



Alaska Oil and Gas Association

121 W. Fireweed Lane, Suite 207

Anchorage, Alaska 99503-2035

Phone: (907) 272-1481

www.aoga.org

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VIA EMAIL:

arcticeis.comments@noaa.gov

Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Re: Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean (RIN 0648-XA885)

Dear Mr. Lecky:

This letter provides the written comments of the Alaska Oil and Gas Association (AOGA) regarding the December 2011 Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean (the "DEIS") prepared by the National Marine Fisheries Service (NMFS). Thank you for considering AOGA's comments and including them in the administrative record.¹

I. INTRODUCTION

Over a period of decades, AOGA and its members have worked cooperatively and successfully with NMFS to study marine mammal populations and behavior in the Arctic, and to closely

¹ AOGA is a private non-profit trade association located in Anchorage, Alaska. AOGA's sixteen member companies account for the majority of oil and gas exploration, development, production, transportation, refining, and marketing activities in Alaska. AOGA's members are the principal industry stakeholders that operate in Arctic Alaskan waters and the adjacent waters of the Outer Continental Shelf ("OCS"). AOGA and its members are longstanding supporters of both responsible oil and gas leasing, exploration and development in Alaska, and wildlife conservation, management and research in the Arctic.

monitor oil and gas activities with the potential to affect marine mammals. Given this context, AOGA appreciates the effort reflected in the DEIS and understands the underlying desire of NMFS to engage in a thoughtful impact analysis. Notwithstanding our respect for NMFS and its statutory missions, candor dictates that we frankly comment that this DEIS is very poorly conceived and otherwise deeply flawed.

We would like to provide comments that help NMFS efficiently remedy the deficiencies in this DEIS. However, it is likely this DEIS is beyond repair, and should be abandoned. Because there is no purpose or need for NMFS to prepare an environmental impact statement analyzing oil and gas activities in the Arctic Ocean, there is no remedy for the most fundamental problems with the DEIS. Even if there were a need for NMFS to evaluate the effects of incidental harassment of marine mammals reasonably expected to occur as a result of oil and gas activities over the next five years, which there is not, NMFS would still need to engage in a new scoping process leading to development of new reasonable alternatives, followed by a new impact assessment of these different alternatives and, eventually, publication of a new draft DEIS. Regrettably, the time, effort and diversion of agency, industry and stakeholder resources required to undertake these tasks would be very substantial, while providing little, if anything, useful.

II. THERE IS NO PURPOSE OR NEED FOR THIS EIS

The purpose, need and scope of this DEIS, and the associated environmental analysis, are misaligned with NMFS's underlying substantive authority (*i.e.*, the Marine Mammal Protection Act (MMPA)), conflicting and confusing, and duplicative of other NEPA analyses. These fundamental flaws cannot be remedied by merely editing the existing DEIS and responding to public comments.

1. This DEIS is an environmental impact analysis in search of a proposed action that does not exist.

The MMPA provides that certain U.S. citizens may petition for issuance of incidental take regulations (ITRs) for a five-year period to authorize the incidental take of small numbers of marine mammals while engaged in a specified activity within a given geographic area. NMFS may issue an ITR if it concludes that the projected incidental take will have a "negligible impact" on affected marine mammal species or stocks and will not have an unmitigable adverse impact on the taking of such species for subsistence uses. 16 U.S.C. § 1371(a)(5)(A). The purpose and need of this DEIS is described and structured as though NMFS intends to issue five-year ITRs for all oil and gas activities in the Arctic Ocean regarding all marine mammal species. However, there is no such pending proposal with NMFS for any ITRs for any oil and gas activity in the Arctic Ocean affecting any marine mammal stock or population.² Accordingly, were NMFS to complete this NEPA process, there would be no five-year ITR decision for it to make and no Record of Decision (ROD) to issue.

² Nor, in the many decades of Arctic OCS oil and gas leasing, exploration and production, has any such petition ever been presented to NMFS.

To be sure, applications have in the past and will in the future be filed with NMFS seeking incidental harassment authorizations (IHAs) under the MMPA for certain marine mammal stocks. *See* 16 U.S.C. § 1371(a)(5)(D). In contrast to ITRs, IHAs are limited in scope to a specific project and operator, of limited duration (no more than one year, which means one open-water season for most Arctic activities), and may only authorize incidental take having the lowest level of effects (*i.e.*, harassment only, not serious injury or mortality). As addressed further below, the necessary NEPA analyses for issuance of IHAs either already exists or are certain to be prepared by the U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM).

2. The scope of NEPA analysis for MMPA incidental take authorizations is limited to analysis of the impact of incidental take on the affected marine mammal stocks or populations within the jurisdiction of NMFS.

It is well-established in the Ninth Circuit, in the context of MMPA incidental take ITRs for oil and gas activities occurring in the Beaufort and Chukchi Seas, that ITRs only authorize incidental take, not the underlying activity. *See, e.g., Center for Biological Diversity v. Kempthorne*, 588 F.3d 701 (9th Cir. 2009). As the DEIS states, “NMFS does not authorize the exploration activities, but rather authorizes the take of marine mammals incidental to specified activities.” DEIS at 2-45. Accordingly, the scope of NEPA analysis directed to issuance of any form of MMPA incidental take authorization is necessarily limited to *the impacts of the anticipated take* on the affected marine mammal stocks, and there is no purpose or need for NMFS to broadly analyze the impacts of future oil and gas activities in general. Impacts on, for example, terrestrial mammals, birds, fish, land use, and air quality are irrelevant in this context because in issuing IHAs (or, were one proposed, an ITR), NMFS is only authorizing take of marine mammals. The scope of the current DEIS is vastly overbroad and does not address any specific incidental take authorization under the MMPA.

Moreover, some Arctic marine mammals – polar bears and Pacific walrus, in particular – are managed under the MMPA by the U.S. Fish & Wildlife Service (USFWS). USFWS has issued current ITRs for polar bears and walrus in the Beaufort and Chukchi Seas. *See* 76 Fed. Reg. 47,010 (Aug. 3, 2011) (current Beaufort Sea ITR); 73 Fed. Reg. 33,212 (June 11, 2008) (current Chukchi Sea ITR).³ These ITRs were issued following a public comment process and accompanied by environmental assessments (EAs) prepared in compliance with NEPA.⁴ Given USFWS authority over polar bears and walrus in the Arctic, and given the existence of current ITRs for these species, accompanied by NEPA analyses, there is no purpose or need for the scope of any NEPA analysis prepared by NMFS to address the impacts of incidental take of

³ AOGA has submitted a petition to USFWS to renew the Chukchi Sea ITR for polar bear and walrus for the period 2013-2018. USFWS, which is not a cooperating agency in preparation of the DEIS, will be preparing its own NEPA document for this ITR renewal.

⁴ Copies of the ITR EAs are available at: <http://alaska.fws.gov/fisheries/mmm/itr.htm>. Both of these EAs have been judicially sustained in response to legal challenges to their adequacy.

polar bears and walrus by the oil and gas industry in the Arctic. Again, in this respect, the current DEIS is overbroad and misaligned in scope because it includes an analysis of the impacts of oil and gas activities on polar bears and walrus in the Arctic.

3. NEPA analysis for an authorization that must, by law, have no more than a *negligible impact*, can never require the preparation of an EIS, which is an analysis reserved for actions that may have *significant impacts*.

Under NEPA, an EIS must be prepared for major federal actions that may significantly affect the human environment. 42 U.S.C. § 4332(C). The term “significantly” is not susceptible to one all encompassing definition, but generally connotes “major” effects, in contrast to lesser impacts deemed to be “moderate,” “minor,” or “negligible.” See 40 C.F.R. § 1508.27. The DEIS adopts and follows this impact weighting nomenclature. See DEIS at 4-4. However, by law, MMPA authorizations (ITR or IHA) may only be issued if the anticipated incidental take is found to have no more than a negligible impact. 16 U.S.C. §§ 1371(a)(5)(A), (D); see DEIS at 1-3 (§ 1.1.1). Because there can never be a purpose or need to prepare an EIS to evaluate the impact of actions that must have no more than a negligible impact, there is no need now, nor can there ever be a need, for NMFS to prepare an EIS in order to issue an MMPA incidental take authorization. It is for this very reason, among others, that in the entire history of OCS oil and gas activity in the Arctic Ocean, no EIS has ever been prepared exclusively for issuance of an MMPA incidental take authorization. Accordingly, here again, NMFS’s decision to prepare an EIS reflects a serious disconnect between its authority under the MMPA and its NEPA analysis.

4. The DEIS is unnecessary because it duplicates existing and certain to be prepared future NEPA documents.

NEPA regulations emphasize the importance of avoiding duplicative impact analyzes. 40 C.F.R. § 1500.4. For this reason, agencies may “adopt” a NEPA analysis prepared by another agency, “tier” from a broader scale or earlier NEPA analysis, and “incorporate by reference” portions of other NEPA documents. *Id.*; 40 C.F.R. §§ 1502.20-21, 1506.3.

With respect to the Chukchi Sea, which encompasses areas in which most OCS oil and gas exploration is expected to occur in the next five years, the judicially-sustained Lease Sale 193 final EIS (FEIS) and supplemental EIS (SEIS) already fully and expressly address seismic exploration and associated ancillary geological and geophysical (G&G) activities. Even if it were appropriate for NMFS to broadly analyze the impacts of these activities, there would be no purpose or need for NMFS to do so now because BOEM has already done it. Although there is no similar recent comprehensive EIS pertaining to seismic exploration in the Beaufort Sea, insofar as AOGA is aware, the potential for these and related G&G activities is relatively low. If and when such activities are proposed to BOEM, BOEM will necessarily undertake any necessary NEPA analysis, including assessment of potential marine mammal incidental take. NMFS may participate in such process as a “cooperating agency” and, in any event, should adopt BOEM’s analysis for its more limited purposes.

As for exploration drilling activities, BOEM has, in the case of Shell Exploration and Production Company’s (“Shell”) proposed Chukchi and Beaufort Sea exploration drilling programs, and

will, in the case of the two other anticipated Chukchi Sea exploration drilling programs by ConocoPhillips and Statoil, prepare project-specific NEPA analyses. Again, NMFS may elect to participate as a cooperating agency and, in any event, such analyses will be suitable for “adoption” by NMFS because marine mammal impacts have been (in the case of Shell), and will be (in the cases of ConocoPhillips and Statoil), addressed.⁵

5. BOEM’s involvement, and the purported analysis of ancillary lease activities in the DEIS, appears to be contrived.

Respectfully, although the DEIS states or implies at times that it was jointly prepared by NMFS and BOEM, it is not apparent that BOEM was an active participant in preparing the DEIS. To the contrary, it appears that BOEM’s involvement has been, at most, passive. Moreover, the suggested link for BOEM’s involvement – analysis of G&G and ancillary lease activities – appears to be similarly contrived. G&G and ancillary activities are, by definition, limited in scope, duration and impact. Such activities do not have the plausible potential to “significantly” affect the human environment so as to require an EIS. Insofar as AOGA is aware, there has never been a purpose or need for a separate EIS to address G&G and ancillary activities. Even if there were such a need, BOEM would be the appropriate lead agency. Indeed, as addressed immediately above, for the Chukchi Sea, BOEM has already completed exactly that analysis as a component of the Lease Sale 193 FEIS/SEIS.

III. NONE OF THE ALTERNATIVES ANALYZED ARE REASONABLE

NEPA requires the lead agency to analyze the proposed action, and a reasonable range of alternative actions, including the no action alternative. *See* 40 C.F.R. § 1502.14. Identification and analysis of the proposed action and reasonable alternatives is considered “the heart” of any EIS process. *Id.* In this instance, there is no proposed action and, in Alternatives 2 and 3, the DEIS mis-identifies the range of reasonable oil and gas activity that may foreseeably occur in the next five years. In particular, the DEIS significantly over estimates the amount of seismic exploration than is reasonably foreseeable, while underestimating the amount of exploration drilling that may occur in 2014 or later. In addition, Alternatives 4 and 5 purport to analyze a range of additional mitigation measures that, in whole or in substantial part, far exceed the scope of NMFS’ authority, and are impracticable, unnecessary or speculative.

⁵ It is also relevant to note that it is uncommon for NEPA analyses pertaining to exploration drilling to require an EIS. Because of the limited duration of such activities, and the associated low level of impact within the project area, it has been adequate for purposes of NEPA to analyze OCS exploration drilling impacts through project-specific EAs (which, in the case of the Chukchi Sea, may be tiered to the Lease Sale 193 FEIS and SEIS). *See, e.g.*, Environmental Assessment – Shell Revised Chukchi Sea Exploration Plan (Dec. 2011).

1. There is no proposed action against which to measure alternatives.

NEPA does not provide federal agencies with the authority to engage in non-programmatic impact analyses in the absence of a proposed action. However, that is precisely what NMFS has done in this instance.

As discussed in Section II above, one of the reasons the DEIS lacks a purpose or need is that there is no pending proposed action. The DEIS is not a programmatic NEPA analysis. Instead, the DEIS is based on the concept of a proposal for a five-year ITR for incidental take of marine mammals during Arctic Ocean OCS oil and gas activities. However, there has never been, and there is not now, a petition pending with NMFS for a five-year ITR for Arctic Ocean oil and gas activities. Accordingly, if there were a proposed action underlying the DEIS, it would have to be for approval of one or more one-year IHAs authorizing incidental take by harassment of small numbers of marine mammals for a specific project or projects. However, the DEIS does not identify any pending IHAs, nor does the DEIS purport to analyze any project specific projections of incidental take by harassment. *See* DEIS at ES-4 (§1.4.2) (stating that “NMFS anticipates receipt of applications” and stating the need for NEPA analysis is “to assist NMFS . . . related to projected requests”), 1-9 (§1.3.2) (same).

If there were a proposed action pending with NMFS for issuance of one or more IHAs (which would, necessarily, be limited to 2012 activity), in order to identify a proposed action against which to compare a range of reasonable alternatives, NMFS would need to have identified the project activities and estimated the associated potential for incidental take. However, because the DEIS does not identify any pending project-specific IHAs, the DEIS also does not identify project specific activities proposed for 2012, or the related potential for incidental take of marine mammals.⁶ *See* DEIS at 2-44 (§ 2.5.1) (emphasizing that “NMFS is required to make these [incidental take] decisions on an *application-specific basis*”) (emphasis added).

2. NMFS has no authority to limit OCS activity and may not propose to do so through an EIS alternative.

Under the MMPA, NMFS has the authority to grant or deny, or to reasonably condition, marine mammal incidental take authorizations. However, NMFS lacks any authority to establish closures, or presumptive caps or limits on OCS oil and gas activity in the Arctic Ocean.

The MMPA states that if NMFS finds that the specified activity itself, or the implementation of mitigation and monitoring measures, will have a negligible impact on the affected marine mammals species or stocks and will not have an unmitigable adverse impact on the availability of affected marine mammal

⁶ The only OCS oil and gas activities anticipated to occur in the Arctic Ocean in 2012 by AOGA’s members are exploration drilling programs by Shell in the Chukchi and Beaufort Seas. As previously mentioned, BOEM has already completed project-specific EAs in satisfaction of NEPA for these activities.

species or stocks for taking for subsistence uses, NMFS *shall issue* the requested ITA.

DEIS at § 2.5 (emphasis in original); *see also* 16 U.S.C. § 1371(a)(5)(A)(i) (Secretary “shall allow” incidental taking that meets applicable statutory standards).

Although NMFS does not approve or disapprove oil and gas activities in the OCS through MMPA incidental take authorizations, the defining and distinguishing characteristics of DEIS Alternatives 2 and 3 are different assumed levels of annual oil and gas activity (identified in the DEIS as Level 1 and Level 2 activity) occurring for a 5-year period. In defining alternatives by activity level, NMFS has confused the nature of the proposed action (incidental take, not oil and gas activity) and the agency’s need to define the proposed action (the anticipated frequency and intensity of incidental take, not the frequency of oil and gas activity), with the NEPA requirement that the impacts of the proposed action should be compared to a reasonable range of alternatives. Stated another way, even if Level 1 or Level 2 oil and gas activities were reasonable assumptions, which they are not, varying ranges of oil and gas activity are not alternatives to proposals for incidental take authorizations.⁷

3. The range of oil and gas activity analyzed in Alternatives 2 and 3 is both too much (for seismic exploration) and too little (for exploration drilling in the Chukchi Sea).

If there were a pending proposal for a five-year ITR for all marine mammals incidental take as a result of oil and gas activity in the Arctic Ocean (which there is not), then in describing the proposed action, NMFS would need to identify the range of activities anticipated to occur and assess the potential frequency and intensity of effects on marine mammals and subsistence. Insofar as Level 1 and Level 2 activity identified in Alternatives 2 and 3 of the DEIS are intended to reflect the expected range of oil and gas activity that will occur in Arctic Ocean OCS over the next five years, these levels are wrong. Both levels of activity overstate foreseeable 2D/3D seismic exploration and understate foreseeable exploration drilling. Because the assumed levels of oil and gas activity are wrong, the impact analysis premised on these assumptions is also flawed.

With respect to 2D and 3D seismic exploration, the DEIS assumes that for each of the next five years there will be either up to seven (Level 1) or, alternatively, up to eleven (Level 2) annual seismic surveys combined for the Chukchi and Beaufort Seas. This level of activity is not realistic. In the Chukchi Sea, major seismic programs were conducted and completed in prior years. Insofar as AOGA is aware, there are no 2D or 3D seismic surveys planned by the oil and gas industry in the Chukchi Sea for the next five years, and, even making a conservative assumption, no more than one seismic survey a year in the Chukchi Sea is realistic. Similarly, in the Beaufort Sea, insofar as AOGA is aware, there are no anticipated 2D or 3D seismic exploration programs in the next several years. Again, making a very conservative assumption, no more than one seismic survey a year in the Beaufort Sea is realistic for the next several years.

⁷ In this context, any attempt to identify additional feasible mitigation is a hopeless quagmire because there is no proposed action with associated proposed mitigation.

With respect to exploration drilling, the DEIS assumes that there may be as many as one exploration drilling program occurring in each of the Chukchi and Beaufort Seas annually (Level 1) or, alternatively, as many as two exploration drilling programs annually in each of the Chukchi and Beaufort Seas. This assumption assumes too few exploration drilling programs for 2014 and perhaps other later years in the Chukchi Sea. Initially, it is important to observe that the actual amount of oil and gas activity expected to occur is very different depending upon the year. For this reason, it is likely unreasonable to assume, as does the DEIS, that some maximum level of activity will occur every year. With respect to exploration drilling in the OCS, Shell is expected to engage in multi-well exploration drilling in the Chukchi Sea over a period of years beginning in 2012. While there will only be one exploration drilling program in the Chukchi Sea in 2012 and 2013, by 2014, it is likely that ConocoPhillips and Statoil will be conducting exploration drilling on their prospects in the Chukchi Sea. Accordingly, in 2014, and perhaps later years depending upon results, there may be as many as three exploration drilling programs occurring in the Chukchi Sea. In the Beaufort Sea, Shell also intends to engage in a multi-well exploration drilling program over a period of years beginning in 2012. However, it does not appear likely that there will be more than one exploration drilling program a year in the Beaufort Sea.

In sum, the range of oil and gas activity analyzed in the DEIS is wrong.⁸ Depending upon the type of exploration activity and the year, the impact analysis in the DEIS assumes either too much or too little activity will occur. If it made sense for NMFS to proceed with this NEPA analysis (which it does not), the agency would need to re-scope the proposed action to develop a realistic range of anticipated activity that takes into account anticipated variations in exploration depending upon the year (instead of assuming maximum activity for all years). Based upon re-scoping, NMFS would then need to reconsider and establish new alternatives, complete a new impact analysis and then re-issue a revised DEIS for public comment.

4. Alternative 4 addresses unnecessary and unexplained time and area closures that are impracticable.

Although NMFS and USFWS have uniformly determined for decades that the anticipated impact of oil and gas activities on marine mammals in the Arctic are, and will be, negligible, and although the best available science demonstrates to a high degree of reliability that these judgments were correct, in Alternative 4, NMFS identifies a range of additional onerous regulatory measures that might be imposed as a condition of a future MMPA authorization. There are numerous statutory, regulatory, analytical and practicability problems with the additional mitigation addressed in Alternative 4.

⁸ The anticipated level of site clearance and shallow hazard survey programs is also wrong. For example, Level 1 activity assumes as many as three such programs in the Chukchi Sea, while Level 2 activity assumes as many as 5 such programs. By comparison, the ITR petition recently submitted by AOGA to USFWS for polar bear and walrus projects as many as seven (and as few as zero) shallow hazard surveys and as many as two (and as few as one) other G&G surveys annually in the Chukchi Sea over the next five years.

First, there is no statutory basis for imposing additional mitigation on activities that, as currently mitigated, do not result in more than temporary changes in behavior, without any known injury, mortality or other adverse consequence to any marine mammal species or stock. *See* DEIS at 2-44 (§ 2.5.1) (“The MMPA states that if NMFS finds that the specified activity itself, or with the implementation of mitigation and monitoring measures, will have a negligible impact on affected marine mammal species or stocks and will not have an unmitigable adverse impact on the availability of marine mammal species or stocks for taking for subsistence uses, NMFS *shall issue* the requested ITA.”) (emphasis in original); *see* 16 U.S.C. § 1371(a)(5).

Second, because the purpose of analyzing a reasonable range of alternatives is to encourage thoughtful decision-making, only alternatives that present important and likely environmental advantages over the proposed action merit detailed consideration. Were this not the case, there could be a potentially infinite number of “alternatives” with equal or more impacts that might be addressed in an EIS to no environmental or decision-making benefit. In the present case, as demonstrated in Table 2.6 (pp. 2-51 to 2-54), there are no relevant environmental advantages anticipated to result from imposition of additional mitigation. In every impact category but one, the draft impact findings for Alternative 4 are identical to the draft impact findings for Alternative 3 (Level 2 activity with standard mitigation measures).⁹ Given that the impacts with and without additional mitigation are the same, Alternative 4 neither advances thoughtful decision-making nor provides a rational justification under the MMPA for NMFS to impose any additional conditions beyond standard mitigation measures. Stated otherwise, there is no need to analyze additional mitigation because (i) the existing mitigation is demonstrably effective in ensuring a negligible impact, and (ii) analysis of the additional mitigation has not demonstrated any impact differential on any environmental resource, including most importantly, marine mammals and subsistence.

Third, Alternative 4 provides no useful analysis because the context is entirely abstract (*i.e.*, independent from a specific proposal). The need and effectiveness of any given mitigation measure, standard or otherwise, can only be assessed in the context of a specific activity proposed for a given location and time, under then-existing circumstances. *See* DEIS at 2-44 (§ 2.5.1) (“NMFS is required to make these [incidental take] decisions on an application-specific basis”). However, this DEIS is merely a theoretical analysis of potential measures undertaken in the absence of a specific activity, location, or time. Moreover, as NMFS has acknowledged, if these measures were ever potentially relevant, reanalysis in a project-specific NEPA document would be required. This circumstance renders the entire exercise of analyzing hypothetical additional mitigation pointless.

⁹ The only category with differently rated impacts between Alternatives 3 and 4 is “cultural resources.” Although authorization of marine mammal incidental take would have no impact on cultural resources, for Alternatives 2 and 3, impacts to cultural resources are rated as “negligible” rather than none. With imposition of additional mitigation measures, the impact is inexplicably *increased* to “minor.” *See* DEIS at Table 2.6 (p. 2-53).

Fourth, the identified time/area closures, and the use of a 120 dB and 160 dB buffer zones, have no sound scientific or other factual basis. In several instances, these unnecessary measures would render oil and gas exploration impracticable.

- According to the DEIS, the primary purpose of the identified time/area closures in Camden Bay, Barrow Canyon and the Western Beaufort Sea, the Shelf Break of the Beaufort Sea, Hanna Shoal, and Kasegaluk Lagoon/Ledyard Bay is protection of bowhead and beluga whales, and minimization of conflicts with subsistence hunting activities. However, the DEIS does not identify any data or other scientific information establishing that past, present, or reasonably anticipated oil and gas activity in these areas has had, or is likely in the future to have, either more than a negligible impact on marine mammals or any unmitigable adverse impact on the availability of marine mammals for subsistence activities. Accordingly, these time/area closures are “mitigation” in search of an adverse impact that, insofar as we are aware, does not exist.
- In addition, except to identify where no exploration drilling is anticipated because there are few or no leases, the DEIS does not provide any information about what levels of oil and gas activity are foreseeably expected to occur in the identified areas in the absence of time/area closures, or what the anticipated adverse impacts from such activities would be. Without this information, the time/area closure mitigation measures are arbitrary because there is an insufficient basis to evaluate and compare the effects with and without time/area closures except through speculation.
- It appears that the principal target of the time/area closures is mitigation of an anticipated large number of 2D/3D seismic surveys. However, as addressed above, few 2D/3D seismic surveys are anticipated in the next five years. The vast majority of these surveys has already been conducted – each with accompanying NMFS-issued MMPA IHAs that did not require preparation of an EIS. There is no scientific evidence that these seismic surveys, individually or collectively, resulted in more than a negligible impact. Again, these measures appear to be mitigation in search of a perceived problem that is not foreseeable.
- The time/area closure for Camden Bay is both arbitrary and impracticable. For the reasons explained above, the proposed Camden Bay time/area closure is arbitrary because there is no demonstrated need. To the contrary, BOEM has already completed its analysis of Shell’s exploration drilling program in Camden Bay and found the anticipated impacts to marine mammals and subsistence to be minimal and fully mitigated. Moreover, the proposed September 1 to October 15 closure effectively eliminates *over 54 percent* of the open water exploration drilling season in Camden Bay. Such a draconian impact – all without a demonstrated need – would likely render exploration

drilling in Camden Bay economically and logistically impracticable, thereby effectively imposing a full closure of the area under the guise of mitigation.¹⁰

- Similarly, restrictions intended to prevent sound levels above 120 dB or 160 dB are arbitrary and unwarranted. As AOGA has previously commented to NMFS in connection with prior draft NEPA analyses of potential seismic survey effects, the best scientific evidence does not support a need for imposition of restrictions at 120 dB or 160 dB levels. Perhaps the most compelling demonstration of this point comes from the sustained period of robust growth and recovery experienced by the Western Arctic stock of bowhead whales, while exposed to decades of seismic surveys and other activities without restrictions at the 120 dB or 160 dB levels. Moreover, as AOGA has also previously commented to NMFS, restrictions at these levels, especially at the 120 dB level, are impracticable to monitor because the resulting exclusion zones are enormous, and the Arctic Ocean is an extremely remote area that experiences frequent poor weather.

Finally, other additional mitigation measures identified by NMFS are speculative and arbitrary, and well beyond the authority of NMFS to impose under authority of the MMPA. In Section 2.4.10 of the DEIS, NMFS has identified other measures the agency is evaluating as possible future standard measures for all alternatives. For all the same reasons identified above, these measures are not needed and their effects are, at most, entirely speculative. However, it bears special mention that NMFS has no basis whatsoever in law or in fact to impose “reduced, limited or zero discharge” requirements on “any or all of the specific discharge streams” from a proposed OCS activity under authority of the MMPA. *Id.* At 2-41.

In sum, AOGA is a strong supporter of reasonable mitigation necessary to ensure that oil and gas activities have a negligible impact and that the availability of marine mammals for subsistence is not impaired. However, there is no need for any of the identified additional mitigation because existing mitigation measures are proven, based on an extensive record with many years of data, to be effective. *See* DEIS at 4-107 (occurrence of hearing impairment, injury, or mortality due to oil and gas exploration activities “is considered highly unlikely” using the standard mitigation measures).

5. Alternative 5 is entirely (and admittedly) speculative, and so useless for NEPA purposes.

Alternative 5 is defined as Level 2 oil and gas activity performed subject to both standard mitigation measures, and alternative seismic survey technologies. However, NMFS acknowledges in the DEIS that these technological alternatives “are in various stages of development and none are commercially available.” DEIS at 2-23 (§ 2.3.5). NMFS further acknowledges that it is uncertain when these technologies could become available, and the

¹⁰ Other suggested time/area closures would have similarly onerous consequences. Proposed time/area closures would arbitrarily bar exploration during *over 49 percent* of the open water season in some areas of the Chukchi Sea.

effects of their usage is largely unknown. *Id.* Indeed, the DEIS states that NMFS is unable to meaningfully analyze the effects of these uncertain technologies and, accordingly, additional NEPA analysis will be required:

Because the majority of these technologies have not yet been built and/or tested, it is difficult to fully analyze the level of impacts from these devices. Therefore, additional NEPA analyses (i.e., tiering) will likely be required if applications are received requesting to use these technologies during seismic surveys.

DEIS at 4-317 (§ 4.8).

No useful purpose is served by purporting to undertake a detailed impact analysis of seismic survey technologies that are too uncertain to know whether they may become commercially viable and, when and if they do become available, what impacts they may have on the incidence of marine mammal takes during seismic surveys. As NMFS has acknowledged, it is impossible to perform a detailed impact analysis for speculative technologies that have, at most, imagined, but untested, effectiveness. The futility of such an analysis is all the more evident where, as here, it is admitted that so little is now known that further NEPA analysis will be required regardless of this EIS.

IV. KEY IMPACT FINDINGS IN THE DEIS ARE ARBITRARY AND ERRONEOUS

The draft impact findings in the DEIS addressed to the effects of oil and gas activities on marine mammals conflict with applicable statutory standards, the best available science, and better-informed NEPA analyses.¹¹

1. The draft impact findings would seriously undermine, if not prevent, NMFS from issuing any MMPA incidental take authorizations for the oil and gas industry, and conflict with judicially-confirmed findings by USFWS regarding polar bears and walrus.

The MMPA allows NMFS (and USFWS) to authorize incidental take of marine mammals if, and only if, the anticipated effects are expected to have a “negligible impact.” 16 U.S.C. § 1371(a)(5)(A) and (D). Although NMFS states that the primary purpose of the DEIS is to facilitate its issuance of MMPA incidental take authorizations, the DEIS proposes impact findings for marine mammal species that are greater than “negligible.” *See, e.g.*, DEIS at 4-111

¹¹ Because the scope of this NEPA analysis should, at most, be limited to analyzing the impact of marine mammal take by harassment during oil and gas activities, AOGA is not commenting on aspects of the DEIS that address other unrelated resources. However, NMFS lacks any expertise pertaining to these resources and, as previously stated, NMFS lacks jurisdiction to analyze these activities on such a broad scale. Other NEPA documents, most notably BOEM’s Lease Sale 193 FEIS/SEIS, more thoroughly and capably analyze the broader range of impacts that may result from oil and gas activity in the Arctic Ocean OCS.

(§ 4.5.1.4.9.) (“the overall impact to bowhead whales is likely to be moderate” from Level 1 activity), 4-115 (“moderate” impact on beluga whales from Level 1 activity), 4-128 (§ 4.5.2.4.12.2) (“minor” impact to all species of ice seals from Level 1 activity); *compare* DEIS at 4-4 (defining “moderate” and “minor” to mean impacts greater than “negligible”). If these draft findings were retained by NMFS, the arguable legal effect of this NEPA analysis would be a presumptive determination that the agency is barred from issuing the very incidental take authorizations for which it purports to be conducting this impact analysis. In other words, the paradoxical consequence of NMFS assessing oil and gas activities so it can issue MMPA authorizations would be that NMFS could issue no MMPA authorizations.¹²

Apparently having grasped this problem late in the drafting process, the DEIS includes a one sentence footnote stating that the standard for “negligible” in the MMPA and NEPA are not the same. *See* DEIS at 4-4, n.1. However, no explanation, analysis or authority has been provided to support the seemingly illogical assertion that an environmental impact finding of greater than “negligible” is not in conflict with a “negligible impact” finding under the MMPA. One conclusory footnote does little to alter the inevitable confusion and significant legal risk created by arbitrary and erroneous draft impact findings that conflict with the applicable statutory standard for issuance of MMPA incidental take authorizations.

2. Oil and gas leasing, exploration, and development in the Arctic Ocean has had no known adverse impact on marine mammal species and stocks, and the reasonably anticipated impacts to marine mammals from OCS exploration activities occurring in the next five years are, at most, negligible.

The impacts of oil and gas activity on marine mammals in the Arctic has been a reasonable concern of the Native community, federal, state and local agencies, and the oil and gas industry for over 40 years. The primary reason for this concern and attention has been the importance of subsistence hunting to Native Alaskans in the Arctic. In addition, bowhead whales, long considered the most important and sensitive Arctic marine mammal, are listed as an endangered species under the ESA and a “strategic stock” under the MMPA. As a result of heightened attention, the Western Arctic Ocean stock (also known as the Bering-Chukchi-Beaufort (BCB) Seas stock) of bowhead whale is one of the most rigorously studied marine mammal stocks on Earth. Offshore oil and gas activities with the potential to affect bowhead whales in the Arctic Ocean have long been subject to a stringent set of mitigation and monitoring requirements.

Given this context, the bowhead whale serves as a prime example of the arbitrary and unsound draft impact findings in the DEIS. The Western Arctic Ocean stock of bowhead whales has been

¹² The consequences of non-negligible impact findings would be compounded for ESA-listed species. The ESA bars issuance of incidental take authorizations for listed marine mammals unless accompanying by a contemporaneous “negligible impact” finding under the MMPA. *See* 16 U.S.C. § 1536(b)(4)(C). Accordingly, for bowhead whales (and for ringed and bearded seals should NMFS proceed with a final ESA-listing later this year), non-negligible impact findings in a final EIS could serve as an insurmountable legal bar to both ESA and MMPA incidental take authorizations.

exposed to the full range of oil and gas activity in the Alaskan OCS since the 1960s. Over the course of this lengthy period of time, with decades of continuous monitoring and study, no injuries or mortalities have been detected from oil and gas activity. Even though bowhead whales are actively hunted for subsistence purposes, the Western Arctic stock has steadily rebounded from depressed abundance caused by pre-20th century commercial whaling practices to the point where the stock is acknowledged to be at or quickly approaching the carrying capacity of its habitat, while continuing to grow at a robust annual rate. There is much about bowhead whales that remains unknown and unknowable. Nevertheless, all the available information indicates to a high degree of scientific reliability that routine oil and gas activity has no more than a negligible impact on the Western Arctic stock, that the stock has experienced robust growth for many decades while exposed to oil and gas activities, and that the stock is healthy, resilient to the adverse impacts of all environmental, subsistence, and anthropogenic effects (including climate change), and recovered to pre-whaling abundance without a detectable slowing in the rate of growth. Moreover, even the DEIS projects that the occurrence of hearing impairment, injury, or mortality due to oil and gas exploration activities “is considered highly unlikely.” DEIS at 4-107.

Notwithstanding the consistency and reliability of the above information, and notwithstanding an unbroken record of well-supported “negligible impact” determinations by NMFS made over a period of decades, the DEIS improbably concludes that “the overall impact to bowhead whales is likely to be “moderate.” DEIS at 4-111. Respectfully, the draft “moderate” impact finding is arbitrary and baseless. For the reasons expressed in the previous section, such a finding exposes OCS oil and gas activity to legal risk that is entirely unwarranted by the sum of over four decades of data and scientific opinion.¹³

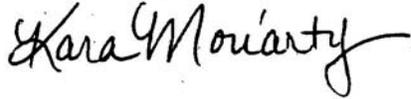
V. CONCLUSION

AOGA is a longstanding supporter of the MMPA regulatory process as an effective means of balancing and rationalizing responsible oil and gas development with conservation of marine mammals. We continue to support issuance of ITRs and IHAs under the MMPA because it has been demonstrably effective in the Arctic in protecting marine mammal species without unduly and unnecessarily burdening industry. Notwithstanding our support for the MMPA, we do not understand what NMFS intended when it prepared this DEIS, and we can find no justification for NMFS to proceed to finalize it. Instead, for the reasons explained above and in the additional

¹³ The other impact findings in the DEIS for marine mammals are similarly unwarranted. *Compare* DEIS at § 4.5.2.4.12 (concluding that impacts to ice seals are likely to be “minor”), *with* AOGA and API letter to Ms. Kaja Brix (NMFS) dated Feb. 13, 2012 at pp. 15-20 (detailing data and findings of NMFS and others that the totality of impacts to Arctic ribbon seals are “negligible”); *compare* DEIS at 4-139 (Level 1 activity impacts on polar bear likely to have “minor” impact), *with* 76 Fed. Reg. 47,010 (Aug. 3, 2011) (current Beaufort Sea ITR for polar bear with USFWS “negligible impact” finding), 73 Fed. Reg. 33,212 (June 11, 2008) (current Chukchi Sea ITR for polar bear with USFWS “negligible impact” finding).

submissions of AOGA's members, the American Petroleum Institute, and other members of Alaska's oil and gas industry, we recommend that NMFS abandon the DEIS.

Sincerely,

A handwritten signature in black ink that reads "Kara Moriarty". The signature is written in a cursive, flowing style.

Kara Moriarty
Executive Director
Alaska Oil and Gas Association

cc: The Honorable Sean Parnell, Governor, State of Alaska
The Honorable Lisa Murkowski, United States Senate
The Honorable Mark Begich, United States Senate
The Honorable Don Young, United States House of Representatives
Dr. James Kendall, Bureau of Ocean Energy Management, Alaska Regional Director
Geoffrey Haskett, U.S. Fish & Wildlife Service, Alaska Regional Director



US Oil & Gas
Association



February 28, 2012

Mr. James H. Lecky,
Director, Office of Protected Resources,
National Marine Fisheries Service.
1315 East-West Highway
Silver Spring, MD 20910-3225

Via Email: arcticeis.comments@noaa.gov.

Reference: National Oceanic and Atmospheric Administration
RIN 0648–XA885 Notice of Availability of a Draft Environmental Impact Statement for
Effects of Oil and Gas Activities in the Arctic Ocean

The American Petroleum Institute (API), the International Association of Geophysical Contractors (IAGC), the National Ocean Industries Association (NOIA), the U.S. Chamber of Commerce, the International Association of Drilling Contractors (IADC, and the US Oil & Gas Association (USOGA) are pleased to provide the following comments on the Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean as published in the December 30 Federal Register¹

Collectively, our associations' members are long-standing and active participants in oil and gas exploration and development activities in Alaska. Among other activities, our members conducted exploration programs in the Beaufort Sea and the Chukchi Sea OCS in the recent past and plan to conduct further seismic exploration in these areas. We are committed to oil and gas exploration and development in the Alaska OCS for the long-term.

In the past five years, industry -- either through its trade associations or as individual companies -- has provided comments to Bureau of Ocean Energy Management (BOEM) and its predecessor, the Minerals Management Service (MMS) and the National Marine Fisheries Service (NMFS) regarding several agency documents including: (1) MMS's 2007-2012 oil and gas leasing program in the OCS, (2) MMS's Lease Sale 193 DEIS (Chukchi Sea), (3) MMS's Lease Sale 202 EIS (Beaufort Sea), (4) MMS's and NMFS's 2006 Programmatic Environmental Assessment (2006 PEA) for seismic surveys in the Beaufort and Chukchi Seas, and (5) NMFS's 2007 Draft Programmatic Environmental

¹ Federal Register, Volume 76, Number 251 Friday, December 30, 2011]]
[Pages 82275-82277]. <http://www.gpo.gov/fdsys/pkg/FR-2011-12-30/html/2011-33195.htm>

Impact Statement Seismic Surveys in the Chukchi and Beaufort Seas, Alaska. In addition, various companies have also provided input to development of numerous Environmental Assessments (EAs) associated with applications for Incidental Harassment Authorizations (IHAs) from NMFS and Geological & Geophysical (G&G) permits from BOEM for Alaska OCS operations.

Central to any discussion of oil and gas exploration and development in the Arctic is the fact that energy production is critical not only to Alaska but to the nation. According to the recently released U.S. Energy Information Agency's 2012 Energy Outlook, oil will remain a critical component of the U.S. energy mix accounting for approximately one-third of energy supplies in 2035. Alaska's North Slope was producing 2.2 million barrels per day in 1988, representing 25% of the U.S. domestic production. Current production had declined to just under 625,000 barrels per day. This decline, unabated, threatens the viability of the Trans Alaska Pipeline thereby threatening the flow of existing oil production and associated tax revenues. Development of new offshore projects is critical to slowing Alaska's oil production decline. Government estimates of economically recoverable oil and natural gas, including reserves growth in known fields, range from 35 to 36 billion barrels of oil and 137 trillion cubic feet of gas. However, removal of the opportunity to develop ANWR 1002, and the Beaufort and Chukchi seas would reduce these estimates by more than 50 percent – which would have significant impact on future U.S. energy production.

It must be remembered that NEPA requires the lead agency to consider social and economic impacts when preparing an EIS.² The DEIS is required, more specifically to consider “the maintenance and enhancement of long-term productivity” and the “quality of the human environment”. Certain alternatives in the DEIS would affect man's maintenance and enhancement of long-term productivity, and would affect potentially irreversible and irretrievable loss of essential energy resources.

Prior industry comment

Industry provided extensive comment and suggestions to the Minerals Management Service and the National Marine Fisheries Service regarding the 2007 Draft Programmatic Environmental Impact Statement (DPEIS), Seismic Surveys in the Beaufort and Chukchi Seas Alaska. Although the DPEIS was withdrawn and replaced with the current DEIS, upon which we are commenting now, many of the industry's earlier comments remain germane, particularly the following passages:

—MMS and NMFS have also acknowledged that all oil and gas activity on the North Slope of Alaska and in the adjacent OCS has had no detectable adverse population-level effects on the health, current status, habitat, or recovery of marine mammal stocks. The DPEIS's statements suggesting that population-level effects may occur unless burdensome new mitigation is imposed are contrary to the best available scientific evidence.”

—The effects of seismic exploration in the Beaufort and Chukchi Seas, particularly with respect to the Bering-Chukchi-Beaufort Seas (BCB) population of bowhead

² NEPA section 102 (42 USC 4332)

whales, have now been the subject of numerous recent detailed analyses by MMS and NMFS. Each successive analysis, performed under the auspices of the Outer Continental Shelf Lands Act (OCSLA), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), and the Marine Mammal Protection Act (MMPA), has comprehensively reviewed the available information regarding seismic impacts and the status of BCB Seas population, regarding which there has been essentially no change over the time period involved. What has changed in these analyses over time are: (i) increasingly unrealistic assumptions about the extent of expected survey activity (referred to in the DPEIS as the “foreseeable level of activity”), (ii) increased significance accorded to speculative impacts for which there is no supporting data, (iii) decreased significance accorded to the highly credible scientific data demonstrating the continued health and growth of the BCB stock and the insignificant effects of seismic activity, (iv) decreased significance accorded to feasibility and practicability, and (v) increased stringency of proposed restrictions on seismic survey activity.”

—the impacts analysis] stacks unreasonable assumptions one on top of another in efforts to support scientifically unwarranted and impracticable restrictions designed to mitigate highly improbable impacts.”

While framed as a new DEIS, many of the deficiencies contained in the withdrawn 2007 DPEIS remain uncorrected or unaddressed. Much of the leaseholder’s previous input does not appear to have been considered. The new DEIS also raises new issues. Some of these are associated with previously identified concerns, others are new issues that, if not properly addressed, would simply undermine any value of the DEIS and impede the agencies’ efforts to meet their statutorily defined and required responsibilities.

Industry Principles Used to Evaluate DEIS

The industry has used the following principles to evaluate the various draft environmental documents promulgated by the BOEM and NMFS.

- The U.S. needs to encourage energy resource development to meet its national and economic security interests.
- Development should proceed with reasonable and balanced environmental protection.
- Industry has acknowledged subsistence use, has supported reasonable balance of competing uses and reasonable requirements to satisfy MMPA’s requirement for no “unmitigable adverse effects” on the subsistence harvests of these species.
- The nature and scope of industry’s activities must be accurately described.
- Assessment of the environmental consequences must use legitimate and scientifically accepted information and risk characterization/assessment methodologies and identify reasonable probabilities of risk and uncertainty.
- Agency decisions regarding U.S. Arctic development should be made using clearly stated criteria yielding results that can be scientifically replicated.

Summary Assessment

- A. The DEIS has structural deficiencies. It is improperly scoped and fails to meet regulatory standards, which thereby impairs its utility in subsequent regulatory decisions.
- B. The DEIS does not accurately portray the nature and extent of industry activities. There are 487 active leases in the Chukchi Sea, 178 active leases in the Beaufort Sea. All are within their 10-year primary terms and expire on or before 2018. Because the DEIS does not present any alternative that would cover the anticipated level of industry activity, it would cap industry activity in a way that (a) positions the DEIS as a decisional document in violation of NEPA standards, and (b) would constitute an economic taking.
- C. The Alternatives fail to meet the NEPA test in at least three respects, (a) as indicated in comment I-B above, the Alternatives do not provide a reasonable range of activities and (b) the No Action Alternative is inaccurately stated, and (c) Alternative 5 regarding alternative technologies is infeasible because those technologies are not available.
- D. The DEIS environmental consequences analysis incorrectly describes the environmental effects of energy exploration and production activities and then conversely understates the economic consequences of limiting American exploration programs. The analysis therefore has no merit. **The DEIS acknowledges that industry activities have had no meaningful adverse impact.** However, the Environmental Consequences analysis gives credibility to conjecture, highlighting “potential effects” that do not meet the best available science test and fails to give consideration to probabilities of an adverse effect. The DEIS relies upon a questionable risk assessment methodology that the agency itself admits does not yield reproducible results and would yield as many different assessments as there are risk assessors. Such variability in risk assessment exceeds agency discretion and provides no guidance for future agency decisions.
- E. The DEIS seeks to impose mitigation measures on activities that the analysis concludes holds little to no risk to either individual animals or populations. Many of these mitigation measures are of questionable effectiveness and/or benefit, some are simply not feasible and virtually all fall outside the bounds of any reasonable cost-benefit consideration. The time and area closure mitigations, in particular, are unjustified and would constrain the industry operations to such a degree as to threaten the feasibility of the very exploration programs they seek to mitigate.
- F. The totality of these deficiencies and errors are such that significant structural modification, including the development of new alternatives and a revised environmental consequences analysis, is needed. The level of change required is sufficiently large that industry recommends that a new and revised DEIS be developed for public review and comment before proceeding.

The issues raised in the summary assessment above are supplemented by detailed technical discussion found in Attachment 1.

In closing, we appreciate the work done by NMFS in preparing this DEIS and the opportunity to comment on it. However, we respectfully request that this DEIS be withdrawn and that it be replaced with a new DEIS that fully addresses the comments provided here.

Sincerely,



Andy Radford, API



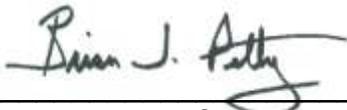
Luke Johnson, NOIA



Sarah Tsoflis, IAGC



Alby Modiano, USOGA



Brian Petty, IADC



William L. Kovacs, U.S. Chamber of Commerce

Detailed Technical Comments on Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean

I. DEIS Scope, Utility and Regulatory Consistency

- A. The DEIS fails to make a fundamental distinction between two different activities -- seismic survey activities related to exploration and those related to maintain and extend production. The DEIS must clarify whether the DEIS is intended to address the use of seismic activities associated with exploration, production (reservoir management) or both.

- B. Proposed actions considered in the EIS include issuance of ITAs by NMFS during G&G permitted activities and the issuance of G&G permits. [ES-3]. Seismic exploration in state waters does not require a G&G permit but may in some situations still require an ITA from NMFS. It is not clear whether the State of Alaska was consulted or if the DEIS includes exploration activities in state waters, which would require incidental taking permit authorization from NMFS.

- C. It is a fundamental tenet of NEPA law that an EIS is not a decisional document -- such that it requires an agency to take a specific action. NEPA analyses are intended to look at the consequences of proposed actions and suggest a reasonable range of feasible alternatives. NEPA analyses are intended to inform subsequent agency decisions. The DEIS scoping must reflect the range of decisions that may be brought forward and the DEIS itself must be informed by and consistent with regulatory standards and the requirements of all Federal statutes under which the agencies make their decisions. The Arctic DEIS does identify and reference the Outer Continental Shelf Lands Act, the Marine Mammal Protection Act and the Endangered Species Act but never addresses several important requirements under these Federal statutes in the analyses. It fails to identify and properly address the need to carefully balance the requirements among the three statutes. The net effect of this is that the DEIS substantially gives undue weight to considerations involving incidental taking of marine mammals under the MMPA and virtually ignores the requirements of OCSLA.

- D. There are no regulations defining the term "potential effects". The DEIS analysis provides extensive attention to potential effects, most of which are questionable due the lack of scientific certainty, and in some critical areas -- the virtual absence of knowledge. It also gives almost no attention to the probability of impact. Next, the DEIS provides little attention to the potential severity of effects. The DEIS confuses agency decision-making by presenting an extensive list of "potential effects" -- as if they are certainties -- and then demands they be mitigated. Thus, it is impossible for the DEIS to inform, guide or instruct agency managers to differentiate between activities that have no effect, minor or major effect to a few animals or to an entire population. Logically, the application of mitigation measures should differentiate among activities according to levels of impact and risk, but the DEIS analyses fail to do so.

- E. The OCSLA and implementing regulations provide for proper exploration and development of U.S. offshore energy resources. The DEIS fails to acknowledge the requirements of OCSLA, which are designed to encourage expeditious offshore energy development³ subject to appropriate environmental safeguards and conducted in a way to minimize activities that endanger life or health.⁴ These requirements foster seismic surveys because the survey results provide the resource assessment information central to the purpose of the Act.
- F. Recognizing the different purposes and considerations associated with MMPA/ESA/OCSLA, obvious balancing judgments are required by agency decision-makers. The DEIS provides extensive information regarding potential impacts of industry activities on marine life. However, it gives insufficient attention to the impacts the alternatives and mitigation measures would have on development of OCS resources. This should include information on lost opportunity costs and the effect of time and area closures given the already very short open water and weather windows available for Arctic industry operations.

II. Alternatives

A. Presentation of the Nature & Level of Industry Activity

The DEIS presents industry activities as a number of seismic and drilling programs. The Alternatives then proceed to define what constitutes the level and type of activity within a “program” effort. Offshore energy exploration operations are highly variable. The DEIS groupings incorrectly describe the activities within each “program” and understate the levels of activity likely undertaken within each. This has the effect of limiting activity in ways that are neither explained nor justified based on the environmental consequence analysis.

The DEIS indicates that “One program” entails however many surveys or exploration wells a particular company is planning for that season. But each program would use only one source vessel (or two source vessels working in tandem, e.g. OBC surveys) or drilling unit and would not survey multiple sites or drill multiple wells concurrently. [ES-6]. The assumption for the number of source vessels and concurrent activity is unlikely and therefore yields an even less accurate picture of future activity. As a result, it has the effect of further reducing the level of anticipated industry work to be addressed in the DEIS.

For example, each seismic “program” [ES-6] is limited to no more than two source vessels working in tandem. This would expand the duration required to complete a program, which could increase the potential for environmental impacts, without decreasing the amount of sound in the water at any one time. NMFS should not limit the number of source vessels used in a program in this manner as it could limit exploration efficiencies inherent in existing industry practice..

³ 43 U.S.C., §§ 1332(3), 1801(7)

⁴ 43 U.S.C., §§ 1332(6), 1801(9), 1802(3)

In-ice towed streamer 2D seismic surveys provide an opportunity to work during a time frame where overlap or conflict with either the subsistence hunters or the marine mammals is either very limited or non-existent. Accordingly many of the mitigation measures suggested throughout the DEIS are not applicable to this methodology and should not be required during these surveys.

The alternatives limit the number of “on ice” seismic surveys to one seismic survey in the Beaufort per year. The Beaufort alone has approximately 400 miles of shallow water coastline where on ice surveys could be applicable; to limit the number of surveys in this manner would reduce the potential to efficiently explore these areas, increase the time required to explore these areas and ultimately could increase the risk of exposure to personnel, wildlife and the environment in general on the North Slope. NMFS & the BOEM should not limit the number of on ice surveys that can be acquired in any year, in either the Beaufort or Chukchi sea areas as it could limit exploration efficiencies inherent in existing industry practice.

The DEIS alternatives also limit the number of drilling operations each year regardless of the type of drilling. Given that there are many different approaches to drilling, each with its own unique acoustic footprint and clear difference in its potential to generate other environmental effects, a pre-established limit on the number of drilling operations each year is not based on a scientific assessment – and therefore is unreasonable.

B. The DEIS improperly groups activities

The DEIS states, —Up to four 2D/3D seismic or CSEM surveys in the Beaufort Sea (Beaufort) and up to three 2D/3D seismic or CSEM surveys in the Chukchi Sea (Chukchi) per year.” And —up to six 2D/3D seismic or CSEM surveys in the Beaufort and up to five 2D/3D seismic or CSEM surveys in the Chukchi per year.” [ES-7, Table ES-1 Summary of Alternatives and ES-8].

By grouping 2D / 3D seismic surveys and Controlled Source Electro-Magnetic (CSEM) surveys together in this manner, the DEIS suggests that these two survey types are interchangeable, produce similar types of data and/or have similar environmental impact characteristics. This is incorrect and the DEIS should be corrected to separate them and, if the Alternatives propose limits, to deal with each survey type separately.

Seismic data and CSEM data are different and provide different types of information about the subsurface. CSEM data cannot replace seismic data but instead is used to complement it. 2D and 3D seismic surveys utilize impulsive sound. Electromagnetic (EM) surveys, including CSEM, do NOT use an acoustic source. EM surveys use an electric dipole antenna (source) towed behind a vessel. The electric and magnetic fields - either natural or subsequently induced in the subsurface - are measured and recorded by an array of receivers. Therefore, there will not be any impacts from acoustic sources associated with EM surveys. For more information on the environmental impacts of EM surveys,

please refer to the recently completed environmental impact assessment of Electromagnetic (EM) Techniques used for oil and gas exploration and production, available at <http://www.iagc.org/EM-EIA>. The EIA concluded that EM sources as presently used have no potential for significant effects on animal groups such as fish, seabirds, sea turtles, and marine mammals. In addition, cumulative effects from EM surveys are negligible compared to natural EM anomalies, induced fields from natural water currents, and anthropogenic EM sources such as those originating from undersea equipment.

C. Environmental Benefits of Geophysical Technologies

In the DEIS, NMFS fails to adequately characterize the important role geophysical imaging technologies play in reducing safety and environmental risks in E&P operations, particularly in drilling operations. At present, there are no commercially available and viable alternatives to current geophysical imaging technologies, which have been employed but continuously refined over the last six decades to be more efficient and emit less sound energy.

Geophysical imaging technologies such as 2D and 3D seismic surveys, near surface / shallow hazard surveys and electromagnetic surveys help reduce the safety and environmental exposure risks of future exploration activities. Vast improvements in these technologies in recent years now afford the E&P industry significant precision in subsurface imaging, resulting in significant environmental benefits. Over the E&P lifecycle, these benefits include: siting wells, facilities and pipelines at safe locations on the seafloor; the need for fewer wells and fewer facilities due to improved drilling success; the ability to predict hazardous over-pressurized zones, and thus to be able to better design those wells to manage the associated risks; and improved overall safety of operations.

High-resolution, shallow site surveys, for example, greatly reduce risks associated with shallow hazards that, in the absence of such surveys, could increase the risk of safety or environmental incidents. As a result, wells are drilled at safe locations, platforms and other facilities are placed in safe locations, and operators can route pipelines safely and around archeologically sensitive areas.

Today we are able to predict the pore pressures of rocks through which a well is drilled, and the predictions are improved when able to combine attributes provided by geophysical imaging technologies with subsurface information. As a result, we are able to predict drilling hazards associated with high-pressure zones, thus enabling engineers to adjust a well's design to mitigate any heightened risks. And these technologies can now be applied utilizing real-time seismic to look ahead of the drill bit for such hazards while drilling

D. No Action Alternative

The DEIS notes that NMFS has not had an EIS in place in the recent past but the Agency has routinely issued ITAs (in the form of Incidental Harassment Authorizations) under the MMPA. [ES-6] Given that the customary use of a No Action alternative is to describe a situation where no change from present

agency decision-making procedure occurs, the DEIS No Action alternative should provide for proper ITAs. To do otherwise would be a major Agency policy decision that will have serious consequences for U.S. Arctic oil and gas production. Any change in this longstanding regulatory procedure without notice and comment is arbitrary. If an alternative based upon no authorization for incidental takes is desired it should be identified and accurately described for what it is -- a new alternative.

E. Industry Activity Levels

Projected levels of lessees' energy exploration and development activities presented under Alternatives 1-5 are incorrect – they do not reflect the level of activity projected by lessees for timely exploration and development.

The DEIS should correct the inaccurate information upon which it based the alternatives and present alternatives showing reasonably likely levels of lessee activity. The February 8, 2010 NOI (2010 NOI) indicates that NMFS' 2011 DEIS will analyze activity levels ranging from unrestricted, to no seismic or exploratory drilling. The NMFS 2011 DEIS does not include an analysis of an unrestricted number of activities, or state this was initially evaluated and removed from further analysis. It appears that NMFS significantly deviated from their NOI and performed an incomplete analysis.

It is worth noting that this DEIS deviates from prior NEPA analyses including the 2007 PDEIS (NMFS/MMS 2007) and the 2006 PEA (MMS 2006) which did not attempt to link alternatives to activity levels. The DEIS does not provide any discussion regarding the pros and cons of changing the methodology to justify the new approach.

The DEIS fails to substantiate how and why it developed and selected the alternatives presented. More importantly, the DEIS fails to explain why alternatives that would more accurately represent likely levels of activity were omitted from inclusion in the DEIS as required under 40 C.F.R. Sections 1500.1 and Section 1502.14.

The specification of the number of “programs” and the limitations on the type and number of activities of the programs, taken together, illustrate the DEIS presents no alternative that remotely reflects the level of activity, particularly for exploratory drilling, that will be needed for expeditious development of leases in the Beaufort and Chukchi seas.

The DEIS indicates that the projected level of activity was “[b]ased upon past lease sales, G&G permits, ancillary activity notices, exploration drilling exploration activities, and requests for ITAs, NMFS and BOEM have determined a reasonable range and level of activities for which permits and authorizations may be requested in the foreseeable future (i.e., five years 2012-2017).” [ES-5].

The use of historical information, which is not consistent with current and immediately upcoming work, is not a reasonable scientific basis for the Agency

to estimate lessees' activities. Readily available projections of future industry activity including the Northern Economics Study present a different picture.⁵

Northern Economics study of Alaska OCS development includes the following projection:

Beaufort Sea

1-3 exploration drilling rigs completing 1-6 exploration / delineation wells per year to get to first oil in about 10 years. Development activity adds installation of 0 – 1 production platforms per year starting in year 10 with completion of 3 – 26 production wells per year starting in year 10.

Chukchi Sea

0-2 exploration drilling rigs in the Chukchi Sea completing 0 – 3 exploration / delineation wells per year to get to first oil in about 14 years. Development activity adds installation of 0 – 2 production platforms per year starting in year 14 with completion of 4 – 28 production wells per year starting in year 14.

A draft Alaska Oil & Gas Association Petition for Incidental Take Regulations for the Chukchi also indicates greater levels of industry activity than the Arctic DEIS projects. It projects 5 to 8 wells per year from 2013 to 2017. The draft petition, which was recently provided to USFWS, also projects up to 7 shallow hazard surveys from 2013 to 2016.⁶

All of the DEIS alternatives, if implemented, would substantially limit industry's ability to explore for and develop resources, thereby preventing companies from meeting their lease obligations.

F. Connected Actions

The DEIS attempts to evaluate energy exploration programs as disconnected activities rather than connected or coordinated actions. Various types of imaging techniques are undertaken to present a comprehensive image of the subsurface. The techniques provide different types of information. Site clearance and shallow hazard surveys and exploratory drilling activities are related. All are connected actions. By taking a piecemeal approach, the DEIS fails to consider actions taken previously or simultaneously as required by NEPA guidelines and fails to consider foreseeable levels and combinations of project activity in the event early or exploration efforts result in discovery of new oil and natural gas resources.⁷

⁵ Economic Analysis of Future Offshore Oil and Gas Development: Beaufort Sea, Chukchi Sea, and North Aleutian Basin, 2009, www.northerneconomics.com/OCS/State.

⁶ Alaska Oil & Gas Association, Petition for Incidental Take Regulations for Oil and Gas Activities in the Chukchi Sea and Adjacent Lands in 2013-2018; January 31, 2012 draft, at page 32

⁷ 40 CFR 1508.25

G. Meeting Regulatory Standards

As noted previously, the DEIS alternatives must satisfy the regulatory standards of MMPA and OCSLA. As written, the DEIS is not helpful as a guide for subsequent agency regulatory decisions that will be required to address a greater number of activities. By limiting future agency action, the DEIS violates NEPA principles and becomes a “decisional document.”

Regardless, if the DEIS does not present an alternative that meets reasonably projected levels of exploration, then the DEIS fails to meet the requirement to provide a reasonably accurate estimate of future activities necessary for the DEIS to support subsequent decision-making under OCSLA.

It is expected the DEIS will be considered and used in future BOEM decisions limiting industry activity. **The DEIS text suggests that this was not an oversight but rather the agencies fully understood and contemplated limiting industry activity.** Of concern is the apparent effort to avoid the substance of the issue by suggesting that a “cap” and a “limit” are somehow different.

“During the scoping period, commenters suggested that there should be a cap established to limit the total number of oil and gas seismic and exploratory drilling activities that may occur in the EIS project area on a per season basis. The alternatives carried forward for analysis in this EIS include a range of exploration activities at different activity levels. While these separate activity level alternatives do not function as “caps,” they do serve as the maximum annual level of activities for which NEPA coverage exists for NMFS’ and BOEM’s issuance of ITAs and permits, respectively, in a given year.” [2-45]

The DEIS process has overlooked several essential factors and requirements of the Outer Continental shelf Lands Act, including lease conditions and time limits.

H. Additional Mitigation Measures Further Reduce Access to Leases

Beyond reductions in activity associated with the limits imposed by the Alternatives themselves and how a “program” is defined, the DEIS proposes Additional Mitigation Measures of time and area closures. While the DEIS is less than clear on the boundaries of such closure areas, it appears that lessee access would vary from area to area with access reduced from 15-95%, depending upon the area.

I. An Unwarranted Economic Taking

A forced limitation in industry activity by offering only alternatives that constrain industry activities would logically result in violating the expeditious development provisions of OCSLA. An agency also may not narrow the selection of alternatives and thereby manipulate its analysis to justify or dictate a pre-determined outcome.

It would deprive leaseholders of the ability to explore their leases within the mandated primary lease term. The consequence of this is to undermine their leasehold property rights and create an “economic taking” cause of action.⁸

J. Antitrust Concerns

By capping industry activity, the DEIS would create a situation where some applicants “would be selected” and granted permits and others not. How does NMFS propose to manage this process without violating a variety of anti-trust statutes?

K. The DEIS includes alternatives that are not capable of being performed and therefore is capricious.

Alternative 5 presents the use of potential alternative seismic technologies. The evaluation addresses issues associated with availability/timing and discusses potential environmental benefits.

The geophysical industry is currently researching and developing the methods described but none of these methods are commercially available or ready for widespread use. The DEIS confirms this fact and notes that these alternatives are not expected to be available until after 2017 and several years of additional time will be required for field validation. These time frames conflict with the 2012-2017 period covered by the DEIS. **Alternative 5 should therefore be removed since it is not viable or implementable.**

These alternative technologies should not be viewed as a replacement for airgun-based seismic surveys in all cases. Low frequency passive seismic methods are not equivalent to conventional seismic sources. Low frequency passive seismic methods do not have the penetration or the effectiveness of a conventional source.

On page ES-16 and elsewhere, NMFS acknowledges that not enough is known about alternatives to conventional seismic sources to allow consideration of Alternative 5. This adds impetus to the suggested elimination (see above) of Alternative 5.

The DEIS offers conflicting considerations without providing clear guidance. The DEIS highlights these technologies as a way to minimize or reduce the amount of sound introduced to the water during seismic surveys. However, on page ES-22, NMFS says that the use of these alternative technologies would not reduce the impact level from that associated with airguns, apparently contradicting earlier statements regarding a lack of knowledge about alternative technologies. Imposing the same restrictions on alternative sources as those on conventional seismic technologies -- removes any incentive for their development and use.

⁸ Natural Res. Defense Council v. U.S. Forest Service, 421 F.3d 799 (9th Cir. 2005)

III. Environmental Consequences Analysis

A. Overview: The impact of industry operations are exaggerated and the projections are in conflict with the historical reality of no meaningful effect

The DEIS presents an environmental consequences analysis that incorrectly describes the environmental effects of industry activities and understates the economic consequences of limiting exploration programs.

The analysis presents a projection of effects that are inconsistent both with 30 years of history and data that demonstrate no harm at either an individual or population level as noted repeatedly in the DEIS. The DEIS analysis in some cases fails to utilize best available science and in other cases fails to give any meaningful consideration to the reasonable probability or likelihood of an effect. —Potential adverse effects, absent scientific support, are a dangerous basis for Federal agency action that directly affects America's efforts to achieve energy independence.

The weakness of the analysis is confirmed by the following internally conflicted and contradictory assessments:

There have been extensive industry operations:

—Offshore oil and gas exploration, development and production activities have occurred in State waters or on the OCS in the Beaufort and Chukchi seas since 1979. Seismic surveys have been conducted in the Chukchi and Beaufort seas since the late 1960s and early 1970s (MMS 2006a).” [4-480]

Bowhead whale populations are healthy

Bowhead whales in the EIS project area, thus far, appear resilient to the level of human-caused mortality and disturbance that has occurred within their range since the end of commercial whaling (MMS 2006a). [4-481]

The estimated annual rate of increase from 1978 to 2001 was 3.4 percent. The 2001 estimate was subsequently revised to 10,545 bowhead whales (Zeh and Punt 2004 cited in Allen and Angliss 2010). The population may be approaching carrying capacity despite showing no sign of a slowing in the population growth rate (Brandon and Wade 2006). [3-89]

The Western Arctic stock of bowhead whales has, however, continued to increase at an estimated 3.4 percent per year despite past and present exploration activities within their range (George et al. 2004).

Therefore, there is no indication of adverse effect from industry activities:

—“there is no evidence of long-term population level effects on the health, status, or population recovery due to these past and present activities”. (MMS 2006a)

The factors external to offshore oil and gas exploration in the Beaufort

and Chukchi seas that affected bowhead whales in the past and present are likely to continue into the future. Subsistence hunting will likely continue to be the greatest source of mortality for bowhead whales. [4-481]

—acoustic disturbance from icebreaking and engine noise from vessel traffic, ship strikes are possible. However, only three ship-strike injuries of bowhead whales were documented from 1976 to 1992.” [4-480]

In the face of these facts regarding the demonstrated absence of adverse effect from industry activities – not predictions --the analysis then spends many hundreds of pages in search of a reason to assert a potential for harm.

This is best summarized by the following assertions:

–Potential long-term effects from repeated disturbance, displacement or habitat disruption on an extremely long-lived species such as the bowhead whale are unknown.” [4-110]

–The potential for seismic airgun pulses to cause acoustic injury in marine mammals is not well understood (Gedamke et al. 2011), and data on levels or properties of sound that are required to induce TTS are lacking for baleen whales. Recent simulation models, using data extrapolated from TTS in toothed whales, suggest the possibility that baleen whales 1 km (0.62 mi) or more from seismic surveys could potentially be susceptible to TTS (Gedamke et al. 2011). There is no information on TTS or PTS specifically for bowhead whales.” [4-119]

The analysis appears to give equivalent weight to potential risks for which there is no indication of past effect and little to no scientific basis beyond the hypothesis of concern. The analysis focuses on de minimus low-level industry acoustic behavioral effects – well below either NMFS existing and precautionary acoustic thresholds and well below levels that recent science indicate are legitimate thresholds of harm. These insupportably low behavioral effect levels are then labeled as a greater risk (—Moderate”) than non-industry activities involving mortality to marine mammals of concern, which are labeled as —Minor” environmental effects.

A legitimate question would be, —Is this the result of a desired outcome to cap or limit industry activities in search of a scientific rationalization?” Or, —Is the analysis merely the result of a highly flawed risk characterization and risk assessment using methodology that does not likely satisfy accepted and tested approaches in NMFS, other agencies or approaches recommended by the National Academy of Sciences?”

B. Contradicting Risk Assessments

Conflicting standards in the environmental consequence yields an internally contradicted DEIS assessment of risks regarding a multitude of activities. Minor and short-term behavioral effects appear to be judged more consequential than

known causes of animal mortality. The inconsistency in the DEIS risk assessment leads to a situation where a lower threshold (120 dB) is unjustifiably applied to exploration activities even though the science indicates that bowhead whale migration is largely unaffected up to ~150dB.

A similar situation arises in analysis of drilling discharges. NMFS indicates that the impacts of drill cuttings and drilling mud would be negligible but immediately reverses itself to assert that elimination of all discharges would reduce an adverse effect.

C. Methodology

The DEIS concedes the difficulty in evaluating acoustic risk to marine mammals and thus should require the agency to be especially vigilant and attentive in characterizing and calculating risk. The methodology outlined in Section 4.1 is inadequate and suffers from multiple problems. Industry would encourage NMFS and BOEM risk assessors to consider the National Academy of Sciences report “Understanding Risk: Informing Decisions in a Democratic Society.”⁹ for initial guidance. We suggest also that there are other ecological risk assessment experiences and approaches with NOAA, EPA, OMB and other agencies that would inform development of an improved methodology.

It is significant that the DEIS fails to explain how the Environmental Consequence analysis relates single animal risk effect to the population level effect analysis and whether the analysis is premised on a deterministic versus a probabilistic risk assessment approach. The DEIS apparently relies on some type of “hybrid” risk assessment protocol and therefore is condemned to an unscientific assessment that leads to an arbitrary and unreasonable conclusion that potential low-level behavioral effects on few individual animals would lead to a biologically significant population level effect.

1. The Mechanics of Assessment

Chapter 3 of the EIS describes the current condition of the physical, biological, and social environment in the EIS project area to serve as a baseline with which to compare the “potential” impacts of the alternatives. Chapter 4 of the EIS analyzes the “potential” impacts of each alternative on physical, biological, and social resources. Impact levels were determined in consideration of the following four criteria.” [ES-15]. The assessment begins with an evaluation of four categories of Intensity (Magnitude), Duration, Extent and Context. Each category is then subdivided into three areas of increasing effect: Minor, Moderate and Major. The analysis then seeks to “aggregate” effect by a relative assessment of the four “potential” impacts refined by the three further distinctions.

2. Definitions of Individual Effect Criteria

⁹ National Research Council. Understanding Risk: Informing Decisions in a Democratic Society. Washington, DC: The National Academies Press, 1996.

The —~~criteria~~” for characterizing impact level, intensity and duration -- minor, moderate, major effects are not clear and do not differentiate such that the differences between —~~minor~~” and —~~moderate~~” are distinctions without a difference.

For example, the —~~Intensity~~” of effect assessment thresholds are described as:

Low: A change in resource condition is *perceptible*, but it does not *noticeably alter* the resource’s function in the ecosystem or cultural context.

Medium: A change in a resource condition is *measurable or observable*, and an *alteration* to the resource’s function in the ecosystem or cultural context is *detectable*.

High: A change in a resource condition is *measurable or observable*, and an *alteration* to the resource’s function in the ecosystem or cultural context is *clearly and consistently observable*.

The distinction made among these categories raises the following questions: What is —~~perceptible~~” under Low Impact? What does —~~noticeably alter~~” mean? How does —~~perceptible~~” under Low Impact differ from —~~detectable~~” under Moderate Impact? What separates an —~~observable~~ change in resource condition” under Moderate Intensity from an —~~observable~~ change in resource condition” under High Impact? Is it proper to establish an —~~observable~~ change” without assessment of the size of the change or more importantly the effect as the basis to judge whether an action should be allowable? Thus, there is no objective or reproducible scientific basis for agency personnel to make decisions. The DEIS process would inherently require agency decision makers to make **arbitrary** decisions not based upon objective boundaries.

3. Characterization of Aggregated Effect

The second step in the assessment process provides for a relative judgment about Intensity versus Duration versus Extent versus Context. The same problem outlined above becomes an order of magnitude worse since there is no reproducible scientific process.

4. Qualitative Assessment Evaluation Exceeds Agency Discretion

The net result is that an assessment of any activity could be anything that the assessor wants it to be. Based upon this system, the DEIS asserts that industry activity is —~~moderate~~”. What is the basis? According to the criteria in the DEIS each evaluation is contained in an agency official’s thought process – which naturally varies from person to person. Based upon this evaluation it could be Minor, Moderate or Major. This is a direct contradiction of the NEPA requirements and guidelines that require objective decision making procedures. More importantly, it would yield inconsistent assessments from reviewer to reviewer. No matter how conscientious a decision maker is, there are no objective boundaries for making determinations. While the Administrative Procedures Act (APA)

and related cases grant agencies wide leeway in their discretion to make decisions, it clearly does not authorize agency representatives to “make it up” from decision to decision. A minimum test is whether decisions are 1) internally consistent and 2) consistent from decision to decision. On both counts this decision making process would exceed agency discretion – in violation of both NEPA and APA requirements.

The DEIS itself actually validates the fundamental flaws in the methodology.

–The terms used in the qualitative thresholds are relative, necessarily requiring the analyst to make a judgment about where a particular effect falls in the continuum from “negligible” to “major”. [ES-16].

–The impact criteria tables use terms and thresholds that are quantified for some components and qualitative for other components.” [ES-15]

The characterizations of risk are highly subjective and fully dependent upon the selection of the evaluator who would be authorized to use his/her own, individual scientific understanding, views and biases. The assessments cannot be replicated. The DEIS itself acknowledges the inconsistency from assessment to assessment. This creates a situation in which the DEIS determines that otherwise minor effects from industry operations (ranging from non-detectable to short-term behavioral effects with no demonstrated population-level effects) are judged to be a higher rated risk to the species than known causes of mortality. Thus, the projection of risk is inconsistent with reality of effect.

5. Use of data that is not best available science.

The DEIS acknowledges the requirement to utilize best available science and assert the agencies have met this requirement.

–NMFS and BOEM have relied upon the best available science to inform our consideration of the environmental impacts surrounding OCS activities over the next five years.” [4-3]

However, there are multiple examples where the DEIS fails to meet this requirement. For example, the 120 dB threshold asserted to be the level that inhibits bowhead migration fails to cite studies that note that the threshold should be ~150 dB¹⁰. Similarly, the analysis of separation of bowhead/calf pairs does not reflect best available science.¹¹

Handling of the 180/160/120 dB acoustic thresholds is a further example of where the DEIS does not meet the best available science standard.

¹⁰ Christie et al. 2010 and Koski et al. 2009

¹¹ Reeves, et al. 1984; Richardson et al 1986, 1987; Koski and Johnson 1987.

The 120 dB threshold conflicts with NMFS thresholds of 160/180 dB. Furthermore, most scientists believe that the best available science is Southall et al. 2007, which proposes thresholds well above the 160/180 dB levels. The 120 dB threshold may represent a lower level at which some individual marine mammals will exhibit minor avoidance responses. While this avoidance might, in some but not all circumstances, be meaningful to a native hunter, scientific research does not indicate dramatic responses in most animals. In fact, the detailed statistical analyses often needed to confirm subtle changes in direction – are not available. The significance of a limited avoidance response (to the animal) likely is minor (Richardson et al, 2011). The NMFS acoustic threshold of 180 dB rms for Level A takes is a dated initial criterion long overdue for revision. An expert panel created by NMFS clearly provides more recent science on acoustic criteria (Southall et al 2007) and recommends a Level A threshold more on the order 200 dB for a pulsed sound source. However, the question of sound pressure level or sound energy level as the more accurate predictor of potential injury is discussed. The use of 160 dB rms as a threshold for Level B takes is more a NMFS guideline and for potential disturbance effects, the question of a dose-response versus a context-response is very much in question.

More important to the concept of take and marine mammal well being, is the question, “What responses actually represent a biologically significant impact?” Richardson et al. (2011) provides a review of potential impacts on marine mammals that concludes injury (permanent hearing damage) from airguns is extremely unlikely and behavioral responses are both highly variable and short-term. The DEIS wrongly reverts to dated acoustic thresholds and ignores significant more recent recommendations on improving criteria. At a minimum, NMFS should substantiate for the record its basis for retaining these old criteria.

6. Probabilities of Effect Ignored

—Potential direct and indirect effects of oil and gas exploration activities on bowhead whales are primarily disturbance and behavioral changes from noise exposure and, possibly, injury or mortality from ship strikes, and habitat degradation. Oil and gas exploration activities authorized under Alternative 2 would likely cause varying degrees of disturbance to feeding, resting, or migrating bowhead whales. Disturbance could lead to displacement from and avoidance of areas of exploration activity...” [4-479]

The environmental consequences analyses is burdened by increasing attention given to more and more speculative possible “potential” effects without adequate consideration to probability of occurrence or applying the required “reasonable likelihood” standard or utilizing standard “weight of the evidence” tests.

7. Uncertainty & Use of Conservative Factors

The discussion of acoustics and acoustic effects suggests – but does not explicitly say --that –“precautionary factors” were injected at various points in its consideration of noise criteria and acoustic effects to offset the absence of adequate information.

The Associations urge NMFS/BOEM to examine this process to handle uncertainty and to include in a revised DEIS the assumptions, and precautionary factors applied that are associated with each step of this process such as: 1) estimates of seismic activity, 2) source sizes and characterizations, 3) underwater sound propagation, 4) population estimates and densities of marine mammals, 5) noise exposure criteria, and 6) marine mammal behavior. Until the agencies document and communicate these underlying decisions in a transparent fashion neither the industry nor agency resource managers can know and understand how such decisions are made and therefore the range and rate of error. The DEIS as presently written presents an –“on the one hand; on the other” approach which does not inform the issue for agency resource managers

8. Socio-Economics Considerations

The Environmental Consequences analysis fails to consider essential economic factors, to properly evaluate and to give appropriate consideration to socio-economic impacts as required by NEPA and necessary for subsequent regulatory decisions under OCSLA.

Positive environmental consequences of some industry activities and technologies are not adequately considered, especially alternative technologies and consideration of what the benefits of better imaging of the subsurface provides in terms of potentially reducing the number of wells to maximize safe production.

The socioeconomic analysis is self-limiting and therefore incomplete due to the foundational assumption that –“the likelihood of exploration resulting in production cannot be predicted.” The DEIS in essence asserts that since exploration success cannot be predicted, future activity and thus benefits cannot be considered. However, the DEIS uses the opposite assumption that future effects must be considered in the evaluation of potential adverse biological effects, oil spill scenarios and cumulative effects. The DEIS should be consistent. In fact, the probability of finding oil and gas is not an –“unknown” due to knowledge acquired from prior seismic surveys and wells drilled over the last 30 years.

Because of the unwarranted assumption the DEIS is limited to examining the short-term direct effects of exploration activities and dismisses their economic importance but overstates their environmental consequences.

In fact, field development is not possible without exploration. While it is impossible to say whether or not development will move forward following

exploration, it is reasonable to conclude that development will not go forward if exploration is not allowed or is rendered impractical. Also, if exploration is not allowed or is restricted to the point that it becomes impractical, investors may dismiss Alaska's future potential for offshore oil and gas exploration, further limiting the state's economic future. If exploration is not allowed or is restricted to the extent that it is impractical, the economic impact to the villages of the North Slope, the state and the lower-48 states could be significant in the long term.

As a result, socioeconomic benefits are apparently not considered in assessment of cumulative impacts for any alternative other than the no-action alternative.

The environmental consequences analysis as noted earlier does not properly address the relative evaluation of effects (biological, physical, socio-economic). For example, the evaluation system suggests that a "Minor" biological effect and a "Minor Socio-Economic" effect would be equivalent. Industry would assert that the analysis not only does not appear to arrive at this conclusion but the DEIS analysis does not provide a basis for assessing the relative costs and benefits of the alternatives.

This problem surfaces in multiple places in the DEIS. For example, Alternative 1 (No Action) states, ".would cause minor adverse impacts from unrealized local employment and tax revenue." [ES-23]. Arguably, impacts from declining NSB revenue and State of Alaska revenue due to declining production will certainly be more than "minor."

The DEIS incorrectly asserts "All four action alternatives would cause minor beneficial impacts from a temporary rise in regional personal income and employment rates." [ES-23]. This statement implies that only direct effects from activities in the next 5 years were considered, or that NMFS believes 50 years is "temporary" and that 55,000 jobs with a \$145 billion payroll are "minor".

D. Acoustic Issues Discussion

After increasing public attention to the potential impact of marine sound, the Marine Mammal Noise Exposure Criteria Work Group (the Southall Work Group) (Southall et al. 2007) was formed in the early 2000's to review the body of scientific evidence and recommend thresholds that regulators could employ. The Southall Work Group examined the prior Hess work and determined that those levels were "precautionary estimates" below which physical injury was considered unlikely (Southall et al. 2007). After reviewing all the available research, the Southall Work Group proposed a threshold for Level A injury of 230 dB re: 1 μ Pa (peak) (flat) (or 198 dB re 1 μ Pa²-s, sound exposure level). The Southall Work Group also repeatedly stated that precaution factors had also been applied in creating its own new proposed criteria.

The DEIS would be improved by a more concise but more complete discussion of the history and underlying difficulties in establishing acoustic criteria and thresholds. As previously noted the issue of acoustic related incidental takes has suffered from the absence of a clear risk characterization and assessment methodology common in other areas of ecological risk assessment. At a minimum, it is necessary for the DEIS to clearly define what constitutes a take and why and what thresholds will be utilized in the rulemaking. If for example, there is a reason for differing thresholds (e.g. potential interference with the subsistence hunt versus protecting the animals from other anthropogenic effects), those differences should be clearly communicated and their rationale thoroughly explained. The failure to do so creates a situation in the DEIS where the questionable, but lowest threshold of 120 dB, which is explained as necessary only because of the subsistence hunt, would be required in times and places where few animals are present and/or the hunt is not an issue.

1. Industry recommends that the DEIS:
 - a. Assert that exposure to sound does not equal an incidental taking.
 - b. Communicate that the 120/160/180 dB thresholds used as the basis of the DEIS analysis are inappropriate and not scientifically supportable.
 - c. Adopt the Southall Criteria (Southall, et al. 2007), which would establish the following thresholds: Level A at 198 dB re: 1 $\mu\text{Pa}^2\text{-s}$ SEL; Level B at the lowest level of TTS-onset as a proxy until better data is developed.

The DEIS does not clearly establish and communicate this information. In fact NMFS has been unable to clearly communicate that sound exposure does not equal a take. This has been an issue for more than a decade. The agency has also been unable to make a decision about utilizing Southall, et al. (2007) – which has been published in a peer reviewed journal, peer reviewed by other panels and under consideration by agency officials for four years. Industry believes that these are the first necessary steps in addressing the acoustics/incidental take issue.

Further, the DEIS continues to assert in confusing and scientifically unsupported ways the 120/160/180 dB re 1 μPa rms thresholds. Recent research, for example, has challenged the 160/180 dB thresholds as being overly protective. Southall et al. (2007) clearly indicates that the 180 dB threshold is overly protective and should be revised to 198 dB re: 1 $\mu\text{Pa}^2\text{-s}$ SEL for a pulsed sound source. NMFS has been evaluating this publication for several years. Industry suggests the most helpful and transparent approach would be for the Agency to now declare that it is the best available science and will be the basis for agency rulemaking or not.

2. Estimates of Potential Level A and B “Takes”
 - a. Level A

The growing scientific consensus is that seismic sources pose little risk of Level A takes (Southall, 2010; Richardson et al. 2011)¹². Southall and Richardson recommended a Level A threshold, 230 dB re: 1 μ Pa (peak) (flat) (or 198 dB re 1 μ Pa²-s, sound exposure level) The NRC's expert panel assessment (NRC 2005) and further review as discussed by Richardson et al (2011) also support the Associations' position.

b. Level B

The level of sound exposure that will induce behavioral responses may not directly equate to biologically significant disturbance; therefore additional consideration must be directed at response and significance (NRC 2005; Richardson et al. 2011; Ellison et al. 2011). To further complicate a determination of an acoustic Level B take, the animals' surroundings and/or the activity (feeding, migrating, etc.) being conducted at the time they receive the sound rather than solely intensity levels may be as important for behavioral responses (Richardson et al 2011).

The Southall Work Group also questioned the relevance of the 160 dB re: 1 μ Pa disturbance criterion noting that thresholds for odontocetes and pinnipeds exposed to pulsed sounds is not at all well-established ...” (Southall et al. 2007, Page 417).

Further, the Southall Work Group recognized that a difference existed between —a significant behavioral response from [and] an insignificant, momentary alteration in behavior.” (See also Richardson et al. 2011). The Southall Work Group went on to propose that —[c]onsequently, upon exposure to a single pulse, the onset of significant behavioral disturbance is proposed to occur at the lowest level of noise exposure that has a measurable transient effect on hearing (i.e., TTS-onset). We recognize that this is not a behavioral effect per se, but we use this auditory effect as a de facto behavioral threshold until better measures are identified.”

3. Factors Impacting Thresholds

Other considerations should be recognized in establishing thresholds:

The biological significance of sound may also depend more so on how long the sound persists (Richardson et al. 2011). NMFS fails to allow for the fact that 3D seismic surveys are typically acquired in a racetrack pattern resulting in lower chances of an individual animal being exposed to loud sounds for extended periods of time. In other words, given that the seismic vessel is moving in and out of a localized area and the fact that animals are believed to avoid vessel traffic and seismic sounds, cumulative sound exposure is again likely being overestimated in the

¹² Southall 2010 is a further extension of the work undertaken by Southall 2007

DEIS. Seismic operations are most often in timescales of weeks and reduce the possibility of significant displacement since they do not persist in an area for an extended period of time. However, little evidence of area-wide displacement exists or has been demonstrated.

The DEIS analysis does not adequately consider the fact that many animals avoid vessels regardless of whether they are emitting loud sounds and may increase that avoidance distance during seismic operations (Richardson et al. 2011). Therefore, it should be a reasonable assumption that natural avoidance serves to provide another level of protection to the animals.

As previously noted, the DEIS is unclear about what constitutes an incidental taking. The MMPA defines Level B takes in the context of behavioral change, not in the context of sound exposure levels, or RMS Sound Pressure Levels. It is debatable whether behavioral changes are dose-responses or context-responses. There are also indications that some animals change their behavior in the presence of RMS Sound Pressure Levels of 160 dB or lower. In other cases of exposure to sounds of 160 dB (and higher), there is no evidence of behavioral change. It is neither logical nor reasonable to assume that every exposure to 160 dB or higher results in a behavioral change of biologically significant impact equating to a Level B take.

There is also mounting scientific evidence that behavioral reactions are species and often individual animal dependent (Stone and Tasker, 2006) and can vary due to biological and environmental context (Wartzok et al., 2004; Frost et al., 1984; Finley et al., 1990; Richardson et al., 2011; Miller et al., 2005; Richardson et al., 1999). Most behavioral studies conducted to date have not recorded the received sound pressure levels nor is it clear that sound pressure level (rms) is the best measurement to use for behavioral studies (Southall et al. 2007). In other words, there is not enough scientific evidence to provide a convincing argument that 160dB should be used as behavioral “take” criteria. In the base case, it is highly likely, just as the case where 180dB was previously used, that 160dB is overly cautious and results in an exceedingly high number of “takes”.

In other rulemakings, NMFS has asserted that animals within calculated isopleths of sound above 160 dB re: 1 μ PA (rms) are considered a take¹³. This basic rationale (independent of uncertainties in numbers) also likely overestimates actual take numbers (exposure of an animal to a sound is not necessarily equivalent to the animal being taken).

¹³ Federal Register/Vol. 75, No. 95/Tuesday, May 18, 2010 at Page 27712;
<http://www.nmfs.noaa.gov/pr/pdfs/fr/fr75-27708.pdf> <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr75-27708.pdf>

Industry understands that guidelines cannot address every specific detail and factor for every specific action. Southall et al (2007) went to great effort to define functional groups in terms of sound sources and marine mammal hearing specialists. Industry remains concerned with the use of the antiquated 160 dB guideline for Level B take estimation and, to a great deal, the inability to define a more reasoned criterion rests with an inability to document and quantify marine mammal responses to known sound levels and, more so, what response constitutes a biologically significant effect (NRC 2005). The Associations strongly encourage NMFS and BOEM in the DEIS analysis to consider the frequency component, nature of the sound source, cetacean hearing sensitivities, and biological significance when determining what constitutes a Level B incidental take.

4. Using and Explaining The Appropriate Acoustic Units of Measure

To foster meaningful dialogue and avoid confusion and poor decisions regarding industry acoustics issues, the DEIS should adequately and accurately describe acoustic source levels.

Evaluation of acoustic effects should include both the cumulative energy criterion in Southall et al.(2007) as well as proposed cumulative energy criterion. Southall et al. indicates that, for impulse sounds, any cetacean exposed to either a peak pressure ≥ 230 dB re 1 μ Pa or a cumulative sound exposure level (energy) of 198 dB re 1 μ Pa²-sec might incur auditory injury. The DEIS should explicitly note the SEL criteria, which is the one that will almost always (if not always) be the determining factor. The document in several places relies on Root Mean Square (RMS) Sound Pressure Level criteria for acoustic impacts. The most recent research has questioned the adequacy of these criteria. Instead, they should be replaced by a combination of Sound Exposure Level limits and Peak (not RMS) Sound Pressure Levels or other metric being considered.

—...broadband peak source levels of a typical full-scale array range from 248 to 255 dB re 1 μ Pa at 1 m with most of the energy emitted between 10 and 120 Hz, although pulses may contain energy up to 1,000 Hz (Richardson et al. 1995)” [p. 2-9].

Numbers of this sort are regularly quoted but they require explanation in order for the reader to have a clear understanding of what the numbers mean. Failure to do so can lead many unfamiliar with acoustics to make inaccurate judgments about the effect of seismic surveys (for example by taking 255 dB minus 180 dB as an indicator of the risk). That approach is flawed but left unexplained the DEIS would contribute to presentation of inaccurate information and discussion. The emitted sound pressure level close to the source array is lower than that calculated using the ‘farfield’ calculation.

These source levels are the back-calculated, modeled sound pressure values and are not actually realized at any point in the water column. In virtually all cases they are derived from modeling and are an over-estimate of the true source sound level (sound output from a seismic source array at 1 meter distance from the array). This is an extremely significant point and we suggest NMFS add the following text or similar and a graphic to further expand upon this important point:

“It is difficult to measure the actual sound pressure level close to a full source array that is being activated, due to the physical environment surrounding an active seismic array. Therefore assumptions are made that enable the response of a given source array to be modeled.”

The ‘farfield’ assumption suggests that at some distance away from a source array, which is much greater than the dimensions of the source array, the peak energy pulses from the various individual source elements (‘near field’ signature) arrive at the same time and add together constructively to form the ‘far field’ response of the source. This response is corrected or back-projected to one meter from the source array to produce the ‘far field’ signature of the source at one meter, which is a standard modeled measure of a source array output. It is well known that the peak energy pulses from individual source elements no longer align at locations close to the seismic source array (in the ‘near field’) as a seismic source array is a ‘distributed’, rather than a ‘point’ source.”

5. Frequency Weighting

The DEIS should make clear whether frequency weighting to account for the hearing ranges of the species in the Beaufort and Chukchi (e.g.- weighting”, as proposed by Southall et al. (2007)), was applied in the Environmental Consequences analysis. It is important to establish whether or not it was used. We understand NMFS has not yet publicly accepted that M- (or similar) weighting should be applied when estimating takes during seismic surveys.

E. Biology Issues Discussion

1. Bowhead Population Size & Health

The DEIS states as fact – rather than as conjecture – that seismic and vessel operations may have an adverse impact on bowhead populations. It then immediately reverses itself and indicates that either empirical fact or peer-reviewed literature renders its conjecture as false. Because the DEIS does not then come to a conclusion it both creates confusion and fosters the use of conjecture over science.

–It is not known whether impulsive sounds affect reproductive rate or distribution and habitat use over periods of days or years.” [4-104]

To the contrary, it is well known that the Western Arctic stock of bowhead whales is healthy as indicated by the year-on-year growth in the

population.

The Western Arctic stock of bowhead whales has, however, been increasing at approximately 3.4 percent per year (George et al. 2004), despite exposure to exploration activities in the Beaufort and Chukchi seas since the late 1960s (MMS 2006).

In another example of this emphasis on conjecture over fact:

—If seismic operations overlap in time, the zone of seismic exclusion or influence could potentially be quite large, depending on the number and the relative proximity of the surveys. NMFS is concerned these simultaneous seismic activities could result in effects that are biologically significant, if they cause avoidance of feeding, resting, or calving areas by large numbers of females with calves over a period of many weeks. Potential impacts to the population would be related to the numbers and types of individuals that were affected (e.g. juvenile males versus females with calves), and to whether areas avoided or from which whales are potentially displaced provide important energetic needs for belugas particularly during their spring and autumn migrations.”[4-114]

However, the DEIS inaccurately portrays scientific-based information as equivalent to previous conjecture as the basis for decision-making:

—Available information does not indicate any long-term adverse effects on any of the existing cetacean populations resulting from the high level of seismic surveys and exploration drilling during the 1980s in the Beaufort and Chukchi seas.” [4-121]

It is well established that the Bering-Chukchi-Beaufort (BCB) Seas population of bowhead whales is healthy and increasing (Angliss and Outlaw, 2005). All available information (e.g., Sheldon et al., 2001; IWC, 2004a, b; NMFS, 2003a, b) indicates that the BCB Seas population of bowheads is increasing, is resilient to the level of mortality and other adverse effects that are currently occurring due to the subsistence hunt or other causes, and may have reached the lower limit of the estimate of the population size that existed prior to intensive commercial whaling.

2. Bowhead Cows Do NOT Abandon or Separate from Their Calves in Response to Seismic Exploration or Other Human Activities

The Environmental Consequences analysis highlights the importance of calves to maintain to the continued recovery and long-term viability of the BCB Seas population. However, there is no scientific support whatsoever for any assumption or speculation that seismic operations have such impacts or could result in the loss or injury of a whale.

To the contrary, all of the scientific evidence shows that seismic and other anthropogenic activities, including commercial whaling, have not been shown to cause the separation or abandonment of cow/calf pairs. Years of field observations of bowhead whales have never shown seismic operations to cause cow/calves to separate or abandon each other (Reeves, et al. 1984; Richardson et al 1986, 1987; Koski and Johnson 1987; Richardson 1999).

Consistent with these observations of the cow/calf bond, Wartzok et al (1989) reported two observations of bowhead cows and calves separated by a few hundred meters quickly rejoined each other when a ship approached them. .

The absence of a problem is again demonstrated by the rate of increase in the BCB Seas bowhead whale population. The population has been increasing at an annual rate of 3.4-3.5% or over 350 calves per year (Brandon and Wade 2004; Angliss and Outlaw 2005; Woodby and Botkin 1993).

3. Migration -- Bowhead Whales Do Not Routinely Deflect 20 Kilometers From Seismic Operations

The DEIS asserts that bowhead whales have rarely been observed within 20 kilometers of active seismic operations but fails to utilize other information that challenge the validity of this assertion.

NMFS frequently cites information from Richardson et al. (1995) that suggested that migrating bowhead whales might react at sound levels as low as 120 dB (RMS) re 1 μ Pa.

—Richardson (1999) suggests that migrating bowheads start to show significant behavioral disturbance from multiple pulses at received levels around 120 dB re 1" [4-99]

—Bowhead whales migrating west across the Alaskan Beaufort Sea in autumn showed avoidance out to 20 to 30 km (12.4 to 18.6 mi) from a medium-sized airgun source at received sound levels of around 120 to 130 dB re 1 rms." (Miller et al. 1999, Richardson et al. 1999).

The DEIS fails to: (1) Adequately reflect prior research contradicting the Richardson et al. findings (2) Address deficiencies in the Richardson et al. study and (3) Present and give adequate consideration to newer scientific studies that challenge the assertion that bowhead whales commonly deflect around industry sound sources.

A. Inadequate Consideration and Emphasis of Prior Research

The DEIS provides inadequate weight to prior studies that contradict the Richardson, et al. study including:

Bowheads have been observed near operating seismic ships (Reeves, et al. 1984; Richardson et al 1986, 1987; Brueggeman et al. 1990) and near controlled tests with single airguns and airgun arrays (Richardson et al. 1986; Ljungblad et al. 1988). Bowheads exposed to pulses from vessels more than 7.5-8 km away rarely show avoidance (Reeves, et al. 1984; Richardson et al 1986, 1987; Koski and Johnson 1987). Summering bowheads showed normal activities 3-5 km from active seismic operations (Richardson et al 1986).

Seismic vessels approaching within approximately 3 to 7 km (1.9 to 4.3 mi), with received levels of airgun sounds of 152 to 178 dB, usually did not elicit strong avoidance reactions (Richardson et al. 1986, 1995, Ljungblad et al. 1988, Miller et al. 2005). [4-99]

B. Failure to Consider More Recent Research

The DEIS also fails to adequately consider newer work showing that migrating whales entered and moved through areas ensounded to 120-150 dB (RMS) deflecting only at levels of ~150 dB. (Christie et al. 2010 and Koski et al. 2009),

C. Failure to Disclose Methodology Problems of Richardson, et al. (1999)

Reliance on Richardson et al. (1999) study should be qualified because of the small sample size and absence of corroborating behavioral observations recorded during the study. The Richardson et al. (1999) study has not been peer-reviewed by an independent scientific panel or published in a peer-reviewed journal, yet the DEIS concludes that fall migrating bowheads avoid active seismic operations by at least 20 km (>120 dB) as though it were a widely accepted scientific fact.

Small sample sizes and lack of corroboration of the behavioral data argues against Richardson's conclusions. Clearly, other factors may have been responsible for the distribution of bowheads relative to seismic operations. More years of data than essentially the one-year used in Richardson's analysis are necessary to draw any conclusions about bowhead responses during no-seismic and seismic operations at the distances reported by Richardson (1999).

In comments submitted regarding the 2007 DEIS, industry provided the below comments highlighting methodology problems with Richardson, et al (1999). The current DEIS does not address these concerns.

—Sample sizes were small or problematic in the three-year study Richardson used to draw his conclusions. The data were analyzed

for 1996, 1997, and 1998 to assess response of bowheads to seismic sounds. Sample sizes were 26 bowheads observed during no seismic and 11 during seismic in 1996, 115 during no seismic and 6 during seismic in 1997, and 59 during no seismic and 65 during seismic in 1998. The sample sizes for 1996 and 1997 were clearly too small to draw any conclusions about seismic effects. The sample sizes were adequate in 1998 for analysis, but too few animals were recorded in the 0-10 km and 10-20 km distance intervals for no-seismic (3, 4 whales) to compare with seismic operations (0, 2) for analysis, suggesting that the absence of more similar numbers of whales to those in more distant categories may have been due to other factors than seismic operations. Furthermore, the presence of two bowheads in the 10-20 km interval during seismic operations indicates that not only were some whales relatively close, but their distribution was apparently unaffected by the operations.”

–Distances of all whales from the operations were highly variable over a wide range of distances, including those in the higher distance categories for no-seismic and seismic periods. The variability of these observations suggests that the observed distribution more likely was caused by natural events such as location, movement, and abundance of prey resources and not necessarily seismic operations. An even distribution of whales relative to distance would be expected for no seismic unless this relationship was affected by natural environmental conditions or normal bowhead behavioral activities. It is noteworthy that seismic operations have been shown to cause behavioral responses of bowheads at or above the 160 dB, which corresponds to distances of 3-8 km from a seismic vessel, beyond which (i.e., 10-20 km) behavior would be expected to be normal (Richardson et al. 1986).”

–In addition, bowhead whale behavior observed during the study does not support Richardson’s conclusions. Responses of bowheads to a disturbance are expressed by changes in normal behavior, such as changes in headings, swim speed and resting. However, behavioral changes were not seen in the bowheads observed by Richardson (1999) during the no seismic versus seismic operations. In fact, Richardson states that there was (1) no significant difference in bowhead headings between seismic and no-seismic periods, (2) proportions of various behaviors observed during seismic periods were similar to those during no-seismic periods, and (3) there was no significant difference in the swimming speeds of bowheads during seismic and no-seismic periods. These analyses provide no evidence of seismic operations affecting bowhead, and suggest the bowheads were behaving normally, which would be expected since they were beyond the 160 dB level.”

IV. Mitigation Measures

The DEIS proposes to require standard mitigation measures for all action alternatives. It also then proposes consideration of an additional 22 mitigation measures.

The mitigation measures are described as necessary to mitigate (1) adverse environmental effects and (2) ensure no “unmitigable adverse effect” on the subsistence hunt.

Consideration of mitigating measures cannot be disassociated from the risks they are intended to mitigate and requirements that they be effective. In fact, a Council on Environmental Quality memorandum notes that if agencies cannot determine if mitigation was implemented or effective, mitigation requirements fail to advance NEPA objectives of informed and transparent decision-making. [CEQ 2011] Decisions regarding mitigation come through a variety of channels as the DEIS notes and decisions about mitigation measures should be respectful of the procedures and jurisdictions that have historically evaluated and implemented mitigation requirements.

NMFS does not have the authority via the DEIS to impose mitigation requirements outside of its jurisdiction onto other agencies including BOEM or the U.S. Coast Guard. And, NMFS should not seek to pre-empt or undermine the Conflict Avoidance Agreement process that industry and the Alaska Eskimo Whaling Commission have used for many years to develop mitigations that result in a determination of no “unmitigable adverse effect” on the hunt.

Previous agency environmental assessments have noted that decades of industry activities have resulted in negligible to minor effects and confirmed the health of bowhead and other species. They also note that the existing, standard mitigation measures have been proven sufficient to mitigate low level effects.¹⁴ The Additional Mitigation Measures are not warranted. Further, as detailed below, many of the Additional Mitigation Measures should be removed because they are not justified by the science, not specific (time/area closures) or are infeasible.

Mitigation measures should be considered in the context of the nature and extent of the risk or effect they are mitigating. This evaluation should include whether they are feasible and whether there are safety issues associated with them. Finally, judgments regarding mitigations should be made considering their cost and effectiveness. The result of these evaluations should not yield overly cautious requirements, which are impossible to implement.

A. Adaptive Management Considerations

The DEIS mentions adaptive management on page ES-34 and elsewhere. The implication is that mitigation requirements could be altered over time. Industry has supported the application of adaptive management in a number of contexts. However, in the DEIS the term is positioned toward the use of adaptive management to further restrict activities and it does not leave room for adaptive management to reduce restrictions. If monitoring shows undetectable or limited

¹⁴ Lease Sale 193 FEIS, 2007; MMS 2007; MMS 2008a

impacts, an adaptive management strategy should allow for decreased restrictions on oil and gas exploration. The conditions under which decreased restrictions will occur should be plainly stated in the discussion of adaptive management.

B. Detailed Discussion of Mitigation Measures

1. Standard Mitigation Measures

- a. **Mitigation Measure A3. Protected Species Observers (PSOs) required on all seismic source vessels and icebreakers, as well as on support (chase) vessels.**

It is neither practicable nor reasonable to require observers on all support vessels, especially on OBC seismic operations, where support vessels often include small boats without adequate space for observers.

The infeasibility of and risks associated with aerial over flight of Arctic waters as a monitoring tool have been extensively discussed in prior NEPA documents. It is also well recognized that such mitigation requirements are put forward only in an effort to support the 120dB observation zones, which are both scientifically unjustified and infeasible to implement. As industry has indicated and a court has indicated its concurrence¹⁵, such over flights pose a serious safety risk. Requiring such mitigation measures as a condition of operating in the Arctic conflicts with the statutory requirements of OCSLA, which mandates safe operations.

- b. **Mitigation Measure A6. PSOs required on all drill ships (including rigs and ships) and ice management vessels.**

The purpose of this requirement is not clear. If the purpose is to establish a shutdown zone, it is unwarranted because the nature of drilling operations is such that they cannot sporadically be shutdown or ramped up and down. If the purpose is the collection of research data, then it should be handled as part of the BOEM research program.

- c. **Mitigation Measure C1. Specified procedures for changing vessel speed and/or direction to avoid collisions with marine mammals.**

The mitigation measure lacks details on the conditions that would trigger this requirement. The nature of some industry operations make this requirement infeasible.

- d. **Mitigation Measure D2. Establishment and utilization of Communication Centers in subsistence communities to address potential interference with marine mammal hunts on a real-time basis throughout the season.**

There should be no requirement for communications center operations during periods when industry is not allowed to operate and by definition there is not possibility for industry impact on the hunt.

¹⁵ *CPAI v. NMFS*, Civ. No. 06-198 (D. Alaska),

2. Additional Mitigation Measures

a. **Additional Mitigation Measure A1. Sound source verification tests for sound sources and vessels at the start of the season.**

The DEIS proposes routinely conducting sound source verification tests. Sound source verification tests take time, are expensive, and can expose people to risks.

The DEIS notes the E&P industry has collected a significant amount of acoustic data from E&P sound sources in the Arctic. [Table 4.5-9 and Table 4.5-10] This data and industry research studies¹⁶ over the past several years can be used to improve sound source modeling codes. The improved modeling codes will lead to more accurate model estimates of the sound emissions from airgun arrays, which should reduce the need for sound source verification tests before the start of every seismic survey in the Arctic. At some point, sound source verification tests should not be required before the start of every seismic survey in the Arctic as the modeling should be able to produce a reliable estimate of the seismic source emissions and propagation

On page ES-13, sound source verification of vessels is suggested as a potential future requirement. This should be eliminated unless NMFS is planning to require the same measurements for all vessels operating in the Beaufort and Chukchi Seas. Also, sound source verification for vessels has no value because there are no criteria for shut down or other mitigation associated with vessel sounds.

On page ES-29, the DEIS suggests that monitoring measures should be designed to accomplish or contribute to what are in fact research goals. Many of these research goals are only attainable with extensive research programs and, arguably, only with experimental manipulation—that is, through replicated intentional exposure experiments. NMFS and others should work together to develop a research program targeting key research goals in a prioritized manner following appropriate scientific method, rather than attempting to meet these goals through monitoring associated with activities.

b. **Additional Mitigation Measure A3. Limiting activities in situations of low visibility.**

The proposed requirement is unwarranted. Cetaceans are not at significantly greater risk of harm when a soft-start is initiated in poor visibility conditions.

¹⁶ The acoustic data collected during the JIP Single Airgun Measurement Study The E&P Sound & Marine Life Joint Industry Program (JIP; www.soundandmarinelife.org) funded the Single Airgun Measurement Study, which acquired near- and far-field source signature measurements with calibrated hydrophones.

Results from a recent study demonstrate that during all stages of the soft-start procedure, sound levels were lower than the widely accepted Southall et al. (2007) threshold levels for auditory injury for cetaceans. The Model Based Assessment of Underwater Noise from an Airgun Array Soft-start Operation. (OGP Report 451, 2011; Hannay et al., 2010) conducted by JASCO and funded by the International Association of Oil and Gas Producers (OGP) through the Joint OGP/IAGC Sound & Marine Life Task Force, investigated the sound exposure level (cumulative sound energy) and zero-to-peak sound pressure levels at points in the water column several distances relative to the location of the onset of a typical soft start procedure. The modeled sound exposure levels and zero-to-peak sound pressure levels were then compared to the noise exposure criteria for marine mammals recommended in the Southall et al. 2007 paper. This study suggests that cetaceans are not at significantly greater risk of harm when a soft-start is initiated in poor visibility conditions. The information in this study provides a measure of confidence in allowing the soft-start activation of a seismic source during darkness or poor visibility conditions. Therefore, we do not think that geophysical surveys need to be limited or shutdown during low visibility conditions.

- c. **Additional Mitigation Measure A4. Measures to increase detection probability for real-time mitigation (e.g. to maintain 180 dB shutdown zones), such as passive and active acoustic monitoring (PAM).**

There are limitations to current PAM technology. However, PAM offers another tool, in addition to visual observers, and may improve monitoring results in some situations. We support the use of PAM as a monitoring tool during certain conditions.

PAM is useful under certain conditions and for certain vocalizing species. However, at this time, standard PAM systems are not able to reliably and accurately determine the location of the vocalizing animal automatically. In addition, the species identification capability of PAM systems varies. The PAM system may not correctly differentiate between species of concern and other marine mammals. Current PAM systems are not able to determine if the vocalizing animal is a calf. A period of confidence in the current PAM capabilities, understanding of limitations, and experienced operator capacity-building is needed before requiring PAM as a mandatory monitoring tool during seismic operations.

We recommend that basic training criteria, such as that specified by many countries for PSOs, be developed and required for PAM operators. In addition, minimum requirements for PAM equipment (including capabilities of software and hardware) should also be considered.

- d. **Additional Mitigation Measure A5. Enhancement of monitoring protocols and mitigation shutdown zones to minimize impacts in specific biologic situations (e.g. cow/calf groups and feeding or resting aggregations).**

These requirements are not warranted as the scientific literature indicates little risk from industry operations.

- e. **Additional Mitigation Measure B1. Temporal/spatial limitations to minimize impacts in particular important habitats, including Camden Bay, Barrow Canyon, Hanna Shoal, the shelf break of the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.**

The DEIS proposes potential area closures for five areas including Camden Bay, Barrow Canyon & Western Beaufort Sea; Shelf Break of the Beaufort Sea; Hanna Shoal and Kasegaluk Lagoon. The proposal presents little detailed scientific rationale for the areas, present little to no specific detail as the boundaries of the areas and finally, provides little recognition to or evaluation of the cost-benefit of the proposals.

As one example, Camden Bay is proposed for closure well into October. However, a standard mitigation measure already precludes all activities until the close of the Kaktovik and Nuiqsut fall bowhead hunts. Furthermore, in the last 10 years no bowheads have been taken after the third week of September in either the Nuiqsut or Kaktovik hunts so proposing closure to extend well into October is unjustified. In a different but similar situation involving Hannah Shoal area, the DEIS would preclude industry activity from September 1 through October 15. The DEIS only says that the area is biologically important and that closure is to avoid conflict with the subsistence hunt. However, the analysis indicates that bowheads are taken inside Hanna Shoal and scientific studies (Suydam et al. 2008) note that virtually all bowheads taken by the Barrow over the last three decades were taken more than 100 miles to the east of the habitat area.

- f. **Additional Mitigation Measure B2. NMFS restricts number of surveys (of same level of detail) that can be conducted in the same area in a given amount of time (i.e. to avoid needless collection of identical data).**

The likelihood of redundant or duplicative surveys is small to non-existent. Seismic surveys are expensive undertakings, and no one would pay for a new survey if existing survey data will suffice. A new survey is conducted only if a company has concluded that the value of the additional information to be provided will exceed the cost of acquisition. That determination is based upon multiple considerations, including ultimately the prospect that the data and information will result in the production of additional oil and gas sufficient to warrant both the data acquisition and the costs of exploration and production.

The restriction is based on the false premise that surveys, which occur in similar places and times, are the same. That is generally not the case. A new survey may be warranted by its use of new technology, a better image, a different target zone, or a host of other considerations. Different seismic companies frequently use different technologies and techniques that produce different data.

Implementing such a requirement poses several large problems. First, who would decide what is redundant? Assuming NMFS or BOEM wants to be the referee: what criteria to they propose? Second, recognizing the intellectual property and commercial property values, how will the agencies protect that information? Assuming a party wanting to challenge a survey would need to provide sufficient information in order to bring forward a challenge, how does the government plan to protect that commercial information? And, any proposal that the companies would somehow be able to self-regulate is infeasible and potentially illegal given the various anti-trust statutes. A government agency would likely find it impossible to set appropriate governing technical and commercial criteria, and would end up stifling the free market competition that has led to technological innovations and success in risk reduction.

Also, all seismic surveys are not the same, even when the exact equipment and technology is being used. Variances in the use of the exact same equipment and technology provide different data sets that have the potential to produce information to assist in subsequent exploration.

g. **Additional Mitigation Measure B3. Separate seismic surveys are prohibited from operating within 145 km (90 mi) of one another.**

A separation requirement for seismic surveys should not be established, particularly at these distances because it is both unwarranted from an environmental protection perspective and unnecessary given how seismic companies already have an incentive for separation. Seismic surveys already maintain a separation imposing a regulatory requirement to this effect would serve no useful purpose. See 2004 GOM G&G PEA at E-40 [~~current industry practice effectively eliminates concurrent seismic operations in the same general area;~~ ~~—because of potential acoustic interference created when simultaneous surveys are conducted too close to one another, ... operators attempt to maintain sufficient separation distance in order to acquire the best data set possible~~”; to achieve optimal data, seismic survey operators attempt to maintain sufficient distance between survey vessels ~~to reach background (ambient) noise levels.”]~~]

The basis for the distances is premised on use of sound exposure levels that are indicative of harm. NMFS has deviated from its previous standards to determine safety zones based on 160 dB without adequate justification. Use of the 160 dB standard would establish a propagation distance of 9-13 kilometers. Furthermore, NMFS has justified the 120 dB threshold based on concerns of continuous noise sources, not impulsive sound sources such as seismic surveys. Beyond this, the argument that overlapping sound fields could mask cetacean communication has already been judged to be a minor concern. NMFS has noted, ~~—in general,~~ NMFS expects the masking effects of seismic pulses to be minor, given the normally intermittent nature of seismic pulses.” 76 Fed. Reg. at 6438.

h. **Additional Mitigation Measure D1. No transit of exploration vessels into the Chukchi Sea**

On page ES-14, the DPEIS suggests that no vessels will be allowed to transit into the Chukchi Sea before 15 July or until the beluga hunt is completed. **Transits should be allowed provided that they do not interfere with the hunt.** Transits far off shore should be allowed and transits that are done within the conditions established through a Conflict Avoidance Agreement should be allowed. Movement of drilling vessels and equipment outside of the barrier islands is also prohibited until the close of the bowhead hunt in Barrow. [ES-14] This would unreasonably limit the entire drilling season to less than two months. Movement of drilling vessels and related equipment in a manner that avoids impacts to subsistence users should be allowed on a case-by-case basis and as determined through mechanisms such as the Conflict Avoidance Agreement not through inflexible DEIS mitigation requirements.

i. **Additional Mitigation Measure D3. Shutdown of exploration activities in the Beaufort Sea for the Nuiqsut (Cross Island) and Kaktovik bowhead whale hunts based on real-time reporting of whale presence and hunting activity rather than a fixed date.**

The mitigation measure, as written, is not clear about how the real-time reporting would be handled. Without these details it is difficult to evaluate the proposal. If there is the expectation that industry operations could be shutdown quickly and restarted quickly, the proposal is not feasible. Who would conduct the monitoring for whales and who would be responsible for reporting? How and to whom would reporting be conducted?

j. **Additional Mitigation Measure D4. Shutdown of exploration activities in the Beaufort Sea for the Barrow bowhead whale hunts from Pitt Point on the east side of Smith Bay to a location about half way between Barrow and Peard Bay from September 15 to the close of the fall bowhead whale hunt in Barrow.**

See general comment on closure areas. See comment under Additional Mitigation Measure D3.

k. **Additional Mitigation Measure D5. Shutdown of exploration activities in the Chukchi Sea for the Barrow (the area circumscribed from the mouth of Tuapaktushak Creek due north to the coastal zone boundary, to Cape Halkett due east to the coastal zone boundary) and Wainwright (the area circumscribed from Point Franklin due north to the coastal zone boundary, to the Kuk River mouth due west to the coastal zone boundary) bowhead whale hunts based on real-time reporting of whale presence and hunting activity rather than a fixed date.**

See general comment on closure areas. See comment under Additional Mitigation Measure D3.

- l. **Additional Mitigation Measure D6.** Shutdown of exploration activities in the Chukchi Sea for the Point Hope and Point Lay bowhead whale hunts (within a 48 km [30 mi] buffer from the coast) based on real-time reporting of whale presence and hunting activity rather than a fixed date.
See general comment on closure areas. See comment under Additional Mitigation Measure D3.

- m. **Additional Mitigation Measure D8.** For exploratory drilling operations in the Beaufort Sea west of Cross Island, no drilling equipment or related vessels used for at-sea oil and gas operations shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.
See general comment on closure areas. See comment under Additional Mitigation Measure D3.



February 28, 2012

Arcticeis.comments@NMFS.gov
Attention: Director, Office of Protective Resources
1315 East-West Highway
Silver Spring, MD 20910

Re: Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic Ocean

Dear Director:

This letter provides Arctic Slope Regional Corporation's (ASRC) comments on the National Marine Fisheries Service's (NMFS) *Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic Ocean* (DEIS).

While ASRC appreciates the efforts of NMFS, as well as the efforts of other federal government entities such as the Bureau of Ocean Energy Management (BOEM), with respect to ensuring that oil and gas exploration and development in the Arctic, including the Beaufort and Chukchi Seas, proceeds in a safe and thoughtful manner, we question whether there is either a basis or a need for the DEIS in light of the myriad other, more appropriate, opportunities for NMFS and BOEM to address the issues that are addressed in the DEIS. In light of the unique circumstances faced by ASRC and its Alaska Native shareholders, we also recognize the need to ensure that all parties involved in oil and gas development in the Arctic engage with the local communities on efforts to protect our subsistence lifestyle and culture, and we are submitting comments that address each of these issues.

ASRC has been actively involved in ongoing Arctic oil and gas development efforts; we have reviewed plans and submitted comments with respect to the various projects, including most recently submittal of comments on BOEM's Proposed Outer Continental Shelf Oil and Gas Leasing Program 2012-2017, dated February 6, 2012, and its Draft Programmatic Environmental Impact Statement (PEIS), dated January 9, 2012. As we have documented in many of the submitted written comments and in our testimony, we continue to believe that development of Alaska's offshore resources can proceed safely and in a manner that protects the unique Arctic environment as well as the subsistence lifestyle and culture of the Alaska Native population.

More broadly, ASRC believes that safe, expeditious and responsible development of oil and gas resources in the Alaska Outer Continental Shelf (OCS) region is critical for the United States' energy policy and energy mix, for the Alaska economy that supports our Alaska Native shareholders, and for the continued operation of the Trans Alaska Pipeline System (TAPS). In

that regard, we have consistently advocated for appropriate regulatory review and oversight of oil and gas exploration and development activities, including environmental reviews and assessments under the National Environmental Policy Act (NEPA) at the appropriate juncture.

We do not, however, believe that the DEIS issued by NMFS is either required by NEPA or appropriate at this stage, and we respectfully request that NMFS reconsider its decision to issue an EIS, withdraw the DEIS, and instead apply the analyses contained in the DEIS to future exploration and development activities that trigger environmental review requirements under NEPA. If, however, NMFS does not withdraw the DEIS, we request that it consider our detailed comments on the DEIS set forth below.

Background

ASRC is an Alaska Native Regional Corporation created at the direction of Congress under the terms of the Alaska Native Claims Settlement Act of 1971 (“ANCSA”). See 43 U.S.C. § 1606. This landmark legislation extinguished Alaskan aboriginal land rights, and authorized and directed Alaska Natives to adopt a western corporate model to manage lands, funds and natural resources. Although the western corporate model was a new concept for Alaska Natives, we have been able to successfully manage our assets consistent with our sound stewardship and values. Under ANCSA, Iñupiat Eskimos living on the North Slope on or before December 18, 1971, were eligible to enroll as shareholders in ASRC. ASRC has since issued additional shares to their descendants, giving ASRC a shareholder base of approximately 11,000 Iñupiat Eskimos.

Through ANCSA, Congress created ASRC and directed that we use the North Slope’s natural resources to benefit the Iñupiat people financially and culturally. Congress authorized ASRC “to provide benefits to its shareholders who are Natives or descendants of Natives or to its shareholders’ immediate family members who are Natives or descendants of Natives to promote the health, education or welfare of such shareholders or family members.” 43 U.S.C. § 1606(r) (emphasis added). Consistent with this unique legislation, ASRC is a for-profit business that is committed both to providing sound returns to our shareholders and to preserving our Iñupiat way of life, culture and traditions.

Operating in one of the least hospitable natural climates in the world, we have built businesses to provide jobs for our people, tax revenues for our Villages and our Borough, and cash dividends for our shareholders. At the same time, we have integrated maintenance and protection of the Iñupiat cultural and traditional practices into the ASRC business.

In carrying out our congressionally-mandated mission, ASRC and its subsidiary companies are active participants in North Slope and Alaska OCS oil exploration, development and production. The oil and gas industry is the source of many jobs for ASRC’s Iñupiat shareholders and of many contracting opportunities for the ASRC family of companies. This includes work our subsidiaries perform as contractors in oil field developments, engineering, pipeline maintenance, and property leasing for exploration and development.

ASRC has a significant stake in ensuring that oil and gas exploration and development in the Arctic is performed in a manner that minimizes the impacts and potential impacts on subsistence activities of our communities and shareholders.

ASRC has historically been very involved in working with the government and with private parties to address concerns about Arctic OCS exploration and its potential effects on the subsistence activities of our communities and shareholders. We also view these concerns against a backdrop of the steep decline in production from onshore fields now contributing to the TAPS. We recognize that our Iñupiat culture depends upon a healthy ecosystem and the subsistence resources it provides and that our communities depend upon present and future oil and gas development as the foundation of a sustained North Slope economy. Development has a direct positive impact on the improvements to the physical infrastructure of our North Slope villages.

ASRC also recognizes that responsible development of domestic oil and gas resources, including oil and gas resources in the Federal OCS, is a critical component of the country's overall energy policy and strategy. In BOEM's most recent assessment of recoverable oil and gas resources it estimated that there are 88.6 billion barrels of undiscovered technically recoverable oil and 398.4 trillion cubic feet of undiscovered technically recoverable natural gas in the Federal OCS.¹ A significant portion of this resource base is located in the Alaska OCS, and developing domestic energy resources -- including those in the Alaska OCS -- will both reduce our country's reliance on foreign oil and bring much-needed jobs to our communities.

While ASRC supports development of domestic energy resources such as those existing in the Alaska OCS, we also recognize the need to address the impacts of such development to ensure that it is done in the most responsible manner, protecting human health, the environment and critically important cultural resources. We support ongoing efforts to rigorously evaluate and continually improve strategies for addressing and mitigating impacts of oil and gas development, and we believe that technological innovation, advancements in risk assessment, and strong and effective regulatory oversight will combine to effectively address environmental considerations, including specifically the evaluation and continued improvement of Arctic spill prevention and response measures.

I. ASRC Requests that NMFS Reconsider its Decision to Issue an EIS and Withdraw the DEIS

Pursuant to NEPA, the need for an EIS is triggered by a "major federal action" that "may significantly affect the human environment."² As far as ASRC can determine, there is no "major federal" action that would trigger the need to prepare the DEIS. Further, as NMFS recognizes in several places in the DEIS, the type of NEPA review that is included in the DEIS has historically occurred at other stages of the oil and gas development process, triggered by specific activities such as lease sales, exploration plans, etc. Indeed, there are sections of the DEIS that discuss the appropriate application of NEPA to oil and gas development activities, at the appropriate stages, and ASRC suggests that a close examination of these sections leads to the conclusion that there is no purpose or need for a NEPA analysis at this stage.

¹ BOEM, *Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf, 2011*, Fact Sheet RED-2011-01a (November, 2011).

² 42 U.S.C. §4332(c).

The Council on Environmental Quality's (CEQ) regulations implementing NEPA define "major federal action" to include "new and continuing activities" that tend to fall into one of four categories:

- Adoption of official policy, such as rules, regulations, and interpretations adopted pursuant to the Administrative Procedure Act;
- Adoption of formal plans;
- Adoption of programs, such as a group of concerted actions to implement a specific policy or plan; or
- Approval of specific projects, including actions approved by permit or other regulatory decision.³

According to the DEIS, the evaluation performed therein is of the potential effects to the environment of **anticipated levels of geological and geophysical exploration activities** in the U.S. Beaufort and Chukchi seas, Alaska.⁴ In addition, the "proposed action" that the DEIS purports to evaluate is set forth in Section 1.2 of the DEIS:

The proposed action considered in this EIS is:

- The issuance of ITAs under Section 101(a)(5) of the MMPA, by NMFS, for the incidental taking of marine mammals during G&G permitted activities, ancillary activities, and exploratory drilling activities in the U.S. Beaufort and Chukchi seas, Alaska, and
- The authorization of G&G permits and ancillary activities in the U.S. Beaufort and Chukchi seas, Alaska, by BOEM under the OCS Lands Act.⁵

In addition, elsewhere in the DEIS NMFS appears to identify the types of "anticipated actions" that it is seeking to address in the DEIS:

- NMFS anticipates receipt of applications to take marine mammals incidental to oil and gas industry exploration activities.⁶
- BOEM anticipates receipt of applications to conduct exploration surveys pursuant to the OCS Lands Act.⁷
- BOEM conducts NEPA analyses for proposed OCS activities and includes measures, if necessary, in permits, plan approvals, and other authorizations to minimize potential adverse effects to the human, marine, and coastal environment (30 CFR Parts 550

³ C.F.R. § 1508.18.

⁴ National Marine Fisheries Service, *Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean*, December 2011, at 1-2. (emphasis added).

⁵ *Id.*, at 1-8.

⁶ *Id.*, at 1-8.

⁷ *Id.*

and 551).⁸

There is no reference that we can find to any proposed federal action -- such as a permit application, a petition for incidental take regulations (ITR), an application for an Incidental Take Authorization (ITA) or an Incidental Harassment Authorization (IHA), or a request for a plan approval or other authorization -- that would even trigger the next NEPA step, determining whether the action is “major” or “may significantly affect the human environment.” The only reference to any “action” that we can find is to undefined “anticipated...activities” that have not yet been proposed, and it is not clear to us how these anticipated activities constitute a proposed “federal action” under the CEQ regulations.

Notwithstanding the fact that we do not believe that there is a proposed federal action that needs this NEPA impacts analysis, we understand and appreciate the need for robust environmental review of oil and gas development in the Arctic Ocean, and we respectfully submit that there is a process in place that has worked very well in the context of ensuring full reviews of actions at appropriate stages of development of these resources. As described at various places in the DEIS:

- The OCS Lands Act, 43 U.S.C. § 1331 *et seq.* prescribes a four stage process for development of offshore federal mineral resources: (1) a 5-year oil and gas leasing program; (2) lease sales; (3) exploration pursuant to exploration plans; and (4) development and production plans. Environmental reviews are conducted for each of these stages.⁹
- BOEM has consistently applied and followed the four stage process created by the OCS Lands Act to ensure the safe and orderly development of oil and gas resources on the OCS in both shallow and deep water. This four stage process consisting of planning, exploration, leasing, and production and decommissioning of oil and gas resources in federal waters requires a careful and comprehensive NEPA review at each and every stage, whether it be via an EIS or an Environmental Assessment (EA).¹⁰
- Because the EIS addresses general effects and is not specific to the request for an ITA for a particular activity, additional NEPA review may be required for each application for authorization. The form of the additional review will depend on the nature and scope of the proposed activity.¹¹

Generally speaking, at each subsequent step of the oil and gas exploration and development process the scope of the proposed program under review gets narrower, while the environmental reviews under NEPA get more robust, specific and detailed. The process includes the ability of agencies like NMFS to “tier” subsequent NEPA documents on those documents previously prepared, in essence building each subsequent NEPA review on the work done in the prior

⁸ *Id.*, at 1-4.

⁹ *Id.*, at 1-4.

¹⁰ *Id.*, at 1-6.

¹¹ *Id.*, at ES-29.

review(s). ASRC has supported, and continues to support, BOEM's policy of "tiering" NEPA reviews for oil and gas development activities.

With respect to future oil and gas activities in the Beaufort and Chukchi Seas, when there is a proposed federal action that requires the next level of NEPA review, there is a wealth of information that can be used, including the analysis set forth in draft form in the draft DEIS. By way of a very recent example, on February 27, 2012, NMFS published a *Notice of Availability of a Draft Environmental Assessment for the Issuance of Incidental Harassment Authorizations in the U.S. Beaufort and Chukchi Seas*.¹² The Draft Environmental Assessment was triggered by the receipt of requests for issuance of IHAs authorizing the incidental taking of marine mammals during Shell's proposed 2012 exploratory drilling programs in the Beaufort and Chukchi Seas, and the discussion and analysis of environmental impacts, mitigation measures, monitoring, etc. in the Draft Environmental Assessment tracks very closely with the discussion and analysis in the DEIS, except that it is tied to an actual proposed action. These IHAs, which are required pursuant to the MMPA, are exactly the type of "proposed actions" that trigger the need to determine whether a NEPA review is required and, if so, issuance of the appropriate NEPA review document (in this case, an environmental assessment).

In the absence of federal action that is triggering the need for a NEPA analysis of the sort set forth in the DEIS, ASRC respectfully requests that NMFS withdraw the DEIS, retaining the substantive analysis set forth therein (subject to our comments below on the substance of the analysis) to be used in forthcoming NEPA reviews of oil and gas activity in the Beaufort and Chukchi Seas.

II. If NMFS Proceeds with the DEIS, ASRC Requests that NMFS Consider the Following Specific Recommendations.

A. *Any Final EIS Must Recognize the Importance of Interaction with Local Communities and Organizations, and of Diligent Implementation of Tools for Mitigating Impacts on Subsistence.*

ASRC recognizes the need for continued emphasis on, and development of, robust systems to protect against adverse impacts of oil and gas development on the Arctic environment, including critically important subsistence and cultural resources. Any oil spill in the Arctic OCS has the potential to be catastrophic to our communities and people. As a result, ASRC has taken a very deliberate approach in our consideration of off-shore exploration and development, and, on behalf of the Native Alaskan shareholders, we have made a concerted effort to be involved in discussions at every step of the oil and gas exploration and production process in Alaska, including on the off-shore OCS.

In addition to working with federal and state agencies with responsibility for overseeing these activities, we have also historically worked with Alaska OCS explorers to address our concerns

¹² 77 Fed. Reg. 11492 (Feb. 27, 2012).

regarding the environmental impacts of specific planned activities. We note that Shell, for example, has done a lot of work to identify and analyze the potential impacts of its operations, as indicated by the Environmental Impact Assessment that was submitted as an Appendix to Shell's May 2011 Revised Outer Continental Shelf Lease Exploration Plan: Camden Bay, Beaufort Sea, Alaska.¹³ That EIA contains a very comprehensive and detailed evaluation and analysis of both potential impacts and measures to be implemented to mitigate those impacts.

It is important that as oil and gas development activity continues in the Arctic, all parties continue to reap the benefits from the substantive involvement of local communities with expertise and knowledge regarding local environmental conditions, subsistence hunting, and cultural resources. In that regard, ASRC appreciates NMFS's recognition in the DEIS that "several processes and programs have evolved to facilitate interaction between the industry and the local communities to ensure that the Arctic subsistence culture can continue to thrive in conjunction with oil and gas development,"¹⁴ and we encourage NMFS to continue to embed these processes and programs in its planning documents.

In various sections of the DEIS, NMFS also references "mechanisms" or "tools" for cooperation, conflict avoidance, and impact mitigation, including Plans of Cooperation (POC), Conflict Avoidance Agreements (CAA), Communication Centers, and the annual Open Water Meeting.¹⁵ ASRC strongly supports the use of appropriate consultation tools in the context of oil and gas development in the Arctic. We believe that POCs, with their requirements for consultation and community meetings with potentially affected communities, are an effective tool to ensure that meaningful consultations continue to take place. CAAs like the Open Water Season CAA play a similarly important role.

We recognize, as does NMFS, that federal agencies such as NMFS or BOEM cannot require these types of agreements that are between private parties. We also believe, however, that it is important to continue to cite to and to support these processes, which can foster discussions that result in effective and efficient mitigation measures, in these planning documents. In that context we take special notice of the interactive process involving the Open Water Season CAA, the Alaska Eskimo Whaling Commission, and the relevant POC that have worked together to address mitigation issues involving the bowhead whale subsistence hunt.

We are not sufficiently familiar with the foundations for the concerns that are discussed in the DEIS to offer specific comments on whether (a) a CAA "requires more from the industry than is necessary to ensure no immitigable adverse impact" (the standard set in the MMPA); (b) a CAA that is developed by the AEWC insufficiently represented the interests of subsistence hunters of species other than the bowhead whale; and/or (c) the POC process has morphed into a one-way process whereby companies unilaterally develop a POC without any chance for meaningful input from the subsistence communities.¹⁶

We do, however, strongly urge that NMFS address these concerns and work with the parties to take whatever steps are necessary to ensure that critical tools and processes such as POCs and

¹³ ASRC submitted detailed comments on Shell's EP on July 25, 2011.

¹⁴ NMFS, *DEIS*, at 2-21.

¹⁵ *Id.*, Sections 2.3.4 (pp. 2-21 through 2-23) and 5.4 (pp. 5-9 through 5-13).

¹⁶ *Id.*, at 5-10 through 5-11.

CAAs continue to be available to facilitate interaction between the oil and gas industry and local communities that results in the proper balance that allows for continued development subject to mitigation measures that adequately protect our subsistence hunting, as well as our local customs and cultural resources. We think this is critical regardless of whether NMFS decides to withdraw or proceed with finalization of the DEIS.

ASRC also supports continued efforts to organize and hold the annual Open Water Meetings. As NMFS recognizes, these meetings offer the opportunity, in one forum, for industry, local, state and federal government officials, and representatives of affected native Alaskan communities, among others, to come together and hear plans, concerns, proposed solutions, etc., with respect to the potential impact of oil and gas development activities on marine mammals, mitigation of those impacts, and general interaction amongst all interested parties.

B. NMFS Should Not Select the No Action Alternative as the Preferred Alternative.

In the event that NMFS proceeds with finalization of the EIS, ASRC urges the Service not to select Alternative 1, the “No Action Alternative,” as the “Preferred Alternative” in the Final EIS and Record of Decision. Under that alternative, companies would not be able to secure required authorizations under the MMPA for incidental takings, and BOEM would not issue G&G permits or authorize ancillary activities in the Beaufort and Chukchi Seas.¹⁷ As a result, no company could undertake these activities during the 2012-2017 period unless they already had the requisite authorizations and permits.

NMFS appears to recognize the adverse impacts that would flow from selection of the No Action alternative as the preferred alternative:

The No Action alternative would have a major impact on land and water use and management because it would be a significant change from existing conditions. This alternative would be **contrary to current federal and state management of offshore waters**. This alternative would cause a change in activity levels and affect management plans and would **change federal, state, and private development rights by preventing exploration for oil and gas resources**.¹⁸

The result would be, in effect, a five-year moratorium on performing activities necessary to support new oil and gas exploration and development in the Arctic OCS, which is unacceptable from a number of perspectives.

As BOEM recognized in its recently released “*Proposed Outer Continental Shelf Oil and Gas Leasing Program 2012-2017*,” oil and natural gas production from the OCS “...are key components of a national energy strategy to diversify energy sources.”¹⁹ ASRC supports the goal of maximizing the diversification of the country’s energy supply, and believes that NMFS should recognize the key role that oil and gas in the OCS, including the Alaska OCS, must play in that effort. As BOEM summarized:

¹⁷ *Id.*, at 2-35.

¹⁸ *Id.*, at ES-24 (emphasis added).

¹⁹ BOEM, *Proposed Outer Continental Shelf Oil and Gas Leasing Program 2012-2017*, November 2011, at 92.

Production of oil and natural gas from the OCS directly reduces the amount of oil that must be imported from abroad, much of it from politically unstable regions, thereby lessening the threat to the U.S. economy posed by supply disruptions and higher prices.²⁰

It is clear that oil and gas resources in the Alaska OCS region will have to play a significant role in the development of additional domestic energy supplies. According to BOEM's 2011 report evaluating undiscovered technically recoverable oil and gas resources on the OCS, the Alaska OCS ranks second in the country with 31% of the potential OCS oil and gas resources; of that total, almost 90% is in the Beaufort and Chukchi Seas.²¹ Timely development of OCS oil and gas resources, including those in the Alaska OCS, will contribute significantly to a better, stronger national energy policy, with these myriad attendant benefits.

ASRC submits that if NMFS were to impose a *de facto* five-year moratorium on new Arctic oil and gas development by selecting the No Action Alternative, it would be erecting unnecessary and unwarranted barriers to the development of domestic energy resources that most credible experts (including BOEM) recognize are critically important components of our national energy policy and that contribute significantly to national security.

Selecting the No Action alternative as the Preferred Alternative would also have significant adverse economic impacts on the residents of the North Slope, including the Native Alaska shareholders of ASRC who reside there. As recognized by the NMSF:

Alternative 1 would result in lost opportunities for employment and personal income in areas providing support activities in the NSB, NAB, Nome, and Dutch Harbor. This includes lost employment to NSB and NAB residents as PSOs, subsistence advisors, Com Center staff, and spill response personnel. There could also be lost employment and personal income to oil and gas professionals in Anchorage, other parts of the state, and nation as a result of Alternative 1.²²

The DEIS also identifies specific ways in which oil and gas exploration and development plays a significant role with respect to both the Alaskan economy and the economies of specific areas like the North Slope -- this list is by no means exhaustive:

- Alaska OCS development is anticipated to be a significant driver in “the next generation of economic activity by extending the duration of the petroleum industry in the state” (ISER 2009).²³
- Exploration, development, production, and transportation of oil and gas are major contributors to the economy of Alaska and the NSB.²⁴

²⁰ *Id.*, at 86.

²¹ BOEM, *supra* note 1, at 2.

²² NMFS, *DEIS*, at 4-13.

²³ *Id.*, at 4-12.

²⁴ *Id.*, at 3-130.

- Current TAPS pipeline throughput has fallen to one-third its peak flow, and any OCS contribution would extend its commercial life. This would continue state and local royalty oil revenue that otherwise would end immediately upon closure of TAPS.²⁵
- The oil and mining industry generate high income jobs and service contracts for local businesses and the construction industry.²⁶
- Oil and gas exploration and development on Alaska's North Slope is the principal industry in the NSB.²⁷
- Average monthly wages in Alaska total \$3,886 per month per household, but the oil and gas extraction industry has the highest monthly wages at \$13,924.²⁸

ASRC is in a position to offer unique testimony on this issue. As indicated earlier in these comments, ASRC was created by Congressional fiat, and Congress mandated that we use the natural resources located on lands conveyed to us to benefit our Iñupiat shareholders and to promote the health, education or welfare of such shareholders. In carrying out this congressional mandate, ASRC and its subsidiary companies are active participants in North Slope and Alaska oil exploration, development and production (both on- and offshore), and the oil and gas industry is the source of many jobs for ASRC's Iñupiat shareholders. ASRC subsidiaries perform a wide variety of contract work supporting oil and gas development, as recognized by NMSF: "Native corporations have established subsidiaries to provide contract services for a variety of activities, including oil field services, ice road construction, and oil spill response."²⁹

In addition, many, perhaps most of ASRC's shareholders are Alaskan North Slope residents, and most of those are located along the Arctic coast. Continued oil exploration and development -- whether offshore or onshore -- maintains the viability of the TAPS, and without a viable TAPS, the North Slope Borough loses its ability to fund critical infrastructure that improves the quality of life for North Slope residents. Finally, ASRC owns more than five million acres of land on the North Slope, and many tens of thousands of acres are located along the Arctic Ocean coastline.

If NMFS were to preclude -- even temporarily -- further oil and gas development by selecting the No Action alternative, the adverse economic impacts on Native Alaskans and the boroughs, villages, and regional corporations would be disproportionately high. It would also adversely impact the ability of regional corporations to meet the obligations imposed upon them by Congress with regard to their shareholders, and ASRC suggests that it would be disingenuous at best for NMFS to trigger these results, particularly through issuance of decision document in a regulatory process that is unwarranted and unnecessary.

²⁵ *Id.*, at 4-13.

²⁶ *Id.*, at 3-133.

²⁷ *Id.*, at 3-135.

²⁸ *Id.*, at 3-136.

²⁹ *Id.*, at 3-144.

By selecting an alternative that would provide for the ability to take the necessary first steps towards the safe and responsible development of oil and gas resources in the Arctic, NMFS would be taking concrete steps to facilitate a process that will culminate in increased energy independence. In doing so it would also avoid the significant adverse consequences that will occur if the decision is made to defer or forego OCS oil and gas development at this critical time.

C. *The Benefits of Future Oil and Gas Activity in the Arctic Outlined in Alternatives 2-5 Outweigh the Potential Impacts of Those Activities*

The benefits of continued oil and gas development in the Beaufort and Chukchi Seas -- as outlined above -- are clear. With respect to weighing the potential impacts of such activities against those benefits, we concur with NMFS that “the benefits offered to the Nation by the long-term productivity of the Proposed Action are expected to offset the short-term use of the environment, if properly mitigated as proposed.”³⁰

The impacts analysis focus on two “exploration scenarios” that the four non-no action alternatives are based upon. ASRC is not in a position to comment on whether the scope of the two exploration scenarios are appropriate, whether they overestimate or underestimate the scope of exploration activities that will occur in the Beaufort and Chukchi Seas in the period 2012-2017, or whether there are more scenarios that should be part of the analysis.

ASRC does believe that the impacts of the scope of activities that are included in the two scenarios can be sufficiently managed and mitigated to minimize adverse environmental effects. Minimizing adverse environmental impacts is very important to us; ASRC and its shareholders have the most at stake in ensuring that impacts on our culture, our lifestyle and our subsistence activities are minimized to the fullest extent possible.

Based on its analysis of the potential impacts and incorporating proposed mitigation measures, NMFS concluded that “the environmental effects of the proposed action alternatives would be temporary in nature and would have no adverse long-term impacts on the long-term productivity of the Beaufort and Chukchi seas, if properly mitigated as proposed.”³¹ ASRC agrees with this conclusion. ASRC also agrees that when the benefits of the oil and gas activities that were considered as part of this analysis are weighed against the temporary environmental effects (and lack of adverse long term impacts), the benefits outweigh the effects.

D. *The DEIS Should Not Include an Evaluation of an Oil Spill Scenario.*

ASRC does not understand why NMFS includes an analysis of the potential impacts of a very large oil spill (VLOS) in its evaluation of “the potential effects or impacts of each of the alternatives...on the physical, biological, and social environments.”³² As NMFS acknowledges, “because the occurrence of a large oil spill is a highly unlikely event, it is not part of the proposed action for any alternative.”³³ To the extent that a VLOS is not part of the proposed

³⁰ *Id.*, at 4-572.

³¹ *Id.*

³² *Id.*, at 4-1.

³³ *Id.*, at 4-84.

action covered the DEIS, ASRC submits it is inappropriate include an evaluation of the impacts of such an event in this document.

ASRC believes, as stated earlier in these comments, that there are several stages in the oil and gas development process where this type of NEPA analysis, including the analysis of the potential impacts of a VLOS, is more directly related to the proposed major federal action under evaluation, more appropriate, and more legally defensible. Indeed, in its review of NEPA implementation in OCS oil and gas development CEQ explicitly recognized the practice of “tiering” of levels of review, pursuant to which the analysis of the potential impacts of a VLOS are more appropriately addressed at the various other stages of NEPA review. In fact, VLOS analyses have already been performed for exploration and development in the Beaufort and Chukchi Seas, and are included in the BOEM 2012-2017 OCS Oil and Gas Leasing Program Draft Programmatic EIS (BOEM 2011d) for the Beaufort Sea and in the BOEM Lease Sale 193 Revised Draft Supplemental EIS (BOEM 2011b) for the Chukchi Sea.³⁴

For these reasons, ASRC urges NMFS to remove the portions of the DEIS that address any analysis of the potential impacts of a VLOS, with the understanding that robust analyses of the impacts of a VLOS have already been performed at other stages of this process, and that any further VLOS analysis will be tiered off of those analyses at the appropriate action stage.

E. *Any Final EIS Must be Revised to More Accurately Classify the Beneficial Impacts on Regional Personal Income and Employment Rates.*

ASRC believes that the manner in which NMFS has chosen to classify the impacts of the five alternatives discussed in the DEIS on personal income and employment understates the positive/beneficial impacts that oil and gas activity that is assumed under Alternatives 2 through 5 would have in Alaska, and specifically on the North Slope. The main cause of this understatement may be the NMFS’s decision to classify an impact as “minor” unless there is more than a 5% increase (or decrease) in the relevant “indicator.”³⁵

As the bulleted list of economic impacts discussed in Section II.B of these comments reflects, the broad economic impacts of OCS oil and gas development is significant. In its Report *Economic Analysis Methodology for the 5-Year OCS Oil and Gas Leasing Program for 2012-2017*, BOEM estimates that the net economic value from anticipated production of economically recoverable oil and natural gas resources expected to be leased and discovered in the Beaufort and Chukchi Seas as a result of the Proposed Program range from \$7.25 billion to \$71.5 billion.³⁶

More specifically with respect to the economic impacts of the activities that are the subject of the DEIS, the four non-no action alternatives discussed in the DEIS rest primarily on the two “exploration scenarios.” Although the scope of activities associated with the exploration scenarios may be limited when compared to more extensive exploration and, ultimately, development and production activities, they nonetheless would have positive impacts on

³⁴ *Id.* at ES-28.

³⁵ *Id.*, Table 4.4-1 at 4-12.

³⁶ BOEM, *Economic Analysis Methodology for the 5-Year OCS Oil and Gas Leasing Program for 2012-2017*, BOEM-2011-050 (October 2011).

socioeconomic conditions in Alaska. This is particularly true in terms of the impact on income and employment for residents of the North Slope, the area located closest to the exploration activities.

NMFS recognizes these impacts in the narrative of the DEIS:

- There would be a limited number of direct local North Slope employment opportunities associated with the standard mitigation measures for PSOs, Subsistence Advisors, Com Centers, and oil spill responders. There would be direct and indirect employment opportunities for Regional and Village Corporations that procure service contracts related to the above activities or support of crews and staging. In the communities of Barrow, Wainwright, Nome and Unalaska/Dutch Harbor (where crew changes occur or vessels are based), there could be short-term, seasonal demand on institutions and social services.³⁷
- The indirect employment opportunities associated with Alternative 2 are shore-based, including: transport of equipment, room and board of survey/seismic crews, and administration of permits to conduct the surveys. Native Corporations and private entities may capitalize on these opportunities.³⁸
- The context of the socioeconomic impacts is unique because the people that would experience the flow of workers and research vessels are predominantly Iñupiat communities.³⁹

NMFS also undertakes some analysis to estimate the number of jobs that could be created under the two exploration scenarios -- for example, under the more limited scenario more than 200 "Protected Species Observer" jobs could be created, while under the more robust exploration scenario almost 340 such jobs could be created.⁴⁰

While these numbers may not reflect a "greater than 5% increase" in employment due to the types of activities assumed in the exploration scenarios, ASRC submits that this type of job creation is anything but "minor" in the context of the North Slope. More importantly, as this is a cumulative assessment (for purposes of analyzing impacts), we believe that the assessment of impacts on income and employment should also be cumulative (that is, include activities and projects beyond the seismic and initial exploration to include development and production). This would result in a significantly greater positive economic benefit -- income and employment included -- for the economies of Alaska and regions such as the North Slope.

Regardless of whether the cumulative impacts are included, ASRC believes that given the current employment climate nationwide and in Alaska, the creation of these jobs should not be characterized as "minor" in the context of this analysis, and ASRC requests that NMFS modify the analysis parameters and discussion in the DEIS to more appropriately reflect the positive

³⁷ NMFS, *DEIS*, at 4-497.

³⁸ *Id.*, at 4-173.

³⁹ *Id.*, at 4-497.

⁴⁰ *Id.*, at 4-172 and 4-268.

economic impact of these alternatives on employment in our region.

F. *The Scope of the Categories of Mitigation Measures to be Considered is Appropriate, Provided that the Mitigation Analysis is Conducted at the Appropriate Stage of Review.*

ASRC has reviewed the categories of mitigation measures set forth in the DEIS, grouped broadly into either the “Standard Mitigation Measures” category or the “Additional Mitigation Measures” category.⁴¹ Generally speaking we agree that these categories, and the specific measures within these categories, represent the appropriate universe of mitigation measures that need to be considered when NMFS is looking to promulgate ITRs or issue ITAs or IHAs under the MMPA, and when BOEM is considering G&G permit applications and applications for ancillary activity approvals.

We do note, however, that whether one or more of these mitigation measures is necessary or appropriate requires a case-by-case analysis in the context of issuing the requisite ITA/IHA/permit/approval, and the scope of the measures that are ultimately determined to be necessary, if any, will be dictated by the specific attributes of the activity for which approval or a permit is being sought. In that regard this comment should not be construed as approval or disapproval of any specific mitigation measure discussed in the DEIS. Finally, we also strongly urge that NMFS and BOEM consult closely with locally affected whaling communities when evaluating potential mitigation measures, including the scheduling/timing/scope of specific activities, using tools such as the POC, CAA, and any other appropriate mechanisms.

ASRC appreciates the opportunity to present these comments on, and suggested modifications to, the DEIS. We look forward to continuing our role in shaping the development of important resources in the Alaska OCS and elsewhere in the region, and we thank you in advance for your consideration of these comments.

Sincerely,
ARCTIC SLOPE REGIONAL CORPORATION

A handwritten signature in black ink, appearing to read 'Richard Glenn', with a horizontal line extending to the right.

Richard Glenn
Executive Vice-President
Lands and Natural Resources

⁴¹ *Id.*, at 2-39 through 2-42, 4-11 and Appendix A.



Shell Exploration & Production

Mr. James H. Lecky,
Director, Office of Protected Resources,
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Shell
3601 C Street, Suite 1000
Anchorage, AK 99503
Tel. (907) 646-7112
Email Susan.Childs@Shell.com
Internet <http://www.Shell.com/>

February 28, 2012

Re: Shell Comments on the NMFS Draft Environmental Impact Statement Effects of Oil and Gas Activities in the Arctic Ocean

Shell Exploration and Production Company (Shell), as the largest lease holder in the Chukchi Sea and Beaufort Sea, is pleased to respond to the subject notice on the availability of a Draft Environmental Impact Statement (DEIS) on the effects of oil and gas activities in the Arctic Ocean (National Oceanic and Atmospheric Administration RIN 0648–XA885 referred to herein as the DEIS) (NMFS 2011). The comments provided below outline Shell's concerns regarding the DEIS.

National Marine Fisheries Service (NMFS) released the DEIS in December 2011. The stated purpose was to analyze the impacts of issuing marine mammal incidental take authorizations associated with oil and gas exploration activities in Federal and State waters of the U.S. Chukchi and Beaufort Seas off Alaska. Shell finds that the DEIS presents no feasible alternatives and that the document does not contain the mandated analyses necessary to withstand judicial scrutiny. Therefore, we request that:

- NMFS withdraw this DEIS;
- NMFS work in collaboration with Bureau of Ocean Energy Management (BOEM) and the U.S. Fish and Wildlife Service (USFWS) to initiate a new DEIS process starting from the scoping stage; and
- NMFS and BOEM conduct a workshop with industry to develop and analyze a feasible set of alternatives.

Shell's comments address four key areas of concern:

- I. Fundamental legal violations of Administrative Procedure Act (APA), National Environmental Protection Act (NEPA), and the Outer Continental Shelf Lands Act (OCSLA) may have occurred during the review process and appear throughout the DEIS document. There are significant NEPA failures in the scoping process, in the consultation process with agency experts, in the development and assessment of action alternatives, and in the development and assessment of mitigation measures. There are also many assumptions and conclusions in the DEIS that are clearly outside of NMFS's jurisdiction, raise anti-competitiveness concerns, and are likely in violation of the

contract requirements and property rights established through the OCSLA. In total, these legal violations create the impression that NMFS pre-judged the results of their NEPA analysis.

- II. Persistent inconsistencies plague the DEIS throughout the document and weaken the validity of the agency's conclusions and recommendations. The background information is inconsistent with past NEPA reviews of offshore exploration; alternatives included and assessed are inconsistent with the scope; definitions of an exploration activity are inconsistent; and, most grievous, conclusions in one section of the document are inconsistent with the technical and scientific information presented in other sections of the document. Particularly flawed is the methodology of characterizing socioeconomic impacts compared to environmental impacts. The inconsistencies present in the treatment and evaluation of impacts in the DEIS lead to conclusions that are not supported by sound environmental or socioeconomic analyses.
- III. Available technical information on numerous issues, including migrating bowhead whales, marine mammal populations, differences between the Beaufort and Chukchi seas, the biological consequences of marine sounds, and special habitat areas, does not appear to have been evaluated or included in the impact analyses as presented in Environmental Consequences (Chapter 4). Impact analyses and subsequent conclusions are also not based on correctly interpreted study results, not based on newer study results provided to the agency by industry, and, in several instances, not based on newer study results that are cited elsewhere in the DEIS. This results in unfounded speculation, the overstatement of impacts and development of arbitrary and unnecessary mitigation measures.
- IV. The activity levels assessed and mitigation measures proposed in the DEIS are so restrictive that they will effectively result in a taking of the rights of leasees. Oil and gas lease holders may be prohibited from meeting their obligations to explore (under the primary lease term) and may thus risk losing their leases upon expiration of the least term. Currently, 936 state and federal offshore leases are held in the Chukchi and Beaufort Seas by about 20 operating companies. These leases are set to expire in 2013-2019. Despite the large number of lease holders and public statements by several operators in each sea concerning their intentions to drill in the near future, the alternatives evaluated in the DEIS have a maximum of two drilling programs in each sea per year. The problem with these restrictive alternatives is compounded by DEIS definitions that limit a drilling program to a single drill rig, and by mitigation measures that reduce the operational window for drilling by about 13 percent across the entire planning area and by another 37-80 percent over large portions of the planning area.

Shell has numerous comments and issues within each one of these key areas of concern, which are discussed below in detail. We have also attached a table entitled Shell Comments on the DEIS to this letter, which contains an additional 145 separate Shell comments on the DEIS.

Shell asks that you consider each of these comments on its merit. Again, we believe that these issues with the DEIS are so significant that the DEIS in its current condition should be withdrawn, and that the EIS process should begin again, starting with scoping.

Shell is providing comments in two formats. The first section is a narrative review of the principle issues that Shell finds to be most problematic flaws. The second section is a spreadsheet-based recitation thorough review of the DEIS providing specific comments within each section. Both segments are important aspects of Shell's input and should be addressed in NMFS's consideration of comments.

Thank you



Susan Childs

Alaska Venture Support Integrator, Manager

I. Legal Implications

The DEIS includes fundamental flaws that, if carried through to the Final EIS, subject the Record of Decision to vacatur and remand in a legal challenge. The DEIS is inconsistent with NEPA and OCSLA, and as a result is arbitrary and capricious in violation of the APA. An agency's actions under both NEPA and OCSLA are reviewed under the arbitrary and capricious standard of the APA. An agency's decision is arbitrary and capricious under the APA where the agency (i) relies on factors Congress did not intend it to consider, (ii) entirely fails to consider an important aspect of the problem, or (iii) offers an explanation that runs counter to the evidence before the agency or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise. *Lands Council v. McNair*, 537 F.3d 981, 987 (9th Cir. 2008) (en banc). The current DEIS errs in all three ways.

Specifically, as discussed further below, the NMFS DEIS (NMFS 2011) fails to comply with NEPA because the agency failed to adequately "scope" the activities analyzed and failed to analyze a reasonable range of alternatives. NMFS's explicit limitations imposed on future exploration and development on existing leases in the DEIS undermine the contractual agreement between lessees and the Federal government in violation of the Supreme Court's instruction in *Mobil Oil Exploration & Producing Southeast v. United States*, 530 U.S. 604 (2000). As drafted, the DEIS raises concerns regarding improper government interference with markets, as early applicants to exploration and development activity would be covered by the environmental analysis, but NMFS would stall, and potentially prohibit, any activity levels higher than those anticipated in the DEIS. Finally, the DEIS represents an untenable attempt by NMFS to overreach its jurisdictional bounds, trampling on the decision making authority that has been granted by Congress primarily to the Department of Interior, and to other agencies as well.

I.A. NEPA Violations

The DEIS is a fundamentally flawed NEPA document. The NEPA violations in the DEIS begin in the initial scoping phase and extend through the purpose and need statement, the alternatives analysis, and the environmental impacts analyzed. Cumulatively, these issues create the appearance of bias, through which NMFS pre-judged the impacts of Arctic oil and gas activities and excluded from its NEPA analysis levels of activity that it deemed unacceptable.

Scoping Problems

Failure to Analyze Connected and Similar Actions

The "scope" of an EIS is defined as the "range of actions, alternatives, and impacts to be considered" in the document (40 C.F.R. § 1508.20). When determining the proper scope for an EIS, an agency must consider three kinds of actions: connected actions, cumulative actions, and

similar actions. This analysis is intended to help the agency properly define the scope of the action to be analyzed.

According to NMFS, the scope of the proposed action includes ~~(1)~~ to continue permitting or authorizing exploration activities that will provide the oil and gas industry and BOEM with the best available data on the location, extent, and properties of hydrocarbon resources, as well as information on shallow geological hazards and seafloor geotechnical properties; and (2) to support MMPA authorizations for the take of marine mammals incidental to conducting deep penetration seismic surveys, shallow hazards surveys, and exploratory drilling activities under the Proposed Action (NMFS 2011, pg 1-9).” As a result, a key objective of the EIS was to ~~e~~valuate a broad range of reasonably foreseeable levels of exploration activities (e.g. deep penetration seismic surveys, shallow hazards surveys, and exploratory drilling activities) (NMFS 2011, pg 1-9) [.]” Another articulated objective was to ~~p~~roject the amount and extent of OCS and state water G&G, ancillary, and exploratory drilling activities that are likely to occur in the U.S. Beaufort and Chukchi seas based on the best available information (NMFS 2011, pg 1-10).”

Despite these stated objectives, the NMFS ~~p~~rojection” of future activities (as reflected in the alternatives analyzed) is unrealistically low, without factual basis and inconsistent with established facts. NMFS’s projection is not large enough to encompass the amount and extent of activity that is reasonably foreseeable. Instead, the projected level of activity and the arbitrarily narrow range of alternatives analyzed by NMFS demonstrates a failure to properly analyze connected and similar actions. If NMFS had properly analyzed connected actions and actions similar to the proposed action, as it should, it would have been compelled to analyze a level of activity reflecting full exploration and development of existing and potential future leases.

Connected actions include those that ~~e~~cannot or will not proceed unless other actions are taken previously or simultaneously” and those that ~~a~~re interdependent parts of a larger action and depend on the larger action for their justification (40 C.F.R. § 1508.25(a)(1)).” . The various stages of oil and gas exploration and development are connected actions that should have been analyzed in the DEIS. For example, a seismic survey, a site clearance survey, and exploratory drilling should be considered connected actions because all are part of an overall exploration program and the more targeted site-specific actions depend on the preliminary survey work. The DEIS analyzes all of these activities independently but fails to account for the temporal progression of exploration toward development on a given prospect. By analyzing only a ~~s~~napshot” of activity in any given year, the DEIS fails to account for the potential bottleneck caused by its forced cap on the activity allowed under its NEPA analysis. Put simply, as more companies complete their preliminary survey work, they will seek authorization to drill. These subsequent drilling operations will be ~~e~~connected actions” to the prior survey work, but, given the arbitrarily low level of exploratory drilling analyzed in the DEIS, some of these connected actions are not covered by the DEIS and would require additional NEPA review.

Similar actions are those that “when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography (40 C.F.R. § 1508.25(a)(2)).” . The DEIS establishes an arbitrary cap on the maximum level of activity analyzed. Levels of activity higher than this cap have *no difference* from the proposed action other than intensity of the activity. Thus, there is no reason why they should not be considered in the current NEPA document as similar actions to the proposed action.

NMFS should have properly analyzed all the actions that are connected and similar to the proposed action using the best available information. If it had, NMFS would have considered a level of activity that reflected reasonably foreseeable lessee demand for authorization to conduct oil and gas exploration and development activities. Unfortunately, NMFS failed to do so, resulting in a legally defective DEIS.

Failure to Consult

The Scoping Report (NMFS 2010) in the DEIS indicates that NMFS went through the motions of a scoping period (NMFS 2011, Appendix C). But the DEIS provides no evidence that NMFS sought out cooperating agencies in the government to provide their expertise in helping NMFS define the proposed action.

BOEM, a cooperating agency for the DEIS, could have provided NMFS with information on the number of federal leases outstanding, the level of exploration activity reasonably necessary to define the resources on a prospect, and the total level of anticipated activity were a successful exploration project to be developed. While it is reasonable to assume that many outstanding leases will not ultimately result in development (or even exploration), NMFS should have “~~truth-~~tested” with its cooperating agency whether the maximum level of activity it assumed was, in fact, a reasonable assumption of the upper limit on anticipated activity. BOEM would have been able to provide NMFS with guidance on a “~~success case~~” on one of these leases. Use of a properly constructed “~~success case~~” scenario would have provided NMFS with a more realistic understanding of the level of activity necessary to allow current leaseholders an opportunity to develop their leases within the lease terms.

Similarly, NMFS should have consulted with the United States Geological Service (USGS), which recently issued a report on anticipated Arctic oil and gas resources (Bird et al. 2008) The USGS estimates that oil and gas reserves in the Arctic may be significant. This report was not referenced in the DEIS. Consultation with USGS would have helped NMFS make a more informed prediction regarding the likelihood and extent of successful exploration and development in the project area and thus may have affected the maximum level of activity it analyzed.

Finally, NMFS does not appear to have consulted with the State of Alaska regarding the expected level of exploration and development activity on *state* leases. Although state leases are

not subject to federal regulation under OCSLA, operators on state lands must nevertheless comply with the MMPA, and the maximum level of activity analyzed in the DEIS must therefore encompass activity on state lands as well as the federal OCS.

If NMFS had properly consulted with BOEM, USGS, and the State of Alaska, it would have been able to develop the information presented in Section IV below, which clearly demonstrates that the level of activity analyzed in the DEIS is insufficient to allow current leaseholders the opportunity to comply with their exploration obligations under their leases.

Problems in the Alternatives Analysis

The most fundamental problem with the DEIS, and one which leads to numerous other problems, is the alternatives analysis. The alternatives analysis is the “heart” of NEPA, and courts have rigorously imposed the obligation that an agency consider a reasonable range of alternatives (40 C.F.R. § 1502.14); *See also* 42 U.S.C. § 4332(2)(E) (NEPA requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources”); *Center for Biological Diversity v. Dep’t of the Interior*, 623 F.3d 633, 642 (9th Cir. 2010). “The existence of reasonable but unexamined alternatives renders an EIS inadequate.” *Friends of Southeast’s Future v. Morrison*, 153 F.3d 1059, 1065 (9th Cir. 1998). The DEIS fails to meet this pivotal NEPA requirement.

In the DEIS, NMFS analyzed five alternatives in detail:

1. A no action alternative (**Alternative 1**).
2. Level 1 lower activity scenario with **up to four** 2D/3D seismic or CSEM surveys in the Beaufort Sea and **up to three** in the Chukchi Sea, **up to three** site clearance and shallow hazards surveys in each sea, **one** on-ice seismic survey in the Beaufort Sea, and **one** exploratory drilling program per Sea (each of which consists of one drilling apparatus) (**Alternative 2**).
3. Level 2 higher activity scenario with **up to six** 2D/3D seismic or CSEM surveys in the Beaufort Sea and **up to five** in the Chukchi Sea, **up to five** site clearance and shallow hazards surveys in each sea, **one** on-ice seismic survey in the Beaufort Sea, and **up to two** exploratory drilling programs per Sea (each of which consists of one drilling apparatus) (**Alternative 3**).
4. Level 2 higher activity scenario (Alternative 3) with additional time/area closures (**Alternative 4**).
5. Level 2 higher activity scenario (Alternative 3) with additional mitigation measures focused on alternative technologies that would augment or replace traditional airgun-based seismic exploration activities (**Alternative 5**) (NMFS 2011, pp 2-29 through 2-48).

For the reasons presented below, the alternatives analyzed do not meet the “need” articulated by NMFS in the DEIS and do not represent a reasonable range of alternatives.

Alternatives Analyzed are Too Narrow to Achieve the Purpose and Need

The scoping problems discussed above resulted in an analysis too narrow to achieve the purpose and need identified in the DEIS. The “need” articulated by NMFS is providing “the required NEPA documentation for the issuance of ITAs for Arctic oil and gas exploration activities.” (NMFS 2011, pg 1-9). The DEIS also acknowledges that NMFS must consider all applications for ITA that it receives (NMFS 2011, pg 2-45). Because NMFS fails to analyze an alternative that would encompass all of the potential applications the agencies may receive, i.e., sufficient activity to enable, at a minimum, all current leaseholders to pursue exploration and development activities within the terms of their leases, the DEIS is insufficient to achieve the need.

The DEIS acknowledges that it provides NEPA coverage only for the level of activity identified in each alternative. As discussed above, there are currently 665 leases in the project area and future lease sales could add to that number (NMFS 2011, Section 1.1.3). The maximum level of activity analyzed in the DEIS under the Level 2 high activity scenario is simply insufficient to facilitate the level of exploration activities necessary to evaluate the resource potential on existing leases, let alone development of any of those leases. For example, when Shell proceeds with its planned Chukchi Sea Exploration Plan and Camden Bay Exploration Plan, it will use one “exploratory program” in each sea, leaving just one “exploratory program” per sea available for all other lessees. It is reasonably foreseeable that more than one other lessee may seek authorization to undertake exploratory drilling during the pendency of Shell’s operations, but the DEIS does not analyze such a scenario. Indeed, both ConocoPhillips and Statoil have indicated their intent to conduct drilling operations in the Chukchi Sea within the period covered by the DEIS. It is not reasonable to assume that these two companies would be able to complete exploration drilling activities in a phased manner that would not overlap with Shell. As such, the alternatives are not even adequate to accommodate the level of activity that is currently apparent to NMFS.

Thus, none of the alternatives presents an exploration and development scenario under which existing leases could be successfully explored or developed within the time limits of the leases, as per existing requirements under OCSLA. Further, the alternatives ignore the future lease sales in the Chukchi and Beaufort Seas that BOEM has already planned and approved. As such these alternatives are not viable, and in the alternatives analysis, NMFS failed to consider an important aspect of the issue it is tasked with analyzing. *Lands Council*, 537 F.3d at 987

A Higher Level of Activity than Analyzed in the Alternatives is Reasonably Foreseeable

The arbitrarily narrow range of alternatives analyzed in DEIS is facially invalid under NEPA. Based on existing leases alone, it is reasonably foreseeable based that higher levels of exploration and development will more likely than not be pursued by existing lessees, and

NMFS should have evaluated a range of alternatives that encompassed such reasonably foreseeable future activity.

The U.S. District Court for the District of Alaska remanded the Lease Sale 193 Final EIS because it failed to analyze a natural gas *development* scenario, even though natural gas development in the Chukchi Sea requires significant intermediate steps before it can take place. *Native Village of Point Hope v. Salazar*, No. 1:08-cv-0004-RRB, Order Remanding to Agency (Aug. 5, 2010), slip op. at 15, (D. Alaska). In that case, the court found that natural gas development was a reasonably foreseeable impact of the lease sale, and that the agency's failure to consider a natural gas development scenario violated NEPA's "hard look" standard because the agency failed to consider an important aspect of the activity being analyzed (i.e., the possibility of natural gas production as a result of the lease sale being analyzed). *Lands Council*, 537 F.3d at 987.

Similarly here, NMFS failed to consider an important aspect of its proposed ITA standards when it understated the existing rights of lessees and the anticipated future exploration and development activity on those leases. Arguably, there are fewer constraints here than there were in *Native Village of Point Hope*, as the probability of the natural gas production scenario discounted by the government there required a large number of intermediate steps that were quite tenuous (e.g., construction of significant infrastructure to get the gas to market). In contrast, here the level of activity analyzed is not sufficient to support exploration and development on the number of leases currently outstanding within their lease terms, or the level of activity already indicated by the number of company's public declarations of intent to conduct exploratory drilling. An agency may not narrow its selection of alternatives and thereby skew its analysis by dictating a certain result. *E.g., Natural Res. Defense Council v. U.S. Forest Serv.*, 421 F.3d 799 (9th Cir. 2005). It is plainly foreseeable based on the number of leases currently outstanding and the increasing levels of activity to date, that a higher level of activity more likely than not will be sought by industry. In the DEIS, NMFS ignores this reality by selecting essentially two alternatives with artificially constrained levels of activity.

The DEIS acknowledges that NMFS "must consider every application [for an ITA] and shall issue the ITA if the requisite findings are made (NMFS 2011, pg. 2-45)." Nevertheless, the DEIS creates a de facto cap on activity in the alternatives by limiting the level of NEPA analysis to arbitrarily low levels of activity, thus necessitating repetitive NEPA review for higher levels of activity which are reasonably foreseeable now. In the DEIS, NMFS states that it rejected an alternative that included a cap that would "limit the total number of oil and gas seismic and exploratory drilling activities that may occur in the EIS project area on a per season basis (NMFS 2011, pg. 2-44)." NMFS claims that its alternatives analysis covers "a range of exploration activities at different activity levels" that "do not function as caps[.]" (NMFS 2011, pp. 2-44 to 2-45). This explanation of the alternatives analysis runs counter to the evidence before the agency and is so implausible that it could not be the product of agency expertise. *Lands Council*, 537 F.3d at 987. It posits a distinction without a difference, as NMFS considered only two levels

of activity, and NMFS admits these –serve as the maximum annual level of activities for which NEPA coverage exists for issuance of ITAs and permits, by NMFS and BOEM respectively, in a given year” (NMFS 2011, pg. 2-45). A restricted level of annual activity is a cap, and there is simply no justification for NMFS arbitrarily setting a cap on the level of activity in this DEIS.

The DEIS Includes No Plausible Explanation Supporting its Arbitrarily Narrow Range of Alternatives

The DEIS does not fully explain how and why it developed the scenarios identified in the alternatives, thereby defeating the fundamental purpose of NEPA: –insur[ing] that environmental information is available to public officials and citizens before decisions are made and before actions are taken (40 C.F.R. § 1500.1(b)).” This failure of transparency limits the public’s ability to analyze and comment on the DEIS. For example, NMFS has stated during public meetings related to the DEIS that they based Alternative 2 on historic levels of activity in the Arctic and provided Alternative 3 as a 40% increase over the highest level of activity previously seen. This approach is based upon the fallacy that levels of exploration activity are not responsive to market forces or to possible synergistic effects of successful exploration. It also ignores the recent strong indicators of interest in aggressively exploring in the OCS, as indicated by the record-setting lease sale in 2008. Recent upsurges in the price of oil and global geopolitical complexities in the delivery of energy have generated a new urgency to the exploration of the OCS. Until recently exploration of the Arctic OCS was thought to be marginally economic, meaning that the cost of exploration and development in this frontier area either exceeded, or was close to, the price of crude oil. Under such economic conditions low levels of exploration would be expected. However, revised estimates of the potential in the region as well as increases in the market price for oil have increased interest in the area. Such market driven fluctuations of active exploration indicators, such as rig counts, are a common phenomenon in the industry and should have been taken into consideration in the projection of alternatives under the DEIS.

Had NMFS taken advantage of the knowledge available within the government in BOEM and USGS as well as in the State of Alaska, it would know that a –success” scenario would not necessarily be constrained by perceived rig availability, i.e., companies can and do obtain additional rigs in other parts of the world that are capable of operating in the Arctic climate with little or moderate upgrade. Such an investment is particularly likely if exploration confirms the USGS predictions regarding the remarkable size of oil and gas resources in the Arctic. By failing to properly scope the DEIS, NMFS appears to have relied on inaccurate assumptions regarding offshore oil and gas industry capacity when selecting the alternatives to be analyzed.

The Limited Scope of the DEIS Creates the Impression that NMFS Pre-Judged the Results

It appears that NMFS may have pre-judged the results of its NEPA analysis regarding what level of activity can be environmentally supported. NEPA requires agencies to discuss alternatives that are considered but eliminated from detailed study, and discuss why the alternatives were eliminated (40 C.F.R. § 1502.14(a)). Based on the DEIS, NMFS utterly failed its obligations

here too, as only two levels of activity were considered. A level of activity greater than Alternative 3 (Level 2 highest activity scenario) was not even “considered but rejected” from the DEIS. Thus, from the outset of preparation of the DEIS by NMFS, the highest level of activity to be analyzed was unreasonably capped without any explanation, and contrary to Congress’s mandate that appropriate alternatives be studied, developed and explored. 42 U.S.C. § 4332(2)(E).

The DEIS concludes that the impacts of Alternative 3 range from negligible to moderate. Given these findings, higher levels of exploration and development may be possible without causing significant impacts (NMFS 2011, pp. ES-15 to ES-20). However, because NMFS arbitrarily limits the level of activity analyzed in the DEIS, the DEIS defeats the informational purpose of an environmental impact analysis by depriving the decision-maker and the public of the full range of information related to exploration at levels higher than those considered in the alternatives. Accordingly, the DEIS fails to analyze an important aspect of the problem. *Lands Council*, 537 F.3d at 987.

I.B. The DEIS Proposes Mitigation Measures and Restrictions Beyond the Jurisdiction of NMFS

NMFS has gone well beyond its statutory mandate in this DEIS. NMFS oversteps its jurisdictional reach, creating conflicts with approvals, instructions and requirements from other agencies. In doing so, NMFS has relied on factors in the DEIS that Congress did not intend it to consider. *Lands Council*, 537 F.3d at 987.

For example, the DEIS includes mitigation measures for walrus and polar bear, which are FWS trust species – placed under the jurisdiction of the USFWS by the MMPA and the ESA. This presents the very real possibility that walrus and polar bear protection measures in an ITA issued by NMFS could contradict those in an LOA issued by FWS. Further, the DEIS includes requirements for an Oil Spill Response Plan. Pursuant to OPA-90, spill response planning is within the purview of BOEM, BSEE, and the Coast Guard—not NMFS. It is duplicative and out of place to have NMFS address this issue when it issues ITAs.

Similarly, the proposed mitigation measures extend well beyond the scope and jurisdiction of NMFS and constitute a broad expansion of regulatory oversight:

- The potential requirements for zero discharge despite a lack of evidence that any of the discharges could impact marine mammals encroach on EPA’s jurisdiction under the Clean Water Act regarding whether and how to authorize discharges.
- Proposed actions to restrict noise or cumulative impacts from oil and gas activities are prescriptively written to limit exploration activities during the short open water season, which encroaches on BOEM’s jurisdiction to review and approve Exploration Plans.

- Proposed acoustic restrictions effectively extend exclusion zones and curtail lease block access, which encroaches on the Department of the Interior’s jurisdiction to identify areas open for leasing.
- Arbitrary mandates inserted (e.g. towing of whales following successful hunt, flight restrictions to above 1500 feet);
- The “Special Habitat” areas were created arbitrarily on the basis of unfounded speculation and without the benefit of a public review process; these areas restrict lease block access, thus encroaching on the Department of the Interior’s jurisdiction to identify areas open for leasing and to approve Exploration Plans.
- Expanded requirement of PSO’s (MMO’s) to all oil and gas vessels;
- Inclusion of mitigations from CAA’s with broad impacts to operations.

These examples demonstrate the problems and conflicts caused by NMFS’s regulatory overreach. If carried forward, the concepts in this document could put lessees in the impossible situation of attempting to comply with conflicting regulatory requirements and ill-defined jurisdictional roles.

Further, on these issues, NMFS is not in the best position to make the final judgment. The division of authority among the various agencies administering Arctic activities is designed to focus on agency core competencies. The Department of the Interior is the land management agency charged with making the careful balancing decisions related to resource use. By limiting the level of activity analyzed in the DEIS, NMFS has used the resulting “eapping” effect to step into the land management role, disrupting the careful balance that Congress instructed the Department of the Interior to make under OCSLA between resource use and environmental protection. This kind of overreach in relying on factors Congress did not intend the agency to consider is prohibited by the APA. *Lands Council*, 537 F.3d at 987.

I.C. OCSLA Violations - De Facto Limits on Activity are Contrary to the Terms in OCSLA

The alternatives analyzed will significantly limit allowable seismic and drilling activities to levels below that which are needed in order to meet deadlines on existing leases. This poses a conflict with OCSLA’s “expeditious development” requirement. In OCSLA, Congress made the political decision to open the OCS to oil and gas exploration and development. The statute establishes the national policy that the OCS be made available for “expeditious and orderly development (43 U.S.C. § 1332(3)).” The expeditious development requirement is effectuated, in part, by time limits on leases. Federal lessees are allowed up to 10 years in which to conduct the necessary exploration activity and begin to produce oil or gas from the area in paying quantities (43 U.S.C. § 1337(b)(2)). Some state leases have an even tighter time limit, allowing only seven years. The lease term requirement has been emphasized by the Obama administration

as a key provision to prevent lessees from “sitting” on their leases. E.g., U.S. Department of Interior, Report to the President, Oil and Gas Lease Utilization-Onshore and Offshore (March 2011) at 10 (noting “[t]he primary term of the lease is the principal diligence tool for OCS leases” (USDOJ 2011) and that in March 2010 Secretary Salazar shortened the primary term for some leases based on water depth). However, to achieve the goal of actively exploring and, if possible, developing their leases, lessees must conduct preliminary exploratory activities, and eventually exploratory drilling.

The artificially low level of activity analyzed in the DEIS would limit the number of lessees able to conduct the requisite environmental due diligence and exploratory drilling. Essentially, the limited activity analyzed in this DEIS would become a bottleneck for Arctic development, forcing some lessees to “sit” on their leases and risk expiration without an opportunity to explore for mineral resources.

I.D. NMFS’s Action Oversteps Its Jurisdiction

Congress did not intend NMFS to be the agency in the driver’s seat, deciding where and when exploration and development should take place in the OCS. In OCSLA, Congress created an orderly process under which such decisions should be made, and authorized the Department of the Interior to make the decisions. OCSLA delegates responsibility and discretion to the Department of the Interior to identify regions to be made open for leasing in the Five Year Plans, to identify and conduct lease sales, and to review and approve the exploration drilling and development plans of individual proposed projects (43 U.S.C. §§ 1340, 1344). For each of these decisions, the Department conducts a NEPA analysis and consults with NMFS regarding the environmental impacts on the species under NMFS’s jurisdiction. At each of the steps that led to the current level of leasing, NMFS concurred. In the lease sales, to which NMFS concurred, companies acquired leases with the reasonable expectation that they would be able to conduct the activities necessary to evaluate the resource potential of the leases acquired and, if commercial discoveries were made, develop those resources. Now, NMFS has postulated a scenario that simply does not reflect reality. NMFS seeks to retroactively limit its approval to activity levels substantially lower than previously authorized by BOEM.

I.E. The Limit on Activity Raises Contract and Property Rights Issues Properly Within the Jurisdiction of the Department of Interior

The Supreme Court has held that when the federal government imposes new limits after the issuance of leases, such action violates the contract. *Mobil Oil Exploration & Producing Southeast v. United States*, 530 U.S. 604, 621 (2000) (13 month delay in the approval of an OCS exploration plan “changed the contract-referenced procedures,” “substantial[ly] deprive[d] the companies of the benefit of their bargain,” and “amounted to a repudiation of the contracts”). In *Mobil Oil*, the Supreme Court warned that the government could not impose new and different requirements not existing at the time of the leases. *Mobil Oil*, 530 U.S. at 616 (emphasis added); See also *Conoco Inc. v. United States*, 35 Fed. Cl. 309, 322-24 (Ct. Fed. Cl. 1996). The

Supreme Court was concerned that, despite the 30-day OCSLA requirement that Interior approve EPs “quickly,” Interior imposed a lengthy approval delay of Mobil Oil’s completed and fully compliant EP. 530 U.S. at 610, 614, 621. There, the EP approval delay was based on the suspension of leases imposed while Interior conducted a new environmental analysis required under NEPA (the need for which was created by a later enacted statute, the Outer Banks Protection Act). *Id.* at 616.¹

Given the blatant deficiencies in NMFS’s level of activity analysis and range of alternatives in the DEIS, lessees are likely to also find a significant delay imposed for a new NEPA analysis whenever a lessee’s activity is above that directly contemplated in the DEIS. The limits on exploration and development that NMFS proposes are precisely the sort rejected by the Supreme Court in *Mobile Oil*.

Three additional arguments could be raised by current lessees if NMFS’s issuance of ITAs is restricted by the insufficient levels of activity analyzed in the DEIS and by arbitrary additional mitigation measures. First, lessees could argue that the federal government fraudulently induced current lessees to bid on Arctic OCS leases. The leases were sold on the understanding that the lessees would be allowed a reasonable number of seasons of an appropriate length and sufficient geographic breadth in which to operate. Had the mitigations and activity-level restrictions proposed in the DEIS been disclosed prior to the lease sales, some lessees may not have chosen to bid or may have decreased their bonus bid amount to adjust for the perceived risks. Second, the regulatory restrictions proposed in the DEIS may be so onerous that they effectively deprive the lessees of all economical use of their leases. *See Lucas v. South Carolina*, 505 U.S. 1003 (1992) (holding that the Fifth Amendment is violated when regulation denies an owner all economically viable use of property). A court could find that NMFS’s actions result in a Fifth Amendment taking. Third, NMFS’s action here usurps Interior’s lease authority. OCSLA contains a provision under which the federal government may cancel a lease (43 U.S.C. § 1334(c), (d)). That authority is allocated solely to the Department of the Interior, not NMFS. *Id.* To the extent that NMFS’s ITA restrictions ultimately render some leases unavailable for exploration, an argument can be made that NMFS effectively “cancelled” the lease by forcing Interior to stall its approval of an Application for Permit to Drill. In such an instance, the federal government would be required to return significant sums back to the lessees.

I.F. The Limited Activity Raises Anti-Competitiveness Concerns

The arbitrary ceiling on exploration and development activities chosen by NMFS raises anti-competitiveness concerns. NMFS will be put in the position of picking and choosing which lessees will get the opportunity to explore their leases. While the DEIS does not describe the precise process, presumably those lessees who apply to NMFS for an ITA first will have priority

¹ *See also Amber Resources Co. v. United States*, 538 F.3d 1358, 1371-74 (Fed. Cir. 2008); *Conoco Inc. v. United States*, 35 Fed. Cl. 309, 322-34 (Ct. Fed. Cl. 1996) (holding subsequent imposition of more burdensome lease procedures and standards breached lease contracts).

in the queue and will receive their approvals. The next applicant may not be able to receive an ITA under the regulation if their level of activity cumulatively exceeds the Level 2 high activity scenario contemplated in the DEIS. The application queue could be “gamed” by applicants or by NMFS if project activities are defined or segmented to fall under the maximum activity limits. Further, the agency may not review and approve lessees based on the order their application was submitted, and some companies might be allowed to “cut” ahead of others in the queue depending on how they define their projects. The financial consequences of this type of limit cannot be understated. It costs a company millions and millions of dollars to plan and permit its exploration activities. Moreover, companies like Shell have a multitude of leases and determining where to focus investment in a given year is a complicated decision based on the conditions and expected returns of a worldwide portfolio of leases and available resources to explore and develop the leaseholds. The leases should be able to rely on a predictable permitting review process, but the arbitrary cap created by the low level of activity analyzed in the DEIS interjects an unwarranted degree of uncertainty into the process.

II. The Document is Flawed from a NEPA Perspective with an Inadequate Range of Alternatives, Insufficient Socioeconomic Analysis, and Numerous Inconsistencies

The DEIS is inconsistent in the characterization of impacts. Beneficial socioeconomic impacts are characterized as “minor” while environmental impacts are characterized by “major.” This level of impact characterization implies an inherent judgment of relative value, not supported by environmental economic analysis.

The 2011 DEIS is also inconsistent with past NEPA reviews on Arctic exploration activities. A review/comparison of the previous DPEIS (NMFS 2007), current 2011 DEIS (NMFS 2011), and Notice of Intent (NOI) (75 FR 6175) found several apparent inconsistencies. The major topics with apparent inconsistencies involve:

- Insufficient participation by agencies with regulatory authority
- Current DEIS is inconsistent with 2010 Federal NOI (FR, February 2010)
- Inconsistent use of Planning Area boundaries
- Inconsistent use of exploration program numbers

A discussion of the apparent inconsistencies with these major topics is as follows.

II.A. Insufficient Participation by Agency with Regulatory Authority

On November 17, 2006, pursuant to the NEPA, NMFS and the former Minerals Management Service (MMS) announced their intent as co-lead agencies to prepare a Draft Programmatic Environmental Impact Statement (NMFS 2007). The purpose of developing the DPEIS was to describe and analyze the potential significant environmental impacts related to reasonably foreseeable proposed geophysical exploration using seismic surveys in the waters of the Chukchi and Beaufort seas. According to NMFS and MMS, the proposed scope of activities and analysis

of effects of the seismic survey activities were based on the best available information at the time. NMFS and MMS subsequently stated that new information (e.g., scientific study results, changes in projections of seismic activity) had become available that would potentially alter the scope, set of alternatives, and analyses in the DPEIS. Also, NMFS and MMS stated that there had been a renewed interest in exploratory drilling in both the Chukchi and Beaufort Seas. As such, NMFS and MMS withdrew the 2007 DPEIS and initiated a new EIS to include this new information, and perform an evaluation of exploratory drilling in both seas.

Although NMFS has stated that the new 2011 DEIS is based on new information becoming available, the 2011 DEIS does not appear to define what new information became available requiring a change in the scope, set of alternatives, and analysis, as stated in the 2009 NOI to withdraw the DPEIS. Although Section 1.7 of the 2011 DEIS lists several NEPA documents (most resulting in a finding of no significant impact) prepared subsequent to the withdrawal of the DPEIS, NMFS has not clearly defined what new information would drive such a significant change to the proposed action and require the radical alternatives analysis presented in the 2011 DEIS.

The 2011 DEIS (NMFS 2011) no longer includes BOEM as a co-lead agency. BOEM has abdicated its responsibility to be a co-lead agency for activities that are clearly regulated under its jurisdiction and appears to be a non-participating cooperating agency. This is counterproductive because the new proposed action was expanded to include exploratory drilling G&G permit authorizations. BOEM should have more than a cooperating agency role in preparation of the 2011 DEIS given that NMFS does not have authority to issue G&G permits, nor does NMFS have the expertise to evaluate such permits.

II.B. The DEIS is Inconsistent

Current DEIS is Inconsistent with 2010 Federal Notice of Intent

The February 8, 2010 NOI (75 FR 6175) indicates that NMFS's 2011 DEIS will analyze activity levels ranging from unrestricted, to no seismic or exploratory drilling. The NMFS 2011 DEIS does not include an analysis of an unrestricted number of activities, nor state this was initially evaluated and removed from further analysis. It appears that NMFS significantly deviated from their NOI and performed an incomplete analysis. The public is not afforded an opportunity to objectively compare a reasonable range of alternatives with varying activity levels that may occur.

In addition, the 2010 NOI states the following as primary drivers for withdrawing the 2007 DPEIS and initiating a new NEPA process:

- NMFS and MMS have received preliminary information from industry suggesting an additional increase in seismic survey applications beyond recent levels; and
- NMFS has received applications for exploratory drilling and expects more in the future, the effects of which were not analyzed in the withdrawn DPEIS.

Based on these statements, it is clear NMFS and BOEM (formerly MMS) anticipated an increase in the number of programs in the future. However, NMFS neglected to evaluate an alternative with an increased number of activities. The 2007 DPEIS evaluated the issuance of authorizations for six seismic surveys in each sea. Alternatives in the DEIS consisted of four to six surveys in the Beaufort Sea and three to five surveys in the Chukchi Sea.

Planning Area Boundaries are Inconsistent

The 2007 DPEIS planning area extends, generally, 200 nautical miles off Alaska's north coast from the Canadian border in the Beaufort Sea, and extends west to the U.S Maritime Boundary in the Chukchi Sea, where it follows the U.S. Maritime boundary landward to Alaska's northwest coast, southward to Point Hope where it terminates. The Planning Area defined in the 2011 DEIS includes the same area as the 2007 DPEIS, except the planning area includes Chukchi Sea waters south of Point Hope, to Kotzebue, just north of the Bering Straits. No oil and gas exploration activities will likely occur in the waters south of Point Hope, since no lease areas exist there. The planning area boundary south of Point Hope should be removed from the study area. This area serves as the primary transportation route from the Bering Straits to the Chukchi Sea and Beaufort Sea lease holdings. By including this portion of the Chukchi Sea in the planning area, NMFS appears to be attempting to restrict access to travel corridors during key periods. Vessel transit to a lease holding or exploration area is not included in current NMFS or BOEM regulatory jurisdiction; therefore, the requirement included in the 2011 DEIS provide unwarranted restrictions.

Exploration Program Numbers are used Inconsistently

The 2007 DPEIS used six concurrent programs in each sea as a baseline for NEPA analysis. This number of programs was determined by the number of leaseholders and after consultation with industry. Even though a finite number of programs were used as a baseline, the 2007 DPEIS focused its analysis on sound exclusion zones for activities, and not a limit on the number of activities. The 2007 DPEIS did evaluate one alternative (Alternative 9) that included limiting the numbers of programs, but MMS and NMFS (2007) dismissed Alternative 9 from further analysis because (NMFS 2007):

- Limiting the number of seismic surveys would not meet the purpose and need under the Proposed Action,
- Geophysical seismic surveys provide information used by industry and government to make informed decisions, evaluate the potential for offshore oil and gas resources, and determine the presence of geologic hazards. Limiting the amount of seismic survey information collected and available at the time leasing decisions are being made does not support informed decision-making,
- Limiting the number of permitted or authorized surveys would not necessarily reduce impacts,

- The MMS implementing regulations at 251.5(b) state: “If MMS disapproves your application, the Regional Director will state the reasons for the denial and will advise you of the changes needed to obtain approval.” If an application for seismic survey were to be denied because it exceeds a limit on the number of permits, there would be no changes that could be made by the applicant to obtain approval, and
- If a limit is placed on the number of ancillary activities authorized for a planning area in a given year, MMS could preclude the lessee from complying with MMS rules and regulations to proceed in a timely manner.

NMFS’s analysis changed in the 2011 DEIS by evaluating impacts resulting from a finite number of programs even though the NOI (75 FR 6175) proposed to evaluate an unrestricted number of programs. Also, NMFS states a driver for completing a new analysis is the anticipated increase in the number of applications for the planning area, above what was anticipated during the 2007 DPEIS. Based on the number of leaseholders, NMFS foresight (75 FR 6175), and industry direction, NMFS did not evaluate a reasonable number of programs in the 2011 DEIS, let alone an unrestricted number of programs. Therefore, it appears that NMFS should not have carried forward any alternatives in the 2011 DEIS limiting the number of programs.

The February 2010 NOI was clear in indicating NMFS analysis would rely on evaluating range of impacts resulting from an unrestricted number of programs to no programs. NMFS did not analyze an unrestricted range of program alternatives, as stated in the NOI. Furthermore, based on anticipated levels current and reasonably foreseeable exploration, as discussed elsewhere in this document, NMFS did not evaluate an adequate range of program alternatives. However, NMFS abbreviated alternatives analysis seems to present a fatal flaw in the NEPA process and limits and objective determination of a preferred alternative based on program numbers.

The alternatives are inconsistent because unproven and unavailable Alternative Technologies are considered. Section 2.3.5 in the NMFS discusses the potential alternative seismic survey technologies evaluated in Alternative 5 (NMFS 2011, Section 2.3.5). The technologies evaluated include:

- Marine Vibrators (Hydraulic & Electric)
- Low frequency acoustic source (LACS)
- Deep-Towed Acoustic Source/Geophysics (DTAGS), and
- Low Frequency Passive Seismic Methods for Exploration

According to Table 2.3 of the DEIS, each of these systems is either undeveloped, not commercially available, or the technology unproven in all environments. Deficiencies listed by the DEIS are:

- The hydraulic vibrator would require significant renovation, and would still not replace airguns for all applications.

- Electric vibrators are unreliable and would take 2-4 years to fully develop.
- LACS are currently under development but would need substantial field testing to prove the technology sufficient for all applications. Complete development of LACS would take at least 1.5 years.
- Only one DTAG is currently in existence, with no projected timeframe to produce a low frequency system, and its current design would not support the oil and gas industry needs for deep penetration.
- The low frequency passive seismic method is the only system that is currently offered commercially, but is unproven in all environments(NMFS 2011).

In the future, some of the alternative technologies could be developed and provide a reliable substitute for impulsive airgun arrays. Full development and commercial availability, however, is not anticipated to occur for at least 3-4 years. The NEPA analysis in this DEIS is for 2012 to 2017. As indicated in the agency's own assessment, a functional alternative method would not be available to industry until 2016 at the earliest, followed by several years of retrofitting to a specific program and field validation to ensure reliable collection of appropriate quality data.

Planning conventional seismic programs takes a significant amount of time and entails large costs. Industry should not be forced to evaluate an unproven technology in their exploration plans under the assumption it will be developed and fully tested prior to receiving authorization from NMFS. In addition, NMFS regulations require industry to collect detailed, accurate, and reliable data as part of their authorizations. The collection of seismic data with unproven alternative technology would not comply with this directive.

NMFS indicates in Table 2.6 Alternative 5 would have equal to, or less effect than Alternative 3 (NMFS 2011). Because NMFS has analyzed the use of alternative technologies over conventional methods and demonstrated that alternative technologies would not be reasonably available during the timeframe of this NEPA analysis, Alternative 5 should be removed from consideration in the Final EIS.

Activity Definitions are Inconsistent

It is unclear how ice gouge, strudel scour, and other bathymetry surveys are considered and will be handled. Shallow hazards surveys may be done without these other types and strudel scour and/or ice gouge surveys will likely be done during several years when shallow hazards surveys are not. NOAA must clearly identify how these other surveys would be counted against the maximum activity level. NOAA also must be more comprehensive in describing potential and specific offshore activities that support exploration and development activities. The lack of clarity results in incorrect impact assessments and conclusions. This results, in turn, in mitigation measures and stipulations that are not applicable to realistic activities.

Alternatives are Inconsistent – Organization of DEIS Creates Impression that a Very Large Oil Spill (VLOS) is Evaluated as an Alternative

The organization of and key charts in the DEIS create the improper impression that a hypothetical Very Large Oil Spill (VLOS) is evaluated as an alternative. NMFS states on page ES-28 that, while not considered part of any of the proposed alternatives, NMFS nevertheless analyzed the potential environmental effects of a low-probability, high impact VLOS. (NMFS 2011). Despite statements elsewhere in the document that a VLOS is not one of the five proposed alternatives, the DEIS includes the heading Very Large Oil Spill Scenario in Beaufort or Chukchi Sea in Table ES-2 and Table 2.6 Comparison of Impacts (NMFS 2011, pp. ES-7 and 2-51). These charts include one column for each alternative analyzed as well as a column for a VLOS. Thus, the extremely unlikely impacts of a VLOS are presented in the same capacity as the impacts expected to result from the actual proposed alternatives. The inclusion of a VLOS in these table creates confusion and is not warranted based on the discussions of alternatives in the preceding DEIS sections.

The DEIS's treatment of the VLOS is inconsistent with the information developed during scoping. As part of the preparation of the DEIS, NEPA requires an early and open process for determining the scope of issues to be addressed. Public scoping meetings were held by NMFS in eight cities and communities in Alaska during February and March of 2010 to discuss the DEIS. Michael Payne with NMFS stated on page 6 of the scoping transcript (NMFS 2010) from the March 23, 2010 scoping meeting held in Anchorage, Alaska that the comments NMFS received at this meeting would all be considered as the agency developed the range of alternatives (NMFS 2010). Section 2.2 of the DEIS on page 2-1 titled Scoping Issues Considered in Developing the Alternatives, does not list the VLOS as one of the 10 bulleted issues in which NMFS was seeking public input as published in the NOI. Thus, there was no indication in scoping that a VLOS should be considered the equivalent of an alternative.

The VLOS scenario and requirements for response plans are thoroughly addressed in BOEM regulations and NEPA documents. BOEM regulations at 30 CFR 550.219 require an Oil Spill Response Plan to accompany any Exploration Plan along with worst case discharge scenarios and modeling reports. Existing regulations at 30 CFR Part 254—Oil Spill Response Requirements for Facilities Located Seaward of the Coastline - set forth the information that must be included in the response plan. Impact analyses for VLOS scenarios have been thoroughly addressed in recent BOEM NEPA documents. BOEMRE (currently BOEM) completed a Supplemental Environmental Impact Statement (SEIS) for Chukchi Lease Sale 193 (BOEM 2011a) and the 2012-2017 OCS Oil and Gas Leasing Program Draft Programmatic EIS (2011) (DEIS at Section 4.9.2)

NMFS's repetition of near-verbatim sections of prior NEPA VLOS analyses is not problematic in concept. However, in execution, NMFS has created significant confusion by organizing the document in such a way and creating charts summarizing potential impacts in such a way as to equate the impacts of a VLOS with the impacts of the proposed alternatives. This misleading presentation undermines the DEIS's purpose to properly inform the public and decisionmakers.

To prevent misperceptions regarding the likelihood of a VLOS, Tables ES-2 and 2.6 should be revised to exclude VLOS impacts. To further minimize the erroneous impression that VLOS impacts are to be expected as a result of the proposed actions – as opposed to the highly unlikely possibilities that they are – Shell suggests that NMFS move the VLOS analysis to an Appendix as BOEM has done in previous NEPA documents.

DEIS is Plagued with Inconsistent use of Incidental Take Radii and Available Scientific Information regarding Bowhead Whales

NOAA has inconsistently applied incidental take radii information within the DEIS and not used data NMFS has available from past seismic surveys authorized under their permitting jurisdiction nor new scientific information. This inconsistent use is particularly evident in Additional Mitigation Measure B3 which would prohibit operators from conducting seismic surveys within 145 km (90 mi) of one another in both the Beaufort and Chukchi Seas. NMFS has often used the >160 dB pulsed sound level to establish incidental take radii in the past. Table 4.5-10 on page 4-44 shows this distance from the sound source to be 9-13 km (5.6 – 8 mi) for airgun arrays in the Beaufort and Chukchi Seas (NMFS 2011). On pages 4-43, 4-89 and 4-159 of the DEIS, however, NMFS has used the distance from continuous sound sources (120 dB) to establish the 145 km (90 mi) operational requirement even for seismic surveys employing pulsed sound.

NMFS cites information from Richardson et al. (1995) that suggested that migrating bowhead whales may react at sound levels as low as 120 dB (rms) re 1 μ Pa but fails to cite newer work by Christie et al. 2010 and Koski et al. 2009, cited elsewhere in the document, showing that migrating whales entered and moved through areas ensonified to 120-150 dB (rms) deflecting only at levels of ~150-160dB. Distances at which whales deflected away from the activities were similar in both studies although the sound levels at those distances were quite different suggesting that factors other than just sound are important in determining avoidance of an area by migrating bowhead whales. This is a general problem with the DEIS in that it consistently fails to use new information as part of the impact analysis instead relying on previous analyses from other NMFS or MMS EIS documents conducted without the benefit of the new data. This implies a pre-disposition toward acceptance of supposition formed from overly conservative views without the benefit of robust review and toward rejection of any data not consistent with these views.

In the Section on the Chukchi Sea activities the DEIS states that the bowhead whale migration spreads out as it enters the Chukchi Sea resulting in a smaller percentage of whales moving across the Chukchi Sea through the lease area where blocks have been leased. They cite Quakenbush et al. (2010) to say it was about 2% of the total probability of use by bowhead whales. Later, in the fifth paragraph of page 107 the EIS states that anticipated impacts in terms of magnitude, duration, extent, and context would be similar to those described for the Beaufort Sea where nearly all of the whales pass through the leased areas (NMFS 2011). This conclusion is not even supported by the DEIS's own analysis

Assessments of Impacts Associated with Drilling Discharges are Inconsistent

In one paragraph, NMFS indicates that the impacts of discharges of drill cuttings and muds would be negligible but in the next paragraph they indicate that elimination of the discharge streams would reduce adverse impacts. These statements demonstrate an insufficient knowledge of the issues or an unintegrated assessment.

The general scientific consensus is that water based muds (WBM) and cutting discharges have no or minimal and very short-lived effects on zooplankton communities in the immediate vicinity of the discharge. Effects on benthic macrofaunal and megafaunal communities are minor and nearly always restricted to sediments within about 300 feet of the discharge where drilling wastes accumulate.

Ecological effects of WBM and cuttings discharges, when detected, are caused by physical disturbance of the water column and benthic environment. Elevated suspended particle concentrations associated with the discharges may clog the gills or digestive tract of zooplankton or benthic filter-feeding invertebrates. Accumulation of drilling wastes on the seafloor buries some of the immobile benthic fauna. Benthic communities in the vicinity of WBM cuttings piles recover quickly, however, due to a rapid return of sediment texture to pre-discharge conditions, and rapid degradation of the organic matter in the WBM cuttings piles allowing sediment oxygen concentrations to return to normal. The rate of benthic recovery depends on the thickness of mud and cuttings accumulations on the seafloor, and may be slightly slower in cold water than temperate environments, because of longer life cycles and slower recruitment of some benthic fauna.

There is no evidence of ecologically significant bioaccumulation of metals or petroleum hydrocarbons by marine animals residing or deployed in cages near WBM and cuttings discharges in cold-water environments. There is no evidence in the field or chemical toxicity of any WBM ingredients. The lack of bioaccumulation or toxicity of drilling waste components assures that effects of WBM cuttings piles are highly localized within a few hundred feet of the discharge and are not being exported to the local food web.

The physical disturbances to the water column and sediments from WBM and cuttings are similar in character and magnitude to the disturbances caused by natural processes, such as storms, massive inputs of suspended sediments from Arctic rivers during spring breakup, and ice scour. Arctic planktonic and benthic communities are well adapted to seasonal disturbance and recover rapidly from the relatively brief and intermittent disturbances associated with exploratory drilling operations.

The DEIS states that NPDES permitting effectively regulates/handles discharges from operations and so “Zero Discharge” was removed from further analysis in Chapter 2.5.4. Despite the conclusions in the assessment and the general scientific consensus summarized in this comment, Zero Discharge is included as Additional Mitigation Measures C3 and C4. This is inconsistent with the rest of the document and unsupported by the scientific literature and the DEIS’ own conclusions.

II.C. The Socioeconomic Impact Analysis in the DEIS is Inadequate

The DEIS inappropriately limited its consideration of the potential socioeconomic impacts of the alternatives. The DEIS fails to consider the full potential economic benefits of exploration and development due to the unsupported and incorrect assumption that such benefits are unknown and cannot be predicted. In fact, the prospectivity (probability of exploration finding oil and gas resource) is relatively well known from existing data and wells drilled in the late 1980s and early 1990s. Furthermore, the likelihood of exploration leading to development and production is greater and more predictable than other events that are included in the DEIS (e.g., oil spill of significance). In fact, a report by the USGS (2008) indicates that prospectivity in the Alaskan Arctic OCS is quite high.

The potential unrealized employment, payroll, government revenue, and other benefits from economic activity associated with development and production are not included in the DEIS assessment of socioeconomic impacts for any alternative because they are “unknown since the likelihood of exploration resulting in production cannot be predicted.” In fact, the prospectivity in the Chukchi and Beaufort Seas (i.e., the likelihood of exploration finding resource) is quite good, and is well known given results from prior exploration in the late 1980s and early 1990s.

The primary purpose of exploration drilling is to make new discoveries that result in oil and gas development and production. As such, the potential economic benefits from development and production are, in fact, anticipated effects resulting from exploration activities. Furthermore, the probability of such outcome must be sufficient to have created expected value that supported multi-billion dollar industry investments.

The magnitude of socioeconomic benefits that have been summarily dismissed from consideration in the DEIS assessment of cumulative impacts, due to the failure to include estimation of prospectivity, is large. Two studies by Northern Economics and the Institute for Social and Economic Research at the University of Alaska provide estimation of this magnitude (NE & ISER 2009; NE & ISER 2011).² As a result, socioeconomic benefits are essentially not considered in assessment of cumulative impacts for any alternative other than the no-action alternative. This material deficiency in the DEIS must be corrected.

² The first study evaluated potential economic benefits of Alaska OCS development within Alaska (NE & ISER, 2009). It estimated nearly 1,000 new jobs would be created in the first two years of exploration in the Chukchi Sea along with nearly \$2 million of new revenue for the North Slope Borough in the third year (mostly from property tax). These estimates of economic benefits increase in subsequent years of exploration, reaching over 5,000 new jobs annually by the fourth year of exploration activity, approximately 10,000 new jobs annually by the time the development phase begins, over \$14 million of new revenue for the North Slope Borough from exploration activities alone, and over \$1.3 billion in wages for direct employment in Alaska for exploration activities alone. The second study used the same basic scenario of activity to evaluate potential national-level benefits (NE & ISER, 2011). It estimated an annual average of 54,700 new jobs would be created and sustained for 50 years by OCS-related development. Total payroll would be \$145 billion, with an estimated \$63 billion paid to employees in Alaska. An estimated \$193 billion in new government revenue would be generated as well, assuming \$65 per barrel average oil price.

The treatment of potential socioeconomic impacts from development as “unknown since the likelihood of exploration resulting in production cannot be predicted” is inconsistent with the consideration given to other potential future events in the DEIS. For example, potential impacts from an oil spill, including the hypothetical Very Large Oil Spill (VLOS) scenario are evaluated in the DEIS (NMFS 2011, Section 4.9). Since the likelihood of exploration leading to development is both greater than the likelihood of an oil spill of significance and more well known than the likelihood of a hypothetical scenario,³ a disparity in treatment that must be corrected is evident.

The relative evaluation of physical, biological, and socioeconomic impacts in the DEIS is not grounded in a common basis of valuation. A common set of four criteria (intensity, duration, extent, context) described in Section 3.0 (page ES-15) are used to determine impact levels (negligible, minor, moderate, major) for the physical, biological, and social environment (NMFS 2011, pg. ES-15). This consistency implies relativity. For example, it implies a “minor” socioeconomic impact and “minor” biological impact are equivalent in impact. But such comparison would require comparable valuation through environmental economic analysis (or other means). For example, the common metric for valuation of employment and marine mammal population could be monetary.

Absent such analysis, which is not apparent in the DEIS, characterization of impacts as negligible, minor, moderate, and major must be interpreted as qualitative judgments since no relative comparison is possible. Furthermore, a basis for comparison across alternatives, such as cost-benefit analysis or other assessment of relative value between human economic activity (e.g., employment, revenue) and physical / biological impacts, does not exist in the DEIS. Thus, the DEIS contains insufficient analysis to provide a basis for assessing the relative merits of alternatives.

The limited alternatives considered would significantly increase the length of time required to explore and appraise hydrocarbon resources. Unnecessarily extending the period of exploration may impact the economic viability of these resources and should be considered. The effective deferral of socioeconomic benefits that would be derived from exploration and development of oil and gas resources has the direct effect of reducing current value of OCSLA resources both to the leasees and to the public. This reduction should have been meaningfully assessed.

The assertion that the alternatives considered in the DEIS cover the “reasonable range and level of activities for which permits and authorizations may be requested in the foreseeable future (i.e., five years 2012-2017) (NMFS 2011)” is not substantiated by analysis of the commercial viability of the maximum level of exploration activity considered (i.e., two programs in each Sea). As such, the reasonableness of the range and level of activities for which permits may be requested in the future is an arbitrary judgment that appears based on incomplete analysis of historical activity and inadequate scoping.

The forecasts for future activity in the DEIS scope of alternatives, if based on historical activity, appear to ignore the impact of economic forces, especially resource value as impacted by current

³ The likelihood of a hypothetical scenario is, by definition, unknown.

and future market prices.⁴ In fact, historical exploration activity in the Chukchi and Beaufort OCS in the 1980s and early 1990s declined and ceased due to low oil price rather than absence of resource. With current oil price much higher, and expectations for sustained high oil price common, a “success case” alternative is a more appropriate anticipation than recurrence of a pattern of activity that took place under historically low oil prices.

The DEIS analysis should also include consideration of the additional time required to first oil under each alternative and mitigation measure, vis-à-vis unfettered activity, since the delay between exploration investment and production revenue has a direct impact on economic viability and, by extension, the cumulative socioeconomic impacts of an alternative. For example, an analysis of the number of exploration wells that could be completed per season under each alternative would give an approximation of the commensurate differences in time required to first oil.

The baseline of minor socioeconomic impact for the No Action alternative is inconsistent with the economic realities in the State of Alaska that are identified in the DEIS. The No Action alternative should start from a baseline of at least moderate adverse socioeconomic impact from declining local employment and tax revenue. NMFS recognizes that, “Exploration, development, production, and transportation of oil and gas are the major contributors to the economy of Alaska and the NSB (NMFS 2011, pg. ES-23).” As such, impacts from declining NSB and State of Alaska revenue from declining oil production under the No Action alternative will certainly be more than “minor.” Although recent high oil prices have masked the production decline, the State of Alaska is forecasting nearly 9 percent decline in oil revenue from 2012 to 2013 (DOR 2011). By not starting from this baseline of adverse socioeconomic impact from the No Action alternative, the NMFS is in effect ignoring the major cumulative impact to regional and statewide socioeconomics as onshore production decline continues.

Analysis of direct and indirect effects for alternatives appear to assume workforce development efforts fail to change historical patterns of local hire, and apparently ignore the 4.8 multiplier for indirect employment acknowledged in Alternative 1. For example, in Alternative 2 (pg. 4-170), if local hire is more successful (i.e., closer to 200 new positions than 100) and the multiplier of 4.8 is acknowledged, the total new employment could reach 960, or nearly 8 percent of the total workforce of the NSB, NAB, and Nome (12,461). This would put the impact in the “medium” to “high” range.

II.D. Evaluation of Greenhouse Gas Emissions is inconsistent

On page ES-28, the DEIS states that, “any of the four action alternatives would have... moderate impacts on climate...” Since no oil will be produced by exploration activities during the time frame apparently considered by this DEIS, it is difficult to understand how any of the action

⁴ The impact of resource value on exploration activity can be seen in the historical change in activity level in the Gulf of Mexico during the 1980s and 1990s. The historical exploration activity in the Beaufort and Chukchi OCS coincides with a period of relative inactivity in the Gulf of Mexico due to historically low oil prices. The much higher level of activity in the Gulf of Mexico today illustrates the folly in anticipating historical activity levels in the Beaufort and Chukchi OCS would persist under the market conditions of today.

alternatives would have any impact on climate. Furthermore, even if the analysis were to be extended through full production, which would be inconsistent with the treatment of socio-economic impacts, the incremental GHG emissions from combustion of the oil produced would be minor (i.e., much less than 1 percent of total GHG emissions). This is another example of inconsistency in the treatment and evaluation of impacts in this DEIS.

III. Best Available Science was not used Resulting in Faulty Mitigation Measures, Misrepresentation of Acoustic Takes, and Erroneous Impact Assessment Conclusions

III.A. Best Available Science not used Resulting in a Misrepresentation of Acoustic Takes and Erroneous Impact Assessment Conclusions

Much of the analysis presented in the DEIS is flawed. While the DEIS makes laudable attempts to be comprehensive in the presentation of information that is available, including many reports and publications made available in the past few years, often the results from these studies are not included in the impact analyses that are presented. For example, on Page 43 Section 4.5.1.4.2 the DEIS cites information from Richardson et al. (1995) that suggested that migrating bowhead whales may react to sound levels as low as 120 dB (rms) re 1 uPa, but fails to cite newer work by Christie et al. (2010) and Koski et al. (2009), cited elsewhere in the document, showing that migrating whales entered and moved through areas ensonified to 120-150 dB (rms). In these studies bowhead whales deflected only at levels of ~150 dB (rms). Distances at which whales deflected were similar in both studies but the sound levels at those distances were quite different suggesting that factors other than just sound may be important in determining avoidance of an area by migrating bowhead whales. This is important in understanding how and why whales react to industrial activities and should have been used in the analysis. Given that this information was not explicitly considered and no reason is offered for why it was not considered, this analysis does not meet the standard of using the best available data in its analyses. Conclusions drawn from such analyses are inherently flawed and, worse, are perpetuated frequently throughout the document.

The perpetuation of this flawed line of reasoning is seen on page 99 (Section 4.5.2.4.9.1) where the second paragraph on this page states that preliminary analyses by Christie et al. (2009) and Koski et al. (2009) showed a stronger tendency for migrating whales to avoid operating airguns than feeding whales. This statement is true and, at least, references these important reports, but the authors fail to mention that these traveling whales all entered and moved through the 120 dB (rms) sound level. They then cite a 2008 MMS document to say most whales would be expected to avoid the sound source at 116 to 135 dB (rms) without ever analyzing and using the new data. Clearly sound level is not the only factor influencing whale deflections around seismic sound sources. This is a flawed analysis.

Other analyses presented fail to consider the differences between the Chukchi and Beaufort seas in the conclusions that are drawn despite having made a point of the differences in the material presented in the analysis. For example on page 107 (Section 4.5.2.4.9.1), in analyzing the

impacts of Chukchi Sea activities on the bowhead whale migration, the DEIS correctly states that the bowhead whale migration spreads out as it enters the Chukchi Sea. This spreading out results in a smaller percentage of whales moving across the Chukchi Sea through the lease area where blocks have been leased than occurs in the areas leased in Beaufort Sea where most of the migration moves through a much narrower area. The DEIS cites Quakenbush et al. (2010) data to suggest that there is about 2% of the total probability of use of the leased area by bowhead whales in the Chukchi Sea. Later, in the fifth paragraph of page 107 the DEIS states that anticipated impacts in terms of magnitude, duration, extent, and context would be similar to those described for the Beaufort Sea where nearly all of the whales pass through the leased areas. This conclusion is simply not supported by the DEIS's own analysis, which only a few paragraphs before pointed out that only about 2% of the bowhead population was likely to be affected during the fall migration through the Chukchi Sea. Given this, how can the magnitude, duration, and extent of anticipated impacts be similar?

In other sections of the DEIS flawed analysis occurs because the information presented simply is not correct. During discussion of additional mitigation measure B3, which restricts seismic operations from operating within 90 miles of another seismic operation, NMFS suggests that there is an additive effect of the seismic programs in terms of sound (NMFS 2011, pg. 4-66). This statement is not quantified in any way implying that in areas where overlap occurs that sound levels may greatly increase. This is incorrect as written. Given that seismic operations use impulsive sound rather than continuous sound there are few locations where sound pulses from both operations would be received simultaneously. At most locations the pulses would be received sequentially and would not exceed the sound level of the closer of the two operations. In the very small areas where pulses were received simultaneously with the same rms pressure level the sounds would add incoherently (with random phase) and at most would increase sound pressure levels by 3 dB. When the received levels of the overlapping pulses differ by 10 dB or more their combined level will be less than 1 dB greater than the strongest pulse. The flawed conclusion that the sound levels are additive is then used to justify this additional mitigation measure. This is a general problem with the EIS in that it consistently fails to use new information as part of the impact analysis instead relying on previous analyses from other NMFS or MMS EIS documents conducted without the benefit of the new data.

III.B. The Additional Mitigation Measures are Unwarranted, Unsupported, Unclear, Sometimes Impracticable, and Would Severely Restrict Lease Operations

NMFS has not demonstrated the need for the Additional Mitigation Measures in the DEIS. Potential impacts of oil and gas exploration activities under the Standard Mitigation Measures, BOEM lease stipulations (MMS 2008c), and existing industry practices, are already negligible. Furthermore, the effectiveness of the Additional Mitigation Measures in reducing any impacts was not established in the DEIS so there is no justification for their implementation. The negative impacts these measures would have on industry and on the expeditious development of resources in the OCS as mandated by OCSLA are significant, and were not described, quantified, or seriously considered in the DEIS. For these reasons, the Additional Mitigation Measures

should be dropped; if not dropped, then alternatives that include only the Standard Mitigation Measures must be developed, evaluated, and compared to the other alternatives. Any Additional Mitigation Measure carried forward must be clarified and made practicable, and further analysis must be conducted and presented in the FEIS to explain why they are needed, how they were developed (including a scientific basis), what conditions would trigger their implementation and how they would affect industry and the ability of BOEM to meet its OCSLA mandate of making resources available for expeditious development. These points are discussed below in detail.

The Need for the Additional Mitigation Measures is not Demonstrated

Per NEPA guidance and regulation, appropriate and reasonable mitigation measures should be considered. 40 C.F.R. § 1502.14(f). Mitigation measures that are not warranted because impacts are already minor or negligible, and which could only be implemented at great cost to the regulated community, are not reasonable or appropriate. NMFS has failed to demonstrate the need for most if not all of the Additional Mitigation Measures identified in the DEIS. This is particularly true of the requirements set forth in Additional Mitigation Measures A4, B1 (time/area closures), C3, D1, D5, D6, and D8. These mitigation measures should be removed from further consideration in the EIS.

Oil and gas exploration has been conducted in the Chukchi Sea and Beaufort Sea without these onerous mitigation measures for the past 40 years. In the Arctic OCS alone, thirty-five exploration wells have been drilled and numerous seismic and shallow hazards surveys have been conducted. No serious impacts on marine mammals have been reported.

Past NEPA documents have concluded that oil and gas exploration in the Chukchi Sea and Beaufort Sea OCS in conjunction with existing mitigation measures (which do not include any of the aforementioned Additional Mitigation Measures) are sufficient to minimize potential impacts to insignificant levels. In the Lease Sale 193 FEIS, MMS (2007) determined that significant cumulative impacts are not expected from any of the routine activities associated with the sale. Furthermore, MMS determined the existing mitigation measures provide the necessary protection to prevent and/or minimize adverse environmental impacts on threatened and endangered species. MMS also concluded that effects on bowhead whales, beluga whales, and other marine mammals including polar bears, were expected to range from negligible to local and short term (generally <1 year) with no regional population effects (MMS 2007). No resource or harvest area would become unavailable or undesirable for use, and no resource would experience overall population reductions (MMS 2007). In the DEIS for Beaufort and Chukchi Sea Planning Areas Oil and Gas Lease Sales 209, 212, 217, and 221, MMS (2008a) determined that existing mitigation measures should ensure that no adverse effects to subsistence-harvest patterns, resources, or practices will occur. Further, NMFS has repeatedly found in its many biological opinions and ITAs that existing mitigation measures are effective for protecting individuals and populations of these stocks. No new findings were presented in the DEIS, nor do such findings exist, that would indicate that these conclusions were either inappropriate or incorrect.

The Additional Mitigation Measures are Onerous & Not Cost Effective

The implementation of mitigation measures can be costly, and as discussed above, may result in operators not meeting their lease obligations. Any benefit that might be derived from the Additional Mitigation Measures in the DEIS would not be commensurate with the costs of implementing these restrictive measures. NMFS has failed to demonstrate the benefits specifically associated with these measures, and has certainly failed to fully evaluate and document the costs associated with their implementation. In fact, NMFS concluded in the DEIS that implementation of the additional time/area closures in the Additional Mitigation Measures would not affect the level of impact on the following marine mammals:

- Bowhead whales
- Beluga whales
- Other cetaceans
- Pinnipeds.

Therefore, time/area closures included in the Additional Mitigation Measures have no significant purpose and should be removed from consideration in the FEIS.

The need for prohibiting transit of exploration support vessels into the Chukchi Sea prior to July 15 or until the beluga hunt is completed at Point Lay (Additional Measure D1) is unsubstantiated. BOEM (2011b) has previously concluded that oil and gas activities in the Chukchi Sea would not overlap in space with Point Lay beluga hunting activities, and therefore would have no effect on Point Lay beluga subsistence resources. Given that the entire Lease Sale 193 area does not overlap geographically with Point Lay subsistence activities, it is reasonable to draw the same conclusion for activities of other lease holders in the Chukchi Sea as well.

This measure also prohibits all geophysical activity within 60 mi of the Chukchi coastline. No reason is offered. The mitigation measure would prohibit lease holders from conducting shallow hazards surveys and other geophysical surveys on leases as required by BOEM regulation. The measure would also render it impossible to conduct various types of geophysical and geotechnical surveys in the areas between leases where discoveries may occur and the shoreline. Such surveys are needed for design and engineering.

NMFS also failed to demonstrate a need for closures of Camden Bay and Barrow Canyon / Western Beaufort Sea Special Habitat Areas to further mitigate potential impacts to migrating, feeding, and resting bowhead whales. Available data do not indicate that noise and disturbance from oil and gas exploration and development activities since the mid-1970s had a lasting population-level adverse effect on bowhead whales. Data indicate that bowhead whales are robust, increasing in abundance, and have been approaching (or have reached) the lower limit of their historic population size at the same time that oil and gas exploration activities have been occurring in the Beaufort and Chukchi seas (MMS 2008b). For these reasons Shell believes additional mitigation measures beyond standard measures are not necessary.

According to a recent CEQ memorandum on the appropriate use of mitigation and monitoring, when agencies cannot determine if mitigation was implemented or **effective**, the use of mitigation may fail to advance NEPA's purpose of ensuring informed and transparent environmental decision-making (CEQ 2011). NMFS failed to demonstrate the effectiveness of implementing Additional Mitigation Measures beyond those which are already required on reducing environmental impacts. NMFS concluded that the time/area closures in the Additional Mitigation Measures would not reduce the level of impact on bowhead or beluga whales. If the closures intended to reduce disturbances of migrating, feeding, and resting whales are not reducing the level of impact on the populations of these species they should not be considered effective mitigation measures and should be removed from consideration in the FEIS.

There is Little or No Scientific Basis is Presented for the Additional Mitigation Measures

Additional mitigation measure B1 contains time or seasonal closures of areas within and adjacent to five Special Habitat Areas: Camden Bay; Barrow Canyon & Western Beaufort Sea; Shelf Break of the Beaufort Sea; Hanna Shoal; and Kasegaluk Lagoon. The DEIS presents little or no scientific basis for establishing these areas or their boundaries; nor does the DEIS present a scientifically supported reasoning for the closure periods.

Additional Mitigation Measure B1 - Camden Bay Special Habitat Area Closure

In Section 2.4.7.2 and Appendix A where the Additional Mitigation Measures are described, Camden Bay is simply described as: an area of high biological productivity, that includes kelp communities; a feeding and resting area for bowhead whales (including subadults and females with calves); and a fall subsistence bowhead whale hunting area. The DEIS further states that it is a primary migration and feeding area for bowhead whales in September 1 – October 15, citing Huntington and Quakenbush 2009, Koski and Miller 2009, and Quakenbush et al. 2010. These statements do not indicate how they came up with the boundaries or the timing, and the cited references do not seem to support the statement in the DEIS, as discussed below.

Quakenbush et al. 2010 specifically stated that they did not identify the Alaskan Beaufort Sea as an important feeding area. Bowhead whales feed in various parts of the Alaskan Beaufort Sea coast depending upon the locations of prey concentrations, created by oceanographic conditions that vary annually. Only a few sites appear to be feeding areas in most years the most notable of which is the area just east of Barrow and near Kaktovik. Conditions in the Camden Bay area concentrate prey in some years but not in others. The authors also stated that the migratory corridor from Amundsen Gulf back to Barrow was less defined (than migration during the spring or other locales) with some whales traveling inshore and some traveling farther offshore with the main migratory route depending mostly on environmental conditions, particularly ice cover. As most of the population migrates from Canadian Beaufort Sea waters to the Chukchi Sea in the fall, thereby transiting the entire Beaufort, it would seem that no particular area along the Beaufort Sea coast is more important for migration – particularly if the migration is less defined at that location.

The Koski and Miller (2009) paper reported the results of the use of different water depths by different size/age classes of bowheads across the Central Beaufort Sea during fall migration. The Camden Bay area represents only about 25% of the study area. Camden Bay was not specifically mentioned as being especially important for feeding or migration. One of the few conclusionary statements about feeding was that the Central Beaufort may be more important as a feeding area for subadult bowheads than for adults.

Much more detailed studies, such as those reported by Richardson and Thomson (2002), have been conducted to determine the importance of the eastern Beaufort Sea to bowhead whales as feeding areas, and were not even referenced in the DEIS. These studies indicate that although bowhead feeding occurs in the area of Camden Bay and elsewhere in the Alaskan eastern Beaufort Sea (Camden Bay to Canada) it is not a particularly important area from a quantitative viewpoint, with bowheads obtaining only an estimated 2.5% of their annual energetic requirements in the entire Alaskan eastern Beaufort Sea (Lee et al. 2005). The bowheads have a much longer residence time, spend a much greater portion of their time feeding, and obtain much more of their annual energy requirements in the Canadian Beaufort and in the Chukchi Sea.

Subsistence (bowhead whale hunting) is also identified as a reason for the time area closure in the Camden Bay Special Habitat Area. The DEIS states that bowhead hunts occur from late August to early October and citing Huntington and Quakenbush (2009). It makes little sense to have this in an additional mitigation measure, when a standard mitigation already prohibits all activities from the Canadian border to the Canning River from August 25 until the close of the Kaktovik and Nuiqsut fall bowhead hunts. Furthermore, in the last ten years (2000-2009) no bowhead whales have been harvested later than September 18 (Nuiqsut) or September 25 (Kaktovik), so closing the area until early October or October 15 for these purposes is not justified.

This Additional Mitigation Measure (B-1) regarding the Camden Bay Special Habitat Area should be deleted for the reasons outlined above. If not removed in total, the start and end dates of the closure period must be clarified; hard dates should be provided for the start and end of the closure or the closure should be tied to actual hunts.

Additional Mitigation Measure B1 - Hanna Shoal Special Habitat Area Closure

In Section 2.4.7.2 and Appendix A where the Additional Mitigation Measures are described, Hanna Shoal is simply described as an area of high biological productivity (benthic organisms), and a feeding area for various marine mammals (walrus, gray whales, and bearded seals). The DEIS further states that it is important for walrus: July – August citing USGS 2011 and for gray whales in late August – early October. Per the mitigation measure, except for emergencies or human/navigation safety, oil and gas exploration operations shall not occur within the Hanna Shoal area or the designated buffer zones from September 1 through October 15.

These statements do not indicate how they came up with the boundaries or the timing, and the cited references do not seem to support the statement in the DEIS, as discussed below. No explanation is provided on how the boundaries were established, or what they are – it is only depicted on Figure 3.2-26. One would assume that because it is a shoal, the boundaries would be

established based on bathymetric contours (sometimes the 40-m contour) but that notion is contraindicated in the figure.

NMFS states on page 4-295 in the environmental consequences section of the DEIS, that Hanna Shoal is currently an important feeding area for Pacific walrus citing USGS (2011), and was historically important as a feeding area for gray whales, citing Moore et al. (2000), Nelson et al. (1994). The USGS reference is simply animated tracks of radio-tagged walruses, and does not discuss the relative importance of Hanna Shoal to walrus. It represents a very small portion of the walrus population. Nelson et al. (1994) reviewed side-scan sonar records and box cores / vibracores to assess feeding habitat and use of feeding habitat by gray whales and walrus.

Although they mentioned that Hanna Shoal is used by walrus and gray whales, they obtained no side-scan sonar from the area and only a single box core from Hanna Shoal. Nelson et al. (1994) concluded that the entire Chukchi Sea (180,222 km²) is potential feeding habitat for walrus, with about 51 percent of it being disturbed (walrus furrows) at any time (24% from a single year). No statements about the importance of Hanna Shoal to walruses is found in the Nelson et al. (1994) reference; they do state that walrus feeding furrows are ubiquitous across the Chukchi Sea. While Hanna Shoal is definitely used by walrus as evident from the tagging data (USGS 2011) so is much of the Chukchi Sea. Walrus distribution in the Chukchi Sea appears to be more related to ice cover than bathymetry or geographic location. The DEIS repeatedly finds impacts to walrus as negligible or minor, obviating the need for any such time area closures. Nelson et al (1994) note that while prior research has shown gray whale sightings on the Hanna Shoal, gray whale sightings are most common along the coast from Point Franklin to Point Barrow. This area is far outside the Hanna Shoal Special Habitat Area. Additionally, the October 15 end date for the closure is too late in the season to be responsive to concerns regarding walrus and gray whales. As indicated in the description in the DEIS of the measure by NMFS and USGS walrus tracking data, the area is used little after August. Similarly, few gray whales are found in the area after September.

NMFS also states that closures of Hanna Shoal are also to mitigate potential impacts or avoid conflicts with subsistence hunters during the fall bowhead whale hunt (September 15 to close of the hunt), but then goes on to say that bowheads are generally taken well inshore of Hanna Shoal, seemingly making the closure moot (NMFS 2011, pg. 4-295). Furthermore no mention of a closure until the end of the hunt is mentioned in the description of the mitigation measure. Suydam et al. (2008) reported that almost all bowheads harvested by Barrow over the past 35 years were harvested in the Beaufort Sea more than 100 miles to the east of the habitat area, indicating that there is very little opportunity for conflicts with Barrow whalers. Whaling crews from Wainwright have conducted fall bowhead hunts only recently, with the first fall bowhead harvested by that village in more than 70 years – in 2010. Areas hunted by Wainwright in the fall are in coastal waters many miles from Hanna Shoal. Closure of the Hanna Shoal Special Habitat Area is not warranted as a mitigation measure to reduce conflicts with subsistence, as subsistence activities do not occur in that area. Because bowheads are generally migrating

westward or southwestward across the Chukchi in the fall, activities conducted in the Hanna Shoal area could not deflect bowheads from hunting areas used by Barrow or Wainwright.

This Additional Mitigation Measure (B-1) regarding the Hanna Shoal Special Habitat Area should be deleted for the reasons outlined above. If not removed in total, the measures must be clarified or adjusted. The time area closure is indicated for the mitigation of potential impacts on gray whales (late August – early October), walrus (July-August), and spotted seals (no dates or seasons are provided). These dates are followed by a statement that says the closure would be for September 1 – October 15. These dates are not aligned with the resource dates. Walrus are there primarily in July-August but the closure is September-October 15. Most gray whales have left the area by October 1, and the area has not been heavily utilized by gray whales at any time of year in recent years. The October 15 end date for the closure is later in the year than any of the resource dates and should be changed.

Additional Mitigation Measure B1 - Barrow Canyon and the Western Beaufort Sea

In Section 2.4.7.2 and Appendix A of the DEIS where the Additional Mitigation Measures are described, NMFS simply states that the Barrow Canyon and the Western Beaufort Sea Special Habitat Area closure from August 1 to the close of the fall bowhead whale hunt in Barrow would minimize surface vessel and aircraft disturbance of feeding and resting whales - bowhead whales in late August – early October, and beluga whales: mid-July – late August. No description of the area was provided, nor was an explanation as to how its boundaries were established or what makes the area especially important or sensitive.

The purpose of the time area closure is purportedly to minimize effects on bowhead whales and belugas. However, the closure does not cover much of the period when belugas would be in the area (July). Its importance to bowheads is apparently debatable; in NMFS's discussion of the bowhead whale in Section 3.2.4.2 of the DEIS the Barrow Canyon is never even mentioned.

On Page 4-71 of the DEIS, NMFS states that activities that disturb the bottom habitat in special habitat areas such as Barrow Canyon Critical Habitat Unit can be particularly damaging since these areas support biologically unique communities, as well as provide important feeding and resting grounds for demersal species and macrofauna. We can find no indication elsewhere in the document that Barrow Canyon contains unique communities. What are these communities, where are they located, and how would oil and gas activities affect such resources if they do exist. The statement refers to bottom habitat in the Barrow Canyon, which is 650-820 ft (200-250 m) deep.

On Page 4-71 of the DEIS, NMFS states that this closure area does not contain any lease areas, while Figure 3.2-25 clearly shows a great number of active leases in State waters within the special habitat area.

This Additional Mitigation Measure should be deleted for the reasons outlined above. If not removed in total, the measure must be clarified. A time area closure is indicated for the Barrow Canyon from September 1 to the close of Barrow's fall bowhead hunt, but dates are also provided for bowhead whales (late August – early October) and beluga whales (mid-July to late August), which are both vague and outside the limits of the closure. It is also not clear if

Barrow Canyon and the Western Beaufort Sea Special Habitat Areas one and the same. Only Barrow Canyon (not the Western Beaufort) is referenced in most places, including the only map (Figure 3.2-25) of the area.

Additional Mitigation Measure B1 - Shelf Break of the Beaufort Sea

In Section 2.4.7.2 and Appendix A of the DEIS where the Additional Mitigation Measures are described, NMFS simply states that the Shelf Break of the Beaufort Sea Special Habitat Area closure from mid-July to late September would minimize surface vessel and aircraft disturbance of feeding whales – beluga whales. There is no description of the area, no map depicting the geographic boundaries, and no explanation as to how its boundaries were established or what makes the area especially important or sensitive.

On page 3-61 of the DEIS, when discussing fish distribution, NMS states that marine waters of the Beaufort and Chukchi seas include nearshore waters and substrates (occurring landward of the continental shelf break, as delimited by the 200-m isobaths and oceanic waters and substrates occurring seaward of the continental shelf break (>200-m isobath). The reader is referred to DEIS Figure 3.1-12, which provides some bathymetry contours but does not reference the shelf break.

The time area closure is indicated for the mitigation of potential impacts on beluga whales from mid-July to late September, but there is no clear statement regarding the closure and what specific types of activities are prohibited, as there is for other closures. Start and end dates must be clarified; hard dates should be provided. Maps and descriptions of the boundaries must be provided.

Additional Mitigation Measure C3- Measures to Ensure, Reduced, Limited, or Zero Discharges

This measure purports to contain requirements to ensure reduced, limited, or zero discharge of any or all of the discharge streams identified with potential impacts to marine mammals or habitat – and lists drill cuttings, drilling fluids, sanitary waste, bilge water, ballast water, and domestic waste. We know of absolutely no scientific reports that indicate any of these discharges have any effect on marine mammals and anything beyond a negligible effect on habitat. In fact the only attempt NMFS made to connect these discharges with impacts to marine mammals was within Section 4.5.3 of the DEIS (Social Environment) where they state that, *–the effects of permitted discharges (including bilge and ballast water, non-contact cooling water, desalination wastes, domestic and sanitary wastes, excess cement slurry, and deck drainage) to marine waters could affect marine mammals and fish. These species may respond by avoiding the areas in the vicinities of the discharge. Drill cuttings and mud discharges may displace marine mammals and fish from a short distance from each drilling location. Fish eggs and larvae could be destroyed, but it is unlikely that population-level effects would occur or that the discharges would limit the availability of these resources to subsistence hunters. These measurable effects on benthic communities have the potential to impact fish resource, particularly benthic feeders. However, scientific evidence suggests that drilling discharges and cuttings have minor effects on adult fish health (Hurley and Ellis 2004).*” Not only is the

mitigation measure vague in what the requirements would be, but the premise of the measure is unsubstantiated. In NMFS’s brief discussion of the potential effectiveness of the measure, they only state that it could potentially reduce impacts, providing no data or references. We draw attention here to the speculative form of the assertion using such qualifiers as “may”, “could” and “potential.” The use of speculation in the absence of citeable indications of harm is poor rationale for the suggestion of invasive regulation. Furthermore, if the waste streams are not discharges they must be hauled off to a site for disposal. There is no analysis of the effects of hauling and disposing these waste streams, which may be greater than the impacts of the discharges themselves.

Potential Negative Impacts of Additional Mitigation Measures to Industry are Significant

The Additional Mitigation measures place new operational restrictions on lease operations that could result in takings of leases purchased in good faith. The most significant impacts to industry from the Additional Mitigation Measures are the constrictions of the operational window available in the Chukchi Sea and the Beaufort Sea that would result from the time / area closures in B1. These arbitrary closures would effectively take anywhere from 13-97% of the open water season that is required for exploration drilling and most marine geophysical surveys, depending on the specific area (Table 1).

Table 1. Portions of the open water operational season lost with implementation of time area closures in the Additional Mitigation Measures

Measure	Area	Closure Period	Season Lost		Season Remaining	
			Days	%	Days	%
B1	Camden Bay SHA	Sep 1- Oct 15	45	40%	68	60%
B1	Barrow Canyon SHA	Aug 1 – close of hunt (Oct 29*)	90	80%	23	20%
B1	Beaufort Shelf Break SHA	Mid Jul – late Sep	75	66%	38	34%
B1	Hanna Shoal SHA	Sep 1 – Oct 15	45	38%	74	62%
D1	Chukchi / Beaufort	Start of season - Jul 15	15	13%	104	58%
D3	Beaufort Sea	Nuiqsut-Kaktovik hunts (Aug 23-Oct11*)	48	42%	65	58%
D4	Peard Bay – Smith Bay	Sep 15 – end Barrow hunt (Oct 29*)	44	37%	75	63%
D5	Pt Franklin–Kuk R.	Whale presence, bowhead hunts	?	?	?	?
D6	<30 mi of Chukchi coast	Whale presence & hunts	?	?	?	?
D8	Beaufort w. of Cross Is.	Until end Barrow bowhead hunt (6/10-10/29*)	110	97%	3	3%

The Additional Mitigation Measure restrictions apply to large areas of Chukchi Sea and Beaufort Sea that are available for oil and gas exploration. Application of the buffers to the Special Habitat Area using the sound radii provided in the DEIS indicates that about 9 % (27 leases) would be affected in the Chukchi Sea OCS and about 51 % (61 leases) of the Beaufort Sea OCS would be off limits to most exploration activities for significant portions of the operating season.

Table 2. Area and leases encompassed by the Special Habitat Areas and the buffer zones established to avoid exceeding 120 dB from continuous sound sources (drilling) and 160 dB impulsive sounds (seismic surveys)

Special Habitat Area with Ensonification Buffer	Chukchi Sea ¹			Beaufort Sea ²		
	Leases	Area (km ²)	% Sale Area	Leases	Area (km ²)	% Sale Area
SHAs + drilling buffer ^{3,5}	24	10,309,934	9	60	13,863,903	35
SHA s+ seismic buffer ^{3,6}	27	10,626,267	9	60	14,260,838	36
Shelf Break + drilling buffer ^{4,5}	NA	NA	NA	0	9,146,196	23
Shelf Break + seismic buffer ^{4,6}	NA	NA	NA	1	9,867,729	25
All SHA + drilling buffer	24	10,309,934	9	60	19,806,578	50
All SHA + seismic buffer	27	10,626,267	9	61	20,497,281	51

¹ Area of Chukchi Sea OCS Lease Sale 193 119,040,033 km²

² Area of Beaufort Sea OCS Multi Sale 39,924,783 km²

³ Includes all Special Habitat Areas except the Shelf Break

⁴ Includes all Special Habitat Areas except the Shelf Break

⁵ Buffer zone for drilling is from DEIS and is 10.0 km in either sea

⁶ Buffer zone for seismic is 10.6 km in Chukchi Sea and 11.4 km in Beaufort Sea per DEIS

Additional mitigation measures are to be applied as needed in the future, rendering the DEIS unclear as to what will be required of industry, and making evaluation under the DEIS potentially inconsistent. The additional mitigation measures are described in Section 2.4.10 (page 2-40) as follows: ~~In~~ short, these measures may, or may not, be incorporated in future permits and authorizations, depending on the specific activity and the analysis conducted pursuant to the MMPA and the OCS Lands Act” (NMFS 2011, pg. 2-40). There are 22 mitigation measures treated in this manner, including: limiting activities in situations of low visibility; temporal/spatial limitations to minimize impacts in particular important habitats; NMFS restricting the number of surveys that can be conducted; specified shipping or transit routes; requirements to ensure reduced, limited, or zero discharge; shutdown of exploration activities for bowhead whale hunts. All 22 of the additional mitigation measures would have material impact on industry operations, yet the DEIS is not clear about which, if any, would be required of industry. The result is ambiguity regarding potentially large restrictions on activity with similarly large negative impacts on project viability and associated socioeconomic benefits. To suggest that any or all of these mitigation measures could be imposed, seemingly at will and without additional analyses, is to propose standards of regulation that would be entirely arbitrary.

The Additional Mitigation Measures Must be Deleted or Changed

We strongly recommend that the additional mitigation measures, particularly the time area closures, be removed from consideration in the Final Environmental Impact Statement (FEIS). As detailed above, these additional mitigation measures are not warranted or needed. They go far beyond the mitigation measures that are routinely and currently applied to oil and gas exploration activities through the IHA application, and there is no indication that current mitigation measures are not sufficient to reduce any and all potential effects from oil and gas exploration on marine mammals and on the availability of these mammals as subsistence resources. Furthermore, these additional measures are costly and onerous, potentially restricting the exploration activities of operators to a level that prevents operators from meeting their lease obligations under OCSLA.

If these additional mitigation measures are not dropped, they must be clarified, refined, and subjected to additional scrutiny and analysis as indicated below.

Additional Mitigation Measure A3 Lacks a Basic Description of the Measure and Must be Deleted or Clarified

Additional Mitigation Measure A3 is simply titled and described as the limiting of activities in situations of low visibility. No further information is provided. NMFS provides no further information in the DEIS with regard to what conditions or situations would meet or fail to meet visibility requirements. NMFS also does not indicate what exploration activities would be affected by such limitations. Operators cannot assess the potential effects of such mitigation on their operations and lease obligations, or its practicability, without these specifics. NMFS certainly cannot evaluate the need or efficacy of the mitigation measure without these details.

Additional Mitigation Measure B1 Contains Time / Area Closures that are Redundant and Should be Deleted and Changed

Additional Mitigation Measure B1 contains a time area closure for the Kasegaluk Lagoon/Ledyard Bay Special Habitat Area. All of the mitigation measures listed under the Kasegaluk Lagoon/Ledyard Bay Special Habitat Area are already in place under BOEM Lease Stipulation 7 (MMS 2008c) for Ledyard Bay. The altitude restrictions are already in Standard Mitigation Measure B1. These redundancies should be removed.

Additional Mitigation Measure B2 is Vague and Impractical & Must be Deleted or Clarified

Requires industry to organize in a way to interact with one another to identify when and if duplicative surveys are likely to occur (same type of survey within a 5 year period). Although this is already done by industry in some cases, as a regulatory requirement it is very vague and needs clarification.

Additional Mitigation Measure C1 is Redundant and Must be Deleted

This measure contains requirements that are already requirements. It states that aircraft should not operate at altitudes of < 1,500 ft when within 0.5 mi of seal or walrus groups – both Standard Mitigation Measures B1 and D3 already require aircraft to maintain these altitudes.

This NMFS mitigation measure also requires the operator to adhere to USFWS mitigation measures. Why is a measure needed to have operators follow another agency's mitigation measures – which already would have the force of law. The same is true for the part of this mitigation measure that indicates polar bear barrier island critical habitat includes a 1.0 mi no-disturbance buffer zone – this is already law. Additionally the measure states that there is a buffer zone around polar bear sea ice critical habitat – this is false.

Additional Mitigation Measure C2 Must be Deleted or Clarified

This measure contains two parts, the second of which would prohibit geophysical activity within 60 mi of any point of the Chukchi Sea coast. IS this mitigation measure really being considered?

We can find no further mention of it in the DEIS. With this mitigation measure in place, successful exploration cannot be conducted in the Chukchi Sea. Not only would lease holders be unable to conduct seismic and shallow hazard surveys on some leases, but essential geophysical surveys for pipelines to shore, such as ice gouge surveys, strudel scour surveys, and bathymetric surveys could not be conducted.

Additional Mitigation Measure D3 Must be Deleted or Clarified

This measure would shutdown all exploration activities in the Beaufort Sea for the Cross Island and Kaktovik bowhead whale hunts. The geographic limits of this requirement must be clearly stated – is it really the entire Beaufort Sea?

Additional Mitigation Measure D5 Must be Deleted or Clarified

This measure would shutdown all exploration activities in portions of the Chukchi Sea for the Barrow and Wainwright bowhead whale hunts. The geographic limits are described in terms of the coastal zone. Alaska has no Coastal Zone Management Program. These areas would be better described in relation to State and Federal waters that coastal zone.

Additional Mitigation Measure D6 Must be Deleted or Clarified

This measure would shutdown all exploration activities in the Chukchi Sea for the Point Hope and Point Lay bowhead whale hunts based on real-time reporting of whale presence and hunting activity. How whale presence would be determined and who would make the determination must be elucidated in this measure. This is vague and impracticable.

Additional Mitigation Measure D7 Must be Deleted or Clarified

This measure would include transit restrictions into the Chukchi Sea modified to allow offshore travel under certain conditions (e.g. 20 mi from coast) if beluga, fall bowhead, and other marine mammal hunts would not be affected. This is vague and impracticable. The transit restrictions are not identified, nor are the conditions under which the transit might be allowed. Some hunting of marine mammals in the Chukchi Sea occurs year round making this measure impracticable.

Additional Mitigation Measure D8 Must be Deleted or Clarified

This measure would prohibit vessels associated with Beaufort Sea drilling operations west of Cross Island, to be at any location outside the barrier islands west of Cross Island until the close of the Barrow bowhead hunt. This must be clarified. Does it mean that vessels must be either inside the barrier islands, east of Cross Island or out of the Beaufort Sea. The Barrow hunt starts in the spring and goes late in the fall. Over the last 20 years Barrow bowhead harvests have occurred as early as April 23 and as late as Oct 29. This would leave no time at all for open water exploration activities from Barrow to Cross Island.

III.C. The Acoustic Incidental Takes are Overstated

In general, the Environmental Consequences analysis presented in the DEIS greatly overstates the potential for impacts from sounds introduced into the water by oil and gas exploration activity on marine mammals. Given that there has never been a mortality or population level effect of oil and gas exploration reported in the Beaufort or Chukchi Sea during several decades of exploration and that the bowhead whale population has continued to grow throughout this period at 3-4% annually, the suggestion that exploration activities may result in regional changes to the bowhead whale migration, separation of mother and calf pairs, and displacement from preferred feeding and resting areas is overstated. Many of the analyses presented in the DEIS are flawed. These flawed analyses are then used to draw conclusions which often greatly overstate the potential impacts of the proposed activities. While the DEIS makes some laudable attempts to include reports and publications made available in the past few years, often the results from these studies are not included or are discounted in favor of speculation in the impact analyses that are presented. In particular, the assessment of incidental takes by sounds introduced into the water during oil and gas exploration activities exaggerates the potential for “takes” and the potential consequences of those “takes” by implying that “takes” occur at lower levels of sound than are recognized by the NMFS in their own regulations. Additionally, incorrect assumptions about the additive qualities of overlapping areas of sound result in further exaggeration of potential cumulative effects. Lastly, a failure to include the actual impacts that have occurred during past levels of oil and gas exploration activity as part of the assessment of cumulative effects results in statements that indicate we do not know what any of the longer term consequences of these activities might be. In fact, we have a substantial timeline to use to answer such questions and all of the evidence to date suggests that any effects from exploration are short term, localized reactions of some individuals with little or no consequences for the population as a whole. There has been no wider-scale disturbance and whales have continued to use all of the same habitat areas that they have used in the past with variation in habitat use more associated with annual fluctuations in temperature, sea-ice presence and locations of prey concentrations than with industry activity. Further there have been no discernible changes in the fall bowhead migration either in distance of the main migration pathway from shore or in the general timing of the migration.

Example 1– DEIS Fails to Apply the Most Recent Information on Avoidance by Feeding Whales

As described earlier in this document, the flawed analysis on Page 43 Section 4.5.1.4.2 of the DEIS cites information from Richardson et al. (1995), but fails to cite newer work (Christie et al. 2010, Koski et al. 2009) that increases our perspective on the role of sound and its influences on marine mammals, specifically bowhead whales. By not describing the full breadth of behavioral responses by bowhead whales to industrial activities the DEIS wrongly exaggerates the potential impacts from these activities. Other flawed analyses exaggerate impacts by drawing conclusions that are not supported by the DEIS’s own analysis. For example on page 107 (section

4.5.2.4.9.1) the conclusion that impacts in the Chukchi Sea where 2% of the whale population is potentially impacted, by the DEIS's own analysis, are equivalent in terms of magnitude, duration, extent, and context to those described for the Beaufort Sea where nearly all of the whales (85-90%) are potentially exposed to industrial activities. Again, such flawed analysis greatly exaggerates the potential impacts.

Example 2 – DEIS Fails to Include Information Concerning Whale Avoidance of Potentially Harmful Sound Energy Levels

The perpetuation of this flawed line of reasoning is seen on page 99 (Section 4.5.2.4.9.1). The first paragraph on page 99 cites Funk et al (2011) but misrepresents the information available in that document. The EIS states that apparent tolerance of seismic sounds by feeding whales seen by Funk et al. (2011) and others should not be interpreted to mean that bowheads are unaffected by noise. The DEIS suggests that feeding whales may be so highly motivated to stay in productive areas that they remain in an area with noise levels that could, with long term exposure, cause adverse affects and that they may suffer stress staying in an area with very loud noise. Funk et al. (2011) reported clear avoidance by feeding whales of sound levels great enough to cause either physical harm (180 dB rms) or those thought to cause behavioral changes in most animals (160 dB rms). These levels are recognized by NMFS as both appropriate and conservative for protecting baleen whales. The conservative nature of these sound levels for protection of baleen whales has also been upheld in recent reviews of this topic (Southhall et al. 2007). All available evidence suggests that whales avoid high levels of sound. There is no evidence that whales remain in sound levels that could cause harm to them regardless of how much food is present. These statements have no support in the literature and are inflammatory speculations that exaggerate the potential impacts of sound on marine mammals and specifically on bowhead whales.

Example 3 – DEIS Provides no Basis for Statements Regarding Potential Effects on Whale Reproduction and Fails to Present Evidence to the Contrary

The first full paragraph of page 100 indicates that it is not known whether impulsive sounds affect reproductive rate or distribution and habitat use over periods of days or years. All evidence indicates that bowhead whale reproductive rates have remained strong despite seismic programs being conducted in these waters for several decades (Gerber et al. 2007. Whales return to these habitat areas each year and continue to use the areas in similar ways. There has been no documented shift in distribution or use (Blackwell et al. 2010). The data that have been collected suggests that the impacts are short term and on the scale of hours rather than days or years (MMS 2007, MMS 2008a).

Example 4 – DEIS Overstates Potential Impacts by Presenting Incorrect Information

In other sections of the DEIS an overstatement of the potential impacts of sound levels on marine mammals occurs because the information presented simply is not correct. During discussion of additional mitigation measure B3 (page 4-66), which restricts seismic operations from occurring within 90 miles of another seismic operation, the DEIS suggests that there is an additive effect of

the seismic programs in terms of sound. This statement is not quantified in any way implying that in areas where overlap occurs that sound levels may greatly increase. This is incorrect as written and requires further analysis and quantification. Given that seismic operations use impulsive sound rather than continuous sound there are few locations where sound pulses from both operations would be received simultaneously. At most locations the pulses would be received sequentially and would not exceed the sound pressure level of the closer of the two operations. In the very small areas where pulses were received simultaneously with the same rms pressure level the sounds would add incoherently (with random phase) and at most would increase sound pressure levels by 3 dB. When the received levels of the overlapping pulses differ by 10 dB or more their combined level will be less than 1 dB greater than the strongest pulse. The flawed conclusion that the sound levels are additive is then used to justify this additional mitigation measure and implies greater impacts of seismic sound than is likely to occur. Later (Page 4-516 section 4.10.5.4.4) the DEIS suggests that marine mammals may have trouble navigating between seismic surveys and drill operations because of overlapping sound signatures but the analysis does not provide any distances or data to support this conclusion. Distances between prospects are considerable and current regulations limiting how close operations may be to each other would already limit the overlap of sound in the marine environment. The lack of any real analysis leads to conclusions that are just idle speculation and again exaggerates the potential impacts of sounds from the exploration activities.

Example 5– DEIS Incorrectly Asserts there could be Cumulative Injurious Effects on Whales from Multiple Seismic Survey Programs

On Page 4-470 (Section 4.10.4.4.5) the conclusion states that exposures to potentially injurious sound levels might be more likely to occur in the Beaufort Sea with multiple programs occurring. Yet there is no evidence that any whales have been exposed to "injurious cumulative sound levels" during decades of exploration activities. This conclusion contradicts previous comments (page 4-443) which states ~~that~~ impacts from these activities over the previous 60 years have been limited in duration and localized without indications of long term or cumulative effects (NMFS 2011)".

Speculative conclusions drawn from flawed analyses that over estimate the effects of sound on marine mammals become more speculative and more exaggerated in the cumulative effects analysis of the DEIS. The DEIS here suggests that there could be "regional level effects on bowhead whales" because the DEIS project area extends across most of the migratory pathway of the whales and that there is potential for bowhead whales to have long term effects from repeated disturbance over time or broad geographic areas and that whether or not there are long term effects is unknown. Again, as stated above (and in other places in the DEIS) there is no evidence after 60 years of exploration activities, often with multiple operations, that anything approaching a "regional level effect" has occurred. This includes years with multiple programs in US waters as well as programs in Canadian waters concurrent with programs in US waters. The bowhead whale population has grown to a point where many feel they should no longer be considered endangered, impacts have been shown to be localized in area and short term in

duration as evidenced by the continued growth of the population and the continued use of the traditional habitat areas (including feeding areas) and migratory pathways of the whales. This is flawed analysis leading to conjecture for a conclusion that has not considered the science that has been done.

Example 6 – DEIS Fails to Use a Clear Definition of Take Resulting in an Overstatement of Potential Impacts

The DEIS greatly overstates the potential impacts of oil and gas exploration in the Beaufort and Chukchi seas. Many of the problems with the analyses stem from the failure to use a clear definition of “take”, which the NMFS has previously defined themselves, and failure to use the most recent information available to inform the discussion. Instead they use questionable interpretations of previous studies that did not have the benefit of the newer data to consider. When the newer studies and data are mentioned they are often discounted or have not been fully digested and understood by the DEIS authors. There is no discussion of the merits of using the 120 dB rms sound level rather it is simply introduced as if it represents a level of “taking” even though studies suggest that the reaction of whales to industry activities involves much more than exposure to a particular sound level and this was pointed out even in the earlier studies that are being used to justify these sound levels. These types of assumptions and flawed analyses in the DEIS lead to exaggerated and speculative conclusions about the potential impacts, which are not supported by any of the work that has been done in the intervening years and often that are not supported by any of the work that has been done. These analyses are then used to justify various “additional mitigation factors” that include time area closures that will greatly restrict activity that is having only low level effects on the marine mammals using these areas.

IV. The DEIS Would Result in Takings by Preventing Lease Holders from Prosecuting Their Leases

Activity levels (Table 3) composing the DEIS alternatives are not sufficient to allow lease holders to meet their lease obligations to the Federal or State Governments nor meet their corporate planning deadlines. These alternatives prescribe the numbers of exploration drilling programs, seismic surveys, and shallow hazards surveys that can be conducted in any one season, and these numbers are too low. The problem is then exacerbated by the DEIS definitions of what comprises a drilling operation (e.g. an operation can only consist of one drilling unit) or a survey, and by the Standard and Additional Mitigation Measures considered in the DEIS which severely curtail the season during which the activities may take place. Although the DEIS contains some language in Section 1 indicating that proposed oil and gas activities that fall outside the scope of this EIS may be permitted by different means, and despite language to the contrary in Section 2.5.2 the selected alternative may serve as a *de facto* seasonal cap on oil and gas exploration. The DEIS should be withdrawn, and a DEIS should be prepared in which alternatives are not synonymous with activity levels. This was accomplished for the two predecessors to this document – the 2007 DPEIS (MMS and NMFS 2007) and the 2006 PEA (MMS 2006). If the current DEIS is carried forward, additional alternatives that meet and

exceed all reasonably foreseeable activity levels must be included and evaluated. Additional details on these points, including suggested alternatives, are provided below.

Table 3. Activity levels by DEIS alternative

Alternative	Exploration Drilling Programs		Seismic Surveys		Shallow Hazards Program	
	Chukchi	Beaufort	Chukchi	Beaufort	Chukchi	Beaufort
1	0	0	0	0	0	0
2	1	*1	4	3	3	3
3	2	**2	6	5	5	5
4	2	**2	6	5	5	5
5	2	** 2	6	5	5	5

* In this scenario only one program could be conducted either in the State Waters during the January – April timeframe or the Federal OCS during the July to October timeframe, thus a State Waters program could effectively block an OCS drilling campaign in the same calendar year.

** In this scenario two same season drilling programs in the Beaufort State Waters region could effectively block an OCS drilling program campaign in the same year.

IV.A. Lease Obligations That Must be Met

Oil and gas leasing in Federal water of the Outer Continental Shelf (OCS) is conducted according to the Outer Continental Shelf Lands Act (OCSLA). National policy established under Section 3(3) of OCSLA dictates that the OCS is to be considered a vital national resource reserve held by the Federal Government for the public, which should be made available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs. Restricting the amount of exploration activities to the extent that the DEIS alternatives might mandate, violates this policy. Development of OCS resources would not be expeditious, and may not be viable at all under the additional restraints of the mitigation measures in described in the DEIA.

Under OCSLA regulations at 30 CFR § 250.180, a lease expires at the end of its primary term unless operations are being conducted on the lease, and operations means producing, re-working, or drilling in an effort to establish production in paying quantities on any subject lease. If operations are not occurring, the lease and all investment in the lease to date may be lost. The initial lease terms in Federal waters of the OCS in the Chukchi and Beaufort Seas are for 10 years. The same holds true in State waters where the primary lease terms are for seven years. There are annual rental rates that must be paid on all leases, and under both the Federal and State leasing programs, the rental rate escalates through the primary lease term providing impetus for early fulfillment of lease obligations.

IV.B. Lease Obligations Can't be Met under Low Activity Levels and Restrictive Mitigation Measures of DEIS

The purchase of lease rights from the Federal or State Government implies an intent and obligation to pursue development of oil and gas leases through exploration activity. Consequently, it would be reasonable for the DEIS to consider the potential for each lease holder wanting to conduct exploration drilling during the five-year period of this DEIS. There are currently 487 active leases in the Chukchi Sea held by six operators (Shell, ConocoPhillips,

Statoil, Repsol, ENI and Iona) and totaling 2,758,277 ac, and 178 active leases in the Beaufort Sea OCS totaling 381,955 ac held by four operators (Shell, ENI, Total and BP) . All of these leases are in their primary 10-year lease periods, which will expire in 2013-2018 (Table 4). There are also 271 active leases held by 16 operators within State waters of the coastal Beaufort Sea. Many leases are held by each operator.

Table 4. Active leases in the Chukchi and Beaufort Sea

Sea	Lease Sale	Sale Year	Active Leases	Active Leases	Expiration ¹
Chukchi Sea	193	2008	487	2,758,377 ac	2018
Beaufort Sea	186	2003	7	15,216 ac	2013
Beaufort Sea	195	2005	82	170,464 ac	2015
Beaufort Sea	202	2008	89	196,275 ac	2018

¹ The primary lease terms on some OCS leases have been extended under suspensions of operation from BOEM

Activity Levels in the DEIS Alternatives are Too Low and Must be Increased

Alternatives with maximum activity levels of 1-2 drilling programs, 4-6 seismic surveys, and 3-5 shallow hazards survey programs in each sea, will clearly not allow the 20 operators holding 936 leases to meet their obligations and operating plans – with leases expiring as soon as 2013 if drilling is not conducted. This does not account for any increases in the number of new operators that may appear on the scene during the time frame of the DEIS (2012-2018) due to the annual Beaufort lease sale that is held by the State of Alaska, nor the Federal lease sales that are set to take place in the Chukchi Sea OCS in 2016 and in the Beaufort Sea OCS in 2015.

Definitions of Alternatives Exacerbate the Issue and Should be Changed

Definitions of the alternatives / activities in the DEIS contribute to the problem. A drilling program is limited to one drilling unit, seismic surveys and shallow hazards survey programs are each limited to one source vessel. If for example one operator were to use two drilling units in the Chukchi Sea per proposed Alternative 3, no other operator would be able to obtain authorization under this NEPA document for a drilling program in the Chukchi Sea that year.

Reductions in Operating Windows from Mitigation Measures Exacerbate the Issue and Should be Removed

OCS oil and gas operations already have a restricted season which constrains most types of exploration activities, as they are typically conducted during open water periods (July to November). These restricted seasons or operational windows would be further reduced by Additional Mitigation Measures in the DEIS, which include closures in the eastern Beaufort from August 25 to the end of Kaktovik and Nuiqsut whaling and from September 15 to the end of Barrow whaling in the western Beaufort. The Additional Mitigation Measures in the DEIS would further restrict the operational window for broad areas of the Beaufort and Chukchi Seas. Access to leases in the eastern Beaufort are already generally limited to the time period of July (USFWS regulations prohibit accessing Chukchi Sea via the Bering Strait before July 1, then another four days are required to transit to leases in the Chukchi and 10 days to the eastern

Beaufort) to end of October (freeze-up), approximately 113 -119 days. Additional Mitigation Measure D1 would remove 15 days from the beginning of the season reducing the season across all of both seas by about 13 percent. Other Additional Mitigation Measures would reduce the operational season by an additional 37-80 percent over extensive areas. For example, B1 would remove 45 days (September 1 – October 15) from the back end of the season, reducing the season by 60 days (53%) to 53 days. The remaining time at the end of the season (after October 15) is so short as to likely render it uneconomical to maintain the drilling unit or other equipment within the operational theater through the closure period, further reducing season length.

IV.C. The DEIS Must be Withdrawn or the Alternatives Must be Changed

The DEIS should be withdrawn, and a new DEIS should be prepared in which alternatives are not synonymous with activity levels. Correctly, activity levels were not part of the alternatives in either of the two predecessors to this document – the 2007 DPEIS (MMS and NMFS 2007) and the 2006 PEA (MMS 2006), and should not be part of the alternatives in the current DEIS. In the previous documents, the alternatives consisted solely of the lease stipulations and mitigation measures that would be applied to permits and authorizations. If the current DEIS is carried forward, new alternatives that at a minimum meet all reasonably foreseeable activity levels based on the current number of lease holders and operators, must be included and evaluated. There is no practicable reason for limiting the activity levels as severely as has been done in the DEIS.

Potential impacts from the activity levels in the DEIS alternatives as assessed in the DEIS are mostly negligible or minor, with a very few classified (wrongly in our opinion) as moderate. Alternatives should be expanded to include much higher activity levels. This would serve two purposes: 1) NMFS might find the upper limit of what could be permitted without significant impacts thereby assessing a broad range of alternatives as mandated by NEPA; and 2) much greater activity levels would likely be found environmentally acceptable, and both industry and the agency would not be burdened with unreasonable and unwarranted restrictions on activity levels.

NMFS Failed to Accurately Assess Past Levels of Exploration and Levels Required in the Future

NMFS failed to conduct the proper research or analysis to establish the correct range of activity levels to be evaluated, and as a consequence, the activity levels in the DEIS alternatives are too low. As a first step in the gathering of information, NMFS should have held workshops with industry, clearly identifying the time period that would be covered, explaining how the information would be utilized, and requesting the range of activity levels the companies / operators might undertake in the next five years. It is not easy for industry to answer such questions precisely, and ranges are required. Projected exploration activity levels depend on many things, including the findings of the immediately preceding activities (results of seismic surveys, success or failure in drilling, etc.), restrictions on operations through permit conditions

such as contemplated in the DEIS, litigation, and changing economics (e.g. price of oil). All three of these drivers will have great impact on future levels of exploration activity.

NMFS states on page ES-6 that the activity levels in the DEIS were based on past exploration drilling programs. If this is the case, NMFS’s analysis would appear to be faulty. For example, our review of historical drilling indicates that up to three exploration drilling programs have been conducted in a single year in the Chukchi Sea and up to eight programs have been conducted in the Beaufort Sea during a single year (Table 5).

Table 5. Historical exploration drilling programs in the Chukchi Sea and Beaufort Sea 1981-2011

	Beaufort Sea State Waters		Beaufort Sea OCS		Total Beaufort Sea		Chukchi Sea OCS	
	Wells	Operators ¹	Wells	Operators ¹	Wells	Operators ¹	Wells	Operators ¹
total	46	31	30	24	76	55	5	4
mean	1.5	1	1.0	0.8	2.5	1.8	0.2	0.1
years	31	31	31	31	31	31	31	31
range	0-5	0-3	0-5	0-5	0-9	0-8	0-3	0-2

¹ Each operator would represent one exploration drilling program by DEIS definition

Alternatives Must be Changed if DEIS moves Forward

Again, we request that NMFS not define alternatives by activity levels. But if this type of alternative is carried forward in the EIS process, NMFS must take steps to prepare alternatives that will cover all potential activities that might occur over the next five years by all potential operators. The alternatives should not just encompass what is expected, but should encompass additional activities that were not expected. There are several logical scenarios that NMFS could use to arrive at activity levels that would meet these requirements. By way of example, we have included three such alternatives. These alternatives (Alternatives A, B and C) are outlined below. The activity levels that compose these new alternatives are summarized below in Table 6. These alternatives are not refined or ready for evaluation by NMFS, but they are examples of how the development of such alternatives could be approached. NMFS must conduct the work described above before finalizing any alternative: workshops must be conducted with industry to obtain input; historical data must be collected and analyzed properly; and the effects of such things as the oil and gas prices and initial drilling success cases must be considered.

Furthermore, the DEIS must consider alternatives that do not contain the Additional Mitigation Measures currently associated with every action alternative in the DEIS. As discussed elsewhere in this document, these measures are not warranted, are not scientifically supported, and are onerous prohibiting exploration activities over extensive areas for significant portions of the open water season.

Alternative A is based on the premise of providing all operators that have expressed publically intentions to drill within the next five years (Shell, ConocoPhillips and Statoil in the Chukchi OCS, and Shell, Repsol, Pioneer and BP in the Beaufort OCS and Alaska Beaufort State Waters), the opportunity to do so. This should be viewed as a minimum. Alternative B is based on the premise of providing every lease holder in the OCS an opportunity to conduct exploration drilling on their holdings. This is common sense and it is further justified based on the costs and effort associated with purchasing the leases in good faith, the required payment of escalating

annual rental fees, and lease obligations that must be met within the finite primary lease term. Finally, Alternative C is based on Shell's projection of future activity levels given a minimum success case in initial drilling efforts. It is a minimum case because Shell cannot speak for the other operators. Under this alternative, the definition of a drilling program would be expanded to consist of up to three drilling units. The Additional Mitigation Measures are excluded from each of these sample alternatives for the reasons stated earlier.

Alternative A

Level of Activity (per year)

- Up to four 2D/3D seismic or CSEM surveys in the Beaufort Sea and up to four 2D/3D seismic or CSEM surveys in the Chukchi Sea per year, with up to one of that total number of surveys in each sea done in-ice with ice breaking if necessary.
- Up to five site clearance and high resolution shallow hazards survey programs in the Beaufort Sea and up to five site clearance and high resolution shallow hazards survey programs in the Chukchi Sea per year.
- One on-ice seismic survey in the Beaufort Sea (State Waters) per year.
- Up to three exploratory drilling programs in the Beaufort Sea and up to four exploratory drilling programs in the Chukchi Sea per year.

Mitigation

Includes only the Standard Mitigation Measures (described in Section 2.4.9) that are part of every action alternative.

Rationale

The number of drilling programs was increased to three in the Chukchi Sea to accommodate the three operators who have expressed publically intentions to drill within the next five years (Shell, ConocoPhillips and Statoil), and to four to accommodate operators who have done so in the Beaufort Sea (Shell, Repsol, Pioneer and BP). Sounds produced by geophysical surveys are known to have a higher degree of impacts on marine mammals than do sounds associated with drilling operations. If the total number of seismic or shallow hazards surveys is reduced, the number of drillships operating can be increased without significantly adding, and in fact maybe reducing, overall impacts. The number of geophysical surveys in existing alternatives exceeds what we believe industry will require.

Alternative B

Level of Activity (per year)

- Up to three 2D/3D seismic surveys in the Beaufort Sea and up to three 2D/3D surveys in the Chukchi Sea.

- Up to six shallow hazards surveys, ice gouge surveys, strudel scour survey programs in either sea
- Up to six exploration drilling programs in the Chukchi Sea OCS, up to four exploration drilling programs in the Beaufort Sea OCS, and up to two in State waters of the Beaufort Sea

Mitigation

- Includes only the Standard Mitigation Measures (described in Section 2.4.9) that are part of every action alternative, but excluding:
 - o B1 which should be deleted as it is covered completely by D3; and
 - o C4 as all drilling programs are required to prepare spill response plans by law

Rationale

All DEIS alternatives contain too low a number for exploration drilling programs. The number of seismic surveys in most alternatives, however, is greater than is expected to be needed during the subject time frame. We would propose an alternative within which the number of seismic surveys would be reduced, and the number of exploration drilling programs is equal to the number of OCS lease holders plus two additional programs within State waters of the Beaufort Sea.

Alternative C

Level of Activity (per year)

- Up to two 2D/3D seismic surveys in the Beaufort Sea and up to two 2D/3D surveys in the Chukchi Sea.
- Up to three shallow hazards surveys, ice gouge surveys, strudel scour survey programs in either sea
- Up to three exploration drilling programs in the Chukchi Sea, up to three exploration drilling programs in the Beaufort Sea, where a “drilling program” is redefined as having up to three drilling units.

Mitigation

- Includes only the Standard Mitigation Measures (described in Section 2.4.9) that are part of every action alternative.

Rationale

All DEIS alternatives contain too low a number for exploration drilling programs. The number of seismic surveys in most alternatives, however, is greater than is expected to be needed during the subject time frame. The above alternative presents reasonable levels of activities based on what Shell envisions would occur under a minimum success case in the Chukchi Sea for Shell and another operator. The activity levels provide no cushion for plans of other operators that we might not be aware of.

Table 6. Summary of activity levels within the new alternatives

Alternative	Drilling Programs (Drilling Units)		Shallow Hazards (Drilling Units)		Seismic Surveys		On-Ice
	Chukchi	Beaufort	Chukchi	Beaufort	Chukchi	Beaufort	Beaufort
¹ A	<u><3 (3)</u>	<u><4 (4)</u>	<u><5</u>	<u><5</u>	<u><4</u>	<u><4</u>	<u><1</u>
² B	<u><6 (6)</u>	<u><6 (6)</u>	<u><4</u>	<u><4</u>	<u><3</u>	<u><3</u>	<u><1</u>
³ C	<u><3 (9)</u>	<u><3 (9)</u>	<u><3</u>	<u><3</u>	<u><2</u>	<u><2</u>	<u><1</u>

¹ Alt A allows < 3 drilling programs and maintains DEIS definition of 1 unit / drilling program - so total is ≤ 3 drilling units per sea per year

² Alt B allows ≤ 6 drilling programs and also maintains DEIS definition of 1 unit / drilling program - so total is ≤ 6 drilling units per sea per year

³ Alt C allows ≤ 4 drilling programs in each sea during any year, and maintains the DEIS definition of a drilling program containing a single drilling unit – so total is ≤9 drilling units in each sea in a given year

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Shell Comments on the DEIS

Comment No.	Page	DEIS	Issue
1	Title	Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement	The proposed action as stated in the DEIS is the issuance of ITAs and G&G permits, while the title of the document relates to the Effects of Oil and Gas activities. NMFS does not regulate oil and gas activities, they only issue ITAs. Based on the title and the evaluation of impacts from actual numbers of O&G activities, the scope the DEIS does not appear to match the Proposed Action and the purpose and need.
2	Title	Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement	Title should limit the NEPA analysis to exploration.
3	ES-1	Section 1.0 Introduction - This DEIS analyzes a range of management alternatives to assist NMFS and BOEM in carrying out their statutory responsibilities to authorize or permit activities within the five year period of 2012 through 2017.	The five year period 2012 to 2017 is probably not accurate in that the FEIS will likely not become final until 2013 or later.
4	ES-1	Section 1.0 Introduction - This DEIS analyzes a range of management alternatives to assist NMFS and BOEM in carrying out their statutory responsibilities to authorize or permit activities within the five year period of 2012 through 2017.	Range of management alternatives is too limited.
5	ES-1	The statutory responsibilities include BOEM's issuance of permits and authorizations under the OCSLA for seismic surveys. A geological and geophysical (G&G) permit must be obtained from BOEM in order to conduct G&G exploration activities for oil, gas, and sulphur resources when operations occur on unleased lands or on lands leased to a third party.	Need to include exploration related activity on a company's own lease lands. It seems that an Ancillary Activities Notice would be required. NMFS failed to list the AA Notice in the Executive Summary.



Shell Comments on the DEIS

Comment No.	Page	DEIS	Issue
6	ES-1	NMFS issues ITAs for oil and gas exploration activities because it is likely that seismic and exploratory drilling activities result in the disturbance of marine mammals through sound, discharge of pollutants, and/or the physical presence of vessels.	This statement indicating discharge of pollutants and/or the physical presence of vessels will result in a disturbance of marine mammals is not scientifically supported.
7	ES-1	Because of the potential for these activities to “take” marine mammals, oil and gas operators may choose to apply for an ITA.	“Take” needs to be defined in the Executive Summary.
8	ES-3	The project area (Figure 1.1) covers an area of approximately 200,331 square miles within the Alaskan portion of the Beaufort and Chukchi seas. It includes State of Alaska and OCS waters adjacent to the North Slope of Alaska, and transit areas of the Chukchi Sea north of the Bering Straits.	Transit areas should not be included in the project area since ITAs are not required for vessel transit. Transit routes continue outside of the BOEM planning areas.
9	ES-4	<p>Of the issues identified during scoping, those that were most commonly raised included:</p> <ul style="list-style-type: none"> • Concerns regarding the NEPA process; • Impacts to marine mammals and habitats; • Risks of oil spills; • Climate change; • Protection of subsistence resources and the Iñupiat culture and way of life; • Availability of research and monitoring data for decision-making; • Monitoring requirements; and • Suggestions for, or implementation of, mitigation measures. 	The bulleted list fails to include economic considerations mentioned numerous times at scoping meetings.



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Comment No.	Page	DEIS	Issue
10	ES-5	<p>NMFS and BOEM identified alternatives by: assessing potential levels of activities, anticipating regulatory compliance needs over the timeframe of the EIS (5 years).</p> <p>“Based upon past lease sales, G&G permits, ancillary activity notices, exploration drilling exploration activities, and requests for ITAs, NMFS and BOEM have determined a reasonable range and level of activities for which permits and authorizations may be requested in the foreseeable future (i.e., five years 2012-2017.”</p>	<p>Use of recent history (which has seen very little activity) is not a good method to forecast the future (i.e., is not “reasonable” in this case). One ‘program’ entails as many surveys or exploration wells a particular company is planning for that season. But each program would use only one source vessel or drilling unit and would not survey multiple sites or drill multiple wells concurrently.</p>
11	ES-5	<p>A total of nine alternatives were initially considered for this DEIS, with the No Action Alternative and four action alternatives carried forward for analysis.</p>	<p>Alternatives don’t analyze effects of one exploration program per lease holder in each sea. Past levels of exploration activities don’t necessarily match future levels. This seems to limit activities to the first two programs to submit applications. Higher activity levels would more fully meet the Purpose and Need.</p>
12	ES-6	<p>“The five alternatives evaluated are:</p> <ul style="list-style-type: none"> • Alternative 1: No Action • Alternative 2: Authorization for level 1 Exploration Activity, and • Alternative 3: Authorization for Level 2 Exploration Activity. • Alternative 4: Authorization for Level 2 Exploration Activity with Additional Required Time/Area Closures • Alternative 5: Authorization for Level 2 Exploration Activity with Use of Alternative Technologies” 	<p>Provide more information on how these activity levels were derived or developed. Industry anticipates activity levels beyond those analyzed in the DEIS.</p>



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Comment No.	Page	DEIS	Issue
13	ES-9	"Including a full analysis of a wide range of Additional Mitigation Measures (described in Section 3.6)"	There is no Section 3.6 in the document. Please clarify language and intent.
14	ES-13	Additional mitigation measures – Zero Discharge	Clarify circumstances when additional mitigation measures would be required.
15	ES-13	Additional mitigation measures – Zero Discharge	NMFS and BOEM should not use the term „zero discharge,’ as there will be some discharges under any exploration scenario. This is confusing and the public is unlikely to understand the distinction.
16	ES-23	<p>Exploration, development, production, and transportation of oil and gas are the major contributors to the economy of Alaska and the NSB.</p> <p>Alternative 1 (No Action) would cause minor adverse impacts from unrealized local employment and tax revenue. The potential unrealized revenue for state and federal governments is unknown since the likelihood of exploration resulting in production cannot be predicted.</p>	<p>Impacts from declining NSB and State of Alaska revenue from declining oil production will certainly be more than “minor.”</p> <p>In fact the potential unrealized revenue (and jobs and payroll) has been estimated, and the likelihood of exploration resulting in production is higher here than in most places due to results from prior wells.</p> <p>By the same logic, the potential impacts of VLOS is “unknown since the likelihood of” such an event occurring cannot be predicted (is hypothetical).</p>
17	ES-23	All four action alternatives would cause minor beneficial impacts from a temporary rise in regional personal income and employment rates.	<p>The DEIS analysis of socioeconomic impacts is inappropriately limited in a manner not consistent with the analysis of other impacts in the DEIS. Potential beneficial impacts from development over 50 years should not be considered “temporary” and 55,000 jobs / \$145 billion payroll should not be considered “minor.”</p> <p>This characterization is inconsistent with the use of these same terms for environmental impacts analysis.</p>



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Comment No.	Page	DEIS	Issue
18	ES-23	The time/area closures under Alternative 4 could reduce total income and employment rates and therefore the beneficial impact would be less than Alternative 3, but would still be minor.	The characterization of beneficial socioeconomic impacts as “minor” is inconsistent with the analysis of other impacts in the DEIS. In fact, the potential beneficial socioeconomic impacts from exploration leading to development are major. As a result, the reduction in potential benefits from time/area closures under Alternative 4 is inappropriately “hidden” as being “still minor.”
19	ES-28	Alternative 1 would have minor cumulative impacts to socioeconomics, and major cumulative impacts to land and water ownership, use and management.	Analysis in the DEIS apparently ignores the major cumulative impact to regional and statewide socioeconomics as onshore oil production decline continues. Impacts from declining NSB and State of Alaska revenue from declining production will certainly be more than “minor.”
20	ES-28	Any of the four action alternatives would have major cumulative impacts on visual resources and moderate impacts on climate, air quality, lower trophic levels, bowhead whales, beluga whales, subsistence, and visual resources.	Since no oil will be produced by exploration activities during the time frame apparently considered by this DEIS, it is difficult to understand how any of the action alternatives would have any impact on climate. Furthermore, even if the analysis were to be extended through full production, which would be inconsistent with the treatment of socioeconomic impacts, the incremental GHG emissions from combustion of the oil produced would be minor (i.e., much less than 1 percent of total GHG emissions). This is another example of inconsistency in the treatment and evaluation of impacts in this DEIS.



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Comment No.	Page	DEIS	Issue
21	1-1	The scope and effects of the seismic survey activities analyzed in the DPEIS were based on the best available information at the time. However, since 2007, new information that alters the scope, set of alternatives, and analyses in the DPEIS has become available (e.g. scientific study results, changes in projections of level and types of offshore exploration activities). In addition, NMFS determined that an EIS should also address the potential effects of exploratory drilling, which was not addressed in the 2007 DPEIS. Therefore, NMFS and MMS filed a Notice of Withdrawal of the DPEIS on October 28, 2009 (74 FR 55539) and announced their decision to prepare a new EIS, the Effects of Oil and Gas Activities in the Arctic Ocean. A Notice of Intent (NOI) to prepare the new DEIS was announced in the Federal Register on February 8, 2010 (75 FR 6175).	NMFS prepared this DEIS to update the previous DPEIS based on new information and to include drilling, not to evaluate numbers of activities as was done in this DEIS.
22	1-1	“New information since 2007 alters the scope, set of alternatives, changes in projections of level of offshore exploration activities.”	Any new information changes in projections of activities should be identified and sources cited.
23	1-1	“NMFS determined that an EIS should also address the potential effects of exploratory drilling which was not addressed in the 2007 DPEIS.”	This DEIS should have built upon the 2007 DPEIS using the same alternatives and adding exploration drilling and new information in the analysis.
24	1-2	Activities that could occur in State waters include seismic surveys, high res/site clearance surveys, and exploratory drilling.	Geotechnical studies, ice gouge surveys, strudel scour surveys, and environmental studies should be included in this list.



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Comment No.	Page	DEIS	Issue
25	1-3	The EIS will allow NMFS and BOEM to assess activities that may occur in a given season in advance of receiving applications to authorize incidental takes.	BOEM already did this in 5 year plan EIS, lease sale EIS, and says they will continue to prepare site/project specific EAs. This is redundant.
26	1-3	The EIS will allow NMFS and BOEM in ensuring compliance with ESA and Magnuson-Stevens. BOEM will coordinate closely with USFWS.	Explain why USFWS is not a cooperating or co-lead agency. They have MMPA trust species that are evaluated and significant mitigation measures the DEIS are based on these USFWS trust species.
27	1-8	Proposed Action- The issuance of ITAs under Section 101(a) (5) of the MMPA, by NMFS, for the incidental taking of marine mammals during G&G permitted activities, ancillary activities, and exploratory drilling activities in the U.S. Beaufort and Chukchi seas, Alaska, and the authorization of G&G permits and ancillary activities in the U.S. Beaufort and Chukchi seas, Alaska, by BOEM under the OCS Lands Act.	The analysis is either too broad for the proposed action stated, or the proposed action needs expanded. NMFS should not limit the number of activities allowed as long as the number of takes has no more than a negligible impact on species or stock.
28	1-8	The Proposed Action is 1) the issuance of ITAs per MMPA by NMFS for AA, G&G, and exploratory drilling, and 2) authorization of G&G permits and AAs by BOEM under OCSLA	Seems incongruous that NMFS would write a NEPA document for BOEM actions (issuing G&G or AA)
29	1-9	NMFS intends to use the EIS as the required NEPA document of all ITAs for arctic exploration. However, if necessary, NMFS may tier from this EIS to support future arctic MMPA oil and gas permit decisions, if such decisions fall outside the scope of this EIS.	Define the scope of activities covered under this DEIS. Further define which activities and what levels of activities would fall outside of the scope.



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Comment No.	Page	DEIS	Issue
30	1-9	For exploration surveys, BOEM intends to conduct site-specific EAs that tier or incorporate this EIS.	This document is not needed. A separate NEPA document is going to be done for each authorization. BOEM could tier off their lease sale EIS or other BOEM EISs/EAs.
31	1-9	Scope & Objective: The scope of the proposed action involves two parts: (1) to continue permitting or authorizing exploration activities that will provide the oil and gas industry and BOEM with the best available data on the location, extent, and properties of hydrocarbon reserves. . .	Limiting the level of activities also limits the amount of data that can be collected. Industry will not be able to collect the best data in the time allotted.
32	1-9	NMFS will use this EIS as the required NEPA document to allow them to issue ITA's, and NMFS may tier from this document to evaluate and support future MMPA oil and gas permit decisions that fall outside the scope of this EIS.	The levels of activities provided in the alternatives should be increased to accommodate all reasonably foreseeable exploration activities. In that way, all requests for authorization by current leaseholders will be handled under this document.
33	1-9	Evaluate a broad range of reasonably foreseeable levels of exploration activities (e.g. deep penetration seismic surveys, shallow hazards surveys, and exploratory drilling activities), including the use of alternative technologies and methodologies intended to reduce the amount and/or intensity of sound output, in state and federal waters in the U.S. Beaufort and Chukchi seas.	These levels of activities are neither broad nor reasonably foreseeable. They should at least accommodate activities from each of the current leaseholders. Currently, Shell has two approved exploration drilling programs. Other lease holders will likely follow a similar path and could be drilling exploratory wells within the 5-year period applicable to this document.



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Comment No.	Page	DEIS	Issue
34	1-9	NMFS intends to use this EIS as the required NEPA documentation for the issuance of ITAs for Arctic oil and gas exploration activities. However, if necessary, NMFS may tier from this EIS to support future Arctic MMPA oil and gas permit decisions if such activities fall outside the scope of this EIS.	NMFS may consider writing 5-yr Incidental Take Regulations for these activities rather than using this EIS as the NEPA document.
35	1-10	The EIS may be used, based on a case-by-case evaluation, as the sole NEPA compliance document for future agency actions covered by this EIS, or it may serve as a tiering document (as contemplated by the CEQ regulations) where it is determined that further NEPA analysis may be required.	Clarify how ITAs requested for activities within the scope of the preferred alternative will not be subject to subsequent NEPA review and any tiering NEPA reviews will be for BOEM authorizations.
36	1-10	Project the amount and extent of OCS and state water G&G, ancillary, and exploratory drilling activities that are likely to occur in the U.S. Beaufort and Chukchi seas based on the best available information.	BOEM cannot issue G&G permits for state waters; exploration in state water should not be included.
37	1-10	Described the Proposed Action and a range of reasonable alternatives, including a suite of proposed mitigation measures, as well as consideration of other mitigation measures	Additional programs should have been evaluated. While the ones evaluated are reasonable they don't appear to be the only reasonable alternatives. An EIS must evaluate all reasonable alternatives or range of reasonable alternatives.
38	1-11	Issues and Concerns to be Addressed in the EIS	Not listed were several important issues and concerns identified in the Scoping Report, including concerns about the need for a stable domestic energy supply, and benefits to the State and nation from oil and gas development. These issues are not addressed anywhere in the DEIS.



Shell Comments on the DEIS

Comment No.	Page	DEIS	Issue
39	1-12	General Comment: Description of Project area	Figure 1.1 should show a buffer to match the irregular shoreline instead of squaring it off. Also, federal jurisdiction is listed as 200-miles offshore, but the project area appears to extend to well past 200 miles. Clarify whether nautical miles or statute miles are used.
40	General comment	Planning Area Boundaries	The planning area boundary south of Point Hope should be removed from the study area. This area serves as the primary transportation route from the Bering Straits to the Chukchi Sea and Beaufort Sea lease holdings. By including this portion of the Chukchi Sea in the planning area, travel corridors are restricted during key periods. Vessel transit to a lease holding or exploration area is not included in current NMFS or BOEM regulatory jurisdiction; therefore, the requirement included in the DEIS provide unwarranted restrictions.
41	1-18	Federal Laws – OCSLA – must provide for “expedited exploration and development of the OCS”	The DEIS contains little or no assessment of the impact of alternatives on BOEM’s ability to meet the OCSLA requirements for exploration and development – all of the alternatives would slow the pace of exploration and development so much that lease terms may be violated and development may not be economically viable.
42	1-19	Federal Laws – Clean Air Act – EPA has jurisdiction.	The omnibus bill signed by President Obama on December 23, 2011 transfers Clean Air Act permitting authority from the EPA Administrator to the Secretary of Interior (BOEM) in Alaska Arctic OCS. This also needs to be changed in Section 3.1.5.1.
43	1-20	Federal Laws – Clean Water Act – The EPA has promulgated regulations to ensure discharges it regulates through the NPDES program would not cause unreasonable degradation.	This requirement of the NPDES Program is not discussed in Environmental Consequences. It represents a mandate and an independent assessment of the impacts by a separate agency – and established that impacts from these discharges would be negligible to minor.



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Comment No.	Page	DEIS	Issue
44	2-1	General Comment: Proposed Action Alternatives	While it appears NOAA has given thought to varied seismic programs within the Beaufort and Chukchi sea (different numbers per sea/alternative) the same evaluation for drilling programs between seas was not evaluated as was requested in public comments listed as COR 38 in Appendix C. (The alternatives should treat the Beaufort and Chukchi seas separately and adopt a flexible program with realistic operating scenarios, and NMFS should consider a broader range of exploration scenarios, given that industry estimates are not always reflective of actual activity into the future). This appears to be a substantive comment that was ignored and resulted in a flawed document. A broader range of exploration scenarios must be evaluated.
45	2-23	Table 2.3 summarizes some of the alternative technologies in consideration by the oil and gas industry. However, these alternative acoustic sources are in various stages of development and none of the systems with the potential to augment or replace airguns as a seismic source are currently Commercially available. It is uncertain at this time exactly when these technologies could become available for commercial use; however, it is possible that some of them could be used during the Timeframe of this EIS. Therefore, they are analyzed in this DEIS based on the limited data currently available.	Alternative technologies that are not commercially available should not be considered reasonably foreseeable.
46	2-23	The impulsive airgun has been under scrutiny as a sound source for seismic exploration due to concerns that the propagated sound waves may harm marine life during operations.	There is no reference of research data that proves this. Include citation stating that airguns are under scrutiny for their potential to harm marine life.



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Comment No.	Page	DEIS	Issue
47	2-30	For planning purposes, NMFS and BOEM can project a reasonable level of activities in the near term (i.e. in the next one to two years) based upon upcoming lease sales and industry's stated needs for developing those leases.	It is unreasonable to assume that activities in years 3-5 will be the same as in years 1-2, especially given the planned lease sale in 2016. Exploration activities are generally sequential and future activities are directed by the results of present exploration activities.
48	2-31	The potential level of activity described by each alternative is based on recent federal and state lease planning and recent industry plans for both seismic surveys and exploratory drilling programs in the Beaufort and Chukchi seas.	Provide more detail on how the potential level of activities was developed.
49	2-32	Activity Definitions – Site clearance surveys typically also include ice gouge and strudel scour surveys.	It is unclear how ice gouge, strudel scour and other bathymetry surveys are considered and will be handled. Shallow hazards surveys may be done independent of these other surveys and strudel scour and/or ice gouge surveys will likely be done during several years when shallow hazards surveys are not. Clearly identify how these other surveys would be counted against the maximum activity level.
50	2-34	Table 2.4 Activity Definitions	Clarify how the definitions will be used. Definitions of alternatives in programmatic type NEPA documents often have the force of law. A seismic survey or drilling program exceeding the numbers in the definitions can be considered out of scope and a permit can be withheld under this DEIS.
51	2-34	Table 2-4, Exploratory Drilling from a drillship – July-October	The exploration drilling season is largely limited by ice. Ice distribution in recent years indicates drilling at some lease holdings could possibly occur June-November. Extend the temporal extent of the exploration drilling season.



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Comment No.	Page	DEIS	Issue
52	2-35	General Comment: Alternatives	The range of alternatives is not reasonable. Limiting the number of exploration drilling programs to a maximum of two within either theater in any year would stop or slow progress on existing leases to a point that operators would not be able to meet the time restrictions and obligation on their leases.
53	2-35	Alternative 2 – Mitigation – including a full analysis of a wide range of Additional Mitigation Measures that could potentially be required through the MMPA process and could vary by alternative.	There are no alternatives that have only the Standard Mitigation Measures used in the past with success. There should be an alternative requiring only standard Mitigation Measures. Also, many of the Additional Mitigation Measures are onerous. Not knowing the specific measures that would be applied makes it impossible to assess the relative impacts of the different alternatives on the environment or the operator. Include an alternative with only the Standard Mitigation Measures.
54	2-35	Alternative 2 2.4.5.3 Assumptions – Exploratory activities in the next 5 years are expected to be in the areas of recently purchased leases. This does not mean that there will not be exploratory activities in other areas of the U.S. Arctic Ocean, especially if BOEM’s next five-year OCS leasing plan includes sales in the U.S. Arctic.	There is a 2016 lease sale in Chukchi and 2015 lease sale in Beaufort Sea within the Proposed 5 Year Plan. Alternatives should include some seismic, shallow hazard and possibly drilling to account for these lease sales. Double negative makes the statement unclear.
55	2-35	General Comment: Alternatives	The 2007 DPEIS had alternatives that differed in mitigation measures, not activity level. State the rationale behind changing the structure of the Alternatives.
56	2-35	General Comment: Alternatives	The DEIS analyzes connected actions independently, but fails to account for the temporal progression of exploration toward development on a given prospect. By analyzing only a “snapshot” of activity in any given year, the DEIS fails to account for the potential bottleneck caused by its forced cap on the activity allowed under its NEPA analysis.



Shell Comments on the DEIS

Comment No.	Page	DEIS	Issue
57	2-36	Alternative 3 –Mitigation - including a full analysis of a wide range of Additional Mitigation Measures that could potentially be required through the MMPA process and could vary by alternative	There is no basis for automatically adding Additional Mitigation Measures without first assessing the impact without Additional Mitigation Measures to determine whether they are needed.
58	2-36	Alternatives 3, 4, and 5 Level of Activity – up to two exploratory drilling operations in the Beaufort Sea	It is not clear until Volume II, page 4-6, Table 4.2-2, that one of these drilling operations is in State waters and one in the OCS – should be clarified in Chapter 2.
59	2-37	General Comment: Additional Mitigation Measures	There have been no substantiated impacts on subsistence from oil and gas exploration activities under current mitigation measures. Additional mitigation measures should not be implemented.
60	2-39	Specified flight altitudes for all support aircraft except for take-off, landing, and emergency situations.	The mitigation measures should be explained in detail in Section 2, rather than only referring to Appendix A.
61	2-40, A-6	2.4.9 Standard Mitigation Measures and Appendix A Standard Mitigation Measures – Mitigation Measure D1 - “Shutdown of activities in specific areas of the Beaufort Sea corresponding to the start and conclusion of the fall bowhead whale hunts in Nuiqsut and Kaktovik beginning on or around August 25:”	Clarify the meaning of „on or around August 25.’ This should say on August 25.
62	2-40, A-6	2.4.9 Standard Mitigation Measures and Appendix A Standard Mitigation Measures – Operators are required to have a plan in place to minimize the likelihood of a spill and in Appendix A Measure C4 - “Each operator is required to prepare an oil spill response plan.”	All exploration drilling programs are required by regulation to have oil spill response plans – stating regulatory requirements is not a mitigation measure – this mitigation measure should be deleted.



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Comment No.	Page	DEIS	Issue
63	2-41	Operators are required to recycle drilling muds.	This may have been proposed for some programs but it should not become mandatory as it is not appropriate for all programs. Drilling mud discharges are already regulated by the EPA NPDES program and are not harmful to marine mammals or the availability of marine mammals for subsistence.
64	2-48	Table 2.5 Summary of Alternatives- Alternative 1: No Action	The “No Action” alternative should be for NMFS to issue IHAs and prepare project-specific EAs as they are currently. Instead, NMFS identifies the “No Action” alternative as the failure to issue IHAs period. Cessation of issuing IHAs to Industry operators would be an “Action” itself. If the intent is for NMFS to consider an alternative in which they stop issuing authorizations, it should be included as an additional alternative, not the “No Action” alternative. IHAs could still be issued as they have in the past if no action were taken.
65	2-48	Table 2.5 Summary of Alternatives	NMFS should have “truth-tested” with its cooperating agency whether the maximum level of activity it assumed was, in fact, a reasonable assumption of the upper limit on anticipated activity. BOEM would have been able to provide NMFS with guidance on a “success case” on one of the leases. Use of a properly constructed “success case” scenario would have provided NMFS with a more realistic understanding of the level of activity necessary to allow current leaseholders an opportunity to develop their leases within the lease terms.
66	2-48	Table 2.5 Summary of Alternatives	NMFS should have consulted with the USGS which recently issued a report on anticipated Arctic oil and gas resources (Bird et al. 2008). This report was not referenced in the DEIS. Consultation with USGS would have helped NMFS make a more informed prediction regarding the likelihood and extent of successful exploration and development in the project area and thus may have affected the maximum level of activity it analyzed.



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Comment No.	Page	DEIS	Issue
67	2-48	Table 2.5 Summary of Alternatives	NMFS did not consult with the State of Alaska regarding the expected level of exploration and development activity on state leases. Although state leases are not subject to federal regulation under OCSLA, operators on state lands must nevertheless comply with the MMPA, and the maximum level of activity analyzed in the DEIS must therefore encompass activity on state lands as well as the federal OCS.
68	2-48	Table 2.5 Summary of Alternatives	The DEIS defeats the informational purpose of an environmental impact analysis by depriving the decision-maker and the public of the full range of information related to exploration at levels higher than those considered in the alternatives.
69	2-48	Table 2.5 Summary of Alternatives	NMFS purports to step into a land management role, disrupting the careful balance that Congress instructed the Department of Interior to make under OCSLA between resource use and environmental protection. This kind of overreach in relying on factors Congress did not intend the agency to consider is prohibited by the Administrative Procedures Act. Congress did not intend NMFS to be the agency in the driver's seat, deciding where and when exploration and development should take place in the OCS.
70	2-48	Table 2.5 Summary of Alternatives	The arbitrary ceiling on exploration and development activities chosen by NMFS raises anti-competitiveness concerns. NMFS will be put in the position of picking and choosing which lessees will get the opportunity to explore their leases.
71	2-48	Table 2.5 Summary of Alternatives	NMFS analysis deviated in the DEIS by evaluating only impacts resulting from a finite number of programs even though the NOI (75 FR 6175, Monday February 8, 2010) proposed to evaluate an unrestricted number of programs.



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Comment No.	Page	DEIS	Issue
72	2-51	Table 2.6	<p>The inclusion of a VLOS in this table does not follow from any of the discussion of Activities or Alternatives in any of the preceding sections. Further, this issue is not mentioned in the scoping (Section 2.2) items raised during public comment. Remove the VLOS column in Table 2.6. VLOS is not an alternative.</p> <p>NOAA states in the DEIS, the chance of a large spill is very remote. This would insinuate that it is not reasonably foreseeable.</p>
73	3-29	Permit Requirements	<p>Revise language to reflect the BOEM air permit requirements in 30 CFR 550.303 and not 40 CFR Part 55.</p>



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Comment No.	Page	DEIS	Issue
74	3-68 to 3-70	<p>“All five species of Pacific salmon occur in the Alaskan Beaufort and Chukchi seas (Craig and Haldorson 1986, NMFS 2005): the pink, chum, sockeye, Chinook, and coho salmon”.</p>	<p>The sections of the report that deal with sockeye and coho salmon are misleading. The inclusion of coho salmon (<i>Oncorhynchus kisutch</i>) in the migratory species list should come with an asterisk (Table 3.2-1). The known northern distribution from southern Alaska ends at about Point Hope (Mecklenburg et al. 2002). Further, Mecklenburg et al. (2002) noted that the presence of coho salmon in the Beaufort/Chukchi region was based on two specimens report by Craig and Haldorson (1986). Craig and Haldorson (1986) stated “that there are no known stocks of Chinook, sockeye, or coho salmon in Arctic waters north of Point Hope. Collection records of these species generally consist of single specimens.” Members of this species should be considered “extralimital strays” in the Beaufort/Chukchi seas.</p> <p>The above argument also holds for sockeye salmon (<i>O. nerka</i>) whose North Pacific range ends at Point Hope (Mecklenburg et al. 2002). Mecklenburg et al. (2002) noted that Craig and Haldorson (1986) listed rare records of stray sockeye salmon north of Point Hope, including the Colville River, Simpson Lagoon, and the Canning River in Alaska. Members of this species should be considered extralimital strays in the Beaufort/Chukchi seas.</p> <p>Both species are considered extremely rare in the Beaufort Sea, representing no more than isolated migrants from populations in southern Alaska or Russian. This sentence is counter intuitive to the lead sentence in the section Pacific salmon.</p> <p>It lends a level of stature or importance to coho and sockeye salmon these species should not have in the Arctic.</p>



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Comment No.	Page	DEIS	Issue
75	3-74 to 3-75	Coho and Sockeye Salmon Essential Fish Habitat Discussion	<p>The discussion of coho salmon and sockeye salmon EFH on pages 3-74 to 3-75 is unnecessary. Again, these sections highlight two species that are essentially should be non-issues. As noted by Fechhelm (2006):</p> <p>“Pursuant to NOAA, NMFS (2005), the Preliminary Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska, it is the current position of NMFS that the only two species of fish found in the Beaufort Sea that are amenable to EFH regulation and consideration are pink salmon and chum salmon (Jon Kurland, Director, NMFS Habitat Conservation Division, Juneau, pers. comm.; Lawrence Peltz, NMFS Habitat Conservation Division, Anchorage, pers. comm.). This is also the position of MMS (Jeff Childs, pers. comm.). Although all five species of Pacific salmon have been reported from the Beaufort Sea, three of these, Chinook (<i>Oncorhynchus tshawytscha</i>), sockeye (<i>O. nerka</i>) and coho (<i>O. kisutch</i>) salmon are extremely rare and no known spawning stocks have been identified in the region (Craig and Haldorson 1986, Fechhelm and Griffiths 2001, Stephenson 2006).”</p>
76	3-74 to 3-75	Coho and Sockeye Salmon Essential Fish Habitat Discussion	<p>The case for Chinook salmon is slightly different:</p> <p>“From 1969-1973, 200 king/Chinook and 200 coho salmon were reported taken in the Barrow subsistence fishery (Patterson 1974 [cited in Craig 1989a]); however, Craig (1989a) contends that these fish could have been sea-run chum salmon. Small numbers of Chinook salmon are taken each year in the Barrow domestic fishery which operates in Elson Lagoon (C. George, pers. comm., North Slope Borough, Department of Wildlife Management)” (Fechhelm and Griffiths 2001).</p> <p>Although not overwhelming numbers, they may be enough to merit inclusion of the species.</p>



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Comment No.	Page	DEIS	Issue
77	3-129	<p>“Communities that would be directly affected by proposed offshore oil and gas exploration and seismic activities. These communities, adjacent to the Beaufort and Chukchi seas, from east to west are: Kaktovik; Prudhoe Bay/Deadhorse; Nuiqsut; Barrow; Wainwright; Point Lay; Point Hope; Kivalina; Kotzebue; and Nome.</p>	<p>Analysis limited to “communities that would be directly affected by proposed offshore oil and gas exploration and seismic activities. These communities, adjacent to the Beaufort and Chukchi seas, from east to west are: Kaktovik; Prudhoe Bay/Deadhorse; Nuiqsut; Barrow; Wainwright; Point Lay; Point Hope; Kivalina; Kotzebue; and Nome.</p>
78	3-130	<p>Alaska’s largest employment sector is the government, which is comprised of federal (16,604 employees), state (25,121 employees or 8 percent), and local (45,608 employees or 15 percent) government employees (ADCCED 2011a). Government bodies are also the largest employer with 1,973 employees in the NSB (58.1 percent) and Northwest Arctic Borough (NAB) employs 1,245 workers (39.2 percent) (ADLWD 2005, NSB 2005; ADCCED 2011a). Major local government employers include borough and other municipal government and school districts. Government funding also influences construction employment for capital projects in the NSB and NAB.”</p>	<p>The DEIS correctly recognizes that government revenue is an important driver for socioeconomic effects. Consequently, impacts from declining NSB and State of Alaska revenue from declining onshore oil production will certainly be more than “minor” and should be included in the No Action alternative.</p>



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Comment No.	Page	DEIS	Issue
79	3-135	"It is estimated that for each direct job created by future OCS activity in the oil and gas sector (and the revenues associated with production) an additional 4.8 indirect jobs are created in the Alaskan economy..."	Analysis of direct and indirect effects for alternatives apparently ignore the 4.8 multiplier for indirect employment acknowledged in Alternative 1. For example, in Alternative 2 (page 4-170), if local hire becomes more successful (i.e., closer to 200 new positions than 100) and the multiplier of 4.8 is acknowledged, the total new employment could reach 960, or nearly 8 percent of the total workforce of the NSB, NAB, and Nome (12,461). This would put the impact in the "medium" to "high" range.
80	3-136	"Average monthly wages in Alaska total \$3,866 per month per household, but the oil and gas extraction industry has the highest monthly wages at \$13,924."	Given this wage disparity, analysis of the magnitude of socioeconomic impacts (i.e., on a scale from negligible to major) should consider total direct and indirect payroll rather than just the number of jobs.
81	4-1	This chapter also includes a separate discussion and analysis of potential environmental impacts resulting from a large oil spill within the project area. A large oil spill is not considered part of the proposed action for any alternative because the occurrence of an oil spill is a highly unlikely event.	Evaluation of a VLOS should be deleted from the DEIS. It is an unlikely event and does not seem reasonably foreseeable.
82	4-1	A large oil spill is not considered part of the proposed action for any alternative because the occurrence of an oil spill is a highly unlikely event. However, if a large spill were to occur, it could result in adverse impacts on the resources discussed below. For this reason, the potential impacts of a very large oil spill are discussed and analyzed separately in Section 4.9 of this DEIS.	These sentences seem to contradict each other. Do not need to discuss if not part of the proposed action for any alternative.



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Comment No.	Page	DEIS	Issue
83	4-12	"Therefore, the summary impact level for socioeconomics is minor."	<p>The relative evaluation of physical, biological, and socioeconomic impacts in the DEIS is not grounded in a common basis of valuation. A common set of four criteria (intensity, duration, extent, context) described in Section 3.0 (page ES-15) are used to determine impact levels (negligible, minor, moderate, major) for the physical, biological, and social environment. This consistency implies relativity. But such comparison would require comparable valuation through environmental economic analysis (or other means). Absent such analysis, which is not apparent in the DEIS, characterization of impacts as negligible, minor, moderate, and major must be interpreted as qualitative judgments since no relative comparison is possible. Furthermore, a basis for comparison across alternatives, such as cost-benefit analysis or other assessment of relative value between human economic activity (e.g., employment, revenue) and physical / biological impacts, does not exist in the DEIS. Thus, the DEIS contains insufficient analysis to provide a basis for assessing the relative merits of alternatives.</p>



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Comment No.	Page	DEIS	Issue
84	4-43	Relevant Acoustic Thresholds	NMFS cites information from Richardson et al. (1995) which suggested that migrating bowhead whales may react at sound levels as low as 120 dB (RMS) re 1 uPa but fails to cite newer work by Christie et al. 2010 and Koski et al. 2009, cited elsewhere in the document, showing that migrating whales entered and moved through areas ensonified to 120-150 dB (RMS) deflecting only at levels of ~150 dB. Distances at which whales deflected were similar in both studies suggesting that factors other than just sound are important in determining avoidance of an area by migrating bowhead whales. This is a general problem with the EIS in that it consistently uses outdated information as part of the impact analysis, relying on previous analyses from other NMFS or MMS EIS documents conducted without the benefit of the new data.
85	4-49	Drillship sound calculations	In the fourth paragraph rather than using the measured source level of the Noble Discoverer the DEIS calculates drillship sound levels based on comparison of source levels with the Mt. Mitchell's DP system. Comparing the sound of the DP systems and using them to calculate drilling noise is not reasonable. Modeled values for the Discoverer based on the South China Sea are much more accurate.



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Comment No.	Page	DEIS	Issue
86	4-66	“Separate seismic surveys are prohibited from operating within 145 km (90 mi) of one another”	Suggesting that there is an additive effect of the seismic programs in terms of sound is incorrect. Given that seismic operations use impulsive sound rather than continuous sound there are few locations where sound pulses from both operations would be received simultaneously. At most locations the pulses would be received sequentially and would not exceed the sound level of the closer of the two operations. In the very small areas where pulses were received simultaneously with the same rms pressure level the sounds would add incoherently (with random phase) and at most would increase sound pressure levels by 3 dB. When the received levels of the overlapping pulses differ by 10 dB or more their combined level will be less than 1 dB greater than the strongest pulse.
87	4-67	No transit of exploration vessels into the Chukchi Sea prior to July 15 or until the beluga hunt is completed at Point Lay	Industry already works with Point Lay to avoid interference with the spring beluga whale hunt.
88	4-68	For exploratory drilling operations in the Beaufort Sea west of Cross Island, no drilling equipment or related vessels used for at-sea oil and gas operations shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.	This measure would prevent exploration of offshore leases west of Cross Island during the open water season. Such a closure would require refunding of lease purchase and investment by companies that are no longer allowed to explore their leases.
89	4-71	Behavioral Disturbance. The behavioral disturbance paragraph suggests that ice breaking may result in removal of ice causing out-of -season plankton blooms.	Ice broken during exploration activities would be "in season" and would not cause out-of-season blooms. Ice broken during other portions of the year such as during "in ice" seismic would reform very quickly and would be unlikely to have any effect on planktonic organisms.



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Comment No.	Page	DEIS	Issue
90	4-71	...that activities that disturb the bottom habitat in special habitat areas such as Barrow Canyon Critical Habitat Unit can be particularly damaging since these areas support biologically unique communities, as well as provide important feeding and resting grounds for demersal species and macrofauna.	We can find no indication elsewhere in the document that Barrow Canyon contains unique communities. Identify what the communities are, where they are located, and how oil and gas activities affect such resources, if they do exist. The statement refers to bottom habitat in the Barrow Canyon, which is 650-820 ft (200-250 m) deep.
91	4-71	... closure area does not contain any lease areas,	Figure 3.2-25 in the DEIS clearly shows a great number of active leases in State waters within the special habitat area.
92	4-97	Population-level effects would, therefore, be negligible (MMS 2008).	At the bottom of page 4-97 (last sentence) the EIS indicates that the impacts of discharges of drill cuttings and muds would be negligible but in the next paragraph they indicate that elimination of the discharge streams would reduce adverse impacts on the localized area. It is not reasonable to require the reduction of a negligible impact.
93	4-97	Sounds from exploratory drilling are different from airgun sounds. As described in Section 4.5.1.4 (Acoustics), most drilling sounds from vessels produce sounds at relatively low frequencies below 600 Hz with tones up to around 1,850 Hz (Greene 1987).	Seismic surveys encompass greater areas than drilling. More seismic surveys are included in the alternatives than needed; Consider exchanging seismic surveys for more drilling.
94	4-98	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	This section on bowhead whales does not include more recent data in the actual analysis of the impacts though it does occasionally mention some of the work. Rather it falls back to previous analyses that did not have this work to draw upon and makes similar conclusions. NMFS makes statements that are conjectural to justify its conclusions and not based on most recent available data.



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Comment No.	Page	DEIS	Issue
95	4-99	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	<p>The first paragraph on page 99 cites Funk et al 2011 but misrepresents the information available in that document. The DEIS states that apparent tolerance of seismic sounds by feeding whales seen by Funk et al 2011 and others should not be interpreted to mean that bowheads are unaffected by noise. It suggests feeding whales may be so highly motivated to stay in productive areas that they remain in an area with noise levels that could, with long term exposure, cause adverse affects and that they may suffer stress staying in an area with very loud noise. Funk et al. 2011 reported clear avoidance by feeding whales of sound levels great enough to cause either physical harm (180 dB rms) or behavioral changes (160 dB rms). These levels are recognized by NMFS as both appropriate and conservative for protecting baleen whales. The Funk et al. work found avoidance of seismic sources at ~150 dB and all available evidence suggests that whales avoid high levels of sound. There is no evidence that whales remain in sound levels that could or would cause harm to them. These statements have no support in the literature and are speculative.</p>
96	4-99	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	<p>The second paragraph on this page states that preliminary analyses by Christie et al. 2009 and Koski et al. 2009 showed a stronger tendency for migrating whales to avoid operating airguns than feeding whales. This is true but they fail to mention that these traveling whales all entered and moved through the 120 dB (rms) sound level. They then cite a 2008 MMS document to say most whales would be expected to avoid the sound source at 116 to 135 dB (rms) without ever analyzing and using the new data. Sound level is not the only factor influencing whale deflections around seismic sound sources. This analysis is flawed.</p>



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Comment No.	Page	DEIS	Issue
97	4-100	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	The first full paragraph of this page indicates that it is not known whether impulsive sound affects reproductive rate, distribution, or habitat use over periods of days or years. All evidence indicates that bowhead whale reproductive rates have remained strong despite seismic programs being conducted in these waters for many years. Whales return to these habitat areas each year and continue to use the areas in similar ways. There has been no shift in distribution or use. We do in fact know that the impacts are short term and on the scale of hours rather than days or years.
98	4-103	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	The last paragraph on this page indicates that the Camden Bay area is important feeding habitat in the US Beaufort Sea. The Camden Bay area is a feeding area in some years and not in others. Various places along the Beaufort Sea coast can, in some years, serve as feeding areas for bowhead whales depending upon the location of aggregations of prey. These aggregations do not always form in the same places along the coast with variation in locations except in a few places, most notably the feeding area to the east of Barrow where whales feed in most years. Whales commonly move across the entire Alaskan Beaufort Sea stopping only in the Barrow feeding area.
99	4-107	Bowhead Whales, Direct and Indirect Effects– Behavioral Disturbance	In the section on the Chukchi Sea activities the EIS states that the bowhead whale migration spreads out as it enters the Chukchi Sea resulting in a smaller percentage of whales moving across the Chukchi Sea through the lease area where blocks have been leased. They cite Quakenbush et al. 2010 to say it was about 2% of the total probability of use by bowhead whales. Later, in the fifth paragraph of page 107 the EIS states that anticipated impacts in terms of magnitude, duration, extent, and context would be similar to those described for the Beaufort Sea where nearly all of the whales pass through the leased areas. This conclusion is not supported by the EIS's own analysis.



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Comment No.	Page	DEIS	Issue
100	4-121	Gray whales have similar migration and life histories to bowhead whales, and could therefore suffer from similar effects.	Suggesting that gray whales have similar migration and life history to bowhead whales and therefore are likely to suffer similar effects is incorrect. Gray whales leave the arctic each year and typically remain along the Chukchi Sea coast, where there is no oil and gas exploration occurring. Along the coast they are rarely exposed to sound levels greater than 120 dB (rms).
101	4-153	Additional mitigation Measure A3 Limiting activities in situations of low visibility	The EIS states that the measure does not specify which activities will be limited or under what conditions. The EIS should state how this measure would be implemented.
102	4-166	Section 4.5.2.6 Special Habitat Areas	In order to designate “special habitat areas,” NMFS must go through the proper channels including a full review process. No such process was undertaken prior to designating these “special habitat areas.”
103	4-170	Direct and Indirect Effects for Alternative 2 – Level 1 Activity – Socioeconomics	<p>The analysis assumes local hire efforts fail to change historical patterns of local hire.</p> <p>NMFS apparently ignores the 4.8 multiplier for indirect employment acknowledged previously in Alternative 1. If local hire is more successful (i.e., closer to 200 new positions than 100) and the multiplier is applied, then total new employment could be 960, or nearly 8% of the total workforce of NSB, NAB, and Nome (12,461). This would put impact in the “medium” to “high” range.</p>
104	4-289	“Time/area closures are intended to reduce impacts to marine mammals during sensitive times and locations in their life cycle to decrease conflict with Native Alaskan marine mammal subsistence activities”	The fish and fish resources have nothing to do with the closings. The idea that closings could benefit fish by reducing exposure to sound and other seismic disruption is intuitively reasonable but empirically unsubstantiated.



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Comment No.	Page	DEIS	Issue
105	4-289	Time/Area Closures Barrow Canyon/Western Beaufort Sea	Because of high fish densities in this area the idea that reducing exposure to sound and other seismic disruption would benefit greater numbers of fish is intuitively reasonable but empirically unsubstantiated (including level of benefit).
106	4-290	Time/Area Closures- Barrow Canyon/Western Beaufort Sea: “The elimination of all exploration activities would benefit all assemblages of marine fish the most, with some anticipated benefit to migratory fish.”	This is an incorrect statement. Of the 13 species of migratory fish listed in this document (Table 3.2-1), four are largely limited to nearshore coastal waters: least cisco, Arctic cisco, broad whitefish, humpback whitefish (Collectively: Craig 1984; Craig et al. 1985; Glass et al. 1990; Fechhelm et al. 1994, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010; Griffiths et al. 1983, 1995, 1996, 1997; Reub et al. 1991; LGL 1990, 1991, 1992, 1993, 1994a, 1994b, 1999a, 1999b; Thorsteinson et al. 1990). These migratory species would not be found at sea in the northwest corner of the Beaufort Sea. Because Barrow Canyon cuts a northeast-southwest swath through the earth's surface about 20 miles north of Barrow (http://www2.gi.alaska.edu/ScienceForum/ASF12/1298.html), these migratory fish would not likely be in the southern portion of the area either. Further, sockeye and coho salmon reported for the Chukchi and Beaufort seas are rare extralimital strays and should not be implicated in the sentence as “migratory fish”.
107	4-290	Time/Area Closures- Shelf Break of the Beaufort Sea: “The elimination of all exploration activities would benefit all assemblages of marine fish the most, with some anticipated benefit to migratory fish”	This statement is intuitively reasonable but empirically unsubstantiated (including level of benefit). This is also incorrect for the reasons described above for Barrow Canyon/Western Beaufort Sea. Most migratory fish would not be found in offshore waters.



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Comment No.	Page	DEIS	Issue
108	4-290	Time/Area Closures- Hanna Shoal: “The elimination of all exploration activities would benefit all assemblages of marine fish the most, with some anticipated benefit to migratory fish”	Because Hanna shoal is located offshore in Chukchi Sea waters this statement is also incorrect for the reasons described above for Barrow Canyon/Western Beaufort Sea and Shelf Break of the Beaufort Sea. Most migratory fish would not be found in offshore waters.
109	4-290	Time/Area Closures- Kasegaluk Lagoon/Ledyard Bay Critical Habitat: “Migratory fish are likely to benefit from this closure... and many amphidromous fish also use brackish water for substantial portions of their life. Therefore, increased protection of these areas would be beneficial to migratory species”	This statement is likely incorrect. In one of the few nearshore fish surveys conducted in the coastal waters of the Chukchi Sea, Fechhelm et al. (1984) conducted summer sampling in Kasegaluk Lagoon proper and in the nearshore coastal waters in the vicinity. They reported “When compared with nearshore summer surveys in the Beaufort Sea, the most prominent feature of the Point Lay catch is the virtual absence of anadromous fish [anadromous/amphidromous] fish” (Fechhelm et al. 1984).
110	4-291	“The effect of the Time/Area closure outlined in Alternative 3 on Fish Resources and EFH would be a reduction in overall impact. Although the overall impact is considered to be negligible based on Alternative 3 alone, any further reduction in impacts resulting from the Time/Area closures would be beneficial.... Due to the substantial decrease to the already very small scale of any potential effects relative to overall population levels and available habitat, there would be no measurable effect on the resource”.	Given that the Time/Area closures are for marine mammals, Alternative 4 would be irrelevant and generally benign in terms of fish and EFH.
111	4-293	Time/Area Closures Impacts to Bowhead Whales	Implementation of the time/area closures as described in the EIS would severely and unnecessarily curtail industry activities during the open water season.



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Comment No.	Page	DEIS	Issue
112	4-295	Time/Area Closure - Shelf Break of the Beaufort Sea	The shelf break of the Beaufort Sea is used by beluga whales but many more use the ice edge habitat. Placing restrictions on the shelf break area of the Beaufort Sea is arbitrary especially when beluga whale impact analyses generally find only low level impacts under current standard mitigation measures.
113	4-295	Time/Area Closures - Hanna Shoal	Gray whales have not been using Hanna Shoal to the extent that they did historically. This may be due to a greater presence of walrus in the area or due to changes in prey distribution associated with climate change. Regardless, relatively few gray whales are using Hanna Shoal and maintaining a closure into early October for gray whales is far too long as most gray whales leave the Chukchi Sea well before mid-October. Having this closure for walrus does not agree with the analyses done in the EIS which consistently indicate low levels of impacts from exploration activities on walruses.
114	4-325	“Because the activity levels are identical, the effects of Standard Mitigating Measures will also be the same”	Alternative 5 differs from Alternative 3 in the application of alternative technologies. This statement implies “No Effect” since the Alternative 3 had “No Effect.”
115	4-325	LACS: “This would reduce potentially adverse impacts to fish by decreasing the number of fish exposed to high sound levels and potentially reduce the impacts from high sound levels as the maximum levels would be lower.”	This technology lowers the amount of energy put into the water compared to a traditional airgun array. This statement is intuitively reasonable for the reasons described for Hydraulic/electric vibrators.
116	4-325	DTAGS: “Based on an analysis of its operations, it is unlikely to reduce any adverse impacts on fish resources. In fact, it is possible that it could increase adverse impacts by increasing the total amount of exposure by fish resources to sound energy.”	This statement says either no effect or an adverse effect.



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Comment No.	Page	DEIS	Issue
117	4-325	“Marine vibrators emit sounds at lower pressure levels than airguns over a narrower range of frequencies than do airguns, thereby reducing the amount of damage in the immediate vicinity of the source, and reducing the number of fish able to hear the sound.”	Hydraulic/Electric Marine Vibrators This statement is intuitively reasonable: lower sound levels decrease the level of noise and any potential stress/impact associated with it. Suggest adding the word “potentially” before the word “reducing” in both instances.
118	4-437	General Comment: Cumulative Impacts	Include summary table describing or summarizing the level of cumulative impacts per alternative/category.
119	4-437	General Comment: Cumulative Impacts	The only cumulative impact with a “Major” rating is for Visual Resources. It has not been demonstrated that impacts on visual resources can act cumulatively in two areas as far apart as the Chukchi and Beaufort Sea Planning Areas. Also, the Chukchi lease areas are so far offshore as to not be visible from shore or subsistence use areas.
120	4-443	Impacts from exploration activities tend to be limited in duration and occur in the immediate vicinity of exploration activities and transportation support routes	This statement would suggest that cumulative impacts from exploration activities have not occurred despite nearly 60 years of activities and contradicts multiple statements throughout the document that suggest we do not know what any of the long term or cumulative impacts from the activities are.
121	4-470	Alternative 2 Conclusion	Conclusion states that exposures to potentially injurious sound levels might be more likely to occur in the Beaufort Sea with multiple programs occurring. Yet there is no evidence that any whales have been exposed to “injurious cumulative sound levels” during 60 years of exploration activities. Furthermore, the EIS states that impacts from these activities over the previous 60 years have been limited in duration and localized without indications of long term or cumulative effects. These seem to be conflicting statements.



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Comment No.	Page	DEIS	Issue
122	4-480	The EIS suggest that there could be "regional level effects on bowhead whales" because the EIS project area extends across most of the migratory pathway of the whales.	There is no evidence after 60 years of exploration activities, often with multiple operations, that anything approaching a "regional level effect" has occurred. The bowhead whale population has grown to a point where many feel they should no longer be considered endangered, impacts have been shown to be localized in area and short term in duration as evidenced by the continued growth of the population and the continued use of the traditional habitat areas (including feeding areas) and migratory pathways of the whales. Further, the EIS itself states similar conclusions on page 443. This flawed analysis does not consider the science that has been done. Further still, this same statement is carried ahead in the analysis on page 482 where similarly flawed conclusions are reached.
123	4-516	"marine mammals might have more difficulty avoiding the potential injury zones when greater numbers of seismic surveys were operating"	Suggesting that marine mammals will have trouble navigating between seismic surveys and drill operations without using any distances or data is speculative. Distances between prospects are considerable and current regulations limiting how close operations may be to each other would already limit the overlap of sound in the marine environment.
124	4-520	"Potential long-term effects from repeated disturbance over time or over a broad geographic range are unknown."	The EIS suggests that there is potential for bowhead whales to have long term effects from repeated disturbance over time or broad geographic areas. All evidence, however, indicates that after 60 years of exposure to oil and gas exploration activities in the Beaufort and Chukchi Seas including simultaneous programs in the US and Canadian waters there have been no measureable long term effects on bowhead whales. To say this is unknown is wrong. This same paragraph goes on to suggest that regional level effects are possible. Again, after 60 years such effects should be evident but they are not. Rather, bowheads are reaching a population level that will remove them from the endangered species list.



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Comment No.	Page	DEIS	Issue
125		General Comment	There is a general level of speculation in this DEIS. Many of the conclusions lack supporting data.
126		General Comment	In general conclusions reached for most species indicate that oil and gas operations have successfully limited their impacts using the standard mitigation measures typical of IHAs yet in this DEIS, NMFS proposes a number of large scale time/area closures. If impacts have been minimal then there is no justification for these additional mitigation measures. NMFS does not clearly demonstrate justification of these measures, relying on speculation that the measures will provide additional protection to marine mammals and in some cases birds and/or fish. However, little or no data is presented to support these conclusions. While such measures may provide some measure of additional protection to biological resources the gain from such measures given the EIS's own analyses would be minimal.
127	5-2	The EIS will also assist NMFS in carrying out other statutory responsibilities	Clarify what other statutory responsibilities are facilitated by this EIS.
128	5-3	This DEIS examines a projected use of alternative technologies, but the actual amount that might be used between 2012 and 2017 (the timeframe of this EIS) is not fully known at this time.	The use of alternative technologies should not be evaluated, because they cannot be conceivably developed and made commercially available during the time period covered by this EIS.
129	5-3	This EIS will also assist BOEM in carrying out other statutory responsibilities.	Clarify what other statutory responsibilities are facilitated by this EIS.
130	5-10	5.4.1 – Conflict Avoidance Agreement: “with each year’s CAA process resulting in an agreement, the CAA, signed by the participants.	The CAA is not always signed by all participants due to disagreements on certain mitigation measures and other issues. This statement is misleading.



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Comment No.	Page	DEIS	Issue
131	Appendix A	Mitigation Measures	The negative impacts these measures would have on industry and the expeditious development of the OCS are significant and were not described, quantified, or seriously considered in the DEIS.
132	A-1	A1 - "typical language in past ITAs includes:"	The reader is referred in Section 2 of the DEIS to Appendix A for details on the mitigation measures – these details repeatedly say typical language – which is not clear if all the bullets under that statement apply. This language is also in Measures A2, A3. Clarify which parts of the mitigation measure would apply.
133	A-5	A4 and A5 - three bullets about 1) PSOs are a key component, 2) locations of seal structures must be marked, 3) no ice roads may be built	Mitigation Measure A5 can be deleted as it is essentially the same as A4.
134	A-4, A-8	B1 and D3- mitigation requirements: aircraft shall not operate below 457 m, aircraft engaged in marine mammal monitoring shall not operate below 305 m.	Standard Mitigation Measures under B1 and D3 have identical requirements and appear to apply to the same activities – so they should be deleted from one or the other.
135	A-6	D1 - "Start dates for hunts are based on:"	This sentence should be deleted. Geophysical activity is restricted based on a start date of August 25.
136	A-6	D1 - "Shutdown of activities in specific areas of the Beaufort Sea corresponding to the start and conclusion of the fall bowhead whale hunts in Nuiqsut and Kaktovik beginning on or around August 25:"	Language needs to be more definitive. Should say "on August 25."



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Comment No.	Page	DEIS	Issue
137	A-7	D1 - "Industry participants will contact the whaling captains' associations of Wainwright, Point Lay, and Point Hope to determine if the village is planning to participate in a fall whale hunt. If the village whaling captains indicate that they plan to participate in the fall whale hunt, before September 15, no more than two geophysical activities employing airguns will occur at any one time within 48.3 km (30 mi) of any point along the Chukchi Sea coast until the close of the fall bowhead whale hunt."	Surveys would likely have already started by September 15. Clarify how this communication would be made, and how to determine which survey program(s) shut down.
138	A-9	A2- Measures to assess efficacy and improve detection capabilities in low visibility situations (e.g. Forward Looking Infrared [FLIR] imaging devices, 360° thermal imaging devices). All PSOs could be provided with and use appropriate night-vision devices, Big Eyes, and reticulated and/or laser range finding binoculars in order to detect marine mammals within the Exclusion Zone.	FLIR is mentioned in the title and not in the measure. Change the title to refer to PSO ocular equipment.
139	A-9	A.3- Limiting activities in situations of low visibility.	Define limits of visibility.
140	A-9	A4- Measures to increase detection probability for real-time (e.g. to maintain 180 dB shutdown zones), such as passive and active acoustic monitoring.	This mitigation measure is too vague. Neither its efficacy nor cost can be assessed. Such mitigation measures should be clarified or deleted. Define/describe active and passive acoustic monitoring.



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Comment No.	Page	DEIS	Issue
141	A-10	A5- A 160-dB vessel monitoring zone for bowhead and gray whales will be established and monitored in the Chukchi Sea and after August 25 in the Beaufort Sea during all seismic surveys. Whenever an aggregation of bowhead whales or gray whales (12 or more whales of any age/sex class that appear to be engaged in a non-migratory, significant biological behavior (e.g. feeding, socializing)) are observed during an aerial or vessel monitoring program within the 160-dB safety zone around the seismic activity, the seismic operation will not commence or will shut down, until two consecutive surveys (aerial or vessel) indicate they are no longer present within the 160-dB safety zone of seismic-surveying operations.	There is no explanation as to how the number 12 was arrived at – no scientific data. Additionally, text in the DEIS on page 4-156 states that this measure has been applied to projects since 2006 and has resulted in no shut downs of operations as bowhead whales have not been detected in the groupings that would trigger the implementation of these measures. If the occurrence is so rare that it has not been required in five years, then the occurrences are not frequent enough to result in any biological harm and the mitigation measure should be dropped.
142	A-10	A5- Enhancement of monitoring protocols and mitigation shutdown zones to minimize impacts in specific biological situations.	This mitigation measure should be clarified. Per Standard Mitigation Measure D1, seismic surveys cannot be conducted from August 25 until the end of whaling.
143	A-10	B- These measures would be required for all activities that occur during the open-water season (i.e. 2D/3D seismic surveys including in-ice seismic, site clearance and high resolution shallow hazards surveys, and exploratory drilling activities).	Clarify how and if this applies to other types of surveys (e.g. geological soil investigations, ice gouge, strudel scour, environmental baseline monitoring studies).
144	A-10	B1- Temporal/spatial limitations to minimize impacts in particular important habitats, including Camden Bay, Barrow Canyon, Hanna Shoal, the shelf break of the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.	These closures, on top of standard closures, will not allow a reasonable amount of time to complete exploratory drilling activities. NOAA states that they removed the permanent closure scenario from further analysis; however, the addition of these mitigation measures effectively closes areas from drilling activities.



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Comment No.	Page	DEIS	Issue
145	A-11	B1- Closure: Camden Bay: Sept 1 – October 15; late august – early October	Operators typically shutdown for whaling activities from August 25-last whale strike in the Beaufort Sea (at least for seismic). Must define/be more specific about “late” August and “early” October.
146	A-11	Camden Bay Special Habitat Area Closure is simply described as: an area of high biological productivity, that includes kelp communities; a feeding and resting area for bowhead whales (including subadults and females with calves); and a fall subsistence bowhead whale hunting area. The DEIS further states that it is a primary migration and feeding area for bowhead whales in September 1 – October 15, citing Huntington and Quakenbush 2009, Koski and Miller 2009, and Quakenbush et al.2010a.	These statements do not indicate how they came up with the boundaries or the timing, and the cited references do not seem to support the statement in the DEIS.
147	A-11	B1- Closure: Barrow Canyon and the Western Beaufort Sea: August 1-“early October (or end of Barrow whaling)	Closures of restricted areas unduly constrain operational windows. Be more specific with dates and clearly define “Western Beaufort Sea.”
148	A-11	B1- Closure: Shelf Break of the Beaufort Sea: mid July-late September	Define “shelf break of the Beaufort Sea” and specify dates.



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Comment No.	Page	DEIS	Issue
149	A-11	<p>B1- Camden Bay: minimizing disturbance of feeding and resting whales. Bowhead whales:</p> <p>September 1 – October 15 for primary migration and feeding (Huntington and Quakenbush 2009; Koski and Miller 2009; Quakenbush et al. 2010a)</p> <p>Subsistence (bowhead whale hunting): late August – early October (Huntington and Quakenbush 2009)</p>	<p>A closure of the identified Camden Bay area from Sep 1- Oct 15 because of whale feeding and migration is unsupported scientifically and would be unacceptable to Shell as it encompasses most of Shell's identified prospects in the Beaufort Sea. Very few reports allude to Camden Bay as an especially important feeding area. Bowheads are known to obtain most of their nutrition in Canadian waters and feed sporadically at various locations in Alaska Beaufort during migration - but these areas change yearly with distribution of zooplankton. If this closure is added on to a closure for the Nuiqsut and Kaktovik hunts as Shell has offered to do in all Beaufort Sea EPs, about half of the drilling season would be lost.</p> <p>The last date on which a bowhead was harvested by Nuiqsut and Kaktovik has ranged from September 6 to September 25 during the last ten years. A closure into October may not be substantiated. It would be preferable for closure to end when the whaling season ends rather than on a hard date.</p>
150	A-12	B2- NMFS restricting number of surveys (of same level of detail) that can be conducted in the same area in a given amount of time (i.e. to avoid needless collection of identical data).	NMFS cannot directly restrict the number of surveys, only takes.
151	A-12	B2- NMFS restricting number of surveys (of same level of detail) that can be conducted in the same area in a given amount of time (i.e. to avoid needless collection of identical data). Require industry to organize a way to interact with one another to identify when and if duplicative surveys are likely to occur (survey type to gather same type of data within five years) and outline efforts to avoid or describe justification.	Five years is too long of a period to project future seismic activity. There is no scientific basis for the five year period. It would be difficult for a company to find out who might have a similar survey planned in that time frame. Lease holders would not likely know what specific seismic surveys will be required five years out, and there is no way to identify speculative seismic surveys. We recommend this mitigation be dropped or changed to one year.



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152	A-12	B3- Separate seismic surveys are prohibited from operating within 145 km of one another.	NMFS often assumes that incidental harassment could occur with levels of > 160 dB for airgun arrays used in scientific surveys. The radii for 160 dB for 3D seismic surveys in the Beaufort Sea and Chukchi Sea are 9-13 km from the array (pg 4-44). The distance in the mitigation measure therefore seems excessive and no scientific basis was provided.
153	A-12	C1- Vessels and aircraft avoidance of concentrations of groups of ice seals, walrus, and polar bears. Under no circumstances, other than an emergency, should aircraft be operated at an altitude lower than 457 m (1,500 ft) when within 0.8 km (0.5 mi) of ice seal or Pacific walrus groups.	A minimum altitude of 457 m is already part of the Standard Mitigation Measures (twice already B1 and D3). Delete this part of C1 to streamline measures.
154	A-13	<p>C3- Requirements to ensure reduced, limited, or zero discharge of any or all of the specific discharge streams identified with potential impacts to marine mammals or marine mammal habitat. Discharge streams identified with potential impacts to marine mammals or marine mammal habitat include the following:</p> <ul style="list-style-type: none"> • Drill cuttings; • Drilling fluids; • Sanitary waste; • Bilge water; • Ballast water; and • Domestic waste (i.e. gray water). <p>C4- Operators are required to recycle drilling muds (e.g. use those muds on multiple wells) based on operational considerations to reduce discharges.</p>	Earlier in the DEIS it was stated that NPDES permitting effectively regulates/handles discharges from operations. Zero Discharge was removed from further analysis in Chapter 2.5.4. Remove the zero discharge additional mitigation measures.



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Comment No.	Page	DEIS	Issue
155	A-13	C3- Requirements to ensure reduced, limited, or zero discharge of any or all of the specific discharge streams identified with potential impacts to marine mammals or marine mammal habitat.	There is no documentation to confirm impacts on marine mammals from discharge streams.
156	A-13	<p>Additional Mitigation Measure D1. No transit of exploration vessels into the Chukchi Sea prior to July 15 or until the beluga hunt is completed at Point Lay.</p> <ul style="list-style-type: none">• Any vessel conducting geophysical work in the Chukchi Sea should remain as far offshore as weather and ice conditions allow and, at all times, at least 8.05 km (5 mi) offshore during transit except for emergencies or human/navigation safety.• Geophysical activity shall not be conducted within 96.56 km (60 mi) of any point on the Chukchi Sea coast.	See previous comment (number 81) on restricting transit until July 15. In addition, the two bullets provided do not relate to D1. Remove the bullets or make them separate mitigation measures.



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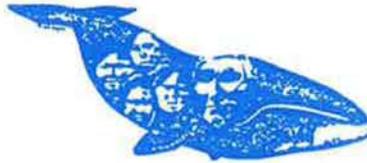
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Alaska Eskimo Whaling Commission

P.O. Box 570 • Barrow, Alaska 99723

(907) 852-2392 • Fax: (907) 852-2303 • Toll Free: 1-800-478-2392

February 28, 2012

VIA ELECTRONIC SUBMISSION to arcticeis.comments@noaa.gov

Mr. Jim Lecky, Director
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Springs, MD 20910

Re: Comments of Alaska Eskimo Whaling Commission on Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean (76 Fed. Reg. 82275) (December 30, 2012)

Dear Mr. Lecky:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean (the DEIS), which was prepared by the National Marine Fisheries Service (NMFS) Office of Protected Resources (OPS) within the National Oceanic and Atmospheric Administration (NOAA).¹ These comments are submitted on behalf of the Alaska Eskimo Whaling Commission (AEWC). AEWC represents the eleven bowhead whale subsistence villages of Barrow, Nuiqsut, Kaktovik, Point Hope, Wainwright, Kivalina, Wales, Savoonga, Gambell, Little Diomedede, and Point Lay. AEWC's members include whaling captains and communities along the North Slope of Alaska who are dependent upon the bowhead whale and other marine species in the Beaufort Sea and Chukchi Sea for our subsistence lifestyles. Our people depend upon the resources of the Arctic Ocean for the continuation of their ancient traditions as well as their physical, mental and spiritual health.

¹ National Oceanic and Atmospheric Administration, Notice of Availability of a Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean. 76 Fed. Reg. 82276 (December 30, 2011).

At the outset, AEWG would like to both thank and commend you and your staff on the impressive work that went into preparation of the DEIS. We recognize the efforts that your staff have made to include in the DEIS accurate and sound scientific and legal analysis. Although we have many concerns about the DEIS and the proposed action, we offer our insights in the hopes of building on the impressive work of your personnel. We also appreciate the efforts made to date to provide AEWG timely information regarding the development of the DEIS and an opportunity to participate in that process.

As you know, AEWG co-manages the subsistence harvest of the bowhead whale, our most important subsistence resource, pursuant to a cooperative agreement with the National Oceanic and Atmospheric Administration.² For many years, AEWG has worked cooperatively with the responsible federal agencies, including NMFS and OPR, as well as numerous oil companies to prevent conflicts between offshore activities in the Arctic and the subsistence activities of AEWG's members and their communities. Pursuant to the Marine Mammal Protection Act (MMPA), Congress implemented special protections for our subsistence activities, and AEWG has played an active role in the implementation of the MMPA for the benefit of our local communities.³ For decades, we have attempted to work with both NMFS and the Bureau of Ocean Energy Management (BOEM)⁴ to ensure that federal agencies give voice to and protect the interests of the local Inupiat communities who stand to lose the most from poorly regulated industrial activity.

Since 1985, AEWG has worked directly with the oil industry in developing the annual Conflict Avoidance Agreement (CAA) as a mechanism to ensure that offshore oil and gas development can co-exist with bowhead whale subsistence hunting. The CAA process has been highly successful in protecting the interests of the local community while facilitating exploration and development of offshore resources. For 20 years, from 1986-2006, exploration and development in the Beaufort and Chukchi Seas proceeded, virtually without dispute or disruption, pursuant to specific mitigation measures developed through the annual CAA process and memorialized in the CAA itself. During this time, oil companies successfully conducted exploration in both seas, and BP developed the Northstar facility with the cooperation of AEWG and its whaling captains. During this time period, the CAA has emerged as a highly effective and, because of the annual CAA process of stakeholder engagement and review, an adaptable marine spatial planning process for Arctic OCS development. The AEWG therefore has many years of experience in seeking to balance offshore activities with the interests of the locally impacted community.

Based on our decades of experience working directly on these issues hand-in-hand with the oil industry, we have been stating for many years now that the federal

² Cooperative Agreement between the National Oceanic and Atmospheric Administration and the Alaska Eskimo Whaling Commission as Amended 2008. Exhibit A.

³ 16 U.S.C. § 1361 *et seq.*

⁴ BOEM was formerly known as the Minerals Management Service (MMS).

government must develop a comprehensive management plan for the Arctic Ocean.⁵ Industry's increasing interest in the offshore resources of the Arctic demands a more intentional, broad scale management approach to preventing conflicts between existing subsistence-based uses and proposals for new industrial activity. The science needed to develop a comprehensive picture of the Arctic ecosystem is falling into place, and we have analogous examples to work from, including Norway's proactive plan to manage offshore oil and gas development in the Barents Sea.⁶

To this point in time, however, both NMFS and BOEM have been exercising their legal authorities on a piece meal basis in response to industry requests for site-specific proposals without having comprehensive and proactive habitat protections in place. This approach gravely concerns our whaling captains over issues like baseline science, cumulative impacts, oil spill response capabilities, and the impacts of underwater noise on bowhead whale behavior. While we appreciate NMFS's effort to take a holistic look at the offshore oil and gas activities being approved in the Arctic, the DEIS includes alternatives for implementation that authorize a level of offshore activity that, if fully realized, has the potential to result in an unprecedented level of impacts to bowhead whales. This is particularly true when the cumulative effects of activities planned or being planned for the Arctic during the next several years are taken into account. In the absence of a process that requires involvement of local communities and science-based management, the resulting impacts threaten unforeseen and unknown consequences to our subsistence resources and therefore our local communities. These risks should not be borne by our people given the potential catastrophic consequences and the Congressional protections for our subsistence protections embodied in the MMPA.

It is our hope that a comprehensive management plan will protect our subsistence livelihood and way of life for our children and grandchildren, while at the same time providing opportunities to meet the energy demands of our Nation in a way that benefits our local communities. The DEIS recently published by your agency provides a unique opportunity to move us towards those laudable goals, which are within reach, but the federal government, and, in particular, NMFS, must intentionally lead us towards those objectives. This process will require difficult decisions and policy choices, but, despite the difficulty of the challenge, we collectively have a responsibility to tackle this problem. We have tried piece meal decision-making, and the one sure lesson we can take away from our experiences of the past five years is that this approach to management

⁵ See, e.g., Alaska Eskimo Whaling Commission, Re: Scoping Comment on BOEMRE's Programmatic Environmental Impact Statement for the Proposed 2012-2017 Outer Continental Shelf Oil and Gas Leasing Program. 76 Fed. Reg. 376 (January 5, 2011), March 31, 2011. Exhibit B.

⁶ The Royal Norwegian Ministry of the Environment, Report No. 8 to the Storting (2005-2006): Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands at 7 (Mar. 31, 2006), available at <http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/integrated-management-of-the-barents-sea.html?id=87148>. Exhibit C.

does not incorporate adequately the interests of the local impacted community and it does not facilitate offshore activity.

With our goals and interests in mind, please give serious consideration to the following comments, which reflect the collective concerns of our whaling captains, developed over the course of several decades of experience in attempting to manage conflicts between offshore activity and our subsistence-based practices. In the first part of our comments, we provide a summary of our major concerns, which are then followed by more detailed comments on the DEIS. As always, thank you for considering the input of our community, and we would welcome the opportunity to discuss these issues with you and your staff at any time.

Please Consider a Community-Based Alternative Modeled on the Conflict Avoidance Agreement

Each of the action alternatives in the DEIS involve specific levels of industrial activity in the Beaufort and Chukchi Seas, but NMFS proposes to defer decisions on the specific protections and mitigation measures that will be used to protect habitat for the bowhead whale and our subsistence practices. In our view, the analysis of alternatives is fundamentally flawed, because NMFS has not included any alternatives that include a fully-developed suite of protections for existing subsistence-based uses and habitat for marine mammals. To remedy this problem, we strongly encourage NMFS to consider an alternative modeled off of the CAA, which would include an upfront decision on specific mitigation to be used along with a collaborative process undertaken on an annual basis in which the oil industry and local communities negotiate adjustments to those measures if appropriate. NMFS would retain final authority to determine whether and how to implement these annual adaptations.

Compliance with the MMPA Standards for Subsistence and Protection of Bowhead Whales

We are extremely concerned that NMFS has not assessed whether the proposed alternatives would comply with the substantive standards of the Marine Mammal Protection Act (MMPA). In particular, we strongly urge NMFS to conduct an up front and transparent analysis of whether the proposed levels of industrial activity, along with appropriate mitigation measures and other protections for habitat and subsistence uses, will comply with the “negligible impact” and “no unmitigable adverse impact” standards of the MMPA. This analysis should be set forth in a revised Draft EIS and should be subject to public comment before NMFS takes a final agency action approving overall levels of industrial activity in the Beaufort and Chukchi Seas.

Mitigation Measures

We are similarly concerned that NMFS proposes to defer a final determination of which specific mitigation measures will apply to industrial activity. We strongly

encourage NMFS to include in a revised DEIS proposals for a complete suite of mitigation measures, which are necessary to allow for adequate public input and review on what the community views as the most important components of a plan for managing industrial activity in the Arctic. We also have concerns about the discussion and treatment of several specific mitigation measures, including safety zones, start-up and shut-down procedures, use of Marine Mammal Observers during periods of limited visibility, and the like. NMFS must include an upfront discussion of whether and to what extent these mitigation measures may be effective at preventing impacts to bowhead whales and the subsistence hunt.

Deferral Areas

AEWC was disappointed to hear that NMFS was unwilling to consider in the DEIS permanent deferral for areas of special importance to bowhead whales and the subsistence hunt. NMFS suggests that AEWC advocate for deferral areas before BOEM as part of the planning process for the five-year plan, however, before the release of the DEIS, BOEM already publicly announced its refusal to consider additional deferral areas as a part of that process. We ask that NMFS include in a revised DEIS a discussion of additional deferral areas and a reasoned analysis of whether and to what extent those deferral areas would benefit our subsistence practices and habitat for the bowhead whale. The selection of specific deferral areas should be informed by the traditional knowledge of our whaling captains and should be developed with specific input of each community.

Cumulative Impacts

AEWC remains gravely concerned about the long-term cumulative impacts to the bowhead whale and its habitat, particularly given the extremely high levels of industrial activity proposed in the action alternatives set forth in the DEIS. We again ask that NMFS conduct a more thorough analysis of cumulative impacts to the bowhead whale and its habitat that includes oil and gas activities in the Canadian Beaufort and the Russian Chukchi Sea as well as entanglement with fishing gear, impacts of increased traffic associated with the oil and shipping industries, discharge, air pollution and other anthropogenic sources of underwater noise and/or disturbance.

The Suggested Path Forward

Given our concerns, AEWC recommends that NMFS revise the DEIS and take a renewed round of public comment before taking a final action on future levels of industrial activity in the Beaufort and Chukchi Seas. The DEIS, as written, is unlikely to pass muster under the National Environmental Policy Act, the Marine Mammal Protection Act, or the Administrative Procedure Act. The agency's limited resources would be better spent revising the DEIS to address the concerns of the local communities as opposed to finalizing a document that lacks information necessary to make an informed choice among available alternatives.

To the extent that NMFS insists on finalizing the EIS despite the concerns of the local community, we strongly encourage the agency to select Alternative 1 along with the time/area closures of Alternative 4, alternative technologies of Alternative 5, and additional components of the “Additional Mitigation Measures,” including zero discharge in the Beaufort Sea, limitation on vessel transit into the Chukchi Sea, protections for the subsistence hunt in Wainwright, Pt. Hope and Pt. Lay, sound source verification, expanded exclusion zones for seismic activities, and limitations on limited visibility operation of seismic equipment.

I. Background on the Marine Mammal Protection Act

Before discussing our specific concerns with the DEIS, we feel it important to ground our comments in the text and policy objectives of the Marine Mammal Protection Act and its implementing regulations. Our work, and the work of NMFS, must be guided first and foremost by the MMPA, and we encourage NMFS to amend the DEIS to include a more complete description of the applicable statute and implementing regulations.

The MMPA implements Congress’ intent to conserve marine mammals, the marine ecosystem, and the subsistence practices of Alaska Natives.

[I]t is the sense of the Congress that [marine mammals] should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be **to maintain the health and stability of the marine ecosystem**. Whenever consistent with this primary objective, it should be the goal to obtain an optimum sustainable population keeping in mind the carrying capacity of the habitat.⁷

Based on its intent to manage the overall health and stability of the marine ecosystem as a whole, Congress also clearly stated that “efforts should be made to protect essential habitats, including the rookeries, mating grounds, and areas of similar significance for each species of marine mammal from the adverse effect of man’s actions . . .”⁸ Congress therefore imbued the entire statute with a clearly expressed policy objective of protecting the larger ecosystem and those places that are particularly important for marine mammals.

In order to achieve these policy objectives, Congress implemented a “moratorium on the taking . . . of marine mammals . . .”⁹ The sole *exemption* to this broad moratorium was for the taking of marine mammals by Alaska Natives for subsistence purposes.¹⁰

⁷ 16 U.S.C. § 1361(6) (emphasis added).

⁸ 16 U.S.C. § 1361(2).

⁹ 16 U.S.C. § 1371(a).

¹⁰ 16 U.S.C. § 1371(b). The statute thus recognizes and assumes that subsistence practices are typically managed by the community to conserve populations of marine

Thus, Congress has given priority to subsistence takes of marine mammals over all other *exceptions* to the moratorium, which may be granted *only* if our subsistence practices and the bowhead whale are protected.

One such exception is for an “incidental, but not intentional, taking . . . of small numbers of marine mammals . . .”¹¹ In order to issue an incidental take authorization, the Secretary must issue a finding that the requested takes: 1) “will have a negligible impact on such species or stock;” and 2) “will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses pursuant to subsection (b) of this section . . .”¹² The *exception* to the moratorium for incidental takes is therefore explicitly subordinate to the *exemption* to the moratorium created by Congress for subsistence uses.

In issuing the incidental take authorization, the Secretary shall prescribe: 1) “the permissible methods of taking by harassment pursuant to such activity, and other means of effective the least practicable impact on such species or stock;”¹³ and 2) “the measures the Secretary determines are necessary to ensure no unmitigable adverse impact on the availability of the species or stock for taking for subsistence uses . . .”¹⁴

The MMPA implementing regulations provide further meaning to the statutory standards. A “negligible impact” is defined as “an impact resulting from the specific activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”¹⁵

An “unmitigable adverse impact” is defined as an impact resulting from the specific activity:

- (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by:
 - (i) Causing the marine mammals to abandon or avoid hunting areas;
 - (ii) Directly displacing subsistence users; or
 - (iii) Placing physical barriers between the marine mammals and the subsistence users; and

mammals and therefore requires the Secretary to issue specific findings before regulating subsistence takes to protect a species or stock of marine mammals. *Id.*

¹¹ 16 U.S.C. § 1371(a)(5)(A)(i), (D)(i).

¹² 16 U.S.C. § 1371(a)(5)(A)(i)(I), (D)(i)(I)-(II).

¹³ 16 U.S.C. § 1371(a)(5)(A)(i)(II)(aa), (D)(ii)(I).

¹⁴ 16 U.S.C. § 1371(D)(ii)(II).

¹⁵ 50 C.F.R. § 216.103.

(2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.¹⁶

Two components of this definition are particularly important. First, the term is defined to include interference with “a harvest,” which reflects the importance of each season’s hunt in each individual community. Second, mitigation for adverse impacts must preserve a community’s access to marine mammals as opposed to providing some other compensation or source of food. The regulation therefore reflects the unique importance of the subsistence hunt, both as a cultural and spiritual practice as well as an irreplaceable source of healthy food the loss of which that cannot be mitigated through other means.

In evaluating applications for incidental harassment authorizations (IHAs), the Assistant Administrator “shall evaluate each request to determine, based upon the best available scientific evidence, whether the taking by the specific activity” will comply with the “negligible impact” and “no unmitigable adverse impact requirements.”¹⁷ An IHA must also set forth the “means of effecting the least practicable adverse impact on the species, its habitat, and on the availability of the species for subsistence uses.”¹⁸

As NMFS considers how to move forward with the DEIS, we strongly encourage the agency to adhere to the will of the Congress and its own interpretations of the statutory direction as embodied in the regulations, specifically the priority granted by Congress for marine mammal subsistence uses vis-à-vis requests for incidental takes. We also request that NMFS’s work be guided by Congressional directive to focus on overall ecosystem health and the agency’s own commitment to make decisions based on the best available science.¹⁹ Finally, as will be discussed in more detail, we strongly encourage NMFS to address in the DEIS whether and to what extent proposed levels of industrial activity will comply with the substantive standards of the MMPA.

II. NMFS Should Consider an Alternative Based Upon and Incorporating the Conflict Avoidance Agreement Process.

AEWC requests that NMFS include in the DEIS an alternative that establishes direct reliance on the Conflict Avoidance Agreement (CAA) and the collaborative, community-based process that has been used to implement successfully the CAA for more than 20 years. That alternative should include a fully developed suite of mitigation measures similar to what is included in each annual CAA, as well as an annual adaptive decision making process whereby the oil industry and the AEWc come together to discuss new information and potential amendments to the mitigation measures and/or

¹⁶ *Id.*

¹⁷ 50 C.F.R. § 216.104(c), 216.107.

¹⁸ 50 C.F.R. § 216.107(a)(2).

¹⁹ 50 C.F.R. § 216.102.

levels of industrial activity. Although we know that NMFS has struggled with how to incorporate a negotiated agreement into its regulatory structure, the agency can simply require that the companies engage in the process, with NMFS representatives as observers, while retaining final authority to decide on adaptive management measures.

In particular, we propose that this alternative include an up front decision by NMFS on a fully developed suite of mitigation measures designed to protect our subsistence practices. We have attached the last three versions²⁰ of the CAA to provide context for how such an alternative would be structured. In particular, the CAA includes: a) a long-standing communications scheme to manage industry and hunter vessel traffic during whale hunting; b) time-area closures that provide a westward-moving buffer ahead of the bowhead migration in areas important for fall hunting by our villages; c) vessel movement restrictions and speed limitations for industry vessels moving in the vicinity of migrating whales; d) limitations on levels of specific activities; e) limitations on discharges in near-shore areas where food is taken and eaten directly from the water; and f) other measures to facilitate stakeholder involvement. To be clear, an alternative modeled on the CAA should include an up front decision on a complete set of mitigation measures that the agency believes is necessary to meet with standards of the Marine Mammal Protection Act.

One well-documented benefit of the CAA process is the adaptive management component, whereby offshore operators and the AEWc discuss proposals planned for each year and adjust the mitigation measures to address new information or changed circumstances. We believe it important for NMFS to incorporate a similar adaptive management process into an alternative modeled off of the CAA, because without doing so the agency cannot fully analyze and consider the benefits provided by this community-based, collaborative approach to managing multiple uses on the Outer Continental Shelf.

In particular, we ask that NMFS include as a part of the alternative an annual process whereby offshore operators and AEWc would negotiate adaptive management provisions on an annual basis, as is currently done pursuant to our existing 20-year old process. Each year, NMFS would require that offshore operators negotiate with the AEWc on amendments to the standard set of mitigation measures. That collaborative process would address new information and changed circumstances as well as the specific industrial operations planned for that specific year. NMFS would retain the authority and discretion to make a final decision on implementation of any particular adaptive management measures, consistent with its previous practice of “generally assum[ing], with some associated analysis, that if a company and the AEWc signed a CAA . . . then it was possible to conduct their activity without having an unmitigable adverse impact on the subsistence hunt.”²¹

²⁰ Exhibits D-F.

²¹ DEIS at ES-33.

As a part of designing such an alternative, NMFS should think carefully about how to integrate the timing of the adaptive management process with the decisions to be made by both NMFS and BOEM regarding annual activities. As you know, the CAA negotiations currently take place in February of each year, but, particularly in the case of BOEM, agencies often ask for our input on appropriate mitigation measures before the offshore operators and AEWC have conducted our annual negotiations. The DEIS therefore presents an important opportunity to coordinate this collaborative process with the decision making schedules of both NMFS and BOEM. We are open to discussing appropriate ways to structure these processes to facilitate timely and orderly decision making, but the negotiation process should take place first to be followed by public comment periods on proposed agency decisions and then final decisions. Simple changes to the schedule would allow federal agencies to provide much more support for the community-based, collaborative process utilized by AEWC.

We also recognize that NMFS has struggled to conceptualize how it can formally incorporate the CAA process into its decision making structure. As stated in the DEIS, “NMFS and BOEM have no authority to require agreements between third parties, and neither NMFS nor BOEM would be able to enforce the provisions of the CAAs because the federal government is not a party to the agreement.”²² We also recognize that NMFS will always have “responsibility to conduct a rigorous and comprehensive independent analysis of the likely subsistence impacts”²³

To be clear, the alternative we propose would not, in any way, intrude on NMFS’s decision-making authority or require the agency to either enforce the terms of the CAA or become a party to the agreement. We propose only that NMFS require that offshore operators engage in the CAA negotiation process, which is similar to the existing requirement that offshore operators submit a Plan of Cooperation (POC) documenting that operators have “met with affected subsistence communities to discuss proposed activities and resolve potential conflicts regarding timing and methods of operation.”²⁴ NMFS would then retain authority to make a final decision on implementation of adaptive management measures that would amend the established set of comprehensive mitigation measures and, in doing so, would ensure compliance with the standards of the MMPA. NMFS clearly has the authority and discretion to require that these collaborative processes take place, and we ask only that NMFS consider structuring an alternative around the existing CAA process, which has worked for more than twenty years.²⁵

²² *Id.*

²³ *Id.*

²⁴ 50 C.F.R. § 216.205(a).

²⁵ As we have stated for many years, we do not believe that the POC process should take place outside of the existing CAA process. Overlapping processes that purport to serve similar purposes create confusion, waste resources, duplicate effort and undermine the ability of our communities to provide meaningful input. Pursuant to the alternative suggested in our comments, the regulatory requirements for a Plan of Cooperation would

Finally, in amending the DEIS to include this alternative, we ask that NMFS discuss and analyze the substantial benefits of our proposal. Those benefits include promoting a community-based, collaborative model for making decisions, which is much more likely to result in consensus while reducing conflict. Our proposal would therefore promote the objectives of OCSLA, which provides for the “expeditious and orderly development [of the OCS], subject to environmental safeguards . . .”²⁶ Our proposal also serves the objectives of the MMPA, which states that the primary objective of management of marine mammals “should be to maintain the health and stability of the marine ecosystem.”²⁷ Our proposal would also likely conserve the resources of your staff and agency resources more generally by relying more on a community-based, collaborative model that would facilitate agency decision making.

NMFS should also include a more thorough discussion of the 20-year history of the CAA to provide better context for assessing the potential benefits of a community-based alternative. NMFS should discuss the long track record of agreement between offshore operators and the AEWG on a great majority of industry proposals, including discussions of specific industry proposals in which agreement over the CAA facilitated implementation, including BP’s development of Northstar as well as numerous other proposals for seismic activity and exploratory drilling. NMFS should also discuss the benefits of utilizing an established collaborative-based process, which provides a predictable and well-established mechanism for making management decisions that requires balance among competing uses.

III. NMFS Must Discuss and Analyze in the DEIS Whether the Proposed Alternatives Will Comply with the Substantive Standards of the Marine Mammal Protection Act.

AEWC is very concerned that the DEIS does not analyze whether the proposed levels of industrial activity will comply with the substantive standards of the Marine Mammal Protection Act. Although NMFS proposes to authorize specific levels of industrial activity and states that it may not conduct any further analysis under NEPA prior to issuing IHAs, the DEIS does discuss whether these activity levels will comply with the “negligible impacts” and “no unmitigable adverse impacts” standards. Without this critical information, we fail to see how NMFS can make an informed decision as to which of the action alternatives are appropriate given the unequivocal requirements of the MMPA. In taking this approach to analysis, we believe that NMFS runs a significant risk that its final decision will not comply with NEPA and the MMPA and will not pass muster under the Administrative Procedure Act.

be fulfilled by participation in the CAA negotiations, at least with respect to impacts to the subsistence hunt of bowhead whales.

²⁶ 43 U.S.C. § 1331(3).

²⁷ 16 U.S.C. § 1361(6).

A. Background on NEPA

We believe that some background on NEPA is helpful for understanding our concerns in this regard. Section 101 of NEPA “declares a broad national commitment to protecting and promoting environmental quality.”²⁸ Congress established important action-forcing procedures designed to ensure that the federal government consider the environmental impacts of Federal activities before they occur. These procedural requirements serve two important purposes. First, they ensure “that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts . . .”²⁹ Second, those procedures “also guarantee[] that the relevant information will be made available to the larger audience that may also play a role in both decision making process and the implementation of that decision.”³⁰ “Simply by focusing the agency’s attention on the environmental consequences of a proposed project, NEPA ensures that important effects will no be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.”³¹ Publication of an EIS is designed to ensure “that the agency has indeed considered environmental concerns in its decision making process”³²

The Council on Environmental Quality (CEQ) has implemented a comprehensive set of regulations that apply to NMFS’s preparation of the Draft EIS.³³ CEQ’s regulations are designed to ensure that “agencies have made the necessary environmental analyses” in way that is “concise, clear, and to the point.”³⁴

The CEQ regulations require that NMFS analyze whether the proposed alternatives will comply with the substantive requirements of the MMPA. The EIS must consider the environmental consequences of the alternatives.³⁵ This portion of the EIS must include a discussion of the “direct effects and their significance (§1508.8)” and the “indirect effects and their significance (§1508.8).”³⁶ The CEQ regulations also set forth mandatory considerations in analyzing “significance” – *i.e.* significance criteria.³⁷

²⁸ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 348 (1989).

²⁹ *Id.* at 349.

³⁰ *Id.*

³¹ *Id.*

³² *Id.* (internal quotations omitted).

³³ 40 CFR Parts 1500-1508.

³⁴ 40 C.F.R. § 1500.2(b).

³⁵ 40 C.F.R. § 1502.16.

³⁶ 40 C.F.R. § 1502.16(a)-(b).

³⁷ 40 C.F.R. § 1508.27; *see also Sierra Club v. U.S. Forest Serv.*, 843 F.3d 1190, 1193 (9th Cir. 1988) (stating that the CEQ regulations “outline factors that an agency must consider in determining whether an action ‘significantly’ affects the environment”).

The critical point for NMFS to understand is that the CEQ regulations *require* that the agency consider in the EIS “whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.”³⁸ In analyzing the effects “and their significance” pursuant to 40 C.F.R. § 1502.16, the agency must discuss threatened violations of substantive environmental laws.³⁹

This analysis is even more important here, where NMFS is conducting the DEIS for the explicit purposes of determining whether to issue ITAs pursuant to the MMPA. An analysis of whether the proposed alternatives threaten violations of the MMPA is therefore particularly relevant for the agency’s analysis and its final decision as well as the public’s review of the information considered by the agency.

B. The DEIS Does Not Contain the Required Analysis of Compliance with the “No Unmitigable Adverse Impact” Standard of the MMPA.

The analysis contained in the DEIS is critical, because, as NMFS states, it “intends to use this EIS as the required NEPA documentation for the issuance of IHAs for Arctic oil and gas exploration activities.”⁴⁰ NMFS reserves the right to “tier from this EIS to support future Arctic MMPA oil and gas permit decisions *if such activities fall outside the scope of the EIS.*”⁴¹ The alternatives include, for instance, as many as two drilling programs in the Beaufort Sea and two drilling programs in the Chukchi Sea per year.⁴² Our understanding, based on NMFS’s statements in the DEIS, is that no further NEPA review would be conducted by NMFS prior to issuing IHAs so long as the proposed activities fall within the scope of the selected alternative. This EIS is therefore likely to provide the only NEPA analysis performed by NMFS of impacts from a wide range of industrial activity to bowhead whales and the subsistence hunt.

In the DEIS, NMFS ignores the substantive standards of the Marine Mammal Protection Act and, instead, uses a confusing set of qualitative “impact levels.”⁴³ We have stated many times in the past that we oppose the use of narrative criteria such as these, which do not reflect the mandatory, substantive standards of the MMPA. We understand that NMFS and its staff are making best efforts to identify how best to conduct their analysis under NEPA, but this has been a long-standing problem in which AEWC has tried to work cooperatively with the agency. We are disappointed to once again see narrative impact levels that do not bear any direct relation to the MMPA standards, and we believe this approach to analyzing potential impacts represents a

³⁸ 40 C.F.R. § 1508.27(b)(10); *see also Ocean Advocates v. U.S. Army Corps. of Eng’rs*, 361 F.3d 1108, 1125 (9th Cir. 2004).

³⁹ *Id.*

⁴⁰ DEIS at ES-4.

⁴¹ *Id.* (emphasis added).

⁴² DEIS at ES-7.

⁴³ DEIS at ES-15.

significant weakness in the DEIS that may render the final decision arbitrary, capricious and contrary to law.

The impact levels address intensity (*i.e.* whether a change in resource condition and function is detectable), duration, geographic extent, and context (*i.e.* whether the resource is protected by legislation and whether it fills a distinctive role in the ecosystem).⁴⁴ The DEIS recognizes that the “terms used in the qualitative thresholds are relative” and therefore “require[e] the analyst to make a judgment about where a particular effect falls in the continuum from ‘negligible’ to ‘major.’”⁴⁵ The DEIS then sets forth yet further qualitative definitions of negligible, minor, moderate and major effects.⁴⁶ For subsistence activities, NMFS provides further narrative explanation of the effects levels according to magnitude or intensity, duration, geographic extent and context.⁴⁷

To be clear about our concerns, using these vague, relativistic, narrative standards, NMFS concludes that all of the action alternatives are likely to cause negative impacts to bowhead whales and the subsistence hunt. All of the action alternatives are rated as having “negligible to moderate” impacts to the subsistence hunt resulting from disturbance of bowhead whales.⁴⁸ Similarly, all of the action alternatives would involve “moderate impacts” to bowhead whales.⁴⁹

We are gravely concerned about this analysis, because it appears from the text of the DEIS that NMFS does not fully grasp the import of the MMPA standards and how they are to be applied. For instance, in discussing the impact levels for effects on subsistence, NMFS identifies duration as involving changes “in use patters for one year or less” and geographic extent as effects “realized by a single community.”⁵⁰ The implicit inference is that impacts that last less than a year or that impact only a single community are less of a concern than longer duration, more wide spread disruption of subsistence activities.

The MMPA standard, however, focuses on each individual harvest for each season and does not allow NMFS to expand the geographic and temporal scope of its analysis, which would tend to mask impacts to local communities over shorter durations of time. The regulation defines an unmitigable adverse impact as one that is “likely to reduce the availability of the species to a level insufficient for *a harvest to meet subsistence needs.*”⁵¹ As NMFS well knows, each individual community has different

⁴⁴ *Id.*

⁴⁵ DESI at ES-16.

⁴⁶ *Id.*

⁴⁷ DEIS at 4-174.

⁴⁸ DEIS at ES-18.

⁴⁹ *Id.*

⁵⁰ DEIS at 4-174.

⁵¹ 50 C.F.R. § 216.103

harvest patterns, and it is not always possible for a community to replace lost subsistence foods. Each individual harvest, by species, by community and by season, is therefore of the utmost importance for the health of the Inupiat people. In assessing whether the proposed alternatives would comply with the MMPA standards, NMFS must analyze impacts to each individual hunt to identify accurately the potential threats to each of our individual communities.

We acknowledge that NMFS comes close to addressing the MMPA standard of “no unmitigable adverse impact” but, in the end, the analysis falls short. In the DEIS, NMFS states that:

In consideration of the standard and additional mitigation measures, seismic surveys, site clearance and high resolution shallow hazard surveys, and exploratory drilling are not expected to disturb or disrupt subsistence activities at a level that would make resources unavailable for harvest or significantly alter the existing levels of harvest.⁵²

We want to be very clear as to why this conclusion falls short of discussing compliance with the MMPA standard for subsistence. First, NMFS has not proposed to make a final decision on which additional mitigation measures would apply. The only possible conclusion therefore is that the proposed alternatives may, in fact, cause impacts to subsistence above and beyond those discussed in the conclusory passage above. Moreover, this conclusion does not reflect the requisite regulatory standard, which focuses on “a harvest” being sufficient to “meet subsistence needs.” Instead, NMFS’s conclusion references “resources unavailable for harvest” without analyzing each individual harvest. Moreover, it discusses “significantly alter[ing] the existing level of harvest” which has no place in the analysis. NMFS must determine whether a harvest will “meet subsistence needs.” The discussion on page 4-198 of the DEIS does not reflect the plain language of the regulation, nor has NMFS reached an explicit determination of whether the alternatives will comply with the MMPA standard.

Finally, we want to clarify one additional point. The MMPA standard is mandatory. Before issuing ITAs, NMFS must find that the proposed activities “*will not* have an unmitigable adverse impact” on the availability of marine mammals for subsistence uses.⁵³ Qualified statements that an activity “may not” have an impact “if” certain additional mitigation measures are applied do not comply with the mandatory standards of the MMPA. Throughout the conclusion of impacts to subsistence, NMFS repeatedly discusses the impacts using qualified language. The MMPA, however, requires a specific finding that the proposed activities “will not” have an adverse impact to our subsistence practices. We ask that NMFS faithfully implement the will of Congress and disclose to us whether it has adequate information to reach these required findings.

⁵² DESI at 4-198.

⁵³ 16 U.S.C. § 1371(a)(5)(A)(i)(I), (D)(i)(I)-(II) (emphasis added).

In sum, as you know, impacts to the bowhead whale subsistence hunt are the primary concern of AEWG and its whaling captains. Congress granted our activities heightened protections under the MMPA and conditioned the issuance of incidental take authorization upon a showing that the proposed activities will not have an unmitigable adverse impact on this nutritionally and culturally critical activity. Without analyzing whether the proposed activities will comply with these important substantive standards, NMFS cannot make an informed decision among the alternatives. We therefore ask that NMFS revise the DEIS, include an explicit analysis of whether the alternatives will comply with the “no unmitigable adverse impact standard” and then publish that revised analysis for a renewed round of public comment.

C. The DEIS Does Not Contain the Required Analysis of Compliance with the “Negligible Impact” Standard of the MMPA.

AEWC is similarly concerned that NMFS has not included in the DEIS a discussion and analysis of whether the proposed alternatives would comply with the “negligible impact” standard of the MMPA.⁵⁴ In particular, we ask that NMFS faithfully adhere to its own regulations and determine in the DEIS whether the proposed alternatives would cause impacts “that cannot be reasonably expected to, and is not reasonably likely to adversely affect the species or stock through effects on annual rates of recruitment or survival.”⁵⁵

Again, we offer excerpts from the DEIS to illustrate our concerns in this regard. With respect to ship strikes, as an example, the DEIS acknowledges that the incidence of strikes could rise with increasing vessel traffic.⁵⁶ “Marine vessels could potentially strike bowhead whales, causing either injury or death.”⁵⁷ Despite the possibility of mortality or serious injury, NMFS does not address the “negligible impact” standard, and, in particular, does not determine whether ship strikes could affect “annual rates of recruitment or survival.” Furthermore, in the overall conclusion, NMFS states that the potential “long-term effects from repeated disturbance, displacement or habitat disruption on an extremely long-lived species such as the bowhead whale are unknown.”⁵⁸ Here again, NMFS is proposing to authorize specific levels of industrial activity without discussing the mandatory standards of the MMPA, and, moreover, it is clear from the limited discussion in the DEIS that NMFS simply does not have data and information adequate to do so. NMFS concludes that the affects to bowhead whales will be “moderate,” but it has not assessed whether industrial activity will affect annual rates of survival or recruitment as required by its own regulations, thus these conclusions appear unfounded.

⁵⁴ 16 U.S.C. § 1371(a)(5)(A)(i)(I), (D)(i)(I)-(II)

⁵⁵ 50 C.F.R. § 216.103.

⁵⁶ DEIS at 4-108.

⁵⁷ *Id.*

⁵⁸ DEIS at 4-110.

We offer some suggestions in this regard that can help to move NMFS in the right direction. First, we strongly encourage NMFS to consider basing its analysis on the potential biological removal (PBR), a concept that we feel reflects the best scientific information available and a concept that is defined within the MMPA. The term “potential biological removal” is defined by Congress to mean “the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.”⁵⁹

In the FINAL programmatic environmental assessment (PEA) performed in 2006, the Minerals Management Service used the “potential biological removal estimates and determination of removal levels that would be ‘significant’ to the population” in analyzing potential impacts to bowhead whales.⁶⁰ MMS discussed the most recent stock assessment performed by NMFS⁶¹, which defined the PBR for the western Arctic stock of bowhead whales, which included information on the minimum population estimate, one-half the maximum theoretical net productivity rate, and a recovery factor.⁶² Using these figures, MMS determined that once the bowhead whale quota and natural mortality were accounted for “removing more than 12 bowheads from this population stock would be significant.”⁶³ We believe that this approach, using information from the stock assessment, current subsistence harvest quotas, and natural mortality to assess potential biological removal reflects the “best scientific evidence available.”⁶⁴

We therefore ask that NMFS respond specifically as to whether it considered analyzing impacts to bowhead whales based upon potential biological removal, and, if so, why it decided not to include such an analysis in the DEIS.

Second, we strongly encourage NMFS to quantify the number of bowhead whales that will potentially be taken by the proposed activities, as is required by the MMPA and its implementing regulations. We believe that NMFS must conduct an analysis of the number of bowhead whales exposed to these sound levels to determine whether proposed activities comply with the statutory requirement that industrial activities cause the incidental take of only “small numbers” of marine mammals.⁶⁵ NMFS has an obligation

⁵⁹ 33 U.S.C. § 1362(20).

⁶⁰ Minerals Management Service, Alaska OCS Region. *FINAL Programmatic Environmental Assessment – Arctic Ocean Outer Continental Shelf Seismic Surveys – 2006* at PEA-36 (June 2006) (OCS EIS/EA MMS 2006-038).

⁶¹ Angliss and Outlaw, 2005.

⁶² PEA-36. We note that the current stock assessment for bowhead whales (Allen and Angliss, 2009) also includes a calculation of PBR and is available on NMFS’ web site at <http://www.nmfs.NMFS.gov/pr/sars/species.htm> (last viewed February 20, 2012).

⁶³ PEA-37.

⁶⁴ 50 C.F.R. § 216.102.

⁶⁵ 16 U.S.C. § 1371(a)(5)(A)(i), (D)(i).

in reviewing requests for IHAs that it determine that “the number of marine mammals taken by harassment will be small . . .”⁶⁶ NMFS must therefore quantify the number of marine mammals that could be taken by each of the alternatives, which, when combined with an analysis of PBR, can help the agency to assess compliance with the “negligible impact” standard of the MMPA. We therefore ask that NMFS respond specifically as to why it did not quantify the numbers of marine mammals that could be taken incidentally as a result of the alternatives set forth in the DEIS.

We also ask for clarification from NMFS for its decision to use 160dB re 1 μ Pa rms for pulsed sounds as the threshold for Level B harassment given extensive scientific evidence discussed by NMFS in the DEIS that deflection of migrating bowhead whales occurs at much lower received sound levels.⁶⁷ Additionally, we ask NMFS to respond to the results of a recent study of the impacts of noise on Atlantic Right whales, which found “a decrease in baseline concentrations of fGCs in right whales in association with decreased overall noise levels (6 dB) and significant reductions in noise at all frequencies between 50 and 150 Hz as a consequence of reduced large vessel traffic in the Bay of Fundy following the events of 9/11/01.”⁶⁸ This study of another baleen whale that is closely related to the bowhead whale supports traditional knowledge regarding the skittishness and sensitivity of bowhead whales to noise and documents that these reactions to noise are accompanied by a physiological stress response that could have broader implications for repeated exposures to noise as contemplated in the DEIS.

Finally, we ask that NMFS make a more concerted effort to quantitatively predict the number of ship strikes. A recent paper estimates that 2-3% of harvested bowhead whales showed wounds or scars consistent with ship strikes.⁶⁹ As the authors state, a “robust program to mitigate [vessel strikes] requires quantitative estimates of vessel strikes, how strike rates change over time, where strikes are most likely to occur, and the options available for minimizing strike probabilities.”⁷⁰ The authors also noted that potential mitigation measures may include the “excellent and effective example” of the “time/space separation scheme of industry vessels, seismic operations, and whale hunting activities in the U.S. Beaufort Sea set forth in the [CAA].”⁷¹ We therefore request that NMFS undertake an effort to quantify past and current vessel activity in the Arctic, to compare that information to known data on bowhead whales, and then to quantify predicted impacts to bowhead whales from potential vessel strikes given the tremendous increase in the level of activity proposed by the DEIS.

⁶⁶ 50 C.F.R. § 216.107

⁶⁷ See *infra* at pg 21.

⁶⁸ Rolland, R.M., *et al.* *Evidence that ship noise increases stress in right whales*. Proc. R. Soc. B (2012) (doi:10.1098/rspb.2011.2429). Exhibit G.

⁶⁹ Reeves, Randall *et al.* *Implications of Arctic industrial growth and strategies to mitigate future vessel and fishing gear impacts on bowhead whales*. Marine Policy 36 (2012) 454-462. Exhibit H.

⁷⁰ *Id.* at 457.

⁷¹ *Id.* at 459.

D. The DEIS Does Not Contain the Required Analysis of the “Other Means of Effecting the Lease Practicable Impact on Such Species or Stock.”

Finally, we are also concerned that the DEIS does not assess how offshore operators are to effect “the least practicable adverse impact on such species or stock and its habitat . . .”⁷² We believe that this standard was intentionally designed by Congress to require implementation of and to spur development of appropriate technology and mitigation measures that can be implemented above and beyond those minimally necessary to ensure negligible impacts to the species or stock.

As we have discussed already, we are very concerned that NMFS has deferred a final decision on what specific mitigation measures will be required because this prevents the agency from reaching concrete conclusions on compliance with the “no unmitigable adverse impact” and the “negligible impacts” standards of the MMPA. In addition, however, NMFS has a duty under the MMPA to identify and impose mitigation measures that will achieve the “least practicable impact” on the species *and* its habitat.

We therefore strongly suggest to NMFS that it include in the DEIS an explicit discussion of whether and to what extent the options available for mitigation comply with the “lease practicable adverse impact” standard. This is particularly important for the “additional mitigation measures” that NMFS has, to this point, deferred for future consideration. By focusing its analysis on the requirements of MMPA, we believe that NMFS will recognize its obligation to make an upfront determination of whether these additional mitigation measures are necessary to comply with the law.

IV. NMFS Should Revise the Discussion of Mitigation Measures in the DEIS and Select a Complete Suite of Applicable Mitigation Measures in the Record of Decision.

We have already discussed this issue in some detail, so we will not belabor the point. But, we strongly recommend to NMFS that it revise the DEIS to include a more complete description of the proposed mitigation measures, eliminate the concept of “additional mitigation measures,” and then decide in the Record of Decision on a final suite of applicable mitigation measures. After 20 years of experience designing effective mitigation in partnership with industry, we have an intimate understanding of how to design and implement such measures as well as a long history of working directly in our local communities to identify what specific measures they require to protect their subsistence activities. By holding out a broad range of potential measures without suggesting a concrete way forward and a recommendation on a complete suite of mitigation measures, NMFS has made this issue extremely confusing for our communities.

⁷² 16 U.S.C. § 1371(a)(5)(A)(i)(II)(aa), (D)(ii)(I)

These changes to the EIS are critical because the amount of activity authorized by the proposed alternatives has the potential to rival the levels of impacts to bowhead whales that have not been seen in the Arctic since the days of commercial whaling. In order to counteract these significant impacts, detailed mitigation measures must be imposed as part of each alternative. Deferring the selection of mitigation measures to a later date, where the public may not be involved, fails to comport with NEPA's requirements.

In addition, we have concerns that the DEIS does not include a clear, up front discussion of the significant scientific debate regarding the effectiveness of many mitigation measures that are included in the DEIS and that have been previously used by industry as a means of complying with the MMPA. As NMFS is well aware, this topic has been discussed in great detail as part of the peer review process over the past several years, with the peer review panel dedicating their time and energy to providing the agency with clear and concise concerns over specific mitigation measures. We are disappointed to see that none of this information has been set forth in the DEIS, and are therefore very concerned that the agency could potentially make a final decision without ensuring that its decision makers and the public are aware of this information.

Before detailing some of those concerns, we encourage NMFS to structure the discussion in the DEIS to meet the minimum legal requirements of NEPA. The EIS must "discuss mitigation measures, with 'sufficient detail to ensure that environmental consequences have been fairly evaluated.'"⁷³ "An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective."⁷⁴ In reviewing NEPA documents, courts require this level of disclosure, because "without at least some evaluation of effectiveness," the discussion of mitigation measures is "useless" for "evaluating whether the anticipated environmental impacts can be avoided."⁷⁵ A "mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA."⁷⁶

In our review of the DEIS, we have been unable to locate any discussion of the significant scientific debate as to whether many of the listed mitigation measures are effective and to what degree. The DEIS includes a listing of the mitigation measures⁷⁷ – both the standard measures and the additional measures – but we have been unable to locate any analysis of whether those mitigation measures are effective. Similarly, Appendix A includes a more robust description of the mitigation measures, but it also

⁷³ *South Fork Band Council of Western Shoshone v. U.S. Dept. of Interior*, 588 F.3d 718, 727 (9th Cir. 2009) (quoting *Robertson*, 490 U.S. at 352).

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Northwest Indian Cemetery Protective Ass'n v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986) *rev'd on other grounds* 485 U.S. 439 (1988).

⁷⁷ DEIS at 2-39-42.

lacks the requisite discussion of whether these measure are effective.⁷⁸ To remedy this problem, we strongly encourage NMFS to include in either Chapter 3 or Chapter 4 a separate section devoted exclusively to assessing whether and to what extent each individual mitigation measure is effective at reducing impacts to marine mammals and the subsistence hunt. NMFS should use these revised portions of the DEIS to discuss and analyze compliance with the “least practicable adverse impact” standard of the MMPA.

Moreover, we are surprised and frankly disappointed to find that NMFS has not included any discussion of the detailed written findings of the expert panel review conducted in 2010 and 2011. We have attached those findings to our comments for your review.⁷⁹ This dedicated team, including Harry Brower from the AEW, as well as Dr. Robert Suydam from the North Slope Borough Department of Wildlife Management, has invested untold hours providing NMFS with written findings as a part of the peer review process, and NMFS should explicitly incorporate that information into its analysis in the DEIS. Indeed, the peer review panel even mentions specifically the EIS and the relevance of their findings for the current analysis being performed by NMFS.

Without repeating that information, we do want to highlight the main points of concern, which NMFS must address directly in the DEIS:

- **Efficacy of single sound pressure level exclusion zones.** The peer review panel states that “a single sound source pressure level or other single descriptive parameter is likely a poor predictor of the effects of introduced anthropogenic sound on marine life.” The panel recommends that NMFS develop a “soundscape” approach to management, and we understand that the NSB Department of Wildlife suggested such an alternative, which was rejected by NMFS. If NMFS moves forward with using simple measures, it recommended that these measures “should be based on the more comprehensive ecosystem assessments and they should be precautionary to compensate for remaining uncertainty in potential effects.”⁸⁰ NMFS should clarify how these concerns are reflected in the mitigation measures set forth in the DEIS and whether the simple sound pressure level measures are precautionary as suggested by the peer review panel.

⁷⁸ DEIS at A-1-14.

⁷⁹ *Expert Panel Review of Monitoring and Mitigation Protocols In Applications for Incidental Take Authorizations Related to Oil and Gas Exploration, Including Seismic Surveys, In the Chukchi and Beaufort Sea, Anchorage, Alaska* (March 22-26, 2010). Exhibit I (2010 Peer Review Report).

Expert Panel Review of Monitoring Protocols in Applications for Incidental Harassment Authorizations Related to Oil and Gas Exploration in the Chukchi and Beaufort Seas, 2011: Statoil and ION Geophysical, Anchorage, Alaska (March 9, 2011). Exhibit J (2011 Peer Review Report).

⁸⁰ 2010 Peer Review Report at 4.

Furthermore, we continue to be concerned about NMFS's determination that the threshold for Level B harassment for impulsive sounds (i.e. airgun noise) is set at 160 dB re 1 μ Pa rms.⁸¹ As the DEIS notes, Richardson (1999) suggests that migrating bowhead whales start to show significant behavioral disturbance from multiple pulses at received sound levels around 120 dB re 1 μ Pa.⁸² "Deflection might start as far as 35 km (21.7 mi) away and may persist 25 to 40 km (15.6 to 24.9) mi to as much as 40 to 50 km (24.9 to 31.1 mi) after passing seismic-survey operations (Miller et al. 1999)."⁸³ Furthermore, the DEIS notes that call "detection rates dropped rapidly when cumulative sound exposure levels (CSELs) were greater than 125 dB re 1 μ Pa² s over 15 minutes."⁸⁴

Given the best available scientific information, we ask that NMFS clarify why it is using 160 dB re 1 μ Pa rms as the threshold for level B take. We are also aware of the apparent differences in the reactions of feeding whales as opposed to migrating whales, with feeding whales appearing to show more tolerance to certain levels of noise associated with seismic operations. We also ask for clarification on whether exposure of feeding whales to sounds up to 160 dB re 1 μ Pa rms could cause adverse effects, and, if so, why the threshold for level B harassment is not lower.

Finally, we ask that NMFS consider implementing mitigation measures designed to avoid exposing migrating bowhead whales to received sound levels of 120dB or greater given the best available science, which demonstrates that such noise levels cause behavioral changes in bowhead whales. We also ask that NMFS respond explicitly to our request on this issue.

- **Aerial surveys.** As the peer review panel noted in the 2010 report, with "some aerial survey capacity, mitigating impacts in areas beyond the view of vessel-based marine mammal observers (i.e., the visual far field) will be essentially impossible."⁸⁵ Moreover, the panel "concluded that aerial surveys should not be categorically excluded as a research and monitoring tool in the Chukchi Sea."⁸⁶ The DEIS, however, does not list aerial surveys as a standard or additional mitigation measure for either the Beaufort or Chukchi Sea. We fail to see any reasonable scientific basis to excluded entirely aerial surveys as a means of collecting information for purposes of implementing mitigation measures and assessing levels of take. We ask that NMFS include aerial surveys as a possible mitigation measure along with a discussion of the peer review panel's concerns regarding this issue.

⁸¹ See, e.g., DEIS at 4-89 (citing 70 Fed. Reg. 1871 (January 11, 2005)).

⁸² DEIS at 4-99.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.*

- **Marine Mammal Observers (i.e. Protected Species Observers).** The peer review panel has consistently raised concerns about the efficacy of near-field monitoring, which we share.⁸⁷ We know based on our traditional knowledge that it can be very difficult to identify marine mammals in adverse weather and sea conditions and, in particular, in darkness. The peer review panel also noted that night-vision binoculars and infrared devices should not be considered reliable until they have been tested under appropriate conditions and fully evaluated.⁸⁸ NMFS must discuss to what extent visual monitoring is effective as a means of triggering mitigation measures, and, if so, how specifically visual monitoring can be structured or supplemented with acoustic monitoring to improve performance. We also note that NMFS should clearly analyze whether poor visibility restrictions are appropriate and whether those restrictions are necessary to comply with the “least practicable impact” standard of the MMPA.

- **Ramp Up Procedures.** The peer review panel expressed similar concerns about “one of the most common industry assumptions pertaining to mitigation – that animals near a sound source will move away as received sound levels increase or are ‘ramped up.’”⁸⁹ The panel noted that little peer reviewed data exists in support of this presumption and that scientists disagree as to the utility of ramp up procedures.⁹⁰ NMFS should disclose in the EIS uncertainties as to the efficacy of ramp up procedures and then discuss and analyze how that uncertainty relates to an estimate of impacts to marine mammals and, in particular, bowhead whales.

The local community and the scientific community have documented their concerns about the efficacy of mitigation measures. This EIS is an important opportunity for NMFS to engage this issue and to assess the efficacy of these proposed measures with the full input of the scientific community before making a decision on overall levels of industrial activity in the Beaufort and Chukchi Seas. For these reasons, we strongly recommend that NMFS amend the DEIS to include such an analysis, which can then be subject to further public review and input pursuant to a renewed public comment period.

V. NMFS Must Consider Whether Expanded Deferral Areas Would Benefit Marine Mammals and Serve the Purposes of the Marine Mammal Protection Act.

We were disappointed to see that NMFS refused to consider permanent deferral areas in conjunction with considering the approval of overall levels of oil and gas

⁸⁷ This is consistent with previous scientific research as well. *See, e.g.*, Richardson and Green, 1995.

⁸⁸ 2010 Peer Review Panel at 7.

⁸⁹ *Id.*

⁹⁰ *Id.*

activities in the Beaufort and Chukchi Seas. As you know, we have advocated, as have other community interests, for a more complete and thorough analysis of permanent deferral areas to protect subsistence use areas and important habitat for bowhead whales. We have made this request to both NMFS and BOEM, and, to date, we still feel that neither of these agencies has conducted an adequate analysis of this issue.

We were particularly disappointed because in the DEIS NMFS states that the “appropriate mechanism for considering exclusion of areas from leasing is when BOEM requests public comments on its Five Year OCS Leasing Plan and later when considering lease sales as described as (sic) the leasing stage of the OCS Lands Act.”⁹¹ In fact, however, BOEM recently released a draft Environmental Impact Statement for the Five-Year Plan in which it refused to consider additional deferral areas.⁹² In that EIS, BOEM eliminated additional deferrals from further analysis, just as NMFS has done here, stating that it would consider the issue further as part of lease sale decisions.⁹³ Because BOEM was a cooperating agency in the preparation of the DEIS, we assume that this was an oversight on the part of NMFS, but we ask that the DEIS clarify that BOEM has already refused to consider expanded deferral areas in the EIS for the Five-Year Plan.

Compounding this problem is the fact that BOEM has also refused to consider larger permanent deferral areas as part of the lease sale stage. During the planning process for Lease Sale 193, the North Slope Borough suggested that it was appropriate to defer from leasing larger portions of the Chukchi and Beaufort Sea planning areas.⁹⁴ BOEM, however, again stated that these issues should be considered during preparation of the Five-Year Plan. But, as just discussed, when we submitted our concerns about deferral during the Five-Year Plan process, BOEM again pushed off consideration of this issue until the lease sale stage.

Finally, we question the agency’s conclusion that “there is no mechanism in Section 101(a)(5) to preemptively close an area to all oil and gas activity.”⁹⁵ Nor is there a mechanism to preemptively *approve* oil and gas activity, which is exactly what NMFS proposes to do as a part of this EIS. But, that does not prohibit NMFS from considering a permanent deferral as an alternative *and* from assessing whether a permanent deferral is necessary to adhere to the standards of the MMPA given the agency’s concurrent decision to preemptively approve specific levels of industrial activity, levels which may

⁹¹ DEIS at 2-44.

⁹² U.S. Dept. of the Interior, Bureau of Ocean Energy Management, *Outer Continental Shelf Oil and Gas Leasing Program: 2012-2017, Draft Programmatic Environmental Impact Statement* (November, 2011) (OCS EIS/EA BOEM 2011-001).

⁹³ Five-Year Plan EIS at 2-8.

⁹⁴ U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region, *Chukchi Sea Planning Area Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea, Final Environmental Impact Statement* (May 2007) (OCS EIS/EA MMS 2007-026) at II-4.

⁹⁵ DEIS at 2-44.

go far above and beyond anything we have ever seen in the Arctic. By foreclosing a consideration of deferral areas, along with a failure to assess compliance with the substantive MMPA standards, NMFS is excluding from analysis important considerations that are highly relevant to the ultimate decision as to what level of activity should take place in the Beaufort and Chukchi Seas.

Finally, we ask that NMFS consider specific deferral areas. In particular, the community of Nuiqsut has long asked federal agencies to create a deferral area in the 20 miles to the east of Cross Island. This area holds special importance for bowhead whale hunters and the whales.

VI. The Consideration of Cumulative Impacts in the DEIS is Inadequate.

AEWC remains gravely concerned about the long-term cumulative impacts to the bowhead whale and its habitat, particularly given the levels of industrial activity proposed in the action alternatives set forth in the DEIS. We again ask that NMFS conduct a more thorough analysis of cumulative impacts to the bowhead whale and its habitat, as well as the cumulative impacts to subsistence activities from the project alternatives.

We appreciate NMFS's recognition that offshore activities in Canadian and Russian waters contribute to cumulative impacts to migratory species.⁹⁶ However, the list of past, present, and reasonably foreseeable activities considered in the DEIS needs to be updated to include the following activities: past activities in the Arctic for which NMFS has issued IHAs; commercial shipping and potential deep water port construction; production of offshore oil and gas resources or production related activities; and commercial fishing.

- The list of activities that have occurred and are likely to occur in the Beaufort Sea and the Chukchi Sea should include all past activities for which NMFS has issued IHAs. For example, the discussion of scientific research fails to include the work done by USGS to establish the United State's territorial sea boundary and the discussion of industrial type activities fails to include proposals to lay cable for high speed internet services. AEW's commissioners have listened to proposals from these types of operators and it is important that these projects are included within the consideration of cumulative impacts.
- Commercial shipping lanes and the increased presence of large commercial vessels needs to be addressed in the cumulative impacts analysis. It is not sufficient to address marine transportation primarily related to existing and proposed activities along the North Slope, as NMFS has done in the DEIS.

⁹⁶ DEIS at 4-438.

- Deep water port construction by the military or otherwise is also increasingly likely in the near future.⁹⁷ This likelihood needs to be explored in the DEIS and included in the analysis of impacts.
- The DEIS needs to clearly contemplate the impacts from the production of oil and gas resources in the Beaufort Sea and the Chukchi Sea since it is entirely possible that production related activities could occur in the next five years.
- The expansion of commercial fishing into the Arctic is another topic that needs to be addressed in the DEIS.

The DEIS is lacking in its disclosure of the overall, cumulative impacts to different resources. Using ocean noise as an example, the DEIS fails to disclose, let alone map out or explain, the overall level of noise that can be anticipated under the project alternatives. The DEIS states that:

Exposures to potentially injurious cumulative sound levels might also occur with higher likelihood in the Beaufort as marine mammals could be exposed to noise from more than one seismic survey within relatively short time periods. The potential for this type of cumulative effect is not presently accounted for by current NMFS criteria for auditory system injury that are based on per-pulse rms sound levels.⁹⁸

How can NMFS and BOEM even begin to purport to analyze the cumulative impacts from increased ocean noise if no mechanism for even measuring the auditory system impacts from multiple operators? As highlighted earlier in these comments, NMFS needs to quantify the number of marine mammals, such as the bowhead whales, that it expects to be taken each year. Building on that analysis of the direct effects of the project, NMFS needs to do the same thing for the impacts from all activities under review and provide an overall quantification. This is critical to the agency ensuring that its approval of IHAs for offshore oil and gas activities will comport with the MMPA.

This information is also necessary for the analysis of cumulative impacts to subsistence, which is also currently lacking in a true quantification of impacts. For example, with 5-6 seismic operations and two exploratory drilling programs in the same year in the Chukchi Sea what are the sound radii for each of these operations, how far might bowhead whales deflect from each operation, and what are the consequences for subsistence hunting? It is these types of questions that remain unanswered by the DEIS.

⁹⁷ Lowther, *Arctic Deep Water Port*, Alaska Business Monthly (Jan., 2012) (available at: <http://www.akbizmag.com/Alaska-Business-Monthly/January-2012/Arctic-Deep-Water-Port/>)

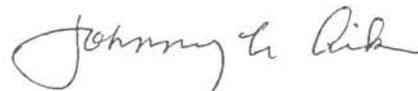
⁹⁸ DEIS at 4-470.

Conclusion & Recommended Path Forward

We recommend against NMFS taking action at this time until a revised DEIS is released that addresses the concerns of the local community and includes a fully developed analysis of compliance with MMPS standards. In the alternative, we ask for a combination of: Alternative 2 with additional mitigation measures, the expanded time-area closures from Alternative 4, and use of the alternative technologies included in Alternative 5; or implementation of a CAA alternative as discussed in these comments.

NMFS's limited resources would best be invested in developing a more defensible long-term management approach for the Arctic that adheres to the best available science and the applicable legal requirements. In particular, as discussed above, we strongly encourage the agency to consider an alternative based on the CAA, and we are fully prepared to dedicate our resources to collaborating in that process. Before NMFS takes a final action approving an alternative setting the overall levels of oil and gas activity in the Arctic, it must have before it critical information on necessary protections for the bowhead whale and its habitat that includes a discussion of deferral areas, necessary mitigation measures, cumulative impacts and a thorough analysis of compliance with the substantive MMPA standards that protect the bowhead whale and our subsistence traditions. The current DEIS is lacking this information and thus, insufficient to support NMFS's decision making.

Sincerely,



Mr. Johnny Aiken
Executive Director

LIST OF EXHIBITS

- A. Cooperative Agreement between the National Oceanic and Atmospheric Administration and the Alaska Eskimo Whaling Commission as Amended 2008
- B. Alaska Eskimo Whaling Commission, Re: Scoping Comment on BOEMRE's Programmatic Environmental Impact Statement for the Proposed 2012-2017 Outer Continental Shelf Oil and Gas Leasing Program. 76 Fed. Reg. 376 (January 5, 2011), March 31, 2011
- C. The Royal Norwegian Ministry of the Environment, *Report No. 8 to the Storting (2005-2006): Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands* at 7 (Mar. 31, 2006)
- D. 2009 Open Water Season Conflict Avoidance Agreement
- E. 2010 Open Water Season Conflict Avoidance Agreement
- F. 2011 Open Water Season Conflict Avoidance Agreement
- G. Rolland, R.M., *et al. Evidence that ship noise increases stress in right whales*. Proc. R. Soc. B (2012) (doi:10.1098/rspb.2011.2429)
- H. Reeves, Randall et al. *Implications of Arctic industrial growth and strategies to mitigate future vessel and fishing gear impacts on bowhead whales*. Marine Policy 36 (2012) 454-462
- I. *Expert Panel Review of Monitoring and Mitigation Protocols In Applications for Incidental Take Authorizations Related to Oil and Gas Exploration, Including Seismic Surveys, In the Chukchi and Beaufort Sea, Anchorage, Alaska* (March 22-26, 2010)
- J. *Expert Panel Review of Monitoring Protocols in Applications for Incidental Harassment Authorizations Related to Oil and Gas Exploration in the Chukchi and Beaufort Seas, 2011: Statoil and ION Geophysical, Anchorage, Alaska* (March 9, 2011)

COOPERATIVE AGREEMENT
between the
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
and the
ALASKA ESKIMO WHALING COMMISSION
as amended
2008

1. PURPOSES

The purposes of this agreement are to protect the bowhead whale and the Eskimo culture, to promote scientific investigation of the bowhead whale, and to effectuate the other purposes of the Marine Mammal Protection Act, the Whaling Convention Act, and the Endangered Species Act as these acts relate to aboriginal subsistence whaling.

In order to achieve these purposes, this agreement provides for:

- (a) Cooperation between members of the Alaska Eskimo Whaling Commission (AEWC) and the National Oceanic and Atmospheric Administration (NOAA) in management of the bowhead whale hunt through 2012; and
- (b) an exclusive enforcement mechanism that shall apply during the term of this agreement to any violation by whaling captains (or their crews) who are registered members of the AEWC of any provisions of the Marine Mammal Protection Act, the Endangered Species Act, or the Whaling Convention Act, as these acts may relate to aboriginal subsistence whaling; of the International Convention for the Regulation of Whaling, 1946; of regulations of the International Whaling Commission; of the AEWC Management Plan; or of this agreement.

2. RESPONSIBILITIES

NOAA has primary responsibility within the United States Government for management

and enforcement of programs concerning bowhead whales. The AEWC is an association governing Alaskan Eskimo whalers who hunt for bowhead whales. The AEWC adopted a Management Plan on March 4, 1981, to govern hunting for bowhead whales by Alaskan Eskimos. The AEWC and NOAA have cooperatively managed the bowhead hunts since 1981. Under this Cooperative Agreement, the AEWC will, in continued cooperation with NOAA, manage the bowhead whale hunts through 2012. The authority and responsibilities of the AEWC are contained in and limited by this agreement and the Management Plan, as amended from time to time, to the extent the Management Plan is not inconsistent with this agreement. If the AEWC fails to carry out its enforcement responsibilities or meet the conditions of this agreement or of the Management Plan, as amended from time to time, NOAA may assert its federal management and enforcement authority and will regulate the bowhead whale hunt in a manner consistent with federal law, this agreement, and the Management Plan to the extent necessary to carry out the responsibilities that are not carried out by the AEWC. Such assertion of federal authority will be preceded by notice to the AEWC of intent to regulate the bowhead whale hunt to the extent necessary to carry out those responsibilities and conditions, and will not be effected until the AEWC or its members have been given an opportunity to present their views on the need for such assertion in a public forum: provided, however, that in cases where NOAA determines that irreparable harm to the bowhead whale resource might result, the assertion of federal authority may be effected immediately after notice, in which cases the public forum on the need for such assertion will be conducted as soon as practicable thereafter.

3. INSPECTION AND REPORTING

NOAA personnel shall monitor the hunt and the AEWC shall assist such personnel with

such monitoring. The AEWG shall report to NOAA regarding the number of strikes and landings. The AEWG shall also inform all whaling captains who are engaged in whaling activities of the number of whales struck or landed at all times. On the first of each month during the spring and fall whaling seasons, the AEWG shall inform NOAA of the number of bowhead whales struck during the previous month. The AEWG shall also provide a report to NOAA within 30 days after the conclusion of the spring hunt, and within 30 days after the fall hunt but no later than March 31, containing at least the following information:

- (1) The date and exact, to the extent practicable, location of strike for each whale struck or landed, including, at a minimum, the estimated distance and bearing from the village or whaling camp;
- (2) The length (as measured from the point of the upper jaw to the notch between the tail flukes) and the sex of the whales landed;
- (3) The length and sex of a fetus, if present, in a landed whale; and
- (4) An explanation of circumstances associated with the striking of any whale not landed, and an estimate of whether a harpoon or bomb emplacement caused a wound which might be fatal to the animal (e.g., the harpoon entered a major organ of the body cavity and the bomb exploded).

NOAA shall provide technical assistance in collection of the above information. The AEWG shall assist appropriate persons in collection of specimens from landed whales. The AEWG shall encourage whaling captains to make such specimens available to researchers upon written request to the AEWG. NOAA personnel cooperating with the AEWG shall work closely with the AEWG Commissioner in each whaling village to facilitate the accurate monitoring of

the hunt.

4. MANAGEMENT

- (1) No more than seventy-five (75) bowhead whales shall be struck in 2008. The AEWG and NOAA shall determine the total number of bowhead whales that may be struck in each year from 2009 through 2012, and any applicable number of bowhead whales that may be landed, through annual negotiations during the first quarter of the year for which the quota is applicable: provided, however, that the Under Secretary or his designee may, in consultation with the AEWG, reconsider and revise the term of this paragraph if he deems it necessary on the basis of public comments received pursuant to the Federal Register notice of the allocations.
- (2) Registered whaling captains shall hunt under the provisions of the AEWG Management Plan, and will use all practical means to improve hunting efficiency.
- (3) The AEWG shall determine the allocation of these permitted strikes among the whaling villages.
- (4) The AEWG Management Plan will provide that the meat and edible products of bowhead whales taken in the subsistence hunt must be used exclusively for native consumption and may not be sold or offered for sale.

5. ENFORCEMENT

- (1) The AEWG agrees that registered whaling captains may be subject to civil monetary assessments for whales struck over the annual strike limit as set forth in this Agreement and whales landed over any landing limit that is prescribed in this

agreement and the Management Plan as they may be amended from time to time. The AEWC will collect the assessments from the whaling captains. In the event of a dispute between NOAA and the AEWC over the number of whales landed or struck or the amount of the assessment, or other factual matters, NOAA will consult with the AEWC about the matter. If the dispute cannot be resolved, it will be referred to an administrative law judge for determination under a trial-type administrative proceeding of the facts and the amount of assessment. The procedures contained in 15 CFR sections 904.200-904.273 will control these proceedings. The decision of the administrative law judge may be appealed to the Administrator of NOAA. Whaling captains may also be liable for civil assessments for other violations of the Management Plan as determined by the AEWC or by an administrative law judge under the procedures described above.

(2) In consideration of the AEWC's agreement hereunder, the Government of the United States agrees that the enforcement procedure described in paragraph (1) of this section shall be the exclusive enforcement mechanism that shall apply during the term of this agreement to any violation by whaling captains or their crew who are registered members of the AEWC of any provisions of the Marine Mammal Protection Act, the Endangered Species Act, or the Whaling Convention Act, as these Acts may relate to aboriginal subsistence whaling; of the International Convention for the Regulation of Whaling, 1946; of any regulations of the International Whaling Commission; of the Management Plan; or of this agreement.

(3) The AEWC shall maintain a list containing the names of all registered whaling

captains and shall make this list available to NOAA upon request.

6. AUTHORITIES

This Cooperative Agreement is concluded under the authorities governing management of living marine resources, including but not limited to the Marine Mammal Protection Act of 1972 and the Whaling Convention Act of 1949.

7. DURATION

This Agreement will become effective upon the signature of the approving officials of both the AEWG and NOAA, and will remain in effect through March 31, 2012.

8. CONSULTATION

NOAA and the AEWG shall consult during the operation of this Agreement concerning the matters addressed herein as well as all other matters related to bowhead whales which either party believes are suitable for such consultation. Specifically, NOAA shall consult with the AEWG on any action undertaken or any action proposed to be undertaken by any agency or department of the Federal Government that may affect the bowhead whale and/or subsistence whaling and shall use its best efforts to have such agency or department participate in such consultation with the AEWG.

9. LIMITATION OF USE

Nothing in the Agreement shall be construed to support or contradict the position of either party regarding the jurisdiction of the International Convention for the Regulation of

Whaling, 1946, or the Whaling Convention Act of 1949 with respect to aboriginal subsistence whaling by Alaskan Eskimos.

10. AMENDMENT

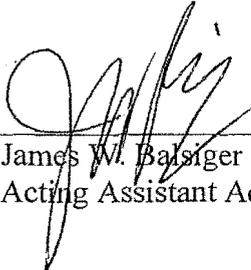
This Agreement may be amended from time to time by mutual written consent of the parties. Such amendments may be approved, on behalf of NOAA, by the United States Commissioner to the International Whaling Commission, or his designee.

Dated: April 3, 2008

Dated: APR 01 2008



Harry K. Brower, Jr.
Chairman, Alaska Eskimo
Whaling Commission



James W. Balsiger
Acting Assistant Administrator for Fisheries

AMENDMENT
to the
COOPERATIVE AGREEMENT
between the
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
and the
ALASKA ESKIMO WHALING COMMISSION

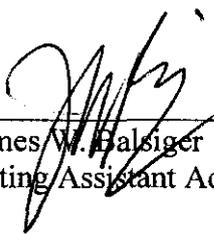
The Alaska Eskimo Whaling Commission (AEWC) and the National Oceanic and Atmospheric Administration (NOAA) hereby agree to amend their Cooperative Agreement as follows:

Article 4, Paragraph (1) is amended to read as follows:

“No more than 75 bowhead whales shall be struck in 2009. The AEWC and NOAA shall determine the total number of bowhead whales that may be struck in 2010, and any applicable number of bowhead whales that may be landed, through annual negotiations prior to the year for which the quota is applicable. Provided, however, that the Under Secretary may, in consultation with the AEWC, reconsider and revise the terms of this paragraph if he deems it necessary on the basis of public comments received pursuant to the Federal Register notice of the allocations.”



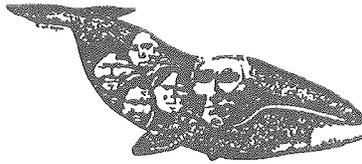
Harry K. Brower, Jr.
Chairman, Alaska Eskimo
Whaling Commission



James W. Balsiger
Acting Assistant Administrator for Fisheries

Date: 1-20-09

Date: 108.2009



Alaska Eskimo Whaling Commission

P.O. Box 570 • Barrow, Alaska 99723

(907) 852-2392 • Fax: (907) 852-2303 • Toll Free: 1-800-478-2392

March 31, 2011

James F. Bennett
Chief, Branch of Environmental Assessment
Bureau of Ocean Energy Management, Regulation and Enforcement
381 Elden Street, Mail Stop 4042
Herndon, Virginia 20170-4817

Submitted electronically at <http://ocs5yeareis.anl.gov>.

Re: Scoping Comments on BOEMRE's Programmatic Environmental Impact Statement for the Proposed 2012-2017 Outer Continental Shelf Oil and Gas Leasing Program. 76 Fed. Reg. 376 (January 4, 2011)

Dear Mr. Bennett:

Thank you for the opportunity to comment on the Bureau of Ocean Energy, Management, Regulation and Enforcement's (BOEMRE) notice of scoping for the Programmatic Environmental Impact Statement (PEIS) for the Proposed 2012-2017 Outer Continental Shelf (OCS) Oil and Gas Leasing Program.¹ These comments are submitted on behalf of the Alaska Eskimo Whaling Commission (AEWC). AEWC represents the eleven bowhead whale subsistence hunting villages of Barrow, Nuiqsut, Kaktovik, Pt. Hope, Wainright, Kivalina, Wales, Savoonga, Gambell, Little Diomed, and Pt. Lay. AEWC's members include whaling captains and communities along the North Slope of Alaska who are dependent upon the bowhead whale and other marine species in the Beaufort and Chukchi Seas for our subsistence lifestyles. Our people depend upon the resources of the Arctic Ocean for the continuation of their ancient traditions as well as their physical, mental and spiritual health.

For many years, AEWC has worked cooperatively with the responsible federal agencies as well as numerous oil companies in an effort to prevent conflicts between offshore activities in the Arctic and the Congressionally protected subsistence activities of AEWC's members and

¹ Notice of Scoping Meetings on the Environmental Impact Statement (EIS) for the Proposed 2012-2017 Outer Continental Shelf (OCS) Oil and Gas Leasing Program. 76 Fed. Reg. 376, 377 (Jan. 4, 2011).

their communities. AEWCo-manages the bowhead whale, our most important subsistence resource, pursuant to a cooperative agreement with the National Oceanic Atmospheric Administration (NOAA). For many years, we have entered into the annual Conflict Avoidance Agreement (CAA) with oil companies, which spells out concrete measures to prevent conflicts between offshore activities and the subsistence hunt.

The AEWCo therefore has many years of experience in seeking to balance offshore activities with the interests of the local impacted community. For decades, we have attempted to work with both NOAA and BOEMRE (formerly MMS) to ensure that federal agencies give voice to and protect the interests of the local Inupiat communities who stand to lose the most from poorly regulated industrial activity. Our concerns are well documented, and many years before the disaster in the Gulf of Mexico, we expressed our concerns that federal agencies were making their decisions based on inadequate information on environmental impacts and unjustifiable assumptions about oil spill risk while at the same time falling far behind international standards set by countries like Norway. It unfortunately took the Macondo incident for these issues to be brought to the national spotlight; however, we now implore the federal government to provide concrete answers to the many questions surrounding offshore activities in the Arctic before authorizing any additional lease sales.

At the outset, AEWCo would like to thank Secretary of the Interior Ken Salazar for his decision “to proceed cautiously on the Outer Continental Shelf and to review safety and environmental issues associated with offshore drilling” by postponing the original public scoping process for the PEIS and the 2012-2017 OCS Oil and Gas Leasing Program.² The Secretary’s decision to spend additional time considering the future of the OCS leasing program and strengthening environmental review procedures was more than warranted. The Deepwater Horizon, considered the “worst environmental disaster America has ever faced,”³ cast significant doubt upon the efficacy of the Department of the Interior’s (DOI) environmental review procedures for oil and gas leasing under the Outer Continental Shelf Lands Act (OCSLA) and the National Environmental Policy Act (NEPA). DOI simply cannot continue with its business-as-usual approach to conducting environmental analyses and proposing future leasing programs. We also applaud the Secretary’s commitment to collaborating with other federal agencies like NOAA and the United States Geological Service.

Instead of reversing position and deciding to offer additional leases in the Arctic, we strongly urge the Secretary and BOEMRE to use the next five-year period to develop and implement a comprehensive management plan for the Arctic in partnership with AEWCo, other stakeholders, NOAA, and other federal agencies. That management plan should take a proactive approach to establishing clear protections and regulations for habitat and natural resource

² U.S. Dept. of Interior Press Release: Interior Extends Opportunity for Public Input on Environmental Analysis of 2012-2017 Oil and Gas Leasing Program (June 30, 2010), available at <http://www.doi.gov/news/pressreleases/Interior-Extends-Opportunity-for-Public-Input-on-Environmental-Analysis-of-2012-2017-Oil-and-Gas-Leasing-Program.cfm>.

³ National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling – Report to the President at 173 (Jan. 2011) (citing President Obama’s June 15, 2010 address).

functions while planning for development and promoting regionally appropriate technologies. A comprehensive management plan can then guide BOEMRE's implementation of its authority under OCSLA within the Arctic region, as well as NOAA's regulatory functions under the Marine Mammal Protection Act.

The pieces are coming together for BOEMRE, NOAA and the federal government to develop a comprehensive management plan that can address the uncertainty experienced by both industry and the local impacted community over the last several years. Under the leadership of the National Ocean Council, the federal government is moving forward with marine spatial planning, and the Interagency Ocean Policy Task Force identified the Arctic as one of the key priority areas of focus. At the same time, as discussed below, we are beginning to develop the science needed to put together a comprehensive picture of the Arctic ecosystem; however, those efforts need more time to produce results before the federal government issues more leases in the Arctic.

In crafting a management plan for the Arctic, we ask that BOEMRE consider emulating Norway's proactive approach to offshore oil and gas development, which provides for significant habitat protection while promoting offshore oil and gas development. To help guide the development of resource use in the Barents Sea, Norway issued a management plan with the purpose "to provide a framework for the sustainable use of natural resources and goods derived from the Barents Sea and the sea areas off the Lofoten Islands . . . and at the same time maintain the structure, functioning and productivity of the ecosystems of the area."⁴ Norway's plan establishes an ecosystem-based management approach that takes into account pressures on habitat⁵ and includes management objectives targeted at maintaining habitat diversity and protecting habitat for vulnerable species.⁶

Both OCSLA and the MMPA similarly authorize and require BOEMRE and NOAA to manage offshore development to ensure the protection of the environment and, more specifically, our traditional subsistence resources. Until this point in time, however, BOEMRE and NOAA have been exercising those authorities on a piece meal basis in response to industry requests for site-specific proposals without having comprehensive and proactive habitat protections in place, which causes our whaling captains grave concerns over issues like baseline science, cumulative impacts, oil spill response capabilities and the impacts of underwater noise on bowhead whale behavior. In the absence of a science-based management plan, these individual decisions threaten to impose unforeseen and unknown impacts on our subsistence resources and therefore our local communities, which are risks that our people should not be forced to bear given the potentially catastrophic consequences.

⁴ The Royal Norwegian Ministry of the Environment, Report No. 8 to the Storting (2005-2006): Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands at 7 (Mar. 31, 2006), available at <http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/integrated-management-of-the-barents-sea.html?id=87148>.

⁵ *Id.* at 93-94.

⁶ *Id.* at 98-99.

The local impacted communities on the North Slope and our whaling captains have been participating and helping in these processes, and we intend to commit as much of our resources as we can to these collaborative, science-based efforts. But we need the federal government to allow us the time necessary to develop the science and formulate a science-based management plan for the Arctic. The comprehensive management plan should include a proactive approach to habitat protection for our subsistence resources as well as a focus on development and oil spill response technologies that are appropriate in a region that is very sensitive ecologically and far removed from onshore infrastructure.

It is our hope that a comprehensive management plan will protect our subsistence livelihood and way of life for our future generations, while at the same time providing opportunities to meet the energy demands of our Nation. Those laudable goals are within reach, but the federal government must assist in that process by creating the time needed to do the job right.

As BOEMRE considers the comments submitted during this scoping process, the agency should be guided by the Secretary's commitment to "ensuring protection of the environment, using the best science, and engaging in an open and transparent process."⁷ The AEW and the local communities have for years been calling on the federal government to do just this – adhere to the best available science with full community input while also incorporating the many lessons to be learned from our traditional knowledge.

We are hopeful that the government will now continue to take the time needed to learn from the many mistakes that lead up to the Deepwater Horizon incident. We were encouraged when BOEMRE relied upon environmental and scientific concerns in making the prudent decision to remove the Beaufort and Chukchi Seas from further leasing consideration in the 2007-2012 revised five-year leasing plan.⁸ Specifically, the Secretary determined that OCSLA's balancing factors warranted removing remaining lease sales in the Beaufort and Chukchi Seas, in part, because "the estimated potential oil and gas discoveries from additional leasing in these areas [do not] outweigh the potential environmental damage (including to subsistence resources) and potential adverse impacts to the coastal zone."⁹

In reaching this decision, the Secretary considered, in particular, "issues related to spill response in Arctic conditions . . ."¹⁰ He noted the need to review information from studies underway by BOEMRE, the U.S. Coast Guard, the U.S. Geological Service, and other entities, which will discuss "the detection and removal of spilled oil."¹¹ This information is critical in

⁷ U.S. Dept. of Interior Press Release: Interior Extends Opportunity for Public Input on Environmental Analysis of 2012-2017 Oil and Gas Leasing Program (June 30, 2010), available at <http://www.doi.gov/news/pressreleases/Interior-Extends-Opportunity-for-Public-Input-on-Environmental-Analysis-of-2012-2017-Oil-and-Gas-Leasing-Program.cfm>.

⁸ BOEMRE Revised Program Outer Continental Shelf Oil and Gas Leasing Program, 2007-2012 at 9 (Dec. 2010), available at <http://www.boemre.gov/5-year/PDFs/RP.pdf>.

⁹ *Id.* at 9.

¹⁰ *Id.* at 9.

¹¹ *Id.* at 10.

determining whether, where and how offshore oil and gas activities can and should move forward in an area that has, since time immemorial, been used primarily by local subsistence communities.

Additionally, the Oil Spill Commission Report recently called for significant regulatory overhaul of BOEMRE's oil spill analyses and environmental reviews, stating that the agency must "create a rigorous, transparent, and meaningful oil spill risk analysis and planning process for the development and implementation of better oil spill response."¹² In short, both the Secretary and the Oil Spill Commission have already recognized that the federal government simply does not have enough information, technology or regulatory infrastructure to move forward with additional leasing activities in the Arctic at this time.

These concerns were compounded by the findings that the Beaufort and Chukchi Seas are among the OCS planning areas experiencing the most significant effects of climate change.¹³ In particular, the Secretary noted that the "potential effects of the proposed action on Arctic resources should be considered in light of the potential effects of climate change on the same resources."¹⁴ Sea ice in the Arctic provides important habitat "essential for the flourishing and survival of marine animals and the traditional subsistence life style."¹⁵ Climate change threatens not only the resources of the Arctic but also our subsistence practices, and we greatly appreciate the Secretary's recognition of these threats to our local culture and communities.

In the few months that have passed since the Secretary's December 2010 decision, the federal government has not obtained any new or additional information that could alter his determination that additional lease sale activity is unwarranted in the Arctic at this time. BOEMRE should therefore exclude the Beaufort and Chukchi Seas from further leasing consideration during the 2012-2017 leasing plan.

Moreover, as the Secretary noted in his December 2010 decision, the oil industry has many existing leases that have yet to be explored. Indeed, as of March 1, 2011, there were 670 active leases in Alaska OCS region totaling more than 1.5 million hectares.¹⁶ At this time, the federal government should be focused on the existing leases, working with the local impacted communities and the oil industry to determine whether, where and how exploration should move forward while ensuring the legally required protections for our subsistence activities and resources. Now is not the time for additional lease sale activity in the migratory corridor for the bowhead whale.

I. The Beaufort and Chukchi Seas Should Be Excluded From The Five-Year Leasing Program.

¹² Deepwater Horizon Commission Report at 266.

¹³ Revised Leasing Program 2007-2012 at 41.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ BOEMRE, Alaska OCS Region. Spreadsheet of Active Leases, available at http://alaska.boemre.gov/lease/hlease/LeasingTables/detailed_active_leases.pdf.

The Outer Continental Shelf Lands Act (OCSLA) requires the Secretary of the Interior to comply with a four-step process before developing offshore oil wells on the outer continental shelf (OCS).¹⁷ The first step requires the Secretary to prepare a five-year plan for proposed leases that includes “a schedule of proposed lease sales indicating, as precisely as possible, the size, timing, and location of leasing activity which he determines will best meet national energy needs for the five-year period following its approval or reapproval.”¹⁸

When preparing the five-year leasing program, the Secretary must consider four overarching principles.¹⁹ First, the Secretary must examine the “economic, social, and environmental” value of resources along the OCS and the potential impact of oil leasing on resources and the environment.²⁰ Second, the Secretary must base the “timing and location” of oil and gas activities on several factors, including, the “geographical, geological, and ecological characteristics” and the “environmental sensitivity and marine productivity” of the OCS.²¹ Third, the Secretary must also balance “the potential for environmental damage . . . discovery of oil and gas . . . and adverse impact on the coastal zone.”²² Fourth, the Secretary must receive fair market value for the leases.²³ Moreover, the Secretary must comply with the requirements of the National Environmental Policy Act when preparing the five-year leasing program.²⁴

In crafting the next five-year leasing program, BOEMRE will select certain areas to consider for potential oil and gas leasing during 2012-2017. In deciding which areas to include within the program, OCSLA requires BOEMRE to consider a variety of environmental factors and to balance these considerations against the potential for oil and gas discovery.²⁵ Areas that the agency does not identify and analyze within the five-year leasing program are off limits from leasing, exploration, or development during the later stages of the OCSLA process.

The Beaufort and Chukchi Seas should be excluded from the five-year leasing plan because the environmental risks associated with offshore oil and gas exploration and development far outweigh the potential for oil and gas discovery,²⁶ as found by the Secretary in his prior 2010 decision.²⁷ The Beaufort and Chukchi Seas are fragile Arctic ecosystems that are “highly sensitive” particularly given the effects of climate change.²⁸ These Arctic seas provide habitat to an abundance of marine life, including whales, birds, and over 98 species of fish. As noted by the Secretary in his prior decision:

¹⁷ *Center for Biological Diversity v. U.S. Dept. of Int.*, 563 F.3d 466, 473 (D.C. Cir. 2009) (internal citation omitted).

¹⁸ 43 U.S.C. § 1344(a).

¹⁹ *Id.*

²⁰ *Id.* at § 1344(a)(1)

²¹ *Id.* at § 1344(a)(2).

²² *Id.* at § 1344(a)(3).

²³ *Id.* at § 1344(a)(4).

²⁴ *Id.* at § 1344(b)(3).

²⁵ *Id.* at § 1344(a).

²⁶ *See* 43 U.S.C. § 1344(a).

²⁷ Revised Leasing Program 2007-2012 at 9.

²⁸ *Id.* at 10.

The presence of sea ice and landfast ice in the marine environment of the Arctic and near Arctic creates a productive marine-ice biome essential for the flourishing and survival of marine animals and the traditional subsistence life style. These environments provide hunting, resting and birthing platforms along the ice-water interface, generate local upwelling responsible for high productivity in polynyas and release large quantities of algae growing beneath the ice surface into the food chain at melt.²⁹

Similarly, the President's Oil Spill Commission also emphasized the rich diversity of the Arctic in urging that government move cautiously in this area. "The marine mammals in the Chukchi and Beaufort are among the most diverse in the world, including seals, cetaceans, whales, walruses, and bears."³⁰

Native villages subsist on many of these species, most importantly bowhead whales, which are "of high importance due to the[ir] nutritional and cultural role . . . to coastal Alaska Natives . . . [and] their role in the marine ecosystem."³¹ The marine resources of the Arctic provide the very foundation of the Inupiat culture, identity and non-cash economy. Any threat to the health of the Arctic resources also threatens directly the continued existence of our people and our ancient traditions and culture. This is precisely why our elders formed the AEWG to advocate for the protection of the bowhead whale and its habitat.

The resources of the Arctic that support our people are also uniquely susceptible to the potential impacts of an oil spill. As the Secretary stated when he deferred further leasing in December of 2010, "[a]rctic species with limited access to open (ice-free) water are considered highly susceptible based on perceived risks associated with these species' inability to avoid extended contact with spilled oil in a confined marine environment."³² Many, if not all, of the existing leases in the Arctic are located within the migration corridor of the bowhead whale in both the Beaufort and Chukchi Seas. A major spill in the migration corridor during the spring or fall migration could have catastrophic effects not only for the bowhead whale but also for our people, who depend upon the whale for up to 50% or more of the annual diet each and every year.

Recognizing the serious environmental risks, BOEMRE excluded these areas from additional leasing consideration under the revised five-year leasing program for 2007-2012.³³ In doing so, the Secretary stated:

²⁹ *Id.* at 40-41.

³⁰ Deepwater Horizon Commission Report at 303.

³¹ Alaska Department of Fish and Game, et al. Satellite Tracking of Western Arctic Bowhead Whales at 1 (July 2010).

³² Revised Leasing Program 2007-2012 at 43.

³³ *Id.* at 9.

I do not believe that the estimated potential oil and gas discoveries from additional leasing in these areas outweigh the potential environmental damage (including to subsistence resources) and potential adverse impacts to the coastal zone.³⁴

Because these major concerns that influenced the Secretary's decision to exclude the Beaufort and Chukchi Seas from the 2007-2012 leasing program still exist, the agency should continue to keep these areas off limits in the 2012-2017 program. During this time period, BOEMRE should be collaborating with other federal agencies, the AEWG and the local communities in the creation of regionally-appropriate development strategies and technologies that will enable us to address current oil spill response gaps while taking a proactive approach to habitat protection for our subsistence resources. This will also provide time for promising scientific research efforts to mature to a point at which they can be relied upon to inform federal decision-making.

A. Oil Spills And Response Capabilities

When preparing the five-year leasing program, BOEMRE must consider the potential impacts of catastrophic oil spills from offshore oil exploration because these spills pose a real and significant threat to the aquatic and coastal ecosystems in the Arctic as well as the subsistence activities of our local communities.³⁵ In December 2010, the Secretary found that the "need for additional information about oil spill risks and response capabilities" contributed to the Secretary's decision to close the Beaufort and Chukchi Seas to additional leasing under the revised 2007-2012 leasing plan.³⁶ Because this information is still unavailable, and in light of more recent information that highlights the existing data gaps on oil spill response capability and the potential impacts of a major oil spill in the Arctic, BOEMRE should exclude these seas from consideration in the 2012-2017 leasing program.

Our whaling captains spend extended periods of time in the Beaufort and Chukchi Seas each and every year during a wide range of seasonal conditions, and our people have accumulated thousands of years of traditional knowledge regarding ice conditions, wind and weather patterns, and animal behavior. We cannot emphasize enough how important it is for the federal government to recognize the tremendous challenges presented by the harsh conditions of the Arctic. It would be pure folly to assume that the oil industry will have "routine" or "normal" conditions in which to operate. Indeed, the Chukchi Sea is typically covered in ice for almost six months out of the year and is free of snow only for a brief period during the summer months.³⁷ If nothing else, our traditional knowledge tells us that the Arctic is extremely unpredictable and often presents very harsh climactic conditions, including fierce winds and storms, long periods of ice, snow, and seasonal darkness, remoteness, and low temperatures. Climate change is causing even more unpredictable events, including stronger wind events and storms, heavier seas and uncharacteristic ice conditions. These icy conditions would make an oil spill response

³⁴ *Id.*

³⁵ *See* 43 U.S.C. § 1344(a)(1).

³⁶ Revised Leasing Program 2007-2012 at 15.

³⁷ BOEMRE, Chukchi Sea Planning Area, Oil and Gas Lease Sale 193 in the Chukchi Sea, Alaska: Draft Supplemental Environmental Impact Statement at 32 (Sept. 2010).

operation extremely challenging for many reasons, not the least of which is that ice poses a significant impediment for oil spill response vessels. As our whaling captains can tell you, the oil spill response personnel may be asked to work in the most hostile conditions one could imagine.

These factors *all* significantly increase the potential for an oil spill and would simultaneously frustrate response efforts. We are slowly starting to see the federal government come to grips with the undeniable reality that oil and gas exploration and development are risky, unpredictable endeavors that have always been accompanied by unexpected accidents. We can no longer assume that a major blowout simply will not occur. The recent events from the Deepwater Horizon have forever changed our collective mindset – we must accept responsibility for our actions, and we must acknowledge the possibility that offshore oil and gas activities may result in a major blowout and oil spill.

With respect to Lease Sale 193 in the Chukchi, BOEMRE recently announced that it would prepare a supplemental environmental impact statement to update its spill risk assessment to account for a very large oil spill (VLOS). Although we do not yet know the parameters of this assessment, the federal government is moving in the right direction, rethinking past errors and conducting new analyses of the potential consequences of much larger spill events. AEWG looks forward to participating in that process and providing input on the details of the forthcoming analysis. In the context of the five-year plan, BOEMRE must also acknowledge, at this stage, that additional leasing could result in additional very large oil spills.

The risks of a major spill are compounded by the fact that the federal government and the oil industry have no proven means of responding to a major oil spill in the harsh, broken-ice conditions of the Arctic and lack critical infrastructure. In the Final Environmental Impact Statement for the previous five-year leasing plan, MMS recognized that “[t]here has been little experience with under-ice or broken-ice oil spills, and there is little evidence to suggest that the capability exists currently to successfully clean up a spill of this type [] in a timely manner, a cause of great concern among local residents.”³⁸ The BP Oil Commission also noted that oil spilled off of Alaska is “likely to degrade more slowly than that found in the Gulf of Mexico because of lower water temperatures” and that “serious questions remain about how to access spilled oil when the area is iced over or in seasonal slushy conditions.”³⁹

More recently, an oil spill in Norway in February of this year once again highlighted that icy conditions frustrate oil spill responses and make clean up difficult.⁴⁰ Indeed, an official from the Norwegian Coastal Administration (NCA) told a reporter, “[t]here is less experience with oil spills in arctic regions,” and that “[t]he NCA is working with the oil industry to develop

³⁸ Minerals Management Services Five-Year OCS Leasing Program: 2007-2012 Final Environmental Impact Statement Vol. I, at IV-236.

³⁹ Deepwater Horizon Commission Report at 302.

⁴⁰ *See, e.g.*, Wall Street Journal, Norway, Sweden Work to Contain Oil Spill (Feb. 18, 2011), available at <http://online.wsj.com/article/SB10001424052748704900004576151873845397148.html>.

technological solutions for equipment that can clean up oil in ice.”⁴¹ As these and other examples illustrate the oil and gas industry and governments in Arctic areas are far from employing oil spill response measures that are known to be effective in Arctic conditions.

These examples reinforce the concerns expressed by NOAA in their comments on the Draft Proposed Outer Continental Shelf Oil and Gas Leasing Program for 2010-2015. At that time, Under Secretary Lubchenko recommended against any further leasing in the Arctic, placing a special emphasis on the planning areas of Alaska and expressing concern over the “challenges of removing oil from solid, broken and shorefast ice.”⁴² NOAA stated that MMS had “greatly understated” the unique risks and challenges posed by Arctic conditions.⁴³

Moreover, the U.S. Coast Guard lacks critical infrastructure in the region. Retired Coast Guard Admiral Thad Allen recently noted that the North Slope does not have any infrastructure to support large-scale response operations and that the Coast Guard icebreaker fleet is inadequate given the current condition of the three vessels and limited funding from Congress.⁴⁴ In no uncertain terms, the federal government is simply unprepared to respond to a major oil spill in the Arctic.

We are particularly concerned about the ability of the federal government and industry to drill a same season relief well. After the Deepwater Horizon blowout, it took months for BP to drill a relief well and bring the blowout at the Macondo well under control.⁴⁵ In the Arctic, the open water season can be very short depending on weather and ice conditions. In the event of a blowout in the middle or end of the open water season, it would be extremely challenging to complete a same season relief well before fall and winter ice forced the back-up drill rig and its crew to move off site. As an example, evidence suggests that industry cannot drill a same season relief well in the deep water of the Beaufort Sea.⁴⁶ In the event of an uncontrolled blowout, a spill could continue unabated throughout the entire winter until icy conditions subsided in the

⁴¹ Fjord Shipping Fleet Information Portal, Update: Clean-Up After Oil Spill in Norway (Feb. 22, 2011), available at http://www.fjordshipping.info/index.php?option=com_content&view=article&id=124:clean-up-after-oil-spill-off-norway-&catid=86:environment&Itemid=82.

⁴² National Ocean and Atmospheric Administration, Comments on the Draft Proposed Outer Continental Shelf Oil and Gas Leasing Program for 2010-2015 (Sept. 9, 2009).

⁴³ *Id.* at 6.

⁴⁴ Ret. Coast Guard Admiral Thad Allen, Written Comments to the House Committee on Transportation and Infrastructure (February 10, 2011).

⁴⁵ The BP spill took 152 days for the well to be permanently sealed. Deepwater Horizon Commission Report at 169.

⁴⁶ *See, e.g.*, Wild Well Control, Inc., Same Season Relief Well Capability Review at 22 (March 2010), available at https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90463/589151/594086/594088/600443/609664/C-05-6D_-_Appendix_B_Same_Season_Relief_Well_Capability_Review_-_A1S2V9_.pdf?nodeid=609515&vernum=0 (concluding that “[a] relief well will take longer to drill than the original well and in the deepwater Beaufort Sea, cannot be drilled in the same drilling season”).

spring or summer, causing unimaginable damage. Unless and until BOEMRE and the federal government can prove that it, and not the oil companies, can conduct oil spill response and clean-up efforts in Arctic waters *in the same season as a blowout*, no further leasing should be allowed to proceed in the Arctic.

In addition to the potential for a spill and the tremendous gaps in oil spill response capabilities, BOEMRE must also weigh the catastrophic damage that could result from a major oil spill. As we have argued many times in the past, BOEMRE does not have enough information about the impacts from oil spills on sensitive Arctic ecosystems and species to proceed responsibly in the region. As BOEMRE recognized in its Draft Supplemental EIS on Lease Sale 193 in the Chukchi Sea, the agency is uncertain about the impacts of a large oil spill on bowhead whales and other species.⁴⁷ Without information such as this, the agency cannot sufficiently analyze and balance these impacts with energy development needs as required under OCSLA.⁴⁸

Even the minimal information available to BOEMRE in the Lease Sale 193 DSEIS demonstrates the tremendous risks. BOEMRE, for instance, previously admitted that a catastrophic oil spill could result in *extirpation of species*.⁴⁹ The extirpation of Arctic species, the collapse of fishing stocks, and the destruction of other subsistence resources would threaten the continued existence of the subsistence lifestyles that our people have engaged in since time immemorial. BOEMRE acknowledged the social problems that an oil spill would cause for subsistence communities:

For a large oil spill, noticeable disruption in excess of two years could occur from the oil spill and clean-up activities. The effects of this disruption would last beyond the period of clean up and would represent a chronic disruption of social organization, cultural values, and institutional organization. The effects would have a tendency to displace existing social patterns.⁵⁰

The conclusions of the LS 193 analysis are telling in this instance and should weigh against any further leasing in the Arctic at this time.

Moreover, even if and when the federal government develops adequate oil spill response capabilities, a potential spill will still present serious risks to the environment and the Inupiat people. BOEMRE and the federal government should therefore be developing contingency plans to assist the local community in the event of a catastrophic event. As an example, AEWG has included in the CAA an Oil Spill Mitigation Agreement, which provides some financial assistance for local communities in the event of a spill. The federal government should develop similar contingency plans that address the economic, social and cultural impacts of a major spill.

⁴⁷ Lease Sale 193 DSEIS Appendix A, 1502.22 Analysis at 103.

⁴⁸ See 43 U.S.C. § 1344(a)(3).

⁴⁹ Lease Sale 193 DSEIS Appendix A, 1502.22 Analysis at 2.

⁵⁰ Lease Sale 193 DSEIS at 23.

In plain and simple terms, a large oil spill could “displace existing social patterns.”⁵¹ That means our local culture, our traditions, and our subsistence lifestyle. We ask that the government balance the potential displacement of our indigenous culture against the nation’s demand for oil in excluding the Beaufort and Chukchi Seas from the 2012-2017 OCS program.

B. Bowhead Whales

In weighing the environmental impacts of potential leasing within the Beaufort and Chukchi areas, BOEMRE must consider and use the most up to date information on bowhead whale migration, behavior and response to industrial activities. Bowhead whales, a species protected under the Endangered Species Act, are “critical to the nutritional and cultural health of indigenous people of Alaska, Russia, and Canada for at least the last 2000 years.”⁵²

As AEWG has stated for many years, we are particularly concerned about the potential cumulative impacts to bowhead whales of offshore oil and gas activities, in conjunction with climate change, oil and gas activities in state waters, oil and gas activities in foreign countries including Canada and Russia, and shipping. As NOAA stated in 2009, there “is a potential for significant cumulative effects to the Western Arctic stock of bowhead whales from development in water off Alaska.”⁵³ The concern, which BOEMRE has failed to grapple with, is that activities in Alaska waters “would potentially subject [bowhead] whales to repeated exposure to seismic (airgun) noise over a significant portion of their range; from the Canadian MacKenzie delta, through the U.S. Beaufort and Chukchi Seas, and into the Bering Sea.”⁵⁴ NOAA called for the development of an “acoustic integration model to consider multiple exposures over space and time” and further stated that it was premature to conclude that seismic work would not have population-level effects without a comprehensive assessment.⁵⁵

Over the last several years, government and industry-funded research have both provided new data regarding bowhead whale habitat and the potential impacts to bowhead whales from industrial activity. This process demonstrates that the scientific community, working in conjunction with our whaling captains and their traditional knowledge, can develop reliable data that can be used to answer some of these questions. Before leasing additional areas of the Arctic, BOEMRE should use this next five-year cycle to aggressively fund and ramp up the productive research that has been taking place in recent years. As an example, a recent cumulative effects workshop has been making progress on developing methodologies for assessing multiple exposures to underwater noise associated with oil and gas activities. This type of promising scientific work is currently moving forward and should be supported by BOEMRE during this next five-year planning cycle.

⁵¹ *Id.*

⁵² Quakenbush et. al., *Fall and Winter Movements of Bowhead Whales (Balaena mysticetus) in the Chukchi Sea and Within a Potential Petroleum Development* 63 Arctic (3) at 1 (Sept. 2010).

⁵³ NOAA Comments on 2010-2015 DPP at 9.

⁵⁴ *Id.*

⁵⁵ *Id.*

In making its decision on the current five-year plan, BOEMRE must account for and consider additional recent scientific developments, which underscore the potential impacts to bowhead whales from the existing leases. BOEMRE and its agency partners have funded much of this work.

In particular, BOEMRE has been funding a bowhead whale tagging study in cooperation with the Alaska Department of Game and Fish, which has been carried out in conjunction with the North Slope Borough Department of Wildlife and our whaling captains.⁵⁶ This remarkable data set provides the most up to date information on bowhead whale use of the Chukchi Sea, which was previously one of the more significant data gaps. The study demonstrates that a large majority of bowhead whales migrate directly through the Lease Sale 193 area in the Chukchi Sea every fall, and the authors conclude that the “greatest potential for anthropogenic disturbances from industrial activities is near Point Barrow in September and October and in the Lease Area in September.”⁵⁷ This information is relevant in assessing the potential impacts of an oil spill in the Chukchi Sea, and it also relates to the potential impacts from routine industrial operations, including underwater noise associated with drilling, icebreaking and seismic, as well as potential impacts from water and air discharges. Prior to the tagging study, bowhead whale use of the Chukchi Sea was a significant unknown variable, and we now have concrete data demonstrating that the Lease Sale 193 areas lies in the middle of the bowhead whale migratory corridor.

The National Marine Fisheries Service (NMFS) also recently published important findings documenting that the Beaufort, and in particular Camden Bay, provides important feeding and resting habitat for migrating bowhead whales, including mothers and calves. NMFS noted recent observations of bowhead whales feeding “almost continuously in the waters near Barrow” during summer months, including “large number of feeding whales east of Point Barrow, later in August into September.”⁵⁸ NMFS also reinforced the importance of the Camden Bay area, in particular, where the oil industry currently holds numerous leases. Mothers and calves use this area in early September until at least early October, and the data indicated that “most of the adults as well as subadults had been feeding.”⁵⁹ “In summary, the best available information indicates that the area near Camden Bay is an area of special significance to bowhead whales.”⁶⁰

Finally, industry has been collecting relevant data regarding the potential impacts of industrial activity on bowhead whale behavior and habitat uses. In particular, recent acoustic monitoring in the Beaufort Sea demonstrates that “seismic surveys lead to a significant decrease in the call detection rates of bowhead whales.”⁶¹ We are still working to understand the

⁵⁶ Alaska Department of Fish and Game, et al. Satellite Tracking of Western Arctic Bowhead Whales at 1 (July 2010).

⁵⁷ *Id.* at 57.

⁵⁸ National Marine Fisheries Service Biological Opinion for certain Oil and Gas Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska for 2010 at 20 (July 2010).

⁵⁹ *Id.* at 23.

⁶⁰ *Id.* at 24.

⁶¹ Funk, D.W., et al., Joint Monitoring Program in the Chukchi and Beaufort Seas, Open Water Seasons, 2006-2008, LGL Alaska Report P1050-2, Draft Final Report, Prepared for Shell

biological significance of masking during the fall migration, but these conclusions reinforce our concerns and the concerns of NOAA regarding the potential for cumulative impacts resulting from multiple exposures to seismic and other sources of underwater noise during the bowhead whale migration.

C. Missing Baseline Information

AEWC has repeatedly emphasized that the agency is missing too much information about the environmental baseline of the Beaufort and Chukchi Seas to adequately analyze the environmental impacts from oil and gas leasing on these areas.⁶² Indeed, the Secretary removed the Beaufort and Chukchi Seas from further leasing in the 2007-2012 revised program because he found that the lack of information and uncertainties surrounding the Arctic environment were too great to proceed. In doing so, he explained that “[t]hese uncertainties indicate that a better informed and cautious approach to additional Arctic leasing is needed in order to properly balance the potential for environmental damage and the potential adverse impact on the coastal zone against the potential for oil and gas discoveries.”⁶³

Again in the Lease Sale 193 context, BOEMRE admitted that it is missing hundreds of pieces of information about the environmental baseline and impacts of oil activities in the Chukchi Sea. Indeed, the District Court of Alaska cited the hundreds of examples of missing information about species and impacts upon them when it remanded the agency’s environmental impact statement for Lease Sale 193 in the Chukchi Sea.⁶⁴

The five-year plan stage is when BOEMRE is supposed to weigh the environmental impacts of oil and gas activities in different regions in the country against the need for these resources. Without even basic information about the baseline in the Beaufort and Chukchi Seas and what the impacts of oil and gas activities may be there, BOEMRE cannot adequately analyze the numerous environmental factors required under OCSLA, including the area’s environmental sensitivity and marine productivity.⁶⁵ AEWG is not saying that offshore oil and gas activities can never occur in the Arctic, only that the relevant information should be gathered over the next five years or more, so BOEMRE can make an informed decision. AEWG is optimistic that this

Offshore, Inc. and Other Industry Contributors, and National Marine Fisheries Service and U.S. Fish and Wildlife Service at 9-53 (March 2010), available at http://www-static.shell.com/static/usa/downloads/2010/alaska/report_2006-2008_jmp_comprehensive_report_draft_final.pdf.

⁶² See, e.g., AEWG Comments on BOEMRE’s Supplemental Draft Environmental Impact Statement for Lease Sale 193 (Nov. 2010).

⁶³ Revised Leasing Program 2007-2012 at 16.

⁶⁴ *Native Village of Point Hope v. Salazar*, 730 F. Supp. 2d 1009, 1018 (D. Alaska 2010) (D. Alaska 2010).

⁶⁵ See, e.g., 43 U.S.C. § 1344(a)(2)(G).

research will be performed over the upcoming years, as evidenced by the numerous scientific initiatives currently in place.

In sum, we strongly support the Secretary's prior decision to focus first on the development of additional baseline data in the Beaufort and Chukchi Seas before moving forward with additional lease sales in the area. In the short time since the Secretary's announcement in 2010, none of the significant uncertainties have been resolved. We recommend that BOEMRE allow the scientific community adequate time to develop the necessary baseline data, and much of that work is moving forward. Instead of opening more areas of the Arctic to leasing for industrial activity, BOEMRE should be aggressively funding the baseline research needed on habitat use to make well-informed decisions after the next five-year planning cycle.

II. Additional Deferment Areas are Necessary In the Beaufort and Chukchi Seas.

In the event that BOEMRE decides to include the Beaufort and Chukchi Seas within the 2012-2017 leasing program, the agency should designate deferment areas to protect bowhead whales and other subsistence resources. In the previous five-year leasing program, BOEMRE included a 25-mile buffer area along the coastline in the Chukchi Sea and two deferment areas for subsistence whaling in the Beaufort Sea.⁶⁶ BOEMRE should retain these previous deferments and expand them to additional areas that emerging scientific information and traditional knowledge show are inappropriate for oil and gas exploration.

AEWC is grateful to BOEMRE for deferring oil and gas activities in two traditional subsistence hunting areas in the original 2007-2012 leasing program. At that time, BOEMRE acknowledged that despite the protection that these areas provided, subsistence hunting would still be vulnerable to adverse impacts from oil and gas activities outside of the deferment areas.⁶⁷

Rather than protecting just a few traditional harvest areas, if BOEMRE will not defer offshore oil and gas activities in the Arctic entirely, then substantial deferment areas must be created to protect our communities and the ocean resources upon which they depend. The five-year planning process is the appropriate time to identify and include deferment areas from further consideration. If BOEMRE waits until the lease sale stage to identify these areas, as MMS did in the past, the public and the agency will have to address these deferment areas on a piece-meal basis, resulting in a more time-consuming and arduous process than it would at this point in OCSLA's planning process.

Additionally, AEWB would like to highlight that the previous five-year leasing program estimated the same net economic benefits for the alternative with deferment areas than the

⁶⁶ MMS, Proposed Final Program Outer Continental Shelf Oil and Gas Leasing Program 2007-2012 at 4 (April 2007).

⁶⁷ Proposed Leasing Program 2007-2012 at 22 ("Subsistence hunting and the hunted animals would remain susceptible to effects from an oil spill or other discharges that affect water and/or air quality occurring in blocks outside the deferral areas").

alternative without.⁶⁸ In light of the strong environmental benefits that would flow from additional deferment areas without corresponding losses to economic productivity, BOEMRE's decision to include deferment areas is environmentally and economically prudent. Thus, AEWC requests that BOEMRE include the following specific deferment areas and that the agency consult with NOAA to determine additional areas for deferment.⁶⁹

A. Camden Bay

Camden Bay is one of the most important subsistence hunting grounds for our community, as each season whaling crews from Nuiqsut base their operations out of Cross Island and crews from Kaktovik on Barter Island hunt for the bowhead whale in and around Camden Bay. As new studies have documented, Camden Bay provides crucial habitat for bowhead whales, particularly mothers and calves, which has been and would be adversely affected by oil and gas activities. We have expressed our concern for many years that BOEMRE moved forward with leasing in Camden Bay without recognizing the unique and important habitat that this area provides to bowhead whales every year during their annual migration. With numerous existing leases and extensive industrial activity already taking place in this very sensitive area, BOEMRE should defer this area from any further leasing.

Over the last decade or more, we have been emphasizing the traditional knowledge of our whaling captains regarding the importance of Camden Bay for feeding and resting during the fall migration. For many years, BOEMRE (formerly MMS) and other federal agencies discounted our concerns and questioned whether bowhead whales feed in the Beaufort during the fall. After BOEMRE leased this area to the oil companies and approved seismic activity, industry monitoring indeed confirmed the data from our whaling captains that, in fact, Camden Bay does provide critical feeding and resting habitat during the fall migration. Despite these lessons, BOEMRE approved drilling in Camden Bay in 2010, concluding that Camden Bay did not provide uniquely important habitat for bowhead whales.

By now, however, there can no longer be any debate about the importance of this habitat. In NMFS' most recent biological opinion concerning the impacts of oil and gas activities, the agency found that:

the best available information indicates that the area near Camden Bay is an area of special significance to bowhead whales. Large numbers of whales have been documented feeding in the area in multiple years and females and calves have been

⁶⁸ Revised Leasing Program 2007-2012 at 39, 45 (valuing the net benefits of production for both alternatives at \$6.58 billion)

⁶⁹ See Deepwater Horizon Commission Report at 264 (stating "NOAA should provide comments and recommendations concerning specific geographic areas that should be excluded from the leasing program or treated in a specific manner due to their ecological sensitivity or for other reasons relevant to NOAA's ocean and coastal science expertise").

documented using the area in approximately the same proportions as they exist in the population (Koski and Miller, 2009). Feeding aggregations of whales may be expected to occur in the area, especially just to the west, the southwest and the northwest of the ice gouge survey sites.⁷⁰

In light of the sensitivities of these areas, NMFS concluded that oil and gas activities are “likely to adversely affect these whales due to vessel operations, noise from marine geophysical (seismic) exploration, and aircraft traffic.”⁷¹

Our concerns over the impacts to bowheads in Camden Bay are reinforced by the experiences of our whaling captains during prior drilling operations in the area. Drilling ships and icebreakers caused significant deflection of bowhead whales from the Camden Bay area during operations in the 1980s and 1990s, interfering with the subsistence hunt and causing unknown impacts on the whales themselves. We have attached for BOEMRE’s review a summary of key research on impacts to bowhead whales due to offshore oil and gas activities during the fall open water season in the Beaufort Sea during this time frame.⁷²

AEWC, the oil industry, and NOAA have been working to address potential conflicts during exploratory drilling through the Conflict Avoidance Agreement as well as Incidental Harassment Authorizations, which have included time and place restrictions to protect the subsistence hunt at Cross Island. Nonetheless, AEWG and its whaling captains are still very concerned about whether and how production and development could take place in Camden Bay without interfering with the hunt and altering bowhead use of this important habitat.

Based on these concerns, AEWG strongly opposes any further leasing in the Camden Bay area in conjunction with the next five-year plan. BOEMRE must first work with AEWG and its whaling captains, in conjunction with NOAA, to determine how to protect the subsistence hunt and the bowhead whale population from the impacts of exploration, production and development before offering any additional areas in the vicinity of Camden Bay for further leasing.

B. Chukchi Sea Migratory Habitat

As discussed above, we are just now identifying when and how bowhead whales use the Chukchi Sea during their fall migration, while at the same time there are numerous unexplored leases that lie directly in the migratory corridor. Moreover, the Chukchi Sea presents unique challenges because of its isolation from on-shore support and the challenging ice, weather and sea conditions. If BOEMRE decides to consider additional areas in the Arctic for leasing, AEWG requests that the agency consider as an alternative deferring areas in the Chukchi that have been identified as lying within the bowhead whale migratory corridor.

⁷⁰ NMFS 2010 OCS Exploration BiOp at 24.

⁷¹ NMFS 2010 OCS Exploration BiOp at 79.

⁷² Alaska Eskimo Whaling Commission, Summary of Key Research on Bowhead Whale Impacts Due to Offshore Oil and Gas Activity During the Beaufort Sea Fall Open Water Season.

Again, we are just now learning the full extent of how bowhead whales use this area during their semi-annual migration. We now know that they, in fact, heavily use the Lease Sale 193 area, but we still have no idea how industrial activity in this area will impact bowhead whales during their fall migration. There are approximately 2.7 million acres of existing leases in the Chukchi, which are far in excess of what BOEMRE can effectively manage given the existing gaps in baseline data and our understanding of the potential cumulative impacts to bowhead whales. Any further leasing in this area should be deferred until the science can catch up with the federal government's questionable prior decision to lease this area in the absence of critical scientific information.

Additionally, AEWG supports the retention of the 25-mile buffer area along the Chukchi Sea coastline, as a minimum, to protect the spring polyna and hunting areas for subsistence villages. This buffer is important and does not present serious economic or energy development issues, as AEWG pointed out in its comments on the previous five-year program, because industry has not expressed previous interest in this near-shore area.⁷³ This buffer is important, but it should be expanded to protect the sensitive species of the Hannah Shoal through the next five years of climactic change that will occur in the Chukchi.

C. Community-based alternatives

AEWG further requests that BOEMRE work with our whaling captains and the communities along the North Slope to develop deferment areas that fully protect the needs of subsistence hunters and local communities. AEWG and local communities have frequently commented on and suggested deferment areas at both the five-year planning and lease sale stage. BOEMRE has recognized these suggestions and included Barrow and Kaktovik as deferment areas at the lease sale stage, and should continue to work closely with these community members to further develop and execute additional community-based alternatives. As we have stated for several years, the existing deferment areas are inadequate to protect the subsistence activities of our whaling captains.

These concerns are pressing, because our communities are being forced to adapt to a warming climate and changes in sea ice by altering the timing and location of their subsistence activities. Wainright, for instance, landed a whale for the first time during the fall season last year. There are similar stories from other locations on the North Slope that relate not only to whaling but also the other subsistence activities that define our culture and people. BOEMRE should engage with each community to seek input on appropriate deferral areas, and these efforts must be designed to incorporate the traditional knowledge of our whaling captains through an open, collaborative process, as opposed to simply one-off public meetings scheduled in the middle of the winter that get cancelled due to bad weather, as happened with the scoping meetings.

Rather than waiting until the lease sale stage, AEWG requests that BOEMRE consult with communities to identify and include deferment areas now. This should be used to develop

⁷³ AEWG Comments on Proposed Program OCS Leasing Program: 2007-2012 at 4-5 (Nov. 22, 2006).

alternatives for the 2012-2017 leasing program that the local community may be able to support. AEW strongly recommends that this process be coordinated with the comprehensive planning efforts of the National Ocean Commission during the upcoming five-year cycle and then incorporated into the next five-year plan for 2017-2022.

III. Environmental Sensitivity Analysis

In preparing the five-year leasing program, OCSLA requires that BOEMRE consider the “relative environmental sensitivity . . . of different areas of the [OCS].”⁷⁴ BOEMRE “must at least attempt to identify those areas whose environment and marine productivity are most and least sensitive to OCS activity.”⁷⁵ The agency’s failure to properly perform an environmental sensitivity analysis has proved fatal to the five-year leasing programs, in part, because it prevents the agency from adequately balancing factors as required under Section 18(a)(3).⁷⁶

AEWC applauds BOEMRE for considering several important factors in the most recent environmental sensitivity analysis for the revised 2007-2012 leasing plan, such as “oil spills, sound and physical disturbance, and increased sensitivity due to climate change and ocean acidification.”⁷⁷ However, AEW is concerned with the previous environmental sensitivity analysis because it underestimated the environmental sensitivity of the Beaufort and Chukchi Seas. In that analysis, BOEMRE ranked the Beaufort Sea as “more sensitive” and the Chukchi Sea as “less sensitive.”⁷⁸ These seas should be ranked “most sensitive” because they provide significant habitat for a variety of species protected under the Marine Mammal Protection Act and Endangered Species Act, experience harsh climatic conditions, and have a lack of baseline information, especially in comparison to other OCS planning areas.

AEWC believes that the previous environmental sensitivity analysis undervalued the Beaufort and Chukchi Seas, in part, because it failed to account for subsistence resources and uses of these areas. In the sensitivity analysis for the revised five-year plan, BOEMRE defined “ecological sensitivity” as the “vulnerability of an OCS planning area’s ecological components (i.e., coastal habitats, marine habitats, marine fauna, and marine productivity) to the potential impacts of OCS oil and gas activities in comparison to the same ecological components in other OCS planning areas.”⁷⁹ Subsistence resources and the role that they play in sustaining the Inupiat people are part of the ecology of the Chukchi and Beaufort Seas.

Therefore, BOEMRE should have included “subsistence resources” within the environmental sensitivity analysis. This can be done by either defining “ecological sensitivity” more broadly or else specifically referencing subsistence resources in the definition. Upon

⁷⁴ 43 U.S.C. § 1344(a)(2)(G).

⁷⁵ *CBD v. DOI*, 563 F.3d at 489 (citing *Watt I*, 668 F.2d at 1313).

⁷⁶ *See CBD v. DOI*, 563 F.3d at 488 (remanding five-year leasing plan because the agency only assessed the sensitivity of the onshore area).

⁷⁷ Revised Leasing Program 2007-2012 at 114.

⁷⁸ Revised Leasing Program 2007-2012 at 115.

⁷⁹ Revised Leasing Program 2007-2012 at 116.

considering subsistence resources, BOEMRE's environmental sensitivity analysis should have found that the Beaufort and Chukchi Seas receive the most sensitive determination.

Moreover, the marine wildlife of the Arctic, including bowhead whales and fishing stocks, are incredibly vulnerable because they are already facing more extreme impacts from climate change. Harsh arctic conditions make both these resources and the humans who depend upon them more vulnerable in the event of a disaster. As previously explained, an oil spill similar to the Deepwater Horizon or another disaster in the Arctic threatens even more acute problems for these seas and their subsistence uses. By taking into account subsistence uses and the vulnerability of subsistence resources, AEW C believes that the Beaufort and Chukchi Seas should both be ranked as "most sensitive."

Although AEW C appreciates the nearly 50 studies that BOEMRE included in the revised environmental sensitivity analysis in the revised five-year leasing program for 2007-2012,⁸⁰ the agency must update and supplement those studies with new information. It is disappointing that a December 2010 analysis did not reflect the current state of the scientific literature on bowhead whales in the areas. Specifically, the bowhead whale studies previously discussed in these comments highlight the sensitivity of the Beaufort and Chukchi Seas that ultimately should alter the agency's sensitivity analyses for these areas.⁸¹ Moreover, BOEMRE's sensitivity analysis should account for the fact that little scientific information is known about the Arctic and the Beaufort and Chukchi Seas.

Despite the exclusion of important data and considerations, the environmental sensitivity analysis still showed that the Beaufort and Chukchi Seas should be excluded from the five-year leasing plan based upon the balance between productivity and sensitivity. Both seas were ranked very low for productivity: the Beaufort Sea was ranked as 7th out of 7⁸² while the Chukchi Sea was ranked as 6th out of 7 in productivity.⁸³

IV. Human Health and Environmental Justice Impacts

BOEMRE must consider that AEW C's members and the Inupiat people of the North Slope of Alaska will bear the brunt of the environmental and human health risks and impacts from oil and gas activities in the Beaufort and Chukchi Seas. Specifically, OCLSA section 18(a)(2)(B) requires that BOEMRE make decisions about the timing and location of activities, in part, upon "an equitable sharing of developmental benefits and environmental risks among the various regions."⁸⁴ Moreover, Executive Order No. 12898 requires federal agencies to analyze disproportionately high and adverse human health and environmental effects of [their] programs, policies, and activities on minority and low-income populations.⁸⁵ Pursuant to the Executive

⁸⁰ Revised Leasing Program 2007-2012 at 119.

⁸¹ *See infra* at pp. 11-13.

⁸² Revised Leasing Program 2007-2012 at 38.

⁸³ Revised Leasing Program 2007-2012 at 46.

⁸⁴ 43 U.S.C. § 1344(a)(2)(B).

⁸⁵ Exec. Order No. 12,898, Federal Actions To Address Environmental Justice in Minority Populations and Low- Income Populations, 59 Fed. Reg. 7,629, 7,632-33 (Feb. 11, 1994).

Order, BOEMRE is required to consider these environmental justice issues within its NEPA analysis.⁸⁶

Oil and gas leasing in the Beaufort and Chukchi Seas poses environmental justice concerns for the Inupiat people of the North Slope of Alaska who are dependent upon the Beaufort and Chukchi Seas for their subsistence lifestyles. As BOEMRE recognized in the previous five-year program, “[t]he immediate environmental risks of OCS oil and gas activities are borne primarily by producing regions and nearby onshore areas.”⁸⁷ Both routine oil and gas activities and unexpected oil spills and accidents threaten to harm, disrupt, and destroy our subsistence resources and lifestyles.

Routine oil and gas activities will increase water and air pollution, adversely affect subsistence resources, disturb cultural patterns, and harm physical health and well-being. In the event that an oil spill or other accident occurs, coastal villages will be the hardest hit. Additionally, Native villages along the North Slope are already facing increased problems associated with climate change, including rising sea levels. BOEMRE has previously acknowledged many of these problems and other long-lasting social and environmental impacts that are associated with oil and gas activities.⁸⁸ Moreover, subsistence hunters will face decreased yields and increasingly dangerous hunting conditions as oil and gas activities push whale migration further from shore and adversely impact the variety of marine life upon which we depend.

To fully consider these various problems, it is imperative that the five-year leasing plan includes a complete environmental justice analysis that *meaningfully* influences the decision-making process. Despite various legal requirements at later stages, federal agencies continue to ignore these environmental justice considerations throughout the decision-making process. For example, the Environmental Appeals Board recently remanded the Clean Air Act permits for Shell’s Exploration Plans in the Beaufort and Chukchi Seas because the Environmental Protection Agency had failed to properly assess the environmental justice impacts from air pollution.⁸⁹ The lack of assessment down the line emphasizes why it is important that BOEMRE fully consider these impacts at the five-year planning stage.

In the likely event that oil and gas activities will make subsistence resources more scarce, subsistence villages will face increasing difficulties with accessing food supplies. Since time immemorial, the Inupiat people have subsisted off of these resources and cannot easily survive without them. After the Deepwater Horizon disaster, NOAA closed 88,522 square miles of fishing in the Gulf of Mexico,⁹⁰ emphasizing that oil spills far out in the ocean will interfere with

⁸⁶ Council on Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act (Dec. 1997), available at <http://www.ceq.hss.doe.gov/nepa/regs/ej/justice.pdf>.

⁸⁷ Proposed Leasing Program 2007-2012 at 96.

⁸⁸ See, e.g., Lease Sale 193 DSEIS at 23.

⁸⁹ *In re Shell Gulf of Mexico and Shell Offshore Inc.*, OCS Appeal No. 01-04, 15 E.A.D. --- (EAB Dec. 30, 2010).

⁹⁰ Deepwater Horizon Commission Report at 187.

coastal communities and fishing activities. In the event that a spill and fishing closure occurred in Arctic areas, our people could lose an entire year's supply of whales and fish or more. Without alternative sources of food or the economic means to procure it along the North Slope, subsistence villagers would be at serious health and survival risks.

CONCLUSION

Thank you for the opportunity to provide scoping comments on the proposed 2012-2017 five-year plan. As the Honorable Secretary of Interior Ken Salazar found in 2010, the risks of a catastrophic oil spill, the inability to respond to such a spill and additional environmental threats far outweigh the questionable benefits of additional lease sale activity in the Beaufort and Chukchi Seas. For these reasons, AEWc supports the Secretary's prior decision to defer further leasing in these regions, a decision that should be carried over for this next five-year plan.

Instead of offering more leases, BOEMRE should instead prioritize a robust, well-funded and strategic scientific initiative focused on addressing the numerous existing data gaps on the Arctic ecosystem and the potential cumulative impacts to the bowhead whale and our subsistence-based communities. With this information in hand, BOEMRE, in partnership with AEWc and our local impacted communities, NOAA, the National Oceans Council and other stakeholders should develop and implement a comprehensive management plan for the Arctic, which can then guide future planning efforts. AEWc is committed to finding common ground whereby the Arctic can contribute to the Nation's energy needs while at the same time guaranteeing that our children and grandchildren will have the same opportunity as our ancestors to practice our ancient traditions and carry on our indigenous, subsistence-based culture. Only through a comprehensive planning effort, as opposed to piecemeal management decisions, can we find that common ground.

Sincerely,


Harry Brower, Jr.
Chairman

cc: (list)

**2009 OPEN WATER SEASON
PROGRAMMATIC CONFLICT AVOIDANCE AGREEMENT**

BETWEEN

**BP EXPLORATION (ALASKA), INC.
CONOCOPHILLIPS ALASKA, INC.
ENI US OPERATING COMPANY, INC.
EXXON MOBIL
PGS ONSHORE
PIONEER NATURAL RESOURCES ALASKA, INC.
SHELL OFFSHORE, INC**

AND

**THE ALASKA ESKIMO WHALING COMMISSION
THE BARROW WHALING CAPTAINS' ASSOCIATION
THE KAKTOVIK WHALING CAPTAINS' ASSOCIATION
THE NUIQSUT WHALING CAPTAINS' ASSOCIATION
THE PT. HOPE WHALING CAPTAINS' ASSOCIATION
THE PT. LAY WHALING CAPTAINS' ASSOCIATION
THE WAINWRIGHT WHALING CAPTAINS' ASSOCIATION**

**Final for Signature
June 30, 2009**

FINAL 06-30-2009

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TITLE I – GENERAL PROVISIONS

SECTION 101. APPLICATION.

Titles I and II apply to all Participants.

Title III applies to those Participants who operate barge or transit vessels in the Beaufort Sea or Chukchi Sea.

Titles IV and V apply only to those Participants who engage in oil and gas operations.

SECTION 102. PURPOSE.

The purpose of this Agreement is to provide:

- (1) Equipment and procedures for communications between Subsistence Participants and Industry Participants;
- (2) Avoidance guidelines and other mitigation measures to be followed by the Industry Participants working in or transiting the vicinity of active subsistence whaling crews, in areas where subsistence whaling crews anticipate hunting, or in areas that are in sufficient proximity to areas expected to be used for subsistence hunting that the planned activities could potentially affect the subsistence hunt through effects on migrating bowhead whale behavior;
- (3) Measures to be taken in the event of an emergency occurring during the term of this Agreement; and
- (4) Dispute resolution procedures.

SECTION 103. DEFINITIONS.

(a) Defined Terms.

For the purposes of this Agreement:

- (1) The term “Agreement” means this 2009 Open Water Season Programmatic Conflict Avoidance Agreement and any attachments to such agreement.
- (2) The term “at-sea oil and gas operations” does not include fixed platform developments located near shore (for example Northstar or Oooguruk).
- (3) The term “barge” means a non-powered vessel that is pushed or towed, and the accompanying pushing or towing vessel, that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include any vessel used to provide supplies or support to at-sea oil and gas operations.
- (4) The term “Com-Center” means a communications systems coordination center established under Section 203.
- (5) The term “geophysical activity” means any activity the purpose of which is to gather data for imaging the marine environment, sea floor, or subsurface, including but not limited to use of air guns, sonar, and other equipment used for seismic exploration or shallow hazard identification.
- (6) The term “Industry Participants” means all parties to this Agreement who are not Subsistence Participants.
- (7) The term “Marine Mammal Observer / Inupiat Communicator” or “MMO/IC” means an observer hired by an Industry Participant for the purpose of spotting and identifying marine mammals in the area of that Industry Participant’s operations during the Open Water Season. The MMO/IC also serves as the on-board Inupiat communicator who can communicate directly with whaling crews.
- (8) The term “Near Shore Operations Support Vessels” means vessels (including aircraft) used to support related activities (such as supply, re-supply, crew movement, and facility maintenance) for near shore oil and gas operations by an Industry Participant.
- (9) The terms “NSB” and “NSB DWM” mean the North Slope Borough and the North Slope Borough Department of Wildlife Management, respectively.

(10) The term “oil and gas operations” means all oil and gas exploration, development, or production activities (including, but not limited to, geophysical activity, exploratory drilling, development activities (such as dredging or construction), production drilling, or production, and related activities (such as supply, re-supply, crew movements, and facility maintenance) by or for any Industry Participant, including aircraft and vessels of whatever kind used in support of such activities, occurring in the Beaufort Sea or Chukchi Sea, whether occurring near shore or offshore, but does not include barge or transit vessel traffic by or for any Participant.

(11) The term “Open Water Season” means the period of the year when ice conditions permit navigation or oil and gas operations to occur in the Beaufort Sea or Chukchi Sea, as appropriate.

(12) The term “Participants” means all parties identified in this Agreement by name and whose representative(s) has signed the Agreement, and all contractors of such parties. When used alone the term includes both Industry Participants and Subsistence Participants.

(13) The term “Subsistence Participants” means the Alaska Eskimo Whaling Commission (AEWC) and its members, including the whaling captains’ associations identified on the cover of this Agreement, as well as any individual members of those associations.

(14) The term “transit vessel” means a powered vessel that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include a vessel used to provide supplies or other support to at-sea oil and gas operations.

(b) Geographically Limited Terms.

For the purposes of this Agreement:

(1) The term “Beaufort Sea” means all waters off the northern coast of Alaska from Point Barrow to the Canadian border.

(2) The term “Chukchi Sea” means all waters off the western and northern coasts of Alaska from Cape Prince of Wales to Point Barrow.

SECTION 104. TERM, SCOPE, AND LIMITATIONS.

(a) Term.

The term of this Agreement shall commence with the signing of this document by the Participants and shall terminate upon completion of the Nuiqsut, Kaktovik, Barrow, Wainwright, Pt Lay, and Pt. Hope Fall Bowhead Hunts or the Beaufort Sea Post Season Meeting required under Section 108(a) and Chukchi Sea Post-Season Meetings in Barrow, Wainwright, Pt. Lay, and Pt. Hope required under Section 108(b), whichever is later.

(b) Scope.

The Participants agree that, unless otherwise specified:

- (1) The mitigation measures identified in this Agreement, which are intended to mitigate the potential impacts of oil and gas operations and barge and transit vessel traffic on bowhead whales and the Alaskan Eskimo subsistence hunt of bowhead whales, are designed to apply to all activities of each Participant during the 2009 Open Water Season, whether referenced specifically or by category, and to all vessels and locations covered by this Agreement, whether referenced specifically or by category.
- (2) This Agreement is intended to apply to all oil and gas operations and barge and transit vessel traffic during the 2009 Open Water Season in the Beaufort Sea or Chukchi Sea.
- (3) Vessels and locations covered by this Agreement include those identified in the Agreement, as well as any other vessels or locations that are employed by or for the Industry Participants in the Beaufort Sea or Chukchi Sea during the 2009 Open Water Season.

(c) Limitations of Obligations.

The following limitations apply to this Agreement.

- (1) No cooperation among the Participants, other than that required by this Agreement, is intended or otherwise implied by their adherence to this Agreement. In no event shall the signatures of any representative of the Alaska Eskimo Whaling Commission (AEWC), or of the Barrow, Nuiqsut, Kaktovik, Wainwright, Pt. Hope, or Pt. Lay Whaling Captains' Associations, or of any other Whaling Captains' Association be taken as an endorsement of any Arctic operations or Beaufort Sea or Chukchi Sea OCS operations by any oil and/or gas operator or contractor.
- (2) Adherence to the procedures and guidelines set forth in this Agreement does not in any way indicate that any Inupiat or Siberian Yupik whalers or the AEWC agree that industrial activities are not interfering with the bowhead whale migration or the bowhead whale subsistence hunt. Such adherence does not represent an admission on the part of the Industry Participants or their contractors that the activities covered by this Agreement will interfere with the bowhead whale migration or the bowhead whale subsistence hunt.
- (3) No member of the oil and gas industry or any contractor has the authority to impose restrictions on the subsistence hunting or any other activities of the AEWC, residents of the Villages of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, or Pt. Hope, or residents of any other village represented by the AEWC.
- (4) In the event additional parties engage in oil and gas operations in the Beaufort Sea or Chukchi Sea during the summer or fall of 2009 the Participants shall exercise their good-faith efforts to encourage those parties to enter into this Agreement. Should additional parties enter into this Agreement at a date subsequent to the date of the signing of this document and before the termination of the 2009 bowhead whale subsistence hunting season, the AEWC will provide to all Participants a supplement to this document containing the added signatures.
- (5) No Participant is responsible for enlisting additional parties to adhere to the terms and conditions of the Agreement. Similarly, **THE AEWC IS NOT RESPONSIBLE FOR, OR A PARTY TO, ANY AGREEMENT AMONG THE INDUSTRY PARTICIPANTS** concerning the apportionment of expenses necessary for the implementation of this Agreement.

(6) In adhering to this Agreement, none of the Participants waives any rights existing at law. All Participants agree that the provisions of this document do not establish any precedent as between them or with any regulatory or permitting authority.

(7) **PARTICIPANTS' OBLIGATIONS SHALL BE SEPARABLE:** All Participants to this Agreement understand that each Participant represents a separate entity. The failure of any Participant to adhere to this Agreement or to abide by the terms and conditions of this Agreement shall not affect the obligation of other Participants to adhere to this Agreement and to proceed accordingly with all activities covered by this Agreement. Nor shall any Participant's adherence to this Agreement affect that Participant's duties, liabilities, or other obligations with respect to any other Participant beyond those stated in this Agreement.

SECTION 105. REGULATORY COMPLIANCE.

(a) United States Coast Guard Requirements.

The Participants shall comply with all applicable United States Coast Guard requirements for safety, navigation, and notice.

(b) Environmental Regulations and Statutes.

The Participants shall comply with all applicable environmental regulations and statutes.

(c) Other Regulatory Requirements.

The Participants shall comply with all applicable federal, state, and local government requirements.

SECTION 106. DISPUTE RESOLUTION.

Subject to the terms of Section 104(c)(7) of this Agreement, all disputes arising between any Industry Participants and any Subsistence Participants shall be addressed as follows:

(1) The dispute shall first be addressed between the affected Participant(s) in consultation with the affected village Whaling Captains' Association and the Industry Participant(s)' Local Representative.

(2) If the dispute cannot be resolved to the satisfaction of all affected Participants, then the dispute shall be addressed with the affected Participants in consultation with the AEW C.

(3) If the dispute cannot be satisfactorily resolved in accordance with paragraphs (1) and (2) above, then the dispute shall be addressed with the AEW C and the Participants in consultation with representatives of NOAA Fisheries.

(4) All Participants shall seek to resolve any disputes in a timely manner, and shall work to ensure that requests for information or decisions are responded to promptly.

SECTION 107. EMERGENCY AND OTHER NECESSARY ASSISTANCE.

(a) Emergency Communications.

ALL VESSELS SHOULD NOTIFY THE APPROPRIATE COM-CENTER IMMEDIATELY IN THE EVENT OF AN EMERGENCY. The appropriate Com-Center operator will notify the nearest vessels and appropriate search and rescue authorities of the problem and advise them regarding necessary assistance. (See attached listing of local search and rescue organizations in Attachment I.)

(b) Emergency Assistance for Subsistence Whale Hunters.

Section 403 of Public Law 107-372 (16 U.S.C. 916c note) provides that “Notwithstanding any provision of law, the use of a vessel to tow a whale, taken in a traditional subsistence whale hunt permitted by Federal law and conducted in waters off the coast of Alaska is authorized, if such towing is performed upon a request for emergency assistance made by a subsistence whale hunting organization formally recognized by an agency of the United States government, or made by a member of such an organization, to prevent the loss of a whale.” Industry participants will advise their vessel captains that, under the circumstances described above, assistance to tow a whale is permitted under law when requested by a Subsistence Participant. Under the circumstances described above, Industry Participants will provide such assistance upon a request for emergency assistance from a Subsistence Participant, if conditions permit the Industry Participant’s vessel to safely do so.

SECTION 108. POST-SEASON REVIEW / PRESEASON INTRODUCTION.

(a) Beaufort Sea Post-Season Joint Meeting.

Following the end of the fall 2009 bowhead whale subsistence hunt and prior to the 2010 Pre-Season Introduction Meetings, the Industry Participant that establishes the Deadhorse and Kaktovik Com Centers will offer to the AEWK Chairman to host a joint meeting with all whaling captains of the Villages of Nuiqsut, Kaktovik and Barrow, the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Beaufort Sea, and with the Chairman and Executive Director of the AEWK, at a mutually agreed upon time and place on the North Slope of Alaska, to review the results of the 2009 Beaufort Sea Open Water Season, unless it is agreed by all designated individuals or their representatives that such a meeting is not necessary.

(b) Chukchi Sea Post-Season Village Meetings.

Following the completion of 2009 Chukchi Sea Open Water Season and prior to the 2010 Pre-Season Introduction Meetings, the Industry Participants involved, if requested by the AEWK or the Whaling Captain's Association of each village, will host a meeting in each of the following villages: Wainwright, Pt. Lay, Pt. Hope, and Barrow (or a joint meeting of the whaling captains from all of these villages if the whaling captains agree to a joint meeting) to review the results of the 2009 operations and to discuss any concerns residents of those villages might have regarding the operations. The meetings will include the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Chukchi Sea. The Chairman and Executive Director of the AEWK will be invited to attend the meeting(s).

(c) Pre-season Introduction Meetings.

(1) Immediately following each of the above meetings, and at the same location, the Industry Participants will provide a brief introduction to their planned operations for the 2010 Open Water Season. Each Industry Participant should provide hand-outs explaining their planned activities that the whaling captains can review.

(2) Subsistence Participants understand that any planned operations discussed at these Pre-Season Introduction Meetings, and the corresponding maps, will represent the Industry Participant's best estimate at that time of its planned operations for the coming year, but that these planned operations are preliminary, and are subject to change prior to the 2010 Open Water Season Meeting.

(d) Map of Planned Industry Participant Activities.

The Industry Participants, jointly, shall prepare and provide the AEWG with a large-scale map of the Beaufort and Chukchi Seas showing the locations and types of oil and gas and barge and transit activities planned by each Industry Participant. This map will be for use by the AEWG and Industry Participants during the 2010 CAA Meeting.

TITLE II -- OPEN WATER SEASON COMMUNICATIONS

SECTION 201. MARINE MAMMAL OBSERVERS / INUPIAT COMMUNICATORS.

(a) Marine Mammal Observer / Inupiat Communicator Required.

- (1) In General. Each Industry Participant agrees to employ a Marine Mammal Observer / Inupiat Communicator (MMO/IC) on board each vessel owned or operated by such Industry Participant in the Beaufort Sea or Chukchi Sea.
- (2) Special Rule for Inside Beaufort Sea Barrier Islands. Industry Participants whose seismic acquisition operations are limited to an area exclusively within the barrier islands need employ an MMO/IC on its sound source vessel only.
- (3) Near Shore Operations Support Vessels. Industry Participants are not required to employ an MMO/IC on Near Shore Operations Support Vessels.
- (4) Sealift Operations. For Industry Participants conducting sealift operations in which two tugs towing barges are accompanied within ½ mile by a third light tug at all times, a MMO/IC is required to be employed on the light tug only.

(b) Duties of Marine Mammal Observer / Inupiat Communicator.

- (1) Each MMO/IC is to be employed as an observer and Inupiat communicator for the duration of the 2009 Open Water Season on the vessel on which he or she is stationed.
- (2) As a member of the crew, the MMO/IC will be subject to the regular code of employee conduct on board the vessel and will be subject to discipline, termination, suspension, layoff, or firing under the same conditions as other employees of the vessel operator or appropriate contractor.

- (3) Once the source vessel on which the MMO/IC is employed is in the vicinity of a whaling area and the whalers have launched their boats, the MMO/IC's primary duty will be to carry out the communications responsibilities set out in this Title.
- (4) At all other times, the MMO/IC will be responsible for keeping a lookout for bowhead whales and/or other marine mammals in the vicinity of the vessel to assist the vessel captain in avoiding harm to the whales and other marine mammals.
- (5) It is the MMO/IC's responsibility to call the appropriate Com-Center as set out in Sections 202 and 203.
- (6) The MMO/IC will be responsible for all radio contacts between vessels owned or operated by each of the Industry Participants and whaling boats covered under Section 207 of this Agreement and shall interpret communications as needed to allow the vessel operator to take such action as may be necessary pursuant to this Agreement.
- (7) The MMO/IC shall contact directly subsistence whaling boats that may be in the vicinity to ensure that conflicts are avoided to the greatest possible extent.
- (8) The MMO/IC will maintain a record of his or her communications with each Com-Center and the subsistence whaling boats.

SECTION 202. COM-CENTER GENERAL COMMUNICATIONS SCHEME.

(a) Reporting Positions for Vessels Owned or Operated by the Industry Participants.

- (1) All vessels (other than barge and transit vessels covered under section 302) shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:
 - (A) Vessel name, operator of vessel, charter or owner of vessel, and the project the vessel is working on.
 - (B) Vessel location, speed, and direction.

(C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ at Chukchi Sea prospect. We are currently at ___' ___ north ___' ___ west, proceeding SE at ___ knots. We will proceed on this course for ___ hours and will report location and direction at that time.

(2) The appropriate Com-Center shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(3) In the event that the Industry Participant's operation includes seismic data acquisition, the operator reserves the right to restrict exact vessel location information and provide more general location information.

(b) Reporting Positions for Subsistence Whale Hunting Crews.

(1) All subsistence whaling captains shall report to the appropriate Com-Center at the time they launch their boats from shore and again when they return to shore.

(2) All subsistence whaling captains shall report to such Com-Center the initial GPS coordinates of their whaling camps.

(3) Additional communications shall be made on an as needed basis.

(4) Each call shall report the following information:

(A) The crew's location and general direction of travel.

EXAMPLE: This is _____. We are just starting out. We will be traveling north-east from _____ to scout for whales. I will call if our plans change.

(B) The presence of any vessels or aircraft owned or operated by any of the Industry Participants, or their contractors, that are not observing the specified guidelines set forth in Title V on Avoiding Conflicts.

(C) The final call of the day shall include a statement of the whaling captain's general area of expected operations for the following day, if known at the time.

(5) Any subsistence whale hunter preparing to tow a caught whale shall report to the appropriate Com-Center before starting to tow.

EXAMPLE: This is Archie Ahkiviana. I am ___'___ north, ___'___ west. I have a whale and am towing it into _____.

(6) Each time a subsistence whaling camp is moved, it shall be reported promptly to the appropriate Com-Center, including the new GPS coordinates.

(7) Subsistence whale hunters shall notify the appropriate Com-Center promptly if, due to weather or any other unforeseen event, whaling is not going to take place that day.

(8) Subsistence whaling captains shall contact the appropriate Com-Center promptly and report any unexpected movements of their vessel.

(c) Responsibilities of Participants.

(1) Monitoring VHF Channel 16.

All vessels covered by Sections 207, 301, and 401 of this Agreement shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas

It is the responsibility of each vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement to determine the positions of all of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication

After any vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

SECTION 203. THE COMMUNICATIONS SYSTEM COORDINATION CENTERS (COM-CENTERS).

(a) Chukchi Lead System Included in Com-Center Coverage.

In addition to the Beaufort Sea and Chukchi Sea, the communications scheme shall apply in the Chukchi Sea lead system, as identified and excluded from leasing in the current MMS Five-Year Leasing Program, 2008-2012.

(b) Set Up and Operation.

(1) Subject to the terms of Section 104(c) of this Agreement, the Industry Participants conducting operations in:

(A) the Beaufort Sea jointly will arrange for the funding of Com-Centers in Deadhorse and Kaktovik; and

(B) the Chukchi Sea jointly will arrange for the funding of Com-Centers in Barrow, Wainwright, Pt. Lay, and Pt. Hope.

(2) All six Com-Centers will be staffed by Inupiat operators. **GROUND TRANSPORTATION MUST BE PROVIDED FOR COM-CENTER OPERATIONS IN KAKTOVIK FOR POLAR BEAR AND BROWN BEAR SAFETY.** The Com-Centers will be operated 24 hours per day during the 2009 subsistence bowhead whale hunt. One Industry Participant in the Beaufort Sea and one Industry Participant in the Chukchi Sea, or their respective contractor, will be designated as the operator of the Com-Centers for that Sea, in consultation with the AEWG.

(3) Each Industry Participant shall contribute to the funding of the Com-Centers covering the areas in which it conducts oil and gas operations. The level of funding for the Com-Centers provided by each of the Industry Participants is intended to be in proportion to the scale of their respective activities, and shall be mutually agreed by the Industry Participants.

(4) The procedures to be followed by the Com-Center operators are set forth in subsection (d) below.

(c) Staffing.

(1) Each Com-Center shall have an Inupiat operator (“Com-Center operator”) on duty 24 hours per day from August 15 until the end of the bowhead whale subsistence hunt in:

- (A) Kaktovik for the Kaktovik Com-Center;
- (B) Nuiqsut for the Deadhorse Com-Center;
- (C) Barrow for the Barrow Com-Center;
- (D) Wainwright for the Wainwright Com-Center.
- (E) Pt. Lay for the Pt. Lay Com-Center, which will be located in the Pt. Lay Whaling Captains’ Association building; and
- (F) Pt. Hope for the Pt. Hope Com-Center, which will be located in the Pt. Hope Whaling Captains’ Association building.

(3) All Com-Center staff shall be local hire.

(d) Duties of the Com-Center Operators.

(1) The Com-Center operators shall be available to receive radio and telephone calls and to call vessels as described below. A record shall be made of all calls from every vessel covered by Sections 207, 301, and 401 of this Agreement. The record of all reporting calls should contain the following information:

- (A) Industry Participant Vessel:
 - (i) Name of caller and vessel.
 - (ii) Vessel location, speed, and direction.
 - (iii) Time of call.
 - (iv) Anticipated movements between this call and the next report.
 - (v) Reports of any industry or subsistence whale hunter activities.

(B) Subsistence Whale Hunting Boat:

- (i) Name of caller.
- (ii) Location of boat or camp.
- (iii) Time of call.
- (iv) Plans for travel.
- (v) Any special information such as caught whale, whale to be towed, or industry vessel conflicts with whale or whaler.

(2) Report of Industry/Subsistence Whale Hunter Conflict:

In the event an industry/subsistence whale hunter conflict is reported, the appropriate Com-Center operator shall record:

- (A) Name of industry vessel.
- (B) Name of subsistence whaling captain.
- (C) Location of vessels.
- (D) Nature of conflict.

(3) If all vessels and boats covered by Sections 207, 301, and 401 of this Agreement have not reported to the appropriate Com-Center within one hour of the recommended time, that Com-Center operator shall attempt to call all non-reporting vessels to determine the information set out above under the Duties of the Com-Center operator.

(4) As soon as location information is provided by a vessel covered by Sections 207, 301, or 401 of this Agreement, the appropriate Com-Center operator shall plot the location and area of probable operations on the large map provided at the Com-Center.

(5) If, in receiving information or plotting it, a Com-Center operator observes that operations by Industry Participants might conflict with subsistence whaling activities, such Com-Center operator should attempt to contact the industry vessel involved and advise the Industry Participant's Local Representative(s) and the vessel operators of the potential conflict.

SECTION 204. STANDARDIZED LOG BOOKS.

The Industry Participants will provide the Com-Centers and Marine Mammal Observer / Inupiat Communicators with identical log books to assist in the standardization of record keeping associated with communications procedures required pursuant to this Agreement.

SECTION 205. COMMUNICATIONS EQUIPMENT.

(a) Communications Equipment to be Provided to Subsistence Whale Hunting Crews.

- (1) In General. The Industry Participants will provide (or participate in the provision of) the communications equipment described in paragraphs (4) and (6) of this subsection and subsection (b) of this section.
- (2) Beaufort Sea. The Industry Participants funding Com-Centers in Deadhorse and Kaktovik will fund the provision of communications equipment for the whaling captains of Kaktovik and Nuiqsut in the same proportion as they fund those Com-Centers.
- (3) Chukchi Sea. The Industry participants conducting operations in the Chukchi Sea will coordinate with each other to participate in funding the provision of communications equipment for the whaling captains of Barrow, Wainwright, Pt. Hope, and Pt. Lay.
- (4) All-Channel, Water-Resistant VHF Radios.

These VHF radios are specifically designed for marine use and allow monitoring of Channel 16 while using or listening to another channel.

- (A) Kaktovik Subsistence Whaling Boats: 8
- (B) Kaktovik Base and Search and Rescue: 2
- (C) Nuiqsut Subsistence Whaling Boats: 12
- (D) Nuiqsut Base and Search and Rescue: 3
- (E) Barrow Base and Search and Rescue: 2

- (F) Wainwright Base and Search and Rescue: 2
- (G) Wainwright Subsistence Whaling Boats: 4
- (H) Pt. Hope Base and Search and Rescue: 2
- (I) Pt. Hope Subsistence Whaling Boats: 10
- (J) Pt. Lay Base and Search and Rescue: 2
- (K) Pt. Lay Subsistence Whaling Boats: 4

(5) Specific VHF Channels For Each Village.

The whaling boats from each of the villages have been assigned individual VHF channels for vessel-to-vessel and vessel-to-Com-Center communications as follows:

- (A) Nuiqsut whaling crews will use Channel 68.
- (B) Kaktovik whaling crews will use Channel 69.
- (C) Barrow whaling crews will use Channel 72.
- (D) Wainwright Whaling Crews will use Channel 12.
- (E) Pt. Lay Whaling Crews will use Channel 72.
- (F) Pt. Hope Whaling Crews will use Channel 68.

(6) Satellite Telephones.

The satellite telephones are to be used as backup for the VHF radios. The satellite telephones for use on subsistence whaling boats are for emergency use only and should be programmed for direct dial to the nearest Com-Center.

- A. Kaktovik Base Phones: 2
- B. Kaktovik Subsistence Whaling Boats: 8
- C. Nuiqsut Base Phones: 2

- D. Nuiqsut Subsistence Whaling Boats: 12
- E. Barrow Subsistence Whaling Boats: 2
- F. Wainwright Subsistence Whaling Boats: 4
- G. Pt. Lay Subsistence Whaling Boats: 2

(7) Distribution and Return of Equipment.

The distribution of the VHF radios and satellite telephone equipment to whaling captains for use during the 2009 fall bowhead subsistence whale hunting season shall be completed no later than August 15, 2009. All such units and telephone equipment provided under this Agreement, whether in this section or otherwise, will be returned promptly by the Subsistence Participants to the Industry Participant or the person providing such units and equipment at the end of each Village's 2009 fall bowhead whale subsistence hunt.

(b) Communications Equipment on Vessels Owned or Operated by the Industry Participants and/or their Contractors.

The Marine Mammal Observer / Inupiat Communicators onboard source vessels owned or operated by the Industry Participants and/or their contractors will also be supplied with all-channel VHF radios. The MMO/ICs have been assigned Channel 7 for their exclusive use in communicating with the Com-Center. Such radios shall be returned upon the completion or termination of the MMO/IC's assignment.

(c) Radio Installation and User Training.

The Whaling Captains of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, and Pt. Hope, with assistance from the Industry Participants, will be responsible for the installation of the VHF radio equipment. The Industry participants will provide (or participate in the provision of) on-site user training for the VHF equipment on or before August 15, 2009, as scheduled by the Whaling Captains' Associations of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the Industry Participant operating the Beaufort Sea Com-Centers or Chukchi Sea Com-Centers, as appropriate.

SECTION 206. INDIVIDUALS TO CONTACT.

Listed below are the primary contact names and phone numbers for each of the Participants.

(1) BP Exploration (Alaska), Inc.'s (BP) Local Representative

LOWRY BROTT will be BP's local representative on the North Slope during the Term of this Agreement and will be stationed at Northstar Island and will be available by telephone at (907)670-3520 and when Mr. Brott is not available, his alternate, Dan Ferriter, will be stationed at Northstar Island and will be available by telephone at the above number.

(2) ConocoPhillips' Local Representative

Jim Darnell (907) 265-6240
Heather Collins-Ballot (907) 265-6213
Field Rep TBD (Jeff Hastings, Fairweather)

(3) ENI's Local Representative

TBD

(4) Exxon Mobil's Local Representative

TBD

(5) PGS Onshore's Local Representative

CHUCK ROBINSON, Area Manager, will be PGS Onshore, Inc.'s local representative during the Term of this Agreement and will be available by telephone at (907) 569-4049.

(6) Pioneer Natural Resources' (Pioneer) Local Representative

PAT FOLEY will be Pioneer's local representative during the Term of this Agreement and will be stationed in Anchorage and will be available by telephone at (907) 343-2110.

(7) Shell Offshore Inc.'s (Shell) Local Representatives

BOB ROSENBLADT and PETER LITTLEWOOD will be Shell's local representatives on the North Slope during the Term of this Agreement and will be stationed at Barrow during Chukchi Sea operations and at Deadhorse during Beaufort Sea operations and will be available by telephone at (907) 770-3700.

(8) Veritas

TBD

(9) The Village of Kaktovik

For purposes of this Agreement, the individuals to contact for the Village of Kaktovik will be: JOSEPH KALEAK at (907) 640-6213 or 640-6515, and FENTON REXFORD at (907) 640-2042 (Home) or (907) 640-6419 (Work).

(10) The Village of Nuiqsut

For purposes of this Agreement, the individuals to contact for the Village of Nuiqsut will be: ISAAC NUKAPIGAK at (907) 480-6220 (Work); (907) 480-2400 (Home), and ARCHIE AHKIVIANA at (907) 480-6918 (Home).

(11) The Village of Barrow

For purposes of this Agreement, the individuals to contact for the Village of Barrow will be: HARRY BROWER, JR. at (907) 852-0350 (Work), and EUGENE BROWER at (907) 852-3601.

(12) The Village of Wainwright

For purposes of this Agreement, the individuals to contact for the Village of Wainwright will be: ROSSMAN PEETOOK at (907) 763-4774, and WALTER NAYAKIK at (907)763-2915 (Work).

(13) The Village of Pt. Hope

For purposes of this Agreement, the individuals to contact for the Village of Pt. Hope will be: RAY KOONUK, SR. at (907) 368-2330 (Work), 368-2332 (Fax), ray.koonuk@tikigag.org (E-mail); CHESTER FRANKSON, SR. at (907) 368-2054 (Home).

(14) The Village of Pt. Lay

For purposes of this Agreement, the individuals to contact for the Village of Pt. Lay will be: JULIUS REXFORD (907) 833-4592 (Home), (907) 833-2214 (Work), (907) 833-2320 (Fax), THOMAS NUKAPIAK (907) 833-6467 (Home), (907) 833-3838

(15) The AEW

For purposes of this Agreement, the individuals to contact for the AEW shall be: HARRY BROWER, JR. at (907) 852-0350 (Work) and JANICE MEADOWS at (907) 852-2392.

SECTION 207. SUBSISTENCE WHALE HUNTING BOATS.

The following is a list of the number of boats each of the Subsistence Participants plan to use:

(1) Boats Owned/Used by Whaling Captains of Nuiqsut (NWCA)

The subsistence whaling crews of the Village of Nuiqsut plan to use (12) twelve boats for subsistence whale hunting during the late summer and fall of 2009.

(2) Boats Owned/Used by Whaling Captains of Kaktovik (KWCA)

The subsistence whaling crews of the Village of Kaktovik plan to use (8) eight boats for subsistence whale hunting during the late summer and fall of 2009.

(3) Boats Owned/Used by Whaling Captains of Barrow (BWCA)

The subsistence whaling crews of the Village of Barrow plan to use (40) forty boats for subsistence whale hunting during the late summer and fall of 2009.

(4) Boats Owned/Used by Whaling Captains of Wainwright (WWCA)

The subsistence whaling crews of the Village of Wainwright plan to use (4) four boats for subsistence whale hunting during the fall of 2009.

(5) Boats Owned/Used by Whaling Captains of Pt. Hope (Pt. HWCA)

The subsistence whaling crews of the Village of Pt. Hope plan to use (10) ten boats for subsistence whale hunting during the late fall of 2009.

(6) Boats Owned/Used by Whaling Captains of Pt. Lay (Pt. LWCA)

The subsistence whaling crews of the Village of Pt. Lay plan to use (4) four boats for subsistence whale hunting during the fall of 2009.

If any additional boats are put in use by subsistence whaling crews, the industry Participants will be notified promptly through the Com-Center.

TITLE III – BARGE AND TRANSIT VESSEL OPERATIONS

SECTION 301. IN GENERAL.

A Participant may employ barges or transit vessels to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement. Any Industry Participant who employs a barge or transit vessel to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement shall require the barge or transit vessel operator to comply with Sections 201 and 302 of this Agreement while providing services to that Industry Participant.

SECTION 302. BARGE AND TRANSIT VESSEL OPERATIONS.

(a) Reporting Positions for Barge or Transit Vessels Owned or Operated by industry Participants.

(1) All barge or transit vessels shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

- (A) Barge or transit vessel name, operator of vessel, charter or owner of vessel, and the project or entity the vessel is transporting materials for.
- (B) Barge or transit vessel location, speed, and direction.

(C) Plans for barge or transit vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the barge or transit vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at ____' ____ north ____' ____ west, proceeding SE at ____ knots. We will proceed on this course for ____ hours and will report location and direction at that time.

(2) The appropriate Com-Center also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All barge and transit vessel operators are responsible for the following requirements.

(1) Monitoring VHF Channel 16. All barge and transit vessel operators shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and barge or transit vessel operator to determine the positions of their barge or transit vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication. After any barge or transit vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Barges and Transit Vessels.

(1) All barge and transit vessel routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All barges and transit vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.

(2) Beaufort Sea. Vessels transiting east of Bullet Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Barges and transit vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Migrating Bowhead Whales.

If any barge or transit vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Sound Signature and Marine Mammal Sighting Data.

Industry Participants whose operations are limited exclusively to barge or vessel traffic will submit to the AEWC and NSB DWM sound signature data for each vessel over 5 net tons they are using and all marine mammal sighting data.

TITLE IV – VESSELS, TESTING, AND MONITORING

SECTION 401. INDUSTRY PARTICIPANT VESSELS AND EQUIPMENT.

(a) List of Vessels and Equipment Required.

Each Industry Participant engaged in oil and gas operations shall provide a list identifying all vessels or other equipment (including but not limited to boats, barges, aircraft, or similar craft) that are owned and/or operated by, or that are under contract to the Industry Participants, for use in the Beaufort Sea or Chukchi Sea for oil and gas operations or for implementation of such Industry Participant's monitoring plan. Vessels and equipment used for oil and gas operations shall be listed in Attachment II, and vessels and equipment used for monitoring plans shall be listed in Attachment III.

(b) Only Listed Vessels and Equipment May Be Used.

(1) NONE OF THE INDUSTRY PARTICIPANTS INTENDS TO OPERATE ANY VESSEL OR EQUIPMENT NOT IDENTIFIED IN THE LISTS REQUIRED UNDER SUBSECTION (a) DURING THE TERM OF THIS AGREEMENT.

(2) Notwithstanding paragraph 1, if any Industry Participant decides to use different vessels or equipment or additional vessels or equipment, such vessels and equipment shall be used only for purposes identified in Attachments II or III; and the AEW and the whaling captains of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Hope, and Pt. Lay shall be notified promptly through the appropriate Com-Center, as identified in Section 203 of this Agreement, and in writing, of their identity and their intended use, including location of use.

SECTION 402. PRE-SEASON SOUND SIGNATURE TESTS.

(a) Test Required Within 72 Hours of Initiating Operations.

For purposes of obtaining a sound signature for Industry Participants' sound sources, the Industry Participants shall have initiated a test of both the geophysical equipment and the vessels identified in Attachments II and III to this Agreement, within 72 hours of initiating or having initiated operations in the Beaufort Sea or Chukchi Sea. If more than one sound source will be used on an individual vessel, a cumulative test of all sound sources used on that vessel will be conducted. Industry Participants are not required to conduct sound signature tests of Near Shore Operations Support Vessels.

(b) Mutual Agreement on Site for Testing; Advance Notice Required.

(1) In General. Each sound signature test shall be conducted at a site mutually agreed upon by the Industry Participant conducting such test and the AEWC. Each Industry Participant conducting such sound signature test(s) will provide a minimum of seven days notice of its intent to perform each test to the AEWC.

(2) Beaufort Sea Testing. For sound signature tests conducted in the Beaufort Sea, the Industry Participant conducting such tests shall provide transportation for an appropriate number of representatives from: the AEWC, the whaling captains of the Villages of Barrow, Nuiqsut, and Kaktovik, and the NSB DWM to observe the sound signature tests.

(3) Chukchi Sea Testing. For sound signature tests conducted on vessels to be used in the Chukchi Sea, the Industry Participant(s) conducting such tests will invite the AEWC and the NSB DWM to observe such tests and transportation will be provided by the appropriate Industry Participant(s).

(4) Subsistence Participants. In order to facilitate the participation of interested Subsistence Participants and the NSB DWM in any sound signature test(s), the Industry Participant(s) will make a good faith effort to provide three weeks notice of its intent to perform each test.

(c) Sound Signature Data to be Made Available.

(1) Within seven (7) days of completing the the sound signature data calculations from the field tests, each Industry Participant and/or its contractor conducting such test(s) will make all data collected during the sound signature test(s) available upon request to the AEWC and the NSB DWM and will provide the AEWC and the NSB DWM the preliminary analysis of that data, as well as any other sound signature data that is available and that the AEWC, the NSB DWM, and the Industry Participant agree is relevant to understanding the potential noise impacts of the proposed operations to migrating bowhead whales or other affected marine mammals.

(2) Once completed the final data analysis will be provided to the AEWC and the NSB DWM upon request.

(3) Any Industry Participant who prepares a model of the sound signature of its vessels and operations, whether before or after the Pre-Season Sound Signature Test, will provide copies of those models and any related analysis to the AEWC and the NSB DWM upon request.

SECTION 403. MONITORING PLANS.

(a) Monitoring Plan Required.

(1) Each Industry Participant agrees to prepare and implement a noise impact monitoring plan to collect data designed to determine the effects of its oil and gas operations on fall migrating bowhead whales and other affected marine mammals.

(2) The Monitoring Plans shall be designed in cooperation with the AEW, the NSB DWM, NOAA Fisheries, the U.S. Minerals Management Service, and any other entities or individuals designated by one of these organizations.

(b) Beaufort Sea Monitoring Plans.

In the Beaufort Sea, the monitoring plans shall include an investigation of noise effects on fall migrating bowhead whales as they travel past the noise source, with special attention to changes in calling behavior, deflection from the normal migratory path, where deflection occurs, and the duration of the deflection.

(c) Chukchi Sea Monitoring Plans.

In the Chukchi Sea, the monitoring plans should focus on the identity, timing, location, and numbers of marine mammals and their behavioral responses to the noise source.

(d) Use of Prior Information and Peer Review Required.

(1) Prior impact study results shall be incorporated into the monitoring plans prepared by each Industry Participant.

(2) Each monitoring plan shall be subject to peer review by stakeholders at the 2009 Open Water Season Peer Review Meeting, convened by NOAA Fisheries. Draft plans will be submitted to the NSB DWM and AEW three weeks prior to the Open Water Meeting. Peer review and acceptance of each monitoring plan through this process shall be completed prior to the commencement of each Industry Participants' 2009 operations in the Beaufort Sea or Chukchi Sea.

(e) Raw Data, Communication, and Summary Required.

- (1) Each Industry Participant conducting site-specific monitoring will:
 - (A) make raw data, including datasheets, field notes, and electronic data, available to the NSB DWM at the end of the season.
 - (B) permit and encourage open communications among their contractors and the AEWC and NSB DWM.
- (2) Each Industry Participant will submit a summary of monitoring plan results and progress to the AEWC and NSB DWM every two weeks during the operating season.

SECTION 404. CUMULATIVE NOISE IMPACTS STUDY.

Each Industry Participant further agrees to provide its monitoring plan and sound signature data, for use in a cumulative effects analysis of the multiple sound sources and their possible relationship to any observed changes in marine mammal behavior, to be undertaken pursuant to a Cumulative Noise Impacts Study.

The study design for the Cumulative Impacts Study shall be developed through a Cumulative Impacts Workshop to be organized by the North Slope Borough in the fall of 2009. The results of this workshop will be presented at the 2010 Open Water Meeting.

TITLE V – AVOIDING CONFLICTS DURING THE OPEN WATER SEASON

Industry Participants are reminded that Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act provide, among other things, that the Secretary can authorize the incidental taking of small numbers of marine mammals of a species or population stock if the Secretary finds, among other things, that the total of such takings during the authorized period **will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses.**

The following Operating Guidelines apply in the Beaufort Sea and Chukchi Sea, except as otherwise specified and in all cases with due regard to environmental conditions and operational safety. These Operating Guidelines are in addition to any permit restrictions or stipulations imposed by the applicable governmental agencies.

SECTION 501. GENERAL PROVISIONS FOR AVOIDING INTERFERENCE WITH BOWHEAD WHALES OR SUBSISTENCE WHALE HUNTING ACTIVITIES.

(a) Routing Vessels and Aircraft.

(1) All vessel and aircraft routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity (as reported pursuant to Section 202).

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(b) Aircraft Altitude Floor and Flight Path.

(1) AIRCRAFT SHALL NOT OPERATE BELOW 1500 FEET unless the aircraft is engaged in marine mammal monitoring, approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations. Aircraft engaged in marine mammal monitoring shall not operate below 1500 feet in areas of active whaling; such areas to be identified through communications with the Com-Centers.

(2) Except for airplanes engaged in marine mammal monitoring, aircraft shall use a flight path that keeps the aircraft at least five (5) miles inland until the aircraft is directly south of its offshore destination, then at that point it shall fly directly north to its destination.

(c) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(d) Vessels Operating in Proximity of Migrating Bowhead Whales.

If any vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

SECTION 502. GEOPHYSICAL ACTIVITY LIMITATIONS.

The following operating limitations are to be observed and the operations are to be accompanied by a monitoring plan as set forth in Section 403 and Attachment III of this Agreement.

(a) Limit on Number of Simultaneous Geophysical Activity Operations.

Only two (2) geophysical activity operations will occur at any one time in either the Beaufort Sea or the Chukchi Sea. The Industry Participants conducting geophysical activity operations agree to coordinate the timing and location of such operations so as to reduce, by the greatest extent reasonably possible, the level of noise energy entering the water from such operations at any given time and at any given location.

(b) Limitations on Geophysical Activity in the Beaufort Sea.

All geophysical activity in the Beaufort Sea shall be confined as set forth below.

(1) Kaktovik: No geophysical activity from the Canadian Border to the Canning River (146 deg. 4 min. W) from 25 August to close of the fall bowhead whale hunt in Kaktovik and Nuiqsut.¹ From August 10 to August 25, Industry Participants will communicate and collaborate with AEWG on any planned vessel movement in and around Kaktovik and Cross Island to avoid impacts to whale hunt.

(2) Nuiqsut:

A. Pt. Storkerson (~148 deg. 42 min. W) to Thetis Island (~150 deg. 10.2 min. W).

(i) *Inside the Barrier Islands*: No geophysical activity prior to August 5. Geophysical activity is allowed from August 5 until completion of operations²

(ii). *Outside the Barrier Islands*: No geophysical activity from August 25 to close of fall bowhead whale hunting in Nuiqsut. Geophysical activity is allowed at all other times.

b. Canning River (~146 deg. 4 min. W) to Pt. Storkerson (~148 deg. 42 min. W): No geophysical activity from August 25 to the close of bowhead whale subsistence hunting in Nuiqsut.

(3) Barrow: No geophysical activity from Pitt Point on the east side of Smith Bay (~152 deg. 15 min. W) to a location about half way between Barrow and Peard Bay (~157 deg. 20 min. W) from September 15 to the close of the fall bowhead whale hunt in Barrow.

¹ The bowhead whale subsistence hunt will be considered closed for a particular village when the village Whaling Captains' Association declares the hunt ended or the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWG), whichever occurs earlier.

² Geophysical activity allowed in this area after August 25 shall include a source array of no more than 12 air guns, a source layout no greater than 8 m x 6 m, and a single source volume no greater than 880 in³.

(c) Limitations on Geophysical Activity in the Chukchi Sea.

All geophysical activity in the Chukchi Sea shall be conducted in accordance with the terms set forth below.

- (1) Geophysical activity shall not be conducted within 60 miles of any point on the Chukchi Sea coast.
- (2) Safe harbor will be at sites selected by the Industry Participants and the AEW. Safe harbor sites will be agreed upon no later than July 1 and shall be listed in Attachment IV.
- (3) Any vessel operating within 60 miles of the Chukchi Sea coast will follow the communications procedures set forth in Title II of this Agreement. All vessels will adhere to the conflict avoidance measures set forth in Section 501 of this Agreement.
- (4) If a dispute should arise, the resolution process set forth in Section 106 of this Agreement shall apply.

SECTION 503. DRILLING AND PRODUCTION.

The following operating limitations are to be observed and the operations are to be accompanied by a Monitoring Plan as set forth in Section 403 and Attachment III of this Agreement.

(a) Zero Discharge of Drilling Mud, Cuttings, Ballast Water, and Produced Water.³

(1) Beaufort Sea. For all drilling operations, whether for exploration, development, or production, in the Beaufort Sea habitat of the bowhead whale, zero volume discharge of drilling mud, cuttings, ballast water, or produced water shall be allowed into the marine environment. All such material shall be disposed of through re-injection or backhaul for onshore disposal.

(2) Chukchi Sea. For all drilling operations, whether for exploration, development, or production, in the Chukchi Sea habitat of the bowhead whale, zero harmful discharge of drilling muds, cuttings, ballast water, or produced water shall be allowed into the marine environment. Any harmful material shall be disposed of through re-injection or backhaul for onshore disposal.

(b) Sampling of Drilling Mud and Cuttings.

For all drilling operations, whether for exploration, development, or production, in the Beaufort Sea or Chukchi Sea habitat of the bowhead whale, the operator shall cooperate with the AEWC and North Slope Borough in the design and implementation of a program to monitor all discharged materials and impacts to migratory resources from any materials that might be discharged into the marine environment.

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³ The intent of this subsection is to apply the same discharge standards that are applicable to Industry Participants that conduct oil and gas operations off Norway. The standard for the Beaufort Sea is to be the same as that applied by Norway in the Barents Sea, and the standard in the Chukchi Sea is to be the same as that applied by Norway in waters south of the Barents Sea. The “harmful” discharges that are prohibited are those classified by Norway as “red” or “yellow” (above certain amounts); discharge of material classified by Norway as “green” is allowed under the zero harmful discharge standard.

(c) Monitoring of Gray Water, Black Water, and Heated Water.

For all exploratory drilling operations in the Beaufort Sea or Chukchi Sea habitat of the bowhead whale, the operator shall cooperate with the AEWG and North Slope Borough in the design and implementation of a program to monitor the composition or temperature and the fate of all discharged materials and impacts to migratory resources from any materials dumped into the marine environment.

(d) Drilling Operations in the Beaufort Sea East of Cross Island.

No drilling equipment or related vessels shall be onsite at any offshore drilling location east of Cross Island from 25 August until the close of the bowhead whale hunt in Nuiqsut and Kaktovik. However, such equipment may remain within the Beaufort Sea in the vicinity of 71 degrees 25 minutes N and 146 degrees 4 minutes W., or at the edge of the Arctic ice pack, whichever is closer to shore.

(e) Drilling Operations in the Beaufort Sea West of Cross Island.

No drilling equipment or related vessels shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.

(f) Oil Spill Mitigation.

Unless otherwise agreed with the AEWG, Industry Participants engaged in oil production or in drilling operations in the Beaufort Sea or Chukchi Sea agree to adhere to the AEWG/NSB/Inupiat Community of the Arctic Slope oil spill contingency agreement.

SECTION 504. SHORE-BASED SERVICE AND SUPPLY AREAS.

Shore-based service and supply areas used by Industry Participants shall be located and operated so as to ensure compliance with the terms of this Agreement.

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
Dated: _____

Harry Brower
AEW Commissioner for Barrow
Dated: _____

Archie Ahkiviana
AEW Commissioner for Nuiqsut
Dated: _____

Joe Kaleak
AEW Commissioner for Kaktovik
Dated: _____

Rossman Peetook
AEW Commissioner for Wainwright
Dated: _____

Ray Koonuk
AEW Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEW Commissioner for Pt. Lay.
Dated: _____

Name:
BP Exploration (Alaska) Inc.
Dated: _____

Name:
ENI
Dated: _____

Name:
Shell Offshore, Inc.
Dated: _____

Name:
ConocoPhillips Alaska
Dated: _____

Name:
Exxon Mobil
Dated: _____

Chuck Robinson
PGS Onshore, Inc.
Dated: _____

Name:
Pioneer Natural Resources Alaska
Dated: _____

ATTACHMENT I

LOCAL SEARCH AND RESCUE ORGANIZATIONS - CONTACT PERSONS

(IN EMERGENCIES, ALWAYS DIAL 911)

North Slope Borough

Search and Rescue (Pilots)

Director Richard Patterson	852-2822 WK	852-2496 Home
Hugh Patkotak	852-2822 WK	852-4844 Home

Barrow Volunteer

Search and Rescue Station

852-2808 OFS

President	Oliver Leavitt	852-7032 WK	852-7032 Home
Vice-Pres.	Price Brower	852-8633 WK	852-7848 Home
Secretary	Lucille Adams	852-0250 Wk	852-7200 Home
Treasurer	Eli Solomon	852-2808 Wk	852-6261 Home
Coordinator	Arnold Brower, Jr.	852-0290 WK	852-5060 Home
Director	Jimmy Nayakik	852-0200 WK	852-JENS Home
Director	Johnny Adams	852-0250 WK	852-7724 Home

Nuiqsut Volunteer

Search and Rescue Station

480-6613 (Fire Hall)

Kaktovik Volunteer

Search and Rescue Station

640-6212 (Fire Hall)

President	Lee Kayotuk	640-5893	Wk	640-6213 Home
Vice-Pres.	Tom Gordon	640-		
Secretary	Nathan Gordon	640-6925		
Treasurer	Don Kayotuk	640-2947		
Fire Chief	George T. Tagarook	640-6212 WK		640-6728 Home

Wainwright Volunteer Search and Rescue

President	Joe Ahmaogak Jr.	763-2826 Home
Vice President	John Hopson, Jr.	763-3464 Home
Secretary	Raymond Negovanna	763-2102 Home
Treasurer	Ben Ahmaogak, Jr.	763-3030 Home
Director	Artic Kittick	763-2534 Home
Director	John Akpik	Unlisted

Pt. Hope Volunteer Search and Rescue

Coordinator	Willard Hunnicutt, Jr.	368-2774 Work
Fire Chief	Willard Hunnicutt, Jr.	368-2774 Work (Note: Only contact for Pt. Hope)

North Slope Borough Disaster Relief Coordinator

Frederick Brower	852-0284 OFS
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ATTACHMENT II

**VESSELS TO BE USED FOR AND IN SUPPORT OF
INDUSTRY PARTICIPANTS' OPERATIONS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' OPERATIONS.**

ATTACHMENT III

**VESSELS TO BE USED FOR AND IN SUPPORT
OF THE INDUSTRY PARTICIPANTS MONITORING PLANS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' MONITORING PLAN.**

ATTACHMENT IV
SAFE HARBOR

**2010 OPEN WATER SEASON
PROGRAMMATIC CONFLICT AVOIDANCE AGREEMENT**

BETWEEN

**BP EXPLORATION (ALASKA), INC.
CONOCOPHILLIPS ALASKA, INC.
EXXON MOBIL CORPORATION
ION / GX TECHNOLOGY
PIONEER NATURAL RESOURCES ALASKA, INC.
SHELL OFFSHORE, INC
STATOIL**

AND

**THE ALASKA ESKIMO WHALING COMMISSION
THE BARROW WHALING CAPTAINS' ASSOCIATION
THE KAKTOVIK WHALING CAPTAINS' ASSOCIATION
THE NUIQSUT WHALING CAPTAINS' ASSOCIATION
THE PT. HOPE WHALING CAPTAINS' ASSOCIATION
THE PT. LAY WHALING CAPTAINS' ASSOCIATION
THE WAINWRIGHT WHALING CAPTAINS' ASSOCIATION**

**Final for Signature
May 27, 2010**

FINAL FOR SIGNATURE

May 27, 2010

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TITLE I – GENERAL PROVISIONS

SECTION 101. APPLICATION.

Titles I and II apply to all Participants.

Title III applies to those Participants who operate barge or transit vessels in the Beaufort Sea or Chukchi Sea.

Titles IV and V apply only to those Participants who engage in oil and gas operations.

Provisions that apply to a specific activity or are designated as specific to either the Beaufort Sea or Chukchi Sea apply only to Participants that engage in that activity or operate in that area, and provisions applicable to activities a Participant does not engage in or areas in which a Participant does not operate do not apply to that Participant.

SECTION 102. PURPOSE.

The purpose of this Agreement is to provide:

- (1) Equipment and procedures for communications between Subsistence Participants and Industry Participants;
- (2) Avoidance guidelines and other mitigation measures to be followed by the Industry Participants working in or transiting the vicinity of active subsistence hunters, in areas where subsistence hunters anticipate hunting, or in areas that are in sufficient proximity to areas expected to be used for subsistence hunting that the planned activities could potentially affect the subsistence hunt through effects on marine subsistence resources;
- (3) Measures to be taken in the event of an emergency occurring during the term of this Agreement; and
- (4) Dispute resolution procedures.

SECTION 103. DEFINITIONS.

(a) Defined Terms.

For the purposes of this Agreement:

- (1) The term “Agreement” means this 2010 Open Water Season Programmatic Conflict Avoidance Agreement and any attachments to such agreement.
- (2) The term “at-sea oil and gas operations” does not include fixed platform developments located near shore (for example Northstar or Oooguruk).
- (3) The term “barge” means a non-powered vessel that is pushed or towed, and the accompanying pushing or towing vessel, that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include any vessel used to provide supplies or support to at-sea oil and gas operations.
- (4) The term “Com-Center” means a communications systems coordination center established under Section 203.
- (5) The term “geophysical activity” means any activity the purpose of which is to gather data for imaging the marine environment, sea floor, or subsurface, including but not limited to use of air guns, sonar, and other equipment used for seismic exploration or shallow hazard identification.
- (6) The term “geophysical equipment” means equipment, such as air guns or sonar, employed on a vessel, towed array, or stationary source, that generate sound waves for the purpose of imaging the marine environment, sea floor, or subsurface. The term does not include vessel engines, generators, or depth finders.
- (7) The term “Industry Participants” means all parties to this Agreement who are not Subsistence Participants.
- (8) The term “Marine Mammal Observer / Inupiat Communicator” or “MMO/IC” means an observer hired by an Industry Participant for the purpose of spotting and identifying marine mammals in the area of that Industry Participant’s operations during the Open Water Season. The MMO/IC also serves as the on-board Inupiat communicator who can communicate directly with whaling crews.

(9) The term “Near Shore Operations Support Vessels” means vessels (including aircraft) used to support related activities (such as supply, re-supply, crew movement, and facility maintenance) for near shore oil and gas operations by an Industry Participant.

(10) The terms “NSB” and “NSB DWM” mean the North Slope Borough and the North Slope Borough Department of Wildlife Management, respectively.

(11) The term “oil and gas operations” means all oil and gas exploration, development, or production activities (including, but not limited to, geophysical activity, exploratory drilling, development activities (such as dredging or construction), production drilling, or production, and related activities (such as supply, re-supply, crew movements, and facility maintenance) by or for any Industry Participant, including aircraft and vessels of whatever kind used in support of such activities, occurring in the Beaufort Sea or Chukchi Sea, whether occurring near shore or offshore, but does not include barge or transit vessel traffic by or for any Participant.

(12) The term “Open Water Season” means the period of the year when ice conditions permit navigation or oil and gas operations to occur in the Beaufort Sea or Chukchi Sea, as appropriate.

(13) The term “Participants” means all parties identified in this Agreement by name and whose representative(s) has signed the Agreement, and all contractors of such parties. When used alone the term includes both Industry Participants and Subsistence Participants.

(14) The term “Primary Sound Source Vessel” means a vessel owned or operated by or for an Industry Participant that (A) employs air guns or active sonar for imaging the subsurface environment, (B) is used to monitor any safety zone around a vessel described in subsection (A), (C) is engaged in ice-breaking, or (D) is the lead vessel in a group of barge or transit vessels.

(15) The term “Subsistence Participants” means the Alaska Eskimo Whaling Commission (AEWC) and its members, including the whaling captains’ associations identified on the cover of this Agreement, as well as any individual members of those associations.

(16) The term “transit vessel” means a powered vessel that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include a vessel used to provide supplies or other support to at-sea oil and gas operations.

(b) Geographically Limited Terms.

For the purposes of this Agreement:

- (1) The term “Beaufort Sea” means all waters off the northern coast of Alaska from Point Barrow to the Canadian border.
- (2) The term “Chukchi Sea” means all waters off the western and northern coasts of Alaska from Cape Prince of Wales to Point Barrow.

SECTION 104. TERM, SCOPE, AND LIMITATIONS.

(a) Term.

The term of this Agreement shall commence with the signing of this document by the Participants and shall terminate upon completion of the Nuiqsut, Kaktovik, Barrow, Wainwright, Pt Lay, and Pt. Hope Fall Bowhead Hunts or the Beaufort Sea Post Season Meeting required under Section 108(a) and Chukchi Sea Post-Season Meetings in Barrow, Wainwright, Pt. Lay, and Pt. Hope required under Section 108(b), whichever is later.

(b) Scope.

The Participants agree that, unless otherwise specified:

- (1) The mitigation measures identified in this Agreement, which are intended to mitigate the potential impacts of oil and gas operations and barge and transit vessel traffic on bowhead whales, including migrating bowhead whales, and the Alaskan Eskimo subsistence hunt of such bowhead whales, are designed to apply to all activities of each Participant during the 2010 Open Water Season, whether referenced specifically or by category, and to all vessels and locations covered by this Agreement, whether referenced specifically or by category.
- (2) This Agreement is intended to apply to all oil and gas operations and barge and transit vessel traffic during the 2010 Open Water Season in the Beaufort Sea or Chukchi Sea.
- (3) Vessels and locations covered by this Agreement include those identified in the Agreement, as well as any other vessels or locations that are employed by

or for the Industry Participants in the Beaufort Sea or Chukchi Sea during the 2010 Open Water Season.

(c) Limitations of Obligations.

The following limitations apply to this Agreement.

- (1) No cooperation among the Participants, other than that required by this Agreement, is intended or otherwise implied by their adherence to this Agreement. In no event shall the signatures of any representative of the Alaska Eskimo Whaling Commission (AEWC), or of the Barrow, Nuiqsut, Kaktovik, Wainwright, Pt. Hope, or Pt. Lay Whaling Captains' Associations, or of any other Whaling Captains' Association be taken as an endorsement of any Arctic operations or Beaufort Sea or Chukchi Sea OCS operations by any oil and/or gas operator or contractor.
- (2) Adherence to the procedures and guidelines set forth in this Agreement does not in any way indicate that any Inupiat or Siberian Yupik whalers or the AEWC agree that industrial activities are not interfering with the bowhead whale migration or the bowhead whale subsistence hunt. Such adherence does not represent an admission on the part of the Industry Participants or their contractors that the activities covered by this Agreement will interfere with the bowhead whale migration or the bowhead whale subsistence hunt.
- (3) No member of the oil and gas industry or any contractor has the authority to impose restrictions on the subsistence hunting or any other activities of the AEWC, residents of the Villages of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, or Pt. Hope, or residents of any other village represented by the AEWC.
- (4) In the event additional parties engage in oil and gas operations in the Beaufort Sea or Chukchi Sea during the summer or fall of 2010 the Participants shall exercise their good-faith efforts to encourage those parties to enter into this Agreement. Should additional parties enter into this Agreement at a date subsequent to the date of the signing of this document and before the termination of the 2010 bowhead whale subsistence hunting season, the AEWC will provide to all Participants a supplement to this document with the added signatures.
- (5) No Participant is responsible for enlisting additional parties to adhere to the terms and conditions of the Agreement. Similarly, **THE AEWC IS NOT RESPONSIBLE FOR, OR A PARTY TO, ANY AGREEMENT AMONG THE INDUSTRY PARTICIPANTS** concerning the apportionment of expenses necessary for the implementation of this Agreement.

(6) In adhering to this Agreement, none of the Participants waives any rights existing at law. All Participants agree that the provisions of this document do not establish any precedent as between them or with any regulatory or permitting authority.

(7) **PARTICIPANTS' OBLIGATIONS SHALL BE SEPARABLE:** All Participants to this Agreement understand that each Participant represents a separate entity. The failure of any Participant to adhere to this Agreement or to abide by the terms and conditions of this Agreement shall not affect the obligation of other Participants to adhere to this Agreement and to proceed accordingly with all activities covered by this Agreement. Nor shall any Participant's adherence to this Agreement affect that Participant's duties, liabilities, or other obligations with respect to any other Participant beyond those stated in this Agreement.

SECTION 105. REGULATORY COMPLIANCE.

(a) United States Coast Guard Requirements.

The Participants shall comply with all applicable United States Coast Guard requirements for safety, navigation, and notice.

(b) Environmental Regulations and Statutes.

The Participants shall comply with all applicable environmental regulations and statutes.

(c) Other Regulatory Requirements.

The Participants shall comply with all applicable federal, state, and local government requirements.

SECTION 106. DISPUTE RESOLUTION.

Subject to the terms of Section 104(c)(7) of this Agreement, all disputes arising between any Industry Participants and any Subsistence Participants shall be addressed as follows:

- (1) The dispute shall first be addressed between the affected Participant(s) in consultation with the affected village Whaling Captains' Association and the Industry Participant(s)' Local Representative.
- (2) If the dispute cannot be resolved to the satisfaction of all affected Participants, then the dispute shall be addressed with the affected Participants in consultation with the AEW.
- (3) If the dispute cannot be satisfactorily resolved in accordance with paragraphs (1) and (2) above, then the dispute shall be addressed with the AEW and the affected Participants in consultation with representatives of NOAA Fisheries.
- (4) All Participants shall seek to resolve any disputes in a timely manner, and shall work to ensure that requests for information or decisions are responded to promptly.

SECTION 107. EMERGENCY AND OTHER NECESSARY ASSISTANCE.**(a) Emergency Communications.**

ALL VESSELS SHOULD NOTIFY THE APPROPRIATE COM-CENTER IMMEDIATELY IN THE EVENT OF AN EMERGENCY. The appropriate Com-Center operator will notify the nearest vessels and appropriate search and rescue authorities of the problem and advise them regarding necessary assistance. (See attached listing of local search and rescue organizations in Attachment I.)

(b) Emergency Assistance for Subsistence Whale Hunters.

Section 403 of Public Law 107-372 (16 U.S.C. 916c note) provides that “Notwithstanding any provision of law, the use of a vessel to tow a whale, taken in a traditional subsistence whale hunt permitted by Federal law and conducted in waters off the coast of Alaska is authorized, if such towing is performed upon a request for emergency assistance made by a subsistence whale hunting organization formally recognized by an agency of the United States government, or made by a member of such an organization, to prevent the loss of a whale.” Industry Participants will advise their vessel captains that, under the circumstances described above, assistance to tow a whale is permitted under law when requested by a Subsistence Participant. Under the circumstances described above, Industry Participants will provide such assistance upon a request for emergency assistance from a Subsistence Participant, if conditions permit the Industry Participant’s vessel to safely do so.

SECTION 108. POST-SEASON REVIEW / PRESEASON INTRODUCTION.**(a) Beaufort Sea Post-Season Joint Meeting.**

Following the end of the fall 2010 bowhead whale subsistence hunt and prior to the 2011 Pre-Season Introduction Meetings, the Industry Participant that establishes the Deadhorse and Kaktovik Com Centers will offer to the AEWC Chairman to host a joint meeting with all whaling captains of the Villages of Nuiqsut, Kaktovik and Barrow, the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants’ vessels in the Beaufort Sea, and with the Chairman and Executive Director of the AEWC, at a mutually agreed upon time and place on the North Slope of Alaska, to review the results of the 2010 Beaufort Sea Open Water Season, unless it is agreed by all designated individuals or their representatives that such a meeting is not necessary.

(b) Chukchi Sea Post-Season Village Meetings.

Following the completion of 2010 Chukchi Sea Open Water Season and prior to the 2011 Pre-Season Introduction Meetings, the Industry Participants involved, if requested by the AEWG or the Whaling Captain's Association of each village, will host a meeting in each of the following villages: Wainwright, Pt. Lay, Pt. Hope, and Barrow (or a joint meeting of the whaling captains from all of these villages if the whaling captains agree to a joint meeting) to review the results of the 2010 operations and to discuss any concerns residents of those villages might have regarding the operations. The meetings will include the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Chukchi Sea. The Chairman and Executive Director of the AEWG will be invited to attend the meeting(s).

(c) Pre-season Introduction Meetings.

(1) Immediately following each of the above meetings, and at the same location, the Industry Participants will provide a brief introduction to their planned operations for the 2011 Open Water Season. Each Industry Participant should provide hand-outs explaining their planned activities that the whaling captains can review.

(2) Subsistence Participants understand that any planned operations discussed at these Pre-Season Introduction Meetings, and the corresponding maps, will represent the Industry Participant's best estimate at that time of its planned operations for the coming year, but that these planned operations are preliminary, and are subject to change prior to the 2011 Open Water Season Meeting.

(d) Map of Planned Industry Participant Activities.

The Industry Participants, jointly, shall prepare and provide the AEWG with a large-scale map of the Beaufort and Chukchi Seas showing the locations and types of oil and gas and barge and transit activities planned by each Industry Participant. This map will be for use by the AEWG and Industry Participants during the 2011 CAA Meeting.

TITLE II -- OPEN WATER SEASON COMMUNICATIONS

SECTION 201. MARINE MAMMAL OBSERVERS / INUPIAT COMMUNICATORS.

(a) Marine Mammal Observer / Inupiat Communicator Required.

- (1) In General. Each Industry Participant agrees to employ a Marine Mammal Observer / Inupiat Communicator (MMO/IC) on board each Primary Sound Source Vessel owned or operated by such Industry Participant in the Beaufort Sea or Chukchi Sea.
- (2) Special Rule for Inside Beaufort Sea Barrier Islands. Industry Participants whose seismic acquisition operations are limited to an area exclusively within the barrier islands need employ an MMO/IC on its Primary Sound Source Vessel only.
- (3) Near Shore Operations Support Vessels. Industry Participants are not required to employ an MMO/IC on Near Shore Operations Support Vessels.
- (4) Sealift Operations. For Industry Participants conducting sealift operations in which two tugs towing barges are accompanied within ½ mile by a third light tug at all times, a MMO/IC is required to be employed on the light tug only.

(b) Duties of Marine Mammal Observer / Inupiat Communicator.

- (1) Each MMO/IC is to be employed as an observer and Inupiat communicator for the duration of the 2010 Open Water Season on the vessel on which he or she is stationed.
- (2) As a member of the crew, the MMO/IC will be subject to the regular code of employee conduct on board the vessel and will be subject to discipline, termination, suspension, layoff, or firing under the same conditions as other employees of the vessel operator or appropriate contractor.
- (3) Once the source vessel on which the MMO/IC is employed is in the vicinity of a whaling area and the whalers have launched their boats, the MMO/IC's primary duty will be to carry out the communications responsibilities set out in this Title.

- (4) At all other times, the MMO/IC will be responsible for keeping a lookout for bowhead whales and/or other marine mammals in the vicinity of the vessel to assist the vessel captain in avoiding harm to the whales and other marine mammals.
- (5) It is the MMO/IC's responsibility to call the appropriate Com-Center as set out in Sections 202 and 203.
- (6) The MMO/IC will be responsible for all radio contacts between vessels owned or operated by each of the Industry Participants and whaling boats covered under Section 207 of this Agreement and shall interpret communications as needed to allow the vessel operator to take such action as may be necessary pursuant to this Agreement.
- (7) The MMO/IC shall contact directly subsistence whaling boats that may be in the vicinity to ensure that conflicts are avoided to the greatest possible extent.
- (8) The MMO/IC will maintain a record of his or her communications with each Com-Center and the subsistence whaling boats, as well as any marine mammal sightings by the MMO/IC.

SECTION 202. COM-CENTER GENERAL COMMUNICATIONS SCHEME.

(a) Reporting Positions for Vessels Owned or Operated by the Industry Participants.

- (1) All vessels (other than barge and transit vessels covered under section 302) shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:
 - (A) Vessel name, operator of vessel, charter or owner of vessel, and the project the vessel is working on.
 - (B) Vessel location, speed, and direction.

(C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ at Chukchi Sea prospect. We are currently at ___' ___ north ___' ___ west, proceeding SE at ___ knots. We will proceed on this course for ___ hours and will report location and direction at that time.

(2) The appropriate Com-Center shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(3) In the event that the Industry Participant's operation includes seismic data acquisition, the operator reserves the right to restrict exact vessel location information and provide more general location information.

(b) Reporting Positions for Subsistence Whale Hunting Crews.

(1) All subsistence whaling captains shall report to the appropriate Com-Center at the time they launch their boats from shore and again when they return to shore.

(2) All subsistence whaling captains shall report to such Com-Center the initial GPS coordinates of their whaling camps.

(3) Additional communications shall be made on an as needed basis.

(4) Each call shall report the following information:

(A) The crew's location and general direction of travel.

EXAMPLE: This is _____. We are just starting out. We will be traveling north-east from _____ to scout for whales. I will call if our plans change.

(B) The presence of any vessels or aircraft owned or operated by any of the Industry Participants, or their contractors, that are not observing the specified guidelines set forth in Title V on Avoiding Conflicts.

(C) The final call of the day shall include a statement of the whaling captain's general area of expected operations for the following day, if known at the time.

(5) Any subsistence whale hunter preparing to tow a caught whale shall report to the appropriate Com-Center before starting to tow.

EXAMPLE: This is Archie Ahkiviana. I am ___'___ north, ___'___ west. I have a whale and am towing it into _____.

(6) Each time a subsistence whaling camp is moved, it shall be reported promptly to the appropriate Com-Center, including the new GPS coordinates.

(7) Subsistence whale hunters shall notify the appropriate Com-Center promptly if, due to weather or any other unforeseen event, whaling is not going to take place that day.

(8) Subsistence whaling captains shall contact the appropriate Com-Center promptly and report any unexpected movements of their vessel.

(c) Responsibilities of Participants.

(1) Monitoring VHF Channel 16.

All vessels covered by Sections 207, 301, and 401 of this Agreement shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas

It is the responsibility of each vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement to determine the positions of all of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication

After any vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

SECTION 203. THE COMMUNICATIONS SYSTEM COORDINATION CENTERS (COM-CENTERS).**(a) Chukchi Lead System Included in Com-Center Coverage.**

In addition to the Beaufort Sea and Chukchi Sea, the communications scheme shall apply in the Chukchi Sea lead system, as identified and excluded from leasing in the current MMS Five-Year Leasing Program, 2008-2012.

(b) Set Up and Operation.

(1) Subject to the terms of Section 104(c) of this Agreement, the Industry Participants conducting operations in:

(A) the Beaufort Sea jointly will arrange for the funding of Com-Centers in Deadhorse and Kaktovik; and

(B) the Chukchi Sea jointly will arrange for the funding of Com-Centers in Barrow, Wainwright, Pt. Lay, and Pt. Hope.

(2) All six Com-Centers will be staffed by Inupiat operators. **GROUND TRANSPORTATION MUST BE PROVIDED FOR COM-CENTER OPERATIONS IN KAKTOVIK FOR POLAR BEAR AND BROWN BEAR SAFETY.** The Com-Centers will be operated 24 hours per day during the 2010 subsistence bowhead whale hunt. One Industry Participant in the Beaufort Sea and one Industry Participant in the Chukchi Sea, or their respective contractor, will be designated as the operator of the Com-Centers for that Sea, in consultation with the AEWC.

(3) Each Industry Participant shall contribute to the funding of the Com-Centers covering the areas in which it conducts oil and gas operations. The level of funding for the Com-Centers provided by each of the Industry Participants is intended to be in proportion to the scale of their respective activities, and shall be mutually agreed by the Industry Participants.

(4) The procedures to be followed by the Com-Center operators are set forth in subsection (d) below.

(c) Staffing.

(1) Each Com-Center shall have an Inupiat operator (“Com-Center operator”) on duty 24 hours per day from August 15 until the end of the bowhead whale subsistence hunt in:

- (A) Kaktovik for the Kaktovik Com-Center;
- (B) Nuiqsut for the Deadhorse Com-Center;
- (C) Barrow for the Barrow Com-Center;
- (D) Wainwright for the Wainwright Com-Center.
- (E) Pt. Lay for the Pt. Lay Com-Center, which will be located in the Pt. Lay Whaling Captains’ Association building; and
- (F) Pt. Hope for the Pt. Hope Com-Center, which will be located in the Pt. Hope Whaling Captains’ Association building.

(2) All Com-Center staff shall be local hire.

(d) Duties of the Com-Center Operators.

(1) The Com-Center operators shall be available to receive radio and telephone calls and to call vessels as described below. A record shall be made of all calls from every vessel covered by Sections 207, 301, and 401 of this Agreement. Information reported regarding whales struck, lost, landed, or the location of whales struck, lost, or landed, or the number of strikes remaining, shall be confidential and shall not be disclosed to anyone other than the AEWC or the local Whaling Captains’ Association. The record of all reporting calls should contain the following information:

- (A) Industry Participant Vessel:
 - (i) Name of caller and vessel.
 - (ii) Vessel location, speed, and direction.
 - (iii) Time of call.

- (iv) Anticipated movements between this call and the next report.
 - (v) Reports of any industry or subsistence activities.
- (B) Subsistence Whale Hunting Boat:
- (i) Name of caller.
 - (ii) Location of boat or camp.
 - (iii) Time of call.
 - (iv) Plans for travel.
 - (v) Any special information such as caught whale, whale to be towed, or industry vessel conflicts with whale or whaler. Any report of the number of whales struck, lost, or landed, or of the number of strikes remaining, shall be kept confidential and shall not be disclosed by the Com-Center or any Com-Center operator to anyone other than the AEWG or the local Whaling Captains' Association. The location of whales struck, lost, or landed shall be kept confidential and shall not be disclosed except to the extent needed to avoid an Industry/Subsistence Whale Hunter conflict.
- (2) Report of Industry/Subsistence Whale Hunter Conflict. In the event an industry/subsistence whale hunter conflict is reported, the appropriate Com-Center operator shall record:
- (A) Name of industry vessel.
 - (B) Name of subsistence whaling captain.
 - (C) Location of vessels.
 - (D) Nature of conflict, data, and time.
- (3) If all vessels and boats covered by Sections 207, 301, and 401 of this Agreement have not reported to the appropriate Com-Center within one hour of the recommended time, that Com-Center operator shall attempt to call all non-reporting vessels to determine the information set out above under the Duties of the Com-Center operator.

(4) As soon as location information is provided by a vessel covered by Sections 207, 301, or 401 of this Agreement, the appropriate Com-Center operator shall plot the location and area of probable operations on the large map provided at the Com-Center.

(5) If, in receiving information or plotting it, a Com-Center operator observes that operations by Industry Participants might conflict with subsistence whaling activities, such Com-Center operator should attempt to contact the industry vessel involved and advise the Industry Participant's Local Representative(s) and the vessel operators of the potential conflict.

SECTION 204. STANDARDIZED LOG BOOKS.

The Industry Participants will provide the Com-Centers and Marine Mammal Observer / Inupiat Communicators with identical log books to assist in the standardization of record keeping associated with communications procedures required pursuant to this Agreement.

SECTION 205. COMMUNICATIONS EQUIPMENT.

(a) Communications Equipment to be Provided to Subsistence Whale Hunting Crews.

(1) In General. The Industry Participants will provide (or participate in the provision of) the communications equipment described in paragraphs (4) and (6) of this subsection and subsection (b) of this section.

(2) Beaufort Sea. The Industry Participants funding Com-Centers in Deadhorse and Kaktovik will fund the provision of communications equipment for the whaling captains of Kaktovik and Nuiqsut in the same proportion as they fund those Com-Centers.

(3) Chukchi Sea. The Industry participants conducting operations in the Chukchi Sea will coordinate with each other to participate in funding the provision of communications equipment for the whaling captains of Barrow, Wainwright, Pt. Hope, and Pt. Lay.

(4) All-Channel, Water-Resistant VHF Radios.

These VHF radios are specifically designed for marine use and allow monitoring of Channel 16 while using or listening to another channel.

- (A) Kaktovik Subsistence Whaling Boats: 8
- (B) Kaktovik Base and Search and Rescue: 2
- (C) Nuiqsut Subsistence Whaling Boats: 12
- (D) Nuiqsut Base and Search and Rescue: 3
- (E) Barrow Base and Search and Rescue: 2
- (F) Wainwright Base and Search and Rescue: 2
- (G) Wainwright Subsistence Whaling Boats: 4
- (H) Pt. Hope Base and Search and Rescue: 2
- (I) Pt. Hope Subsistence Whaling Boats: 10
- (J) Pt. Lay Base and Search and Rescue: 2
- (K) Pt. Lay Subsistence Whaling Boats: 4

(5) Specific VHF Channels For Each Village.

The whaling boats from each of the villages have been assigned individual VHF channels for vessel-to-vessel and vessel-to-Com-Center communications as follows:

- (A) Nuiqsut whaling crews will use Channel 68.
- (B) Kaktovik whaling crews will use Channel 69.
- (C) Barrow whaling crews will use Channel 72.
- (D) Wainwright Whaling Crews will use Channel 12.

(E) Pt. Lay Whaling Crews will use Channel 72.

(F) Pt. Hope Whaling Crews will use Channel 68.

(6) Satellite Telephones.

The satellite telephones are to be used as backup for the VHF radios. The satellite telephones for use on subsistence whaling boats are for emergency use only and should be programmed for direct dial to the nearest Com-Center.

A. Kaktovik Base Phones: 2

B. Kaktovik Subsistence Whaling Boats: 8

C. Nuiqsut Base Phones: 2

D. Nuiqsut Subsistence Whaling Boats: 12

E. Barrow Subsistence Whaling Boats: 2

F. Wainwright Subsistence Whaling Boats: 4

G. Pt. Lay Subsistence Whaling Boats: 2

(7) Distribution and Return of Equipment.

The distribution of the VHF radios and satellite telephone equipment to whaling captains for use during the 2010 fall bowhead subsistence whale hunting season shall be completed no later than August 15, 2010. All such units and telephone equipment provided under this Agreement, whether in this section or otherwise, will be returned promptly by the Subsistence Participants to the Industry Participant or the person providing such units and equipment at the end of each Village's 2010 fall bowhead whale subsistence hunt.

(b) Communications Equipment on Vessels Owned or Operated by the Industry Participants and/or their Contractors.

The Marine Mammal Observer / Inupiat Communicators onboard source vessels owned or operated by the Industry Participants and/or their contractors will also be supplied with all-channel VHF radios. The MMO/ICs have been assigned Channel 7 for their exclusive use in communicating with the Com-Center. Such radios shall be returned upon the completion or termination of the MMO/IC's assignment.

(c) Radio Installation and User Training.

The Whaling Captains of Nuiqsut, Kaktovik, Wainwright, Pt. Lay, and Pt. Hope, with assistance from the Industry Participants, will be responsible for the installation of the VHF radio equipment. The Industry participants will provide (or participate in the provision of) on-site user training for the VHF and satellite telephone equipment on or before August 15, 2010, if requested and as scheduled by the Whaling Captains' Associations of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the Industry Participant operating the Beaufort Sea Com-Centers or Chukchi Sea Com-Centers, as appropriate.

SECTION 206. INDIVIDUALS TO CONTACT.

Listed below are the primary contact names and phone numbers for each of the Participants.

(1) BP Exploration (Alaska), Inc.'s (BP) Local Representative

LOWRY BROTT will be BP's local representative on the North Slope during the Term of this Agreement and will be stationed at Northstar Island and will be available by telephone at (907)670-3520 and when Mr. Brott is not available, his alternate, Dan Ferriter, will be stationed at Northstar Island and will be available by telephone at the above number.

(2) ConocoPhillips' Local Representative

Jim Darnell (907) 265-6240
Heather Collins-Ballot (907) 265-6213
Field Rep TBD (Bob Shears, Wainwright – Oloognik/Fairweather Corp.)

(3) Exxon Mobil's Local Representative

TBD

(4) ION / GX Technology's Local Representative

TBD

(5) Pioneer Natural Resources' (Pioneer) Local Representative

PAT FOLEY will be Pioneer's local representative during the Term of this Agreement and will be stationed in Anchorage and will be available by telephone at (907) 343-2110.

(6) Shell Offshore Inc.'s (Shell) Local Representatives

JOHN MAKETA and HOWARD HILL will be Shell's local representatives on the North Slope during the Term of this Agreement and will be stationed at Barrow during Chukchi Sea operations and at Deadhorse during Beaufort Sea operations and will be available by telephone at (907) 770-3700.

(7) STATOIL's Local Representative

TBD

(8) The Village of Kaktovik

For purposes of this Agreement, the individuals to contact for the Village of Kaktovik will be: JOSEPH KALEAK at (907) 640-6213 or 640-6515, and FENTON REXFORD at (907) 640-2042 (Home) or (907) 640-6419 (Work).

(9) The Village of Nuiqsut

For purposes of this Agreement, the individuals to contact for the Village of Nuiqsut will be: ISAAC NUKAPIGAK at (907) 480-6220 (Work); (907) 480-2400 (Home).

(10) The Village of Barrow

For purposes of this Agreement, the individuals to contact for the Village of Barrow will be: HARRY BROWER, JR. at (907) 852-0350 (Work), and EUGENE BROWER at (907) 852-3601.

(11) The Village of Wainwright

For purposes of this Agreement, the individuals to contact for the Village of Wainwright will be: ROSSMAN PEETOOK at (907) 763-4774, and WALTER NAYAKIK at (907)763-2915 (Work).

(12) The Village of Pt. Hope

For purposes of this Agreement, the individuals to contact for the Village of Pt. Hope will be: CHESTER FRANKSON, SR. at (907) 368-2054 (Home).

(13) The Village of Pt. Lay

For purposes of this Agreement, the individuals to contact for the Village of Pt. Lay will be: JULIUS REXFORD (907) 833-4592 (Home), (907) 833-2214 (Work), (907) 833-2320 (Fax), THOMAS NUKAPIAK (907) 833-6467 (Home), (907) 833-3838

(14) The AEW

For purposes of this Agreement, the individuals to contact for the AEW shall be: HARRY BROWER, JR. at (907) 852-0350 (Work) and JOHNNY AIKEN at (907) 852-2392.

SECTION 207. SUBSISTENCE WHALE HUNTING BOATS.

The following is a list of the number of boats each of the Subsistence Participants plan to use:

(1) Boats Owned/Used by Whaling Captains of Nuiqsut (NWCA)

The subsistence whaling crews of the Village of Nuiqsut plan to use (12) twelve boats for subsistence whale hunting during the late summer and fall of 2010.

(2) Boats Owned/Used by Whaling Captains of Kaktovik (KWCA)

The subsistence whaling crews of the Village of Kaktovik plan to use (8) eight boats for subsistence whale hunting during the late summer and fall of 2010.

(3) Boats Owned/Used by Whaling Captains of Barrow (BWCA)

The subsistence whaling crews of the Village of Barrow plan to use (40) forty boats for subsistence whale hunting during the late summer and fall of 2010.

(4) Boats Owned/Used by Whaling Captains of Wainwright (WWCA)

The subsistence whaling crews of the Village of Wainwright plan to use (4) four boats for subsistence whale hunting during the fall of 2010.

(5) Boats Owned/Used by Whaling Captains of Pt. Hope (Pt. HWCA)

The subsistence whaling crews of the Village of Pt. Hope plan to use (10) ten boats for subsistence whale hunting during the late fall of 2010.

(6) Boats Owned/Used by Whaling Captains of Pt. Lay (Pt. LWCA)

The subsistence whaling crews of the Village of Pt. Lay plan to use (4) four boats for subsistence whale hunting during the fall of 2010.

If any additional boats are put in use by subsistence whaling crews, the industry Participants will be notified promptly through the Com-Center.

TITLE III – BARGE AND TRANSIT VESSEL OPERATIONS

SECTION 301. IN GENERAL.

A Participant may employ barges or transit vessels to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement. Any Industry Participant who employs a barge or transit vessel to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement shall require the barge or transit vessel operator to comply with Sections 201 and 302 of this Agreement while providing services to that Industry Participant.

SECTION 302. BARGE AND TRANSIT VESSEL OPERATIONS.**(a) Reporting Positions for Barge or Transit Vessels Owned or Operated by Industry Participants.**

(1) All barge or transit vessels shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Barge or transit vessel name, operator of vessel, charter or owner of vessel, and the project or entity the vessel is transporting materials for.

(B) Barge or transit vessel location, speed, and direction.

(C) Plans for barge or transit vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the barge or transit vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at ____' ____ north ____' ____ west, proceeding SE at ____ knots. We will proceed on this course for ____ hours and will report location and direction at that time.

(2) The appropriate Com-Center also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All barge and transit vessel operators are responsible for the following requirements.

(1) Monitoring VHF Channel 16. All barge and transit vessel operators shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and barge or transit vessel operator to determine the positions of their barge or transit vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication. After any barge or transit vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Barges and Transit Vessels.

(1) All barge and transit vessel routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All barges and transit vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.

(2) Beaufort Sea. Vessels transiting east of Bullet Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Barges and transit vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Bowhead Whales.

If any barge or transit vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;

(4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and

(5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Sound Signature and Marine Mammal Sighting Data.

Industry Participants whose operations are limited exclusively to barge or vessel traffic will submit to the AEWG and NSB DWM sound signature data for each vessel over 5 net tons they are using and all marine mammal sighting data.

TITLE IV – VESSELS, TESTING, AND MONITORING

SECTION 401. INDUSTRY PARTICIPANT VESSELS AND EQUIPMENT.

(a) List of Vessels and Equipment Required.

Each Industry Participant engaged in oil and gas operations shall provide a list identifying all vessels or other equipment (including but not limited to boats, barges, aircraft, or similar craft) that are owned and/or operated by, or that are under contract to the Industry Participants, for use in the Beaufort Sea or Chukchi Sea for oil and gas operations or for implementation of such Industry Participant's monitoring plan. Vessels and equipment used for oil and gas operations shall be listed in Attachment II, and vessels and equipment used for monitoring plans shall be listed in Attachment III.

(b) Only Listed Vessels and Equipment May Be Used.

(1) NONE OF THE INDUSTRY PARTICIPANTS INTENDS TO OPERATE ANY VESSEL OR EQUIPMENT NOT IDENTIFIED IN THE LISTS REQUIRED UNDER SUBSECTION (a) DURING THE TERM OF THIS AGREEMENT.

(2) Notwithstanding paragraph 1, if any Industry Participant decides to use different vessels or equipment or additional vessels or equipment, such vessels and equipment shall be used only for purposes identified in Attachments II or III; and the AEWG and the whaling captains of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Hope, and Pt. Lay shall be notified promptly through the appropriate Com-Center, as identified in Section 203 of this Agreement, and in writing, of their identity and their intended use, including location of use.

SECTION 402. SOUND SIGNATURE TESTS.**(a) Sound Source Verification Testing.**

(1) Geophysical Equipment. For purposes of obtaining a sound signature for Industry Participants' geophysical equipment, the Industry Participants shall have initiated a test of all geophysical equipment within 72 hours of initiating or having initiated operations in the Beaufort Sea or Chukchi Sea. Such tests shall be conducted as set forth in section 402(b).

(2) Vessels. Industry Participants will conduct a sound source verification test for all vessels used for geophysical activity. Each Industry Participant shall establish a sound source verification range or Industry Participants may participate jointly in establishing a range for the Chukchi Sea and Beaufort Sea, or both. A separate range shall be used for the Chukchi Sea and Beaufort Sea, and vessels shall use the appropriate range for each sea in which they operate. For testing each vessel shall proceed through the range and record information on the date, time, vessel speed, vessel route, vessel load, weather conditions, and equipment operating on the vessel (all noise generating equipment on the vessel, other than geophysical equipment subject to separate testing under paragraph (1), shall be in operation while the vessel is proceeding through the range). The range should be established near a location where details on wind speed and direction are regularly monitored and archived.

(b) Mutual Agreement on Site for Testing; Advance Notice Required.

(1) In General. Each geophysical equipment sound signature test shall be conducted at a site mutually agreed upon by the Industry Participant conducting such test and the AEWC. Each Industry Participant conducting such sound signature test(s) will make a good faith effort to provide three (3) weeks advance notice to the AEWC and the NSB DWM of its intent to perform each test.

(2) Beaufort Sea Testing. For geophysical equipment sound signature tests conducted in the Beaufort Sea, the Industry Participant conducting such tests shall provide transportation for an appropriate number of representatives from: the AEWC, the whaling captains of the Villages of Barrow, Nuiqsut, and Kaktovik, and the NSB DWM to observe the sound signature tests.

(3) Chukchi Sea Testing. For geophysical equipment sound signature tests conducted on vessels to be used in the Chukchi Sea, the Industry Participant(s) conducting such tests shall provide transportation for an appropriate number of representatives from: the AEWC, the whaling captains of the Villages of Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the NSB DWM to observe the sound signature tests.

(c) Sound Signature Data to be Made Available.

(1) Within seven (7) days of completing the sound signature field tests for geophysical equipment and within 30 days of the end of the operating season for sound source verification ranges, each Industry Participant and/or its contractor conducting such test(s) will make all data collected during the sound signature test(s) available upon request to the AEWC and the NSB DWM and will provide the AEWC and the NSB DWM the preliminary analysis of that data, as well as any other sound signature data that is available and that the AEWC, the NSB DWM, and the Industry Participant agree is relevant to understanding the potential noise impacts of the proposed operations to migrating bowhead whales or other affected marine mammals.

(2) Once completed the final data analysis will be provided to the AEWC and the NSB DWM upon request. Final data from sound source verification ranges shall be provided to the NSB DWM and the AEWC no later than December 31, 2010.

(3) Any Industry Participant who prepares a model of the sound signature of its vessels and operations, whether before or after the Sound Signature Test, will provide copies of those models and any related analysis to the AEWC and the NSB DWM upon request.

SECTION 403. MONITORING PLANS.

(a) Monitoring Plan Required.

(1) Each Industry Participant agrees to prepare and implement a noise impact monitoring plan to collect data designed to determine the effects of its oil and gas operations on fall migrating bowhead whales and other affected marine mammals.

(2) The Monitoring Plans shall be designed in cooperation with the AEWC, the NSB DWM, NOAA Fisheries, the U.S. Minerals Management Service, and any other entities or individuals designated by one of these organizations.

(b) Beaufort Sea Monitoring Plans.

In the Beaufort Sea, the monitoring plans shall include an investigation of noise effects on fall migrating bowhead whales as they travel past the noise source, with special attention to changes in calling behavior, deflection from the normal migratory path, where deflection occurs, and the duration of the deflection.

(c) Chukchi Sea Monitoring Plans.

In the Chukchi Sea, the monitoring plans should focus on the identity, timing, location, and numbers of marine mammals and their behavioral responses to the noise source. The monitoring plans will place emphasis on understanding impacts from industrial sounds on marine mammals.

(d) Use of Prior Information and Peer Review Required.

(1) Prior impact study results shall be incorporated into the monitoring plans prepared by each Industry Participant.

(2) Each monitoring plan shall be subject to peer review by stakeholders at the 2010 Open Water Season Peer Review Meeting, convened by NOAA Fisheries. Draft plans will be submitted to the NSB DWM and AEWG by March 1, 2010. Peer review and acceptance of each monitoring plan through this process shall be completed prior to the commencement of each Industry Participants' 2010 operations in the Beaufort Sea or Chukchi Sea.

(e) Raw Data, Communication, and Summary Required.

(1) Each Industry Participant conducting site-specific monitoring will:

(A) make raw data, including datasheets, field notes, and electronic data, available to the NSB DWM at the end of the season.

(B) permit and encourage open communications among their contractors and the AEWG and NSB DWM.

- (2) Each Industry Participant will submit a summary of monitoring plan results and progress to the AEW and NSB DWM every two weeks during the operating season.

SECTION 404. CUMULATIVE NOISE IMPACTS STUDY.

Each Industry Participant further agrees to provide its monitoring plan and sound signature data, for use in a cumulative effects analysis of the multiple sound sources and their possible relationship to any observed changes in marine mammal behavior, to be undertaken pursuant to a Cumulative Noise Impacts Study.

The study design for the Cumulative Impacts Study shall be developed through a Cumulative Impacts Workshop to be organized by the North Slope Borough in the winter of 2010/2011. The results of this workshop will be presented at the 2011 Open Water Meeting.

TITLE V – AVOIDING CONFLICTS DURING THE OPEN WATER SEASON

Industry Participants are reminded that Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act provide, among other things, that the Secretary can authorize the incidental taking of small numbers of marine mammals of a species or population stock if the Secretary finds, among other things, that the total of such takings during the authorized period **will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses.**

The following Operating Guidelines apply in the Beaufort Sea and Chukchi Sea, except as otherwise specified and in all cases with due regard to environmental conditions and operational safety. These Operating Guidelines are in addition to any permit restrictions or stipulations imposed by the applicable governmental agencies.

SECTION 501. GENERAL PROVISIONS FOR AVOIDING INTERFERENCE WITH BOWHEAD WHALES OR SUBSISTENCE WHALE HUNTING ACTIVITIES.

(a) Routing Vessels and Aircraft.

(1) All vessel and aircraft routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity (as reported pursuant to Section 202).

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(b) Aircraft Altitude Floor and Flight Path.

(1) AIRCRAFT SHALL NOT OPERATE BELOW 1500 FEET unless the aircraft is engaged in marine mammal monitoring, approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations. Aircraft engaged in marine mammal monitoring shall not operate below 1500 feet in areas of active whaling; such areas to be identified through communications with the Com-Centers.

(2) Except for airplanes engaged in marine mammal monitoring, aircraft shall use a flight path that keeps the aircraft at least five (5) miles inland until the aircraft is directly south of its offshore destination, then at that point it shall fly directly north to its destination.

(c) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(d) Vessels Operating in Proximity of Bowhead Whales.

If any vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

SECTION 502. GEOPHYSICAL ACTIVITY LIMITATIONS.

The following operating limitations are to be observed and the operations are to be accompanied by a monitoring plan as set forth in Section 403 and Attachment III of this Agreement. The Industry Participants conducting geophysical activity agree to coordinate the timing and location of such activity so as to reduce, by the greatest extent reasonably possible, the level of noise energy entering the water from such activity at any given time and at any given location.

(a) Limitations on Geophysical Activity in the Beaufort Sea.

All geophysical activity in the Beaufort Sea shall be conducted in accordance with the terms set forth below.

(1) Kaktovik: No geophysical activity from the Canadian Border to the Canning River (146 deg. 4 min. W) from 25 August to close of the fall bowhead whale hunt in Kaktovik and Nuiqsut.¹ From August 10 to August 25, Industry Participants will communicate and collaborate with AEWG on any planned vessel movement in and around Kaktovik and Cross Island to avoid impacts to whale hunt.

(2) Nuiqsut:

A. Pt. Storkerson (~148 deg. 42 min. W) to Thetis Island (~150 deg. 10.2 min. W).

(i) *Inside the Barrier Islands*: No geophysical activity prior to August 5. Geophysical activity is allowed from August 5 until completion of operations²

(ii). *Outside the Barrier Islands*: No geophysical activity from August 25 to close of fall bowhead whale hunting in Nuiqsut. Geophysical activity is allowed at all other times.

b. Canning River (~146 deg. 4 min. W) to Pt. Storkerson (~148 deg. 42 min. W): No geophysical activity from August 25 to the close of bowhead whale subsistence hunting in Nuiqsut.

(3) Barrow: No geophysical activity from Pitt Point on the east side of Smith Bay (~152 deg. 15 min. W) to a location about half way between Barrow and Peard Bay (~157 deg. 20 min. W) from September 15 to the close of the fall bowhead whale hunt in Barrow.

¹ The bowhead whale subsistence hunt will be considered closed for a particular village when the village Whaling Captains' Association declares the hunt ended or the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWG), whichever occurs earlier.

² Geophysical activity allowed in this area after August 25 shall include a source array of no more than 12 air guns, a source layout no greater than 8 m x 6 m, and a single source volume no greater than 880 in³.

(b) Limitations on Geophysical Activity in the Chukchi Sea.

All geophysical activity in the Chukchi Sea shall be conducted in accordance with the terms set forth below.

- (1) Beginning September 15, and ending with the close of the fall bowhead whale hunt,³ if Wainwright, Pt. Lay, or Pt. Hope intend to whale, no more than two geophysical activities employing air guns will occur at any one time in the Chukchi Sea and air guns will not be used within 30 miles of any point along the Chukchi Sea. Industry Participants will contact the whaling captains' associations of each of those villages to determine if a village is attempting to whale and will notify the AEWG of any response.
- (2) Safe harbor will be at sites selected by the Industry Participants and the AEWG. Safe harbor sites will be agreed upon no later than June 15 and shall be listed in Attachment IV.
- (3) Any vessel operating within 60 miles of the Chukchi Sea coast will follow the communications procedures set forth in Title II of this Agreement. All vessels will adhere to the conflict avoidance measures set forth in Section 501 of this Agreement.
- (4) If a dispute should arise, the resolution process set forth in Section 106 of this Agreement shall apply.

³ The bowhead whale subsistence hunt will be considered closed when village Whaling Captains' Associations of Wainwright, Pt. Lay, and Pt. Hope have each declared that (A) they do not intend to hunt, (B) their village hunt has ended, or (C) the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWG), whichever occurs earlier.

SECTION 503. DRILLING AND PRODUCTION.

The following operating limitations are to be observed and the operations are to be accompanied by a Monitoring Plan as set forth in Section 403 and Attachment III of this Agreement.

(a) Agreement to Jointly Propose Discharge Standards to the EPA.

The Participants agree to jointly develop and submit comments to the Environmental Protection Agency in support of applying to the Beaufort Sea and Chukchi Sea the discharge standards applicable to the Arctic waters off Norway.

(b) Sampling of Drilling Mud and Cuttings.

For all drilling operations, whether for exploration, development, or production, in the Beaufort Sea or Chukchi Sea habitat of the bowhead whale, the operator shall cooperate with the AEWG and North Slope Borough in the design and implementation of a program to monitor all discharged materials and impacts to migratory resources from any materials that might be discharged into the marine environment.

(c) Monitoring of Gray Water, Black Water, and Heated Water.

For all exploratory drilling operations in the Beaufort Sea or Chukchi Sea habitat of the bowhead whale, the operator shall cooperate with the AEWG and North Slope Borough in the design and implementation of a program to monitor the composition or temperature and the fate of all discharged materials and impacts to migratory resources from any materials dumped into the marine environment to assess the impacts of such discharges on water quality, the benthic environment, and prey species.

(d) Drilling Operations in the Beaufort Sea East of Cross Island.

No drilling equipment or related vessels shall be onsite at any offshore drilling location east of Cross Island from 25 August until the close of the bowhead whale hunt in Nuiqsut and Kaktovik. However, such equipment may remain within the Beaufort Sea in the vicinity of 71 degrees 25 minutes N and 146 degrees 4 minutes W., or at the edge of the Arctic ice pack, whichever is closer to shore.

(e) Drilling Operations in the Beaufort Sea West of Cross Island.

No drilling equipment or related vessels shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.

(f) Oil Spill Mitigation.

Unless otherwise agreed with the AEWC, Industry Participants engaged in oil production or in drilling operations in the Beaufort Sea or Chukchi Sea agree to adhere to the AEWC/NSB/Inupiat Community of the Arctic Slope oil spill contingency agreement.

SECTION 504. SHORE-BASED SERVICE AND SUPPLY AREAS.

Shore-based service and supply areas used by Industry Participants shall be located and operated so as to ensure compliance with the terms of this Agreement.

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

Name:
BP Exploration (Alaska) Inc.
Dated: _____

Name:
Shell Offshore, Inc.
Dated: _____

Name:
ConocoPhillips Alaska
Dated: _____

Name:
Exxon Mobil Corporation
Dated: _____

Name:
ION / GX Technology
Dated: _____

Name:
Pioneer Natural Resources Alaska
Dated: _____

Name:
Statoil
Dated: _____

ATTACHMENT I

**LOCAL SEARCH AND RESCUE ORGANIZATIONS - CONTACT PERSONS
(IN EMERGENCIES, ALWAYS DIAL 911)**

North Slope Borough

Search and Rescue (Pilots)

Director Hugh Patkotak 852-2822 WK 852-4844 Home

Barrow Volunteer

Search and Rescue Station

852-2808 OFS

President	Oliver Leavitt	852-7032 WK	852-7032 Home
Vice-Pres.	Price Brower	852-8633 WK	852-7848 Home
Secretary	Lucille Adams	852-0250 Wk	852-7200 Home
Treasurer	Eli Solomon	852-2808 Wk	852-6261 Home
Coordinator	Arnold Brower, Jr.	852-0290 WK	852-5060 Home
Director	Jimmy Nayakik	852-0200 WK	852-JENS Home
Director	Johnny Adams	852-0250 WK	852-7724 Home

Nuiqsut Volunteer

Search and Rescue Station

480-6613 (Fire Hall)

Kaktovik Volunteer

Search and Rescue Station

640-6212 (Fire Hall)

President	Lee Kayotuk	640-5893	Wk	640-6213 Home
Vice-Pres.	Tom Gordon	640-		
Secretary	Nathan Gordon	640-6925		
Treasurer	Don Kayotuk	640-2947		
Fire Chief	George T. Tagarook	640-6212 WK		640-6728 Home

Wainwright Volunteer Search and Rescue

President	Joe Ahmaogak Jr.	763-2826 Home
Vice President	John Hopson, Jr.	763-3464 Home
Secretary	Raymond Negovanna	763-2102 Home
Treasurer	Ben Ahmaogak, Jr.	763-3030 Home
Director	Artic Kittick	763-2534 Home
Director	John Akpik	Unlisted

Pt. Hope Volunteer Search and Rescue

Coordinator	Willard Hunnicutt, Jr.	368-2774 Work
Fire Chief	Willard Hunnicutt, Jr.	368-2774 Work (Note: Only contact for Pt. Hope)

North Slope Borough Disaster Relief Coordinator

Frederick Brower	852-0284 OFS
------------------	--------------

ATTACHMENT II

**VESSELS TO BE USED FOR AND IN SUPPORT OF
INDUSTRY PARTICIPANTS' OPERATIONS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' OPERATIONS.**

ATTACHMENT III

**VESSELS TO BE USED FOR AND IN SUPPORT
OF THE INDUSTRY PARTICIPANTS MONITORING PLANS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' MONITORING PLAN.**

ATTACHMENT IV

SAFE HARBOR

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.



Harry Brower

Chairman, AEW
AEWC Commissioner for Barrow
Dated: 28 May 2010

AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

FINAL FOR SIGNATURE

May 27, 2010

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____



AEWC Commissioner for Pt. Hope
Dated: May 28, 2010

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

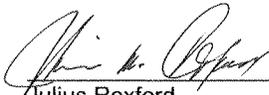
Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

AEWC Commissioner for Pt. Hope
Dated: _____



Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: 6-2-10

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joseph Kaleak

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: 6-2-10

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

TITLE VI – PARTICIPANTS

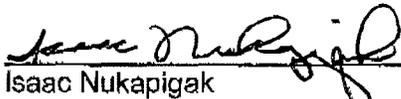
This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____



Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: 6/14/2010

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

FINAL FOR SIGNATURE

May 27, 2010

TITLE VI – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

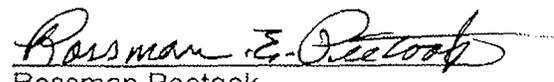
Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____



Rossman Peetook
AEWC Commissioner for Wainwright
Dated: 05-28-10

Bruce Wilkerson

Name:
BP Exploration (Alaska) Inc.
Dated: JUNE 1, 2010

Name:
Shell Offshore, Inc.
Dated: _____

Name:
ConocoPhillips Alaska
Dated: _____

Name:
Exxon Mobil Corporation
Dated: _____

Name:
ION / GX Technology
Dated: _____

Name:
Pioneer Natural Resources Alaska
Dated: _____

Name:
Statoil
Dated: _____

Name:
BP Exploration (Alaska) Inc.
Dated: _____

Name:
Shell Offshore, Inc.
Dated: _____

Name:
ConocoPhillips Alaska
Dated: _____

Name:
Exxon Mobil Corporation
Dated: _____

Name:
ION / GX Technology
Dated: _____

KS


Name: Kenneth H. Sheffield, Jr.
Pioneer Natural Resources Alaska
Dated: June 1, 2010
Pioneer's execution of this Conflict Avoidance Agreement is subject to and conditioned upon Pioneer's letter of June 1, 2010 and the terms and conditions therein.

Name:
Statoil
Dated: _____

**2011 OPEN WATER SEASON
PROGRAMMATIC CONFLICT AVOIDANCE AGREEMENT**

BETWEEN

**ARCTIC CABLE COMPANY, LLC
BP EXPLORATION (ALASKA), INC.
ENI US OPERATING COMPANY, INC.
EXXON MOBIL CORPORATION
ION / GX TECHNOLOGY
PIONEER NATURAL RESOURCES ALASKA, INC.
SHELL OFFSHORE, INC
STATOIL**

AND

**THE ALASKA ESKIMO WHALING COMMISSION
THE BARROW WHALING CAPTAINS' ASSOCIATION
THE KAKTOVIK WHALING CAPTAINS' ASSOCIATION
THE NUIQSUT WHALING CAPTAINS' ASSOCIATION
THE PT. HOPE WHALING CAPTAINS' ASSOCIATION
THE PT. LAY WHALING CAPTAINS' ASSOCIATION
THE WAINWRIGHT WHALING CAPTAINS' ASSOCIATION**

**Final for Signature
March 31, 2011**

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TITLE I – GENERAL PROVISIONS

SECTION 101. APPLICATION.

Title I applies to all Participants.

Title II applies to all Participants, except as provided in Titles III or VI.

Title III applies to those Participants who operate barge or transit vessels in the Beaufort Sea or Chukchi Sea.

Titles IV and V apply only to those Participants who engage in oil and gas operations.

Title VI applies to those Participants who engage exclusively in geophysical activities that are conducted at least 40 miles or more from the Alaska coast in the Beaufort Sea or Chukchi Sea and begin on or after October 1, 2011.

Provisions that apply to a specific activity or are designated as specific to either the Beaufort Sea or Chukchi Sea apply only to Participants that engage in that activity or operate in that area, and provisions applicable to activities a Participant does not engage in or areas in which a Participant does not operate do not apply to that Participant.

SECTION 102. PURPOSE.

The purpose of this Agreement is to provide:

- (1) Equipment and procedures for communications between Subsistence Participants and Industry Participants;
- (2) Avoidance guidelines and other mitigation measures to be followed by the Industry Participants working in or transiting the vicinity of active subsistence hunters, in areas where subsistence hunters anticipate hunting, or in areas that are in sufficient proximity to areas expected to be used for subsistence hunting that the planned activities could potentially adversely affect the subsistence bowhead whale hunt through effects on bowhead whales;
- (3) Measures to be taken in the event of an emergency occurring during the term of this Agreement; and
- (4) Dispute resolution procedures.

SECTION 103. DEFINITIONS.**(a) Defined Terms.**

For the purposes of this Agreement:

- (1) The term "Agreement" means this 2011 Open Water Season Programmatic Conflict Avoidance Agreement and any attachments to such agreement.
- (2) The term "at-sea oil and gas operations" does not include gravel islands or fixed platform developments located near shore (for example Northstar or Oooguruk) or Near Shore Operations Support Vessels.
- (3) The term "barge" means a non-powered vessel that is pushed or towed, and the accompanying pushing or towing vessel, which is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include any vessel used to provide supplies or support to at-sea oil and gas operations or Near Shore Operations Support Vessels.
- (4) The term "Com-Center" means a communications systems coordination center established under Section 203.
- (5) The term "geophysical activity" means any activity the purpose of which is to gather data for imaging the marine subsurface environment, including but not limited to use of air guns, sonar, and other geophysical equipment used for seismic exploration or shallow hazard identification.
- (6) The term "geophysical equipment" means equipment, such as air gun arrays over 300 cubic inches or sparker arrays over 20,000 kJ, employed on a vessel or a towed array, that generates sound waves for the purpose of imaging the subsurface marine environment for exploration and development purposes. The term does not include vessel engines, generators, or sources such as fathometers, fish finders, side-scan sonar, or other sources intended for engineering and /or transportation purposes.
- (7) The term "Industry Participants" means all parties to this Agreement who are not Subsistence Participants.
- (8) The term "Marine Mammal Observer / Inupiat Communicator" or "MMO/IC" means an observer hired by an Industry Participant for the purpose of spotting and identifying marine mammals in the area of that Industry Participant's operations during the Open Water Season. The MMO/IC also serves as the on-board Inupiat communicator who can communicate directly with whaling crews.

- (9) The term "Near Shore Operations Support Vessels" means vessels (including aircraft) used to support related activities (such as supply, re-supply, crew movement, and facility maintenance) for near shore oil and gas operations by an Industry Participant.
- (10) The terms "NSB" and "NSB DWM" mean the North Slope Borough and the North Slope Borough Department of Wildlife Management, respectively.
- (11) The term "oil and gas operations" means all oil and gas exploration, development, or production activities (including, but not limited to, geophysical activity, exploratory drilling, development activities (such as dredging or construction), production drilling, or production, and related activities (such as supply, re-supply, crew movements, and facility maintenance) by or for any Industry Participant, including aircraft and vessels of whatever kind used in support of such activities, occurring in the Beaufort Sea or Chukchi Sea, whether occurring near shore or offshore, but does not include barge traffic, transit vessel traffic, cable laying vessel traffic, or research vessel traffic (i.e. traffic by a vessel which is only conducting research and is not conducting any geophysical activities) by or for any Participant.
- (12) The term "Open Water Season" means the period of the year when ice conditions permit navigation or oil and gas operations to occur in the Beaufort Sea or Chukchi Sea, as appropriate.
- (13) The term "Participants" means all parties identified in this Agreement by name and whose representative(s) has signed the Agreement, and all contractors of such parties. When used alone the term includes both Industry Participants and Subsistence Participants.
- (14) The term "Primary Sound Source Vessel" means a vessel owned or operated by or for an Industry Participant that (A) employs air gun arrays greater than 300 cubic inches or sparkers greater than 20,000 kJ, for imaging the subsurface environment, (B) is used to monitor any safety zone around a vessel described in subsection (A), (C) is engaged in ice-breaking, or (D) is the lead vessel in a group of barge or transit vessels.
- (15) The term "sonar" means equipment, employed as hull mounted or towed array, intended for the active location of surface or underwater vessels. The term does not include vessel engines, generators, or sources such as fathometers, fish finders, side-scan sonar, or other sources intended for engineering, cable laying or routing, and/or transportation purposes.

(16) The term "Subsistence Participants" means the Alaska Eskimo Whaling Commission (AEWC) and its members, including the whaling captains' associations identified on the cover of this Agreement, as well as any individual members of those associations.

(17) The term "transit vessel" means a powered vessel that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include a vessel used to provide supplies or other support to at-sea oil and gas operations or Near Shore Operations Support Vessels.

(b) Geographically Limited Terms.

For the purposes of this Agreement:

(1) The term "Beaufort Sea" means all waters off the northern coast of Alaska from Point Barrow to the Canadian border.

(2) The term "Chukchi Sea" means all waters off the western and northern coasts of Alaska from Cape Prince of Wales to Point Barrow.

SECTION 104. TERM, SCOPE, AND LIMITATIONS.

(a) Term.

The term of this Agreement shall commence with the signing of this document by the Participants and shall terminate upon completion of the Nuiqsut, Kaktovik, Barrow, Wainwright, Pt Lay, and Pt. Hope Fall Bowhead Hunts or the Beaufort Sea Post Season Meeting required under Section 108(a) and Chukchi Sea Post-Season Meetings in Barrow, Wainwright, Pt. Lay, and Pt. Hope required under Section 108(b), whichever is later.

(b) Scope.

The Participants agree that, unless otherwise specified:

(1) The mitigation measures identified in this Agreement, which are intended to mitigate interference by oil and gas operations and barge and transit vessel traffic with the Alaskan Eskimo subsistence bowhead whale hunt, are designed to apply to all activities of each Participant during the 2011 Open Water Season, whether referenced specifically or by category, and to all vessels and locations covered by this Agreement, whether referenced specifically or by category.

(2) This Agreement is intended to apply to all oil and gas operations and barge and transit vessel traffic during the 2011 Open Water Season in the Beaufort Sea or Chukchi Sea.

(3) Vessels and locations covered by this Agreement include those identified in the Agreement, as well as any other vessels or locations that are employed by or for the Industry Participants in the Beaufort Sea or Chukchi Sea during the 2011 Open Water Season.

(c) Limitations of Obligations.

The following limitations apply to this Agreement.

(1) No cooperation among the Participants, other than that required by this Agreement, is intended or otherwise implied by their adherence to this Agreement. In no event shall the signatures of any representative of the Alaska Eskimo Whaling Commission (AEWC), or of the Barrow, Nuiqsut, Kaktovik, Wainwright, Pt. Hope, or Pt. Lay Whaling Captains' Associations, or of any other Whaling Captains' Association be taken as an endorsement of any Arctic operations or Beaufort Sea or Chukchi Sea OCS operations by any oil and/or gas operator or contractor.

(2) Adherence to the procedures and guidelines set forth in this Agreement does not in any way indicate that any Inupiat or Siberian Yupik whalers or the AEWC agree that industrial activities are not interfering with the bowhead whale migration or the bowhead whale subsistence hunt. Such adherence does not represent an admission on the part of the Industry Participants or their contractors that the activities covered by this Agreement will interfere with the bowhead whale migration or the bowhead whale subsistence hunt.

(3) No member of the oil and gas industry or any contractor has the authority to impose restrictions on the subsistence hunting of bowhead whales or associated activities of the AEWC, residents of the Villages of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, or Pt. Hope, or residents of any other village represented by the AEWC.

(4) In the event additional parties engage in oil and gas operations in the Beaufort Sea or Chukchi Sea during the summer or fall of 2011 the Participants shall exercise their good-faith efforts to encourage those parties to enter into this Agreement. Should additional parties enter into this Agreement at a date subsequent to the date of the signing of this document and before the termination of the 2011 bowhead whale subsistence hunting season, the AEWC will provide to all Participants a supplement to this document with the added signatures.

(5) No Participant is responsible for enlisting additional parties to adhere to the terms and conditions of the Agreement. Similarly, **THE AEWG IS NOT RESPONSIBLE FOR, OR A PARTY TO, ANY AGREEMENT AMONG THE INDUSTRY PARTICIPANTS** concerning the apportionment of expenses necessary for the implementation of this Agreement.

(6) In adhering to this Agreement, none of the Participants waives any rights existing at law. All Participants agree that the provisions of this document do not establish any precedent as between them or with any regulatory or permitting authority.

(7) **PARTICIPANTS' OBLIGATIONS SHALL BE SEPARABLE:** All Participants to this Agreement understand that each Participant represents a separate entity. The failure of any Participant to adhere to this Agreement or to abide by the terms and conditions of this Agreement shall not affect the obligation of other Participants to adhere to this Agreement and to proceed accordingly with all activities covered by this Agreement. Nor shall any Participant's adherence to this Agreement affect that Participant's duties, liabilities, or other obligations with respect to any other Participant beyond those stated in this Agreement. If an Industry Participant does not receive permit approvals from regulatory agencies to conduct its proposed activities, then that company may withdraw from this Agreement.

SECTION 105. REGULATORY COMPLIANCE.

(a) United States Coast Guard Requirements.

The Participants shall comply with all applicable United States Coast Guard requirements for safety, navigation, and notice.

(b) Environmental Regulations and Statutes.

The Participants shall comply with all applicable environmental regulations and statutes.

(c) Other Regulatory Requirements.

The Participants shall comply with all applicable federal, state, and local government requirements.

SECTION 106. DISPUTE RESOLUTION.

Subject to the terms of Section 104(c)(7) of this Agreement, all disputes arising between any Industry Participants and any Subsistence Participants shall be addressed as follows:

- (1) The dispute shall first be addressed between the affected Participant(s) in consultation with the affected village Whaling Captains' Association and the Industry Participant(s)' Local Representative.
- (2) If the dispute cannot be resolved to the satisfaction of all affected Participants, then the dispute shall be addressed with the affected Participants in consultation with the AEW.
- (3) If the dispute cannot be satisfactorily resolved in accordance with paragraphs (1) and (2) above, then the dispute shall be addressed with the AEW and the affected Participants in consultation with representatives of NOAA Fisheries.
- (4) All Participants shall seek to resolve any disputes in a timely manner, and shall work to ensure that requests for information or decisions are responded to promptly.

SECTION 107. EMERGENCY AND OTHER NECESSARY ASSISTANCE.**(a) Emergency Communications.**

ALL VESSELS SHOULD NOTIFY THE APPROPRIATE COM-CENTER IMMEDIATELY IN THE EVENT OF AN EMERGENCY. The appropriate Com-Center operator will notify the nearest vessels and appropriate search and rescue authorities of the problem and advise them regarding necessary assistance. (See attached listing of local search and rescue organizations in Attachment I.)

(b) Emergency Assistance for Subsistence Whale Hunters.

Section 403 of Public Law 107-372 (16 U.S.C. 916c note) provides that "Notwithstanding any provision of law, the use of a vessel to tow a whale, taken in a traditional subsistence whale hunt permitted by Federal law and conducted in waters off the coast of Alaska is authorized, if such towing is performed upon a request for emergency assistance made by a subsistence whale hunting organization formally recognized by an agency of the United States government, or made by a member of such an organization, to prevent the loss of a whale." Industry Participants will advise their vessel captains that, under the circumstances described above, assistance to tow a whale is permitted under law when requested by a Subsistence Participant. Under the circumstances described above, Industry Participants will provide such assistance upon a request for emergency assistance from a Subsistence Participant, if conditions permit the Industry Participant's vessel to safely do so.

SECTION 108. POST-SEASON REVIEW / PRESEASON INTRODUCTION.**(a) Beaufort Sea Post-Season Joint Meeting.**

Following the end of the fall 2011 bowhead whale subsistence hunt and prior to the 2012 Pre-Season Introduction Meetings, the Industry Participant that establishes the Deadhorse and Kaktovik Com Centers will offer to the AEWG Chairman to host a joint meeting with all whaling captains of the Villages of Nuiqsut, Kaktovik and Barrow, the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Beaufort Sea, and with the Chairman and Executive Director of the AEWG, at a mutually agreed upon time and place on the North Slope of Alaska, to review the results of the 2011 Beaufort Sea Open Water Season, unless it is agreed by all designated individuals or their representatives that such a meeting is not necessary.

(b) Chukchi Sea Post-Season Village Meetings.

Following the completion of the 2011 Chukchi Sea Open Water Season and prior to the 2012 Pre-Season Introduction Meetings, the Industry Participants involved, if requested by the AEWG or the Whaling Captain's Association of each village, will host a meeting in each of the following villages: Wainwright, Pt. Lay, Pt. Hope, and Barrow (or a joint meeting of the whaling captains from all of these villages if the whaling captains agree to a joint meeting) to review the results of the 2011 operations and to discuss any concerns residents of those villages might have regarding the operations. The meetings will include the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Chukchi Sea. The Chairman and Executive Director of the AEWG will be invited to attend the meeting(s).

(c) Pre-season Introduction Meetings.

(1) Immediately following each of the above meetings, and at the same location, the Industry Participants will provide a brief introduction to their planned operations for the 2012 Open Water Season. Each Industry Participant should provide hand-outs explaining their planned activities that the whaling captains can review.

(2) Subsistence Participants understand that any planned operations discussed at these Pre-Season Introduction Meetings, and the corresponding maps, will represent the Industry Participant's best estimate at that time of its planned operations for the coming year, but that these planned operations are preliminary, and are subject to change prior to the 2012 Open Water Season Meeting.

(d) Map of Planned Industry Participant Activities.

As practicable, Industry Participants shall jointly prepare and provide the AEWC with a large-scale map of the Beaufort and Chukchi Seas showing the locations and types of oil and gas and barge and transit activities planned by each Industry Participant. This map will be for use by the AEWC and Industry Participants during the 2012 CAA Meeting.

SECTION 109. INDIVIDUAL NOTIFICATION.

In the event that any Industry Participant does not become a signatory to this Agreement, the local Whaling Captains' Associations shall be notified by the AEWC, no later than June 30, 2011, so that the local Whaling Captains' Associations can prepare to talk with the non-signatories to avoid conflict during that association's fall subsistence bowhead whaling season.

TITLE II -- OPEN WATER SEASON COMMUNICATIONS

SECTION 201. MARINE MAMMAL OBSERVERS / INUPIAT COMMUNICATORS.

(a) Marine Mammal Observer / Inupiat Communicator Required.

(1) In General. Each Industry Participant agrees to employ a Marine Mammal Observer / Inupiat Communicator (MMO/IC) on board each Primary Sound Source Vessel owned or operated by such Industry Participant in the Beaufort Sea or Chukchi Sea.

(2) Special Rule for Inside Beaufort Sea Barrier Islands. Industry Participants whose seismic acquisition operations are limited to an area exclusively within the barrier islands need employ an MMO/IC on one Primary Sound Source Vessel only.

(3) Near Shore Operations Support Vessels. Industry Participants are not required to employ an MMO/IC on Near Shore Operations Support Vessels.

(4) Sealift Operations. For Industry Participants conducting sealift operations in which two tugs towing barges are accompanied within ½ mile by a third light tug at all times, a MMO/IC is required to be employed on the light tug only.

(b) Duties of Marine Mammal Observer / Inupiat Communicator.

(1) Each MMO/IC is to be employed as an observer and Inupiat communicator for the duration of the 2011 Open Water Season on the vessel on which he or she is stationed.

(2) As a member of the crew, the MMO/IC will be subject to the regular code of employee conduct on board the vessel and will be subject to discipline, termination, suspension, layoff, or firing under the same conditions as other employees of the vessel operator or appropriate contractor.

(3) Once the source vessel on which the MMO/IC is employed is in the vicinity of a whaling area and the whalers have launched their boats, the MMO/IC's primary duty will be to carry out the communications responsibilities set out in this Title.

(4) At all other times, the MMO/IC will be responsible for keeping a lookout for bowhead whales and/or other marine mammals in the vicinity of the vessel to assist the vessel captain in avoiding harm to the whales and other marine mammals.

(5) It is the MMO/IC's responsibility to call the appropriate Com-Center as set out in Sections 202 and 203.

(6) The MMO/IC will be responsible for all radio contacts between vessels owned or operated by each of the Industry Participants and whaling boats covered under Section 207 of this Agreement and shall interpret communications as needed to allow the vessel operator to take such action as may be necessary pursuant to this Agreement.

(7) The MMO/IC shall contact directly subsistence whaling boats that may be in the vicinity to ensure that conflicts are avoided to the greatest possible extent.

(8) The MMO/IC will maintain a record of his or her communications with each Com-Center and the subsistence whaling boats, as well as any marine mammal sightings by the MMO/IC.

SECTION 202. COM-CENTER GENERAL COMMUNICATIONS SCHEME.

(a) Reporting Positions for Vessels Owned or Operated by the Industry Participants.

(1) All vessels (other than vessels covered under sections 302 and 602) shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Vessel name, operator of vessel, charter or owner of vessel, and the project the vessel is working on.

(B) Vessel location, speed, and direction.

(C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ at Chukchi Sea prospect. We are currently at ___'___ north ___'___ west, proceeding SE at ___ knots. We will proceed on this course for ___ hours and will report location and direction at that time.

(2) The appropriate Com-Center shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(3) In the event that the Industry Participant's operation includes seismic data acquisition, the operator reserves the right to restrict exact vessel location information and provide more general location information.

(b) Reporting Positions for Subsistence Whale Hunting Crews.

(1) All subsistence whaling captains shall report to the appropriate Com-Center at the time they launch their boats from shore and again when they return to shore.

(2) All subsistence whaling captains shall report to such Com-Center the initial GPS coordinates of their whaling camps.

(3) Additional communications shall be made on an as needed basis.

(4) Each call shall report the following information:

(A) The crew's location and general direction of travel.

EXAMPLE: This is _____. We are just starting out. We will be traveling north-east from _____ to scout for whales. I will call if our plans change.

(B) The presence of any vessels or aircraft owned or operated by any of the Industry Participants, or their contractors, that are not observing the specified guidelines set forth in Title V on Avoiding Conflicts.

(C) The final call of the day shall include a statement of the whaling captain's general area of expected operations for the following day, if known at the time.

(5) Any subsistence whale hunter preparing to tow a caught whale shall report to the appropriate Com-Center before starting to tow.

EXAMPLE: This is Archie Ahkiviana. I am ___' ___ north, ___' ___ west. I have a whale and am towing it into _____.

(6) Each time a subsistence whaling camp is moved, it shall be reported promptly to the appropriate Com-Center, including the new GPS coordinates.

(7) Subsistence whale hunters shall notify the appropriate Com-Center promptly if, due to weather or any other unforeseen event, whaling is not going to take place that day.

(8) Subsistence whaling captains shall contact the appropriate Com-Center promptly and report any unexpected movements of their vessel.

(c) Responsibilities of Participants.

(1) Monitoring VHF Channel 16.

All vessels covered by Sections 207, 301, and 401 of this Agreement shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas

It is the responsibility of each vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement to determine the positions of all of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication

After any vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

SECTION 203. THE COMMUNICATIONS SYSTEM COORDINATION CENTERS (COM-CENTERS).

(a) Chukchi Lead System Included in Com-Center Coverage.

In addition to the Beaufort Sea and Chukchi Sea, the communications scheme shall apply in the Chukchi Sea lead system, as identified and excluded from leasing in the current MMS Five-Year Leasing Program, 2007-2012.

(b) Set Up and Operation.

(1) Subject to the terms of Section 104(c) of this Agreement, the Industry Participants conducting operations in:

(A) the Beaufort Sea jointly will arrange for the funding of Com-Centers in Deadhorse and Kaktovik; and

(B) the Chukchi Sea jointly will arrange for the funding of Com-Centers in Barrow, Wainwright, Pt. Lay, and Pt. Hope.

(2) All six Com-Centers will be staffed by Inupiat operators. **GROUND TRANSPORTATION MUST BE PROVIDED FOR COM-CENTER OPERATIONS IN KAKTOVIK FOR POLAR BEAR AND BROWN BEAR SAFETY.** The Com-Centers will be operated 24 hours per day during the 2011 subsistence bowhead whale hunt. One Industry Participant in the Beaufort Sea and one Industry Participant in the Chukchi Sea, or their respective contractor, will be designated as the operator of the Com-Centers for that Sea, in consultation with the AEWC.

(3) Each Industry Participant shall contribute to the funding of the Com-Centers covering the areas in which it conducts oil and gas operations. The level of funding for the Com-Centers provided by each of the Industry Participants is intended to be in proportion to the scale of their respective activities, and shall be mutually agreed by the Industry Participants.

(4) The procedures to be followed by the Com-Center operators are set forth in subsection (d) below.

(c) Staffing.

(1) Each Com-Center shall have an Inupiat operator ("Com-Center operator") on duty 24 hours per day from August 15, or one week before the start of the fall bowhead whale hunt in each respective village, until the end of the bowhead whale subsistence hunt in:

(A) Kaktovik for the Kaktovik Com-Center;

(B) Nuiqsut for the Deadhorse Com-Center;

(C) Barrow for the Barrow Com-Center;

(D) Wainwright for the Wainwright Com-Center.

- (E) Pt. Lay for the Pt. Lay Com-Center, which will be located in the Pt. Lay Whaling Captains' Association building; and
- (F) Pt. Hope for the Pt. Hope Com-Center, which will be located in the Pt. Hope Whaling Captains' Association building.

(2) All Com-Center staff shall be local hire.

(d) Duties of the Com-Center Operators.

(1) The Com-Center operators shall be available to receive radio and telephone calls and to call vessels as described below. A record shall be made of all calls from every vessel covered by Sections 207, 301, and 401 of this Agreement. Information reported regarding whales struck, lost, landed, or the location of whales struck, lost, or landed, or the number of strikes remaining, shall be confidential and shall not be disclosed to anyone other than the AEWC or the local Whaling Captains' Association. The record of all reporting calls should contain the following information:

- (A) Industry Participant Vessel:
 - (i) Name of caller and vessel.
 - (ii) Vessel location, speed, and direction.
 - (iii) Time of call.
 - (iv) Anticipated movements between this call and the next report.
 - (v) Reports of any industry or subsistence activities.
- (B) Subsistence Whale Hunting Boat:
 - (i) Name of caller.
 - (ii) Location of boat or camp.
 - (iii) Time of call.
 - (iv) Plans for travel.

- (v) Any special information such as caught whale, whale to be towed, or industry vessel conflicts with whale or whaler. Any report of the number of whales struck, lost, or landed, or of the number of strikes remaining, shall be kept confidential and shall not be disclosed by the Com-Center or any Com-Center operator to anyone other than the AEWG or the local Whaling Captains' Association. The location of whales struck, lost, or landed shall be kept confidential and shall not be disclosed except to the extent needed to avoid an Industry/Subsistence Whale Hunter conflict.
- (2) Report of Industry/Subsistence Whale Hunter Conflict. In the event an industry/subsistence whale hunter conflict is reported, the appropriate Com-Center operator shall record:
- (A) Name of industry vessel.
 - (B) Name of subsistence whaling captain.
 - (C) Location of vessels.
 - (D) Nature of conflict, data, and time.
- (3) If all vessels and boats covered by Sections 207, 301, and 401 of this Agreement have not reported to the appropriate Com-Center within one hour of the recommended time, that Com-Center operator shall attempt to call all non-reporting vessels to determine the information set out above under the Duties of the Com-Center operator.
- (4) As soon as location information is provided by a vessel covered by Sections 207, 301, or 401 of this Agreement, the appropriate Com-Center operator shall plot the location and area of probable operations on the large map provided at the Com-Center.
- (5) If, in receiving information or plotting it, a Com-Center operator observes that operations by Industry Participants might conflict with subsistence whaling activities, such Com-Center operator shall contact the industry vessel involved and advise the Industry Participant's Local Representative(s) and the vessel operators of the potential conflict.

SECTION 204. STANDARDIZED LOG BOOKS.

The Industry Participants will provide the Com-Centers and Marine Mammal Observer / Inupiat Communicators with identical log books to assist in the standardization of record keeping associated with communications procedures required pursuant to this Agreement.

SECTION 205. COMMUNICATIONS EQUIPMENT.**(a) Communications Equipment to be Provided to Subsistence Whale Hunting Crews.**

(1) In General. The Industry Participants will provide (or participate in the provision of) the communications equipment described in paragraphs (4) and (6) of this subsection and subsection (b) of this section.

(2) Beaufort Sea. The Industry Participants funding Com-Centers in Deadhorse and Kaktovik will fund the provision of communications equipment for the whaling captains of Kaktovik and Nuiqsut in the same proportion as they fund those Com-Centers.

(3) Chukchi Sea. The Industry participants conducting operations in the Chukchi Sea will coordinate with each other to participate in funding the provision of communications equipment for the whaling captains of Barrow, Wainwright, Pt. Hope, and Pt. Lay.

(4) All-Channel, Water-Resistant VHF Radios.

These VHF radios are specifically designed for marine use and allow monitoring of Channel 16 while using or listening to another channel.

- (A) Kaktovik Subsistence Whaling Boats: 8
- (B) Kaktovik Base and Search and Rescue: 2
- (C) Nuiqsut Subsistence Whaling Boats: 12
- (D) Nuiqsut Base and Search and Rescue: 3
- (E) Barrow Base and Search and Rescue: 2
- (F) Wainwright Base and Search and Rescue: 2
- (G) Wainwright Subsistence Whaling Boats: 4
- (H) Pt. Hope Base and Search and Rescue: 2
- (I) Pt. Hope Subsistence Whaling Boats: 10

- (J) Pt. Lay Base and Search and Rescue: 2
- (K) Pt. Lay Subsistence Whaling Boats: 4

(5) Specific VHF Channels For Each Village.

The whaling boats from each of the villages have been assigned individual VHF channels for vessel-to-vessel and vessel-to-Com-Center communications as follows:

- (A) Nuiqsut whaling crews will use Channel 68.
- (B) Kaktovik whaling crews will use Channel 69.
- (C) Barrow whaling crews will use Channel 72.
- (D) Wainwright Whaling Crews will use Channel 12.
- (E) Pt. Lay Whaling Crews will use Channel 72.
- (F) Pt. Hope Whaling Crews will use Channel 68.

(6) Satellite Telephones.

The satellite telephones are to be used as backup for the VHF radios. The satellite telephones for use on subsistence whaling boats are for emergency use only and should be programmed for direct dial to the nearest Com-Center.

- A. Kaktovik Base Phones: 2
- B. Kaktovik Subsistence Whaling Boats: 8
- C. Nuiqsut Base Phones: 2
- D. Nuiqsut Subsistence Whaling Boats: 12
- E. Barrow Subsistence Whaling Boats: 2
- F. Wainwright Subsistence Whaling Boats: 4
- G. Pt. Lay Subsistence Whaling Boats: 2

(7) Distribution and Return of Equipment.

The distribution of the VHF radios and satellite telephone equipment to whaling captains for use during the 2011 fall bowhead subsistence whale hunting season shall be completed no later than August 15, 2011. All such units and telephone equipment provided under this Agreement, whether in this section or otherwise, will be returned promptly by the Subsistence Participants to the Industry Participant or the person providing such units and equipment at the end of each Village's 2011 fall bowhead whale subsistence hunt.

(b) Communications Equipment on Vessels Owned or Operated by the Industry Participants and/or their Contractors.

The Marine Mammal Observer / Inupiat Communicators onboard source vessels owned or operated by the Industry Participants and/or their contractors will also be supplied with all-channel VHF radios. The MMO/ICs have been assigned Channel 7 for their exclusive use in communicating with the Com-Center. Such radios shall be returned upon the completion or termination of the MMO/IC's assignment.

(c) Radio Installation and User Training.

The Whaling Captains of Nuiqsut, Kaktovik, Wainwright, Pt. Lay, and Pt. Hope, with assistance from the Industry Participants, will be responsible for the installation of the VHF radio equipment. The Industry participants will provide (or participate in the provision of) on-site user training for the VHF and satellite telephone equipment on or before August 15, 2011, if requested and as scheduled by the Whaling Captains' Associations of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the Industry Participant operating the Beaufort Sea Com-Centers or Chukchi Sea Com-Centers, as appropriate.

SECTION 206. INDIVIDUALS TO CONTACT.

Listed below are the primary contact names and phone numbers for each of the Participants.

(1) Arctic Cable Company, LLC's Local Representative

TBD

(2) BP Exploration (Alaska), Inc.'s (BP) Local Representative

LOWRY BROTT will be BP's local representative on the North Slope during the Term of this Agreement and will be stationed at Northstar Island and will be available by telephone at (907) 670-3520 and when Mr. Brott is not available, his alternate, Jim Croak, will be stationed at Northstar Island and will be available by telephone at the above number.

(3) ENI's Local Representative

Hans Neidig (907) 865-3314

(4) Exxon Mobil's Local Representative

TBD

(5) ION / GX Technology's Local Representative

TBD

(6) Pioneer Natural Resources' (Pioneer) Local Representative

PAT FOLEY will be Pioneer's local representative during the Term of this Agreement and will be stationed in Anchorage and will be available by telephone at (907) 343-2110.

(7) Shell Offshore Inc.'s (Shell) Local Representatives

JOHN MAKETA and HOWARD HILL will be Shell's local representatives on the North Slope during the Term of this Agreement and will be stationed at Barrow during Chukchi Sea operations and at Deadhorse during Beaufort Sea operations and will be available by telephone at (907) 770-3700.

(8) STATOIL's Local Representative

TBD

(9) The Village of Kaktovik

For purposes of this Agreement, the individuals to contact for the Village of Kaktovik will be: JOSEPH KALEAK at (907) 640-6213 or 640-6515, and CHARLIE M. BROWER at (907) 640-4163 (home), (907) 640-2092 (work), or (907) 640-0052 (cell).

(10) The Village of Nuiqsut

For purposes of this Agreement, the individuals to contact for the Village of Nuiqsut will be: ISAAC NUKAPIGAK at (907) 480-6220 (Work); (907) 480-2400 (Home).

(11) The Village of Barrow

For purposes of this Agreement, the individuals to contact for the Village of Barrow will be: HARRY BROWER, JR. at (907) 852-0350 (Work), and EUGENE BROWER at (907) 852-3601.

(12) The Village of Wainwright

For purposes of this Agreement, the individuals to contact for the Village of Wainwright will be: ROSSMAN PEETOOK at (907) 763-4774, and WALTER NAYAKIK at (907)763-2915 (Work).

(13) The Village of Pt. Hope

For purposes of this Agreement, the individuals to contact for the Village of Pt. Hope will be: CHESTER FRANKSON, SR. at (907) 368-2054 (Home).

(14) The Village of Pt. Lay

For purposes of this Agreement, the individuals to contact for the Village of Pt. Lay will be: JULIUS REXFORD (907) 833-4592 (Home), (907) 833-2214 (Work), (907) 833-2320 (Fax), THOMAS NUKAPIAK (907) 833-6467 (Home), (907) 833-3838

(15) The AEW C

For purposes of this Agreement, the individuals to contact for the AEW C shall be: HARRY BROWER, JR. at (907) 852-0350 (Work) and JOHNNY AIKEN at (907) 852-2392.

SECTION 207. SUBSISTENCE WHALE HUNTING BOATS.

The following is a list of the number of boats each of the Subsistence Participants plan to use:

(1) Boats Owned/Used by Whaling Captains of Nuiqsut (NWCA)

The subsistence whaling crews of the Village of Nuiqsut plan to use (12) twelve boats for subsistence whale hunting during the late summer and fall of 2011.

(2) Boats Owned/Used by Whaling Captains of Kaktovik (KWCA)

The subsistence whaling crews of the Village of Kaktovik plan to use (8) eight boats for subsistence whale hunting during the late summer and fall of 2011.

(3) Boats Owned/Used by Whaling Captains of Barrow (BWCA)

The subsistence whaling crews of the Village of Barrow plan to use (40) forty boats for subsistence whale hunting during the late summer and fall of 2011.

(4) Boats Owned/Used by Whaling Captains of Wainwright (WWCA)

The subsistence whaling crews of the Village of Wainwright plan to use (4) four boats for subsistence whale hunting during the fall of 2011.

(5) Boats Owned/Used by Whaling Captains of Pt. Hope (Pt. HWCA)

The subsistence whaling crews of the Village of Pt. Hope plan to use (10) ten boats for subsistence whale hunting during the late fall of 2011.

(6) Boats Owned/Used by Whaling Captains of Pt. Lay (Pt. LWCA)

The subsistence whaling crews of the Village of Pt. Lay plan to use (4) four boats for subsistence whale hunting during the fall of 2011.

If any additional boats are put in use by subsistence whaling crews, the Industry Participants will be notified promptly through the Com-Center.

TITLE III – BARGE, TRANSIT, AND CABLE LAYING VESSEL OPERATIONS

SECTION 301. IN GENERAL.

A Participant may employ barges, transit, or cable laying vessels to transport materials or lay cable through the Beaufort Sea or Chukchi Sea during the term of this Agreement. Any Industry Participant who employs a barge or transit vessel to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement shall require the barge or transit vessel operator to comply with Sections 201, 205(b) and 302 of this Agreement while providing services to that Industry Participant.

SECTION 302. BARGE AND TRANSIT VESSEL OPERATIONS.

(a) Reporting Positions for Barge, Transit or Cable Laying Vessels Owned or Operated by industry Participants.

(1) All barge, transit, or cable laying vessels shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Barge, transit, or cable laying vessel name, operator of vessel, charterer or owner of vessel, and the project or entity the vessel is transporting materials for.

(B) Barge, transit, or cable laying vessel location, speed, and direction.

(C) Plans for barge, transit, or cable laying vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the barge or transit vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at _____ north _____ west, proceeding SE at _____ knots. We will proceed on this course for _____ hours and will report location and direction at that time.

(2) The appropriate Com-Center also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All barge, transit, or cable laying vessel operators are responsible for the following requirements.

- (1) Monitoring VHF Channel 16. All barge and transit vessel operators shall monitor marine VHF Channel 16 at all times.
- (2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and barge or transit vessel operator to determine the positions of their barge or transit vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.
- (3) Vessel-to-Vessel Communication. After any barge or transit vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Barge, Transit, and Cable Laying Vessels.

- (1) All barge, transit, and cable laying vessel routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All barges and transit vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.
- (2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.
- (3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Barge, transit, and cable laying vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Bowhead Whales.

If any barge or transit vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Marine Mammal Sighting Data.

Industry Participants whose operations are limited exclusively to barge or vessel traffic will submit to the AEW and NSB DWM all marine mammal sighting data.

TITLE IV – VESSELS, TESTING, AND MONITORING

SECTION 401. INDUSTRY PARTICIPANT VESSELS AND EQUIPMENT.

(a) List of Vessels and Equipment Required.

Each Industry Participant engaged in oil and gas operations shall provide a list identifying all vessels or other equipment (including but not limited to boats, barges, aircraft, or similar craft) that are owned and/or operated by, or that are under contract to the Industry Participants, for use in the Beaufort Sea or Chukchi Sea for oil and gas operations or for implementation of such Industry Participant's monitoring plan. Vessels and equipment used for oil and gas operations shall be listed in Attachment II, and vessels and equipment used for monitoring plans shall be listed in Attachment III.

(b) Only Listed Vessels and Equipment (or Like Vessels and Like Equipment) May Be Used.

(1) NONE OF THE INDUSTRY PARTICIPANTS INTENDS TO OPERATE ANY VESSEL OR EQUIPMENT (EXCEPT FOR LIKE VESSELS OR LIKE EQUIPMENT) NOT IDENTIFIED IN THE LISTS REQUIRED UNDER SUBSECTION (a) DURING THE TERM OF THIS AGREEMENT.

(2) Notwithstanding paragraph 1, if any Industry Participant decides to use different vessels or equipment or additional vessels or equipment, such vessels and equipment shall be used only for purposes identified in Attachments II or III; and the AEWC and the whaling captains of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Hope, and Pt. Lay shall be notified promptly through the appropriate Com-Center, as identified in Section 203 of this Agreement, and in writing, of their identity and their intended use, including location of use.

SECTION 402. SOUND SIGNATURE TESTS.**(a) Sound Source Verification Testing.**

(1) Geophysical Equipment. For purposes of obtaining a sound signature for Industry Participants' geophysical equipment, the Industry Participants shall have initiated a test of all geophysical equipment within 72 hours of initiating or having initiated operations in the Beaufort Sea or Chukchi Sea. Such tests shall be conducted as set forth in section 402(b).

(2) Vessels. For vessels engaged in geophysical activity, Industry Participants will conduct a sound source verification test for all geophysical equipment used for geophysical activity. Each Industry Participant shall establish a sound source verification range or Industry Participants may participate jointly in establishing a range for the Chukchi Sea and Beaufort Sea, or both. A separate range shall be used for the Chukchi Sea and Beaufort Sea, and vessels shall use the appropriate range for each sea in which they operate. For testing each vessel shall proceed through the range and record information on the date, time, vessel speed, vessel route, vessel load, weather conditions, and equipment operating on the vessel (all noise generating equipment on the vessel, other than geophysical equipment subject to separate testing under paragraph (1), shall be in operation while the vessel is proceeding through the range). The range should be established near a location where details on wind speed and direction are regularly monitored and archived.

(b) Mutual Agreement on Site for Testing; Advance Notice Required.

(1) In General. Each geophysical equipment sound signature test shall be conducted at a site mutually agreed upon by the Industry Participant conducting such test and the AEW. Each Industry Participant conducting such sound signature test(s) will make a good faith effort to provide three (3) weeks advance notice to the AEW and the NSB DWM of its intent to perform each test.

(2) Beaufort Sea Testing. For geophysical equipment sound signature tests conducted in the Beaufort Sea, the Industry Participant conducting such tests shall provide transportation for an appropriate number of representatives from: the AEW, the whaling captains of the Villages of Barrow, Nuiqsut, and Kaktovik, and the NSB DWM to observe the sound signature tests.

(3) Chukchi Sea Testing. For geophysical equipment sound signature tests conducted on vessels to be used in the Chukchi Sea, the Industry Participant(s) conducting such tests shall provide transportation for an appropriate number of representatives from: the AEW, the whaling captains of the Villages of Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the NSB DWM to observe the sound signature tests.

(c) Sound Signature Data to be Made Available.

(1) Within fourteen (14) days of completing the sound signature field tests for geophysical equipment and within 30 days of the end of the operating season for sound source verification ranges, each Industry Participant and/or its contractor conducting such test(s) will make preliminary and final quality controlled results of the sound signature test(s) available upon request to the AEWC and the NSB DWM. The Industry Participant and/or its contractor will also provide the AEWC and the NSB DWM the preliminary analysis of that data, as well as any other applicable sound signature data that is available and that the AEWC, the NSB DWM, and the Industry Participant agree is relevant to understanding the potential noise impacts of the proposed operations to migrating bowhead whales or other affected marine mammals.

(2) Once completed the final data analysis will be provided to the AEWC and the NSB DWM upon request. The final data report for the sound source verification testing shall be provided to the NSB DWM and the AEWC no later than December 31, 2011.

(3) Any Industry Participant who prepares a model of the sound signature of its vessels and operations, whether before or after the sound signature test, will provide copies of those models and any related analysis to the AEWC and the NSB DWM upon request.

SECTION 403. MONITORING PLANS.

(a) Monitoring Plan Required.

(1) Each Industry Participant agrees to prepare and implement a monitoring plan to collect data designed to determine the potential effects of its oil and gas operations on fall migrating bowhead whales.

(2) The Monitoring Plans shall be designed in cooperation with the AEWC, the NSB DWM, NOAA Fisheries, and the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). If additional outside review is requested by any of the above entities, the Industry Participant will evaluate the request on a case by case basis.

(b) Beaufort Sea Monitoring Plans.

In the Beaufort Sea, the monitoring plans shall include an investigation of noise effects on fall migrating bowhead whales as they travel past the noise source, with special attention to changes in calling behavior, deflection from the normal migratory path, where deflection occurs, and the duration of the deflection.

(c) Chukchi Sea Monitoring Plans.

In the Chukchi Sea, the monitoring plans should focus on the identity, timing, location, and numbers of marine mammals and their behavioral responses to the noise source. The monitoring plans will place emphasis on understanding potential impacts from industrial sounds on bowhead whales.

(d) Use of Prior Information and Peer Reviewed Data.

(1) Prior impact study results shall be incorporated into the monitoring plans prepared by each Industry Participant as applicable.

(2) Each monitoring plan for oil and gas operations shall be subject to peer review by stakeholders on a peer review panel identified by NOAA Fisheries at the 2011 Open Water Season Peer Review Meeting, convened by NOAA Fisheries. Draft plans will be submitted to the NSB DWM and AEWC no later than two weeks prior to the 2011 Open Water Peer Review Meeting.

(e) Raw Data, Communication, and Summary Required.

(1) Each Industry Participant conducting site-specific monitoring will:

(A) after quality control reviews are completed, make electronic data, available to the NSB DWM at the end of the season.

(B) permit and encourage open communications among their contractors and the AEWC and NSB DWM.

(2) Each Industry Participant will submit a summary of monitoring plan results and progress to the AEWC and NSB DWM every two weeks during the operating season.

SECTION 404. CUMULATIVE NOISE IMPACTS STUDY.

Each Industry Participant further agrees to provide its monitoring plan and sound signature data, for use in a cumulative effects analysis of the multiple sound sources and their possible relationship to any observed changes in marine mammal behavior, to be undertaken pursuant to a Cumulative Noise Impacts Study.

The study design for the Cumulative Impacts Study shall be developed through a Cumulative Impacts Workshop to be organized by the North Slope Borough in the winter of 2011/2012. The results of this workshop will be presented at the 2012 Open Water Meeting.

TITLE V – AVOIDING CONFLICTS DURING THE OPEN WATER SEASON

Industry Participants are reminded that Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act provide, among other things, that the Secretary can authorize the incidental taking of small numbers of marine mammals of a species or population stock if the Secretary finds, among other things, that the total of such takings during the authorized period **will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses.**

The following Operating Guidelines apply in the Beaufort Sea and Chukchi Sea, except as otherwise specified and in all cases with due regard to environmental conditions and operational safety. These Operating Guidelines are in addition to any permit restrictions or stipulations imposed by the applicable governmental agencies.

SECTION 501. GENERAL PROVISIONS FOR AVOIDING INTERFERENCE WITH BOWHEAD WHALES OR SUBSISTENCE WHALE HUNTING ACTIVITIES.**(a) Routing Vessels and Aircraft.**

(1) All vessel and aircraft routes shall be planned so as to minimize any potential conflict with bowhead whales or bowhead subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity (as reported pursuant to Section 202).

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at least five (5) miles offshore during transit.

(b) Aircraft Altitude Floor and Flight Path.

(1) AIRCRAFT SHALL NOT OPERATE BELOW 1500 FEET unless the aircraft is engaged in marine mammal monitoring, approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations. Aircraft engaged in marine mammal monitoring shall not operate below 1500 feet in areas of active whaling; such areas to be identified through communications with the Com-Centers.

(2) Except for airplanes engaged in marine mammal monitoring, aircraft shall use a flight path that keeps the aircraft at least five (5) miles inland until the aircraft is directly south of its offshore destination, then at that point it shall fly directly north to its destination.

(c) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(d) Vessels Operating in Proximity of Bowhead Whales.

If any vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;

- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

SECTION 502. GEOPHYSICAL ACTIVITY LIMITATIONS.

The following operating limitations are to be observed and the operations are to be accompanied by a monitoring plan as set forth in Section 403 and Attachment III of this Agreement. The Industry Participants conducting geophysical activity agree to coordinate the timing and location of such activity so as to reduce, by the greatest extent reasonably possible, the level of noise energy entering the water from such activity at any given time and at any given location.

(a) Limitations on Geophysical Activity in the Beaufort Sea.

All geophysical activity in the Beaufort Sea shall be conducted in accordance with the terms set forth below.

- (1) Kaktovik: No geophysical activity from the Canadian Border to the Canning River (146 deg. 4 min. W) from 25 August to close of the fall bowhead whale hunt in Kaktovik and Nuiqsut.¹ From August 10 to August 25, Industry Participants will communicate and collaborate with AEWG on any planned vessel movement in and around Kaktovik and Cross Island to avoid impacts to whale hunt.

¹ The bowhead whale subsistence hunt will be considered closed for a particular village when the village Whaling Captains' Association declares the hunt ended or the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWG), whichever occurs earlier.

(2) Nuiqsut:

A. Pt. Storkerson (~148 deg. 42 min. W) to Thetis Island (~150 deg. 10.2 min. W).

(i) *Inside the Barrier Islands:* No geophysical activity prior to August 5. Geophysical activity is allowed from August 5 until completion of operations²

(ii). *Outside the Barrier Islands:* No geophysical activity from August 25 to close of fall bowhead whale hunting in Nuiqsut. Geophysical activity is allowed at all other times.

b. Canning River (~146 deg. 4 min. W) to Pt. Storkerson (~148 deg. 42 min. W): No geophysical activity from August 25 to the close of bowhead whale subsistence hunting in Nuiqsut.

(3) Barrow: No geophysical activity from Pitt Point on the east side of Smith Bay (~152 deg. 15 min. W) to a location about half way between Barrow and Peard Bay (~157 deg. 20 min. W) from September 15 to the close of the fall bowhead whale hunt in Barrow.

² Geophysical activity allowed in this area after August 25 shall include a source array of no more than 12 air guns, a source layout no greater than 8 m x 6 m, and a single source volume no greater than 880 in³.

(b) Limitations on Geophysical Activity in the Chukchi Sea.

All geophysical activity in the Chukchi Sea shall be conducted in accordance with the terms set forth below.

- (1) Beginning September 15, and ending with the close of the fall bowhead whale hunt,³ if Wainwright, Pt. Lay, or Pt. Hope intend to whale in the Chukchi Sea, no more than two geophysical activities employing geophysical equipment will occur at any one time in the Chukchi Sea. During the fall bowhead whale hunt, geophysical equipment will not be used by Participants within 30 miles of any point along the Chukchi Sea coast. Industry Participants will contact the Whaling Captains' Associations of each of those villages to determine if a village is prepared to whale and will notify the AEWC of any response.
- (2) Safe harbor will be at sites selected by the Industry Participants and the AEWC. Safe harbor sites will be agreed upon no later than the beginning of operations and shall be listed in Attachment IV. However, a vessel captain will seek safety for his assets (vessel and personnel) as is his duty under the Law of the Sea.
- (3) Any vessel operating within 60 miles of the Chukchi Sea coast will follow the communications procedures set forth in Title II of this Agreement. All vessels will adhere to the conflict avoidance measures set forth in Section 501 of this Agreement.
- (4) If a dispute should arise, the resolution process set forth in Section 106 of this Agreement shall apply.

³ The bowhead whale subsistence hunt will be considered closed when village Whaling Captains' Associations of Wainwright, Pt. Lay, and Pt. Hope have each declared that (A) they do not intend to hunt, (B) their village hunt has ended, or (C) the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWC), whichever occurs³⁴ earlier.

SECTION 503. DRILLING AND PRODUCTION.

For exploratory drilling and production between 144 deg. W and the Canning River (~146 deg. 4 min. W), zero discharge of:

- (1) drilling fluids;
- (2) cuttings after 20" casing;
- (3) treated sanitary and gray water; and
- (4) ballast and bilge water.

(b) Drilling Operations in the Beaufort Sea East of Cross Island.

No drilling equipment or related vessels used for at-sea oil and gas operations shall be onsite at any offshore drilling location east of Cross Island from 25 August until the close of the bowhead whale hunt in Nuiqsut and Kaktovik. However, such equipment may remain within the Beaufort Sea in the vicinity of 71 degrees 25 minutes N and 146 degrees 4 minutes W., or at the edge of the Arctic ice pack, whichever is closer to shore.

(c) Drilling Operations in the Beaufort Sea West of Cross Island.

In 2011, no drilling equipment or related vessels used for at-sea oil and gas operations shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.

SECTION 504. SHORE-BASED SERVICE AND SUPPLY AREAS.

Shore-based service and supply areas used by Industry Participants shall be located and operated so as to ensure compliance with the terms of this Agreement.

TITLE VI – LATE SEASON SEISMIC OPERATIONS

SECTION 601. IN GENERAL.

Any Industry Participant who engages exclusively in geophysical activities that are conducted at least 5 miles or more from the Alaska coast in the Beaufort Sea or Chukchi Sea and begin on or after October 1, 2011 shall comply with Sections 201, 205(b), 502(a), and 602 of this Agreement.

SECTION 602. VESSEL OPERATIONS.

(a) Reporting Positions When Vessels Come Within 40 Miles of the Coast.

(1) A vessel subject to this section operating within 40 miles of the Alaska coast shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Vessel name, operator of vessel, charter or owner of vessel, and the project or entity the vessel is conducting operations for.

(B) Vessel location, speed, and direction.

(C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at ____' ____ north ____' ____ west, proceeding SE at ____ knots. We will proceed on this course for ____ hours and will report location and direction at that time.

(2) The appropriate Com-Center also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All vessel operators subject to this title are responsible for the following requirements.

- (1) Monitoring VHF Channel 16. All vessel operators shall monitor marine VHF Channel 16 at all times.
- (2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and vessel operator to determine the positions of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.
- (3) Vessel-to-Vessel Communication. After any vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Vessels.

- (1) All vessel routes within 40 miles of the Alaska coast shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.
- (2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.
- (3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Bowhead Whales.

If any barge or transit vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Marine Mammal Sighting Data.

Industry Participants whose operations are subject to this title will submit to the AEWG and NSB DWM all marine mammal sighting data.

TITLE VII – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

Harry Brower
Chairman, AEW
AEWC Commissioner for Barrow
Dated: _____

Rex Rock
AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

Joe Kaleak
AEWC Commissioner for Kaktovik
Dated: _____

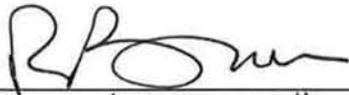
Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rossman Peetook
AEWC Commissioner for Wainwright
Dated: _____

Name:
Arctic Cable Company, LLC
Dated: _____

Name:
BP Exploration (Alaska) Inc.
Dated: _____

Name:
ENI US Operating Company
Dated: _____



Name: *Agent and Attorney in Fact*
R. Lee Bruce
Exxon Mobil Corporation
Dated: *4/4/2011*

Name:
ION / GX Technology
Dated: _____

Name:
Pioneer Natural Resources Alaska
Dated: _____

Name:
Shell Offshore, Inc.
Dated: _____

Name:
Statoil
Dated: _____

ATTACHMENT I

**LOCAL SEARCH AND RESCUE ORGANIZATIONS - CONTACT
PERSONS
(IN EMERGENCIES, ALWAYS DIAL 911)**

North Slope Borough**Search and Rescue (Pilots)**

Director Hugh Patkotak	852-2822 WK	852-4844 Home
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Barrow Volunteer**Search and Rescue Station**

852-2808 OFS

President	Oliver Leavitt	852-7032 WK	852-7032 Home
Vice-Pres.	Price Brower	852-8633 WK	852-7848 Home
Secretary	Lucille Adams	852-0250 Wk	852-7200 Home
Treasurer	Eli Solomon	852-2808 Wk	852-6261 Home
Coordinator	Arnold Brower, Jr.	852-0290 WK	852-5060 Home
Director	Jimmy Nayakik	852-0200 WK	852-JENS Home
Director	Johnny Adams	852-0250 WK	852-7724 Home

Nuiqsut Volunteer**Search and Rescue Station**

480-6613 (Fire Hall)

Kaktovik Volunteer**Search and Rescue Station**

640-6212 (Fire Hall)

President	Lee Kayotuk	640-5893	Wk	640-6213 Home
Vice-Pres.	Tom Gordon	640-		
Secretary	Nathan Gordon	640-6925		
Treasurer	Don Kayotuk	640-2947		
Fire Chief	George T. Tagarook	640-6212 WK		640-6728 Home

Wainwright Volunteer Search and Rescue

President	Joe Ahmaogak Jr.	763-2826 Home
Vice President	John Hopson, Jr.	763-3464 Home
Secretary	Raymond Negovanna	763-2102 Home
Treasurer	Ben Ahmaogak, Jr.	763-3030 Home
Director	Artic Kittick	763-2534 Home
Director	John Akpik	Unlisted

Pt. Hope Volunteer Search and Rescue

Coordinator	Willard Hunnicutt, Jr.	368-2774 Work
Fire Chief	Willard Hunnicutt, Jr.	368-2774 Work (Note: Only contact for Pt. Hope)

North Slope Borough Disaster Relief Coordinator

Frederick Brower	852-0284 OFS
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ATTACHMENT II

**VESSELS TO BE USED FOR AND IN SUPPORT OF
INDUSTRY PARTICIPANTS' OPERATIONS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' OPERATIONS.**

ATTACHMENT III

**VESSELS TO BE USED FOR AND IN SUPPORT
OF THE INDUSTRY PARTICIPANTS MONITORING PLANS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' MONITORING PLAN.**

FINAL FOR SIGNATURE

March 31, 2011

ATTACHMENT IV
SAFE HARBOR

**EXPERT PANEL REVIEW
OF MONITORING AND MITIGATION PROTOCOLS
IN APPLICATIONS FOR INCIDENTAL TAKE AUTHORIZATIONS
RELATED TO OIL AND GAS EXPLORATION, INCLUDING SEISMIC SURVEYS,
IN THE CHUKCHI AND BEAUFORT SEAS**

**Anchorage, Alaska
22-26 March 2010**

1. BACKGROUND

On 22-24 March 2010 the National Marine Fisheries Service (Service), working with the Minerals Management Service, sponsored an “Arctic Open Water” meeting in Anchorage, Alaska. The purpose of the meeting (the latest in a series of such meetings) was to review various oil and gas activities, including seismic surveys, site clearance/shallow hazard surveys, and exploratory drilling, with a focus on their potential effects on marine ecosystems in the Chukchi and Beaufort Seas. Much of the meeting focused on analyses of past exploration, monitoring, and research activities, as well as descriptions of proposed 2010 activities by Shell, ConocoPhillips, British Petroleum (BP), and Statoil, as well as ION and TGS, two companies that specialize in seismic surveys. At the time of the meeting, the Service had received six applications for incidental harassment authorizations (IHAs) to take marine mammals incidentally under provisions of the Marine Mammal Protection Act and applicable regulations.

For each of these applications, the Service must make a determination as to whether the proposed activities will have (1) more than a negligible impact on the pertinent protected species or stock, or (2) an unmitigable adverse impact on the availability of such species or stock for subsistence hunting. The Service also must prescribe regulations establishing permissible means of taking and other means of effecting the least practicable adverse impact, as well as monitoring and reporting requirements. The Marine Mammal Protection Act defines “take” to mean “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” In this instance, the Act defines “harassment” to mean “any act of pursuit, torment, or annoyance which—

- (i) has the potential to injure a marine mammal or marine mammal stock in the wild [i.e., Level A harassment]; or
- (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [i.e., Level B harassment].”

The Service requires monitoring for two purposes. The first is to detect when mitigation thresholds have been met and appropriate responses must be instigated (e.g., monitoring that may lead to a shutdown of an activity if a marine mammal enters a safety zone). The second is to allow a post-hoc analysis of the number of animals that may have been taken during the course of an activity. Thus, the former type of monitoring is used to ensure the least practicable impact, whereas the latter is used to estimate post-hoc just what the impact was based on number and types of takes. Monitoring to achieve these two purposes often requires different field techniques or strategies. The remainder

of this report reflects the views of individual panel members, which were similar in many but not all circumstances (as noted), regarding real-time monitoring for purposes of mitigation and the collection of monitoring data for purposes of informing subsequent assessment of impact.

2. PEER-REVIEW PANEL

The regulations pertaining to issuance of incidental take authorizations also require peer review to evaluate proposed monitoring methods. Section 216.108(d) (50 CFR) states:

Where the proposed activity may affect the availability of a species or stock of a marine mammal for taking for subsistence purposes, proposed monitoring plans... must be independently peer-reviewed prior to issuance of an incidental harassment authorization.

To satisfy this peer-review requirement, the Service convened a panel of seven scientists (section 7) with diverse backgrounds but all familiar with marine mammal research and conservation in the Arctic regions of Alaska. On 25-26 March 2010 the panel members reviewed all IHA applications and discussed specific recommendations¹. Panel members did not strive for consensus and different perspectives will be indicated in the remainder of this report by reference to the views of “some” and “others.”

The specific guidance given to the panel was as follows:

Each IHA [incidental harassment authorization] applicant’s monitoring program should document the effects (including acoustic) on marine mammals (e.g., noted reactions of the animals to the activity) and document or estimate the actual level of take as a result of the activity (in this case, either seismic surveys, site clearance/shallow hazard surveys, or exploratory drilling). OPR [the Service’s Office of Protected Resources] is asking you to review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements. Additionally, OPR would like the panel to discuss the following questions [paraphrased] with regards to each monitoring plan:

- Are the applicant’s objectives achievable based on the methods described in the plan?
- Are the applicant’s objectives the most useful for understanding impacts on marine mammals?
- Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?
- What is the best way for an applicant to report their data and results to NMFS?

After discussion of the monitoring plans, the panel will submit a recommendations report to OPR that describes the changes (and reasons for the changes) the panel suggests for the

¹ Meeting minutes are available upon request.

monitoring plans....[T]he report should make clear when a recommendation or comment applies to all monitoring plans versus the instances when a particular recommendation or comment only applies to one applicant's monitoring plan.

The remainder of this document summarizes the major points emanating from the panel's discussions, including those that pertain to all or multiple applications and those that pertain to an individual application.

3. GENERAL RECOMMENDATIONS AND COMMENTS

3.1. Acoustic effects of oil and gas exploration – assessment and mitigation

Much of the panel's deliberation regarding the proposed activities and accompanying mitigation measures focused on the effects of noise on marine life. Perhaps the most important recommendation by the panel members is that the Service begin a transition away from using a single metric of acoustic exposure (i.e., sound pressure level) to estimate the potential effects of anthropogenic sound on marine living resources. Although sound pressure level has been used historically and is relatively simple to apply, the available science increasingly indicates that no single factor is likely to encompass all of the relevant aspects of sound exposure needed to assess, monitor, or mitigate effects. Rather, the effects of anthropogenic sound on marine mammals are determined by the influence of a suite of potentially co-varying physical and biological factors. Important characteristics of sound may include the natural ambient level, the relative difference from ambient noise as a new noise is introduced (the signal-to-noise ratio), the "sensation" level of sound which takes into account both the signal-to-noise ratio and characteristics of receiver hearing capabilities, sound "rise" time (the time required for the sound to reach its peak level) and the relative impulsiveness of the signals, total sound energy received, sound frequency, sound constancy or pattern, and sound duration. Other important physical factors influencing the sound field generated by the industrial activity include the bathymetry, proximity to shore, ocean bottom substrate, and presence of sea ice. Important biological influences may include activity of the animals involved (e.g., feeding, migration, reproduction), their social structure (e.g., aggregations of individuals or presence of mother-calf pairs), their previous individual experience with the sound (i.e., sound novelty, association with predator or prey sounds), and the various other biological stressors affecting them.

Given the above considerations, marine mammals are best understood as living within dynamic acoustic environments that, among other things, vary over time, space, frequency, level, and directionality. The term "spatial-temporal-spectral" variation has been used to indicate the complex and dynamic nature of marine acoustic environments. The term also serves as a reminder that a single sound pressure level or other single descriptive parameter is likely a poor predictor of the effects of introduced anthropogenic sound on marine life. Indeed, science has consistently shown that the single-parameter approach to predicting specific effects of sound exposure is largely untenable and more biologically-realistic ways of estimating impact are needed (e.g., Southall et al. 2007, Clark et al. 2009). That is, further progress in understanding the effects of sound on marine ecosystems will require a more comprehensive approach that recognizes and characterizes the "acoustic scene" or "soundscape" in much the same manner that a full understanding of a terrestrial species requires the study of landscape ecology and the co-varying abiotic and biotic features of its surroundings.

Panel members concurred that the Service should be constantly striving toward a more comprehensive ecosystem-based approach in predicting the nature and severity of environmental risks from industrial activities, including oil and gas development. Many of the tools needed to develop more realistic impact predictions are available now or will be available in the foreseeable future. At the same time, panel members recognized that the Service may not be able to implement such an approach for mitigation purposes on a real-time basis. For real-time mitigation, the Service may have to continue relying on simple measures that can be readily applied in the field. However, these simple measures should be based on the more comprehensive ecosystem assessments and they should be precautionary to compensate for remaining uncertainty in potential effects. (For example, the Service could apply different levels of precaution by adjusting risk factors as it does in the calculation of potential biological removal levels for stock assessment purposes.) Furthermore, the Service should tailor those simple measures to the various activities to be conducted (e.g., seismic studies versus exploratory drilling), the environments in which they will be conducted (e.g., deep pelagic versus shallow coastal), and the relevant biological circumstances (e.g., species present, migratory versus reproductive seasons). The Service has started to move in this direction by applying different sound exposure thresholds for intermittent versus continuous noise and for different groups of animals.

Implementing this dual approach of comprehensive assessment and simple real-time mitigation rules will require at least three fundamental changes to the status quo: 1) better planning and coordination of research on the biological and physical environment, 2) more research into human influences on the biophysical environment, and 3) the provision of additional resources for such research. The conceptual basis for moving in this direction is clear and the approach is necessary to provide managers with the information necessary to ensure protection of the marine environment during the course of various industrial activities.

3.2. Aerial surveys

Aerial surveys are a useful tool for collecting real-time information on marine mammal distribution and movements, including responses to sound sources. In the Arctic, in particular, they involve significant costs and a degree of risk, which must be weighed against the costs and risks of other monitoring methods. Shell Oil indicated that it will use aerial surveys in the Beaufort Sea, but not in the Chukchi Sea where proposed activities will occur farther offshore and therefore entail more risk. Panel members recognized the additional risk, but some asserted that such surveys can be conducted safely, such as those being flown by the Service in offshore areas of the Chukchi Sea. For that reason, the panel members concluded that aerial surveys should not be categorically excluded as a research and monitoring tool in the Chukchi Sea. If aerial surveys are not used, then additional monitoring tools (e.g., passive acoustic systems, unmanned aircraft systems) must be further developed, field tested, and implemented to provide the type of information gained from aerial surveys (e.g., species-specific estimates of the number of individuals taken by a particular activity). Without some aerial survey capacity, mitigating impacts in areas beyond the view of vessel-based marine mammal observers (i.e., the visual far-field) will be essentially impossible.

Panel members also concluded that the industry could use the same aircraft for detecting mitigation thresholds (e.g., identifying aggregations or mothers with calves within safety radii) and for estimating the total number of takes using conventional line-transect analysis, but only if analytical methods are adapted accordingly. Monitoring for the former purpose requires that the aircraft be able to break away from pre-determined transects to circle sighted animals and confirm such information as species, number of animals, and group composition. Such breaks in flight pattern are

consistent with “closing mode” line transect surveys, and “[t]here is no intrinsic reason why the observer should stay on the line. If more accurate data can be gathered by moving off the line, then field methods should allow this” (Buckland et al. 2001). However, field protocols for closing mode surveys may lead to biased results if conventional line-transect methods are used to analyze the data. One alternative would be to use adaptive line transect sampling methods, which permit additional survey effort in areas of high animal density (Palka and Pollard 1999). Closing mode surveys have the potential disadvantage of taking longer to complete, but if sufficient survey effort can be achieved and analytical methods are adapted accordingly, then closing mode line transect surveys are considered consistent with best practices for the type of broad scale surveys that might be used to estimate total take.

That being said, panel members questioned the design of some aerial surveys proposed in the IHA applications to detect the effects of certain activities (e.g., seismic surveys, exploratory drilling). The frequently used approach of equally spaced and widely dispersed transect lines centered over offshore operations is not appropriate when the primary concern is the response of animals in close proximity to the activity. In such cases, those responsible for monitoring should adjust their survey design (e.g., stratify levels of effort) to meet the monitoring goals, with anticipated level of survey effort determined by pre-survey analyses of statistical power for detecting responses.

Finally, the technology now available for conducting aerial surveys is vastly improved over that used in the recent past. The new technology makes it possible to enter and visualize survey results in real-time, and to combine that information with real-time data from acoustic buoys. All such data provides useful information for those conducting surveys and those responsible for ensuring mitigation thresholds are effectively monitored. To take advantage of such information and maximize the value of aerial surveys for mitigation, survey data should be entered into a computer on board the aircraft in a way that enables immediate geospatial analysis by the survey team and evaluation by the Service. If necessary, the information could then be used to implement mitigation measures for the “activity footprint” of the larger operation.

3.3. Marine mammal observers

Qualified marine mammal observers (MMOs) are key elements of successful monitoring and mitigation efforts and, as such, their training, competence, consistency, and independence are important considerations in any evaluation of their utility. With regard to MMOs, panel members recommended—

- Observers should be trained using visual aids (e.g., videos, photos), to help them identify the species that they are likely to encounter in the conditions under which the animals will likely be seen.
- Observers should understand the importance of classifying marine mammals as “unknown” or “unidentified” if they cannot identify the animals to species with confidence. In those cases, they should note any information that might aid in the identification of the marine mammal sighted. For example, for an unidentified mysticete whale, the observers should record whether the animal had a dorsal fin.
- Observers should attempt to maximize the time spent looking at the water and guarding the safety radii. They should avoid the tendency to spend too much time evaluating animal

behavior or entering data on forms, both of which detract from their primary purpose of monitoring the safety zone.

- “Big eye” binoculars (e.g., 25 x 150 power) should be used from high perches on large, stable platforms. They are most useful for monitoring impact zones that extend beyond the effective line of sight. With two or three observers on watch, the use of big eyes should be paired with searching by naked eye, the latter allowing visual coverage of nearby areas to detect marine mammals. When a single observer is on duty, the observer should follow a regular schedule of shifting between searching by naked-eye, low-power binoculars, and big-eye binoculars based on the activity, the environmental conditions, and the marine mammals of concern.
- Observers should use the best possible positions for observing (e.g., outside and as high on the vessel as possible), taking into account weather and other working conditions.
- Sightings should be entered and archived in a way that enables immediate geospatial depiction to facilitate operational awareness and analysis of risks to marine mammals. Real-time monitoring is especially important in areas of seasonal migration or influx of marine mammals. Various software packages for real-time data entry, mapping, and analysis are available for this purpose.
- Observer teams should include Alaska Natives and all observers should be trained together. Whenever possible, new observers should be paired with experienced observers to avoid situations where lack of experience impairs the quality of observations.
- Following the model used to monitor commercial fisheries, observers should be managed by an independent organization that trains and assigns them to observe various operations. Training and on-site performance should be evaluated regularly. At the end of every assignment, the organization should debrief the observers, collect their data, conduct basic analyses with the data, and prepare the data and results for dissemination to interested parties.
- The Service should provide instructions regarding the estimation of the number of takes during the course of an activity (e.g., seismic survey). The guidance should be sufficiently specific to ensure that take estimates are accurate and include realistic estimates of precision and bias.

3.4. Visual near-field monitoring

For the purposes of this report, panel members used the term “visual near-field monitoring” to refer to visual monitoring of areas within the line of sight, generally the line of sight of MMOs on-board vessels. Visual searching of such areas is one of the most common forms of monitoring, both for mitigation purposes and for estimating the total number of animals taken during an activity. For example, one of the main purposes of MMOs is to implement mitigation measures, especially those intended to avoid the risk of hearing impairment, either temporary or permanent, if marine mammals are too close to a sound source.

Although such monitoring pertains to areas “within the line of sight,” it is still subject to limitations and must be corrected for availability and perception biases. For example, visual observers can

detect marine mammals only when they are at the surface (i.e., available for sighting). Furthermore, observers may not detect the marine mammals even when they are at the surface and in view (i.e., they are not perceived). Both of these biases (availability and perception) can vary substantially with environmental conditions. Without suitable corrections, surface observations are inadequate for detecting or estimating the total number of animals that are encountered during a survey.

At least three approaches have been used to improve visual near-field monitoring. The first involves various technologies such as night-vision binoculars and forward-looking infrared devices. Although these technologies may provide a slight increase in detection capability under ideal conditions, the Service should not consider these technologies reliable until they have been tested under appropriate conditions and their efficacy has been evaluated.

A second approach is to “sample” the visual near-field area periodically and then extrapolate to the full survey period. However, this approach also has severe shortcomings. First, visual sampling is extremely difficult at night, but a strategy that avoids any type of nighttime sampling is likely misleading because it disregards the temporal variability inherent in marine mammal behavior. Second, intermittent sampling may be inadequate for detecting events that are relatively rare but may be significant. For these reasons, intermittent sampling only when sampling conditions are optimal may result in biased results and conclusions regarding the effects of industry activities.

With such concerns in mind, the panel discussed a third approach, which is the use of towed passive acoustics arrays to collect information on the occurrence of animals around an observation vessel. Based on those discussions, several panel members recommended that the Service encourage the industry to consider the use of seismic streamers to collect bioacoustic information. At present, this kind of monitoring has not been successfully used for determining the exact locations of animals relative to safety zones, but further development of passive acoustic technology may facilitate such uses in the foreseeable future.

Finally, visual near-field monitoring, coupled with other monitoring approaches (e.g., passive acoustic monitoring) provides a mechanism to evaluate one of the most common industry assumptions pertaining to mitigation—that animals near a sound source will move away as received sound levels increase or are “ramped up.” Although ramp-up procedures are commonly included among industry mitigation measures, scientists disagree as to their utility. Collecting the data to test this hypothesis is certainly feasible, but the peer-reviewed scientific literature contains relatively few analyses of such data. To help evaluate the utility of ramp-up procedures, the Service should require observers to record, analyze, and report their observations during any ramp-up period. The Service also should support specific studies using multiple types of monitoring (visual, acoustic, tagging) to evaluate how marine mammals respond to increasing received sound levels. Such information should provide useful evidence as to whether ramp-up procedures are an effective form of mitigation.

3.5. Visual far-field monitoring

For the purposes of this report, panel members used the term “visual far-field monitoring” to refer to the areas beyond line of sight, generally the line of sight of MMOs on-board vessels. Scientists that conduct visual surveys for marine mammals, whether from vessel or aircraft, have long recognized that the probability of detection declines with distance from the survey platform. Monitoring of the far-field is important if animals beyond line of sight are exposed to sound levels that may lead to significant effects, such as masking or changes in important behaviors. Under

certain circumstances (e.g., darkness, rough sea state, inclement weather), the line-of-sight distance also may be reduced to the point that undetected animals could be at risk of hearing impairment, either temporary or permanent.

With that concern in mind, the panel considered three recommendations. The first is that observers carefully document visibility during observation periods so that total estimates of take can be corrected accordingly. The second is that aerial surveys be used whenever possible to supplement the monitoring effort in areas not visible to observers on vessels (section 3.2). The third is that alternative methods be developed to improve monitoring of the visual far-field. In this regard, the most promising method is passive acoustic monitoring. Active acoustic monitoring also may be useful under certain circumstances (i.e., when the risk of injury to animals is high), but is itself a source of additional noise and is therefore a less desirable means of monitoring.

Under ideal conditions, comprehensive monitoring of a large-scale seismic operation would require two to three aircraft, distributed and localized passive acoustic systems to include both real-time and archival units, and ship-based surveys with visual observers, towed passive acoustic monitoring arrays, and active acoustic monitoring systems. Ship surveys could be used in several configurations, including in front of the seismic vessel, adjacent to the airgun array, or behind the array. Tagging of animals expected to be in the area where the survey is planned also may provide valuable information on the location of potentially affected animals and their behavioral responses to industrial activities. Although the panel recognized that such comprehensive monitoring might be difficult and expensive, such an effort (or set of efforts) reflects the complex nature of the challenge of conducting reliable, comprehensive monitoring for seismic or other relatively-intense industrial operations that ensonify large areas of ocean. Examples of far-field monitoring that represent improvements in assessment methods include the BP/Northstar acoustics monitoring project (e.g., Blackwell et al. 2004, 2007; Blackwell and Greene 2006), the monitoring of seismic studies in the Beaufort Sea using aerial surveys in 1992 and 1993 (Schick and Urban 2000) and between 1997 to 1999 (Richardson et al. 1999), and offshore monitoring over the Chukchi Sea using aerial surveys from 1989 to 1991 (Moore and Clarke 1993).

Passive acoustic monitoring provides a valuable tool for far-field monitoring. Despite certain limitations (e.g., it is less useful for animals that rarely vocalize, and it is difficult to extrapolate to population density or abundance), detection rates using passive acoustic methods have far exceeded detection rates based on visual observation in some cases (e.g., Blackwell et al. 2007; Clark et al. *in press*). Overall, passive acoustic monitoring has provided a temporal record of the autumn bowhead whale migration that coincides with that derived from visual sampling (e.g., Moore et al. 1989). In any given set of circumstances, passive acoustic monitoring will require verification using a variety of methods (e.g., visual observers, acoustic and other tags). Nevertheless, it offers the considerable advantage of detecting animals below the surface (which is a substantial impediment to vessel- and aerial-based visual observations), and detecting animals even when visual conditions are poor (i.e., at night or during periods of rough sea state or inclement weather).

3.6. Baseline biological and environmental information

The IHA provisions of the Marine Mammal Protection Act reflect two main concerns, those being that the proposed activities might cause more than negligible impacts on the species or stocks affected, or they might cause unmitigable adverse impacts on the availability of marine mammal species or stocks for subsistence purposes. Determining when an activity has had or will have such effects requires some understanding of natural conditions as a basis for comparison to conditions

that exist during the proposed activities. Panel members considered the collection of baseline information critical for making such comparisons. They noted, however, that the biological information needed to make comparisons often is not available because the necessary background studies have not been conducted. They also noted that collecting such information requires a considerable investment because population status and environmental conditions vary seasonally and inter-annually, and because the Arctic is experiencing directional changes resulting from climate change (e.g., sea ice retreat).

Panel members also noted that information collected on the species or stocks of concern during operations, or during short breaks in operations, cannot be assumed indicative of control or natural conditions without some further form of verification. An animal's behavior during a break in a seismic study or exploratory drilling may not be indicative of natural behavior if the animal's response to previous activity persists into or through the break period or the animal is responding just to the presence of a vessel. For example, if a whale has abandoned disturbed habitat and the source of disturbance has been halted temporarily, the whale's behavior during that halt cannot be assumed to be "natural" unless the whale returns to the habitat where it was initially disturbed. Thus, the notion that industry can collect baseline information during periodic interruptions of its noise-producing activities requires assumptions that have not been tested and likely are not true. It is possible to collect baseline information on species and stocks that may be affected by these operations by conducting studies prior to the initiation of industrial activities or once sufficient time has elapsed after the complete cessation of activities. However, management and research agencies have not yet been willing to commit the necessary resources for the required assessment studies. The panel members therefore recommend that the National Marine Fisheries Service and the Minerals Management Service work with the industry to develop more rigorous, longer-term research methods for collecting baseline information before activities are initiated.

3.7. Comprehensive ecosystem assessments and cumulative impacts

Panel members discussed the need for better analysis of the potentially interacting influences of multiple oil and gas activities co-occurring in time and space and, more broadly, the influences of those activities in combination with ecosystem alterations from climate change (e.g., Moore and Laidre 2006) and coincident with other human activities that are increasing in the Alaskan Arctic (e.g., commercial shipping, fishing, coastal development, military activities, marine recreational activities, scientific research). The concept of "cumulative effects" is recognized in the legislation governing management of marine environments (e.g., National Environmental Policy Act, Endangered Species Act). However, assessments to date are generally inadequate for the purpose of understanding the full effects of human activities on the marine environment. Panel members emphasized the need for more "comprehensive ecosystem assessments" and they used that term to refer to the interaction and collective impact of all human activities and environmental phenomena to which an individual or population is exposed in a well-defined spatial region during a specific period of time. A presentation by R. Day at the Arctic Open Water meeting served as an excellent reminder of the importance of collecting and integrating information on the physical and biological environment. The real challenge appears to be finding ways to integrate and synthesize large amounts of data from multiple sources and/or activities to provide a clearer understanding of the combined influence of multiple human activities on marine life and habitat.

The panel members identified a number of basic tasks that the industry, federal agencies, Alaska Native organizations, conservation organizations, and other interested parties could undertake to promote more comprehensive ecosystem assessments. These include, but are not limited to—

- Emphasize multidisciplinary studies that integrate physical, chemical, and biological measurements to assess human influences throughout marine ecosystems.
- Incorporate data collected using all reliable methods and from all pertinent sources, including broad ecosystem studies, more narrowly targeted research, and other activities (e.g., commercial, military) that may have ecosystem effects. These data streams should be integrated spatially and temporally to provide a more comprehensive assessment of the ecosystem.
- Archive all collected data in standardized databases for sharing among scientific disciplines.
- Maintain and make available detailed logs of all activities in the Beaufort and Chukchi area (e.g., oil and gas, shipping, fishing, scientific cruises, use of ice breakers).
- Develop and implement policies and means for sharing data and ensuring that the research community has access to the information needed to conduct more integrated, comprehensive ecosystem assessments.
- Develop better and more timely methods for integrating and displaying combined datasets spatially and temporally.
- Include data on location and timing of subsistence hunts.
- Monitor developments in other regions or scientific disciplines that may reveal better ways of integrating and analyzing multiple datasets or conducting cumulative effects or comprehensive ecosystem analyses.
- Include pertinent biological information on the status, ecology, and behavior of the potentially affected species or stocks (e.g., contaminant load, body condition, reproduction, distribution, and relative abundance).

3.8. Duplication of seismic survey effort

Panel members briefly discussed the increasing number of geophysical surveys in the Beaufort and Chukchi Seas and whether the essential seismic information could be collected by a coordinated survey effort rather than by independent and sometimes duplicative efforts. Although the risks to marine mammals and marine ecosystems are still somewhat poorly described, unnecessarily duplicative surveys must increase those risks. The fact that some companies are willing to invest in surveys of the region so that later they might sell the resulting data indicates that the information coming from a single survey could well meet the needs of multiple companies. If that is the case, then allowing multiple, duplicative surveys in an area does not appear to meet the standard of having the least practical adverse effect, as required by the Marine Mammal Protection Act. Some members of the panel recommend the Service work with the Minerals Management Service and other relevant stakeholders to promote and possibly require data sharing to reduce or eliminate duplicative seismic surveys in the Alaskan Arctic.

3.9. Whale behavior

On several occasions participants in the Arctic Open Water meeting used the term “skittish” to describe the behavior of whales wary of disturbance. One participant in the meeting raised a question as to the term’s specific meaning. Panel members discussed this matter briefly. In essence, skittishness simply means that the animals appear to have become more sensitive to disturbance, responding more quickly and at greater distance from a disturbance source. This change in behavior may mean that the whales are more likely to abandon preferred habitat (e.g., used for reproduction, feeding, migration), with conceivable impacts on survival and reproduction. For Alaska Natives who depend on whales for subsistence, this heightened sensitivity often means that the whales are more difficult to approach and are more dangerous when they are approached.

Such heightened sensitivity of animals to factors that pose threats to them is a well documented and accepted observation in wildlife science. However, determining the cause of such skittishness is another matter. It may reflect the condition of the animals or their physiological state, as well as past experiences including interactions with oil and gas operations, subsistence hunters, vessel traffic (e.g., commercial, fishing), and other human activities in the Arctic. Because multiple factors may contribute to such behavior, studies to characterize the sources for any particular population or species (e.g., bowhead whales, beluga whales) would require a complex research design and considerable resources to gather the required observations.

4. RECOMMENDATIONS AND COMMENTS ON SPECIFIC APPLICATIONS

4.1 ION SEISMIC SURVEY

4.1.1. Each IHA applicant’s monitoring program should document the effects (including acoustic) on marine mammals and document or estimate the actual level of take as a result of the activity. Does the monitoring plan meet this goal?

ION’s monitoring plan provides limited specific information. The plan would lead to documentation of responses by some animals around the survey vessel, thereby requiring extrapolation to estimate total take. However, ION’s strategy also includes an ice-breaking vessel, and the potential effects of that vessel, including the in-air and underwater noise it creates, are poorly understood. The combination of two vessels could have undesirable effects on pinnipeds, in particular: an animal might be frightened off the ice near the vessels and enter the water within a safety zone, potentially exposing it to relatively intense sound levels that could have additional impacts. Furthermore, ION has planned its survey late in the autumn (October to December). During this time, observers will have a very difficult time monitoring marine mammals because of forming sea ice, darkness, and inclement weather. Finally, the plan did not provide sufficient information on how the numerous biases evident in the existing monitoring plan would be quantified. At the end of its deliberation on ION’s plan, panel members did not have confidence that their mitigation and monitoring program would provide a reliable estimate of take.

4.1.2. Review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements

For the reasons described above, members of the panel lacked confidence that the monitoring activities and methods were sufficient to meet the objectives.

4.1.3 Are the applicant's objectives achievable based on the methods described in the plan?

The objectives (page 54) can be achieved only partially with the monitoring plan.

Objective 1 – *Ensure that disturbances to marine mammals and subsistence hunts are minimized and all permit stipulations are followed.* This objective can be achieved in part because the survey has been timed to avoid the period when most of the hunting occurs. However, in mid to late October and November substantial numbers of bowheads likely still will be in the Beaufort Sea including near Barrow, which is an important feeding area (Moore et al. 2010, Monnett and Treacy 2005, Lowry et al. 2004). Similarly, surveying from offshore to onshore will help minimize impacts to whales and the subsistence hunt, but will not eliminate such impacts entirely. The distribution of the whales in November is poorly known, although some tagging and acoustic data have been collected.

Objective 2 – *Document effects of the proposed survey on marine mammals.* This objective can be achieved partially, but only for animals that are visible to the MMOs. The monitoring method is entirely dependent on visual monitoring by the MMOs, which is known to be limited by a number of factors that lead to poor visibility (e.g., sea ice, minimal number of daylight hours). The operator did not include plans for acoustic monitoring.

Objective 3 – *Collect baseline data.* This objective cannot be achieved. ION proposed that baseline information can be collected when the seismic airgun is not operating. However, the company also indicated that the full airgun array would be off for only a few hours during the course of the entire survey (a period of several months). Furthermore, the ice-breaker might still be operating when the airgun array is turned off, and such conditions are not representative of a baseline environment.

Finally, some panel members expressed concerns about survey noise from the east causing “skittish” behavior in whales farther west. Such behavior might impact the bowhead hunt at Barrow in October.

4.1.4. Are the applicant's objectives the most useful for understanding impacts on marine mammals?

Yes, the objectives are useful and appropriate.

4.1.5. Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?

Yes, ION should—

- Coordinate with other companies (e.g., Shell) that are supporting overwintering buoy studies.
- Consider augmenting existing nearshore acoustic arrays with offshore bottom-mounted acoustic arrays (or single recorders) that would extend recording capability through a larger portion of the area of concern. (Sonobuoys will be difficult to use in heavy ice and may or may not be useful for recording sounds from seismic surveys and marine mammal calls. Bottom-mounted recorders may be more useful for those purposes.)
- Coordinate with other companies or agencies to conduct tagging studies using satellite-linked telemetry. These studies also should integrate information on the amount of sea ice in the

region, and should be analyzed using available programs for describing the distribution and movements of the tagged whales (e.g., kernel analysis).

- Verify calculated safety radii to account for possible sound channels in deeper waters.
- Collect baseline data (with emphasis on acoustic methods) before seismic surveys begin.

4.1.6. What is the best way for an applicant to report their data and results to the Service?

ION should—

- Summarize observation effort and extant visual conditions, the number of animals seen by species, the location and time of each sighting, position relative to the survey vessel, the vessel's activity (i.e., airguns operating or not) at the time, each animal's response, and any adjustments made to operating procedures. It also should provide all spatial data on charts (always including vessel location).
- Make all data (including effort and conditions) available in the report or (preferably) electronically for integration with data from other companies.
- Estimate and report (1) statistical power for all methods intended to detect adverse impacts and (2) uncertainty in all reported estimates (e.g., number of takes).
- Integrate all observer data with information from tagging and acoustic studies to provide a more comprehensive description of the acoustic environment during its survey.
- Accommodate specific requests for raw data, including tracks of all vessels associated with the operation and activity logs documenting when and what types of sounds are introduced into the environment by the operation.

4.2. SHELL DRILLING IN CAMDEN BAY

4.2.1. Each IHA applicant's monitoring program should document the effects (including acoustic) on marine mammals and document or estimate the actual level of take as a result of the activity. Does the monitoring plan meet this goal?

The monitoring plan includes vessel-based MMOs, passive acoustics, and an aerial survey. The plan is likely to meet the goals of documenting effects and providing a basis for estimating the number of takes if Shell monitors the full "footprint" of the operation including the drill rig and associated vessels. If the activity footprint is larger than the area monitored, the monitoring plan will not meet these goals.

The aerial surveys will provide some information on bowhead whale and pinniped distribution. The surveys will not provide species-specific information on seals (including effects of the drilling operation on them), although vessel-based MMOs should be able to do so to some extent (section 3.3).

Panel members discussed two significant concerns regarding the aerial surveys. The first was that a single survey can be used to detect mitigation thresholds and to monitor for the purpose of estimating total effects only if analyses of the data are modified accordingly (section 3.2). Failure to incorporate such modifications could result in highly biased results. The reason for this is that monitoring for mitigation purposes may require that the aircraft break transect to investigate animals sighted and get information on species, number, and composition (e.g., cow-calf pairs). In addition, the time required to make such diversions could prevent a single aircraft from completing its survey of the far-field region as needed to evaluate more long-range effects.

The second concern relates to the design of the survey around the drilling platform. Panel members considered a sampling plan based upon widely spaced transects over a relatively large area to be insufficient to detect deflections in the 5-10 km range. With that concern in mind, panel members recommend that the aerial survey be redesigned to include some level of stratification that would focus more effort in the area where effects are most likely to occur. Some effort is still needed at locations farther away from the drilling operation to document the extent of deflection. Data from previous years should be used to determine the amount of effort required to detect an effect with the desired level of certainty (i.e., a power analysis).

Finally, panel members did not have sufficient information to determine the potential effects of various discharges (e.g., drilling wastes, warm water) around drilling sites and the potential consequences for bowhead whales and other marine mammals in the area.

4.2.2. Review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements

See response to question 1.

4.2.3. Are the applicant's objectives achievable based on the methods described in the plan?

The objectives can be found on pages 2 (vessel-based), 8 (aerial), and 15 (acoustics) of the monitoring plan.

Monitoring in accordance with the plan should provide a good basis for mitigating potential effects as well as for estimating the total number of animals taken. In addition, the plan will result in collection of some baseline information because Shell will be conducting aerial and vessel-based surveys before drilling starts. That baseline information can be supplemented by combining it with data collected in the area during previous years with low levels of industrial activity.

Aerial surveys likely will provide useful information on the presence of marine mammals near the operation if the survey design is modified to focus more effort near the drill ship. The combination of vessel-based MMOs, passive acoustic monitoring, and aerial surveys also should provide a reasonable basis for characterizing the number, distribution, movement, and some behaviors of marine mammals near the area of operation, although each of these methods is subject to limitations (e.g., the aerial survey will not provide species-specific information for pinnipeds). As noted above, the design for the aerial transects should be modified to increase the likelihood of detecting deflections on the order of 5-10 km distance from the drill ship. With such adjustments, the information collected from all these sources should provide a reasonable basis for estimating short-term responses to, and possibly impacts from, this single drilling operation.

Panel members did not have enough information to evaluate Shell's methods for assessing availability of bowhead whales to Inupiat hunters. That is, the present monitoring plan does not provide enough information to determine whether drilling operations will affect either the distribution and number of whales in the hunting area or their behavior. The primary concern with regard to changes in behavior is that the whales may become more "skittish" or wary of human activities, may therefore shift their distribution offshore, may be more difficult to approach, and may be more dangerous when approached. The monitoring plan does not provide an adequate explanation for how such changes in behavior will be evaluated.

The acoustic objectives (page 15) can be achieved with the proposed acoustic monitoring strategy.

4.2.4. Are the applicant's objectives the most useful for understanding impacts on marine mammals?

Panel members felt that the objective "*collect and report data on the distribution, numbers, movement and behavior of marine mammals near the drilling operation, with special emphasis on migrating bowhead whales*" may discount the need to monitor other marine mammals as well. Understanding effects on bowhead whales, whether migrating, feeding, resting, or engaged in any other activity, is important, but other marine mammals also occur in the area, and it is also important to assess potential effects on them and effects on their availability for subsistence purposes.

4.2.5. Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?

See above comments regarding simultaneous use of aerial surveys for mitigation and monitoring, the need for stratifying the aerial survey plan to increase coverage closer to the operation where takes are most likely to occur, and the need to compare available datasets (e.g., visual, acoustic) and integrate all available information from this activity and others in the area into a comprehensive ecosystem assessment.

4.2.6. What is the best way for an applicant to report their data and results to NMFS?

Shell should—

- Summarize observation effort and conditions, the number of animals seen by species, the location and time of each sighting, position relative to the survey vessel, drill vessel and support vessels, the company's activity at the time, each animal's response, and any adjustments made to operating procedures.
- Provide all spatial data electronically and on hard copy charts (always including vessel location).
- Make all data available in the report or (preferably) electronically for integration with data from other companies.
- Estimate and report (1) statistical power for all methods intended to detect adverse impacts and (2) uncertainty in all reported estimates (e.g., number of takes).
- Integrate all observer data with information from tagging and acoustic studies to provide a more comprehensive description of the acoustic environment during its survey.

- Accommodate specific requests for raw data, including tracks of all vessels and aircraft associated with the operation and activity logs documenting when and what types of sounds are introduced into the environment by the operation.

4.3. SHELL DRILLING IN THE CHUKCHI SEA

4.3.1. Each IHA applicant's monitoring program should document the effects (including acoustic) on marine mammals and document or estimate the actual level of take as a result of the activity. Does the monitoring plan meet this goal?

The plan meets this goal in part only. Shell will use vessel-based MMOs and either bottom-founded hydrophones or a system of radio spar buoys to monitor near the drill site. The utility of MMOs depends largely on visibility, and all the standard concerns apply with regard to periods of low visibility (e.g., darkness, rough sea state, inclement weather). The use of the acoustic monitoring will help compensate for poor visibility, but the accuracy of acoustic data for the purpose of localizing animals declines beyond approximately 10 km from the hydrophone array, and passive acoustic methods cannot be used to monitor individuals that do not vocalize. If the drilling and support activities cause disturbance beyond this limit, or if vocalization rates are unknown or variable, then the monitoring plan will not be adequate. As a consequence, the company's ability to estimate take also will be compromised.

The panel discussed the concern of Alaska Natives that the activity may result in a change in offshore-to-onshore movement patterns for beluga whales, thereby altering their availability to subsistence hunters along the coastal region of northwestern Alaska during June, July and August. Some panel members anticipate that drilling will have a limited impact on the coastal distribution of beluga whales unless the whales move through the drilling area before approaching the coast. Shell does not plan to conduct aerial surveys near the drilling platform to provide a real-time basis for assessing such movements or mitigating drilling effects. The company does plan to conduct aerial surveys along the coast to examine the distribution of beluga whales and their availability to subsistence hunters. However, panel members were skeptical that the sawtooth design of the surveys will satisfy that purpose as it will not cover offshore areas where belugas are known to occur and it may not be sufficient to characterize beluga whale distribution in coastal waters. With that concern in mind, panel members suggested that Shell consult with subsistence hunters in that region to determine where and when their survey efforts should be focused.

Finally, panel members did not have sufficient information to determine the potential effects of various discharges (e.g., drilling wastes, warm water) around drilling sites and the potential consequences for bowhead whales and other marine mammals in the area.

4.3.2. Review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements

See the response to question 1 above.

4.3.3. Are the applicant's objectives achievable based on the methods described in the plan?

Page 2 of the application lists the objectives for vessel-based monitoring by MMOs.

Objective 1 – *The basis for real-time mitigation, if necessary.* This objective should be met when visibility is good unless significant behavioral effects occur outside the safety radii. The sound levels from drilling are expected to remain below the thresholds of temporary and permanent hearing impairment, although the drilling should be monitored acoustically to confirm that this is the case. Support vessels also will introduce considerable sound levels into the water, thus expanding the area (footprint) in which impacts could occur. Effects of primary concern will be behavioral (e.g., changes in migratory pattern, disruption of mother-calf pairs). Acoustic monitoring should provide a basis for characterizing the sounds from the drilling and support activities, but will not provide a useful basis for real-time mitigation of behavioral effects because of the time needed for data analysis.

Objective 2 – *Estimate the number of takes.* This objective may or may not be achievable depending on visibility, the spatial distribution and variability of the noise field (footprint) from all activities, and resulting behavioral effects. Shell should be able to monitor some effects within 10 km using vessel-based MMOs and a passive acoustic array. If all effects are limited to that area, then monitoring should be sufficient to provide an estimate of the total number of takes. If visibility is poor or effects occur outside that limit, then the estimate may be biased, depending on whether and how Shell adjusts its analysis to compensate for these shortcomings.

Objectives 3, 4 – *Data on the occurrence, distribution, etc., of marine mammals; information to compare the distances, distributions, behavior, and movements with and without drilling.* Panel members expect that these objectives can be achieved only partially; the results will be limited to what the MMOs can see. Shell will be able to collect some baseline data if vessel-based surveys are conducted before drilling starts and the vessels and their sounds do not impact marine mammals.

Page 8 of the monitoring and mitigation plan lists the objectives for acoustic monitoring.

Objective 1 – *Quantify the absolute sound levels and monitor variation with time, etc.* This objective can be achieved with acoustic monitoring.

Objective 2 – *Measure the sound levels produced by vessels operating in support of the drilling operation.* This objective also can be achieved with acoustic monitoring. The planned acoustic monitoring should provide good information on the sounds at the drill site.

Shell has collected acoustic baseline data in previous years. Presumably, those data will be representative of the year they were collected. With regard to the proposed exploratory drilling, Shell will be able to collect additional baseline data on acoustic conditions only if the company monitors the area for some period prior to the start of drilling operations.

4.3.4. Are the applicant's objectives the most useful for understanding impacts on marine mammals?

Some panel members disagreed with Shell's decision to categorically exclude aerial surveys for monitoring. As described earlier (section 3.2), aerial surveys do entail some degree of risk, but that risk can be managed and minimized. Indeed, the Service, with support from the Minerals Management Service, conducts aerial surveys in the area of concern by careful management of the associated risk.

Acoustic monitoring at this site should provide a rich and useful database, although those data will not compensate fully for the data that could be collected using aerial surveys.

4.3.5. Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?

Shell should review the results of vessel-based and acoustic surveys at the Burger site to learn what it can about baseline information on the occurrence of marine mammals.

Some panel members thought that Shell should make better use of support helicopters to collect visual data near the drill site if Shell is not going to fly fixed-wing aerial surveys. Two options would be to (1) conduct aerial surveys near the drill site using the helicopter from the drill ship or a nearby support vessel, and (2) use transits to and from land to the drill site to collect pertinent information on marine mammal occurrence in the area. At a minimum, the helicopter could conduct dedicated short surveys around the drill vessel before returning to shore. The panel would like to see a cost/benefit analysis of this kind of approach. Absent the use of fixed-wing or helicopter surveys, Shell should continue to pursue the use, and investigate the efficacy, of unmanned aircraft technology for monitoring and mitigation purposes near the drill site.

Shell should maintain and make available detailed logs for all aspects of its program, including activities on the drill ship and all support activities. It should integrate this information with data from acoustic and MMO monitoring and environmental studies to provide a comprehensive assessment of potential effects. To that end, Shell should be open to sharing information and coordinating with any other company that decides to work in the same area to provide a basis for comprehensively assessing the cumulative effects of multiple operations.

Shell's objective 1 on page 8 (*quantification and measuring of sound levels*) is not sufficient inasmuch as simply monitoring sound levels does not provide adequate characterization of the soundscape (see section 3.1). In this regard, Shell should collect, retain, and analyze sound and other data for all aspects of its program to allow analysts to create a more comprehensive characterization of the disturbance caused by exploratory drilling and the resulting potential to take marine mammals.

With regard to potential effects on beluga whales, Shell should conduct its nearshore aerial surveys, but should consult with subsistence hunters in the area to focus the survey effort and initiate the surveys by ~20 June to provide baseline information before drilling commences.

4.3.6. What is the best way for an applicant to report their data and results to NMFS?

Shell should—

- Summarize observation effort and conditions, the number of animals seen by species, the location and time of each sighting, position relative to the survey, drilling, and support vessels, the company's activity at the time, each animal's response, and any adjustments made to operating procedures. Provide all spatial data on charts (always including vessel location).
- Make all data available in the report or (preferably) electronically for integration with data from other companies.
- Estimate and report (1) statistical power for all methods intended to detect adverse impacts and (2) uncertainty in all reported estimates (e.g., number of takes).

- Integrate all observer data with information from tagging and acoustic studies to provide a more comprehensive description of the acoustic environment during its survey.
- Accommodate specific requests for raw data, including tracks of all vessels and aircraft associated with the operation and activity logs documenting when and what types of sounds are introduced into the environment by the operation.

4.4. SHELL MARINE SEISMIC IN THE BEAUFORT AND CHUKCHI SEAS

4.4.1. Each IHA applicant’s monitoring program should document the effects (including acoustic) on marine mammals and document or estimate the actual level of take as a result of the activity. Does the monitoring plan meet this goal?

The monitoring plan meets the goal for the airgun array, but not for the other sources of sound used during the various operations. Taken together, these activities will create a complex sound field with potential effects beyond those that the applicant proposes to monitor. Although it is reasonable to focus the monitoring program on the most intense sound sources, other noises from these operations may be more significant for certain species because of their differential hearing capabilities and differences in the ambient background noise. With that in mind, each major component of the seismic survey should be measured and evaluated. In addition, the plan does not clarify whether ice seals disturbed by helicopter flights will be included in the take estimates. Similarly, the acoustic “footprint” of the autonomous underwater vehicle was not described and may not be known.

Aerial surveys combined with the acoustic monitoring plan will be helpful to understand the effects of shallow hazard surveys in the Beaufort.

4.4.2. Review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements

See response to question 1.

4.4.3. Are the applicant’s objectives achievable based on the methods described in the plan?

Vessel-based survey objectives (page 2) can be partially achieved with the monitoring plan.

Objective 1 – *Basis for real-time mitigation.* Real-time mitigation may or may not be achieved, depending on where takes occur. If they occur beyond the line of sight or when visibility is poor, then the objectives will not be met. Even with good visibility the objectives might not be met if MMOs fail to detect marine mammals in safety zones. The likelihood of detection for animals in these zones is less than one and has not been quantified, but should be to determine the efficacy of visual observations.

Objective 2 – *Information needed to estimate the levels of takes.* This objective cannot be achieved because the focus of the plan is entirely on the airguns and does not include sources of higher frequency sounds that may take marine mammals.

Objectives 3 and 4 – *Data on the occurrence, distribution, and activities of marine mammals; information to compare the distances, distributions, behavior and movements with and without airgun activity.* These objectives

can be achieved only partially because of the known limitations of vessel-based visual observations (section 3.3). Comparisons of marine mammal distances, distributions, behaviors and movements cannot be determined reliably during periodic breaks in airgun activity (section 3.6). Instead, such an investigation requires dedicated surveys during periods of sufficient duration to ensure that the animals have resumed normal movements, distribution, and behavior. That is, baseline information is almost certainly too complex to assess during periodic breaks in seismic surveys.

Aerial survey objectives (page 10) also can be partially achieved.

Objective 1 – *Advise operating vessels as to the presence of marine mammals in the vicinity*. Shell should be able to achieve this objective. However, panel members had some concern that the survey area was too large and that the aerial surveys would be more effective if they were more focused around the seismic vessel where effects are most likely to occur. In this regard, aerial surveys complement vessel-based MMO surveys if they help cover the visual far-field. At the same time, over-extending the visual far-field (i.e., to an area too large) would compromise the utility of aerial surveys for mitigation purposes. Also, as noted in section 3.2, panel members do not believe that aerial surveys can be used simultaneously for mitigation and monitoring purposes without suitable adjustments in analytical methods.

The objective of the acoustic study of bowhead deflection (page 19) can be achieved using passive acoustic arrays, has provided important information in the past, and should be continued in the future to shed more light on the effects of sound from oil and gas activities on bowhead whales.

4.4.4. Are the applicant's objectives the most useful for understanding impacts on marine mammals?

No, the applicant's objectives are not the most useful for understanding impacts on marine mammals. The acoustics objectives are vague and do not include a metric by which success can be measured. They should be revised to be more specific. For example, a more useful objective would be "to estimate the probability of whale deflection as a consequence of the suite of operations occurring in this area."

The objectives for the acoustic component also are focused on bowhead whales to the exclusion of other marine mammals. Pinnipeds and other species of cetaceans should be addressed as well.

Some panel members believe that aerial surveys would be helpful for understanding the distributions of marine mammals in this area during July and August.

4.4.5. Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?

Shell may use a number of technologies that produce high-frequency sounds. Therefore, the company also should assess the effects of those sounds and establish mitigation measures such as safety radii for marine mammals, where appropriate. Directional autonomous seafloor acoustic recorders used in the Beaufort Sea will not provide information on the high frequency sounds and cannot be used to monitor and evaluate marine mammal responses to those high-frequency sounds.

As members of the panel have emphasized with all applicants, it will be critical that Shell integrate the information gained from its acoustic methods, vessel-based MMOs, dedicated vessel-based marine mammal surveys, aerial surveys, and environmental studies to provide a more comprehensive

ecosystem-based assessment of the effects of oil and gas operations. To that end, Shell should work with other companies to devise methods for integrating all its data into such an assessment. Doing so will require keeping detailed logs of all activities, whether related to seismic surveys, drilling, or support functions. This information also should be combined with pertinent biological (e.g., tagging) and environmental (e.g., ice) data to provide a more comprehensive means for assessing the ecosystem and potential effects from oil and gas activities.

4.4.6. What is the best way for an applicant to report their data and results to NMFS?

Shell should—

- Summarize observation effort and conditions, the number of animals seen by species, the location and time of each sighting, position relative to the survey vessel, the company's activity at the time, each animal's response, and any adjustments made to operating procedures. Provide all spatial data on charts (always including vessel location).
- Make all data available in the report or (preferably) electronically for integration with data from other companies.
- Estimate and report (1) statistical power for all methods intended to detect adverse impacts and (2) uncertainty in all reported estimates (e.g., number of takes).
- Integrate all observer data with information from tagging and acoustic studies to provide a more comprehensive description of the acoustic environment during its survey.
- Accommodate specific requests for raw data, including tracks of all vessels and aircraft associated with the operation and activity logs documenting when and what types of sounds are introduced into the environment by the operation.

4.5. TGS SEISMIC SURVEY

The panel considered the application from TGS to constitute only a preliminary outline of the information needed to apply for authorization to conduct the proposed activity. The monitoring plan, in particular, would require substantial augmentation before the panel could conduct a meaningful review. For example, the monitoring plan included only MMOs, which the panel members do not consider sufficient for estimating take and determining overall effects, especially for a seismic survey with a relatively large airgun array. At a minimum, a revised monitoring plan for a seismic survey of this size should incorporate MMOs as well as additional acoustic monitoring methods, including those for estimating effects/takes in the far field. Such methods might include acoustic monitoring and/or aerial surveys. Ideally, the monitoring plan also would describe coordination with other operators in the area, including how numerous data sets from multiple sources would be integrated into the analysis of effects.

4.6. STATOIL SEISMIC

4.6.1. Each IHA applicant’s monitoring program should document the effects (including acoustic) on marine mammals and document or estimate the actual level of take as a result of the activity. Does the monitoring plan meet this goal?

The goal will be met only partially. The monitoring plan calls for vessel-based MMOs and would collect acoustic information, but methods for estimating takes in the visual far-field are minimal to nonexistent.

In addition, Statoil may have difficulty estimating takes in the visual near-field, particularly if safety radii extend far from the vessel and beyond the line of sight. Panel members expressed concern that the proposed methods would not be sufficient for adequate monitoring of the area within the safety radii when the radii are far from the vessel. Members also questioned whether MMOs would be able to see further than the safety radii to collect sightings data used to estimate animal density and total takes. Without such information, the estimated number of takes will be biased low.

4.6.2. Review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these requirements

See the response to question 1.

4.6.3. Are the applicant’s objectives achievable based on the methods described in the plan?

Statoil’s objectives for its vessel-based observations are listed on page 57 of its application.

Objective 1 – *Use observations to determine when to implement mitigation measures during the seismic operation.* This objective cannot be achieved fully because the observers likely would not be able to monitor all the areas within the safety radii. In practice, the MMOs likely would be able to monitor only a small portion of those areas during the limited portion of the survey when visibility is good to excellent.

Objective 2 – *Obtain information needed to estimate the number of marine mammals potentially exposed to 160dB.* This objective can be achieved only in part. Although the MMOs on the chase vessels will help provide information on take levels w/in 160 dB, they, too, will be able to monitor only a limited area. Panel members would need to know specific plans for the operation of the chase vessels to judge how well MMOs on those vessels would be able to sample the areas within the 160 dB radii. That information was not included in the application. In addition, the panel noted that much of this survey would occur at night, when vessel-based visual monitoring cannot be used to satisfy this objective. It also is not clear how Statoil would monitor beyond the 160 dB radii, where previous seismic surveys have affected bowhead whales.

Objective 3 – *Compare distance/distribution of marine mammals relative to the source vessel at times with and without seismic activity.* This objective can be met partially, at best. Here, too, MMO limitations preclude monitoring of the entire area of concern, so comparisons will be limited. In addition, the duration of periods with no seismic testing was not clear, and the panel was not convinced that sampling during those periods will provide a reliable basis for characterizing baseline behavior.

Statoil’s acoustic objectives are listed on page 58 of its application.

Based on discussion with Statoil representatives, the monitoring plan in their application no longer reflects their current plan for acoustic monitoring. They indicated that they will participate in the installation of a single acoustic array, but the panel understood that the array will monitor only a

portion of the survey area. Other portions of their survey area will not be assessed using acoustic recorders. Without more information regarding implementation of the array, panel members found the company's proposed acoustic plan to be incomplete. At the least, the array should be designed to characterize the full extent of the seismic survey area. Ideally, it also would be useful for monitoring any other relevant biological and/or acoustic features of the area.

4.6.4. Are the applicant's objectives the most useful for understanding impacts on marine mammals?

Objectives for acoustics were provided, but the information on the acoustic monitoring plan was not sufficient to judge whether the objectives are the most useful.

4.6.5. Should the applicant consider additional monitoring methods or modifications of proposed monitoring methods for the proposed activity?

Statoil has indicated that it will not use aerial surveys, claiming that they are "impractical and unsafe." As described above (section 3.3), some members of the panel disagree with this assessment. At the least, aerial surveys could be conducted in a portion of the proposed survey area.

Absent the use of aerial surveys, the application falls short with regard to visual far-field monitoring. The applicant's only option is to find alternative methods for collecting the essential information. At present, the only alternative available to the company is to use a combination of passive acoustic monitoring, dedicated vessel-based marine mammal surveys, and vessel-based MMOs. All this information will need to be integrated with pertinent environmental data to provide a reasonably accurate assessment of potential effects.

Statoil could strengthen its monitoring and analyses by coordinating with other operations in the area to share data (including tagging data) and thereby provide a more robust assessment of baseline information and potential effects of seismic surveys. Consistent with this, Statoil should keep careful logs of vessel positions, tracks, and activities.

Statoil offered to conduct a cumulative effects analysis of the sounds in the Chukchi Sea, but did not explain how this would be accomplished. This would be very helpful, but the value of such an analysis will depend heavily on the extent to which pertinent data are collected by the various companies and shared for the purpose of conducting a comprehensive analysis.

4.6.6. What is the best way for an applicant to report their data and results to NMFS?

Statoil should—

- Summarize observation effort and conditions, the number of animals seen by species, the location and time of each sighting, position relative to the survey vessel, the company's activity at the time, each animal's response, and any adjustments made to operating procedures. Provide all spatial data on charts (always including vessel location).
- Make all data available in the report or (preferably) electronically for integration with data from other companies.
- Estimate and report (1) statistical power for all methods intended to detect adverse impacts and (2) uncertainty in all reported estimates (e.g., number of takes).

- Integrate all observer data with information from tagging and acoustic studies to provide a more comprehensive description of the acoustic environment during its survey.
- Accommodate specific requests for raw data, including tracks of all vessels and aircraft associated with the operation and activity logs documenting when and what types of sounds are introduced into the environment by the operation.

5. ACKNOWLEDGMENTS

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7. PANEL MEMBERS

The members of the review panel were—

- | | |
|-------------------------|--|
| John Burns, Ph.D. | University of Alaska, Fairbanks (retired) |
| Chris Clark, Ph.D. | Cornell University, Bioacoustics Research Program |
| Megan Ferguson, Ph.D. | National Marine Fisheries Service, National Marine Mammal Laboratory |
| Sue Moore, Ph.D. | National Marine Fisheries Service, Office of Science and Technology |
| Tim Ragen, Ph.D. | Marine Mammal Commission |
| Brandon Southall, Ph.D. | Southall Environmental Associates, Inc. |
| Robert Suydam, Ph.D. | North Slope Borough, Department of Wildlife Management |

Expert Panel Review of Monitoring Protocols in Applications for Incidental Harassment Authorizations Related to Oil and Gas Exploration in the Chukchi and Beaufort Seas, 2011: Statoil and ION Geophysical

Anchorage, Alaska

9 March 2011

1. BACKGROUND

Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act (MMPA) allow for the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographic region. For activities that occur in Arctic waters and have the potential to affect the availability of a species or stock of marine mammal for subsistence uses, the monitoring plan for the proposed activity must be independently peer-reviewed. To aid the National Marine Fisheries Service (NMFS) in its review of the monitoring plans for the upcoming season, NMFS holds an annual Open Water Meeting in Anchorage, Alaska, each spring. The meetings are open to the public and provide an opportunity for applicants to share the results of monitoring programs from the previous year and present the monitoring plans for activities proposed for the upcoming open water season. The meeting also allows for input and comments from Alaska Natives, industry representatives and industry-funded scientists, government representatives, environmental organizations, and interested members of the public on the results of the previous year's monitoring programs and the proposed monitoring plans for the upcoming season.

In 2011, NMFS, working with the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), sponsored the Open Water Meeting on 7-8 March. At the time of the meeting, NMFS had received two applications for Incidental Harassment Authorizations (IHAs), one from Statoil and the other from ION Geophysical, to take marine mammals by harassment incidental to industry operations. For each of these applications, NMFS must make a determination as to whether the proposed activities will have (1) more than a negligible impact on the pertinent protected species or stock, or (2) an unmitigable adverse impact on the availability of such species or stock for subsistence hunting. NMFS also must prescribe (1) regulations establishing permissible means of taking and other means of effecting the least practicable adverse impact, and (2) monitoring and reporting requirements.

The methods most often described in monitoring plans have two specific goals. The first is to detect when mitigation thresholds have been met and appropriate responses must be instigated (e.g., monitoring that may lead to a shutdown of an activity if a marine mammal enters a relatively small "safety" zone intended to minimize the probability of injury). The second objective is to provide sufficient information about distribution and movement of animals to support a sufficiently robust post-hoc analysis of the number of animals that may have been taken incidental to, and the potential effects of, industry activities. Thus, the former type of monitoring is used to provide a degree of protection for animals from harm during operations, whereas the latter is used to estimate post-hoc just what the impact was based on number and types of takes.

According to NMFS policy guidelines, the marine mammal monitoring prescribed in the terms of either an IHA or Letter of Authorization (LOA) and generally required of action-proponents (e.g., oil and gas industry, military) whose operations may impact marine mammals and other protected species should be designed to accomplish or contribute to one or more of the following:

- a) An increase in our understanding of the likely occurrence of marine mammal species in the vicinity of the action, i.e., presence, abundance, distribution, and/or density of species.
- b) An increase in our understanding of the nature, scope, or context of the likely exposure of marine mammal species to any of the potential stressor(s) associated with the action (e.g.,

- sound), through better understanding of one or more of the following: 1) the action itself and its environment (e.g., sound source characterization, propagation, and ambient noise levels); 2) the affected species (e.g., life history or dive patterns); 3) the likely co-occurrence of marine mammal species with the action (in whole or part) associated with specific adverse effects, and/or; 4) the likely biological or behavioral context of exposure to the stressor for the marine mammal (e.g., age class of exposed animals or known pupping, calving or feeding areas).
- c) An increase in our understanding of how individual marine mammals respond (behaviorally or physiologically) to the specific stressors associated with the action (in specific contexts, where possible, e.g., at what distance or received level).
 - d) An increase in our understanding of how anticipated individual responses, to individual stressors or anticipated combinations of stressors, may impact either: 1) the long-term fitness and survival of an individual; or 2) the population, species, or stock (e.g., through effects on annual rates of recruitment or survival).
 - e) An increase in our understanding of the effectiveness of mitigation and monitoring measures.
 - f) A better understanding and record of the manner in which the authorized entity complies with the incidental take authorization.

2. PEER-REVIEW PANEL OBJECTIVES

To satisfy the peer-review requirements of section 216.108(d) of the regulations pertaining to issuance of IHAs in areas of the Alaskan Arctic, NMFS convened an expert peer-review panel (hereafter the “panel”) of five scientists and one experienced Inupiat hunter, with diverse backgrounds and familiarity with marine mammal natural history and biology, research, and conservation in the Arctic regions of Alaska. A facilitator with extensive background in Arctic marine mammal science, conservation, and management issues assisted with the discussions among the panelists and between the panel and industry representatives. This was the second such panel conducted in conjunction with the Arctic Open Water Meetings to consider the previous and proposed monitoring plans; four members of the panel and the facilitator from 2010 also participated in 2011. On March 9, 2011, panel members reviewed the two IHA applications from Statoil and ION Geophysical and discussed specific recommendations (meeting minutes available upon request). The panel considered how components of monitoring plans applied to all lines of investigation identified in NMFS’ policy guidelines stated above, although expert panelists were instructed to focus primarily on deriving a robust estimate of actual takes and enhancing understanding of the potential effects of industry’s activities on marine mammals. Panel members did not strive for consensus on specific points; differing perspectives are indicated herein by reference to “some” and “others.”

The specific guidance given to the panel was as follows:

Each IHA applicant’s monitoring program should be designed to accomplish one or more of the following: document the effects of the activity (including acoustic) on marine mammals; document or estimate the actual level of take as a result of the activity (in this case, seismic or marine surveys or icebreaking); increase the knowledge of the affected species; or increase knowledge of the anticipated impacts on marine mammal populations. OPR [NMFS’ Office of Protected Resources] is asking you to review the monitoring plans to ensure that the monitoring activities and methods described in the plans will enable the applicant to meet these stated goals.

Specifically, OPR would like the panel to discuss the following questions with regards to each monitoring plan:

- Are the applicant's stated objectives the most useful for understanding impacts on marine mammals and otherwise accomplishing the goals stated in the paragraph above?
- Are the applicant's stated objectives able to be achieved based on the methods described in the plan?
- Are there techniques not proposed by the applicant, or modifications to the techniques proposed by the applicant, that should be considered for inclusion in the applicant's monitoring program to better accomplish the goals stated above?
- What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS?

This report documents the panel's evaluation of Statoil's and ION's proposed monitoring plans for 2011 and provides recommendations for improvements that could be enacted for operations conducted within two timeframes: a) 2011; or b) in the near future, possibly with intermediate steps before complete compliance. Specific *recommendations* are numbered consecutively throughout this report.

3. RESULTS OF 2010 PEER-REVIEW PANEL RECOMMENDATIONS

The panel requested a report from staff of NMFS' Office of Protected Resources on the implementation of the recommendations from the 2010 panel. OPR reported that while the primary purpose of the review was to provide an assessment of the monitoring plans for NMFS, the 2010 panel report is publically available on the OPR website. The recommendations from the 2010 panel were discussed within OPR and the NMFS Alaska Regional Office. Additionally, OPR sent letters requesting that Statoil and Shell make specific changes to their respective monitoring plans as a result of comments by the panel. The letters from OPR included requirements for both 1) specific panel recommendations NMFS expected the companies to implement in the 2010 monitoring plans for their IHAs and 2) improvements to monitoring plans they should consider implementing in 2011 and beyond. OPR staff held conference calls with company representatives to make sure they understood the new recommendations and requirements.

OPR's letters to each company added specific requirements to the 2010 IHAs, in part resulting from panel recommendations, including additional observer training requirements, the use of high-power "big eye" binoculars, conducting observations from the highest possible position on the boat, and prioritizing observation of safety radii over acquiring detailed behavior data, among others. OPR additionally required that companies share raw data from their monitoring plans upon request. OPR also requested that the companies collect additional information pertaining to the effectiveness of the "ramp-up" mitigation procedure for airgun operations that is a current industry standard despite a lack of study as to its actual efficacy.

The panel noted and appreciated industry's efforts to pursue new monitoring technologies during operations in 2010. Specifically, ION pursued the panel's recommendation to investigate the use of thermal imaging technology for night observations but did not implement its use because their 2010 seismic program was postponed. Additionally, Statoil investigated the use of a towed passive acoustic monitoring array. Results of this feasibility test were presented and discussed at the 2011 Open Water Meeting. Statoil's tests enabled evaluations of the pros and cons of this new equipment application and provided a better understanding of whether and how this technology might substantially improve an integrated approach to marine mammal monitoring during the open water period.

The panel discussed the requisite follow-up to ensure the companies implemented the new requirements in their monitoring plans that resulted from the 2010 panel recommendations. Members of the panel expressed some concern about the lack of willingness of some companies to provide certain non-proprietary data (aerial and vessel-based marine mammal survey data; acoustic detections of marine

mammals and any marine mammal responses to sound; biological and physical oceanographic data; location and movement of equipment operating in the region; type of equipment used, including characteristics of sound intensity and frequency, sound propagation in the environment at the time of the activity, and duty cycles; and timing of the activity) upon request. OPR committed to review the 90-day reports to ensure that the new requirements (e.g., incorporating uncertainty into post-season estimates of take) had been addressed.

Building on the successes of the framework established in 2010, the panel recommended that the following actions be taken to assist NMFS in interpreting future panel recommendations and to ensure that the companies implement the prescribed recommendations:

Recommendations

- (1) Companies should be asked specifically to report what changes they made in their operations as a result of the previous years' panel recommendations. These should be highlighted in their verbal presentations at the Open Water Meeting, discussed directly with the review panel, and detailed in their 90-day reports (and final reports, if appropriate).
- (2) NMFS should follow up with the panel shortly after the draft panel report is submitted to NMFS to make sure NMFS understands the recommendations so that they can better communicate the recommendations to industry.
- (3) NMFS should follow up with industry to ensure that the new IHA requirements resulting from NMFS' decisions based on the panel's recommendations were implemented, both in the field and in the reports.

4. GENERAL RECOMMENDATIONS AND COMMENTS

Some of the 2010 panel recommendations were more overarching and/or long-term than a single company's monitoring plan or activities. These recommendations encouraged NMFS and all stakeholders to take a more comprehensive view of increasing development in the Arctic, in addition to the narrow, single operation approach that historically has been applied. Panel members encouraged the agency to incorporate some of these more programmatic recommendations regarding consideration of the concept of acoustic "habitat" and aggregate/cumulative effects of multiple types of human activities within new NEPA compliance assessments being developed for Arctic exploration and production activities (see recommendation 12.ii of this report). Within this process, NMFS should recognize the critical importance of the acoustic habitat for basic life functions in marine mammals and other marine life and establish management processes to protect not only individual animals but the overall acoustic habitat.

Over the course of the panel review, the panel frequently touched on general recommendations and comments that had previously been raised in the 2010 panel review. Section 3.0 from the 2010 meeting is incorporated here by reference (see Appendix A for a summary of the recommendations from the 2010 panel), with updates as discussed below.

4.1 ACOUSTIC EFFECTS OF OIL AND GAS EXPLORATION – ASSESSMENT AND MITIGATION

As identified in the 2010 panel report, the potential environmental impacts of noises produced by exploration and production activities include both small-scale, short-term effects (i.e., acute), and large-scale, long-term influences (i.e., chronic). Acute effects from single noise sources (e.g., seismic airgun array, pile driving) are presently assessed by acoustic monitoring and post-processing these data to estimate sound exposure levels at nearby animals. Acute cumulative effects on animals as a result of multiple noise sources from simultaneous activities are not considered, and neither are the potential chronic influences from multiple noise sources. For large whales and some pinnipeds, such as the

bowhead whale, bearded seal, and walrus, which produce low-frequency sounds (< 1000Hz) for communication, masking of communication sounds as a result of cumulative noises can result in the loss of communication opportunities (Clark et al. 2009). There is growing evidence that under chronic noise conditions the impacts of acoustic masking could have biological consequences. Furthermore, as noted by the 2010 panel, sufficient evidence exists to conclude that factors of sound exposure other than simply the received level are key determinants of potential impact, particularly regarding behavioral response probability. The current panel reiterates these broader recommendations for NMFS to consider and integrate into decision-making in conservation management on a more programmatic basis. This concern is especially pertinent because migrating bowhead whales are highly sensitive to low levels of anthropogenic sounds (IWC 2007, pg. 233). Additionally, and in some cases related to these overarching conclusions, members of the panel made recommendations resulting from specific observations regarding acoustic effects.

First, all acoustic sources of operations should be included both from a mitigation and a monitoring perspective. As mentioned above, most of these assessments are focused on acute, high-power sources such as seismic airgun arrays. While these are clearly important, often lost in these assessments are sounds that may have lower total instantaneous power output, but may operate more continuously or over broader areas (e.g., service or supply vessels), or may occur at somewhat higher frequencies but still within audible range of most species and at relatively high output power (e.g., some sub-bottom profilers used in shallow hazard surveys). These assessments should consider the differential hearing abilities of differing marine mammal species (see Southall et al., 2007), and the physics governing underwater sound production and propagation. Furthermore, under present acoustic impact guidelines, seismic airgun signals are categorized as impulses, even for ranges at which a significant portion of the original acoustic impulse energy is converted into broadband reverberation and/or frequency dispersive components with biologically salient features. Thus, seismic airgun signals should not be treated as truly impulsive when received at ranges where sound propagation is known to remove the impulsive nature of these signals. Over very short ranges where potential hearing loss (temporary or permanent) can occur, airgun impulses retain their impulsive features and should be considered as impulses. As distance from the seismic source increases, and the area over which behavioral impacts could occur increases, the impulsiveness of the signal is no longer its dominant acoustic feature and the signal should no longer be considered or regulated as an impulse.

Second, NMFS should provide companies with explicit information about what acoustic aspects of their activities need to be detailed in their IHAs and incorporated into take estimates. For example, this could be accomplished by recommending certain combinations of frequencies, propagating signal types and source levels that should be thoroughly addressed in the IHAs, and some measures of the spatial and temporal scales over which the activities extend.

Third, the probability of behavioral impact from specific activities should be assessed based on the best available science that is most appropriate and similar to the condition of exposure that will occur. The panel specifically noted large differences in the existing literature about the response probability for migrating bowhead whales relative to feeding/socializing individuals (see Southall et al., 2007, for a discussion). Migrating bowhead whales respond to anthropogenic sounds at much greater distances and at much lower received levels than feeding bowhead whales. Thus the behavioral context appears in this case to be a key driver of response probability, rather than merely the loudness of the received sound, which is the common metric by which these impacts have previously been regulated. Consequently, the behavioral state of animals must be considered in assessing potential impacts on animals at different times of the year or in different habitats; this might require modification to existing marine mammal observer protocols so that the ability to detect marine mammals is not compromised by the need to determine the animals' behavioral state. Where significant uncertainty exists, such as when it is difficult to ascertain the whale's behavior, a precautionary means of predicting response should be applied.

Recommendations

- (4) All significant acoustic sources of operations should be included both from a mitigation and a monitoring perspective.
- (5) Assessments of sound sources should consider the differential hearing abilities of differing marine mammal species (see Southall et al., 2007) and the physics governing underwater sound production.
- (6) NMFS should provide companies with explicit information about what acoustic aspects of their activities need to be detailed in their IHA applications and incorporated into take estimates.
- (7) The probability of behavioral impact from specific activities should be assessed based on the best available science that is most appropriate and similar to the condition of exposure that will occur. Where significant uncertainty exists, such as when it is difficult to ascertain the whale's behavior, a precautionary means (i.e., the behavioral state when whales are most sensitive to anthropogenic sounds) of predicting response should be applied.
- (8) NMFS should routinely require that the authorized entity report estimates of the spatio-temporal distributions of acoustic levels. Some panel members recommended that this reporting explicitly include acoustic levels at least as low as the 120 dB level because evidence exists to suggest that this received level has caused bowhead whales to deflect, or be entirely excluded from, an area (Brewer et al., 1993; LGL Ltd. and Greeneridge Sciences Inc., 1987; Davies, 1997; and Hall et al., 1994). Others thought that the 120 dB level should not be explicitly referenced due to the inherent complexity of the system, as marine mammal reactions to noise are likely a function of multiple factors.

4.2 AERIAL SURVEYS

Panel members spent minimal time discussing aerial surveys because neither proposed 2011 monitoring plan incorporated aerial surveys. Aerial surveys remain a useful tool for conducting far-field monitoring in some conditions, and the points made in the previous report remain relevant. Section 3.2 from the previous report is incorporated by reference (see Appendix A for a summary of recommendations from the 2010 panel).

4.3 MARINE MAMMAL OBSERVERS

Panel members specifically highlighted a few of the issues regarding marine mammal observers identified in 2010 (summarized in Appendix A), namely, the importance of having observers that are independent from industry, and the need for a tool to assess the observers' abilities to identify species. There is also a need for an independent debrief of observers to identify problems from the previous monitoring efforts and to recommend improvements for future efforts.

Significant concerns remain that the observers for the oil and gas industry are not independent of the industry, because the observers are contracted, trained, deployed, and debriefed by individuals working directly for the industry, and the observer data is transmitted, quality controlled, analyzed, released, and archived by the industry. This model was rejected long ago for the commercial fishing industry: at a minimum, when an observer program is required for a commercial fishery, the federal government trains and debriefs the observers, and conducts the quality control, analysis, release, and archival of the data.

The panel also identified that no assessment tool exists to determine whether marine mammal observers (MMOs) are correctly identifying sightings to species. It is not clear whether observers are required to demonstrate their ability to identify Arctic marine mammals before they begin observing. At the least,

observers should pass an identification test, using material that is different than what was used during training, before beginning stints as Arctic MMOs.

The 2010 panel recommended that MMOs should provide more details about observed characteristics of marine mammals that were not identified to species. For example, if an unknown mysticete was seen, it should be noted whether it had a dorsal fin. If only a blow was observed, it should be recorded as only a blow. MMOs may have recorded those details, as required in the 2010 IHAs, but those details are not included in the 90-day reports. They should be included in the final reports.

Recommendations

- (9) NMFS should investigate funding and implementing an independent observer program to replace the current system of vessel-based marine mammal observers for the oil and gas industry.
- (10) NMFS should require that MMOs pass an Arctic marine mammal identification test, with material that is different than what was used in training, before serving on an industry vessel.
- (11) NMFS should require that MMOs record additional details about unidentified marine mammal sightings, such as “blow only”, mysticete with (or without) a dorsal fin, “seal splash”, etc. That information should also be included in 90-day and final reports.

4.4 VISUAL NEAR-FIELD MONITORING

Section 3.4 from the previous report is incorporated by reference (see Appendix A for a summary of the recommendations from the 2010 panel).

4.5 VISUAL FAR-FIELD MONITORING

Section 3.5 from the previous report is incorporated by reference (see Appendix A for a summary of the recommendations from the 2010 panel).

4.6 BASELINE BIOLOGICAL AND ENVIRONMENTAL INFORMATION

Section 3.6 from the previous report is incorporated by reference (see Appendix A for a summary of the recommendations from the 2010 panel).

4.7 COMPREHENSIVE ECOSYSTEM ASSESSMENTS AND CUMULATIVE IMPACTS

The 2010 panel report included a section regarding the need for a more robust and comprehensive means of assessing the collective or cumulative impact of many of the varied human activities that contribute noise into the Arctic environment (see Section 4.1 above). The essence of those observations was that for many species, sounds generated by human activities overlap those used by the marine mammals, and the potential impacts from these human activities should be determined not by each activity in isolation, but rather by the cumulative effects from the suite of human activities in relation to the biological and environmental events. The 2010 panel suggested, and the 2011 panel reiterates that, in addition to the mitigation and monitoring of single activities, as occurs with IHA or LOA applications, NMFS should develop an overarching means of assessing and requiring steps to minimize the collective impacts of development activities on marine ecosystems, including marine acoustic habitats. This will require a fundamentally different mode of assessment than has previously been applied under federal law; the panel encourages NMFS to strongly consider how this may be accomplished within the ongoing programmatic EIS for Arctic oil and gas exploration and production. Cumulative impacts could and should be assessed in IHAs using risk assessment methodology.

In addition to the overarching recommendation for a more holistic and biologically relevant means of assessing the overall footprint (acoustic and otherwise) of human development in the Arctic, the 2010 panel made a number of specific recommendations about comprehensive ecosystem assessment and cumulative impacts (Appendix A). These are presented in similar form here, with some modifications derived in the 2011 panel review process.

Recommendations

(12) NMFS should develop a framework for assessing, and requiring steps to minimize, the collective impacts of human activities on marine ecosystems, including acoustic habitats. This can be addressed two ways:

- i. NMFS should require in IHAs that cumulative impacts assessments be conducted.
- ii. In the pending Arctic EIS for oil and gas exploration, NMFS should address the issues and incorporate the recommendations identified in the 2010 and 2011 panel reports. The following ongoing issues are particularly important:
 - a. Evaluating monitoring techniques and the limitations thereof;
 - b. Requiring improvements in both near-field and far-field monitoring techniques;
 - c. Improving techniques for estimating the number of takes when companies or organizations request an IHA or LOA, and improving methods for estimating the number of marine mammals actually taken (or exposed) during operations;
 - d. Assessing cumulative impacts and proposing thresholds for limiting the total amount of human activity in the Alaskan Arctic to protect marine mammals, their habitat, and the availability of marine mammals to subsistence hunters.

(13) Data analysis and integration:

- i. To better assess impacts to marine mammals, data analysis should be separated into periods when a seismic airgun array (or a single mitigation airgun) is operating and when it is not. Final and comprehensive reports to NMFS should summarize and plot:
 - a. Data for periods when a seismic array is active and when it is not;
 - b. The respective predicted received sound conditions over fairly large areas (tens of km) around operations.
- ii. To allow visualization and interpretation of the complex field of anthropogenic activities and distributions and movements of marine mammals, the final and comprehensive reports required by the IHA should provide all spatial data on figures that depict the locations of the principal sound sources. This could be represented by a diagram in which all MMO sightings (vessel-based and aerial) and acoustic detections are plotted relative to their distance and bearing from a specific sound source. Alternatively, it could be depicted in a map of the region, showing the operation area, tracklines of vessels and aircraft (if applicable), MMO sightings (vessel-based and aerial), and acoustic detections. To facilitate understanding of both the spatial and temporal aspects of the activity and marine mammal responses, these figures would ideally be animated, showing industry activities and sightings or acoustic detections changing through time. Whenever ancillary biological data (e.g., tagging, acoustic, broad-scale aerial survey) are available that are coincident in space and time with the activity, they should be included in these figures.
- iii. Advances in integrating data from multiple platforms through the use of standardized data formats are needed to increase the statistical power to assess potential effects.

Therefore, industry should examine this issue and jointly propose one or several data integration methods to NMFS at the Open Water Meeting in 2012.

- iv. To help evaluate the effectiveness of MMOs, reports should include sightability curves (detection functions) for distance-based analyses.
- v. To better understand the potential effects of oil and gas activities on marine mammals and to facilitate integration among companies and other researchers, the following information should be obtained and provided electronically: the location and time of each aerial or vessel-based sighting or acoustic detection; position of the sighting or acoustic detection relative to ongoing operations (i.e., distance from sightings to seismic operation, drilling ship, support ship, etc.), if known; the nature of activities at the time (e.g., seismic on/off); any identifiable marine mammal behavioral response (sighting data should be collected in a manner that will not detract from the MMO's ability to detect marine mammals); and any adjustments made to operating procedures. These data should be presented in final and comprehensive reports, if practicable.
- vi. Prior to the 2012 Open Water Meeting companies should discuss the most practical and constructive means of making their marine mammal and environmental data (e.g., aerial and vessel-based marine mammal survey data, acoustic detections of marine mammals and any responses to sound, biological and physical oceanographic data) and other information about their activities (location and movement of equipment operating in the region; type of equipment used, including characteristics of sound intensity and frequency, sound propagation in the environment at the time of the activity, and duty cycles; and timing of the activity) available to the public.
- vii. During the 2012 Open Water Meeting, companies should propose an approach, method, or organization (e.g., AOOS, NSSI, NSB, NMFS, etc.) that could help accomplish this data-sharing task.

4.8 DUPLICATION OF SEISMIC SURVEY EFFORT

Section 3.8 from the previous report is incorporated by reference (see Appendix A for a summary of the recommendations from the 2010 panel).

4.9 IMPROVING TAKE ESTIMATES AND STATISTICAL INFERENCE INTO EFFECTS OF THE ACTIVITY

Estimating the number of individuals of each species that could potentially be taken incidental to an activity is critically important for NMFS to consider in their determination of whether the activity is likely to have no more than a negligible impact on those species. In addition, estimating the number of individuals of each species that actually were taken incidental to a permitted activity is critically important for NMFS to consider when evaluating whether the monitoring and mitigation measures were effective. However, panel members continue to have concerns that take estimates are not inferred using the best available data; neglect to incorporate existing knowledge on the animal movement (i.e., migration or other movements), which, therefore, tends to negatively bias take estimates; do not incorporate all potential disturbances associated with an activity; and fail to incorporate reliable estimates of uncertainty. Estimates of uncertainty in take estimates are particularly important, because the use of point estimates alone implies a level of certainty that does not exist.

In addition, hypothesis tests conducted on data acquired during operations, which are used to identify whether an activity affected marine mammals, usually are not presented with relevant information on the

power of the tests. The ability to evaluate the reliability of a hypothesis test is low without an estimate of the associated power.

Recommendations

- (14) Reported results from all hypothesis tests should include estimates of the associated statistical power.
- (15) NMFS should continue to assess and apply the evolving best available science in estimating the potential effects of acoustic exposure on marine mammals and other protected species. NMFS and others should expect that this would result in evolving regulatory criteria as our understanding of the underlying complex issues evolves.
- (16) In the meantime, companies should:
 - i. Provide in their reports a clear and complete explanation of methods used to estimate takes. The methods should be transparent and repeatable, and should include all necessary information on species or stock, time period, spatial extent, and other relevant parameters (e.g., whether the data were collected during times when a seismic array was active), including relevant contextual factors such as multiple simultaneous activities.
 - ii. Estimate and report uncertainty in all take estimates. Uncertainty could be expressed by the presentation of confidence limits, a minimum-maximum, posterior probability distribution, etc.; the exact approach would be selected based on the sampling method and data available.
 - iii. Include all potential sources of disturbance (e.g., seismic arrays, sub-bottom profilers, all ships, etc.) in take estimates.
 - iv. Use the best available information to compute estimated takes.
 - a. If multiple sources of reputable information are available, it is generally better to use the more recent information, even if it is not from a peer-reviewed publication, as long as standard scientific practices of data quality control and analysis are followed.
 - b. If multiple sources of concurrent, relevant information result in considerably different take estimates, both sources should be cited and both take estimates should be presented.
 - c. Differences in the species/stock, time period, spatial extent, and other relevant parameters should be investigated to determine how they might bias the take estimates for a specific activity.

4.10 IMPROVING THE PEER-REVIEW PROCESS

There were various suggestions for improving the peer-review process. When monitoring plans were first peer-reviewed in the late 1990s, the process involved more of a dialog about how to modify monitoring plans to meet specific needs identified by researchers or the subsistence community. This approach allowed the industry to participate directly in recommending novel methods for meeting scientific goals that, in some cases, proved very successful. Some members of the panel thought it would be helpful to extend the peer-review panel process to allow more time for an interactive discussion of the objectives, methodologies, technologies, and practical limitations inherent in monitoring plans with the company representatives and consultants.

The panel also asked each company's representatives if they had recommendations for improving the meeting. Statoil suggested delaying the panel meeting by one day to provide the companies time to

prepare additional materials, if necessary, based on comments received during the public meetings. This is in contrast to some suggestions made at the Open Water Meeting to schedule the panel's meetings with industry prior to the public meetings. Statoil also suggested that it might be helpful to hold a poster session, during which each activity could be displayed and people could ask questions.

Recommendations

- (17) The 2011 public Open Water Meeting was 2 days long. This was sufficient time for the companies to present a brief overview of the previous year's activities and the upcoming season's planned activities, and for the companies and the regulatory agencies to receive stakeholder input.
- (18) During the 2012 Open Water Meeting, additional time should be devoted to presentations and discussions of the insights into the impacts (or lack thereof) of exploration and production activities on marine mammals and the spatiotemporal distribution, density, and movements of marine mammals in the Arctic that have resulted from the cumulative body of research that industry has conducted in the Beaufort and Chukchi Seas from 2006 to the present, or since ~2000 for monitoring activities at Northstar production island in the Beaufort Sea.
- (19) The panel meeting should accommodate more time for discussion with the company representatives.
- (20) NMFS and the panel should provide key questions to the companies before meeting with the panel in future years. This will be particularly helpful if the panel has technical questions about the monitoring plans that are best answered by specific technical staff who might not have otherwise been present at the panel meeting.
- (21) NMFS should provide explicit guidelines to the companies regarding what details should be included in the written monitoring plans and presented to the public during the Open Water Meeting.
- (22) NMFS should consider implementing a requirement to have IHA applications submitted by November 1, thereby allowing review of plans prior to March. This would allow both NMFS and industry more time to review and adjust plans prior to the scheduled start of activities.
- (23) NMFS should encourage companies to present an overview of activities planned further than one year into the future, if known.
- (24) NMFS should compile and present a summary table detailing both the authorized and actual estimated takes for the previous year, and the proposed takes for the upcoming season. NMFS should explain how these take estimates relate to "small numbers" of individuals being affected by the permitted or proposed activities.
- (25) NMFS should develop a specific template that the panel would use to assess specific questions about the efficacy and design of monitoring programs for applications for the upcoming open water season. The panel should be directed to review and complete these assessments immediately following the panel meeting and provide those to NMFS so that relatively quick decisions may be made in this regard. The panel should then provide a separate review and recommendations on the overarching/broader issues, along the lines of many of those given here, within six weeks of the Open Water Meeting.

5. COMMENTS AND RECOMMENDATIONS ON SPECIFIC APPLICATIONS

5.1 STATOIL

5.1.1 Are the applicant's stated objectives the most useful for understanding impacts on marine mammals and otherwise accomplishing the goals stated in the paragraph above?

See section 5.1.2, below.

5.1.2 Are the applicant's stated objectives able to be achieved based on the methods described in the plan?

The panelists considered whether the objectives of the monitoring program were "useful" (question in section 5.1.1, above), and simultaneously discussed whether they could be achieved based on the methods described.

In general, the panel thought that the objectives were useful for understanding the impacts on marine mammals. However, there were no objectives focused on understanding how marine mammals would be impacted beyond the line of sight of vessel-based marine mammal observers and beyond the distance at which acoustic recorders can monitor. The panel thought that it is reasonable to add these far-field issues to the objectives and that the proposed monitoring plan would not meet these objectives. The panel also noted that several of the other acoustic sources (in addition to the small airgun array) used in the shallow hazard survey are relatively powerful and operate in the acoustic band of many if not most marine mammals; members of the panel particularly noted the sub-bottom profiler as a concern. To date, NMFS has not required the companies to include these types of sources in mitigation or monitoring plans; thus Statoil did not predict takes nor will they use the effective mitigation zones that incorporate these other acoustic sources during operations. While they are complying with the regulations in this regard, the panel notes that the objectives for mitigation and monitoring are incomplete without considering all elements of an activity with the potential to disturb or harm marine mammals.

Nevertheless, for the stated objectives, the panel generally thought that the specified monitoring plan would be generally effective.

Objective: Provide the basis for real-time mitigation, if necessary, as required by the various permits that Statoil receives. Panel members generally agreed that this objective could be achieved within the 180/190 dB "injury" zone, except during inclement weather or darkness. During those times, MMOs would unlikely be able to observe the entire safety zones.

Objective: Provide information needed to estimate the number of "takes" of marine mammals by harassment, which must be reported to NMFS and USFWS. The panel generally agreed that this objective could be achieved within the 180/190dB zone, with the concern about effective monitoring during darkness or inclement weather noted above, but that there was no effective way to estimate takes beyond the area that could be effectively seen from the vessel. Thus, it was not likely that Statoil would be able to collect data to reliably estimate the number of marine mammals that were actually "taken" by harassment.

Objective: Provide data on the occurrence, distribution, and activities of marine mammals in the areas where the survey program is conducted. The panel generally agreed that this objective could be partially achieved, but only within visual sighting distance of the observers on the vessels, which might not be representative of the occurrence, distribution and activities of all animals that could potentially be affected by the activity.

Objective: Provide information to compare the distances, distributions, behavior, and movements of marine mammals relative to the survey vessel at times with and without airgun activity. The panel

generally agreed that this objective could be partially achieved, but only within visual sighting distance of the observers on the vessels. Broad-scale movements of marine mammals should be investigated within the context of both the Statoil survey vessel and other activities in the area. Because the number of sightings from the seismic survey boat will be small, other sources of information (including passive acoustics and aerial surveys) should be pooled to increase the amount of information that can be incorporated in the analysis.

Objective: Provide a communication channel to coastal communities including Inupiat whalers and other subsistence users. This objective can be achieved provided there is always an Inupiat communicator on the vessel. The vessel-based monitoring program may help to minimize impacts on the subsistence harvest, particularly during crew transfers at villages (e.g., Wainwright) by obtaining updated and accurate information on the status and location of subsistence hunting activities in the area and taking necessary actions to minimize disturbance, but the monitoring plan does not address impacts on subsistence at other times.

Objective: Passive acoustic monitoring. Panel members agreed that the passive acoustic monitoring objectives are appropriate for assessing sound source verification for some of the sound sources on the seismic vessel. However, concerns remained because not all sound sources would be evaluated and the effects of the activities' sounds on animals in the far-field would not be evaluated.

5.1.3 Are there techniques not proposed by the applicant, or modifications to the techniques proposed by the applicant, that should be considered for inclusion in the applicant's monitoring program to better accomplish the goals stated above?

The panel recognized that the current monitoring plan does not propose to address any far-field impacts of the seismic operation. In order to improve the monitoring plan so it would address far-field monitoring, the following should be implemented:

- Use the cluster array to localize whale calls and evaluate the effects of sound on calling animal distribution.
- Conduct sound source verification for the sub-bottom profilers.
- Under specific conditions, conduct aerial surveys to evaluate distributions of whales in the vicinity of exploration and production activities. The industry has expressed concerns related to the safety of manned aerial surveys. If manned surveys are not feasible, other methods for far-field monitoring (e.g., unmanned systems or scout vessels) need to be investigated and, upon approval by NMFS, implemented.
- Consider other new technologies (i.e., underwater vehicles, satellite monitoring, etc.) to assess far-field monitoring.

5.1.4 What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS?

Review panel members generally re-iterated the recommendations made in last years' panel report, in addition to those listed in section 4.7 above. Furthermore,

- The report should clearly compare authorized takes to the level of actual estimated takes.
- Sightability curves (detection functions) for MMOs should be provided.
- As a starting point for integrating different data sources, Statoil should present their 2010 and 2011 data by plotting acoustic detections from bottom-mounted hydrophone and visual detections from MMOs on a single map.

5.2 ION GEOPHYSICAL

5.2.1 Are the applicant's stated objectives the most useful for understanding impacts on marine mammals and otherwise accomplishing the goals stated in the paragraph above?

See section 5.2.2, below.

5.2.2 Are the applicant's stated objectives able to be achieved based on the methods described in the plan?

The panelists considered whether the objectives of the monitoring program were "useful" (question from section 5.2.1, above) and simultaneously discussed whether they could be achieved based on the methods described. In general, the panel thought that the objectives were useful for understanding the impacts on marine mammals. However, one major shortcoming was there were no objectives focused on estimating actual takes or understanding how marine mammals would be impacted beyond the immediate line of sight of vessel-based marine mammal observers. The panel recognizes the trade-off that ION is attempting to make, working during a time when fewer whales are likely to be present, but the compromise is that there are likely to be so few daylight hours (particularly by the end of the survey) that none of the monitoring objectives will be achievable.

Objective: Provide the basis for real-time mitigation, if necessary, as required by the various permits that ION receives. Panel members generally agreed that this objective could not be achieved due to extended periods of darkness and inclement weather, and presence of sea ice, during the time of year (October to December) in which the proposed activity would occur. The panel discussed whether previous failures of thermal imaging technologies to detect marine mammals, especially cetaceans, should preclude ION's plan to use thermal imaging technologies during the autumn and winter in the Beaufort and Chukchi Seas. Some panel members commented that the winter environment might be very different, and that thermal imaging technologies had been helpful during spring ice seal research in the Bering Sea when seals were on the ice. There was concern expressed about whether thermal imaging systems are able to detect bowheads. The conclusion was that thermal imaging technologies should still be tested by ION during their proposed activities.

Objective: Provide information needed to estimate the number of "takes" of marine mammals by harassment, which must be reported to NMFS and USFWS. Panel members generally agreed that this objective could not be achieved due to multiple factors (e.g., extended periods of darkness, presence of sea ice, inclement weather) that are likely to occur during the proposed time period for the activity.

Objective: Provide data on the occurrence, distribution, and activities of marine mammals in the areas where the survey program is conducted. Panel members generally agreed that this objective could not be achieved under true "baseline," or undisturbed, conditions; therefore, the resulting data would provide little information for estimating actual takes or understanding potential effects of the activity on marine mammals. Even during the 40- to 60-second periods each hour during which ION plans to not fire the airguns, marine mammals in the vicinity of the operations could potentially be affected by the presence of the vessels and the previous operation of the airgun array. At best, these data will provide information on the occurrence, distribution, and activities of marine mammals that were *detected* by MMOs during the operations; extrapolation to all animals in the area of operations will be extremely unreliable and inappropriate.

Objective: Provide information to compare the distances, distributions, behavior, and movements of marine mammals relative to the survey vessel at times with and without airgun activity. Panel members generally agreed that this objective could not be achieved because the 40- to 60-second periods each hour

during which ION plans to not fire the airguns is too short to consider representative of baseline conditions. However, the panel noted that the acoustic information about the activity that could be gained over the course of the survey when the airguns were shut off would be valuable for post-analysis of this activity and for evaluating future activities. The panel recommended the airguns be turned off for two shots (i.e., 60 seconds) to provide sufficient time to record the background noise associated with the vessels.

5.2.3 Are there techniques not proposed by the applicant, or modifications to the techniques proposed by the applicant, that should be considered for inclusion in the applicant's monitoring program to better accomplish the goals stated above?

ION should deploy overwintering acoustic recorders within their survey area during their eastward transit across the Alaskan Beaufort to the Canadian Beaufort Sea early in the summer. The recorders would monitor sounds during the summer, the seismic shoot, and over the winter. ION should contract someone to return in 2012 to retrieve the instruments and analyze the data. These acoustic data would provide some true baseline information to compare the occurrence, distribution, and behavior of marine mammals at times when ION's activities are occurring and when they are absent. To accomplish this, ION should present a plan for an acoustic monitoring program to an independent expert panel for review. The plan should consider the best placement of the instruments relative to ION's proposed activities, the expected distribution and gradients in marine mammal distribution, and other existing overwintering recorders. There are relatively few data on the distribution and relative abundance of marine mammals in the Beaufort Sea during ION's planned seismic survey. Additional information is needed. Therefore, some panel members thought that ION should conduct aerial surveys in the proposed survey area in October, when there is sufficient daylight to effectively conduct a visual survey, and when belugas, seals, polar bears, and bowheads will likely still be in the area.

ION should also consider changing the survey design to minimize the likelihood of affecting the autumn subsistence whaling and hunting activities. If the western transect lines are critically important to survey, ION should survey them during the open water period, which is prior to the autumn whaling and hunting season and is when more is known about the occurrence, distribution, density, and behavior of marine mammals. It is also when available mitigation methods are most likely to be successful.

If ION does conduct their surveys during the proposed time period, they should establish a communication plan with the hunters. The proposed time period is after the other companies plan to complete their activities, and, therefore, the communication centers are not scheduled to continue operating. ION should wait until the bowhead hunt ends (approximately 20 October) before beginning to survey in the western region of their survey area.

5.2.4 What is the best way for an applicant to present their data and results (formatting, metrics, graphics, etc.) in the required reports that are to be submitted to NMFS?

Panel members generally re-iterated the recommendations made in last year's panel report and listed in section 4.7 above. In addition,

- The report should clearly compare authorized takes to the level of actual estimated takes.
- Sightability curves (detection functions) for MMOs should be provided.

6. ACKNOWLEDGEMENTS

Panel members wish to acknowledge and thank Mr. George Noongwook of St. Lawrence Island and Johnny Aiken of Barrow for the information and insights they brought to the panel discussions. Panel members also wish to thank Dr. Robyn Angliss for facilitating the panel's discussion and Ms. Sheyna Wisdom for taking minutes of the meeting.

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8. PANEL MEMBERS

The members of the review panel were:

Harry Brower	Alaska Eskimo Whaling Commission
Christopher W. Clark, PhD	Cornell University, Bioacoustics Research Program
Megan Ferguson, PhD	National Marine Fisheries Service, National Marine Mammal Laboratory
Jason Gedamke, PhD	National Marine Fisheries Service, Office of Science and Technology
Brandon Southall, PhD	Southall Environmental Associates, Inc
Robert Suydam, PhD	North Slope Borough, Department of Wildlife Management

Appendix A

Summary of General Recommendations from the 2010 Peer-review Panel Report

1.0 Acoustic effects of oil and gas exploration – assessment and mitigation

- 1.1 NMFS should begin a transition away from using a single metric of acoustic exposure (i.e., sound pressure level) to estimate the potential effects of anthropogenic sound on marine living resources.
- 1.2 NMFS should be constantly striving toward a more comprehensive ecosystem-based approach in predicting the nature and severity of environmental risks from industrial activities, including oil and gas development.
 - 1.2.1 Recognizing that NMFS may not be able to implement such an approach for mitigation purposes on a real-time basis, for real-time mitigation NMFS may have to continue relying on simple measures that can be readily applied in the field.
 - 1.2.2 These simple measures should be based on the more comprehensive ecosystem assessments and they should be precautionary to compensate for remaining uncertainty in potential effects.
 - 1.2.3 Furthermore, NMFS should tailor those simple measures to the various activities to be conducted (e.g., seismic studies versus exploratory drilling), the environments in which they will be conducted (e.g., deep pelagic versus shallow coastal), and the relevant biological circumstances (e.g., species present, migratory versus reproductive seasons).

2.0 Aerial Surveys

- 2.1 Aerial surveys should not be categorically excluded as a research and monitoring tool in the Chukchi Sea.
- 2.2 If aerial surveys are not used, then additional monitoring tools (e.g., passive acoustic systems, unmanned aircraft systems) must be further developed, field tested, and implemented to provide the type of information gained from aerial surveys (e.g., species-specific estimates of the number of individuals taken by a particular activity).
- 2.3 Monitoring for the purpose of detecting mitigation thresholds (e.g., identifying aggregations or mothers with calves within safety radii) requires that the aircraft be able to break away from pre-determined transects to circle sighted animals and confirm such information as species, number of animals, and group composition.
- 2.4 Those responsible for monitoring with the intent of detecting the effects of certain activities (e.g., seismic surveys, exploratory drilling) should adjust their survey design (e.g., stratify levels of effort) to meet the monitoring goals, with anticipated level of survey effort determined by pre-survey analyses of statistical power for detecting responses.
- 2.5 To maximize the value of aerial surveys for mitigation, survey data should be entered into a computer on board the aircraft in a way that enables immediate geospatial analysis by the survey team and evaluation by NMFS.

3.0 Marine Mammal Observers

- 3.1 Observers should be trained using visual aids (e.g., videos, photos), to help them identify the species that they are likely to encounter in the conditions under which the animals will likely be seen.
- 3.2 Observers should understand the importance of classifying marine mammals as “unknown” or “unidentified” if they cannot identify the animals to species with confidence. In those cases, they should note any information that might aid in the identification of the marine mammal sighted. For example, for an unidentified mysticete whale, the observers should record whether the animal had a dorsal fin.
- 3.3 Observers should attempt to maximize the time spent looking at the water and guarding the safety radii. They should avoid the tendency to spend too much time evaluating animal behavior or entering data on forms, both of which detract from their primary purpose of monitoring the safety zone.
- 3.4 “Big eye” binoculars (e.g., 25 x 150 power) should be used from high perches on large, stable platforms. They are most useful for monitoring impact zones that extend beyond the effective line of sight. With two or three observers on watch, the use of big eyes should be paired with searching by naked eye, the latter allowing visual coverage of nearby areas to detect marine mammals. When a single observer is on duty, the observer should follow a regular schedule of shifting between searching by naked-eye, low-power binoculars, and big-eye binoculars based on the activity, the environmental conditions, and the marine mammals of concern.
- 3.5 Observers should use the best possible positions for observing (e.g., outside and as high on the vessel as possible), taking into account weather and other working conditions.
- 3.6 Sightings should be entered and archived in a way that enables immediate geospatial depiction to facilitate operational awareness and analysis of risks to marine mammals. Real-time monitoring is especially important in areas of seasonal migration or influx of marine mammals. Various software packages for real-time data entry, mapping, and analysis are available for this purpose.
- 3.7 Observer teams should include Alaska Natives and all observers should be trained together. Whenever possible, new observers should be paired with experienced observers to avoid situations where lack of experience impairs the quality of observations.
- 3.8 Following the model used to monitor commercial fisheries, observers should be managed by an independent organization that trains and assigns them to observe various operations. Training and on-site performance should be evaluated regularly. At the end of every assignment, the organization should debrief the observers, collect their data, conduct basic analyses with the data, and prepare the data and results for dissemination to interested parties.
- 3.9 NMFS should provide instructions regarding the estimation of the number of takes during the course of an activity (e.g., seismic survey). The guidance should be sufficiently specific to ensure that take estimates are accurate and include realistic estimates of precision and bias.

4.0 Visual Near-field Monitoring

- 4.1 NMFS should require efficacy testing of night-vision binoculars, forward-looking infrared devices, and other such instruments to improve near-field monitoring under Arctic conditions.
- 4.2 NMFS should encourage the industry to consider the use of seismic streamers (passive acoustic technology) to collect bioacoustic information. At present, this kind of monitoring

has not been successfully used for determining the exact locations of animals relative to safety zones, but further development of passive acoustic technology may facilitate such uses in the foreseeable future.

- 4.3 Industry should avoid the use of “sampling” the visual near-field area periodically and then extrapolating to the full survey period. This approach has severe shortcomings and could lead to biased results and conclusions regarding the effects of industry activities.
- 4.4 To help evaluate the utility of ramp-up procedures, NMFS should require observers to record, analyze, and report their observations during any ramp-up period. NMFS also should support specific studies using multiple types of monitoring (visual, acoustic, tagging) to evaluate how marine mammals respond to increasing received sound levels. Such information should provide useful evidence as to whether ramp-up procedures are an effective form of mitigation.

5.0 Visual far-field monitoring

- 5.1 Marine mammal observers should carefully document visibility during observation periods so that total estimates of take can be corrected accordingly.
- 5.2 Aerial surveys should be used whenever possible to supplement the monitoring effort in areas not visible to observers on vessels.
- 5.3 Alternative methods should be developed to improve monitoring of the visual far-field. In this regard, the most promising method is passive acoustic monitoring. Active acoustic monitoring also may be useful under certain circumstances (i.e., when the risk of injury to animals is high), but is itself a source of additional noise and is therefore a less desirable means of monitoring.

6.0 Baseline Biological and Environmental Information

- 6.1 NMFS and the Minerals Management Service [now BOEMRE] should work with the industry to develop more rigorous, longer-term research methods for collecting baseline information before activities are initiated.

7.0 Comprehensive Ecosystem Assessments and Cumulative Impacts

The following is a list of “basic tasks” that the “industry, federal agencies, Alaska Native organizations, conservation organizations, and other interested parties could undertake to promote more comprehensive ecosystem assessments”:

- 7.1 Emphasize multidisciplinary studies that integrate physical, chemical, and biological measurements to assess human influences throughout marine ecosystems.
- 7.2 Incorporate data collected using all reliable methods and from all pertinent sources, including broad ecosystem studies, more narrowly targeted research, and other activities (e.g., commercial, military) that may have ecosystem effects. These data streams should be integrated spatially and temporally to provide a more comprehensive assessment of the ecosystem.
- 7.3 Archive all collected data in standardized databases for sharing among scientific disciplines.
- 7.4 Maintain and make available detailed logs of all activities in the Beaufort and Chukchi area (e.g., oil and gas, shipping, fishing, scientific cruises, use of ice breakers).
- 7.5 Develop and implement policies and means for sharing data and ensuring that the research community has access to the information needed to conduct more integrated, comprehensive ecosystem assessments.

- 7.6 Develop better and more timely methods for integrating and displaying combined datasets spatially and temporally.
 - 7.7 Include data on location and timing of subsistence hunts.
 - 7.8 Monitor developments in other regions or scientific disciplines that may reveal better ways of integrating and analyzing multiple datasets or conducting cumulative effects or comprehensive ecosystem analyses.
 - 7.9 Include pertinent biological information on the status, ecology, and behavior of the potentially affected species or stocks (e.g., contaminant load, body condition, reproduction, distribution, and relative abundance).
- 8.0 Duplication of Seismic Survey Effort
- 8.1 NMFS should work with the Minerals Management Service [now BOEMRE] and other relevant stakeholders to promote and possibly require data sharing to reduce or eliminate duplicative seismic surveys in the Alaskan Arctic. It may be possible that essential seismic information could be collected by a coordinated survey effort rather than by independent and sometimes duplicative efforts.

**2012 OPEN WATER SEASON
PROGRAMMATIC CONFLICT AVOIDANCE AGREEMENT**

BETWEEN

**BP EXPLORATION (ALASKA), INC.
ENI US OPERATING COMPANY, INC.
EXXON MOBIL CORPORATION
GX TECHNOLOGY CORP.
PIONEER NATURAL RESOURCES ALASKA, INC.
SHELL OFFSHORE, INC**

AND

**THE ALASKA ESKIMO WHALING COMMISSION
THE BARROW WHALING CAPTAINS' ASSOCIATION
THE GAMBELL WHALING CAPTAINS' ASSOCIATION
THE KAKTOVIK WHALING CAPTAINS' ASSOCIATION
THE KIVALINA WHALING CAPTAINS' ASSOCIATION
THE LITTLE DIOMEDE WHALING CAPTAINS'
ASSOCIATION
THE NUIQSUT WHALING CAPTAINS' ASSOCIATION
THE PT. HOPE WHALING CAPTAINS' ASSOCIATION
THE PT. LAY WHALING CAPTAINS' ASSOCIATION
THE SAVOONGA WHALING CAPTAINS' ASSOCIATION
THE WAINWRIGHT WHALING CAPTAINS' ASSOCIATION
THE WALES WHALING CAPTAINS' ASSOCIATION**

**FINAL FOR SIGNATURE
MARCH 1, 2012**

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TITLE I – GENERAL PROVISIONS

SECTION 101. APPLICATION.

Title I applies to all Participants, except as provided in Title VI.

Title II applies to all Participants, except as provided in Titles III or VI.

Title III applies to those Participants who operate barge or transit vessels in the Beaufort Sea or Chukchi Sea.

Titles IV and V apply only to those Participants who engage in oil and gas operations.

Title VI applies to those Participants who engage exclusively in geophysical activities that are conducted at least 5 miles or more from the Alaska coast in the Beaufort Sea or Chukchi Sea and begin on or after October 1, 2012.

Provisions that apply to a specific activity or are designated as specific to either the Beaufort Sea or Chukchi Sea apply only to Participants that engage in that activity or operate in that area, and provisions applicable to activities a Participant does not engage in or areas in which a Participant does not operate do not apply to that Participant.

SECTION 102. PURPOSE.

The purpose of this Agreement is to provide:

- (1) Equipment and procedures for communications between Subsistence Participants and Industry Participants;
- (2) Avoidance guidelines and other mitigation measures to be followed by the Industry Participants working in or transiting the vicinity of active subsistence hunters, in areas where subsistence hunters anticipate hunting, or in areas that are in sufficient proximity to areas expected to be used for subsistence hunting that the planned activities could potentially adversely affect the subsistence bowhead whale hunt through effects on bowhead whales;
- (3) Measures to be taken in the event of an emergency occurring during the term of this Agreement; and
- (4) Dispute resolution procedures.

SECTION 103. DEFINITIONS.**(a) Defined Terms.**

For the purposes of this Agreement:

- (1) The term “Agreement” means this 2012 Open Water Season Programmatic Conflict Avoidance Agreement and any attachments to such agreement.
- (2) The term “at-sea oil and gas operations” does not include gravel islands or fixed platform developments located near shore (for example Northstar or Oooguruk) or Near Shore Operations Support Vessels.
- (3) The term “barge” means a non-powered vessel that is pushed or towed, and the accompanying pushing or towing vessel, which is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include any vessel used to provide supplies or support to at-sea oil and gas operations or Near Shore Operations Support Vessels.
- (4) The term “Com-Center” means a communications systems coordination center established under Section 203.
- (5) The term “geophysical activity” means any activity the purpose of which is to gather data for imaging the marine subsurface environment, including but not limited to use of air guns, sonar, and other geophysical equipment used for seismic exploration or shallow hazard identification. “Geophysical activity” does not include support vessels that are not actively employing geophysical equipment, or other supporting activities that do not generate sound waves for the purposes of imaging the subsurface marine environment.
- (6) The term “geophysical equipment” means equipment, such as air gun arrays over 300 cubic inches or sparker arrays over 20,000 kJ, employed on a vessel or a towed array, that generates sound waves for the purpose of imaging the subsurface marine environment for exploration and development purposes. The term does not include vessel engines, generators, or sources such as fathometers, fish finders, side-scan sonar, or other sources intended for engineering and /or transportation purposes.
- (7) The term “Industry Participants” means all parties to this Agreement who are not Subsistence Participants.

(8) The term “Marine Mammal Observer / Inupiat Communicator” or “MMO/IC” means an observer hired by an Industry Participant for the purpose of spotting and identifying marine mammals in the area of that Industry Participant’s operations during the Open Water Season. The MMO/IC also serves as the on-board Inupiat communicator who can communicate directly with whaling crews.

(9) The term “Near Shore Operations Support Vessels” means vessels (including aircraft) used to support related activities (such as supply, re-supply, crew movement, and facility maintenance) for near shore oil and gas operations by an Industry Participant.

(10) The terms “NSB” and “NSB DWM” mean the North Slope Borough and the North Slope Borough Department of Wildlife Management, respectively.

(11) The term “oil and gas operations” means all oil and gas exploration, development, or production activities (including, but not limited to, geophysical activity, exploratory drilling, development activities (such as dredging or construction), production drilling, or production, and related activities (such as supply, re-supply, crew movements, and facility maintenance) by or for any Industry Participant, including aircraft and vessels of whatever kind used in support of such activities, occurring in the Beaufort Sea or Chukchi Sea, whether occurring near shore or offshore, but does not include barge traffic, transit vessel traffic, cable laying vessel traffic, or research vessel traffic (i.e. traffic by a vessel which is only conducting research and is not conducting any geophysical activities) by or for any Participant.

(12) The term “Open Water Season” means the period of the year when ice conditions permit navigation or oil and gas operations to occur in the Beaufort Sea or Chukchi Sea, as appropriate.

(13) The term “Participants” means all parties identified in this Agreement by name and whose representative(s) has signed the Agreement, and all contractors of such parties. When used alone the term includes both Industry Participants and Subsistence Participants.

(14) The term “Primary Sound Source Vessel” means a vessel owned or operated by or for an Industry Participant that (A) employs air gun arrays greater than 300 cubic inches or sparkers greater than 20,000 kJ, for imaging the subsurface environment, (B) is used to monitor any safety zone around a vessel described in subsection (A), (C) is engaged in ice-breaking, or (D) is the lead vessel in a group of barge or transit vessels.

(15) The term “sonar” means equipment, employed as hull mounted or towed array, intended for the active location of surface or underwater vessels. The term does not include vessel engines, generators, or sources such as fathometers, fish finders, side-scan sonar, or other sources intended for engineering, cable laying or routing, and/or transportation purposes.

(16) The term “Subsistence Participants” means the Alaska Eskimo Whaling Commission (AEWC) and its members, including the whaling captains’ associations identified on the cover of this Agreement, as well as any individual members of those associations.

(17) The term “transit vessel” means a powered vessel that is used solely to transport materials through the Beaufort Sea or Chukchi Sea. Such term does not include a vessel used to provide supplies or other support to at-sea oil and gas operations or Near Shore Operations Support Vessels.

(b) Geographically Limited Terms.

For the purposes of this Agreement:

(1) The term “Beaufort Sea” means all waters off the northern coast of Alaska from Point Barrow to the Canadian border.

(2) The term “Chukchi Sea” means all waters off the western and northern coasts of Alaska from Cape Prince of Wales to Point Barrow.

SECTION 104. TERM, SCOPE, AND LIMITATIONS.

(a) Term.

The term of this Agreement shall commence with the signing of this document by the Participants and shall terminate upon completion of the Nuiqsut, Kaktovik, Barrow, Wainwright, Pt Lay, and Pt. Hope Fall Bowhead Hunts or the Beaufort Sea Post Season Meeting required under Section 108(a) and Chukchi Sea Post-Season Meetings in Barrow, Wainwright, Pt. Lay, and Pt. Hope required under Section 108(b), whichever is later.

(b) Scope.

The Participants agree that, unless otherwise specified:

- (1) The mitigation measures identified in this Agreement, which are intended to mitigate interference by oil and gas operations and barge and transit vessel traffic with the Alaskan Eskimo subsistence bowhead whale hunt, are designed to apply to all activities of each Participant during the 2012 Open Water Season, whether referenced specifically or by category, and to all vessels and locations covered by this Agreement, whether referenced specifically or by category.
- (2) This Agreement is intended to apply to all oil and gas operations and barge and transit vessel traffic during the 2012 Open Water Season in the Beaufort Sea or Chukchi Sea.
- (3) Vessels and locations covered by this Agreement include those identified in the Agreement, as well as any other vessels or locations that are employed by or for the Industry Participants in the Beaufort Sea or Chukchi Sea during the 2012 Open Water Season.

(c) Limitations of Obligations.

The following limitations apply to this Agreement.

- (1) No cooperation among the Participants, other than that required by this Agreement, is intended or otherwise implied by their adherence to this Agreement. In no event shall the signatures of any representative of the Alaska Eskimo Whaling Commission (AEWC), or of the Barrow, Nuiqsut, Kaktovik, Wainwright, Pt. Hope, or Pt. Lay Whaling Captains' Associations, or of any other Whaling Captains' Association be taken as an endorsement of any Arctic operations or Beaufort Sea or Chukchi Sea OCS operations by any oil and/or gas operator or contractor.
- (2) Adherence to the procedures and guidelines set forth in this Agreement does not in any way indicate that any Inupiat or Siberian Yupik whalers or the AEWC agree that industrial activities are not interfering with the bowhead whale migration or the bowhead whale subsistence hunt. Such adherence does not represent an admission on the part of the Industry Participants or their contractors that the activities covered by this Agreement will interfere with the bowhead whale migration or the bowhead whale subsistence hunt.

(3) No member of the oil and gas industry or any contractor has the authority to impose restrictions on the subsistence hunting of bowhead whales or associated activities of the AEWG, residents of the Villages of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, or Pt. Hope, or residents of any other village represented by the AEWG.

(4) In the event additional parties engage in oil and gas operations in the Beaufort Sea or Chukchi Sea during the summer or fall of 2012 the Participants shall exercise their good-faith efforts to encourage those parties to enter into this Agreement. Should additional parties enter into this Agreement at a date subsequent to the date of the signing of this document and before the termination of the 2012 bowhead whale subsistence hunting season, the AEWG will provide to all Participants a supplement to this document with the added signatures.

(5) No Participant is responsible for enlisting additional parties to adhere to the terms and conditions of the Agreement. Similarly, **THE AEWG IS NOT RESPONSIBLE FOR, OR A PARTY TO, ANY AGREEMENT AMONG THE INDUSTRY PARTICIPANTS** concerning the apportionment of expenses necessary for the implementation of this Agreement.

(6) In adhering to this Agreement, none of the Participants waives any rights existing at law. All Participants agree that the provisions of this document do not establish any precedent as between them or with any regulatory or permitting authority.

(7) **PARTICIPANTS' OBLIGATIONS SHALL BE SEPARABLE:** All Participants to this Agreement understand that each Participant represents a separate entity. The failure of any Participant to adhere to this Agreement or to abide by the terms and conditions of this Agreement shall not affect the obligation of other Participants to adhere to this Agreement and to proceed accordingly with all activities covered by this Agreement. Nor shall any Participant's adherence to this Agreement affect that Participant's duties, liabilities, or other obligations with respect to any other Participant beyond those stated in this Agreement. If an Industry Participant does not receive permit approvals from regulatory agencies to conduct its proposed activities, then that company may withdraw from this Agreement.

SECTION 105. REGULATORY COMPLIANCE.

(a) United States Coast Guard Requirements.

The Participants shall comply with all applicable United States Coast Guard requirements for safety, navigation, and notice.

(b) Environmental Regulations and Statutes.

The Participants shall comply with all applicable environmental regulations and statutes.

(c) Other Regulatory Requirements.

The Participants shall comply with all applicable federal, state, and local government requirements.

SECTION 106. DISPUTE RESOLUTION.

Subject to the terms of Section 104(c)(7) of this Agreement, all disputes arising between any Industry Participants and any Subsistence Participants shall be addressed as follows:

- (1) The dispute shall first be addressed between the affected Participant(s) in consultation with the affected village Whaling Captains' Association and the Industry Participant(s)' Local Representative.
- (2) If the dispute cannot be resolved to the satisfaction of all affected Participants, then the dispute shall be addressed with the affected Participants in consultation with the AEWC.
- (3) If the dispute cannot be satisfactorily resolved in accordance with paragraphs (1) and (2) above, then the dispute shall be addressed with the AEWC and the affected Participants in consultation with representatives of NOAA Fisheries.
- (4) All Participants shall seek to resolve any disputes in a timely manner, and shall work to ensure that requests for information or decisions are responded to promptly.

SECTION 107. EMERGENCY AND OTHER NECESSARY ASSISTANCE.**(a) Emergency Communications.**

ALL VESSELS SHOULD NOTIFY THE APPROPRIATE COM-CENTER IMMEDIATELY IN THE EVENT OF AN EMERGENCY. The appropriate Com-Center operator will notify the nearest vessels and appropriate search and rescue authorities of the problem and advise them regarding necessary assistance. (See attached listing of local search and rescue organizations in Attachment I.)

(b) Emergency Assistance for Subsistence Whale Hunters.

Section 403 of Public Law 107-372 (16 U.S.C. 916c note) provides that “Notwithstanding any provision of law, the use of a vessel to tow a whale, taken in a traditional subsistence whale hunt permitted by Federal law and conducted in waters off the coast of Alaska is authorized, if such towing is performed upon a request for emergency assistance made by a subsistence whale hunting organization formally recognized by an agency of the United States government, or made by a member of such an organization, to prevent the loss of a whale.” Industry Participants will advise their vessel captains that, under the circumstances described above, assistance to tow a whale is permitted under law when requested by a Subsistence Participant. Under the circumstances described above, Industry Participants will provide such assistance upon a request for emergency assistance from a Subsistence Participant, if conditions permit the Industry Participant’s vessel to safely do so.

SECTION 108. POST-SEASON REVIEW / PRESEASON INTRODUCTION.**(a) Beaufort Sea Post-Season Joint Meeting.**

Following the end of the fall 2012 bowhead whale subsistence hunt and prior to the 2013 Pre-Season Introduction Meetings, the Industry Participant that establishes the Deadhorse and Kaktovik Com Centers will offer to the AEWK Chairman to host a joint meeting with all whaling captains of the Villages of Nuiqsut, Kaktovik and Barrow, the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants’ vessels in the Beaufort Sea, and with the Chairman and Executive Director of the AEWK, at a mutually agreed upon time and place on the North Slope of Alaska, to review the results of the 2012 Beaufort Sea Open Water Season, unless it is agreed by all designated individuals or their representatives that such a meeting is not necessary.

(b) Chukchi Sea Post-Season Village Meetings.

Following the completion of the 2012 Chukchi Sea Open Water Season and prior to the 2013 Pre-Season Introduction Meetings, the Industry Participants involved, if requested by the AEWG or the Whaling Captain's Association of each village, will host a meeting in each of the following villages: Wainwright, Pt. Lay, Pt. Hope, Kivalina, Little Diomedede, Wales, Savoonga, and Barrow (or a joint meeting of the whaling captains from all of these villages if the whaling captains agree to a joint meeting) to review the results of the 2012 operations and to discuss any concerns residents of those villages might have regarding the operations. The meetings will include the Marine Mammal Observer / Inupiat Communicators stationed on the Industry Participants' vessels in the Chukchi Sea. The Chairman and Executive Director of the AEWG will be invited to attend the meeting(s).

(c) Pre-season Introduction Meetings.

(1) Immediately following each of the above meetings, and at the same location, the Industry Participants will provide a brief introduction to their planned operations for the 2012 Open Water Season. Each Industry Participant should provide hand-outs explaining their planned activities that the whaling captains can review.

(2) Subsistence Participants understand that any planned operations discussed at these Pre-Season Introduction Meetings, and the corresponding maps, will represent the Industry Participant's best estimate at that time of its planned operations for the coming year, but that these planned operations are preliminary, and are subject to change prior to the 2012 Open Water Season Meeting.

(d) Map of Planned Industry Participant Activities.

As practicable, Industry Participants shall jointly prepare and provide the AEWG with a large-scale map of the Beaufort and Chukchi Seas showing the locations and types of oil and gas and barge and transit activities planned by each Industry Participant. This map will be for use by the AEWG and Industry Participants during the 2012 CAA Meeting.

SECTION 109. INDIVIDUAL NOTIFICATION.

In the event that any Industry Participant does not become a signatory to this Agreement, the local Whaling Captains' Associations shall be notified by the AEWG, no later than March 31, 2012, so that the local Whaling Captains' Associations can prepare to talk with the non-signatories to avoid conflict during that association's fall subsistence bowhead whaling season.

TITLE II -- OPEN WATER SEASON COMMUNICATIONS**SECTION 201. MARINE MAMMAL OBSERVERS / INUPIAT COMMUNICATORS.****(a) Marine Mammal Observer / Inupiat Communicator Required.**

(1) In General. Each Industry Participant agrees to employ a Marine Mammal Observer / Inupiat Communicator (MMO/IC) on board each Primary Sound Source Vessel owned or operated by such Industry Participant in the Beaufort Sea or Chukchi Sea. Native residents of the eleven villages represented by the Alaska Eskimo Whaling Commission shall be given preference in hiring for MMO/IC positions.

(2) Special Rule for Inside Beaufort Sea Barrier Islands. Industry Participants whose seismic acquisition operations are limited to an area exclusively within the barrier islands need employ an MMO/IC on one Primary Sound Source Vessel only.

(3) Near Shore Operations Support Vessels. Industry Participants are not required to employ an MMO/IC on Near Shore Operations Support Vessels.

(4) Sealift Operations. For Industry Participants conducting sealift operations in which two tugs towing barges are accompanied within ½ mile by a third light tug at all times, a MMO/IC is required to be employed on the light tug only.

(b) Duties of Marine Mammal Observer / Inupiat Communicator.

(1) Each MMO/IC is to be employed as an observer and Inupiat communicator for the duration of the 2012 Open Water Season on the vessel on which he or she is stationed.

(2) As a member of the crew, the MMO/IC will be subject to the regular code of employee conduct on board the vessel and will be subject to discipline, termination, suspension, layoff, or firing under the same conditions as other employees of the vessel operator or appropriate contractor.

(3) Once the source vessel on which the MMO/IC is employed is in the vicinity of a whaling area and the whalers have launched their boats, the MMO/IC's primary duty will be to carry out the communications responsibilities set out in this Title.

(4) At all other times, the MMO/IC will be responsible for keeping a lookout for bowhead whales and/or other marine mammals in the vicinity of the vessel to assist the vessel captain in avoiding harm to the whales and other marine mammals.

(5) It is the MMO/IC's responsibility to call the appropriate Com-Center as set out in Sections 202 and 203.

(6) The MMO/IC will be responsible for all radio contacts between vessels owned or operated by each of the Industry Participants and whaling boats covered under Section 207 of this Agreement and shall interpret communications as needed to allow the vessel operator to take such action as may be necessary pursuant to this Agreement.

(7) The MMO/IC shall contact directly subsistence whaling boats that may be in the vicinity to ensure that conflicts are avoided to the greatest possible extent.

(8) The MMO/IC will maintain a record of his or her communications with each Com-Center and the subsistence whaling boats, as well as any marine mammal sightings by the MMO/IC.

SECTION 202. COM-CENTER GENERAL COMMUNICATIONS SCHEME.

(a) Reporting Positions for Vessels Owned or Operated by the Industry Participants.

(1) All vessels (other than vessels covered under sections 302 and 602) shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Vessel name, operator of vessel, charter or owner of vessel, and the project the vessel is working on.

(B) Vessel location, speed, and direction.

C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ at Chukchi Sea prospect. We are currently at ___' ___ north ___' ___ west, proceeding SE at ___ knots. We will proceed on this course for ___ hours and will report location and direction at that time.

(2) The appropriate Com-Center shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(3) In the event that the Industry Participant's operation includes seismic data acquisition, the operator reserves the right to restrict exact vessel location information and provide more general location information.

(b) Reporting Positions for Subsistence Whale Hunting Crews.

(1) All subsistence whaling captains shall report to the appropriate Com-Center at the time they launch their boats from shore and again when they return to shore.

(2) All subsistence whaling captains shall report to such Com-Center the initial GPS coordinates of their whaling camps.

(3) Additional communications shall be made on an as needed basis.

(4) Each call shall report the following information:

(A) The crew's location and general direction of travel.

EXAMPLE: This is _____. We are just starting out. We will be traveling north-east from _____ to scout for whales. I will call if our plans change.

(B) The presence of any vessels or aircraft owned or operated by any of the Industry Participants, or their contractors, that are not observing the specified guidelines set forth in Title V on Avoiding Conflicts.

(C) The final call of the day shall include a statement of the whaling captain's general area of expected operations for the following day, if known at the time.

(5) Any subsistence whale hunter preparing to tow a caught whale shall report to the appropriate Com-Center before starting to tow.

EXAMPLE: This is Archie Ahkiviana. I am ___'___ north, ___'___ west. I have a whale and am towing it into _____.

(6) Each time a subsistence whaling camp is moved, it shall be reported promptly to the appropriate Com-Center, including the new GPS coordinates.

(7) Subsistence whale hunters shall notify the appropriate Com-Center promptly if, due to weather or any other unforeseen event, whaling is not going to take place that day.

(8) Subsistence whaling captains shall contact the appropriate Com-Center promptly and report any unexpected movements of their vessel.

(c) Responsibilities of Participants.

(1) Monitoring VHF Channel 16.

All vessels covered by Sections 207, 301, and 401 of this Agreement shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas

It is the responsibility of each vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement to determine the positions of all of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication

After any vessel owned or operated by any of the Industry Participants and covered by Sections 301 or 401 of this Agreement has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the MMO/IC shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

SECTION 203. THE COMMUNICATIONS SYSTEM COORDINATION CENTERS (COM-CENTERS).**(a) Chukchi Lead System Included in Com-Center Coverage.**

In addition to the Beaufort Sea and Chukchi Sea, the communications scheme shall apply in the Chukchi Sea lead system, as identified and excluded from leasing in the current MMS Five-Year Leasing Program, 2007-2012.

(b) Set Up and Operation.

(1) Subject to the terms of Section 104(c) and Section 601 of this Agreement, the Industry Participants conducting operations during the Com-Center operational window specified in Section 203(c) in:

(A) the Beaufort Sea jointly will arrange for the funding of Com-Centers in Deadhorse and Kaktovik; and

(B) the Chukchi Sea jointly will arrange for the funding of Com-Centers in Barrow, Wainwright, Pt. Lay, Pt. Hope, Kivalina, Wales, and St. Lawrence Island.

(2) All nine Com-Centers will be staffed by Inupiat operators. **GROUND TRANSPORTATION MUST BE PROVIDED FOR COM-CENTER OPERATIONS IN KAKTOVIK FOR POLAR BEAR AND BROWN BEAR SAFETY.** The Com-Centers will be operated 24 hours per day during the 2012 subsistence bowhead whale hunt. One Industry Participant in the Beaufort Sea and one Industry Participant in the Chukchi Sea, or their respective contractor, will be designated as the operator of the Com-Centers for that Sea, in consultation with the AEWC.

(3) Each Industry Participant shall contribute to the funding of the Com-Centers covering the areas in which it conducts oil and gas operations. The level of funding for the Com-Centers provided by each of the Industry Participants is intended to be in proportion to the scale of their respective activities, and shall be mutually agreed by the Industry Participants.

(4) The procedures to be followed by the Com-Center operators are set forth in subsection (d) below.

(c) Staffing.

(1) Each Com-Center shall have an Inupiat operator (“Com-Center operator”) on duty 24 hours per day from August 15, or one week before the start of the fall bowhead whale hunt in each respective village, until the end of the bowhead whale subsistence hunt in villages listed in subparagraphs (A) through (G) and until the completion of all Industry Participant vessel transits (other than a vessel covered under Title V) in villages listed in subparagraphs (G) through (I):

- (A) Kaktovik for the Kaktovik Com-Center;
- (B) Nuiqsut for the Deadhorse Com-Center;
- (C) Barrow for the Barrow Com-Center;
- (D) Wainwright for the Wainwright Com-Center.
- (E) Pt. Lay for the Pt. Lay Com-Center, which will be located in the Pt. Lay Whaling Captains’ Association building; and
- (F) Pt. Hope for the Pt. Hope Com-Center, which will be located in the Pt. Hope Whaling Captains’ Association building.
- (G) Kivalina for the Kivalina Com-Center.
- (H) Wales for the Wales Com-Center.
- (I) Gambell or Savoonga for the St. Lawrence Island Com-Center.

(2) All Com-Center staff shall be local hire.

(d) Duties of the Com-Center Operators.

(1) The Com-Center operators shall be available to receive radio and telephone calls and to call vessels as described below. A record shall be made of all calls from every vessel covered by Sections 207, 301, and 401 of this Agreement. Information reported regarding whales struck, lost, landed, or the location of whales struck, lost, or landed, or the number of strikes remaining, shall be confidential and shall not be disclosed to anyone other than the AEWC or the local Whaling Captains' Association. The record of all reporting calls should contain the following information:

(A) Industry Participant Vessel:

- (i) Name of caller and vessel.
- (ii) Vessel location, speed, and direction.
- (iii) Time of call.
- (iv) Anticipated movements between this call and the next report.
- (v) Reports of any industry or subsistence activities.

(B) Subsistence Whale Hunting Boat:

- (i) Name of caller.
- (ii) Location of boat or camp.
- (iii) Time of call.
- (iv) Plans for travel.
- (v) Any special information such as caught whale, whale to be towed, or industry vessel conflicts with whale or whaler. Any report of the number of whales struck, lost, or landed, or of the number of strikes remaining, shall be kept confidential and shall not be disclosed by the Com-Center or any Com-Center operator to anyone other than the AEWC or the local Whaling Captains' Association. The location of whales struck, lost, or landed shall be kept confidential and shall not be disclosed except to the extent needed to avoid an Industry/Subsistence Whale Hunter conflict.

(2) Report of Industry/Subsistence Whale Hunter Conflict. In the event an industry/subsistence whale hunter conflict is reported, the appropriate Com-Center operator shall record:

- (A) Name of industry vessel.
- (B) Name of subsistence whaling captain.
- (C) Location of vessels.
- (D) Nature of conflict, data, and time.

(3) If all vessels and boats covered by Sections 207, 301, and 401 of this Agreement have not reported to the appropriate Com-Center within one hour of the recommended time, that Com-Center operator shall attempt to call all non-reporting vessels to determine the information set out above under the Duties of the Com-Center operator.

(4) As soon as location information is provided by a vessel covered by Sections 207, 301, or 401 of this Agreement, the appropriate Com-Center operator shall plot the location and area of probable operations on the large map provided at the Com-Center.

(5) If, in receiving information or plotting it, a Com-Center operator observes that operations by Industry Participants might conflict with subsistence whaling activities, such Com-Center operator shall contact the industry vessel involved and advise the Industry Participant's Local Representative(s) and the vessel operators of the potential conflict.

SECTION 204. STANDARDIZED LOG BOOKS.

The Industry Participants will provide the Com-Centers and Marine Mammal Observer / Inupiat Communicators with identical log books to assist in the standardization of record keeping associated with communications procedures required pursuant to this Agreement.

SECTION 205. COMMUNICATIONS EQUIPMENT.**(a) Communications Equipment to be Provided to Subsistence Whale Hunting Crews.**

- (1) In General. The Industry Participants will provide (or participate in the provision of) the communications equipment described in paragraphs (4) and (6) of this subsection and subsection (b) of this section.
- (2) Beaufort Sea. The Industry Participants funding Com-Centers in Deadhorse and Kaktovik will fund the provision of communications equipment for the whaling captains of Kaktovik and Nuiqsut in the same proportion as they fund those Com-Centers.
- (3) Chukchi Sea. The Industry participants conducting operations in the Chukchi Sea will coordinate with each other to participate in funding the provision of communications equipment for the whaling captains of Barrow, Wainwright, Pt. Hope, and Pt. Lay.
- (4) All-Channel, Water-Resistant VHF Radios.

These VHF radios are specifically designed for marine use and allow monitoring of Channel 16 while using or listening to another channel.

- (A) Kaktovik Subsistence Whaling Boats: 8
- (B) Kaktovik Base and Search and Rescue: 2
- (C) Nuiqsut Subsistence Whaling Boats: 12
- (D) Nuiqsut Base and Search and Rescue: 3
- (E) Barrow Base and Search and Rescue: 2
- (F) Wainwright Base and Search and Rescue: 2
- (G) Wainwright Subsistence Whaling Boats: 4
- (H) Pt. Hope Base and Search and Rescue: 2
- (I) Pt. Hope Subsistence Whaling Boats: 10

- (J) Pt. Lay Base and Search and Rescue: 2
- (K) Pt. Lay Subsistence Whaling Boats: 4

(5) Specific VHF Channels For Each Village.

The whaling boats from each of the villages have been assigned individual VHF channels for vessel-to-vessel and vessel-to-Com-Center communications as follows:

- (A) Nuiqsut whaling crews will use Channel 68.
- (B) Kaktovik whaling crews will use Channel 69.
- (C) Barrow whaling crews will use Channel 72.
- (D) Wainwright Whaling Crews will use Channel 12.
- (E) Pt. Lay Whaling Crews will use Channel 72.
- (F) Pt. Hope Whaling Crews will use Channel 68.

(6) Satellite Telephones.

The satellite telephones are to be used as backup for the VHF radios. The satellite telephones for use on subsistence whaling boats are for emergency use only and should be programmed for direct dial to the nearest Com-Center.

- A. Kaktovik Base Phones: 2
- B. Kaktovik Subsistence Whaling Boats: 8
- C. Nuiqsut Base Phones: 2
- D. Nuiqsut Subsistence Whaling Boats: 12
- E. Barrow Subsistence Whaling Boats: 2
- F. Wainwright Subsistence Whaling Boats: 4
- G. Pt. Lay Subsistence Whaling Boats: 2

(7) Distribution and Return of Equipment.

The distribution of the VHF radios and satellite telephone equipment to whaling captains for use during the 2012 fall bowhead subsistence whale hunting season shall be completed no later than August 15, 2012. All such units and telephone equipment provided under this Agreement, whether in this section or otherwise, will be returned promptly by the Subsistence Participants to the Industry Participant or the person providing such units and equipment at the end of each Village's 2012 fall bowhead whale subsistence hunt.

(b) Communications Equipment on Vessels Owned or Operated by the Industry Participants and/or their Contractors.

The Marine Mammal Observer / Inupiat Communicators onboard source vessels owned or operated by the Industry Participants and/or their contractors will also be supplied with all-channel VHF radios. The MMO/ICs have been assigned Channel 7 for their exclusive use in communicating with the Com-Center. Such radios shall be returned upon the completion or termination of the MMO/IC's assignment.

(c) Radio Installation and User Training.

The Whaling Captains of Nuiqsut, Kaktovik, Wainwright, Pt. Lay, and Pt. Hope, with assistance from the Industry Participants, will be responsible for the installation of the VHF radio equipment. The Industry participants will provide (or participate in the provision of) on-site user training for the VHF and satellite telephone equipment on or before August 15, 2012, if requested and as scheduled by the Whaling Captains' Associations of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the Industry Participant operating the Beaufort Sea Com-Centers or Chukchi Sea Com-Centers, as appropriate.

SECTION 206. INDIVIDUALS TO CONTACT.

Listed below are the primary contact names and phone numbers for each of the Participants.

(1) BP Exploration (Alaska), Inc.'s (BP) Local Representative

LOWRY BROTT will be BP's local representative on the North Slope during the Term of this Agreement and will be stationed at Northstar Island and will be available by telephone at (907) 670-3520 and when Mr. Brott is not available, his alternate, Jim Croak, will be stationed at Northstar Island and will be available by telephone at the above number.

(3) ENI's Local Representative

Hans Neidig (907) 865-3314

(4) Exxon Mobil's Local Representative

TBD

(5) GX Technology's Local Representative

Ed Nelson (832) 344-6852

(6) Pioneer Natural Resources' (Pioneer) Local Representative

PAT FOLEY will be Pioneer's local representative during the Term of this Agreement and will be stationed in Anchorage and will be available by telephone at (907) 343-2110.

(7) Shell Offshore Inc.'s (Shell) Local Representatives

JOHN MAKETA and HOWARD HILL will be Shell's local representatives on the North Slope during the Term of this Agreement and will be stationed at Barrow during Chukchi Sea operations and at Deadhorse during Beaufort Sea operations and will be available by telephone at (907) 770-3700.

(8) STATOIL's Local Representative

TBD

(9) The Village of Kaktovik

For purposes of this Agreement, the individuals to contact for the Village of Kaktovik will be: JOSEPH KALEAK at (907) 640-6213 or 640-6515, and CHARLIE M. BROWER at (907) 640-4163 (home), (907) 640-2092 (work), or (907) 640-0052 (cell).

(10) The Village of Nuiqsut

For purposes of this Agreement, the individuals to contact for the Village of Nuiqsut will be: ISAAC NUKAPIGAK at (907) 480-6220 (Work); (907) 480-2400 (Home).

(11) The Village of Barrow

For purposes of this Agreement, the individuals to contact for the Village of Barrow will be: HARRY BROWER, JR. at (907) 852-0350 (Work), and EUGENE BROWER at (907) 852-3601.

(12) The Village of Wainwright

For purposes of this Agreement, the individuals to contact for the Village of Wainwright will be: ROSSMAN PEETOOK at (907) 763-4774, and WALTER NAYAKIK at (907)763-2915 (Work).

(13) The Village of Pt. Hope

For purposes of this Agreement, the individuals to contact for the Village of Pt. Hope will be: CHESTER FRANKSON, SR. at (907) 368-2054 (Home).

(14) The Village of Pt. Lay

For purposes of this Agreement, the individuals to contact for the Village of Pt. Lay will be: JULIUS REXFORD (907) 833-4592 (Home), (907) 833-2214 (Work), (907) 833-2320 (Fax), THOMAS NUKAPIAK (907) 833-6467 (Home), (907) 833-3838.

(15) The Village of Kivilina

For the purposes of this Agreement, the individuals to contact for the Village of Kivilina will be: _____.

(16) The Village of Little Diomed

For the purposes of this Agreement, the individuals to contact for the Village of Little Diomed will be: _____.

(17) The Village of Wales

For the purposes of this Agreement, the individuals to contact for the Village of Wales will be: _____.

(18) The Village of Savoonga

For the purposes of this Agreement, the individuals to contact for the Village of Savoonga will be: _____.

(19) The Village of Gambell

For the purposes of this Agreement, the individuals to contact for the Village of Gambell will be: _____.

(20) The AEW

For purposes of this Agreement, the individuals to contact for the AEW shall be: JOHNNY AIKEN at (907) 852-2392.

SECTION 207. SUBSISTENCE WHALE HUNTING BOATS.

The following is a list of the number of boats each of the Subsistence Participants plan to use:

(1) Boats Owned/Used by Whaling Captains of Nuiqsut (NWCA)

The subsistence whaling crews of the Village of Nuiqsut plan to use (12) twelve boats for subsistence whale hunting during the late summer and fall of 2012.

(2) Boats Owned/Used by Whaling Captains of Kaktovik (KWCA)

The subsistence whaling crews of the Village of Kaktovik plan to use (8) eight boats for subsistence whale hunting during the late summer and fall of 2012.

(3) Boats Owned/Used by Whaling Captains of Barrow (BWCA)

The subsistence whaling crews of the Village of Barrow plan to use (40) forty boats for subsistence whale hunting during the late summer and fall of 2012.

(4) Boats Owned/Used by Whaling Captains of Wainwright (WWCA)

The subsistence whaling crews of the Village of Wainwright plan to use (4) four boats for subsistence whale hunting during the fall of 2012.

(5) Boats Owned/Used by Whaling Captains of Pt. Hope (Pt. HWCA)

The subsistence whaling crews of the Village of Pt. Hope plan to use (10) ten boats for subsistence whale hunting during the late fall of 2012.

(6) Boats Owned/Used by Whaling Captains of Pt. Lay (Pt. LWCA)

The subsistence whaling crews of the Village of Pt. Lay plan to use (4) four boats for subsistence whale hunting during the fall of 2012.

If any additional boats are put in use by subsistence whaling crews, the Industry Participants will be notified promptly through the Com-Center.

TITLE III – BARGE, TRANSIT, AND CABLE LAYING VESSEL OPERATIONS

SECTION 301. IN GENERAL.

A Participant may employ barges, transit, or cable laying vessels to transport materials or lay cable through the Beaufort Sea or Chukchi Sea during the term of this Agreement. Any Industry Participant who employs a barge or transit vessel to transport materials through the Beaufort Sea or Chukchi Sea during the term of this Agreement shall require the barge or transit vessel operator to comply with Sections 201, 205(b) and 302 of this Agreement while providing services to that Industry Participant.

SECTION 302. BARGE AND TRANSIT VESSEL OPERATIONS.

(a) Reporting Positions for Barge, Transit or Cable Laying Vessels Owned or Operated by industry Participants.

(1) All barge, transit, or cable laying vessels shall report to the appropriate Com-Center at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

- (A) Barge, transit, or cable laying vessel name, operator of vessel, charterer or owner of vessel, and the project or entity the vessel is transporting materials for.
- (B) Barge, transit, or cable laying vessel location, speed, and direction.
- (C) Plans for barge, transit, or cable laying vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the barge or transit vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at ____' ____ north ____' ____ west, proceeding SE at ____ knots. We will proceed on this course for ____ hours and will report location and direction at that time.

(2) The appropriate Com-Center also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All barge, transit, or cable laying vessel operators are responsible for the following requirements.

(1) Monitoring VHF Channel 16. All barge and transit vessel operators shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and barge or transit vessel operator to determine the positions of their barge or transit vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication. After any barge or transit vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Barge, Transit, and Cable Laying Vessels.

(1) All barge, transit, and cable laying vessel routes shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All barges and transit vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Barge, transit, and cable laying vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Bowhead Whales.

If any barge or transit vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Marine Mammal Sighting Data.

Industry Participants whose operations are limited exclusively to barge or vessel traffic will submit to the AEWC and NSB DWM all marine mammal sighting data.

TITLE IV – VESSELS, TESTING, AND MONITORING

SECTION 401. INDUSTRY PARTICIPANT VESSELS AND EQUIPMENT.

(a) List of Vessels and Equipment Required.

Each Industry Participant engaged in oil and gas operations shall provide a list identifying all vessels or other equipment (including but not limited to boats, barges, aircraft, or similar craft) that are owned and/or operated by, or that are under contract to the Industry Participants, for use in the Beaufort Sea or Chukchi Sea for oil and gas operations or for implementation of such Industry Participant's monitoring plan. Vessels and equipment used for oil and gas operations shall be listed in Attachment II, and vessels and equipment used for monitoring plans shall be listed in Attachment III.

(b) Only Listed Vessels and Equipment (or Like Vessels and Like Equipment) May Be Used.

(1) NONE OF THE INDUSTRY PARTICIPANTS INTENDS TO OPERATE ANY VESSEL OR EQUIPMENT (EXCEPT FOR LIKE VESSELS OR LIKE EQUIPMENT) NOT IDENTIFIED IN THE LISTS REQUIRED UNDER SUBSECTION (a) DURING THE TERM OF THIS AGREEMENT.

(2) Notwithstanding paragraph 1, if any Industry Participant decides to use different vessels or equipment or additional vessels or equipment, such vessels and equipment shall be used only for purposes identified in Attachments II or III; and the AEWG and the whaling captains of Nuiqsut, Kaktovik, Barrow, Wainwright, Pt. Hope, and Pt. Lay shall be notified promptly through the appropriate Com-Center, as identified in Section 203 of this Agreement, and in writing, of their identity and their intended use, including location of use.

SECTION 402. SOUND SIGNATURE TESTS.**(a) Sound Source Verification Testing.**

(1) Geophysical Equipment. For purposes of obtaining a sound signature for Industry Participants' geophysical equipment, the Industry Participants shall have initiated a test of all geophysical equipment within 72 hours of initiating or having initiated operations in the Beaufort Sea or Chukchi Sea. Such tests shall be conducted as set forth in section 402(b).

(2) Vessels. For vessels engaged in geophysical activity, Industry Participants will conduct a sound source verification test for all geophysical equipment used for geophysical activity. Each Industry Participant shall establish a sound source verification range or Industry Participants may participate jointly in establishing a range for the Chukchi Sea and Beaufort Sea, or both. A separate range shall be used for the Chukchi Sea and Beaufort Sea, and vessels shall use the appropriate range for each sea in which they operate. For testing each vessel shall proceed through the range and record information on the date, time, vessel speed, vessel route, vessel load, weather conditions, and equipment operating on the vessel (all noise generating equipment on the vessel, other than geophysical equipment subject to separate testing under paragraph (1), shall be in operation while the vessel is proceeding through the range). The range should be established near a location where details on wind speed and direction are regularly monitored and archived.

(b) Mutual Agreement on Site for Testing; Advance Notice Required.

(1) In General. Each geophysical equipment sound signature test shall be conducted at a site mutually agreed upon by the Industry Participant conducting such test and the AEW. Each Industry Participant conducting such sound signature test(s) will make a good faith effort to provide three (3) weeks advance notice to the AEW and the NSB DWM of its intent to perform each test.

(2) Beaufort Sea Testing. For geophysical equipment sound signature tests conducted in the Beaufort Sea, the Industry Participant conducting such tests shall provide transportation for an appropriate number of representatives from: the AEW, the whaling captains of the Villages of Barrow, Nuiqsut, and Kaktovik, and the NSB DWM to observe the sound signature tests.

(3) Chukchi Sea Testing. For geophysical equipment sound signature tests conducted on vessels to be used in the Chukchi Sea, the Industry Participant(s) conducting such tests shall provide transportation for an appropriate number of representatives from: the AEWC, the whaling captains of the Villages of Barrow, Wainwright, Pt. Lay, and Pt. Hope, and the NSB DWM to observe the sound signature tests.

(c) Sound Signature Data to be Made Available.

(1) Within fourteen (14) days of completing the sound signature field tests for geophysical equipment and within thirty (30) days of the end of the operating season for sound source verification ranges, each Industry Participant and/or its contractor conducting such test(s) will make preliminary and final quality controlled results of the sound signature test(s) available upon request to the AEWC and the NSB DWM. The Industry Participant and/or its contractor will also provide the AEWC and the NSB DWM the preliminary analysis of that data, as well as any other applicable sound signature data that is available and that the AEWC, the NSB DWM, and the Industry Participant agree is relevant to understanding the potential noise impacts of the proposed operations to migrating bowhead whales or other affected marine mammals.

(2) Once completed the final data analysis will be provided to the AEWC and the NSB DWM upon request. The final data report for the sound source verification testing shall be provided to the NSB DWM and the AEWC no later than December 31, 2012.

(3) Any Industry Participant who prepares a model of the sound signature of its vessels and operations, whether before or after the sound signature test, will provide copies of those models and any related analysis to the AEWC and the NSB DWM upon request.

SECTION 403. MONITORING PLANS.**(a) Monitoring Plan Required.**

(1) Each Industry Participant agrees to prepare and implement a monitoring plan to collect data designed to determine the potential effects of its oil and gas operations on fall migrating bowhead whales.

(2) The monitoring plans shall be designed in cooperation with the AEWG, the NSB DWM, and NOAA Fisheries, together with the Bureau of Ocean Energy Management (BOEM) when operating in Federal waters. If additional outside review is requested by any of the above entities, the Industry Participant will evaluate the request on a case by case basis.

(b) Beaufort Sea Monitoring Plans.

In the Beaufort Sea, the monitoring plans should focus on the identify, timing, location, and numbers of marine mammals and their behavioral responses to the noise source. The monitoring plans will place emphasis on understanding potential impacts from industrial sounds on bowhead whales.

(c) Chukchi Sea Monitoring Plans.

In the Chukchi Sea, the monitoring plans should focus on the identity, timing, location, and numbers of marine mammals and their behavioral responses to the noise source. The monitoring plans will place emphasis on understanding potential impacts from industrial sounds on bowhead whales.

(d) Use of Prior Information and Peer Reviewed Data.

(1) Prior impact study results shall be incorporated into the monitoring plans prepared by each Industry Participant as applicable.

(2) Each monitoring plan for oil and gas operations shall be subject to peer review by stakeholders on a peer review panel identified by NOAA Fisheries at the 2012 Open Water Season Peer Review Meeting, convened by NOAA Fisheries. Draft plans will be submitted to the NSB DWM and AEWG no later than two weeks prior to the 2012 Open Water Peer Review Meeting.

(e) Raw Data, Communication, and Summary Required.

- (1) Each Industry Participant conducting site-specific monitoring will:
 - (A) after quality control reviews are completed, make electronic data, available to the NSB DWM at the end of the season.
 - (B) permit and encourage open communications among their contractors and the AEWC and NSB DWM.
- (2) Each Industry Participant will submit a summary of monitoring plan results and progress to the AEWC and NSB DWM every two weeks during the operating season.

SECTION 404. CUMULATIVE NOISE IMPACTS STUDY.

Each Industry Participant further agrees to provide its monitoring plan and sound signature data, for use in a cumulative effects analysis of the multiple sound sources and their possible relationship to any observed changes in marine mammal behavior, to be undertaken pursuant to a Cumulative Noise Impacts Study.

The study design for the Cumulative Impacts Study shall be developed through a Cumulative Impacts Workshop to be organized by the North Slope Borough in the winter of 2012/2013. The results of this workshop will be presented at the 2013 Open Water Meeting.

TITLE V – AVOIDING CONFLICTS DURING THE OPEN WATER SEASON

Industry Participants are reminded that Sections 101(a)(5)(A) and (D) of the Marine Mammal Protection Act provide, among other things, that the Secretary can authorize the incidental taking of small numbers of marine mammals of a species or population stock if the Secretary finds, among other things, that the total of such takings during the authorized period **will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses.**

The following Operating Guidelines apply in the Beaufort Sea and Chukchi Sea, except as otherwise specified and in all cases with due regard to environmental conditions and operational safety. These Operating Guidelines are in addition to any permit restrictions or stipulations imposed by the applicable governmental agencies.

SECTION 501. GENERAL PROVISIONS FOR AVOIDING INTERFERENCE WITH BOWHEAD WHALES OR SUBSISTENCE WHALE HUNTING ACTIVITIES.

(a) Routing Vessels and Aircraft.

(1) All vessel and aircraft routes shall be planned so as to minimize any potential conflict with bowhead whales or bowhead subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity (as reported pursuant to Section 202).

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at least five (5) miles offshore during transit.

(b) Aircraft Altitude Floor and Flight Path.

(1) AIRCRAFT SHALL NOT OPERATE BELOW 1500 FEET unless the aircraft is engaged in marine mammal monitoring, approaching, landing or taking off, or unless engaged in providing assistance to a whaler or in poor weather (low ceilings) or any other emergency situations. Aircraft engaged in marine mammal monitoring shall not operate below 1500 feet in areas of active whaling; such areas to be identified through communications with the Com-Centers.

(2) Except for airplanes engaged in marine mammal monitoring, aircraft shall use a flight path that keeps the aircraft at least five (5) miles inland until the aircraft is directly south of its offshore destination, then at that point it shall fly directly north to its destination.

(c) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(d) Vessels Operating in Proximity of Bowhead Whales.

If any vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- (4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- (5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

SECTION 502. GEOPHYSICAL ACTIVITY LIMITATIONS.

The following operating limitations are to be observed and the operations are to be accompanied by a monitoring plan as set forth in Section 403 and Attachment III of this Agreement. The Industry Participants conducting geophysical activity agree to coordinate the timing and location of such activity so as to reduce, by the greatest extent reasonably possible, the level of noise energy entering the water from such activity at any given time and at any given location.

(a) Limitations on Geophysical Activity in the Beaufort Sea.

All geophysical activity in the Beaufort Sea shall be conducted in accordance with the terms set forth below.

(1) Kaktovik: No geophysical activity from the Canadian Border to the Canning River (146 deg. 4 min. W) from 25 August to close of the fall bowhead whale hunt in Kaktovik and Nuiqsut.¹ From August 10 to August 25, Industry Participants will communicate and collaborate with AEWG on any planned vessel movement in and around Kaktovik and Cross Island to avoid impacts to whale hunt.

(2) Nuiqsut:

A. Pt. Storkerson (~148 deg. 42 min. W) to Thetis Island (~150 deg. 10.2 min. W).

(i) *Inside the Barrier Islands*: No geophysical activity prior to July 25. Geophysical activity is allowed from July 25 until completion of operations²

(ii). *Outside the Barrier Islands*: No geophysical activity from August 25 to close of fall bowhead whale hunting in Nuiqsut. Geophysical activity is allowed at all other times.

b. Canning River (~146 deg. 4 min. W) to Pt. Storkerson (~148 deg. 42 min. W): No geophysical activity from August 25 to the close of bowhead whale subsistence hunting in Nuiqsut.

(3) Barrow: No geophysical activity from Pitt Point on the east side of Smith Bay (~152 deg. 15 min. W) to a location about half way between Barrow and Peard Bay (~157 deg. 20 min. W) from September 15 to the close of the fall bowhead whale hunt in Barrow.

¹ The bowhead whale subsistence hunt will be considered closed for a particular village when the village Whaling Captains' Association declares the hunt ended or the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWG), whichever occurs earlier.

² Geophysical activity allowed in this area after August 25 shall include a source array of no more than 12 air guns, a source layout no greater than 8 m x 6 m, and a single source volume no greater than 880 in³.

(b) Limitations on Geophysical Activity in the Chukchi Sea.

All geophysical activity in the Chukchi Sea shall be conducted in accordance with the terms set forth below.

- (1) Beginning September 15, and ending with the close of the fall bowhead whale hunt,³ if Wainwright, Pt. Lay, or Pt. Hope intend to whale in the Chukchi Sea, no more than two geophysical activities employing geophysical equipment will occur at any one time in the Chukchi Sea. During the fall bowhead whale hunt, geophysical equipment will not be used by Participants within 30 miles of any point along the Chukchi Sea coastline. Industry Participants will contact the Whaling Captains' Associations of each of those villages to determine if a village is prepared to whale and will notify the AEWC of any response.
- (2) Safe harbor will be at sites selected by the Industry Participants and the AEWC. Safe harbor sites will be agreed upon no later than the beginning of operations and shall be listed in Attachment IV. However, a vessel captain will seek safety for his assets (vessel and personnel) as is his duty under the Law of the Sea.
- (3) Any vessel operating within 60 miles of the Chukchi Sea coast will follow the communications procedures set forth in Title II of this Agreement. All vessels will adhere to the conflict avoidance measures set forth in Section 501 of this Agreement.
- (4) If a dispute should arise, the resolution process set forth in Section 106 of this Agreement shall apply.

³ The bowhead whale subsistence hunt will be considered closed when village Whaling Captains' Associations of Wainwright, Pt. Lay, and Pt. Hope have each declared that (A) they do not intend to hunt, (B) their village hunt has ended, or (C) the village quota has been exhausted (as announced by the village Whaling Captains' Association or the AEWC), whichever occurs earlier.

SECTION 503. DRILLING AND PRODUCTION.**(a) Camden Bay.**

For exploratory drilling and production between 144 deg. W and the Canning River (~146 deg. 4 min. W), zero discharge of:

- (1) drilling fluids;
- (2) cuttings after 20" casing;
- (3) treated sanitary and gray water; and
- (4) ballast and bilge water.

(b) Drilling Operations in the Beaufort Sea East of Cross Island.

No drilling equipment or related vessels used for at-sea oil and gas operations shall be onsite at any offshore drilling location east of Cross Island from 25 August until the close of the bowhead whale hunt in Nuiqsut and Kaktovik. However, such equipment may remain within the Beaufort Sea in the vicinity of 71 degrees 25 minutes N and 146 degrees 4 minutes W., or at the edge of the Arctic ice pack, whichever is closer to shore.

(c) Drilling Operations in the Beaufort Sea West of Cross Island.

In 2012, no drilling equipment or related vessels used for at-sea oil and gas operations shall be moved onsite at any location outside the barrier islands west of Cross Island until the close of the bowhead whale hunt in Barrow.

(d) Oil Spill Mitigation Agreement.

Industry Participants engaged in drilling operations agree to enter into a binding oil spill mitigation agreement with the Alaska Eskimo Whaling Commission, the North Slope Borough, and the Inupiat Community of the Arctic Slope to provide for hunter transport to alternate hunting locations in the event of an oil spill. The agreement shall be attached as Attachment V.

SECTION 504. SHORE-BASED SERVICE AND SUPPLY AREAS.

Shore-based service and supply areas used by Industry Participants shall be located and operated so as to ensure compliance with the terms of this Agreement.

SECTION 505. TERMINATION OF OPERATIONS AND TRANSIT THROUGH THE BERING STRAIT.

Except as provided in Title VI, all Industry Participant vessels shall complete operations in time to allow such vessels to complete transit through the Bering Strait to a point south of 59 degrees North latitude no later than November 15, 2012. Any Industry Participant vessel that encounters weather or ice that will prevent compliance with the date in the preceding sentence shall coordinate its transit through the Bering Strait to a point south of 59 degrees North latitude with the appropriate Com-Centers listed in Section 203. All Industry Participant vessels shall, weather and ice permitting, transit east of St. Lawrence Island and no closer than 10 miles from the shore of St. Lawrence Island.

TITLE VI – LATE SEASON SEISMIC OPERATIONS**SECTION 601. IN GENERAL.**

Notwithstanding any other provision of this Agreement, any Industry Participant who engages exclusively in geophysical activities that are conducted at least 5 miles or more from the Alaska coast in the Beaufort Sea or Chukchi Sea and begin on or after October 1, 2012 shall only be responsible to comply with Title I, excluding Sections 104(c)(4) and 108(a) and (b), and Sections 201, 205(b), 206, 502(a), and 602 of this Agreement. For the avoidance of doubt, an Industry Participant described in this Section 601 shall not be subject to the requirements of Section 203 including but not limited to funding of Com-Centers, providing certain equipment, training and providing representatives as designated operators of Com-Centers.

SECTION 602. VESSEL OPERATIONS.**(a) Reporting Positions When Vessels Come Within 40 Miles of the Coast.**

(1) A vessel subject to this section operating within 40 miles of the Alaska coast shall report to the appropriate Com-Center, if open, at least once every six hours commencing with a call at approximately 06:00 hours. Each call shall report the following information:

(A) Vessel name, operator of vessel, charter or owner of vessel, and the project or entity the vessel is conducting operations for.

(B) Vessel location, speed, and direction.

(C) Plans for vessel movement between the time of the call and the time of the next call. The final call of the day shall include a statement of the vessel's general area of expected operations for the following day, if known at that time.

EXAMPLE: This is the Arctic Endeavor, operated by _____ for _____ in the Chukchi Sea. We are currently at ____' ____ north ____' ____ west, proceeding SE at ____ knots. We will proceed on this course for ____ hours and will report location and direction at that time.

(2) The appropriate Com-Center, if open, also shall be notified if there is any significant change in plans, such as an unannounced start-up of operations or significant deviations from announced course, and such Com-Center shall notify all whalers of such changes. A call to the appropriate Com-Center shall be made regarding any unsafe or unanticipated ice conditions.

(b) Operator Duties.

All vessel operators subject to this title are responsible for the following requirements.

(1) Monitoring VHF Channel 16. All vessel operators shall monitor marine VHF Channel 16 at all times.

(2) Avoidance of Whale Hunting Crews and Areas. It is the responsibility of each Industry Participant and vessel operator to determine the positions of their vessels and to exercise due care in avoiding any areas where subsistence whale hunting is active.

(3) Vessel-to-Vessel Communication. After any vessel owned or operated by any Industry Participant has been informed of or has determined the location of subsistence whale hunting boats in its vicinity, the Marine Mammal Observer / Inupiat Communicator shall contact those boats in order to coordinate movement and take necessary avoidance precautions.

(c) Routing Vessels.

(1) All vessel routes within 40 miles of the Alaska coast shall be planned so as to minimize any potential conflict with bowhead whales or subsistence whaling activities. All vessels shall avoid areas of active or anticipated whaling activity, as reported pursuant to Section 202.

(2) Beaufort Sea. Vessels transiting east of Bullen Point to the Canadian border should remain at least five (5) miles offshore during transit along the coast, provided ice and sea conditions allow.

(3) Chukchi Sea. Vessels should remain as far offshore as weather and ice conditions allow, and at all times at least five (5) miles offshore during transit.

(d) Vessel Speeds.

Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowhead whales or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations.

(e) Vessels Operating in Proximity of Bowhead Whales.

If any vessel inadvertently approaches within 1.6 kilometers (1 mile) of observed bowhead whales, except when providing emergency assistance to whalers or in other emergency situations, the vessel operator will take reasonable precautions to avoid potential interaction with the bowhead whales by taking one or more of the following actions, as appropriate:

- (1) reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- (2) steering around the whale(s) if possible;
- (3) operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;

(4) operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and

(5) checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(f) Marine Mammal Sighting Data.

Industry Participants whose operations are subject to this title will submit to the AEW and NSB DWM all marine mammal sighting data.

TITLE VII – PARTICIPANTS

This Agreement shall be binding and effective when signed by the duly authorized representatives of the Participants. Signatures may be by facsimile on separate pages.

George Noongwook

AEWC Chairman

Dated: _____

Harry Brower, Jr.

AEWC Commissioner for Barrow

Dated: _____

Merlin Koonooka

AEWC Commissioner for Gambell

Dated: _____

Joseph Kaleak

AEWC Commissioner for Kaktovik

Dated: _____

Raymond Hawley

AEWC Commissioner for Kivalina

Dated: _____

Ronald Ozenna, Jr.

AEWC Commissioner for Little Diomedede

Dated: _____

Isaac Nukapigak
AEWC Commissioner for Nuiqsut
Dated: _____

Rex A. Rock, Sr.
AEWC Commissioner for Pt. Hope
Dated: _____

Julius Rexford
AEWC Commissioner for Pt. Lay
Dated: _____

George Noongwook
AEWC Commissioner for Savoonga
Dated: _____

John Hopson, Jr.
AEWC Commissioner for Wainwright
Dated: _____

Luther Komonaseak
AEWC Commissioner for Wales
Dated: _____

Name:
BP Exploration (Alaska) Inc.
Dated: _____

Name:
ENI US Operating Company
Dated: _____

Name:
Exxon Mobil Corporation
Dated: _____

Name:
GX Technology Corp.
Dated: _____

Name:
Pioneer Natural Resources Alaska
Dated: _____

Name:
Shell Offshore, Inc.
Dated: _____

ATTACHMENT I -- LOCAL SAR CONTACTS

LOCAL SEARCH AND RESCUE ORGANIZATIONS -

CONTACT PERSONS

(IN EMERGENCIES, ALWAYS DIAL 911)

North Slope Borough Search and Rescue (Pilots)

Director Hugh Patkotak	852-2822 WK 852-4844 Home
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Barrow Volunteer Search and Rescue Station

852-2808 OFS

President	Oliver Leavitt	852-7032 WK 852-7032 Home
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Vice-Pres.	Price Brower	852-8633 WK 852-7848 Home
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Secretary	Lucille Adams	852-0250 Wk 852-7200 Home
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Treasurer	Eli Solomon	852-2808 Wk 852-6261 Home
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Coordinator	Arnold Brower, Jr.	852-0290 WK 852-5060 Home
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Director	Jimmy Nayakik	852-0200 WK 852-JENS Home
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Director	Johnny Adams	852-0250 WK 852-7724 Home
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Nuiqsut Volunteer

Search and Rescue Station	480-6613 (Fire Hall)
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Kaktovik Volunteer

Search and Rescue Station	640-6212 (Fire Hall)
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President	Lee Kayotuk	640-5893 Wk 640-6213 Home
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Vice-Pres.	Tom Gordon	640-
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Secretary	Nathan Gordon	640-6925
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Treasurer	Don Kayotuk	640-2947
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Fire Chief	George T. Tagarook	640-6212 WK 640-6728 Home
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FINAL FOR SIGNATURE
1, 2012

March

Wainwright Volunteer Search and Rescue

President Joe Ahmaogak Jr. 763-2826 Home

Vice President John Hopson, Jr. 763-3464 Home

Secretary Raymond Negovanna 763-2102 Home

Treasurer Ben Ahmaogak, Jr. 763-3030 Home

Director Artic Kittick 763-2534 Home

Director John Akpik Unlisted

Pt. Hope Volunteer Search and Rescue

Coordinator Willard Hunnicutt, Jr. 368-2774 Work

Fire Chief Willard Hunnicutt, Jr. 368-2774 Work
(Note: Only contact for Pt. Hope)

North Slope Borough Disaster Relief Coordinator

Frederick Brower 852-0284 OFS

ATTACHMENT II -- OPERATIONS VESSELS

VESSELS TO BE USED FOR AND IN SUPPORT OF INDUSTRY PARTICIPANTS' OPERATIONS AS IDENTIFIED IN SECTION 401(b)(1)(B)

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT
ATTACHED**

**IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' OPERATIONS.**

ATTACHMENT III -- MONITORING VESSELS

**VESSELS TO BE USED
FOR AND IN SUPPORT
OF THE INDUSTRY PARTICIPANTS MONITORING PLANS
AS IDENTIFIED IN SECTION 401(b)(1)(B)**

[ALL VESSELS TO BE IDENTIFIED BY COMPANY]

NOTE:

**COPY OF PRESENTATION OF THE INDUSTRY PARTICIPANT
ATTACHED
IDENTIFYING VESSELS TO BE USED FOR AND IN SUPPORT OF THE
INDUSTRY PARTICIPANTS' MONITORING PLAN.**

FINAL FOR SIGNATURE
1, 2012

March

ATTACHMENT IV -- SAFE HARBOR

FINAL FOR SIGNATURE
1, 2012

March

ATTACHMENT V -- OIL SPILL MITIGATION



ALASKA INTER-TRIBAL COUNCIL

ADVOCATING FOR 229 FEDERALLY RECOGNIZED SOVEREIGN TRIBES

445 East Fifth Avenue - Anchorage, Alaska 99501

907-563-9334 Main

907-563-9337 Fax

February 15, 2012

James H. Lecky
Director, Office of Protective Resources
National Marine Fisheries Service – NOAA
1315 East-West Highway
Silver Spring, MD 20910

Cc: Jane Lubchenko

Re: DEIS – Effects of Oil and Gas Activities in the Arctic

Dear Mr. Lecky,

Thank you for this opportunity to comment on the DEIS – Effects of Oil and Gas Activities in the Arctic which seems to be connected to the 5 year OCS Plan.

The Alaska Inter-Tribal Council (AI-TC) is a statewide consortium of federally recognized tribes in Alaska, which share a common bond with unique cultures, languages, spirituality and traditional values. AI-TC was established in 1992 and is charged to advocated for, protect, defend and enhance the inherent rights of Tribes in Alaska.

In adhering to and further support of Alaska Inter-Tribal Council's existing Annual Convention Resolution 2005-08 we detail our concerns to address current new threats regarding the Federal Outer Continental Shelf (OCS) 5 year plan and pending actions. Additional Annual Conventions Resolutions include:
Resolution #2009-02-26: Oppose Leasing, Exploration and Development of Alaska's Outer Continental Shelf.
Resolution #2005-12: In Support of Reinstating the Moratorium on Offshore Oil and Gas Development in Lease Site 92 in the Bristol Bay Region.

Resolution #2005-08: Oppose Development of Oil and Gas in the 1002 Area of the ANWR and Offshore Waters of the Arctic Ocean, Chukchi Sea and Beaufort Sea.

Resolution 2007-12-01: To Support the Clean Water Initiative

Resolution 2007-12-02: To Oppose NPDES Primacy [transfer] until the State demonstrates Tribal Consultation.

The Outer Continental Shelf of Alaska provides an abundance of marine life, is adjacent to some important terrestrial public resources in Alaska. Alaska's Tribal Coastal Communities, River Communities and Lake Communities have depended on marine subsistence resources since time immemorial. The Beaufort and Chukchi Seas, North Aleutian Basin (Bristol Bay), the Historic Bay of Cook Inlet and other offshore areas are critical to our ways of life now and into the future for the next seven generations. AI-TC is deeply concerned with the risks posed to sensitive marine and coastal environments from oil and gas activities in the OCS Alaska areas. Vital Subsistence resources that are intrinsic to the livelihood of coastal Tribal Communities of Alaska with the OCS Alaska areas are at risk. AI-TC is concerned that the Historic Bay of Cook Inlet is not covered in the DEIS as this is tied into the 5 year OCS Plan that includes the Historic Bay of Cook Inlet and its resources.

Due to the serious risk posed to these ecological areas and the communities that are within these areas or in close proximity who rely upon coastal resources, AI-TC strongly recommends the entire OCS Alaska be suspended from the Federal OCS Energy planning. Conservation groups, Tribal Governments, Alaska Native Corporations, Commercial Fishing Organizations, Scientists and Experts have asserted that there is too little information known about the existing biological conditions in the Arctic, especially in light of changes wrought by climate change, to be able to reasonably understand, evaluate and address the cumulative, adverse impacts of oil and gas activities on those arctic ice environments.

The adverse and cumulative impacts of the use of dispersants and the added noise from ships that are spoken of that will be called upon to mix the dispersants into the icy waters because of the unknown effects of the dispersant in the icy temperature waters; invasive species; black carbon issues; the industrial and emergency marine vessels added, cumulative, adverse and aggregate noise upon our traditional foods we have relied on since time immemorial. The industry has

not shown that their activities will have no cumulative, adverse and unhealthy effects upon the animals, the air, the waters nor the peoples of the Coastal Communities in the Arctic. We are concerned about the lack of a study on the adverse and cumulative and aggregate impacts upon the Tribal Coastal Communities should the clean air, the clean water, and the subsistence food animals disappear from their ways of life. What are the adverse, cumulative and aggregate effects upon the health of the individuals and upon each and every community?

While the “need” for this DEIS is framed in the context of exploratory operations only, it not only presupposes the extraction of hydrocarbons from the Arctic, the EIS makes the extraction of discovered hydrocarbons inevitable by stating that “NMFS may tier from this EIS to support future Arctic MMPA oil and gas permit decisions if such activities fall outside the scope of this EIS” (DEIS Section 1.2, p1-3).

In light of the existing lousy track record and the current ongoing problems with extraction operations, along with the constant introduction of new practices and technologies, we believe it is unwise to leave such an open-ended permit to move into production without proper review of the extensive processes, technologies, and infrastructure required for commercial hydrocarbon exploitation.

We suggest that the current DEIS be limited exclusively to exploration. Any additional complexities associated with proposed future extraction should be reviewed in their own contexts.

We consider the Outer Continental areas as the nursery grounds for the salmon species of Alaska—when they are “out to sea” we know that they go to the Bristol Bay, the Chukchi, the Beaufort Seas; these are special nursery areas and should have the strongest possible protections. We support the strongest possible protection for the Coastal Plain of the Arctic Refuge; the Outer Continental Shelf areas: the Chukchi, Beaufort, Bristol Bay and Cook Inlet.

The Beaufort and Chukchi Seas, North Aleutian Basin(Bristol Bay) and Cook Inlet are critical habitat for many subsistence resources including the Bowhead Whale, the Endangered North Pacific Right Whale and other marine mammal species essential to the health and cultural survival of our people. The whales and other marine mammals, birds and fish migrate to and from through our oceans and

lands. Our people rely strongly on their continued ability to utilize our oceans and lands for subsistence, for cultural and traditional uses, for bartering and trading using and exercising our ancient and historical use and occupancy of the seas, the right of navigation.

Existing International Law already protects our subsistence rights. This right is recognized and affirmed by civilized nations in the International Covenant on Human Rights; Article 1 of both the International covenant on Civil and Political Rights, and the International Covenant on Economic, Social and Cultural Rights read in part:

“...In no case may a people be deprived of its own means of subsistence.”

Offshore industrial activity presents a grave threat to Alaska’s marine environment and our rights of subsistence, practicing our traditions and cultures, deprived of our way of life, our economic structures, our rights of a community to grow and be healthy since there is no ability to clean up spilled oil in our waters and there is no knowledge of the Long Term Effects of Dispersants in icy waters and conditions. All Indigenous peoples and communities are concerned about their continued sustenance from land and sea and the continuance of traditional subsistence hunting, fishing and cultural practices and that these are supportive of each other, fully expressing our rights of self-determination.

The Department of Interior and its Agencies should administer federal lands and waters in a way that protects subsistence resources and their historic and ancient uses. We strongly encourage all Federal Agencies to fulfill and honor their government to government responsibilities and obligations, sacred duties to protect and promote the natural resources of Alaska.

AI-TC strongly opposes the leasing, exploration and development of oil and gas in the Beaufort and Chukchi Seas; the North Aleutian Basin (Bristol Bay); the Historic Bay of Cook Inlet and other OCS Alaska areas. Furthermore, AI-TC supports the adoption of the No Action Alternative in the Draft Environmental Impact Statement.

AI-TC further recommends that the National Research Council report to Congress on certain missing information regarding the composition, distribution, status,

ecology of the living marine resources in these ecosystems. AI-TC recommends that an Economic Impact Study be conducted on the Subsistence Economies, the Human Health Adverse and Cumulative and Aggregate Impacts; and Climate Change Impacts to the economies of the Coastal Communities of Alaska. AI-TC further recommends that the Secretary perform an Oil Spill Response Gap Analysis for proposed and Existing Arctic Oil and Gas Operations.

Respectfully,

Alaska Inter-Tribal Council

Delice Calcote
Interim Executive Director

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER

SEAN PARNELL, GOVERNOR

550 WEST 7TH AVENUE, SUITE 1400
ANCHORAGE, ALASKA 99501-3650
PHONE: (907) 269-8431
FAX: (907) 269-8918

February 28, 2012

Mr. Michael Payne
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Springs, MD 20910

Re: NMFS DEIS for Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Payne,

The State of Alaska reviewed the Draft Environmental Impact Statement (DEIS) for the Effects of Oil and Gas Activities in the Arctic. The stated purpose of the DEIS currently out for public comment has expanded significantly from the State's understanding to include the evaluation of potential effects of a Very Large Oil Spill, as well as the potential effects of seismic activity and alternate approaches for the Bureau of Ocean Energy Management (BOEM) to issue geophysical (G&G) permit decisions. Neither of these topics were considered in the original Environmental Impact Statement (EIS), so we were very surprised to find them being addressed in what we assumed was going to be an evaluation of the effects of Outer Continental Shelf (OCS) activities as they relate to authorizing the take of marine mammals incidental to oil and gas activities pursuant to the Marine Mammal Protection Act (MMPA). Per National Environmental Policy Act (NEPA) requirements, the public should have been informed about the expansion of the original EIS scope at a minimum, and the lead federal agency should have offered additional scoping opportunities to gather comments from the public, affected State and local agencies, and other interested stakeholders. This is a significant oversight of the NEPA process.

The DEIS addresses potential environmental impacts of oil and gas exploration in both State and federal waters of Alaska's OCS. For this reason, the State of Alaska should have been consulted during the EIS process, if not asked to join the EIS team as a Cooperating Agency. Unfortunately, since your agency made no attempt to collaborate with the State of Alaska, the restrictions, outcomes, and mitigation measures within the DEIS extend beyond the scope and jurisdiction of the National Marine Fisheries Service (NMFS), duplicate and contradict existing State lease stipulations and mitigation measures, and display an overreach of federal authorities and regulatory oversight.

Recognizing the significant role Alaska plays with regard to America's energy security, President Obama issued Executive Order 13580, "Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska," on July 12, 2011. The Executive Order tasks the Working Group to:

- Ensure the sharing and integrity of scientific and environmental information and cultural and traditional knowledge among agencies to support the permit evaluation process for onshore and offshore energy development projects in Alaska

"To responsibly develop Alaska's resources by making them available for maximum use and benefit consistent with the public interest."

- Coordinate federal engagement with States, localities, and tribal governments, as related to energy development and permitting issues in Alaska

It is disappointing that the goals of this presidential order are not being followed with respect to this DEIS process.

Furthermore, it is not clear from reading the DEIS why additional restrictions based on possible outcomes from the DEIS are needed when federal regulations already exist and where mitigation is already being evaluated in separate OCS EIS documents. For example, under the MMPA, incidental take authorizations are issued by NMFS for offshore activities to limit marine mammal encounters to negligible impacts. Incidental take authorizations and impacts to marine mammals in Alaska's OCS have most recently been evaluated as part of a separate DEIS which closed for public comment only one month ago by BOEM and for the 5-year (2012-2017) OCS Oil and Gas Leasing Program. It is not clear how your NEPA document may tier from other OCS EIS documents that are at a later stage of the NEPA process.

The DEIS is duplicative and presents additional OCS EIS documents without clearly identifying how mitigation from each document may be integrated into other federal decisions, particularly where multiple EIS's are evaluating oil and activities in the OCS. Furthermore, it is troubling that your agency's DEIS has failed to describe which specific action has triggered the NEPA process, explaining only that conceptual ideas of seismic effects from possible OCS oil and gas activities are being evaluated. This vague understanding of conceptual ideas would complicate and limit the ability to properly assess environmental impacts and provide suitable mitigation.

The four action alternatives evaluated in the DEIS include very restrictive drilling programs that do not accurately reflect the current number of companies holding leases in Alaska's OCS. Inevitably, this oversight and inclusion of an unrealistic range of alternatives would prevent certain companies from developing their OCS leases. Allowing only two exploratory drilling programs within a season and in the Beaufort and Chukchi Seas would significantly curtail leaseholder's abilities to develop their leases and prevents the economic viability of developing these areas. There are six operators holding leases in the Chukchi Sea and 18 operators with leases in the Beaufort Sea. The allowable exploratory actions in each of the alternatives are unrealistic and the decision making for choosing this level of allowable activity in the DEIS alternatives is arbitrary and should be re-evaluated.

Other proposed mitigation measures include seasonal closures that would reduce the potential to explore within the already brief open water season by approximately 50 percent. These closures further restrict an already short window of opportunity for companies to commence exploration activities. There are additional "special habitat area" closures that arbitrarily block lease access, and it is not made clear under which authority NMFS can impose these additional sensitive area closures. These proposed restrictions, individually and totally, would significantly limit the ability to develop Alaska's OCS.

We suggest that the efforts undertaken while developing this DEIS be re-evaluated to ensure adherence to the public process and for overall NEPA compliance. Furthermore, collaboration with other State, federal, and local stakeholders, as well as experts from the oil and gas industry, is essential to help improve the DEIS. For example, we understand from conversations with the Environmental Protection Agency (EPA) that they will be releasing their Ocean Discharge Criteria Evaluation (ODCE) soon, as part of the process of renewing the Arctic National Pollutant Discharge Elimination System (NPDES) General Permits for the Beaufort Sea and Chukchi Sea. Section 403(c) of the Clean Water Act requires that NPDES permits for ocean discharges be issued in compliance with the Ocean Discharge Criteria for preventing unreasonable degradation of ocean waters. It is not clear how NOAA

and BOEM can address the persistence of pollutants, bioaccumulation, and vulnerability of biological communities without the benefit of EPA evaluation. To note, the proposed zero discharge mandate described in the Arctic DEIS may be lacking EPA's critical input on the matter, possibly contradicting EPA's direction based on the pending ODCE evaluation. The EPA released the Arctic NPDES General Permits for public comment in March, 2012, but it is not clear yet when they will be releasing the ODCE for agency comment.

The State of Alaska has significant concerns regarding the mitigation measures and potential restrictions proposed in the DEIS, which if enforced, contradict President Obama's goal of reducing the nation's reliance on foreign oil. "Meeting this new goal of cutting our oil dependence depends largely on ... finding and producing more oil at home, and reducing our dependence on oil with cleaner alternatives fuels ..." (Speech at Georgetown University, March 29, 2011).

Furthermore, the State questions the economic analysis used for the DEIS, which did not accurately capture the positive economic benefits that would be realized from developing Alaska's OCS. Seismic surveys and potential exploration drilling would lend to positive impacts on economic growth, resident and worker employment opportunities, additional access for future development, as well as the royalty revenue, and production and property tax revenues that would result from developing Alaska's OCS.

Development of Alaska's OCS would greatly help secure our nation's energy needs. Studies estimate that the Alaska Arctic has more undiscovered oil than any Arctic nation. These studies estimate that the OCS contains 27 billion barrels of conventional oil and 132 trillion cubic feet of natural gas. Studies have also shown that development in Alaska's Beaufort and Chukchi Seas could result in the production of 700,000 barrels of oil per day for 40 years, in turn supplying more jobs, income, and energy for our state and nation, lowering our nation's trade deficit.

Finally, it is unclear whether NOAA intends to extend the public comment period to accommodate the postponed public meetings to be held in Kaktovik and Nuiqsut, Alaska in March. It seems appropriate to keep the public comment period open for all public entities until public meetings have been completed, versus closing the comment period on February 28, 2012, as currently proposed.

The Alaska OCS region is a vast yet untapped resource which has the potential to increase our nation's energy security, provide thousands of high-paying jobs, and generate billions of dollars in revenue. The State of Alaska has a vested interest in seeing those resources responsibly developed. From the federal perspective, exploration and development in the Alaska OCS region is important to the nation as a whole, especially considering sky rocketing oil and gas prices, which threaten economic recovery.

President Obama's Executive Order 13580, "Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska," was issued for the purpose of coordinating the "efforts of Federal agencies responsible for overseeing the safe and responsible development of onshore and offshore energy resources and associated infrastructure in Alaska and to help reduce our dependence on foreign oil."

As a result of the Executive Order, we were encouraged that the Obama Administration's views toward responsible oil and gas development were becoming more positive. However, this NMFS DEIS for the Effects of Oil and Gas Activities in the Arctic seems clearly to go against the goals and spirit of the Executive Order. The DEIS does not assess a particular project, is duplicative, creates the need for additional OCS EIS documents, and is based upon questionable authority. We are therefore concerned that the Executive Order is not being taken seriously, particularly in regard to creating a more coordinated, efficient process for Alaska OCS exploration, permitting, and development.

For these reasons, I am copying Deputy Secretary of the Interior, David Hayes and Deputy Assistant to the President on Energy and Climate Change, Heather Zichal, given that they are in charge of efforts to make energy development and permitting in Alaska more efficient. I encourage you to work with Mr. Hayes and Ms. Zichal to better harmonize this DEIS effort with the President's goals under Executive Order 13580.

We offer our general comments as well as those specific to the DEIS in the attached enclosure
Sincerely,



Daniel S. Sullivan
Commissioner

Enclosure

cc: David Hayes, U.S. Deputy Secretary of the of the Interior
Heather Zichal, Deputy Assistant to the President for Energy and Climate Change
Randy Ruaro, Deputy Chief of Staff, Office of the Governor
Kip Knudson, Director of State and Federal Relations, Office of the Governor
Larry Hartig, Commissioner, Alaska Department of Environmental Conservation
Joseph Balash, Deputy Commissioner, Alaska Department of Natural Resources
Ed Fogels, Deputy Commissioner, Alaska Department of Natural Resources
Jeff Jones, Special Assistant, Office of the Governor
William Barron, Director, Division of Oil and Gas, Alaska Department of Natural Resources
Thomas Crafford, Director, Office of Project Management and Permitting, Alaska
Department of Natural Resources
Mark Robbins, Associate Director, Office of the Governor
Gary Mendivil, Office of the Commissioner, Alaska Department of Environmental
Conservation
Sara Longan, Office of Project Management and Permitting, Alaska Department of Natural
Resources

Comments on DEIS for Effects of Oil and Gas Activities in the Arctic

Overall Comment: Numerous references are made to EPA's permitting authority for air emissions. The current regulatory authority is now split between the EPA (past and pending permits) and BOEM (future permits).

All Alternatives: 1, 2, 3, 4, 5

Alaska State waters: Page ES-7

The State of Alaska owns and manages the waters to three miles out from the coast, unless the coastal area was reserved to federal ownership prior to or at statehood. Leaseholders are advised that they may need to obtain prior State and federal authorizations for activities within waters of the State of Alaska.

Tiering: Page ES-4

The DEIS refers to potential future tiering by the NOAA/NMFS and BOEM to incorporate the EIS policies, stipulations, and mitigation measures by reference. The State specifically recommends that the DEIS define the future tiering land and water management uses that will incorporate the EIS, by reference.

This future management intent may extend the regulatory jurisdiction beyond the original scope for issuing MMPA ITA's and BOEM G&Gs. The State does not support the lack of specific explanations of the potential future uses of tiering of the EIS by reference, as it may set arbitrary boundaries and time/area restrictions that will result in limited and delayed oil and gas activities. It may also allow for future additional regulatory interpretation that may in turn lead to litigation regarding the interpretation of jurisdiction, mitigations and implementation practices.

"However, if necessary, NMFS may tier from this EIS to support future Arctic MMPA oil and gas permit decisions if such activities fall outside the scope of this EIS." (Page ES-4)

Limits to the maximum number of programs per year: Page ES-7, ES-17 through 20

Alternatives 2, 3, 4, and 5 limit the maximum number of seismic surveys, and limit the maximum exploration drilling programs in the Beaufort and Chukchi Seas. There is not just cause in the DEIS to validate that acoustic and non-acoustic impacts from these programs are severe enough to cause long term acute or cumulative negative impacts or adverse modifications to marine mammals throughout the planning area. Implementing multiple programs per year is the preferred option for the Alternatives 2, 3, 4, and 5.

The federal leaseholders, the State, the North Slope Borough, the northern Alaskan communities, and onshore and offshore operators will experience greatly reduced economic, and resources exploration and development opportunities, as a result of the restricted number of programs for seismic surveys and exploratory drilling in both the Chukchi and Beaufort Seas. The long-term effects of restricting exploration, and subsequent development, will negatively impact the economy of Alaskans. The potential long-term benefits of oil and gas production could have very significant

beneficial impacts that can only be realized if exploration is maximized to facilitate discovery of oil and gas resources that are able to be produced and developed.

The State recommends that no maximum limit be set on the number of seismic or exploratory drilling projects per year. The appropriate mitigations can be determined and implemented for each program at the time of ITA and G&G permit approvals.

Alternative 5: Page ES-6, ES-7, ES-17 through 20 Authorization for Level 2 Exploration Activity with Use of Alternative Technologies:

The discussion of technologies that do not yet exist is problematic, and cannot be realistically substantiated as a viable Alternative. It may be impossible to plan for land and water use and management, and the State recommends this Alternative should be removed from the list of Alternatives.

Alternative 3 and 4; compared:

Defining special areas for biological productivity, life history functions and subsistence activities, and time/area closures: Page ES-9 through 11, and ES-17 through 20-table.

Alternative 3 is used as the basis analysis for impacts for all of the Alternatives 3, 4, and 5 (Page ES-17 through 20).

The comparison of impacts between Alternative 3 and Alternative 4, that includes time/area closures, are virtually identical, yielding no significant improvement, protection, or reduction of negative impacts to resources by closing the identified areas.

Alternative 4:

Time closures: Page ES-9 through 11, and ES-17 through 20, table.

The State does not support the arbitrary prohibition of exploration drilling based on the proposed dates, as early as mid-July through September 1, and in some cases mid-October, each year. Closing specific areas during significant periods of the non-ice season may severely negatively impact seismic and exploration program activity opportunities. Placing the time closures chronologically in sequence, results in closures from mid-July through at least mid-September, and in some cases through mid-October. This leaves less than half of the non-ice season available for activity in those areas, with no resulting resource and species protection realized.

The assumption that all seismic exploration drilling activities will cause resources and species harassment, harm, or take is speculative. Alternative 4, if remaining, should be changed to allow for specific mitigations and time constraints designed to match proposed projects as they occur. The effect of reducing the duration of the drilling season has negative effects on current and future potential exploration activities, and may delay projects beyond the life of the existing lease term. The delays can also discourage any leaseholders from investing in seismic assessment, exploration drilling, and energy resources development in the Arctic Ocean, that are needed for meeting the nation's energy needs. These time restrictions will also likely reduce the potential for connectivity of oil and gas operations occurring in the federal waters with adjacent onshore and offshore processing, storage, and pipeline transportation systems.

Area Closures: Page ES-9 through 11, and ES-17 through 20-table.

Alternative 4 includes mitigation for required time/area closures based upon biological productivity, life history functions and subsistence activities. These new land classification boundaries are defined solely by NMFS for the purpose of activity management, and are not sufficiently substantiated as being directly beneficial to resources and species protection. There is not sufficient evidence presented that supports that arbitrary area boundary determinations will provide protection to marine mammal species. The designation of geographic boundaries by NMFS and BOEM should be removed, and projects should be evaluated based upon specific project requirements.

Evaluation of Economic Issues, Socioeconomics. Page ES-18, ES-25, 3-131-133; also detailed discussions of Alternatives 1 – 5 in Vol. 2.

The State does not support the restrictions on seismic surveys and exploration drilling because of the: likely long term negative impacts on economic growth; reduced resident and worker employment opportunities; constrained development and access; and the resultant reductions in royalty revenue, and production and property tax revenues.

Alternative 1, No Action:

The DEIS states that Alternative 1 will result in prevention of offshore exploration causing reduction in potential employment and tax revenue. (Page E-25, paragraph 4) It also projects a “minor adverse impact from unrealized local employment and tax revenue.” (Page ES-18). The DEIS document later states to the contrary that:

“these potential negative economic impacts of the activity are statewide and even nationwide.” (Page 4-14)

The assumption that Alternative 1 causes only minor adverse impact is likely inaccurate, especially as it relates to long-term development opportunities and delivery of energy resources to the State and the nation. Alternative 1 should be updated to reflect the more realistic, larger scope of adverse impacts to local communities, statewide, and national interests. The potential long-term benefits to be realized from oil and gas development have been understated, and do not take into account the indirect jobs and business generated by increased oil and gas activity.

As an example, the Institute of Social and Economic Research (ISER 2008) reported that 31 percent of Alaska jobs for residents are generated by activity in the petroleum industry sector. Goldsmith reports that only a small percentage of the 52,000 jobs that depend on petroleum production are direct production jobs (ISER and Goldsmith. S., 2008).

Alternatives 2, 3, 4, and 5:

The short and long-term positive impacts of increased revenue, business opportunity, and oil and gas availability are not fully considered in the DEIS. This oversight represents a biased interpretation of both employment and revenue for all referenced Alternatives, because it does not take into account the indirect jobs and business generated by increases oil and gas activity, as found by ISER (2008), and must be corrected to reflect potential future negative impacts.

The projected increases in employment related to the discussions for Alternatives 2, 3, 4, and 5 appear to be low, at not more than five percent (Page ES-18). These projections do not take into consideration the indirect services and supplies related to oil and gas activities and resource

development. The DEIS constraints negatively impact the socioeconomics of local communities', and regional and state economies, and should be updated in the DEIS to reflect this information. Several mitigation measures for Alternatives 2 and 3 also project that future employment opportunities will decrease when these mitigation measures are implemented.

In addition, the oil and gas activities on the North Slope and Beaufort Sea, Alaska, generate State revenue through royalty and production tax (Page 3-131). The North Slope Borough (NSB) receives revenue sharing from State property taxes to support NSB government and services (Page 3-133). If seismic and exploration drilling programs do not occur, the subsequent production and revenue also do not occur.

The State recommends reducing and preventing short and long-term negative socioeconomic impacts by: removal of seismic survey, exploration drilling and time/area restrictions; and increasing the employment, oil and gas development, and economic stability that follow from successful oil and gas exploration activities.

Environmental Injustice, Socioeconomics. Page ES-20, 3-135, 3-237-238

The State challenges the assumption that Alternatives 1, 2, 3, 4, and 5 pose minor adverse impacts and do not cause environmental injustice (Table, ES-20). The DEIS states that:

“employment and race data in Section 3.3.10, Environmental Justice, show that unemployment and poverty disproportionately affects Alaska Native people.” (Page 3-135).

“The communities on the North Slope of Kaktovik, Nuiqsut, Barrow, Wainwright, Point Lay, Point Hope, Kivalina, Kotzebue, and Nome would be considered low-income communities under the definition of EO 12898.” (Page 3-238).

Reduction of oil and gas seismic and exploration drilling would, in effect, perpetuate the status of low income communities, and constrain employment growth; thereby, encouraging continued environmental injustice caused by restrictive regulation of oil and gas activities in the Chukchi and Beaufort Seas. The potential short and long term benefits to be realized from oil and gas development have been understated, and the analyses do not take into account the indirect jobs and business generated by increased oil and gas activity.

Land and Water Ownership, Use and Management. Page ES-15, ES-19, 2-53

The State asserts that the proposed impacts to land and water uses and management from the Alternatives 1, 2, 3, 4, and 5 may cause minor impacts from seismic and exploration activities. However the potential short and long-term impacts are likely to be of higher intensity, duration, extent, and context. The Alternatives 1, 2, 3, 4, and 5 must be re-evaluated to consider loss of economic freedom, of development opportunities, and of the ability to transport oil and gas produced in the Chukchi and Beaufort Seas to the nation.

The evaluation of impacts discussed in the DEIS about land and water use are primarily focused on subsistence uses. There are many diverse water and land uses that will be restricted or prevented because of specific requirements in the proposed Alternatives.

As stated in the DEIS:

“ADNR manages oil and gas activities in state waters, and permitted exploration activities comply with state management guidelines.” (Page 4-14).

Alternative 1: The DEIS also explains that:

“...the inability to obtain ITAs from NMFS would prevent leaseholders from pursuing exploration activities in compliance with federal regulations and constrain their ability to utilize their leases. This would indirectly affect state ownership by constraining activities on leases awarded and represents a high intensity, long-term adverse effect of regional extent.” (Page 4-16).

“The magnitude of use impacts on federal and state waters is high because major changes in the ability to conduct activities on leases in federal and state waters will result from this action, also affecting transportation and commercial uses that support these activities.” (Page 4-18).

“In total, the direct and indirect impacts on land use are considered to be major; they are high intensity, long-term, regional, and result in changes of federal, state, and private development rights by effectively preventing exploration for oil and gas resources in compliance with federal regulations.” (Page 4-18).

“Preventing oil and gas exploration and development of the federal OCS would eliminate any oil production that could extend the commercial life of TAPS. This represents a high intensity, long-term adverse effect of statewide extent.” (Page 4-19).

Alternatives 2, 3, 4, and 5:

The effects of Alternatives 2, 3, 4, and 5, are likely to reduce or prevent oil and gas exploration and development, due to the proposed maximum number of seismic surveys and exploration drilling programs per year. This is unjust to the numerous federal leaseholders of Chukchi and Beaufort Seas lease interests.

Were these limitations on exploration fully explained to potential and actual bidders on the federal lease sales? Refund of bonus bids to leaseholders may be necessary if exploration and development limitations are established in the post-lease sale timeframe.

The time/area restrictions will set arbitrary limits to the duration of programs, and establish special biological areas that may do little to protect the species, but will cause high intensity, short and long-term adverse effects, and restrictions to oil and gas land and water uses.

Alternative 4 proposes to increase time/area closures for exploration activities in NMFS defined special areas (Page ES-7, ES-10-11). The State strongly challenges the DEIS assumption that the increased [or potential resultant decreased]:

“levels of activity will not generate different types of impacts to land or water ownership, use, and management.” (Page 4-550, paragraph 4),

and that:

“Under Alternative 4, the levels of direct, indirect and cumulative impact on land and water ownership, use, and management are negligible, moderate, and minor, respectively. Based on this, the overall level of impact of Alternative 4 is considered minor.” (Page 4-550, paragraph 5).

The conclusion of negligible or minor cumulative impacts on transportation for Alternative 4 was not substantiated in the DEIS. The impacts to access, restrictions on vessel traffic, seismic survey, exploration drilling and ancillary services transportation are severely restricted both in time and in areal/geographic extent. (Page 4-551, paragraph 1).

“In summary, no concerns related to adverse cumulative impacts have been identified. Some cumulative impacts may exist if Alternative 4 overlaps with another large-scale development project but those impacts would be of low intensity, temporary in duration affecting local areas of common resources and are considered unlikely to have long-term impacts on regional transportation infrastructure.” (Page 4-551)

Alternatives Summary:

The DEIS and Alternatives 1, 2, 3, 4, and 5, as proposed are concerning. Access to offshore lands is required to conduct seismic surveys, and geological and geophysical permit activities. Subsequent oil and gas discovery will encourage continued development, production and transportation. Oil and gas activities, protection of resources, and subsistence uses are not mutually exclusive, as evidenced by years of successful multiple use of the Beaufort and Chukchi Seas, clearly demonstrating that they can be done concurrently under proper management and monitoring.

The DEIS should be updated for all Alternatives to include practices that encourage, instead of discourage, seismic surveys and exploration drilling.

Specific recommended changes to the Alternatives include these specific examples: increase number of seismic and exploration drilling programs per year; remove restrictions on time/areas for oil and gas activities; and refrain from defining arbitrary special areas for biological productivity, life history functions, and subsistence activities.

There is a balance that can be achieved among subsistence activities and oil and gas exploration and development. The recommended changes to the DEIS will help to sustain the balance of needs: to encourage leaseholders to proceed with oil and gas activities; to continue to foster subsistence activities; to sustain economic stability for Alaskans; and to increase the nation’s available oil and gas resources to meet our country’s growing energy needs.

Page-Specific Comments:

Page ES-7, Table ES-1, Summary of Alternatives, Alternative 3: Box three in this column notes that up to two exploratory drilling programs could take place in the Beaufort Sea and up to two exploration drilling programs could take place in the Chukchi Sea. Later text in the document adds gravel islands to this list of activities. This statement should match with later statements.

Page ES-9, 2.3.1, bullet four: This bullet column notes that up to two exploratory drilling programs could take place in the Beaufort Sea and up to two exploration drilling programs could take place in

the Chukchi Sea. Later text in the document adds gravel islands to this list of activities. This statement should match with later statements.

Page ES-25, Comparison of Impacts by Alternative: This section discusses the level of the impacts but does not identify the impacts as being significant or insignificant. This makes it difficult to track these to the discussion of Alternative Mitigation Measures later in the document.

Page ES-26, Comparison of Impacts by Alternative: Alternatives 2 through 5 each have a brief table and paragraph summarizing the impact levels for each resource. Alternative 1 does not have this information provided.

Page 1-19, Clean Air Act: The final EIS should indicate that future permitting authority for the OCS now rests with BOEM and authority for existing permits rests with the EPA.

Page 1-21, Alaska Air Quality: The final EIS should indicate that future permitting authority for the OCS now rests with BOEM and authority for existing permits rests with the EPA.

Page 2-18, Exploratory Drilling Activity Discharges and Emissions: The final paragraph should be changed in the final EIS to indicate that future permitting authority for the OCS now rests with BOEM and authority for existing permits rests with the EPA. The text also states that "*Emissions of air pollutantswould be limited using best available control technologies to ensure compliance with the provisions of the.....*" This wording may need clarification because "best available control technologies" has a specific regulatory meaning and the best available control technology (BACT) standards only applies to Prevention of Significant Deterioration (PSD) permits. If minor permits are issued, BACT would not be required. This wording should be amended to reflect the fact that BACT would be applied where required, but not necessarily applied in all permit situations.

Page 3-22, Meteorological Data Summary by Community: Table 3.1-2 has a footnote 11 that states that the average days of precipitation per year were determined by counting those days that received more than 0.1 inches of precipitation. This appears to be a typographical error. The accepted standard for measuring precipitation makes use of the tipping bucket rain gauge, where each bucket is designed to collect the equivalent of 0.01 inches of precipitation and then tip to empty its contents. See *EPA Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA-454/R-99-005) February 2000*.

Page 3-24, Changes in the Arctic: The bullets in the second paragraph discuss climate change trends. The final bullet notes that "*Winter temperatures have decreased by about 5.5 to 7° over the past five decades.*" This appears to be a typographical error, since most scientific reports cite a winter temperature increase. Since winter temperatures in the Arctic are expressed in degrees below zero, the actual numerical values may have decreased (ex. from -30 to -27), but that actually represents an increase in temperature. This wording should be corrected.

Page 3-27, Section 3.15 Air Quality: Paragraph two in this section provides an overview of air quality issues in the Arctic. Arctic haze should be included as an air quality issue in this paragraph.

Page 3-27, Section 3.1.5.1 EIS Project Area: The final EIS should indicate that future permitting authority for the OCS now rests with BOEM and authority for existing permits rests with the EPA.

Page 3-28, Paragraph one: This paragraph identifies “expected” air quality levels for several areas in the Arctic without reporting any actual data. The DEC Air Quality Program has monitoring data for a number of locations in the Arctic and additional monitoring data has also been collected in support of the current Shell OCS air permits and pending Conoco Phillips OCS air permits. In the context of NEPA documents it is valuable to provide actual baseline information, so the final EIS should describe the current air quality in areas of the Arctic where the data is available.

Page 3-28, Section 3.1.5.2 Air Quality Standards: The final EIS should indicate that future permitting authority for the OCS now rests with BOEM, and authority for existing permits rests with the EPA. In addition, the text states that “*The areas in and around the Beaufort and Chukchi Seas are uniformly classified as attainment...*” This is not correct, as the offshore areas are “unclassified.”

Page 3-29, Air Toxics: This paragraph notes that no data are available from the Kotzebue Air Toxics Monitoring Study at this time. Analysis of this data is close to complete and preliminary results may be available from DEC. This information should be updated in the final EIS.

Page 3-29, Air Toxics: This latter half of this paragraph discusses lead as one of the criteria pollutants. It should be noted in this paragraph that the Red Dog Mine conducted lead monitoring a decade ago in Noatak and Kivalina. The quarterly averages from this study indicated that both villages were well below the EPA standard at that time. The levels measured back then would be below the current standards as well.

Page 3-29, Permit Requirements: The final EIS should indicate that future permitting authority for the OCS now rests with BOEM and authority for existing permits rests with the EPA.

Page 3-30, Climate Change and Greenhouse Gases: It should be noted in this paragraph that in addition to the reporting rule, the EPA’s tailoring rule requires sources emitting greenhouse gases (GHG) in quantities above certain thresholds to obtain GHG permits.

Page 3-30, Existing Air Quality: As noted earlier, air quality data exists for some of the Arctic areas mentioned. This section should include monitoring data results for areas where data is available and not “assume” or “expect” air pollutant levels.

Page 3-32, Paragraph one: The monitoring station referred to is at Sand Point on Popof Island, not Simeonoff Island. While the monitoring done in this area does help describe remote arctic marine areas, the paragraph should also include a statement that the island is located over 800 miles from the area under consideration in the DEIS.

Page 3-39, Section 3.1.7, Water Quality: The quote from Brown et al. (2010) appears to indicate that due to past development the Alaska Arctic Region OCS is not considered to be pristine. From a chemical perspective this conclusion does not appear to be supported by the discussion of Water Quality Parameters in Section 3.1.7.2 on pages 3-41 through 3-42. Please correct this conflict.

Page 3-40, Section 3.1.7.2, Water Quality Parameters – Temperature and Salinity: Paragraph two of this section states that “*The salinity of typical open ocean seawater is usually about 35ppt (35,000 milligrams per kilograms[mg/ kg]), or 35 grams of salt dissolved in 1,000 grams of seawater.*” The comparison should actually be stated as **35 grams of salt dissolved in 1,000 grams of freshwater**, since seawater would already have the salinity concentration noted.

Page 4-5, Section 4.2 Assumptions for Analysis: Paragraph four should be updated to reflect the most recent lease sales. The existing language refers to upcoming 2011 lease sales.

Page 4-21, Paragraph three: This paragraph discusses dispersing of discharges. The recently issued Ocean Discharge Criteria Evaluation (ODCE) that accompanies the draft Beaufort Sea and Chukchi Sea NPDES General Permits has more recent dispersal modeling that should be referenced here.

Page 4-27, Emissions Estimates: Paragraph one discusses emission estimates based on draft EPA air permits. The final EIS should reflect the fact that EPA permits are no longer draft permits.

Page 4-28, Paragraph four: This paragraph discusses vessel speeds and resulting emissions. It should be noted that BOEM lease stipulations currently limit vessels involved in exploration drilling activities to vessel speeds of nine knots.

Page 4-31, Table 4.5.4: Footnote 10 for this table notes that the ice management equipment emissions in the table are based on the information provided in OCS permit R10OCS020000, Conoco Phillips Jackup Rig-Chukchi Sea. Conoco Phillips withdrew this permit and resubmitted a new permit application in December. Please confirm which permit application has been cited for the information in this table.

Page 4-32, Paragraph three: By its location following the paragraph discussing seismic survey activities implies that oil spill response vessels would be required for seismic surveys. This paragraph should be moved to follow the paragraph on exploration drilling, since oil spill response vessels are not required for seismic surveys, but are required for exploration drilling.

Page 4-32, Paragraph three: This paragraph talks about oil spill response vessels being required for seismic surveys. That paragraph should follow the section on exploration drilling, since oil spill response vessels are not required for seismic surveys.

Page 4-33, Table 4.5-5: The use of scientific notation in this table makes it difficult to compare those estimated emission rates with those expressed in standard notation in EPA permits.

Page 4-35, Additional Air Quality Concerns: Paragraph one in this section discusses oil spills and the use of oil spill response vessels as a precaution and emissions estimates from those vessels. It also implies that oil spill response vessel activity is “*likely required to be permitted.*” It is not clear how this conclusion could be reached, since that specific question was posed in the most recent appeals of Shell’s Discoverer drill rig air permits before the Environmental Appeals Board and the determination was made that oil spill response activities would not be included in air permits.

Page 4-36, Conclusion: This section concludes that the worst case scenario emissions would remain below the Prevention of Significant Deterioration (PSD) threshold of 250 tons per year (tpy). In several places in this document Shell's OCS air permits are referenced as allowing activity similar to the proposed activity, yet the EPA required Shell to obtain a PSD permit because it would exceed the stated threshold. Please clarify this apparent inconsistency.

Page 4-51, Section 4.5.1.5 Water Quality: The first paragraph notes that "*The EPA will reissue separate NPDES General Permits for exploration in the Beaufort Sea and the Chukchi Sea prior to the 2012 drilling season.*" While these permits are currently out for public comment, the timeframe for final permit issuance cannot be stated with absolute certainty. It should instead be noted that EPA's intention is to reissue the permits in time for the 2012 drilling season.

Page 4-56, Exploratory Drilling Program: Paragraph one of this section states that "*exploratory drilling programs could result in elevated levels of metals in the water.*" Other discussion of the same topic in this section use "increased concentration" to describe the presences of metals. It is unclear why the "elevated levels" language is used as this could imply that the levels of metals in the water are elevated above regulatory standards. It should also be noted in the final EIS that new Ocean Discharge Criteria Evaluations (ODCEs) for the Beaufort and Chukchi Sea have been performed by the EPA and were released for public comment on January 30, 2012. These updated ODCEs should be cited in the Final EIS.

Page 4-59, Paragraph two: This paragraph notes that the Ocean Discharge Criteria Evaluation (ODCE) for the Beaufort and Chukchi Sea NPDES General Permits was not available at the time of writing of this EIS. It should also be noted in the final EIS that new Ocean Discharge Criteria Evaluations (ODCEs) for the Beaufort and Chukchi Sea have been performed by the EPA and were released for public comment on January 30, 2012. These updated ODCEs should be cited in the Final EIS.

Page 4-66, Additional Mitigation Measure C2: Specified shipping or transit routes to avoid important habitat in areas where marine mammals may occur in high densities: This mitigation measure proposes the designation of shipping or transit routes for vessels. Our understanding from a similar issue in the Bering Sea is that shipping routes or shipping lanes of this sort are established and enforced under the regulatory authority of the U.S. Coast Guard. While NOAA or BOEM could establish restricted areas, they could not regulate shipping routes, so this mitigation measure should be discussed in more details in the final EIS. Similar language can be found on page 4-160 within the discussion of Additional Mitigation Measure C2.

Page 4-66, Additional Mitigation Measure C3: This mitigation measure proposes reduced, limited, or zero discharge of any or all of the specific discharge streams identified with potential impacts to marine mammals or marine mammal habitat. It is difficult to understand the scientific justification for this proposal given that fact that EPA has concluded that discharges authorized under the Beaufort Sea and Chukchi Sea NPDES General Permits will not cause an unreasonable degradation of the marine environment. The Ocean Discharge Criteria Evaluation released by the EPA in January 2012 considered the discharges, the existing biological environment and the potential effect on subsistence-related marine resources. Please explain in the final EIS how NOAA's

recommendations can justify being more stringent than EPA's permit conditions, limitations and requirements.

Page 4-67, Additional Mitigation Measure C4: Operators are required to recycle drilling muds: This proposes that requiring operators to recycle drilling muds would also have the potential to decrease the size of the minor sediment mound. It is not clear how decreasing the size of the sediment mound would be possible through recycling drilling muds since a large percent of the sediment mound is made up of drill cuttings, not drill muds. Is this mitigation measure actually proposing to prevent disposal of spent drilling muds at the end of the drilling? Disposal of spent muds at the conclusion of a well could produce a minor sediment mound, but that proposal is not clear from the description in this paragraph.

Page 4-67, Additional Mitigation Measure D1: No transit of exploration vessels into the Chukchi Sea prior to July 15 or until the beluga hunt is completed at Point Lay. This paragraph appears to propose restricting all vessel traffic in the Chukchi during a specific time. It is not clear if this restriction is focused on the nearshore Chukchi Sea or on all areas. The logic of restrictions on vessels due to whales avoiding those areas may justify restrictions in the nearshore areas, but it is not clear how this logic would justify closing the entire Chukchi offshore areas to vessel traffic if open water exists. This appears to be the logic outlined in Additional Mitigation Measure D2, so it would appear that this mitigation measure needs to be clear on the areas intended for vessel restrictions. Similar language appears on page 4-163 within the discussion of Additional Mitigation Measure D1.

Page 4-71, Behavioral Disturbance: This paragraph describes how oil and gas exploration activities affect or disturb behavior in lower trophic level organisms. The description of ice breaking proposes that the removal of surface ice could provide increased light, leading to out-of-season phytoplankton blooms. As noted in the comment regarding icebreaking on page 4-75 icebreaking does not normally remove surface ice, it merely breaks the bonds within an ice sheet to allow vessel passage.

Page 4-71, Injury and Mortality: Paragraph two in this section discusses the discharge of drilling muds and cuttings. It notes that "*mortality and injury could also be caused by the introduction of toxins and sediments into the water column due to drilling discharges.*" It is not clear from this statement whether these claims refer to planned or accidental discharges. This would also appear to imply that discharges regulated under the Arctic NPDES General Permit can cause harm. This appears to be the opposite conclusion reached in the EPA's recently released Ocean Discharge Criteria Evaluations for the Beaufort Sea and Chukchi Sea.

Page 4-75, Paragraph five notes that with icebreaking "the ice typically returns to fill the wake as the ship passes", yet on page 4-71, paragraph one implies that icebreaking leads to the removal of surface ice. Paragraph six further notes that "*in shallow areas with thick sea ice, the impacts from icebreaking could potentially extend to the seafloor if the broken ice was to have direct contact.*" Please explain further how these impacts could be possible. Current icebreaking vessels require substantial draft to operate (the icebreaker Healy has a design draft of 29 ft).

Page 4-76, Paragraph one: This paragraph discusses pack ice movement created by icebreaking at a time of year when the ice may not normally be breaking and moving. It is not clear how the impacts from icebreaking could be covered in such a general all encompassing statement, since some areas of

sea ice may be seasonally stable and some areas of seas ice are subject to tremendous deformation forces, instability, pressure ridges and ice ride-up events.

Page 4-76, Exploratory Drilling: The initial sentence in the section should be amended to read “*Exploratory drilling may involve the discharge of drilling fluids and cuttings directly into the ocean at the drill site.*” Shell’s proposed 2012 exploration drilling program in the Beaufort Sea proposes to only discharge drilling cuttings as part of their mudline cellar construction and will have zero discharge of drilling fluids and cuttings for the balance of the well, so it is not a given that all exploratory drilling will involve the discharge of drilling fluids and cuttings.

Page 4-97, Potential Effects of Exploratory Drilling: The second paragraph in this section should be amended to read “*Exploratory drilling may involve the discharge of drilling cuttings and drilling fluids directly into the ocean.*” Shell’s proposed 2012 exploration drilling program in the Beaufort Sea proposes to only discharge drilling cuttings as part of their mudline cellar construction and propose to have zero discharge of drilling fluids and cuttings for the balance of the well, so it would not be a given that all exploratory drilling will involve the discharge of drilling fluids and cuttings.

Page 4-160, Additional Mitigation Measure C2: Discusses “specified shipping or transit routes to avoid important habitat in areas where marine mammals may occur in high densities.” Our understanding from a similar issue in the Bering Sea is that shipping lanes of this sort are established and enforced under the regulatory authority of the Coast Guard, so this could require further discussion in the EIS.

Page 4-179, Paragraph two: The second sentence in this paragraph refers to the bowhead subsistent hunt. It should refer to the bowhead subsistence hunt.

Page 4-240, 4-285: The air quality and climate change section of Alternative 3 and Alternative 4 each discuss difference aspects of the effects, making comparisons of the alternative difficult. In the final EIS please clearly identify each alternative’s emission levels and impacts based on the same criteria.

Page 4-282, Climate - Direct and Indirect Effects: The language in paragraph one proposes that “*the impact levels for Alternative 4 is expected to be the same as for Alternative 3.*” It is not clear how this can be true because Alternative 4 includes more temporal restrictions on activity. Because air quality is based on concentrations of pollutants, it would seem that restricted the timeframe, but allowing the same quantity of emissions to be released would lead to potentially greater concentration of pollutants and hence greater air impacts. Please clarify this issue in the final EIS.

Page 4-282, Climate - Direct and Indirect Effects: The language in paragraph two proposes that “*global climate change is attributed to changes in sea ice extent and thickness, ocean salinity, and ocean temperatures. . . .*” This language appears to imply that changes in sea ice extent cause climate change, when just the opposite may be true. This wording needs to be corrected in the final version of the EIS.

Page 4-346, Oil Spill Scenario: Paragraph two in this section notes that “*Much of the information summarized in Section 4.9.1 through 4.9.5 has been taken verbatim from these two documents to provide an accurate representation of the original analysis.*” As noted below in the comment on page 4-351, the information

has not been taken verbatim from the Lease Sale 193 EIS. The information on the Very Large Oil Spill Scenario (VLOS) has been interpreted incorrectly and needs to be corrected.

Page 4-347, Section 4.91 Background and Rationale: The second paragraph notes that “most” of the 4.9 million barrels was recovered. Please provide the most reliable percentage or volume figure that is available. By subtracting the amount of residual oil it appears that approximately 74 percent of the oil was recovered, burned, skimmed, chemically or naturally dispersed, or evaporated or dissolved.

Page 4-351, Very Large Spill Scenario vs. Worst Case Discharge: Paragraph three of this section notes “*The VLOS scenario in the Chukchi Sea represents an extreme case in flow rate and discharge period that, in turn, represents the largest discharge expected from any site in the EIS project area.*” It is not clear how this VLOS can be termed the largest discharge expected since the Lease Sale 193 EIS specifically noted that the VLOS was based on a hypothetical reservoir that may or may not contain oil. Our comments on the Lease Sale 193 EIS asked BOEM to provide data on analogous fields in the OCS that had similar characteristics and were capable of flowing oil. Without the confirmation of actual conditions that are similar to the hypothetical reservoir in Lease Sale 193, the word expected is not appropriate in this context.

Page 4-354, Paragraph five: This paragraph referred to Table 5 which supposedly contained data on the relative weights of crude oils. It appears that Table 5 does not exist. Please correct this oversight in the final EIS.

Page 4-355, Section 4.9.4.9 Volume of Oil Reaching Shore: This paragraph includes some older references to research work that was done in the 1980’s and 1990’s. More recent research or reports based on the Deepwater Horizon incident could be referenced here.

Page 4-357, Section 4.9.4.12: This section notes that the use of dispersants can be authorized “*by the FOSC in consultation with the ARRT.*” This conflicts with the federal Unified Plan which states “*the OSC, with concurrence of the EPA representative to the ARRT and the State of Alaska may use dispersants...*” This section should be changed to clarify the consultation requirements as found in the Unified Plan. This information will also need to be address on page 4-358.

Page 4-358, Levels of Recovery and Cleanup Activities: Based on the scenarios outline in these bullets it would appear that at least 300-400 vessels, including USCG vessels and vessels from Cook Inlet and Prince William Sound, would be deployed near the source of the spill. It is not clear how these vessels would be transported to the Arctic in time to effectively respond to a spill. Alaska spill response standards at AS 46.04.030 require the responsible party to be able to contain or control, and clean up the realistic maximum oil discharge within 72 hours. Federal standards address cleanup of the discharge within 30 days. Please provide a reasonable estimate in the final EIS of how many vessels would be available in the theatre of operations for immediate spill response consistent with Alaska standards.

Page 4-359, Section 4.9.4.13.2, Offshore Spill (Phase 2): The third bullet dealing with contamination may need to be clarified by the addition of two new words “*Pollution stemming from an oil spill may contaminate environmental resources, habitat, subsistence resources, and/or food sources.*”

Page 4-359 - 360, Scenario Phases and Impact-Producing Factors: This section discusses five distinct phases of Very Large Oil Spill Scenarios, which are presented chronologically. Since the sections are presented chronologically, it is not clear why capping and killing and capping and diverting are included in section 4.9.4.14 instead of in section 4.9.4.13.4 where relief well drilling is discussed. The response activities should be considered and exercised concurrently with a relief well.

Page 4-361, Opportunities for Intervention and Response: The paragraph refers to a Table 3 for information on the time periods for a second drilling vessel to arrive on scene. There is no Table 3 in this section. If this table is available elsewhere in the document please provide a specific page citation for where the table can be found.

Page 4-366 thru 367, Additional Analysis for Climate and Meteorology: The final sentence of page 4-366 proposes that “*Since CO₂ emissions and black carbon resulting from a VLOS would occur in a relatively short timeframe, the magnitude of effects is expected to be less than those associated with the actual oil exploration activities...*” The concern with CO₂ as a pollutant does not depend on localized concentrations, as they would with traditional air pollutants, rather concern with CO₂ is focused on its ability to stay in the atmosphere and affect the earth’s atmosphere for a substantial length of time. Thus the total quantity emitted is of concern, not where it is over several months versus several years. Please clarify this point in the final EIS.

Page 4-444, Paragraph two: Sentence two in this paragraph notes that “*Characteristics are probably similar to exploration activities in Alaska.*” Up to date information on offshore exploration drilling activities in the Canadian Beaufort Sea are available through the National Energy Board of Canada’s recent review of Arctic Offshore Drilling. Information is available at <http://www.neb-one.gc.ca/clf-nsi/rthnb/pplctnsbfrthnb/rctcffshrdrlngvrw/rctcffshrdrlngvrw-eng.html>

Page 4-444: It should be noted in paragraph two that the Sakhalin Island is approximately 2,000 miles from Kotzebue at a latitude approximately the same as British Columbia.

Page 4-444: Paragraph four notes that the North Slope Borough has plans for exploration and development of the East Barrow, South Barrow, and Walakpa gas fields. Please note that this information is duplicated in bullet seven following this paragraph.

Page 4-445: Paragraphs three and four on this page discuss details of the Alaska Pipeline Project. The statement that this construction schedule is preliminary and subject to change, should be highlighted and placed at the beginning of the section, as all these proposed dates appear to be based on resource reports filed with the Federal Energy Regulatory Commission, and the EIS for this project will not be initiated until October 2012 at the earliest.

Page 4-445, Point Thomson Project: Sentence two in this paragraph misspells the word east.

Page 4-446, Alpine Unit CD-5 and CD-6 Projects: It should be noted in the final EIS that federal permits have been issued or will be issued in the very near future for these projects, and ConocoPhillips has been cleared to move forward on these projects. Sentence three in this paragraph misspells the Colville River as Collville.

Page 4-446, Liberty Project: Sentence two in this paragraph misspells the word Satellite as Satelite when describing the Endicott Satellite drilling island.

Page 4-455, Table 4.10-7 appears to have a footnote (2) referenced in the category title of “U.S. Community Development/Capital Projects²”, but there is no corresponding footnote at the bottom of the table.

Page 4-465, Section 4.10.4.2.2 Past and Present Actions: The final sentence in this paragraph notes that “*GHG atmospheric concentrations will continue to increase, and perhaps accelerate because of the continued increase in emissions and the potential decrease in the removal rate of these gases from the atmosphere.*” It is not clear if this statement is still true since the U.S. Energy Information Administration released figures on January 23, 2012, that appear to show that U.S carbon dioxide emissions will remain below the 2005 levels for the foreseeable future (see http://www.eia.gov/forecasts/aeo/er/executive_summary.cfm)

Page 4-465, Section 4.10.4.2.3 Reasonably Foreseeable Future Actions: Paragraph one notes that “*it is not likely that there will be any oil or gas production in the Beaufort or Chukchi seas during the life of this document.*” Based on statements from Shell Offshore on their exploration and development timelines we would expect oil and gas production within 18-20 years. Paragraph two further notes that “*sea levels could rise by approximately 0.2 to 0.6m within the next century.*” Providing these two disparate time frames in a discussion of reasonably foreseeable future actions is very confusing. Please clarify in the final EIS if reasonably foreseeable future actions would have to happen in less than 20 years or in less than 100 years.

Page 4-514, Section 4.10.5.2.5 Conclusion: This section proposes that “*Due to the additive and synergistic nature of GHG emissions on climate change impacts, and the fact that the project and alternative could promote or make more accessible the use of fossil fuels, Alternative 3 could contribute to moderate to major cumulative impact to climate change.*” It is not clear how the project could promote or make more accessible the use of fossil fuels and how that fossil fuel use could then be attributed as an impact to climate change. This statement is overly simplistic and appears to attribute the consumption of fossil fuels to the exporter and not the end user which defies logic.

Page 5-534. Section 4.10.6.2.4 Contribution of Alternative to Cumulative Effects: This section notes “*As with Alternatives 2 and 3, the indirect effects from Alternative 4 would contribute more to cumulative impacts than the direct effects.*” It is not clear how this statement is true, since the sections discussing Alternatives 2 and 3 did not appear to make similar statements. Discussion of the alternatives needs to be made consistent in the final EIS.

References:

ISER and Goldsmith, S., 2008, “What Drives the Alaska Economy?”, citing to “Structural Analysis of the Alaska Economy: What are the Drivers?”, <http://www.iser.uaa.alaska.edu>

R. H. Lambertsen, Ph.D., V.M.D.
344 Murano Drive
West Melbourne, FL 32904 USA

13 February 2012

James H. Lecky
Director
Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
13 15 East West Highway, Room 13704
Silver Spring, MD 20910

RE: National Oceanic and Atmospheric Administration (NOAA) *Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic.*

Dear Mr. Lecky:

Notwithstanding those positive comments I otherwise might be able to offer regarding the document referenced, I ask that NOAA/NMFS **refrain** from approving it at least until the responsible officer of the U.S. Copyright Office respond to my Freedom of Information Act (FOIA) request of 5 February 2012, inasmuch as 1) the response anticipated now evidently should provide critically needed understanding of activities and operations of government not least in the area addressed by the document referenced; and 2) my 5 February FOIA request is consistent with the “call to action” advanced in the draft *National Fish, Wildlife and Plants Climate Adaptation Strategy* published recently by the U.S. Fish and Wildlife Service and NOAA with support of the Association of Fish and Wildlife Agencies, and in consultation with the distinguished scientists, engineers, cartographers, and policymakers listed in Attachment 1.

Thank you in advance for your attention to this matter.

Kindest regards,



R. H. Lambertsen, Ph.D., V.M.D.

- Attachments:
1. List of team members of and contributors to draft *National Fish, Wildlife and Plants Climate Adaptation Strategy*.
 2. FOIA request of 5 February 2012.
 3. Draft “Role of Veterinary Ship” (Attachment to Item 2).

Attachment 1

List of Team Members of and Contributors to Draft *National Fish, Wildlife and Plants
Climate Adaptation Strategy*

Anderson, Phil
WA Department of Fish & Wildlife

Antonio, John
Bureau of Indian Affairs

Boice, Peter
U.S. Department of Defense

Boroja, Maria
Animal & Plant Health Inspection Service

Brittell, Dave
WA Department of Fish & Wildlife

Davidson, Margaret
National Oceanic and Atmospheric
Administration
Ocean Service

Fielder, Dwight
Bureau of Land Management

Gould, Rowan
U.S. Fish and Wildlife Service

Grayum, Mike
Northwest Indian Fisheries Commission

Hawkins Hoffman
National Park Service

Houser, Paul
Bureau of Reclamation

Hunting, Kevin
CA Department of Fish & Game

Hyberg, Skip, Ph.D.
Farm Service Agency

Jensen, Jay
Council on Environmental Quality

Kinsinger, Anne
U.S. Geological Survey

Lousberg, Macara
U.S. Environmental Protection Agency
Office of Water

Myers, Gordon
NC Wildlife Resources Commission

Olson, Carolyn
Natural Resources Conservation Service

Riexinger, Patricia
NY Division of Fish, Wildlife & Marine
Resources

Schwaab, Eric
National Oceanic and Atmospheric
Administration
National Marine Fisheries Service

Smith, Chip
U.S. Army Corps of Engineers

Sullivan, Jack
WI Department of Natural Resources

Vitello, John
Bureau of Indian Affairs

Williams, Terry
Tulalip Tribe
Northwest Indian Fisheries Commission

Zimmermann, Anne
U.S. Forest Service

Zorn, Jim
Great Lakes Indian Fish & Wildlife
Commission

Antonio, John
Bureau of Indian Affairs

Babij, Eleanora, Ph.D.
U.S. Fish and Wildlife Service

Barnhart, Gerald
Association of Fish & Wildlife Agencies

Blazer, Arthur
Great Lakes Indian Fish & Wildlife
Commission

Call, Jessica
Council on Environmental Quality

Choudhury, Arpita, Ph.D.
Association of Fish & Wildlife Agencies
Freund, Kate
U.S. Fish and Wildlife Service

Griffis, Roger
National Oceanic and Atmospheric
Administration
National Marine Fisheries Service

Lettrich, Matt
National Oceanic and Atmospheric
Administration
Office of Ocean & Coastal Resource
Management

McGilvray, Laurie
National Oceanic and Atmospheric
Administration
Office of Ocean & Coastal Resource
Management

Penn, Kim
National Oceanic and Atmospheric
Administration
Office of Ocean & Coastal Resource
Management

Roessing, Megan
Council on Environmental Quality

Ryan, Devon
Association of Fish & Wildlife Agencies

Shaffer, Mark
U.S. Fish and Wildlife Service

Taylor, Gary
Association of Fish & Wildlife Agencies

Albertson, Joy
U.S. Fish and Wildlife Service

Antoine, Adrienne
National Oceanic and Atmospheric
Administration
Climate Program Office

Beavers, Rebecca, Ph.D.
National Park Service

Hayum, Brian
U.S. Fish and Wildlife Service

Hecht, Anne
U.S. Fish and Wildlife Service

Honeycutt, Maria
National Oceanic and Atmospheric
Administration &
National Park Service

Kline, Jennifer
GA Department of Natural Resources

Lettrich, Matt
National Oceanic and Atmospheric
Administration
Office of Ocean and Coastal Resource
Management

Martin, Lynn
U.S. Army Corps of Engineers

Mepheron, Matthew
National Oceanic and Atmospheric
Administration
Social Sciences Branch

Moore, Amber
National Oceanic and Atmospheric
Administration
Office of Habitat Conservation

Mumford, Sonia
U.S. Fish and Wildlife Service

Parsons, Doug
FL Fish and Wildlife Conservation
Commission

Penn, Kim
National Oceanic and Atmospheric
Administration
Office of Ocean and Coastal Resource
Management

Phinney, Jonathan
National Oceanic and Atmospheric
Administration
Southwest Fisheries Science Center

Stringer, Christina, Ph.D.
Bureau of Indian Affairs

Thorne, Karen, Ph.D.
U.S. Geological Survey

Trott, Katherine
U.S. Army Corps of Engineers

Auclair, Allan
Animal & Plant Health Inspection Service

Bradford, John
U.S. Geological Survey

Byers, Elizabeth
WV Division of Natural Resources

De Angelis, Patricia, Ph.D.
U.S. Fish and Wildlife Service

Eckert, Greg
National Park Service

Gordh, Gordon, Ph.D.
Animal & Plant Health Inspection Service

Kearney, Richard
U.S. Fish and Wildlife Service

Limpert, Dana
MD DNR Wildlife and Heritage Service

McKelvey, Kevin
U.S. Forest Service

Morton, John M., Ph.D.
U.S. Fish and Wildlife Service

Nowacki, Greg
U.S. Forest Service

O'Leary, John
MA Division of Fisheries and Wildlife

Petruncio, Mark, Ph.D.
Yakama Nation

Schuurman, Gregor
WI Department of Natural Resources

Tirpak, John
U.S. Fish and Wildlife Service

Tuttle, Crawford
CA Department of Forestry and Fire
Protection

Walhovd, Gerald
Bureau of Indian Affairs

Grassland, Shrubland, Desert, Tundra
Technical
Team Members

Balogh, Greg
U.S. Fish and Wildlife Service

Gonzales, Armand
CA Department of Fish and Game

Gordon, Wendy, Ph.D.
TX Parks and Wildlife Department

Green, Nancy
U.S. Fish and Wildlife Service

Hohman, Bill
Natural Resources Conservation Service

Iovanna, Richard
Farm Service Agency

Jorgenson, Janet
U.S. Fish and Wildlife Service

Karl, Michael "Sherm", Ph.D.
Bureau of Land Management

Korth, Kim
NJ Division of Fish and Wildlife

Manning, Mary
U.S. Forest Service

Olson, Dave
U.S. Fish and Wildlife Service

Olwell, Peggy
Bureau of Land Management

Richards, Laura
NV Department of Wildlife

Shenk, Tanya, Ph.D.
National Park Service

Speaks, Pene
WA Department of Natural Resources

Vines, Jeri
Bureau of Indian Affairs

Baker, Rowan
U.S. Fish and Wildlife Service

Barrett, Paul, Ph.D.
U.S. Fish and Wildlife Service

Beechie, Tim
National Oceanic and Atmospheric
Administration
Northwest Fisheries Science Center

Blett, Tamara
National Park Service

Buckley, Anna
OR Department of State Lands

Chris Bujalski
Bureau of Indian Affairs

Burnett, Kelly
U.S. Forest Service

Cunningham, Cathy
Bureau of Reclamation

Cushing, Janet
U.S. Army Corps of Engineers

Day, David
PA Fish and Boat Commission

Feeney, Rory
Miccosukee Tribe

Gabanski, Laura
U.S. Environmental Protection Agency

Gephart, Laura
Columbia River Intertribal Fish Commission

Gorke, Roger
U.S. Environmental Protection Agency
Office of Water

Hagstrom, Neal
CT Department of Environmental Protection
Inland Fisheries Division

Hatch, Keith
Bureau of Indian Affairs

Hudy, Mark
U.S. Forest Service

Kiffney, Peter, Ph.D.
National Oceanic and Atmospheric
Administration
Northwest Fisheries Science Center

Kolar, Cynthia
U.S. Geological Survey

Lathrop, Richard, Ph.D.
WI Department of Natural Resources

Lent, Bob
U.S. Geological Survey

MacKenzie, Richard, Ph.D.
U.S. Forest Service

Peterson, Jeffrey
Council on Environmental Quality

Rosen, Barry H., Ph.D.
U.S. Geological Survey

Shively, Dan
U.S. Fish and Wildlife Service

Stys, Beth
Florida Fish and Wildlife Conservation
Commission

Babij, Eleanora, Ph.D.
U.S. Fish and Wildlife Service

Chytalo, Karen
NY Department of Environmental
Conservation

Cintron, Gil
U.S. Fish and Wildlife Service

Crawford, Steve
Passamaquoddy Tribe at Pleasant Point

DeMaster, Doug
National Oceanic and Atmospheric
Administration
Alaska Fisheries Science Center

Fay, Virginia
National Oceanic and Atmospheric
Administration
Southeast Habitat Conservation Division

Glazer, Robert
FL Fish and Wildlife Conservation
Commission

Littlefield, Naomi
National Oceanic and Atmospheric
Administration

McCreedy, Cliff
National Park Service

Merrick, Richard (Co-chair)
National Oceanic and Atmospheric
Administration
National Marine Fisheries Service

Moore, Elizabeth
National Oceanic and Atmospheric
Administration
Office of National Marine Sanctuaries

Nelson, Mark
National Oceanic and Atmospheric
Administration
Office of Sustainable Fisheries

Nye, Janet, Ph.D.
U.S. Environmental Protection Agency
Office of Research and Development

Parker, Britt
National Oceanic and Atmospheric
Administration
Coral Reef Conservation Program

Patrick, Wesley, Ph.D.
National Oceanic and Atmospheric
Administration
Office of Sustainable Fisheries

Peterson, William
National Oceanic and Atmospheric
Administration
Fish Ecology Division

Sullivan, Jim
National Oceanic and Atmospheric
Administration

West, Jordan
U.S. Environmental Protection Agency
Office of Research and Development

Williams, Terry
Tulalip Tribe
Northwest Indian Fisheries Commission

Barnes, Christopher
U.S. Geological Survey
Earth Resources Observation and Science

R. H. Lambertsen, Ph.D., V.M.D.
344 Murano Drive
West Melbourne, FL 32904 USA

5 February 2012

Freedom of Information Act Officer
Library of Congress
Copyright Office
101 Independence Avenue, S.E.
Washington, D.C. 20559-6000

Dear Sir or Madam:

This is a request under 5 USC Section 552 (Freedom of Information Act). I request any and all documents you have that might *in particular* explain:

- 1) Why my original work Power, God, Evolution (Reg. No. TX000652204; 2007-06-04) could not be of interest to members of Congress, and thus far has not been granted a call number in the Library of Congress (LOC).
- 2) Why my three copyright applications of 2009 (1-24074797; 1-240629431; 1-230841951) to this day remain in “open” status despite your fees being contemporaneously paid.

In order to help determine my status for purposes of determining the applicability of any fees, you should know that I am an American scientist and veterinarian, and that the documents requested are not primarily for commercial use. I therefore request a waiver of all fees for this request. Disclosure to me of the information requested is in the public interest because it could contribute significantly to understanding of the operations or activities of the government, is not primarily in my commercial interest, would or should facilitate charitable activity (*vide infra*), and would or should contribute to marine mammal protection (in the sense promulgated by Congress). I am however willing to pay fees for this request up to a maximum of \$500. If you estimate that the fees will exceed this limit, please inform me first.

I ask that my request receive expedited processing because the failure thus far to assign a LOC call number to Power, God, Evolution, and to issue copyright certificates in response to my three applications of 2009, now severely impact both my desire and probable ability to have at least two follow on works published in scientific journals of certain 501(c)(3) type charitable organizations; and also to succeed in my non-violent anti-terrorism initiative and/or my veterinary ship initiative (explanatory document attached).

Thank you in advance for your consideration of this FOIA request, which is also submitted pursuant to 16 USC Chapter 31 (Marine Mammal Protection Act).

Sincerely,

R. H. Lambertsen, Ph.D., V.M.D.

E-mail address: rlambert1752@yahoo.com

Attachment: Draft “Role of Veterinary Ship”

Role of Veterinary Ship

Broadly: To extend the practice of veterinary medicine to include the >70% of Earth's surface covered by water but in general not accessible from land-based hospitals.

Specifically: Provision of specially equipped, oceangoing platform(s) needed to carry out the prevention, diagnosis and treatment of disease in marine animals, including advanced action to promote population recovery of threatened and endangered species, to restore marine ecosystems health, and to enhance marine animal welfare.

Activities thereby to be made possible or facilitated include, but are not limited to:

Response to marine environmental disasters and incidents; in particular oil spills by rescue and decontamination of oil-fouled birds, pinnipeds, otters, and other sea life.

Rescue, treatment and freeing of sea turtles, pinnipeds, cetaceans, and otters that become entangled in sport fishing lines, commercial fishing gear, and/or marine debris.

General pathobiological research on marine animals to advance basic knowledge of their diseases and to identify promising avenues for treatment.

Specialized pathobiological research on those marine animals known to provide useful sentinels for toxicological and other hazards to human health.

Evaluation of the safety of treatment modalities for marine animals, including in particular large balaenopterids. This will have as its ultimate aim countering problems of climate change and ecosystems deterioration by therapeutic enhancement of the ecosystems services contributed by now depleted populations of Earth's largest and most powerful mammals.

Pending demonstration of safety, offshore deployment of fast boats and expert personnel for the treatment of a known endemic parasitic disease threatening the health and population recovery of certain large balaenopterids.

Rapid transfer by helicopter of technical experts in disentanglement of large whales to offshore sites not immediately accessible from land-based facilities.

Rapid transfer by helicopter of diseased and injured marine animals to land-based veterinary hospitals.

Coordination with U.S. Coast Guard's OCEAN STEWARD mission to reduce the burden on government in this area and to implement more fully the policy of the United States promulgated by Executive Order 13547.

**ALASKA WILDERNESS LEAGUE—AUDUBON ALASKA—CENTER FOR
BIOLOGICAL DIVERSITY—DEFENDERS OF WILDLIFE—EARTHJUSTICE
FRIENDS OF THE EARTH—NATURAL RESOURCES DEFENSE COUNCIL
NORTHERN ALASKA ENVIRONMENTAL CENTER—OCEAN CONSERVATION
RESEARCH—OCEANA—PACIFIC ENVIRONMENT—SIERRA CLUB
THE WILDERNESS SOCIETY—WORLD WILDLIFE FUND**

Feb. 28, 2012

VIA EMAIL

Jim Lecky,
National Marine Fisheries Service, Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910
Email: arcticeis.comments@noaa.gov

Re. National Marine Fisheries Service's Draft Environmental Impact Statement for the Effects of Oil and Gas Activities in the Arctic Ocean, 76 Fed. Reg. 82,275 (Dec. 30, 2011)

Dear Mr. Lecky:

We continue to support the National Marine Fisheries Service (NMFS) in its effort to complete the long-standing process to develop a programmatic Environmental Impact Statement (EIS) for oil and gas exploration in the Arctic Ocean. A comprehensive, long-term overview is necessary in order to adequately capture the potential effects of increasing industrial activity on the people, marine life, and ecology of the area. We are greatly concerned, however, with the direction of the draft EIS.

The scope of annual activity contemplated by the draft EIS is staggering, with up to twenty-one surveys, four exploration drilling programs, and dozens of support vessels – including icebreakers – operating at any given time. Yet in many respects the analysis in the draft EIS simply duplicates the existing project-by-project review in a different format with little in the way of reliably protective mitigation measures. A number of systemic failings compromise its findings: a failure to adequately consider missing information; a failure to provide even the most rudimentary quantitative analysis of marine mammal takes; a failure to examine the effects of multiple concurrent and cumulative disturbances on vulnerable species; and a failure to incorporate the leading science on noise, disturbance, and emerging technologies.

Critically, the selection of alternatives and assessment of effects in the draft EIS fall short because they do not assist decisionmakers in determining what measures can be taken to reduce impacts and what choices may be preferential from an environmental standpoint. Instead, each alternative is presented as resulting in virtually the same impact, and there is no indication of what scenario – either activity level or location – would be cause for greater concern. This is contrary not only to existing science, but it flouts the fundamental purposes of NEPA.

This EIS process is an opportunity to create a forward-thinking approach for managing oil and gas activities in the Arctic. When previously confronted with enormous data gaps and a statutory mandate to sustainably manage a resource, NMFS took a “precautionary, ecosystem-based approach” and prohibited activities until sufficient information exists.¹ The same precautionary, ecosystem-based approach should prevail here as well. As it stands, we support the no action alternative and provide the following comments for NMFS to consider as it moves forward.

I. FAILURE TO ADEQUATELY CONSIDER MISSING INFORMATION

It is undisputed that there are significant gaps in basic information about the Arctic Ocean, its wildlife, and the potential effects of noise and disturbance from oil and gas exploration. The pressing need for more information has been acknowledged repeatedly in recent years by both NMFS and the Bureau of Ocean Energy and Management (BOEM).² It has also been affirmed by other sources, including in the recent analysis by United States Geological Survey intended specifically to review existing data gaps in the Arctic.

NEPA regulations set out an “ordered process” for an agency preparing an EIS in the face of missing information.³ When there is incomplete information relevant to reasonably foreseeable significant adverse impacts that is essential to a reasoned choice among alternatives, an agency must obtain and include the missing information in the EIS if the overall costs of obtaining it are not exorbitant.⁴ If the costs are exorbitant or the means to obtain the information are unknown, agencies must provide in the EIS a number of responses including, a “summary of existing credible scientific evidence” and an evaluation of impacts “based upon theoretical approaches or research methods generally accepted in the scientific community.”⁵

The regulation furthers NEPA’s purpose of ensuring that agencies make “fully informed and well-considered decision[s] . . . ,”⁶ its mandate of “widespread discussion and consideration of the environmental risks and remedies associated with [a] pending project”, and its “require[ment] that this evaluation take place *before* a project is approved.”⁷

The draft EIS cites to the applicable Council of Environmental Quality (CEQ) regulation and maintains that it identifies those areas “where information is unavailable to support a thorough evaluation of the environmental consequences of the alternatives.”⁸ Where data gaps exist, the draft EIS purports to provide the information required by the regulation.⁹ The draft

¹ 74 Fed. Reg. 56,734, 56,734 (Nov. 3, 2009).

² Throughout the development of an EIS for Arctic oil and gas activities, BOEM has undergone a number of reorganizations and name changes. For the sake of simplicity, it is referred to as BOEM in this document, except when a previous name is used to identify the source of a document. BOEM is a cooperating entity on the EIS, but because NMFS is the lead agency, these comments are often directed to it.

³ *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1244 (9th Cir. 1984).

⁴ 40 C.F.R. § 1502.22.

⁵ *Id.* § 1502.22(b).

⁶ *Vt. Yankee Nuclear Power Corp. v. Natural Resources Def. Council*, 435 U.S. 519, 558 (1978).

⁷ *LaFlamme v. FERC*, 852 F.2d 389, 398 (9th Cir. 1988) (internal quotation marks omitted).

⁸ National Marine Fisheries Service (NMFS), Effects of Oil and Gas Activities in the Arctic Ocean, Draft Environmental Impact Statement (EIS) at 4-3 (Dec. 2011) (DEIS).

⁹ *Id.*

EIS, however, does not consistently apply section 1502.22. It ignores NMFS and BOEM's previous conclusions as to their inability to make informed decisions as to potential effects. It acknowledges information gaps without applying the CEQ framework. And it disregards multiple sources that highlight additional fundamental data gaps concerning the Arctic and the effects of oil and gas disturbance.

A. Unjustified findings of sufficient information

The draft EIS contains a number of instances in which it acknowledges major information gaps related to marine mammals but insists that there is an adequate basis for making an assessment of impacts. For example, the draft EIS finds that it ~~is~~ not known whether impulsive sounds affect reproductive rate or distribution and habitat use [of bowhead whales] over periods of days or years."¹⁰ Moreover, the potential ~~for~~ increased stress, and the long-term effects of stress, are unknown, as research on stress effects in marine mammals is limited[.]"¹¹ Nevertheless, the draft EIS concludes that for bowheads the ~~level~~ of available information is sufficient to support sound scientific judgments and reasoned managerial decisions, even in the absence of additional data of this type."¹² The draft EIS also maintains that sufficient information exists to evaluate impacts on walrus and polar bear despite uncertainties about their populations.¹³

Yet elsewhere NMFS has recognized without better data, it is difficult to make the findings that are legally required to authorize marine mammal harassment.¹⁴ There ~~are~~ gaps in our understanding of the biological significance of exposure to various levels of both continuous and impulsive oil and gas activity sounds."¹⁵ Moreover, the data to describe marine mammals and their habitat in the Arctic ~~are~~ lacking or inadequate to support impact assessment and mitigation planning."¹⁶ NMFS's earlier conclusions are at odds with the statements in the draft EIS about missing information.

¹⁰ *Id.* at 4-100.

¹¹ *Id.* A study on ship noise and marine mammal stress was recently issued. Rolland, R.M., Parks, S.E., Hunt, K.E., Castellote, M., Corkeron, P.J., Nowacek, D.P., Wasser, S.K., and Kraus, S.D., Evidence that ship noise increases stress in right whales, *Proceedings of the Royal Society B: Biological Sciences* doi:10.1098/rspb.2011.2429 (2012).

¹² DEIS at 4-100. Elsewhere, the draft EIS states that long term effects of disturbance on bowheads is ~~at~~ well understood." *Id.* at 4-479; *see also id.* at 4-105 (long-term effects of vessels and aircraft on bowheads is ~~unknown~~). Potential ~~long-term~~ effects from repeated disturbance, displacement or habitat disruption on an extremely long-lived species such as the bowhead whale are unknown." *Id.* at 4-110; 4-255 (same); 4-256 (same); 4-480 (same); 4-259 (same; other cetaceans).

¹³ DEIS at 3-116; 3-119. The draft EIS also asserts that the utility of such information is further reduced because the impacts are ~~common~~ to all alternatives. *See, e.g., id.* at 3-119. As discussed throughout these comments, the alternatives under consideration should, in fact, result in varying degrees of impact, and to the extent that they do not, the draft EIS must develop alternatives that do.

¹⁴ NMFS, Comments on Minerals Management Service (MMS) Draft EIS for the Chukchi Sea Planning Area – Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea at 2 (Jan. 30, 2007) (NMFS LS 193 Cmts); NMFS, Comments on MMS Draft EIS for the Beaufort Sea and Chukchi Sea Planning Areas – Oil and Gas Lease Sales 209, 212, 217, and 221 at 3-5 (March 27, 2009) (NMFS Multi-Sale Cmts).

¹⁵ National Oceanic and Atmospheric Administration (NOAA), Comments on the U.S. Department of the Interior/MMS Draft Proposed Outer Continental Shelf (OCS) Oil and Gas Leasing Program for 2010-2015 at 9 (Sept. 9, 2009).

¹⁶ NMFS Multi-Sale Cmts at 3; *see also id.* at 4 (uncertain status and trend of the marine mammal populations inhabiting the proposed lease sale areas will make it difficult to detect and quantify any population level effects").

Similarly, although the draft EIS takes note of some of the missing information related to the effects of noise on fish, it maintains that what does exist is sufficient to make an informed decision.¹⁷ BOEM's original draft supplemental EIS for lease sale 193, however, observed that "experiments conducted to date have not contained adequate controls to allow us to predict the nature of the change or that any change would occur."¹⁸ NOAA subsequently submitted comments noting that BOEM's admission indicated that the "next step would be to address whether the cost to obtain the information is exorbitant, or the means of doing so unclear."¹⁹

The draft EIS also acknowledges that robust population estimates and trends for marine fish are unavailable and detailed information concerning their distribution is lacking.²⁰ Yet the draft EIS asserts that "[g]eneral population trends and life histories" are sufficiently understood to conclude that impacts on fish resources would be "negligible."²¹ As recently as 2007, BOEM expressed stronger concerns when assessing the effects of a specific proposal for two drillships operating in the Beaufort Sea. It found that it could not "concur that the effects on all fish species would be 'short term' or that these potential effects are insignificant, nor would they be limited to the '... localized displacement of fish'", because they could persist for up to five months each year for three consecutive years and they could occur during critical times in the life cycle of important fish species.²² The agencies' prior conclusions are equally applicable in the context of this draft EIS.²³

B. Additional areas of missing information

¹⁷ DEIS at 4-73 (despite the need for further study on the effects of oil and gas activities, "enough information exists to perform a full analysis").

¹⁸ Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), Chukchi Sea Planning Area, Oil and Gas Lease Sale 193 in the Chukchi Sea, Alaska, Draft Supplemental EIS, OCS EIS/EA BOEMRE 2010-034, App. A at 46 (Sept. 2010) (LS 193 DSEIS), *available at* http://www.alaska.boemre.gov/ref/EIS%20EA/2010_034.pdf; *see also* MMS, Beaufort Sea and Chukchi Sea Planning Areas, Oil and Gas Lease Sales 209, 212, 217, and 221, Draft EIS, OCS EIS/EA MMS 2008-0055at 4-64 (Nov. 2008) (2008 Multi-Sale DEIS), *available at* http://www.alaska.boemre.gov/ref/EIS%20EA/ArcticMultiSale_209/2008_0055_deis/vol2.pdf.

¹⁹ NMFS, Comments on BOEMRE Draft Supplemental EIS for the Chukchi Planning Area – Oil and Gas Lease Sale in the Chukchi Sea at 5 (Feb. 28, 2011) (NMFS LS 193 2011 Cmts); *see also* NMFS LS 193 Cmts at 2-3; NMFS Multi-Sale Cmts at 16.

²⁰ DEIS at 3-63. The data gaps for fish inhabiting the near-shore are at least equally profound. *Id.*

²¹ *Id.* at 4-77.

²² MMS, Shell Offshore Inc. Beaufort Sea Exploration Plan, Environmental Assessment, OCS EIS/EA MMS 2007-009 at 50-51 (Feb. 2007) (2007 Drilling EA), *available at* http://www.alaska.boemre.gov/ref/EIS%20EA/ShellOffshoreInc_EA/SOI_ea.pdf. BOEM avoided looking more closely at the issue by resting on a significance threshold that required effects to extend beyond multiple generations. The issue of an appropriate significance threshold in the draft EIS is discussed in the text, *infra*. A panel of the Ninth Circuit determined that the uncertainty required BOEM to obtain the missing information or provide a convincing statement of its conclusion of no significant impacts notwithstanding the uncertainty. *Alaska Wilderness League v. Salazar*, 548 F.3d 815, 831 (9th Cir. 2008), *opinion withdrawn*, 559 F.3d 916 (9th Cir. Mar 06, 2009), *vacated as moot*, 571 F.3d 859 (9th Cir. 2009).

²³ Courts have also made clear that "without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA." *Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).

Throughout the draft EIS, there are additional acknowledgements of missing information, but without any specific findings as to the importance to the agencies' decisionmaking, as required by section 1502.22, including:

Foraging movements of pack-ice breeding seals are not known.²⁴

There are limited data as to the effects of masking.²⁵ The ~~g~~reatest limiting factor in estimating impacts of masking is a lack of understanding of the spatial and temporal scales over which marine mammals actually communicate[.]²⁶

It is not known whether impulsive noises affect marine mammal reproductive rate or distribution.²⁷

It is ~~n~~ot currently possible to predict which behavioral responses to anthropogenic noise might result in significant population consequences for marine mammals, such as bowheads, in the future."²⁸

The potential long-term effects on beluga whales from repeated disturbance are unknown.²⁹ Moreover, the current population trend of the Beaufort Sea stock of beluga whales is unknown.³⁰

The ~~d~~egree to which ramp-up protects marine mammals from exposure to intense noises is unknown."³¹

Chemical response techniques to address an oil spill, such as dispersants, ~~e~~ould" result in additional degradation of water quality, which ~~m~~ay or may not" offset the benefits of dispersant use.³²

A number of entities have also taken note of the data gaps as to both baseline information for Arctic species and the effects of noise and disturbance.³³ Recently, the United States

²⁴ DEIS at 3-108.

²⁵ *Id.* at 4-88.

²⁶ *Id.*

²⁷ *Id.* at 4-89.

²⁸ *Id.* at 4-110 – 4-111.

²⁹ *Id.* at 4-258; *see also id.* at 4-114 (same); 4-115 (same); 4-299 (same); 4-332 (same).

³⁰ *Id.* at 4-483.

³¹ *Id.* at 4-142; *see also id.* (seals); 4-143 (walrus and polar bear). The draft EIS also asserts the effect of discharges on marine mammal habitat is ~~n~~known" but that gathering information would be cost prohibitive. *Id.* at 4-128 (seals); 4-133 (walrus); 4-266 (polar bear). The CEQ regulations, however, require that an EIS at least attempt an analysis ~~b~~ased upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22(b)(4).

³² DEIS at 4-370; 4-413 (same).

³³ *See, e.g.,* Joint Subcommittee on Ocean Science & Technology, Addressing the Effects of Human-Generated Sound on Marine Life: An Integrated Research Plan for U.S. Federal Agencies at 3 (Jan. 13, 2009), *available at* <http://www.whitehouse.gov/sites/default/files/microsites/ostp/oceans-mmnoise-IATF.pdf>, (stating that the current status of science as to noise effects ~~e~~often results in estimates of potential adverse impacts that contain a high degree of uncertainty"); *id.* at 62-63 (noting the need for baseline information, particularly for Arctic marine species); National Commission on the BP *Deepwater Horizon* Oil Spill and Offshore Drilling (Nat'l Commission), *Deep*

Geological Survey (USGS) found that basic data for many marine mammal species in the Arctic are still needed, including information on current abundance, seasonal distribution, movements, population dynamics, foraging areas, sea-ice habitat relationships, and age-specific vital rates.³⁴ The need for such fundamental information is apparent even for bowhead whales, one of the better studied species in the Arctic.³⁵ The report confirms that more research is also necessary to accurately assess marine mammal reactions to different types of noise and that more work is needed to characterize the seasonal and spatial levels of ambient noise in both the Beaufort and Chukchi seas.³⁶ Recognizing the scope and importance of the data gaps, the report states that missing information serves as a major constraint to a defensible science framework for critical Arctic decision making.”³⁷

The final supplemental EIS for lease sale 193 contains similar findings. For example, BOEM found that it lacked the information to determine where bowhead aggregations occur in the Chukchi Sea.³⁸ It further acknowledged that much of the information on the distribution and timing of movements of belugas is missing, particularly for late summer and fall during the open-water period when lease sale activities like seismic surveying and exploration drilling would take place.³⁹

The draft EIS reveals in many instances that studies are in fact already underway, indicating that the necessary information gathering is not cost prohibitive. A study undertaken by BP, the North Slope Borough, and the University of California will help better understand

Water: The Gulf Oil Disaster and the Future of Offshore Drilling, Report to the President at vii (Jan. 2011), available at

http://www.oilspillcommission.gov/sites/default/files/documents/DEEPWATER_ReporttothePresident_FINAL.pdf (finding that “[s]cientific understanding of environmental conditions in sensitive environments . . . in areas proposed for more drilling, such as the Arctic, is inadequate”); Nat’l Commission, Offshore Drilling in the Arctic:

Background and Issues for the Future Consideration of Oil and Gas Activities, Staff Working Paper No. 13 at 19, available at

http://www.oilspillcommission.gov/sites/default/files/documents/Offshore%20Drilling%20in%20the%20Arctic_Background%20and%20Issues%20for%20the%20Future%20Consideration%20of%20Oil%20and%20Gas%20Activities_0.pdf (listing acoustics research on impacts to marine mammals as a “high priority”).

³⁴ Holland-Bartels, Leslie, and Pierce, Brenda, eds., 2011, An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370 (USGS Report), available at <http://pubs.usgs.gov/circ/1370/>. See also *id.* at 57 (walrus); 184 (Finding 6.12, beluga whales); 185 (Finding 6.13, gray whales); 187 (Finding 6.15, ice seals). Although the draft EIS cites to the USGS report, it does not discuss its findings in the context of missing information.

³⁵ *Id.* at 52, 179-182.

³⁶ *Id.* at 176.

³⁷ *Id.* at 23.

³⁸ BOEMRE, Chukchi Sea Planning Area, Oil and Gas Lease Sale 193 in the Chukchi Sea, Alaska, Final Supplemental EIS, OCS EIS/EA BOEMRE 2011-041 at IV-101 (Aug. 2011) (LS 193 FSEIS), available at http://alaska.boemre.gov/ref/EIS%20EA/2011_041_FSEIS/2011_041x.htm (current data unavailable to typify summer use of Chukchi Sea); *id.* at IV-103 (insufficient data to determine fall migration paths and how intensively bowheads feed during fall migration through the Chukchi Sea).

³⁹ *Id.* at III-77. BOEM has, however, re-affirmed its decision to hold Lease Sale 193. It did so despite recognizing that the EIS for the sale identifies literally hundreds of data gaps for the Chukchi Sea relevant to potentially significant effects. Contrary to its stated commitment to base decisions on good science, its legal obligations, and basic common sense, however, BOEM determined that none of the missing information is essential at the lease sale stage.

masking and the effects of masking on marine mammals[.]”⁴⁰ It will also address ways to overcome the “inherent uncertainty” of where and when animals may be exposed to anthropogenic noise by developing a model for migrating bowheads.⁴¹ NOAA has convened working groups on Underwater Soundmapping and Cetacean Mapping in the Arctic.⁴² BOEM has an Environmental Studies Program that includes a number of ongoing and proposed studies in the Beaufort and Chukchi seas that are intended to address a wide-variety of issues relevant to the draft EIS.⁴³ As the Ninth Circuit recently found, agencies have an obligation pursuant to NEPA “to ensure that data exists *before approval*” so that decisionmakers can “understand the adverse environmental effect *ab initio*.”⁴⁴

II. FAILURE TO ADEQUATELY DEFINE IMPACT LEVELS

For each resource, the draft EIS provides specific impact criteria.⁴⁵ These criteria are then used to determine whether the overall effect on the resource qualifies as “negligible,” “minor,” “moderate,” or “major.”⁴⁶ As the ultimate measure of potential effects, these descriptors are problematic: they do not inform the relevant agencies as to how impacts relate to their substantive statutory responsibilities, and they do not provide adequate information as to their relationship to the NEPA significance threshold.

A. Alignment with substantive legal standards

As recognized by the agencies, the draft EIS is intended to provide the information necessary for NMFS to comply with the Marine Mammal Protection Act (MMPA) and for BOEM to comply with the Outer Continental Shelf Lands Act (OCSLA).⁴⁷ This approach comports with applicable caselaw. The Ninth Circuit has observed that, when an action is taken pursuant to a specific statute, not only do “the statutory objectives of the project serve as a guide by which to determine the reasonableness of objectives outlined in an EIS,” but “the statutory objectives underlying the agency’s action work significantly to define its analytic obligations.”⁴⁸ Consequently, “the considerations made relevant by the substantive statute driving the proposed action *must be addressed* in NEPA analysis.”⁴⁹ Indeed, agencies are required by NEPA to explain how alternatives in an EIS will meet requirements of “other environmental laws and polices.”⁵⁰

⁴⁰ DEIS at 4-88.

⁴¹ *Id.* at 4-469.

⁴² *Id.* at ES-34.

⁴³ *Id.* 5-8 – 5-9.

⁴⁴ *Northern Plains Resource Council v. Surface Transport. Bd.*, --- F.3d ----, 2011 WL 6826409, *14 (9th Cir. Dec. 29, 2011) (emphasis in original). *See also Ctr. for Biological Diversity v. Bureau of Land Management*, 422 F. Supp. 2d 1115, 1166 (N.D. Cal. 2006) (Section 1502.22 requires an agency to “demonstrate” that the costs of obtaining missing, essential information are exorbitant).

⁴⁵ *See, e.g.*, DEIS at 4-85 – 4-86 (Table 4.5-19, providing impact criteria for marine mammals).

⁴⁶ *Id.* at 4-4.

⁴⁷ *See id.* at 1-10.

⁴⁸ *Oregon Natural Desert Ass’n v. BLM*, 625 F.3d 1092, 1109 (9th Cir. 2010).

⁴⁹ *Id.* (emphasis added; footnote omitted); *id.* at 1109 n.11 (“the factors to be considered are derived from the statute the major federal action is implementing, as well as from the nature of the action itself”).

⁵⁰ *See* 40 C.F.R. § 1502.2(d).

While the draft EIS attempts to address the relevant subject matter implicated by the governing statutes (e.g., marine mammals and the ocean environment), its impact descriptors bear no resemblance to the standards imposed by the MMPA and OCSLA.⁵¹ The draft EIS does not provide, for example, the necessary information to determine whether any of the proposed alternatives will have a more than negligible impact on any marine mammal stock and whether there may be undue harm to aquatic life.⁵² The statutes' substantive requirements are by no means the only yardstick by which to measure effects in the NEPA analysis, but their requirements should be integrated to a greater degree. The 2006 programmatic environmental assessment for seismic surveying achieved this goal by incorporating elements of the MMPA's "potential biological removal" to determine the number of harassed whales that could affect the population's rates of survival and recruitment.⁵³

NMFS itself included an analogous recommendation in its comments to the draft supplemental EIS for lease sale 193. Due to the potential for effects on Essential Fish Habitat, NMFS indicated that BOEM's NEPA documentation should in the future "use [the] exact terminology" from the Magnuson-Stevens Fisheries Act and its regulations rather than terms such as "negligible" and "minor."⁵⁴ Doing so, NMFS maintained, would help to avoid confusion between the agencies and better inform the public.⁵⁵

B. Relationship to NEPA significance

Furthermore, the draft EIS's approach avoids articulating any thresholds for "significance," the point at which NEPA requires the preparation of an EIS. Although a defined threshold is particularly needed when an agency prepares an EA, it has consequences here given the programmatic nature of the Arctic EIS. NMFS may later incorporate portions of the EIS by reference, and under such circumstances, it will be critical to understand the import of the analysis within the context of an established threshold.⁵⁶ BOEM or other agencies may incorporate analysis from the EIS as well.

The existing impact criteria and impact levels, unfortunately, obscure rather than illuminate the potential for harm. A "major" impact is one that is "generally medium or high intensity, long-term or permanent in duration, a regional or state-wide extent, and affect important or unique resources."⁵⁷ For marine mammals, that would demand an alternation of behavior patterns for several years and potentially affecting the resource throughout the entire

⁵¹ For example, the draft EIS makes a point to note that the term "negligible" as used in the document does not have the same meaning as used in the MMPA. DEIS at 4-4 n.1.

⁵² 16 U.S.C. § 1371(a)(5)(D)(i)(I) (MMPA); 43 U.S.C. § 1340(a)(1) & (g)(3) (OCSLA). See also 30 C.F.R. § 551.6(a). The draft EIS must ensure that Shell's activities do not reduce the availability of any affected population or species to a level insufficient to meet subsistence needs. See 50 C.F.R. § 216.102.

⁵³ MMS, Final Programmatic Environmental Assessment, Arctic Outer Continental Shelf Seismic Surveys – 2006, OCS EIS/EA MMS 2006-038 at 36-37 (June 2006) (2006 PEA), available at http://www.alaska.boemre.gov/ref/EIS%20EA/Final_PEA/Final_PEA.pdf.

⁵⁴ NMFS LS 193 2011 Cmts at 4.

⁵⁵ *Id.*

⁵⁶ DEIS at 5-2.

⁵⁷ *Id.* at 4-4.

two-sea EIS project area.⁵⁸ This, however, does not fit comfortably with the draft EIS's warnings that displacement from important habitat lasting even a matter of weeks can result in harm of biological significance to marine mammals.⁵⁹

A well-reasoned significance threshold is especially important here given that there have been conflicting definitions of significance in recent NEPA documents related to the Arctic.⁶⁰ NMFS, as an expert wildlife agency and the lead for the draft EIS, should take the opportunity to delineate the appropriate boundaries for assessing the impacts. Doing so will better inform both the public and decisionmakers as to the appropriate backdrop for future exploration activities.

III. FAILURE TO CONSIDER A REASONABLE RANGE OF ALTERNATIVES

The purpose of an EIS is to "igorously explore and objectively evaluate all reasonable alternatives" to the proposed action.⁶¹ That discussion of alternatives "is the heart of the [EIS],"⁶² and it "guarantee[s] that agency decision-makers have before them and take into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance."⁶³ These standards have not been met here.

A. Unjustified dismissal of alternatives

The draft EIS improperly dismisses three effective alternatives on the erroneous belief that they exceed the agencies' present capacity or legal authority to impose.

- (1) Activity caps.— As NMFS has recognized, oil and gas-related disturbances in the marine environment can result in biologically significant impacts depending upon the "timing, location, and number" of the activities.⁶⁴ Yet the draft EIS declines even to consider an alternative limiting the amount of activity that can be conducted in the Arctic, or part of the Arctic, over a given period. The agencies base their rejection of this alternative not on the grounds

⁵⁸ *Id.* at 4-85. In order to diminish the degree of harm, the draft EIS also repeatedly notes that the affected marine mammals are unlikely to "leave the EIS project area entirely[.]" an observation of questionable relevance under any circumstance but particularly so given the size of the EIS project area at issue here. *Id.* at 4-100 (bowheads); 4-105 (same); 4-255 (same); *see also id.* at 4-259 (other cetaceans).

⁵⁹ *Id.* at 4-121; 4-114. *See Sierra Club v. Mainella*, 459 F. Supp. 2d 76, 106 (D.D.C. 2006) (faulting an agency for failing to explain "the basis for its conclusion that potentially 'moderate' impacts could not be significant under NEPA").

⁶⁰ Compare PEA-35 with MMS, Beaufort Sea Planning Area, Oil and Gas Lease Sales 186, 195, and 202, Final EIS, OCS EIS/EA MMS 2003-001 at IV-4 (Feb. 2003) (2003 Multi-Sale FEIS).

⁶¹ 40 C.F.R. § 1502.14(a).

⁶² *Id.* § 1502.14

⁶³ *Alaska Wilderness Recreation & Tourism Ass'n v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995) (quoting *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228 (9th Cir. 1988)); *see also Angoon v. Hodel*, 803 F.2d 1016, 1020 (9th Cir. 1986) ("[T]he touchstone for our inquiry is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation.") (quoting *California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).

⁶⁴ NMFS, Biological Opinion for Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska and Authorization for Small Takes Under the Marine Mammal Protection Act at 86 (July 17, 2008) (2008 BiOp).

that it exceeds their legal authority, but that it does not meet the purpose and need of the EIS.⁶⁵

In fact, determining the legally acceptable limits of activity is essential to NMFS's issuance of take authorizations in the Arctic – which is the agency's stated purpose and need.⁶⁶ Pursuant to NMFS's own general regulations, an incidental harassment authorization must be revoked if the authorized takings —individually or in combination with other authorizations” are having more than a negligible impact on the population or an unmitigable adverse impact on subsistence.⁶⁷ Unfortunately, the draft EIS makes no attempt to assess whether the scope of activities it contemplates satisfies the negligible impact standard, or even to quantify the amount of take that would occur (see *infra*). Similarly, considering limits on activities is essential to BOEM's permitting and other requirements under OCSLA.⁶⁸

Instead of developing an activity cap alternative for the EIS, the agencies propose, in effect, to consider overall limits on activities when evaluating individual applications under OCSLA and the MMPA.⁶⁹ It would, however, be much more difficult for NMFS or BOEM to undertake that kind of analysis in an individual IHA application or OCSLA exploration plan because the agencies often lack sufficient information before the open water season to take an overarching view of the activities occurring that year. Determining limits at the outset would also presumably reduce uncertainty for industry. In short, excluding any consideration of activity caps from the alternatives analysis in this EIS frustrates the purpose of programmatic review, contrary to NEPA.⁷⁰

- (2) Permanent area closures.— As noted *infra*, it is broadly recognized that area closures represent the most effective available means of reducing harm from various anthropogenic noise sources on marine mammals, and that closures can also reduce the risk of ship-strikes of cetaceans and the impact of oil spills on wildlife. But the draft EIS rules out any consideration of permanent area closures, arguing the agencies' lack authority under the MMPA and OCSLA to prescribe them.⁷¹ Indeed, it suggests that the proper time for consideration of permanent closures is during the offshore leasing program and lease sale processes.⁷²

BOEM's relegation of this alternative to the leasing process is not consistent with its obligation, at the exploration and permit approval stage, to reject

⁶⁵ DEIS at 2-45.

⁶⁶ DEIS at 1-3 to 1-4.

⁶⁷ 50 C.F.R. § 216.107(f)(2). Additionally, NMFS must ensure that the activity does not take more than “small numbers” of marine mammal species and stocks – another standard that the agency improperly fails to evaluate in this draft EIS.

⁶⁸ DEIS at 1-4.

⁶⁹ DEIS at 2-45.

⁷⁰ See also 40 C.F.R. § 1500.2(e) (stating that agencies should identify and assess alternatives that would “avoid or minimize adverse effects of [proposed] actions upon the quality of the human environment”).

⁷¹ DEIS at 2-44.

⁷² *Id.*

applications that would cause ~~serious~~ harm” or ~~undue~~ harm.”⁷³ It is reasonable here for BOEM to define areas whose exploration would exceed these legal thresholds regardless of time of year, just as it defines areas for seasonal avoidance pursuant to other OCSLA and MMPA standards.⁷⁴ Regardless, the lease sale stage is not a proper vehicle for considering permanent exclusions for strictly off-lease activities, such as off-lease seismic surveys. At the very least, the draft EIS should consider establishing permanent exclusion areas, or deferring activity within certain areas, outside the boundaries of existing lease areas.

- (3) Eliminating duplicative surveys.— NMFS’s Open Water Panel has twice called for the elimination of unnecessary, duplicative surveys, whether through data sharing or some other means.⁷⁵ Yet the draft EIS pleads that BOEM cannot adopt this measure, on the grounds that the agency cannot ~~require~~ companies to share proprietary data, combine seismic programs, change lease terms, or prevent companies from acquiring data in the same geographic area.”⁷⁶

This analysis overlooks BOEM’s statutory duty under OCSLA to approve only those permits whose exploration activities are not ~~unduly~~ harmful” to marine life.⁷⁷ While OCSLA does not define the standard, it is difficult to imagine an activity more expressive of ~~undue~~ harm” than a duplicative survey, which obtains data that the government and industry already possess and therefore is not necessary to the ~~expeditious~~ and orderly development, subject to environmental safeguards” of the outer continental shelf.⁷⁸ It is thus within BOEM’s authority to decline to approve individual permit applications in whole or part that it finds are unnecessarily duplicative of existing or proposed surveys or data. Additionally, nothing in OCSLA bars BOEM from incentivizing the use of common surveyors or data sharing, as already occurs in the Gulf of Mexico, to reduce the total survey effort. The draft EIS also fails to consider this latter alternative.

B. Failure to fully develop conservation alternatives

NMFS must evaluate action alternatives that are more protective of Arctic resources. As found by the draft EIS, none of the action alternatives demonstrably reduces the environmental

⁷³ *E.g.*, 43 U.S.C. § 1340(a); 30 C.F.R. § 550.202.

⁷⁴ Similarly, NMFS should define such areas in light of the negligible impact and subsistence hunting standards in the MMPA. 16 U.S.C. §§ 1371(a)(5)(A), (D).

⁷⁵ Burns, J., Clark, C., Ferguson, M., Moore, S., Ragen, T., Southall, B., and Suydam, R., Expert panel review of monitoring and mitigation protocols in applications for incidental harassment authorizations related to oil and gas exploration, including seismic surveys, in the Chukchi and Beaufort Seas at 10 (2010) (Expert Panel Review 2010); Brower, H., Clark, C.W., Ferguson, M., Gedamke, J., Southall, B., and Suydam, R., Expert panel review of monitoring protocols in applications for incidental harassment authorizations related to oil and gas exploration in the Chukchi and Beaufort Seas, 2011: Statoil and ION Geophysical at 9 (2011) (Expert Panel Review 2011).

⁷⁶ DEIS at 2-46.

⁷⁷ 43 U.S.C. § 1340(a); *see also* 30 C.F.R. § 550.202.

⁷⁸ 30 U.S.C. § 1332(3).

impact of oil and gas exploration.⁷⁹ NEPA requires that agencies explore alternatives that “will avoid or minimize adverse effects of these actions upon the quality of the human environment.”⁸⁰ The analysis in the draft EIS both avoids proposing a beneficial alternative and consistently dilutes the advantages of mitigation measures that could be used as part of such an alternative.⁸¹

1. *Measures to reduce effects on Arctic resources*

Multiple alternatives with indistinguishable outcomes do not represent a “range” of alternatives and do not assist in determining preferential options. NMFS could, for example, include an alternative that requires all “standard” and “additional” mitigation measures, while adding limits such as late-season drilling prohibitions to protect migrating bowhead whales and reduce the harm from an oil spill. Reducing the harm from spills includes both increasing the chance that a spill can be stopped before the winter freeze up and potentially lessening the chance that large volumes of spilled oil remain in the ice and re-emerge during the spring.

Additionally, the draft EIS fails entirely to consider a number of other reasonable measures that would significantly reduce environmental risk from project activities.⁸² These include, but are not limited to:

- (1) A requirement that seismic survey vessels use the lowest practicable source levels, minimize horizontal propagation of the sound signal, and/or minimize the density of track lines consistent with the purposes of the survey. Accordingly, the agencies should consider establishing a review panel, potentially overseen by both NMFS and BOEM, to review survey designs with the aim of reducing their wildlife impacts;⁸³
- (2) A requirement that all vessels undergo measurement for their underwater noise output per American National Standards Institute/Acoustical Society of America standards (S12.64); that all vessels undergo regular maintenance to minimize propeller cavitation, which is the primary contributor to underwater ship noise; and/or that all new vessels be required to employ the best ship-quieting designs and technologies available for their class of ship.⁸⁴

⁷⁹ As explained *infra*, we do not believe that NMFS has adequately considered the benefits from measures such as facilitating emerging technology or imposing time and place restrictions.

⁸⁰ 40 C.F.R. § 1500.2(e).

⁸¹ Regardless, the proposals here constitute a reasonable alternative that must be considered by NMFS in any final EIS.

⁸² *Id.* § 1502.14 (alternatives should be compared to “sharply defin[e] the issues and provid[e] a clear basis for choice among options by the decisionmaker and the public”)

⁸³ An independent panel may also be appropriate. For example, an independent peer review panel has been established to evaluate survey design of the Central Coastal California Seismic Imaging Project, which is aimed at studying fault systems near the Diablo Canyon nuclear power plant. See California Public Utilities Commission, Application of Pacific Gas and Electric Company for Approval of Ratepayer Funding to Perform Additional Seismic Studies Recommended by the California Energy Commission: Decision Granting the Application, *available at* docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/122059-09.htm.

⁸⁴ Renilson, M., Reducing underwater noise pollution from large commercial vessels (2009) *available at* www.ifaw.org/oceannoise/reports; Southall, B.L., and Scholik-Schlomer, A. eds. Final Report of the National Oceanic and Atmospheric Administration (NOAA) International Symposium: Potential Application of Vessel-

- (3) A speed limit (e.g., 10 knots) placed on all vessels transiting to and from a work site, with consideration for additional limits on vessel speed when transiting through important habitat areas, in order to reduce both underwater noise and ship-strike risk;⁸⁵
- (4) Required use of real-time passive acoustic monitoring in migratory corridors and other sensitive areas to alert ships to the presence of whales, primarily to reduce ship-strike risk;⁸⁶
- (5) A prohibition on all seismic surveys outside proposed lease sale areas, which, for reasons similar to those discussed above at section IV(C), are not essential to the stated purpose and need;
- (6) Use of additional best practices for monitoring and maintaining safety zones around active airgun arrays and other high-intensity underwater noise sources, as set forth in Weir and Dolman (2007) and Parsons et al. (2009); and⁸⁷
- (7) A deferral on exploration drilling until the concerns detailed by the U.S. Oil Spill Commission are adequately addressed.⁸⁸

2. *Faulty analysis of acoustic mitigation measures*

As part of developing additional alternatives that incorporate existing mitigation measures, NMFS must also substantially improve its assessment of those measures. The existing

Quieting Technology on Large Commercial Vessels, 1-2 May 2007, at Silver Springs, Maryland (2008) *available at* http://www.nmfs.noaa.gov/pr/pdfs/acoustics/vessel_symposium_report.pdf.

⁸⁵ Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S., and Podesta, M., Collisions between ships and whales, *Marine Mammal Science* 17:35-75 (2001); Pace, R.M., and Silber, G.K., Simple analyses of ship and large whale collisions: Does speed kill? Biennial Conference on the Biology of Marine Mammals, December 2005, San Diego, CA. (2005) (abstract); Vanderlaan, A.S.M., and Taggart, C.T., Vessel collisions with whales: The probability of lethal injury based on vessel speed. *Marine Mammal Science* 23:144-156 (2007); Renilson, M., Reducing underwater noise pollution from large commercial vessels (2009) *available at* www.ifaw.org/oceannoise/reports; Southall, B.L., and Scholik-Schlomer, A. eds. Final Report of the National Oceanic and Atmospheric Administration (NOAA) International Symposium: Potential Application of Vessel-Quieting Technology on Large Commercial Vessels, 1-2 May 2007, at Silver Springs, Maryland (2008), *available at* http://www.nmfs.noaa.gov/pr/pdfs/acoustics/vessel_symposium_report.pdf; Thompson, M.A., Cabe, B., Pace III, R.M., Levenson, J., and Wiley, D., Vessel compliance and commitment with speed regulations in the US Cape Cod Bay and off Race Point Right Whale Seasonal Management Areas. Biennial Conference on the Biology of Marine Mammals, November-December 2011, Tampa, FL (2011) (abstract); National Marine Fisheries Service, NOAA. 2010 Large Whale Ship Strikes Relative to Vessel Speed. Prepared within NOAA Fisheries to support the Ship Strike Reduction Program (2010), *available at* http://www.nmfs.noaa.gov/pr/pdfs/shipstrike/ss_speed.pdf.

⁸⁶ Abramson, L., Polefka, S., Hastings, S., and Bor, K., Reducing the Threat of Ship Strikes on Large Cetaceans in the Santa Barbara Channel Region and Channel Islands National Marine Sanctuary: Recommendations and Case Studies (2009) (Marine Sanctuaries Conservation Series ONMS-11-01); Silber, G.K., S. Bettridge, and D. Cottingham, —Report of a workshop to identify and assess technologies to reduce ship strikes of large whales.” Providence, Rhode Island, July 8-10, 2008 (2009) (NOAA Technical Memorandum. NMFS-OPR-42).

⁸⁷ Weir, C.R., and Dolman, S.J., Comparative review of the regional marine mammal mitigation guidelines implemented during industrial seismic surveys, and guidance towards a worldwide standard, *Journal of International Wildlife Law and Policy* 10: 1-27 (2007); Parsons, E.C.M., Dolman, S.J., Jasny, M., Rose, N.A., Simmonds, M.P., and Wright, A.J., A critique of the UK’s JNCC seismic survey guidelines for minimising acoustic disturbance to marine mammals: Best practice? *Marine Pollution Bulletin* 58: 643-651 (2009).

⁸⁸ See National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling* (2011).

draft EIS makes numerous errors: mischaracterizing the effectiveness and practicability of particular measures; failing to analyze variations of measures that may be more effective than the ones proposed; and failing to standardize measures that are plainly effective. More specifically:

- (1) Application of standard mitigation.— While the draft EIS states that the mitigation measures encompassed by its —Standard” list are mandatory, it also includes language suggesting that they would be applied on a case-by-case basis.⁸⁹ NMFS should make clear that this mitigation is indeed mandatory.
- (2) Limiting activities in low-visibility conditions. — Although the draft EIS acknowledges that limiting activities in low-visibility conditions can reduce the risk of ship-strikes and near-field noise exposures, it does not include the measure on its standard mitigation list.⁹⁰ Its rationale against doing so is flawed. *First*, it suggests that the restriction could extend the duration of a survey and thus the potential for cumulative disturbance of wildlife; but this concern would not apply to activities in migratory corridors, since target species like bowheads are transient. *Second*, while it suggests that the requirement would be expensive to implement, it does not consider the need to reduce ship-strike risk in heavily-used migratory corridors in order to justify authorization of an activity under the IHA process.⁹¹ At the very least, this requirement should be standardized for all activities involving moving vessels that occur in bowhead whale migratory corridors during the latter parts of the open-water season (i.e., September-October); and for all transits of support vessels in all areas at all times.
- (3) Standard safety zones.— The draft EIS fails to consider a number of recent studies on temporary threshold shift in establishing its 180/190 dB safety zone standard.⁹² These studies include: (1) a controlled exposure experiment demonstrating that harbor porpoises are substantially more susceptible to temporary threshold shift than the two species, bottlenose dolphins and belugas, that have previously been tested;⁹³ (2) a modeling effort indicating that, when uncertainties and individual variation are accounted for, a significant number of whales could suffer temporary threshold shift beyond 1 km from a seismic source;⁹⁴ (3) studies suggesting that the relationship between temporary and permanent threshold shift may not be as predictable as previously believed;⁹⁵ and (4) the oft-cited Southall et al. (2007), which suggests use

⁸⁹ DEIS at 4-139, 232.

⁹⁰ *Id.* at 4-153.

⁹¹ As discussed in these comments, IHAs cannot issue to activities with the potential to cause serious injury or mortality.

⁹² See DEIS at 4-139 to 4-141.

⁹³ Lucke, K., Siebert, U., Lepper, P.A., and Blanchet, M.-A., Temporary shift in masked hearing thresholds in a harbor porpoise (*Phocoena phocoena*) after exposure to seismic airgun stimuli, *Journal of the Acoustical Society of America* 125: 4060-4070 (2009).

⁹⁴ Gedamke, J., Gales, N., and Frydman, S., Assessing risk of baleen whale hearing loss from seismic surveys: The effect of uncertainty and individual variation, *Journal of the Acoustical Society of America* 129:496-506 (2011).

⁹⁵ Kastak, D., Mulsow, J., Ghoul, A., Reichmuth, C., Noise-induced permanent threshold shift in a harbor seal [abstract], *Journal of the Acoustical Society of America* 123: 2986 (2008) (sudden, non-linear induction of permanent threshold shift in harbor seal during TTS experiment); Kujawa, S.G., and Liberman, M.C., Adding insult

of a cumulative exposure metric for temporary threshold shift in addition to the present RMS metric, given the potential occurrence of multiple surveys within reasonably close proximity.⁹⁶ NMFS should conservatively recalculate its safety zone distances in light of these studies, which indicate the need for larger safety zones, especially for the harbor porpoise.⁹⁷

- (4) Larger safety zones for aggregations of target species.— The draft EIS improperly rejects the 120 dB safety zone for bowhead whales, and the 160 dB safety zone for bowhead and gray whales that have been used in IHAs over the past five seasons.⁹⁸ First, although it claims that the measure is ineffective because it has never yet been triggered,⁹⁹ it does not consider whether a less stringent, more easily triggered threshold might be more appropriate given the existing data. For example, the draft EIS fails to consider whether requiring observers to identify at least 12 whales within the 160 dB safety zone, and then to determine that the animals are engaged in a “non-migratory, biologically significant behavior,” might not constitute too high a bar, and whether a different standard would provide a greater conservation benefit while enabling survey activity.

Second, the draft EIS disparages the measure by citing industry’s “serious concerns regarding the overall safety of conducting fixed-wing aircraft monitoring flights in the Arctic, especially in the Chukchi Sea.”¹⁰⁰ This assertion should be reviewed in light of the multiple aerial surveys that are now being conducted there: COMIDA survey flights are now routine over the Chukchi, and Shell is relying on aerial reconnaissance for confirmation of ice conditions during its planned drilling.¹⁰¹ In fact, Shell is planning to implement an aerial monitoring program extending 37 kilometers from the shore, as it has for a number of years when conducting offshore exploration activities.¹⁰² As NMFS’s Open Water Panel has recommended, unmanned flights should also be investigated.¹⁰³

Although time/area closures are a more effective means of reducing cumulative exposures of wildlife to disruptive and harmful sound, these expanded safety zones have value in minimizing disruptions, and potentially in reducing the risk of hearing loss and injury, outside the seasonal closure areas, particularly when cow-calf pairs

to injury: Cochlear nerve degeneration after “temporary” noise-induced hearing loss, *Journal of Neuroscience* 29: 14077-14085 (2009) (mechanism linking temporary to permanent threshold shift).

⁹⁶ See DEIS at 4-469; Southall, B.L., Bowles, A.E., Ellison, W.T., Finneran, J.J., Gentry, R.L., Greene, C.R., Jr., Kastak, D., Ketten, D.R., Miller, J.H., Nachtigall, P.E., Richardson, W.J., Thomas, J.A., and Tyack, P.L., Marine mammal noise exposure criteria: initial scientific recommendations, *Aquatic Mammals* 33:411-521 (2007) (Southall et al. (2007)).

⁹⁷ Similarly, NMFS must revise its risk analysis to account for lower thresholds of hearing loss. The new data on harbor porpoises should be added to the available data on bottlenose dolphins and belugas to determine thresholds for data-poor species.

⁹⁸ DEIS at 4-155 to 4-156.

⁹⁹ *Id.* at 4-155.

¹⁰⁰ *Id.* at 4-156.

¹⁰¹ 76 Fed. Reg. 69,958, 69,960 (Nov. 9, 2011).

¹⁰² *Id.* at 69,987.

¹⁰³ See Expert Panel Review 2011.

are present.¹⁰⁴ Indeed, NMFS should consider designing larger exclusion zones (detection-dependent or -independent) around river mouths with anadromous fish runs to protect beluga whale foraging habitat, insofar as these areas are not encompassed by seasonal closures.¹⁰⁵ Finally, independent of its consideration of expanded safety zones, NMFS should consider requiring aerial monitoring and/or fixed hydrophone arrays to reduce the risk of near-source injury and monitor for impacts.¹⁰⁶

- (5) Additional detection-based mitigation.— The draft EIS includes a number of detection-based measures on its —“Additional Mitigation” list that should be standardized. For example, sound source verification has been required of Arctic operators for several years, as part of their IHA compliance requirements, and has proven useful for establishing more accurate, *in situ* measurements of safety zones and for acquiring information on noise propagation.¹⁰⁷ And passive acoustic monitoring systems – while being only partially effective, like all existing monitoring techniques – has had limited success in detecting toothed whale calls in the Arctic and elsewhere, as NMFS and its expert Open Water Panel have recognized.¹⁰⁸ Both measures should be included on the —“Standard Mitigation” list.
- (6) Vessel avoidance of important habitat.— The draft EIS admits that routing ships around important habitat would benefit bowheads, belugas, gray whales, and walrus.¹⁰⁹ Indeed, it is well established that vessel routing can significantly reduce both cumulative noise exposure and the risk of ship-strikes.¹¹⁰ NMFS does not provide any justification for not including this measure on its —“Standard Mitigation” list, except to note that —“designated transit routes may be difficult to establish” in some areas.¹¹¹ But this observation, even if true, does not diminish the efficacy of avoiding known areas of biological importance, as NMFS notes is already the case for the Ledyard Bay Critical Habitat Unit in the Chukchi Sea.¹¹² Accordingly, the draft EIS should require avoidance of such areas as a standard mitigation measure.

¹⁰⁴ See 2006 PEA at 110-111 (noting sensitivity of baleen whale cow-calf pairs).

¹⁰⁵ See Miller, G.W., Moulton, V.D., Davis, R.A., Holst, M., Millman, P., MacGillivray, A., and Hannay, D., Monitoring seismic effects on marine mammals—southeastern Beaufort Sea, 2001-2002, in Armsworthy, S.L., et al. (eds.), *Offshore oil and gas environmental effects monitoring/Approaches and technologies*, at 511-542 (2005).

¹⁰⁶ *Id.*; Hatch, L., Clark, C., Merrick, R., Van Parijs, S., Ponirakis, D., Schwehr, K., Thompson, M., and Wiley, D., Characterizing the relative contributions of large vessels to total ocean noise fields: a case study using the Gerry E. Studds Stellwagen Bank National Marine Sanctuary, *Environmental Management* 42:735-752 (2008).

¹⁰⁷ See, e.g., Expert Panel Review 2010; Expert Panel Review 2011.

¹⁰⁸ *Id.*; see also Expert Panel Review 2010; DEIS at 4-153 to 4-155. See also Gillespie, D., Gordon, J., Mchugh, R., McLaren, D., Mellinger, D.K., Redmond, P., Thode, A., Trinder, P., and Deng, X.Y., PAMGUARD: semiautomated, open source software for real-time acoustic detection and localization of cetaceans, *Proceedings of the Institute of Acoustics* 30(5) (2008).

¹⁰⁹ DEIS at 4-160 to 4-161.

¹¹⁰ E.g., Hatch, L., Clark, C., Merrick, R., Van Parijs, S., Ponirakis, D., Schwehr, K., Thompson, M., and Wiley, D., Characterizing the relative contributions of large vessels to total ocean noise fields: a case study using the Gerry E. Studds Stellwagen Bank National Marine Sanctuary, *Environmental Management* 42:735-752 (2008).

¹¹¹ DEIS at 4-160 to 4-161.

¹¹² *Id.* at 4-161.

- (7) Required separation distances between survey vessels.— The draft EIS implies that requiring airgun surveys to maintain a 90-mile separation distance would reduce impacts in some circumstances but not in others, depending on the ~~area~~ of operation, season, and whether whales are feeding or migrating.”¹¹³ NMFS does not provide any biological basis for this finding; indeed, it acknowledges that the ~~“overlap”~~ among sound fields would diminish if surveys are separated, reducing the risks of adverse synergistic effects.¹¹⁴ Rather, it observes that separating surveys could increase ~~the overall area of ensonification.~~¹¹⁵ This analysis fails to consider, however, that the measure would affect only the timing, not the spatial extent of the survey effort: the overall area of ensonification would remain the same over the course of a season since survey activities would only be separated, not curtailed. Moreover, even if NMFS believes that surveys should not be separated in all cases, it should consider a measure that defines the conditions in which greater separation would be required.
- (8) Restrictions on numbers of activities to reduce survey duplication.— While acknowledging the conservation benefits of this measure, the draft EIS argues that the agencies have no legal authority to impose it.¹¹⁶ This position is based on an incorrect reading of OCSLA, as noted in these comments.

C. Failure to develop a viable technology alternative

The draft EIS, despite including seismic exploration technology as an alternative, has failed to consider any management action associated with that alternative.¹¹⁷ Instead, it merely supposes that industry may decide to use an exploration technology other than airguns, in place of one or more authorized surveys¹¹⁸ and then assesses the potential reduction in impact area.¹¹⁹ Such an approach does not constitute an action alternative for purposes of NEPA analysis and does not meet the important goal of advancing new technologies.

New technology represents a promising means of reducing the environmental footprint of seismic exploration. Industry experts and biologists participating in a September 2009 workshop on airgun alternatives reached the following conclusions: that airguns produce a great deal of ~~“waste”~~ sound and generate peak levels substantially higher than needed for offshore exploration; that a number of quieter technologies are either available now for commercial use or can be made available within the next five years; and that, given the natural resistance of industry, governments should accelerate development and use of these technologies through both

¹¹³ *Id.* at 4-159.

¹¹⁴ *Id.* See also Wright, A.J. ed., Report on the workshop on assessing the cumulative impacts of underwater noise with other anthropogenic stressors on marine mammals: from ideas to action, proceedings of workshop held by Okeanos Foundation, Monterey, California, August 26-29, 2009 (2009); BOEM, Site-specific environmental assessment of geological and geophysical survey application no. L11-007 for TGS-NOPEC Geophysical Company, at 22 (2011) (imposing separation distance in Gulf of Mexico, noting that purpose is to ~~allow~~ for a corridor for marine mammal movement”).

¹¹⁵ DEIS at 4-159.

¹¹⁶ *Id.* at 4-158 to 4-159.

¹¹⁷ *Id.* at 4-38.

¹¹⁸ *Id.*

¹¹⁹ *Id.* at 4-319 to 4-320.

research and development funding and regulatory engagement.¹²⁰ Among the technologies discussed in the 2009 workshop report are engineering modifications to airguns, which can cut emissions at frequencies not needed for exploration; controlled sources, such as marine vibroseis, which can dramatically lower the peak sound currently generated by airguns by spreading it over time; various non-acoustic sources, such as electromagnetic and passive seismic devices, which in certain contexts can eliminate the need for sound entirely; and fiber-optic receivers, which can reduce the need for intense sound at the source by improving acquisition at the receiver.¹²¹ An industry-sponsored report by Noise Control Engineering made similar findings about the availability of greener alternatives to seismic airguns, as well as alternatives to a variety of other noise sources used in oil and gas exploration.¹²²

The draft EIS instead relies on out-of-date information in characterizing the availability of certain technologies. For example, marine vibroseis – which has the potential to reduce peak sound levels by 30 decibels or more and virtually eliminate output above 100 Hz – is on the verge of commercial availability, with useable arrays produced by Geo-Kinetics and PGS now being tested for their environmental impacts on fish, and other models in development through the Canadian government and a Joint Industry Program.¹²³ Yet the draft EIS uses a 2010 personal communication with PGS for the proposition that a commercial electric vibroseis array is not “available for data collection at this time”¹²⁴ – an outdated observation that does not reflect current fact.¹²⁵

Critically, the draft EIS fails to include any actionable alternatives to require, incentivize, or test the use of new technologies in the Arctic. Such alternatives include: (1) mandating the use of marine vibroseis or other technologies in pilot areas, with an obligation to accrue data on environmental impacts; (2) creating an adaptive process by which marine vibroseis or other technologies can be required as they become available; (3) deferring the permitting of surveys in particular areas or for particular applications where effective mitigative technologies, such as marine vibroseis, could reasonably be expected to become available within the life of the EIS; (4) providing incentives for use of these technologies as was done for passive acoustic monitoring systems in NTL 2007-G02; and (5) exacting funds from applicants to support accelerated mitigation research in this area. The final EIS must consider these alternatives.

¹²⁰ Weilgart, L. ed., Report of the workshop on alternative technologies to seismic airgun surveys for oil and gas exploration and their potential for reducing impacts on marine mammals, 31 Aug. – 1 Sept., 2009, Monterey, Calif. (2010), available at www.oceanos-stiftung.org/oceanos/download.php?id=19.

¹²¹ *Id.*

¹²² Spence, J., Fischer, R., Bahtiarian, M., Boroditsky, L., Jones, N., and Dempsey, R., Review of existing and future potential treatments for reducing underwater sound from oil and gas industry activities (2007) (NCE Report 07-001) (prepared by Noise Control Engineering for Joint Industry Programme on E&P Sound and Marine Life). Despite the promise indicated in the 2007 and 2010 reports, neither NMFS nor BOEM has attempted to develop noise-reduction technology for seismic or any other noise source, aside from BOEM’s failed investigation of mobile bubble curtains.

¹²³ Tengeham, R., An electrical marine vibrator with a flextensional shell, *Exploration Geophysics* 37:286-291 (2006); LGL and Marine Acoustics, Environmental assessment of marine vibroseis (2011) (Joint Industry Programme contract 22 07-12).

¹²⁴ DEIS at 2-26.

¹²⁵ Nor does the draft EIS explain why obtaining data quality or environmental information on these technologies would have been exorbitant.

D. Faulty analysis of time/place restrictions

Time and place restrictions designed to protect high-value habitat are one of the most effective means to reduce the potential impacts of noise and disturbance, including noise from oil and gas exploration.¹²⁶ The draft EIS recognizes that, in general, if marine mammals are displaced from important feeding or breeding areas impacts could be ~~noteworthy~~.¹²⁷ When assessing the potential benefits of time and place restrictions in Alternative 4 designed to protect such habitat, however, the draft EIS concludes that all of the marine mammal impact descriptors remain unchanged. Those findings are based largely on the belief that activity levels may not be reduced by the time/place restrictions and that the resulting permissible disturbances would lead to effects that are roughly equivalent to exploration without the restrictions in place. Neither justification holds up to scrutiny. In addition, any final EIS must consider including additional areas and developing a mechanism for new areas to be added over the life of the EIS.

1. *Benefits of protecting important habitat*

The draft EIS repeatedly asserts, without support, that time and place limitations may not result in fewer exploration activities.¹²⁸ The draft EIS must do more to justify its position.¹²⁹ It cannot simply assume that desirable locations for exploration activities are fungible enough that a restriction on activities in Camden Bay, for example, will lead to more exploration between Camden Bay and Harrison Bay.¹³⁰ Indeed, the draft EIS at times recognizes that ~~—lower levels of exploration activities may actually occur[,]” leading to a “smaller increase”~~ in the number of activities as compared to the other action alternatives.¹³¹ When examining the socioeconomic impact of Alternative 4, the draft EIS states that time/area closures ~~—may result in”~~ reduced personal income for locals due to ~~—reductions in the durations of these positions.”~~¹³²

More importantly, in its analysis the draft EIS seemingly disregards the entire rationale for establishing the closures: they provide important protections for species and subsistence hunting based on particular habitat use. Or, as phrased in the draft EIS, the closures are intended ~~—to~~ reduce adverse impacts to marine mammals in areas (and times) important to biological productivity and life history functions and to minimize conflicts with Alaska Native marine

¹²⁶ See, e.g., Letter from Dr. Jane Lubchenco, Undersecretary of Commerce for Oceans and Atmosphere, to Nancy Sutley, Chair, Council on Environmental Quality at 2 (Jan. 19, 2010); Agardy, T., et al., A Global Scientific Workshop on Spatio-Temporal Management of Noise (October 2007).

¹²⁷ DEIS at 4-89.

¹²⁸ In its conclusion for bowhead whales, for example, the draft EIS states that ~~—exploration effort may not be reduced, but rather redistributed and possibly concentrated in other areas.”~~ *Id.* at 4-296; see also *id.* at 4-289 (~~—under this alternative, there would be no reduction in the overall amount of activity occurring”~~); 4-307 (stating that ~~—any reduction in impacts in one location and time could be displaced to another location and time and the total number of animals affected by exploration activities may not change with the implementation of this mitigation measure”~~).

¹²⁹ *Coal. for Canyon Pres. v. Bowers*, 632 F.2d 774, 782 n. 3 (9th Cir. 1980) (~~—But nothing more was said except that such pollution would “occur anyhow” because traffic was bound to increase regardless of whether or not the project was built. Nothing referred to any studies or to facts on which these conclusions were based.”~~)

¹³⁰ See DEIS at 4-296; 4-303.

¹³¹ *Id.* at 4-283 (examining effects on acoustic habitat). See also *id.* at 308-309 (closures, such those Ledyard Bay, ~~—could be so extensive that overall exploration activity could be reduced”~~); *id.* at 313 (limits could ~~—potentially impede”~~ exploration activity).

¹³² *Id.* at 4-547.

mammal subsistence hunting activities.”¹³³ This can reduce the severity of impacts related to missed feeding opportunities when marine mammals lose their energy input at that site and necessitating the use of additional reserves to find food at an alternate spot[.]”¹³⁴

The draft EIS acknowledges the obvious point that the effects of oil and gas exploration will depend on the number of activities taking place in a particular area.¹³⁵ As NMFS found in its 2008 regional biological opinion for the Arctic, whether noise disturbances from oil and gas activities potentially result in a “biologically significant” impact on bowhead whales depends on the “timing, location, and number” of the disturbances.¹³⁶ Bowhead whales are known to feed around Camden Bay and a “disproportionately higher number of mothers and calves occur in Camden Bay from early September into October.”¹³⁷ Bowhead whales are also known to routinely congregate and feed around Barrow Canyon.¹³⁸ If large numbers of bowhead whale cows and calves avoid feeding or resting areas over a period of many weeks it “could result in effects that are biologically significant.”¹³⁹ The same considerations are true for other species, such as beluga whales and walrus.¹⁴⁰

Nevertheless, according to the draft EIS offsets the benefits of the time/area closures by maintaining that marine mammals may still be affected by those activities that are permitted to go forward at other times or in other places. Concurrent closures “could result in excluded activities concentrating in areas not included in the closure areas[.]”¹⁴¹ Although protecting Barrow Canyon and Camden Bay, for example, “could mitigate adverse impacts” the “overall” impact would be the similar to Alternative 3.¹⁴² According to the draft EIS, when migration corridors are considered, bowhead whales use a considerable portion of the EIS project area outside of the protected areas, implying that all bowhead habitat in the Arctic is of equal importance.¹⁴³ For belugas, because the draft EIS assumes that the activity levels would remain

¹³³ *Id.* at 4-293.

¹³⁴ *Id.* at 4-157.

¹³⁵ *See id.* at 4-255 (“The extent of the impact would depend on the number of seismic activities and associated support vessels in an area.”); *see also id.* (“The extent of impact resulting from the addition of a second drilling program in each sea would depend on the spatial and temporal distribution of the activities within the open water season.”).

¹³⁶ 2008 BiOp at 86 (activities “could produce sufficient noise and disturbance that whales might avoid an area of high value to them and suffer consequences of biological significance”).

¹³⁷ DEIS at 4-294.

¹³⁸ *Id.* at 4-295.

¹³⁹ *Id.* at 4-121. The draft EIS also notes that disruption of feeding cows and calves during the late summer and fall “when bowheads are building fat and energy reserves prior to migrating” could result in effects with “potential biological significance.” *Id.* at 4-156. NMFS, however, not always limited its caution to those activities that could affect cows and calves. In its 2008 regional biological opinion for exploration activities, NMFS found that consequences would be “of particular concern” if inaccessible areas included locations used for feeding or resting “by large numbers of individuals” or by females and calves. 2008 BiOp at 86.

¹⁴⁰ DEIS at 4-114. The draft EIS notes that the importance of walrus displacement “would depend on the quality of the benthic habitat for feeding walrus and its proximity to the ice pack or haulouts on land.” *Id.* at 4-132.

¹⁴¹ *Id.* at 4-296.

¹⁴² *Id.*

¹⁴³ *Id.* The draft EIS also warns of higher exposures of marine mammals due to operations occurring in close vicinity to one another due to a compressed exploration schedule. *Id.* at 4-283. And yet the draft EIS elsewhere expresses confidence in the existing minimum separation distance between seismic vessels to mitigate effects. *Id.* at 4-257 (mandatory separation “would effectively limit the intensity of effects on beluga whale regardless of where the activities take place”).

the same, the overall effects —would therefore be similar to what would occur under Alternative 3[.]” although disturbances may occur in different times and places.¹⁴⁴ This cursory analysis does not adequately consider the potential benefits to marine mammals from area closures that are specifically designed to protect important habitat.¹⁴⁵ The draft EIS offers no justification for equating sound exposures within these sensitive locations during critical time periods with all other sound exposures occurring anywhere in the Arctic.

The draft EIS should also consider to what degree the time/place restrictions could protect marine mammals from some of the harmful effects from an oil spill. Avoiding exploration drilling during times when marine mammals may be concentrated nearby could help to ameliorate the more severe impacts discussed in the draft EIS.¹⁴⁶

2. *Additional areas for protections*

While the draft EIS provides a reasonable starting point for habitat protections there are additional areas – and expanded versions of the suggested areas – that must be considered.

In the Chukchi Sea, any final EIS should include the zone along the Alaskan coastline among the locations that should be considered for special restrictions, an area important enough to justify multiple requests from NMFS for leasing deferrals. Commenting on the original Lease Sale 193 draft EIS, NMFS —strongly endorse[d]” an alternative that would have avoided any federal leases out to 60 miles.¹⁴⁷ NMFS articulated a number of reasons in support of its position, including reducing impacts on endangered bowhead whales, avoiding harm to Native subsistence hunts, protecting the nearshore from —catastrophic” events, and reducing the effects of seismic surveying on the productive zone along the coast.¹⁴⁸ In its March 2009 comments on

¹⁴⁴ *Id.* at 4-299. *See also id.* at 4-303 (discussing results for other cetaceans); *id.* at 4-159 (protections —could appreciably” reduce potential effects on walrus at Hanna Shoal). *Cf.* MMS, Chukchi Sea Planning Area, Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea, OCS EIS/EA MMS 2007-026 at IV-155 (May 2007) (LS 193 FEIS)), *available at*

http://www.alaska.boemre.gov/ref/EIS%20EA/Chukchi_FEIS_193/feis_193.htm (evidence of whales changing behavior and lost feeding opportunities due to vessel disturbance —suggest” that —avoiding impacts to important feeding areas would provide considerable benefits to cetaceans”). The similarity of the alternatives’ impacts – at least as interpreted by NMFS – further emphasizes the need for the draft EIS to add an alternative that results in measurable improvements to the marine resources. *See text, supra.*

¹⁴⁵ The failure of the draft EIS to establish applicable buffers for the protected areas also confuses the analysis. Although the draft explains that buffer areas could be required, it does not establish any specifics as to their size. DEIS at 4-293. NMFS must fully define the parameters of its alternatives in order to allow for a coherent analysis of likely effects. Instead, the draft EIS repeatedly notes that activities taking place outside the protected areas could still affect marine mammals within but that buffer zones —would help to reduce further impacts from occurring within these special habitat areas.” *Id.* at 4-294; *see also* 4-295 (same); 4-295 (same); 4-296 (same); 4-301 (same); 4-302 (same). If agency properly defined buffer areas, this equivocation would be unnecessary.

¹⁴⁶ *Id.* at 4-422 (harm to bowhead whales during feeding); 4-388 (harm to seals were a spill to reach a polynya or lead system); 4-394 (harm to marine mammals from a winter spill near Hannah Shoal). *See also id.* at 4-355 (“A VLOS from a nearshore site would allow less time for oil to be weathered, dispersed, and/or recovered before reaching shore.”); 4-381 (noting that deferral corridors could offer protections to sensitive nearshore areas should a spill occur).

¹⁴⁷ NMFS LS 193 Cmts at 3.

¹⁴⁸ *Id.* In its 2008 Biological Opinion, NMFS determined that noise-producing activities, such as seismic surveys, in the spring lead system during the migration have —a fairly high potential of affecting the whales, including females with newborn calves” and stated that impacts could be —potentially biologically significant.” 2008 BiOp at 52.

the draft Arctic multi-sale EIS, NMFS repeated these same rationales and again “strongly endorse[d]” the 60-mile corridor alternative from lease sale 193.¹⁴⁹ Indeed, NMFS recommended a deferral of leasing both along the Chukchi Sea coast and around Hannah Shoal, indicating that moving forward was premature “until such time as it can be demonstrated that exploration and development activities in these sensitive regions can be accomplished without significant impacts to marine mammal populations or subsistence hunters.”¹⁵⁰ Most recently, NMFS reaffirmed its stance in comments on the draft supplemental EIS for lease sale 193, issued following a court-ordered remand.¹⁵¹

NMFS’s position that coastal protections will benefit bowhead whales is based on the proximity of the Chukchi Sea shoreline to the spring lead system, described by NMFS as “one of the most sensitive environments” for bowhead whales.¹⁵² During their spring migration, whales follow the narrow, newly opened pathways in the ice to reach the Canadian Beaufort Sea. Not only is unobstructed passage critical for the bowheads’ successful transit to their summer feeding grounds, but studies also indicate that “most calving occurs during the spring migration when whales are in the Chukchi Sea.”¹⁵³ The draft EIS recognizes that a “catastrophic discharge event contaminating ice leads or polynyas in the spring could have devastating effects, trapping bowhead whales where they may encounter fresh crude oil.”¹⁵⁴ Beluga whales also make use of the spring leads, leaving them equally vulnerable to nearshore spill.¹⁵⁵ Avoiding exploratory drilling proximate to the spring lead system and avoiding late season drilling would help to reduce the risk of oil contaminating the spring lead.¹⁵⁶ At a minimum, NMFS should consider timing restrictions in the Chukchi Sea to avoid activities taking place too early in the open water season.

In the Beaufort Sea, any protections for Camden Bay should extend beyond the dimensions of the Bay itself to include areas located to the west and east, recently identified by NMFS as having “special significance” to bowhead whales.¹⁵⁷ Bowhead Whale Aerial Survey Project (or BWASP) sightings show that whales are found feeding in many years on both sides of the Bay.¹⁵⁸ Industry surveys have also confirmed whales feeding west of Camden Bay in both 2007 and 2008.¹⁵⁹ NMFS determined that the greater Camden Bay area is one of three “key”

¹⁴⁹ NMFS Multi-Sale Cmts at 9-10.

¹⁵⁰ *Id.* at 10.

¹⁵¹ NMFS LS 193 2011 Cmts at 7.

¹⁵² NMFS Multi-Sale Cmts at 9.

¹⁵³ 2008 BiOp at 10.

¹⁵⁴ DEIS at 4-383.

¹⁵⁵ *Id.* at 4-384 – 4-385.

¹⁵⁶ See LS 193 FSEIS at IV-268 (noting that spills originating farther from the spring lead system “allow[] more time to respond”); *id.* at IV-273; DEIS at 4-355 (same).

¹⁵⁷ NMFS, Authorization of Small Takes Under the Marine Mammal Protection Act for certain Oil and Gas Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska for 2010 at 24 (July 13, 2010) (2010 BiOp).

¹⁵⁸ *Id.* at 24, 67 (Brownlow Point); see also Ferguson et al., A Tale of Two Seas: Lessons from Multi-decadal Aerial Surveys for Cetaceans in the Beaufort and Chukchi Seas (2011 PowerPoint) (slide 15), attached as Exh. 1. A larger version of the map from the PowerPoint is attached as Exh. 2.

¹⁵⁹ Shell, Revised Outer Continental Shelf Lease Exploration Plan, Camden Bay, Beaufort Sea, Alaska, , Appendix F 3-79 (May 2011) (Beaufort EIA), available at <http://boem.gov/Oil-and-Gas-Energy-Program/Plans/Regional-Plans/Alaska-Exploration-Plans/2012-Shell-Beaufort-EP/Index.aspx>.

feeding sites, along with Point Barrow and the eastern Beaufort Sea.¹⁶⁰ The area eastward near Kaktovik, in addition to supporting bowhead feeding, is used for subsistence hunting. BWASP data also demonstrate that bowhead whale feeding aggregations are more likely to be encountered in places such as north of Dease Inlet to Smith Bay; northeast of Smith Bay; and northeast of Cape Halkett.¹⁶¹ More broadly, NMFS should consider timing restrictions to avoid the peak of the bowhead migration throughout the Beaufort Sea.

Additional habitat may come to light both as this NEPA process moves forward and after the final EIS is issued. NMFS's habitat mapping workshop is scheduled to release information this year, and the Chukchi Sea Acoustics, Oceanography, and Zooplankton study is well underway. These and other studies emphasize the evolving nature of information available concerning the Arctic. As part of the EIS, NMFS should establish a plan for continuing to gather information. As these and other future studies identify new areas that merit special management, the EIS should have a clearly defined process that would allow for their addition.¹⁶²

E. Faulty analysis of no action alternative

The draft EIS cannot assume that any delay in exploration activity compromises property rights or immediately triggers compensation from the government.¹⁶³ Offshore leases do not convey a fee simple interest with a guarantee that exploration activities will take place. As the Supreme Court recognized, OCSLA's plain language indicates that —the purchase of a lease entails no right to proceed with full exploration, development, or production”¹⁶⁴ Activities on leases are also subject to a variety of laws designed to protect the environment¹⁶⁵ and the —strictures placed in these statutes for the environment's protection will condition the lessees' rights” as well as the obligations of the government.¹⁶⁶ Leases typically include express language noting that, in addition to OCSLA, they are subject to all other applicable statutes and regulations.¹⁶⁷

The draft EIS draws a distinction between the —inability of BOEM and NMFS to issue permits and authorizations” as a result of the no action alternative and —the denial of a permit/authorization based on regulatory review[.]”¹⁶⁸ This perspective proceeds from the

¹⁶⁰ 2010 BiOp at 25.

¹⁶¹ See 2008 BiOp at 65.

¹⁶² Similar points are included in a September 20, 2011, letter to NMFS from conservation groups. See Alaska Wilderness League, *et al.*, Letter to Jane Lubchenco, Ph.D. Re. Environmental Impact for Oil and Gas Exploration in the Arctic (Sept. 20, 2011), attached as Exh. 3.

¹⁶³ DEIS at 4-13; 4-16.

¹⁶⁴ *Sec'y of the Interior v. California*, 464 U.S. 312, 339 (1984).

¹⁶⁵ *North Slope Borough v. Andrus*, 642 F.2d 589, 594 (D.C. Cir. 1980) (stating that OCSLA, the ESA, and the MMPA all authorize the government to review activities taking place pursuant to offshore leases and —to suspend any such activity which jeopardizes the environment”); see also *id.* at 595 (noting that the MMPA requires the government to —prevent harm to protected wildlife”)

¹⁶⁶ *North Slope*, 642 F.2d at 594.

¹⁶⁷ BOEM, Oil and Gas Lease of Submerged Lands Under the Outer Continental Shelf Lands Act, Form MMS-2005, Sec. 1, Statutes and Regulations (Oct. 2011), available at <http://www.gomr.boemre.gov/homepg/forms/BOEM-2005.pdf>. See also NMFS Multi-Sale Cmts at 11 (warning that MMPA take authorization —may not be possible in biologically sensitive regions or in areas important for subsistence hunting of marine mammals).

¹⁶⁸ DEIS at 4-16.

mistaken notion that the choice of the no action alternative is divorced from any substantive law. It is well-established that NEPA “does not work a broadening of the agency’s substantive powers.”¹⁶⁹ Whatever action the agencies ultimately choose to take must be “within [their] province in the first instance.”¹⁷⁰ Consequently, a no action alternative that is justified by the governing statutes – as it indeed is here – would not “uncontrary” to federal management of the outer continental shelf; rather it would uphold the protections that are an indisputable part of that management.¹⁷¹

IV. FAILURE TO ADEQUATELY ANALYZE THE EFFECTS OF NOISE

A. No quantitative examination of harassment

The draft EIS does not attempt to estimate the number of marine mammal takes under each proposed alternative, choosing instead to evaluate disturbance according to a set of biologically arbitrary and legally dubious “impact criteria.” We find this approach nothing short of astonishing. It contradicts several years of agency practice – a practice beginning with NMFS’s adoption of the Navy’s AIM model for SURTASS LFA rulemaking in 2002, continuing through the several years of NEPA analyses and rulemakings for sonar training on the Navy’s many offshore ranges, and governing analyses of seismic surveys in the Arctic and, for the National Science Foundation’s research activities, in numerous locations around the world.¹⁷² No reason is offered for this deviation from established practice; and indeed, NMFS continues to require seismic and drilling applicants to provide take numbers to support its own findings under NEPA and MMPA.¹⁷³

Uncertainty about the locations of activities cannot plausibly justify NMFS’s failure in this case. The five-year, programmatic NEPA analyses that the agencies produced on the Navy’s offshore ranges each quantified take from multiple types of sonar training, over areas at least as expansive as those considered here, with a goal of affording the Navy considerable flexibility in planning and conducting operations. The AFAST EIS, for example, considered more than one dozen types of sonar training, and nearly as many sound sources, across the entire eastern seaboard and Gulf of Mexico – and still provided comparative take numbers for each of several major alternatives. In the case of SURTASS LFA, the agencies produced nominal take numbers for an activity that encompasses literally three-quarters of the world’s oceans. The National Science Foundation’s programmatic EIS for academic seismic surveys, which also provided take numbers, is almost equal in geographic scope; and NSF continues to apply for IHAs on a project-

¹⁶⁹ *Natural Res. Def. Council v. EPA*, 822 F.2d 104, 129 (D.C. Cir. 1987).

¹⁷⁰ *Id.*

¹⁷¹ DEIS at 4-15.

¹⁷² See, e.g., U.S. Navy, Final Overseas Environmental Impact Statement and Environmental Impact Statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar (2011); U.S. Navy, Final Atlantic Fleet Active Sonar Training Environmental Impact Statement/ Overseas Environmental Impact Statement (2008); National Science Foundation, Final Programmatic Environmental Impact Statement/ Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey (2011).

¹⁷³ See, e.g., 76 Fed. Reg. at 69,990 (proposed IHA for Shell drilling in Chukchi Sea); 76 Fed. Reg. 58,473 (Sept. 21, 2011) (proposed IHA for Apache seismic survey in Cook Inlet); 76 Fed. Reg. 46,729 (Aug. 3, 2011) (issued IHA for Statoil shallow hazards survey in the Chukchi Sea).

by-project basis, as would industry in the Beaufort and Chukchi seas. NMFS simply has no reasonable justification for failing to provide take numbers here.

In addition, the draft EIS fails to provide any quantification of masking effects, either from continuous noise sources such as icebreakers and ships or from mixed impulsive/continuous noise sources such as airguns. Researchers at NOAA and Cornell have created a model that quantifies impacts on the communication space of marine mammals. That published model has already been applied to shipping noise off Massachusetts and off British Columbia, and the same researchers involved in the Massachusetts study have applied it to airgun surveys as well.¹⁷⁴ Remarkably, the draft EIS – instead of applying the model – simply states without any discernible support that “masking of marine mammal calls and other natural sounds are expected to be limited”.¹⁷⁵ It also approvingly references an industry-academic project in the Beaufort Sea (mentioned *supra*) that might ultimately provide more information on masking effects¹⁷⁶ – ignoring the fact that this project will apply the same “communication space” model.¹⁷⁷ Assessing masking effects is essential to a reasoned consideration of impacts and alternatives, and NMFS’s failure to apply a relevant, published model that its own scientists helped develop violates NEPA.

B. Outdated marine mammal disturbance thresholds

First, the draft EIS uses a single sound pressure level (160 dB (RMS)) as a threshold for behavioral, sublethal take in all marine mammal species from seismic airguns. This approach does not reflect the best available science, and the choice of threshold is not sufficiently conservative in several important respects:

- (1) The method represents a step backward from recent programmatic authorizations. For Navy sonar activity, NMFS has used a combination of specific bright-line thresholds (for harbor porpoises) and linear risk functions that endeavor to take account of risk and individual variability and to reflect the potential for take at relatively low levels.¹⁷⁸ In the wake of these past authorizations for acoustic impacts on marine mammals, the agencies’ reversion to a single, non-conservative, bright-line threshold for all species is simply not tenable.
- (2) The 160 dB threshold is non-conservative, since the scientific literature establishes that behavioral disruption can occur at substantially lower received levels for some species.

¹⁷⁴ Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., van Parijs, S., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems as a function of anthropogenic sound sources (2009) (IWC Sci. Comm. Doc. SC/61/E10); Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., Van Parijs, S.M., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems: intuitions, analysis, and implication, *Marine Ecology Progress Series* 395: 201-222 (2009); Williams, R., Ashe, E., Clark, C.W., Hammond, P.S., Lusseau, D., and Ponirakis, D., Inextricably linked: boats, noise, Chinook salmon and killer whale recovery in the northeast Pacific, presentation given at the Society for Marine Mammalogy Biennial Conference, Tampa, Florida, Nov. 29, 2011 (2011).

¹⁷⁵ DEIS at 4-88.

¹⁷⁶ *Id.*

¹⁷⁷ Fleishman, E., and Streever, B., Assessment of cumulative effects of anthropogenic underwater sound: project summary and status, at 2 (2012).

¹⁷⁸ *E.g.*, 74 Fed. Reg. 4844, 4844-4885 (Jan. 27, 2009).

It is well established that bowhead whales are behaviorally disrupted by noise at levels far below NMFS's threshold. Bowheads migrating through the Beaufort Sea have shown almost complete avoidance at received levels at 120-130 dB (RMS) and below.¹⁷⁹ For this reason BOEM has stated in past Arctic lease sale EISs, that most bowheads ~~w~~ould be expected to avoid an active source vessel at received levels as low as 116 to 135 dB re 1 μ Pa when migrating.¹⁸⁰ Similarly, in its past attempt at a programmatic EIS for Arctic oil and gas exploration, NMFS imposed a 120-dB safety zone for aggregations of bowhead whales based on its finding that ~~b~~owhead whales apparently show some avoidance in areas of seismic sounds at levels lower than 120 dB.¹⁸¹ Even the present draft EIS admits that seismic causes behavioral impacts in bowhead whales at received levels of 120 dB or below.¹⁸² And although bowheads appear less aversive while feeding, the draft EIS rightly acknowledges that they may be ~~s~~o highly motivated to remain in a productive feeding area" that they experience adverse effects and increased chronic stress.¹⁸³

Beluga whales are highly sensitive to a range of anthropogenic sounds, including broadband sounds whose energy is concentrated in the low frequencies. For example, belugas in the Canadian high Arctic were found to produce alarm calls at 85 km distance from a large ship and icebreaker, and to start engaging in avoidance behavior at 45-60 km, where received levels were 94-105 decibels; apparently the whales moved to areas up to 80 km from the vessels and did not return for 1-2 days following the transit.¹⁸⁴ In the presence of various types of ships, including cargo vessels, tug boats, and motor boats, belugas in other areas have been shown to break off foraging and other activities and to separate or swim away, even at relatively low received levels; in many cases, the effects were reported to last for some time after the source had departed.¹⁸⁵ As for seismic in particular, few migrating belugas were sighted

¹⁷⁹ Miller, G.W., Elliot, R.E., Koski, W.R., Moulton, V.D., and Richardson W.J., Whales, in Richardson, W.J. (ed.), Marine Mammal and Acoustical Monitoring of Western Geophysical's Open-Water Seismic Program in the Alaskan Beaufort Sea, 1998 (1999); Richardson, W.J., Miller, G.W., and Greene Jr., C.R., Displacement of migrating bowhead whales by sounds from seismic surveys in shallow waters of the Beaufort Sea, *Journal of the Acoustical Society of America* 106:2281 (1999).

¹⁸⁰ DEIS at 4-99; see also 2008 Multi-Sale DEIS.

¹⁸¹ See 2006 PEA; 71 Fed. Reg. 66,912, 66,913 (2006) (noting that ~~the~~ 120-dB mitigation measure was essential to allow NMFS to conclude with a FONSI, especially given the level of uncertainty on the effects of seismic surveys on bowhead whales in Arctic waters").

¹⁸² DEIS at 4-99.

¹⁸³ *Id.*

¹⁸⁴ Findley, K.J., Miller, G.W., Davis, R.A., and Greene, C.R., Jr., Reactions of belugas, *Delphinapterus leucas*, and narwhals, *Monodon monoceros*, to ice-breaking ships in the Canadian high Arctic, *Can. J. Fish. Aquat. Sci.* 224: 97-117 (1990); see also Cosens, S.E., and Dueck, L.P., Ice breaker noise in Lancaster Sound, NWT, Canada: implications for marine mammal behavior, *Mar. Mamm. Sci.* 9: 285-300 (1993).

¹⁸⁵ See, e.g., Fraker, M.A., The 1976 white whale monitoring program, MacKenzie estuary, report for Imperial Oil, Ltd., Calgary (1977); Fraker, M.A., The 1977 white whale monitoring program, MacKenzie estuary, report for Imperial Oil, Ltd., Calgary (1977); Fraker, M.A., The 1978 white whale monitoring program, MacKenzie estuary, report for Imperial Oil, Ltd., Calgary (1978); Stewart, B.S., Evans, W.E., and Awbrey, F.T., Effects of man-made water-borne noise on the behaviour of beluga whales, *Delphinapterus leucas*, in Bristol Bay, Alaska, Hubbs Sea World (1982) (report 82-145 to NOAA); Stewart, B.S., Awbrey, F.T., and Evans, W.E., Belukha whale (*Delphinapterus leucas*) responses to industrial noise in Nushagak Bay, Alaska: 1983 (1983); Edds, P.L., and

within 10-20 km of seismic vessels during aerial surveys in the Beaufort Sea.¹⁸⁶ All of these impact distances significantly exceed those predicted by the draft EIS's 160 dB (RMS) threshold.

Data on other species, some of which occur in the Beaufort and Chukchi Seas, provide further evidence of impacts at significantly lower levels. For example, a single seismic survey has been shown to cause endangered fin and humpback whales to stop vocalizing – a behavior essential to breeding and foraging – over an area at least 100,000 square nautical miles in size, and can cause baleen whales to abandon habitat over the same scale.¹⁸⁷ Sperm whale foraging success, as measured by buzz rate, appears to decline significantly on exposure to received levels above 130 dB (RMS), with potentially serious long-term consequences.¹⁸⁸ Harbor porpoises are known to be acutely sensitive to a range of anthropogenic sources, including airguns. They have been observed to engage in avoidance responses fifty miles from a seismic airgun array – a result that is consistent with both captive and wild animal studies showing them abandoning habitat in response to pulsed sounds at very low received levels, well below 120 decibels (re 1 μ Pa (RMS)).¹⁸⁹

The evidentiary record here substantially exceeds the one for mid-frequency sonar in *Ocean Mammal Institute v. Gates*, in which a Hawaiian District Court judge invalidated a NMFS threshold that ignored documented impacts at lower received levels as arbitrary and capricious.¹⁹⁰

- (3) The use of a multi-pulse standard for behavior harassment is non-conservative, since it does not take into account the spreading of seismic pulses over time beyond a certain distance from the array.¹⁹¹ NMFS's own Open Water Panel for the Arctic –

MacFarlane, J.A.F., Occurrence and general behavior of balaenopterid cetaceans summering in the St. Lawrence estuary, *Canada, Can. J. Zoo.* 65: 1363-1376 (1987).

¹⁸⁶ Miller, G.W., Moulton, V.D., Davis, R.A., Holst, M., Millman, P., MacGillivray, A., and Hannay, D., Monitoring seismic effects on marine mammals—southeastern Beaufort Sea, 2001-2002, in Armsworthy, S.L., et al. (eds.), *Offshore oil and gas environmental effects monitoring/Approaches and technologies*, at 511-542 (2005).

¹⁸⁷ Clark, C.W., and Gagnon, G.C., Considering the temporal and spatial scales of noise exposures from seismic surveys on baleen whales (2006) (IWC Sci. Comm. Doc. IWC/SC/58/E9); Clark, C.W., pers. comm. with M. Jasny, NRDC (Apr. 2010); see also MacLeod, K., Simmonds, M.P., and Murray, E., Abundance of fin (*Balaenoptera physalus*) and sei whales (*B. borealis*) amid oil exploration and development off northwest Scotland, *Journal of Cetacean Research and Management* 8: 247-254 (2006).

¹⁸⁸ Miller, P.J.O., Johnson, M.P., Madsen, P.T., Biassoni, N., Quero, M., and Tyack, P.L., Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico, *Deep-Sea Research I* 56: 1168-1181 (2009).

¹⁸⁹ E.g., Bain, D.E., and Williams, R., Long-range effects of airgun noise on marine mammals: responses as a function of received sound level and distance (2006) (IWC Sci. Comm. Doc. IWC/SC/58/E35); Kastelein, R.A., Verboom, W.C., Jennings, N., and de Haan, D., Behavioral avoidance threshold level of a harbor porpoise (*Phocoena phocoena*) for a continuous 50 kHz pure tone, *Journal of the Acoustical Society of America* 123: 1858-1861 (2008); Kastelein, R.A., Verboom, W.C., Muijsers, M., Jennings, N.V., and van der Heul, S., The influence of acoustic emissions for underwater data transmission on the behavior of harbour porpoises (*Phocoena phocoena*) in a floating pen, *Mar. Environ. Res.* 59: 287-307 (2005); Olesiuk, P.F., Nichol, L.M., Sowden, M.J., and Ford, J.K.B., Effect of the sound generated by an acoustic harassment device on the relative abundance and distribution of harbor porpoises (*Phocoena phocoena*) in Retreat Passage, British Columbia, *Mar. Mamm. Sci.* 18: 843-862 (2002).

¹⁹⁰ 546 F. Supp.2d 960, 973-75 (D. Hawaii 2008).

¹⁹¹ See Expert Panel Review 2011.

which has included some of the country's leading marine bioacousticians – has twice characterized the seismic airgun array as a mixed impulsive/continuous noise source and has stated that NMFS should evaluate its impacts on that basis.¹⁹² That analysis is supported by the masking effects model referenced above, in which several NMFS scientists have participated; by a Scripps study, showing that seismic exploration in the Arctic has raised ambient noise levels on the Chukchi Sea continental slope (*see infra*); and, we expect, by the modeling efforts of NOAA's Sound Mapping working group, whose work will be completed this April or May. NMFS cannot continue to ignore its own science.

- (4) The threshold's basis in RMS, rather than peak pressure, is non-conservative. Studies have criticized the use of RMS for seismic because of the degree to which pulsed sounds must be stretched.¹⁹³

NMFS must revise the thresholds and methodology used to estimate take from airgun use. Specifically, we urge the following:

- (a) NMFS should employ a combination of specific thresholds for which sufficient species-specific data are available and generalized thresholds for all other species.¹⁹⁴ These thresholds should be expressed as linear risk functions where appropriate. If a risk function is used, the 50% take parameter for all the baleen whales (bowhead, fin, humpback, and gray whales) and odontocetes occurring in the area (beluga whales, narwhals, killer whales, harbor porpoises) should not exceed 140 dB (RMS). Indeed, at least for bowhead whales, beluga whales, and harbor porpoises, NMFS should use a threshold well below that number, reflecting the high levels of disturbance seen in these species at 120 dB (RMS) and below.
- (b) Data on species for which specific thresholds are developed should be included in deriving generalized thresholds for species for which less data are available.
- (c) In deriving its take thresholds, NMFS should treat airgun arrays as a mixed acoustic type, behaving as a multi-pulse source closer to the array and, in effect, as a continuous noise source further from the array, per the findings of the 2011 Open Water Panel cited above. Take thresholds for the impulsive component of airgun noise should be based on peak pressure rather than on RMS.
- (d) Masking thresholds should be derived from Clark et al. (2009), recognizing that masking begins when received levels rise above ambient noise.¹⁹⁵

¹⁹² *Id.*; see also Expert Panel Review 2010.

¹⁹³ Madsen, P.T., Marine mammals and noise: Problems with root-mean-squared sound pressure level for transients, *Journal of the Acoustical Society of America* 117:3952-57 (2005).

¹⁹⁴ By "thresholds," we mean either bright-line thresholds or linear risk functions.

¹⁹⁵ Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., van Parijs, S., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems as a function of anthropogenic sound sources (2009) (IWC Sci. Comm. Doc. SC/61/E10); Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., Van Parijs, S.M., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems: intuitions, analysis, and implication, *Marine Ecology Progress Series* 395: 201-222 (2009).

Second, the draft EIS fails to consider masking effects in establishing a 120 dB threshold for continuous noise sources. Some biologists have analogized the increasing levels of noise from human activities as a rising tide of “fog” that is already shrinking the sensory range of marine animals by orders of magnitude from pre-industrial levels.¹⁹⁶ As noted above, masking of natural sounds begins when received levels rise above ambient noise at relevant frequencies. Accordingly, NMFS must evaluate the loss of communication space – and consider the extent of acoustic propagation – at far lower received levels than the draft EIS currently employs.

Third, the draft EIS entirely fails to consider the impacts of sub-bottom profilers and other active acoustic sources commonly featured in deep-penetration seismic and shallow hazard surveys. As NMFS’s Open Water Panel has suggested, some sub-bottom profilers used in Arctic surveys have source levels and frequency ranges approaching that of certain active military sonar systems, with shorter intervals between pings.¹⁹⁷ These source levels far exceed the 200 dB (RMS) threshold that the draft EIS considers “high intensity” when analyzing broadband sound¹⁹⁸; similarly, they exceed the threshold level of acoustic sources that NMFS includes in its take analyses of naval activities.¹⁹⁹ For purposes of authorizing mid-frequency sonar training, NMFS assumes that harbor porpoises are taken at received levels above 120 dB (RMS); and recent studies of killer whales and beaked whales, for example, indicate high levels of take at 140 dB (RMS) and below.²⁰⁰ Regardless of the risk function it ultimately uses, NMFS must include these additional acoustic sources in its take analysis.

¹⁹⁶ Bode, M., Clark, C.W., Cooke, J., Crowder, L.B., Deak, T., Green, J.E., Greig, L., Hildebrand, J., Kappel, C., Kroeker, K.J., Loseto, L.L., Mangel, M., Ramasco, J.J., Reeves, R.R., Suydam, R., Weilgart, L., Statement to President Barack Obama of Participants of the Workshop on Assessing the Cumulative Impacts of Underwater Noise with Other Anthropogenic Stressors on Marine Mammals (2009); Clark, C., and Southall, B., Turn down the volume in the ocean, *CNN.com*, Jan. 20, 2012, available at www.cnn.com/2012/01/19/opinion/clark-southall-marine/index.html; see also McDonald, M.A., Hildebrand, J.A., and Wiggins, S.M., Increases in deep ocean ambient noise in the Northeast Pacific west of San Nicolas Island, California, *Journal of the Acoustical Society of America* 120: 711-718 (2006).

¹⁹⁷ See Expert Panel Review 2011.

¹⁹⁸ DEIS at 4-41.

¹⁹⁹ See, e.g., 74 Fed. Reg. 4,844 (Jan. 27, 2009); U.S. Navy, Final Atlantic Fleet Active Sonar Training Environmental Impact Statement/ Overseas Environmental Impact Statement (2008).

²⁰⁰ *Id.*; Tyack, P.L., Zimmer, W.M.X., Moretti, D., Southall, B.L., Claridge, D.E., Durban, J.W., Clark, C.W., D’Amico, A., DiMarzio, N., Jarvis, S., McCarthy, E., Morrissey, R., Ward, J., and Boyd, I.L., Beaked whales respond to simulated and actual Navy sonar, *PLoS ONE* 6(3):e17009.doi:10.1371/journal.pone.0017009 (2011) (beaked whales); Miller, P.J., Kvadsheim, P., Lam, F.-P.A., Tyack, P.L., Kuningas, S., Wensveen, P.J., Antunes, R.N., Alves, A.C., Kleivane, L., Ainslie, M.A., and Thomas, L., Developing dose-response relationships for the onset of avoidance of sonar by free-ranging killer whales (*Orcinus orca*), presentation given at the Society for Marine Mammalogy Biennial Conference, Tampa, Florida, Dec. 2, 2011 (killer whales); Miller, P., Antunes, R., Alves, A.C., Wensveen, P., Kvadsheim, P., Kleivane, L., Nordlund, N., Lam, F.-P., van IJsselmuide, S., Visser, F., and Tyack, P., The 3S experiments: studying the behavioural effects of navy sonar on killer whales (*Orcinus orca*), sperm whales (*Physeter macrocephalus*), and long-finned pilot whales (*Globicephala melas*) in Norwegian waters, Scottish Oceans Institute Tech. Rep. SOI-2011-001, available at soi.st-andrews.ac.uk (killer whales). See also, e.g., Fernández, A., Edwards, J.F., Rodríguez, F., Espinosa de los Monteros, A., Herráez, P., Castro, P., Jaber, J.R., Martín, V., and Arbelo, M., ‘Gas and Fat Embolic Syndrome’ Involving a Mass Stranding of Beaked Whales (Family Ziphiidae) Exposed to Anthropogenic Sonar Signals, *Veterinary Pathology* 42:446 (2005); Jepson, P.D., Arbelo, M., Deaville, R., Patterson, I.A.P., Castro, P., Baker, J.R., Degollada, E., Ross, H.M., Herráez, P., Pocknell, A.M., Rodríguez, F., Howie, F.E., Espinosa, A., Reid, R.J., Jaber, J.R., Martín, V., Cunningham, A.A., and Fernández, A., Gas-Bubble Lesions in Stranded Cetaceans, 425 *Nature* 575-576 (2003); Evans, P.G.H., and Miller, L.A., eds., Proceedings of the Workshop on Active Sonar and Cetaceans (2004) (European Cetacean Society publication); Southall, B.L., Braun, R., Gulland, F.M.D., Heard, A.D., Baird, R.W., Wilkin, S.M., and Rowles, T.K.,

C. No consideration of combined effects

Here as elsewhere, the draft EIS's analysis is anemic. After spending 20 pages listing all of the Arctic activities that are reasonably foreseeable to occur over the next five years – an astonishing degree of oil and gas development, commercial shipping, coastal development, and military activities – the document presents a highly repetitive, mechanical, and ultimately empty analysis.²⁰¹ Indeed, for virtually every entry under each alternative, the draft EIS does little more than restate its conclusions from the previous chapter about the magnitude of the alternatives' impacts. To the extent that it does make new findings – recognizing, for example, that exploration activities in the Canadian Beaufort Sea can impact the project area²⁰² and that concurrent surveys could produce a greater risk of hearing loss or injury than are presently accounted for through NMFS's criteria²⁰³ – it does nothing to incorporate those findings into a biologically meaningful analysis.

In short, the draft EIS makes no attempt to analyze the cumulative and synergistic effects of masking, energetic costs, stress, hearing loss, or any of the other impact mechanisms identified over the last several years,²⁰⁴ whether for its own action alternatives or for the combined set of activities expected to flood the Arctic. While it argues that some impacts lie beyond our current ability to assess, it fails to incorporate methods and analysis that are presently available:

- (1) Qualitative assessment.— Over the last several years, the scientific community has identified a number of pathways by which anthropogenic noise can affect vital rates and populations of animals. These efforts include the 2005 National Research Council study, which produced a model for the Population Consequences of Acoustic Disturbance; an ongoing Office of Naval Research program whose first phase has advanced the NRC model; and the 2009 Okeanos workshop on cumulative impacts.²⁰⁵ The draft EIS employs none of these methods, and hardly refers to any biological pathway of impact.
- (2) Models of masking effects.— As noted above, bioacousticians at NOAA and Cornell have developed a quantitative model to assess loss of communication

Hawaiian Melon-Headed Whale (*Peponacephala electra*) Mass Stranding Event of July 3-4, 2004 (2006) (NOAA Tech. Memo. NMFS-OPR-31).

²⁰¹ DEIS at 4-439 to 4-458.

²⁰² *Id.* at 4-469.

²⁰³ *Id.* at 4-470.

²⁰⁴ National Research Council, *Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects* (2005); Wright, A.J. ed., *Report on the workshop on assessing the cumulative impacts of underwater noise with other anthropogenic stressors on marine mammals: from ideas to action*, proceedings of workshop held by Okeanos Foundation, Monterey, California, August 26-29, 2009 (2009).

²⁰⁵ *Id.*

space over time from both commercial shipping and seismic exploration.²⁰⁶ Incredibly, the draft EIS does not model for masking effects.

- (3) Energetics.— Researchers have studied the impacts of various types of noise on the foraging success of killer whales and sperm whales. Both species were shown to experience significant decrements in foraging, of 18-19% and greater, within areas of obvious biological importance.²⁰⁷ The draft EIS fails to consider the impacts of noise on foraging and energetics; indeed, despite its own recognition that animals who remain in their feeding grounds may suffer adverse impacts over time,²⁰⁸ it repeatedly characterizes “observed” impacts as minor and short-term²⁰⁹. Based on the published evidence, the draft EIS should conservatively assume that animals that are not evidently displaced from their feeding grounds nonetheless experience a significant decrement in foraging, of at least 20%, at received levels of 140 dB and greater.
- (4) Chronic noise.— We are aware of at least three efforts to quantify cumulative noise levels in the Beaufort and Chukchi seas: of the three, one is concluded, and one will conclude this spring. The first, a passive acoustic monitoring study conducted by Scripps, found that at far distances seismic exploration significantly boosted ambient noise on the Chukchi Sea continental shelf and dominated frequencies below 100 Hz more than half of the time.²¹⁰ The second is NOAA’s working group on cumulative noise mapping, which is incorporating seismic exploration into its open-season chronic noise map of the American Arctic. The draft EIS has not incorporated this quantitative information into its cumulative impact analysis, or indicated that it will do so.
- (5) Stress.— Following from studies on terrestrial mammals, stress from ocean noise—alone or in combination with other stressors—may weaken a cetacean’s immune system, interfere with brain development, increase the risk

²⁰⁶ Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., van Parijs, S., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems as a function of anthropogenic sound sources (2009) (IWC Sci. Comm. Doc. SC/61/E10); Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., Van Parijs, S.M., Frankel, A., and Ponirakis, D., Acoustic masking in marine ecosystems: intuitions, analysis, and implication, *Marine Ecology Progress Series* 395: 201-222 (2009).

²⁰⁷ Lusseau, D., Bain, D.E., Williams, R., and Smith, J.C., Vessel traffic disrupts the foraging behavior of southern resident killer whales *Orcinus orca*, *Endangered Species Research* 6: 211-221 (2009); Williams, R., Lusseau, D. and Hammond, P.S., Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*), *Biological Conservation* 133: 301-311 (2006); Miller, P.J.O., Johnson, M.P., Madsen, P.T., Biassoni, N., Quero, M., and Tyack, P.L., Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico, *Deep-Sea Research I* 56: 1168-1181 (2009). See also Mayo, C.S., Page, M., Osterberg, D., and Pershing, A., On the path to starvation: the effects of anthropogenic noise on right whale foraging success, North Atlantic Right Whale Consortium: Abstracts of the Annual Meeting (2008) (finding that decrements in North Atlantic right whale sensory range due to shipping noise have a larger impact on food intake than patch-density distribution and are likely to compromise fitness).

²⁰⁸ DEIS at 4-99.

²⁰⁹ E.g., *id.* at 4-479.

²¹⁰ Roth, E.H., Hildebrand, J.A., Wiggins, S.M., and Ross, D., Underwater ambient noise on the Chukchi Sea continental slope, *Journal of the Acoustical Society of America* 131:104-110 (2012).

of myocardial infarctions, depress reproductive rates, cause malformations and other defects in young, all at moderate levels of exposure.²¹¹ Because physiological stress response is highly conserved across species, it is reasonable to assume that marine mammals would be subject to the same effects, particularly if, as here, they are exposed repeatedly to noise from oil and gas exploration and other stressors.²¹² Indeed, a recent New England Aquarium study of North Atlantic right whales, the closest relative of the bowhead whale, indicates that shipping noise alone can induce chronic stress in marine mammals.²¹³ The draft EIS, while acknowledging the potential for chronic stress to significantly affect marine mammal health, and while expecting that anthropogenic noise would induce physiological stress responses in marine mammals, does not incorporate chronic stress into its cumulative impact analysis, such as by using other species as proxies for lower life expectancies.

The data already show that industrial noise can disrupt biologically significant behavior and shrink whale communication range on a region-wide scale. As Dr. Chris Clark (Cornell) postulated in a report of the International Whaling Commission's Scientific Committee, such repeated and persistent acoustic insults over the large areas affected by airgun surveys alone should be considered enough to cause population-level impacts in at least some species of marine mammals.²¹⁴ The draft EIS's summary conclusions to the contrary are made without support, and without even attempting to address data gaps through methods accepted within the scientific community.²¹⁵

D. Potential for death and serious injury

The draft EIS improperly dismisses the risk of mortality and serious injury from acoustic impacts. *First*, the draft EIS fails entirely to consider the adverse synergistic effect that at least some types of anthropogenic noise can have on ship-strike risk. Mid-frequency sounds with frequencies in the range of some sub-bottom profilers have been shown to cause North Atlantic right whales to break off their foraging dives and lie just below the surface, increasing the risk of

²¹¹ See, e.g., Chang, E.F., and Merzenich, M.M., Environmental Noise Retards Auditory Cortical Development, 300 *Science* 498 (2003) (rats); Willich, S.N., Wegscheider, K., Stallmann, M., and Keil, T., Noise Burden and the Risk of Myocardial Infarction, *European Heart Journal* (2005) (Nov. 24, 2005) (humans); Harrington, F.H., and Veitch, A.M., Calving Success of Woodland Caribou Exposed to Low-Level Jet Fighter Overflights, *Arctic* 45:213 (1992) (caribou).

²¹² A special issue of the *International Journal of Comparative Psychology* (20:2-3) is devoted to the problem of noise-related stress response in marine mammals. For an overview published as part of that volume, see, e.g., A.J. Wright, N. Aguilar Soto, A.L. Baldwin, M. Bateson, C.M. Beale, C. Clark, T. Deak, E.F. Edwards, A. Fernández, A. Godinho, L. Hatch, A. Kakuschke, D. Lusseau, D. Martineau, L.M. Romero, L. Weilgart, B. Wintle, G. Notarbartolo di Sciarra, and V. Martin, Do marine mammals experience stress related to anthropogenic noise? (2007).

²¹³ Rolland, R.M., Parks, S.E., Hunt, K.E., Castellote, M., Corkeron, P.J., Nowacek, D.P., Wasser, S.K., and Kraus, S.D., Evidence that ship noise increases stress in right whales, *Proceedings of the Royal Society B: Biological Sciences* doi:10.1098/rspb.2011.2429 (2012).

²¹⁴ IWC Scientific Committee, Report of the 2004 Scientific Committee of the International Whaling Commission, Annex K: Report of the Standing Working Group on Environmental Concerns (2004).

²¹⁵ 40 C.F.R. § 1502.22. See also Bejder, L., Samuels, A., Whitehead, H., Finn, H., and Allen, S., Impact assessment research: use and misuse of habituation, sensitization and tolerance in describing wildlife responses to anthropogenic stimuli, *Marine Ecology Progress Series* 395:177-185 (2009).

vessel strike.²¹⁶ A similar risk for bowhead whales must be considered here. *Second*, as noted above (and contrary to representations in the draft EIS), a number of recent studies indicate that anthropogenic sound can induce permanent threshold shift at lower levels than anticipated.²¹⁷ Hearing loss remains a significant risk where, as here, the agency has not required aerial or passive acoustic monitoring as standard mitigation, appears unwilling to restrict operations in low-visibility conditions, and has not firmly established seasonal exclusion areas for biologically important habitat.

Third, the draft EIS wrongly discounts the potential for marine mammal strandings, even though at least one stranding event, the September 2002 stranding of beaked whales in the Gulf of California, is tightly correlated with geophysical survey activity; and even though high-intensity sounds in general have long been used by drive fisheries to force marine mammals ashore.²¹⁸ *Fourth*, and finally, as noted above, the draft EIS makes no attempt to assess the long-term effects of chronic noise and noise-related stress on life expectancy, although terrestrial animals could serve as a proxy. The agencies' reliance on monitoring for adaptive management, and their assurance that activities will be reassessed if serious injury or mortality occurs, is inappropriate given the probability that even catastrophic declines in Arctic populations would go unobserved.²¹⁹

As the Ninth Circuit has found, ~~the~~ considerations made relevant by the substantive statute during the proposed action must be addressed in NEPA analysis."²²⁰ Here, in assessing their MMPA obligations, the agencies presuppose that industry will apply for IHAs rather than five-year take authorizations and that BOEM will not apply to NMFS for programmatic rulemaking. But the potential for mortality and serious injury bars industry from using the incidental harassment process to obtain take authorizations under the MMPA.

In 1994, Congress amended the MMPA to add provisions that allow for the incidental harassment of marine mammals through IHAs, but only for activities that result the ~~taking~~ by harassment" of marine mammals.²²¹ For those activities that could result in ~~taking~~" other than harassment, interested parties must continue to use the pre-existing procedures for authorization through specific regulations, often referred to as ~~five-year~~ regulations."²²² Accordingly, NMFS's implementing regulations state that an IHA in the Arctic cannot be used for ~~activities~~

²¹⁶ Nowacek, D.P., Johnson, M.P., and Tyack, P.L., North Atlantic right whales (*Eubalaena glacialis*) ignore ships but respond to alerting stimuli, *Proceedings of the Royal Society of London, Part B: Biological Sciences* 271:227 (2004).

²¹⁷ Kastak, D., Mulsow, J., Ghoul, A., Reichmuth, C., Noise-induced permanent threshold shift in a harbor seal [abstract], *Journal of the Acoustical Society of America* 123: 2986 (2008); Kujawa, S.G., and Liberman, M.C., Adding insult to injury: cochlear nerve degeneration after ~~temporary~~ noise-induced hearing loss, *Journal of Neuroscience* 29:14077-14085 (2009).

²¹⁸ Brownell, R.L., Jr., Nowacek, D.P., and Ralls, K., Hunting cetaceans with sound: a worldwide review, *Journal of Cetacean Research and Management* 10: 81-88 (2008); Hildebrand, J.A., Impacts of anthropogenic sound, in Reynolds, J.E. III, Perrin, W.F., Reeves, R.R., Montgomery, S., and Ragen, T.J., eds., *Marine Mammal Research: Conservation beyond Crisis* (2006).

²¹⁹ Taylor, B.L., Martinez, M., Gerrodette, T., Barlow, J., and Hrovat, Y.N., Lessons from monitoring trends in abundance of marine mammals, *Marine Mammal Science* 23:157-175 (2007).

²²⁰ *ONDA*, 625 F.3d at 1109.

²²¹ 16 U.S.C. § 1371(a)(5)(D)(i).

²²² *See id.* § 1371(a)(5)(A).

that have the *potential* to result in serious injury or mortality.”²²³ In the preamble to the proposed regulations, NMFS explained that if there is a potential for serious injury or death, it must either be “negated” through mitigation requirements or the applicant must instead seek approval through five-year regulations.²²⁴

The caution exhibited by NMFS in promulgating the 1996 regulations is consistent with the MMPA’s general approach to marine mammal protection. Legislative history confirms that at the time of the MMPA’s original passage Congress intended to build in a “conservative bias” that would avoid adverse or irreversible effects “until more is known.”²²⁵ The committee report that accompanied the House version of the 1994 amendments emphasizes that the IHA provisions were not intended to “waken any of the existing standards which protect marine mammals and their habitats from incidental takes[.]”²²⁶ Thus, the 1994 amendments preserved the existing five-year regulation process for those activities that risked the possibility of lethal or seriously injurious marine mammal take.

Given the clear potential for serious injury and mortality, few if any seismic operators in the Arctic can legally obtain their MMPA authorizations through the IHAs process. BOEM should consider applying to NMFS for a programmatic take authorization, and NMFS should revise its impact and alternatives analyses in the EIS on the assumption that rulemaking is required.

V. SPECIES OF CONCERN

As highlighted throughout these comments, there are multiple faults with the analysis of marine mammals impacts in the draft EIS. A few are repeated here but also discussed are those points that are specific to particular marine mammals. In combination, these errors result in a serious underestimation of potential effects.

A. Bowheads

The draft EIS assumes away the possibility of substantial harm to the bowhead whale population despite potentially high levels of oil and gas exploration, the known sensitivity of bowhead whales, and critical missing information. In its conclusion for Alternative 2, the draft EIS concedes that there could be “varying degrees” of disturbance to bowhead feeding, resting, and migrating whales “depending on actual level of effort, type of activity, time of year, and whether the activities run concurrent in the Beaufort and Chukchi seas.”²²⁷ Because the extent of

²²³ 50 C.F.R. § 216.107 (emphasis added).

²²⁴ 60 Fed. Reg. 28,379, 28,380-81 (May 31, 1995).

²²⁵ H.R. Rep. 92-707, at 5 (1971) reprinted in 1972 U.S.C.C.A.N. 4144, 4148.

²²⁶ H.R. Rep. 103-439, at 37 (1994).

²²⁷ DEIS at 4-110. There is very little discussion of the combined effects of drilling and ice management. *See id.* at 4-103. As raised in comments recently submitted to NMFS for its exploration drilling proposed IHAs, ice management can significantly expand the extent of a disturbance zone. *See Alaska Wilderness League, et al., Comments on Taking Marine Mammals Incidental to an Exploration Drilling Program Near Camden Bay, Beaufort Sea, AK* (Dec. 7, 2011) (Beaufort Sea IHA Cmts); *Alaska Wilderness League, et al., Comments on Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska* (Dec. 9, 2011) (Chukchi Sea IHA Cmts), attached as Exhs. 4 and 5. Nor do the “conceptual examples” provided by the draft EIS reflect the 20-30 kilometer deflection zone discussed in the text for bowhead whales. *Compare* DEIS at 4-103 *with id.*, Figures

the impact will ~~depend~~ on the number of exploration activities and associated support vessels in an area,” the draft EIS shifts its focus to ~~individual~~” sound sources, finding that those impacts are likely to be of medium intensity, localized, and temporary.²²⁸ The draft EIS then simply concludes, without analysis, that ~~the~~“evaluated collectively” the overall effect of the activities will be moderate.²²⁹ This is not the hard look at direct and indirect impacts that NEPA requires.²³⁰

The draft EIS finds that as much as 25% of the EIS project area could be exposed to sound levels of 120 dB from the exploration activities, a level known to provoke significant behavioral reactions in migrating bowhead whales.²³¹ Multiple activities could result in large numbers of bowheads potentially excluded from feeding habitat for the duration of the survey.²³² And the exploration activities may take place year-after-year over the life of the EIS, with a ~~high~~“likelihood” of drilling around Camden Bay.²³³ Under the circumstances, there is a threat of biologically significant effects that the draft EIS must further explore.²³⁴

Instead, it appears that the conclusions of the draft EIS rest largely on the fact that the bowhead whale population has grown in the face of past oil and gas exploration activities.²³⁵ The draft EIS, however, makes little effort to examine the extent of past activities or the amount of noise produced as compared to what is projected by the alternatives.²³⁶ The draft EIS must

4.3-1 and 4.4-2. It is also unclear how the virtually non-existent disturbance zones for exploratory drilling in the Chukchi Sea were determined for Figure 4.4-2. *Cf. id.* at 4-49 (discussing a default of 10 km for 120 dB).

²²⁸ *Id.* at 4-110 – 4-111.

²²⁹ *Id.* at 4-111. This failure to consider the full effect of the multiple disturbances that are under consideration is a pervasive failing of the draft EIS. Nor does the draft EIS attempt to apply its impact descriptors collectively. The draft EIS concedes that because exploration activities can continue for several years the duration of the effects on the ~~acoustic~~“environment” should be considered ~~long~~“term,” but this overview is absent from the bowhead assessment. *Cf.* 4-51. And if bowheads must consequently avoid exploration activities across much of their fall migration route the impact extends far beyond ~~localized~~.”

²³⁰ *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 811 (9th Cir. 1999) (criticizing ~~very~~“broad and general statements devoid of specific, reasoned conclusions” in an EIS).

²³¹ DEIS at 4-51 (acoustic impacts); 4-99 (bowhead reaction to seismic surveying noise); 4-103 (bowhead reaction to drilling noise). Southall et al., 2007 at 446, 452. *See also* 76 Fed. Reg. 68,974, 68,988 (Nov. 7, 2011) (noting ~~strong~~“avoidance reactions”). The draft EIS maintains that data are not available to determine whether female bowheads with calves react differently than other segments of the population. DEIS at 4-104. Although the data are not bowhead specific, NMFS has observed in the past female baleen whales with calves typically are more responsive to disturbances. *See* 2008 BiOp at 86 (noting that in other species ~~males~~“with young are more responsive to noise and human disturbance than other segments of the population”); 2006 PEA at 111 (noting heightened response of female baleen whales accompanied by calves). Any potential impacts on females and calves merit ~~special~~“consideration.” *Id.* at 110. The ability of the female bowhead whale to provide adequate care to her offspring during its period of dependency is ~~critical~~“to the continued recovery and the long-term viability of the population.” *Id.*

²³² DEIS at 4-100.

²³³ *Id.* at 4-103.

²³⁴ *See, e.g., id.* at 4-121 (“NMFS is concerned these simultaneous seismic activities could result in effects that are biologically significant for bowhead whales in particular.”); 2008 BiOp at 68 (stating that ~~small~~“deflections in individual bowhead swimming paths and a reduction in use of possible feeding areas near exploration units may result in adverse effects on the species”).

²³⁵ DEIS at 4-110.

²³⁶ *Id.* at 4-443 (briefly discussing past oil and gas activity in the Alaskan Arctic); 4-480 – 4-481 (past activities and bowhead whales). NMFS has found that due to the ~~incompleteness~~“of the data, it could not evaluate the totality of past effects on bowheads. 2010 BiOp at 50. The draft EIS further suggests that the stock has increased even despite

also consider the fact that the bowhead population may be approaching carrying capacity, potentially altering the degree to which it can withstand repeated disturbances.²³⁷ The superficial nature of the assessment is reinforced by the lack of substantives analysis for Alternative 3 despite adding four additional seismic surveys, four shallow hazard surveys, and two drilling programs to the totals in Alternative 2.²³⁸

As noted throughout these comments, the extent of missing information in the Arctic is daunting and this holds equally true for bowhead whales. The long-term effects of disturbance on bowheads are unknown.²³⁹ The potential for increased stress is unknown, and it is unknown whether impulsive sounds ~~—~~ffect the reproductive rate or distribution and habitat use over a period of days or years.²⁴⁰ Although there are some data indicting specific habitat use in the Beaufort Sea, information is especially lacking to determine where bowhead aggregations occur in the Chukchi Sea.²⁴¹ What is known about the sensitivity of bowhead whales to sound and disturbance indicates that the zones of influence for a single year that included as many as twenty-one surveys, four drillships, and dozens of support vessels – including ice management vessels – would be considerable and almost certainly include important habitat areas.²⁴² The assumption that the resulting effects over five years would be no more than ~~—~~moderate” is unsupported.

B. Beluga

NMFS must first evaluate whether enough is known about beluga whales and their habitat use to accurately predict the degree of harm expected from multiple years of exploration activity.²⁴³ Even if the data are deemed sufficient, the analysis of direct and indirect effects in the draft EIS does not support the conclusion that the impact on beluga whales would be no more than moderate.

In the discussion of potential effects from 2D and 3D surveying the draft EIS speculates, based on studies of captive whales and airgun frequencies, that belugas may be ~~—~~insensitive” to such sounds.²⁴⁴ And yet when discussing ~~—~~similar” OBC surveying the draft EIS recognizes that effects ~~—~~may extend 20-30 km” from the source.²⁴⁵ Indeed, to bolster the claim that beluga whales are unlikely to suffer auditory injury because they tend to avoid loud noise, the draft EIS affirms that recent monitoring studies ~~—~~have confirmed that belugas remained further [sic] away

present levels of oil and gas activity, but the most recent estimate of the population – based on photographic data – is from 2004. *See id.* at 3-89.

²³⁷ DEIS at 3-89 (carrying capacity); *see also* Beaufort Sea IHA Cmts, Statement of Dr. David Bain, Exh. 4.

²³⁸ DEIS at 4-254 – 4-256.

²³⁹ *Id.* at 4-110.

²⁴⁰ *Id.* at 4-100.

²⁴¹ LS 193 FSEIS at IV-101 (current data unavailable to typify summer use of Chukchi Sea); *id.* at IV-103 (insufficient data to determine fall migration paths and how intensively bowheads feed during fall migration through the Chukchi Sea).

²⁴² Effects of disturbance on bowhead whales related to important habitat areas are discussed in the text, *supra*.

²⁴³ *See, e.g.*, USGS Report at 184 (for beluga whales, the ~~—~~present understanding of the essential spatial and temporal habitat needs . . . in the Arctic is limited and constrains the ability to confidently understand and efficiently mitigate potential anthropogenic noise impacts”).

²⁴⁴ DEIS at 4-111.

²⁴⁵ *Id.* at 4-112.

from seismic operations than has been shown for other odontocetes[.]”²⁴⁶ Beluga whales’ strong reactions to higher frequencies also make plain the failure of the draft EIS to calculate ensonified zones for sub-bottom profilers, side scan sonar, and echosounders.²⁴⁷ Curiously, the draft EIS does not discuss beluga whales’ well-documented reaction to ships and ice breakers in the context of surveying with ice breaker support or exploratory drilling.²⁴⁸ As raised in comments submitted to NMFS for the Shell’s Arctic exploration drilling proposed IHAs, ice management activity has the potential to disturb significant numbers of beluga whales.²⁴⁹

The draft EIS makes very little effort to estimate where and when beluga whales might be affected by oil and gas activities despite NMFS registering its concern for “biologically significant” effects.²⁵⁰ BOEM has similarly found that “[i]f noise causes disruption of important behaviors such as mating, nursing, or feeding, or if animals are scared away from important habitat over long periods of time, then these impacts [of noise and disturbance from lease sale activities] could affect the long-term survival of the population.”²⁵¹ The draft EIS naturally finds that potential impacts would relate to “the numbers and types of individuals that were affected . . . and to whether areas avoided or from which whales are potentially displaced provide important energetic needs for belugas particularly during their spring and autumn migrations.”²⁵² Yet the draft EIS does not attempt such an analysis. There is no assessment of how many beluga whales may be harassed by the total number of authorized activities, where that harassment might take place, or what segment of the population could be the most vulnerable. To the extent that this information is available, the draft EIS must incorporate it into the analysis.²⁵³ Where it is not, the draft EIS must apply the framework required by the CEQ regulations.

C. Seals

Again, as with a number of marine mammals in the Arctic, “[t]here is a basic lack of information about ice seals.”²⁵⁴ Moreover, portions of the ringed and bearded seal populations have been proposed for listing pursuant to the Endangered Species Act (ESA), and the ribbon

²⁴⁶ *Id.* at 4-113. *See also* 76 Fed. Reg. 30,110, 30,126 (May 24, 2011) (finding that belugas appear to be “fairly responsive” to seismic energy).

²⁴⁷ DEIS at 4-112.

²⁴⁸ *See id.* at 4-111 – 4-112 (seismic with ice breaker support); 4-113 (exploratory drilling).

²⁴⁹ Beaufort Sea IHA Cmts at 12; Chukchi Sea IHA Cmts at 12.

²⁵⁰ DEIS at 4-114.

²⁵¹ LS 193 FEIS at IV-154.

²⁵² DEIS at 4-114.

²⁵³ *Id.* at 3-100 – 3-102 (describing known information regarding timing and location of habitat use). As with the bowhead whales, the draft EIS asserts that available information does not indicate “long-term adverse effects” on the beluga whale stocks during the 1980s. *Id.* at 4-114 – 4-115. The draft EIS does not provide any context for this claim or any citation in support. *Id.*

²⁵⁴ USGS Report at 187; *see also id.* (“Key information about the abundance, distribution, and vital aspects of ice seals is incomplete”); Lindow, Emily, NOAA, Email to Joseph C. Talbot, BOEMRE, Re. 1001-03b and 1101-02a(2) Camden Bay EP– Draft EA Review at 113 (July 28, 2011) (NMFS’s “lack of understanding about ice seal stock structure in general means we are unsure about what stock is potentially being impacted in a specific area”), attached as Exh. 6; DEIS at 4-123 (“Very few data are available on the reactions of pinnipeds to echosounder sounds or other devices at frequencies similar to those used during seismic operations.”); *id.* (“It is not known if multiple disturbances within a certain timeframe add to the stress of an animal and, if so, what frequency and intensity may result in biologically important effects.”).

seal is considered a “species of concern” under the ESA.²⁵⁵ The proposed listings were prompted, in part, by the effects of climate change on ice seal habitat.²⁵⁶ The added stress of diminishing habitat should form a greater part of the draft EIS analysis. A recent outbreak of skin lesions and sores among ringed seals, accompanied by higher than normal levels of mortality, further complicates any assessment.²⁵⁷ The potentially weakened state of the populations should be considered as part of the baseline.

Even if all the ice seal populations were robust, allowing additional offshore industrial activity risks harm. Low-frequency noise can mask biologically significant sounds, and the proposed activities will disrupt normal behavior, causing seals not only to flee preferred habitat but expend extra energy in doing so.²⁵⁸ NMFS also should consider whether ice management or ice breaking have the potential to seriously injure or kill ringed seals resting on pack ice.²⁵⁹ Hanna Shoal has been noted as an important feeding habitat for bearded seals, and as noted in Shell’s recent exploration plan ice “often” accumulates between its Chukchi drill sites and the Shoal, requiring active ice management.²⁶⁰ In general, the seal analysis – as with many other sections of the draft EIS – does a poor job of considering how the aggregated effects of multiple activities might cause harm.

When assessing potential effects on seal prey species, the draft EIS maintains that that fish will resume normal behavior “within minutes or a few hours” after seismic surveying.²⁶¹ As discussed, *supra*, this conclusion ignores existing studies on the effects of seismic surveying on fish that indicate that effects will last considerably longer over relatively wide areas.

D. Polar Bear

Global warming has caused Arctic sea ice – polar bears’ primary habitat – to melt at an increasingly rapid rate, raising concerns about its long-term chances for survival. Classified as a threatened species under the ESA, the polar bear is also protected by international conservation agreements.²⁶² As with bowhead whales, this globally iconic species plays a critical role in Arctic indigenous cultures.

Disturbance to denning bears is a particular concern. The IUCN Polar Bear Specialist Group cautioned that “Expansion of wintertime Petroleum exploration and development in the

²⁵⁵ See 75 Fed. Reg. 77,496 (Dec. 10, 2010); 75 Fed. Reg. 77,476 (Dec. 10, 2010).

²⁵⁶ See 75 Fed. Reg. at 77,511-12 (discussing sea ice losses); 75 Fed. Reg. at 77,492 (same).

²⁵⁷ NOAA, 2011 Arctic Seal Disease Outbreak Fact Sheet (updated Nov. 22, 2011) (Arctic Seal Outbreak Fact Sheet), available at <http://alaskafisheries.noaa.gov/protectedresources/seals/ice/diseased/ume022012.pdf>. NMFS has officially declared an “unusual mortality event” for ringed seals.

²⁵⁸ See 2008 Multi-Sale DEIS at 4-185 – 4-186.

²⁵⁹ *Id.* at 4-181; cf. 76 Fed. Reg. 69,958, 69,985 (Nov. 9, 2011) (discussing seals and ice management). The addition of a second exploration drilling program in Alternative 3 would add at least two more ice breakers to the Chukchi Sea. Cf. DEIS at 4-261 (asserting that changes to ice habitat would be the same for Alternative 3).

²⁶⁰ DEIS at 4-303 (seals and Hanna Shoal); Shell, Revised OCS Lease Exploration Plan, Chukchi Sea, Alaska, Appendix F at 4-57 (May 2011) (Chukchi EIA), available at http://alaska.boemre.gov/ref/ProjectHistory/2012_Shell_CK/2012x_.HTM.

²⁶¹ DEIS at 4-127.

²⁶² U.S. FWS Polar Bear Fact Sheet at 2, available at

http://www.fws.gov/home/feature/2009/pdf/polar_bearfactsheet1009.pdf

Arctic has increased concerns that oil and gas activities could disturb denning polar bears, resulting in premature den abandonment and cub mortality.”²⁶³ On-ice surveys may directly disrupt nursing polar bears in their dens. Bears disturbed while nursing or awakened from their winter slumber have been known to abandon their dens as a result, placing the cubs at risk. Undetected dens may also suffer physical harm from machinery used during seismic surveys that can literally crush them beneath the snow. Ringed seals, which also make their lairs on the ice, are also susceptible to disturbances from these surveys.²⁶⁴

Recent research indicates that as the ice melts sooner polar bears are forced to return to land earlier in the summer.²⁶⁵ The earlier the bears return to land, the more likely they are to be impacted by summer seismic and other activities in the water, onshore support of open water activities, and any oil spills that might occur. These impacts will be more severe for subadult bears, which are likely to be the first to return to land as sea ice retreats.²⁶⁶ “Because of the greater maternal investment a weaned subadult represents, reduced survival rates of subadult polar bears have a greater impact on population growth rate and sustainable harvest than reduced litter production rates.” Thus, impacts to subadults that return to land in summer represent potentially major impacts to polar bear populations and should be considered in any final EIS.²⁶⁷

The draft EIS’s reliance on future mitigation measures required by the FWS and undertaken by industry is unjustified. It refers to measures “typically” required through the MMPA and considers that it is in industry’s “self-interest” to avoid harming bears.²⁶⁸ Without more, the draft EIS cannot simply assume that claimed protections resulting from the independent efforts of others will mitigate for potential harm.²⁶⁹

E. Walrus

Many of the issues relevant to effects on walrus have been raised in the context of other marine mammals as well. The extent of the missing information is vast, as well summarized in the USGS Report:

²⁶³ IUCN/SSC Polar Bear Specialist Group. In N.J. Lunn, S. Schliebe, and E.W. Born (eds.), *Polar bears: Proceedings of the 13th Working Meeting of the IUCN Polar Bear Specialist Group*. P. 2135. IUCN, Gland, Switzerland and Cambridge, U.K.

²⁶⁴ The draft EIS recognizes that the disturbance or dispersion of prey species of ice seals could have effects on polar bears but given the questions raised, *supra*, regarding potential effects on seals, the dismissal of potential harm is unwarranted. DEIS at 4-138.

²⁶⁵ Durner, G. M., et al., Predicting 21st-century polar bear habitat distribution from global climate models. *Ecological Monographs*, 79(1):25–58 (2009).

²⁶⁶ R. F. Rockwell, L. J. Gormezano, The early bear gets the goose: climate change, polar bears and lesser snow geese in western Hudson Bay, *Polar Biology*, 32:539–547 (2009).

²⁶⁷ LS 193 FEIS at IV-168.

²⁶⁸ DEIS at 4-134, 4-138.

²⁶⁹ “Mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.” *Carmel-By-the-Sea v. U.S. Dep’t of Transp.*, 123 F.3d 1142, 1154 (9th Cir.1997) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 353 (1989)). As NMFS previously counseled BOEM’s predecessor, an EIS “should propose and evaluate a suite of specific mitigation measures” rather than “defer that mitigation and analysis to subsequent actions by NMFS and FWS at some point in the future.” NMFS Multi-Sale FEIS Cmts at 3; *see also id.* at 13 (asserting that relying on the MMPA “abdicates” responsibility for analyzing effects).

Information gaps include: population size; stock structure; foraging ecology in relation to prey distributions and oceanography; relationship of changes in sea ice to distribution, movements, reproduction, and survival; models to predict the effects of climate change and anthropogenic impacts; and improved estimates of harvest. Impacts to walrus of changes in Arctic and subarctic ice dynamics are not well understood.²⁷⁰

Walrus are also expected to suffer greatly from the effects of climate change, and the FWS found that listing pursuant to the ESA is warranted.²⁷¹ In December, the FWS also determined that walrus, like ringed seals, were experiencing an “unusual mortality” event.²⁷²

The draft EIS indicates that large groupings of walrus have been encountered during exploration activities in the Chukchi Sea.²⁷³ Nor is it uncommon for individuals to be exposed to high levels of seismic energy.²⁷⁴ The draft EIS references the “limited geographic extent” of ice breaking activities, but it does not consistently recognize that multiple ice breakers could operate as a result of the exploration drilling programs.²⁷⁵ The draft EIS does observe that the importance of any displacement will depend on the quality of benthic habitat for feeding walrus and its proximity to pack ice or haulouts on land.²⁷⁶ As noted in the draft EIS, it is presumably “more cost effective to haul out near the productive feeding areas and expend less energy traveling[.]”²⁷⁷ Hanna Shoal is recognized as a high quality (“important”) feeding ground for walrus,²⁷⁸ and exploration drilling occurring in proximity will require ongoing ice management.²⁷⁹ The draft EIS appears to diminish any such effects as “short-term,” as they would last “few weeks to a few months.”²⁸⁰ Yet the draft EIS does not provide any reference to support the notion that losing access to important habitat for months at a time would constitute an insignificant occurrence.²⁸¹

In all, the great number of unknowns, the already stressed population, the large numbers of walrus found in the Chukchi Sea, the importance of Hanna Shoal, and the possible length of

²⁷⁰ USGS Report at 57.

²⁷¹ 76 Fed. Reg. 7,634, 7,634 (Feb. 10, 2011). However, the FWS simultaneously found that listing the Pacific walrus is currently precluded by higher priority actions. *Id.*

²⁷² See Arctic Seal Outbreak Fact Sheet.

²⁷³ DEIS at 4-130. The movement of walrus has been affected by the changing ice conditions in the Arctic. Encounters with walrus in the water have increased in recent years “primarily in the fall when the pack ice recedes beyond the shelf break into water too deep for walrus to forage.” *Id.* at 4-490.

²⁷⁴ *Id.* at 4-131.

²⁷⁵ *Id.* at 4-131; 4-263 (“the amount of ice breaking activity [under Alternative 3] would be similar to Alternative 2.”).

²⁷⁶ *Id.* at 4-306 (Hanna Shoal); 4-132 (productive feeding areas).

²⁷⁷ *Id.* at 3-117.

²⁷⁸ *Id.* at 4-306.

²⁷⁹ See Chukchi EIA at 4-57.

²⁸⁰ DEIS at 4-132.

²⁸¹ The draft EIS finds in other contexts that displacement over a matter of weeks could result in biologically significant impacts to marine mammals. See DEIS at 4-121 (bowhead whales); 4-114 (beluga whales). The analysis in the draft EIS for Alternative 3 highlights the general failure to consider the collective impact of different activities. For example, although it notes the minimum separation distance for seismic surveys, no such impediment exists for separating surveying and exploration drilling, along with its accompanying ice breaking activities. See DEIS at 4-263.

exploration activity displacement all indicate the potential for serious effects. The draft EIS does not adequately confront these concerns.²⁸²

F. Gray whales

The draft EIS's analysis for gray whales is faulty in a number of respects. In part, gray whales appear to have suffered from being grouped into a general analysis as one of a number of "other" cetaceans, including fin, minke, and killer whales, and harbor porpoise.²⁸³ More attention specific to gray whales is needed.

The USGS report notes that more information is needed concerning the gray whale's "spatial and temporal habitat needs" during its summers in the Chukchi Sea.²⁸⁴ The Chukchi Sea is of primary interest because it is a major feeding ground for the gray whale[.]"²⁸⁵ The draft EIS claims instead, without support, that the gray whale "feeding and migration patterns fairly closely mimic those of bowhead whales, therefore, gray whales are expected to be exposed to similar potential effects."²⁸⁶ Unlike the bowhead whale annual migration between the Bering Sea and the Canadian Beaufort, the gray whale migration route extends far south to Mexico and typically goes no farther than the Chukchi Sea.²⁸⁷ And, unlike bowhead whales, they are primarily benthic feeders, relying on shallow coastal areas and shoals.²⁸⁸ Perhaps based on its misconception of gray whale habitat use, the analysis of the effects for Alternatives 2 and 3 does not discuss either the gray whale's reliance on the Chukchi Sea for its feeding or its documented preference for Hanna Shoal.²⁸⁹

The same is true for the analysis of the habitat protections in Alternative 4. The draft EIS notes that there are potential benefits to gray whales from protections in and around Hanna Shoal.²⁹⁰ Gray whales can be disturbed by very low levels of industrial noise, with feeding disruptions occurring at noise levels of 110 dB.²⁹¹ As noted, *supra*, ice management activities associated with exploration drilling could very well take place proximate to Hanna Shoal. Yet when discussing the possibility that area closures could concentrate effects elsewhere, the draft EIS focuses on the Beaufort Sea, "such as on the Beaufort shelf between Harrison Bay and Camden Bay during those time periods."²⁹² The draft EIS does so despite recognizing that "of the cetaceans under consideration – habitat protective measures – are most likely to impact gray

²⁸² As with the analysis of effects on polar bears, the draft EIS improperly relies on measures that may be required through the MMPA. DEIS at 4-134 (referencing mitigation measures required by FWS LOAs). The draft EIS also notes that the MMPA assures that impacts will remain "negligible" but does not confront how that term applies in the context of its impact scale. *Id.* at 3-116.

²⁸³ DEIS at 4-115.

²⁸⁴ USGS Report at 185.

²⁸⁵ *Id.*

²⁸⁶ DEIS at 4-118; *see also id.* at 4-121 (Gray whales have "similar migration and life histories" to bowhead whales).

²⁸⁷ *See* USGS Report at 53; *id.* at 184 (Gray whales are a "rare occurrence" east of Barrow in the Beaufort Sea).

²⁸⁸ DEIS at 3-99.

²⁸⁹ *See* 76 Fed. Reg. at 70,000 (characterizing Hanna Shoal, a "common gray whale feeding ground."); DEIS at 4-115 – 4-121 (Alternative 2); 4-258 – 4-259 (Alternative 3).

²⁹⁰ *Id.* at 4-302 (closure would reduce adverse effects, "especially those associated with noise disturbance, such as displacement, particularly on gray whales").

²⁹¹ *Id.* at 4-118.

²⁹² *Id.* at 4-303.

whales and less likely to impact the remaining cetaceans in the resource group, due to species distribution.”²⁹³

In another instance of overreliance on comparisons to bowhead whales, the draft EIS states that both populations have increased despite previous exploration activities.²⁹⁴ Gray whale numbers, however, have declined since ESA protections were removed in 1994, and there is speculation that the population is responding to environmental limitations.²⁹⁵ Further straining the analogy, in the past, exploration activities were less frequent in the Chukchi Sea.

G. Harbor Porpoise

As noted *supra*, harbor porpoise are extremely sensitive to noise and disturbance.²⁹⁶ In order to comply with NEPA, the draft EIS must also address the fact that the unofficial Bering Sea “stock” is based on “arbitrarily set geographic boundaries.”²⁹⁷ The draft EIS maintains that the Bering Sea stock may number as many as 48,215; however, stock assessments completed elsewhere have identified smaller stocks from what had been larger groupings.²⁹⁸ Smaller stocks of a species tend to be more vulnerable to harm caused by human activities.²⁹⁹ Although the draft EIS acknowledges in the oil spill context that harbor porpoise (along with gray whales) have “higher relative abundance” in the Chukchi Sea compared to other marine mammals, there is very little analysis of noise and other disturbance that is specific to the species.³⁰⁰

H. Fish

Although the draft EIS admits that airgun surveys can significantly degrade catch rates in commercial fisheries, and cause “numerous” other impacts on Arctic fish species, it substantially understates the scale of impact and fails to consider any measures to mitigate their effects.³⁰¹

Airgun surveys are known to significantly affect the distribution of some fish species, which can impact fisheries and could also displace or reduce the foraging success of marine mammals that rely on them for prey. Indeed, as one study has noted, fishermen in various parts of the world have complained for years about declines in their catch rates during oil and gas airgun surveys, and in some areas have sought industry compensation for their losses.³⁰² Airguns

²⁹³ *Id.*

²⁹⁴ *Id.* at 4-118.

²⁹⁵ *Id.* at 3-98 (“These abundance trends are consistent with a population approaching carrying capacity[.]”).

²⁹⁶ Moreover, based on tests of a captive harbor porpoise, the draft EIS noted that some cetaceans “apparently can incur TTS at considerably lower sound exposures than are necessary to elicit TTS in the beluga or bottlenose dolphin.” DEIS at 4-114.

²⁹⁷ LS 193 FEIS at III-78 – III-79.

²⁹⁸ *Id.* at 3-106; Chukchi Sea IHA Cmts, Statement of Dr. David Bain at 14-15, Exh. 5. Shell’s recent EIA for exploratory drilling in the Chukchi indicates that the Bering Sea group of harbor porpoise has been estimated at 16,271. Chukchi EIA at 3-78. The draft EIS admits that there “is no reliable information on trends in abundance for this stock.” DEIS at 3-106.

²⁹⁹ Chukchi Sea IHA Cmts, Statement of Dr. David Bain at 15, 16.

³⁰⁰ DEIS at 4-487.

³⁰¹ *Id.* at 4-74.

³⁰² McCauley, R.D., Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M.-N., Penrose, J.D., Prince, R.I.T., Adhitya, A., Murdoch, J., and McCabe, K., Marine seismic surveys: Analysis and propagation of air-gun signals; and effects of

have been shown experimentally to dramatically depress catch rates of some commercial fish species, by 40 to 80% depending on catch method, over thousands of square kilometers around a single array.³⁰³ Large-scale displacement is likely to be responsible for the fallen catch rates: studies have shown both horizontal (spatial range) and vertical (depth) displacement in a number of other commercial species on a similar spatial scale.³⁰⁴ Impacts on fisheries were found to last for some time beyond the survey period, not fully recovering within 5 days of post-survey monitoring.³⁰⁵ Airguns also have been shown to substantially reduce catch rates of rockfish, at least to the distances (less than 5 km) observed in the experiment.³⁰⁶ Yet the draft EIS – which acknowledging that displacement can increase the risk of predation, disrupt fish spawning and reproduction, alter migration routes, and impact feeding – appears to assume without support that effects on both fish and fisheries would be localized.

Furthermore, high-intensity noise from airguns and other sources can impact fish in numerous other ways. Like marine mammals, fish use sound for communication, homing, and other important purposes, and, like marine mammals, they can experience temporary or permanent hearing loss on exposure to intense sound.³⁰⁷ Even brief playbacks of predominantly low-frequency noise from speedboats have been shown to significantly impair the ability of some fish species to forage.³⁰⁸ Other impacts on commercially harvested fish include reduced reproductive performance: recent data suggest that loud, low-frequency sound may disrupt chorusing, a behavior essential to breeding, in some commercial species.³⁰⁹ Several studies indicate that airgun noise can kill or decrease the viability of fish eggs and larvae.³¹⁰

air-gun exposure on humpback whales, sea turtles, fishes and squid (2000) (industry-sponsored study undertaken by researchers at the Curtin University of Technology, Australia).

³⁰³ Engås, A., Løkkeborg, S., Ona, E., and Soldal, A.V., Effects of seismic shooting on local abundance and catch rates of cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*), *Canadian Journal of Fisheries and Aquatic Sciences* 53: 2238-2249 (1996); see also Løkkeborg, S., Ona, E., Vold, A., Pena, H., Salthaug, A., Totland, B., Øvredal, J.T., Dalen, J. and Handegard, N.O., Effects of seismic surveys on fish distribution and catch rates of gillnets and longlines in Vesterålen in summer 2009 (2010) (Institute of Marine Research Report for Norwegian Petroleum Directorate).

³⁰⁴ Slotte, A., Hansen, K., Dalen, J., and Ona, E., Acoustic mapping of pelagic fish distribution and abundance in relation to a seismic shooting area off the Norwegian west coast, *Fisheries Research* 67:143-150 (2004).

³⁰⁵ Engås *et al.*, Effects of seismic shooting.

³⁰⁶ Skalski, J.R., Pearson, W.H., and Malme, C.I., Effects of sounds from a geophysical survey device on catch-per-unit-effort in a hook-and-line fishery for rockfish (*Sebastes spp.*), *Canadian Journal of Fisheries and Aquatic Sciences* 49: 1357-1365 (1992).

³⁰⁷ McCauley *et al.*, Marine seismic surveys: analysis and propagation of air-gun signals, and effects of air-gun exposure; McCauley, R., Fewtrell, J., and Popper, A.N., High intensity anthropogenic sound damages fish ears, *Journal of the Acoustical Society of America* 113: 638-642 (2003); see also Scholik, A.R., and Yan, H.Y., Effects of boat engine noise on the auditory sensitivity of the fathead minnow, *Pimephales promelas*, *Environmental Biology of Fishes* 63: 203-209 (2002).

³⁰⁸ Purser, J., and Radford, A.N., Acoustic noise induces attention shifts and reduces foraging performance in three-spined sticklebacks (*Gasterosteus aculeatus*), *PLoS One*, 28 Feb. 2011, DOI: 10.1371/journal.pone.0017478 (2011).

³⁰⁹ Clark, C.W., pers. comm. with M. Jasny, NRDC (Apr. 2010) (unpublished data on disruption of drum fish chorusing by low-frequency shipping noise).

³¹⁰ Booman, C., Dalen, J., Leivestad, H., Levsen, A., van der Meer, T., and Toklum, K., Effekter av luftkanonskyting på egg, larver og yngel (Effects from airgun shooting on eggs, larvae, and fry), *Fisken og Havet* 3:1-83 (1996) (Norwegian with English summary); Dalen, J., and Knutsen, G.M., Scaring effects on fish and harmful effects on eggs, larvae and fry by offshore seismic explorations, in Merklinger, H.M., *Progress in Underwater Acoustics* 93-102 (1987); Banner, A., and Hyatt, M., Effects of noise on eggs and larvae of two estuarine fishes, *Transactions of the American Fisheries Society* 1:134-36 (1973); L.P. Kostyuchenko, Effect of

In short, the draft EIS improperly assumes that no offshore fishing occurs in the region, fails to recognize the scale of seismic survey impacts on fish species, does not assess impacts of decreased prey availability on marine mammals, ignores the potential for acoustic impacts on Essential Fish Habitat – and, finally, fails to consider measures to mitigate these impacts, such as excluding surveys from spawning areas and other areas of biological importance to Arctic fish species. NMFS must improve its scant analysis.³¹¹

VI. FAILURE TO ADEQUATELY CONSIDER EFFECTS OF OIL SPILLS

A major oil spill in Arctic waters would have crippling effects on the ecosystem, wildlife and people in the Arctic. Spilled oil could kill or severely injure marine mammals and their prey – including whales, seals, polar bears, walrus, seabirds, fish, and microorganisms – and could destroy what are for now pristine waters and shorelines. It could render subsistence resources unusable for multiple years. All of these impacts likely would have a dramatic, negative effect on the people who depend on these animals and places. There is no proven technology to clean up a spill in the remote, icy conditions of the Arctic Ocean, and a spill at the wrong time could continue unchecked for months under the winter sea ice before attempts could be made to stop it.

A. Chukchi Sea

For the Chukchi Sea very large oil spill (VLOS) analysis, the draft EIS relies extensively on the Final Supplemental EIS (FSEIS) for lease sale 193. The FSEIS’s analysis suffers from a number of flaws which render it inadequate to fully inform the decisions underlying NMFS’s draft EIS. Considered as a whole, the analysis in the FSEIS and the draft EIS fails to assist decisionmakers or the public understand the real-world consequences of a VLOS and fails to draw conclusions relevant to decisions about whether, where, and under what circumstances to allow oil and gas exploration activities in the Arctic to go forward.

The oil spill analysis in the lease sale 193 FSEIS is based on a recapitulation of the results of an oil spill trajectory model without explaining what the results mean in terms of effects in the real world. Appendix B of the FSEIS states that, unlike previous analyses that BOEM has conducted, in its large spill trajectory analysis ~~it~~ is not estimated that any one trajectory brings oil to that location.³¹² Rather, ~~the~~ number of trajectories contacting an

elastic waves generated in marine seismic prospecting on fish eggs on the Black Sea, *Hydrobiology Journal* 9:45-48 (1973).

³¹¹ Additionally, the agencies must consider the impacts of seismic surveys and other activities on invertebrates.

See, e.g., McCauley, R.D., Fewtrell, J., Duncan, A.J., Jenner, C., Jenner, M.-N., Penrose, J.D., Prince, R.I.T., Adhitya, A., Murdoch, J., and McCabe, K., Marine seismic surveys: Analysis and propagation of air-gun signals; and effects of air-gun exposure on humpback whales, sea turtles, fishes and squid (2000); André, M., Solé, M., Lenoir, M., Durfort, M., Quero, C., Mas, A., Lombarte, A., van der Schaar, M., López-Bejar, M., Morell, M., Zaugg, S., and Houégnyan, L., Low-frequency sounds induce acoustic trauma in cephalopods, *Frontiers in Ecology and the Environment* doi:10.1890/100124 (2011); Guerra, A., and Gonzales, A.F., Severe injuries in the giant squid *Architeuthis dux* stranded after seismic explorations, in German Federal Environment Agency, International Workshop on the Impacts of Seismic Survey Activities on Whales and Other Marine Biota at 32-38 (2006);

³¹² LS 193 FSEIS at B10.

individual resource over the total number of trajectories launched is used to calculate the percent chance of a hypothetical large spill trajectory contacting that resource.”³¹³

This approach to the model results does not provide adequate information about the effects of an oil spill in the Chukchi Sea. A VLOS would involve ~~multiple~~ trajectories over time with each trajectory launched regularly as the well continued to flow.”³¹⁴ The ~~conditional probabilities~~” in the FSEIS thus ~~represent~~ how many trajectories come to that location described as percent trajectories (number of trajectories contacting/total number of trajectories launched).”³¹⁵ It is unclear, however, exactly what the ~~percent of trajectories~~” tells decision makers and the public about the actual behavior of a VLOS.³¹⁶

Moreover, by reciting model results for each environmental resource in isolation, the FSEIS fails to draw conclusions about the risk to the environment *overall* posed by a spill at any of the areas under consideration. NMFS’s EIS must synthesize the oil spill information in a manner that presents the information relevant to the decision about authorizing future exploration activities – namely, the severity of the consequences from oil spills originating in different areas of the Chukchi Sea.³¹⁷

The draft EIS’s discussion of shoreline oiling is similarly inadequate. The draft EIS indicates that 5-30% of spilled oil would be expected to reach the shore and that hundreds of miles of shoreline ~~would~~” be contaminated.³¹⁸ This assessment, however, does not detail the harm from spills that occur in different locations, and the analyses cited in the draft EIS do not fill in the necessary information. The lease sale 193 FSEIS provides only a composite of how much shoreline might be ~~discontinuous[ly]~~” oiled from a spill originating anywhere in the region under consideration.³¹⁹ While this may predict the extent of shoreline oiling for oil spills of different durations, it does not provide information about impacts from oil spills originating

³¹³ *Id.*

³¹⁴ *Id.*

³¹⁵ *Id.*

³¹⁶ *Id.*

³¹⁷ The analysis in the draft EIS that is intended to supplement the lease sale 193 FSEIS adds little. For example, the sections on bowhead and beluga whales state only that effects could be ~~major~~.” DEIS at 4-389. If anything, the passages tend to reinforce the need for additional information. *See id.* (“If the area is an important feeding area, such as off Barrow, or along the migratory corridor, especially in the spring lead system, the impacts may be of higher magnitude.”); *id.* at 4-394 (noting that if oil entered Kasegaluk Lagoon, effects could be major).

³¹⁸ DEIS at 4-372; 4-383. The draft EIS assumes that 10-40 percent of the spilled oil would be recovered or reduced and that as much as 25-40 percent would naturally disperse, evaporate, or dissolve. *Id.* at 4-355. NMFS should reconsider its claims regarding the recovery rate. *See* Pew Environment Group, Comments on Shell Offshore Inc.’s 2011 – Revised OCS Lease Exploration Plan, Camden Bay, Beaufort Sea, Alaska, and Revised Beaufort Sea, Regional Exploration Oil Discharge Prevention and Contingency Plan at 25-27 (July 25, 2011) (Pew Letter), attached as Exh. 7. Further, it is not clear that NMFS considered whether the ice and lower water temperatures of the Arctic will significantly slow weathering processes such as evaporation. BOEM, 2012-2017 Outer Continental Shelf Oil and Gas Lease Program Draft Environmental Impact Statement at 4-48 (2011) (Five-Year Plan DEIS). The draft EIS separately maintains that in situ burning may remove up to 90% of the spilled oil, a claim that is not justified by existing studies. *Compare* DEIS at 4-357 *with* Pew Letter at 33. The draft EIS appears to contemplate that burning would take place in the spring lead system, a potential disaster for marine mammals. DEIS at 4-358 – 4-359. Although the assumptions as to oil recovery are evidently not factored into the spill volume, they should nevertheless be corrected in any final EIS. *Id.* at 4-359.

³¹⁹ LS 193 FSEIS at 144 (Table 6).

from different wellsites, and potentially contacting different areas, species, and resources as a result.³²⁰ The draft EIS also cites to the 2012-2017 five-year leasing plan draft EIS in support of its discussion of impacts to terrestrial mammals as a result of oil reaching the shore, but the entire discussion in the five-year plan draft EIS appears to be little more than a paragraph with virtually no site-specific details.³²¹

B. Beaufort Sea

For the Beaufort Sea discussion, the draft EIS relies heavily on the analysis in the draft EIS for the 2012-2017 five-year plan and the analysis from the 2003 multi-sale EIS.³²² Collectively, the documents, including the additional analysis in the draft EIS, do not provide the information needed to determine the potential effects of a VLOS.

As with the Chukchi Sea discussion, the draft EIS does not provide sufficient information to determine whether and under what circumstances exploration should proceed and the environmental consequences of the various choices. The draft EIS expressly states that ~~no~~ modeling was performed for the Beaufort Sea analysis.³²³ Instead, it provides a generic summary of projected general impacts when large volumes of oil are released into the environment. As in the Chukchi Sea analysis, simply recognizing that impacts from a large spill will be ~~major~~ “tells a decisionmaker very little about the options for shaping possible alternatives.”³²⁴ Indeed, the failure to conduct any modeling at all appears to have led to some degree of confusion. At one point the draft EIS asserts that conditions in the Beaufort Sea would move oil ~~away~~ “from the shore” while otherwise claiming that prevailing winds over the course of a spill would ~~blow~~ “the oil onshore.”³²⁵

The draft EIS does, however, cite passages related to the trajectory model for a Beaufort Sea spill taken from the 2003 multi-sale EIS.³²⁶ NMFS’s reliance on that model as a prediction of the likelihood that a spill will contact particular sensitive areas is unjustified. Two assumptions of the trajectory model ensure that it cannot yield reasonable estimates of the absolute likelihood of oil contacting sensitive areas. First, the model assumes that all spills behave like a single point and move with the wind and current along a single path.³²⁷ Second, the model assumes that once the spill contacts the coast, it stops.³²⁸ In other words, it assumes that a spill can never contact the mainland at more than one place.

³²⁰ The DEIS also cites to ~~“MMS 2007”~~ for its estimation of when oil may reach the coastline. Presumably, this is a reference to the lease sale 193 FEIS, but it is unclear why NMFS does not rely on the supplemental EIS for the entire oil spill trajectory analysis. See DEIS at 4-355.

³²¹ Compare Five-Year Plan DEIS at 4-291 – 4-292 with DEIS at 4-395.

³²² DEIS at 4-347 (portions of the discussion in the draft EIS were ~~“taken verbatim”~~ from the five-year plan analysis); *id.* at 4-417 (citing to the 2003 Multi-Sale FEIS); 4-419 (same); 4-421 (same).

³²³ *Id.* at 4-416; 4-419.

³²⁴ See, e.g., DEIS at 4-422 (bowhead whales); 4-423 (beluga whales); 4-426 (Camden Bay).

³²⁵ Compare *id.* at 4-410 with *id.* at 4-416; 4-419. For the offshore claim, the DEIS cryptically refers to the theory of ~~“Ekman transport”~~ as part of its analysis, without explanation. DEIS at 4-410. In addition, more information beyond a generalized sense of wind direction is needed to determine the trajectory of a spill. See LS 193 FSEIS at B-8 (noting circulation models and 15-year analysis of wind data).

³²⁶ DEIS at 4-417 (fish habitat); 4-424 (Camden Bay).

³²⁷ 2003 Multi-Sale EIS at A-1-9.

³²⁸ *Id.* at A-1-10.

Unfortunately, the multi-sale EIS uses the model as if it provided a reasonable estimate of the absolute likelihood of contact, and the draft EIS appears to adopt the same assumption.³²⁹ The draft EIS, for example, quotes the multi-sale's use of "combined probabilities," that is, the percentages arrived at when the results of the trajectory model are adjusted to reflect the probability of a spill occurring in the first place.³³⁰ The misleading implication that the draft EIS is addressing absolute probabilities is even stronger in this instance.

Moreover, the "foundation" for the Beaufort Sea spill analysis, the 2012-17 five-year plan draft EIS, is still undergoing agency review.³³¹ A number of entities have submitted critical comments to BOEM, and the entire proposal may undergo substantial revisions – including to its oil spill analysis – before a final EIS is released. NMFS must consider the comments that BOEM received on the five-year plan draft EIS as well as the plan itself before extensively relying on the analysis.

C. Potential for death and serious injury

As discussed *infra*, activities with even the "potential" to result in serious injury or mortality must be authorized through MMPA regulations.³³² There can be little dispute that a VLOS occurring in the Arctic risks death and serious injury to scores of marine mammals.³³³

The draft EIS cites to what it considers a "very low" or "very small" likelihood of a spill.³³⁴ However, the risk of well-control incidents is substantially *higher* during exploration drilling activities than it is during development, as recently acknowledged by BOEM.³³⁵ The draft EIS notes that only that one VLOS has occurred on the outer continental shelf (OCS) since

³²⁹ See DEIS at 4-417; 4-424.

³³⁰ DEIS at 4-417 ("However, the combined probability of one or more spills occurring and contacting the nearshore area is very low (less than 0.5%)."). The 0.5% figure is also incorrect. The model estimates probability of contact to each of 66 individual land segments separately. To determine the probability of contact to the nearshore generally would require adding each of the individual probabilities. Instead, lease sale FEIS concludes that the risk of contact to the nearshore generally is less than 0.5% based on the fact that the risk of contact to any one of the 66 land segments is less than 0.5%.

³³¹ DEIS at 4-409.

³³² 50 C.F.R. § 216.107(a)

³³³ See, e.g., DEIS at 4-384 ("Exposure of aggregations of bowheads, especially if calves are present, could result in mortality"); 4-385 ("Prolonged inhalation of toxic fumes or accidental inhalation of surface oil could result in temporary and/or permanent injury or mortality" to beluga whales); 4-388 ("Any VLOS reaching a polynya or lead system could have serious effects on local ringed and bearded seal sub-populations, potentially oiling or even killing a number of bearded and/or ringed seals."); 4-390 ("A VLOS in the Chukchi Sea could have an overall moderate to major impact on gray whales."); 4-421 (projecting numbers of dead marine mammals); Lease Sale 193 FSEIS at 235-44 (discussing effects of a large spill on ice seals); *id.* at 194-95 (noting risks to bowhead whales); *id.* at 201 (noting potential harm to gray whales); *id.* at 203 (noting potential harm to beluga whales); see also DEIS at 4-421 (bowhead whales); 4-423 (beluga whales).

³³⁴ DEIS at 4-351.

³³⁵ LS 193 FSEIS at B2-B3. See also Pew Environment Group, *Oil Spill Prevention and Response in the U.S. Arctic Ocean: Unexamined Risks, Unacceptable Consequences* at 37 (2010) (noting that from 1992 to 2006, the rate in the United States was one blowout for every 387 wells drilled, for 39 total blowouts through the end of the 1990s"); WWF-Canada Arctic Offshore Drilling Review, NEB File: OF-EP-Gen-AODR 01 Suggested Studies and Preliminary Response to CFI #1 and CFI #2 at 9 (Nov. 29, 2010) (noting information indicating "4 blowouts from a total of 647 wells in Canadian offshore waters, or one in every 162 wells drilled").

1971 (the *Deepwater Horizon*), but this does not fully take into account the work done by the Bercha group.³³⁶ Its most recent report indicates that blowouts that could spill large quantities of oil occur are a real risk during exploration drilling. For example, it finds that 3.5 out of every 10,000 exploration wells drilled in water between 30 and 60 meters deep would result in a well blowout equal to or greater than 150,000 barrels of oil.³³⁷ More than six out of every 10,000 would result in a blowout spill between 10,000 and 149,999 barrels of oil.³³⁸

More accurately, as NMFS has recognized, no amount of regulatory oversight can alter the fact that spills are an inevitable byproduct of oil and gas operations.³³⁹ The 2010 *Deepwater Horizon* disaster underscored the inherent risks of exploration drilling in frontier environments. The draft EIS acknowledges that human error—while working under extreme weather conditions on the Arctic OCS could increase the risk of loss of well control in certain circumstances where established procedures are not followed.”³⁴⁰ Although industry representatives routinely assert that companies have a strong economic incentives to avoid such incidents, three large oil offshore spills have occurred over the past year alone, all operated by Shell: the Shell *Godafoss* vessel oil spill in Norway near a national park-marine preservation area (5,000 barrels of oil) in February 2011,³⁴¹ the oil spill at Shell’s *Gannet Alpha* platform in the North Sea near Aberdeen, Scotland (1,300 barrels of oil) in August 2011,³⁴² and the oil spill at Shell’s *Bonga* facility in the Atlantic off the coast of Nigeria (40,000 barrels of oil) in December 2011.³⁴³ Most recently, there was a blowout on a North Slope exploratory well.³⁴⁴

VII. FAILURE TO ADEQUATELY CONSIDER ISSUES RELATED TO CLIMATE CHANGE

The analysis related to the effects of climate change is faulty in a two key respects: 1) the draft EIS fails to adequately consider how exploration activities could contribute to marine mammal harm in the context of a rapidly changing Arctic environment; and 2) the draft EIS fails

³³⁶ DEIS at 4-351. Versions of the report are cited in the final supplemental EIS for lease sale 193 and in the draft EIS itself. LS 193 FSEIS at B4; DEIS at 3-50, 4-363.

³³⁷ Bercha Group, *Alternative Oil Spill Occurrence Estimators and their Variability for the Beaufort Sea—Fault Tree Method*, OCS Study MMS 2008-035, at 4.30 (Table 4.17) (2008).

³³⁸ *Id.*

³³⁹ 75 Fed. Reg. at 77,487 (“Although planning, management, and use of best practices can help reduce risks and impacts, the history of oil and gas activities, including recent events, indicates that accidents cannot be eliminated. Tanker spills, pipeline leaks, and oil blowouts are likely to occur in the future, even under the most stringent regulatory and safety systems”).

³⁴⁰ DEIS at 4-363. The draft EIS asserts that the incident rate of loss of well control “is expected to be lower” than for operations in the Gulf of Mexico. *Id.* The report relied upon for this claim is discussed in the text, *infra*.

³⁴¹ Euronews, *Norway’s only marine reserve hit by oil spill* (Feb. 18, 2011), available at <http://www.euronews.net/2011/02/18/norway-s-only-marine-reserve-hit-by-oil-spill/>.

³⁴² Fiona Harvey, *North sea oil spill ‘worst for a decade’*, *The Guardian* (August 15, 2011), available at <http://www.guardian.co.uk/environment/2011/aug/15/north-sea-oil-spill>.

³⁴³ John Vidal, *Nigeria on alert as Shell announces worst oil spill in a decade*, *The Guardian* (Dec. 22, 2011), available at <http://www.guardian.co.uk/environment/2011/dec/22/nigerian-shell-oil-spill>.

³⁴⁴ Richard Mauer, *North Slope oil well suffers a blowout*, *Anchorage Daily News* (Feb. 16, 2012), available at <http://www.adn.com/2012/02/15/2319427/exploratory-well-blows-on-north.html>. The latter two spills occurred from low-tech sources, i.e., pipelines and hose transfer activities respectively, raising questions about industry’s ability to prevent major spills from well-understood technical processes in contrast to major spills from blowouts where there may be geologic unknowns.

to adequately consider the full range of future climate change impacts that could naturally flow from exploration activities.

A. Effects on species in the context of climate change

The Arctic is undergoing significant climactic changes, and models estimate that temperatures will increase by as much as 6° F by 2040.³⁴⁵ Warming temperatures have already visibly altered Alaska's land, water, wildlife, and people.³⁴⁶ Perhaps the most dramatic change has been the disappearance of sea ice. —As a result of receding and thinning sea ice scientists have observed polar bears drowning and going hungry, walrus forced onto land, and sharp declines in numbers of ice-dependent sea birds.³⁴⁷ As noted *supra*, a number of Arctic species have been listed pursuant to the ESA — or are proposed for listing — in part based on issues related to climate change. The warming is also threatening indigenous cultures. Arctic animals and subsistence hunts are central to Alaska Native cultures. Today, subsistence hunters have to travel farther to access animals.³⁴⁸ Melting permafrost is accelerating coastal erosion and forcing communities to relocate.³⁴⁹

The draft EIS contains only the barest attempt to consider harm to the Arctic ecology and its inhabitants in the context of climate change. In discussing marine mammals and climate change, the draft concedes that ice-obligate species such as walrus, ice seals, and polar bears are especially vulnerable.³⁵⁰ Indeed, recent shifts —in distribution and habitat use by polar bears and walrus in the Beaufort and Chukchi seas are likely attributable to loss of sea ice habitat.³⁵¹ But the draft EIS does not in any real sense make use of this information. Examining possible harm to polar bear habitat from oil and gas operations, the draft EIS asserts only that they —would be negligible compared to the potential for dramatic sea ice loss due to climate change and changes in ecosystems due to ocean acidification.³⁵² The draft EIS applies the same approach when looking at possible effects on subsistence.³⁵³ For walrus and ice seals, the draft EIS simply notes potentially catastrophic climate effects without adequately considering how oil and gas activities might leave species more vulnerable to that outcome.³⁵⁴

The EIS cannot avoid looking closely at possible harm to Arctic resources from the combination of oil and gas activities and climate change by diminishing the former in comparison to the latter. In either case, decisionmakers and the public are left with the impression that the agency action will not make much difference simply because the magnitude

³⁴⁵ See Anne E. Gore & Pamela A. Miller, Broken Promises: The Reality of Oil Development in America's Arctic at 41 (Sep. 2009) (Broken Promises).

³⁴⁶ *Id.* at 40. The passing reference in the draft EIS that that climate change may be part of the —natural variability of climate patterns and fluctuations” is unsupported by any credible science and should be removed. See DEIS at 3-23.

³⁴⁷ Broken Promises at 41.

³⁴⁸ *Id.*

³⁴⁹ *Id.*

³⁵⁰ DEIS at 3-123. See also *id.* at 4-473 (noting that ocean acidification —must be considered in combination with actions that may lead to cumulative impacts”).

³⁵¹ *Id.* at 3-122 – 3-123.

³⁵² DEIS at 4-493 – 4-494. See also *id.* at 4-526 (polar bears and Alternative 3).

³⁵³ *Id.* at 4-501; 4-528.

³⁵⁴ *Id.* at 4-491 (noting that global warming presents the greatest threat to walrus); *id.* at 4-488 (ice seals; same).

of climate change is so large. This circumvents NEPA's purpose and prevents the consideration and adoption of solutions which could mitigate future harm.

B. Effects on climate change

1. *Future development and production*

The draft EIS cannot ignore the millions of tons of greenhouse gases that will be released in to the atmosphere as a result of the oil and gas that is produced as a result of the exploration activities authorized here. When examining the effects of exploration on the climate, the draft EIS rests on the fact that —its not likely that there will be any oil or gas production in the Beaufort or Chukchi seas during the life of this document.”³⁵⁵ This, however, does not reflect the obligation that NEPA places on agencies to consider future indirect effects of a proposed action. Indirect effects are those —caused by an action and are *later in time* or farther removed in distance, but are still reasonably foreseeable.”³⁵⁶ The draft EIS recognizes that exploration can act as a —gateway for future offshore oil and gas development[.]”³⁵⁷ Or, more pointedly, the project —could promote or make more accessible the use of fossil fuels”³⁵⁸ As courts have recognized in the leasing context, —pumping oil” is the aim of congressional mineral leasing policy, and certainly that aim is even more relevant to the oil industry's efforts at the exploration stage.³⁵⁹

Although the draft EIS maintains at times that the likelihood of future production cannot be predicted and its magnitude is unknown, this willful ignorance disregards available information. The draft EIS can and must develop predictions based on existing estimates of oil and gas reserves. The lease sale 193 EIS assumes, for example, that one billion barrels will be produced as a result of the leasing for purposes of its environmental analysis.³⁶⁰ Reasonable forecasting and speculation are implicit in NEPA, and courts —reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as “crystal ball inquiry.”³⁶¹ To the extent that there may be some uncertainty, agencies must still —evaluat[e] . . . impacts based upon theoretical approaches . . . generally accepted in the scientific community.”³⁶² The same is true for the effects of the emissions on the environment. The EIS cannot ignore those —actual impacts” that may result.³⁶³

³⁵⁵ *Id.* at 4-465; *id.* at 4-466 (“However, it cannot be foreseen that exploration activities being analyzed in this EIS would result in the production of oil and gas within the timeframe being analyzed.”); 4-471 (“However, over the five-year lifespan of this EIS, climate change and ocean acidification are expected to have negligible effects on water quality in the EIS project area.”); *see also id.* at 4-25 (indirect climate change impacts are anticipated to be “low”).

³⁵⁶ 40 C.F.R. § 1508.8(b) (emphasis added).

³⁵⁷ DEIS at 4-504.

³⁵⁸ *Id.* at 4-514. *See also id.* at 4-503 (stating that the “possibility of the exploration activity leading to further development raises the possibility of health consequences subsequent to this further activity”).

³⁵⁹ *Conner v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1988) (quotation marks omitted).

³⁶⁰ LS 193 FEIS IV-6. That estimation is far too low given projected reserves and the expected price of oil, but it at least represents an attempt to forecast future production. *See also* Five-Year Plan DEIS at 4-106 (Table 4.4.1-4).

³⁶¹ *Scientists' Inst. for Public Information, Inc. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

³⁶² 40 C.F.R. § 1502.22(b).

³⁶³ DEIS at 4-23. The draft EIS maintains that it is not “feasible” to do so, but the Environmental Protection Agency has modeled effects from even a single coal plant. *Id.* Letter from Robert Meyers to Dale Hall and Jim Lecky, Re: Endangered Species Act and Greenhouse Gas Emissions (Oct. 3, 2008), attached as Exh. 8.

2. Emissions of black carbon

The draft EIS fails to analyze the impact of black carbon outside of its VLOS scenario, disregarding emissions associated with increased vessel traffic and development infrastructure. Black carbon is generally regarded as the second most important driver of Arctic warming. It contributes to warming by absorbing incoming and outgoing radiation and by darkening snow and ice, ~~which~~ reduces the reflection of light back to space and accelerates melting.³⁶⁴ Emissions of black carbon from sources in the Arctic are particularly troubling because Arctic emissions can cause substantially more regional warming than similar amounts of black carbon emitted outside the Arctic.³⁶⁵

The Environmental Protection Agency (EPA) has recognized black carbon's role in both global and Arctic warming. The Administrator has acknowledged that black carbon ~~is~~ an important climate forcing agent and takes very seriously the emerging science on black carbon's contribution to . . . the high rates of observed climate change in the Arctic.³⁶⁶ Further, in a draft report to Congress on black carbon, EPA found that its ~~high~~ capacity for light absorption and its role in key atmospheric processes link it to a range of climate impacts, including increased temperatures, accelerated ice and snow melt, and disruptions in precipitation patterns.³⁶⁷ EPA states that modeling studies have shown that black carbon radiative forcing ~~from both~~ atmospheric concentration and deposition on the snow and ice³⁶⁸ has contributed to Arctic surface warming. One study found that black carbon deposition on sea ice ~~may~~ have resulted in a surface warming trend of as much as 0.5 to 1°C.³⁶⁹ Other modeling studies have shown increased warming of 0.4 to 0.5°C from black carbon deposited on snow; indicated that black carbon may increase snowmelt rates north of 50°N latitude by as much as 19 to 28 percent; and have revealed that black carbon forcing may be the cause of as much as 50 percent of Arctic sea ice retreat.³⁷⁰

Nor is the analysis of black carbon in the VLOS section itself sufficient. The draft EIS asserts that the magnitude of climate effects is ~~expected~~ to be less than those associated with the actual oil exploration activities,³⁷¹ but the oil spill discussion does not attempt to quantify emission volumes and the section devoted to air impacts of exploration activities does not specifically address black carbon at all.

VIII. EFFECTS ON SUBSISTENCE

³⁶⁴ EPA, Report to Congress on Black Carbon External Peer Review Draft at 12-1 (March 2011) (Black Carbon Report), available at [http://yosemite.epa.gov/sab/sabproduct.nsf/0/05011472499C2FB28525774A0074DADE/\\$File/BC%20RTC%20External%20Peer%20Review%20Draft-opt.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/0/05011472499C2FB28525774A0074DADE/$File/BC%20RTC%20External%20Peer%20Review%20Draft-opt.pdf).

³⁶⁵ See D. Hirdman et al., *Source Identification of Short-Lived Air Pollutants in the Arctic Using Statistical Analysis of Measurement Data and Particle Dispersion Model Output*, 10 *Atmos. Chem. Phys.* 669 (2010).

³⁶⁶ 74 Fed. Reg. 66496, 66,520 (Dec. 15, 2009).

³⁶⁷ Black Carbon Report at 1-1.

³⁶⁸ *Id.* at 2-42.

³⁶⁹ *Id.*

³⁷⁰ *Id.* at 2-45.

³⁷¹ *Id.* at 4-366 – 4-367. Particularly in the case of black carbon, any final EIS may not avoid predicting ~~actual~~ impacts³⁷¹ in the Arctic resulting from the project in favor of simply calculating emissions. *Id.* at 4-23.

In addition to the points already noted in these comments, issues that are particular to subsistence hunting require a more thorough analysis. Subsistence hunters are affected by industrial activities in ways that do not strictly correlate to the health of marine mammal populations. When marine mammals deflect away from exploration activities, hunting opportunities may be lost regardless of whether or not the deflection harms the species as a whole. Whalers are affected when bowhead whales become skittish or aggressive in the presence of noise producing activities.³⁷² A traditional subsistence diet can be disrupted as a result of exploration activities when there is even the perception that animals are tainted by discharges and other toxins.³⁷³

Despite these added complexities, the review of subsistence issues in the draft EIS is superficial and incomplete. The analysis for bowhead whales, for example, appears to rely on ~~additional~~ mitigation measures in the Chukchi Sea that are not required by the EIS.³⁷⁴ In discussing effects from ice management vessels, the subsistence section attempts to draw a distinction between ~~ice breaking~~ and ~~ice management~~ that is nowhere else described in the document.³⁷⁵ Ice management of any kind can have profound effects on marine mammal behaviors, as described *supra*. Although industry has in the past maintained that during ~~ice management~~ a slower rotation speed of a ship's propeller reduces cavitation effects, the draft EIS does not cite to any evidence in support of such a claim.³⁷⁶ More importantly, such a claim is unjustified. First-year ice is most likely the type of ice to be encountered during open water activities, and there is evidence that such ice is ~~most~~ most efficiently broken at continuous high speed which involves the highest continuous power production[.]³⁷⁷ As with effects on marine mammals generally, the analysis in the draft EIS repeatedly finds that disturbances to subsistence are ~~temporary~~ because they last only as long as the ~~duration of the activities~~ each season, ignoring that the draft EIS assumes that multiple authorizations will take place year after year.³⁷⁸

The draft EIS must also do more to address the potential for harm to coastal communities due to the perceived contamination of subsistence resources. The draft EIS cites to studies demonstrating that perceived contamination is a very real issue for local residents, and industrialization at the levels contemplated by the draft EIS would undoubtedly contribute to that belief.³⁷⁹ Yet the draft EIS avoids seriously confronting the issue. In discussing effects to subsistence hunting from permitted discharges, the draft EIS refers to the section on public health.³⁸⁰ The summary for the public health effects, however, refers to the entirety of the cumulative effects discussion.³⁸¹ That section appears to contain no more than a passing reference to the issue.³⁸² The examination of the mitigation measure that would require

³⁷² See 76 Fed. Reg. at 69,022.

³⁷³ DEIS at 4-209.

³⁷⁴ Compare DEIS at 4-181 (seismic surveying may not occur in the Chukchi Sea until bowhead hunts are complete); with DEIS at 2-41 – 2-42 (describing mitigation for subsistence hunting in the Chukchi Sea).

³⁷⁵ DEIS at 4-192.

³⁷⁶ See 76 Fed. Reg. at 69,960.

³⁷⁷ Shell, Outer Continental Shelf Pre-Construction Air Permit Application Revised, Frontier Discoverer Chukchi Sea Exploration Drilling Program at 16 (Feb. 23, 2009) (footnote omitted).

³⁷⁸ See, e.g., DEIS at 4-481 (bowhead whales); 4-482 (beluga whales)

³⁷⁹ *Id.* at 4-209.

³⁸⁰ DEIS at 4-197.

³⁸¹ *Id.* at 4-209.

³⁸² *Id.* at 4-512.

recycling of drilling muds fares no better. The section simply reinforces the fact that residents are very concerned about contamination without considering the benefits that could come from significantly reducing the volume of toxic discharges.³⁸³

Additional analysis is required related to deferral areas specific to subsistence hunting. As noted, NMFS has in the past recommended the deferral of leasing along the Chukchi Sea coast —until such time as it can be demonstrated that exploration and development activities in these sensitive regions can be accomplished without significant impacts to marine mammal populations *or* subsistence hunters.”³⁸⁴ Any final EIS must confront the potential need for added coastal protections in the Chukchi Sea.³⁸⁵

IX. OTHER CONCERNS

A. Effects on Air

The fleet of vessels and aircraft that may be utilized in the coming five years to conduct geophysical surveys and exploratory drilling in the Beaufort and Chukchi seas will emit large amounts of air pollution that could harm human health and the environment and significantly degrade the Arctic’s air quality. NEPA requires that any final EIS must analyze the effects of these substantial emissions.

1. *Recent amendments to the Clean Air Act*

As an initial matter, the draft EIS’s evaluation of potential air impacts is now outdated and likely substantially underestimates potential air quality impacts of future oil and gas activities in the Arctic. The draft EIS states that air quality in Alaska is regulated by EPA and the Alaska Department of Environmental Conservation and assumes that all future air pollution sources in the Arctic will be subject to EPA’s OCS regulations and air permitting requirements.³⁸⁶ Recent Congressional action, however, undercuts these assumptions. In late December 2011, Congress used a rider to the Consolidated Appropriations Act of 2012 to amend section 328 of the Clean Air Act (CAA).³⁸⁷ The rider changes the text of section 328 to exempt “Outer Continental Shelf sources located offshore of the North Slope Borough of the State of Alaska” from EPA’s CAA authority; instead, such sources will be subject to regulation by the Department of the Interior (DOI) pursuant to the Department’s statutory and regulatory authority.³⁸⁸ DOI’s regulations, now administered by BOEM, differ from EPA’s.³⁸⁹ Given the likelihood that at least some sources will not be subject to EPA regulations or air permitting

³⁸³ *Id.* at 4-204. NMFS should further consider whether a “no discharge” alternative could be justified on the basis of disruptions to subsistence due to perceived contamination. *Cf.* DEIS at 2-47.

³⁸⁴ NMFS Multi-Sale Cmts at 10 (emphasis added). NMFS has specifically argued that a 25-mile buffer is inadequate. *Id.* at 9.

³⁸⁵ NMFS should also consider an alternative that is designed primarily to benefit subsistence hunting (i.e., restrictions on activity timing/location and waste discharges).

³⁸⁶ *See, e.g.*, DEIS at 3-28 to 3-29, 4-26 to 4-32, and 4-35.

³⁸⁷ *See generally* Pub. L. No. 112-74 § 432.

³⁸⁸ *Id.* at § 432(b), (c). Activities with pending applications are unaffected. *Id.* § 432(d).

³⁸⁹ *Compare* 40 C.F.R. § 55 (EPA OCA air regulations) *with* 30 C.F.R. §§ 250.218, 250.302-303 (key DOI air regulations).

requirements, the draft EIS must be revised to reflect expected emissions under DOI's regulatory approach.

2. *Future air pollution authorizations*

Oil and gas activities in the Arctic generate several harmful air pollutants, including nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter (PM), including fine particulate matter (PM_{2.5}).³⁹⁰ The potential for offshore oil and gas activities to increase pollution levels in coastal communities in the Arctic is particularly worrisome as these communities already exhibit markedly higher rates of pulmonary disease than the general population, making them especially vulnerable to morbidity and mortality from air pollution.³⁹¹

The draft EIS states that —CO and PM are the pollutants of most concern in Alaska,³⁹² but this statement is made without explanation or justification. In any event, whatever pollutants may be of the most significance within onshore areas of the state, other pollutants are certainly cause for concern in the offshore and coastal areas that will be most affected by oil and gas activities in the Arctic Ocean. For example, both NO_x emissions—which are regulated as nitrogen dioxide (NO₂)—and PM_{2.5} emissions pose a danger to coastal and near-coastal communities.

For example, for the company's planned operation of the *Discoverer* drillship, Shell admits that it will emit up to 336 tons per year of NO_x and up to 21 tons per year of PM_{2.5}.³⁹³ Both of these pollutants are harmful to human health. According to EPA, NO₂ acts mainly as an irritant affecting the eyes, nose, throat, and respiratory tract.³⁹⁴ —Continued exposure to high NO₂ levels can contribute to the development of acute or chronic bronchitis. Low level NO₂ exposure may cause increased bronchial reactivity in some asthmatics, decreased lung function in patients with chronic obstructive pulmonary disease and increased risk of respiratory infections, especially in young children.³⁹⁵ Exposure to elevated levels of particulate matter, especially PM_{2.5}, can cause adverse health effects even in healthy individuals.³⁹⁶ However, people with heart or lung disease, children, and the elderly are most vulnerable.³⁹⁷ —Numerous

³⁹⁰ DEIS at 4-25.

³⁹¹ See Environmental Protection Agency (EPA) Region 10, Supplemental Statement of Basis for Proposed OCS Prevention of Significant Deterioration Permits Noble Discoverer Drillship, Shell Offshore Inc., Beaufort Sea Exploration Drilling Program, Permit No. R10OCS/PSD-AK-2010-01, Shell Gulf of Mexico Inc., Chukchi Sea Exploration Drilling Program, Permit No. R10OCS/PSD-AK-09-01 at 65 (July 6, 2011) (*Discoverer Suppl. Statement of Basis 2011*), *available at* http://www.epa.gov/region10/pdf/permits/shell/discoverer_supplemental_statement_of_basis_chukchi_and_beaufort_air_permits_070111.pdf.

³⁹² DEIS at 3-28, 4-35.

³⁹³ EPA Region 10, Technical Support Document, Review of Shell's Supplemental Ambient Air Quality Impact Analysis for the Discoverer OCS Permit Applications in the Beaufort and Chukchi Seas at 8 (Jun. 24, 2011) (*Discoverer Technical Support Document*), *available at* http://www.epa.gov/region10/pdf/permits/shell/discoverer_ambient_air_quality_impact_analysis_06242011.pdf.

³⁹⁴ EPA, An Introduction to Indoor Air Quality: Nitrogen Dioxide, *available at*

<http://www.epa.gov/iaq/no2.html#Health Effects Associated with Nitrogen Dioxide>

³⁹⁵ *Id.*

³⁹⁶ EPA, Particulate Matter: Health, *available at* <http://www.epa.gov/oar/particlepollution/health.html>

³⁹⁷ *Id.*

scientific studies have linked particle pollution exposure to a variety of problems,” including development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease.³⁹⁸

As BOEM has acknowledged previously, “[a]irborne emissions from OCS activities could contribute incrementally to the risk of [chronic] health problems.”³⁹⁹ NMFS and BOEM must make a full assessment of the risks posed by the activities contemplated in the DEIS. The agencies should carefully analyze potential health effects, and may not simply rely on EPA’s (or BOEM’s) permitting process to prevent significant effects.⁴⁰⁰ Indeed, BOEM’s predecessor recognized this in the past, stating that

[e]missions [that] cause an increase in pollutants over an area of at least a few tens of square kilometers that exceeds half the increase permitted under the Prevention of Significant Deterioration [(PSD)] criteria or the National Ambient Air Quality Standards [(NAAQS)] for nitrogen dioxide, sulfur dioxide, or particulate matter less than 10 microns in diameter; or exceeds half the increase permitted under the [NAAQS] for carbon monoxide or ozone are significant for purposes of NEPA.⁴⁰¹

Using this criterion, expected air emissions from prospective oil and gas activities in the Arctic Ocean are plainly significant for purposes of NEPA. For example, emissions from Shell’s *Discoverer* are expected to exceed 24-hour concentrations of PM_{2.5} by 12.2 µg/m³ in the Beaufort Sea and 12.4 µg/m³ in the Chukchi Sea.⁴⁰² This increase easily exceeds EPA’s newly enacted 24-hour PM_{2.5} increment of 9 µg/m³.⁴⁰³ Likewise, *Discoverer* operations in the Chukchi are expected to increase 1-hour NO₂ concentrations from 13.2 µg/m³ to 174.0 µg/m³, an increase of 160.8 µg/m³ that greatly exceeds 50 percent of the NAAQS level of 188 µg/m³.⁴⁰⁴

Notably, air quality impacts from oil and gas activities may extend across large distances. For example, in its modeling for the 2010 air permit issued for Shell’s *Discoverer* operations in the Beaufort Sea, EPA determined that Shell’s operations would result in elevated annual NO₂ concentrations at a distance of more than 50 kilometers from the drillship; PM concentrations would remain elevated as far as 42 kilometers from the drillship.⁴⁰⁵ Because of the magnitude of expected emissions from oil and gas activities in the Arctic Ocean, as well as the expansive area that may be affected by a single source, NEPA requires a thorough analysis by NMFS and BOEM.

³⁹⁸ *Id.*

³⁹⁹ 2008 Multi-Sale DEIS Appendix J at J-12.

⁴⁰⁰ *S. Fork Band Council Of W. Shoshone Of Nevada v. U.S. Dept. of Interior*, 588 F.3d 718, 726 (9th Cir. 2009) (“A non-NEPA document . . . cannot satisfy a federal agency’s obligations under NEPA.”).

⁴⁰¹ 2003 Multi-Sale FEIS at IV-5.

⁴⁰² *Discoverer* Supp. Statement of Basis 2011 at 57-58.

⁴⁰³ 75 Fed. Reg. 64,864, 64,865 (Oct. 20, 2010).

⁴⁰⁴ *Discoverer* Supp. Statement of Basis 2011 at 58.

⁴⁰⁵ Region 10, Statement of Basis for Proposed OCS Prevention of Significant Deterioration Permit No. R10OCS/PSD-AK-2010-01, Shell Offshore Inc., Frontier *Discoverer* Drillship, Beaufort Sea Exploration Drilling Program at 98 (Feb. 17, 2010), available at ftp://ftp.epa.gov/reg10ftp/alaska/ocs/beaufort/air/shell/discoverer/2010/Proposed_Permit/.

NMFS and BOEM also must address air pollution impacts on wildlife and ecosystems. The DEIS, borrowing from a previous EPA analysis, focuses primarily on NAAQS compliance. While it is important that offshore oil and gas activities not violate NAAQS, such standards are intended, in the first instance, to protect human health. A source's NAAQS compliance does not preclude environmental consequences and some of the pollutants that will be emitted by offshore oil and gas sources have detrimental effects on the environment. For example, ~~air~~ pollutants like NO₂ are eventually deposited in aquatic and terrestrial ecosystems, including habitat of rare and endangered species, resulting in acidification and nutrient enrichment that degrades these ecosystems and affects biodiversity."⁴⁰⁶ The draft EIS should address such environmental consequences of air pollution.

3. *Recent Arctic OCS air permits*

To the extent it attempts any meaningful analysis of air quality impacts, the DEIS is substantially flawed because it assumes that recent OCS air permits issued by EPA can be used to predict the impacts of other future oil and gas activities in the Beaufort and Chukchi seas.⁴⁰⁷ However, not all emissions associated with an operation are covered by an EPA OCS air permit. NMFS and BOEM are obligated to consider all emissions associated with oil and gas development, not merely those that are subject to direct regulation or permit conditions.

A brief discussion of the recently finalized air permits issued by EPA for Shell's *Discoverer* drillship illustrates the degree to which an OCS air permit fails to reflect the entirety of a source's air emissions and expected air impacts. EPA's air analysis for the *Discoverer* did not address, and the permit does not in any way limit, the following emissions: (1) emissions of the *Discoverer* drillship and associated vessels before the drillship becomes an ~~OCS~~ "source" (*i.e.*, before it is anchored); (2) emissions of the *Discoverer* drillship and associated vessels after the drillship ceases to constitute an ~~OCS~~ "source"; and (3) during the period that the *Discoverer* constitutes an OCS source, emissions from associated vessels operating at a distance of more than 25 miles from the drillship. The DEIS must address the cumulative impact of the air pollution emitted during each and every phases of the *Discoverer*'s operation, not just those emissions directly subject to permitting requirements

Even during the periods of operation directly subject to air permitting requirements, the air modeling developed for the *Discoverer* ignores the most severe impacts from the drillship and its associated fleet. EPA's air modeling for the *Discoverer* assumed that the air within a 500-meter of the drillship does not constitute ~~ambient~~ "air".⁴⁰⁸ In other words, based on nothing more than an arbitrary regulatory determination, EPA authorized a pollution bubble—one kilometer in diameter—within which Shell's emissions are fully unregulated.

The draft EIS acknowledges ~~the~~ "use of exclusion zones" around oil and gas activities and mistakenly suggests that such zones will prevent pollutant levels ~~above~~ regulatory

⁴⁰⁶ See 76 Fed. Reg. 46,084, 46,103-05 (Aug. 1, 2011).

⁴⁰⁷ See DEIS at 4-35 (~~Exhaustive modeling has been completed as part of the current draft permits for OCS exploratory drilling programs. Due to the similarities of those activities to the sources included in the project, estimates of impacts can be assessed based on the draft permit modeling results.~~).

⁴⁰⁸ *Discoverer* Supp. Statement of Basis 2011 at 26-27

standards.”⁴⁰⁹ As a factual matter, this conclusion is completely wrong. Air pollution levels are expected to be the highest within the exclusion zones;⁴¹⁰ in fact, concentrations are likely to exceed applicable standards there.⁴¹¹ Here, significant environmental impacts are expected within the exclusions zones. NEPA requires a full and transparent accounting of these impacts.

4. *Reliance on draft air permits*

The draft EIS’s citation to “~~current~~ draft permits” to support its analysis of potential air quality impacts is inherently flawed because the document’s analysis appears to have drawn upon a single draft permit, namely, draft permit no. R10OCS020000 for a jackup rig that ConocoPhillips Company proposed in 2011 to use in the Chukchi Sea.⁴¹² This draft permit, issued in July of 2011, was later withdrawn after it was made subject to public comment—presumably because of the substantial technical and legal flaws identified by the public.⁴¹³ Given that draft permit no. R10OCS020000 was withdrawn, it is not an appropriate basis for the draft EIS’s air quality analysis.

Even had it not been withdrawn, the draft Conoco permit would not have provided a valid basis for predicting air impacts from future oil and gas activities in the Arctic. First, the draft permit violated applicable statutory and regulatory requirements and EPA’s analysis did not reliably identify the full potential impact of Conoco’s operations upon air quality.⁴¹⁴ Second, of the four OCS air permits proposed by EPA for the Arctic in 2011, Conoco’s operations were expected to produce the fewest air emissions.⁴¹⁵ Indeed, the Conoco permit relied upon by the DEIS is for only a minor source of air pollution for purposes of the CAA’s ~~Prevention of~~

⁴⁰⁹ DEIS at 4-35.

⁴¹⁰ Discoverer Supp. Statement of Basis 2011 at 59; *see also* Shell, OCS Pre-Construction Air Permit Application, Frontier Discoverer, Beaufort Sea Exploration Program at 166 (Jan. 2010), *available at* http://ftp.epa.gov/reg10ftp/alaska/ocs/beaufort/air/shell/discoverer/2010/Permit_Application_Materials_and_EPA_Responses/. (“Peak Project contribution . . . occurs only 80 meters downwind of the drill site”).

⁴¹¹ Given that Shell’s proposed *Discoverer* operations within the Chukchi Sea are expected to barely comply with applicable standards at a radius of 500 meters, violations are possible if not likely within the 500 meter radius. *See* Discoverer Supp. Statement of Basis 2011 at 58 (noting that in the Chukchi Sea, the Discoverer’s total impact will amount to 93% of the 1-hour NO₂ national ambient air quality standard, 67% of 24-hour PM_{2.5} standard, and 60% of the 24-hour PM₁₀ standard).

⁴¹² DEIS at 4-31, n.10, n.19-21.

⁴¹³ *See* <http://yosemite.epa.gov/R10/airpage.nsf/Permits/conocophillips> (last visited Feb. 21, 2012) (“EPA proposed a draft Title V Clean Air Act permit on July 22, 2011, for ConocoPhillips to explore for oil and gas in the Chukchi Sea on the Outer Continental Shelf (OCS). ConocoPhillips withdrew their air permit application on Sept. 26, 2011 and submitted a new air permit application Dec. 1, 2011. On Jan. 27, 2012, ConocoPhillips withdrew their air permit application.”).

⁴¹⁴ *See* Alaska Wilderness League, *et al.*, Comments on Draft Title V Part 71 Air Permit for ConocoPhillips’s Proposed Oil and Gas Exploration Drilling in the Chukchi Sea, Alaska (Sept. 21, 2011), attached at Exh. 9.

⁴¹⁵ Conoco’s operations were projected to emit 207 tons per year (tpy) of NO_x. EPA Region 10, Statement of Basis for Draft OCS Title V Air Quality Operating Permit No. R10OCS020000, ConocoPhillips Company, Jackup Drill Rig, Chukchi Sea Exploration Drilling Program at 26 (July 22, 2011) (Conoco Statement of Basis). Operations for Shell’s *Kulluk* drilling unit are projected to emit 240 tpy of NO_x. EPA Region 10, U.S. EPA Region 10, Statement of Basis for Draft Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit No. R10OCS030000, Shell Offshore Inc., Conical Drilling Unit Kulluk, Beaufort Sea Exploration Drilling Program at 24 (Jul. 20, 2011) (Kulluk Statement of Basis), *available at* http://www.epa.gov/region10/pdf/permits/ocs/shell/kulluk/SoB_Draft_072211_Public_Comment.pdf. Shell’s two *Discoverer* permits assume 336 tons of NO_x emissions annually. Discoverer Technical Support Document at 8.

Significant Deterioration” (PSD) program. The two air permits issued for Shell’s *Discoverer* drillship by contrast, are both for PSD major source operations. To analyze the expected impacts from oil and gas development in the Arctic, NMFS and BOEM must acknowledge the full size and emissions potential of the equipment that the oil companies intend to operate there. The approach utilized by the draft EIS—using lowball estimates from the smallest draft permit issued last year—is arbitrary and must be revised in accordance with the requirements of NEPA.

The draft EIS’s use of the Conoco permit is also improper because the draft EIS failed to acknowledge all of Conoco’s emissions and potential impacts. The draft EIS purports to include “a list of typical equipment” for an Arctic oil and gas survey or exploratory drilling.⁴¹⁶ The list set forth in the draft EIS is conspicuously incomplete, however, as it assumes that exploratory drilling can be conducted using only a single icebreaker.⁴¹⁷ Conoco’s proposed operations were expected to necessitate two icebreakers.⁴¹⁸ Indeed, the three other OCS air permits issued in 2011 also indicate the need for two icebreakers.⁴¹⁹ The failure of the draft EIS to account for the use of two icebreakers in each exploratory drilling operations is significant because the icebreakers are the largest source of air pollution associated with an exploratory drilling operation in the Arctic. For example, the two icebreakers that Shell intends to use with the *Discoverer* cumulatively will emit 3,200 pounds of NO_x pollution per day, whereas the drillship itself will only emit 710 pounds of NO_x per day.⁴²⁰ The draft EIS must be corrected to account for this error and the greater expected emissions associated with exploratory drilling operations.

5. Cumulative air impacts

The draft EIS wholly ignores potential cumulative impacts from oil and gas activities in the Arctic Ocean. NEPA requires an analysis of cumulative impacts. As it is currently written, the draft EIS only addresses the air impacts of a single, prospective oil and gas project. This approach ignores that multiple operations may operate in the same sea simultaneously. For example, the two OCS air permits issued for the *Discoverer* are not limited in duration, meaning that the drillship may operate contemporaneously with other operations that are, or should be, evaluated by the draft EIS. The draft EIS should therefore explicitly address the impacts of the *Discoverer* and its potential contribution to cumulative effects. Likewise, the OCS air permit issued by EPA for the *Kulluk* is valid for five years, meaning that its operations should be evaluated in detail as well.

Significantly, Shell and Conoco own lease blocks in close proximity to one another, greatly increasing the prospect of cumulative, harmful impacts from air pollution. An air permit application submitted by Conoco in 2010 indicates that the company may operate its drill rig only 25 kilometers away from oil and gas exploration activities planned by Shell.⁴²¹ Further,

⁴¹⁶ DEIS at 4-25.

⁴¹⁷ DEIS at 4-29, Table 4.5-4.

⁴¹⁸ Conoco Statement of Basis at 11-12 (noting the draft permits authorizes the use of two icebreakers).

⁴¹⁹ See *Discoverer* Supp. Statement of Basis 2011 at 32-33 (two icebreakers); *Kulluk* Statement of Basis at 15 (two icebreakers).

⁴²⁰ *Discoverer* Supp. Statement of Basis 2011 at 44.

⁴²¹ Conoco, OCS Air Permit Application, Chukchi Sea Devil’s Paw Prospect at L-20 (Feb. 2010), available at ftp://ftp.epa.gov/reg10ftp/alaska/ocs/chukchi/air/concocophillips/2010_permit_application_withdrawn/permit_application/.

with each of the operations' ice breakers and oil spill response vessels operating eight and sixteen kilometers away, respectively, the support vessels could be co-located in close proximity, creating a clear potential for significant cumulative impacts.⁴²² In light of these facts, the draft EIS's assumption that air quality impacts of individual oil and gas projects can be evaluated in isolation is plainly erroneous.

The draft EIS should be revised to identify the total number of oil and gas projects that may be expected to operate during a single season in each sea, the potential proximity of such operations, and the impact of multiple and/or clustered operations upon local and regional air quality.

B. Invasive Species

The draft EIS does not adequately consider the threat that oil and gas activities in the Beaufort and Chukchi seas will introduce invasive species to the Arctic marine environment. Alaska's Arctic waters are vulnerable to invasion by exotic species.⁴²³ Invasive species pose a threat because they could "compete with or prey on Arctic marine fish or shellfish species, which may disrupt the ecosystem and predators that may depend on indigenous species."⁴²⁴ Invasive species could "impact the biological structure of bottom habitat" or change habitat diversity,⁴²⁵ or "could compete with marine mammal prey, such as an invasive mollusk replacing the indigenous mollusk that walrus feed on."⁴²⁶ Other invasive species, such as rats, could prey upon seabirds or their eggs. Because "a significant portion of Alaska's economy . . . depends upon the pristine and natural quality of its aquatic ecosystems," establishment of a harmful invasive species could also threaten Alaska's economic well-being.⁴²⁷ Climate change heightens this risk, as previously unknown species may increasingly invade Arctic waters, threatening native species.⁴²⁸

Increased numbers of oil and gas activities risks introducing aquatic invasive species to the Beaufort and Chukchi seas. For example, "[i]nvasive species could be released in ballast water from ships, carried on ship hull fouling communities or brought in on drilling rigs that had been used in waters other than the Arctic."⁴²⁹ The summary conclusions contained in the draft

⁴²² See *id.* at L-14.

⁴²³ See North Pacific Fisheries Management Council, Public Review Draft, Arctic Fishery Management Plan at 93 (Jan. 2009); see also G.V. Ashton, *et al.*, *First non-native crustacean established in coastal waters of Alaska*, *Aquatic Biology* 3(2), 133-37 (2008); cf. Marcos Tavares and Gustavo A. S. De Melo, *Discovery of the first known benthic invasive species in the Southern Ocean: the North Atlantic spider crab *Hyas araneus* found in the Antarctic Peninsula*, *Antarctic Science* 16 (2), 129-31 (2004).

⁴²⁴ North Pacific Fishery Management Council, Environmental Assessment for the Arctic Fishery Management Plan at 76 (Aug. 2009) (Arctic FMP EA), available at <http://www.fakr.noaa.gov/analyses/arctic/earirfrfa0809final.pdf>; see also *id.* at 141, 150, 160, 188-189 (noting risks posed by invasive species).

⁴²⁵ *Id.* at 141.

⁴²⁶ *Id.* at 188.

⁴²⁷ MMS, Outer Continental Shelf Oil & Gas Leasing Program: 2007-2012, Final EIS, OCS EIS/EA MMS 2007-003 at IV-14 (April 2007) (2007-2012 FEIS) available at <http://www.boemre.gov/5-year/2007-2012FEIS.htm>.

⁴²⁸ See, e.g., 2007-2012 EIS at IV-10; Arctic FMP EA at 76; 130.

⁴²⁹ *Id.* at 76; see also S. Gollasch, *The importance of ship hull fouling as a vector of species introductions into the North Sea*, *Biofouling* 18(2):105-121 (2002); National Research Council, *Stemming the Tide: Controlling Introductions of Nonindigenous Species by Ships' Ballast Water* (1996) (recognizing that the spread of invasive species through ballast water is a serious problem).

EIS provide little information by which to judge the potential adverse effects, determine appropriate mitigation measures, or choose among competing alternatives.⁴³⁰

X. FUTURE PERMITTING

A. Reliance on delayed ESA consultations

Federal agencies must ensure against the likelihood of jeopardy ~~in~~ consultation with and with the assistance of the Secretary[.]”⁴³¹ The draft EIS asserts that the action agencies will engage in consultation only when specific activities are under review, i.e., at the authorization/permitting stage.⁴³² The Ninth Circuit, however, has squarely rejected the notion that ESA consultation on a programmatic overview can be substituted for later site-specific consultations.⁴³³ It has similarly held that incomplete information as to the precise location and extent of future activities does not excuse the failure to produce a comprehensive biological opinion.⁴³⁴ Consultation must take place before the release of a final EIS.

B. Authorizing oil and gas activities while the EIS remains unfinished

As our groups have repeatedly brought to NMFS’s attention, NEPA regulations make clear that agencies should not proceed with authorizations for individual projects until an ongoing programmatic EIS is complete.⁴³⁵ That limitation is relevant to the IHAs application currently before NMFS, including Shell’s plan for exploration drilling beginning in 2012. Shell’s plans are unprecedented in scope, with two drilling fleets operating simultaneously in both seas over multiple years, resulting in 10 new exploration wells. The project will include seismic surveys and likely some degree of ice breaking and management. It will occur in the same season and seismic surveying conducted by both BP and ION. It would be unlawful for NMFS to approve the marine mammal harassment associated with Shell’s proposal without completing the EIS. Only by evaluating as a whole the cumulative, long-term impacts of noise associated with expanding levels of seismic exploration and exploratory drilling can the full and potentially synergistic effects of the various individual projects be understood and adequately protective mitigation measures put in place.⁴³⁶

C. Authorizing oil and gas activities without a site-specific review

The draft EIS states that the final document may be used as the ~~sole~~” NEPA compliance document for future activities.⁴³⁷ Such an approach is unwarranted. The EIS, as written, does

⁴³⁰ See, e.g., DEIS at 4-71-72; 4-251; 4-288.

⁴³¹ 16 U.S.C. § 1536(a)(2).

⁴³² DEIS at 6-1.

⁴³³ *Pacific Rivers Council v. Thomas*, 30 F.3d 1050, 1054-55 (9th Cir. 1994) (finding that consultation is required even when overarching plans are ~~merely~~” programmatic documents).

⁴³⁴ *Conner*, 848 at 1453-54 (noting that the agency could have determined whether activities in particular areas were fundamentally incompatible with the continued existence of species, and could have also identified potential conflicts between species and post-leasing activities due to cumulative impact).

⁴³⁵ See 40 C.F.R. § 1506.1(c).

⁴³⁶ The EIS may also illuminate issues such as necessary mitigation measures and important time and place restrictions.

⁴³⁷ DEIS at 1-10.

not provide sufficient information about the effects of specific activities taking place in any particular location in the Arctic. The Ninth Circuit has criticized attempts to rely on a programmatic overview to justify projects when there is a lack of “any *specific* information” about cumulative effects.⁴³⁸ That specificity is missing here as well. For example, Shell’s proposed a multi-year exploration drilling program in both seas beginning in 2012 will involve ten wells, four ice management vessels, and dozens of support ships. The EIS simply does not provide an adequate analysis that captures the effects of the entire enterprise, including: 1) the *Kulluk*’s considerable disturbance zone; 2) the proximity of the drill sites to bowhead feeding locations and the number of potentially harassed whales; or 3) the total combined effects of drilling, ice management, and vessel traffic.⁴³⁹

Thank you for considering these comments, and we look forward to continuing to work together on the development of this proposal.

Sincerely,

Cindy Shogan
Executive Director
ALASKA WILDERNESS LEAGUE

Eric F. Myers
Policy Director
AUDUBON ALASKA

Rebecca Noblin
Alaska Director
CENTER FOR BIOLOGICAL DIVERSITY

Sierra Weaver
Senior Staff Attorney
DEFENDERS OF WILDLIFE

Michael Mayer
Project Attorney
EARTHJUSTICE

John Kaltenstein
Marine Program Manager
FRIENDS OF THE EARTH

Michael Jasny
Senior Policy Analyst
NATURAL RESOURCES DEFENSE
COUNCIL

Pamela A. Miller
Arctic Program Director
NORTHERN ALASKA ENVIRONMENTAL
CENTER

Michael Stocker
OCEAN CONSERVATION RESEARCH

Susan Murray
Senior Director, North Pacific
OCEANA

Shawna Larson
Alaska Program Director
PACIFIC ENVIRONMENT

Dan Ritzman
Alaska Program Director
SIERRA CLUB

⁴³⁸ *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 997 (9th Cir. 2004) (emphasis in original).

⁴³⁹ See Beaufort IHA comments, attached as Exh. 4.

Nicole Whittington-Evans
Alaska Regional Director
THE WILDERNESS SOCIETY

Layla Hughes
Senior Program Officer for Arctic Oil, Gas,
and Shipping Policy
WORLD WILDLIFE FUND

TABLE OF EXHIBITS

- 1 Ferguson et al., A Tale of Two Seas: Lessons from Multi-decadal Aerial Surveys for Cetaceans in the Beaufort and Chukchi Seas
- 2 Map of All Feeding and Milling Bowhead Whales Sightings
- 3 Alaska Wilderness League, *et al.*, Letter to Jane Lubchenco, Ph.D. Re. Environmental Impact for Oil and Gas Exploration in the Arctic (Sept. 20, 2011)
- 4 Alaska Wilderness League, *et al.*, Comments on Taking Marine Mammals Incidental to an Exploration Drilling Program Near Camden Bay, Beaufort Sea, AK (Dec. 7, 2011)
- 5 Alaska Wilderness League, *et al.*, Comments on Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska (Dec. 9, 2011)
- 6 Lindow, Emily, NOAA, Email to Joseph C. Talbot, BOEMRE, Re. 1001-03b and 1101-02a(2) Camden Bay EP– Draft EA Review (July 28, 2011)
- 7 Pew Environment Group, Comments on Shell Offshore Inc.’s 2011 – Revised OCS Lease Exploration Plan, Camden Bay, Beaufort Sea, Alaska, and Revised Beaufort Sea, Regional Exploration Oil Discharge Prevention and Contingency Plan (July 25, 2011)
- 8 Meyers, Robert, Letter to Dale Hall and Jim Lecky, Re. Endangered Species Act and Greenhouse Gas Emissions (Oct. 3, 2008)
- 9 Alaska Wilderness League, *et al.*, Comments on Draft Title V Part 71 Air Permit for ConocoPhillips’s Proposed Oil and Gas Exploration Drilling in the Chukchi Sea, Alaska (Sept. 21, 2011)



Arcticeis Comments <arcticeis.comments@noaa.gov>

Please cancel Shell licence

1 message

marek.bednar@email.cz <marek.bednar@email.cz>

Sat, Feb 25, 2012 at 3:26 PM

To: arcticeis.comments@noaa.gov

Dear NOAA,
please stop industrialization in Arctic territory and cancel Shell licence which allows them to extract the mineral commodities including earth oil there. It's essential for Earth health.

Thanking

Marek Bednar

[REDACTED]
Czech Republic



Arcticeis Comments <arcticeis.comments@noaa.gov>

Environmental impact statement (arctic ocean)

1 message

Lester (Skeet) Black <skeetb@genevawoods.com>

Mon, Feb 13, 2012 at 4:37 PM

To: arcticeis.comments@noaa.gov

To the Director of the office of protected resources. I would like to comment as an independant citizen from the state of Alaska on the recent Draft Environmental Impact Statement (DEIS) on the Effects of Oil and Gas Activities in the Arctic Ocean. Fogive me if the format of this comment is inappropriate but I have a job and a family that take my time and formalities generally fall away for me. On the positive side I get right to my point.

The proposed restrictions will make development of our oil and gas resources in the Arctic uneconomical for the developers. While I'm relatively sure this was goal of the study, we as people have to make appropriate decisions with the information we are given. Anything that has the potential to close up the Arctic to development should be considered very carefully not only for the impact on the evnironment, but also for the people involved. Limiting access to our natural resources is NOT an appropriate measure. It will financially impact every person in the state of Alaska, not just the oil companies. I am an environmentalist, but I see the need to look beyond the media hype to real solutions, and limiting access to oil development is playing into the hands of people who do not understand Alaska, and who are not connected to the environment as we are. We've seen the caribou herds return to the north slope BECAUSE we drilled for oil. Prior to that there were pools of oil at the surface making it impossible for the animals to reside. We've developed oil very responsibly, and we've done it with very little impact to the environment.

As a lifelong Alaskan, and as a person who's very concerned with the environment, I am asking that you not adopt the recomendations of this study.

Thank you.

Skeet Black

Geneva Woods Health Care Services

<http://www.genevawoods.com>

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Geneva Woods Pharmacy proudly announces its award of accreditation status by the Accreditation Commission for Health Care, Inc. (ACHC) to provide services for Pharmacy, Medset Pharmacy, Home Infusion Pharmacy, Home Medical Equipment and Supplies, Rehab Services and Respiratory Services.

I Support the No Action Alternative to NOAA's DEIS

Feb 21, 2012

NOAA Administrator Jane Lubchenco

Dear NOAA Administrator Lubchenco,

I'm writing to register my concerns about drilling in the Arctic Ocean. NOAA's National Marine Fisheries Service recently released a DEIS on the effects of oil and gas activities in that area. I support the no-action alternative and urge the administration to adopt it.

First of all, there are no known methods of cleaning up oil spills under the conditions that exist in the Arctic. Furthermore, normal biological degradation is almost nonexistent under the conditions there.

Secondly, oil and gas exploration produces some of the loudest man-made noises in the ocean, and that can interfere with marine mammals' migration routes, feeding habits, and resting areas.

If drilling were to be permitted, mitigation measures should be mandatory for all activities, rather than on a case-by-case basis. Currently identified areas with high wildlife and subsistence values should also receive permanent deferrals, including Camden Bay, Barrow Canyon/Western Beaufort Sea, Hanna Shoal, shelf break at the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.

It is important to get this decision right because future decisions rely on it. The oil and gas exploration activity considered in this DEIS cannot be justified against existing laws to protect marine mammals and subsistence hunting. I urge NMFS support the no-action alternative and to defer any more oil and gas exploration.

Thank you for considering my comments.

Sincerely,

Mr. James Boone

One fundamental issue that is being glossed over is evidenced in the wording of the reason for the environmental DEIS summary, the assessment is being conducted “Because of the potential for these (oil and gas exploratory) activities to “take” marine mammals.

In no way are these animals going to be taken, in any sense of the word. They are going to be killed and wasted. As any hunter or biologist would know, this is a wonton waste of meat. The kill is not being taken, but the exact opposite: the dead animals are not being used for human benefit in any way. The very fact that parenthesis are placed around the word indicates that it is recognized that the animals are being wasted and with no known benefits to mankind. The waste of the animals will not create oil and gas. There is a chance that the exploration will find no oil and gas evident or economically recoverable. In that case, the marine mammals killed will have been an entire waste. Is that an acceptable activity within the Marine Mammal Protection Act and a proper use of our resources?

If it is, the wording should be changed to reflect these animals are not being taken, but instead are being wasted. Let’s not misrepresent this as a sort of hunting activity. As a hunter, I view it in no way honorable and demeaning to the word “taking” an animal.

And if it is, the assessment should be made based upon firm scientific knowledge and not hoping for the best. Before we allow this widespread mapping to occur there needs to be a very clear picture of how the sound waves will affect every marine mammal. Such is the standard that we must hold the stewards of these animals. Without this firm knowledge there is no way that we can know that the *waste* of animals will be and how that toll will affect the species as a whole.

I look forward to your feedback.

With warm wishes and hopes for peace on earth this holiday season,

Thomas Offutt & Hanneke Bouwmeester

Dear James H. Lecky,

Please do not permit anymore oil & gas exploration within the US arctic ecosystem. It is not in the national interest of 99% of Americans, or other members of the Arctic ecosystem. Primarily, my main objective is over the continued enhancement of the greenhouse effect as these oil and gas emissions are released into the common atmosphere that we all share. Secondly, an oil spill in an arctic environment would be devastating to numerous biological systems, and could even exacerbate sea ice melt after said ice becomes blackened with oil. As you well know, the black ice would have a higher albedo that would theoretically expedite ice melt.

Please, consider the intergenerational injustice associated with greenhouse effect induced sea level rise, and the corresponding ocean acidification that occurs with fossil fuel combustion. Further oil and gas exploration in an arctic environment amounts a theft of our collective future that you should stop permitting.

The science is clear, in large part to NOAA research, we are approaching 400ppm of atmospheric CO₂ and you have the nerve to approve permits that will carry us well beyond that number? Please don't take us back to the Pliocene warm period!

Sincerely,

Anderson S. Cagle

BA-Geography (University of Montana)



2211 Norfolk Street, Suite 614
Houston, Texas 77098
P 713 337 8800
F 866 273 8998
www.consumerenergyalliance.org

February 22, 2012

Director James H. Lecky
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

RE: Comments on the Draft Environmental Impact Statement for the Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Lecky:

On behalf of Consumer Energy Alliance (CEA), I am writing to express some concerns we have regarding the National Marine Fisheries Service (NMFS) Draft Environmental Impact Statement (EIS) and the alternatives identified in the draft. In particular, we believe all five of the alternatives identified will prescribe mandatory mitigations and restrictions that will harm the economic viability of Arctic oil and gas development, all while producing negligible benefits for marine mammal protections. Moreover, the alternatives included in this draft do not fully address the possible range of activities that may occur in the Arctic, even though the principal objective in this exercise is to “evaluate a broad range of reasonably foreseeable levels of exploration activities and associated mitigation measures.”

CEA is a non-profit, non-partisan organization committed to working with elected leaders, affected stakeholders and consumers to help create sound energy policy and maintain stable energy prices. As part of a balanced energy policy, CEA advocates for expanded domestic production and use of all energy resources, including traditional fossil fuel resources, nuclear energy, renewable sources, and energy efficiency and conservation, as a means to provide price stability for consumers. CEA has more than 175 affiliated organizations, including energy suppliers and producers, manufacturers, farmers, small businesses and community organizations, as well as a nationwide network of almost 300,000 consumer-advocates. CEA strongly supports Arctic energy development as part of a balanced energy policy.

In all of the alternatives, the maximum amount of activity considered is two exploratory drilling programs in each sea. Due to the shorter drilling season in the Arctic, this level of activity may be less than needed for economic viability. In the Gulf of Mexico, the federal government does not impose a limitation on the level of activity permissible at any given time. Rather, regulators can require implementation of various mitigation efforts if the level of activity may interfere with the health of a species or its habitat. With hundreds of rigs operating in the Gulf of Mexico safely, we believe the NMFS should not impose arbitrary levels of activity in the Arctic, but rather develop alternatives that more closely align to intentions of expanded Arctic oil and gas development.

In addition to restrictions on the level of activity, we remain concerned that Alternative 4 (Authorization for Level 2 Exploration Activity with Additional Required Time/Area Closures) would significantly limit the drilling season in the Arctic and effectively restrict exploration. The alternative establishes areas for seasonal closures (i.e. all oil & gas exploration activities must cease for a defined period) including the Camden Bay and the Hanna Shoal.

If these areas were subject to seasonal closures as early as late August, operators would lose a good portion of their drilling season. Already, operators must comply with scheduled cessation of activity in respect for subsistent activities. If these extended closures proceed, operators may only be able to complete one or two wells during a season. At this rate, the economic viability of such a large scale project becomes problematic. Lessees would not be afforded an opportunity to explore and develop their tracts in a timely manner, and would thus not be able to capitalize on their leases.

Arctic oil and gas development can be achieved safely with minimal impact to the environment. The benefits of OCS development to our nation's energy and economy security are significant. With a conservative estimate of 27 billion barrels of oil and 132 trillion cubic feet of gas, Alaskan OCS resources will go a long way to securing our energy future. At a time of increased stability overseas and high oil prices, the United States should work to bolster our energy independence and reduce our trade deficit with hostile countries.

Furthermore, an annual average of 54,700 new jobs would be created and sustained nationwide for 50 years from Alaskan OCS exploration and production. These new jobs would lead to over \$145 billion in new payroll and over \$193 billion in tax revenue for federal, state and local governments. This level of economic development is critical at a time of high national unemployment and ongoing budget deficits in local, state and federal governments.

In conclusion, we urge the NMFS to amend the Draft EIS to better address the possibility of greater oil and gas development activity in the Arctic. In order to secure a better economic and energy future, the federal government must provide operators with reasonable avenues to OCS exploration and production. Arbitrary and onerous conditions on drilling plans will significantly hinder our ability to move forward with development of this vital resource base.

We appreciate the opportunity to comment today, and we look forward to reviewing the Final EIS in the future. If you have any questions on these comments, please contact me directly at 713-337-8800.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Holt', written in a cursive style.

David Holt
President



Arcticeis Comments <arcticeis.comments@noaa.gov>

Artic Gas and Oil Exploration.

1 message

Christiansen, Shane B. <ChristiansenSB@muni.org>

Thu, Dec 22, 2011 at 3:49 PM

To: "arcticeis.comments@noaa.gov" <arcticeis.comments@noaa.gov>

To those of you whom rule over all who are concerned about natural resources, we need good and proper ethical practices when exploring and removing these resources from some of the most inhabitable areas in this hemisphere. Short cuts dew to greed must not be taken 1st point of fact Gulf of Mexico, Halliburton cheap cement.

Done with proper oversight this exploration in the Artic National Wildlife refuge is very doable, most of those commercials I have witnessed do not even pertain to the areas in question having worked and lived in those areas for decades I often wondered where and who made those commercials because they did not geographically pertain to those areas in question.

The lies that are shoved out by the lobbyists to rile up the mainstream from corruption must stop. We as a Nation have the resources and the knowledge and ability to remove oil and gas safely from the Artic and inland areas. 2nd point the oil sands and fracking can be done most efficiently and safely when properly managed as not to pollute the areas ground water, those who appose it either know nothing about the process or do not want change dew to back door hand shacks with foreign oil, NAFTA is a lie to the American worker because of political greed.

SO STAND TALL FOR AMERICA BRING INDUSTRIE BACK STOP KILLING THE MIDDLE CLASS, AND LETS PUT THEM BACK TO WORK NOT ON WELFARE.

Are you part of the solution or more of the same political propaganda bull &^%8?

Merry Christmas

Shane Christiansen

Engineering Technician III

Municipality of Anchorage Solid Waste Services

1111 E. 56th Avenue

Anchorage, AK 99518-1754

Phone : (907) 428-1064

TO: National Marine Fisheries Service (NMFS) Office of Protected Resources

FROM: Christopher Clark, David Mann, Patrick Miller, Doug Nowacek, Brandon Southall

SUBJECT: Comments on Arctic Ocean Draft Environmental Impact Statement

DATE: 28 February 2012

NMFS,

Please consider the following general and specific comments regarding the Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement (DEIS). These comments represent the combined views of five scientific collaborators identified below on some of the key topics regarding the issues specifically in the DEIS and the Arctic. We believe, however, that some of the issues raised herein are also more broadly relevant to how these issues are assessed and managed generally. The underlying science and complexity of analytical approaches has evolved rapidly over the last decade. The decision-making processes regulating such exploration activities, particularly in large areas of critically important biological habitat, must continue to evolve as well. While there are some promising aspects of the DEIS (*e.g.*, the recognition of the importance of aggregate exposure and interacting effects) the overarching analysis still suffers in many ways from an increasingly outdated way of considering potential impacts. As marine mammal scientists with expertise in bioacoustics, we believe that the scale of the potential acoustic risks requires an integrated scientific, regulatory, and industry approach consistent with our current understanding of marine mammals, and how they respond to and are influenced or impacted by combinations of impulsive and continuous sounds from a variety of sound sources. Our comments here are organized according to four key issues.

Cumulative effects

Impact assessments in MMPA authorizations for both oil and gas and scientific research seismic exploration activities have typically been limited to a specific survey, and the assessment has typically been limited to just the loudest sound source (*e.g.*, seismic airgun array). Given our rapidly evolving understandings and quantifications of the spatial, temporal and spectral scales of the acoustic footprints generated by these seismic activities as well as their potential and measured biological effects, this single-source regulatory approach is no longer appropriate. It is a positive step that the DEIS appears to recognize this fact and spends considerable time in considering the complexities and challenges of assessing aggregate sound exposures and interacting/cumulative impacts. It is the responsibility of regulators charged with implementing the MMPA to ensure that activities have no greater than a negligible impact on species and populations, to prescribe mitigations that reduce those impacts to the lowest possible level, and to ensure the availability of species for subsistence hunters. While the DEIS does expend considerable energy in describing and considering these issues, it fails to develop a coherent analytical framework by which impacts are assessed and how decisions are made. In short, this appears to be effectively a hollow consideration of these issues rather than an actual assessment of

the potential aggregate impacts of many overlapping or sequential activities and their potential impacts. We clearly realize these are difficult issues to handle and that a quantitative methodology or unifying principle to precisely define acoustic takes from cumulative effects is unlikely to emerge soon, if ever. However, some means of cumulative impact assessment is needed, even if it is only a qualitative risk assessment of factors such as timing of operations, variability in animal or environmental patterns, and overlapping stressors. Framing this in the context of a risk assessment methodology is a much more realistic and meaningful way of qualitatively assessing and constraining the uncertainty associated with these issues. By not adequately assessing the cumulative impacts and potentially interacting influences from the full complex of industry activities taking place in the same region, the DEIS seems at present to fall short of what is needed to allow NMFS to meet its statutory obligations for considering the combined activities being proposed.

Appropriate impact thresholds

The continued reliance on overly simplified, scientifically outdated, and artificially rigid impact thresholds used in MMPA rulemakings and environmental assessments to predict potential impacts of discrete events associated with seismic exploration is of great concern. The working assumption that impulsive noise never disrupts marine mammal behavior at levels below 160 dB (RMS), and disrupts behavior with 100% probability at higher levels has been repeatedly demonstrated to be incorrect, including in cases involving the sources and areas being considered in the Arctic DEIS. That 160 dB (RMS) threshold level originated from the California HESS panel report in the late 1990s¹ and was based on best available data from reactions to seismic surveys measured in the 1980s. Since then considerable evidence has accumulated, and these newer data indicate that behavioral disruptions from pulsed sources can occur well below that 160 dB (RMS) threshold and are influenced by behavioral and contextual co-variables. For example, migrating bowheads are known to avoid seismic airgun surveys in the Arctic at distances beyond 20 kilometers, where received levels are approximately 120-130 dB (RMS)². Fin and humpback whales, in some circumstances, have been shown to cease vocalizing and vacate habitat in response to airguns over scales of 10,000 and 100,000 sq. mi., corresponding to relatively low levels of sound (Clark, pers. comm.). In sperm whales, airguns have been associated with a substantial decline in buzz rate, a proxy for prey capture attempts, at received levels on the order of 135-147 dB (RMS)³. Finally, research in the Arctic has also shown that very few belugas in feeding areas occurred within 20 km of a full-scale seismic survey, but that there was an unexpectedly high density of

¹ High Energy Seismic Survey (HESS). (1999). *High Energy Seismic Survey review process and interim operational guidelines for marine surveys offshore Southern California*. Camarillo, CA: Rep. from High Energy Seismic Survey Team for Calif. State Lands Comm. and U.S. Minerals Manage. Serv. 39 pp. Available at: www.mms.gov/omm/pacific/lease/fullhessrept.pdf.

² Richardson, W. J., Miller, G. W., & Greene, Jr., C. R. (1999). Displacement of migrating bowhead whales by sounds from seismic surveys in shallow waters of the Beaufort Sea. *Journal of the Acoustical Society of America*, 106, 2281.

³ Miller, P.J.O. M.P. Johnson, P.T. Madsen, N. Biassoni, M. Quero, and P.L. Tyack. (2009). Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico. *Deep-Sea Research I* 56, 1168–1181.

belugas at 20-30 km ranges⁴. Based on the site-specific propagation conditions, this suggests animals were displaced over quite large areas at distances for which the received level was $\sim < 130$ dB (RMS).

These are just a few examples of cases involving seismic airgun noise demonstrating significant deviation from the 160 dB step-function threshold approach historically used by NMFS⁵. There are of course other examples for which animals appear to have received levels exceeding 160 dB RMS with little or no apparent behavioral response, including some in the Arctic involving airgun noise. However, care should be taken in interpreting these cases since clearly the lack of observed avoidance is not necessarily indicative of a lack of impact (*e.g.*, animals that have a learned tolerance of sound and remain in biologically important areas may still incur physiological (stress) costs from exposure or suffer significant communication masking). The clear point of these observations is that behavioral response in nature clearly follows more of a probabilistic function that changes based on the species in question, behavioral state and other contextual issues. It has become painfully obvious that the use of received level alone is seriously limited in terms of reliably predicting impacts of sound exposure. However, if NMFS intends to continue to define takes accordingly, a more representative probabilistic approach would be more defensible. A risk function with a 50% midpoint at 140 dB (RMS) that accounts, even qualitatively, for contextual issues likely affecting response probability, comes much closer to reflecting the existing data for marine mammals, including those in the Arctic, than the 160 dB (RMS) step-function that has previously been used and is again relied upon in the Arctic DEIS.

Additional baseline data

As a simple observation in support of conclusions reached within the DEIS, we believe the extreme lack of sufficient baseline data on many key biological questions central to issues in the DEIS make an adequate assessment of impacts very difficult. The information gaps in many areas with relatively new and expanding exploration activities are extensive and severe enough that we believe it is too difficult for regulators to reach scientifically reliable conclusions about the risks to marine mammals from oil and gas activities.

Monitoring and mitigation

Under conditions when exploitation is determined to be acceptable, monitoring and mitigation plans on a wide range of temporal scales should become both a standard requirement and industry practice. These must be designed in a manner specific to the nature of the operation and the environment to minimize the risks of both acute impacts (*i.e.*, direct, short-term, small-scale harm as predicted from

⁴ Miller, G. W., Moulton, J. D., Davis, R. A., Holst, M., Millman, P., MacGillvray, A., & Hannay, D. (2005). Monitoring seismic effects on marine mammals – southeastern Beaufort Sea, 2001-2002. In S. L. Armsworthy, P. J. Cranford & K. Lee (Eds.), *Offshore oil and gas environmental effects monitoring/Approaches and technologies* (pp. 511-542). Columbus, OH: Battelle Press.

⁵ For further discussion and examples of this issue, please see: Southall, B. L., A. E. Bowles, W. T. Ellison, J. J. Finneran, R. L. Gentry, C. R. Greene Jr., D. Kastak, D. R. Ketten, J. H. Miller, P. E. Nachtigall, W. J. Richardson, J. A. Thomas, and P. L. Tyack. (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals* 33, 411-521.

Ellison, W.E., Southall, B.L., Clark, C.W. and Frankel, A.F. (2011). A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. *Conservation Biology*, Volume **, No. *, 1–8. DOI: 10.1111/j.1523-1739.2011.01803.x

estimates of noise exposure on individuals) and to measure/minimize chronic effects (*i.e.*, cumulative, long-term, large-scale adverse effects on populations as predicted from contextually mediated behavioral responses or the loss of acoustic habitat). To date, standard practices for individual seismic surveys and other activities have been of questionable efficacy for monitoring or mitigating direct physical impacts (*i.e.*, acute impacts on injury or hearing) and have essentially failed to address chronic, population level impacts from masking and other long-term, large-scale effects, which most likely are the greatest risk to long-term population health and viability.

More meaningful monitoring and mitigation measures that should be more fully considered and implemented in the programmatic plans for the Arctic include:

- 1) Considerations of time and area restrictions based on known sensitive periods/areas;
- 2) Sustained acoustic monitoring, both autonomous and real-time, of key habitat areas to assess species presence and cumulative noise exposure with direct federal involvement and oversight;
- 3) Support or incentives for research to develop and apply metrics for a population's health, such as measures of vital rates, prey availability, ranging patterns, and body condition;
- 4) Specified spatial-temporal separation zones between intense acoustic events; and
- 5) Requirements or incentives for the reduction of acoustic footprints of intense noise sources.

Sincerely,

Christopher Clark, Cornell University



David Mann, Loggerhead Instruments



Patrick Miller, University of St. Andrews



Douglas P. Nowacek, Duke University



Brandon Southall, SEA, Inc, UC Santa Cruz





Arcticeis Comments <arcticeis.comments@noaa.gov>

Foreign oil reliance

1 message

Chris Clarke <ctclarke@gmail.com>

Thu, Dec 22, 2011 at 1:13 PM

To: "arcticeis.comments@noaa.gov" <arcticeis.comments@noaa.gov>

I believe our country must STOP relying on foreign (unfriendly) oil. North America has the technology, workforce and oil reserves to sustain our needs for years. I don't feel that we should establish anymore oil operations in the ocean. It seems too difficult to control, with substantial consequences. Especially when the land based operations in Canada are reportedly so vast.

Thank you,
Chris Clarke

scent frum mi iPhone. Plez xcuse ne speling mistakes oar airers Thnx Chris



David W. Brown
Land Manager

700 G Street, 99501
P.O. Box 100360 – Suite ATO 1470
Anchorage, Alaska 99510-0360
Phone (907) 265-6914
Fax (907) 263-4966
Cell (907) 229-8995
david.w.brown@conocophillips.com

February 28, 2012

VIA EMAIL:

arcticeis.comments@noaa.gov

Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Re: Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean (RIN 0648-XA885)

Dear Mr. Lecky:

This letter provides the written comments of ConocoPhillips Alaska, Inc., and ConocoPhillips Company (together, ConocoPhillips) regarding the December 2011 Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean (the "DEIS") prepared by the National Marine Fisheries Service (NMFS). Thank you for considering ConocoPhillips' comments and including them in the administrative record.

I. INTRODUCTION

ConocoPhillips sincerely appreciates the time and effort devoted to preparation of the DEIS by NMFS, and the interest of NMFS in pro-actively addressing future Marine Mammal Protection Act (MMPA) incidental take authorizations (ITAs) for oil and gas industry activities in the Arctic Ocean. In Alaska and the adjacent Outer Continental Shelf (OCS), the MMPA has provided a stable and remarkably successful regulatory regime that conserves marine mammals and protects subsistence hunting of marine mammals, without imposing unnecessary and burdensome restrictions. Pursuant to the MMPA, ConocoPhillips is a long-standing recipient of ITAs from NMFS and the U.S. Fish and Wildlife Service (USFWS), and is working cooperatively and successfully with the Services to both study marine mammal populations and behavior in the Arctic, and to closely monitor company oil and gas activities with the potential to affect marine mammals.

Notwithstanding our respect for NMFS and the MMPA, this DEIS is poorly conceived and otherwise very seriously flawed. As addressed in **Section II** below, there is no purpose or need for NMFS to prepare an EIS for future MMPA ITAs that have not been requested. Moreover, as addressed in **Section III** below, even if there were a purpose and need for NMFS to draft an EIS to analyze the effects of incidental harassment of small numbers of marine mammals over the next five-year period, the DEIS addresses a range of oil and gas activities that overstates the foreseeable occurrence of some oil and gas activities (*e.g.*, 2D and 3D seismic surveys) and underestimates the foreseeable occurrence of other oil and gas activities (*e.g.*, exploration drilling). Accordingly, in order to complete this NEPA process, NMFS would need to start over again with a new scoping process, leading to development of an accurate projection of anticipated oil and gas activity and new alternatives. Based upon this information, NMFS would then need to conduct a reanalysis of impacts, reissue a DEIS, and then proceed to a final EIS. In other words, NMFS would need to start over completely. Finally, as addressed in **Sections IV and V**, the proposed additional mitigation measures identified in the DEIS are unnecessary, speculative, and inadequately evaluated, and the key impact findings in the DEIS are arbitrary and unsupported.

Because there is no purpose or need for NMFS to prepare an environmental impact statement analyzing oil and gas activities in the Arctic Ocean, there is no remedy for the most fundamental problems with the DEIS. Accordingly, we regret to comment that NMFS should abandon preparation of an EIS to address the effects of oil and gas activities in the Arctic Ocean over the next five years.

II. LACK OF PURPOSE AND NEED

The purpose, need, and scope of this DEIS, and the associated environmental analysis, are misaligned with NMFS's authority under the MMPA. Moreover, the DEIS duplicates other NEPA analyses by other federal agencies. These flaws cannot be remedied because there is no purpose or need for NMFS to complete this EIS.

1. There is no proposed action for this EIS to analyze.

The MMPA provides that U.S. citizens may petition for issuance of incidental take regulations (ITRs) for a five-year period to authorize the incidental take of small numbers of marine mammals while engaged in a specified activity (other than commercial fishing) within a given geographic area. But no such petition has been made for ITRs for oil and gas activities in the Arctic Ocean, and none is anticipated. Nonetheless, the purpose and need of this DEIS is described and structured as though NMFS intends to issue five-year ITRs for all oil and gas activities in the Arctic Ocean regarding all marine mammal species. The lack of a purpose and need is illustrated by the fact that if NMFS completed this NEPA process, there would be no five-year ITR decision for it to make and no Record of Decision (ROD) to issue. This DEIS is premature because it is not based on a genuine proposed action.

In addition to ITRs, the MMPA also authorizes issuance of one-year incidental harassment authorizations (IHAs). See 16 U.S.C. § 1371(a)(5)(D). In contrast to ITRs,

IHAs are limited in scope to a specific project and operator, limited to a maximum duration of one year (which in the Arctic would be one open-water season for most activities), and limited to authorizing incidental take in the form of harassment only. NMFS has issued many IHAs in the past and applications will be made to NMFS for future IHAs. The necessary NEPA analyses for issuance of IHAs already exist, or are certain to be prepared by the U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM). Because the IHA process is working adequately, and there is no basis for NMFS to initiate an ITR process, this DEIS is disconnected from any factual basis that would provide a supporting purpose and need. As detailed below, that lack of a basis has resulted in a lack of focus.

2. MMPA incidental take authorizations are not permits or approvals of the underlying oil and gas exploration activities.

The scope of the current DEIS is overbroad and misaligned with any incidental take action that NMFS might take under authority of the MMPA. As stated by NMFS in the DEIS:

NMFS does not authorize the exploration activities, but rather authorizes the take of marine mammals incidental to specified activities.

DEIS at 2-45; See *Center for Biological Diversity v. Kempthorne*, 588 F.3d 701 (9th Cir. 2009) (sustaining narrow scope of USFWS EA for MMPA incidental take ITRs for oil and gas activities occurring in the Beaufort and Chukchi Seas). Given that NMFS is conducting this NEPA process in order to issue marine mammal ITAs under the MMPA, the scope of the NEPA analysis should be limited to the impacts of the anticipated take on the affected marine mammal stocks. There is no purpose or need for NMFS to broadly analyze the impacts of future oil and gas activities in general because NMFS only authorizes marine mammal takes. Marine mammal take authorizations have no impacts on, among other things, terrestrial mammals, birds, fish, land use, cultural resources, and air quality. The DEIS purports to analyze impacts to these resources, but in doing so the DEIS strays too far from the proper scope of NMFS's authority and institutional mandate.

Moreover, polar bears and Pacific walrus are managed under the MMPA by USFWS. USFWS has issued current ITRs for polar bears and walrus in the Beaufort and Chukchi Seas. See 76 Fed. Reg. 47,010 (Aug. 3, 2011) (current Beaufort Sea ITR); 73 Fed. Reg. 33,212 (June 11, 2008) (current Chukchi Sea ITR).¹ These ITRs were issued following a public comment process and accompanied by environmental assessments

¹ A petition has been submitted by the Alaska Oil and Gas Association (AOGA) to USFWS to renew the Chukchi Sea ITR for polar bear and walrus for the period 2013- 2018. USFWS, which is not a cooperating agency in preparation of the DEIS, will be preparing its own NEPA document for this ITR renewal.

(EAs) prepared in compliance with NEPA.² Given USFWS authority over polar bears and walrus in the Arctic, and given the existence of current ITRs for these species, accompanied by NEPA analyses, there is no purpose or need for any NEPA analysis prepared by NMFS to address, as does the DEIS, the impacts of incidental take of polar bears and walrus by the oil and gas industry in the Arctic.

3. MMPA incidental take authorizations never require preparation of an EIS because, by law, ITAs must have a *negligible impact*.

Under NEPA, an EIS must be prepared for major federal actions that may significantly affect the human environment. 42 U.S.C. § 4332(C). The term “significantly” is not susceptible to one all-encompassing definition, but generally connotes “major” effects, in contrast to lesser impacts deemed to be “moderate,” “minor,” or “negligible.” See DEIS at 4-4 (adopting these impact categories). In contrast, by law, MMPA ITAs (both ITRs and IHAs) may only be issued if the anticipated incidental take is found to have no more than a negligible impact. 16 U.S.C. §§ 1371(a)(5)(A), (D); see DEIS at 1-3 (§ 1.1.1). There can never be a purpose or need to prepare an EIS to evaluate the impact of actions that must have no more than a negligible impact. Accordingly, there is no need now, nor can there ever be a need, for NMFS to prepare an EIS in order to issue an MMPA incidental take authorization.

4. The DEIS unnecessarily duplicates other NEPA documents and risks undermining other agencies.

NEPA regulations emphasize the importance of avoiding duplicative impact analyses. 40 C.F.R. § 1500.4. For this reason, agencies may “adopt” a NEPA analysis prepared by another agency, “tier” from a broader scale or earlier NEPA analysis, and “incorporate by reference” portions of other NEPA documents. *Id.*; 40 C.F.R. §§ 1502.20-.21, 1506.3.

The Chukchi Sea encompasses most areas in which OCS oil and gas exploration is expected to occur in the next five years. However, the Lease Sale 193 final EIS (FEIS) and supplemental EIS (SEIS) already fully and expressly address seismic exploration and associated ancillary geological and geophysical (G&G) activities. Even if it were appropriate for NMFS to broadly analyze the impacts of these activities, there would be no purpose or need for NMFS to do so now because BOEM has already done it.³ By

² Copies of the ITR EAs are available at: <http://alaska.fws.gov/fisheries/mmm/itr.htm>. Both of these EAs have been judicially sustained in response to legal challenges to their adequacy.

³ Although there is no similar recent EIS pertaining to seismic exploration in the Beaufort Sea, insofar as ConocoPhillips is aware, the potential for these and related G&G activities is relatively limited. Our best estimate is that ConocoPhillips might undertake a total of 1-3 G&G surveys in the next five years in the Chukchi Sea, and potentially other G&G surveys in the Beaufort Sea. If and when such activities are proposed to BOEM, BOEM will necessarily undertake any necessary NEPA analysis, including assessment of potential marine mammal incidental take. NMFS may participate in such process as a “cooperating agency.”

creating an unnecessary and duplicative NEPA analysis, NMFS introduces a risk of undermining the work of other federal agencies and the purposes of the MMPA and the Outer Continental Shelf Lands Act.

As for exploration drilling activities, BOEM has, in the case of Shell Exploration and Production Company's proposed Chukchi and Beaufort Sea exploration drilling programs, and will, in the case of the two other anticipated Chukchi Sea exploration drilling programs by ConocoPhillips and Statoil, prepare project-specific NEPA analyses. These project-specific NEPA analyses will be suitable for "adoption" by NMFS because marine mammal impacts have been (in the case of Shell), and will be (in the cases of ConocoPhillips and Statoil), addressed.⁴

5. Ancillary lease activities do not justify an EIS.

The DEIS demonstrates very little, if any, involvement of BOEM. The link for BOEM's involvement is said to be analysis of G&G and ancillary lease activities. But G&G and ancillary activities are, by definition, limited in scope, duration, and impact. Such activities do not have the plausible potential to "significantly" affect the human environment so as to require an EIS. Insofar as ConocoPhillips is aware, there has never been a purpose or need for a separate EIS to address G&G and ancillary activities. Moreover, as addressed previously, for the Chukchi Sea, BOEM has already completed exactly that analysis as a component of the Lease Sale 193 FEIS/SEIS. Duplication of this work by NMFS, which does not have jurisdiction over G&G and ancillary activities, is counterproductive because it could undermine the work of BOEM, which does have jurisdiction over the activities.

III. THE ASSUMED LEVELS OF OIL & GAS ACTIVITY ARE UNREASONABLE

Because there is no proposed action, Alternatives 2 and 3 in the DEIS are used to theorize ranges of oil and gas activity that may occur in the next five years. However, NMFS has significantly overestimated the amount of seismic exploration than is reasonably foreseeable, and has underestimated the amount of exploration drilling that may occur in 2014 or later.

1. There is no proposed action against which to measure alternatives.

NEPA does not provide federal agencies with the authority to engage in non-programmatic impact analyses in the absence of a proposed action. However, that is precisely what NMFS has done in this instance.

⁴ It is also relevant to note that it is uncommon for NEPA analyses pertaining to exploration drilling to require an EIS. Because of the limited duration of such activities, and the associated low level of impact within the project area, it has been adequate for purposes of NEPA to analyze OCS exploration drilling impacts through project-specific EAs (which, in the case of the Chukchi Sea, may be tiered to the Lease Sale 193 FEIS and SEIS). See, e.g., Environmental Assessment – Shell Revised Chukchi Sea Exploration Plan (Dec. 2011).

As discussed in Section II above, one of the reasons the DEIS lacks a purpose or need is that there is no pending proposed action. The DEIS is not a programmatic NEPA analysis. Instead, the DEIS is based on the concept of a proposal for a five-year ITR for incidental take of marine mammals during Arctic Ocean OCS oil and gas activities. However, there has never been, and there is not now, a petition pending with NMFS for a five-year ITR for Arctic Ocean oil and gas activities. Accordingly, if there were a proposed action underlying the DEIS, it would have to be for approval of one or more one-year IHAs authorizing incidental take by harassment of small numbers of marine mammals for a specific project or projects. However, the DEIS does not identify any pending IHAs, nor does the DEIS analyze any project-specific projections of incidental take by harassment.

If there were a proposed action pending with NMFS for issuance of one or more IHAs for 2012 activity, in order to identify a proposed action against which to compare a range of reasonable alternatives, NMFS would need to have identified the project activities and estimated the associated potential for incidental take. However, because the DEIS does not identify any pending project-specific IHAs, the DEIS also does not identify project-specific activities proposed for 2012, or the related potential for incidental take of marine mammals.⁵ See DEIS at 2-44 (§ 2.5.1) (emphasizing that “NMFS is required to make these [incidental take] decisions on an *application-specific basis*”) (emphasis added).

2. The range of foreseeable oil and gas activity that may occur in the Arctic Ocean over the next five years is not a NEPA alternative under the purview of NMFS.

Under the MMPA, NMFS has the authority to grant or deny, or to reasonably condition, marine mammal incidental take authorizations, which NMFS “shall allow” if statutory requirements are satisfied. See 16 U.S.C. § 1371(a)(5); see also DEIS at § 2.5 (if statutory findings are made, “NMFS *shall issue* the requested ITA”) (emphasis in original). However, NMFS lacks any authority to establish closures, or presumptive caps or limits, on OCS oil and gas activity in the Arctic Ocean.

Although NMFS does not approve or disapprove oil and gas activities in the OCS through MMPA incidental take authorizations, in defining alternatives, NMFS has confused the nature of the proposed action (incidental take, not oil and gas activity) and the agency’s need to define the proposed action (the anticipated frequency and intensity of incidental take, not the frequency of oil and gas activity), with the NEPA requirement that the impacts of the proposed action should be compared to a reasonable range of alternatives. As a result of this confusion, the defining and distinguishing characteristics of DEIS Alternatives 2 and 3 are different assumed levels of annual oil and gas activity identified in the DEIS as Level 1 and Level 2 activities. However, even if Level 1 or Level 2 oil and gas activities were reasonable assumptions, *which they are not*, varying

⁵ ConocoPhillips does not have plans to conduct exploration activities in the Chukchi or the Beaufort Seas in 2012.

ranges of oil and gas activity are not alternatives to proposals for incidental take authorizations.

3. The DEIS assumes and analyzes a range of oil and gas activity that is both too much for seismic exploration and too little for exploration drilling.

The DEIS assumes and analyses two different ranges of maximum annual oil and gas activity, referred to as Level 1 (Alternative 2) and Level 2 (Alternative 3). Both levels of activity overstate foreseeable 2D and 3D seismic exploration and understate foreseeable exploration drilling. Because the assumed levels of oil and gas activity are wrong, the impact analysis premised on these assumptions is necessarily inaccurate and incomplete.

With respect to 2D and 3D seismic exploration, the DEIS assumes that for each of the next five years there will be either up to seven (Level 1) or, alternatively, up to eleven (Level 2) annual seismic surveys combined for the Chukchi and Beaufort Seas. This level of activity is not realistic. Insofar as ConocoPhillips is aware, all or certainly most major seismic programs for current Chukchi and Beaufort Sea prospects were conducted and completed in prior years under IHAs. ConocoPhillips has no plans to conduct additional 2D or 3D seismic surveys in the Chukchi or Beaufort Seas for the next five years.

With respect to exploration drilling, the DEIS assumes that there may be as many as one exploration drilling program occurring in each of the Chukchi and Beaufort Seas annually (Level 1) or, alternatively, as many as two exploration drilling programs annually in each of the Chukchi and Beaufort Seas. This assumption assumes too few exploration drilling programs for 2014 and perhaps other later years in the Chukchi Sea. Insofar as ConocoPhillips is aware, there will be at most one exploration drilling program in the Chukchi Sea (by Shell) and at most one in the Beaufort Sea (also by Shell) in 2012 and 2013. However, by 2014, ConocoPhillips intends to conduct exploration drilling in the Chukchi Sea. We believe it is also probable that Statoil will be conducting exploration drilling on their prospects in the Chukchi Sea beginning in 2014. Accordingly, in 2014, and perhaps later years depending upon results, there may be as many as three exploration drilling programs occurring in the Chukchi Sea.⁶

⁶ The DEIS includes assumptions about what an exploration drilling program would entail. See, e.g., DEIS at 2-32 and Table 2.4 (pp. 2-33 to 2-34). Notwithstanding our general objections to the DEIS as a whole, as detailed in this letter, Table 2.4 provides a number of assumptions and specifications that likely are not correct with respect to specific activities carried out by specific operators, such as ConocoPhillips. Should Table 2.4 ever be used by NMFS in the evaluation of a proposed action, we recommend that NMFS first consult the operator or operators proposing the action because the assumptions in Table 2.4 most likely will not fully or accurately describe the activities being proposed.

In sum the range of oil and gas activity analyzed in the DEIS is not what is reasonably foreseeable.⁷ Depending upon the type of exploration activity and the year, the impact analysis in the DEIS assumes either too much or too little activity will occur.

IV. THE PROPOSED ADDITIONAL MITIGATION MEASURES ARE ARBITRARY

The DEIS purports to analyze a range of mitigation measures that NMFS might impose on oil and gas activities in addition to the standard suite of existing mitigation measures. These additional mitigation measures far exceed the scope of NMFS's authority, and are impracticable, unnecessary, or speculative.

1. Alternative 4 identifies "additional mitigation" that is unnecessary and, in some instances, impracticable.

Alternative 4 of the DEIS identifies a range of additional onerous regulatory measures that might be imposed as a condition of future MMPA ITAs, including several severe time/area closures. There are many problems with these time/area closures, not the least of which is that there is no demonstrated need for additional mitigation. NMFS and USFWS have determined for decades that the anticipated impact of oil and gas activities on marine mammals are negligible, and the best available science demonstrates to a high degree of reliability that these judgments have been correct.

First, there is no statutory basis for imposing additional mitigation on activities that, as currently mitigated, do not result in more than temporary changes in behavior, without any known injury, mortality or other adverse consequence to any marine mammal species or stock. See DEIS at 2-44 (§ 2.5.1) ("The MMPA states that if NMFS finds that the specified activity itself, or with the implementation of mitigation and monitoring measures, will have a negligible impact on affected marine mammal species or stocks and will not have an unmitigable adverse impact on the availability of marine mammal species or stocks for taking for subsistence uses, NMFS *shall issue* the requested ITA.") (emphasis in original).

Second, as demonstrated in DEIS Table 2.6 (pp. 2-51 to 2-54), there are no relevant environmental advantages to imposition of additional mitigation. In every impact category but one, the draft impact findings for Alternative 4 (Level 2 activity with standard and additional mitigation) are identical to the draft impact findings for

⁷ Based on industry information assembled for renewal of the current polar bear and walrus ITR for the Chukchi Sea, the assumed level of site clearance and shallow hazard survey programs is also wrong. In the DEIS, Level 1 activity assumes as many as three such programs in the Chukchi Sea, while Level 2 activity assumes as many as 5 such programs. By comparison, the ITR petition recently submitted by AOGA to USFWS for polar bear and walrus incidental take from 2013 through 2018, projects as many as seven (and as few as zero) shallow hazard surveys and as many as two (and as few as one) other G&G surveys annually in the Chukchi Sea over the next five years.

Alternative 3 (Level 2 activity with only standard mitigation measures).⁸ Given that the impacts with and without additional mitigation are the same, Alternative 4 provides no basis under the MMPA for NMFS to impose any additional conditions beyond standard mitigation measures. Simply put, there is no need to analyze additional mitigation because (i) the existing mitigation is demonstrably effective in ensuring a negligible impact, and (ii) analysis of the additional mitigation has not demonstrated any impact differential on any environmental resource, including, most importantly, marine mammals and subsistence.

Third, Alternative 4 provides no useful analysis because the context is completely abstract (*i.e.*, not based upon a specific proposal). The need and effectiveness of any given mitigation measure, standard or otherwise, can only be assessed in the context of a specific activity proposed for a given location and time, under then-existing circumstances. See DEIS at 2-44 (§ 2.5.1) (“NMFS is required to make these [incidental take] decisions on an application-specific basis”). However, this DEIS is a theoretical analysis of potential measures undertaken in the absence of a specific activity, location or time. It is pointless to analyze hypothetical additional mitigation because, if these measures were ever potentially relevant, reanalysis in a project-specific NEPA document would be required.

Fourth, the identified time/area closures, and the use of a 120 dB and 160 dB buffer zones, have no sound scientific or other factual basis. In several instances, these unnecessary measures would render oil and gas exploration impracticable.

- According to the DEIS, the primary purpose of the identified time/area closures in Camden Bay, Barrow Canyon and the Western Beaufort Sea, the Shelf Break of the Beaufort Sea, Hanna Shoal and Kasegaluk Lagoon/Ledyard Bay is protection of bowhead and beluga whales, and minimization of conflicts with subsistence hunting activities. However, the DEIS does not identify any data or other scientific information establishing that past, present, or reasonably anticipated oil and gas activity in these areas has had, or is likely in the future to have either more than a negligible impact on marine mammals or any unmitigable adverse impact on the availability of marine mammals for subsistence activities. Accordingly, these time/area closures are “mitigation” in search of an adverse impact that, insofar as we are aware, does not exist.
- In addition, except to identify where no exploration drilling is anticipated because there are few or no leases, the DEIS does not provide any information about what levels of oil and gas activity are

⁸ The only category with differently rated impacts between Alternatives 3 and 4 is “cultural resources.” Although authorization of marine mammal incidental take would have no impact on cultural resources, for Alternatives 2 and 3, impacts to cultural resources are rated as “negligible” rather than none. With imposition of additional mitigation measures in Alternative 4, NMFS inexplicably *increased* the impact to “minor.” See DEIS at Table 2.6 (p. 2-53).

foreseeably expected to occur in the identified areas in the absence of time/area closures, or what the anticipated adverse impacts from such activities would be. Without this information, the time/area closure mitigation measures are arbitrary because there is an insufficient basis to evaluate and compare the effects with and without time/area closures except through speculation.

- It appears that the principal target of the time/area closures is mitigation of an anticipated large number of 2D/3D seismic surveys. However, as addressed above, few or no 2D/3D seismic surveys are anticipated in the next five years. The vast majority of these surveys have already been conducted – each with accompanying NMFS-issued MMPA IHAs that did not require preparation of an EIS. There is no scientific evidence that these seismic surveys, individually or collectively, resulted in more than a negligible impact. Again, these measures appear to be mitigation in search of a problem that is not foreseeable.
- The time/area closure for areas of the Chukchi Sea is both arbitrary and impracticable. For the reasons explained above, the proposed Chukchi Sea time/area closures are arbitrary because there is no demonstrated need. To the contrary, for example, BOEM has already completed its analysis of Shell Oil's exploration drilling program in the Chukchi Sea and found the anticipated impacts to marine mammals and subsistence to be minimal and fully mitigated. Proposed time/area closures would arbitrarily bar exploration during *over 49 percent* of the open water season in some areas of the Chukchi Sea. Such a severe impact – all without a demonstrated need – would render exploration drilling in the Chukchi Sea unnecessarily difficult.⁹
- Restrictions intended to prevent sound levels above 120 dB or 160 dB are also arbitrary and unwarranted. As ConocoPhillips has consistently commented to (and demonstrated in litigation with) NMFS, the best scientific evidence does not support a need for imposition of restrictions at 120 dB or 160 dB levels. One of the most compelling demonstrations of this point comes from the sustained period of robust growth and recovery experienced by the Western Arctic stock of bowhead whales, while exposed to decades of seismic surveys and other activities without restrictions at the 120 dB or 160 dB levels. Moreover, as ConocoPhillips has also previously commented to (and successfully litigated with) NMFS, restrictions at these levels, especially at the 120 dB level, are impracticable and unsafe to monitor

⁹ Other suggested time/area closures would have similarly onerous consequences. The proposed September 1 to October 15 closure in Camden Bay effectively eliminates *over 54 percent* of the open water exploration drilling season in that area.

because the resulting exclusion zones are enormous and the Arctic Ocean is an extremely remote area that experiences frequent poor weather.

Finally, in Section 2.4.10 of the DEIS, NMFS has identified other measures the agency is evaluating as possible future standard measures for all alternatives evaluated in the DEIS. For all the same reasons identified above, these measures are not needed and their effects are, at most, entirely speculative. However, it bears special mention that NMFS has no legal or factual basis to impose "reduced, limited or zero discharge" requirements on "any or all of the specific discharge streams" from a proposed OCS activity under authority of the MMPA. See DEIS at 2-41.

In sum, there is no need for any of the identified additional mitigation because existing mitigation measures have proven to be effective. See DEIS at 4-107 (occurrence of hearing impairment, injury, or mortality due to oil and gas exploration activities "is considered highly unlikely" using the standard mitigation measures).

2. Alternative 5 is too speculative.

Alternative 5 is defined as Level 2 oil and gas activity performed subject to both standard mitigation measures, and alternative seismic survey technologies. However, NMFS acknowledges in the DEIS that these technological alternatives "are in various stages of development and none are commercially available." DEIS at 2-23 (§ 2.3.5). NMFS further acknowledges that it is uncertain when these technologies could become available, and that the effects of their usage are largely unknown. *Id.* The DEIS states that NMFS is unable to meaningfully analyze the effects of these uncertain technologies and, accordingly, additional NEPA analysis will be required:

Because the majority of these technologies have not yet been built and/or tested, it is difficult to fully analyze the level of impacts from these devices. Therefore, additional NEPA analyses (i.e., tiering) will likely be required if applications are received requesting to use these technologies during seismic surveys.

DEIS at 4-317 (§ 4.8).

No useful purpose is served by undertaking a detailed impact analysis of seismic survey technologies that are too uncertain to know whether they may become commercially viable and, when and if they do become available, what impacts they may have on the incidence of marine mammal takes during seismic surveys. It is impossible to perform a detailed impact analysis for speculative technologies that are untested and, therefore, of unknown effectiveness.

V. KEY IMPACT FINDINGS IN THE DEIS ARE ARBITRARY AND ERRONEOUS

The draft impact findings in the DEIS addressed to the effects of oil and gas activities on marine mammals conflict with applicable statutory standards, the best available science, and better-informed NEPA analyses.

1. The draft impact findings conflict with MMPA requirements.

The MMPA allows NMFS and USFWS to authorize incidental take of marine mammals if the anticipated effects are expected to have a “negligible impact.” 16 U.S.C. § 1371(a)(5)(A) and (D). Although NMFS states that the primary purpose of the DEIS is to facilitate its issuance of MMPA incidental take authorizations, the DEIS inexplicably proposes impact findings for marine mammal species that are greater than “negligible.”¹⁰ If these draft findings were retained by NMFS, the arguable legal effect of this NEPA analysis would be a presumptive determination that the agency is barred from issuing the very incidental take authorizations for which it purports to be conducting this impact analysis. In other words, the paradoxical consequence of NMFS assessing oil and gas activities so it can issue MMPA authorizations would be that NMFS could issue no MMPA authorizations.

Having grasped this problem, the DEIS includes a one sentence footnote stating that the standard for “negligible” in the MMPA and NEPA are not the same. See DEIS at 4-4, n.1. However, no explanation, analysis, or authority has been provided to support the seemingly illogical assertion that an environmental impact finding of greater than “negligible” is not in conflict with a “negligible impact” finding under the MMPA. One conclusory footnote does little to ameliorate the significant legal risk and inevitable confusion created by arbitrary and erroneous draft impact findings that conflict with the MMPA statutory standard for issuance of ITAs.

2. The reasonably anticipated impact to marine mammals from OCS exploration activities occurring in the next five years is, at most, negligible.

The impacts of oil and gas activity on marine mammals in the Arctic has been a reasonable concern of the Native community, federal, state and local agencies, and the oil and gas industry for over 40 years. The primary reason for this concern and attention has been the importance of subsistence hunting to Native Alaskans in the Arctic. In addition, bowhead whales, long considered the most important and sensitive Arctic marine mammal, are listed as an endangered species under the Endangered Species Act (ESA) and a “strategic stock” under the MMPA. As a result of heightened attention, the Western Arctic Ocean stock (also known as the Bering-Chukchi-Beaufort (BCB) Seas stock) of bowhead whale is one of the most rigorously studied marine

¹⁰ See, e.g., DEIS at 4-111 (§ 4.5.1.4.9) (“the overall impact to bowhead whales is likely to be moderate” from Level 1 activity), 4-115 (“moderate” impact on beluga whales from Level 1 activity), 4-128 (§ 4.5.2.4.12.2) (“minor” impact to all species of ice seals from Level 1 activity); compare DEIS at 4-4 (defining “moderate” and “minor” to mean impacts greater than “negligible”).

mammal stocks on Earth. Offshore oil and gas activities with the potential to affect bowhead whales in the Arctic Ocean have long been subject to a stringent set of mitigation and monitoring requirements.

Given this context, the bowhead whale serves as a prominent example of the arbitrary and unsound draft impact findings in the DEIS. The Western Arctic Ocean stock of bowhead whales has been exposed to the full range of oil and gas activity in the Alaskan OCS since the 1960s. Over the course of this lengthy period of time, with decades of continuous monitoring and study, no injuries or mortalities have been detected from oil and gas activity. Even though bowhead whales are actively hunted for subsistence purposes, the Western Arctic stock has steadily rebounded from depressed abundance caused by historical industrial whaling practices to the point where the stock is acknowledged to be at or quickly approaching the carrying capacity of its habitat, while continuing to grow at a robust annual rate. There is much about bowhead whales that remains unknown and unknowable. Nevertheless, all the available information indicates to a high degree of scientific reliability that routine oil and gas activity has no more than a negligible impact on the Western Arctic stock, that the stock has experienced robust growth for many decades while exposed to oil and gas activities, and that the stock is healthy, resilient to the adverse impacts of all environmental, subsistence, and anthropogenic effects (including climate change), and recovered to pre-whaling abundance without a detectable slowing in the rate of growth. Moreover, even the DEIS projects that the occurrence of hearing impairment, injury, or mortality due to oil and gas exploration activities "is considered highly unlikely." DEIS at 4-107.

Notwithstanding the consistency and reliability of the above information, and notwithstanding an unbroken record of well-supported "negligible impact" determinations by NMFS made over a period of decades, the DEIS improbably concludes that the overall impact to bowhead whales is likely to be "moderate." DEIS at 4-111. Respectfully, the draft "moderate" impact finding is arbitrary. For the reasons expressed in the previous section, such a finding puts OCS oil and gas activity at an extreme legal risk that is entirely unwarranted by the sum of over four decades of data and scientific opinion.¹¹

¹¹ The other impact findings in the DEIS for marine mammals are similarly unwarranted. *Compare* DEIS at § 4.5.2.4.12 (concluding that impacts to ice seals are likely to be "minor"), *with* AOGA and API letter to Ms. Kaja Brix (NMFS) dated Feb. 13, 2012 at pp. 15-20 (detailing data and findings of NMFS and others that the totality of impacts to Arctic ribbon seals are "negligible"); *compare* DEIS at 4-139 (Level 1 activity impacts on polar bear likely to have "minor" impact), *with* 76 Fed. Reg. 47,010 (Aug. 3, 2011) (current Beaufort Sea ITR for polar bear with USFWS "negligible impact" finding), 73 Fed. Reg. 33,212 (June 11, 2008) (current Chukchi Sea ITR for polar bear with USFWS "negligible impact" finding).

VI. CONCLUSION

ConocoPhillips is a longstanding supporter of the MMPA regulatory process because the MMPA has proven to be an effective means of balancing and rationalizing responsible oil and gas development with conservation of marine mammals. Notwithstanding our support for the MMPA, we can find no justification for NMFS to proceed to finalize this DEIS. Instead, for the reasons explained above and in the additional submissions of the American Petroleum Institute and other members of Alaska's oil and gas industry, we recommend that NMFS abandon the DEIS.

Very truly yours,



David W. Brown *JTB*

cc: The Honorable Sean Parnell, Governor, State of Alaska
The Honorable Lisa Murkowski, United States Senate
The Honorable Mark Begich, United States Senate
The Honorable Don Young, United States House of Representatives
Mr. Geoff Haskett, U.S. Fish & Wildlife Service
Mr. James Kendall, Bureau of Ocean Energy Management
Ms. Emma Pokon, North Slope Borough

**CENTER FOR REGULATORY EFFECTIVENESS (“CRE”) COMMENTS ON
NATIONAL MARINE FISHERIES SERVICE’S (“NMFS”)
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN (“DEIS”),
<http://www.gpo.gov/fdsys/pkg/FR-2012-01-18/pdf/2012-823.pdf> ,
AVAILABLE ONLINE AT http://www.nmfs.noaa.gov/pr/pdfs/permits/arctic_deis.pdf .
COMMENTS FILED BY EMAIL ON FEBRUARY 24, 2012, TO
arcticeis.comments@noaa.gov**

I. Executive Summary

More stringent regulation is unnecessary to protect marine mammals from oil and gas seismic operations in the Arctic because marine mammals have flourished and increased during and oil and gas operations under current regulation.

The DEIS should be revised to discuss Information Quality Act (“IQA”) Requirements, which also apply to any third-party information that is used or relied on to regulate oil and gas operations.

CRE agrees with NMFS that Active Acoustic Monitoring should be further studied, but is not yet ready to be imposed as a mitigation measure.

Passive Acoustic Monitoring (“PAM”) is already routinely being required by NMFS under the Marine Mammal Protection Act (“MMPA”), or under the Endangered Species Act (“ESA”), during the Service’s regulation of offshore seismic and sonar. Because NMFS is already requiring PAM as a monitoring or mitigation requirement, we recommend that the Service emphasize the availability of PAMGUARD, which is an open source, highly tested and well documented version of PAM. NMFS should encourage use of PAMGUARD by noting its availability in all NMFS’ actions requiring or recommending the use of PAM. These notices should also state that PAMGUARD is an acceptable method of meeting any PAM requirements or recommendations.

***II. Marine Mammals Have Flourished and Increased
During Oil and Gas Seismic Operations***

The DEIS discusses whether more stringent mitigation provisions, including operational area restrictions, are necessary in order to protect marine mammals from oil and gas seismic operations in the Arctic. The answer to this question is no.

BOEM recently issued a Final Supplemental Environmental Impact Statement for Gulf of Mexico OCS Oil and Gas Lease Sale: 2012; Central Planning Area Lease Sale 216/222; Mexico

OCS Oil and Gas Lease Sale: 2012; Central Planning Area Lease Sale 216/222 (“SEIS”). This final SEIS for the GOM correctly concluded that, despite more than 50 years of oil and gas seismic and other activities, “there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations”:

“Overall, within the CPA [Central Planning Area], there is a long-standing and well-developed OCS Program (more than 50 years); there are no data to suggest that activities from the preexisting OCS Program are significantly impacting marine mammal populations. Therefore, in light of the above analysis on the proposed action and its impacts, the incremental effect of the proposed action on marine mammal populations is not expected to be significant when compared with all other past, present, and reasonably foreseeable future activities.”¹

This final SEIS for the GOM further states that

“NTL 2007-G02, “Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program,” minimizes the potential of harm from seismic operations to sea turtles and marine mammals; these mitigations include onboard observers, airgun shut-downs for whales in the exclusion zone, ramp-up procedures, and the use of a minimum sound source. Therefore, no significant cumulative impacts to sea turtles would be expected as a result of the proposed exploration activities when added to the impacts of past, present, or reasonably foreseeable oil and gas development in the area, as well as other ongoing activities in the area.”²

The NAS’ National Research Council has agreed with MMS/BOEM and concluded with regard to the entire OCS that:

“[T]here have been no known instances of injury, mortality, or population level effects on marine mammals from seismic exposure but... the potential for these types of impacts may exist without appropriate mitigation measures. The MMS-approved seismic surveys include mitigation measures designed to reduce the potential for effects to occur.”³

NMFS has reached a similar conclusion about seismic in the Arctic. For example, a recent NMFS Biological Opinion concluded that marine mammals are flourishing and increasing in the Arctic despite increasing oil and gas seismic activities there:

¹ Page 4-231 of document available online at <http://www.boem.gov/Environmental-Stewardship/Environmental-Assessment/NEPA/nepaprocess.aspx> .

² *Id.*, page 4-242.

³ See, e.g., Outer Continental Shelf Oil & Gas Leasing Program, 2007-2012 Final Environmental Impact Statement, page V-64 (MMS April 2007), available online at <http://www.boemre.gov/5-year/2007-2012DEIS/VolumeII/5and6-ConsultationPreparers.pdf>

“Data indicate that bowhead whales are robust, increasing in abundance, and have been approaching (or have reached) the lower limit of their historic population size at the same time that oil and gas exploration activities have been occurring in the Beaufort Sea and, to a lesser extent, the Chukchi Sea.”

“To our knowledge, no whales or other marine mammals have been killed or injured by these past seismic operations, and the BCB population of bowhead whales continues to increase at an annual rate estimated more than 3 percent.

Because the Western Arctic bowhead whale population is approaching its pre-exploitation population size and has been documented to be increasing at a roughly constant rate for over 20 years, the impacts of oil and gas industry on individual survival and reproduction in the past have likely been minor (Angliss and Outlaw 2010). These activities are unlikely to have any effect on the other four stocks of bowhead whales. Similarly, only the western North Pacific stock of humpback whales and the Northeast Pacific stock of fin whales would be potentially affected by oil and gas leasing and exploration activities in the Chukchi Sea. The described work would have no effect on the remaining worldwide stocks of humpback or fin whales. No injury or lethal takes are anticipated from these activities, nor are population level consequences to the stocks expected. Most impacts would be due to harassment of whales, which may lead to behavioral reactions from which recovery is fairly rapid. Mitigative measures will be recommended to reduce harassment and the possibility of harm or lethal takes.”⁴

NMFS has correctly emphasized that “to date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to airgun pulses, even in the case of large airgun arrays.”⁵

In sum, the agencies’ identification of a preferred alternative in the final EIS should reflect the fact that marine mammals have thrived during many years of seismic and other oil and gas activities. There is neither need nor basis for any significant change in the mitigation measures which produced that positive result.

⁴ Pages 64-65, ENDANGERED SPECIES ACT: SECTION 7 CONSULTATION BIOLOGICAL OPINION, Incidental harassment authorization to allow for incidental takes of marine mammals during shallow hazards survey in the Chukchi Sea, Alaska, 2011 (NMFS 2011), available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/statoil_biop2011.pdf .

⁵ 75 FR 49795-96 (Aug. 13, 2010), page 49795, available online at <http://edocket.access.gpo.gov/2010/2010-19962.htm> .

III. The DEIS Should Be Revised to Discuss Information Quality Act Requirements

The DEIS discusses “**Federal Laws and Other Requirements Applicable to Oil and Gas Activities in the Arctic Ocean.**”⁶

This section of the DEIS should be revised in the final EIS to include a discussion of the IQA and IQA Guidelines requirements because they also apply to federal Government regulation of oil and gas activities in the Arctic Ocean.

For example, the DEIS should discuss NMFS’ IQA Guidelines.⁷

The DEIS should also be revised to discuss NMFS’ ***Instruction on NMFS DATA DOCUMENTATION***, which states at pages 11-12 that all NMFS data disseminations must meet NMFS’ IQA guidelines.⁸

The DEIS should also be revised to discuss NMFS’ ***Instruction on SECTION 515 PRE-DISSEMINATION REVIEW AND DOCUMENTATION FORM.***⁹

The DEIS should also be revised to reference NMFS’ ***Instruction on GUIDELINES FOR AGENCY ADMINISTRATIVE RECORDS***, which states at pages 2-3 that:

“The AR [Administrative Record] first must document the process the agency used in reaching its final decision in order to show that the agency followed required procedures. For NOAA actions, procedural requirements include...the Information Quality Act....”¹⁰

⁶ Pages 1-15 to 1-21 (emphasis in the original), available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/arctic_deis.pdf.

⁷ NMFS’ IQA guidelines are available online at ***Policy Directive on Policy on the Data Quality Act, available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/policies/04-108.pdf>***. See also ***NMFS INSTRUCTION on Data Quality Act, SECTION 515 PRE-DISSEMINATION REVIEW AND DOCUMENTATION GUIDELINES***, available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/procedures/04-108-03.pdf>, which also applies and which should also be discussed in the DEIS.

⁸ This NMFS ***Instruction*** is available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/procedures/04-111-01.pdf>.

⁹ This NMFS ***Instruction*** is available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/procedures/04-108-02.pdf>.

¹⁰ This NMFS ***Instruction*** is available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/procedures/30-123-01.pdf>.

The DEIS should also be revised to discuss NMFS' ***DIRECTIVE on Data and Information Management***, which states at page 3:

“(General Policy and Requirements

A. Data are among the most valuable public assets that NMFS controls, and are an essential enabler of the NMFS mission. The data will be visible, accessible, and understandable to authorized users to support mission objectives, in compliance with OMB guidelines for implementing the “Information Quality Act” (IQA)....”¹¹

The DEIS should also be revised to state that these IQA requirements apply to any third party information that NMFS uses or relies on in the DEIS/EIS, or in otherwise regulating oil and gas activities in the Arctic Ocean.¹²

If NMFS believes that any of the above-cited NMFS IQA requirements do not apply to this ICR, then we ask that NMFS say so and explain why in a response to CRE's comments.

We also ask that the DEIS be revised to discuss any and all NMFS or BOEM IQA requirements/guidance that apply to oil and gas activities in the Arctic Ocean, but which are not cited or referenced in CRE's comments.

IV. CRE Agrees with NMFS that Active Acoustic Monitoring Should Not Yet be Imposed as a Mitigation Measure

With regard to marine mammals, the DEIS concludes that

“An active acoustic monitoring (AAM) system...can detect animals that are not producing sounds. To do so, however, requires introducing sound into the environment, which can cause behavioral disturbances....Use of AAM remains in the realm of research and development (Bingham 2011).”¹³

We agree with NMFS' conclusion about AAM. We also encourage continuing research into AAM.

¹¹ This NMFS *Directive* is available online at <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/policies/04-111.pdf>.

¹² See, e.g., NMFS letter to CRE available online at http://thecre.com/pdf/NOAA-IWC_Letter.pdf.

¹³ http://www.nmfs.noaa.gov/pr/pdfs/permits/arctic_deis.pdf at pages 4-153 to 4-155.

V. NMFS Should Encourage the Use of PAMGUARD

The “Additional Mitigation Measure” section of the DEIS discusses the efficacy of Passive Acoustic Monitoring (“PAM”) with regard to specific marine mammal species. This discussion states that there are some limitations on PAM’s usefulness:

“***Bowhead Whales*** – The efficacy of real-time passive acoustic monitoring (PAM) in the Arctic depends on species, frequency and source level of calls, how often the marine mammals call, and choosing the right array and software to match these variables. PAM has been successful at detecting higher frequency clicks of toothed whales where the frequency is well above that of the seismic and tow ship. In the Arctic, most of the calls are low frequency calls, such as from bowheads, which overlap with the seismic marine mammals, particularly in such a large area where visual sightings are often limited. However, there are significant technical challenges for using this system from moving vessels with their own noise source within the frequency range of the bowhead whales. There has been success in detecting bowhead whale calls from long-term passive acoustic recording devices that are placed on the seafloor bottom for a certain amount of time. However, these devices are not monitored in real-time.

PAM systems only work if an animal produces a sound that can be detected by the system.”

“The Sound and Marine Life Joint Industry Programme (JIP) is currently funding ongoing research on the use of real-time acoustic identification of cetaceans and the use of active acoustics technologies for use in mitigation and monitoring marine mammals during offshore exploration activities (JIP 2009). The technology, although not yet proven in Arctic conditions, has the potential for future application, pending continued research and modifications.”

“***Beluga Whales*** – The efficacy of real-time PAM in the Arctic at this time depends on species, frequency and loudness of calls, how often the marine mammals call, and choosing the right array and software to match these variables. PAM has been successful at detecting higher frequency clicks of toothed whales where the frequency is well above that of the seismic and tow ship. These technologies have the potential to greatly improve the detection of marine mammals, particularly in such a large area where visual sightings are often limited. The 2010 Statoil seismic survey program did detect beluga whales on the towed PAM array by JASCO (NMFS 2011b), but localizing the animals is difficult because the system must have very good received signal-to-noise ratio to localize beluga whales.

PAM systems are only effective for detecting animals that are emitting sounds.”

“Other Cetaceans – The efficacy of real-time PAM in the Arctic currently depends on species, frequency and source level of calls, how often the marine mammals call, and choosing the right array and software to match these variables. PAM has been successful at detecting higher frequency clicks of toothed whales where the frequency is well above that of the seismic and tow ship. In the Arctic, most of the calls are low frequency calls, such as from bowhead whales, which overlap with seismic sounds (NMFS 2010). Fin, gray and humpbacks whales also vocalize in lower frequencies. These technologies have the potential to greatly improve the detection of marine mammals, particularly in such a large area where visual sightings are often limited. However, there are significant technical challenges for using this system from moving vessels with their own noise source within the frequency range low-frequency whales. This is less problematic for higher frequency toothed whales. Several vessels are required to collect acoustic information from different angles to allow the calculation of animal locations and all of this data must be combined and analyzed in real-time to be useful. Additional Mitigation Measure would impact other cetaceans the same as it would bowhead whales.”

“Pinnipeds – This additional mitigation measure would require use of technology such as ...passive acoustic monitoring to improve real-time detection of marine mammals. These technologies have the potential to greatly improve the detection of marine mammals, at least under certain conditions, and could provide more information about potential interactions and actual behavioral responses to disturbance. However, there are significant technical challenges for using passive acoustic monitoring to provide real-time locations of animals in relation to moving vessels which would be useful to monitor appropriate safety radii. Several vessels are required to collect acoustic information from different angles to allow the calculation of animal locations and all of this data must be combined and analyzed in real time to be useful. In addition, only animals that are vocalizing can be detected with passive arrays. Bearded seals often vocalize and can be detected during the spring-summer breeding season but other seals do not vocalize frequently and could be missed even if present. Active acoustic systems may also be useful in locating animals in real-time but they introduce additional sounds into the marine environment that may cause behavioral reactions in the animals they are intended to monitor. These types of systems are subjects of continuing research to determine their efficacy and practical limitations.”

Walrus – The effects of this additional mitigation measure on walrus would be the same as described for pinnipeds in Section 4.5.2.4.12.

Polar Bears – The effects of this additional mitigation measure on polar bears would be the same as described for pinnipeds in Section 4.5.2.4.12.”¹⁴

¹⁴ Pages 4-153 to 4-155, available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/arctic_deis.pdf .

The few cited references in the DEIS do not support NMFS' assertions that PAM has limitations. Nor is there any support for NMFS' assertion that PAMGUARD needs "continued research and modifications" to work in Arctic conditions. We recommend that if the final EIS includes the same or similar assertions, then NMFS should provide references supporting those assertions.

We are also puzzled by NMFS' description of PAM as a possible additional mitigation measure that may in the future be required under the MMPA and/or ESA. We are puzzled because NMFS already routinely includes PAM as a monitoring or mitigation requirement in IHAs, LOAs or rules that NMFS issues under the MMPA.

A published article by NMFS' staff discusses NMFS' currently required uses of PAM.¹⁵

In just the year 2011, NMFS included PAM requirements in, *e.g.*:

- An L-DEO seismic survey in the Western Gulf of Alaska, available online at <http://www.nsf.gov/geo/occe/envcomp/shillington-2011-final-ea-23-may.pdf>, and issued permit at http://www.nmfs.noaa.gov/pr/pdfs/permits/ldeo_wgoa_issued_iha.pdf ;

- An industry seismic survey in Cook Inlet, Alaska, available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/apache_ak_iha_application2011.pdf ;

- A University of Alaska Geophysics Institute seismic survey in the Arctic Ocean, using PAM , available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/uagi_iha_issued.pdf ;

- An industry seismic IHA for the Chukchi, available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/statoil_iha_issued2011.pdf ; and

- An USGS seismic survey in Central Gulf of Alaska, available online at http://www.nmfs.noaa.gov/pr/pdfs/permits/usgs_goa_iha2011.pdf .

If PAM is so limited for use in the Arctic and Alaska, then why is NMFS routinely requiring its use in the Arctic and Alaska?

The Navy and NMFS are also requiring that PAM be used with Navy sonar. With NMFS' concurrence, the Navy stated that "Passive acoustic monitoring for low frequency sounds generated by marine mammals will be conducted when SURTASS [sonar] is deployed."¹⁶

¹⁵“The use of acoustic monitoring in the National Marine Fisheries Service marine mammal incidental take authorizations,” Shane Guan, Office of Protected Resources, NOAA/NMFS, presented at 160th Meeting of the Acoustical Society of America (Nov. 15 – 19, 2010), Session 1pAB: Animal Bioacoustics, available online at <http://scitation.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=PMARCW00001100001010002000001&idtype=cvips&doi=10.1121/1.3606451&prog=normal>

¹⁶ <http://www.surtass-lfa-eis.com/Measures/index.htm> .

In addition, BOEM regulates offshore oil & gas seismic operations primarily through *Notice to Lessees and Operators* (“NTL”) 2007-G02. This NTL has a section which encourages, but does not require, the voluntary or “experimental” use of Passive Acoustic Monitoring:

“Experimental Passive Acoustic Monitoring

Whales, especially sperm whales, are very vocal marine mammals, and periods of silence are usually short and most often occur when these animals are at the surface and may be detected using visual observers. However, sperm whales are at the greatest risk of potential injury from seismic airguns when they are submerged and under the airgun array. Passive acoustic monitoring appears to be very effective at detecting submerged and diving sperm whales, and some other marine mammal species, when they are not detectable by visual observation. MMS strongly encourages operators to participate in an experimental program by including passive acoustic monitoring as part of the protected species observer program. Inclusion of passive acoustic monitoring does **not** relieve an operator of any of the mitigations (including visual observations) in this NTL **with the following exception**: Monitoring for whales with a passive acoustic array by an observer proficient in its use will allow ramp-up and the subsequent start of a seismic survey during times of reduced visibility (darkness, fog, rain, etc.) when such ramp-up otherwise would not be permitted using only visual observers. If you use passive acoustic monitoring, include an assessment of the usefulness, effectiveness, and problems encountered with the use of that method of marine mammal detection in the reports described in this NTL. A description of the passive acoustic system, the software used, and the monitoring plan should also be reported to MMS at the beginning of its use.”¹⁷

Similarly, the 2010 seismic guidelines for the UK’s Joint Nature Conservation Committee (“JNCC”) state that

“In addition to the visual mitigation provided by MMOs, if seismic surveys are planned to start during hours of darkness or low visibility it is considered best practice to deploy Passive Acoustic Monitoring (PAM).”¹⁸

Because NMFS is already requiring PAM, we recommend that the Service emphasize the availability of PAMGUARD, which is an open source, highly tested and well documented version of PAM.

The JNCC Guidelines include the following section encouraging the use of PAMGUARD:

¹⁷ NTL 2007-G02, available online at http://sero.nmfs.noaa.gov/sf/deepwater_horizon/Appendix_A_Seismic_NTL_2007-G02.pdf (emphasis in the original).

¹⁸ JNCC Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys (August 2010), Introduction, available online at http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Seismic%20Guidelines_August%202010.pdf

“In the last few years, software that processes and analyses cetacean sounds has been developed. PAMGUARD is open source software that has been developed as part of the International Association of Oil and Gas Producers Joint Industry Project (JIP). JNCC recognises that PAMGUARD is currently in a transition period between use as a research tool and widespread adoption as a monitoring technique. Moreover, JNCC recognises the need to balance proactive implementation of PAM with the need to further develop its capability, for example to include species recognition and baleen whale detection, and therefore encourages users of these systems to actively contribute to their development and refinement.”¹⁹

PAMGUARD has been developed by the International Association of Oil and Gas Producers Joint Industry Project (“JIP”). The PAMGUARD web site discusses PAMGUARD in considerable detail, and provides free, public access to PAMGUARD.²⁰ The site is worth quoting at some length:

“Background

The PAMGUARD project was set up to provide the world standard software infrastructure for acoustic detection, localisation and classification for mitigation against harm to marine mammals, and for research into their abundance, distribution and behaviour. Many marine activities involve underwater sound emissions. These may be a by-product of the activity (e.g. piling or explosives), or a tool (e.g. air guns used for seismic surveys in oil and gas exploration, or military/commercial sonar). To mitigate against harm to marine mammals, observers are often employed to visually scan the sea surface for the presence of animals. In the event of a sighting, procedures such as suspension/delay of activities may be implemented to avoid harm.

Current Methods

Visual observations play a vital role, but marine mammals are difficult to spot on the sea surface, especially when weather and light conditions are poor. However, many marine mammals produce loud and distinctive vocalisations, which can often be detected more reliably than visual cues. For these species, passive acoustic monitoring (PAM) offers an effective means of detection. Furthermore, the creatures do not need to be on the surface to be detected.

¹⁹ JNCC Guidelines for Minimising the Risk of Injury and Disturbance to Marine Mammals from Seismic Surveys (August 2010), Section 4,1, available online at http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Seismic%20Guidelines_August%202010.pdf .

²⁰ The industry-sponsored PAMGUARD website is available online at <http://www.PAMGUARD.org/home.shtml> .

Why do we need PAMGUARD?

While PAM software already exists, the source code is not freely available for others to help to expand and improve. This means that assumptions, and therefore margins for error, are not readily understood, that code evolves more slowly, or not at all, and source code improvements are at the mercy of the time and resources that the few responsible developers can commit. In the case of the military and some commercial organisations, detection, classification and localisation (DCL) technologies are in-house and protected. What is needed is an environment which raises the profile of PAM and creates a means of tapping into the intellectual resources of the research community. Industry and marine environmentalists are well aware of the need to upgrade and modernize.”²¹

The Joint Industry Program Annual Report for 2009 also contains extensive, detailed documentation of PAMGUARD.²² The report explains that

“A software package called PAMGUARD has been released that can interpret and display calls of vocalising marine mammals, locate them by azimuth and range and identify some of them by species. These abilities are critical for detecting animals within safety zones and enabling shut-down.”²³

PAMGUARD was discussed at a recent IAGC meeting, which strongly encouraged the industry to use PAMGUARD and explained why.²⁴ One power point slide explains the “PAMGUARD Vision”:

- Create an integrated real-time PAM software infrastructure
- Open source
- Platform independent
- Freely available to all PAM users for the benefit of the marine environment.

²¹ PAMGUARD site available online at <http://www.pamguard.org/background.shtml> .

²² See 2009 Report, pages 1, 2, and 3, available online at <http://www.soundandmarinelife.org/Site/Basics/AnnRep3.pdf> .

²³ *Id*, page 1.

²⁴ See, beginning with slide 9, power point presentation at http://iagc.org/attachments/contentmanagers/9530/6%207%20IAGC_HSESForum_pres_MarEnv_SMLWkgrpUpdate_V01_2011_09_27.pdf .

●Establish a reliable/robust industry standard interface tool in preparation for PAM being mandated²⁵

VI. Conclusion and Recommended Actions

The final EIS should conclude that more stringent regulation is not necessary to protect marine mammals from oil and gas seismic operations in the Arctic because marine mammals have flourished and increased during and oil and gas operations. The agencies' identification of a preferred alternative in the final EIS should reflect this conclusion.

The final EIS should discuss Information Quality Act Requirements, and should state that these IQA requirements also apply to any third-party information that the agencies use or rely on to regulate oil and gas operations.

The final EIS should state that Active Acoustic Monitoring should be further studied, but is not yet ready to be imposed as a mitigation measure.

The final EIS should emphasize the availability of PAMGUARD, and encourage its use. The final EIS should also state that PAMGUARD is an acceptable method of meeting any PAM requirements or recommendations.

We thank you for the opportunity to submit these comments, and we look forward to the agencies' response to them.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Jim Tozzi". The signature is stylized with a large initial "J" and "T".

Jim Tozzi
Member, Board of Advisors

²⁵ *Id.*, Slide 11.



Arcticeis Comments <arcticeis.comments@noaa.gov>

drilling

1 message

nick danger <702baller@gmail.com>

Thu, Dec 22, 2011 at 3:27 PM

To: arcticeis.comments@noaa.gov

I am in favor of drilling in the arctic, I have lived in Alaska since 1978 and raised my family because of the oil business in Alaska. The oil companies are the biggest donors to charities and nonprofits in Alaska. People keep forgetting that they have many jobs for Alaskans that pay great wages.

--

Nick Danger



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501-5126



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ER11/1188
PEP/ANC

February 21, 2012

Mr. James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East West Highway, Room 13704
Silver Spring, MD 20910

Dear Mr. Lecky:

The U.S. Department of the Interior (Department) has reviewed the December 2011 National Oceanic and Atmospheric Administration (NOAA) *Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean* (Draft EIS). We have no comments to offer at this time.

It should be noted that any comments the Department's Bureau of Ocean Energy Management (BOEM) may have on this Draft EIS will be submitted to NOAA by BOEM under separate cover in accordance with their role as a Cooperating Agency for the EIS.

If you have questions regarding our response or require for more information, please contact me via phone at 907-271-5011 or via email at pamela.bergmann@ios.doi.gov.

Sincerely,

Pamela Bergmann
Regional Environmental Officer – Alaska



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
ECOSYSTEMS, TRIBAL AND
PUBLIC AFFAIRS

February 28, 2012

James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910-3225

Re: EPA Comments on the Draft Environmental Impact Statement for the Effects of Oil and Gas Activities in the Arctic Ocean, EPA Project #10-012-NOA.

Dear Mr. Lecky:

We have reviewed the National Marine Fisheries Service Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement (EIS) (CEQ No. 20110436) in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309 specifically directs the EPA to review and comment in writing on the environmental impacts associated with all major federal actions. Under our policies and procedures, we assign a rating to the draft EIS based on the environmental impacts of the proposed action and the document's adequacy in meeting NEPA requirements.

The draft EIS evaluates the potential impacts associated various scenarios and levels of exploration activities in the Arctic Ocean, as well as potential impacts from a very large oil spill. In general we believe the draft EIS contains a thorough analysis of possible activities that will provide useful for project-specific analyses into the future. We also commend the National Marine Fisheries Service for voluntarily undertaking the analysis of a very large spill event.

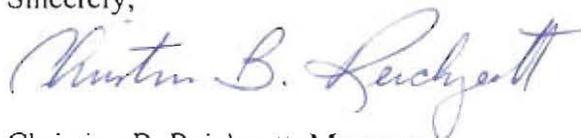
Because of the quality and programmatic nature of the analysis, as well as the anticipated levels of impacts, we have assigned a rating of EC-1 (Environmental Concerns-Adequate Information) to the draft EIS. A copy of the EPA's rating system criteria used in conducting our environmental review is enclosed. Our rating and our comments will be posted on the EPA Office of Federal Activities website at <http://www.epa.gov/compliance/nepa/eisdata.html>. Our concerns primarily involve the potentially moderate impacts to beluga and bowhead whales under the various action alternatives, as well as the potential for impacts to numerous resources should a very large oil spill event occur. We recognize, however, that the EIS identifies appropriate mitigation to address impacts to the extent possible, and therefore we do not have any additional mitigation suggestions to offer at this time.

We do suggest that the final EIS consider new information regarding the EPA Region 10's Beaufort (AKG-28-2100) and Chukchi (AKG-28-8100) General Permits. Although not final, we are in the process of soliciting public comment on the fact sheets and draft permits and this information may be useful depending on the timing of the issuance of the final EIS. Links to the fact sheets, draft permits, and other related documents can be found at:

<http://yosemite.epa.gov/r10/water.nsf/npdes+public+notices/arctic-gp-pn-2012>.

Thank you for the opportunity to review and provide written comments on this draft EIS. If you have any questions regarding this letter, please contact me at (206)553-1601, or by electronic mail at reichgott.christine@epa.gov, or you may contact Jennifer Curtis of my staff in Alaska at (907)271-6324 or by electronic mail at curtis.jennifer@epa.gov.

Sincerely,



Christine B. Reichgott, Manager
Environmental Review and Sediments Management Unit

Cc: Candace Nachman, NMFS

Enclosure

U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

URS

written comments

Job Arctic Seismic Development EIS

Page _____ of _____

Description Kuvlun

Project No. _____

Sheet _____ of _____

written comments

Computed by _____

Date 2/6/12

Checked by _____

Date _____

Reference

The village of Noatak does subsistence hunting during the springtime for marine mammal(s) and camp by what is called Nuvurrag just passed Sisaulik northward. You may want to consult with them too?

Dalby E. Foster



Arcticeis Comments <arcticeis.comments@noaa.gov>

NMFS DEIS - Effects of Oil/Gas Activities in the Arctic Ocean

1 message

Sen. Cathy Giessel <Senator_Cathy_Giessel@legis.state.ak.us>

Fri, Feb 17, 2012 at 2:25 PM

To: "arcticeis.comments@noaa.gov" <arcticeis.comments@noaa.gov>

Dear Sirs,

I am communicating **OPPOSITION** to the **National Marine Fisheries Service (NMFS) Draft Environmental Impact Statement (DEIS)** on the **Effects of Oil and Gas Activities in the Arctic Ocean**.

The Draft Environmental Impact Statement (DEIS) imposes arbitrary and capricious restrictions on the Alaska outer continental shelf development area. It is so broad that it addresses no specific project, covers a vast area of Beaufort and Chukchi Seas (including state waters), references no specific lease sales, and has no 5 year planning program. This DEIS proposes mitigation measures beyond the scope and jurisdiction of NMFS and constitutes broad expansion of regulatory oversight.

As an Alaska elected official, I vigorously **OPPOSE this clear violation of authority** by this federal agency.

Cathy

Senator Cathy Giessel

Session contact:

State Capitol, Room 7, Juneau, AK 99801

Office 907 465 4843

Toll free 800 892 4843

Fax 907 465 3871

Dan Howells
Campaigns Director
Greenpeace USA
702 H Street, NW, Suite 300
Washington, DC 20001
Email: dan.howells@greenpeace.org

Feb. 28, 2012

Jim Lecky
Director, Office of Protective Resources
1315 East-West Highway
Silver Spring, MD 20910
Email: arcticeis.comments@noaa.gov

Dear Mr. Lecky,

Greenpeace is pleased at the effort by the National Marine Fisheries Service (NMFS) and the Bureau of Ocean Energy Management (BOEM)—in the name of the American people and in trust for current and future generations over the stewardship of our natural resources—to research, understand, document, and publicize the environmental impacts of Arctic oil and gas exploration.

We are greatly concerned about the impacts that have been described in the Draft Environmental Impact Statement (DEIS). The exploratory activities will result in significant adverse impacts to marine mammals—including whales and polar bears—as well as to aquatic organisms on or above the seabed that have a crucial role in the ecologic system and its services. The exploratory activities also will unnecessarily contribute to climate change, poor air and water quality, and the despoliation of a pristine environment. Furthermore, the exploratory activities will have negative impacts on indigenous culture and tradition while providing only small economic support to these same indigenous societies.

Moreover, the DEIS documents the unacceptably extreme impacts in the event of an oil spill. If the Chukchi and Beaufort Seas are opened for oil and gas exploration, the question is not whether a spill will occur in the Arctic but when.

The inevitable oil spill would drastically effect, as documented in the DEIS, plankton, fish, birds, whales, porpoises, seals, walrus, polar bears, as well as coastal species such as caribou. The inevitable oil spill would significantly degrade water quality, air quality, and the marine and coastal ecosystems. The inevitable oil spill would have unacceptable impact on Alaska's public health, indigenous subsistence traditions, recreation, tourism, and scenic beauty.

Indeed, the DEIS admits that there will be “disproportionately high adverse effects” on Alaskan minority populations from impacts to subsistence foods and public health.

Greenpeace encourages NMFS and BOEM to adhere to the precautionary approach to oil and gas exploration in the Arctic and to choose the no-drilling alternative. NMFS should not grant the “incidental take authorization” and BOEM should not grant the geological and geophysical permit that will allow Shell to kill aquatic life and to destroy their living, breeding, feeding, and migration grounds.

In addition, we submit the below comments.

Sincerely,

Dan Howells
Campaigns Director
Greenpeace USA

I. Issuance of a Geological and Geophysical Permit Would Be Illegal Based on the Evidence on Record

One of the purposes of the DEIS is to assist the public and agency decision-makers in determining whether BOEM should issue a geological and geophysical permit for Shell’s proposed oil exploration activities.

BOEM regulations state that geological and geophysical activities *cannot*, among other restrictions, “cause harm or damage to life (including fish and other aquatic life), property, or to the marine, coastal, or human environment” and cannot “cause pollution.”¹ The DEIS, however, documents how the proposed exploratory activities *will* cause harm and damage to life, *will* cause harm and damage to property, *will* cause harm and damage to the marine, coastal, and human environments, and *will* cause pollution.

It is thus inconceivable (and unexplained) how BOEM could issue a geological and geophysical permit for the proposed exploratory activities without violating the plain language of its own regulations. By issuing this geological and geophysical permit, BOEM would be illegally exceeding its authority to act in the name of the American people, based on the evidence on record.

Greenpeace urges the utmost transparency from agency decision-makers and the strictest adherence to the laws on how agencies are authorized to act in the name of the American people.

¹ 30 C.F.R. Part 551.

II. The Range of Alternatives Considered Is Not Reasonable

The DEIS considers five alternatives: a “no action” alternative and four “action” alternatives, each with a different composition of exploration activities. However, this range of five alternatives is not reasonable.

A. The Range of Action Alternatives Is Too Narrow

The four “action” alternatives are virtually indistinguishable and thus comprise an inadequate range. In the DEIS, Table ES-1 nicely summarizes how the only differences among the alternatives are two choices in the quantity of exploratory activities (for example, either four or six seismic surveys in the Beaufort Sea) and three choices in mitigation activities: no mitigation activities, mitigation based on undeveloped and untested technology, or mitigation through closing certain highly sensitive areas at certain times. Moreover, the expected environmental impacts of these four alternatives are virtually identical. This range therefore does not meet the needs of the public or decision-makers in choosing an alternative.

A reasonable range of “action” alternatives that would enable an informed decision would include:

- Alternatives with different types of exploratory activities. For example, there is no “action” alternative without exploratory drilling or seismic surveys. Such alternatives would have far less significant environmental impacts and would be in line with a precautionary approach.
- Alternatives representing greater variation. For example, the range only provides for six seismic surveys in the Beaufort Sea with mitigation through closing certain highly sensitive areas at certain times rather than for four or two seismic surveys with mitigation. Not only does this narrowness unnecessarily constrain decision-makers, it suggests that the agencies have already chosen their preferred alternative without explicating stating that preference, as required by law.
- Alternatives with reduced chances of resulting in an oil spill. The DEIS demonstrates that while the exploratory activities themselves will have significant adverse environmental impacts, an oil spill will have far greater adverse environmental impacts. Yet there is no alternative that seeks to reduce the likelihood of an oil spill.

B. The Analysis of the No Action Alternative is Inadequate

The analysis of the “no action” alternative finds no impact on the biological environment and no impact on the physical environment. This lack of impact is positive. However, the analysis finds two adverse impacts of “no action” on the social environment: (1) a minor impact on unrealized local employment and tax revenue and (2) a major impact on the use and management of land and water from lost oil and gas exploration opportunity.

Greenpeace supports the creation of sustainable economies and jobs, especially for indigenous people and others who have been historically disadvantaged. However, the impact of no action on unrealized local employment and tax revenue is overstated. The DEIS points out that indigenous and local communities would not in reality gain that much from the exploration

activities. The nature of the work would be “short term.” There would only be a “small number of local hire positions,” associated with the mitigation measures. The DEIS anticipates that few “direct full-time employment benefits would materialize locally” for the Iñupiat people.

Furthermore, the impact of no action on tax revenue is over-estimated, because it includes an unsubstantiated and absurd scenario in which the federal government would be required to buy back the exploration leases.

Similarly, the impact of no action on the use and management of land and water is significantly inflated. The impact on the use of land and water focuses on lost opportunities for the transportation and commercial sectors. However, these lost opportunities are unsubstantiated and do not reflect the reality that there is currently insufficient infrastructure in place to support the proposed drilling. If the government desires to provide financial assistance to Alaskan communities such as Prudhoe Bay, Barrow, Wainwright, Nome, and Dutch Harbour, it can do so in alternative ways that do not subject these and neighbouring communities to the eventuality of an oil spill.

The analysis of the impact on the management of land and water takes the perspective that the government, having sold leases to Shell, is responsible for Shell’s ability to utilize the leases for oil and gas exploration. This is a misunderstanding of the cost-benefit balance. In pursuing the leases with knowledge of the extreme environmental impacts of drilling in the Arctic, Shell took a financial risk in order to position itself to make a financial profit. Just as the profit would not go to the government, the risk does not adhere to the government.

In summary, the DEIS overstates the adverse impacts of the “no action” alternative. Furthermore, it misrepresents the relative impacts of the alternatives. Table ES-3 presents the “no action” alternative as the only alternative with a *major* impact—the use and management of land and water. But it neglects to portray under the “action” alternatives the *major* impacts from an oil spill. This comparison is deceptive and confusing to the public and decision-makers.

C. The Range of Alternatives Does Not Address the True Purpose and Need

The range of alternatives essentially presents decision-makers with the choice to either (a) permit a narrow selection of exploratory activities or (b) allow no action, resulting in adverse impacts to local employment, tax revenue, and, as discussed above, land and water use and management. The choice reflects the framing of the DEIS’s purpose and need: whether or not NMFS and BOEM should issue the incidental take authorization and geological and geophysical permit, respectively.

However, the choice does not reflect the ultimate, true purpose and need that underlies the DEIS: the government is investigating in the interest of the American people how to meet the nation’s energy needs. Instead of merely providing a strawman “no action” alternative, the DEIS should develop other “action” alternatives illustrating how the nation’s energy needs could be met without permitting the oil and gas exploratory activities and their unnecessary and unacceptable environmental impacts. Indeed, agencies are required under the National Environmental Policy

Act to explore alternatives that “will avoid or minimize adverse effects of these actions upon the quality of the human environment.”²

Such an alternative would support the President’s vision for a clean energy economy:

As we recover from this recession, the transition to clean energy has the potential to grow our economy and create millions of jobs - but only if we accelerate that transition. Only if we seize the moment.

(It is noted that a reasonable range often includes alternatives that the agency cannot realize fully through its own jurisdiction alone.)

Greenpeace is pleased to offer such an alternative. The oil reserves in the Arctic are estimated contain merely three years’ worth of energy. Instead of focusing on such dirty, unsustainable energy sources, we explain how the country can meet its energy needs and attain energy security by developing renewable energy infrastructure and solutions. Complete with financial analyses and employment calculations, we show how 87.4% of primary energy demand can be supplied by renewable energy sources by 2050.

To assist NMFS and BOEM in developing this type of alternative in the DEIS, Greenpeace incorporates into the record the report “Energy [r]evolution: A Sustainable Energy Outlook: 2010 USA Energy Scenario.”

<http://www.energyblueprint.info/1239.0.html>

http://www.energyblueprint.info/fileadmin/media/documents/national/2010/0910_gpi_E_R_usa_report_10_lr.pdf?PHPSESSID=a403f5196a8bfe3a8eaf375d5c936a69 (PDF document, 9.7 MB)

² 40 C.F.R. § 1502.22.

III. International Law Issues

International law requires that nations act responsibly in exercising their sovereignty over natural resources within their jurisdiction and thus have a duty to prevent harm to the marine environment and to the environment of other nations. Authorization of exploratory activities at this stage has the potential to cause harm to marine ecosystems and the security of foreign indigenous peoples. U.S. authorities, including NMFS and BOEM, are therefore required to ensure that any exploratory activities will not cause harm outside of U.S. territorial borders.

Environmental conditions in the Arctic are unique and at the limits of scientific knowledge. Rising sea and air temperatures in combination with a retreat of sea ice threatens existing ecological structures and may be magnified by carbon release of melting permafrost. The coastal zone and continental shelves are the areas most sensitive to human activity. The marine ecosystems are delicately balanced and traverse geographical boundaries, so disruption in one link of the food chain through, for example, discharge of hazardous substances, can have severe repercussive effects for the rest of the system.

The Arctic is also a politically unique entity. Because most of the Arctic falls under the sovereignty of the five coastal States, with certain pockets remaining international space, any sustainable and integrated environmental governance system would require a high level of international cooperation. At the Lullissat Ministerial Conference of 2008, the United States, Canada, Denmark, Norway and Russia declared, “we recall that an extensive international legal framework applies to the Arctic Ocean . . . we remain committed to this legal framework”

The United States and Canada both own areas of the Beaufort Sea with probable hydrocarbon reserves. This area is on the migratory pattern for several species of marine mammals and is geographically proximate to subsistence hunting aboriginal peoples on both sides of the border. It is therefore vital that both countries adopt an integrated and cooperative approach to impact assessment arising from any Arctic hydrocarbon development because the unintended consequences of such development carry the potential to wreak havoc on the sensitive arctic ecosystem.

Indigenous peoples in North American are already struggling to survive in a changing climate with reduced permafrost, increased water acidification and changes to the traditionally known patterns of animals used for subsistence hunting. Increased hydrocarbon activity in the Arctic creates conflict between the commercial exploitation of resources and the continuity of indigenous ways of life. The DEIS arbitrarily discriminates between consultation with indigenous peoples apparently based solely on which side of the U.S.-Canadian border those peoples live.

As elaborated upon below, the DEIS fails to address adequately several aspects of international law. For example, there are significant procedural deficiencies in, amongst others, public participation and assessment of potential adverse effects on wildlife and indigenous Arctic peoples.

A. The DEIS Fails to Observe the Principle of “No Harm”

The principle of ‘no harm’ or due diligence, is a principle of customary international law binding on the United States. The principle was first enunciated in arbitration between Canada and the United States where American landowners alleged damage from sulfur dioxide emitted by a Canadian smelter caused damage. In awarding damages, the Tribunal noted:

[U]nder the principles of international law, as well as the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.³

Principle 21 of the 1972 Stockholm declaration introduced a reformulated statement of rights to resource extraction and responsibility of to avoid transboundary damage:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.⁴

This principle has been held by the International Court of Justice to have attained the status of customary international law in two recent cases.⁵ This principle is reiterated in the 1992 Rio Declaration, Principle 2, adding only a ‘developmental’ context to the obligation to avoid transboundary harm. The principle requires countries to implement systems of environmental management in order to assess whether transboundary effects are possible and, if likely, to notify and consult the affected state to prevent the transboundary impact.

The Espoo Convention on Transboundary Impact is commonly used as the global standard for how to implement the requirements of the ‘no harm’ customary law principle which is binding on all countries. The United States has signed, but not ratified the Espoo Convention.

³ Trail Smelter Arbitration, 3 R.I.A.A. at 1965. See also Corfu Channel Case (U.K. v. Ir.) 1949 I.C.J. 4, 22 (April 9).

⁴ The Declaration of the United Nations Conference on the Environment, Principle 21 (1972).

⁵ The ICJ stated as follows: “The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment.” The ICJ first stated this view in its *Advisory Opinion in the Legality of the Threat or Use of Nuclear Weapons*, *Advisory Opinion*, I.C.J. Reports 1996, p. 226, para. 29. The Court also repeated this passage in the case concerning the *Gabcíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, I.C.J. Reports 1997, p. 7, paragraph 53.

Therefore, under Article 18 of the Vienna Convention of the Law on Treaties, the United States is obligated not to frustrate the object and purpose of the treaty. The Espoo Convention applies to offshore hydrocarbon exploration and production, as stated in its Appendix 1. Under the convention, a country engaging in this type of activity must “take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities” and must notify and provide information to a potentially affected country.

Here, the DEIS notes, albeit indirectly, its awareness of the possibility of adverse, transboundary effects on subsistence resources that migrate within and without U.S. borders. For example, an adverse effect on subsistence beluga whale hunting in the Canadian community of Tuktoyaktuk potentially accompanies hydrocarbon development of the Chukchi and Beaufort Seas.

The DEIS has failed, however, to assess those impacts and has not evidenced that NFMS and BOES have notified or consulted with Canada and its potentially affected communities. Therefore, the DEIS fails to observe the no harm principle in considering the transboundary impacts of the exploratory activities.

B. Potential Impacts on the Inuvialuit Community of Tuktoyaktuk, Canada

The marine environment of the Arctic and the capacity of indigenous peoples to continue subsistence hunting are under ever greater threat from a changing climate. Climate change research suggests that the population size, reproduction rates and migratory patterns of animals upon which indigenous peoples depend are being adversely affected. These trends could present permanent irreversible change to the way of life of Arctic indigenous peoples. Hydrocarbon activities in the Arctic have the capacity to aggravate and accelerate threats faced by indigenous peoples through interference with the marine ecosystem.

The DEIS notes that subsistence hunting occurs within the project area and states, “Oil and gas exploration activities could disturb and displace subsistence resources, causing them to move away from coastal waters and become less readily available to subsistence hunters. Contamination of subsistence resources through discharge of drilling muds and other waste streams from ships and support facilities industrial pollution would be possible.”

However, the DEIS fails to consider impacts on subsistence hunting that occur outside the project area, for example, in the Canadian portion of the Beaufort Sea. There is no explanation why the DEIS has adopted a discriminatory approach to the effects on indigenous people regarding subsistence hunting.

The Inuvialuit community of Tuktoyaktuk is located on the Canadian side of the border with Alaska. As is the case with many indigenous peoples in the United States, the Toktoyaktuk community faces food security challenges due to changes in the abundance and distribution of wildlife, including the required time to harvest subsistence marine sources. Beluga whales remain an important food source for the people of Toktoyaktuk and reliance on this source of food render inhabitants very sensitive to any changes in the patterns of migratory marine life or any conditions that effect processing or hunting. People of Toktoyaktuk hunt beluga whales with harpoons and rifles from aluminum boats in the open water of Kugmallit Bay, especially around

Hendrikson Island. While hunting is done relatively close to the community, hunters travel further afield if the need arises.

Beluga whales are listed as threatened on the IUCN Red List due to overharvesting and increased threats from shipping traffic and commercial exploitation by Russia. The United States and Canada rely on non-binding co-management agreements between indigenous peoples and federal agencies, such as the Alaska Beluga Whale Committee and the Nunavut Wildlife Management Board in Canada. Clearly these entities are relevant stakeholders for consultation purposes.

The Beluga whales hunted by Inuvialuit of Toktoyaktuk are from the Eastern Beaufort Sea Stock.⁶ However, the Eastern Beaufort Belugas have a wide range and are known to migrate westward along the Alaskan coast each August. It is believed that they overwinter in the Chukchi Sea, along with three other groups of Belugas that are collectively known as the Bering Sea Stock.⁷ Crucially, very little is known about the interaction of these four groups or where each population resides within the Chukchi Sea.

It is believed that the Beluga whales feed mostly offshore in deeper waters where they dive for fish and invertebrates.⁸ The whales arrive in Kugmallit Bay once it is ice-free and offshore ice conditions permit their movement, generally in late June or early July; migration out of the bay starts in July but it is not uncommon for Inuvialuit to still see whales in early August.

It is estimated that each year approximately 200 whales are taken from the Eastern Beaufort Sea Stock. This accounts not only for Inuvialuit hunting, but also for Alaskan community hunting in Diomede, Kivalina, Point Hope, Point Barrow and Kaktovik.⁹

Exploratory activities clash with the migratory period of the Beluga whale. This migration brings the Beluga to areas where the subsistence hunt of the peoples of Toktoyaktuk has been carried out since time immemorial. It is known that belugas are sensitive to sonar interference and the presence of chemicals in water. Exploratory activities could impact the hunt by reducing the number of belugas that arrive in Kugmallit bay or displacing the whales and requiring hunters to travel further from the shore to hunt.

Considering noise effects from sonar impulses and exploratory drilling on migrating bowhead whales, the draft Chukchi EIS states, “Drilling operations occurring during September and October could potentially disturb and displace bowheads migrating through and across the Chukchi Sea.” It is thus possible that the same operations could disturb and displace beluga whales migrating to and from the hunting ground of Kugmallit Bay – perhaps requiring hunters to travel further to hunt and potentially reducing the feasibility of the hunt.

⁶ Harwood, L.A., & Smith, T.G. (2002) Whales of the Inuvialuit Settlement Region in Canada’s Western Arctic: an overview and outlook. *Arctic* 55: 77-93.

⁷ Harwood & Smith, at note 15.

⁸ Harwood & Smith, at note 15.

⁹ Harwood & Smith, at note 15.

Measures are detailed in the DEIS that aim to prevent adverse impact on the subsistence hunting of marine mammals by indigenous peoples on the U.S. side of the border with Canada. However, there are no equal measures to guard against similar interference in the case of Canadian-based indigenous peoples.

The DEIS notes that the impact on beluga whales of a major oil spill in the Chukchi or Beaufort Seas would be a “major impact from toxic exposure, loss of seasonal habitat, reduction and contamination of prey, and disturbance from increased human activity”. The DEIS does not assess the effects of such a spill on indigenous peoples located on the Canadian side of the border, even though it is widely known that many marine mammals, including belugas, have transboundary migration patterns.

The United States and Canada are party to the United Nations International Covenant on Civil (CCPR) and Political Rights. The CCPR requires all eight Arctic states to protect individuals belonging to minorities pursuant to Article 27 of the Covenant. Although this is an individual right, positive measures by States may also be necessary to protect the identity of a minority and its traditional way of life – including traditional livelihoods - of indigenous peoples. The Human Rights Committee, tasked with monitoring the Convention, has given expansive interpretation to Article 27 in its case law and has held that the traditional livelihoods of indigenous peoples must enjoy protection.

Furthermore, the Committee has deemed that in assessing the acceptability of an activity, a State must take into consideration all commercial activities taking place in an area, in other words, whether these cumulative activities constitute a danger to the traditional livelihoods of indigenous peoples. Consequently, a State should therefore assess – normally explicitly in the EIA procedure – the adverse effects of commercial activities on, for instance, beluga hunting, the traditional livelihood of the peoples of Toktoyaktuk.

According to the Human Rights Committee, Article 27 calls for a State to enter into meaningful consultations with representatives of those indigenous peoples whose traditional livelihood is interfered before granting a permit. Article 27 therefore requires from a State a particular obligation of consultation in terms of indigenous peoples, depending on the matter and extent of the consultation.

Because hydrocarbon development has the potential to adversely affect the subsistence hunting of the Toktoyaktuk people, NMFS and BOEM should offer the opportunity for consultation with the people of Toktoyaktuk and incorporate their traditional knowledge into its decision making process.

C. The Arctic Council’s Arctic Guidelines

The United States is a member of the Arctic Council, an intergovernmental body. The Arctic Council has adopted general guidelines for Environmental Impact Assessment in the Arctic that urges the assessment of activities from the point of view of likely transboundary impacts. The guidelines recognize that transboundary impacts can particularly occur with the development of

oil and gas resources and note, “Communities in the area of anticipated impacts should be given an opportunity to participate, irrespective of their location relative to the border.”¹⁰

Furthermore, the Arctic Council has adopted specific Arctic Offshore Oil and Gas Guidelines. The guidelines specify that offshore oil and gas activities should be conducted so as to protect, and avoid adverse impacts on, living resources and the ecosystems on which they depend; to avoid adverse impacts on the traditional ways of life, resource uses and cultural values of Arctic indigenous communities; and to coordinate with other human activities in the region. Under the Arctic Guidelines, special attention should be given to marine mammals that are resources for human use, particularly by indigenous peoples. The attention required is not limited with regard to national jurisdiction.

The beluga whales that migrate from the project area under U.S. jurisdiction to waters under Canadian jurisdiction are marine resources harvested by aboriginal peoples. Thus they warrant special attention in the DEIS. However, the DEIS fails to address the issue of transboundary harm in this context and failed to provide an opportunity to participate to the people of Toktoyaktuk, who depend upon the migratory beluga whale for subsistence uses.

¹⁰ Arctic Environmental Protection Strategy, 1997 chapter 11, paras. 9-10.



Arcticeis Comments <arcticeis.comments@noaa.gov>

Director of Protective Resources, Comment on DEIS

1 message

Dave Harbour <harbour@gci.net>

Tue, Feb 28, 2012 at 6:51 PM

To: arcticeis.comments@noaa.gov

The proposed restrictions would effectively take what industry purchased in good faith and make development of offshore leases in the Arctic improbable and uneconomic. The DEIS is extremely problematic in that proposed mitigation measures will severely compromise the economic feasibility of developing oil and gas in the Alaska OCS. Elements of the DEIS exceed the authority of the NMFS and it should be withdrawn.

Dave Harbour



Arcticeis Comments <arcticeis.comments@noaa.gov>

Arctic Drilling

1 message

Justin Hof <j.justinhof@yahoo.com>

Tue, Jan 3, 2012 at 11:10 AM

Reply-To: Justin Hof <j.justinhof@yahoo.com>

To: "arcticeis.comments@noaa.gov" <arcticeis.comments@noaa.gov>

Because of recent events on the Deepwater Horizons disaster, I beleive that it is short sighted to open up more arctic waters to oil and gas operations. I beleive that the land and wildlife that use the land deserve the utmost protection.

Thank You,

Justin Hof

IÑUPIAT COMMUNITY of the ARCTIC SLOPE
an IRA Regional Tribal Government

P.O. Box 934 · Barrow, Alaska 99723
Ph: (907) 852-4227 1-888-788-4227 Fax: (907) 852-2449



February 28, 2012

VIA ELECTRONIC MAIL

Mr. Jim Lecky
Director
Office of Protected Resources
NOAA Fisheries
1315 East-West Highway
Silver Springs, MD 20910
arcticeis.comments@noaa.gov

Re: Comments on the Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean (76 Fed. Reg. 82275 (December 30, 2012)).

Dear Mr. Lecky,

Thank you for the opportunity to comment on the Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean (DEIS). *See* 76 Fed. Reg. 82276 (December 30, 2011) (announcing availability of draft and comment period). These comments are submitted on behalf of the Iñupiat Community of the Arctic Slope (ICAS).

ICAS is a regional tribal government for eight villages on the North Slope of Alaska. ICAS was organized in accordance with the Indian Reorganization Act of 1934. Pursuant to our Constitution and By-Laws, approved by the U.S. Department of the Interior, our membership includes all persons of Inupiat blood living within the Arctic Slope of Alaska. ICAS represents the Iñupiat people who have relied upon the species and other natural resources in the Beaufort and Chukchi Seas for subsistence purposes since time immemorial.

In a recent election, our membership weighed in and directed ICAS to continue its work to protect our resources from the threats posed by offshore drilling. As our elders have stated, "the Sea is our garden." Our people live off the subsistence resources of the Beaufort and

Chukchi Seas, and our subsistence practices form the very backbone of our community and ensure our physical, spiritual, and mental health.

As tribal representatives, we feel a great responsibility and obligation to protect the ecosystem and resources that were left to us by our elders so that our children and grandchildren have the same opportunity to practice our ancient traditions. It is for this reason, that we ask NMFS to adopt: 1) the no action alternative; 2) a community-supported alternative (as discussed by the Alaska Eskimo Whaling Commission in its comments); 3) an alternative that limits activities based on set sound levels that cannot be exceeded (as proposed by the North Slope Borough); 4) an ecosystem based management alternative; or 5) an alternative that requires use of the all the mitigation measures (*i.e.*, standard and additional measures) plus a zero discharge plan, the new technologies discussed in Alternative 5, and the level of activity designated for Alternative 2.

We appreciate your efforts to incorporate traditional knowledge into the NEPA process. However, most of this information stems from the scoping process or from prior comments submitted by North Slope entities. Why didn't NMFS utilize government-to-government consultation to gather additional relevant information on traditional knowledge? We are constantly forced to ask government agencies to engage with us on a government-to-government basis and to do so early enough in the process so that our consultations will be meaningful and will be considered by the agencies. We reiterate these requests here and hope that NMFS will work more closely with us in the future on critical projects and analyses such as this one.

For years, we have emphasized to the federal government and the oil and gas industry that the Arctic presents grave and unique challenges to offshore oil and gas exploration. Among these is the risk of a major oil spill. The Deepwater Horizon catastrophe in the Gulf of Mexico has only strengthened our concerns about the impacts of a spill in Arctic waters. We can no longer operate under the flawed assumption that an oil spill will not occur in the Arctic. The DEIS must therefore, assume a spill will occur and plan accordingly. The consequences for our Villages and our subsistence practices if a spill occurs would be catastrophic. A small spill could deprive a Village of bowhead whales for one season and a large spill could deprive many villages of bowhead whales for many years. The consequences of either of these events has disastrous repercussions for the health of our communities and our culture. Until the oil and gas industry can demonstrate that oil can be cleaned up in a broken ice environment during the limited open water season, and the federal government has infrastructure in place to respond to a major spill in the Arctic, authorization for exploratory drilling operations in the Beaufort and Chukchi Seas should not be given by NMFS under the Marine Mammal Protection Act (MMPA), because of the impacts to Alaskan Native's subsistence practices.

The consideration of other direct impacts such as those to air and water quality, bowhead whales, and subsistence are also inadequate as is the consideration of cumulative impacts. We incorporate the comments of Alaska Eskimo Whaling Commission and our whaling captains. The consideration of mitigation measures in the draft EIS is also inadequate and incomplete. This process also calls for the preparation of human health assessments and an environmental justices analysis.

Our communities and our people are already struggling with the dramatic impacts of a warming climate, which threatens our subsistence resources, our ability to hunt and travel over the ice, our ability to store our food, and care for the health of our communities. Allowing five to six seismic surveys, five site clearance surveys, one on ice seismic survey, and two exploratory drilling operations in each the Beaufort and the Chukchi Seas will not aid our communities' ability to engage in subsistence practices and our traditional way of life. We ask that you reconsider your proposal and adopt new alternatives that will protect our the Arctic and our people.

A. The Range of Alternatives Considered Needs to be Expanded and NMFS Should Adopt a More Protective Alternative that Limits Activities.

The range of alternatives presented in the DEIS is insufficient. We ask that NMFS cure this problem by considering the following alternatives for adoption:

- 1) a community-supported alternative that would create a Conflict Avoidance Agreement like process for our communities to negotiate mitigation measures with industry for proposed offshore oil and gas activities;
- 2) an alternative that limits activities based on set sound levels that cannot be exceeded;
- 3) an ecosystem based management alternative; or
- 4) an alternative that requires use of all the mitigation measures (*i.e.*, standard and additional measures) plus zero discharge, the new technologies discussed in Alternative 5, and the level of activity designated for Alternative 2.

We support the community-supported alternative discussed by the Alaska Eskimo Whaling Commission in its comments on the DEIS and we also support the proposal by the North Slope Borough to set sound levels for the Beaufort and Chukchi Seas and to approve or not approve activities based on their contributions to these sound levels. Our proposal for an ecosystem based management alternative is discussed below. We also support combining the activity level of Alternative 2 and applying both the standard and additional mitigation measures plus a zero discharge requirement, and the new technologies discussed in Alternative to create a new alternative.

We ask that NMFS adopt either the no action alternative or one of the four alternative outlined above. The current alternatives in the DEIS authorize significant levels of offshore oil and gas activities. We are deeply concerned about what the impacts from these activities will be on our air, water, subsistence foods, and communities and culture. For this reason, we ask NMFS to consider more limited alternatives that are more protective of our way of life and that will reduce the impacts to Arctic communities.

1. NMFS Should Consider as an Alternative an Ecosystem-Based Management (EBM) Plan.

NMFS should consider an ecosystem-based management plan (EBM) to protect habitat for the bowhead whale and all the important wildlife species of the Arctic that support the Iñupiat people. In the DEIS, NMFS focuses on authorizing specific levels of oil and gas activity, but the Arctic Ocean is much more complex than simply providing a venue for exploration and development of petroleum resources. Human use of the Arctic is increasing rapidly, and a number of different anthropogenic sources of disturbance are expected to affect wildlife and other natural resources in the coming years. NMFS should consider an EBM alternative that would comprehensively regulate the variety of anthropogenic impacts on the Arctic ecosystem.

An EBM alternative would address many of the concerns that we have with the current DEIS. In the DEIS, for example, NMFS proposes to approve specific levels of industrial activity in the Beaufort and Chukchi Seas without establishing clear, consistent protections for important habitat areas and the subsistence practices of the Iñupiat people. NMFS proposes to approve specific levels of industrial activity while deferring a decision on key protections and mitigation measures, including deferral areas, time/area closures, decisions on new technologies, designated vessel travel routes, operational restrictions, and other mitigation measures. Moreover, NMFS concedes that levels of industrial activity may have negative impacts on bowhead whales and the subsistence hunt, which would likely violate the requirements of the MMPA, but it still propose to defer a decision on important protections for habitat and subsistence practices.

In our view, the analysis of alternatives is fundamentally flawed, because NMFS has not developed any alternatives that include a fully-developed suite of protections for habitat and subsistence practices. Without this information, the decision maker does not have complete information and therefore cannot make an informed decision as to the ultimate impacts of industrial activity and the necessary means to implement the required protections for marine mammals and subsistence activities. An EBM alternative would remedy this shortcoming by setting as clear objectives future conditions that include the long-term protection of bowhead whales and their habitat as well habitat for a host of other important wildlife species. By looking at management of the Arctic comprehensively from an ecosystem-based perspective, NMFS could more effectively manage cumulative impacts while identifying necessary measures to protect against adverse impacts that are inconsistent with the long-term protection of habitat. Again, we strongly recommend that NMFS look at the Norwegian management plan for the Barents Sea and develop an alternative for the Arctic that incorporates explicit management objectives targeted at maintaining habitat diversity and protecting habitat for vulnerable species.

Our concerns over the cumulative threats to the bowhead whale demonstrate the potential value of an EBM approach to management. Bowhead whales are long-lived creatures that travel great distances during their annual migration. They are therefore potentially exposed to a wide range of potential anthropogenic impacts over broad geographical and temporal scales. In focusing narrowly on a decision to approve levels of oil and gas activities, NMFS is likely to mask the overall level of effect on the bowhead whale. Additional sources of disturbance are likely to present cumulative threats to the whale and its habitat, including: increased shipping traffic through the Bering Strait and the Arctic Ocean, entanglement with fishing gear in the Bering Sea, oil and gas activities in the Russian Chukchi Sea and the Canadian Beaufort Sea, and increased underwater noise from shore-based infrastructure. In addition, climate change and ocean acidification are rapidly changing baseline conditions and must also be incorporated into

any assessment of future anthropogenic impacts. A narrow focus on oil and gas activities is therefore likely to underestimate the overall level of impact on the bowhead whale, whereas an EBM approach would better regulate the totality of potential impacts to wildlife habitat and ecosystem services in the Arctic.

Moreover, proposals for EBM of the Arctic have been discussed for many years, and NOAA has a wealth of materials from which it can draw ideas and concepts. We have attached a sample of the available materials to demonstrate the high level of thinking that many scientists and organizations have already devoted to this subject. In addition to the management plan for the Barents Sea, these sources include:

- 1) Environmental Law Institute. *Intergrated Ecosystem-Based Management of the U.S. Arctic Marine Environment – Assessing the Feasibility of Program and Development and Implementation* (2008)¹
- 2) Siron, Robert et al. *Ecosystem-Based Management in the Arctic Ocean: A Multi-Level Spatial Approach*, Arctic Vol. 61, Suppl 1 (2008) (pp 86-102)²
- 3) Norwegian Polar Institute. *Best Practices in Ecosystem-based Oceans Management in the Arctic*, Report Series No. 129 (2009)³
- 4) The Aspen Institute Energy and Environment Program. *The Shared Future: A Report of the Aspen Institute Commission on Arctic Climate Change* (2011)⁴

We also feel it important to stress that an EBM approach is clearly consistent with the policy objectives of the MMPA and within the existing discretion of NMFS to develop and implement. Indeed, in passing the MMPA, Congress explicitly stated that “the primary objective of [marine mammal] management should be to maintain the health and stability of the marine ecosystem.”⁵ Congress also delegated to the Secretary the responsibility and obligation to “prescribe such regulations with respect to the taking and importing of animals from each species of marine mammal . . . as [s]he deems necessary and appropriate to insure such taking will not be to the disadvantage of those species and population stocks and will be consistent with the purposes and policies set forth in section 2 of this Act.”⁶ In issuing such regulations, Congress directed the Secretary to consider, among other things, “the marine ecosystem and related environmental considerations . . .”⁷ Congress also delegated to the Secretary broad discretion to develop mechanisms that “may include, but are not limited to, restrictions with respect to” the number of animals that can be taken, the age, size, or sex of animals that may be taken, and the timing, manner and location of taking marine mammals.⁸ Congress therefore directed the Secretary to manage marine mammals for the benefit of the ecosystem as a whole and delegated broad rulemaking authority to accomplish these purposes.

¹ Attachment 1.

² Attachment 2.

³ Attachment 3.

⁴ Attachment 4.

⁵ 16 U.S.C. § 1361(6).

⁶ 16 U.S.C. § 1373(a).

⁷ 16 U.S.C. § 1373(b).

⁸ 16 U.S.C. § 1373(c).

An EBM is also fully consistent with the policy objectives of the Executive Branch and President Obama's Administration. On July 22, 2010, President Obama issued Executive Order 13547, entitled "Stewardship of the Ocean, Our Coasts, and the Great Lakes."⁹ The EO "provides for the development of coastal and marine spatial plans" that "will enable a more integrated, comprehensive, ecosystem-based, flexible, and proactive approach to planning and managing sustainable multiple uses across sectors and improve the conservation of the ocean [and] our coasts."¹⁰ The EO adopted "the recommendations of the Interagency Ocean Policy Task Force" and "directs the executive agencies to implement those recommendations under the guidance of the National Ocean Council."¹¹

The implementation strategy of the National Ocean Council includes ecosystem-based management as the number one national priority objective.¹² Those priority objectives also include addressing changing conditions in the Arctic and strengthening the resiliency of coastal communities in the face of a changing climate and ocean acidification.¹³ Indeed, the federal government is currently taking comment on a Draft Implementation Plan that sets forth a plan for "Federal Government-wide implementation of EBM" while "moving away from a sector-by-sector approach to management toward a more integrated way of doing business."¹⁴

In sum, consideration of an EBM alternative in the DEIS is fully consistent with Congressional policy and the discretion delegated to the Secretary, is fully consistent with the policies of the Executive Branch, and is responsive to the concerns of the local impacted communities in the Arctic. Moreover, there is a wealth of information NMFS can draw from in developing this alternative, including examples from other countries and numerous reports and studies in which scholars and organizations have studies and set forth proposals for EBM planning in the Arctic.

B. The Analysis Of The Direct Impacts Of The Project Is Insufficient.

1. The oil spill analysis section needs to be reworked and updated.

The recent well blowout and natural gas leak on the North Slope are a reminder that such events are perhaps more likely than we expect.¹⁵ Even when the company, its experts, and the government agencies all review the seismic profile of the area to be drilled, they missed the shallow gas pocket and unexpected events occurred with consequences for our environment. If this recent spill had involved oil and not gas, we cannot begin to imagine the catastrophe that

⁹ 75 Fed. Reg. 43023 (July 22, 2010).

¹⁰ *Id.* at Sec. 1.

¹¹ *Id.*

¹² <http://www.whitehouse.gov/administration/eop/oceans/objectives>

¹³ *Id.*

¹⁴ National Ocean Council, *Draft National Ocean Policy Implementation Plan*.

¹⁵ The spill occurred while Repsol was drilling a well on-shore and hit a pocket of shallow gas that caused the well to blow out. <http://www.adn.com/2012/02/16/2321760/north-slope-blowout-is-still-out.html> The well spewed 42,000 gallons of drilling mud.

would have resulted. Let this incident serve as a reminder to us all that we cannot assume oil and gas spills are unlikely.

The Arctic DEIS relies upon and incorporates the analysis from the final EIS for Lease Sale 193. DEIS at 4-350. That analysis is flawed. It fails to acknowledge that oil spill containment and cleanup technology in the Arctic is not yet demonstrated. The Lease Sale 193 EIS fails to adequately address the risks and difficulties of same season relief well drilling and it fails to assess alternative means of containing a blowout to address the unique problems posed by the Arctic environment, including sea ice, severe weather, cold, and darkness.

More importantly, the Lease Sale 193 EIS is lacking in an in-depth analysis of how impacts to subsistence use and marine mammal populations will be mitigated throughout clean-up and afterward to preserve subsistence hunting opportunities (as required by the MMPA) and maintain current bowhead whale and other marine mammal populations.

NMFS's decision to create a separate section of the DEIS to address oil and gas spills results in the impacts from spills being segmented out from the impacts of the alternatives. In light of the fact that the alternatives authorize different levels of activity, they are likely to have different risk levels for an oil or gas spill occurring. Therefore, it is important that the impacts of a spill or spills is analyzed along with the alternatives instead of separately. This is also important because the impacts of a spill or spills resulting from any of the action alternatives needs to be considered along with the other impacts of that alternative so the decision-maker can make a reasoned choice among the alternatives. Segmenting out the spill impacts seemingly lessens the impacts of the alternatives as they are discussed in the DEIS. For this reason, we encourage NMFS to re-work the discussion of oil spills into the discussion of the project alternatives.

The discussion of subsistence in the section on oil spills needs to be expanded. All that NMFS discusses is the impacts from the IWC reducing the bowhead whale quota. This analysis is incomplete. It needs to discuss the longer term impacts to our communities from loss of our whale hunting tradition. It also needs to discuss the impacts to other subsistence resources. What are the effects of the loss of whales, seals, walrus, and fish on our people?

Additionally, the analysis needs to include a discussion of the impacts of a smaller spill that would deprive one, two, or three of villages of bowhead whales for a season or two seasons. What are those impacts? How could they be mitigated? These are serious issues and lay at the heart of our concerns for offshore oil and gas drilling. Please make sure that the EIS includes an in-depth discussion of these impacts that relates to the alternatives under consideration.

- 2. The current analysis of air quality impacts is no longer accurate do to a change in applicable law and requires revision for several other reasons.**
 - a. The Clean Air Act was amended and the EIS needs to be updated to reflect the change of air permitting from EPA to BOEM.**

Unfortunately, there is now a major flaw in the analysis of air quality impacts in the DEIS. Around the time the DEIS was made available for public comment, a rider in a December 2011 appropriations bill changed air permitting authority along the North Slope of Alaska. Consolidated Appropriations Act of 2012, Pub. L. No. 112-74 (Dec. 23, 2011). The rider removed EPA's authority to issue air permits and delegated that permitting authority to BOEM. As a result of this change in law, the analysis of air quality impacts and air permitting in the DEIS is no longer accurate.

It is critical that the DEIS recognize this change in law and its significant ramifications for air quality in the Arctic. EPA issued air permits to offshore oil and gas companies based on the Clean Air Act and detailed implementing regulations. *Compare* 42 U.S.C. § 7627, 40 C.F.R. part 55 *with* 30 C.F.R. §§ 250.300-304. On the other hand, BOEM's air permitting regulations are antiquated, ill equipped to protect air quality in the Arctic, and contain no requirement that the permittee comply with air quality standards or apply BACT to its operations except for in rare circumstances (due to the exemption calculations in the regulations). *See* 30 C.F.R. § 250.303(d). Therefore, until there is some indication that BOEM intends to adopt new air permitting regulations for the Arctic or otherwise adopt regulations that will ensure compliance with the requirements of the Clean Air Act, it is imperative that NMFS address the worst case scenario – offshore oil and gas activities proceeding under BOEM's current regulations.¹⁶

b. The emissions estimates need to be increased to account for emissions that are not documented in EPA issued air permits or permit applications.

We thank NMFS for using recent air quality data including the data being collected by contractors for ConocoPhillips, Shell, and others. Arctic DEIS at 3-31. However, ICAS is concerned about NMFS's reliance upon recent draft air permits and permit applications as a source for potential emissions information. DEIS at 4-27. The Clean Air Act section 328 only requires calculation of the potential emissions of associated vessels – *i.e.*, the majority of the vessels associated with offshore oil and gas operations – when they are within 25 miles of the drillship, jack-up rig, or other OCS source. 42 U.S.C. § 7627(a)(4)(C) (“emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source”). Therefore, the emissions calculations in the draft and final EPA issued air permits and in the applications for those permits, while helpful, cannot serve as the complete inventory of air emissions for a NEPA analysis. The same thing is true for the modeling that is done for EPA issued air permits. DEIS at 4-35.

Instead, this information can serve as a springboard for estimating the complete emissions from the operations by extrapolating the emissions from vessels outside the 25 mile radius of the OCS source (*i.e.*, drillship, jack-up rig, etc.) and the emissions from other vessels

¹⁶ By advocating that NMFS analyze what air permitting would look like under BOEM's existing regulations, ICAS in no way condones that implementing the Clean Air Act in this manner would be lawful. Instead, we are simply explaining where air permitting stands at current in the Arctic.

that never enter that radius. Additionally, the DEIS needs to include estimates of the emissions from all vessels while in transit to and from the site of their operations. ICAS is happy to meet with NMFS to discuss this information further, because it is critical that the EIS contain more complete estimates of the emissions from offshore oil and gas operations than it currently contains.

c. Air permitting for the Arctic demonstrates that the AP-42 emissions factors are insufficient for capturing actual emissions.

We also disagree with NMFS's use of solely the AP-42 emission factors. A comparison of the 2011 Shell's air permits for its *Discoverer* and *Kulluk* drillships illustrates this problem. The *Discoverer* is considered to be a major source and thus, subject to BACT while the *Kulluk* is a synthetic minor source (*i.e.* a source that is technically major but that requested limits on its emissions to keep them below the major source thresholds). In the *Discoverer* permits, EPA uses 26.6 lb/103 gal as the emission factor for NO_x based on stack tests of the heaters and boilers. In the *Kulluk* permit, EPA uses 20 lb/103 gal., which is the AP-42 emission factor for the heaters and boilers. In other words, the *Discoverer* emission factor (for operations that are subject to BACT) *is higher than the emission factor* applied to the *Kulluk* heaters and boilers, which are not subject to BACT.

This example illustrates the problem with relying solely upon AP-42 emissions factors. We recognize that at present emissions factors are difficult to compute for the Arctic and that the AP-42 emissions factors are an attractive one-stop shop for emissions information. However, we caution NMFS against using data that is potentially inaccurate for the Arctic as demonstrated by the example above. Please look at stack testing results and other emissions calculations for Arctic operations before relying solely on the AP-42 emissions factors in your analysis of air quality.

d. NMFS cannot assume that offshore operators will commit to using Ultra Low Sulphur Diesel fuel and several other assumptions in the air quality analysis must be corrected.

While it is correct that certain Arctic operators have committed to using ultra low sulfur fuel or low sulfur fuel in their operations, this assumption cannot be maintained in light of the transfer of air permitting authority to BOEM. The basic fact that use of ultra low sulfur fuel and low sulfur fuel has been a permit condition in EPA issues air permits, DEIS at 4-28, does not mean that it will be in the future (especially because EPA is no longer issuing air permits for North Slope offshore operations). In many instances, air permittees *request certain conditions* be included in their air permits and EPA honors those requests. The inclusion of such permit conditions in an EPA issued permit does not mean that such conditions will be included in the next air permit.

We point NFMS to the draft air permit and permit applications for Shell's 2009 Chukchi air permit for the *Discoverer* that did not include the use of ultra or low sulfur diesel fuel. We ask that NMFS include the 2009 projected air emissions for NO_x and SO₂ in the DEIS in order to

account for circumstances in which offshore operators do not agree to the use of ultra or low sulphur diesel fuel.

The vessel transit speeds used by NMFS in the DEIS, DEIS at 4-28, should also consider the terms of AEWG's Conflict Avoidance Agreement, which has included speed restrictions in certain geographic areas. A critical factor to include in the vessel emissions is the use of icebreakers. Critical to Arctic operations, icebreakers have some of the most polluting engines proposed for use in the Arctic (after the main propulsion engines of drillships and the like). Please look back over the various proposals for IHAs that have been submitted to NMFS to determine the instances when icebreakers are included in seismic and geological and geophysical surveys and update the air emissions information accordingly.¹⁷ When icebreakers are included in proposed operations, please ensure that accurate emissions calculations for these vessels are used instead of generic emissions factors.

NMFS is using a 70 percent control factor for "the propulsion engines, and for the main engines on the drill rig." DEIS at 4-32. Thus far, air permits have not been applied for by oil and gas companies engaging in seismic or geological and geophysical surveys therefore, these engines should not have a control factor applied to them. Additionally, EPA has only required BACT for the engines onboard the drillship – not for its propulsion engine or engines.¹⁸ Therefore, the propulsion engines should not be subject to a control factor.

3. The Water Quality and Subsistence Analyses Need to Be Updated.

We are disappointed that NMFS is not considering mitigation measure that includes a zero discharge requirement to protect subsistence resources. *See e.g.*, DEIS at 4-200-4-203. Our communities have long expressed their concerns about drilling muds, sanitary waste, grey water, heated water, and chemicals being pumped into the ocean, which is our garden. This is particularly a concern in areas through which marine mammals and fish that we eat migrate. Many people along the North Slope of Alaska will spur traditional foods if they believe they have been contaminated by offshore pollution. This leaves them little choice in what they can eat. This is a critical issue that requires exploration of a zero discharge mitigation measure in the DEIS to protect water quality and our subsistence practices. We ask that NMFS update its list of mitigation measures to include a zero discharge measure to address these impacts.

The contaminants of concern NMFS addresses in its "ecosystem approach" must include sanitary waste and drilling muds and cuttings. Both the section on water quality and subsistence require a discussion of mitigation measures and how NMFS intends to address local community concerns about contamination of subsistence foods. This is not covered in either the water quality or subsistence sections and must be addressed by the agency.

Additionally, we ask NMFS to explore the potential for diversion of bowhead whales and other subsistence species due to water and air discharges. Bowhead whales can sense pollutants

¹⁷ Thus far, every proposal for exploration in the Arctic has included the use of two icebreakers.

¹⁸ This is because the propulsion engine is not in use when the drill ship is considered to an OCS source and subject to regulation under the Clean Air Act.

and other discharges in the water and may divert their migrations as a result of these discharges. Because both direct discharges to the water and air pollution that is deposited in the ocean could impact bowhead whale migrations, we ask that NMFS look at where these waste streams will be located, where they will overlap between the air and water and between different operators, and match that up with the bowhead whale migration to discern potential areas of impact.

C. The Cumulative Impacts Analysis Is Insufficient.

We are disappointed by the consideration of cumulative impacts in the DEIS. The list of activities analyzed is incomplete, the consideration of the overall, synergistic impacts is limited or missing, and the conclusions fail to tie in the impacts from a possible oil spill or look at overall what the project alternatives, in addition to all other activities that are likely to occur, mean for our communities and our way of life.

We ask NMFS to include more details about offshore projects in Canada and Russia because these projects cumulatively impact our bowhead whales and other migratory species. While NMFS states that limited information is available, we recommend that the agency coordinate with the oil and gas industry as well as the governments of both these countries to obtain additional information.¹⁹

We also ask that NMFS use the past IHAs that it has issued for the Arctic as a baseline for the types of activities that take place and use this information to add into the cumulative effects analysis. How many icebreakers might operate in one season? How many vessels might transit the Bering Strait and at what times? How many vessels will travel to the Beaufort Sea and when? Additional details such as these which are relevant to our important subsistence resources need to be disclosed and discussed so we can understand the cumulative impacts that are foreseeable during the next five years. Without this information, we cannot provide meaningful input on the DEIS.

The DEIS must also consider the development of Arctic shipping routes and increased ship traffic and resulting impacts. This raises a great concern for ship strikes of bowhead and other whales and these significant impacts must be addressed in conjunction with the project alternatives. The DEIS must also consider the creation of production facilities, which increase the risk of spills and have longer term environmental impacts. We also ask that NMFS include a discussion of the recent disease that is affecting our seals and walrus and how potential similar future events like this (of unknown origin) are likely to increase in the future.

¹⁹ The following news articles contain information on the companies involved in offshore work that will aid NMFS in gathering the relevant information. See <http://www.alaskadispatch.com/article/chevron-canada-plans-beaufort-sea-seismic-testing>
<http://www.mondaq.com/canada/x/165652/Oil+Gas+Electricity/Oh+Canada+Significant+Developments+In+Canadian+Energy+January+2012>
<http://www.ogj.com/articles/print/vol-110/issue-2a/regular-features/ogj-newsletter.html>
<http://www.ogj.com/articles/2011/08/exxonmobil-rosneft-sign-arctic-black-sea-deal.html>
<http://www.ogj.com/articles/2011/07/russia--laptev-e-.html>

In discussing the impacts from climate change in the DEIS, please note the impacts to our ice cellars and other traditional mechanisms for keeping foods. DEIS at 4-456. Ocean acidification is also a great concern for our people and it is imperative that this impact of climate change is discussed in the DEIS.

It is not enough for NMFS to compare the impacts of the project alternatives to the impacts of climate change and conclude that offshore oil and gas activities are comparably minimal. *See, e.g.*, DEIS at 4-501. Instead the impacts are additive and if significant (because of climate change, ocean noise, or any other impact), should be mitigated or the project alternative amended to protect our people and our subsistence way of life. The current DEIS fails to include the requisite analysis of what overall the impacts to our environment and our people will be from the proposed project alternatives. Use the information you have on our subsistence hunting grounds and provide real information about what will happen in these areas and when, and then disclose what the impacts will be to our people.

D. The Discussion and Consideration Of Mitigation Measures Is Inadequate.

NMFS has put off until the future a determination of whether many mitigation measures will be required. That determination needs to be explored and made now so the public can offer meaningful comments on NMFS's proposed courses of action. We ask that NMFS require mitigation measures to be adopted now and include all the standard and "additional" mitigation measures as requirements. The public must have the opportunity to comment on NMFS's proposed plan of action, including the mitigation measures it intends to adopt, in order to provide meaningful input.

There are several additional mitigation measures that must be added to the list of measures. In light of the recent change in law regarding air permitting along the North Slope of Alaska, we ask NMFS to consider a mitigation measure that would require oil and gas companies who are engaging in exploration operations to obtain EPA issued air permits. With respect to water quality, Shell has demonstrated that near zero discharge capabilities exist in the Arctic. To address significant community concerns over the impacts of water discharges on subsistence foods, we ask NMFS impose this mitigation measure on exploratory operations. It is essential for the health of marine mammals, fish, and our communities. Many Iñupiat are concerned about eating polluted seafood and frankly may not consume traditional foods that are harvested from areas where it is known oil and gas companies discharged sewage, chemicals, and/or drilling muds and cuttings. This creates a catch twenty-two for local communities and imposing a zero discharge mitigation measure would go a long ways toward addressing community concerns. To address ocean noise and impact to subsistence, if NMFS does not adopt an alternative that imposes a sound limit for approved activities, we ask that NMFS either stagger operations or take some measures to ensure that migratory species do not encounter multiple ensonified areas and that the ensonified areas from oil and gas operations do not overlap.

E. NMFS and BOEM Need To Prepare a Human Health Assessment and Environmental Justice Analysis.

Please ensure that the human health and environmental justice impacts from offshore activities in the Arctic are adequately disclosed and considered before a decision is made among the project alternatives. Neither an environmental justice analysis, nor human health assessments appear to be among the documents available for public comment at this time. We request that a human health assessment and environmental justice analysis be made available for public input.

Under Executive Order No. 12898, NMFS is required to assess the disproportionately high and adverse impacts on human health and the environment for minority and disadvantaged communities. Exec. Order No. 12,898, Federal Actions To Address Environmental Justice in Minority Populations and Low- Income Populations, 59 Fed. Reg. 7,629, 7,632-33 (Feb. 11, 1994). This project requires an environmental justice analysis that explores the impacts of offshore oil and gas activities on the minority communities along the North Slope of Alaska. The limited information provided in the DEIS is not sufficient to meet NMFS's obligations under the Executive Order.

As an initial matter, the environmental justice section of the DEIS fails to even include all of our communities. The Villages of Little Diomedede, Wales, Gambell, and Savoonga are not included in the analysis; *see* DEIS at 4-232. Please update the EIS and the accompanying analysis to include these Villages.

BOEM has recognized that local communities in the Arctic face the most significant problems stemming from oil and gas activities in the area, which threatens to destroy our communities and our lifestyles. These problems would cause chronic disruption of our social patterns. Lease Sale 193 DEIS at 23 (Sept. 2010). Oil spills and other consequences of offshore oil and gas exploration will interfere with our ability to safely and consistently engage in subsistence hunting, harming our primary sources of nutrition and our culture. We cannot reconcile BOEM's conclusions in the Lease Sale 193 EISs with NMFS's conclusion in the Arctic DEIS. How can NMFS conclude that the disproportionate impacts to our people "would be minor" when it is possible that the food we eat and our resulting culture could be wiped out by an oil spill resulting from the activities being analyzed?

Moreover, by significantly increasing water and air pollution offshore, oil and gas activities will further amplify our exposure to toxic chemicals and diminished air quality. Yet, the analysis of environmental justice does not discuss the health baseline in our communities and how the significant industrial activity contemplated under the EIS alternatives will impact our people – especially those people who spend significant time offshore engaged in subsistence activities. These impacts from the project activities are significant given our predisposition and already high susceptibility to respiratory and other health problems. Taken together the additional impacts will intensify the already disproportionate burdens that we are facing from the rapid effects of climate change in the Arctic. However, we do not see these issues addressed in the environmental segment of the DEIS. Please update the document to address these issues.

The DEIS must also take a holistic look at all the activities that may cause bowhead whales to divert from their migrations with consequent impacts on our subsistence hunts. This analysis needs to start in the Canadian Beaufort and follow the whales down to the Bering Strait or Russian Chukchi Sea. Noise is well documented as diverting whales from their migratory

routes, but water and air discharges, increased vessel traffic, and potential production structures and pipelines must all be mapped out and included in this analysis. Our communities need to know what the real impacts to bowhead subsistence hunts will be and how far our whaling crews will have to travel and what the likely impacts will be to our communities. These impacts must be weighed in the disproportionate impact analysis.

With respect to preparing human health assessments, we ask that NMFS work with the North Slope Borough to accomplish these tasks. An assessment is critical now for informing NMFS choice of alternatives and to the development of mitigation measures to address the impacts to our communities. Relying upon the last health assessment from 2008 is no longer sufficient.

CONCLUSIONS

The Iñupiat people are dealing with multiple threats to our well being, including climate change, increased industrialization, and access to the North Slope. Our ice is melting. Our wildlife is stressed. Our air is polluted. We must first find solutions to these problems not authorize innumerable offshore oil and gas related activities in the Arctic.

Sincerely,


George Edwardson, President



IFAW

February 28th, 2012

Attn: Director James H. Lecky
Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration (NOAA)
1315 East West Highway, Room 13704
Silver Spring, MD 20910
arcticeis.comments@noaa.gov

INTERNATIONAL
HEADQUARTERS
290 Summer Street
Yarmouth Port, MA 02675-1734
USA
Tel: 508 744 2000
Fax: 508 744 2039

Subject: NOAA Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic

Dear James Lecky,

Australia
Belgium
Canada
China
France
Germany
India
Japan
Kenya
Netherlands
Russia
South Africa
United Arab Emirates
United Kingdom
United States

The International Fund for Animal Welfare (IFAW) supports a more precautionary approach to oil and gas development in the Arctic, and would encourage the agency to consider Alternative 1, no action. According to the Marine Mammal Protection Act (MMPA), “(a)uthorization for incidental taking shall be granted if NMFS finds that the taking will have a negligible impact on the affected species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses” (Section 101(a)(5) of the MMPA). In this case oil and gas activities in the Arctic are likely to have more than a negligible impact and at this time we lack proper mitigation strategies to be able reduce these impacts. Therefore, the issuance of incidental take authorizations (ITAs), for the incidental taking of marine mammals during geological and geophysical (G&G) permitted activities, ancillary activities, and exploratory drilling activities in the U.S. Beaufort and Chukchi seas should not be approved.

I. Recommendations to the National Marine Fisheries Service (NMFS) for actions and mitigation measures to be taken before allowing for oil and gas activities in the Arctic.

a. Collect baseline data and implement long term acoustic monitoring.

Until very recently Arctic marine mammals have been protected by a blanket of ice that has impeded human development resulting in relatively low levels of acoustic disturbance. The Arctic may be Earths last silent sea and our only remaining opportunity to gather an accurate baseline of the acoustic habitat needs of cetaceans.

Protection of acoustic environments relies upon accurate reference conditions and that requires the development of procedures for measuring the source contributions of noise as well as analyses of historical patterns of noise exposure in a particular region. Even studies implemented at this very moment will not be entirely accurate since shipping traffic has already begun taking advantage of newly ice-free routes. The Arctic is likely the last place on the planet where acoustic habitat baseline information can be gathered and doing so is imperative to understanding the resulting habitat loss from these activities. A comprehensive inventory of acoustical conditions is the first step towards documenting the extent of current noise conditions, and estimating the pristine historic and desired future conditions.

a. Protect quiet spaces.

The quietest marine environments, such as the Arctic, must be vigorously protected as they are the most vulnerable to noise intrusions. Unique environments for hearing natural sounds are equally important for understanding and researching anthropogenic noise. Little noise energy is needed to significantly deteriorate acoustic conditions in a region like the Arctic where natural sound levels are low. Just like any other significant resource, quiet merits the highest standards for protection.¹

A protected area's ecological integrity depends on the quantity and quality of time that key species spend within its boundaries^{2,3}. While scant, the data on arctic species distribution and migration data that does exist can be used to inform appropriate protected area designation. To protect against noise intrusion a quiet buffer area should be established when planning for acoustically disruptive activity to preserve the acoustic habitat and communication of species within the protected area. These protected areas can also provide a longer-term reference to document and quantify the benefits of spatial planning; areas that are quiet and of biological and ecological significance should be protected. For example, Hanna Shoal as an important ecosystem between the Chukchi Sea and Arctic Ocean and important habitat for walruses, polar bears, and gray whales. Barrow Canyon, a likely hotspot for primary productivity would be another candidate for protected status⁴.

b. Improve mitigation of survey noise.

IFAW believes that at “present the full animal welfare, biological and conservation implications of ocean noise pollution are unknown. What evidence we do have indicates that, at very least, noise has serious welfare implications for marine mammals and at worst the potential to disrupt entire ecosystems... It is essential that precautionary measures are introduced without delay to reduce man-made ocean noise and to mitigate its effects.”⁵

In the case of seismic surveys, improvements to analysis and processing methods would allow for the use of less powerful survey sources reducing the number of air-gun blasts. Better

¹ Hatch, Lelia and Kurt Fristrup. 2009. No barrier at the boundaries: implementing regional frameworks for noise management in protected natural areas. *Mar. Ecol. Prog. Ser.* Vol. 395: 223-244.

² Landry M, Thomas VG, and TD Nudds. 2001. Sizes of Canadian national parks and the viability of large mammal populations: policy implications. *George Wright Forum.* 18:13-23.

³ , Hooker S. K. & L.R. Gerber. 2004. Marine reserves as a tool for ecosystem-based management: the potential importance of megafauna. *BioScience.* 54: 27-39.

⁴ Thessen, Anne. 2010. Barrow Canyon: A Hot Spot for Subsurface Primary Productivity Adjacent to the Oligotrophic Canada Basin. Lecture at the Woods Hole Oceanographic Institute.

⁵ IFAW. 2008. *Ocean Noise: Turn it down – A report on ocean noise pollution.*

planning and coordination of surveys along with data sharing will help to reduce the number and lengths of surveys by avoiding duplication and minimizing survey noise. Requirements should be set in place for data collection, presence of adequate marine mammal observers, and use of passive acoustic monitoring to avoid surveys when and where marine mammals are present.

In areas new to oil and gas activities, regulations should be put in place that encourage or require the use of new quieter technologies. IFAW specifically recommends that agencies and industry involved in Arctic oil and gas exploration should establish a research fund to reduce source levels in seismic surveys. New techniques including vibroseis should be considered particularly in areas where there have not been previous surveys and so comparability with earlier data is not an issue. Likewise, similar to their vessel-quieting technology workshops, we encourage NOAA to fund and facilitate expanded research and development in noise reduction measures for seismic surveys. Noise reduction measures should be implemented by industry within US waters and by US companies internationally but especially in areas of the Arctic which have not yet been subjected to high levels of man-made noise.

c. Improve information exchange

It is urgent that information gathered in scientific studies be appropriately synthesized and conveyed in a useable manner for decision makers. Effort should be put towards enhancing interagency coordination for managing noise. The improved communication among federal agencies involved in noise impact assessment would enhance compliance with the US National Technology Transfer and Advancement Act (NTTAA).⁶ The NTTAA promotes the use of consensus-based standards rather than agency-specific standards whenever possible and/or appropriate⁷.

d. Mitigate for additional vessel traffic.

At the same time, plans for regulating ship movements in these lease areas need to be formalized to avoid ship strikes with marine mammals. Vessels should be prohibited from sensitive areas with high levels of wildlife presence that are determined to be key habitat for feeding, breeding, or calving and ship routes should be clearly defined including a process for annual review to update and re-route shipping around these sensitive areas. Speed restrictions may also need to be considered if re-routing is not possible.

e. Develop oil spill response in advance of oil and gas development activities.

From the Marine Mammal Commission's briefing on Deepwater Horizon, the list of physical effects a spill can have on marine mammals is quite extensive: inflammation, or necrosis of skin; chemical burns of skin, eyes, nares (nostrils), or mucous membranes; inhalation of toxic fumes with potential short- and long-term respiratory effects (e.g., inflammation, pulmonary emphysema, infection); ingestion of oil (and dispersants) directly or via contaminants, leading to inflammation, ulcers, or bleeding; possible damage to liver, kidney, and brain tissues; stress from presence of vessels and aircraft, noise and handling; and complications leading to dysfunction of immune and reproductive systems, physiological stress, declining physical condition, and death.

⁶ NTTAA (US National Technology Transfer and Advancement Act). 1995. Pub L 104-113 Sec 12(d).

⁷ OMB (US Office of Management and Budget). 1998. Circular No. A-119: federal participation in the development and use of voluntary consensus standards and in conformity assessment activities. www.whitehouse.gov/omb/circulars/a119/a119.html

Technologies and techniques applicable to oil spill response and clean-up have yet to be developed and proven effective in Arctic waters. While there have been several recent advances made in mechanical containment and recovery devices there has been little to no testing of their effectiveness in ice conditions. In-situ burning as an oil spill response tool for icy waters has been studied in more detail but it has not yet been tested to see if the scientific results translate to effectiveness in real-world conditions with uncertain weather and ice conditions. Chemical herders, an important component to increased effectiveness of in-situ burning, have not yet been developed to function in offshore, rough waters. Lacking this added tool, in-situ burning might not be feasible at all. Likewise, the toxicity of the emissions or residues from in situ burning and chemical herders is not well understood. While the NMFS DEIS only applies to exploratory drilling activities, IFAW believes it is still critical to develop these oil spill response technologies in advance of offshore development.⁸

f. Assess and model cumulative impacts.

Making determinations about the cumulative impacts of anthropogenic survey noise, shipping movements, and oil spills are imperative. We know a little about the impacts of noise on bowhead whales, but nothing on the chronic exposure to these noise sources. The agency should conduct cumulative impact assessments across the many possible exposure scenarios related to climate change, shipping movements, oil spills, and particularly ocean noise.

No cumulative impact modeling of other noise sources, such as from increasing shipping, concurrent with the activities in the DEIS has been conducted to ascertain an accurate impact on arctic marine mammals as they migrate. Rather, the DEIS only addresses single impacts to individual animals. In reality a whale does not experience a single noise in a stationary area as the DEIS concludes but is faced with a dynamic acoustic environment which all must be factored into estimating exposure not only to individuals but also to populations. Retreating ice cover has already opened up a Northern Sea shipping route decreasing time for ships to transit to China. With the global commercial shipping fleet expanding an ever increasing number of ships, and associated noise will be transiting the arctic, further increasing the anthropogenic contributions to ocean noise and increasing concerns regarding impacts to marine life.

The contributions of any single noise source are often subtle and sources spread across space and time. However the total of these disturbances impose serious barriers to population scale communication as well as degrade an individual animal's auditory awareness.⁹ Studies have documented the impact of noise on communications where animals change their calls to coincide with quieter periods or extend the duration of their calls.¹⁰ The chronic impact on individual's acoustic awareness likely poses a much graver threat as it masks the incidental sound produced by animals such as respiration-which cannot adapt to undersea noise pollution.

⁸ Holland-Bartels, Leslie, and Pierce, Brenda, eds. 2011. An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370, 278 p.

⁹ Clark CW, Ellison WT, Southall BL, Hatch L, Van Parijs SM, Frankel A, Ponirakis D. 2009. Acoustic masking in marine ecosystems: intuitions, analysis, and implication. *Mar Ecol Prog Ser.* 395:201–222.
¹⁰ Holt, MM., D. P. Noren, V. Veirs, C. K. Emmons, and S. Veirs. 2008. Speaking up: Killer whales (*Orcinus orca*) increase their call amplitude in response to vessel noise. *J. Acoust. Soc. Am.* Volume 125, Issue 1, pp. EL27-EL32.

It is acknowledged that cumulative impacts are not completely addressed in many National Environmental Policy Act (NEPA) documents due to complexities and gaps in scientific information to inform pragmatic decisions.^{11,12} However, no comprehensive modeling exists and a more active effort to fill in gaps in science should be implemented. Comprehensive modeling is urgent for the spatiotemporal management of noise and effectively mitigating cumulative impacts¹³ on cetaceans. These models must account for regional cetacean density and distribution, be time- and species-specific, incorporate survey data and models that estimate density using best available predictive environmental factors.

II. While IFAW does not support the opening of the Beaufort and Chukchi Seas for further oil and gas activities, if the agency decides to move forward with oil and gas activities in the Beaufort and Chukchi Seas it should consider a combination of the alternatives presented in the DEIS.

If the National Marine Fisheries Service (NMFS) rejects Alternative 1, no action, it is strongly recommend that additional mitigation measures such as those outlined in Alternatives 4 and 5 be required. It is imperative that areas known to be important feeding, breeding or calving grounds for marine mammals and/or valuable to subsistence hunting should be closed to oil and gas activities and their related noise impacts. Likewise, further restrictions need be applied to reduce and minimize the impact of survey noise and vessel traffic. The closures and technology requirements outlined in Alternative 4 and 5 make good strides in reduction of ocean noise impacts, and IFAW recommends the agency include all of these additional mitigation measures (NMFS DEIS sections 2.4.2, 2.6.1 and 2.7) in the final EIS.

While IFAW supports the proposed closures and technology requirements we do not support the higher level of exploration activity that is associated with Alternative 4 and 5. Instead, if the agency decides to take action we propose that these additional mitigation requirements be paired with a more conservative approach more similar to the Level 1 exploration activities of Alternative 2, and that our additional recommendations described above also be considered for inclusion.

III. Conclusion

We cannot allow oil and gas activities to proceed at the expense of sensitive marine mammal populations. Instead, we must manage towards a more proactive and precautionary approach allowing for better development of the science while ensuring that this science is also better incorporated into the decision making process. Oil and gas activities in the Arctic must be coupled with long-term species monitoring programs supported by industry funding, and research must be incorporated into a rapid review process for management on an ongoing basis.

¹¹ EPA (US Environmental Protection Agency). 1999. Consideration of cumulative impacts in EPA review of NEPA documents. Office of Federal Activities (2252A) EPA 315-R- 99-002/May 1999. www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf

¹² CEQ. 1997. Considering cumulative effects under the National Environmental Policy Act. Council on Environmental Quality, Executive Office of the President, Washington, DC. January.

¹³ Agardy, T., Aguilar Soto, N., Cañadas, A., Engel, M., Frantzis, A., Hatch, L., Hoyt, E., Kaschner, K., LaBrecque, E., Martin, V., Notarbartolo di Sciara, G., Pavan, G., Servidio, A., Smith, B., Wang, J., Weilgart, L., Wintle, B. and Wright, A. 2007. A Global Scientific Workshop on Spatio-Temporal Management of Noise. *Report of the Scientific Workshop*. 44 pages.

By allowing the science and technology to develop first we can provide more concrete, feasible and effective mitigation strategies so we can provide both energy security and proper wildlife protections.

Sincerely,

A handwritten signature in blue ink that reads "Jeff Flocken". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Jeffrey Flocken, J.D.
Washington D.C. Office Director
International Fund for Animal Welfare
1350 Connecticut Ave. NW Suite 1220
Washington, D.C. 20036
(202) 296-3860



February 28, 2012

Mr. James H. Lecky,
Director, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Via Email: arcticeis.comments@noaa.gov.

Reference: National Oceanic and Atmospheric Administration
RIN 0648–XA885 Notice of Availability of a Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Lecky:

ION Geophysical Corporation (“ION”) is pleased to provide the following comments on the Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean as published in the December 30 Federal Register.

ION is a seismic services contractor that has been actively acquiring seismic data in the global arctic region including Beaufort Sea and the Chukchi Sea OCS since 2006. During that time we have developed a number of proprietary technologies that allow for the acquisition of both 2D and 3D seismic data in ice covered waters. This technology has been proven effective through its active use in the global market place every year since 2009.

ION actively supports the comments that have been offered by The American Petroleum Institute (API), the International Association of Geophysical Contractors (IAGC), the National Ocean Industries Association (NOIA) and the US Oil & Gas Association (USOGA). However, as ION is the only seismic contractor actively using this in ice seismic technology and since ION intends to continue seismic exploration during periods of ice cover in the Beaufort Sea and the Chukchi Sea OCS, we feel that it is prudent for us to offer comments to the Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean specific to our technology.

ION chooses to leave commentary on the broader industry concerns to The American Petroleum Institute (API), the International Association of Geophysical Contractors (IAGC), the National Ocean Industries Association (NOIA) and the US Oil & Gas Association (USOGA) and instead focus specifically on those sections of the Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean as published in the December 30 Federal Register that relate directly to ION’s planned use of technology.

In our opinion, the most imperative issues in the DEIS identified are the following:

- 1) NMFS Failed to meet the requirements of NEPA in evaluating a full range of reasonable alternatives
 - Restricting the number of programs does not necessarily correlate to decreased impacts.
 - The additional mitigation measures are too restrictive and could result in serving as the no action alternative.
 - NMFS did not prepare the EIS in conformity with the Notice of Intent published in the Federal Register.
- 2) NMFS oversteps their authority under the MMPA
 - NMFS has no authority in restricting access to specific areas not currently protected under law.
 - NMFS does not have the authority to restrict vessel transit.
- 3) NMFS uses vague, and inconsistent language in the Additional Mitigation Measures
 - NMFS is unclear whether alternative technologies will be required or are optional in Alternative 5.
- 4) NMFS did not provide a complete evaluation of the socioeconomic impacts of instituting the additional mitigation measures; and
- 5) The size of the planning area does not accurately reflect the location of potential activities.

Should you have any questions regarding our comments Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean as published in the December 30 Federal Register please contact me myself at Joe.Gagliardi@iongeo.com

Sincerely,



Joseph Gagliardi
Director Arctic Solutions & Technology
ION Geophysical Corporation

**ION Geophysical Corporation Comments Draft Environmental Impact Statement
on the Effects of Oil and Gas Activities in the Arctic Ocean**

Page: General Comment

The DEIS states BOEM is participating as a cooperating agency. NMFS is not clear in the DEIS how much input BOEM had in developing the DEIS. BOEM should have more than a cooperating agency role since the proposed action includes BOEM issuance of G&G permits.

Page: General Comment

NMFS states the primary reason for initiating a new NEPA process was due to new information that became available requiring a change in scope, set of alternatives, and analysis. NMFS does not define what the new information is that resulted in the need for a new NEPA process. NMFS lists several NEPA documents that were completed subsequent to them withdrawing the DPEIS. The listed NEPA documents resulted in a FONSI, which does not indicate the need for an EIS.

Page: General Comment

The current DEIS includes the southern Chukchi Sea, down to Kotzebue. The April 2007 NMFS/BOEM (MMS) DPEIS only included the Chukchi Sea waters to Point Hope. NMFS should specify in the DEIS why they are including a larger planning area, especially if the new area does not include the potential for oil and gas activities covered under the DEIS. Including these areas in any preferred alternative will ultimately impose unwarranted restrictions on vessel transit to the areas where oil and gas activities (seismic surveys and exploration activities) will be performed. If NMFS wishes to include vessel transit as part of the regulated activity, adequate information should be provided to support this decision including NMFS authority to restrict vessel transit.

Page: General Comment

The April 2007 NMFS/BOEM (MMS) DPEIS excluded Alternative 9 (program number alternative) from further analysis for the following reasons:

- Limiting seismic surveys does not meet purpose and need.
- Surveys provide useful information used by government to make informed decisions.
- Limiting surveys does not necessarily reduce impacts.

- Disagrees with NMFS implementing regulation 251.5(b).
- Precludes lessee from complying with rules and regulations to proceed in a timely manner.

The reasons to **NOT** evaluate specific program numbers in the 2007 DPEIS would apply to the current DEIS. This is a fundamental shift in reasoning of how alternatives are evaluated. NMFS should 1) address why a previously rejected alternative (limiting number of surveys) has become the basis for **ALL** alternatives currently under consideration, and 2) what is the reasoning behind the change in analysis method.

If NMFS cannot adequately address this discrepancy, they should consider withdrawing the current DEIS and initiating a new analysis that does not focus on limiting program numbers as a means of reducing impacts.

Page: General Comment

The February 2010 Notice of Intent to Prepare an EIS stated that “the range of reasonable alternatives will include the Proposed Action and several other action alternatives, as well as a No Action alternative. The action alternatives analyzed will represent a range of levels of activities from unrestricted to no seismic or exploratory drilling”.

The alternatives evaluated in DEIS were limited to an arbitrary number of programs that did not include a reasonable range of potential activities and did not evaluate unrestricted activities as was stated in the NOI. Because NMFS did not evaluate the range of alternatives described in the NOI, NMFS should rescind the current EIS and initiate a new NEPA procedure that evaluates a full range of alternatives.

Page 1-2 Section 1.1

The current description of deep penetration geophysical survey activities being evaluated only includes in-ice towed streamer 2D surveys. In-ice towed streamer 3D surveys should also be included for evaluation. It is possible that within the 5 year term covered by the EIS, in-ice towed streamer technology will be developed to allow operation of in-ice towed 3D seismic surveys. Impacts to the environment should be the same from the two programs.

Page 1-3 Section 1.1

BOEM is identified as a cooperating agency. Please clarify if any other agencies (e.g., BSEE and USFWS) were invited to be cooperating agencies as identified in

40 CFR 1501.6 and if any are cooperating agencies. All cooperating and coordinating agencies should be clearly identified in the DEIS.

Page 1-9 Section 1.3.2

The DEIS states “NMFS intends to use this EIS as the required NEPA documentation for the issuance of ITAs for Arctic oil and gas exploration activities. However, if necessary, NMFS may tier from this EIS to support future Arctic MMPA oil and gas permit decision if such activities fall outside the scope of this EIS.” The scope of activities covered by the EIS and not covered by the EIS should be clearly defined within the document. Verify that requests for ITAs for activities covered by this EIS will not be subject to additional NEPA review by NMFS and if this EIS be used to develop a 5-year rule and provide for issuance of LOAs as allowed under the MMPA Sec. 101(a)(5)(A)(i).

Page 1-10 Section 1.4

The DEIS states “Assessed the direct and indirect effects of the Proposed Action and alternative approaches to authorize oil and gas deep penetration geophysical surveys and shallow hazards surveys under the OCS Lands Act and the taking of marine mammals incidental to seismic and shallow hazards surveys and exploratory drilling activities under the MMPA.” The Proposed Action (p. 1-8) is defined as 1) issuance of ITAs under the MMPA for incidental takes and 2) authorization G&G permits and ancillary activities. Please clarify what “alternative approaches to authorize” oil and gas surveys and exploratory drilling (other than by permit) are legal.

Page 1-10 Section 1.4

The DEIS states “There are multiple regulatory scenarios under which NMFS can issue MMPA authorizations (e.g. IHA versus LOA, or through the structure of the Open Water Meeting or Monitoring Peer Review).” Please clarify that NMFS can authorize taking under the MMPA only by an IHA or LOA (MMPA Sec. 101 (a) (5)). Although they are part of the permitting process, the MMPA does not allow authorization of marine mammal takes via the Open Water Meeting or Monitoring Peer Review.

Page 1-11 Section 1.5

Several issues identified in the Scoping Report (Table 3) were not included in the DEIS. These include 1) the need for a stable domestic energy supply and 2) benefits to the state and nation from oil and gas development, and benefits to the oil and gas industry from predictability in permitting process.

Page 2-22 Section 2.3.4

The DEIS states “While federal statute or regulations do not require a CAA, NMFS’ regulations require that operators develop a POC containing mitigation measures that are agreed to by both the operator and the subsistence hunters.” This is incorrect. According to 50 CFR 216.104(a)(12) an applicant for an IHA must develop a Plan of Cooperation that identifies the measures taken to minimize adverse effects on the availability of marine mammals for subsistence use including i) a statement that the applicant provided a copy of the POC to the affected subsistence community, ii) a schedule for meeting with the community to discuss and resolve potential conflicts, iii) a description of measures taken to avoid interference with subsistence whaling or sealing, and iv) plans applicant has to continue dialogue with communities and to resolve conflicts. Edit this statement to make it correspond with applicable regulation.

Page: ES-11; 2-23; 2-38

Executive Summary; Section 2.3.5; Section 2.4.8

On p. ES-11 the DEIS states that Alternative 5 would only use alternative technologies, and does not mention use of airguns.

On p. 2-23 the DEIS states that Alternative 5 includes “some of the alternative technologies in consideration by the oil and gas industry. However, these alternative acoustic sources are in various stages of development and none of the systems with the potential to augment or replace airguns as a seismic source are currently commercially available.”

On p. 2-38 the DEIS states that Alternative 5 states that either traditional technology (airguns) **OR** alternative technologies could be used.

Technology to be used under Alternative 5 should be consistent for all references within the DEIS. Given that these technologies are not commercially available, not fully tested, and are unproven, use of these technologies cannot be reasonably mandated. Inclusion of Alternative 5 which allows the applicant to choose which technologies they will use is reasonable for inclusion in the DEIS.

Page 2-24 Table 2.4

For 2D/3D open water towed streamer seismic survey the source vessel also is the receiver vessel. For the in-ice seismic survey a support vessel should be included as described in Table 2.2 and Section 2.3.2.3.

Page: 2-37 Section 2.4.7.2

Mitigation measures identified include *required* time/area closures identified and discussed unidentified “buffer zones” including Camden Bay, Barrow Canyon and Western Beaufort Sea, Shelf Break of the Beaufort Sea, Hanna Shoal, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit. With the exception of Ledyard Bay Critical Habitat Unit, these areas have not been designated for any protective/critical habitat status. These areas were not included in the 2007 DPEIS. Camden Bay, Barrow Canyon, Hanna Shoal, and Kasegaluk Lagoon are not currently listed as critical habitat and do not maintain special protective status. NMFS should remove this alternative from further consideration until such time that these areas are officially designated by law to warrant special protective measures. In addition, these temporal/spatial limitations should be removed from Section 2.4.10(b).

Page 2-39 Section 2.4.9

For open water and in-ice marine surveys include the standard mitigation measure of a “mitigation airgun” during turns between survey lines and during nighttime activities.

Page 2-40 Section 2.4.9(d)

Include shutdown of activities in specific areas corresponding to start and conclusion of bowhead whale hunts for all communities that hunt bowhead whales, not just Nuiqsut (Cross Island) and Kaktovik (as stated on p. 2-41). Also evaluate the necessity of including dates within the DEIS. Communication with members of village Whaling Captains Associations indicate that the dates of hunts may shift due to changing weather patterns, resulting in a shift in blackout dates.

Page 2-40 Section 2.4.9(d)

The mitigation measure “establishment and utilization of Communication Centers in subsistence communities to address potential interference with marine mammal hunts on a real-time basis throughout the season” should be edited to clarify that Communication Centers are only necessary if marine mammal subsistence hunts are ongoing at the time and within the area of the seismic activities.

Page 2-41 Section 2.4.10(b)

The mitigation measure “separate seismic surveys are prohibited from operating within 145 km (90 mi) of one another” is prohibitively restrictive and it is unclear what, if any mitigation of impacts this measure would result in.

As stated on p. 4-159, “Currently as an operational requirement...separate 2D and 3D seismic surveys are not allowed to operate within 24 km (15 mi) of one another in order to ensure that there are no issues with data collection.” The DEIS attempt to use this operational restriction for protection of bowhead whales. Impacts from overlap of 160 dB radii (from two seismic programs – which will be much smaller than the proposed separation distance) is discussed, but dismissed.

The impact that necessitates a separation distance, the mitigating effects of the separation distance, and why a distance of 145 km (90 mi) is required should be clearly identified and supported. Information supporting the proposed mitigation measure is not included. If this information supporting the proposed mitigation measure cannot be provided, the mitigation measure should be removed from consideration.

Page 2-41 Section 2.4.10(d)

The proposed mitigation measure would eliminate vessels entering the Chukchi Sea for transit before July 15 to avoid impacts to beluga whales. If a more specific exclusion area (e.g., within 30 miles of the coast) would be protective of beluga whale migration routes, it should be considered instead of closing the Chukchi Sea to transiting vessels.

Page 2-41 Section 2.4.10(d)

Reevaluate the necessity of including dates for shutdown of activities for Barrow whale hunt within the DEIS to be consistent with language for other community whale hunts in this proposed mitigation measure. Communication with members of village Whaling Captains Associations indicate that the dates of hunts may shift due to changing weather patterns, resulting in a shift in blackout dates.

Page 4-6 Section 4.2.1 1st paragraph

The current description of in-ice surveys only includes “2D seismic surveys towing a single, long streamer”. It is possible that within the 5 year term intended to be covered by this EIS that equipment will be developed allowing 3D seismic surveys towing multiple streamers to be conducted in ice covered

waters. It is recommended that NMFS include this in their definition of in-ice seismic surveys. Impacts to the environment would not differ between these two program types.

Page 4-48 Table 4.5-11

This table should include standard error or coefficient of variation values for each mean value shown in order to provide the reader with a better understanding of the amount of variation that exists around each mean value.

Page 4-64 Table 4.5.1.7

This section does not include an assessment of the standard mitigation measure of using a “mitigation airgun” during turns between survey lines and/or the allowance of ramp-ups from a mitigation airgun during periods of reduced visibility.

Page 4-65 Section 4.5.1.8 Additional Mitigation Measure A4.

Although active acoustic monitoring is mentioned in the title of this additional mitigation measure, it is not addressed in the text. Active acoustic monitoring has a high potential for being an effective monitoring tool, but it also involves some additional acoustic impacts to the environment. An analysis of the cost/benefit of using such technologies should not be ignored in this section.

Page 4-65 Section 4.5.1.8 Additional Mitigation Measure B1.

There is a lack of scientific evidence around actual importance level and definition of these closure areas. The descriptions of these areas do not meet the required standard of using the “best available science”.

Page 4-66 Section 4.5.1.8 Additional Mitigation Measure B3.

The indication that seismic sounds would be additive needs to be clarified. In acoustic terms, additive would only mean an increase of ~3 dB, assuming simultaneous arrival of sounds at the receiver (marine mammal) from nearly the same direction. Slightly offset arrival times as well as arrivals from various directions would mean less than 3 dB increase in the sound level at the receiver. The likely impact of multiple seismic surveys occurring in proximity to each other is therefore overstated when this additional explanation is not included. Potential impacts on marine mammals are also overstated by suggesting that effects would, or are likely to, occur out to 45 mi from each seismic sound

source. The behavioral reaction of marine mammals to seismic and other industrial sounds depends on the location and activity of the animal at that time. It is unnecessary and not supported by science to use a threshold disturbance level (or distance) applicable to only very specific circumstances and species and apply it to all other behavioral states and species. Such large restrictions on activities should only be applied under specific circumstances when there are applicable reasons to believe that marine mammals are likely to exhibit biologically meaningful responses at the low levels of sound used to establish the distances considered in this mitigation measure.

Page 4-67 Section 4.5.1.8 Additional Mitigation Measure D1.

Consideration of the beluga whale spring migration route should be included in the definition of this mitigation measure. It is not scientifically supported to close the entire Chukchi Sea to vessel traffic when the only stated intent is to avoid disrupting the subsistence hunt of beluga whales during their migration along or near the coast near Pt. Lay.

Page 4-67 Section 4.5.1.8 Additional Mitigation Measure D4.

This measure (or an additional alternative mitigation measure) should be consistent with surrounding mitigation measures that consider start dates of bowhead whale hunting closed areas based on real-time reporting of whale presence and hunting activity rather than a fixed date.

Page 4-96 Section 4.5.2.4.6 Potential Effects of Icebreaking and Ice Management Activities

The only description of icebreaking given in this section is that of “backing and ramming” operations. It is not accurate to describe icebreaking only in these terms. In fact, most, if not all, icebreaking and ice management activities previously proposed by industry and likely to occur within the EIS area would not involve backing and ramming. Instead, icebreaking would likely only involve vessels moving through young, first year ice at a relatively slow, constant rate of speed of ~4 kts and or pushing on large pans of ice without breaking them in order to alter their course. Traveling through young ice without backing and ramming will not produce the same levels of sounds as backing and ramming because there will not be as much propeller cavitation. Sound propagation distances associated with elevated sound levels of only 10-15 dB above routine vessel sounds (which would result in source level estimates much lower than 185 dB) should also be provided here as more realistic representations of the likely activities to be conducted by industry.

Page 4-99 Section 4.5.2.4.9.1 1st paragraph

This paragraph summarizes evidence showing that under some circumstances (primarily feeding activities) bowheads do not show avoidance of airgun sounds until the source is 2-3 km away and sound levels reach 170-180 dB. However, the final sentences of the paragraph note that other, non-behavioral impacts may be occurring. Although the assumption that non-behavioral impacts may be occurring is likely true to some degree, there is little to no evidence of the nature and degree of such impacts (at least cited here in the EIS) and although animals have previously been exposed to such levels there is no evidence showing any such impacts are biologically significant at the individual level and especially at the population level (as evidenced by continued bowhead population growth in the presence of greater offshore industrial activity than considered by this EIS).

Page 4-99 Section 4.5.2.4.9.1 2nd paragraph

Analyses reported by Christie et al. (2009) and Koski et al. (2009) should not be cited as preliminary. Those analyses are complete and the reports are available. It should also be noted that those more recent reports of airgun activity (larger airgun source and at a different location than that reported by Richardson (1999)) suggest that some bowheads may begin to respond at levels between 116-135 dB, but that it is not correct to say that most bowheads would avoid areas where pulsed sounds reached those levels as the EIS concludes based on a reference to MMS (2008). In fact, recent aerial survey data (cited above and in the EIS) and acoustic data (Blackwell et al. 2009 and 2010) suggest that many migrating bowheads occur in areas where seismic sounds are 120-160 dB.

Page 4-100 Section 4.5.2.4.9.1 1st paragraph

The Section 3.2.6.1 referenced here is not correct. Additionally, it seems that the reporting of “occasional” feeding by bowheads in Camden Bay is used as justification for establishing the Camden Bay area as a Special Habitat Area. The BWASP survey database includes numerous sightings of bowheads feeding in areas along the entire Alaskan Beaufort Sea coast. The occasional use of an area for feeding by bowheads is not reason enough to designate an area as Special Habitat because it would then have to include the entire length of the Alaskan Beaufort Sea.

Page 4-101 Section 4.5.2.4.9.1 2nd paragraph

The conclusion that anticipated impacts on bowhead whales of in-ice activities would be the same or similar to those described for open-water activities is not

supported by the evidence provided, especially when it is stated in the same paragraph that the period of overlap with bowhead whales is so much shorter.

Page 4-106 Section 4.5.2.4.9.1 7th paragraph

The conclusions regarding potential levels of impact presented in this paragraph are not supported by the evidence provided when the acknowledged differences in the migratory corridor as well as the limited duration of overlap between in-ice seismic and bowhead whales in the Chukchi Sea are accounted for.

Page 4-109 Section 4.5.2.4.9.1 1st line

The range of vessel speeds considered here for a seismic survey source vessel (or their support vessels) in transit is not appropriate. These vessels are not capable of traveling at 20 kts. Typical transit speeds are between 8 and 12 kts, below the 15 kt threshold noted in the paragraph as the threshold for when ship strikes become more likely.

Page 4-121 Section 4.5.2.4.11.1 1st paragraph

NMFS's concern regarding the exclusion of large numbers of bowhead females with calves from feeding areas over a period of many weeks is legitimate. However, there is no evidence that such important feeding areas occur within the EIS area other than just east of Pt. Barrow. Other locations of feeding and/or resting have only shown use in some years and for limited durations of time. Limitations of the proximity of seismic surveys to each other (or to specific habitat areas) should only be made when and where they are applicable to known locations where biologically significant impacts might occur, not generally across the entire EIS area.

Page 4-121 Section 4.5.2.4.11.1 1st paragraph

Gray whales do not have a similar migration and life history to bowhead whales, so their inclusion here and the assumption that similar effects might occur to them is invalid.

Page 4-155 Section 4.5.2.4.16 Additional Mitigation measures A5-1.

The justification for believing that biologically significant effects to individuals or the bowhead population would occur from exposure of four or more bowhead cow/calf pairs to >120 dB pulsed sounds is not provided or referenced. Such a conclusion from the available scientific knowledge seems dubious at best and

the inclusion of a potential mitigation measure based on that conclusion is not supported. Additionally, the amount of time and effort required to monitoring for four or more bowhead cow/calf pairs within the 120 dB seismic sound level area take away from better defining the distances and/or sound level thresholds at which more substantial impacts may be occurring (i.e. within the 170-150 dB zone). Lastly, would the referenced 4 or more cow/calf pairs have to be actually observed within the area to trigger mitigation actions or would mitigation be required if survey data corrected for sightability biases using standard line-transect protocols suggested 4 or more were present (i.e. fewer than 4 cow/calf pairs were actually sighted)?

Page 4-155 Section 4.5.2.4.16 Additional Mitigation measures A5-1.

If a mitigation measure for aggregations of 12 or more whales were to be included there should be some type of scientific justification for the number of animals required to trigger the mitigation action.

Page 4-157 Section 4.5.2.4.16 Additional Mitigation measures B1.

The conclusion that Camden Bay is of particular importance to bowhead whales is not supported by the available data. Occasional feeding in the area and sightings of some cow/calf pairs in some years does not make it a uniquely important area.

Page 4-159 Section 4.5.2.4.16 Additional Mitigation Measure B3.

The proposed separation distance (145 km) of simultaneously operating seismic programs should not be considered as an EIS area wide alternative. It should only be used at specific times and locations and after a full evaluation of the likelihood of overlap of seismic sound and/or disturbance impacts has actually taken place. Simply assuming that seismic sound might overlap and that they would therefore be “additive” in nature is incorrect.

Page 4-160 Section 4.5.2.4.16 Additional Mitigation Measure C1

Implementation of such a measure would be nearly impossible given the lack of definition. Even if it were more carefully defined, the assumption that a vessel could steer around a loosely aggregated “group” of animals is incorrect. Most such groups do not occur as tightly clustered animals that act as one. Instead, they occur as a loosely aggregated group of animals that is better described as a patch of higher density. Steering around such a group is nearly impossible as PSOs on vessels often do not notice they are in such a group until a number of

sightings have occurred and the vessel is already within the higher density patch. At that point it likely does more harm than good trying to steer away from each individual or small group of animals as it will only take the vessel towards another individual or small group.

Page 4- 283 Section 4.7.1.4.2

The conclusion that implementation of time closures does not reduce the spatial distribution of sound levels is not entirely correct. The proposed closure of the Hanna Shoal area for July-August for walrus, and then from August-October for gray whales would effectively eliminate any industrial activities in or near the area, thereby reducing the spatial distribution of industrial activities and associated sounds.

Page 4-293 Section 4.7.2.4.1.1 2nd paragraph

Although there is mention of additional buffer zones around time/area closures, there is no mention of how or when the agency might decide to implement those buffer zones. Therefore, a reasonable assessment of the potential effects of those buffer zones cannot be made.

Page 4-294 Section 4.7.2.4.1.3 Camden Bay paragraph

The east and west boundaries of the Camden Bay time/area closure appears to be arbitrary. Nowhere is a justification for the actual boundaries given. Additional, there is no evidence provided or cited for how impacts to mothers or calves could occur or how they could be biologically significant on an individual basis, much less at the population level. The simple occurrence of bowhead cow calf pairs in the area does not mean it is especially important on an annual basis. There are many years when bowhead whales do not stop in Camden Bay at any higher rate than they stop anywhere along the Alaskan Beaufort Sea coast. Potential deflections or avoidance by bowheads on the order of tens or even a hundred kilometers, during the course of a >7,000 km long migration, has not been shown to have biologically significant impacts. If such avoidance was going on when greater levels of industrial activity were occurring in previous years, then the evidence actually shows that no biologically significant effects occurred at the population level.

Page 4-295 Section 4.7.2.4.1.3 3rd paragraph

Potential impacts on subsistence hunters during the fall bowhead migration are cited as something that requires mitigation that would be addressed by this

closure. There is no bowhead subsistence hunting in or anywhere near the Hanna Shoal area and there is no evidence that industry activities in that area could impact the subsistence bowhead hunts occurring >60 miles away. Additionally, recent aerial survey data suggests that Hanna Shoal has not been used by gray whales in recent years and the historic data does not suggest that Hanna Shoal was an important area for gray whales on a routine (annual) basis. Any recommended closure of the area for gray whales would need to be justified by more than historical data if more recent data suggests that it may no longer be used by gray whales. Closure of the area for gray whales on an annual basis is not supported by even the historical data. If any closure of the area were considered, it should be based on whether or not gray whales are actually using that area in that year, not on occasional historical use of the area.

Page 4-298 Section 4.7.2.4.2.3 4th Paragraph

Although there is evidence that beluga whales occur more commonly at the shelf break than in shallower waters or deeper offshore waters, there is no evidence cited in the EIS stating that the whales are feeding there at that time and that it is an especially important location. Most belugas sighted along the shelf break during aerial surveys are observed traveling or migrating, not feeding. There needs to be more than speculation that belugas are feeding in the area to justify such a closure.

Page 4-300 Section 4.7.2.4.3.3 Table 4.7-3

It is not correct to say that gray whales are present from July-Sep along the shelf break in the Beaufort Sea or in Camden Bay. Gray whale occurrence anywhere in the Beaufort Sea except near Pt. Barrow is uncommon to rare. There are insufficient data in the BWASP dataset to calculate meaningful densities of gray whales in the Beaufort Sea.

Page 4-306 Section 4.7.2.4.5.3 6th paragraph

Although Hanna Shoal may be an important feeding area for walrus, this is not likely true in every year. Satellite tagging data from walrus in 2011 suggests less use of the Hanna Shoal area than in 2010 and greater use of areas on its periphery or closer to shore. Actual use of Hanna Shoal for feeding by walrus on a routine annual basis is not truly understood yet. Any closure of the area to mitigate impacts on walrus could do more harm than good by forcing activities into areas on the periphery of the closed area, which in some years may actually be more important to walrus than the area inside the proposed closure.

Page 4-328 Section 4.8.2.4.1.1 3rd paragraph

It does not make logical sense to assume that impacts on bowhead whales would be the same if seismic source levels were reduced by 10-20 dB using alternative technologies. Such decreases in source levels represent orders of magnitude differences in sound energy and therefore also in the amount of area ensonified. At low sound levels (110-130 dB), a difference of 10-20 dB can mean a difference of tens, and even hundreds, of kilometers from the sound source.

Page 470 Section 4.10.4.4.5 1st paragraph

The conclusion states that potential injurious cumulative sound levels might occur and with higher likelihood in the Beaufort Sea. However, there is no evidence from over 60 years of industry activities that injurious cumulative sound levels occur.

Comments submitted concerning NMFS's DEIS for Effects of Oil and Gas Activities in the Arctic

Please find below are my comments concerning NMFS's *DEIS for Effects of Oil and Gas Activities in the Arctic*. I submit them with the hope they will be used to improve the EIS. Admittedly, my comments were hastily prepared in a matter of 5 hours (unlike the preparation of the DEIS, written and reviewed over months). As such, I apologize for the lack of succinctness or clarity. Should you have questions or desire clarifications concerning my comments, please contact me.

Cheers,

Jeff Childs

Marine Wildlife Ecologist

Anchorage, Alaska

Upon reading several sections of NMFS's *DEIS for Effects of Oil and Gas Activities in the Arctic* and after performing some basic word searches, it is apparent that this Draft EIS was rushed and not ready to be released to the public as a credible environmental impacts analysis of oil and gas activities to be conducted in the Alaskan Beaufort and Chukchi seas. While various minor deficiencies are expected when publishing a draft EIS, some substantive deficiencies in NMFS's *DEIS* are obvious and embarrassing.

1. First, I would remind NMFS and BOEM that federal courts have consistently ruled that agencies are to prepare EIS's supported by the best available information (e.g., data) and rigorous impacts analysis.
 - a. For example, NEPA's purpose of ensuring that agencies make "fully informed and well-considered decision[s] . . . ," its mandate of "widespread discussion and consideration of the environmental risks and remedies associated with [a] pending project", and its "require[ment] that this evaluation take place *before* a project is approved." *Vt. Yankee Nuclear Power Corp. v. Natural Resources Def. Council*, 435 U.S. 519, 558 (1978); *LaFlamme v. FERC*, 852 F.2d 389, 398 (9th Cir. 1988) (internal quotation marks omitted).
 - b. Without "establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to

comply with NEPA.” *Half Moon Bay Fisherman’s Mktg. Ass’n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988).

c. *Angoon v. Hodel*, 803 F.2d 1016, 1020 (9th Cir. 1986) (“[T]he touchstone for our inquiry is whether an EIS’s selection and discussion of alternatives fosters informed decision-making and informed public participation.”) (quoting *California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).

d. Having noted such, my comments below are intended to address the lack of analytical rigor and depth, as well as data deficiencies relative to impact assessments reported in the DEIS. I request NMFS make full use of the best scientific information and assessment methodologies, and rigorously analyze impacts to the physical, biological, and subsistence resources identified in the DEIS.

2. The *Assumptions for Analysis* are unnecessarily incomplete and largely unsupported by data that is available upon request from the oil and gas industry. The assumptions analysis results in a flawed and substantial *underestimation* of industry activities in the study area. An analysis is necessary examining how many different lessees there are, where their respective leases are in each planning area (Beaufort vs. Chukchi seas), when their leases expire, and when they anticipate exploring (by activity) their leases for hydrocarbons. I’m given to believe that there are at least six different lessees that must explore their leases for hydrocarbons before their leases expire. To assume there to be only one exploratory drilling program per planning area (Alternative 2) or only two exploratory drilling programs in the Beaufort (one occurring in state waters) and two in federal waters of the Chukchi per year (Alternatives 3, 4, and 5) is unrealistic to lessees that explore their leases relative to contractual lease clocks/calendars. This is further complicated by recent regulatory decisions cutting the annual exploratory drilling window by one third, purportedly to temporally expand the oil spill response window during the open water season. At the least, the agencies should collect the necessary data by canvassing lessees as to what *their* exploration schedules are, instead of guessing or erroneously assuming what that level of activity might be over the five years covered by the EIS! *This is an outstanding example of not having basic information (e.g., lessee planned activity schedules) necessary even though such information is available (upon request) to assess environmental impacts!* Such information can be and should be obtained (at negligible cost) by the federal government, and used to generate accurate assumptions for analysis. Sharing activity plans/schedules are also the best of interest of lessees so as to expedite the completion of the EIS and subsequent issuance of permits. NMFS and BOEM should also canvas seismic survey companies to gather information concerning their interest and schedules of conducting procured or speculative seismic surveys in the region and include such data in the generation of their assumptions for analysis.

3. The Direct and Indirect Impacts Analysis attributed to Alternatives 2 through 5 are substantively incomplete and unsupported in many cases. Many aspects of the direct and indirect impacts analysis lack analytical rigor and depth, particularly in light of previously published environmental impact analyses by the MMS and/or NMFS. Many conclusions drawn in impact analysis sections are not reproducible by other resource experts or the lay public. Narrowing the logic gaps between industry activities and impact conclusions are necessary to logically defend why assessed impacts do not meet the next higher impact level. Below are

several examples of substantively incomplete and unsupported analysis lacking analytical rigor and depth.

a. Introduction of Non-Native Species that may become Invasive

i. The DEIS specifies that vessel traffic may introduce invasive species, and could cause moderate impacts to lower trophic levels. The analysis is incomplete and lacks thoroughness because:

1. The analysis is ambiguous as to how it determined the impact level would *only* result in moderate impacts and not result in a major impact. There are many examples in the U.S. and abroad whereby the introduction of non-native species into new ecosystems resulted in “major” adverse impacts to lower and higher trophics; in many cases restructuring the ecosystem community and ecosystem processes. For example, there is the recent study describing adverse impacts on Florida Everglades wildlife following the introduction of non-native snakes (constrictors); impacts include declining mammalian populations and community restructuring of the Everglades ecosystem. Although this example involves tropical vertebrate wildlife, there is considerable scientific and management literature involving the introduction of non-native invertebrates or fish with which to draw upon for further detailed impacts analysis concerning non-native species introductions into Alaskan marine ecosystems. Analyze deeper, much deeper.

2. The analysis references ballast water [transfer] as the only vector of introducing a non-native species via vessel traffic. However, the analysis lacks analytical depth and rigor, particularly in light of public scoping comment DATA 7 citing Gollasch (2002); a study conducted in Norway (another arctic country), that clearly identified hull fouling as a very viable vector of introducing non-native species to arctic and subarctic marine ecosystems from other ecosystems. Furthermore, examine the email correspondence from Dr. Greg Ruiz (SERC, a national authority on marine invasive species with scientific experience in Alaska), to MMS biologist Jeff Childs (and forwarded to MMS managers) concerning the introduction of aquatic non-native species via oil & gas industry activities. Dr. Ruiz clearly identifies hull fouling of drilling rigs and vessels as a great concern and viable means of introducing non-native species to arctic and subarctic Alaska (see http://www.peer.org/docs/doi/08_24_1_more_invasives_concerns.pdf; http://www.peer.org/news/news_id.php?row_id=977 with links to supporting documentation). Past analysis also shows that putting equipment contaminated with non-native fauna or flora

overboard in a different ecosystem may also introduce such non-native species, yet this vector is not identified or discussed in the DEIS.

ii. Although the DEIS is marine mammal centric, the impacts analysis regarding non-native species introduction is truncated at the Lower Trophics Level, meaning that subsequent analysis of direct and indirect impacts on fish, EFH, birds, and *marine mammals* are not considered, and hence, incomplete. The introduction of a non-native invertebrate or fish species has potential to significantly alter native populations of invertebrates, fish, birds, and/or mammals by altering ecological patterns and processes. Please carry a rigorous analysis through, assessing direct and indirect impacts of introducing non-native species for all wildlife considered (e.g., fish, birds, mammals).

iii. A rigorous analysis includes fully examining and disclosing the various vectors and likely inoculation sites for introducing non-native species to Alaska ecosystems. IF NOT FOR NMFS issuing IHA's and BOEM issuing other permits (e.g., seismic, exploratory drilling) to various oil & gas industry entities, such industry vessels (e.g., seismic vessels, drill ships, etc.) would LIKELY NOT be coming to Alaska, whether that be federal waters of the Chukchi and Beaufort seas, or to Alaskan ports and coastal waters. NMFS and BOEM must expand their impacts analysis to include a rigorous and comprehensive analysis of potential non-native species introductions via industry vessel traffic stopping in Alaska ports and transiting its coastal waters in southern and western Alaska. For example, the DEIS identifies that some vessel traffic would come from Dutch Harbor. It is known that most vessel traffic involved in industry activities will come to Alaska from Outside (e.g., Seattle, WA, and Australia are two known source locations). There is potential for introducing non-native species to Dutch Harbor or other ports and coastal waters in southern and western Alaska (e.g., Nome) as these vessels transit or visit such locations. Analyze impacts to wildlife, fisheries, and subsistence users in the southern Chukchi Sea, Bering Sea, Gulf of Alaska, and Cook Inlet regions. Also, see public scoping comment COR 13; it was not addressed in the DEIS. Executive Order 13112 is NOT an optional Executive Order; please fully comply with Section 2 specifying federal agency duties. In addition to conducting further rigorous analysis concerning the introduction of non-native species, please identify mitigation and monitoring measures and analyze those measures with the Standard/Alternative Mitigation Measures considered in the DEIS.

b. Fish and EFH Impacts Analysis (Direct and Indirect; Alternatives 2 through 5)

i. Substantively incomplete and unsupported analysis lacking analytical rigor and depth; conclusions are often not rationally and effectively supported by data; some statements are simply false and can be demonstrated so with further analysis of available data, studies, and a plethora of broad data gaps that include data gaps concerning the distribution, population abundance, and life history statistics for the various arctic fish species. Please review recent arctic fisheries

studies/reports performed by Dr. Brenda Norcross (UAF) in the last decade, these were funded by MMS/BOEM and run counter to assertions made by NMFS concerning fish population trends, distribution, etc.. NMFS should carefully scrutinize the impacts analysis for data deficiencies, as well as statements conflicting with available scientific studies. Below are several to guide further scrutiny:

1. The DEIS states “Because marine fish are widely dispersed and are largely unrestricted in their movements, noises associated with these activities are not expected to have a measurable effect on marine fish populations” (p 4-77). It also specifies that “The effect on juvenile and adult fish would be negligible.” There are fish species occurring in the Chukchi and/or Beaufort planning areas that are represented by very few specimens and were collected at one or several specific sites. These “rare species” are not known to be widely dispersed in the planning areas, and little biological or ecological information is known concerning their populations, habitat needs, or life history statistics. A rigorous analysis is necessary to assess direct and indirect impacts of industry activities on such rare fish populations. Do any current lease blocks include sites where rare fish have been collected? If so, it is possible that an exploratory drilling operation may cause significant adverse impact to rare fish habitat, displacing rare fish to less suitable/unsuitable habitat that comprises their existence in the planning area. The loss of a rare fish species/population in the region may result in decreased biodiversity in the region (another biological resource).

2. The DEIS states “General population trends and life histories are sufficiently understood to support sound scientific judgments and expected impacts to fish resources are negligible. This statement is not supported by the available studies and altogether untrue. It can be shown untrue by reporting the population abundance and life history statistics of each species listed in Table 3.2-1. Please tabulate abundance data for the last 50 years in Table 3.2-1 using 10 year increments to demonstrate the population trends. Again, I draw your attention to recent work performed by Dr. Brenda Norcross (UAF) for MMS/BOEM. There are extensive data deficiencies for most marine and coastal fish population abundance and trends over time. I know because I conducted such an exercise for the MMS in the mid 2000’s and the report is archived as part of lease sale administrative record. Contact Kate Wedermeyer (BOEM) or myself for a copy if it cannot be located in the administrative record.

3. The DEIS lacks a rigorous analysis of noise impacts to fish, particularly relating to the interaction of two or more acoustic

sources (e.g., two seismic surveys). The DEIS correctly notes that seismic surveys are known to displace fishes, the impact depends on species, life stage, etc. Some studies show displacement lasting at least five days, at which point the study ceased and fish abundance in the ensonified area was still below the abundance measured before seismic noise was introduced. A rigorous analysis is needed that investigates how two or more noise generating activities interact to displace fish moving/feeding along the coast. Seismic surveys may ensonify nearshore and coastal waters utilized by some fish species for summer feeding (critical to some arctic fish populations) or their movement among/between preferred habitat areas. Such acoustic barriers may interrupt natural processes important to the life cycle and reproductive success of some fish species/populations. NMFS should also ensure such rigorous analysis has been done for birds and mammals. For example, how do multiple seismic surveys in the same region modify the foraging of marine birds (e.g., where forage fish have been displaced to deeper water or away from nesting areas)? How do multiple surveys interact to modify marine mammal foraging? Again, analyze deeper.

4. There are various cases in the document where one impact analysis truncates; meaning that the impacts analysis was not analytically carried through to other resources. This leads to incomplete and inaccurate impacts assessments, typically involving food web components. As one example, the impacts analysis for ice seals reports that prey (i.e., fish) would resume normal behavior and movement patterns within minutes to a few hours following passage of a seismic vessel (and exposure to airgun noise). Scientific studies do not support this assessment and the impacts analysis describing fish behavior relative to seismic survey activity reports differently than what the ice seal section states. Basically, rigorous analysis includes consistency and accuracy through all layers of trophic/resource analysis. A flow chart showing cause-and-effect relationships through each biological layer may help correct truncation of analyses between resource groups. Make sure that analysts authoring the different resource assessments read each other's work, particularly those for prey resources or habitat parameters (e.g., sea ice).

5. Please analyze the impacts to invertebrate and fish resources stemming from introducing "structure" (i.e., drilling platform and catenaries; seafloor structures) into the water column or the seafloor. Think "habitat creation" "refugia" or "artificial reef." How might introducing such structure benefit/cost some invertebrate or fish populations?

6. Please examine Tables ES-3 through 6. Tables ES-4 through 6 do not include Fish/EFH in the respective impact level columns. Also, Tables ES-4 through 6 do not accurately reflect the impact level for Lower Trophics with respect to the introduction of non-native species (moderate). The composition of Tables ES-3 through 6 may change, so please review these tables for accuracy after additional, rigorous analysis is completed.

7. Sea Ice Impacts Analysis

a. Scientific studies and traditional knowledge show that during the open water season, there are “high ice years” and “low ice years.” There are a number of scientific studies that show that various arctic biota respond differently to high versus low ice phenomenon. Such biological/ecological responses are likely to be modified by the addition of industry activities. Impact analyses for various resources in the DEIS (e.g., sea ice, lower trophic levels, fish/EFH, marine mammals) lack analysis of impacts relative to “high ice years” versus “low ice years.” Please rigorously analyze the interaction of high ice/low ice year phenomena and industry activities impacts on arctic resources (e.g., wildlife and subsistence). For example, how will ice management affect biological resources (species and habitats) during high ice years? In low ice years?

b. Analysis is lacking regarding the breakup of sea ice by ice management and warming arctic sea water. Published scientific work suggests that ice dampens the effects of wind on sea state. It has been further suggested that breaking up ice as sea ice retreats poleward in summer (open water season) allows wind to introduce energy to the sea surface that may facilitate increasing sea state, that subsequently can break down further the ice edge retreating northward. This conceivably accelerates habitat degradation and loss of sea ice utilized by some birds and marine mammals and by cryopelagic fish. Further analysis is warranted concerning such in the physical and biological impacts analysis sections.



Arcticeis Comments <arcticeis.comments@noaa.gov>

Arctic drilling

1 message

Julie Locascio <pomba27@aol.com>

Sun, Jan 8, 2012 at 1:14 PM

To: arcticeis.comments@noaa.gov

All I can say is BOO HISS.

What is the point of even talking to you about the rarity of pristine ecosystems ANYWHERE in this country, and how tragically pathetic our energy dependence on fossil fuel is--is there anything I can say that you haven't already heard from James Hansen and millions of other scientists and activists?

BOO HISS.

Julie Locascio
2400 16th Street NW, Apt.743
Washington, DC 20009

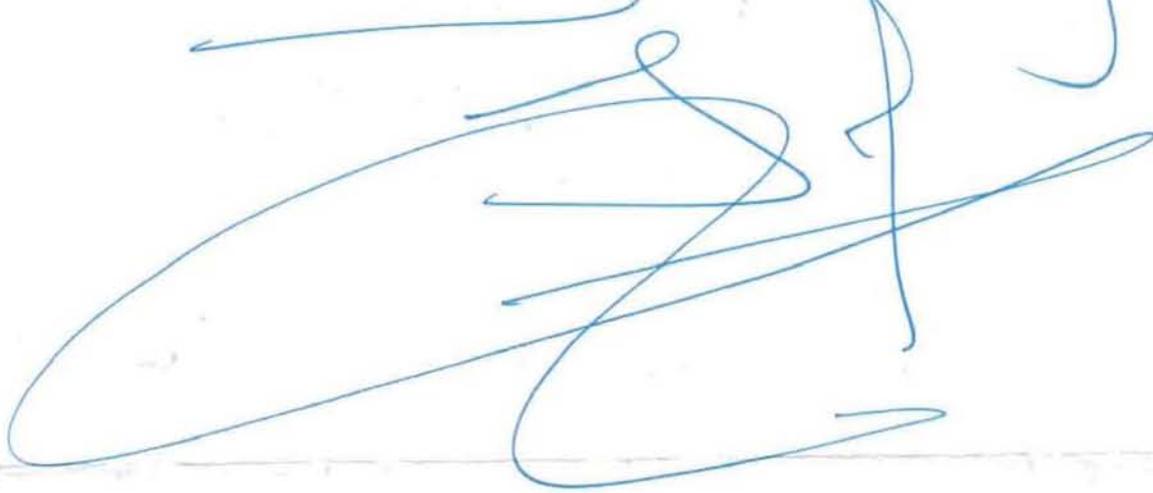


San Diego
Ca 92110

of all the animals
man is the only one
that is cruel - Mark Twain

Dear Director -
Alaska's northern coast
is home to many beautiful wildlife
species: bowhead whales, beluga whales,
seals, walrus, polar bear, marine
birds and terrestrial mammals to
name a few - Unfortunately, these
animals & their habitats are
currently being threatened by the
many negative effects of oil &
gas exploration! Four proposed
alternatives recently outlined by
NOAA + NMF.S will cause
negative impacts, such as noise,
exposure, ship traffic and
potential oil spills, on arctic
wildlife! The only human and

responsible alternative to oil
and gas exploration is a
"No Action" alternative, which
would fully protect wildlife -
particularly marine mammals - in
the Arctic - I would be
most grateful and would
appreciate a kind reply.

Sincerely




MARINE MAMMAL COMMISSION

28 February 2012

Mr. James H. Lecky, Director
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910-6233

Dear Mr. Lecky:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed (1) the draft environmental impact statement prepared by the National Marine Fisheries Service, in cooperation with the Bureau of Ocean Energy Management, on the effects of oil and gas activities in the Arctic Ocean and (2) the associated 30 December 2011 *Federal Register* notice (76 Fed. Reg. 82275). The Commission provides the following recommendations and rationale.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- (1) work with the Bureau of Ocean Energy Management to conduct supplemental activity-specific environmental analyses under the National Environmental Policy Act that provide detailed information on proposed seismic surveys and drilling activities and the associated environmental effects, (2) work with the Bureau and industry to ensure that the necessary information is available to estimate the number of takes as accurately as possible given current methods and data, (3) encourage the Bureau to make activity-specific analyses available for public review and comment rather than issuing memoranda to the file or categorical exclusions that do not allow for public review/comment, and (4) encourage the Bureau to make those analyses available for public review and comment before the Service makes its final determination regarding applications for incidental take authorizations;
- work with the Bureau of Ocean Energy Management to expand the draft environmental impact statement to include a broader range of alternatives that ensure that oil and gas activities have no more than a negligible impact on marine mammal species and stocks and will not have adverse impacts on the Alaska Native communities that depend on the availability of marine mammals for subsistence, as required under the Marine Mammal Protection Act; additional alternatives should include a phased approach for increasing oil and gas activities, avoidance of redundant seismic surveys, development of a soundscape approach and consideration of caps on noise or activity levels for managing sound sources during the open-water period, and a clear basis for judging whether the impacts of the industry's activities are, indeed, negligible as required by the Act;
- identify its preferred alternative, including the rationale for its selection;
- work with the Bureau of Ocean Energy Management to estimate the site-specific acoustic footprints for each sound threshold (i.e., 190, 180, 160, and 120 dB re 1 μ Pa) and the

- expected number of marine mammal takes, accounting for all types of sound sources and their cumulative impacts;
- work with the Bureau of Ocean Energy Management and other entities as appropriate to establish and fully support programs designed to collect and synthesize the relevant scientific information and traditional knowledge necessary to evaluate and predict the long-term and cumulative effects of oil and gas activities on Arctic marine mammals and their environment;
- revise the draft environmental impact statement to include a fuller analysis of each alternative and discuss whether it meets the requirements of the Marine Mammal Protection Act for issuing incidental take authorizations; to the extent that the information needed to make the determinations required under the Marine Mammal Protection Act is lacking, the Service should take steps to ensure that this information is available before an authorization is issued and should acknowledge that supplemental environmental analyses under the National Environmental Policy Act may be necessary;
- work with the Bureau of Ocean Energy Management to incorporate a broader list of mitigation measures that would be standard for all oil and gas-related incidental take authorizations in the Arctic region (as identified below);
- include additional measures to verify compliance with mitigation measures and work with the Bureau of Ocean Energy Management and industry to improve the quality and usefulness of mitigation and monitoring measures (as identified below); and
- work with the Bureau of Ocean Energy Management, Fish and Wildlife Service, U.S. Geological Survey, state of Alaska, North Slope Borough, Alaska Native organizations, academia, non-governmental organizations, and industry to develop a comprehensive, long-term monitoring program for the Arctic ecosystem, including its marine mammal populations.

RATIONALE

Programmatic approach and site-specific analyses

The exploration, development, and production of oil and gas reserves in the Beaufort and Chukchi Seas may significantly affect Arctic marine mammal populations and the ocean and coastal ecosystems on which they depend. Risks include exposure to sound from seismic surveys and drilling operations; disturbance from aircraft and vessel traffic; habitat degradation from discharges of oil, drilling wastes, or other materials (e.g., fuel); and exposure to oil and other chemicals from an oil spill or other major discharge. Oil and gas activities also can reduce the availability of marine mammals to Alaska Native communities for subsistence purposes.

Federal agencies are required to comply with the National Environmental Policy Act before they make final decisions about proposed federal actions that could impact the human environment. Under that Act, the Bureau conducts analyses at various stages of the leasing, exploration, and development process to evaluate the environmental and socioeconomic effects of oil and gas activities authorized under the Outer Continental Shelf Lands Act and to issue related permits. The Service is responsible for issuing incidental take authorizations under section 101(a)(5) of the Marine

Mammal Protection Act. Prior to issuance, the Service typically prepares environmental assessments to evaluate the effects of issuing authorizations to take marine mammals incidental to proposed oil and gas activities and any proposed mitigation and monitoring measures.

The National Marine Fisheries Service and the Bureau of Ocean Energy Management jointly prepared the subject draft environmental impact statement to evaluate (1) the Service's issuance of incidental take authorizations for exploration activities that include deep penetration (two-dimensional and three-dimensional) geophysical surveys, high resolution site clearance and shallow hazards surveys, and exploratory drilling, and (2) the Bureau's issuance of permits under the Outer Continental Shelf Lands Act for geological and geophysical surveys and ancillary activities. The document is intended to provide a programmatic evaluation of pre-production oil and gas activities planned in the U.S. Arctic during a five-year period and their cumulative effects.

The Marine Mammal Commission agrees that a programmatic approach is warranted and timely considering the expected increases in oil and gas exploration activities in the U.S. Arctic coupled with the effects of climate disruption and increasing human activities in the region. A programmatic approach should help ensure that a systematic, interdisciplinary approach is used to determine the environmental impact of the proposed actions as required by the National Environmental Policy Act, and that the sum of all risk factors do not cause "undue or serious harm or damage to the human, marine, or coastal environment," as required by the Outer Continental Shelf Lands Act (30 C.F.R. § 250.202), and are not having more than a negligible impact on affected marine mammal stocks or an unmitigable adverse impact on the availability of marine mammals for subsistence uses, as required by the Marine Mammal Protection Act (50 C.F.R. § 216.104).

The Service has stated that it "intends to use this [environmental impact statement] as the required [National Environmental Policy Act] documentation for the issuance of [incidental take authorizations] for Arctic oil and gas exploration activities." However, the Service has provided only conceptual examples of the temporal and spatial distribution of proposed activities under each alternative and the maps and figures provided do not include all possible activities considered for each alternative or how these activities might overlap spatially and temporally. In fact, the lack of specific information precludes a full assessment of the potential effects of the combined activities, including such things as an estimation of the number of takes for species that transit through the action area during the timeframe being considered. Similarly, the range of airgun volumes, source levels, and distances to the 190-, 180-, 160-, and 120-dB re 1 μ Pa harassment thresholds (Table 4.5-10, which are based on measurements from past surveys) vary markedly and cannot be used to determine with any confidence the full extent of harassment of marine mammals. Such assessment requires modeling of site-specific operational and environmental parameters, which is simply not possible based on the information in this programmatic assessment.

For those and related reasons, the draft environmental impact statement does not provide an adequate basis for the issuance of the Service's incidental take authorizations. Absent important information on the number and nature of potential takes that may occur incidental to the proposed activities, the Service cannot make an informed, science-based judgment as to whether those takes

will involve a small number of animals and whether their total impact will be negligible as required under the Marine Mammal Protection Act. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service (1) work with the Bureau of Ocean Energy Management to conduct supplemental activity-specific environmental analyses under the National Environmental Policy Act that provide detailed information on proposed seismic surveys and drilling activities and the associated environmental effects, (2) work with the Bureau and industry to ensure that the necessary information is available to estimate the number of takes as accurately as possible given current methods and data, (3) encourage the Bureau to make activity-specific analyses available for public review and comment rather than issuing memoranda to the file or categorical exclusions that do not allow for public review/comment, and (4) encourage the Bureau to make those analyses available for public review and comment before the Service makes its final determination regarding applications for incidental take authorizations.

Selection of alternatives

The Service and the Bureau have identified five alternatives, including (1) the no-action alternative; (2) authorization of “Level 1” exploration activities, (3) authorization of “Level 2” exploration activities, (4) authorization of Level 2 exploration activities with time/area closures; and (5) authorization of Level 2 exploration activities with the use of alternative technologies. Activities associated with Level 1 and Level 2 exploration activities are summarized in Table 1. With the exception of the no-action alternative, the Service has indicated that each of the action alternatives would require a suite of “standard” mitigation measures and also could require one or more “additional” mitigation measures as necessary.

Table 1. Summary of exploration activity levels considered in the draft environmental impact statement associated with alternatives 2, 3, 4, and 5 (adapted from page 4-6)

Level 1 Exploration Activities (alternative 2)	Level 2 Exploration Activities (alternatives 3, 4, and 5)
Two 2D/3D deep penetration towed-streamer seismic surveys in the Beaufort Sea and two of the same types of surveys in the Chukchi Sea, per year	Three 2D/3D deep penetration towed-streamer seismic surveys in the Beaufort Sea and four of the same types of surveys in the Chukchi Sea, per year
One in-ice towed streamer 2D survey (using icebreaker) in the Beaufort Sea and one of the same types of surveys in the Chukchi Sea, per year	One in-ice towed streamer 2D survey (using icebreaker) in the Beaufort Sea and one of the same types of surveys in the Chukchi Sea, per year
One ocean bottom cable survey in the Beaufort Sea, per year	Two ocean bottom cable surveys in the Beaufort Sea, per year
One on-ice vibroseis seismic survey in the Beaufort Sea, per year	One on-ice vibroseis seismic survey in the Beaufort Sea, per year
Three site clearance and high-resolution shallow hazards survey programs in the Beaufort Sea and three of the same types of surveys in the	Five site clearance and high-resolution shallow hazards survey programs in the Beaufort Sea and five of the same types of surveys in the Chukchi

Level 1 Exploration Activities (alternative 2)	Level 2 Exploration Activities (alternatives 3, 4, and 5)
Chukchi Sea, per year	Sea, per year
One exploratory drilling program in the Beaufort Sea and one exploratory drilling program in the Chukchi Sea, per year	Two exploratory drilling programs in the Beaufort Sea and two exploratory drilling programs in the Chukchi Sea, per year

The draft environmental impact statement indicates that the Service’s objectives are to “evaluate a broad range of reasonably foreseeable levels of exploration activities, ... including the use of alternative technologies and methodologies intended to reduce the amount and/or intensity of sound output, in state and federal waters in the U.S. Beaufort and Chukchi seas” (page 1-9). However, the range of action alternatives considers only two levels of activity, with the lower level of activity (i.e., alternative 2) resulting in a total acoustic footprint that would be significantly greater than at any time since the 1980s (pages 4-44 to 4-47). In addition, the narrow range of alternatives and the lack of specificity regarding the source levels, timing, duration, and location of the activities being considered do not provide a sufficient basis for determining whether other options might exist for oil and gas development with significantly less environmental impact, including reduced effects on marine mammals. Providing a broader range of activity levels (i.e., alternatives) with more specificity regarding the spatial, temporal, and operational characteristics of associated activity levels seems essential to ensure the least practicable impact to marine mammal species and stocks and their habitats, as required under the Marine Mammal Protection Act.

The Service and Bureau also should have considered a phased, adaptive approach to increasing the number of surveys in the region because the cumulative effects of seismic surveys are not clear. The Commission has previously recommended a go-slow approach to allow time for assessing the impacts of increasing activity levels. Such an approach would provide an opportunity to monitor and manage effects before they become significant and also would help prevent situations where the industry has over-committed its resources to activities that may cause unacceptable harm.

In addition, the Service and Bureau should have considered various strategies for avoiding unnecessarily redundant seismic surveys as a way of ensuring the least practicable impact on marine mammals and the environment. Because some companies conduct geophysical surveys for the purpose of selling the data, those data could be made available to multiple companies, avoiding the need for each company to commission separate surveys. Careful management of the number and timing of surveys will be particularly important in this region because the surveys will be limited in space and time to open waters, when multiple species of marine mammals use the same areas for feeding, reproduction, and migration. Rather than exclude the possibility of avoiding redundant seismic surveys outright, such options should have been included and evaluated in the draft environmental impact statement to ensure that decision makers are informed by consideration of a full suite of alternatives that sharply define the issues.

Other possible alternatives excluded from further consideration included caps on noise or activity levels. As rationale for this decision, the draft environmental impact statement maintains that the concept of a sound ‘budget’ “implies a quantitative management of total sound that cannot currently be supported by the science” (page 2-46). The Commission disagrees. The Arctic “soundscape” should be relatively easy to describe and manage compared to the soundscapes of other regions. In the Arctic, sound levels follow a highly distinct seasonal pattern dominated in winter by ice-related sound and then altered by sound from wind, waves, vessels, seismic surveys, and drilling in the open-water period. The sound signatures (i.e., frequency, intensity, duration, variability) of the various sources are either well known or easily described and, for any given region, they should be relatively predictable. The primary source of anthropogenic sound in the Arctic during the open-water season is oil and gas-related seismic activity, and those activities can elevate sound levels by 2–8 dB (Roth et al. 2012). The Service and Bureau should be able to compare the seasonal variations in the soundscape to the movement patterns and natural histories of marine mammals and to subsistence hunting patterns.

Clearly, oil and gas companies are making an effort to avoid portions of the bowhead whale hunting grounds during the whales’ migration, and similar efforts could be made to protect beluga whales, walrus, ice seals, and the hunters who depend on them. By carefully comparing the soundscape to marine mammal natural history and subsistence hunting patterns, the Bureau and industry would have a stronger scientific foundation from which to make reasoned judgments regarding which activities will result in the least practicable impact on these species. Using this information, the Service and Bureau should be able to place limits on the number, timing, and type of seismic activities permitted annually, at least until the long-term, population-level effects of seismic operations on marine mammals and other marine species are fully understood. The Arctic is, in fact, one region where limits on sound-generating activities can be implemented pro-actively, before other human activities (e.g., shipping and tourism) increase. Developing an inventory/database of seismic sound sources used in the Arctic, as suggested by the U.S. Geological Survey, would be a good first step (Hutchinson and Ferrero 2011). Such a database “may ultimately reduce the need for expensive or redundant acoustic modeling and monitoring, especially in sensitive or biologically significant habitats, as well as contribute to developing more effective mitigation strategies.”

The Service is proposing to authorize up to 12 seismic surveys and 2 drilling programs in the Beaufort Sea and 10 surveys and 2 drilling programs in the Chukchi Sea each year. The Service concludes that this level of activity will result in moderate impacts on bowhead whales; beluga whales; subsistence hunting; air quality; acoustics; visual resources; and land and water ownership, use, and management. The Commission does not understand the scientific justification for that conclusion given uncertainties regarding the long-term, population-level effects that may result from the proposed level of seismic and drilling activities on marine mammals. It also is not clear that the proposed number of surveys, individually or in combination, will have no more than a negligible impact on marine mammals, the threshold for issuing an incidental take authorization under the Marine Mammal Protection Act. How can moderate impacts be deemed negligible? To ensure that seismic survey activities and the associated impacts are, indeed, negligible and at the least practicable

level for purposes of the Marine Mammal Protection Act, the permitted activity level should not exceed what is absolutely essential for the industry to conduct.

In addition, the Service does not indicate which of the five identified alternatives is considered the “preferred” alternative. Presumably the selection of a preferred alternative would be based, at least in part, on an analysis of which alternative and associated effects have the least practicable impact on marine mammals. However, the Service does not provide any discussion of the criteria that will ultimately be used as the basis for its selection of a preferred alternative.

For these reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service work with the Bureau of Ocean Energy Management to expand the draft environmental impact statement to include a broader range of alternatives that ensure that oil and gas related activities have no more than a negligible impact on marine mammal species and stocks and will not have adverse impacts on the Alaska Native communities that depend on the availability of marine mammals for subsistence, as required under the Marine Mammal Protection Act. Additional alternatives should include a phased, adaptive approach for increasing oil and gas activities, avoidance of redundant seismic surveys, development of a soundscape approach and consideration of caps on noise or activity levels for managing sound sources during the open-water period, and a clear basis for judging whether the impacts of the industry’s activities are, indeed, negligible as required by the Act. The Commission further recommends that the Service identify its preferred alternative, including the rationale for its selection.

Impacts on marine mammals and analytical gaps

The draft environmental impact statement describes the affected environment and expected impacts from the proposed activities. Again, the statement does not explain how decision makers can draw definitive conclusions regarding potential effects on marine mammals or other ecosystem components given the lack of details for the operations identified under each alternative. The uncertainty is evident in the Service’s assessment of effects on bowhead whales resulting from alternative 2—“Oil and gas exploration activities in the Beaufort and Chukchi seas, as allowed under [a]lternative 2, would likely cause varying degrees of disturbance to feeding, resting, or migrating bowhead whales depending on actual level of effort, type of activity, time of year, and whether activities run concurrent in the Beaufort and Chukchi seas” (page 4-110). This type of vague, qualitative information is not sufficient to inform decision makers of the risks involved and the best means for managing or minimizing those risks.

For example, the Service’s analysis of sound sources and associated acoustic footprints is based on the average distances from the sound sources to the various sound threshold levels used by the Service to delineate harassment, as measured during previous seismic surveys of various types, rather than actual modeling of propagation loss associated with the proposed types and numbers of sound sources. The Commission believes that decision makers need more specific information because these sound sources may ensonify large portions of the Chukchi and Beaufort Seas. For example, the Service has estimated that alternative 2 would ensonify 35 percent of the Chukchi Sea and 14 percent of the Beaufort Sea at the 120-dB re 1 μ Pa threshold (page 4-50); whereas,

alternative 3 would ensonify 58 percent of the Chukchi Sea and 19 percent of the Beaufort Sea at the 120-dB re 1 μ Pa threshold (page 4-245). The significance of these estimates is difficult to interpret and predict given the vague set of assumptions on which they are based.

The Commission also has noted several omissions and inadequacies in the Service's analysis of impacts. For example, the Service states that the vertical seismic profilers and vertical cable surveys are used as part of the drilling program, yet the Service has not analyzed the effects of those sound sources as part of the proposed drilling operations. Vertical seismic profilers are airgun arrays with the potential to generate source levels at or above 238 dB re 1 μ Pa at 1 m (Shell 2011). In addition, the Service has not analyzed the combined effects of proposed new activities plus production drilling at BP's Liberty prospect, even though this drilling project is likely to go forward in the timeframe covered by the draft environmental impact statement. To assess the effects of the proposed oil and gas exploration activities under the Marine Mammal Protection Act, the Marine Mammal Commission recommends that the National Marine Fisheries Service work with the Bureau of Ocean Energy Management to estimate the site-specific acoustic footprints for each sound threshold (i.e., 190, 180, 160, and 120 dB re 1 μ Pa) and the expected number of marine mammal takes, accounting for all types of sound sources and their cumulative impacts.

To predict the expected effects of oil and gas and other activities more accurately, the Commission agrees with the U.S. Geological Survey that a broader synthesis and integration of available information on bowhead whales and other marine mammals is needed. That synthesis should incorporate such factors as ambient sound levels, natural and anthropogenic sound sources, abundance, movement patterns, the oceanographic features that influence feeding and reproductive behavior, and traditional knowledge (Hutchinson and Ferrero 2011). As noted above, the U.S. Geological Survey's recommendation to develop an inventory/database of seismic sound sources used in the Arctic would be a good first step toward a better understanding of long-term, population-level effects of seismic and drilling activities. Two recent projects that will help further such an integrated approach are NOAA's recently launched Synthesis of Arctic Research (SOAR) and the North Pacific Marine Research Institute's industry-supported synthesis of existing scientific and traditional knowledge of Bering Strait and Arctic Ocean marine ecosystem information.

An ecosystem-wide, integrated synthesis of available information would help identify important data gaps that exist for Arctic marine mammals, particularly for lesser-studied species such as beluga whales, walruses, and ice seals. It also would help the agencies better understand and predict the long-term, cumulative effects of the proposed activities, in light of increasing human activities in the Arctic and changing climatic conditions. Therefore, the Marine Mammal Commission recommends that the Service work with the Bureau and other entities as appropriate to establish and fully support programs designed to collect and synthesize the relevant scientific information and traditional knowledge necessary to evaluate and predict the long-term and cumulative effects of oil and gas activities on Arctic marine mammals and their environment.

Marine Mammal Protection Act standards

The Service has developed “impact criteria” for the draft environmental impact statement to evaluate each of the alternatives and its potential impacts on biological and socioeconomic resources. These criteria range from negligible to major, using terms and thresholds that are quantitative for some components and qualitative for others. For alternative 2 (Level 1 activities), impacts are identified as moderate for subsistence, minor to moderate for bowhead and beluga whales, and minor for other marine mammal species. For alternatives 3 (Level 2 activities) and 5 (Level 2 activities with alternative technologies), impacts are identified as moderate for subsistence, bowheads, and belugas, and minor for other marine mammal species. For alternative 4 (Level 2 activities with time/area closures), impacts are identified as moderate for bowhead and beluga whales and minor for other marine mammal species and subsistence. The Service concludes that even at the higher level of activity (Level 2 activities) bowhead whales will be displaced only temporarily, but that long-term effects are unknown. It goes on to state that the extent of the impact would depend on the number of seismic activities and associated support vessels in an area, and that multiple seismic activities in one area or in several areas across the bowhead migratory corridor could lead to more widespread, regional impacts.

Although these criteria may be considered sufficient for purposes of the analyses required under the National Environmental Policy Act, they do not necessarily meet the standards applicable under the Marine Mammal Protection Act for issuing incidental take authorizations—that only small numbers of animals are taken, that such takes have no more than a negligible impact on the affected marine mammal species and stocks, and that the activities do not have an unmitigable adverse impact on the availability of marine mammals for subsistence uses. The Commission believes that any analysis of potential impacts at this stage is speculative at best because of the lack of definitive information regarding sound source levels, the type and duration of proposed exploration activities, and the mitigation measures that each operator would be required to meet. However, before an incidental take authorization can be issued, the Service will need such information to make the findings required under the Marine Mammal Protection Act. To ensure that is the case, the Marine Mammal Commission recommends that the National Marine Fisheries Service revise the draft environmental impact statement to include a fuller analysis of each alternative and discuss whether it meets the requirements of the Marine Mammal Protection Act for issuing incidental take authorizations. To the extent that the information needed to make the determinations required under the Marine Mammal Protection Act is lacking, the Service should take steps to ensure that this information is available before an authorization is issued and should acknowledge that supplemental environmental analyses under the National Environmental Policy Act may be necessary.

Mitigation and monitoring measures

The Service has identified a suite of standard mitigation measures that would be applied to all authorized activities and additional, specific measures that would be required only for certain activities or operators, as appropriate. The Commission agrees that the list of standard mitigation measures should be incorporated in all incidental take authorizations issued by the Service and also should be included under the terms and conditions for the Bureau’s issuance of geological and

geophysical permits and ancillary activity and exploratory drilling approvals. However, the Commission believes that many of the “additional” mitigation measures should be expanded and included as standard conditions.

The following is a summary of mitigation measures that the Commission has recommended in incidental harassment authorizations for other proposed oil and gas activities. The various rationales for including those measures can be found in past letters to the Service and are not repeated here. The Marine Mammal Commission recommends that the National Marine Fisheries Service work with the Bureau of Ocean Energy Management to incorporate a broader list of mitigation measures that would be standard for all oil and gas-related incidental take authorizations in the Arctic region, including:

- a) Detection-based measures intended to reduce near-source acoustic impacts on marine mammals
 - require operators to use operational- and activity-specific information to estimate exclusion and buffer zones for all sound sources (including seismic surveys, sub-bottom profilers, vertical seismic profiling, vertical cable surveys, drilling, icebreaking, support aircraft and vessels, etc.) and, just prior to or as the activity begins, verify and (as needed) modify those zones using sound measurements collected at each site for each sound source;
 - assess the efficacy of mitigation and monitoring measures and improve detection capabilities in low visibility situations using tools such as forward-looking infrared or 360° thermal imaging;
 - require the use of passive acoustic monitoring to increase detection probability for real-time mitigation and monitoring of exclusion zones; and
 - require operators to cease operations when the exclusion zone is obscured by poor sighting conditions;
- b) Non-detection-based measures intended to lessen the severity of acoustic impacts on marine mammals or reduce overall numbers taken by acoustic sources
 - limit aircraft overflights to an altitude of 457 m or higher and a horizontal distance of 305 m or greater when marine mammals are present (except during takeoff, landing, or an emergency situation)¹;
 - require temporal/spatial limitations to minimize impacts in particularly important habitats or migratory areas, including but not limited to those identified for time-area closures under Alternative 4 (i.e., Camden Bay, Barrow Canyon/Western Beaufort Sea, Hanna Shoal, the Beaufort Sea shelf break, and Kasegaluk Lagoon/Ledy Bay critical habitat);
 - prevent concurrent, geographically overlapping surveys and surveys that would provide the same information as previous surveys; and
 - restrict 2D/3D surveys from operating within 145 km of one another;
- c) Measures intended to reduce/lessen non-acoustic impacts on marine mammals

¹ Flight altitudes were included as an additional mitigation measure, but a specific minimum altitude was not identified.

- reduce vessel speed to 9 knots or less when transiting the Beaufort Sea²;
 - reduce vessel speed to 9 knots or less within 274 m of whales^{2,3};
 - avoid changes in vessel direction and speed within 274 m of whales³;
 - reduce speed to 9 knots or less in inclement weather or reduced visibility conditions²;
 - use shipping or transit routes that avoid areas where marine mammals may occur in high densities, such as offshore ice leads;
 - establish and monitor a 160-dB re 1 μ Pa zone for large whales around all sound sources and do not initiate or continue an activity if an aggregation of bowhead whales or gray whales (12 or more whales of any age/sex class that appear to be engaged in a non-migratory, significant biological behavior (e.g., feeding, socializing)) is observed within that zone;
 - require operators to cease drilling operations in mid- to late-September to reduce the possibility of having to respond to a large oil spill in ice conditions;
 - require operators to develop and implement a detailed, comprehensive, and coordinated Wildlife Protection Plan that includes strategies and sufficient resources for minimizing contamination of sensitive marine mammal habitats and that provides a realistic description of the actions that operators can take, if any, to deter animals from spill areas or respond to oiled or otherwise affected marine mammals—the plan should be developed in consultation with Alaska Native communities (including marine mammal co-management organizations), state and federal resource agencies, and experienced non-governmental organizations; and
 - require operators to collect all new and used drilling muds and cuttings and either re-inject them or transport them to an Environmental Protection Agency-licensed treatment/disposal site outside the Arctic;
- d) Measures intended to ensure no unmitigable adverse impact to subsistence users
- require the use of Subsistence Advisors; and
 - facilitate development of more comprehensive plans of cooperation/conflict avoidance agreements that involve all potentially affected communities and co-management organizations and account for potential adverse impacts on all marine mammal species taken for subsistence purposes.

The Marine Mammal Commission also recommends that the National Marine Fisheries Service include additional measures to verify compliance with mitigation measures and work with the Bureau and industry to improve the quality and usefulness of mitigation and monitoring measures:

- track and enforce each operator's implementation of mitigation and monitoring measures to ensure that they are executed as expected;

² Reduced vessel speeds were included as an additional mitigation measure, but a specific maximum vessel speed was not identified.

³ The specific distance at which vessels should exercise caution when around whales was not identified.

- provide guidance to operators regarding the estimation of the number of takes during the course of an activity (e.g., seismic survey)—that guidance should be sufficiently specific to ensure that take estimates are accurate and include realistic estimates of precision and bias;
- provide additional justification for the determination that the mitigation and monitoring measures that depend on visual observations would be sufficient to detect, with a high level of confidence, all marine mammals within or entering identified mitigation zones;
- work with protected species observers, observer service providers, the Fish and Wildlife Service, and other stakeholders to establish and implement standards for protected species observers to improve the quality and usefulness of information collected during exploration activities;
- establish requirements for analysis of data collected by protected species observers to ensure that those data are used both to estimate potential effects on marine mammals and to inform the continuing development of mitigation and monitoring measures;
- require operators to make the data associated with monitoring programs publicly available for evaluation by independent researchers;
- require operators to gather the necessary data and work with the Bureau and the Service to assess the effectiveness of soft-starts as a mitigation measure; and
- require operators to suspend operations immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury could be attributed to the applicant's activities—any suspension should remain in place until the Service has reviewed the situation and determined that further deaths or serious injuries are unlikely or has issued regulations authorizing such takes under section 101(a)(5)(A) of the Act.

Comprehensive monitoring program

In addition to project-specific monitoring measures, the Commission believes that a comprehensive, long-term monitoring program is needed for the Arctic to ensure that its rapidly changing marine environment is adequately protected from the adverse effects of oil and gas exploration and development and other human activities. Clearly, the Bureau and the Service cannot be solely responsible for such a program—it must be coordinated with key partners, including the Fish and Wildlife Service, U.S. Geological Survey, the state of Alaska, the North Slope Borough, Alaska Native organizations, academia, non-governmental organizations, and industry. The program should include a strategy for assessing the status of marine mammal populations, characterizing important natural history traits including habitat use, determining vulnerability to risks from all human activities, and identifying and developing appropriate mitigation and monitoring measures. A number of research tools are available for collecting this information, including vessel and aircraft surveys, passive acoustics, photo-identification studies, biopsy sampling, telemetry tagging, and information obtained from stranded and subsistence-harvested animals. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service work with the Bureau of Ocean Energy Management, Fish and Wildlife Service, U.S. Geological Survey, state of Alaska, North Slope Borough, Alaska Native organizations, academia, non-governmental organizations, and industry to develop a comprehensive, long-term monitoring program for the Arctic ecosystem, including its marine mammal populations.

Please contact me if you have questions about the Commission's recommendations or comments.

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive style with a long horizontal line extending from the end of the name.

Timothy J. Ragen, Ph.D.
Executive Director

cc: Dr. James Kendall, Bureau of Ocean Energy Management, Alaska Outer Continental Shelf Region, Anchorage, AK
Dr. Kim Rivera, National Marine Fisheries Service, Alaska Regional Office, Juneau, AK
Jenifer Kohout, Marine Mammals Management Office, Anchorage, AK

References

Hutchinson, D.R., and R.C. Ferrero. 2011. Chapter 6. Marine mammals and anthropogenic noise. Pages 165-202 *in* L. Holland-Bartels and B. Pierce (eds.), An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370.

Roth, E.H., J.A. Hildebrand, and S.M. Wiggins. 2012. Underwater ambient noise on the Chukchi Sea continental slope from 2006–2009. *Journal of the Acoustical Society of America* 131(1):104-110.

Shell Offshore Inc. 2011. Application for incidental harassment authorization for the non-lethal taking of whales and seals in conjunction with planned exploration drilling program during 2012 near Camden Bay in the Beaufort Sea, Alaska. 393 pages.



Arcticeis Comments <arcticeis.comments@noaa.gov>

Public Comment on Environmental Impact Statement (EIS) on the Effects of Oil and Gas Activities in the Arctic Ocean

1 message

Petra Mottishaw <mottishaw@hotmail.com>

Wed, Feb 29, 2012 at 1:42 AM

To: arcticeis.comments@noaa.gov

Director, Office of Protective Resources
1315 East-West Highway
Silver Spring, MD 20910

Dear Director, Office of Protective Resources at NOAA,

Thank you for the open period for public comment on the environmental impact statement you have provided. I am a scientist, and would like to comment on data gathering on the effects of activities in the Arctic Ocean.

I appreciate that you are attempting to assess the impact of oil and gas extraction on the environment. It is necessary to have a governmental body attempt to do this with scientific evidence. This assessment has not been thorough enough.

In spite of this, I also think our system is flawed, and that no matter how much assessment and preparation, you will never be able to reach an acceptable level of safety. When large oil companies want to do something and offer money, people will do that which is economically advantageous in the short term and not do what is good for them, the economy, or the environment in the long term.

Scientifically, it is not a question of if there will be an oil spill, but when. The Chukchi and Beaufort Seas are remote wilderness areas that are important reserves for the health of the planet. There is no large local population of people to help in the case of a spill or to monitor for spills. The harshness and severity of the weather in these oceans could result in delays in rescuing people and protecting the environment. No matter how many "safeties" you attempt to add to oil extraction, there will always be a catastrophic event. Scientific evidence is already in place that the environmental effects go on for decades.

Catastrophic events are not the only problem with oil exploration and drilling. Day to day activities produce noise, pollution, and spills on a smaller scale, and generalized human encroachment.

These are listed in this Statement as potentially effecting affecting threatened and endangered animals. There are rules that NOAA presides over. Take The Marine Mammal Protection Act as an example. NOAA-National Marine Fisheries Service issues permits to study impacts on marine mammals. Or NOAA prevents these research studies as contravening the act. Why enforce the act for some, and then allow corporations to do that which can be demonstrated to have negative effects on marine mammals? I do not believe this environmental impact statement has enough scientific evidence to prove that oil activities will not harm the Alaskan environment.

I believe that if we are looking at the long-term health of the environment, we should leave the Alaskan wilderness wild. If we are looking for long-term health of the economy, we should stop depending on non-sustainable energy. We have the best and brightest minds - invest in the new technologies instead and get us off our dependence on oil. Drilling in the arctic, no matter how much environmental impact assessment we do, will have a negative impact on the whole world.

Thank you,

Dr. Petra Mottishaw

Veterinarian (extern at the Oiled Wildlife Veterinary Care and Research Center, CA 2008)

Volunteer veterinarian at The Marine Mammal Center

Monterey Bay National Marine Sanctuary Steward at Save Our Shores

Marine Biologist (Masters on diving physiology in seals)

(and visitor to Prudhoe Bay).

Paul A. Yost

Vice President

Energy and Resources Policy

February 29, 2012

Mr. James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Re: National Oceanic and Atmospheric Administration RIN 0648–XA885, Notice of Availability of a Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Lecky:

The National Association of Manufacturers (the NAM) welcomes the opportunity to comment on National Oceanic and Atmospheric Administration RIN 0648–XA885, Notice of Availability of a Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean. The NAM is the largest industrial trade association in the U.S., representing over 12,000 small, medium and large manufacturers in all 50 states. The NAM is the leading voice in Washington, DC for the manufacturing economy, which provides millions of high wage jobs in the U.S. and generates more than \$1.6 trillion in GDP. In addition, two-thirds of our members are small businesses, which serve as the engine for job growth. The NAM's mission is to enhance the competitiveness of manufacturers and improve American living standards by shaping a legislative and regulatory environment conducive to U.S. economic growth. Our members understand that we must expand access to all forms of domestic energy production to meet current and future needs for affordable energy, and that the potential production from Alaska's Outer Continental Shelf (OCS) is vital to our nation's interests.

The federal government, the oil and gas industry, and countless supporting businesses have invested billions of dollars in pursuit of Arctic oil and gas drilling to date, and they stand to invest substantially more in the coming years to advance our nation's energy and economic security. The ripple effects through our economy would support thousands of jobs, especially in the manufacturing industry.

We understand, however, that the pace and economic viability of the Arctic OCS oil and gas program could be substantially contracted, with potentially significant yet unidentified economic consequences, if "incidental take" regulations for marine mammals follows one of the alternatives identified to date in the Draft Environmental Impact Statement for Effects of Oil and Gas Activities in the Arctic Ocean. We are concerned that, if companies are precluded from exercising their leases, or cannot proceed with their investments because of too many restrictions and too much uncertainty, as would likely result from any of the current Draft Environmental Impact Statement (DEIS) alternatives, there will be ripple effects throughout all the companies that would have benefitted from Arctic oil and gas exploration and development.

Leading Innovation. Creating Opportunity. Pursuing Progress.

We request that you give strong consideration to the comments submitted by the American Petroleum Institute, the International Association of Geophysical Contractors, the National Ocean Industries Association, the US Oil & Gas Association, and their member companies. We further request that you take any necessary action to ensure viability for the Arctic OCS oil and gas program, even if it means developing a new suite of DEIS alternatives.

Thank you for considering our requests.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Yost', with a large, sweeping flourish extending to the right.

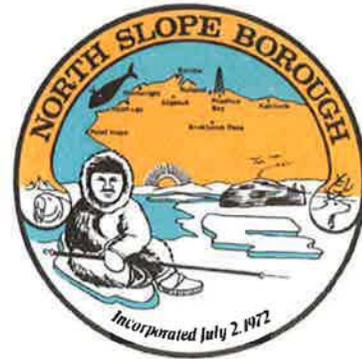
Paul A. Yost
Vice President
Energy and Resources Policy

North Slope Borough

OFFICE OF THE MAYOR

P.O. Box 69
Barrow, Alaska 99723
Phone: 907 852-2611 or 0200
Fax: 907 852-0337 or 2595
Email: charlotte.brower@north-slope.org

Charlotte E. Brower, Mayor



February 28, 2012

James Lecky
Director
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910
arcticeis.comments@noaa.gov

RE: Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Lecky:

Thank you for the opportunity to comment on the "Effects of Oil and Gas Activities in the Arctic Ocean: Draft Environmental Impact Statement." This DEIS seeks to evaluate the potential impacts associated with seismic and exploratory drilling activities in the Arctic OCS. The evaluation of impacts from these activities is meant to fulfill the responsibilities of the National Marine Fisheries Service (NMFS) under the National Environmental Policy Act (NEPA) as the agency issues incidental take authorizations for seismic activities and exploratory drilling pursuant to the Marine Mammal Protection Act (MMPA). The Bureau of Ocean Energy (BOEM) will also utilize the analysis to support permitting of geological and geophysical (G&G) surveys pursuant to the Outer Continental Shelf Lands Act (OCSLA).

NMFS' responsibilities in enforcing the provisions of the MMPA are of utmost importance to the North Slope Borough (NSB) and our residents. Arctic offshore oil and gas activity may have the potential to bring economic benefits to the region and the nation. But it is critical that those benefits do not accrue at the cost of the marine mammals and other subsistence resources that our residents rely upon. No amount of financial compensation or economic development can replace the bowhead whale, ice seals, and other marine mammal populations. We rely on NMFS to vigorously enforce the terms of the MMPA to ensure that our subsistence resources and practices, and ultimately culture and way of life are not compromised by industrial activities in the waters that support our communities.

A. Missing information and importance of monitoring programs and mitigation:

There remains great uncertainty in the nature and extent of the impacts of oil and gas exploration on marine mammals. The U.S. Geological Survey's recent report, "An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska," underscores this concern. This report is replete with examples of where the existing state of knowledge needs improvement to fully grasp the impact of activities authorized by

NMFS. For instance, the report finds that “For all the many studies conducted on ocean noise and marine mammals, large uncertainty still exists in extrapolating how impacts of noise on individual animals may affect survivorship or reproductive rates of populations.” Furthermore, there are a number of instances in this DEIS where NMFS recognizes the lack of relevant data, or, as identified in the attached comments from our Department of Wildlife Management, instances where conclusions are drawn without supporting data.

The degree of uncertainty regarding impacts to marine mammals greatly handicaps the agencies’ efforts to fully evaluate the impacts of the permitted activities, and NMFS’ ability to determine whether the activity is in compliance with the terms of the MMPA. We encourage the agency to acknowledge these data-gaps, as required by applicable NEPA regulations (40 C.F.R. §1502.22), and to work to gather the missing information.

Robust monitoring plans for authorized activities could be a key component to filling some of these gaps. Not only do these monitoring plans need to be implemented, but all data collected should be publically available for peer review and analysis. In the current system, we have no choice but to accept industries’ interpretation of results. This is not appropriate when we are talking about impacts to the public and its resources. Since industry is exploring for oil and gas that belongs to the people of the US and they are potentially impacting other resources that also belong to the people of the US, data from monitoring programs should be available to the public.

Additionally, because of the degree of uncertainty behind the nature and extent of impacts to marine mammals, we encourage NMFS to require a full suite of mitigation measures to every take authorization issued by the agency. Thus, we recommend that the mitigation measures currently identified as “additional mitigation measures” in the DEIS be included as “standard mitigation measures” in the final document. In particular, we recommend that more stringent regulation of marine vessel discharge for both exploratory drilling operations, support vessels, and other operations so as to eliminate possible environmental contamination of the marine environment through the introduction of pathogens and foreign organisms through ballast water, waste water, sewage, and other discharge streams.

B. Alternatives:

Given the uncertainty regarding the cumulative impacts of exploratory drilling and seismic surveys to subsistence species and the marine environment we urge NMFS to take a cautious approach. Amongst the action alternatives in the DEIS we would prefer Alternative 2 for its lower level of activity, but we also believe that the time/area closures of Alternative 4 are appropriate. Of course, any technology that might serve to achieve reductions in adverse impacts to marine mammals and the subsistence hunts should be implemented.

We are concerned that NMFS and BOEM do not feel enabled to limit the amount of industrial activity authorized in the Arctic. In rejecting an alternative that would cap the level of activity the DEIS states: “There is little, if any, quantitative data upon which BOEM or NMFS could justify designating a particular activity-level cap.” Similarly, in rejecting an alternative based on limiting cumulative impacts – for example, a sound budget approach – the agency again notes the lack of information stating: “Additionally, there are even fewer data to quantify those impacts to support a cumulative noise cap as the current understanding of the likely impacts from noise and ability to quantify those impacts are generally limited to observed responses to a single sound source.” NMFS then concludes: “while NMFS

will consider the potential impacts from exposure over time to multiple sound sources in this document, a 'budget' implies a quantitative management of total sound that cannot currently be supported by the science." The inadequate data regarding cumulative impacts should serve, however, to limit authorizations rather than preventing a limit on activity.

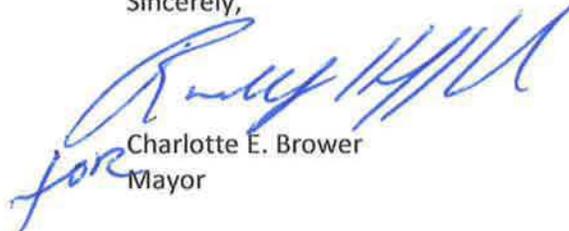
The MMPA envisions incidental take authorizations only where the applicant, or the agency, can make an affirmative showing of negligible impact to the species or stock and no unmitigable impact to the subsistence hunt. The lack of information regarding cumulative impacts should empower the agency to limit activity rather than handicap NMFS' efforts to protect marine mammals and the subsistence hunt. Accordingly, a sound budget alternative, or other approach which aspires to protect marine mammals from the aggregate impacts of authorized activity should be pursued.

C. Health Impact Assessment:

We applaud NMFS for incorporating a health impact assessment (HIA) into this EIS. NSB's April 2010 scoping comments advocated for the use of a HIA to formally and systematically assess human health impacts from the permitted activity as required by NEPA. We are pleased that NMFS accepted this recommendation and the input from NSB as Cooperating Agency to incorporate a public health component into this EIS. We hope that NMFS will continue to analyze this category of impacts in future NEPA analyses and continue to improve upon the input submitted for this document. As additional data becomes available regarding impacts to the Arctic environment, NMFS should continue to evaluate how those impacts may have implications for human health.

Additional specific comments from NSB's Department of Wildlife Management are attached to this letter. We hope you can give careful attention to the points raised by our experts in their review of the document. Thank you for considering our comments and concerns.

Sincerely,



Charlotte E. Brower
Mayor

Cc: Jacob Adams, Sr., NSB Chief Administrative Officer
Jason Bergerson, Advisor to NSB Mayor
Richard Camilleri, Advisor to NSB Mayor
Ian Young, Advisor to NSB Mayor
Ethel Patkotak, Borough Attorney
Taquilik Hepa, Director of NSB Department of Wildlife Management
Rhoda Ahmaogak, Director of NSB Department of Planning and Community Services
Doreen Leavitt, Director of NSB Department of Health and Social Services

Enclosure: Attachment A – Comments on "Effects of oil and gas activities in the Arctic Ocean, Draft Environmental Impact Statement (DEIS)" by the North Slope Borough Department of Wildlife Management

Attachment A

Comments on “Effects of oil and gas activities in the Arctic Ocean, Draft Environmental Impact Statement (DEIS)” by the North Slope Borough Department of Wildlife Management

February 28, 2012

Pages ES-8 to ES-11 and Chapter 2, Alternatives: The five alternatives provide a range of possible oil and gas activities in the U.S. Beaufort and Chukchi seas. These alternatives primarily focus on a range of seismic surveys, site clearance/shallow hazards surveys, and exploratory drilling. The alternatives also discuss a range of mitigation measures. While these alternatives cover the range of likely activities, the agency has missed an opportunity to draft an alternative that is more pertinent to bowhead whales and other marine mammals. One of the primary impacts addressed by the DEIS is related to impacts of anthropogenic sounds on marine mammals. Unfortunately, the alternatives use a proxy for sound that is numbers of activities, for assessing impacts from industrial sounds on marine mammals.

Instead of evaluating impacts based on the number of industrial activities, the National Marine Fisheries Service (NMFS) should have crafted a more relevant alternative that is based on the amount of anthropogenic sounds that marine mammals might be exposed to. All industrial activity is not the same. Some activities are louder (i.e., seismic) than others (i.e., echosounders for imaging the bathymetry). Additionally, the qualities and frequencies of sound differ among activities. Thus, some activities will likely have more of an impact on marine mammals than others.

An alternative based on accumulation of sound exposure level could be drafted to evaluate: (1) different types and numbers of industrial activities, (2) different frequencies produced by each activity, (3) location of activities, (4) timing of activities, (5) overlap in time and space with marine mammals, and (6) knowledge about how marine mammals respond to anthropogenic activities. Threshold levels could be based on simulation modeling using the above information. This approach would use a valid scientific approach, one that is at least as robust, and probably more, than the current approach of simply assessing numbers of activities.

Page ES-7, Table ES-1 Summary of Alternatives: Although the word “program” is defined (Page ES-6), it is unclear whether this term is missing from Table ES-1. Table ES-1 indicates that Alternatives 2 and 3 include: “One on-ice seismic survey in the Beaufort per year.” This statement seems to mean that the Alternatives contemplate one on-ice survey per year; but it could be read as one survey per year by program. The word “program” is included elsewhere in the table, its absence here is confusing. This should be clarified.

Pages ES-11 and 2-39, Standard Mitigation Measures: There is only one standard mitigation measure that protects subsistence harvests of bowheads in the Beaufort Sea. This measure is for the villages of Kaktovik and Nuiqsut. Standard mitigation measures are also needed to protect autumn bowhead hunting at Barrow, Wainwright, and possibly at Point Lay and Point Hope. Additionally, standard mitigation measures are needed to protect subsistence hunting of belugas at Point Lay and Wainwright and seal and walrus hunting along the Chukchi Sea coasts. One approach for protecting beluga hunting at Point Lay would be to implement adaptive

management; whereby, ships and drill rigs would not come within 60 miles of the community of Point Lay until the beluga hunt is completed. These types of mitigation measures should be standard and should be applied to any Incidental Take Authorization (ITA).

Another Standard Mitigation Measure should be the requirement that industry signs a Conflict Avoidance Agreement (CAA) with the relevant marine mammal co-management organizations. In the past, this requirement has been a voluntary agreement between industry and the Alaska Eskimo Whaling Commission. The CAA has been more effective than plans of cooperation (POC) primarily because the CAA actually involves negotiations as opposed to the more one-sided discussion, primarily by industry, which is associated with the POC. In the alternative, rather than adopting the terms of a negotiated CAA outright, NMFS should engage with the relevant marine mammal co-management organizations and industry applicants to work out a similar negotiated agreement that brings the affected subsistence groups to the table.

Another Standard Mitigation Measure should be developed with regards to marine mammal monitoring during darkness and inclement weather. Currently, monitoring efforts during darkness and inclement weather are severely limited. This results in the possibility that marine mammals could enter safety zones, especially near seismic surveys, which could result in physical injury (i.e., Level A takes). Furthermore, industry is currently proposing to conduct seismic surveys later into the autumn than surveys have ever previously occurred. Being able to monitor during darkness and inclement weather should require more efficient and appropriate protocols. If more appropriate monitoring methods cannot be developed, NMFS should not allow for seismic surveys during times when monitoring is severely limited.

Page ES-13 and 2-40, Additional Mitigation Measures: First, we generally support the adoption of all “additional mitigation measures” as “standard mitigation measures” in the final document. Additionally, NMFS has appropriately included an additional mitigation measure related to discharges from drilling operations. One weakness of this measure is that it does not address the current industry plan of recycling muds and then discharging any unused or remaining muds at the end of the season. At the very least, no drilling muds should be discharged. Furthermore, using the best management practice of near- zero discharge, as is being implemented by Shell in Camden Bay in the Beaufort Sea, would be the best method for mitigating impacts to marine mammals and ensuring that habitat is kept as clean and healthy as possible.

Page ES-17, Table ES-2: There are several issues related to this table. (1) Cumulative Impacts should be added to this table. (2) In the event of a very large oil spill (VLOS), NMFS has determined that pinnipeds (including walruses) would experience only minor to moderate impacts. This conclusion is peculiar because NMFS is now considering listing ringed and bearded seals, and Fish and Wildlife Service is considering listing walruses under the Endangered Species Act. If the agencies have concern for these species, possibly because of declining population, it is hard to imagine how a VLOS would not have major impacts. For declining populations, added insults, especially something as major as a VLOS, would cause substantial negative impacts. (3) NMFS suggests that socio-economic impacts would be beneficial for all action alternatives. While there may be some beneficial aspects to the action alternatives, there are data and reports that also show negative aspects of offshore oil and gas activities. (See, Stephen R. Braund and Associates. 2009. Impacts and benefits of oil and gas development to Barrow, Nuiqsut, Wainwright, and Atkasuk Harvesters. Report to the North Slope Borough Department of Wildlife Management, PAGEO. Box 69, Barrow, AK.)

Pages 2-16 to 2-17, Floating Drilling Vessels: Section 2.3.3.4 notes the use of the drillship Discoverer. While Shell has reported that the vessel is or will be ice-strengthened, this is not the same as an ice class vessel. Because it is not certified as ice class, the NSB questions whether the Discoverer has the capacity to complete a relief-well late in the operating season when sea ice may be present. This comment also pertains to the following sections: Section 4.9.4.14, Page 4-361 (and relates specifically to Shell, as does this section of the EIS, Opportunities for Intervention and Response) and Section 4.9.4.4, Page 4-353 Duration of Spill: "If a spilled occurred on 31 October, it is estimated that a VLOS discharge would be stopped within 74 days." If there is proven technology that could operate outside of the open-water season this equipment should be specified. It should also be demonstrated that equipment can operate successfully in non-open water arctic conditions, the conditions anticipated 74 days after October 31.

Pages 3-6 to 3-7, Section 3.1.2.4 Pack Ice and Ice Gouges: An updated literature search should be completed for this section. In particular additional data regarding ice gouging published by MMS and Weeks et. al should be noted. The DEIS emphasizes ice gouging in 20-30 meter water depth: "A study of ice gouging in the Alaskan Beaufort Sea showed that the maximum number of gouges occur in the 20 to 30m (66 to 99 ft) water-depth range (Machemehl and Jo 1989)." However, an OCS study commissioned by MMS (2006-059) noted that Leidersdorf, et al., (2001) examined ice gouges in shallower waters:

48 ice gouges exceeding the minimum measurement threshold of 0.1 m [that were] detected in the Northstar pipeline corridor. These were all in shallower waters (< 12 m) and the maximum incision depth was 0.4 m. "In all four years, however, measurable gouges were confined to water depths exceeding 5 m." These results are consistent with the earlier work, and these results are limited to shallow water. Thus, this study will rely on the earlier work by Weeks et al. which includes deeper gouges and deeper water depths.

(Alternative Oil Spill Occurrence Estimators for the Beaufort/Chukchi Sea OCS (Statistical Approach) MMS Contract Number 1435 – 01 – 00 – P0 – 17141 September 5, 2006 TGE Consulting: Ted G. Eschenbach and William V. Harper). The DEIS should also reference the work by Weeks, including:

Weeks, W.F., P.W. Barnes, D.M. Rearic, and E. Reimnitz, 1984, "Some Probabilistic Aspects of Ice Gouging on the Alaskan Shelf of the Beaufort Sea," *The Alaskan Beaufort Sea: Ecosystems and Environments*, Academic Press.

Weeks, W.F., P.W. Barnes, D.M. Rearic, and E. Reimnitz, June 1983, "Some Probabilistic Aspects of Ice Gouging on the Alaskan Shelf of the Beaufort Sea," US Army Cold Regions Research and Engineering Laboratory.

Page 3-50, Section 3.1.8.4 Oil Spill History: The EIS states: "Because sufficient historical data on offshore oil spills do not exist for the Alaska Arctic OCS regions, agencies rely upon estimates to represent expected frequency and severity of oil spills in these regions (Bercha International Inc. 2006a and 2006b (in OCS Study MMS 2006-033 and OCS Study MMS 2005-061) and (MMS 2007a)." First, we recommend also citing the USGS "Data-Gap Report," which states: "Estimation of Spill

Occurrence: Because there is limited Arctic OCS development, sufficient historical data on offshore Arctic oil spills do not exist to calculate spill probabilities directly.” (Holland-Bartels, L., and J.J. Kolak, Chapter 5: Oil-Spill Risk, Response and Impact, in Holland-Bartels, Leslie, and Pierce, Brenda, eds., 2011, An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370, p. 113).

Second, this means that estimates from non-Arctic sources are used to generate Arctic estimates; so, this DEIS should explain how non-Arctic analogs are related to the Arctic and what criteria are used. The USGS Data-Gap Report acknowledges the limits of the using estimates based on non-Arctic estimates:

The spill probability—fault-tree process—is a well documented, transparent, and best available approach to deal with estimations of spill likelihood in the Arctic OCS given that regional historical data on spills are not available. However, the approach depends on accurate adjustments of non-Arctic data to likely Arctic outcomes, which are admittedly done in a somewhat cursory manner. Climate change considerations also may alter the validity of spill frequency adjustments. For example, adjustment of GOM spill frequency probabilities downward because of an assumption that storms are less severe in the Arctic and that a reduced collision rate exists because of less traffic (table 5–1) as compared to GOM values may need to be reconsidered. For example, increases in storm severity and traffic patterns have already been observed and may increase in response to changing climate and ice conditions in the Arctic (see Chapter 4, Climate Change Considerations).

(At 115). A similar acknowledgement ought to be included in this DEIS.

In addition, we would also highlight the USGS Data-Gap Report recommendation for continuous updating of these estimates: “Continued updating of spill data, re-examination of statistical approaches used in the application of non-Arctic analogs . . . , and rigorous development and incorporation of climate-influenced forecasts on factors such as storms, vessel traffic, or other fault-tree model adjustments would provide improved understanding of and confidence in spill risk estimates over the proposed project life.” (At 115).

Page 3-55, 4th full paragraph, Section 3.2.2 Fish and Essential Fish Habitat: The DEIS downplays freshwater habitats and fish species, stating: “while freshwater habitats and freshwater fish species are important, this section focuses more extensively on coastal and marine fish/fishery ... because there is likely greatest potential for impacts in these areas.” Some fish listed as freshwater, such as Arctic and least cisco (Section 3.2.2.3.1, Pages 3-61 to 3-63), undergo important transitions that the DEIS should examine. As Arctic and least cisco move from the Beaufort Sea to the Nigliq channel, for instance, there is also a movement of saltwater up the freshwater channel up to near Ocean Point (C. George, Per Comm. and Seigle et al., 2010). The effects of natural or chemically dispersed oil from a spill may allow oil droplets to move up the freshwater channel, too. This should be acknowledged. See: Seigle JC, JM Gottschalk, JR Rose. Fall 2010 Subsistence Fishery Monitoring of the Colville River. Final Report. 2010. ABR, Inc. July 2011.

- Page 3-61, second full paragraph and list of bullet points, Section 3.3.3.3.1 Freshwater Fish: While the list of fish and times (temporally mixed in terms of season and month) is okay, it is incomplete and somewhat misleading since season is not defined and fish may be present more than or less than a month. Also, since this is an EIS for the Arctic Ocean, which includes the “nearshore band of brackish coastal water” (Page 3-62), there should be a more complete listing of freshwater and “nearshore band of brackish coastal water” fish and fishery. For instance, there is extensive fishing in Elson and Kasegaluk Lagoons and Wainwright inlet, to name just a few, that should be acknowledged in more depth. See also Fish Fauna in nearshore water of a barrier island in the western Beaufort Sea, Alaska. SW Johnson, JF Thedinga, AD Neff, and CA Hoffman. US Dept of Commerce, NOAA. Technical Memorandum NMFS-AFSC-210. July 2010.
- Page 3-68, Section 3.2.2.3.2 The Cryopelagic Assemblage: The sentence “*The arctic cod is abundant in the region, and their enormous autumn-winter pre spawning swarms are well known*” is misleading. What is the referenced region? There are no well known pre spawning swarms known if for the Beaufort and Chukchi Sea Oil and Gas leasing areas. Furthermore large aggregations of arctic Cod have not been common in the most recent fish surveys conducted in the Beaufort and Chukchi Seas (same references used in this EIS.)
- Page 3-76, Section 3.2.2.5 Essential Fish Habitat, Snow Crab (*Chionoecetes opilio*) late juveniles EFH: The Western Beaufort Sea may have to be included as a possible EFH given the high numbers of non-commercial size snow crab caught in the 2008 Beaufort Sea Marine Fish Monitoring (Rand and Logerwell 2010).
- Page 3-109, Section 3.2.4.3 Survival and Mortality: Spotted seals and the Beaufort Sea Coast should be added to the species and regions affected by the seal disease outbreak.
- Page 4-71, Section 4.5.2.1.2 Conclusion: We disagree that the summary impact level on lower trophic levels can be classified as negligible. The information presented in “Injury and Mortality” and “Habitat Loss/Alteration” indicates to a summary impact level of moderate. The slow recovery of biological communities in Camden Bay, Barrow Canyon, Hanna Shoal, the shelf break of the Beaufort Sea, the Western Beaufort Sea, and Kasegaluk Lagoon/Ledyard bay Critical Habitat Unit are not localized. These areas add to an extensive area when considered together. Furthermore some of these areas are important for subsistence harvest and even if the effects were localized the slow recovery of the biological communities will have a long term affect on the local community subsistence practices.
- Page 4-85, Table 4.5-19 Impact Criteria for Marine Mammals: The criteria that were used for the magnitude or intensity of impacts are not appropriate. For a high intensity activity, whales and other marine mammals would have to entirely leave the EIS project area. This criterion is completely arbitrary and has no basis in biology. Instead, the intensity of the impact should relate to animals missing feeding opportunities, being deflected from migratory rates, the potential for stress related impacts, or other risks factors.
- Pages 4-96, Section 4.5.2.4.5 Potential Effects of Aircraft Activities; 4-124, Section 4.5.2.4.12 Disturbance; Page 4-145, Section 4.5.2.4.15 B1: Aircraft overflight regulations for pinnipeds should be increased to 3,000 ft to avoid disturbance of animals on terrestrial and ice haulouts. Spotted seals and Walrus are the most sensitive to overflights. This is particularly important for

helicopter traffic as pinnipeds are more sensitive to this type of platform. (Frost and Lowry 1990, Rugh et al. 1997, USFWS aircraft advisory for Chukchi Coast Walrus Haulouts)

Page 4-98, last paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, 2D/3D Seismic Surveys: This paragraph summarizes the results from acoustic monitoring of a variety of oil and gas activities in the Beaufort and Chukchi seas. Unfortunately, the paragraph only references two studies and only provides further information about monitoring in 2008. Table 4.5-10 (beginning on page 4-44) provides a vast amount of information about acoustic monitoring of industrial activities during 2006 to 2010. This table should be referenced in this paragraph and a more appropriate summary should occur based on the information in the table.

Page 4-99, 2nd paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, 2D/3D Seismic Surveys: This paragraph provides results of how migrating bowheads respond to seismic surveys. The paragraph correctly points out that the results suggest that bowheads respond to seismic sounds even at the low received levels of approximately 120 dB re:1 μ Pa. This best available scientific information points out that bowheads respond to pulsed sounds much lower than the level of 160 dB re:1 μ Pa currently used by NMFS for pulsed sounds. When assessing takes of bowheads, whether from pulsed or continuous sounds, NMFS should use the 120 dB received level.

Page 4-100, 3rd paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, 2D/3D Seismic Surveys: This paragraph addresses the possibility of bowheads leaving the EIS project area. It is not clear what the point of this paragraph. The EIS project area is quite large and encompasses much of the range of bowheads. The pertinent issue is whether bowheads are deflected from migration routes, feeding areas, resting areas, subsistence hunting areas, or whether whales are put at additional risk from industrial activities and not whether they leave the EIS area. This paragraph needs substantial revision.

The middle of this paragraph states that “behavioral responses of bowhead whales to activities are expected to be temporary.” There are no data to support this conclusion. The duration of impacts from industrial activities to bowhead whales is unknown. This statement should clearly state the limitations in data. If a conclusion is made without data, more information is needed about how NMFS reached this conclusion.

Page 4-101, 2nd paragraph, 1st sentence, Section 4.5.2.4.9.1 Direct and Indirect Effects, In-ice Seismic Survey (2D/3D) with Icebreaker Support: NMFS concludes that in-ice seismic surveys would have only a medium magnitude and a local extent. The magnitude will be substantial (the criteria in Table 4.5-19 need to be revised) because the airgun array will likely be large. Also, the extent could be across the entire Beaufort Sea (as is proposed by ION in 2012), which is not local.

Page 4-102, top paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, Site Clearance and High Resolution Shallow Hazards Survey Programs: This paragraph also summarizes what is known about propagation of anthropogenic sounds from site clearance/shallow hazard surveys. A more reasonable summary is needed about the range of possible propagation levels, a reference to Table 4.5-10 would be helpful.

Page 4-102, 2nd paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, Site Clearance and High Resolution Shallow Hazards Survey Programs: A discussion about how bowheads respond to site

clearance/shallow hazard surveys occurs in this paragraph but references only Richardson et al. (1985). Given the number of recent site clearance/shallow hazard surveys, there should be additional information to be available from surveys conducted since 2007. If there are not more recent data, this raises questions regarding the failure of monitoring programs to examine effects to bowheads from site clearance/shallow hazard surveys.

Page 4-103, 2nd paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, Exploratory Drilling: “Continuous noise emitted from stationary sources ... elicit less dramatic reactions by bowhead whales than do moving sources.” This sentence is contrary to the previous paragraph that discussed results of reactions of bowheads to exploratory drill rigs. Whales avoided rigs by 20 to 30 km. This response to stationary objects seems just as dramatic as responses to moving seismic vessels.

Page 4-103, 4th paragraph, 5th line, Section 4.5.2.4.9.1 Direct and Indirect Effects, Exploratory Drilling: “Both studies noted that ... it was difficult to separate the effect of the drilling operation from other independent variables, such as water depth.” This sentence is misleading, at least for Davies (1997). Davies (1997) clearly demonstrated that bowheads deflected around the drillship. Whales were on average closer to shore, and in shallower water, to the east and west of the drill rig and that whales were deflected away from and almost completely avoided about a 20 km zone around the drill rig.

Page 4-104, 1st paragraph, 1st sentence, Section 4.5.2.4.9.1 Direct and Indirect Effects, Exploratory Drilling: The conclusions based on the impact criteria are not supported by data. For example, there are no data on the duration of impacts to bowheads from exploratory drilling. If NMFS is going to make conclusions, they should highlight that conclusions are not based on data but on supposition.

Page 4-104, Section 4.5.2.4.9.1 Direct and Indirect Effects, Associated Vessels and Aircraft: This section does not use the best available science. A considerable effort has occurred to evaluate impacts from activities associated with BP’s Northstar production island. Those studies showed that resupply vessels were one of the noisiest activities at Northstar and that anthropogenic sounds caused bowheads to deflect north of the island or to change calling behavior. This EIS should provide that best available information about how bowheads respond to vessel traffic to the public and decision makers.

Page 4-106, 2nd paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, 2D/3D Surveys: Funk et al. (2010) is referenced for a statement that bowheads may respond differently to seismic in the Chukchi compared to the Beaufort Sea. This is contrary to the first sentence in this section (page 4-105), which stated that “effects from seismic noise on bowhead whales in the Chukchi Sea would likely be similar to those described above for the Beaufort Sea.” Given these contrary comments, more details are needed about the Funk et al. reference. Please clarify if actual data shows a difference or if their statement was simply supposition.

Page 4-106, 4th paragraph, Section 4.5.2.4.9.1 Direct and Indirect Effects, 2D/3D Surveys: As with previous sections, conclusions are not based on data, especially concerning extent and duration of possible impacts. Again, the limits of available information need to be noted in the document.

Page 4-106, Section 4.5.2.4.9.1 Direct and Indirect Effects, In-ice seismic: There are few data on the distribution and abundance of bowhead whales (or other marine mammals) in the Beaufort Sea from October to mid-December. This lack of information must be acknowledged so that decision makers and the public are aware that all assessments of possible impacts are limited because few data are available about the possible risk to marine mammals.

Page 4-107, Section 4.5.2.4.9.1 Direct and Indirect Effects, Hearing Impairment, Injury, and Mortality: The 1st sentence states that hearing impairment, injury or mortality is “highly unlikely.” Please confirm if there are data to support this statement. Our understanding is that there are no data about hearing impairment in bowhead or beluga whales. Again, if speculation or supposition is used to make conclusions, this should be clearly stated.

Page 4-111, Section 4.5.2.4.10.1 Direct and Indirect Effects, 2D/3D Seismic Surveys: This section discusses impacts to beluga whales from seismic surveys. Unfortunately, the section is not complete. For example, Miller et al. conducted aerial surveys during seismic operations in the southeastern Beaufort Sea. They recorded much lower sighting rates of belugas within 6 to 12 mi (10–20 km) of an active seismic vessel. Observers on-board the source vessel saw few belugas. They concluded that some belugas might be avoiding the seismic operations at distances of 10–20 km (Miller, G.W., V.D. Moulton, R.A. Davis, M. Holst, PAGE Millman, A. MacGillivray and D. Hannay. 2005. Monitoring seismic effects on marine mammals—southeastern Beaufort Sea, 2001-2002. p. 511-542 *In*: S.L. Armsworthy, P.J. Cranford, and K. Lee (eds.), *Offshore Oil and Gas Environmental Effects Monitoring/Approaches and Technologies*. Battelle Press, Columbus, OH). The section needs to be updated and the Miller et al. information used in the analyses of impacts.

Page 4-111 and 4-112, Section 4.5.2.4.10.1 Direct and Indirect Effects, 2D/3D Seismic Surveys, In-ice seismic with icebreaker support: This section is not complete. One study not referenced showed the effects of an icebreaker on belugas. When the vessel approached to within 35 to 50 km (21.7 to 31.1 mi) and received levels ranged from 94 to 105 dB re 1 μ Pa in the 20 to 1,000 Hz band, belugas were observed swimming rapidly away, changing their dive patterns, and group structure was disrupted (Finley, K.J., G.W. Miller, R.A. Davis and C.R. Greene. 1990. Reactions of belugas, *Delphinapterus leucas*, and narwhals, *Monodon monoceros*, to ice-breaking ships in the Canadian high arctic. *Can. Bull. Fish. Aquatic Sci.* 224:97-117). This study suggests that belugas may be more sensitive to anthropogenic sounds than bowhead whales. This information needs to be incorporated into the analyses of direct and cumulative impacts on beluga whales.

Page 4-125, Section 4.5.2.4.12.1 Direct and Indirect Effects, Hearing Impairment, Injury, and Mortality: The statement “It is believed seals could detect and avoid most oil spills in open water season due to good vision and smell” is misleading. Based on animal behavior and results from the Exxon Valdez Oil Spill (EVOS) it is much more likely that seals would be attracted to a spill area particularly cleanup operations, leading to a higher chance of oiling (Nelson 1969, Herreman 2011 personal observation). More than 300 seals died from direct causes from EVOS and >80% of seals in the area were oiled, the population declined by 43% in spill affected areas, Exxon Valdez Oil Spill Restoration Plan: 2010 Update injured resources and services. Exxon Valdez Oil Spill Trustee Council. 441 W. 5th Avenue, Suite 500, Anchorage, AK 99501.).

Page 4-128, Section 4.5.2.4.12.2 Conclusion: Does not take into account disturbance due to aircraft.

Pages 4-128, Section 4.5.2.4.12.2 Conclusion; 4-133 Section 4.5.2.4.13.1 Direct and Indirect Effects, Habitat Change; 4-524 Section 4.10.5.10.4.4 Contribution of Alternative 3 to Cumulative Effects (seals); 4-525, Section 4.10.5.10.5, Walrus; 4-544 to 4-545, Section 4.10.6.10.5 Walrus; 4-546, Section 4.10.6.10.6 Polar Bears; 4-562, Section 4.10.7.10.4 Pinnipeds; 4-563, Section 4.10.7.10.5 Walrus; and 4-564, Section 4.10.7.10.6 Polar Bears: These sections do not address possible environmental contamination due to marine vessel discharge such as ballast water, waste water, sewage, etc.

Pages 3-107 et seq., Section 3.2.4.3 Pinnipeds: Peard Bay and Admiralty Bay/Dease Inlet should be added as important ice seal habitat.

Page 4-130, Section 4.5.2.4.13 Pacific Walrus: This section should include a discussion about disturbance to walrus on terrestrial haulouts.

Page 4-132, Section 4.5.2.4.13.1 Direct and Indirect Effects, Exploratory Drilling: This paragraph notes that displacement will be short term during the life of operations, but it does not address the fact that this displacement could occur during a critical and stressful portion on the animals annual life cycle, molt. Stress to displaced individuals would be greatly increased during this time of year.

Page 4-158, Table 4.5-21: Ribbon seals should be listed as not commonly present rather than absent in Ledyard Bay Critical Habitat. Bearded seals concentrations should be extended until July in Ledyard Bay Critical Habitat. Spotted seals should be listed as not commonly present at the Shelf Break.

Page 4-162, Section 4.5.2.4.16 Additional Mitigation Measures for Marine Mammals, Additional Mitigation Measure C3 Requirements to ensure reduced, limited, or zero discharge of any or all of the specific discharge streams identified with potential impacts to marine mammals or marine mammal habitat: Reduction levels should be specified and applied to marine vessel traffic supporting operations as well as drill ships.

Page 4-346, Section 4.9 Oil Spill Scenario: This section notes that there is a considerable difference between conditions in the Arctic Ocean and the Gulf of Mexico where the Deepwater Horizon oil spill occurred. This is true in general, but the section concludes that the shallower waters and lower formation pressures reduce “the likelihood of such a catastrophic event in the EIS project area.” This is an unwarranted statement since it only accounts for water depth and formation pressures as decreasing likelihood, but the isolated areas, lack of infrastructure, and potential of ice may impede any disaster relief thus compounding the adverse effects of an arctic spill. These ideas are not even qualitatively addressed; therefore, either include the latter comment or delete the unwarranted, incomplete thought.

Page 4-350, Section 4.9.2 Very Large Oil Spill (VLOS) Scenario: “The basic mechanisms by which individuals of the various Arctic species are affected by spilled oil are reasonably well known.” This statement is unsupported. Currently, research is examining the effect of oil on Arctic species precisely because it is not known, even the Joint Industry Program recognizes that this is not the case, since they are conducting some of the research. This statement should be removed.

Page 4-351, Section 4.9.3 General Assumptions: “From 1971-2010 there has been one very large oil spill during exploratory and development/production operations on 41, 781 wells, or 2.39×10^{-5} per well.” First, we question the combination of exploratory and development wells in this statistic. NMFS, BOEM, and industry representatives frequently represent that these are separate issues. Also, the analysis should directly acknowledge that “[b]ecause there is limited Arctic OCS development, sufficient historical data on offshore Arctic oil spills do not exist to calculate spill probabilities directly” (Page 113, in *An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska, 2011*. Circular 1370, USGS. Edited by Leslie Holland-Bartels and Brenda Pierce).

Page 4-351, Section 4.9.3 Rate, Time and Composition of Hypothetical Spill: This section refers to “real world constraints” but does not explain what these constraints are. This section should identify those constraints with more specificity.

Page 4-352, Section 4.9.3 Rate, Time and Composition of Hypothetical Spill: The text refers to “Figure 4,” but there is no Figure 4 in this document (including in volume 3). In addition, there is not enough information in this paragraph to run the model. More detail would be helpful.

Page 4-352, Section 4.9.3 Additional Parameters: The EIS notes past VLOS events, but nowhere does it indicate how the parameters were determined. For instance, Bullet 1 provides a range of days (39-74) for oil and gas release, but DWH ran for 84 days. Please use the greater number of days. Bullet 3 does not seem to adequately reflect the DWH event, as specified on Page 4-347, where the EIS notes that the US Coast Guard estimated residual oil, after accounting for evaporation, to be 4.9 MMbbls. How does the use of 2.2 MMbbls reflect this known amount from an actual, exploratory disaster? Bullet 4 purports to incorporate into a model “a small portion of the spill.” How much is that? Bullet 5 only notes an oil spill trajectory model. Please provide the model.

Page 4-353, Section 4.9.4.2 Timing of the Initial Event: The analysis selects 15 July – 31 October as the timing of the initial event. While the initial event may be technically during the open water season, Alaska Cleans Seas tends to end their boat activity due to ice by mid-October. The EIS notes this in some fashion (Page 4-355 to 4-356, under Severe and Extreme Weather: “recovery of sea-surface oil could be impeded by the formation of sea ice during severe cold outbreaks that occur typically over the Arctic winter.” This, of course, is true, but ice formation occurs before “winter” which is not defined in the EIS. Rather than use vague terms like summer or winter, please use dates, unless you have defined these seasons and the analysis, for instance, begins on the first day of winter, 21 December. If this is the case, please state it.

Page 4-353, Section 4.9.4.3 Volume of Spill: This section refers to Figure 15, but this Figure does not appear in this document. Please clarify where the Figure can be found.

Page 4-353, Section 4.9.4.4 Duration of Spill: If a spill occurred on 31 October, it is estimated that a VLOS discharge would be stopped within 74 days. This scenario does not make sense for a late season spill unless there is proven technology that can operate outside of the open-water season. Please specify this equipment and show that it has been proven in non open-water arctic conditions.

Page 4-354, Section 4.9.4.6 Oil in the Environment: First, this section references Table 5, again the referenced table does not appear in this document. Second, the scenario selects a light-weight

oil without an explanation for why this is appropriate. There should be a range of representative oils used for these scenarios. The Valdez accident released oil considered API 29 “which [is] North Slope relatively heavy oil,” (quoted in Oil Biodegradation and Bioremediation: A Tale of the Two Worst Spills in U.S. History. Ronald M. Atlas and Terry C. Hazen. *Environmental Science and Technology*. 2011).

Pages 4-357 to 4-358, Effects of Ice on Response Actions: Access to stable ice sheets entrapping oil would not likely be possible once ice is solid enough to support heavy equipment due to large distance equipment would have to be flown and the shifting ice pack conditions.

Page 4-374, Production Function: A discussion the effect of dispersants on marine mammals, fish, and benthic filter feeding organisms should be included. A large percent of the Chukchi productivity is benthic.

Page 4-383, Kasegaluk Lagoon Special Habitat Area: A mention of the importance of Kasegaluk Lagoon to seals needs to be included.

Page 4-387, Pinnipeds: Peard Bay and Eluksingiak Point need to be included principle spotted seal haulout locations that could be affected by a VLOS.

Page 4-387, Pinnipeds: Presence of spotted seals needs to be changed to – associated with ice front until after break up.

Page 4-387, Pinnipeds: This section incorrectly concludes that ribbon seals would not be affected by a VLOS. Ribbon seals could be significantly impacted through prey as concluded in impacts to fish on page 4-378.

Page 4-387, Pinnipeds: Ringed seals and some bearded seals spend a fair amount of time foraging in the open ocean during maximum ice retreat (NSB unpublished data, <http://www.north-slope.org/departments/wildlife/Walrus%20Ice%20Seals.php#RingedSeal>, Crawford et al. 2011, ADF&G unpublished data). Bearded seals are not restricted to foraging only in shallow areas on a benthic diet. Consumption of pelagic prey items does occur (ADF&G unpublished data, Lenter 1988).

Pages 4-388 Pinnipeds, and 4-392, Ringed Seal: Ringed seals are known to persist in the offshore pack ice during all times of the year (Crawford et al. 2011, NSB unpublished data, Lenter 1988). It has actually been suggested that there are two ecotypes, those that make a living in the pack ice and shore fast ice animals. This should be stated in one of these sections.

Page 4-388 Pacific Walrus: This analysis does not take into account large foraging movements during the open water season or the possibility of animals coming into contact with oil spilled during the drilling season and not cleaned up before the normal spring migration period occurs.

Pages 4-387 and 4-388, Pinnipeds: This analysis does not discuss the effects loss of prey base would have on any of the seal species.

Pages 4-391 to 4-392 and 4-423 to 4-424, Pinnipeds: Analysis should include the fact ringed and bearded seals could be disturbed by cleanup traffic during early summer which overlaps the molt period. Such a disturbance would greatly increase stress to these species.

Generally, the effects that a very large oil spill could have on seal populations are understated in the analyses. The oil spill would not have to reach polyna or lead systems to affect seals. Ringed seals feed under the pack ice in the water column layer where oil would likely be entrained. Bearded seals travel through this water layer. Numerous individuals are likely to become oiled no matter where such a spill is likely to occur. Food sources for all seal species would be heavily impacted in spill areas. We are finding that seals are highly mobile with animals from many different "sub-populations" as stated in the document converging on specific regions at different times of year. So more than one "subpopulation" could likely be affected by a very large oil spill.

Page 4-393, Polar Bear: Analysis should include the high probability for polar bears to be impacted if a spill reached the lead edge between the shorefast and pack ice zones. This is critical foraging habitat especially during spring after den emergence by females with cubs.

Page 4-438, Section 4.10.1 Methodology for Identifying Cumulative Impacts: The third bullet says that "specific methodology" was used to assess cumulative impacts. Unfortunately, the cumulative impact section does not provide details about what specific methodology was used. Cumulative impacts are one of the biggest issues in northern Alaska because of the large amount of industrial activities in the U.S., Canada, and Russia and because of the rapidly changing environment in the Arctic. Because of these issues, details and transparency is especially needed for the cumulative impacts assessment.

Page 4-439, Table 4.10-1 General Categories of Relevant Past, Present, and Reasonably Foreseeable Future Actions: This table summarizes past, present and reasonably foreseeable future actions that might contribute to cumulative impacts. Numerous activities are outlined for the Beaufort and Chukchi seas in Canada, Alaska and Russia. However, no activities are described for the Bering Sea. This is a substantial oversight because many of the species occurring in northern Alaska use the Bering Sea as a wintering area. Thus, possible impacts from that region could accumulate with other impacts in the Beaufort and Chukchi seas.

Page 4-470, Section 4.10.4.4.5 Conclusion: The first paragraph is a bit misleading and avoids the use of available data. One of the satellite tagged bowhead whales was exposed to a seismic operation in the Canadian Beaufort, migrated across the Beaufort Sea and was again in the vicinity of a seismic operation in the Chukchi Sea. Because the acoustic footprint of seismic operations is so large, it is quite conceivable that bowheads could be exposed to seismic operations in the Canadian Beaufort, the Alaskan Beaufort, and the Chukchi Sea, while also encountering drilling operations. The conclusions concerning the cumulative impacts associated with acoustics should be re-assessed with greater analysis of how all sound sources might interact on bowheads during feeding, resting and migration.

Page 4-489 and Page 4-491, Conclusions: The DEIS concludes that the cumulative direct and indirect effects on pinnipeds (including walrus) would be minor. It is not clear whether NMFS considered the potential listing of ringed and bearded seals in this decision. If those two species are listed under the Endangered Species Act, there will be major concern that the population is

declining or may soon be. If a population is declining, added stressor will only exacerbate the decline. Impacts from anthropogenic sounds or oil spills could have major impacts to possibly declining populations of ringed and bearded seals.

FIGURE 3.2-18, Ringed Seal Distribution: This map should be amended to reflect the following additional high concentration areas: Peard Bay from June to July, and shore fast ice adjacent to Point Barrow from June to July.

Native Village of Kotzebue

Kotzebue IRA

February 27, 2012

Mr. James H. Lecky, Director
Office of Protected Resources
NMFS 1315 East-West Hwy, Room 13705
Silver Spring, MD 20910-6233

RE: Effects of Oil and Gas Activities in the Arctic Ocean Draft EIS December 2011

Knowledge of Language

Knowledge of Family Tree

Dear Mr. Lecky,

Sharing

Humility

Respect for Others

Love for Children

Cooperation

Hard Work

Respect for Elders

Respect for Nature

Avoid Conflict

Family Roles

Humor

Spirituality

Domestic Skills

Hunter Success

Responsibility to Tribe

The Native Village of Kotzebue appreciates the opportunity to review and comment on the Effects of Oil and Gas Activities in the Arctic Ocean Draft EIS. The Tribe also appreciates the commitment the NMFS has demonstrated to Government to Government Consultation during this process and had a good meeting with the consultation team. The Tribe looks forward to continuing the consultation as this process proceeds and mitigation strategies are developed. The members of the Tribe depend heavily on the Chukchi Sea to provide food security and cultural integrity and it is of the upmost importance that the NMFS does everything in its power to assist with protecting the health and vitality of the Chukchi Sea as exploration activities occur.

Below are comments based on reviewing the Draft EIS:

Page and Section Referenced Comments:

1-20 (1.8.11) – Add the Native Village of Kotzebue to list of Tribal Government consultations.

2-43 (2.4.11.2) – Make the final comprehensive report available to the public and note where it will be accessible.

3-4 (3.1.1.4) – The use of [anecdotal evidence] of cited TEK seems unnecessary and also not consistent with similar references throughout the rest of the document.

3-38 (3.1.6.3) – Consider adding the traffic and other underwater acoustics from activity occurring to and from the Red Dog Mine port.

3-102 (3.2.4.1) – Need to add beluga diet discussion.

3-108 (3.2.4.3) – Add information and reference from a recent publication based on the Native Village of Kotzebue led ringed seal research: **Crawford, J. A., K. J. Frost, L. T. Quakenbush, and A. Whiting. 2012. Different habitat use strategies by subadult and adult ringed seals (*Phoca hispida*) in the Bering and Chukchi seas. *Polar Biology* 35(2):241–255.**

3-142 (3.3.1.4) – IRA vs. traditional council discussion could be clearer, the Native Village of Kotzebue is actually an IRA Council as described in the second paragraph, and it is likely that the other traditional councils also listed are chartered through the IRA. The revised discussion can highlight the distinction of being federally-recognized tribal governments not only for BIA services, but also for the purposes of federal government-to-government consultations per federal policies that affect them and other executive orders that pertain to this federal tribal relationship.

3-152 (3.3-8) – Table caption and table label mix up Point Lay and Kivalina.

3-155 (3.3.2.3) – Discrepancy on beluga stocks between this page and earlier beluga discussion (3-100) that notes Eastern Chukchi in place of Kotzebue Sound stock, please clarify.

3-172 to 175 (3.2.2.4) – Poor description/characterization of subsistence areas/activities for Kotzebue, see: **Whiting, A., D. Griffith, S. Jewett, L. Clough, W. Ambrose, and J. Johnson. 2011. Combining Inupiaq and Scientific Knowledge: Ecology in Northern Kotzebue Sound, Alaska. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-72, Fairbanks. 71 pp**, for a more accurate representation, especially for Kotzebue Sound uses. Also delete the use of “Sisoalik” as a spelling and replace with “Sisualik”, which is the proper way to spell it in the local Inupiaq dialect. On USGS maps the same area is spelled Sheshalik, which is a butchered version of the local name “Sisualik”.

3-208 (3.3.4.2) – Should be reindeer herding in the last sentence last paragraph.

4-178 (4.5.3.1.2) – Poor description/characterization of subsistence areas/activities for Kotzebue, see: **Whiting, A., D. Griffith, S. Jewett, L. Clough, W. Ambrose, and J. Johnson. 2011. Combining Inupiaq and Scientific Knowledge: Ecology in Northern Kotzebue Sound, Alaska. Alaska Sea Grant, University of Alaska Fairbanks, SG-ED-72, Fairbanks. 71 pp**, for a more accurate representation, especially for Kotzebue Sound uses. Also the statement – “proposed offshore activities would not occur offshore of Kotzebue” – is confusing in respect to the EIS area including northern Kotzebue Sound and the coastal Chukchi Sea adjacent to the Sound. Especially in regards to providing prescriptions for mitigation in this area. If the proposed activities would not occur offshore of Kotzebue then why is it included in the EIS area? And if it is included in the EIS area because it is an eligible area for exploration activities then should not recommendations be included for mitigating impacts through exclusion areas, or timing issues. Vessel traffic will in fact travel past Kotzebue Sound at some point to reach the area of “activity” and beluga whales (among other resources) enter Kotzebue Sound from this same general direction/area, so at least minimal consideration needs to be given to potential impacts.

4-179 [(4.5.3.1.2) second paragraph, second sentence] – “...this may [will/is] be considered an adverse...” (Make a more definitive statement). Its meaning appears to be stating that considering this an adverse impact is allowed, but if the referred to outcome happens it will be an adverse impact, no question about that.

4-189 (4.5.3.1.2) – Discussion of July 1 in 4th paragraph on this page and the first paragraph on the following page is confusing since all other discussions on this topic use July 15.

4-190 [(4.5.3.1.2) 1st paragraph 3rd sentence] – “...before July 1 after the majority of spring beluga hunting is completed in the Chukchi Sea villages.” This is not true for Kotzebue and likely also not true for Point Lay.

4-245 (4.6.1.4.1) – Estimates of Total Surface Areas of Ensonification at Threshold Levels seem awfully high at 58% of 120 db for alternative 3, explain more about what this is saying.

4-261 (4.6.2.4.4.1) – McLaren (1990) concluded pinnipeds, with the exception of benthic feeders and species that prey upon birds or other seals, are unlikely to consume significant quantities of hydrocarbons since their prey species are unlikely to accumulate residues. This section does not discuss bearded seals (benthic feeders) or walrus and the discussion about ingestion of oil in section 4.5.2.4.12 by benthic feeders could be developed further, especially in regards to large areas of the sea floor becoming covered with oil from a VLOS.

5-5 (5.3.1) – In addition, consider developing a lay version of post activity report that discusses the items (a through g) on this page and the bullet pointed items listed on page 5-13 (5.5) for the benefit of coastal communities that need to be able to understand the outcomes and effectiveness of the multiple assumptions used to develop mitigation measures. The most common documents available to communities currently are the NEPA documents full of assumptions and overly technical documents that are unsuitable for informing local communities on the results of the assumptions and associated mitigation measures presented before the fact in NEPA documents.

General Discussion Comments:

Are the exploratory program permits per company, or total for Chukchi Sea EIS area? It is not clear how the alternatives with either one or two exploratory drilling programs mesh with the NPDES assumption of at least one rig for: Shell 2012, COP 2013, and Statoil 2014. Does each company only need an exploratory program one time during the 5-year period? Maybe clarify the concurrent or consecutive exploratory drilling scenarios and how they fit within the alternatives being proposed.

Similar to comments made above in reference to the statements made on page 4-178 about proposed activities not occurring offshore Kotzebue, if this is in fact the case then why not remove the Hope Basin from the EIS area? Otherwise, the NVK very strongly requests developing and including additional area/time closures/restrictions for nearshore Kotzebue Sound and for Point Hope and Kivalina in the Final EIS.

The NVK recommends no on ice discharge of drilling muds due to concentrated nature of waste and some likely probability of directly contacting marine mammals, or other wildlife like arctic foxes and birds. Even if the muds are considered non-toxic the potential for fouling fur and feathers and impeding thermal regulation properties seems a reasonable concern.

The NVK supports com centers in the villages during bowhead hunting if villagers find this useful and desirable.

The benefits of concurrent ensonification areas needs to be given some more consideration 15 miles vs. 90 miles – balance footprint vs. potential harm – it is not entirely clear what the cost/benefit result is on this issue. Multiple simultaneous surveys in several areas across the migratory corridor could result in a broader regional impact – biologically and subsistence significant impact – deflection and taking out of use a large area of feeding habitat with potential significant energy impacts. The supposed benefit would also seem to depend on the trajectory of migrating animals in relation to the activity. This also would relate to total area ensonified threshold as discussed above.

In regards to the statement: Oil and gas are ecosystem goods, and the flows of energy that they represent are ecosystem services. If this is going to be the basis for factually making a sober analysis of the benefits derived from oil and gas in relation to ecosystem services benefiting humans, then there also needs to be the same type of sweeping affirmation on the ecosystem costs presented by the release of fossil carbon into the ecosystem from where it is presently geologically sequestered. Unfortunately, and frankly surprisingly, the term fossil carbon does not appear in the DEIS, when in fact the whole purpose of this federally permitted activity is to free fossil carbon and make it available for release into the ecosystem, this topic should by definition be included in the analysis – this is the whole goal of the activities being permitted. Since the addition of fossil carbon to the natural carbon cycle is the scientifically accepted theory of the major cause of rapid loss of sea ice and increase in ocean acidification, both of which pose enormous challenges to marine mammals and to the anthropocentric ecosystem services, this discussion about ecosystem services and the discussion of costs/benefits of either approving the proposed activities or not, needs to include the full discussion of the costs and benefits of releasing fossil carbon. The impacts/costs should be figured by using the total amount of

fossil carbon estimated to be available to be brought to the surface is equal to the amount of impact the release of this same amount of fossil carbon into the existing carbon levels would affect. This should be regardless of final destination/use, as the total amount of fossil carbon brought above ground by production would be essentially equally available for release into the existing carbon cycle at any time since it would no longer be geologically sequestered.

Use any and all mitigation measures that are practicable and generally are expected to produce real world improvement on level and amount of negative impacts – encourage trials of new avoidance mechanisms that show promise for ameliorating negative impacts.

The NVK supports using trained dogs to clear path for on ice roads or other on ice activities. The Tribe has had experience with trained dogs to find ringed seal dens and breathing holes in Kotzebue Sound and they are the most effective means of doing so available.

In regards to the discussion surrounding the time industry vessels could enter the exploration area, consider, or include discussions of, the potential increase risk this may pose. That is, by requiring a "late" start this may increase the risk of losing control of a VLOS by having operations continue later into the fall (that is the timing of reaching the reservoir because of a delayed start will more likely occur at the end of the season when environmental conditions rapidly become more challenging) when ice and freezing temperatures become a hazard for contributing to risk and response if anything happens. Maybe operators could stage at leasing areas but hold off on exploration activity until July 15, or Point Lay beluga hunt is completed, or something along these lines.

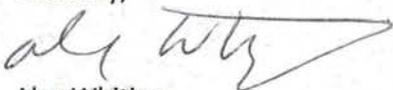
It would be helpful to include a visual model of trajectory fate of oil spills, at least an example or two using predominant/prevaling currents and winds for fall open water and the hypothetical VLOS presented in the related BOEM NEPA documents. Such a model was created for a 2011 Coast Guard Ecological Risk Assessment training the NVK participated in and having a visual model to work with was very useful for understanding more clearly the risks posed by oil spills and response needs.

The NVK supports implementation of the most protective time/area closures proposed under all alternatives. You start with no allowable activities and each additional activity allowed increases impacts and potential harm, even though closed areas/ times would mean activity would still occur and have impacts outside of these areas there remains a potential net benefit from implementing the most protective exclusion areas/timing. While most of the impact conclusions are considered to range from minor to negligible - reducing any of these impacts means an overall net reduction in the cumulative impact, even if that reduction is slight in any particular case looked at in isolation, taken together the net cumulative impact could become significantly less.

As far as selecting from the activity alternatives presented in this DEIS, the Native Village of Kotzebue supports **Alternative 2 – Authorization for Level 1 Exploration with the Additional Required Time/Area Closures as listed in Alternative 4, with the addition of Kotzebue Sound/ Hope Basin closures.** A Kotzebue IRA Council resolution supporting this choice is attached.

Thank you for considering these comments and the Tribe looks forward to working with the NOAA on developing acceptable mitigation practices as the permitting process proceeds.

Sincerely,



Alex Whiting
Environmental Specialist

Native Village of Kotzebue Kotzebue IRA

RESOLUTION 12-07

A RESOLUTION SUPPORTING ALTERNATIVE 2 – AUTHORIZATION FOR LEVEL 1 EXPLORATION ACTIVITY WITH THE ADDITIONAL REQUIRED TIME/AREA CLOSURES AS LISTED IN ALTERNATIVE 4 IN REFERENCE TO THE NOAA EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN DRAFT ENVIRONMENTAL IMPACT STATEMENT DECEMBER 2011

Knowledge of Language

WHEREAS: the Native Village of Kotzebue is an Alaskan Native Village organized as an Indian Tribe pursuant to the provisions of the Federal Indian Reorganization Act of 1934, as amended in 1936; and

Knowledge of Family Tree

Sharing

Humility

WHEREAS: the Kotzebue IRA Council is the governing body of the Native Village of Kotzebue; and

Respect for Others

WHEREAS: the Kotzebue IRA ascribes to self-determination so as to render all services to be more responsive to the needs and desires of the Native Village of Kotzebue tribe; and

Love for Children

Cooperation

WHEREAS: the Kotzebue IRA has as its mission support for traditional cultural practices that fulfill the material, nutritional, and spiritual needs of its members; and

Hard Work

Respect for Elders

WHEREAS: marine mammals and the other fish and wildlife found in the Chukchi Sea are a crucial and integral part of its members food security and cultural heritage; and

Respect for Nature

WHEREAS: NOAA is responsible for permitting harassment and incidental take of these animals by oil and gas activities planned to occur in the Chukchi Sea ; and

Avoid Conflict

Family Roles

WHEREAS: since many assumptions made on both impacts to, and mitigation outcomes for, these animals, from oil and gas exploration activity in the Chukchi Sea are untested and not known with sufficient certainty, it is the position of the Kotzebue IRA Council that NOAA should adopt permitting policy that allows for the least amount of harassment to these animals and weighs heavily on the most protective approach

Humor

Spirituality

Domestic Skills

NOW THEREFORE BE IT RESOLVED: the Native Village of Kotzebue Council supports the **Alternative 2 – Authorization for Level 1 Exploration Activity with the Additional Required Time/Area Closures** as listed in **Alternative 4** in reference to the **NOAA Effects of Oil and Gas Activities in the Arctic Ocean Draft Environmental Impact Statement December 2011**

Hunter Success

Responsibility to Tribe

CERTIFICATION

Resolution 12-07 is approved by the Kotzebue IRA Council at a scheduled meeting held this 21 day of February, 2012 by a vote of 8 for, 0 against, and 0 not voting.


Guy Adams, Chairman


Wilbur Karmun Jr., Secretary

Mr. Jim Lecky
Director, Office of Protective Resources
1315 East-West Highway
Silver Spring, MD 20910

Email: arcticeis.comments@noaa.gov

Dear Mr. Lecky:

We appreciate the opportunity to submit comments on the draft programmatic Environmental Impact Statement (EIS) for offshore oil and gas activities in the Arctic Ocean. We are deeply concerned about the overall approach of the proposal and the scope and scale of activities included in the outlined alternatives. While we are encouraged that some elements of the EIS reflect the beginnings of a shift to a more precautionary science-based approach, we strongly support Alternative 1—No Action at this time.

Given the proposed alternatives outlined in the EIS, Alternative 1 is clearly the best option for moving closer to creating a sustainable future for the Arctic. The other alternatives represent a major environmental impact that would put in motion a near permanent fundamental change for Arctic marine ecosystems. Along with this letter we have joined with other groups to submit detailed general comments on the EIS and the many reasons why NMFS should choose Alternative 1 at this time.

There is a clear need for long-term, precautionary, science-based planning that acknowledges the complexity, importance, remoteness and fragility of America's Arctic region. The interconnected nature of Arctic marine ecosystems demands a more holistic approach to examining the overall health of the Arctic and assessing the risks and impacts associated with offshore oil and gas activities in the region.

We can no longer afford, nor scientifically justify, a piecemeal approach to management in the Arctic, where each decision, industry, interest group or area is assessed individually with minimal thought to the effects on the region as a whole over time. We must move away from arbitrary economic, political or geographic boundaries and instead incorporate the latest science to address how changes in one area or species affect another. We must also start looking beyond short-term horizons to long-term planning that can guide our decisions and management for the coming decades, not the next business cycle or election year.

No such long-term, holistic plan yet exists, and until more progress is made it is irresponsible to expose large swaths of the Arctic to the proven risks associated with the offshore oil and gas activities covered under this EIS. The seismic surveys, shallow-hazard surveys and exploration drilling outlined in the proposed alternatives represent an exponential increase in industrial activities in the Arctic Ocean. Such an increase would undoubtedly disturb and most likely cause undue harm to marine mammals through increases in noise levels and duration, intentional

and unintentional discharge of pollutants (including an oil spill), and the increase in the physical presence and sheer number of vessels in the region.

The Arctic Ocean currently contains a minimal amount of anthropogenic noise, with the existing soundscape filled instead with the sounds of animals, scraping ice, wind and other noises that Arctic species have adapted to over generations. Adding new, and in some cases incredibly loud, levels of noise would have impacts to a host of marine species, particularly marine mammals.

Many marine mammals have very sensitive hearing, capable of detecting noises across great distances as necessary to life in the ice-covered Arctic. Changing the relatively quiet Arctic marine soundscape to a seismic rock concert that lasts all summer would create a range of negative effects. Generating high volume or high frequency sounds close to these animals can cause physical harm to the ears and disrupt important behavior patterns, including driving animals away from feeding areas or disrupting a whale's ability to perceive the environment or communicate.

New oil and gas exploration drilling would also inevitably bring higher levels of pollution. Along with risks from oil spills, there is the potential for leaking of oil or other discharges, which would cover the water surface with oily grey bilge water and other noxious elements. Drill cuttings would also likely release toxic elements into the water.

The most frightening risk is from an oil spill, and if we have learned nothing else from the *Exxon Valdez* and *Deepwater Horizon* disasters we must recognize the proven risks and inherent unpredictability associated with any offshore oil activities. These risks would only be multiplied in the Arctic, where remoteness, lack of adequate response capabilities, challenging conditions and fragile marine ecosystems create a recipe for disaster in the event of a spill.

Compounding the problem is the distressing lack of any known method or adequate infrastructure for addressing an oil spill, shipping accident or other marine incident in Arctic waters. There is no established way to remove oil out of icy Arctic waters, nor any precedent for operating a large-scale industrial cleanup operation in such a remote and unforgiving part of the world.

Along with the pollution risks to Arctic waters, the vast increase in number of vessels and aircraft that would accompany any oil and gas activities would emit large amounts of air pollution. This could significantly and negatively alter the air quality in the region with potential effects on human health and the overall environment.

The only way to truly mitigate the potentially catastrophic impacts is through Alternative 1—No Action. In addition to the alarming scale and associated risks of the other proposed alternatives within the EIS, the decision to break the analysis into individual components also misses the overall big picture of fundamental ecosystem change that would cumulatively result from the proposed oil and gas activities.

Among other issues, the lack of appreciation and understanding of the potential for synergistic effects from massive oil and gas activities and climate change misses one of the largest risks to the ecosystem. Rather than finding a way to a sustainable future for the Arctic, this EIS appears to be an effort to justify the current practice of handing out Incidental Take Authorizations without full consideration of cumulative impacts or meaningful mitigation efforts to seriously limit those impacts.

In particular, the lack of information about marine mammals in the Arctic and potential impacts of anthropogenic noise, oil spills, pollution and other impacts on those marine mammals undercuts the agency's ability to determine the overall effects of such activities. In most cases in this EIS where there is inadequate information, NMFS wrongly assumes that there will thus not be any associated impacts. This occurs many times throughout the EIS and is not only inappropriate but flies in the face of the idea of a responsible precautionary approach, ensuring that we will only "discover" potential impacts after they have already happened.

We support stopping the expansion of oil and gas activities in the Arctic Ocean until there is adequate information available—both from "western" science and Local and Traditional Knowledge—to adequately assess potential impacts and therefore make informed decisions. There must also be a plan in place that shows if and how any proposed oil and gas activities could occur without harming the marine ecosystem or subsistence way of life. This is in keeping with the spirit of the Arctic Fishery Management Plan, where this same region was assessed and federal policymakers determined that no new activities should occur until such information and planning was in place.

ANALYSIS OF THE PROPOSED MITIGATION MEASURES IN THE EIS

As mentioned above, Oceana strongly supports Alternative 1—No Action at this time. Yet considering current trends and existing activities in the region we would also like to address the mitigation measures proposed in the EIS, given the unfortunately high likelihood of further industrial activity in the Arctic.

While the mitigation measures outlined in the EIS represent a good first step in the right direction, they do not go nearly far enough. The mitigation measures are disproportionately small considering the scope and scale of proposed activities, and fall far short in covering an adequate amount of important habitat and concentration areas for marine mammals.

Further, a piecemeal approach to mitigating impacts, while not inconsequential, is only one part of a necessary comprehensive plan to sustainably manage the Arctic. Such a plan should start by identifying and protecting Important Ecological Areas of the Arctic.

Identifying and Protecting Important Ecological Areas of the Arctic

Protecting Important Ecological Areas, including important marine mammal areas, from oil and gas activities is an important management approach that will result in conservation benefits. The

maps of marine mammal concentration areas included later in this letter are initial drafts developed by Oceana as part of a larger effort currently underway to identify Important Ecological Areas of the Arctic.

Important Ecological Areas (IEAs) are geographically delineated areas which by themselves or in a network have distinguishing ecological characteristics, are important for maintaining habitat heterogeneity or the viability of a species, or contribute disproportionately to an ecosystem's health, including its productivity, biodiversity, function, structure, or resilience. IEAs include places like migration routes, subsistence areas, sensitive seafloor habitats, concentration areas, breeding and spawning spots, foraging areas, and places with high primary productivity.¹ The maps of marine mammal concentration areas suggest particular areas that are very important to marine mammals.

Looking at marine ecosystems through the lens of IEAs can help us better understand how to preserve the health, productivity, biodiversity and resilience of marine ecosystems while providing for ecologically sustainable fisheries and other economic endeavors, traditional subsistence uses, and viable marine-dependent communities.²

In recognition of this concept the Ocean Policy Task Force highlighted that “[Coastal and Marine Spatial Planning] is intended to improve ecosystem health and services by planning human uses in concert with the conservation of important ecological areas.” There is a clear recognition that the benefits of protecting IEAs is both a priority and provides a significantly larger benefit than protecting a different area of equal size.

Marine mammal concentration areas are one potential example of Important Ecological Areas that require robust management measures to ensure the health of the ecosystem as a whole. Impacts to marine mammal concentration areas, especially those areas where multiple marine mammal species are concentrated in a particular place and time, are more likely to cascade throughout populations and ecosystems. This is due to the fact that the density of animals impacted is higher and/or the diversity of different species shown overlapping in specific areas is higher. Given the fragility of Arctic marine ecosystems and the disproportionate importance of marine mammals in the ecosystems and food web, any impacts to these animals would likely cascade throughout the region.

This is unacceptable from both a scientific and management perspective, especially considering that recurrent concentration areas, such as those we present, are almost certainly not due to chance. Animals gather in places because they are important for feeding, breeding, migrating, resting or other reasons. Disturbing animals when they are in those areas may disrupt the important activity that the animals are using the area to complete. For example, if chased from a high density feeding area, it will be more difficult (and energetically expensive) for animals to

¹Ayers et al., Important Ecological Areas in the Ocean: A Comprehensive Ecosystem Protection Approach to the Spatial Management of Marine Resources (Aug. 23, 2010), available at <http://na.oceana.org/en/news-media/publications/reports/important-ecological-areas-in-the-ocean>.

²*Id.*

get as much food elsewhere. This will add to the general impacts covered above to further stress Arctic species.

The Analysis of Benefits of Time and Area Closures is Flawed

The inclusion of proposed mitigation measures within the EIS does represent positive progress, particularly the inclusion of time and area closures. Such measures recognize the need to protect Important Ecological Areas and reduce the impacts of oil and gas activities on marine mammals and other species. However, along with concerns over the sheer scope of proposed activities and the relatively small scale of the proposed mitigation measures, we also believe that the NMFS analysis showing “limited benefits” of such closures is faulty and should be revisited.

The analysis expressed in the draft EIS underestimates the benefit of the time and area closures, particularly due to the fact that it does not well reflect the higher densities of marine mammals in concentration areas and other IEAs. The analysis also does not fully recognize the importance of those areas to the overall health of the species being impacted, and thus underestimates the likely disproportionate effects of activities in those areas. The categorical nature of the qualitative analysis puts impacts into unclear “levels,” without an appreciation of the continuum of the level of impacts.

The EIS recognizes that using time and area closures can be a tool to mitigate the impacts of oil and gas activities. Yet the analysis nonsensically concludes no benefit as a result of mitigating those impacts. This illogical disconnect, along with a lack of information to assess the size of the benefit beyond unclear and ill-defined levels, mistakenly results in analysts concluding there is no benefit.

This faulty analysis, along with the clear gaps in good data for a number of species, only serves to bolster the need for precaution in the region. While we agree there is good information on the existence of some Important Ecological Areas, the lack of information about why some concentration areas occur and what portion of a population of marine mammals uses each area hampers the ability of NMFS to determine the benefits of protecting the area. This lack of scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The inability to quantitatively estimate the potential impacts of oil and gas activities, or express the benefits of time and area closures of important habitats, likely has much more to do with incomplete information than with a perceived lack of benefits from the time and area closures. Such a lack of information only reinforces why NMFS should choose the No Action alternative until there is adequate data to ensure that oil and gas activities will not harm the health of Arctic marine ecosystems. Future management measures should include time and area closures for IEAs, which have the potential to have large and important conservation benefits that are not easily captured in the analysis NMFS prepared for the EIS.

The Maps in the EIS are Already Outdated

The enclosed marine mammal concentration area maps provide strong evidence for robust time and area closures should NMFS decide to move forward with approval of industrial activities in the Arctic. While the maps in the EIS share some of the same sources as the enclosed maps, the concentration areas we present here reflect additional new information, corrections, and discussions with primary researchers. The enclosed maps are based in part on the Arctic Marine Synthesis developed previously, but include some new areas and significant changes to others.

While these updates are still in a draft form, discrepancies between the maps presented here and the EIS indicate potential corrections that NMFS should consider. Thus, along with the specific information highlighted below we strongly encourage NMFS to review the citations we provide for these updated maps.

One example of how new information has already shed new light is in the case of the Pacific walrus. Recent satellite tagging and observations note the use of the coastal region of the Chukchi Sea between Icy Cape and Point Hope, including using the beach and barrier islands as haul out areas. The highest numbers appear to be in the vicinity of Point Lay north to Icy Cape, including Kasegaluk Lagoon.

In addition, the Beaufort population of beluga whales has been shown to use the Chukchi Sea ice lead system in the spring. They likely travel in leads off of the shelf to reach the Mackenzie Delta. When they return in the fall, they are clearly farther offshore than the orange arrow and southern side of the hash lines indicate in the EIS text for the Beaufort Shelf Break.

There are also a number of improvements that can be made for the Eastern Chukchi population of belugas as the result of the research conducted by Robert Suydam for his dissertation (see references in the beluga section). These include expanding the summer time concentration area to include Barrow Canyon and the rest of the area between Point Franklin and Point Barrow out to and along the shelf break. The very high concentration area off Barrow depicted in the EIS is far closer to shore than where most of the Eastern Chukchi Sea tagged belugas have been documented.

In addition, based on the text of the EIS and a review of the primary literature on gray whales, we encourage NMFS to consider the northern coastal Chukchi around Hanna Shoal and off Point Barrow as concentration areas for gray whales. Gray whales are clearly more concentrated in those spots than in surrounding areas, and as the EIS indicates those areas will potentially become more important with the continuation of rapid Arctic climate change.

Comments on the Proposed Time and Area Closures in the EIS

Turning to the specific time and area closures outlined in the EIS, the enclosed marine mammal concentration area maps provide strong support for the spirit of precaution behind those measures. We also maintain, however, that the proposed mitigation measures do not go far

enough to provide meaningful protections for marine mammals in light of the immense increase in industrial activities outlined in the EIS.

We strongly support the time and area closures for Ledyard Bay and Kasegaluk Lagoon for all the reasons highlighted in the EIS. In addition to what was mentioned in the EIS, walrus utilize these areas from June through September, with large haulouts on the barrier islands of Kasegaluk Lagoon in late August and September. In the spring a number of marine mammals use these areas, including bowhead whales, beluga whales, bearded seals, ringed seals and polar bears.

For Hanna Shoal we also strongly support the time and area closures. Along with the reasons outlined in the EIS, it is important to note that Hanna Shoal is a migration area for bowhead whales in the fall, with some indication of areas where tagged whales are spending more time than they are in other areas. Also, as the ice begins to return to the region in the late fall this region may contain higher densities of polar bears.

For Barrow Canyon, along with the reasons highlighted in the EIS, in the spring a number of marine mammals use this area, including bowhead whales, beluga whales, bearded seals, ringed seals and polar bears. In the summer and fall this area is also important for gray whales, walrus, and bearded seals. For all those reasons we believe Barrow Canyon merits considerable protections.

We also strongly support the time and area closures for Beaufort Shelf Break and Camden Bay for all the reasons highlighted in the EIS. However, the Beaufort Shelf Break should be included in the map of special habitat areas of the Beaufort Sea, and it is unclear why that area was left out of that section.

There is a Clear Need for Additional Time and Area Closures in the Arctic

Once again, given the alternatives outlined in the EIS we strongly support Alternative 1—No Action as the only meaningful protections for marine mammals and other aspects of Arctic marine ecosystems. However, given the agency's movement towards identifying time and area closures, and the potential that regardless of the risks and lack of science new activities may be permitted to occur, we would like to strongly urge that additional areas be considered for special protections. Along with these specific time and area proposals, particular caution should be taken in early fall throughout the region, when peak use of the Arctic by marine mammals takes place.

Based on the enclosed maps and latest data, we believe that should any proposed activities go forward the following areas merit special consideration and protection as outlined:

Add the Coastal Band of the Chukchi Sea (~50 miles wide)

The coastal band of the Chukchi Sea is an important and productive region for marine mammals in general, with high use in spring, summer and fall. In the spring the ice lead system along the Chukchi coast is one of the biological wonders of the world, a migratory corridor that rivals

famed terrestrial migrations in Africa and elsewhere. Beluga whales, bowhead whales, and countless sea birds move through the lead system every year, joined by ringed and bearded seals.

Even though oil and gas activities are not anticipated to occur in the spring, NMFS should consider highlighting this area as an important and sensitive habitat in the region and note that it should not be disturbed if future oil and gas activities anticipate springtime activity. In addition, there is the potential for catastrophic impacts should an oil spill occur in a different season and due to difficult cleanup conditions remain in this critical area until the springtime migrations.

In the summer, portions of the coastal band contain concentration areas for beluga whales, walrus, bearded seals, gray whales, ribbon seals and spotted seals. In the fall, portions of the coastal band contain concentration areas for bowhead whales, beluga whales, walrus, bearded seals, gray whales, ribbon seals and spotted seals.

In addition to the Ledyard Bay region within the coastal band, the northern (Point Franklin to Point Barrow) and southern (around Point Hope) ends are particularly important for marine mammals. Comparisons of overlapping concentration areas of different marine mammal species clearly show this region as one of the most heavily used in the Arctic by marine mammals. The region encompasses the head of Barrow Canyon along with the waters around Peard Bay where beluga whales, gray whales, walrus and bearded seals are known to concentrate in the summer and fall. In the fall, lingering bowhead whales, which are presumably feeding, are also seen to regularly occupy this region.

The region around Point Hope is known as a concentration area during the summer and fall for a number of species, presumably for feeding. Gray whales, ribbon seals, bearded seals, and walrus concentrate in this area, which should be considered for special protection.

Expand the Barrow Canyon Area

Expanding the Barrow Canyon area would more fully capture the canyon and the areas used most often by marine mammals. The area proposed in the EIS only captures a portion of Barrow Canyon used by beluga whales during the summer and fall. While this is a good start, the head of Barrow Canyon (off the coast between Point Barrow and Point Franklin) as well as the mouth of Barrow Canyon along the shelf break, are important for a number of other species as well.

Expand the Hanna Shoal area

In general, the Hanna Shoal region highlighted in the EIS is fairly confined, and it is unclear why the proposed time and area closure covers only that area in particular. As indicated on the enclosed maps, areas to the south may be fairly important for walrus, bowhead whales, and gray whales, and the closure as currently outlined may not adequately protect walrus in particular. Although the results are not published yet, additional analyses from USGS tagging studies (such as those presented at the 2012 Alaska Marine Science Symposium) could be used to better delineate the important habitat area in order to actually mitigate impacts and protect the species.

Additional Considerations

Along with the specific areas mentioned above, we also encourage NMFS to consider a time and area closure during the winter and spring in the Beaufort Sea that captures the ice fracture zone between landfast ice and the pack ice where ringed seal densities are the highest. In addition to this being an important region for ringed seals it is likely an important area for polar bears, as ringed seals are their primary prey.

In addition to the specific time and area closures mentioned above, the critical importance of late summer and early fall for marine mammals in the Arctic deserves special recognition and extreme caution across the region. Many species, such as gray whales, travel thousands of miles to feed in the Arctic. Disrupting their utilization of the region to feed and engage in other activities may hamper the animal's ability to conduct their migrations, survive the winter, or reproduce. Also, we urge NMFS to create a system where as new and better information becomes available, there is opportunity to add and adjust areas to protect important habitat.

CONCLUSION

Given the proven risks and potentially grave consequences of oil and gas activities in the Arctic, the region should be deferred from all oil and gas activities unless and until there is a plan in place that shows those activities can be conducted without harming the health of the ecosystem or opportunities for the subsistence way of life. Considering the scope of new activities outlined in the alternatives in the draft EIS, the insufficient mitigation measures proposed, and the potential for catastrophic impacts to Arctic marine ecosystems as a result of oil and gas activities, we strongly support the adoption of Alternative 1—No Action.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan J. Murray". The signature is written in a cursive style with a large, stylized "M" at the end.

Susan Murray
Senior Director, Pacific
Oceana

APPENDIX: MARINE MAMMAL CONCENTRATION AREA MAPS

The following pages contain distribution maps of marine mammal concentration areas for bearded seals, beluga whales, bowhead whales, gray whales, polar bears, ribbon seals, ringed seals, spotted seals and Pacific walrus in U.S. Arctic waters north of 68° latitude.

Concentration areas are defined as specific geographic regions where a species occurs consistently at higher densities than elsewhere within the study region or species range. As the use of the Arctic by marine mammals varies considerably throughout the year, we identified concentration areas for each season where there was sufficient data available. Concentration areas were identified directly from sources, digitized from existing studies, and/or hand drawn based on information in published studies or personal communications with experts.

Marine mammals are the most well-known and iconic species in the Arctic and are of vital importance to the communities and ecosystems of the region. The abundance, seasonal concentrations and migratory patterns of whales, walruses, seals and other animals are connected to the rhythms of life in Arctic communities, and have been for generations. These species play an integral role in the cultures, personal health and economic well-being of thousands of Americans who live along Arctic shores. Animals that migrate long distances to and from the Arctic, such as gray whales, also benefit communities throughout the U.S. west coast through tourism and as part of the overall quality of life for many coastal citizens.

As primary consumers at or near the top of the food chain, marine mammals also are critical in the structure and functioning of Arctic marine ecosystems. In most cases Arctic marine mammals are long-lived species with low reproduction rates, and many marine mammal species fill multiple roles within Arctic ecosystems. As a result, impacts to one species, or damage from an oil spill or other accident to a specific area where those species concentrate, are likely to have harmful effects not only to an individual species, but throughout the ecosystem.³

In addition to maps of concentration areas for each species, we have also included maps that show the overlap of all concentration areas of the eight species for each season. Overlapping concentration areas may indicate important areas for marine mammals generally due to location, physical characteristics, relationship to seasonal sea ice cover, or other factors. These overlapping areas warrant further consideration and stronger protective measures to ensure they are not affected by oil and gas activities or other industrial impacts.

It is also important to note that, while these maps represent our best understanding, there is relatively sparse information in many cases. For example, the summer distributions of bearded seals are based on only a few tagged animals. For most marine mammal species in the Arctic, there is not adequate information to even provide good estimates of population size. There is a clear need for a more comprehensive gap analysis undertaken by an independent entity, such as

³Bertness, M. D., S. D. Gaines, and M. Hay (Editors). 2001. *Marine Community Ecology*. 550 pages, Sinauer Associates, Sunderland, Massachusetts. *See generally*.

Appendix: Oceana Marine Mammal Concentration Area Maps for Draft Programmatic EIS for Arctic Oil and Gas Activities.

February 28, 2012

Page 2 of 33

the National Research Council, and the establishment of a comprehensive research program for the region.

These gaps in data and understanding only serve to reinforce the overall need for further scientific research and documentation of Local and Traditional Knowledge to more accurately delineate marine mammal concentration areas and identify Important Ecological Areas in the region.

BEARDED SEALS

Bearded seals are commonly found with drifting sea ice, usually in waters less than 650 ft (200 m) deep. They are solitary animals, and individual seals rest on single ice floes facing the water for an easy escape from predators. Their lifespan exceeds 25 years, with females giving birth to a single pup while hauled out on pack-ice usually between mid-March and May. Current abundance and population trends are unknown.

While bearded seals can be found in both the Beaufort and Chukchi seas year round, a large portion of the population overwinters in the Bering Sea. Bearded seals generally move north in late spring and summer as sea ice melts and retreats, and they then move south in the fall as sea ice forms.

In the Beaufort Sea, bearded seals are most numerous around the flaw zone between landfast and drifting pack ice and in the broken pack ice. They are not typically found on shore fast ice or the area covered by shore fast ice. Also, from recent—but very limited—tagging data it appears that during their northward migration these animals move from Kotzebue Sound up along the coast to feed within the coastal band of the Chukchi and Beaufort seas during the summer and fall. Aerial observations for marine mammals in the northern Chukchi Sea also indicate Bearded Seals are found in higher concentrations in the band of waters closer to shore (out to approximately 30-40 miles) than those waters farther offshore. Overall, the data to support the assertion of higher bearded seal densities in the coastal band versus farther offshore is limited.

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BELUGA WHALES

Beluga whales are generally found in shallow coastal waters, but they have also been seen in deep waters. Belugas can be found swimming among icebergs and ice floes in the waters of the Arctic and subarctic, where water temperatures may be as low as 32° F (0° C). They are extremely social animals that typically migrate, hunt, and interact together in groups of ten to several hundred

Their lifespan is thought to be about 35-50 years. Beluga whales mate in the spring, usually in March or April, in small bays and estuaries. Females give birth to single calves (and on rare occasion twins) every two to three years on average, usually between March and September.

Five distinct populations of beluga whales occur in the United States, all in Alaska: Cook Inlet, Bristol Bay, Eastern Bering Sea, Eastern Chukchi Sea and Beaufort Sea. The study area is home to two of those five: the Eastern Chukchi Sea population and the Beaufort Sea population. Both are currently designated as healthy populations, with the latest estimates showing approximately 3,700 individuals in the Eastern Chukchi Sea population, and 40,000 individuals in the Beaufort Sea population.

The following map shows the spring, summer and fall concentration areas for the Eastern Chukchi and Beaufort populations. In the spring, the Beaufort population uses the Chukchi Sea ice lead system while migrating to the Mackenzie River delta region in Canada. In late June, the Eastern Chukchi population gathers outside of Omalik Lagoon south of Point Lay on the Chukchi Sea coast. They then migrate north along the coast, with concentration areas found along the coast, including in and around Barrow Canyon and near the shelf break off Point Barrow.

In addition, satellite tagging has shown that some beluga whales may travel north well offshore into the ice pack in very deep water during the summer, presumably to feed on Arctic cod. One whale was documented up to 80 degrees north in heavy ice. Other Eastern Chukchi individuals move out onto the Chukchi shelf break, as well as over into the eastern Beaufort Sea. A small portion of Beluga whales tagged in the Mackenzie River delta area (Beaufort population) have been shown to utilize areas along the Beaufort shelf break, including off the eastern portion of the Alaska coast, which has also been documented in summer aerial surveys for the region.

In early fall, satellite tagged whales from the Eastern Chukchi population clearly concentrate in Barrow Canyon as well as along the western Beaufort Sea shelf break. Satellite tagged belugas from the Beaufort Sea population indicate concentrations along the Beaufort Sea shelf break offshore during the same time as they migrate west and eventually across the Chukchi Sea. These concentration areas of belugas are also apparent in both the aerial surveys for whales in the Chukchi Offshore Monitoring in Drilling Area project and the Bowhead Whale Aerial Survey Project in the Beaufort Sea.

Belugas are an important subsistence species for the communities of Point Lay, Point Hope, Wainwright, and Barrow. In Point Lay, there is an annual organized community hunt that provides a very large portion by weight of the subsistence food for the community each year.

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BOWHEAD WHALES

Bowheads live in the Arctic Ocean and adjacent seas. They spend most of the summer in relatively ice-free waters adjacent to the Arctic Ocean and are associated with sea ice the rest of the year. The Bering-Chukchi-Beaufort, or Western Arctic, population (one of five distinctly recognized populations of bowheads) is currently estimated at 10,500 and is increasing at a rate of 3.2% per year.

Bowhead whale females generally have one calf every three to four years after a gestation period of around 13 to 14 months. The average and maximum lifespan are unknown; however, evidence indicates that individuals can live over 100 years.

The bowhead whale subsistence hunt has a central cultural role in the subsistence way of life of some coastal communities, and it plays an important role in the health and well-being of many Arctic peoples.

The enclosed map depicts seasonal concentration areas for bowhead whales. In the spring, bowheads migrate north through the Bering Strait, along the Chukchi Sea coast and over to the eastern Beaufort Sea to feed during the summer. During this migration bowheads concentrate in the spring in the ice lead system along the Chukchi Sea coast, which is where the bowhead whale hunt is conducted by the communities of Point Hope, Point Lay, Wainwright, and Barrow. The Local and Traditional Knowledge of hunters in Barrow and Wainwright describe consistent areas used for feeding and calving where bowheads are concentrated within this migration corridor.

In the fall, bowheads migrate back across the Beaufort Sea along the continental shelf. Hunters have identified consistent feeding concentration areas off the barrier islands in the vicinity of Kaktovik. Bowheads also concentrate in large numbers while feeding in the region around Point Barrow during the migration.

After passing Point Barrow, bowheads then move across the Chukchi Sea, with a fair amount of variability from year to year in where they cross and how quickly they cross. There is some evidence of concentration areas of bowhead whales in the northern Chukchi Sea as they migrate, presumably to take advantage of feeding hot spots. There are also feeding concentration areas in the fall along the Russian coast of the southern Chukchi Sea, before they move through the Bering Strait for the winter. Although only a portion of the study area in the Chukchi Sea is indicated as a fall concentration area, because of the year to year variation in where migration of bowheads cross the Chukchi Sea, in some years areas other than those depicted are likely to be important to bowheads.

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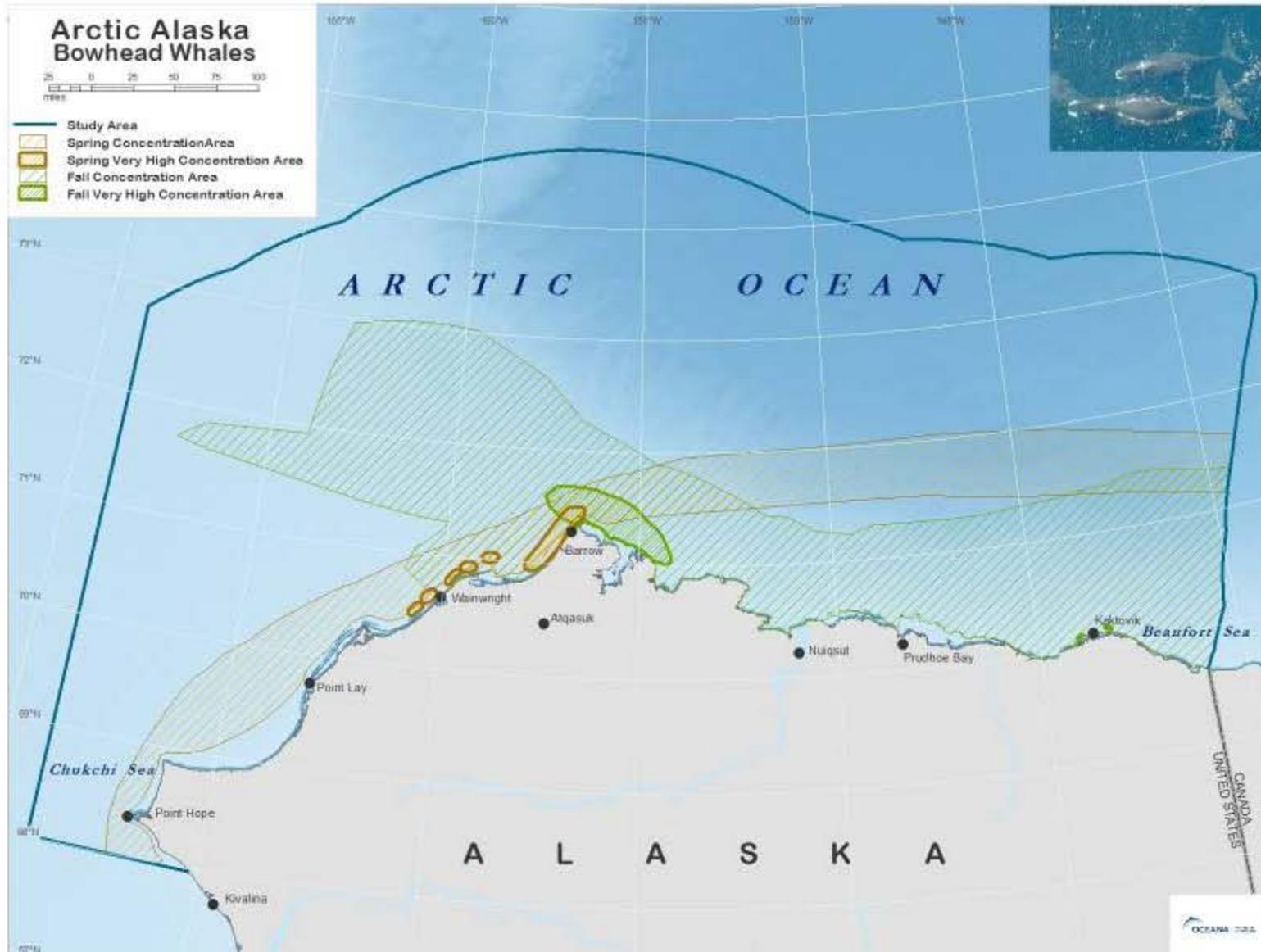
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GRAY WHALES

Gray whales are found mainly in shallow coastal waters in the North Pacific Ocean. Most of the Eastern North Pacific population spends the summer feeding in the northern Bering and Chukchi seas and migrates between those Arctic feeding areas and their winter breeding grounds off the coast of Baja California, Mexico.

Gray whales are frequently observed traveling alone or in small, unstable groups. Large aggregations also may be seen on feeding and breeding grounds. The most recent abundance estimates for Eastern North Pacific gray whales are based on counts made during the 1997-98, 2000-01, and 2001-02 southbound migrations, and range from about 18,000-30,000 animals.

The enclosed map shows summer and fall concentration areas for gray whales in the study area. While gray whales feed primarily in the northern Bering Sea and southern Chukchi Sea, there are a handful of specific concentration areas in the northeast Chukchi Sea, specifically around Point Hope, Wainwright, Point Franklin, Peard Bay, and Point Barrow.

In addition, aerial surveys conducted between 1982 and 1987 showed concentrations of gray whales in the Hanna Shoal region, which is reflected on the map. While gray whales were not seen consistently in this area in the surveys conducted between 2008 and 2010, it is important to note that the region was not surveyed between 1987 and 2008. Thus, the Hanna Shoal region is not only a potentially important concentration area for gray whales, but also a clear example of where gaps in the data reflect the need for further study to better understand the migratory patterns and concentrations of these animals.

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PACIFIC WALRUS

Pacific walrus mainly inhabit the shallow continental shelf waters of the Bering and Chukchi seas, with distribution varying markedly with the seasons. Generally walrus occupy first-year ice with natural openings such as leads and polynyas and are not found in areas of extensive, unbroken ice.

For terrestrial haulouts, isolated sites such as islands, points, spits, and headlands are occupied most frequently. Social factors, learned behavior, and proximity to prey probably influence the location of haulout sites, but little is known about such factors.

The current size of the Pacific walrus population is unknown, and the walrus has the lowest reproductive rate of any pinniped. Pacific walrus breed in the winter between December and March, with calves born in late April or May of the following year. With pregnancies that last through the next breeding season, the minimum interval between successful births for walruses is two years.

The enclosed map depicts summer and fall concentration areas for Pacific walrus. As shown, most of these areas are in the Chukchi Sea, including important terrestrial haul out areas along the northwest coast of Alaska. Walrus primarily feed on clams or other invertebrates that live on and in the sea bottom on shallow continental shelf areas. Thus, their foraging areas are generally limited by depth to continental shelf areas and are focused on areas of high prey availability.

As the sea ice cover retreats north each spring, females, calves and juveniles stay on ice, using it as a resting platform while they feed on the seafloor of the very productive continental shelf in the northern Bering Sea and Chukchi Sea. Males tend to stay in the Bering Sea during this time, hauling out in large numbers at Round Island and elsewhere.

In early summer, females, young of the year and juveniles remain in the Chukchi Sea utilizing the still present sea ice as a resting platform while feeding. As sea ice begins to recede away from the continental shelf in late summer and fall, however, walruses will leave the ice and begin hauling out on shore to remain near the productive feeding areas of the continental shelf.

Walrus are now hauling out in very large numbers consistently on the barrier islands in the Point Lay region and in smaller numbers elsewhere between Point Hope and Point Barrow. In addition, satellite tagging shows walrus also concentrating during this time in the Hanna Shoal region, down to Herald Shoal, and in a band along the Chukchi coast. As sea ice reforms over the Chukchi Sea in the late fall and early winter, walrus move back down into the northern Bering Sea.

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POLAR BEAR

Populations of polar bears are distributed in Alaska, Canada, Greenland, Norway, and Russia, with a worldwide population estimated at 22,000-25,000 bears. Two populations occur in Alaska: the southern Beaufort Sea population, shared with Canada; and the Chukchi-Bering Seas population, shared with the Russian Federation.

Polar bears generally live alone except when concentrating along the coast during the open water period to mate or rear cubs. Polar bears' primary food are ringed seals, but they also hunt bearded seals, walrus, and beluga whales, and scavenge on beached carrion such as whale, walrus, and seal carcasses found along the coast.

Polar bears give birth to one to three cubs in December or January, and cubs remain with their mother for a little more than two years. Pregnant females will enter maternity dens in October or November; in Alaska, dens are excavated on either sea ice or on land.

The enclosed map shows fall, winter and spring concentration areas for polar bears within the study area. Along with the more general fall concentration area, winter concentration areas are divided into subsections to reflect important locations for activities like denning.

The distribution of both the Chukchi-Bering Sea and southern Beaufort Sea polar bear populations is influenced by season, ocean currents, ice and weather observations and availability of seals. Polar bears move seasonally with the ice edge, using the ice as a platform for hunting, feeding, breeding and movement. They are most abundant near coastlines and the southern extent of the ice pack. With low sea ice cover in early fall, polar bears have been found in coastal areas, with higher densities of bears in the study area being found between Prudhoe Bay and the Canadian border.

In winter, polar bears stay along the coast, usually as far south as Saint Lawrence Island. Dens can be found on the Chukchi and Beaufort coasts, but denning is more concentrated along the Beaufort coast, especially near the Arctic National Wildlife Refuge. Pregnant females and newborn cubs den from late November to early April, with barrier islands particularly important for denning. Those barrier islands were designated as winter concentration areas on the enclosed map. The winter and spring concentration areas also show polar bear feeding areas, which is from documented Local and Traditional Knowledge of coastal villagers.

For fall, the map depicts the core use area of polar bears in the study region from Armstrup et al. 2005. In the summer polar bears are generally found offshore following the receding pack ice in the Arctic, with individual bears roaming over very large areas. Locations of bowhead whale bone piles from subsistence hunts by the villages of Barrow, Nuiqsut and Kaktovik are included in each season as they are attraction areas for polar bears.

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RIBBON SEALS

Ribbon seals inhabit the Bering and Okhotsk seas, and parts of the Chukchi, eastern Siberian, and western Beaufort seas. They are strongly associated with sea ice for mating, whelping pups and molting, and for the rest of the year are pelagic and wide ranging across much of the Bering Sea, north Pacific and Chukchi Sea.

Ribbon seals become sexually mature after 3-5 years. Adult ribbon seals produce one offspring per year, and gestation lasts 11 months. They breed in May and give birth the following year between late March and April. Molting occurs annually, typically between March and June; juveniles molt earlier and adults molt after giving birth. On average, ribbon seals live for about 20 years, but can reach up to about 30 years.

In the latest stock assessment (2007), NMFS estimated a global population size of 240,000 ribbon seals, 90,000-100,000 of which inhabit the Bering Sea.

Habitat selection by ribbon seals can be broadly divided into two seasonal periods. In spring and early summer ribbon seals are engaged in whelping, nursing, breeding, and molting, all of which take place on and around sea ice where the seals haul out. During these months ribbon seals are concentrated in the ice front or “edge zone” of the seasonal pack ice, typically in the central and western Bering Sea.

During May and June, ribbon seals spend much of the day hauled out on ice floes while weaned pups develop self-sufficiency and adults complete their molt. As the ice melts, seals become more concentrated, with at least part of the Bering Sea population moving towards the Bering Strait and the southern part of the Chukchi Sea.

Once molting is complete ribbon seals leave the ice and spend most of their time in open water. During this time they are wide-ranging, capable of deep dives of more than 500 meters, and rarely haul out on the ice. Relatively little is known about the distribution or concentrations of ribbon seals during this time. Recent satellite tagging indicates a fraction of the ribbon seals migrate into the central Chukchi Sea for the summer and fall (the southwest corner of the area in the Arctic under consideration in the Five Year Plan).

While some ribbon seals remain in the Chukchi Sea until the return of the sea ice in late fall pushes them back into the Bering Sea, more information needs to be gathered to better understand their distribution. One important note is that unlike some other seal species ribbon seals are not well adapted for maintaining breathing holes in winter sea ice, making it clear they need to move south for the winter.

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Appendix: Oceana Marine Mammal Concentration Area Maps for Draft Programmatic EIS for Arctic Oil and Gas Activities.

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RINGED SEALS

Ringed seals reside in Arctic waters and are commonly associated with ice floes and pack ice. They are solitary animals and when hauled out on ice separate themselves from each other by hundreds of yards. During the spring breeding season females construct lairs within the thick ice and give birth to a single pup in March or April. Ringed seals live about 25 to 30 years, and the estimated population size for the Alaska population of ringed seals is 249,000 animals. The population trend for the Alaska stock is unknown.

Ringed seals are well adapted to occupying seasonal and permanent ice. They tend to prefer large floes and are often found in the interior ice pack where the sea ice coverage is greater than 90%.

Surveys in late winter and spring indicate ringed seal densities and concentration areas are most numerous in nearshore fast and pack ice. In particular, surveys from the Beaufort Sea indicate that densities tend to be highest around the fracture zone between the fast ice and the pack ice.

Satellite tagging of ringed seals indicates that ringed seals often disperse broadly for the open water period in the summer and fall, presumably to forage in highly productive areas. Unfortunately, data is limited on where there may be foraging concentration areas within the study area. This is another example of the kind of information that is sorely needed to fully assess the impacts of any offshore development.

The enclosed map shows the winter and spring concentration area for ringed seals.

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SPOTTED SEALS

Spotted seals prefer Arctic or subarctic waters, and they are often found within the outer margins of shifting ice floes. Rarely do they inhabit areas of dense pack ice. Spotted seals range from the coast of Alaska throughout the Bering Sea, Sea of Japan, and Sea of Okhotsk.

During breeding season between January and mid-April spotted seals haul out on ice floes, whereas during the summer months they can be found in the open ocean or hauled out on shore. Pup births peak in mid-March. The estimated population size for the Alaska stock of spotted seals is 59,000 animals. The population trend is unknown.

The enclosed map shows summer and fall concentration areas for spotted seals. In summer and early fall, spotted seals use coastal haul outs regularly, especially on barrier islands in several locations in the study area. Individual seals can make extensive foraging trips, as long as a thousand kilometers, from these haul out concentration areas.

As sea ice forms in the fall and winter, spotted seals and other ice-dependent animals retreat south back into the Bering Sea, typically crossing through the Bering Strait in November. During the winter spotted seals are found along the ice edge in the Bering Sea. In spring they prefer smaller ice floes along the southern margin of the sea ice and move to coastal habitats after the retreat of the sea ice.

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SEASONAL MAPS

As described earlier, along with the maps showing seasonal concentration areas for each Arctic marine mammal species, we are also providing the following four maps that aggregate those concentration areas for all species during particular seasons. These maps provide another way of looking at the data about concentration areas. They also identify those overlapping seasonal concentration areas where, based on information available now, further study and extra caution is required to minimize any impact from offshore oil and gas activities.

As reflected on each species map, Arctic marine mammals move with the seasons. Sea ice cover, mating and calving behavior, availability of food for predators, protection for prey animals, availability of good haul out locations and a number of other factors contribute to the seasonal movements and concentration areas for individual species.

In the winter months, there are a number of marine mammal species that leave the Chukchi and Beaufort seas altogether, as they only are present to take advantage of the burst of summer productivity. A good example is the seasonal migration of gray whales, which come north to the Arctic to feed in the summer months and move south as far as Baja California to breed and calve in warmer waters in the winter.

There are some species, however, that remain in the winter—primarily polar bears and ringed seals—although there are overwintering bearded seals and there is documentation of gray whales overwintering as well. As reflected in the winter concentration areas map, the most important places for those marine mammals during the Arctic winter months are coastal areas and fast and nearshore pack ice along the Beaufort and Chukchi coasts.

As winter turns to spring, a host of species comes back to the region. A corridor of water opens up along the sea ice edge consistently on the Chukchi coast. This corridor is the pathway that tens of thousands of beluga whales, bowhead whales, seabirds and other animals use to return to the Beaufort and Chukchi seas. Hunters use this consistent and productive migration corridor extensively for subsistence. Impacts to this corridor could have important and far reaching consequence for the Beaufort and Chukchi large marine ecosystems.

As spring turns to summer, sea ice begins to retreat into the high Arctic, and the rest of the region's seasonal marine mammals return. Walrus, spotted seals and gray whales enter the Chukchi and Beaufort seas, and the increase in activity as summer wears on stands in stark contrast to the leaner, harsher months of winter.

While marine mammals are found throughout the study area during the summer, the coastal region along the Chukchi Sea coast remains particularly important for marine mammals for feeding, haul outs and other uses. The enclosed map highlights some particular areas where large numbers and a wide variety of animals are concentrated during summer. For example, beluga whales congregate in the area around Omalik lagoon, reaching their peak in late June.

Kasegaluk Lagoon near Point Lay is very important for that community's beluga subsistence hunt, and also an abundant area for spotted seals and walrus haul outs.

Whales also gather in the Barrow Canyon and the Point Franklin regions to feed, with concentrations areas of belugas and gray whales. As the ice continues to recede throughout the summer, Hanna Shoal begins to become more important for marine mammals, with walrus in particular utilizing the region.

While summer is a busy time for marine mammals in the Arctic, the activity truly peaks as summer turns to fall. Sea ice reaches its annual minimum each September, and marine mammals are actively foraging in the open water, finding as much nutrition as possible to survive the long migration or lean Arctic winter ahead. Along with the frenzy of feeding, fall also is when gray whales and other species begin departing for warmer water farther south. Animals that migrated to the eastern Beaufort Sea move back through the study area on their journey to more southern latitudes, feeding along the way.

The fall map reflects this combination of feeding and seasonal migrations. The Beaufort shelf and shelf break are important migration and feeding corridors for bowheads and belugas. The Barrow Canyon and Point Barrow area and areas south to Peard Bay and Point Franklin are hotspots for feeding of bowhead, beluga, and gray whales, as well as walrus.

In addition, Kasegaluk Lagoon and its barrier islands remain important with massive haul outs of walrus, as well as being an important area for spotted seals hauling out. Hanna Shoal also continues to play a key role for foraging walruses, feeding and migrating bowhead whales, and foraging gray whales.

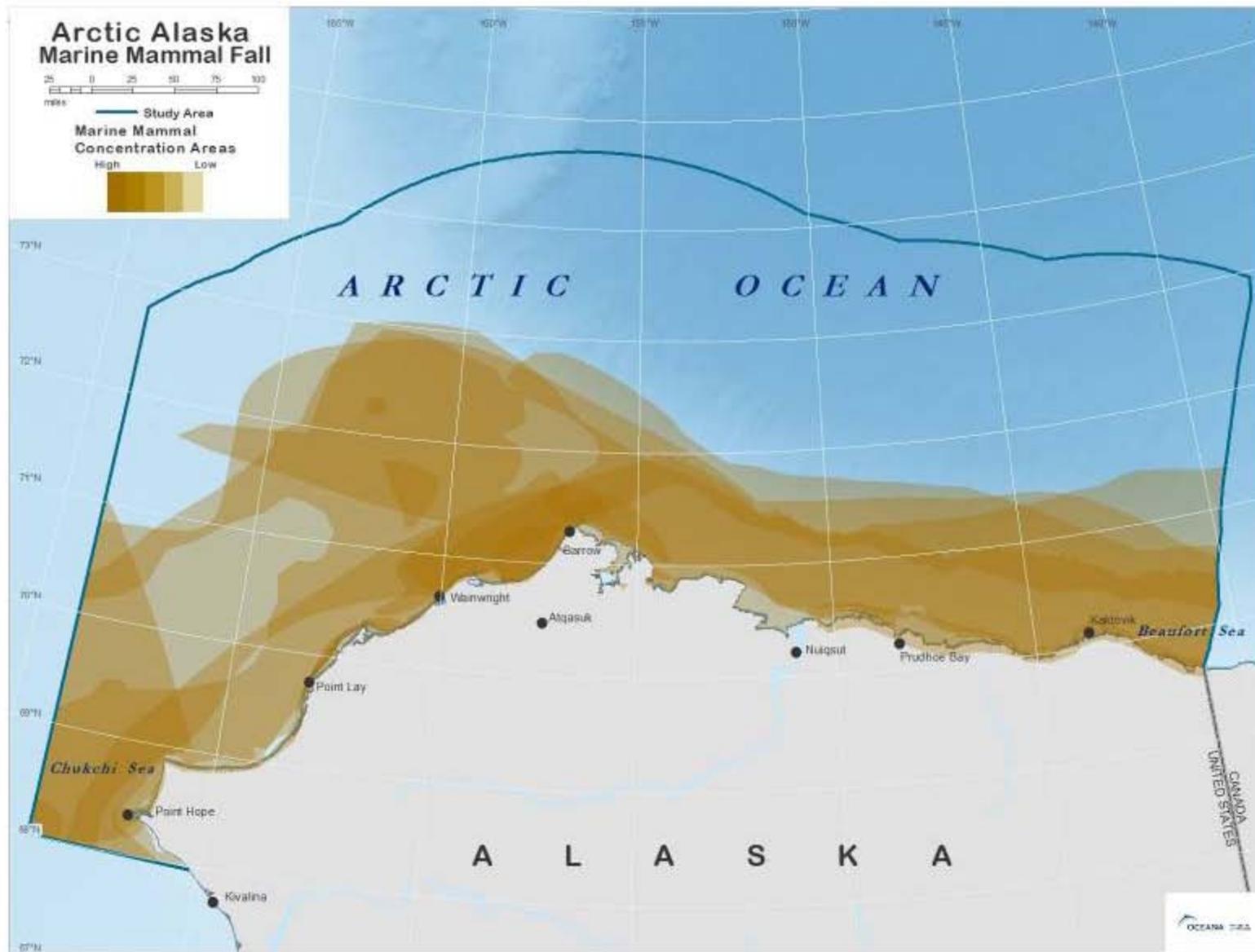
Clearly, even this limited analysis of only eight species shows not only many important areas to be protected, but that there is much more work to be done to understand the complex Arctic marine ecosystems. Without that understanding, we risk irreversible harm from decisions about moving forward with industrial activities.

Given the proven risks and potentially grave consequences of oil and gas activities in the Arctic, the region should be deferred from all oil and gas activities unless and until there is a plan in place that shows those activities can be conducted without harming the health of the ecosystem or opportunities for the subsistence way of life. Considering the scope of new activities outlined in the alternatives in the draft EIS, the insufficient mitigation measures proposed, and the potential for catastrophic impacts to Arctic marine ecosystems as a result of oil and gas activities, we strongly support the adoption of Alternative 1—No Action.









OCEAN CONSERVATION RESEARCH



Science and technology serving the sea

James H. Lecky
Director, Office of Protective Resources
National Marine Fisheries Service – NOAA
1315 East-West Highway
Silver Spring, MD 20910

February 6, 2012

Cc: Jane Lubchenko

Re: DEIS – Effects of Oil and Gas Activities in the Arctic

Dear Mr. Lecky,

We welcome the opportunity to review and comment on the Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic (hereinafter DEIS). We will attempt to be thorough and informative in our review comments, and I am grateful that the public 45 day comment period was extended in consideration of the draft being released over the traditional American winter holidays. This is particularly important because the Arctic – heretofore being a largely pristine environment is rapidly becoming an industrial Klondike and is likely to become irreversibly transformed even before citizens have a chance to review the proposed transformations.

I'm sure that the irony has been repeatedly brought to your attention that while NMFS-NOAA is drafting their five year plan for the Arctic, Shell Oil is in the midst of not one, but two tragic oil spills. One is in the temperate waters Nigeria of some 44,000 barrels, the second in the temperate waters of the Gulf of Mexico consisting of some 14,000 barrels of drilling muds (diesel fuel mixed with abrasives and other chemicals) spilled during an *exploratory* operation not unlike deep water exploratory operations proposed for the Beaufort Sea. This should be taken into serious consideration, particularly since it is stated a number of times in the DEIS that an oil spill is “highly unlikely.”

The Gulf of Mexico incident is under the new safety regime established by the Bureau of Ocean Energy Management and Regulation (now Bureau of Ocean Energy Management – BOEM, and the Bureau of Safety and Environmental Enforcement – BSEE) in the wake of the largest oil spill disaster in US waters that was made possible by industrial hubris, regulatory incompetence, and lax enforcement. While we understand that the division of the Department of the Interior into BOEM and BSEE has brought many sensible changes to the management of our national resources, the occurrence of this incident reflects poorly on the implementation of that division.

We introduce our comments on the Draft EIS for Arctic oil and gas activities with this framing not because oil and gas operations in Nigeria or the Gulf of Mexico are germane to planned activities in the Arctic, but rather they point to systematic problems with the industry and regulatory oversight that will not be ameliorated as these practices head into the more physically challenging Arctic environment. And given what we are being told about operational safety and environmentally sensitive practices, in the face of the current and ongoing disasters I can only take a tepid view of the assurances that the we, the public are given about Arctic environmental safety and mitigation strategies.

We will demonstrate in our review that while some of the more obvious environmental disruptions of the proposed operations have been addressed in the EIS, there are many other noise factors in Arctic hydrocarbon exploration and extraction operations that will have environmental impacts which are poorly understood, or as yet unknown.

While the US regulatory framework required by NEPA hinges on specific impacts to certain species – either under the Marine Mammal Protection Act (MMPA) or the Endangered Species Act (ESA) and also more generally under the OCS Lands Act, we now understand that individual species do not make up the environment but rather the health of individual species is an expression of ecosystem vitality. This perspective has increasingly come into consideration under NOAA’s growing use of “Ecosystem Based Management” in the regulation and protection of Marine Protected Areas (MPAs).

MMPA, ESA, and OCS Lands Act regulatory responsibilities can be addressed by “checking the proper boxes” under review, but it is incumbent upon us to bring what we do know about the fabric of healthy ecosystems into our deliberations about any actions that will compromise the vitality of the subject ecosystem. We need to do this not only to assure the ongoing viability of the ecosystems in question, but also to assure our own viability on this increasingly challenged planet we inhabit.

1.0 Proposed reach of the DEIS

While the “need” for EIS is framed in the context of exploratory operations only, it not only presupposes the extraction of hydrocarbons from the Arctic, the EIS makes the extraction of discovered hydrocarbons inevitable by stating that “NMFS may tier from this EIS to support future Arctic MMPA oil and gas permit decisions if such activities fall outside the scope of this EIS” (DEIS Section 1.2, p1-3). In light of the existing lousy track record and the current ongoing problems with extraction operations, along with the constant introduction of new practices and technologies, we believe it is unwise to leave such an open-ended permit to move into production without proper review of the extensive processes, technologies, and infrastructure required for commercial hydrocarbon exploitation.

We suggest that the current DEIS be limited exclusively to exploration because we do understand the scope of most of the technologies proposed on Alternatives 2 through 4. Any additional complexities associated with proposed future extraction should be reviewed in their own contexts.

2.0 Scope of these comments

The DEIS specifically concerns exploration by way of surveys, mapping, and exploratory drilling. While all of these activities impose various impacts on the environment, biota, and human inhabitants of the Arctic including chemical, climatological, economic, and physical changes, we will focus our comments on acoustical impacts on sea animals (fish and marine mammals) with the understanding that others have and will address the impacts of oil spills, effluent discharge, drilling mud disposal, methane and other gas releases, physical habitat disruption, ship strikes, and the synergistic impacts of having an increase in chronic human activity in an environment that until recently was not so disposed.

2.1 Comments and review

The Arctic can be a noisy environment, particularly when the seasonal ice begins to break up. Additionally many arctic animals make their own noises, sometimes quite loud. But Arctic animals have adapted to the repertoire of naturally occurring noises by either occupying a bio-acoustic niche which is clear from masking effects of certain noises, or by avoiding areas close to high noise sources.

Industrialization of the Arctic is bringing in an entirely new repertoire of noises which are not in sync with biological adaptations, so just by the very nature and temporal-spatial context of the noises generated, industrial noises will be disruptive.¹

The acoustical impacts are a significant component to hydrocarbon exploration and include:

- impulse noise from deep penetration seismic airgun surveys
- impulse noise from site survey sparkers and airgun arrays
- periodic noise from site clearance bathymetric survey sonars
- periodic noise from on-ice vibroseis surveys
- continuous and periodic noise from drilling
- impact noise from construction/erection of exploratory drilling platforms
- continuous noise from running machinery
- continuous and chronic noise from transport and support vessels
- continuous and chronic noise from thruster-stabilized drilling platforms
- periodic noise from platform maintenance operations,
- continuous and periodic noise from AUV communications
- periodic noise from helicopter and other aircraft transport
- continuous and periodic noise from ice-breaker operations

¹ Christine Erbe and David M. Farmer, "Zones of impact around icebreakers affecting beluga whales in the Beaufort Sea." J. Acoust. Soc. Am. 108 (3), Pt. 1 p.1332

Of the noise sources identified above, the only noises substantially addressed in the DEIS are 2D/3D Seismic Surveys, In-Ice Surveys, Site Clearance and High Resolution Shallow Hazard Surveys, On-ice Seismic Surveys, and Exploratory Drilling.

We know that seismic airgun surveys are disruptive. They are known to disrupt foraging behavior at distances greater than the typical 1000 meter observation/mitigation threshold² and that Belugas are known to avoid seismic surveys at distances greater than 10 km^{3,4} and behavioral disturbance of bowheads have been observed at distances of 7km – 35km.⁵ And while observers are charged with initiating shut-down procedures when marine mammals are sited within 1km of a seismic survey operation, effecting a ‘mitigation’ the fact that marine mammals are seen in significantly lower numbers during seismic surveys indicates a broader impact on marine mammals that extends far beyond the standard 1000 meter mitigation set-back.⁶ These observations belie the “unlikely impacts” evaluation peppered throughout the DEIS regarding impacts from seismic surveys. This disruption would be the case with both impulse sounds used in penetration as well as high-resolution seismic surveys.

Fortunately we do have a sizable body of data on the impacts of seismic surveys on marine mammals and fish. And while there are a few studies that do not clearly

² Jochens, A., D. Biggs, K. Benoit-Bird, D. Engelhaupt, J. Gordon, C. Hu, N. Jaquet, M. Johnson, R. Leben, B. Mate, P. Miller, J. Ortega-Ortiz, A. Thode, P. Tyack, and B. Würsig. 2008. Sperm whale seismic study in the Gulf of Mexico: Synthesis report. U.S. Dept. of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study MMS 2008-006. 341 pp. SWSS final report was centered on the apparent lack of large-scale effects of airguns (distribution of sperm whales on scales of 5-100km were no different when airguns were active than when they were silent), but a key observation was that one D-tagged whale exposed to sound levels of 164dB re:1µPa ceased feeding and remained at the surface for the entire four hours that the survey vessel was nearby, then dove to feed as soon as the airguns were turned off.

³ Miller, G.W., R.E. Elliott, W.R. Koski, V.D. Moulton, and W.J. Richardson. 1999. Whales. p. 5-1 – 5-109 In W.J. Richardson, (ed.), Marine mammal and acoustical monitoring of Western Geophysical's open-water seismic program in the Alaskan Beaufort Sea, 1998. LGL Report TA2230-3. Prepared by LGL Ltd., King City, ONT, and Greeneridge Sciences Inc., Santa Barbara, CA, for Western Geophysical, Houston, TX, and NMFS, Anchorage, AK, and Silver Spring, MD. 390 p.

⁴ Harris, R.E., T. Elliot, and R.A. Davis. 2007. Results of mitigation and monitoring program, Beaufort Span 2-D marine seismic program, open-water season 2006. LGL Rep. TA4319-1. Rep. from LGL Ltd., King City, Ont., for GX Technology Corp., Houston, TX. 48 p.

⁵ Richardson, W.J., Greene Jr, C.R., Malme, C.I. and Thomson, D.H. 1995. Marine Mammals and Noise. Academic Press, San Diego. 576pp.

⁶ Holst, M., M.A. Smultea, W.R. Koski, and B. Haley. 2005. Marine mammal and sea turtle monitoring during Lamont-Doherty Earth Observatory's marine seismic program off the Northern Yucatán Peninsula in the Southern Gulf of Mexico, January–February 2005. LGL Report TA2822-31. Prepared by LGL Ltd. environmental research associates, King City, ONT, for Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY, and NMFS, Silver Spring, MD. June. 96 p.

demonstrate impacts, there are many other examples where compromises to fisheries,⁷ damage to squid,⁸ and disruptions to marine mammals⁹ due to seismic airgun surveys are unambiguous. The studied impacts – along with the many anecdotal accounts point to the likelihood that impacts may vary depending on circumstances and conditions and should not be dismissed just because of a few studies that indicate only “negligible impacts.”

Additionally the DEIS states that “Research on acoustic impacts to fish has been limited to relatively few species, and specific data regarding the effects of noise on the species encountered in the arctic environment are lacking” but then without substantiation states “enough information exists to perform a full analysis.”¹⁰

We don’t believe that this is the case, as we know next to nothing about Arctic fish and invertebrate acoustical adaptations to an environment that is completely dark for a large part of the year. Given what we do know about animal adaptations to extreme environments¹¹ we can assume that there is a complex range of adaptations that are yet unknown to science. This assumption is safer and more biologically accurate than the blanket assumption made in the DEIS that “fish are unlikely to remain in an area where intense sounds sources are present long enough to be injured or killed.”¹²

While migratory fish may evade threats by swimming away, many fish, especially sedentary fish, will “entrench” into their safe zone when threatened, and thus prolong their exposure to potentially damaging stimulus. An example of “entrenchment” behavior is found in Knudsen 1994 with salmon exposed to 5 – 10 Hz noise. These animals retreated to deeper waters, even while the deeper water they retreated into was closer to the sound source.¹³ Assuming that fish will “move out of harm’s way” is an irresponsible management assumption and needs to be verified prior to stating that “enough information exists to perform a full analysis.”

⁷ Arill Engås, Svein Løkkeborg, Egil Ona, and Aud Vold Soldal “Effects of seismic shooting on local abundance and catch rates of cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*)” *Can. J. Fish. Aquat. Sci.* 53: 2238–2249 (1996).

⁸ Michel André, Marta Solé, Marc Lenoir, Mercè Durfort, Carme Quero, Alex Mas, Antoni Lombarte, Mike van der Schaar, Manel López-Bejar, Maria Morell, Serge Zaugg, and Ludwig Houégnigan “Low-frequency sounds induce acoustic trauma in cephalopods” *Frontiers in Ecology and the Environment*. Nov. 2011 V9 Iss.9

⁹ Richardson WJ, Miller GW, Greene Jr. CR 1999. “Displacement of Migrating Bowhead Whales by Sounds from Seismic Surveys in Shallow Waters of the Beaufort Sea.” *J. of Acoust. Soc. of America*. 106:2281.

¹⁰ DEIS Section 4.55.2.2 p. 4 -73

¹¹ Michael Tobler, Ingo Schlupp, Katja U. Heubel, Rüdiger Riesch, Francisco J. García de León, Olav Giere and Martin Plath. “Life on the edge: hydrogen sulfide and the fish communities of a Mexican cave and surrounding waters” 2006 *Extremophiles Journal*, Volume 10, Number 6, Pages 577-585

¹² DEIS Section 4.55.2.2 p. 4 -74

¹³ Knudsen, F.R., P.S. Enger, and O. Sand. 1994. Avoidance responses to low frequency sound in downstream migrating Atlantic salmon smolt, *Salmo salar*. *Journal of Fish Biology* 45:227–233.

Noises from the erection of drilling platforms have not been evaluated in the DEIS although it is likely that these will be used in the Chukchi Sea and will likely occur in the spring and summer when impacts on breeding marine mammals would be the highest. To date installation and erection noises from “jack-up” drilling platforms have not been evaluated in peer reviewed literature and will need to be evaluated prior to authorizing the use of this technology under this EIS. The DEIS states that “it is assumed that the first time a jack-up rig is in operation in the Arctic, detailed measurements will be conducted to determine the acoustic characteristics.”¹⁴ This statement implies an “assumption” that the noise levels found on erecting the jack-up rig will be below levels required for mitigation. What would be the procedure if the noise exposure threshold was exceeded? We suggest that the noises of erecting a jack-up rig be characterized in a trial basin before deployment to a remote location where the environment is more sensitive to disruption and where the phrase “practicable mitigation” takes on a more relaxed meaning.

Noises from floating drilling platforms were evaluated in the DEIS in Section 2.3.3.4, but all three platforms evaluated were moored (two drill ships and one floating platform) and the measured noise was produced by drilling operations only. It is likely that deep-water drilling in the Beaufort Sea will include thruster-stabilized platforms (mentioned in the same section). These are dynamic positioning systems that continuously drive six to eight large propellers on a drillship or semi-submersible drilling platform. All of these propellers will be cavitating and creating turbulence 24 hours a day. This constitutes continuous noise and will need to be quieter than 120 dB re: 1 μ Pa in order to be below NMFS disturbance criteria for continuous noise exposure.

To date noise from thruster-stabilized drilling platforms has not been evaluated in peer reviewed literature and will need to be evaluated prior to authorizing the use of this technology under this EIS.

Due to the challenging physical environment in the Arctic all exploratory drilling operations will have a higher number of operating vessels in and around each project which will include crew change vessels, ice management vessels, oil spill response vessels, and fuel barges (see Table 2.2 “Summary of Typical Support Operations for Exploration Activities” in the DEIS). While each individual vessel is considered a single, periodic or transient source of noise, the entire operation requiring multiple vessels needs to be considered in whole as a source of continuous noise because the operation would not occur without the full complement of vessels. As such the entire operation around a drilling ship or drilling platform will need to be quieter than 120 dB re: 1 μ Pa in order to be below NMFS disturbance criteria for continuous noise exposure.

Increasingly tasks in ocean industries are being delegated to remotely operated and autonomous unmanned vessels. This will particularly be the case in any proposed Arctic operations where human exposure to the elements is costly and dangerous. Many of these technologies rely on acoustical communication systems. These systems operate in a number of different frequency regimes depending on the application. The communication bands include mid-frequency (up to 10kHz) for navigation, upper mid-frequency (20kHz-

¹⁴ DEIS Section 2.3.3.4, final sentence, p 2-18

60kHz) for task management and coordination on multi-nodal networks, and high frequency (above 100 kHz) for transmission of video and profiling data.

While mid-frequency military sonar has been associated with catastrophic strandings of marine mammals,¹⁵ to date none of the mid-frequency or upper-mid frequency industrial communication sonars have been evaluated for their impacts on marine mammals. And with the exception of the “cautionary” suggestion in the first paragraph of page 4-95 of the DEIS¹⁶ the potential impacts of the increased use of industrial communication sonars is not included in the DEIS. We suggest that this “warranted caution” be developed into a directive to understand the impacts of these new and introduced communication technologies on Arctic odontocetes and pinnepeds prior to their extensive deployment in the Arctic under this DEIS.

The noisiest period of the fossil fuels industrial activities is during exploration and establishment of sites.¹⁷ This noise is due to surveys and placement of equipment, but it is also due to the high concentration of support vessels and aircraft used in the dynamics of exploration. Aircraft noise will be louder because aircraft will be carrying and placing heavy equipment, not just personnel associated with associated with operations. Helicopters will more likely be larger work craft such as the Bell UH-1 “Huey” or the twin rotor “Chinook.” Gray whales are known to avoid low flying aircraft,¹⁸ and execute abrupt turns and dives to avoid small, low flying helicopters;¹⁹ larger helicopters under load will produce greater impacts.

Concerns for aircraft impacts are mentioned in the DEIS section 3.3.7.3, but predominantly about the impacts on subsistence hunters. The stated impacts are due to aircraft frightening the hunter’s quarry, so by inference the increase in aircraft numbers as well as their heavier payloads will have impacts on wild animals including whales (not hauled out pinnepeds and polar bears). Unless helicopters and other heavy load aircraft are grounded during the spring and summer months, there is a high probability that they will disrupt or “take” marine mammals in the water. This is not adequately addressed in the DEIS (Section 4.5.2.4.5).

¹⁵ Balcomb III, KC, Claridge DE. 2001. A mass stranding of cetaceans caused by naval sonar in the Bahamas. *Bahamas J. Sci.* 8(2):2-12.

¹⁶ “However, evidence that sonar signals can, in special circumstances, lead (at least indirectly) to physical damage and mortality ... suggests that caution is warranted when dealing with exposure of marine mammals to any high-intensity “pulsed” sound.”

¹⁷ Richardson, W.J., Greene Jr, C.R., Malme, C.I. and Thomson, D.H. 1995. *Marine Mammals and Noise*. Academic Press, San Diego. 576pp.

¹⁸ Ljungblad, D.K., Moore, S.E. and Van Schoik, D.R. 1983. Aerial surveys of endangered whales in the Beaufort, eastern Chukchi and northern Bering Seas, 1982. NOSC Technical Document 605 to the US Minerals Management Service, Anchorage, AK. NTIS AD-A134 772/3. 382pp

¹⁹ Southwest Research Associates. 1988. Results of the 1986-1987 gray whale migration and landing craft, air cushion interaction study program. USN Contract No. PO N62474-86-M-0942. Final Report to Nav. Fac. Eng. Comm., San Bruno, CA. Southwest Research Associates, Cardiff by the Sea, CA. 31pp.

3.0 Summary

Permitting hydrocarbon exploration in the Arctic Ocean presupposes extraction, and as such the actions proposed under this DEIS are “the camel’s nose under the tent” that will inevitably lead to large-scale disruption of a pristine habitat that is already under significant stress. The implications of this disruption are global in scale – from the contributions of CO₂, methane, and other greenhouse gasses to the environment, the climatological implications of polar ice melt-back, the disruptions to commercial fisheries, and to disruptions to indigenous lifeways.

These impacts are implied in the proposed actions alone, without considering the reasonable probability of accidental release of oil or gas into the environment. And while it is not in the purview of the DEIS to qualify Incidental Harassment Authorization applicants on their performance record, the ongoing poor safety and environmental compliance performance of various members of the fossil fuel industry brings into question many of the operating assumptions upon which the DEIS is based.

We have found that while the DEIS does address many concerns, the following acoustical impacts have not been adequately addressed:

- Mitigation distances and thresholds for seismic surveys fall far short of where significant marine mammal disturbances are known to occur.
- Propagation of airgun noise from in-ice seismic surveys is not accurately known, complicating mitigation threshold distances and procedures.
- Impacts of seismic airgun surveys on Arctic fish and essential fish habitat is known to be negative, is poorly understood, and is not thoroughly presented in the DEIS.
- Impacts of seismic airgun surveys on squid and other invertebrates have not been included in the DEIS and need to be considered both in terms of the particular species as well as in terms of their role in the food supplies of marine mammals and commercial and protected fish.
- Noise from the erection and deployment of Jack-up rigs and other stationary platforms need to be quantified and qualified prior to introducing them into the Arctic.
- Noise from thruster-driven dynamic positioning systems on drilling platforms and drill ships need to be quantified and qualified prior to introducing them into the Arctic.
- Aggregate noise from any operation with multiple support vessels needs to be considered a “continuous noise source” and comply with the NMFS 120dB re: 1µPa marine mammal disturbance threshold.
- Noise impacts on marine mammals from underwater acoustic communication systems needs to be evaluated and incorporated into the DEIS.
- Noise impacts of heavy transport aircraft and helicopters needs to be evaluated and incorporated into the DEIS

The foregoing “punch-list” accounts for individual actions, aggravators, or impacts. But all of these activities will be occurring throughout the permissible seasons, each and

every action taking some toll on the entire environment. While impacts reviewed (and those not reviewed) in this DEIS will occur on “estimated numbers” of protected animals, these animals live in an ecosystem where the synergistic impacts of individual or specific stressors are difficult to trace or calculate.

It is clear that the intention of the exploration actions in the DEIS are not to “just find out what is out there,” but rather to find out where extraction operations will yield the best results. As such this DEIS is the gateway to rapid expansion of hydrocarbon extraction in the Arctic, the impacts of which will make the proposed action impacts in the DEIS pale.

Time and time again, by way of systematic justifications of some environmental compromise or other we have been eroding the environmental health of the very habitat that we depend on for our own life support. This is evidenced by the continuous acceleration of species extinctions world-wide. This trend points to the fact that soon enough humans will find ourselves near the top of the “endangered” list – unless we begin to make broad systematic changes in the way we engage with our limited planetary habitat.

We feel that when our recommendations are included in the DEIS, that they will clearly point to habitat and species compromise for which there are no mitigations and no recovery.

Due to all of the foregoing we recommend that the “No action alternative” be selected.

Sincerely,

A handwritten signature in black ink that reads "Michael Stocker". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Michael Stocker
Director
Ocean Conservation Research

No Drilling in the Arctic

Feb 21, 2012

Dear NOAA Administrator Lubchenco,

NOAA's National Marine Fisheries Service recently released a Draft Environmental Impact Statement on the effects of oil and gas activities in the Arctic Ocean. This EIS makes it apparent that we know very little about this unique and fragile ecosystem. Let's not cave to those who would further risk destruction of our natural heritage just for a cheaper price at the pump. In addition, the continued pursuit and extraction of hydrocarbons from our planet will only hasten global warming.

Please hold fast in preventing oil exploration in the Arctic and elsewhere.

Sincerely,

Mr. Nathan Petz



Comments submitted by electronic mail to: arcticeis.comments@noaa.gov

February 28, 2012

Mr. James H. Lecky
Director
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, Room 13705
Silver Spring, MD 20910-6233

Dear Mr. Lecky,

The Pew Environment Group and the Ocean Conservancy submit the following comments on the National Marine Fisheries Service (NMFS) Draft Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic (DEIS).¹

We appreciate the time and effort that NMFS, in cooperation with the Bureau of Ocean Energy Management (BOEM), spent in working towards a programmatic approach to evaluating the effects of oil and gas activities over a five-year period in the Beaufort and Chukchi seas. This was an opportunity for NMFS and BOEM to engage in a forward-thinking precautionary and ecosystem-based approach. However, the DEIS falls short of our expectations for responsible management of shared trust resources in the U.S. Arctic.

We believe that decisions about whether, where, and how oil and gas activities are conducted in the U.S. Arctic Ocean must be based on sound scientific information, thoughtful planning, and with the full involvement of the people most affected. Below we address several concerns we have with the DEIS and offer recommendations that we believe NMFS should include in the final EIS and preferred alternative. While none of the alternatives detailed in the DEIS adequately address our concerns, there are components that can contribute to a strong new preferred alternative in the final EIS. Incorporating these suggestions would help work towards achieving an integrated approach to resource management in the Arctic.

¹ Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) Federal Register Notice 76 Federal Register 82275-77 (December 30, 2011)

The Unprecedented Level of Activity Calls for a Precautionary Approach

Every alternative in the DEIS (except the no action alternative) would allow for an “unprecedented level of activity” never before experienced within the Beaufort or Chukchi seas.² The proposed level of activity poses several concerns. Sound is vital to survival of marine mammals as they use it to detect their environment and communicate with one another. The U.S. Geological Survey (USGS)³ highlighted that the type of information needed to make decisions about the impact of offshore activity (e.g., seismic noise) on marine mammals remains largely lacking.⁴ A significant unknown is the degree to which sound impacts marine mammals, from the individual level to the population level. To complicate matters, much of the baseline data about individual species (e.g., population dynamics) remains a noteworthy gap.⁵ It is this incomplete baseline that NMFS uses as their basis for comparing the potential impacts of each alternative.⁶ Furthermore, in their effects analysis, NMFS uses qualitative thresholds to determine impacts for each alternative. The uncertainty associated with each of these determinations requires that NMFS follow a precautionary approach.

The Marine Mammal Protection Act (MMPA) also demands a precautionary approach. The MMPA does not require NMFS to fill every information gap, but it does require NMFS to err on the side of caution.⁷ For example, NMFS has an affirmative obligation to find that impacts are no more than “negligible” and limited to the harassment of only “small numbers” of marine mammals.⁸ In making these determinations, NMFS must give the benefit of the doubt to the species. The MMPA was “deliberately designed to permit takings of marine mammals only when it was known that that taking would not be to the disadvantage of the species.”⁹ As explained in more detail below, the DEIS does not make the required finding under the MMPA and we believe site specific activities will require additional NEPA analyses. Given the unprecedented level of activity proposed in the U.S. Arctic by the DEIS, we believe that the recommendations contained herein will improve the final EIS and move NOAA towards a precautionary and adaptive approach in the U.S. Arctic.

NMFS Should Include Permanent Deferrals and Time and Place Restrictions in the Final EIS and Preferred Alternative

We are appreciative of NMFS’ inclusion of time and place restrictions in Alternative 4. However, we believe that these proposed time and place restrictions are insufficient to protect areas of ecological and cultural significance. Alternatives in the final EIS that consider any level of

² This fact was presented by NMFS Office of Protected Resources officials at a public hearing on the proposed DEIS in Anchorage, Alaska on February 13th, 2012.

³ Holland-Bartels, L. and Pierce, B., eds. 2011. An evaluation of science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370. 278 pp.

⁴ See Hutchinson and Ferrero. 2011. Chapter 6. Marine mammals and anthropogenic noise, pages 165-202 in Holland-Bartels and Pierce 2011

⁵ Holland-Bartels and Pierce 2011

⁶ Page ES-15, NOAA 2011. Draft Environmental Impact Statement (DEIS) for Effects of Oil and Gas Activities in the Arctic, http://www.nmfs.noaa.gov/pr/pdfs/permits/arctic_deis.pdf

⁷ e.g. Congress enacted the MMPA to manage marine mammals “for their benefit and not for the benefit of commercial exploitation.” H. Rep. No. 92-707, reprinted in 1972 U.S.C.A.N., 1972, pp. 4144–45.

⁸ 16 U.S.C. § 1371(a)(5)(D).

⁹ *Comm. for Humane Legislation v. Richardson*, 540 F.2d 1141, 1150 (DC Cir. 1976).

industrial activity should include permanent subsistence and ecological deferrals in addition to time and place restrictions.

Subsistence is a priority activity protected under the Marine Mammal Protection Act, with all other activities allowed only if they do not impinge on subsistence activities, requiring that any incidental take authorized will not have “an unmitigatable adverse impact on the availability of such species or stock for taking for subsistence uses” by Alaska Natives”.¹⁰ NMFS must ensure oil and gas activities do not reduce the availability of any affected population or species to a level insufficient to meet subsistence needs.¹¹

Impacts from oil and gas activities may adversely affect the subsistence resources upon which many Alaska Natives rely.¹² For example, noise from seismic operations, exploration drilling, and/or development and production activities may make bowhead whales skittish and more difficult to hunt. Aircraft associated with oil and gas operations may negatively affect other subsistence resources, including polar bears, walrus, seals, caribou, and coastal and marine birds, making it more difficult for Alaska Native hunters to obtain these resources. Water pollution could release toxins that bioaccumulate in top predators, including humans. A large oil spill would have major adverse impacts on subsistence resources and activities.

Subsistence resources have long provided a source of healthy food for North Slope communities. Subsistence foods provide high nutritional value and protect against health problems like high blood pressure, obesity, diabetes, and cardiovascular disease. For many Alaska Natives, subsistence hunting is an important aspect of their culture. Negative impacts to subsistence resources could decrease food security, encourage consumption of store-bought foods with less nutritional value, and deteriorate the cultural fabric of Alaska Native communities. Thus, when industrial activities adversely affect subsistence resources, they also cause harm to the people who depend on those resources. For all these reasons, the final NMFS EIS and preferred alternative should exclude subsistence use areas from the proposed activity for the Chukchi and Beaufort seas. BOEM, a cooperating agency on this DEIS, announced during the preparation of their 2012-2017 Outer Continental Shelf Program that they were soliciting recommendations on additional deferral areas.¹³ BOEM already has ample information to support deferring subsistence areas relied upon by Arctic coastal communities. Consistently over the last decade, in written comments and in public hearings, North Slope communities and regional organizations have recommended that BOEM exclude subsistence use areas from the oil and gas leasing process. BOEM has funded research to document subsistence use areas and to corroborate them with areas recommended by communities.¹⁴

¹⁰ 16 U.S.C. § 1371(a)(5)(D)(i)(II)

¹¹ 50 C.F.R. § 216.103

¹² See, e.g., Minerals Management Service, Chukchi Sea Oil and Gas Lease Sale 193 Final Environmental Impact Statement (OCS EIS/EA MMS 2007-026) at II-34-39 and IV-157

¹³ See Minerals Management Service, Notice of Intent to Prepare and Scope an Environmental Impact Statement (EIS) for the Outer Continental Shelf (OCS) Oil and Gas Leasing Program for 2012–2017, 75 Fed. Reg. 16,828, 16,829 (April 2, 2010) (noting that the agency was considering alternatives that could include, among other things, “limiting areas available for leasing, and excluding parts of or entire planning areas”).

¹⁴ Braund, S. 2010. Subsistence Mapping of Nuiqsut, Kaktovik, and Barrow. U.S. Department of the Interior, Minerals Management Service. Alaska OCS Region, Environmental Studies Program. MMS OCS Study Number 2009-003. Anchorage, Alaska.

During the BOEM 2012-2017 Proposed Program and DEIS comment period, we submitted existing and publicly available subsistence hunting information for deferral recommendations. Data include hunting areas for bowhead whale, beluga whale, polar bear, seals, walrus, and waterfowl. The data document local subsistence use throughout an area 25 miles to over 100 miles offshore of six villages on the Arctic coastline. When assembled on a single map, the data show the extent of hunting areas for the six Arctic coastal communities (see Attachment A, Map 1, “Important Subsistence Areas”). NMFS should exclude the important subsistence use areas depicted in Map 1 from oil and gas activities as described in the DEIS. Attachment A to these comments describes in more detail these subsistence areas, their importance to communities, and the reasons they should be permanently deferred.

Among scientists, there is general consensus that time and/or place restrictions designed to protect high value habitat are one of the most effective means to reduce the potential impacts of noise and disturbance.¹⁵ The current understanding of ecological functioning in the Chukchi and Beaufort seas indicates that a number of sensitive marine habitats are especially important to the region’s ecological functioning. Please see Attachment A for areas that we’ve previously identified as being ecologically significant and submitted to BOEM. These areas should be excluded from future activity and include, among others, Hanna and Herald shoals, Barrow Canyon, and the Chukchi Sea ice lead system (see Attachment A, Map 7, “Proposed Deferral Areas and Seasonal Restrictions”). NMFS should exclude these ecologically important areas from activity proposed in the DEIS permanently. Excluding these areas now will help BOEM act proactively to protect areas that are ecologically important and that help sustain the region’s subsistence resources. In the absence of population dynamics data on marine mammal species, deferring these areas will ensure a precautionary approach.

As noted above, existing information justifies deferral for areas like Hanna and Herald Shoals, Barrow Canyon, and the Chukchi Sea ice lead system. Excluding these areas from activity described in this DEIS is necessary, but it is not sufficient over the long-term. Identification of important ecological areas should be an ongoing part of an integrated, long-term scientific research and monitoring program for the Arctic, not a static, one-time event. As an Arctic research and monitoring program gives us a greater understanding of the ecological functioning of Arctic waters, it may reveal additional important ecological areas that BOEM and NMFS should exclude from future lease sales and other oil and gas activities. Further justification for this action comes from the Department of the Interior (DOI) announcement on February 17, that the Interagency Arctic Working Group will pursue “implementation of an ecosystem-based management framework for the Alaska Arctic that would focus on particularly important ecological areas that support special wildlife, land or water resources, as well as areas important for the subsistence and culture of local communities.”¹⁶

¹⁵ See, e.g., Agardy, T., and 17 others 2007. A global scientific workshop on spatio-temporal management of noise. Report of workshop held in Puerto Calero, Lanzarote, June 4-6, 2007.; ECS Working Group. 2009. Technical report on effective mitigation for active sonar and beaked whales, working group convened by European Cetacean Society.; OSPAR Commission, Assessment of the environmental impact of underwater noise (report issued as part of OSPAR Biodiversity Series, London, UK.).

¹⁶ See Department of the Interior News Release, “Obama Administration Announces Major Steps toward Science-Based Energy Exploration in the Arctic: BSEE Issues Approval for Shell Chukchi Sea Oil Spill Response Plan (Feb 17, 2012).

NMFS Should Ensure that Traditional Knowledge Informs the Final EIS and Preferred Alternative

Arctic peoples have a wealth of local and traditional knowledge about their environment. Many people who live on Alaska's Arctic coast rely on the ocean for food and other resources. Their experience and their traditional way of life—passed down through untold generations—have given them great knowledge of their environment and the species with which they share it. For the aforementioned reasons, we were pleased that NMFS acknowledged the cultural importance of subsistence activities and recognized the importance of traditional knowledge in the description and potential effects of offshore activity on subsistence resources. However, instead of traditional knowledge shaping the alternatives, NMFS compiled, by village, subsistence time/use data and highlighted where subsistence overlapped with the draft alternatives as displayed on table 4.5-26 on page 4-174-178 of the DEIS.

Gathering and using traditional knowledge will require both a precautionary and adaptive approach. NMFS should make a better effort to ensure that traditional knowledge truly informs the final EIS and preferred alternative. To be meaningful, NMFS must obtain and incorporate traditional knowledge *before* it commits to management decisions that may adversely affect subsistence resources. Arctic peoples' ocean-based subsistence activities are central to their culture and sense of identity. In this context—where a management mistake could have cascading effects that jeopardize subsistence and cultural traditions—extra caution such as the consideration of permanent deferrals is warranted.

NMFS Should Include a Rigorous Approach to Addressing Cumulative Effects in the Final EIS

The DEIS does not adequately address cumulative effects and it requires additional, significant analysis. It is not enough for the DEIS to merely list the current and projected uses of the Arctic Ocean. Instead, the final EIS must describe and analyze how impacts from oil and gas activities will interact with other industrial uses and with ongoing climate change and ocean acidification over space and time. Furthermore, the final EIS should start with and build upon the current efforts examining this issue, including the effort currently being undertaken by the oil company British Petroleum and the North Slope Borough along with the University of California, Santa Barbara examining Cumulative Effects of Anthropogenic Underwater Sound on Marine Mammals.¹⁷ Finally, the final EIS should discuss the shortfall and next steps, from the perspective of MMPA and NMFS. The final EIS should also recommend additional research needed in order for such efforts to be applied towards the issuance of incidental take authorizations (ITAs) by NMFS and Geological and Geophysical, exploration, and ancillary (G&G) permits by BOEM.

Threats from human activity or environmental change may have additive and/or synergistic effects on wildlife.¹⁸ A number of authorities have emphasized the need to consider these sorts

¹⁷ Fleishman, E. and B. Streever. 2011. Developing methods for assessing cumulative effects of anthropogenic sound on marine mammals. 19th Biennial Conference on the Biology of Marine Mammals. Tampa, Florida, November 27 – December 2, 2011.

¹⁸ Marine Mammal Commission (MMC). 2007. Marine mammals and noise: A sound approach. A report to Congress from the Marine Mammal Commission. March 2007. The Marine Mammal Commission, Washington, D.C., USA.

of cumulative impacts in the Arctic.¹⁹ A full characterization of risk to marine mammals from the impacts of noise will be a function of not only the characterization of the sources of noise in the marine environment (amount and length of sound; exposure time to marine mammal; response of marine mammal) but also the cumulative effects of multiple sources of noise and the interaction of other risk factors. This is particularly true in environments such as the Arctic that are undergoing rapid shifts due to climate change. Scientific literature emphasizes the need to ensure that the resiliency of ecosystems is maintained in light of the changing environmental conditions associated with climate change.²⁰

The need to consider cumulative impacts for the bowhead, walrus, and other Arctic species is particularly acute because of potential impacts from climate change on these species.²¹ These changes must be added to species' known sensitivities to anthropogenic disturbance. For example, baleen whales use low-frequency sounds to communicate. Noise from exploratory drilling, seismic airguns, and vessel traffic could, in combination, affect their ability to communicate. Other risk factors may be additive or interact synergistically. For instance, researchers propose that species will shift poleward, including whales.²² Bowhead whales have adapted to an ice-covered environment and typically have long life spans and produce offspring in smaller intervals than do other whale species. Researchers suggest that bowhead whales may face additional competition from gray and minke whales that are better adapted to a more

¹⁹ See e.g., bowhead whale stock assessment in Allen, B.M. and R.P. Angliss. 2010. Bowhead whale (*Balaena mysticetus*): Western Arctic stock Pages 217-224 in NOAA-TM-AFSC-223 Alaska marine mammal stock assessments 2010, Alaska Fisheries Science Center, NOAA, Seattle, Washington, USA.; MMC. 2008. Biological viability of the most endangered marine mammals and the cost-effectiveness of protection programs: A report to Congress from the Marine Mammal Commission. Marine Mammal Commission, Washington, D.C., USA. 448pp.; National Research Council of the National Academies (NRC). 2005. Marine Mammal Populations and Ocean Noise: Determining when Noise Causes Biologically Significant Effects. National Academy Press. Washington, D.C., USA.; Wartzok, D., and P. Tyack. 2008. Elaboration of the NRC population consequences of acoustic disturbance (PCAD) model. *Bioacoustics* 17:286-288.

²⁰ See e.g., Brander, K. 2008. Tackling the old familiar problems of pollution, habitat alteration and overfishing will help with adapting to climate change. *Marine Pollution Bulletin* 56:1957-1958.; Chapin, F.S. and others. 2006. Building Resilience and Adaptation to Manage Arctic Change. *Ambio* 35: 198-201.; Huntington, H.P. 2009. A preliminary assessment of threats to Arctic marine mammals and their conservation in the coming decades. *Marine Policy* 22:77-82.; Ragen, T.J., H.P. Huntington, and G.K. Hovelsrud. 2008. Conservation of Arctic marine mammals faced with climate change. *Ecological Applications* 18S:166-174.; Olsson, P., and C. Folke. 2004. Adaptive co-management for building resilience in social-ecological systems. *Environmental Management* 34:75-90.; Walker, B.H. and D. Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*. Island Press, Washington, D.C., USA. 174p.

²¹ See e.g., Post, E. and 24 others. 2009. Ecological dynamics across the Arctic associated with recent climate change. *Science* 325:1355-1358.

²² Cheung W.W.L. and others 2009. Projecting global marine biodiversity impacts under climate change scenarios. *Fish and Fisheries*. doi: 10.1111/j.1467-2979.2008.00315.x.; Cheung W.W.L., V.W. Y. Lam, and D. Pauly. 2008. Dynamic bioclimate envelope model to predict climate-induced changes in distribution of marine fishes and invertebrates. Pages 5-50 *in* Modelling Present and Climate-Shifted Distributions of Marine Fishes and Invertebrates. Fisheries Centre Research Reports 16(3) (W.L. Cheung, V.W.Y. Lam, and D. Pauly, editors). University of British Columbia, Vancouver, BC, Canada.; Parmesan, C. 2006. Ecological and evolutionary responses to recent climate change. *Annual Review of Ecology, Evolution and Systematics* 37:637-669.; Moore, S.E. 2008. Marine mammals as ecosystem sentinels. *Journal of Mammalogy* 89:534-540.

temperate environment.²³ Bowhead whale migration routes may expose them to drilling activity in both drilling locations in the Beaufort Sea and Chukchi Sea.²⁴

Other ice-dependent species, including walrus, ringed seals, and polar bears, might experience effects from multi-sea and multi-year operations. Over winter, walrus remain in the Bering Sea along the sea ice edge. As the spring ice melt progresses females and calves move northward while males remain in the southeastern Bering Sea.²⁵ The winter range and the summer range for males and subadults could place them within the Bering Sea, potentially overlapping with bottom trawling.²⁶ Furthermore, walrus have been affected by the recent loss in summer sea-ice;²⁷ benthic feeding grounds in the Bering Sea may be transforming because of shifts in sub-Arctic communities;²⁸ and walrus are hauling out in large numbers on land-based sites, exposing them to potentially more land-based sources of disturbance (e.g., polar bears, low-flying aircraft).²⁹ Surveys recently conducted during the open water season³⁰ documented upwards of a thousand walrus in a proposed exploratory drilling (study) area, potentially exposing a large number of walrus to stresses associated with oil and gas activity, including drilling and vessel activity. Since a large proportion of these animals in the Chukchi Sea are comprised of females and calves, it is possible that the production of the population could be differentially affected. Both polar bears and ringed seals may be affected by multiple-year impacts from activities associated with drilling (including an associated increase in vessel traffic) given their dependence on sea-ice and its projected decline.³¹ Polar bears have been undergoing declines in both birth rates and survival rates³² and were listed as threatened with extinction under the Endangered Species Act because of their projected loss of habitat and access to their primary food, ringed seals. The additive impacts of drilling activity on polar bears and ringed seals could provide additional stress.

²³ Ferguson, S.H., and J.W. Higdon. 2009. Which whales will invade a melting Arctic? Proceedings from the 18th Biennial Conference on the Biology of Marine Mammals, 12-16 October 2009, Quebec City, Quebec, Canada.

²⁴ Alaska Department of Fish and Game. 2009. Summary maps of fall movements of bowhead whales in the Chukchi Sea. February 2009, 6p. http://www.wildlife.alaska.gov/management/mm/bow_move_chukchi_sea.pdf; Alaska Department of Fish and Game. 2008. Update to the Alaska Eskimo Whaling Commission. http://www.wildlife.alaska.gov/management/mm/bowhead_update.pdf; Quakenbush, L. 2007. Preliminary satellite telemetry results for Bering-Chukchi-Beaufort bowhead whales. International Whaling Commission SC/59/BRG12. 2 pp.; Quakenbush, L. and 6 others. 2011. How many industrial activities do individual bowhead whales from the Western Arctic stock encounter annually? 19th Biennial Conference on the Biology of Marine Mammals, Tampa, Florida, November 27 – December 2, 2011.

²⁵ Fay, F.H. 1974. The role of ice in the ecology of marine mammals of the Bering Sea, Page 383 in Hood, D.W., and E.J. Kelley. eds., *Oceanography of the Bering Sea*: Fairbanks, University of Alaska, Institute of Marine Science, Occasional Publication No. 2, p. 383.; Fay, F.H. 1985. *Odobenus rosmarus*. The American Society of Mammalogists.

²⁶ U.S. Fish and Wildlife Service (USFWS). 2009. Draft Stock Assessment Report Pacific Walrus (*Odobenus rosmarus divergens*): Alaska Stock, revised 05.29.2009. 8p.

²⁷ USFWS 2009

²⁸ Post et al. 2009

²⁹ Thomas, T.A., W.R. Koski, D.S. Ireland, D.W. Funk, J. Laurinoli, and M. Macrander. 2009. Pacific walrus movements and use of terrestrial haul-out sites along the Alaskan Chukchi Sea coast in 2007. Proceedings from the 18th Biennial Conference on the Biology of Marine Mammals, 12-16 October 2009, Quebec City, Quebec, Canada.

³⁰ Brueggeman, J. 2009. Marine Mammal Surveys at the Klondike and Burger Survey Areas in the Chukchi Sea during the 2008 Open Water Season, September 2009.; Lemons, P. and C. Christman. 2011. Pacific walrus (*Odobenus rosmarus divergens*) abundance and use of the northeast Chukchi Sea based on COMIDA aerial surveys. 19th Biennial Conference on the Biology of Marine Mammals, Tampa Florida, November 27-December 2, 2011.

³¹ Post et al. 2009; Laidre, K.L., I. Stirling, L.F. Lowry, O. Wiig, M.P. Heide-Jorgensen, and S.H. Ferguson. 2008. Quantifying the sensitivity of Arctic marine mammals to climate-induced habitat change. *Ecological Applications* 18S:97-125.

³² Post et al. 2009

New predictive modeling techniques are becoming available to better describe and analyze the links between impacts experienced at the individual level to the population level. One example is the tool for sound and marine mammals; Acoustic Integration Models (AIMs) that estimate how many animals might be exposed to specific levels of sound.³³ Furthermore, Ellison et al. (2011)³⁴ suggest a three-pronged approach that uses marine mammal behaviors to examine sound exposure and help with planning of offshore activities. Additionally, scenario-modeling tools such as EcoPath and EcoSim might help with modeling potential outcomes from different anthropogenic activities.³⁵

NMFS Should Include a Sound Budget in the Final EIS and Preferred Alternative

Ambient noise budgets are not very well known in the Arctic, but the USGS indicated that this type of data was needed “for scientists to understand the magnitude and significance of potential effects of anthropogenic sound on marine mammals.”³⁶ NMFS should include a sound budget for the Arctic in the final EIS and preferred alternative. This recommendation was dismissed by NMFS in the DEIS because of the lack of data. Yet the lack of data has not hindered NMFS and BOEM from issuing ITA and G&G permits to industry. Hutchinson and Ferrero (2011) noted that there were on-going studies that could help provide a basis for a sound budget. Eventually, NMFS should permit the amount of anthropogenic noise allowed into the water to be based on the science. Doing so would ensure that the effects of multiple noise sources do not create impacts that exceed the substantive requirements of the MMPA, and it would assist NMFS in developing a “comprehensive baseline” from which to measure cumulative impacts.

An Arctic sound budget should include any noise that could contribute to a potential take, not simply seismic surveying, oil and gas drilling, and ice management activities. Other sources of noise, such as vessel traffic, can contribute to an overall sound level that has the potential to adversely affect marine mammals. This point was emphasized in the peer review comments for the 2010 Open Water meeting:

Panel members emphasized the need for more “comprehensive ecosystem assessments” and they used that term to refer to the interaction and collective impact of all human activities and environmental phenomena to which an individual or population is exposed in a well-defined spatial region during a specific period of time.³⁷

³³ Cordue, P. 2006. Summary Report: Review of Acoustic Integration Model (AIM). Workshop proceedings 25-27 September 2006, Washington, DC. Published by University of Miami, 11 December 2006. 134 p.; Pascual, P. and others 2003: Draft guidance on the development, evaluation, and application of regulatory environmental models. The Council for Regulatory Environmental Modeling. Draft, November 2003. 60p.; Frankel, A.S. 2006. Acoustic Integration Model (AIM) Internal Review Document. Marine Acoustics Inc., proprietary document (draft, 14 September 2006). 50 p.; Frankel, A.S. and J.M. Buchanan. 2006. Acoustic Integration Model© (AIM) Users Manual. Marine Acoustics, Inc., draft, April 2006. 58 p.; Frankel, A.S and K. Vigness-Raposa. 2006. Marine Animal Behavioral Analysis. Marine Acoustics Inc., Tech. Memo. 63 p.; Marine Acoustics, Inc., 2004. Patent Application, 29 Oct 04. Method for modeling the effect of a stimulus on an environment. Marine Acoustics, Inc. proprietary document. 42 p.

³⁴ Ellison, W., B. Southall, C. Clark, and A. Frankel. 2011. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. *Conservation Biology*. Doi: 10.1111/j.1523-1739.2011.01803.x.

³⁵ See e.g., Whitehouse, G.A. 2011. Modeling the eastern Chukchi Sea food web with a mass-balance approach. A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science, University of Washington, 2011. 159pp.

³⁶ Holland-Bartel and Pierce 2011, page 219

³⁷ NMFS. 2010. Expert Panel Review Of Monitoring And Mitigation Protocols in Applications for Incidental Take Authorizations Related to Oil and Gas Exploration, Including Seismic Surveys, in the Chukchi and Beaufort Seas.

The DEIS Cannot Substitute for Site-Specific NEPA Analysis

The DEIS qualitatively describes a broad analysis of the impacts of oil and gas activities including seismic surveys and exploration drilling. It does not, however, definitively establish the full suite of mitigation measures that will be required for any given site-specific activity. Instead, the DEIS lists a series of mitigation measures that may or may not apply to site-specific actions. In addition, the DEIS does not conclude that proposed seismic and drilling activities will satisfy the “small numbers,” “negligible impact,” and no “unmitigatable adverse impact” on subsistence uses by Alaska Natives requirements set forth in the MMPA.³⁸ As a result, NMFS should characterize this analysis as a programmatic EIS, and should make clear that additional site-specific NEPA analysis must be performed in conjunction to assess individual proposed projects and activities. A programmatic EIS, such as the one NMFS has proposed here, cannot provide the detailed information required to ensure that specific projects will avoid serious environmental harm and will satisfy the standards established by the MMPA. For example, it may be necessary to identify with specificity the locations of sensitive habitats that may be affected by individual projects in order to develop and implement appropriate mitigation measures. The proposed EIS cannot achieve this level of detail. As a result, additional, site-specific NEPA analysis is required.

NMFS Should Require Mitigation Measures in the Final EIS and Preferred Alternative

In the final EIS and preferred alternative, NMFS should identify definitively the mitigation measures that will be required for all site-specific projects. The required mitigation measures should include both those measures that NMFS currently characterizes as “required standard mitigation measures as described in section 2.4.9 of the DEIS and those that are currently characterized as “additional mitigation measures” in section 2.4.10 of the DEIS. The final EIS should establish mandatory mitigation measures that will provide the greatest protection and least harassment to marine mammals. To provide the greatest level of protection and certainty, NMFS should ensure that mitigation measures are in place prior to the commencement of any activity rather than considering mitigation measures on a case by case basis later along in the process when it is more difficult as activities have advanced in planning. In the later planning stages it becomes more difficult to get mitigation measures that are protective – rather it becomes more of a bargaining process. Some of the potential mitigation measures that NMFS lists in the EIS (section 2.4.10) have already been required and characterized as “standard” in recent IHAs.³⁹ For example, NMFS required Statoil to establish a 160dB vessel monitoring zone for whales during shallow hazard surveys. If and when they observed aggregations of large whales actively engaging in any significant behaviors, they were required to shut down all activities until the whales were no longer within the 160 dB zone. Since these mitigation measures were already required previously by IHAs, it is feasible for operators to perform these measures. NMFS should also include an assessment of effectiveness for each mitigation measure in the final EIS. NMFS should make mandatory the full suite of substantive mitigation measures—both “required standard mitigation measures” and “additional mitigation

³⁸ 16 U.S.C. § 1371(a)(5)(D)

³⁹ FR Doc. 2011–12666, NOAA Notice and proposed incidental harassment authorization for takes of marine mammals incidental to specific activities; taking marine mammals incidental to shallow hazards survey in the Chukchi Sea, Alaska, Federal Register Notice, Volume 76, No 100, Tuesday May 24, 2011, pages 30110-30130.

measures”—for any level of activity that includes, at a minimum, those activities described in section 2.4.9 and 2.4.10.

NMFS Should Consider Effects of an Overwintering Oil Spill in the Final EIS

NMFS should consider the effects of oil trapped under ice, and the potential impacts to species, especially during spring melt. Seasonal sea ice poses a risk to potential oil spill response operations and could delay oil spill response due to the inability to continue operations in ice. Despite some advances in oil spill response technology, there is still a significant gap in the ability to either remove or burn oil in 30 – 70 percent ice cover. This gap is documented in recent oil in ice field studies completed by SINTEF and cited by NMFS.⁴⁰

In the event of an oil spill occurring near or continuing in to freeze-up, oil would likely remain trapped under sea ice. Oil spill responders do not currently possess the ability to accurately and continuously track oil under ice. Instead, spill responders would likely attempt to monitor the oil’s movement under the ice and attempt oil recovery once it reappears in melt pools in the spring. As cited in the DEIS, the spring lead system and melt pools are important areas where wildlife collects.

Recognizing the hazards introduced by seasonal sea ice, BOEM included a seasonal drilling restriction in Shell’s conditionally approved Chukchi Sea Exploration Plan.⁴¹ BOEM is requiring Shell to suspend drilling into potential hydrocarbon bearing formations 38 days before the onset of freeze-up in the Chukchi Sea. This would ensure a greater window of time to respond to a spill before sea ice encroaches on the drill site.

While the effectiveness of oil spill response techniques are not factored into the spill volume posited by the very large oil spill scenario and its potential impacts, NMFS should factor in the additional complications and ecosystem impacts when oil is trapped under ice. NMFS could mitigate the risk ice poses by including seasonal operating restrictions in the final EIS and preferred alternative.

Conclusion

In conclusion, oil and gas activities are expanding rapidly in the Beaufort and Chukchi seas. Production from the Northstar facility in the Beaufort Sea is ongoing and this summer, industrial activity from oil and gas activities may include some combination of the proposed activities. In addition to oil and gas activities, commercial shipping and vessel traffic are increasing in Arctic waters as summer sea ice retreats. This growth in industrial activities comes at a time when a rapidly changing climate is causing profound changes to the region, and when ocean acidification will contribute additional stress to marine ecosystems. The potential impacts of

⁴⁰ Potter, S., JIP Report No. 27, Tests of Fire-Resistant Booms in Low Concentrations of Drift Ice – Field experiments May 2009, Open Report, Oil in Ice – JIP, SINTEF Materials and Chemistry, March 20, 2010. This field test showed that fire boom (more sturdy than regular ocean containment boom), if towed at very low speeds, could contain ice concentrations up to 30% and still burn the contained oil efficiently. Greater concentrations of ice (up to 50%) reduced the burn efficiency.

⁴¹ Letter of Conditional Approval to Shell for Chukchi Sea Exploration Plan. Dec. 16, 2011. <http://www.boem.gov/ShellChukchi2012/>

these industrial activities and environmental changes—both individually and cumulatively—demand a comprehensive approach towards managing our Arctic Ocean resources. We urge NMFS to consider and incorporate our recommendations in the final EIS and preferred alternative. Incorporating these suggestions would help work towards achieving an integrated approach to resource management in the Arctic. We appreciate the opportunity to provide comments and we look forward to working with you as the process moves forward. In the meantime please don't hesitate to contact us for additional information or clarification.

Respectfully submitted,



Marilyn Heiman
Director, U.S. Arctic Program
The Pew Environment Group



Andrew Hartsig
Director, Arctic Program
Ocean Conservancy

ATTACHMENT A

Known Subsistence Areas and Important Ecological Areas That Should Be Deferred From Leasing in the 2012–2017 Leasing Program

Impacts from oil and gas activities may adversely affect the subsistence resources upon which many Alaska Native communities rely (see, e.g., Minerals Management Service, Chukchi Sea Oil and Gas Lease Sale 193 Final Environmental Impact Statement (OCS EIS/EA MMS 2007-026) at II-34-39 and IV-157). For example, noise from seismic operations, exploration drilling, and/or development and production activities may cause bowhead whales to avoid traditional feeding or migration areas, making them more difficult to hunt. Aircraft associated with oil and gas operations may negatively affect other subsistence resources, including polar bears, walrus, seals, caribou, and coastal and marine birds, making it more difficult for indigenous hunters to obtain these resources. Water pollution could release toxins that bioaccumulate in top predators, including humans. A large oil spill could have a disastrous impact on a range of subsistence resources.

Subsistence resources have long provided a source of healthy food for North Slope communities. Subsistence foods are high in nutritional value and protect against health problems like high blood pressure, obesity, diabetes, and cardiovascular disease. For many Native Alaskans, subsistence hunting is an important aspect of their culture. Negative impacts to subsistence resources, such as reduced abundance or contaminated habitats, could decrease food security, encourage consumption of store-bought foods with less nutritional value, and deteriorate the cultural fabric of Alaska Native communities. Thus, when industrial activities adversely affect subsistence resources, they also cause harm to the people who depend on those resources. For all these reasons, BOEM must take a careful look at potential impacts to subsistence resources and show their commitment towards ensuring these resources are protected at the earliest stage possible in the planning process.

Protection of subsistence resources and subsistence practices requires sound environmental management. BOEM should take immediate action to remove areas of ecological or cultural importance from the 2012–2017 Program in the Beaufort and Chukchi Seas. Doing so at this stage of the planning process will set clear, transparent public policy. Establishing subsistence and ecological deferrals at the first stage of the OCS leasing process will provide certainty for government agencies, industry and community residents alike regarding which areas of the OCS will be protected from leasing because of the vital habitat and food production values they provide. Without that certainty at the beginning of the OCS process, all stakeholders end up wasting time and resources. There is no legal, scientific or political justification not to remove these areas at this stage of the OCSLA process or to mandate that any future leases include specific stipulations and drilling restrictions such as time/area closures or mitigation measures during species migrations in order to protect subsistence resources.

Important Subsistence Areas (Map 1)

Indigenous residents of the Chukchi and Beaufort seas depend on resources from the ocean to maintain a subsistence way of life. In addition, they have valuable knowledge about their environment and its resources that can help inform planning and decision-making. At the end of the day, it is the residents of the Arctic who will live with the consequences of Arctic OCS policy and management decisions. Thus, in order to ensure that Arctic communities subsistence resources are adequately protected, we strongly recommend that BOEM designate expanded

and additional subsistence use areas as deferral areas excluded from future lease planning areas in the Chukchi and Beaufort Sea program areas in the final 2012–2017 Program and PEIS. These recommendations have been made by local communities repeatedly during the multi-year public process. The former Minerals Management Service funded research that document subsistence use areas supporting those areas recommended for deferral by communities.¹ Furthermore, in the Notice of Intent for the 2012–2017 Program, BOEM specifically indicated that it was seeking recommendations on deferral areas. There is ample information to support deferring subsistence areas relied upon by Arctic coastal communities.

We compiled existing subsistence hunting information from Kaktovik, Nuiqsut, Barrow, Wainwright, Point Lay, and Point Hope on a single map which shows the extent of hunting areas for those six Arctic coastal communities (Map 1). Data included hunting areas for bowhead whale, beluga whale, polar bear, seals, walrus, and waterfowl. Data sources included studies by Braund,² Wainwright Traditional Council and The Nature Conservancy,³ Braund and Burnham,⁴ and Pedersen.⁵ The data documents local subsistence use throughout an area 25 miles to over 100 miles offshore of the six villages. Map 1 shows subsistence use areas that BOEM should defer and remove from the program areas included in the final Program and PEIS.

Wildlife Concentration Areas

The maps described below depict important concentration areas for Arctic marine wildlife. Data were based on a large number of datasets summarized in the *Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas*⁶ and further refined by Oceana and North Slope Borough wildlife managers and subsistence hunters.⁷ These maps provide scientific justification for excluding important wildlife concentration areas from the final Program and PEIS.

Bird Concentration Areas in the Arctic (Map 2)

This map depicts seabird and waterbird abundance and proposed globally significant Important Bird Areas (IBAs), which are places that regularly hold greater than 1% of the global population of a species. Using the North Pacific Pelagic Seabird Database (courtesy of USGS),⁸ we summed and displayed the total abundance of all species present in the Arctic OCS program areas. Also shown are proposed IBAs for a variety of species.⁹ Hotspots are shown along most

¹ Braund, S. 2010. Subsistence Mapping of Nuiqsut, Kaktovik, and Barrow. U.S. Department of the Interior, Minerals Management Service. Alaska OCS Region, Environmental Studies Program. MMS OCS Study Number 2009-003. Anchorage, Alaska.

² Ibid.

³ Wainwright Traditional Council (WTC) and The Nature Conservancy (TNC). 2008. Wainwright Traditional Use Area Conservation Plan Map Book.

⁴ Braund, S., and D. Burnham. 1984. Subsistence Economics and Marine Resource Use Patterns. In Barrow Arch Environment and Possible Consequences of Planned Offshore Oil and Gas Development. Prepared by LGL Ecological Research Associates, Inc. Prepared for U.S. Department of Interior, Minerals Management Service and Department of Commerce, NOAA. Anchorage, Alaska.

⁵ Pedersen, S. 1979. Regional Subsistence Land Use, North Slope Borough, Alaska. Occasional Paper No. 21 Anthropology and Historic Preservation, Cooperative Park Studies Unit, University of Alaska, Fairbanks, Alaska and Conservation and Environmental Protection, North Slope Borough, Barrow, Alaska.

⁶ Smith, M.A. 2010. Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas. Audubon Alaska and Oceana: Anchorage.

⁷ Oceana. 2011. Whale, Ice Seal, and Walrus Concentration Areas. GIS shapefiles. Juneau, Alaska.

⁸ Drew, G. and J. Piatt. 2011. North Pacific Pelagic Seabird Database, version 2.0. Microsoft Access database. US Geological Survey. Anchorage, Alaska.

⁹ Smith, M., N. Walker, C. Free, M. Kirchhoff, N. Warnock, and I. Stenhouse. Unpublished Report. A Standardized Method for Mapping Marine Important Bird Areas Using At-sea and Colony-based Survey Data. Audubon Alaska. Anchorage, Alaska.

of the Chukchi and Beaufort coast, and at Hanna Shoal and Barrow Canyon. IBAs are found at Cape Lisburne, Ledyard Bay, Icy Cape, Peard Bay, Barrow Canyon, Smith Bay, and Camden Bay.

Polar Bear Concentration Areas in the Arctic (Map 3)

Two populations of polar bears, the Southern Beaufort Sea and the Chukchi/Bering Sea, den and feed in the US Arctic. The concentration areas shown here are based on two publications. The US Geological Survey has satellite-tracked these two populations for several years,¹⁰ and published spatial data representing the 50% core use area for these bears. Kalxdorff¹¹ documented local knowledge of polar bear concentration areas for feeding and denning. Together these two datasets represent the known primary areas for offshore polar bear feeding and denning within the Arctic OCS program areas.

Whale Concentration Areas in the Arctic (Map 4)

Three whale species regularly occur in the US Arctic. Bowhead and beluga whales migrate north offshore of the Chukchi Sea coast in the spring, feed primarily in Canadian waters during the summer, then migrate west offshore of the Beaufort Sea coast in the fall. Barrow Canyon is a very high concentration area for bowhead whales feeding in the fall. For gray whales, the Chukchi Sea is their final destination, the end of an annual migration from Mexico. Beginning with data compiled in the *Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas*, Oceana worked with local wildlife managers to update whale concentration areas based on current research and local knowledge. The latest satellite-tracking information for bowhead whale migration was a primary source of information.¹² The updated information is shown here, including concentration areas for bowhead and beluga whales, and high concentration areas for all three species. Areas of particularly high conservation concern include the Chukchi lead system, Barrow Canyon, Peard Bay, Hanna Shoal, and the shelf break offshore in the Beaufort Sea.

Pinniped Concentration Areas in the Arctic (Map 5)

Three species of ice seals (ringed, bearded, and spotted) and walrus are known to concentrate in high numbers within the Arctic OCS program areas. Beginning with data compiled in the *Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas*, Oceana worked with local wildlife managers to update ice seal and walrus concentration areas based on current research and local knowledge. The latest satellite-tracking information for walrus migration was a primary source of information.¹³ The map displays the overlap of concentration areas for walrus, ringed, bearded, and spotted seals in the Chukchi Sea, and bearded and ringed seals in the Beaufort Sea. The highest numbers of species are found along the Chukchi coast from Ledyard Bay to Peard Bay, with all four species present near Kasegaluk Lagoon. Walrus concentrate at and travel between Hanna and Herald Shoal in mid-s to late summer.

Wildlife Concentration Areas in the Arctic (Map 6)

This summary map overlaps eight individual species (bowhead, beluga, and gray whales, spotted, ringed, and bearded seals, walrus and polar bear) and globally significant IBAs. All

¹⁰ Amstrup, S. C., G. M. Durner, I. Stirling, and T. L. McDonald. 2005. Allocating harvests among polar bear stocks in the Beaufort Sea. *Arctic* 58:247-259.

¹¹ Kalxdorff, S.B. 1997. Collection of local knowledge regarding polar bear habitat use in Alaska. Technical Report MMM 97-2. Marine Mammals Management, US Fish & Wildlife Service Region 7. Anchorage, Alaska.

¹² Quakenbush, L. 2009. Summary maps of fall movements of bowhead whales in the Chukchi Sea. Alaska Department of Fish and Game. Fairbanks, Alaska.

¹³ US Geological Survey. 2011. Walrus radio-tracking in the southern Chukchi Sea 2011. US Geological Survey. Anchorage, AK.

colored areas on the map are a concentration area for one or more species of concern. Areas of highest overlap include the Chukchi lead system, the Beaufort shelf, and Hanna Shoal. A coastal buffer 50 to 60 miles offshore in the Chukchi Sea, and variable from 15 to 60 miles offshore in the Beaufort Sea, as well as Hanna Shoal, captures the areas of highest conservation concern within the Arctic OCS program areas.

Place-based Ecological Areas

Given our current level of understanding of ecological functioning in the Chukchi and Beaufort seas, several regions of sensitive marine habitat should be excluded from future lease planning areas, including at a minimum Hanna and Herald Shoals, Barrow Canyon, and the Chukchi Sea ice lead system. By excluding these areas from the final Program and PEIS, BOEM will proactively protect areas that are important to subsistence resources. Below, we provide some of the rationale as to why these areas are ecologically important. We would like to emphasize that identification of important ecological areas should be an ongoing part of an integrated, long-term scientific research and monitoring program for the Arctic and not something that happens once. The areas that we recommend for exclusion are based on current knowledge, but a research and monitoring program could identify additional areas from which leasing should also be excluded.

Hanna and Herald Shoals

During a time of rapid change, Hanna and Herald shoals appear to be important sea ice areas over the long term. These shallow areas divert warm water masses flowing northward from the Bering Sea, holding colder water long into the summer season.¹⁴ As a result, sea ice persists there longer into the season as well.¹⁵ A pack ice feature near Hanna Shoal called Post Office Point was historically a meeting point known for its reliable ice all summer long. The area was given its name because ships would meet at this dependable location to exchange mail and information at sea.¹⁶ Recent warming has changed the structure of this persistent lobe of ice, and the minimum September sea ice extent has come that far south only once in the last decade.¹⁷ In comparison, Hanna Shoal and Post Office Point were ice-covered seven out of ten years in the 1980s and four out of ten years in the 1990s. Nonetheless, Post Office Point and Hanna and Herald shoals continue to be areas of persistent ice floes, which are very important for ice-associated wildlife. Although the pack ice is expected to further recede with climate change, the seafloor topography is likely to continue to divert warm waters. Hanna and Herald shoals have the potential to provide substantial lingering ice floes well into the future compared to other areas in the region,¹⁸ and may become a last stronghold for some ice-associated species. Recent satellite-tracking data emphasizes the importance of the Hanna Shoal area

¹⁴ Weingartner, T., K. Aagaard, R. Woodgate, S. Danielson, Y. Sasaki, and D. Cavalieri. 2005. Circulation on the north central Chukchi Sea shelf. *Deep Sea Research Part II: Topical Studies in Oceanography* 52:3150-3174.

¹⁵ Martin, S. and R. Drucker. 1997. The effect of possible Taylor columns on the summer ice retreat in the Chukchi Sea. *Journal of Geophysical Research* 102:10473-10482; Spall, M.A. 2007. Circulation and water mass transformation in a model of the Chukchi Sea. *Journal of Geophysical Research* 112.

¹⁶ Aldrich, H.L. 1915. Lands in the Arctic: what may be beyond ice as old as the year one. *New York Times*. http://query.nytimes.com/mem/archive-free/pdf?_r=1&res=9C00E0D81138E633A25757C2A96F9C946496D6CF . Accessed October 2008.; Bockstoce, J.R. 1986. *Whales, men and ice: the history of whaling in the western Arctic*. University of Washington Press, Seattle, Washington.

¹⁷ National Snow and Ice Data Center. 2010. Monthly sea ice extent. GIS shapefile.

<ftp://sidacs.colorado.edu/DATASETS/NOAA/G02135/shapefiles/>. Accessed January 2010.

¹⁸ Spall, M.A. 2007. Circulation and water mass transformation in a model of the Chukchi Sea. *Journal of Geophysical Research* 112.

during bowhead whale migration in the fall¹⁹ and both shoals for walrus foraging and resting, especially during the summer.²⁰

Barrow Canyon

Barrow Canyon straddles the boundary between the Beaufort and Chukchi seas. This submarine canyon runs along the Chukchi Sea coast, approximately 5 to 15 miles offshore from Point Franklin to Point Barrow, then cuts through the shelf break and drains into the Canada Basin. It is 150 miles long and about 15 miles wide, with a depth that is 1200 feet below the surrounding cliffs and peaks.²¹ The Alaska Coastal Current follows the Chukchi Sea coast through Barrow Canyon into the 4000-meter deep Canada Basin; part of the water mass flows east around Point Barrow eventually dispersing into the Beaufort Gyre.²² Occasionally warmer water originating in the Atlantic flows the other direction (southwestward) through the canyon,²³ making this a place where the Atlantic and Pacific meet. Complex water mass mixing, upwelling, and sea ice dynamics make the waters around Point Barrow and Barrow Canyon very productive compared to other nearby areas and the oligotrophic Canada Basin.²⁴

Pseudocalanus copepods and euphausiids concentrate off Point Barrow to the shelf break,²⁵ serving as a very important food source for bowhead whales feeding there in the fall.²⁶ Benthic resources are not well known in this area, but were dominated by brittle stars and Opilio crab in recent surveys.²⁷ The southern canyon is essential fish habitat for saffron cod.²⁸ Much of the southern nearshore canyon is open water through the winter, and the northern offshore portion has concentrated ice present for about nine months,²⁹ making this area accessible to migrating wildlife most of the year. As wildlife move between the Beaufort and Chukchi seas, they must round Point Barrow and pass over Barrow Canyon. The area is a migration bottleneck for birds and marine mammals, which pass there during both spring and fall migration.

Barrow Canyon is important habitat for Arctic marine mammals. It is a concentrated feeding area for polar bears³⁰ and is designated critical feeding habitat by the FWS. Ringed seals, the

¹⁹ Quakenbush, L. 2009. Summary maps of fall movements of bowhead whales in the Chukchi Sea. Alaska Department of Fish and Game. Fairbanks, Alaska.

²⁰ US Geological Survey. 2011. Walrus radio-tracking in the southern Chukchi Sea 2011. US Geological Survey. Anchorage, AK.

²¹ Rozell, N. 1996. Barrow Canyon: Where Atlantic Meets Pacific. Article # 1298. UAF Geophysical Institute: Fairbanks, AK.

²² UAF (University of Alaska – Fairbanks) Institute of Marine Science. 2009. Chukchi Sea Circulation. Digital Map. Accessed at <http://www.ims.uaf.edu/chukchi/>. March.

²³ Garrison, G.R. and P. Becker. The Barrow submarine canyon: A drain for the Chukchi Sea. *Journal of Geophysical Research* 81(24):4445-4453.

²⁴ Mathis, J.T., D.A. Hansell, D. Kadko, N.R. Bates, and L.W. Cooper. 2007. Determining net dissolved organic carbon production in the hydrographically complex Western Arctic Ocean. *Limnology and Oceanography* 52(5):1789-1799.

²⁵ NOAA (National Oceanic and Atmospheric Administration). 1988. Bering, Chukchi, and Beaufort Seas Coastal and Ocean Zones Strategic Assessment Data Atlas.

²⁶ Moore, S.E. and Laidre, K.L. 2006. Trends in sea ice cover within habitats used by bowhead whales in the Western Arctic. *Ecological Applications*, 16(3):932-944.

²⁷ Rand, K.M., and L.A. Logerwell. 2011. The first demersal trawl survey of benthic fish and invertebrates in the Beaufort Sea since the late 1970s. *Polar Biology* 34:475-488.

²⁸ NMFS (National Marine Fisheries Service). 2005. Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. NOAA NMFS, Alaska Region: Anchorage, AK.

²⁹ Eicken, H., L.H. Shapiro, A.G. Gaylord, A. Mahoney, and P.W. Cotter. 2005. Mapping and characterization of recurring spring leads and landfast ice in the Beaufort and Chukchi seas. OCS Study MMS 2005-068. MMS: Anchorage, Alaska.

³⁰ Kalxdorff, S. 1997. Collection of Local Knowledge Regarding Polar Bear Habitat Use in Alaska. Technical Report MMM97-2. USFWS, Marine Mammal Management: Anchorage, AK.

primary food source of polar bears, and bearded seals, a secondary food source, also concentrate in the Barrow Canyon area from about July to September.³¹ This is also a concentrated feeding area for female walrus and their young in June to October.³² Bowhead whales migrate northeast up the Chukchi coast in spring, passing Point Barrow and Barrow Canyon in April and May before heading farther offshore on their way to the Canadian Beaufort Sea for summer feeding. In the fall, they follow the Alaskan Beaufort Sea coast back west and stop at Barrow Canyon for fall feeding between late August and early November.³³ Much like bowhead whales, beluga whales pass through this area twice per year during migration and concentrate in large numbers in the fall to feed on fish.³⁴

Nearshore areas by Point Barrow are marine feeding areas for many species of birds, including Yellow-billed and Red-throated Loons, Spectacled, Steller's, King, and Common Eiders, Long-tailed Ducks, Northern Fulmars, and Short-tailed Shearwaters.³⁵ There are IBAs for multiple species at Barrow Canyon. Within the Barrow Canyon area there are proposed IBAs for King Eider, Arctic Tern, Long-tailed Duck, and Red Phalarope.³⁶ Like marine mammals, these and other bird species migrate through this area twice per year when moving between the Beaufort and Chukchi seas in spring and fall.

A portion of Barrow Canyon is currently not open to leasing, and no leases have been sold in the areas that are open. However, this area is frequented by ships, and has a very low to medium human impact score.³⁷ In addition, it is "downstream" of the lease areas, so particular attention should be given to potential pollution impacts, including oil spills.

Chukchi Sea Lead System

The Chukchi Sea lead system along the entire Alaskan coastline is an important ecological area which serves as an essential corridor for migrating species such as the bowhead whale, walrus, ice seals, waterfowl, gulls, and seabirds, and in turn for indigenous subsistence hunters.

The wind and currents in the Chukchi Sea allow for an area of open water leads that create an important zone between the landfast and pack ice. As a result, this area provides an important migration corridor for animals in spring and fall. Most of the bird species that migrate to/from the Arctic slope breeding grounds pass through the lead system.³⁸ There are multiple globally significant IBAs located along this system.³⁹ Within the Chukchi lead system there are several

³¹ NOAA (National Oceanic and Atmospheric Administration). 1988. Bering, Chukchi, and Beaufort Seas Coastal and Ocean Zones Strategic Assessment Data Atlas.

³² *Id.*

³³ ADFG (Alaska Department of Fish and Game). 2011. Bowhead Movements May 2006-July 2010. Marine Mammal Program: Juneau, AK. Accessed at <http://www.adfg.alaska.gov/index.cfm?adfg=marinemammalprogram.bowheadmovements>. March 25.

³⁴ NOAA (National Oceanic and Atmospheric Administration). 1988. Bering, Chukchi, and Beaufort Seas Coastal and Ocean Zones Strategic Assessment Data Atlas; Suydam, R. and ADFG. 2004. In North Slope Borough. 2006. North Slope Borough Area Wide Comprehensive Plan.

³⁵ Smith, M.A. 2010. Arctic marine synthesis: atlas of the Chukchi and Beaufort seas. Audubon Alaska and Oceana, Anchorage, Alaska.

³⁶ Smith, M., N. Walker, C. Free, M. Kirchoff, N. Warnock, and I. Stenhouse. Unpublished Report. A Standardized Method for Mapping Marine Important Bird Areas Using At-sea and Colony-based Survey Data. Audubon Alaska. Anchorage, Alaska.

³⁷ Halpern, B., S. Walbridge, K. Selkoe, C. Kappel, F. Micheli, C. D'Agrosa, et al. 2008. A global map of human impact on marine ecosystems. *Science* 319:948-952.

³⁸ Smith, M.A. 2011. Place-based Summary of the Arctic Marine Synthesis. Audubon Alaska Anchorage, Alaska.

³⁹ Smith, M., N. Walker, C. Free, M. Kirchoff, N. Warnock, and I. Stenhouse. Unpublished Report. A Standardized Method for Mapping Marine Important Bird Areas Using At-sea and Colony-based Survey Data. Audubon Alaska. Anchorage, Alaska.

IBAs which are recognized or proposed for Spectacled and King eiders, Black-legged Kittiwakes, Glaucous Gulls, Pomerine Jaegers, Long-tailed Ducks, Arctic Terns, Sabine's Gulls, Brant, and Kittlitz's Murrelet. Within the two program areas, the highest known densities for all bird species combined is found in the Chukchi lead system near Peard Bay, closely followed by concentrations in Ledyard Bay, Kasegaluk Lagoon, and offshore of Cape Lisburne.

It is also an important area for breeding and feeding polar bears because of the high concentration of ice seals, particularly ringed seals. Pacific walrus also utilize this zone, particularly after the sea ice retreat in late summer. They make trips to/from Hanna Shoal once they haul out on the shoreline off Icy Cape, and then forage on benthic organisms until they migrate along the Chukchi coast south.⁴⁰ The Chukchi Sea lead system is very important for endangered migrating bowhead whales. Almost the entire population travels along the Chukchi Sea coast during spring months, from March through June.

Furthermore, the National Oceanic and Atmospheric Administration (NOAA) has recognized the ecological and cultural importance of the Chukchi Sea lead system. In a letter to BOEM regarding the Chukchi Lease Sale 193 NOAA recommended that BOEM should designate a deferral area constituting a buffer of 60 miles from the Chukchi Sea shoreline. This recommended buffer would exclude oil and gas activity to protect the lead system and the important wildlife concentration that exists there. We agree with NOAA's recommendation and urge BOEM to adopt this buffer as a deferral in the final Program and PEIS.

Recommendations for Deferral Areas and Restriction Zones (Map 7)

The Marine Mammal Protection Act (MMPA) requires that any incidental take authorized will not have "an unmitigatable adverse impact on the availability of such species or stock for taking for subsistence uses" by Alaska Natives (16 U.S.C. § 1371(a)(5)(D)(i)(II)). BOEM must ensure oil and gas activities do not reduce the availability of any affected population or species to a level insufficient to meet subsistence needs (50 C.F.R. § 216.103). This is particularly important because BOEM consults with NMFS about potential impacts to marine mammals in the EIS process. One way for BOEM to ensure that oil and gas activities will not negatively impact marine mammal resources is for BOEM to identify areas in the Beaufort and Chukchi planning areas, at this stage of the OCSLA process, that require specific restrictions and/or mitigation measures. For example, restrictions may include time/area restrictions during important migratory periods or in areas that fall upstream/downstream of important ecological areas. BOEM should also require mitigation measures for important wildlife areas at this stage of the leasing process.

We recommend that BOEM include, in the final Program and PEIS, seasonal and migration restrictions to oil and gas activity on the Beaufort Sea shelf. This would be the orange lease blocks represented in Map 7. This area is important to migrating bowhead whales in the spring and beluga whales in the spring and fall, especially September.⁴¹ BOEM should use the five-year program to require oil and gas operators to cease all industrial activity in these regions during these migration periods and to require protective mitigation measures during times when activities are allowed.

⁴⁰ Jay, C.V., A.S. Fischbach, and A.A. Kochnev. 2011. Walrus foraging areas in the Chukchi Sea during years of scarce summer sea ice. 19th Biennial Conference for the Society for Marine Mammalogy, November 26 - December 3, 2011, Tampa Bay, FL, USA.

⁴¹ Smith 2011 *ibid*.

BOEM should also use the five-year program to bolster the Alaska Eskimo Whaling Commission Conflict Avoidance Agreement process, including the seasonal and temporal closures designed by the whaling captains in cooperation with offshore operators to protect subsistence hunting. BOEM should work with NMFS, North Slope communities, the Alaska Eskimo Whaling Commission, other marine mammal commissions, and other Alaska Native organizations to develop an alternative for the 2012–2017 Program and PEIS designed to ensure that oil and gas operations do not impede or impact subsistence activities. If BOEM proceeds with Arctic leases, the agency should consider and incorporate additional protective measures at the lease sale stage, before issuing any new leases. Furthermore, BOEM should create additional seasonal management areas to protect important bowhead feeding and migratory corridors in the Beaufort Sea (e.g., Map 4.)

In summary, we recommend that BOEM include in the final Program and PEIS additional deferral areas for important subsistence areas and the areas of the Chukchi and Beaufort seas that, given our current understanding, will help protect those important subsistence resources. At a minimum, the areas identified by Braund⁴² should be included in the deferral, as well as Hanna and Herald Shoal, Barrow Canyon, and the Chukchi Sea lead system. The process for identifying ecologically important areas should be adaptive; as we gain a better understanding of the Arctic Seas, those areas deemed important should be included in future deferrals. Furthermore, we recommend that BOEM act at this stage of the OCSLA process to implement additional seasonal and time/area closures and other mitigation measures for those areas that have high concentrations of wildlife. BOEM should established and included these protections in the final 2012–2017 Program and PEIS.

⁴² Braund, S. 2010. Subsistence Mapping of Nuiqsut, Kaktovik, and Barrow. U.S. Department of the Interior, Minerals Management Service. Alaska OCS Region, Environmental Studies Program. MMS OCS Study Number 2009-003. Anchorage, Alaska.

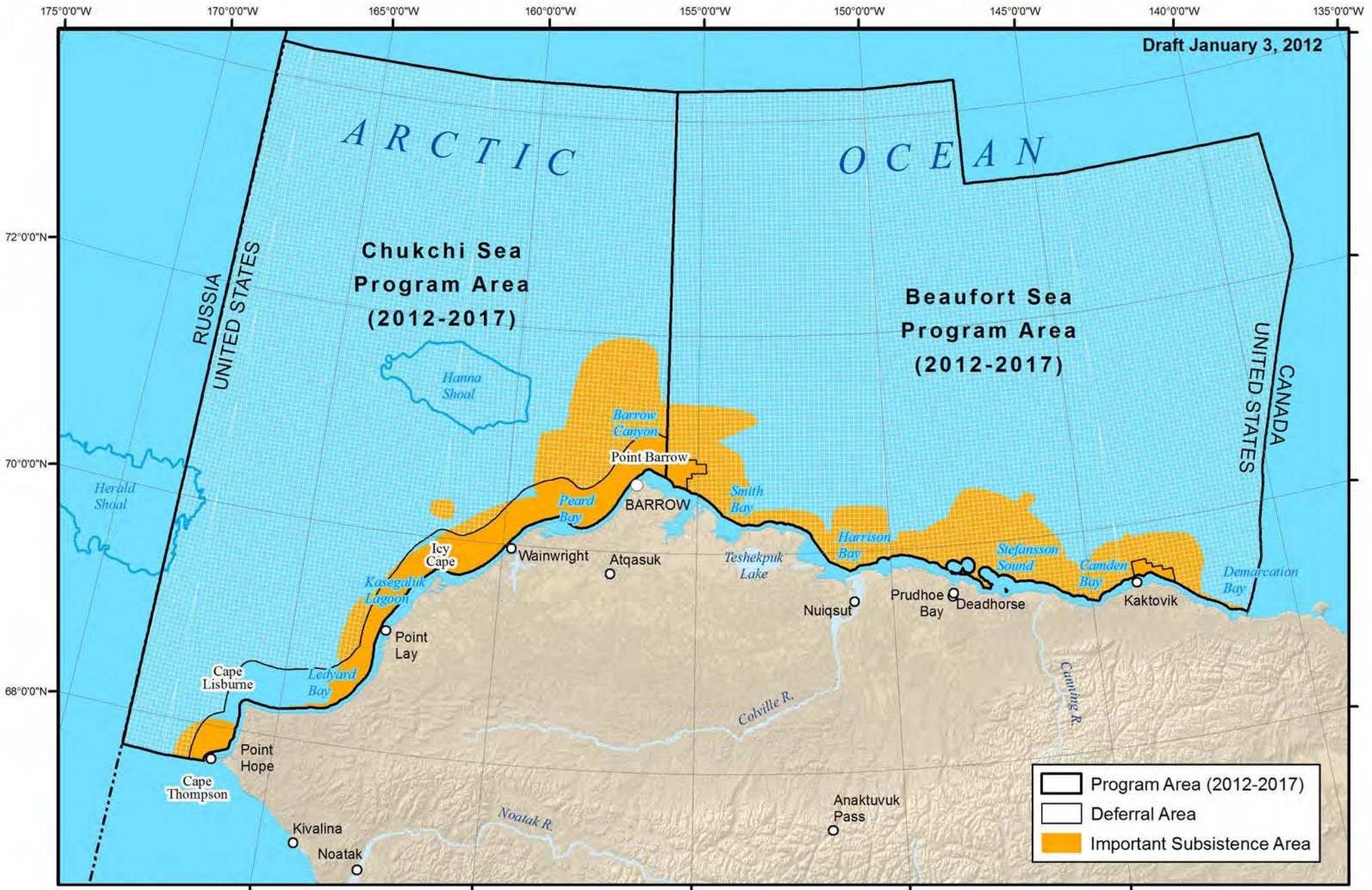
Attachment A

Map 1

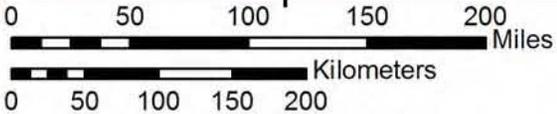
“Important Subsistence Areas in the Arctic Ocean”

Important Subsistence Areas in the Arctic Ocean

Draft January 3, 2012



	Program Area (2012-2017)
	Deferral Area
	Important Subsistence Area



Braund, S. 2010. Subsistence Mapping of Nuiqsut, Kaktovik, and Barrow. U.S. Department of the Interior, Minerals Management Service. Alaska OCS Region, Environmental Studies Program. MMS OCS Study Number 2009-003. Anchorage, Alaska.

Braund, S., and D. Burnham. 1984. Subsistence Economics and Marine Resource Use Patterns. In Barrow Arch Environment and Possible Consequences of Planned Offshore Oil and Gas Development. Prepared by LGL Ecological Research Associates, Inc. Prepared for U.S. Department of Interior, Minerals Management Service and Department of Commerce, NOAA. Anchorage, Alaska.

Pedersen, S. 1979. Regional Subsistence Land Use, North Slope Borough, Alaska. Occasional Paper No. 21 Anthropology and Historic Preservation, Cooperative Park Studies Unit, University of Alaska, Fairbanks, Alaska and Conservation and Environmental Protection, North Slope Borough, Barrow, Alaska.

Wainwright Traditional Council (WTC) and The Nature Conservancy (TNC). 2008. Wainwright Traditional Use Area Conservation Plan Map Book.

*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

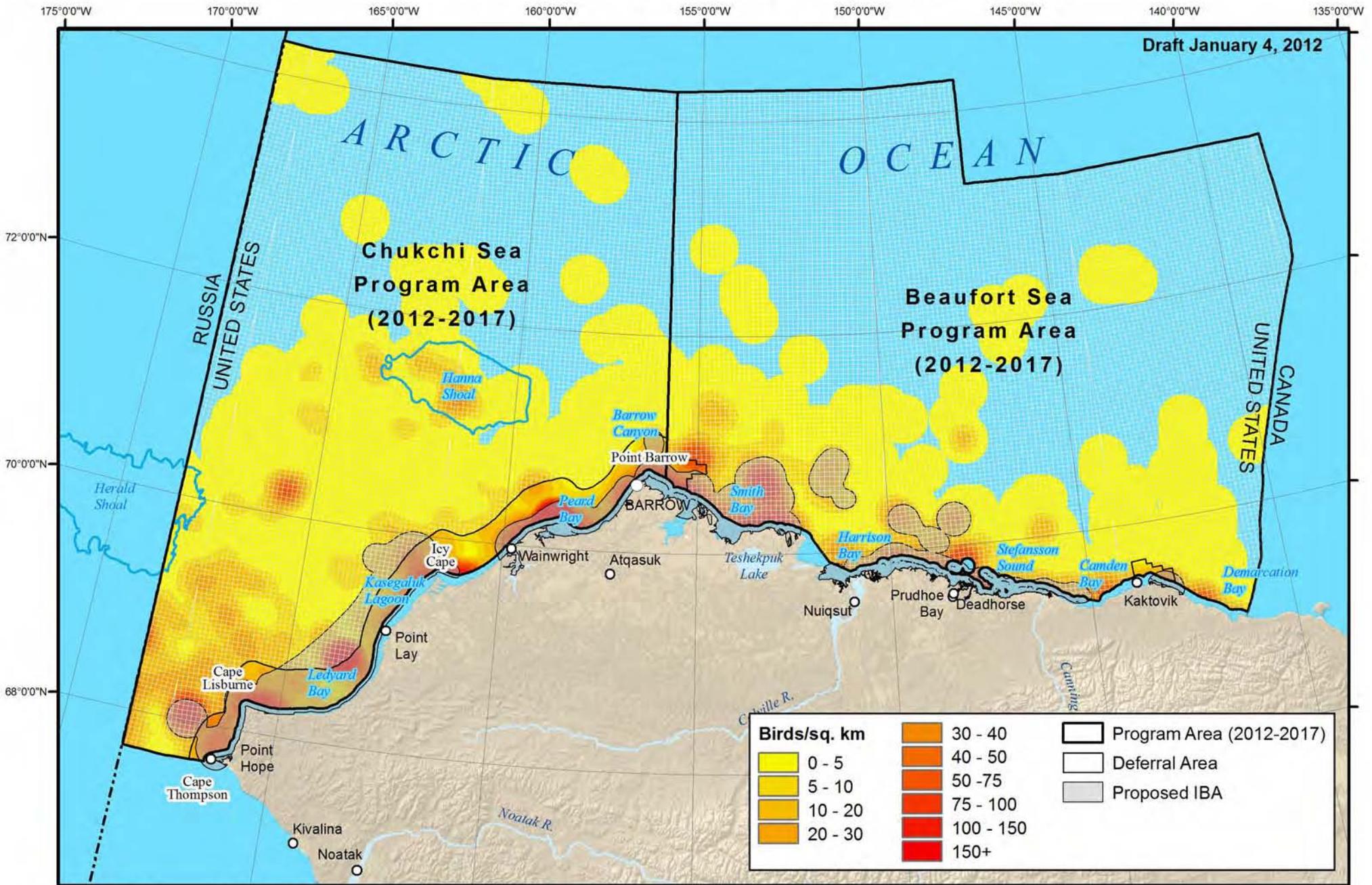
Attachment A

Map 2

“Bird Concentration Areas in the Arctic Ocean”

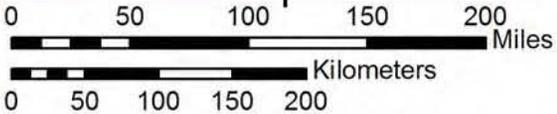
Bird Concentration Areas in the Arctic Ocean

Draft January 4, 2012



Birds/sq. km		
	0 - 5	
	5 - 10	
	10 - 20	
	20 - 30	
	30 - 40	
	40 - 50	
	50 - 75	
	75 - 100	
	100 - 150	
	150+	

Program Area (2012-2017)
 Deferral Area
 Proposed IBA



*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

Smith, M., N. Walker, C. Free, M. Kirchhoff, N. Warnock, and I. Stenhouse. Unpublished Report. A Standardized Method for Mapping Marine Important Bird Areas Using At-sea and Colony-based Survey Data. Audubon Alaska. Anchorage, Alaska. Survey. Anchorage, AK.
 Drew, G. and J. Piatt. 2011. North Pacific Pelagic Seabird Database, version 2.0. Microsoft Access database. US Geological Survey. Anchorage, Alaska.

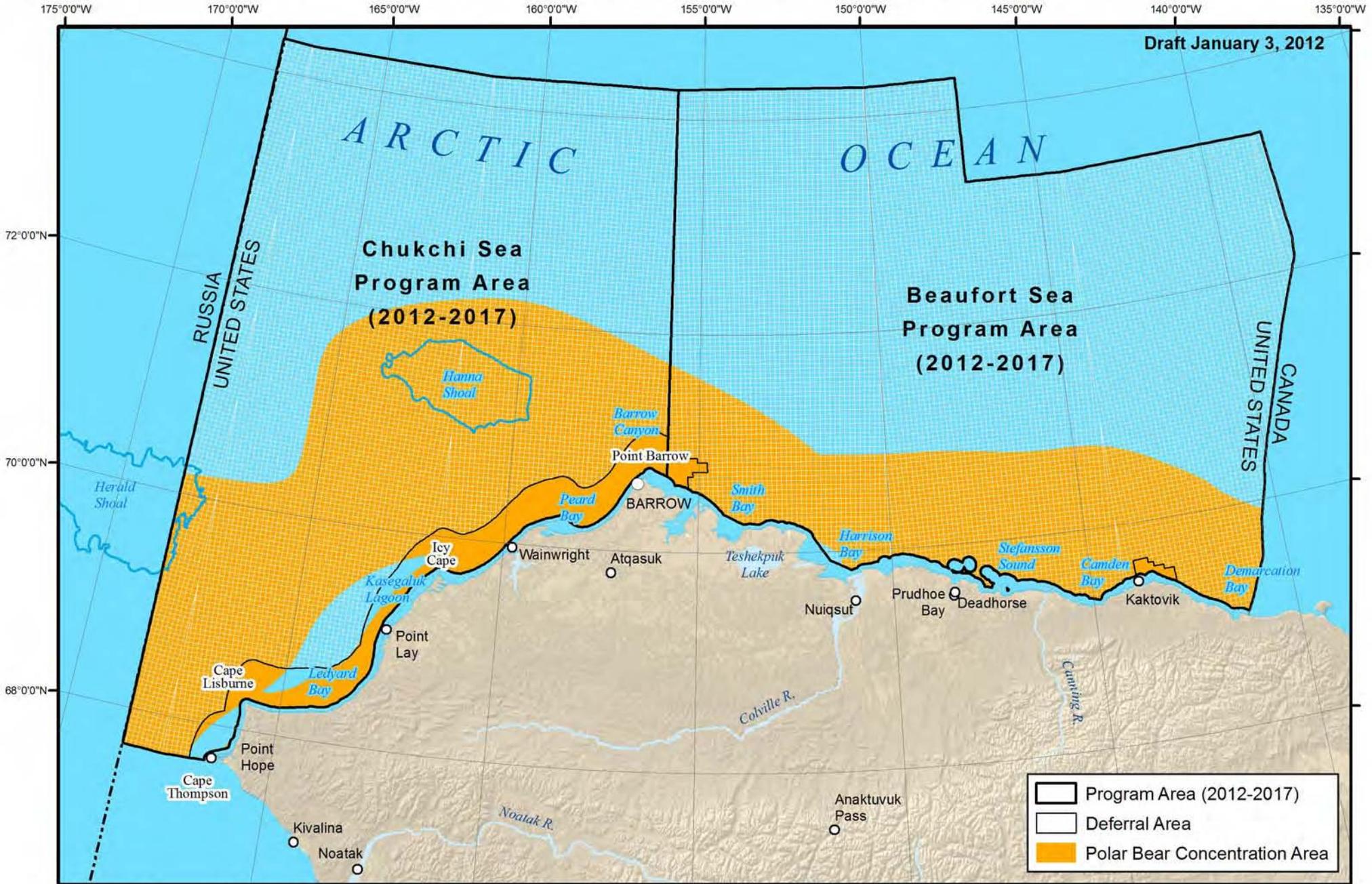
Attachment A

Map 3

“Polar Bear Concentration Areas in the Arctic Ocean”

Polar Bear Concentration Areas in the Arctic Ocean

Draft January 3, 2012



0 50 100 150 200 Miles

0 50 100 150 200 Kilometers

0 50 100 150 200

*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

Amstrup, S. C., G. M. Durner, I. Stirling, and T. L. McDonald. 2005. Allocating harvests among polar bear stocks in the Beaufort Sea. *Arctic* 58:247-259.

Kalxdorff, S.B. 1997. Collection of local knowledge regarding polar bear habitat use in Alaska. Technical Report MMM 97-2. Marine Mammals Management, US Fish & Wildlife Service Region 7. Anchorage, Alaska.

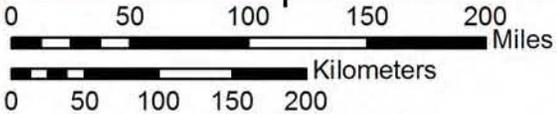
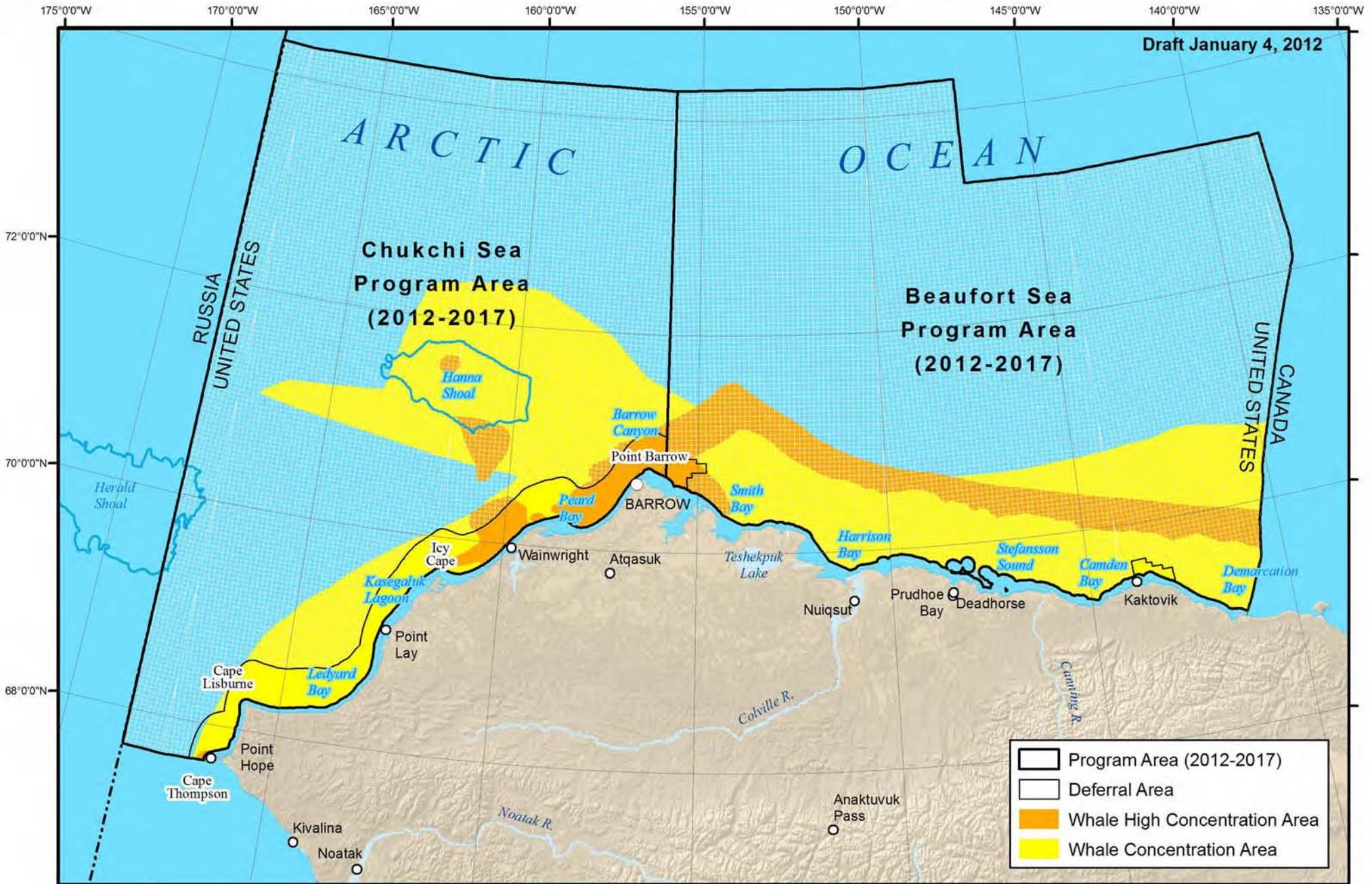
Attachment A

Map 4

“Whale Concentration Areas in the Arctic Ocean”

Whale Concentration Areas in the Arctic Ocean

Draft January 4, 2012



*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

Includes Bowhead, Beluga, and Gray Whales

Oceana, 2011. Whale, Ice Seal, and Walrus Concentration Areas. GIS shapefiles. Juneau, Alaska.
 Quakenbush, L. 2009. Summary maps of fall movements of bowhead whales in the Chukchi Sea. Alaska Department of Fish and Game. Fairbanks, Alaska.
 Smith, M.A. 2010. Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas. Audubon Alaska and Oceana. Anchorage, Alaska.

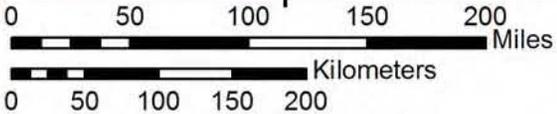
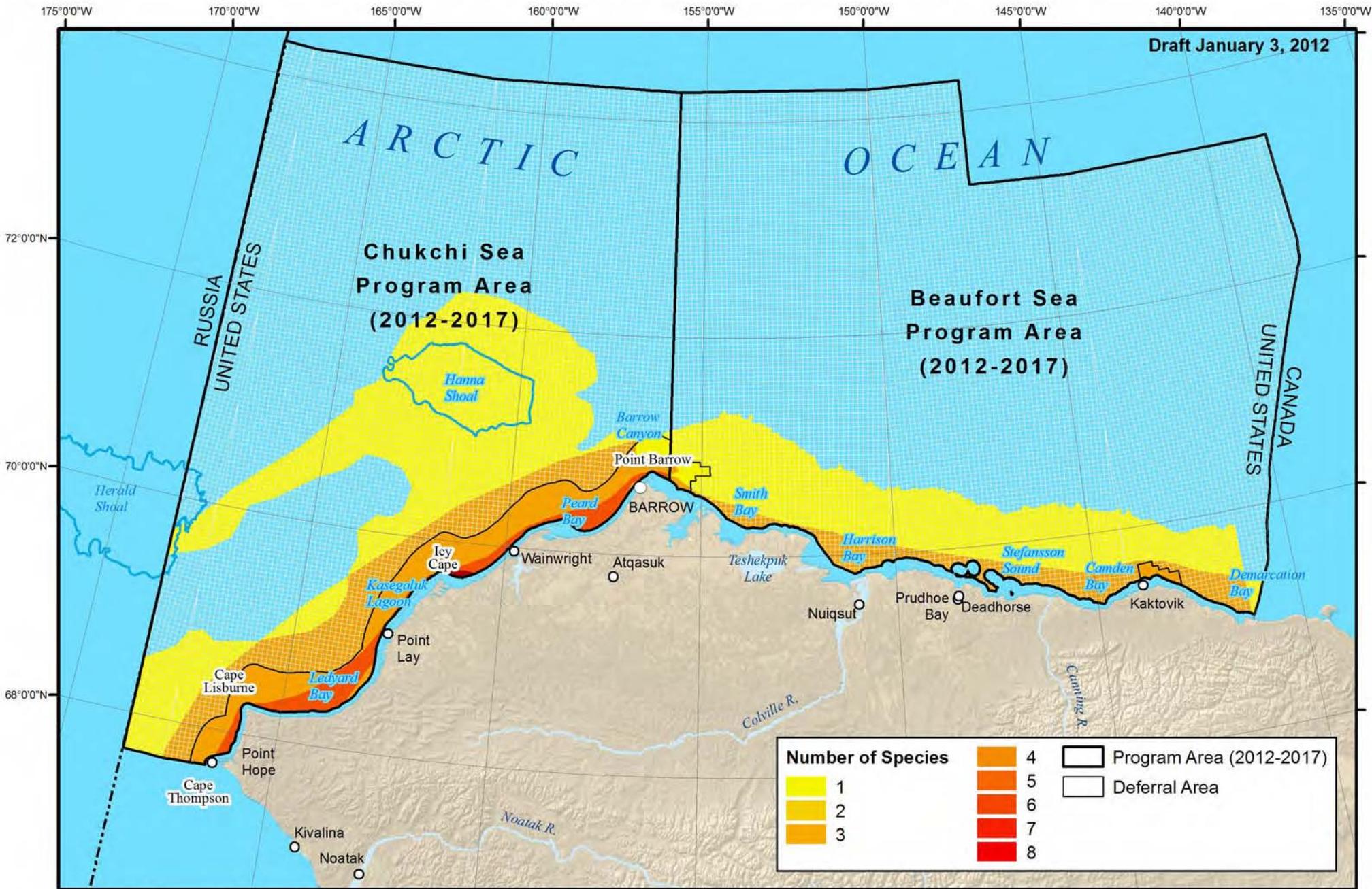
Attachment A

Map 5

“Pinniped Concentration Areas in the Arctic Ocean”

Pinniped Concentration Areas in the Arctic Ocean

Draft January 3, 2012



*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

Number of Species		
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	

Program Area (2012-2017)
Deferral Area

Includes Bearded, Ringed, and Spotted Seals; Walrus.

Oceana, 2011. Whale, Ice Seal, and Walrus Concentration Areas. GIS shapefiles. Juneau, Alaska.
 Smith, M.A. 2010. Arctic Marine Synthesis: Atlas of the Chukchi and Beaufort Seas. Audubon Alaska and Oceana. Anchorage, Alaska.
 US Geological Survey. 2011. Walrus radio-tracking in the southern Chukchi Sea 2011. US Geological Survey. Anchorage, AK.

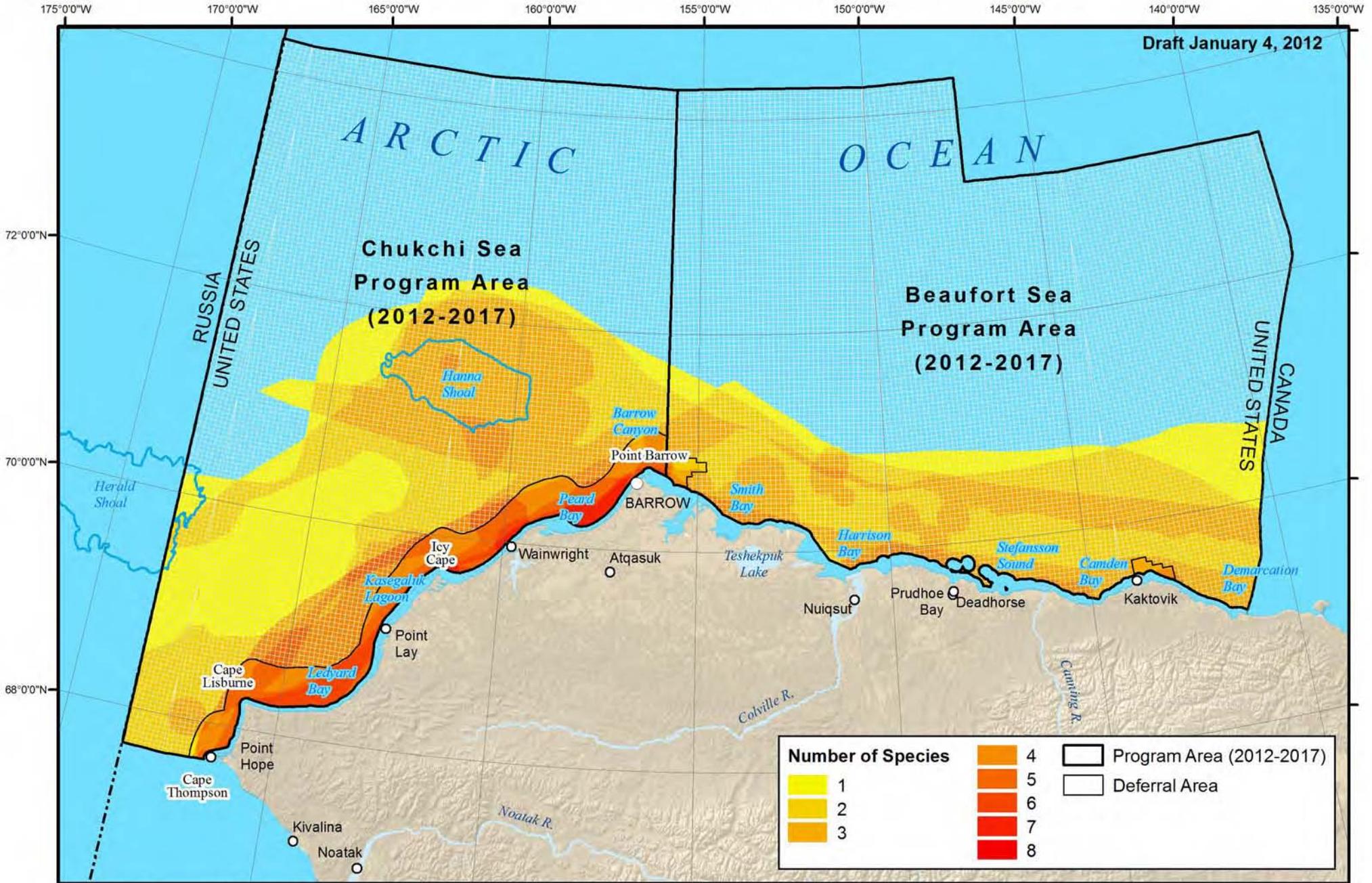
Attachment A

Map 6

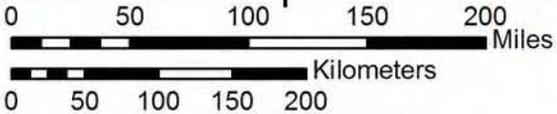
“Wildlife Concentration Areas in the Arctic Ocean”

Wildlife Concentration Areas in the Arctic Ocean

Draft January 4, 2012



Number of Species		Program Area (2012-2017)	Deferral Area
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		



Includes Bowhead, Beluga, and Gray Whales, Bearded, Ringed, and Spotted Seals, Walrus, Polar Bears, and Proposed IBAs.

*This map reflects the revised 2012-2017 OCS Arctic Program Areas, which include an additional 70,000 square miles of leasing blocks compared to the current 2007-2012 boundaries.

Amstrup, S. C., G. M. Durner, I. Stirling, and T. L. McDonald. 2005.
 Drew, G. and J. Piatt. 2011.
 Kalxdorff, S.B. 1997.
 Oceana. 2011.
 Quakenbush, L. 2009.
 Smith, M.A. 2010.
 Smith, M., N. Walker, C. Free, M. Kirchhoff, N. Warnock, and I. Stenhouse. Unpublished Report.
 US Geological Survey. 2011.

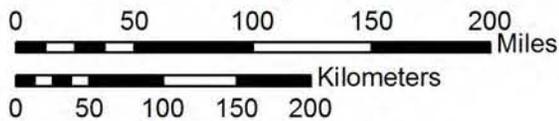
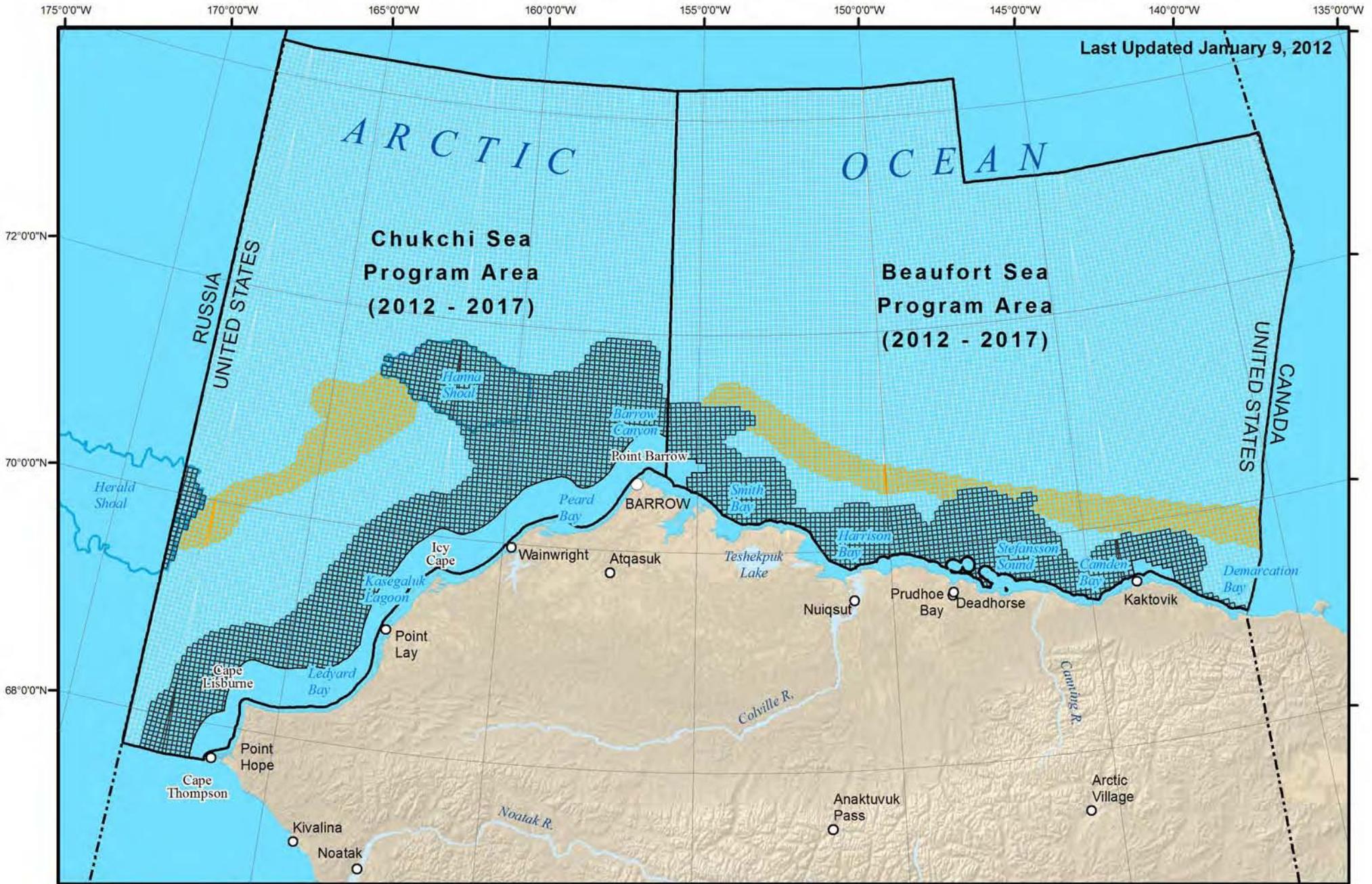
Attachment A

Map 7

“Proposed Deferral Areas and Seasonal Restrictions”

Proposed Deferral Areas and Seasonal Restrictions

Last Updated January 9, 2012



- Arctic Ocean Program Area
- Existing Deferral Area
- Proposed Deferral Blocks
- Proposed Seasonal Restriction Blocks

It would seem that the concept of "*Oil Exploration*" implies that, if the resource (in this case oil) is found in sufficient quantities, it would be developed into a *production* oil field - isn't that the **purpose** of exploring the site in the first place?? What other purpose COULD there be for this proposed exploration activity?? WHY are we exploring this site for oil, if not to **produce** oil from this site at some future point??

If this exploration activity did **not** take place, then there would be **no** oil production from this area - the logical conclusion is, therefore, that this proposed activity (the *oil exploration* discussed in the EIS) facilitates future oil *production* from this area. Oil PRODUCTION would be a direct result of this proposed oil EXPLORATION.

Given that we are *exploring* the amount of oil in this area for the purpose of eventually *producing* oil from this site, then how can NOAA fail to recognize that 'cumulative impacts' should include the effects of this area being developed into a full fledged production oil field?? Isn't that the entire *point* of this activity!!!! With **multiple** *oil-producing* wells being active for an **extended period of time** (the life of the oil field; 20-30 years?), the EIS's assumption that a major oil spill is "*not considered part of any of the proposed alternatives*" seems ridiculous!

How will oil be skimmed with sea ice present? How would you even deploy skimmer boats in heavy sea-ice conditions?? How would rough waters effect oil spill response effectiveness and time?? Could rough seas and sea ice, in combination, churn the surface oil? what, effects would this have on oil spill response??

The idea that an oil spill is a "*low-probability*" event would only apply to the *exploration* phase of this endeavor - once this area goes into full *production* (the logical 'next step', assuming the exploration is 'successful') this rather optimistic assumption that an oil spill event is a 'low-probability' event doesn't seem as valid.

Does NOAA, or any other agency/group, have data suggesting that the probability of a major spill from a production oil-well-field of this size would be a 'low-probability' event?? Are there ANY existing oil-well-fields of the size of the proposed exploration site that have operated THEIR ENTIRE DESIGN/PRODCUTION LIFE that haven't had at least one major spill event?? It would seem that a major spill event would, in fact, be LIKELY at some point during the oil-producing life of the field.

Mr. Cyrus B. Randelia, P.E.



RESOURCE DEVELOPMENT COUNCIL

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Jim Laiti

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Andy Mack

Thomas Mack

John MacKinnon

Stephanie Madsen

Sam Mazzeo

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Hans Neidig

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Senator Lisa Murkowski

Congressman Don Young

Governor Sean Parnell

February 24, 2012

Mr. James H. Lecky

Director

Office of Protected Resources

National Marine Fisheries Service

1315 East-West Highway, Room 13705

Silver Spring, MD 20910-6233

Re: DEIS on Effects of Oil and Gas Activities in the Arctic Ocean

Dear Mr. Lecky:

The Resource Development Council for Alaska, Inc., (RDC) is writing to express its opposition to the Draft Environmental Impact Statement (DEIS) on the Effects of Oil and Gas Activities in the Arctic Ocean.

RDC is a statewide organization made up of all resource sectors, business associations, labor unions, Native corporations, tourism providers, local governments and individuals. RDC's purpose is to encourage a strong, diversified private sector in Alaska and expand the state's economic base through the responsible development of our natural resources.

RDC has serious concerns with the DEIS and believes the proposed mitigation measures are so problematic that they will severely compromise the feasibility of developing oil and gas resources in the Alaska OCS. RDC does not support any of the alternatives in the DEIS. NEPA requires that an EIS provide a full and reasonable range of alternatives. However, none of the alternatives offered in the DEIS are reasonable.

The industry purchased leases in the Arctic in good faith, and Shell alone has spent more than \$4 billion on purchasing its leases and preparing to drill. However, the restrictions and mitigation measures outlined in the five alternatives of the DEIS would likely make future development improbable and uneconomic, which in our view would essentially amount to a de facto taking of the leases. The mitigation measures and restrictions are in addition to current lease stipulations and other measures already in place to protect the environment.

Our concerns include arbitrary seasonal closures that would effectively reduce the brief open water season by up to 50 percent in some areas of the Chukchi and Beaufort Seas. In addition, the scope of alternatives would arbitrarily limit activities to unrealistically low levels that underestimate the amount of anticipated exploration drilling. For example, the maximum amount of activity considered by any of the alternatives in the DEIS within a single season is two exploratory drilling programs in each sea. With six operators holding leases in the Chukchi and 18 in the Beaufort, this scope is extremely problematic in that it would likely curtail or defer exploration activities, preventing some leaseholders from pursuing development of their leases.

The proposed restrictions not only extend beyond the scope of earlier EIS', RDC believes they are beyond the scope and jurisdiction of the National Marine Fisheries Service (NMFS), and generally constitute a broad expansion of regulatory oversight. As a result, we believe the DEIS extends control beyond the agency's mandate and conflicts with other agency jurisdictions.

Other potential requirements that are of deep concern include a zero discharge mandate, despite no scientific evidence that any of the discharges would impact marine mammals. Cumulative impacts from oil and gas activities are prescriptively written to limit exploration activities during the short open water season. Acoustic restrictions would extend exclusion zones and sharply curtail lease block access. Arbitrary mandates, including flight restrictions to above 1,500 feet, are also proposed, as well as "Special Habitat Areas" which would also arbitrarily restrict access.

The DEIS also mandates portions of Conflict Avoidance Agreements (CAAs) with broad impacts to operations. CAAs are currently voluntary and mandating such agreements clearly supersedes the authority of NMFS.

RDC agrees with both ConocoPhillips Alaska, Inc. and the Alaska Oil and Gas Association that the current DEIS process is unnecessary and that it duplicates National Environmental Policy Act (NEPA) analyses that have already been performed. There has already been both a final and supplemental EIS for Chukchi Sea Lease Sale 193, which adequately addressed seismic exploration and other lease activities to which this DEIS is intended to assess. In addition, the Bureau of Ocean Energy Management (BOEM) has prepared NEPA analyses for Shell's exploration drilling programs and will prepare a project specific analysis for all other Arctic OCS exploration programs. As a result, the DEIS duplicates and complicates the NEPA process by introducing a competing impact assessment to BOEM's work.

Furthermore, there is no need to prepare a full EIS for Incidental Take Authorizations, given the Marine Mammal Protection Act (MMPA) grants the NMFS authority to authorize incidental take of small numbers of marine mammals only if such activity has no more than a "negligible impact" on affected stocks. NEPA only requires preparation of an EIS if a proposed action is expected to "significantly" affect the human environment. In fact, an EIS has never been prepared for the incidental take of small numbers of marine mammals. Likewise, geological and geophysical activities do not require an EIS, given they are limited by scope, duration, and impact. These activities do not have the potential to "significantly" affect the environment or subsistence resources, and there has not been a need for an EIS to address these activities.

RDC would also like to point out that there are regulations already in place for incidental take of polar bears and walrus in the Chukchi and Beaufort Seas, and the incidental harassment authorization process for NMFS species has long been established. This process has a long track record of success in protecting these species.

Considering what is already in place, the suggested mitigation measures outlined in the DEIS are unnecessary since they address problems that have long been adequately mitigated. Simply put, the restrictions and mitigation measures in the DEIS go too far. The DEIS is not only unnecessary, it is unworkable. It would likely preclude future development, undermining the Obama administration's priority of developing the vast oil and gas deposits of the Arctic, which the President has found to be in the nation's best interest.

The OCS is an important future source of U.S. energy supply. The potential reserves offshore Alaska could reach as high as 27 billion barrels of oil and 132 trillion cubic feet of natural gas – more than all the current total proven U.S. oil reserves. Development would significantly boost the economy, create 54,000 new jobs and \$145 billion in payroll across the U.S., and reduce America's reliance on foreign energy. It would also generate \$193 billion in revenues to federal, state, and local governments.

RDC strongly encourages the NMFS to abandon this unnecessary and duplicate process, which in its current form, would likely stymie U.S. Arctic oil and gas activities. If the agency insists on moving forward with the DEIS, at a minimum, the document must strike a balance in assessing reasonable measures that will protect the environment, while not compromising the feasibility of harnessing the much-needed energy resources of the Arctic.

Sincerely,

RESOURCE DEVELOPMENT COUNCIL
for Alaska, Inc.



Carl Portman
Deputy Director

Cc: Alaska Congressional Delegation
Governor Sean Parnell



Arcticeis Comments <arcticeis.comments@noaa.gov>

Comment for NMFS DEIS

1 message

Erica Reiner <ericaleigh.reiner@gmail.com>

Tue, Feb 7, 2012 at 8:57 PM

To: arcticeis.comments@noaa.gov

Cc: mjasny@nrdc.org

I, Erica Reiner, stand with the NRDC in their evaluation of the NMFS' DEIS in regards to poor analysis techniques and unlikelihood of the subsequent findings. This is a request for a higher-quality survey effort to be conducted, perhaps by an independent and trusted 3rd party team. I also implore you to uphold international standards and requirements for environmental and marine stewardship.

Regards,

Erica Reiner
MSc. Marine Science & Management

Mr. James H. Lecky
Director
Officer of Protected Resources
National Marine Fisheries Service
1315 East-West Hwy, Room 13705
Silver Spring, MD 20910-6233

February 28, 2012

Happy Monday Mr. Lecky,

The petroleum industry really took off in Oil Creek, Pennsylvania in 1859. Since then our country has maintained a status as one of the largest oil producing nations. Petroleum over the past 153 years allowed many industries, our society now depends on, to thrive. The reserves of petroleum in North America peaked in the 1970s and global reserves recently peaked as well. Our society is now considering using some of the most challenging to obtain as well as low quality oil existing on this planet in order to satisfy our addiction to fast, cheap, and abundant energy.

When a heroin addict needs a fix, he doesn't care what is destroyed on his path to satisfy his addiction. He may steal from his own mother, deceive his friends, or become violent to enable his addiction. The same is the case with energy.

During the public comment meeting in Anchorage, Alaska all the testimony from the petroleum industry mentioned that as the environmental standards and mitigation measures will hinder the economic viability to drill in the Beaufort and Chuckchi Seas. Alternatively, every scientist as well as subsistence users, all of whom have intimate relations to traditional knowledge or science, supported the no action alternative for the lack of current scientific knowledge of the region as well as insufficient mitigation measures, especially for noise.

Of the 5 alternatives the no action alternative is the only one that makes any rational sense with the state of the missing scientific baseline as well as long-term data. Then taking a look at the economic viability of companies being able to successfully work and meet the unsubstantiated environmental mitigation measures should seal the decision for no action. More science needs to be done. This DEIS should also be reprocessed as a pragmatic DEIS since it fails to include the Cook Inlet's marine resources, cultural, and economic impacts from the proposed leasing in the Beaufort and Chuckchi seas. The arctic marine ecosystem, subsistence hunting grounds, and commercial fishing are all connected to the proposed leasing area through migratory pathways of marine and coastal animals, therefore this must be considered.

Looking at the reality of climate change altering the arctic as we have come to know it needs to be fully considered as well. Now is not the time to risk the last wild salmon fisheries, the marine garden of the north, the culture of Alaskan native

peoples, and our oceans. When an oil spill happens, the oil knows no borders. Plumes of oil are still roaming the deep ocean after the Deep Horizon oil spill in the gulf, most likely due to the heavy use of deepwater dispersants. (Fate of Dispersants Associated with the Deepwater Horizon Oil Spill is attached) The use of these dispersant could have even more unknown effects in the cold and often ice covered seas of the arctic.

Our country is already risking the fate of 100,000s of species with our current level of reckless development for short-term profit and comfort. I claim it is not only irresponsible to be continuing existing the developmental raping of planet Earth, but it is insane to issue permits to new destructive development especially in one of the last intact ecosystems on planet Earth. I recommend that to fully consider projects under NEPA in our current state of the planet, life cycle analysis of the project as well as full ecosystem mapping of the proposed project area must be considered. Otherwise, the whole process is a sham based off of politics more than reality.

Thank you for your consideration.

All the best,

Tina Robinson

Co-founder Cultural REcyclists



We need more jobs . We need to be less dependent on other countries. We need to allow /permit more drilling in Alaska and the US. It will only get worse and we'll pay more at the pumps when we shouldn't have to.

Laurel Schalavin

NOAA Fisheries Service received several thousand copies of this letter from Sierra Club members. Here is a sample of the letter that was sent as part of the public comment period.

No Drilling in the Polar Bear Seas

Feb 23, 2012

Dear NOAA Administrator Lubchenco,

NOAA's National Marine Fisheries Service recently released a Draft Environmental Impact Statement on the effects of oil and gas activities in the Arctic Ocean. It is apparent that there is too little known about the marine environment in the Beaufort and Chukchi Seas to allow oil and gas activities. I support the no-action alternative and urge the administration to adopt it.

America's Arctic Ocean is home to amazing wildlife, including beluga and bowhead whales, polar bears, walrus, seals, and more. In the vastness of the Beaufort and Chukchi Seas, the lives of these animals are not well known. However, we do know that their lives are already being altered by climate change. We cannot allow offshore drilling activities because the harm to the marine environment is too great.

Oil and gas exploration produces some of the loudest man-made noises in the ocean that can interfere with marine mammals' migration routes, feeding habits, and resting areas. The cumulative effects of these activities will be detrimental to marine wildlife and are not adequately analyzed. For example, bowhead whales are extremely sensitive to noise from seismic air guns, which would disrupt migration pathways and affect subsistence hunts for local Alaskan communities.

Mitigation measures also should be mandatory for all activities, rather than on a case-by-case basis. Currently identified areas with high wildlife and subsistence values should also receive permanent deferrals, including Camden Bay, Barrow Canyon/Western Beaufort Sea, Hanna Shoal, shelf break at the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.

After BP's Deepwater Horizon oil disaster it became clear that exploration drilling can cause a large oil spill, which would be impossible to clean up in the harsh Arctic conditions. We know too little about Arctic marine wildlife to know this would not significantly harm populations. The United States Geological Survey identified important gaps in existing information related to the

Beaufort and Chukchi seas, including gaps on the effects of noise on marine mammals.

It is important to get this decision right because future decisions rely on it. The oil and gas exploration activity considered in this Draft EIS cannot be justified against existing laws to protect marine mammals and subsistence hunting. I urge NMFS support the no-action alternative and to defer any more oil and gas exploration.

Sincerely,



Arcticeis Comments <arcticeis.comments@noaa.gov>

Oppose DEIS in Arcitic Ocean

1 message

Lorali Simon <lorali.simon@gmail.com>

Tue, Feb 14, 2012 at 4:37 PM

To: arcticeis.comments@noaa.gov

Dear Director,

The DEIS is extremely problematic in that proposed mitigation measures will severely compromise the economic feasibility of developing oil and gas in the Alaska OCS. Limiting activity to only two exploration drilling programs in each the Chukchi and Beaufort Sea during a single season would lock out other lease holders and prevent them from pursuing development of their leases. Arbitrary end dates for prospective operations effectively restrict exploration in Camden Bay removes 54 percent of the drilling season. The DEIS extends control and oversight beyond the agency's authority and conflicts with other agency jurisdictions such as BOEM and the U.S. Fish and Wildlife Service. The DEIS extends restrictions on the amount of activity well beyond the scope of the earlier Lease Sale EIS. Proposed actions to restrict noise or cumulative impacts from oil and gas activities are prescriptively written to limit exploration activities during the short open water season.

Acoustic restrictions extend exclusion zones and curtail lease block access. "Special Habitat Areas" arbitrarily restrict lease block access. Many mitigation measures are unclear or left open to agency interpretation, expanding uncertainties for future exploration or development. For example, alternative five includes technologies for mitigation that have not yet been built and/or tested. The DEIS includes mitigation measures which would mandate portions of Conflict Avoidance Agreements with broad impacts to operations. Such a requirement supersedes the authority of NMFS. This DEIS clearly proposes mitigation measures beyond the scope and jurisdiction of NMFS and constitutes a broad reassessment and expansion of regulatory oversight. The DEIS is arbitrary – it is not associated with a specific project. The DEIS is not based on the reasonably foreseeable level of activities in the Beaufort and Chukchi Seas, nor past lease sales, a proposed lease sale, or a five-year planning program. The DEIS covers over 200,000 square miles of waters within the Beaufort and Chukchi Seas, including state waters.

Sincerely,
Lorali Simon
Palmer, Alaska

February 28, 2012



Mr. James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

RE: National Marine Fisheries Service Draft Environmental Impact Statement for the Effects of Oil and Gas Activities in the Arctic Ocean (RIN 0648-XA885)

Statoil USA E&P Inc. (Statoil) appreciates the opportunity to provide these comments for your consideration. On December 30, 2011, the National Marine Fisheries Service (NMFS) released its Draft Environmental Impact Statement for the Effects of Oil and Gas Activities in the Arctic Ocean (DEIS) for public review and comment. 76 Fed. Reg. 82275 (December 30, 2011)¹. The Bureau of Ocean Energy Management (BOEM) is named as a cooperating agency on the DEIS.

I. Overview.

Statoil and its affiliates comprise an international energy enterprise with operations in thirty-six countries, including in offshore waters in the United States. Statoil is the largest offshore operator in the world in waters in excess of one hundred (100) meters, and we are committed to contributing to the world's energy needs in a responsible manner, developing new technology to accomplish that goal, and creating innovative solutions to problems in all facets of our business. With over 35 years of experience conducting oil and gas operations on the Norwegian Continental Shelf and in deepwater environments around the world, we respect the need to balance operational efficiency with environmental protection.

In 2008, at Lease Sale 193, Statoil acquired 16 leases which it operates in the Chukchi Sea. Statoil is completing its evaluation of the 3D seismic data it has recently acquired on these leases and plans to conduct exploratory drilling during the 2014 summer exploration season. Statoil also owns a working interest in 50 additional Chukchi Sea leases operated by ConocoPhillips Alaska, Inc. (CPAI). CPAI plans to conduct exploratory drilling during the 2014 summer exploration season as well. Thus, Statoil's interests will be affected by any actions NMFS or BOEM might take based on this DEIS.

Statoil is a member of the Alaska Oil and Gas Association (AOGA). Statoil supports and reiterates the comments submitted by CPAI and AOGA.

¹ NMFS extended the comment period to February 28, 2012. 77 Fed. Reg. 2513 (January 18, 2012).

Statoil has many concerns with the DEIS and highlights only a few of those concerns in this letter. Statoil's comments are focused only on the Chukchi Sea.

II. An EIS is Neither Required or Appropriate under These Circumstances.

An important threshold question is whether an EIS is required or otherwise appropriate under these circumstances. Given the fact that BOEM recently completed a supplemental EIS for the Chukchi, we fail to appreciate the legal or policy reasons to prepare another EIS analyzing similar issues.

The National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.* requires the preparation of an environmental impact statement (EIS) for any federal action that may significantly affect the human environment. Currently there is no concrete proposal before the NMFS that requires preparation of an EIS. As NMFS is aware, the Marine Mammal Protection Act (MMPA) limits NMFS authorizations to those that will have a "negligible impact" on affected marine mammals. As a consequence, every historical oil and gas activity considered by NMFS has been appropriately analyzed under an Environmental Assessment (EA) rather than an EIS.

NMFS' stated purpose for the DEIS is to analyze the potential impacts from issuance of incidental take authorizations (ITA) under the MMPA for unspecified "G&G permitted activities, ancillary activities and exploratory drilling activities in the Beaufort and Chukchi seas," and the BOEM's issuance of permits for G&G permits and ancillary activities in both seas. DEIS at 1-9. Although these types of activities will be occurring in coming years, the agency does not have before it application requests to justify the preparation of an EIS. Nor is NMFS, to our knowledge, contemplating the issuance of an incidental take regulation (ITR). From our perspective, the draft EIS appears to be designed for a hypothetical ITR even though, to our knowledge, no such regulation has been, or is being, considered by either industry or NMFS.

III. The Range of Alternatives is Fundamentally Flawed.

Statoil's most significant concern relates to the range of alternatives, which we believe is so fundamentally flawed that it must be completely re-worked from the ground up. Under NEPA, the range alternatives analyzed by the agency must be reasonable in light of the purpose and need of the DEIS. Here, the range of alternatives is, on its face, unreasonable, because the alternatives contemplate an unrealistically high level of activity for seismic surveys and does not recognize the likelihood of having three exploration drilling programs in a given year. The root cause of the deficiency in the alternatives is NMFS' reliance on a generic set of assumptions concerning anticipated levels of activity. This fundamental flaw carries over into the alternatives which are premised on analysis of a range of scenarios which are unlikely to occur (in the case of seismic) or which ignore the scope of activities which are likely to occur (in the case of exploration drilling).

The DEIS analyzes five alternatives – the requisite no action alternative, and four other alternatives. Alternative 2 contemplates up to three 2D/3D seismic or CSEM surveys

per year with one exploratory drilling program. The mitigation measures included in this alternative are the “standard” mitigation measures along with the possible additional mitigation measures that are not clearly defined. Alternative 3 contemplates up to five seismic or CSEM surveys with two exploratory drilling programs. The mitigation measures are identical to those in Alternative 2. Alternative 4 is the same as alternative 3, but it would also include timing restrictions and buffer zones for listed areas. Of particular concern to Statoil are those closures and restrictions tied to the Hanna Shoal. Finally, Alternative 5 is again the same as three, but it then contemplates additional mitigation measures that “focus on the use of alternative technologies.”

The level of seismic activity contemplated under each of the alternatives is significantly overstated. From our understanding of the oil and gas industries’ plans in the Chukchi Sea, it is unlikely that any additional surveys will be conducted in the next two to three years. Accordingly, the alternatives scenario should be substantially revised to account for a realistic level of seismic activity.

Our most significant concern relates to the assumptions for exploration drilling. Six companies own leases in the Chukchi Sea – Statoil, Shell, ConocoPhillips, ENI, IONA, and Repsol, the first three of which are planning to drill exploratory wells within the next several years. By 2014, it is highly probable that there will be one or more seasons in which all three leaseholders would be undertaking drilling operations in the Chukchi Sea. NMFS states that the range of activities used to formulate the alternatives is based on the range of activities for the next five years and on past levels. DEIS at 2-31. However, this is clearly not the case as none of the alternatives encompasses the likelihood of three operators, all of whom currently own leases in the Chukchi Sea, conducting drilling operations simultaneously. The range of alternatives is legally flawed because none of the alternatives address the scenarios that are currently being contemplated and which are most likely to occur. Statoil requests that NMFS completely revise the alternatives to account for the realistic exploration drilling scenarios in the majority of the alternatives

Alternative 5 should be deleted in its entirety. The alternative is identical to alternative 3 with the exception that it includes “alternative technologies” as possible mitigation measures. However, virtually none of the technologies discussed are currently commercially available nor will they be during the time frame of this EIS. For example, on page 2-23, NMFS discusses a number of alternative acoustic source technologies, but as acknowledged in the DEIS, “...none of the systems with the potential to replace augment or replace airguns as a seismic source are currently commercially available.” Similarly, on page 2-24, NMFS sets out a number of technologies in a table – three out of the four listed are not currently commercially available and will not be during the coming five years. Finally, on pages 2-25 through 2-29, NMFS discusses additional technologies. Again, virtually none of these are commercially available now nor will they be in the next five years. Thus, this alternative serves no useful purpose as the additional measures are not available for use and will not be during the time period covered by the EIS.

IV. The DEIS Has Incomplete and Unsupported Conclusions Concerning Impacts in the Hanna Shoal Area.

Under Alternative 4, NMFS proposes to include a third layer of potential mitigation measures that would involve timing restrictions as well as closure of certain areas. Of particular concern to Statoil are the measures associated with the Hanna Shoal area.

All of Statoil's leases are in close proximity to the Hanna Shoal. NMFS describes the area as one with "high biological productivity; a feeding area for various marine mammals." DEIS at 2-37 but does not provide any citations to support these assertions. Based on this, it appears that NMFS is proposing to close this area to seismic activity and exploration operations during the following time periods – July to August (walrus); late August to early October (gray whales); September 1 to October 15 (no oil and gas operations in Hanna Shoal or the buffer zone except for emergencies). In addition, NMFS is proposing a buffer zone around Hanna Shoal based on prevention of ensonification that is not clearly defined.

After introducing Alternative 4 on page 2-37 of the DEIS, NMFS states that the buffer zone is described in detail in Chapter 3, Sections 3.2.3 and 3.2.4; however neither of these sections contains this information. The former is a discussion of marine and coastal birds, while the latter is a discussion of marine mammals². Without more detailed information regarding the buffer zone, it is difficult to provide comprehensive comments. However, according to studies by JASCO Applied Sciences Ltd., which were carried out in 2010, a 120 dB safety zone with Hanna Shoal as the center would prevent Statoil from exercising its lease rights because a 120dB buffer zone would encompass virtually all of our leases. NMFS does state that "In the event a buffer zone of this size is impractical, a buffer zone avoiding the ensonification of the important habitat above 180 dB could be used." Although this might result in a smaller buffer zone, it could still have a significant negative impact on Statoil's ability to exercise its lease rights depending on how the buffer zone was calculated.

Since the DEIS does not provide any information as to how and why the boundaries of the Hanna Shoal were drawn, it is not possible to meaningfully comment on whether the protection itself is justified and whether it should be further protected by a buffer zone.

More fundamentally, the DEIS lacks any evidence that the Hanna Shoal actually provides support on an annual or consistent basis for important biological productivity and life history functions of the walrus or gray whale. Recent data cited in the DEIS (Clarke et al 2011) supports the fact that the area is not currently commonly used by gray whales, thus undercutting any need for such protection. It goes against the basic underpinnings of NEPA, which requires the use of best available science, to designate an area for protection when the science does not support such a conclusion. Nor can the proposed closures be justified on the basis of mitigating potential impacts to

² The Executive Summary for the DEIS does contain an explanation of what areas might be encompassed by the buffer zone, but this information is not presented in the document itself.

subsistence hunters during the fall bowhead whale hunt as the DEIS acknowledges that the actual hunting grounds are well inshore of Hanna Shoal.

Regarding walrus³, movement tracks from walrus tagged by the USGS in 2011 showed no evidence that walrus used the area. Instead, tagged animals used areas closer to the Chukchi sea coast, Ledyard Bay, and offshore areas south of Hanna Shoal. These two years of tagging data (and other data from previous years) suggest that Hanna Shoal may be used heavily by walrus in some years, but it does not support the conclusion that it is an especially important location on an annual basis. Nor is there sufficient information in the DEIS regarding the use of the area by walrus for feeding to justify protection. There appears to be only one page in the entire DEIS where this is even referenced (DEIS at 4-393), and NFMS merely notes that the benthic organisms on which walrus feed occur on or near the Hanna Shoal. There is no discussion of how the assemblage of benthic organisms found at Hanna Shoal is different, and presumably more important, than other locations within the Chukchi Sea such that protection of the area could be justified.

Finally, the DEIS does not contain any discussion of the scientific basis supporting how NMFS created the boundaries of the protection area. As NMFS has not provided the information in the DEIS, no meaningful comments can be offered. NFMS itself completely undercuts any justification for closure based on impacts to walrus when it states: "...none of the data collected to date on walrus reactions to explorations activities indicate that they would be displaced from key areas or resources for more than a few minutes to hours." DEIS at 4-544. Thus, the current science does not support closure of the area for protection of the walrus. Given that NMFS provides no sound scientific justification for the closures or the buffer zone, they should be removed from Alternative 4. Moreover, any additional timing stipulations or other measures that could negatively affect the drilling window for the Chukchi Sea need to be carefully scrutinized. The realistic drilling window for offshore operations in the Arctic is typically 70 – 150 days. Any infringement on this limited time frame could result in insufficient time to complete drilling operations.

V. Other Issues.

The remainder of this comment letter will highlight just a few of the numerous technical errors that we have found in the document. On page 3-34, the sound matrix is wrong. The DEIS incorrectly states that the difference between sound pressure in air and in water is 26dB. It is not - this value is the difference for the reference values. It should be 62dB. See Gausland 2000 and the OGP Report 406 (2008) and DOSIT (<http://www.dosits.org/science/soundsinthesea/air/water>).

Table 3.1-6 is incorrectly cited to Richardson 1995. On page 4-43, NMFS refers to PTS when it should be TTS. TTS is used as a proxy for PTS as there is no documented reference to PTS in marine mammals. On page 4-86, NMFS refers to Richardson 1995

³ See <http://alaska.usgs.gov/science/biology/walrus/tracking.html>.

as support for its statements. However, there is more recent information that represents the best available science, and better meets NEPA's mandate to use the best available science. NMFS should revise the document to account for Southall et al's 2007 paper on Effects of Noise on Marine Mammals.

On page 4-94, NMFS states that gas-bubble disease could be a mechanism for strandings in dolphins. However, there is no scientific support for this statement, and in fact, the opposite is true. See, "Investigation of the Potential for Vascular Bubble Formation in Repetitively Diving Dolphin" D.S. Houser *et al* 2007.

Last, under the MMPA, NMFS can only authorize the incidental take of marine mammals if the anticipated effects are expected to have a "negligible impact." A significant deficiency in the DEIS is NMFS' characterization of impacts of various impacts on marine mammals as "moderate" or "minor." By characterizing the impacts on marine mammals from forecasted activities as something other than "negligible," NMFS is creating significant legal risk for later stage permitting activities. The underlying premise that oil and gas activities cause higher than "negligible" impacts is not supported by the science or the agencies' many past actions in permitting Arctic oil and gas activities. Chapter 4 of the DEIS needs to be significantly revised to eliminate the arbitrary factual findings and conclusions and make abundantly clear through a stand-alone discussion the distinction between evaluation of impacts under NEPA and findings required by the MMPA.

VI. Conclusion.

The National Petroleum Council, in its report released in September of 2011, *Prudent Development: Realizing the Potential of North America's Abundant Natural Gas and Oil Resources* stated that access to prospective areas needs to be encouraged by the removal of regulatory uncertainty. This DEIS does just the opposite. It will not be a document that can be used to support analysis of future exploration drilling activities because, as noted above, the alternatives analysis does not capture the range of activities that are likely to occur. If finalized in anything resembling its current form, the EIS will only serve to create more uncertainty and will likely fuel needless litigation. We are highly skeptical that the current DEIS can be revised to fully address the many concerns raised by Statoil, CPAI and AOGA. Hence, we recommend that NMFS abandon this EIS and continue with its past practice of evaluating the impacts of oil & gas activities in the Arctic through project-specific NEPA analyses.

Sincerely,


Bill Moore
Land Manager

1-27-12
A Note to Say...

Comments on the Draft EIS
(Effects of Oil & Gas Activities
in the Arctic Ocean)

Alternative 1 - No Action

Alternative -

Is the Alternative that
should be taken - no permits
should be issued. Many
citizens depend on these
waters and the mammals
and fish they provide. There
is no proven method for
cleaning up an oil spill
in ice-filled waters.

A Note to Say...

The risks are enormous in drilling for oil in these extreme Arctic conditions. Seismic testing would disrupt whale migration patterns and any incidental takes of marine mammals is totally unacceptable.

Noise, drilling wastes, air pollution would disrupt/displace whales, sea lions, polar bears.

No drilling should be allowed - no permits should be issued, period!

A Note to Say...

It is absolutely insane
to say an oil spill could
be cleaned up - and an
oil spill will happen - there
is no doubt about that.

Thank you for the opportunity
to comment although it won't
do any good.

Sincerely,
Jerry Cummings



From the Desk of:

SCOTT THORSON
1231 GAMBELL STREET
SUITE 300
ANCHORAGE, ALASKA 99501

February 5, 2011

Director
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

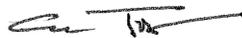
I am writing to express my serious concerns about the Draft Environmental Impact Statement (DEIS) on the Effects of Oil and Gas Activities in the Arctic Ocean.

No alternative under this DEIS is acceptable. Limiting the extent of activity to two exploration programs annually in the Chukchi and Beaufort Seas is unreasonable and will shut out certain lease holders.

The proposed mitigation measures outlined in the DEIS makes virtually any development uneconomic and therefore could preclude any development of the resources both Alaska and Lower 48 needs. Moreover, these mitigation measures could make the investments made by companies who purchased leases from the government worthless as the current eighteen operators who own these leases will be seriously handicapped in performing the work necessary to prove the reserves under the time constraints required by the federal government.

This Draft Environmental Impact Statement should be scrapped and the process should begin again. The document is so flawed that it is a non-starter.

Sincerely,



Scott Thorson

February 28, 2012

Director, Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910
Cc: arcticeis.comments@noaa.gov

Subject: Comments on NMFS's DEIS on the Effects of Oil and Gas Activities in the Arctic Ocean

Thank you for the opportunity to comment on the National Marine Fisheries Service (NMFS) Draft Environmental Impact Statement (DEIS) on the Effects of Oil and Gas Activities in the Arctic Ocean. The Nature Conservancy (the Conservancy) is a non-profit organization whose mission is to conserve the lands and waters on which all life depends. We are best known for our science-based, collaborative approach to developing creative solutions to conservation challenges. Our on-the-ground conservation work is carried out in all 50 states and more than 30 foreign countries and is supported by approximately one million individual members.

The Conservancy has worked at more than one hundred marine sites around the globe employing a variety of strategies for marine conservation including habitat restoration at important nursery and spawning areas, removal of invasive species, protection of key coastal lands, private conservation of submerged lands, establishment of protected areas, management of extractive marine resources activities, and reduction of nutrient and toxic inputs to coastal systems. Our selection of appropriate conservation strategies is done in concert with public and private partners and depends on the biological, socioeconomic, and governance circumstances at each site.

We appreciate that NMFS expanded the scope of this DEIS to include a broader range of activities, additional mitigation measures, and a cumulative impacts analysis. The Conservancy is a strong advocate for multi-objective coastal and marine planning, and the expanded scope is in line with such an approach. However, the Conservancy urges NMFS to take this a step further and align the DEIS and future permitting decisions with other coastal and marine spatial planning efforts for the Arctic.

In the decades to come this region will see growth in coastal and on-shore infrastructure. Exploration and development of oil and natural gas resources as addressed in this DEIS is one of several emerging uses anticipated in the Arctic. Shipping is increasing and commercial fishing (once a fishery management plan is developed) and tourism may increase in the future. Currently there is no coherent plan in place to guide development of this range of new and expanding uses and the facilities and infrastructure that will be needed to support them.

Recognizing the indistinguishable link between economic productivity and health of our oceans and coastal zones, President Obama, via executive order in July 2010, established a National Ocean Policy and adopted the recommendations of The White House Council on Environmental Quality's Interagency Ocean Policy Task Force. Those recommendations included a framework for effective coastal and marine spatial planning (CMSP), a decision-making process that creates a blueprint for ocean use and conservation.

The Conservancy strongly supports coastal and marine spatial planning as a key tool in developing a national strategy for our ocean, coasts, and Great Lakes and is actively involved in advancing the policy and practice of CMSP. As the National Ocean Policy is implemented, the Conservancy urges NMFS to align its planning and permitting decisions with the recommendations of the interagency task force, including the twelve national guiding principles for CMSP. Engaging stakeholders is a critical first step in CMSP, and we are pleased to see that the North Slope Borough is an official cooperating agency for this report.

In the Arctic we have an opportunity to learn from experience (i.e. the development of other coastal regions) and to plan for development in a way that provides for the conservation of sensitive resources, offers greater clarity and certainty for development interests, and respects the needs and protects the way of life for indigenous communities.

Beyond the need for more integrated marine and coastal spatial planning in the Arctic, we have concerns with the DEIS that we hope NMFS will incorporate into the final EIS.

1. Mitigation activities described in the plan focus on minimization measures and do not incorporate the full mitigation hierarchy which is to avoid, minimize, and finally offset impacts to species and habitats. The DEIS should clearly identify areas where activities will be prohibited to avoid any take of marine mammals. It should also establish a framework for calculating potential take and appropriate offsets.
2. Therefore, we recommend that the time/area closures necessary to ensure that irreplaceable resources will not be impacted by oil and gas development be included in any Alternative as standard avoidance measures. Also, the list of closures should be expanded to include Dease Inlet and boulder patch communities.
3. The DEIS begins to identify data gaps for Arctic marine mammals' sensitivity to oil and gas development projects; however, there are also baseline data gaps for marine mammals that are needed immediately in order to assess how behavior changes with increased activity. These data are also critical to developing appropriate mitigation measures and evaluating their effectiveness.
4. While the DEIS addresses a Very Large Oil Spill (VLOS) scenario it does a poor job of quantifying or characterizing the impacts from routine spills and leakage. Additionally, there should be better clarification that VLOS are violations of the Clean Water Act and illegal under a MMPA permit.

Additionally, in the introduction, NMFS indicates that this DEIS looks at cumulative impacts into the foreseeable future. Later, it appears the cumulative impacts were assessed over a 5-year time frame. It is unclear whether this is the time frame and if so NMFS might consider looking out over 10-15 years when commercial development activities are likely to occur.

The remainder of this document addresses these concerns listed above in more detail.

Utilizing the full mitigation hierarchy

A major concern with the DEIS is that it uses a very narrow definition of mitigation. Conservancy scientists along with other institutions including the Environmental Law Institute have been working with a number of Federal agencies to implement the full 'mitigation hierarchy' or 'mitigation protocol' in environmental impact assessments and mitigation planning. The mitigation protocol employs three phases of mitigation activities: avoid, minimize, and offset.

The mitigation protocol means an approach to the foreseeable impacts of projects that requires first making every effort to avoid damages to environmental resources, then minimizing that

damage that cannot be avoided, and only then offsetting the damage that cannot be avoided or minimized. (Wilkinson et al. 2009)

However, the majority of the standard and additional mitigation measures described in the DEIS are in fact minimization measures. The plan fails to identify clear avoidance measures and there is no description of offsets that will be used to protect and/or restore marine mammal habitat if take occurs.

Avoidance Measures

Identifying geographical areas where impact will be avoided altogether, otherwise known as ‘avoidance areas’ or ‘no take zones’, is an important first step in the mitigation hierarchy (McKenney and Kiesecker, 2010). Avoidance areas should be established where the resource is irreplaceable and where take would either cause irreversible impact to the species or its population or where mitigation of the take would have a low probability of success. Therefore, it is the sensitivity of the resource, not the level of activity that should dictate the location of avoidance areas.

The plan has identified temporal no take zones, but these are included as additional mitigation measures and only mandatory in Alternative 4.

Additional Mitigation Measure B1. Temporal/spatial limitation to minimize impacts in particular important habitats, including Camden Barrow Canyon, Hanna Shoal, the shelf break of the Beaufort Sea, and Kasegaluk Lagoon/Ledyard Bay Critical Habitat Unit.

Other avoidance measures identified in the DEIS include Additional Mitigation Measures D3-D6. NMFS should consider adding an Avoidance Measures section to Appendix A and include these time/area closures as standard avoidance measures. These avoidance measures should be included in each and every Alternative if in the event of a foreseeable adverse impact the resource could not be replaced with known restoration measures. Additionally, the time/areas closures should be expanded to include the Dease Inlet and boulder patch communities in the Chukchi and Beaufort Seas. Since there is limited data on the exact location of boulder patch communities, measures to identify location of and appropriate buffers around such communities should be included in this section. See below for information on Dease Inlet and boulder patch communities.

Compensatory Mitigation

The DEIS fails to address the third step in the mitigation hierarchy which is to compensate for unavoidable and incidental take. NMFS should provide a clear framework for compensatory mitigation activities. In the report *The Next Generation of Mitigation*, the authors identify three primary forms of compensatory mitigation:

Obligations to provide compensatory mitigation may be satisfied by: purchasing credits from a conservation or mitigation “bank” that is established in advance, making a payment to an “in-lieu fee” program that supports a planned conservation action, or by the regulated entity or actor directly undertaking the compensation actions.

NMFS should identify the preferred compensation mechanism and develop measures for estimating take of marine mammals, for example through collisions or spill events, and calculating appropriate offsets.

Immediate need for environmental baseline data, including marine mammals

This new DEIS was developed to incorporate new information that alters the scope, set of alternatives, and analyses considered previously. In addition, NMFS determined that an EIS must also address the potential effects of issuing authorizations for take that would occur incidental to exploratory drilling, which were not addressed in the 2007 DEIS. Among other things, this new EIS would address the effects of both geophysical surveys and exploratory drilling, cumulative effects over a longer time frame, and a range of practicable mitigation and monitoring measures for marine mammals and their availability for subsistence uses.

As written the DEIS does not address or acknowledge the increasingly well-documented gaps in knowledge of baseline environmental conditions in the Chukchi and Beaufort Seas, nor how baseline conditions and marine mammal populations are being affected by climate change. It is unclear what decisions over what period of time would be covered under the DEIS or how information gaps would be addressed and new information incorporated into future decisions.

The Arctic is experiencing change in ice extent at a rate that exceeds even the most aggressive models. Not only is the extent of sea ice diminishing, it is also diminishing in quality with a shrinking proportion of thicker, more complex multi-year ice. Further, the amount and duration of annual ice persistence over shallow water of the Chukchi and Beaufort Seas off Alaska's coast is declining as the summer ice retreats to the deeper basin of the central Arctic Ocean (National Snow and Ice Data Center, 2011).

These changes have important, but largely unknown, potential impacts to a variety of ice-dependent species. For example, walrus traditionally use ice as a resting platform from which they access shallow feeding grounds in the Chukchi. Traditionally, as this ice shifted and moved, the walrus have been able to move with it and access a wider range of feeding areas. As walrus are forced to use immovable shore-based sites, their foraging areas become constrained with potential to reduce the amount of food available (Jay and Fischbach, 2008).

Similarly, several species of "ice seals" (e.g., ringed, spotted, and bearded seals) that use Alaska's Arctic waters are important subsistence foods for Alaska Natives. These animals rely on sea ice for resting, for shelter, and as a platform to access feeding areas. They are also key prey for polar bears, which are listed as threatened under the Endangered Species Act (ESA) and also use sea ice as their primary hunting grounds.

We know that sea ice over shallow feeding areas is a vitally important aspect of habitat for these species. We do not know the full effects of the rapid changes to this key habitat at the individual or population level. Further, we have little information on the potential for additional stresses brought by oil and gas activity and increased shipping and tourism and how these potential stressors may magnify the impacts associated with changing climate and shrinking sea ice habitats.

It is our understanding that some limited research to address these gaps is beginning undertaken, but we are concerned that NMFS lacks the information to achieve the purposes of this DEIS – and the document includes little discussion about where data gaps exist or what steps are recommended to address those gaps and incorporate new information into decisions so as to avoid or mitigate impacts on the environment. While research and monitoring for marine mammals in the Arctic has increased, NMFS still lacks basic information on abundance, trends, and stock structure of most Arctic marine mammal species. This information is needed to gauge whether observed local or regional effects on individuals or groups of marine mammals are likely to have a cumulative or population level effect.

Further, the DPEIS appears not to address or acknowledge the findings of the U.S. Geological Survey (USGS) June 2011 report “Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska.” USGS reinforced that information and data in the Arctic are emerging rapidly, but most studies focus on subjects with small spatial and temporal extent and are independently conducted with limited synthesis. USGS recommended that refined regional understanding of climate change is required to help clarify development scenarios. Uncertainties exist on topics for which more science focus is required, including physical parameters, such as storm frequency and intensity, and circulation patterns, and species’ response to environmental changes.

Apparently, NOAA does not currently have sufficient information to adequately assess cumulative effects to the environment over the unspecified “longer time frame” described in the DEIS introduction as one of the purposes of this new DPEIS. The DEIS appears, in its cumulative effects analysis (Sec. 4.10.1) to define a 5-year “reasonably foreseeable future” as the basis for its assumptions regarding cumulative effects. However, this does seem to meet the “longer time frame” goal identified in the introduction.

We recommend that any G&G activities in the Arctic must be accompanied by a parallel research effort that improves understanding of ecosystem dynamics and the key ecological attributes that support polar bears, walrus, ice seals and other ice-dependent species. NMFS, as the agency with principal responsibility for marine mammals, should acknowledge that any understanding of cumulative effects is hampered by the need for better information. NMFS should acknowledge the need for additional research and monitoring particularly regarding marine mammals and the topics identified by USGS and other science centers, such as the National Marine Mammal Laboratory. The DPEIS should describe a program of work to address these gaps and explain clearly how new information will be incorporated into future decisions.

Assessing routine and large oil spill impacts

While we continue to learn lessons from the Exxon Valdez Deepwater Horizon oil spill, one thing is clear: even in moderate weather conditions, and in heavily developed areas with significant experience in oil spill response, the ability to contain oil, once accidentally released into the environment, is limited. Moreover, the Deepwater Horizon spill illustrated the technological risks of oil spills in previously unexplored areas. While the depths of the Gulf of Mexico are a very different environment than the Arctic shelf, the lesson is transferable: we must use caution, especially in new environments. In the Arctic, containment and reclamation of spilled oil in and on the water will be further hampered by persistent poor weather, ice, freezing temperatures, remoteness, and lack of infrastructure to stage response personnel and supplies. We do not believe there has been adequate demonstration of spill cleanup technology under the challenging conditions that will likely prevail in the event of a spill.

The National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling made the following recommendations in its *Report to the President*:

“The remoteness and weather of the Arctic frontier create special challenges in the event of an oil spill. Successful oil-spill response methods from the Gulf of Mexico, or anywhere else, cannot simply be transferred to the Arctic. Industry and academic organizations are conducting research on response to oil on ice, but more needs to be done. A comprehensive interagency research program to address oil-spill containment and response issues in the Arctic should be developed, funded, and implemented within the federal government. Spill trajectory and weather models based on Arctic conditions must also be developed. This research should be funded promptly by the Oil Spill Liability Trust Fund, and the resulting analysis should inform when and where leasing occurs.”

We urge NOAA to act on this recommendation by organizing an interagency research program on oil spill response in the Arctic and to seek appropriations from the Oil Spill Liability Trust Fund to carry out that program in full as soon as possible.

The DEIS does not sufficiently consider the role of mitigation measures for very large oil spills which would lead to “least likely adverse impacts” associated with exploratory drilling. One such mitigation measure is to identify the habitats with the most important biodiversity functions and subsistence values that might be affected by a large spill in response planning that occurs prior to exploratory drilling so that those areas might be protected first should a spill occur. Even though an incidental take permit would not authorize the impacts associated with a very large spill, NOAA is required to impose mitigation measures that are available and would result in the least likely impacts from permitted exploratory drilling. Identification of high value environmental areas is one such measure.

Additionally, routine oil spills associated with wells, platforms, vessels and pipeline operations are unavoidable. Although compliance with NPDES permits would reduce or prevent most impacts from normal operations, the impacts of routine spills and the appropriate mitigation measures were not sufficiently considered in the DEIS. It is unclear whether sufficient government capacity is in place to ensure frequent monitoring and enforcement of NPDES permit terms given the remoteness of this region. BOEM should seek increased resources for NPDES monitoring and enforcement for the Arctic region and NOAA should more thoroughly consider the impact of routine spills on marine mammals.

Inclusion of Dease Inlet and boulder patch communities in the time/area closures

As mentioned above we recommend that Dease Inlet and boulder patch communities be included in the time/area closure described in Alternative 4 and Additional Mitigation Measure B.

Dease Inlet is identified by the National Audubon Society as an Important Bird Area with global priority status and provides vital habitat for breeding and migrating shorebirds and waterfowl. According to the National Audubon Society:

In some years the northeast portion of the Teshekpuk Lake region supports large numbers (>50,000) of molting geese including Snow, Cackling, and Greater White-fronted Geese, and up to 30% of the Pacific Flyway Brant population. This region also supports breeding populations of waterfowl that are federally listed as Threatened or as species of concern, including the Spectacled Eider and Steller’s Eider. In addition, the region contains some of the highest breeding densities of the vulnerable Yellow-billed Loon in the western hemisphere. (National Audubon Society, 2012)

Boulder patch communities are unique to the soft sediments that dominate the seafloors of the Beaufort and Chukchi Seas. Currently, there are only two areas having hard substrates that have been identified in the Chukchi and Beaufort: one in Peard Bay, southwest of Barrow, and the other in Steffanson Sound near Prudhoe Bay (Kolak 2011). Boulder patch communities host a large spectrum of biodiversity including kelp, soft corals, sea anemones, sponges and a variety fish species. Since there is limited data on the exact location of boulder patch communities, measures to identify location of and appropriate buffers around such communities should be included in this section of the DEIS.

We appreciate the opportunity to comment on this DEIS. The Conservancy understands that increasing domestic energy supplies is important for many economic and national security objectives. However, we urge NMFS, NOAA, and BOEM to be very cautious about expanding oil and gas drilling in the Arctic. As we have explained above, we believe the DEIS should fully incorporate the mitigation hierarchy by clearly defining avoidance areas and developing a framework for compensatory mitigation. We

recommend that further ecological studies be conducted on marine mammals and sensitive habitats in the Arctic that will serve as a baseline for mitigation measures and monitoring and help us to better understand the effects of oil and gas operations on species and habitats. We also urge that an interagency research program on oil spill response in the Arctic be developed to identify measures that can prevent or mitigate both large and routine spills. Last, we hope that NMFS will work to integrate its planning and permitting decisions with coastal and marine spatial planning efforts for the Arctic region.

Please do not hesitate to contact me if you have questions or would like additional information regarding these comments.

Sincerely,



Robert Bendick
Director, U.S. Government Relations

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**Arcticeis Comments** <arcticeis.comments@noaa.gov>

Comments on Arctic Oil Drilling

1 message

Jonathan Vishanoff <jvishanoff@cox.net>

Wed, Jan 11, 2012 at 11:11 AM

To: arcticeis.comments@noaa.gov

To whomever this may concern,

I think that we definitely need more oil in some places in the United States. It would make sense to drill for more. However, the problem is where you drill for the oil. If you drill in the Arctic ocean, eventually there is a chance that the well will start to leak. The explosion that happened on the Gulf of Mexico is an example of the type of situation you can run into. That well leaked 11,130 tons of oil per day. That is more than enough to harm many species of marine creatures. In the Arctic, people depend on these marine animals for survival. If an oil spill the size of the one in the Gulf were to happen in the Arctic, the few sea creatures that there are would be greatly endangered. I think you should find a different place to drill, where sea creatures are not as scarce, and people do not depend on them as much.

Please extend my thanks to all in the NOAA for all that they do. I am interested in becoming a meteorologist, and I use your services almost daily.

Sincerely,

Jonathan Vishanoff



Arcticeis Comments <arcticeis.comments@noaa.gov>

Public Comment NMFS Effects of Arctic Drilling

1 message

PmjPkj <pmjpkj@comcast.net>

Fri, Jan 13, 2012 at 2:50 PM

To: arcticeis.comments@noaa.gov

To Whom it May Concern:

I am writing to urge you to highly consider Alternative I, No Impact regarding proposed oil and gas activities in the Arctic. As the global temperature increases, ice cover is diminishing making it increasingly difficult for many native species to survive. Animals most at risk of increasing temperatures and negative effects from both oil and gas exploration and spills include walrus, ice seals, species of whale which are only found in cold regions, and of course the many species of birds which use the arctic sea. These animals could be negatively effected by not only the exploration activity but also any spills that could occur.

The native peoples depend on the region for food and economical support. Although the drilling and other exploratory activities would consist of every precautionary measure, an accident such as a spill would negatively impact the local economy and livelihood of the native people.

I understand that only the best technology will be used, however little drilling in the arctic has been conducted and therefor unforeseen conditions and complications have a high probability. Current technology only allows rescue and repair attempts during ice free parts of the year. Therefor any accidents would have a window of repair after which time that window would close. If the repair was not successful, damage to the ecosystem would continue until the ice melted. Please remember that petroleum products cause malformation in fish, death in marine mammals and birds, and remain in the benthos for at least 25 years. Therefor a mistake would impact the ecosystem for at least a quarter of a century.

Please consider alternative I, no impact, to protect the arctic environment, the arctic people, the local economy, the fisheries, and the companies that wish to pursue exploration. A spill would be negatively viewed by the public and the company responsible would then face financial losses from a drop in sales.

Although arctic drilling might be feasible in the future it is not safe at the present time because current cleanup methods are unsuitable and ineffective.

Yours truly,

Christiana Wittmaack
Masters Student, Coastal Zone Management
Nova Southeastern University Oceanographic Center

February 27, 2012

James Lecky, Director
Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East West Highway, Room 13704
Silver Spring, MD 20910

Dear Mr. Lecky,

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR EFFECTS OF OIL AND GAS ACTIVITIES IN THE ARCTIC OCEAN (76 FED .REG. 82275-77; DECEMBER 30, 2011)

The World Society for the Protection of Animals (WSPA) submits the following comments in response to the notice of availability of the above-referenced DEIS and request for comments regarding potential impacts to marine mammals from oil and gas exploration activities in the Arctic Ocean.

NO ACTION ALTERNATIVE

WSPA strongly supports the No Action Alternative (Alternative 1). The seismic and exploratory drilling activities in Alternatives 2-5 would result in disturbance and potential mortality of marine mammals, primarily from impacts such as noise exposure, habitat degradation, and/or vessel activity. Alternative 1 is the only acceptable alternative, as it will have no adverse effects on marine mammals and is the only reliable way to prevent a prospective catastrophic oil spill scenario from occurring in the Arctic Ocean.

IMPACTS ON MARINE MAMMALS

According to the MMPA¹, the Secretary can authorize incidental takings if they have a “negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.” Furthermore, NMFS has defined “negligible impact²” to be “an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”

According to table ES-2 (Comparison of Impacts) in the DEIS, all action alternatives would cause minor to moderate impacts to bowhead whales, beluga whales, other cetaceans, pinnipeds, pacific walruses, polar bears and terrestrial mammals. In particular, beluga whales and endangered bowhead whales would be impacted from sound disturbance, ship strikes, and habitat degradation. It is not clear whether the minor and moderate impacts described in the DEIS impacts analysis would have ‘negligible’ adverse effects, as defined by the MMPA, or whether these minor and moderate impacts would comply with the MMPA. This should be made clear, as the purpose of the EIS is to ensure compliance with the MMPA.

¹ Sections 101 (a)(5)(A) and (D)

² 50 CFR 216.103

Furthermore, impacts, such as those from sound disturbance, have the potential to “adversely affect the species or stock,” which would make the impacts from oil and gas activities described in the DEIS non-compliant with the MMPA. For instance, the impacts from noise can disrupt key habitats and important biological behaviors (e.g., populations will leave well-established breeding and feeding grounds), which could cause detrimental effects at the population level.³ According to an IWC Scientific Committee report, repeated and persistent exposure of noise across a large area could cause detrimental impacts to marine mammal populations.⁴ Another study recently associated reduced underwater noise with a reduction in whales’ stress hormones, providing evidence that noise may contribute to long-term stress (negatively affecting growth, immune response to diseases, and reproduction) for individuals and populations.⁵

Most marine mammals primarily rely on their acoustic sense, and they would likely suffer more from noise exposure than other species.⁶ While marine mammals have seemingly developed strategies to deal with noise and related shipping traffic (e.g., changing vocalizations, shifting migration paths, etc.), the fact that some species have been exposed to anthropogenic changes for only one generation (e.g., bowhead whales) makes it unlikely that they have developed coping mechanisms appropriate to meet novel environmental pressures, such as noise.⁷ Marine mammals living in relatively pristine environments, such as the Arctic Ocean, and have less experience with noise and shipping traffic may experience magnified impacts.⁸

POTENTIAL OIL SPILLS

Table ES-2 in the DEIS shows that a large oil spill scenario would cause minor to major impacts, depending on the species of marine mammal involved. Even though the probability of an oil spill occurring is reported as low in the DEIS, only Alternative 1 would guarantee no spill would occur. The harsh environmental conditions in the arctic (e.g., freezing temperatures, ice floes, short daylight hours, high winds and surging seas, etc.) only increase the chances of an oil spill occurring and reduces the capability of spill-response operations.⁹

Alaska's northern coast provides vital habitat for a variety of wildlife, including bowhead whales, beluga whales, seals, walruses, polar bears, marine birds, and terrestrial mammals. An oil spill in the Beaufort and Chukchi Seas would devastate important habitat for these species as well directly harm wildlife through contact, ingestion, and inhalation of oil.¹⁰

³ Environmental Caucus Statement for The Report of the Advisory Committee on Acoustic Impacts on Marine Mammals to the Marine Mammal Commission (2006). <http://www.mmc.gov/sound/fullsoundreport.pdf>

⁴ International Whaling Commission Scientific Committee report (2004). Section 6.2, Biological acoustics. http://de.wdcs.org/laerm/download/IWC2004_Sci_Comm_Report.pdf

⁵ Rolland, R.M., et al. (2012). Evidence that ship noise increases stress in right whales. *Proc. R. Soc. B.* doi: 10.1098/rspb.2011.2429

⁶ Weilgart, L.S. (2007). A brief review of known effects of noise on marine mammals. *International J of Comp. Psych.* 20(2): 159-168.

⁷ Rabin, L.A. & Greene, C.M. (2002). Changes to acoustic communications systems in human-altered environments. *J of Comp. Psych.*, 116(2): 137-141. And Wright, A.J., et al. (2007). Do marine mammals experience stress related to anthropogenic noise? *International J of Comp. Psych.*, 20(2):274-316.

⁸ The reaction can also depend on species type, age, sex and behaviors. Weilgart, L.S. (2007).

⁹ WWF report (2007). <http://www.worldwildlife.org/what/wherewework/arctic/WWFBinaryitem24363.pdf>

¹⁰ <http://alaska.fws.gov/media/unalaska/Oil%20Spill%20Fact%20Sheet.pdf>

ANIMAL WELFARE AND ETHICS

There are a plethora of adverse effects that oil and gas exploration activities (e.g., noise, shipping, habitat degradation, and potential for oil spills) would cause marine mammals - a serious ethical issue that should be considered.

For instance, industrial noise can cause temporary or long term hearing damage in marine mammals, making survival nearly impossible in the marine environment. Noise can cause high levels of stress, severely compromising the health of the animals involved. It can also disrupt natural behaviors such as migration, echolocation, resting, navigation, feeding, predator avoidance, and communication with conspecifics as well as displace animals from biologically important areas and even separate mother-calf pairs. Ship strikes, both fatal and non-fatal, are also a serious welfare issue as collisions can shatter whales' skulls, fracture bones, jaws or vertebrae, cause massive bruising, deform dorsal fins and flukes and result in serious gashes and cuts on whale's bodies.

The No Action Alternative is the only humane and responsible alternative.

PUBLIC SUPPORT

There is a considerable amount of public support for the No Action Alternative. A recent online petition¹¹ run by WSPA garnered the support of the following:

- 13,831 U.S. supporters (see attachment)
- 1,503 International supporters

The more than 15,000 signatures clearly show the strong public interest in this issue and support for no oil and gas exploration activities occurring in the Arctic Ocean.

CONCLUSION

Based on these comments, WSPA and more than 15,000 concerned individuals urge NMFS to choose the No Action Alternative and protect marine mammals from adverse impacts caused by seismic and exploratory drilling activities in the Arctic.

Sincerely,



Karen Vale
Campaign Coordinator, Oceans and Wildlife

[attachment]

¹¹ From February 9, 2012 to Feb 27, 2012 WSPA posted an online action asking the public to sign a petition in support of the No-Action Alternative.

NOAA Fisheries Service received more than 30,000 signed copies of this letter from NRDC members. Here is a sample of the letter that was sent as part of the public comment period.

Feb 16, 2012

Jim Lecky, National Marine Fisheries Service

Subject: Comments on Draft Environmental Impact Statement for Arctic Oil and Gas Exploration

Dear Jim Lecky, National Marine Fisheries Service,

Thank you for the opportunity to comment on your Draft Environmental Impact Statement. I support the no-action alternative disallowing any exploratory drilling or airgun surveys in the Beaufort and Chukchi Seas.

Your agency has underestimated both the likelihood and the consequences of a major spill. The oil industry simply was unable to contain a spill in the Gulf of Mexico, let alone in the hazardous conditions of the Arctic. A major spill could devastate populations of endangered bowhead whales, belugas, polar bears, and other wildlife.

Furthermore, you fail to address the wide-ranging impacts that repeated, high-intensity airgun surveys will have on wildlife. The industry's airguns produce the loudest sounds humans put in the water short of explosives, and can undermine foraging and breeding in endangered marine mammals over enormous distances. We know far too little about these vulnerable species to ensure that the industry's constant pounding does not significantly impact their populations or jeopardize their survival.

I urge NMFS not to go forward with this action, and to defer any airgun exploration in the Beaufort and Chukchi Seas until more study is done on the Arctic's most vulnerable wildlife.

Sincerely,
Ms. Chrissy Zicarelli



Petition to the National Marine Fisheries Service Urging the Protection of Arctic Marine Life from Excessive Ocean Noise

Submitted as public comments on
Draft Environmental Impact Statement on the Effects of Oil
and Gas Activities in the Arctic Ocean

by Layla Hughes,
Senior Program Officer for Arctic Oil and Gas Policy,
World Wildlife Fund

on behalf of 8,058 concerned WWF Supporters
on February 28, 2012

It is critical that NOAA's National Marine Fisheries Service protect the health of the Arctic Ocean's fish, marine mammals, and wildlife from noise associated with offshore oil and gas exploration and development.

The Draft Programmatic Environmental Impact Statement on the Effects of Oil and Gas Activities in the Arctic Ocean includes four alternatives that will directly impact important marine species such as whales, seals, walrus, and fish. The lack of technology, knowledge, infrastructure, and equipment to deal with the extreme conditions of the Arctic Ocean makes adopting any of the four alternatives irresponsible.

We urge you to adopt the no action alternative.