



**Five Year Summary Report of Marine Mammal Monitoring at  
Ugak Island**

**Compliance with National Marine Fisheries Service Final Rule  
(50 CFR Par 217, Subpart H)**

**1 April 2011 through 22 March 2016**

**Submitted on 4/21/2016**

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### Attachments

- Attachment 1 (NMFS Annual Report 120521)
- Attachment 2 (NMFS Annual Report 2013)
- Attachment 3 (NMFS Annual Report 2014)
- Attachment 4 (NMFS Annual Report 2015)
- Attachment 5 (NMFS Annual Report 2016)

## Introduction

The Alaska Aerospace Corporation (AAC) owns and operates the Pacific Spaceport Complex Alaska (PSCA) (formerly Kodiak Launch Complex (KLC)) at Narrow Cape, Kodiak Island, Alaska. AAC is licensed by the Federal Aviation Administration to launch rockets from PSCA. PSCA is adjacent to the Pacific Ocean, and marine mammals are known to occupy land on Ugak Island. Therefore AAC is subject to the Marine Mammal Protection Act and oversight by the National Marine Fisheries Service (NMFS) for harassment and incidental take of marine mammals. NMFS has issued a final rule which will govern AAC mitigation, monitoring and reporting requirements from 2011 to 2016. These reporting requirements include an annual report summarizing the annual activities at PSCA with regards to rocket launches and marine mammal monitoring. This document is the summary of five annual reports for April 2011 through March 2016.

## Overview

PSCA is a spaceport that launches both orbital and suborbital rockets on a southern trajectory for government and commercial customers.

AAC monitors the effects of launch operations on the environment. For marine mammals, the main focus is on the pinniped population on Ugak Island, about 3.5 miles south of the launch pad along the flight azimuth. Rockets are usually eight miles in altitude when they pass over the island. Ugak Island is a known haul-out area for both Steller sea lions and harbor seals.

According to the Marine Mammal Protection Act, Regulations Governing Small Takes of Marine Mammals Incidental to Specified Activities, and the conditions of previous Letters of Authorization (LOA), AAC must perform the following monitoring activities for the NMFS in accordance with the final rule (50 CFR Part 217, Subpart H):

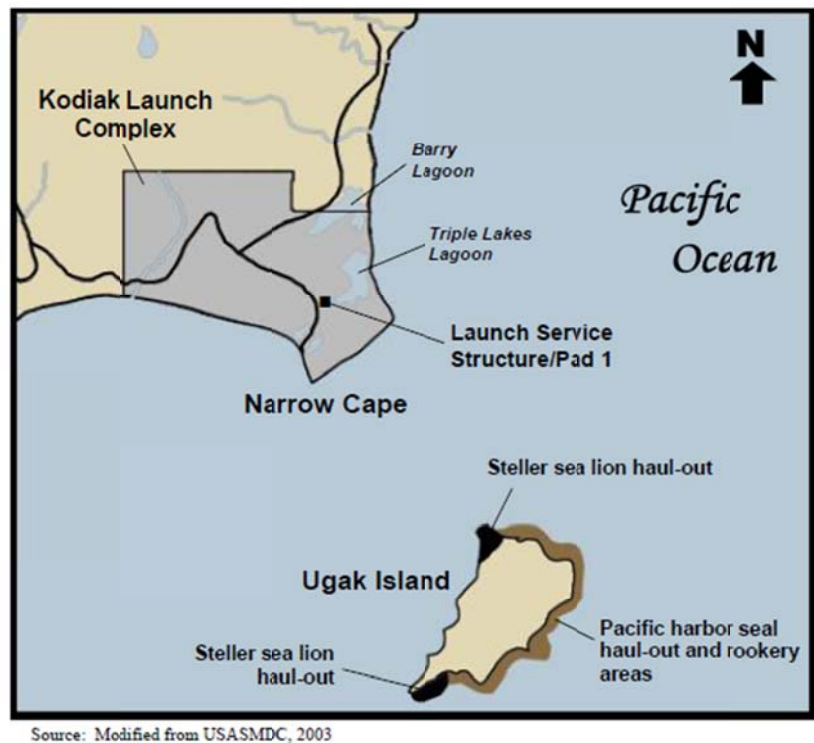


Figure 1: Narrow Cape and Ugak Island site overview.

- Deploy a remote camera system designed to detect pinniped responses to rocket launches for at least the first five launches.
- Conduct visual monitoring of pinniped response two hours before launch, during launch, and two hours after launch.
- Conduct visual monitoring of harbor seal rookery if the launch is during pupping season.
- Conduct quarterly aerial surveys of haulout sites.
- Monitor sound pressure and exposure time for new classes of rockets.

A summary of these monitoring activities follows.

## **Remote Camera System**

### **Typical Methodology**

A SeeMore Wildlife System remote camera system was installed September 8-9, 2011. Only one of the two launches during the five year period was monitored due maintenance issues with the camera, as are discussed below. It was monitored two hours the morning before the launch and two hours after by an environmental company, R&M Consultants.

The remote camera monitoring system was installed and commissioned as required.

### **Results**

The camera proved largely ineffective during the five year period. While professionally installed with three separate power sources, power and maintenance became an issue. Maintenance/repair was also a constant issue with Kodiak's poor weather, as it did not allow frequent rotary wing flights for repair and refueling of the system.

Moving away from the camera to fixed wing aircraft for surveys is recommended in the future.

## **Launch Operations and Monitoring**

### **Typical Methodology**

Typical surveys are conducted by a third party that flies three passes around the Ugak Island at heights between 500 and 700 ft sea level. Time, tide, wind, sea state, and weather conditions are noted. A high quality camera takes images with time and GPS stamps. Raw images were provided to a biologist specializing in marine mammals, who analyzes the images for presence, numbers, and species of pinnipeds. The photographs are entered into Preview, a photographic display application, for analysis. For image analysis, natural landmarks are used to denote discrete sections of beach to eliminate counting individual animals more than once. When pinnipeds are observed, they are counted three different times at varying magnifications per image group. An image group is a series of photographs marking the beginning and ending frames containing the pinnipeds. For example, a group of pinnipeds contained in the three pictures spanning image titles 8585-8587, are counted three times to obtain a total of nine counts (three counts per picture). If varying counts were determined from repeated analysis of the same series of photographs, the count that occurred

most frequently (e.g. 20) was used as the final count. For instance, if the three consecutive counts of pinnipeds on image 8585 were 20, 21 and 20, the number 20 would be chosen as the final count for that image.” Only pinnipeds on land were included in the final counts; harbor seals observed in water were noted but not included in the final counts.

## **Results**

There were two launches during the survey period, Sep 2011 and Aug 2014. Both launches were during dark hours. However, no effects were reported or observed afterward.

The Sep 2011 launch showed 17-19 harbor seals the day before the launch and 4-5 after the launch (during a different time of day). No injured, killed, or harassed seals were observed.

The Aug 2014 launch experienced a launch anomaly. The anomaly resulted in the detonation of the rocket shortly after liftoff. The explosion was over the launch pad at low altitude (under 1000 feet). For safety and security reasons, a flight restriction was placed over the launch site and nearby areas. As a result, no observations of the marine mammal population were made after the anomaly until the 30 October quarterly survey. There have been no reports of any affect to the marine mammal population from this incident.

In the five years previous to this reporting period (2006-2011), the launches were monitored and there was no evidence of stellar sea lion or harbor seal disturbances.

## **Pupping Season Monitoring**

There were no launches in the five year period during seal pupping season (15 May – 30 June).

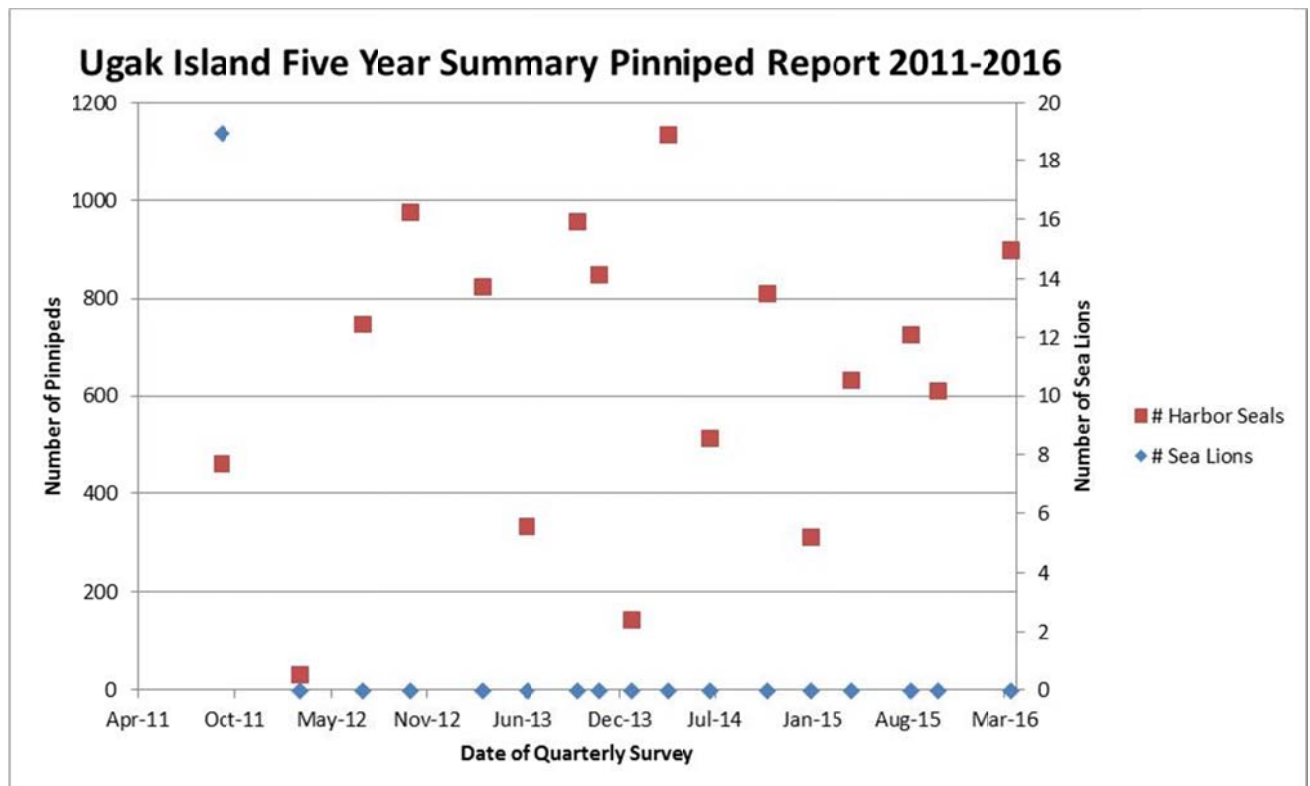
## **Quarterly Aerial Surveys**

### **Typical Methodology**

Quarterly surveys were conducted in the same manner as launch surveys.

## Results

The following aerial surveys of Ugak Island were performed over the last five years:



**Figure 2. Ugak Island Five Year Summary Pinniped Report.**

As can be seen in the above chart, there has been only one instance of sighting of Stellar sea lions in the past five years. The one sighting was at the northwest haulout of Ugak Island. This is consistent with the history of the area, since 2000, counts have generally been zero (e.g. NMFS, 2009; Fritz and Stinchcomb, 2005). What's more, a large majority of the surveys during the breeding season since 1989 have found no Stellar sea lions (NMFS 2011).

The average count of harbor seals over the 5 years was 644 with a standard deviation of 307 and a range of 32-1133. The harbor seal population appears to be stable, relative to historical data. The high level of variability is expected. During PSCA's permit for LOA, several multiday studies were conducted. In each of the multiday surveys, the number of seals was widely variable. For example, an eight day survey in February 2006 resulted in a maximum and minimum count of 684 and 58 respectively (AAC 2010). The multiday survey's results gave an average of 337 with a standard deviation of 198; showing large fluctuations in seal counts.

A copy of the quarterly survey reports were transmitted with each annual report. An additional copy of each of the reports is available by request.

### **Sound Pressure Data**

No new classes of rocket were launched during the five year period.

### **Contact**

For additional information regarding this report, please contact Mr. Chris Sibrel at (907) 743-3502 or email [chris.sibrel@akaerospace.com](mailto:chris.sibrel@akaerospace.com).

## References:

Alaska Aerospace Corporation. 2010. Application for a five-year programmatic permit for small takes of marine mammals incidental to launching space launch vehicles, long-range ballistic target missiles, and small missile systems at Kodiak Launch Complex, Kodiak, Alaska. Submitted to NOAA National Marine Fisheries Service, Silver Spring, MD 20910.

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Allen, B. M. and R.P. Angliss. 2010. Alaska Marine Mammal Stock Assessments 2009. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-206. Alaska Fisheries Science Center. Seattle, WA. 276 pp.

Fritz, L.W. and C. Stinchcomb. 2005. Aerial, Ship, and Land-based Surveys of Steller Sea Lions (*Eumetopias jubatus*) in the Western Stock in Alaska, June and July 2003 and 2004. NOAA Technical memorandum NMFS-AFSC-153. Alaska Fisheries Science Center. Seattle, WA. 56pp.

NOAA NMFS. 2011. Endangered Species Act – Section 7 Consultation Biological Opinion. National Marine Fisheries Service, Alaska Region. Seattle, WA 25pp



## Appendix A. Tabulated Five Year Summary Report

| Year | Quarter                     | Date      | Time (local) | # Sea Lions | # Harbor Seals | Notes                                  |
|------|-----------------------------|-----------|--------------|-------------|----------------|--|
| 2011 | 2 <sup>nd</sup> (Apr-Jun)   | N/A       |              |             |                | Source selection for flights           |
| 2011 | 3 <sup>rd</sup> (Jul-Sep)   | 21-Sep-11 | 1330-1430    | 19          | 462            | Only sea lion sighting                 |
| 2011 | 4 <sup>th</sup> (Oct-Dec)   | 5-Dec-11  |              |             |                | Postponed twice due to multiple storms |
| 2012 | 1 <sup>st</sup> (Jan-Mar)   | Mar-12    | 0930-1030    | 0           | 32             | Results Typical                        |
| 2012 | 2 <sup>nd</sup> (Apr-Jun)   | N/A       |              |             |                | Postponed due to storms                |
| 2012 | 3 <sup>rd</sup> (Jul-Sep)   | 8-Jul-12  | 1600-1626    | 0           | 747            | Results Typical                        |
| 2012 | 4 <sup>th</sup> (Oct-Dec)   | 20-Oct-12 | 1200-1330    | 0           | 975            | Results Typical                        |
| 2013 | 1 <sup>st</sup> (Jan - Mar) | 16-Mar-13 | 1209-1334    | 0           | 823            | Results Typical                        |
| 2013 | 2 <sup>nd</sup> (Apr-Jun)   | 16-Jun-13 | 1342-1408    | 0           | 332            | Results Typical                        |
| 2013 | 3 <sup>rd</sup> (Jul-Sep)   | 1-Oct-13  | 1210-1316    | 0           | 955            | Results Typical                        |
| 2013 | 4 <sup>th</sup> (Oct-Dec)   | 14-Nov-13 | N/A-N/A      | 0           | 847            | Results Typical                        |
| 2014 | 1 <sup>st</sup> (Jan-Mar)   | 21-Jan-14 | 1115-1230    | 0           | 144            | Results Typical                        |
| 2014 | 2 <sup>nd</sup> (Apr-Jun)   | 5-Apr-14  | 1218-1338    | 0           | 1133           | Results Typical                        |
| 2014 | 3 <sup>rd</sup> (Jul-Sep)   | 3-Jul-14  | 1110-1239    | 0           | 513            | Results Typical                        |
| 2014 | 4 <sup>th</sup> (Oct-Dec)   | 30-Oct-14 | 1100-1207    | 0           | 810            | Results Typical                        |
| 2015 | 1 <sup>st</sup> (Jan-Mar)   | 26-Jan-15 | 1100-1200    | 0           | 312            | Results Typical                        |
| 2015 | 2 <sup>nd</sup> (Apr-Jun)   | 23-Apr-15 | 1230-1330    | 0           | 631            | Results Typical                        |
| 2015 | 3 <sup>rd</sup> (Jul-Sep)   | 24-Aug-15 | 1520-1610    | 0           | 726            | Results Typical                        |
| 2015 | 4 <sup>th</sup> (Oct-Dec)   | 18-Oct-15 | 1100-1154    | 0           | 609            | Results Typical                        |
| 2016 | 1 <sup>st</sup> (Jan-Mar)   | 21-Mar-16 | 1100-1200    | 0           | 898            | Results Typical                        |