



INCIDENTAL HARASSMENT AUTHORIZATION

The Alaska Gasline Development Corporation (AGDC) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)) to harass marine mammals incidental to the Alaska LNG Project in Prudhoe Bay, Alaska, when adhering to the following terms and conditions.

1. This Incidental Harassment Authorization (IHA) is valid from July 1, 2023 to June 30, 2024.
2. This IHA is valid only for pile driving associated with Alaska LNG Project in Prudhoe Bay, Alaska.
3. General Conditions
 - (a) A copy (electronic or paper) of this IHA must be in the possession of AGDC, its designees, work crew personnel, and Protected Species Observers (PSOs) operating under the authority of this IHA.
 - (b) The species authorized for taking are bowhead whale (*Balaena mysticetus*), gray whale (*Eschrichtius robustus*), beluga whale (*Delphinapterus leucas*), ringed seal (*Phoca (pusa) hispida*), spotted seal (*Phoca largha*), and bearded seal (*Erignathus barbatus*).
 - (c) The taking, by Level A and Level B harassment, is limited to the species listed in condition 3(b). Table 1 provides the authorized number of takes per species and stock.
 - (d) The taking by serious injury or death of any of the species listed in condition 3(b) of this IHA is prohibited.
 - (e) Any taking of marine mammal species not identified in condition 3(b) is prohibited.
 - (f) AGDC is required to conduct briefings for construction supervisors and crews, the monitoring team, and AGDC staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.
4. Mitigation Measures

The holder of this IHA is required to implement the following mitigation measures:



- (a) For in-water construction, heavy machinery activities other than pile driving, if a marine mammal comes within 10 m, AGDC must cease operations and reduce vessel speed to the minimum level required to maintain steerage and safe working conditions.
- (b) AGDC must establish and implement shutdown zones as indicated in Table 3. NMFS may update the shutdown zones and the Level A and Level B harassment zones (Table 2), as appropriate, pending review and approval of the results of acoustic monitoring (see Reporting condition 6c).
- (c) AGDC is required to employ PSOs per the Marine Mammal Monitoring Plan, dated December 21, 2020, and Monitoring Measures described in section 5 of this IHA.
- (d) Marine mammal monitoring must take place from 30 minutes prior to initiation of pile driving activity through 30 minutes post-completion of pile driving activity. Pile driving may only commence once observers have declared the shutdown zone clear of marine mammals. In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone (Table 3), their behavior must be monitored and documented until they leave of their own volition, at which point the activity may begin.
- (e) If a marine mammal is entering or is observed within an established shutdown zone (Table 3), pile driving must be halted or delayed. Pile driving may not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone; 15 minutes have passed without subsequent detections of small cetaceans and pinnipeds; or 30 minutes have passed without subsequent detections of large cetaceans.
- (f) If visibility degrades to where a PSO determines that they cannot effectively monitor the entire shutdown zone during pile driving, the applicant may continue to drive the pile section that was being driven to its target depth when visibility degraded to unobservable conditions, but will not drive additional sections of pile. Pile driving may continue during low light conditions to allow for the evaluation of night vision and infrared sensing devices.
- (g) AGDC must use soft start techniques when impact pile driving. Soft start requires contractors to provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets. A soft start must be implemented at the start of each day's impact pile driving and at any time following cessation of impact pile driving for a period of thirty minutes or longer.
- (h) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the Level B harassment zone (Table 2), pile driving and removal activities must shut down immediately when it is safe to do so, using delay and shut-down procedures. Activities must not resume until the animal has been

confirmed to have left the area or the observation time period, as indicated in condition 4(e) above, has elapsed.

- (i) Pile driving activities must cease during the entirety of the Nuiqsut whaling season (approximately August 25 – September 15, though the exact dates may change).
- (j) Vessels must transit landward of Cross Island during the entirety of the Nuiqsut whaling season (approximately August 25 – September 15, though the exact dates may change).
- (k) If pile driving is necessary during the February to April contingency period, AGDC must begin pile driving prior to March 1.
- (l) A subsistence advisor must survey areas within a buffer zone of Dock Head 4 (DH4) where water depth is greater than 3 m to identify potential ringed seal structures before winter construction activities begin, should they occur.
- (m) AGDC must implement a 150 m buffer between identified ringed seal lairs and construction activities.
- (n) Aircraft must transit at an altitude of 457 m or higher, to the extent practicable, while maintaining Federal Aviation Administration flight rules (e.g., avoidance of cloud ceiling, etc.), excluding takeoffs and landing. If flights must occur at altitudes less than 457 m due to environmental conditions, aircraft must make course adjustments, as needed, to maintain at least a 457 m separation from all observed marine mammals. Helicopters (if used) must not hover or circle above marine mammals.
- (o) AGDC must implement all mitigation measures described in the biological opinion (issued on June 3, 2020).
- (p) AGDC must conduct the communication and coordination as described in the Plan of Cooperation (dated January 4, 2021).

5. Monitoring Measures

The holder of this IHA is required to abide by the following marine mammal and acoustic monitoring measures:

- (a) Marine mammal monitoring must be conducted in accordance with the Marine Mammal Monitoring and Mitigation Plan (dated December 21, 2020).
- (b) Land-based PSOs must monitor from elevated structures in the locations listed below.
 - i. Dock Head 4 Work- During impact pile driving at DH4, two PSOs must be stationed to view toward the east, north, and west of the seawater treatment

plant. During vibratory pile driving at DH4, two PSOs must monitor from each PSO location (four PSOs).

- ii. Barge Bridge- During work at the barge bridge, two PSOs must be stationed at the north end of the bridge.
- (c) Marine mammal monitoring during pile driving and removal must be conducted by NMFS-approved PSOs in a manner consistent with the following:
- i. Independent PSOs (*i.e.*, not construction personnel) who have no other assigned tasks during monitoring periods must be used.
 - ii. At least one PSO must have prior experience performing the duties of a PSO during construction activity pursuant to a NMFS-issued incidental take authorization.
 - iii. Where a team of three or more PSOs are required, a lead observer or monitoring coordinator must be designated. The lead observer must have prior experience working as a marine mammal observer during construction.
 - iv. Other PSOs may substitute education (degree in biological science or related field) or training for experience.
 - v. PSOs may also substitute Alaska native traditional knowledge for experience. PSOs with traditional knowledge may also have prior experience, and therefore be eligible to serve as the lead PSO.
 - vi. AGDC must submit PSO CVs for approval by NMFS prior to the onset of pile driving.
- (d) PSOs must monitor 24 hours per day from shore, even during periods within the construction activity period when construction is not underway. Monitoring must begin three days prior to the start of pile driving, and continue for three days after all pile driving is complete for the season.
- (e) PSOs must use NVDs and/or infrared IR for nighttime and low visibility monitoring.
- (f) PSOs must record visibility conditions every 30 minutes throughout construction using land-based reference landmarks.
- (g) Sound source verification (SSV), to be conducted for purposes of measuring sound source levels and sound propagation, must be conducted in accordance with accepted methodology as described in an Acoustic Monitoring Plan, which AGDC must develop after its contractor is selected. The Acoustic Monitoring Plan must be reviewed by NMFS, the North Slope Borough Department of Wildlife Management and the Alaska Eskimo Whaling Commission, and approved by NMFS. AGDC must

conduct SSV for the number of each pile type and size indicated in the approved plan. AGDC will submit the SSV report (see Reporting requirement 6(c)) to NMFS (typically within 72 hours), and NMFS will provide feedback and approval of any revisions to the zones within five business days.

- (h) AGDC must deploy three hydrophones during the open-water season to monitor for marine mammals, beginning three days prior to the start of pile driving, and continuing for three days after completion of pile driving, in accordance with the Marine Mammal Monitoring and Mitigation Plan, dated December 21, 2020 and the Acoustic Monitoring Plan referenced in (g). Should construction be required during ice-cover, AGDC must deploy one hydrophone located in between the 2,200 m and 4,700 m zones, perpendicular to the pile driving site. The location must be reviewed by NMFS, the North Slope Borough Department of Wildlife Management and the AEWG, and approved by NMFS prior to deployment.

6. Reporting

The holder of this IHA is required to:

- (a) Submit a draft report on all marine mammal monitoring conducted under the IHA within ninety calendar days of the completion of marine mammal and acoustic monitoring or sixty days prior to the issuance of any subsequent IHA for this project, whichever comes first. A final report shall be prepared and submitted within thirty days following resolution of comments on the draft report from NMFS.
- (b) The marine mammal report must contain the informational elements described in the Marine Mammal Monitoring and Mitigation Plan, dated December 21, 2020, including, but not limited to:
 - i. Dates and times (begin and end) of all marine mammal monitoring.
 - ii. Construction activities occurring during each daily observation period, including precise start and stop time of each type of construction operation mode, how many and what type of piles were driven or removed and by what method (*i.e.*, impact or vibratory).
 - iii. Total number of hours during which each construction activity type occurred.
 - iv. Total number of hours that PSOs were on duty during each construction activity, and total number of hours that PSOs were on duty during periods of no construction activity.
 - v. Weather parameters and water conditions during each monitoring period (*e.g.*, wind speed, percent cover, visibility, sea state), and number of hours of observation that occurred during various visibility and sea state conditions.

- vi. The number of marine mammals observed, by species and operation mode, relative to the pile location, and if pile driving or removal was occurring at time of sighting.
- vii. The number of marine mammals observed (including periods with no construction).
- viii. Age and sex class, if possible, of all marine mammals observed.
- ix. PSO locations during marine mammal monitoring, including elevation above sea level.
- x. Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting).
- xi. Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level A and Level B harassment zones while the source was active.
- xii. Number of individuals of each species (differentiated by month as appropriate) detected within the Level A and Level B harassment zones.
- xiii. Histograms of perpendicular distances to PSO sightings, by species (or species group if sample sizes are small).
- xiv. Sighting rates summarized into daily or weekly periods for the before, during, and after construction periods.
- xv. Maps showing visual detections by species and construction activity type.
- xvi. Detailed information about any implementation of any mitigation triggered (e.g., shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any.
- xvii. Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.
- xviii. An estimation of the potential takes, by species, by Level A and Level B harassment based on the number of observed exposures within the Level A and Level B harassment zones and the percentages of the Level A and Level B harassment zones that were not visible.
- xix. Submit all PSO datasheets and/or raw sighting data (in a separate file from the Final Report referenced immediately above).

- (c) The acoustic monitoring report must, at minimum, include the following:

For Sound Source Verification:

- i. Hydrophone equipment and methods: recording device, sampling rate, distance (m) from the pile where recordings were made; depth of recording device(s).
- ii. Type and size of pile being driven, substrate type, method of driving during recordings.
- iii. For impact pile driving: Pulse duration and mean, median, and maximum sound levels (dB re: 1 μ Pa): cumulative sound exposure level (SELcum), peak sound pressure level (SPLpeak), root-mean-square sound pressure level (SPLrms), and single-strike sound exposure level (SELS-s).
- iv. For vibratory driving/removal: Mean, median, and maximum sound levels dB re: 1 μ Pa : SPLrms, SELcum, and timeframe over which the sound is averaged.
- v. Number of strikes (impact) or duration (vibratory) per pile measured, one-third octave band spectrum, power spectral density plot.
- vi. Estimated source levels referenced to 10m, transmission loss coefficients, and estimated Level A and Level B harassment zones.

For Passive Acoustic Monitoring for Marine Mammals:

- vii. Number of marine mammal detections (including species, date and time of detections, and type of pile driving underway during each detection, if applicable).
 - viii. Detection rates summarized into daily or weekly periods for the before, during, and after construction periods.
 - ix. Received sound levels from pile driving activity.
 - x. The following hydrophone equipment and method information: recording devices, sampling rate, sensitivity of the PAM equipment, locations of the hydrophones, duty cycle, distance (m) from the pile where recordings were made, depth of recording devices, depth of water in area of recording devices.
- (d) Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, the IHA-holder shall report the incident to the Office of Protected Resources (OPR) (301-427-8401), NMFS and to the Alaska regional stranding coordinator (907-586-7209) as soon as feasible. If the death or injury was clearly caused by the specified activity, the IHA-holder must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of the IHA. The IHA-holder must not resume their activities until notified by NMFS.

The report must include the following information:

- i. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
 - ii. Species identification (if known) or description of the animal(s) involved;
 - iii. Condition of the animal(s) (including carcass condition if the animal is dead);
 - iv. Observed behaviors of the animal(s), if alive;
 - v. If available, photographs or video footage of the animal(s); and
 - vi. General circumstances under which the animal was discovered.
7. This Authorization may be modified, suspended or revoked if the holder fails to abide by the conditions prescribed herein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines: 1) the authorized taking is likely to have or is having more than a negligible impact on the species or stocks of affected marine mammals, 2) the authorized taking is likely to have or is having an unmitigable adverse impact on the availability of the affected species or stocks for subsistence uses, or 3) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat.

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Donna S. Wieting,
Director, Office of Protected Resources
National Marine Fisheries Service

Date

Table 1. Authorized Amount of Taking, by Level A Harassment and Level B Harassment, by Species and Stock

Common Name	Stock	Level A Harassment Take	Level B Harassment Take
Bowhead Whale	Western Arctic	0	110
Gray Whale	Eastern North Pacific	0	2
Beluga Whale	Beaufort Sea	0	55
	Chukchi Sea		
Ringed Seal	Alaska	9	1,765
Spotted Seal	Alaska	2	353
Bearded Seal	Alaska	2	300

Table 2. Level A and Level B Harassment Isopleths

Activity	Hammer Type	Level A Harassment Zone (m)			Level B Harassment Zone (m)
		LF Cetaceans	MF Cetaceans	Phocids	
11.5-inch H-Pile	Impact	1,194	43	639	341
14-inch H-Pile	Impact	1,002	36	536	631
	Vibratory	2	<1	1	1,000
48-inch Pipe Pile	Impact	1,575	56	843	2,154
19.69-inch Sheet Piles	Vibratory	17	2	10	4,642
25-inch Sheet Piles	Vibratory	17	2	10	4,642

Table 3. Shutdown Zones by Marine Mammal Hearing Group, Pile Size, and Pile Driving Method

Activity	Hammer Type	Shutdown Zone (m)		
		LF Cetaceans	MF Cetaceans	Phocids
11.5-inch H-Pile	Impact	1,200	50	500
14-inch H-Pile	Impact	1,200	50	500
	Vibratory	10	10	10
48-inch Pipe Pile	Impact	1,600	50	500
Sheet Piles	Vibratory	20	10	10
Screeding		215		