



Memorandum

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FROM: John Hendrix, Lisa Parker, ^{MC3} Marta Czarnezki (Apache Alaska Corporation)

RE: Monthly Report – August 1 – 31, 2012

1.0 INTRODUCTION

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) issued Apache Alaska Corporation (APACHE) an Incidental Harassment Authorization (IHA) under the authority of section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*) to harass small numbers of marine mammals, by Level B harassment, incidental to three-dimensional (3D) seismic surveys in Cook Inlet (hereafter *Cook Inlet 3D Seismic Program*) from April 2012 through April 2013.

This monthly report presents information requested in the IHA and Incidental Take Statement (ITS) for this reporting time period of **August 1– 31, 2012** and includes information on the seismic operations, marine mammal monitoring and mitigation measures implemented. Protected Species Observer (PSO) daily reports which include details on the required information are not included in the monthly report because they were attached to the weekly reports previously submitted to NMFS.

SUMMARY OF SIGHTINGS

Table 1. Summary of the number of observations, shut downs and takes.

Marine Mammal Species	No. of Observations¹	No. of Shut Downs	No. of Takes	No. of Cumulative Takes
Beluga Whale <i>(Delphinapterus leucas)</i>	10	0	0	0
Killer Whale <i>(Orcinus orca)</i>	0	0	0	0
Harbor Porpoise <i>(Phoca vitulina)</i>	4	1	1	1
Steller Sea Lion <i>(Eumatopia jubatus)</i>	1	0	0	0
Harbor Seal <i>(Phocoena phocoena)</i>	27	4	1	8
Unidentified Large Cetacean	1	1	0	0
Unidentified Pinniped	5	0	0	0

¹ Number of observations include animals visually observed (vessel, land, aerial) and acoustically detected

2.0 SUMMARY OF OPERATIONS

The following table summarizes the seismic operations over this reporting period. More details are found in the following text.

Table 2. Total number of slack tides and hours per airgun and vessel.

Source	No. of Slack Tides	No. of Hours
10 cui mitigation (<i>M/V Arctic Wolf</i>)	NA	110.5
10 cui mitigation (<i>M/V Peregrine Falcon</i>)	NA	111.2
440 cui ultra-shallow (<i>M/V Peregrine Falcon</i>)	0	0.0
2400 cui (<i>M/V Arctic Wolf</i>)	88	175.8
2400 cui (<i>M/V Peregrine Falcon</i>)	78	177.1

Operations moved easterly; however, continued offshore in central Cook Inlet, with Trading Bay to the west and the Nikiski/Kenai area to the east (Figure 1). Eight vessels operated for the *Cook Inlet 3D Seismic Program* during the month of August including *M/V Arctic Wolf*, *M/V Peregrine Falcon*, *M/V Miss Diane*, *M/V Mark Stevens*, *M/V Maxime*, *M/V Dreamcatcher*, *M/V Norseman I* and *M/V Side Winder* (Table 3). Vessel-based PSOs were stationed on the *M/V Arctic Wolf*, *M/V Peregrine Falcon* (source vessels) and *M/V Dreamcatcher* (mitigation vessel). During seismic activity, the vessels traveled at speeds between 4-5 knots. As identified in the IHA application, marine seismic data are only acquired during low and high slack tides (approximately 2-3 hours over the tide). There are approximately 4 slack tides in a 24-hour period. Over the course of this reporting period, airguns operated for a total of approximately 352.9 hours. The 2400 cui airgun array operated from *Arctic Wolf* during 88 slack tides, for a total of approximately 175.8 hours. The *Peregrine Falcon* operated the 2400 cui airgun array during 78 slack tides for a total of approximately 177.1 hours. The mitigation gun was used on 27 different days. The *Arctic Wolf* and the *Peregrine Falcon* operated the mitigation gun for approximately 110.5 and 111.2 hours, respectively. During August, operations were delayed due to mitigation measures for a total of 5.30 hours, with a cumulative time of 64.67 hours for the duration of the project. The mitigation vessel, the *Dreamcatcher*, was generally stationed to the north or south of the project area (opposite of the land-based observation station) for acoustic and visual monitoring for near-shore marine mammal movement during all periods of seismic operations.

The monitoring team consisted of two PSOs on the *Arctic Wolf*, two PSOs on the *Peregrine Falcon*, two PSOs on the *Dreamcatcher*, two or three PSOs at the land-based station (OSK Bluff Site) and aerial overflights with one or two PSOs. One PSO was based on the *Norseman I* on August 23-28 for additional monitoring. All PSOs operate on a 4-hour shift to avoid fatigue and only during daytime operations.

A radio-telemetered passive acoustic monitoring (PAM) buoy has not been redeployed. The PAM buoy remains in Anchorage for maintenance and re-evaluation. Thus, an over-the-side (OTS) hydrophone was deployed from the *Dreamcatcher* during all nighttime operations (at minimum) with the engines off (but generators still on) for passive acoustic monitoring. The *Dreamcatcher* is positioned to the north or south of the seismic acquisition patch (opposite of the land-based observation station). Two acoustic technicians

Table 3. Vessels operating for the Cook Inlet 3D Seismic Program.

Vessel	Vessel Purpose	Size	Documentation No.	Call Sign	Gross Tonnage
<i>M/V Arctic Wolf</i>	Source vessel	41 m x 9 m (135 ft x 30 ft)	687450	-	251
<i>M/V Peregrine Falcon</i>	Source vessel	26 m x 6 m (85 ft x 24 ft)	950245	WCZ6285	131
<i>M/V Miss Diane</i>	Node vessel	26 m x 6 m (85 ft x 20 ft)	1210779	WAV0779	53
<i>M/V Mark Stevens</i>	Node vessel	26 m x 6.7 m (85 ft x 22 ft)	1238385	WCZ-7941	81
<i>M/V Maxime</i>	Transfer vessel	21 m x 4.9 m (70 ft x 16 ft)	1196716	WAV6716	48
<i>M/V Dreamcatcher</i>	Mitigation vessel	26 m x 7.1 m (85 ft x 23 ft)	963070	WBN5411	100
<i>M/V Norseman I</i>	Housing Management	33 m x 8.5 m (108 ft x 28 ft)	553713	WDC-6817	197
<i>M/V Side Winder</i>	Side scan sonar	11 m x 4 m (36.8 ft x 14 ft)	1091516	WCZ-6262	16

3.0 MONITORING EFFORT

A total of 1,484.5 hours of monitoring effort took place from August 1-31, 2012 including visual vessel- and land-based (711.51 and 148.8 hours, respectively), passive acoustic monitoring (602.0 hours) and aerial surveys (22.2 hours; Table 3). The PSOs watched for marine mammals prior to and during seismic activity to monitor the 160 dB zone (9.5km). Opportunistic observations took place when applicable from the mitigation vessel and days when seismic activity did not take place.

Table 3. Total number of hours of monitoring per method.

Monitoring Method	Total No. of Hours
Visual Vessel-based	711.5
Visual Land-based	148.8
Passive Acoustic Monitoring	602.0
Aerial Survey	22.2
Total	1,484.2

3.1 Environmental Conditions

In general, the environmental conditions were conducive to appropriately monitor marine mammals during seismic operations. The sea state ranged from 0 to 4 with an occasional 5 or 6 on the Beaufort Sea State scale. However, operations did not occur on two days during August due to weather conditions (August 2 and 3) and aerial surveys were canceled on four additional days (August 4, 20, 23, 31) due to low ceiling level.

3.2 Marine Mammal Observations

A total of 48 marine mammal observations and 341 estimated individual animals were observed from August 1-31, 2012 using visual vessel- and land-based, acoustic and aerial survey methods. Details on the species sightings are described below and found in the “PSO Daily Reports.”

Visual Vessel- and Land-based Observations

Three marine mammal species were visually observed from vessel- or land-based stations during this month’s monitoring effort including the harbor porpoise, Steller sea lion and harbor seal (Table 4). In addition to those species, an unidentified large cetacean and unidentified pinnipeds were observed.

Table 4. Total of individuals and sighting per species from vessel- and land-based stations

Species	Estimated No. of Individuals Observed	No. of Sightings
Harbor Porpoise	7	4
Steller Sea Lion	1	1
Harbor Seal	26	26
Unidentified Large Cetacean	1	1
Unidentified Pinniped	4	4
Total	39	36

Harbor Porpoise

A total of seven harbor porpoise were observed on four different occasions. Harbor porpoise were observed at the surface, swimming, traveling, and foraging.

Steller Sea Lion

A Steller sea lion was observed on August 18 at 13:40 from a vessel-based observation station. The Steller sea lion was observed swimming, diving and looking toward the vessel.

Harbor Seal

A total of 26 harbor seals were observed on 26 different occasions. Harbor seals were observed swimming traveling, diving, sinking, looking toward the vessel and milling.

Unidentified Large Cetacean

On August 11 at 16:43, a large cetacean was observed from a vessel-based observation station blowing, swimming and breaching.

Unidentified Pinniped

A total of four unidentified pinnipeds were observed on four different occasions. The unidentified pinnipeds were observed swimming, traveling, active on the surface, diving, milling, and looking toward the observer.

Acoustic Observations

An unidentified pinniped was the only species acoustically detected during this month's monitoring effort. The pinniped was detected on August 30 at 16:21 and was recorded for approximately 10 seconds. No seismic activity was taking place; and therefore, no mitigation measures were implemented.

Table 5. Number of acoustic detections per species

Species	No. of Detections
Unidentified Pinniped	1
Total	1

Aerial Observations

Two species of marine mammals were observed during aerial surveys including the beluga whale and harbor seal (Table 6).

Table 6. Total of individuals and sighting per species from aerial surveys

Species	Estimated No. of Individuals Observed	No. of Sightings
Beluga Whale	~256	10
Harbor Seal	~45	1
Total	301	11

Beluga Whale

A total of approximately 256 individual beluga whales were observed on 10 different occasions during aerial surveys. Many of these individuals were likely resighted on several occasions. Beluga whales were observed surfacing, swimming, traveling and milling near the McArthur, Beluga, Theodore, Ivan and Susitna Rivers.

Harbor Seal

On August 27 during an aerial survey, approximately 45 harbor seals were observed hauled out near the Susitna River Delta

Dead Harbor Seal

During the month of August, there were two dead harbor seal sightings (Figure 2). Sightings occurred on August 7 and 13. NMFS was notified and a report was submitted within 24 hours of the incident as required by the IHA. Details of these events can be found in the previously submitted reports to NMFS.

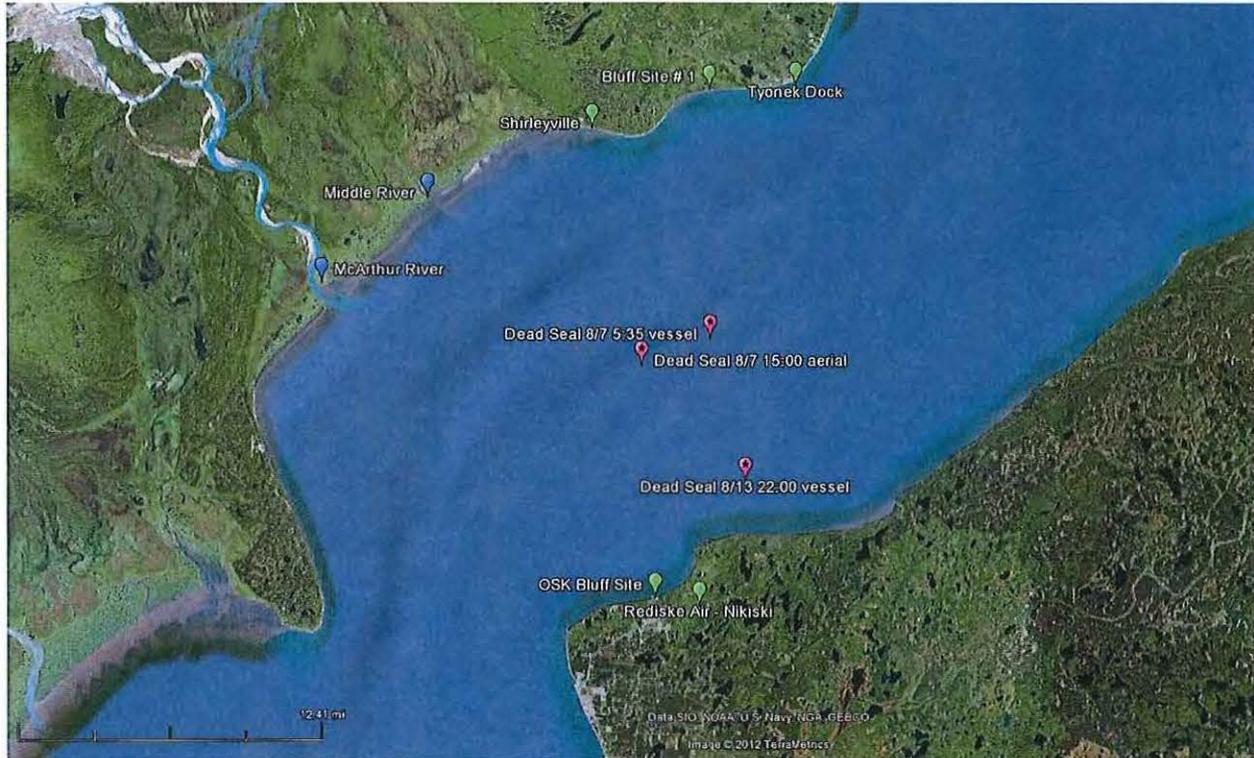


Figure 2. Location of the harbor seal carcasses observed on August 7 and 13 (pink dot with black star).

3.3 Marine Mammal Takes

During the month of August, there were two Level B takes (Table 7). A harbor porpoise was taken on August 20 at 14:45. The harbor porpoise was observed traveling. Seismic activity was taking place on both the *Arctic Wolf* and the *Peregrine Falcon*. Vessels were ramping up and were at 1200 cui when the harbor porpoise was sighted. Seismic activity was initially shut down to estimate the harbor porpoise's distance from the vessels and then resumed ramp up to 2400 cui. The harbor porpoise's distance from the *Arctic Wolf* and the *Peregrine Falcon* was estimated at 8.0 km from both vessels.

On August 25 at 12:45 a harbor seal was taken. The harbor seal was initially observed looking toward the vessel. Seismic activity was only taking place on the *Peregrine Falcon*. The vessel was ramping up and was at 300 cui when the harbor seal was sighted and continued to ramp up until it reached full volume 2400 cui. The harbor seal's distance from the *Arctic Wolf* and the *Peregrine Falcon* was estimated at 3.0 and 1.0 km, respectively, outside the specified 190 dB zone.

No other marine mammal species were taken during this time period. No cetaceans or pinnipeds were exposed to 180 or 190 dB, respectively.

Table 7. Number of marine mammal takes

Species	No. of Takes	Cumulative Level of Takes
Beluga whale	0	0
Killer whale	0	0
Harbor porpoise	1	1
Steller sea lion	0	0
Harbor seal	1	8

3.4 Implementation of Mitigation Measures

Mitigation measures that were implemented during the month of August include shut downs (6; Table 9). There were no shut downs followed by a power down, no power downs and no clearing safety zone delays. Ramp up procedures also took place when initiating operations. Marine mammal monitoring (visual, acoustic and aerial) of the safety radii (monitoring zone extends 9.5 km) was ongoing throughout the month. Passive acoustic monitoring using an OTS hydrophone occurred at minimum at night during seismic operations. NMFS's vessel operation and marine mammal viewing guidelines to minimize vessel and aircraft impacts were continually implemented. Airguns were discharged at depths greater than 2 m (~ 6.6 ft). Details on the implemented mitigation measures are described in the PSO Daily Reports.

Table 9. Number of implemented mitigation measures per species.

Species	Delay Clearing Safety Zone	Shut Down	Shut Down/Power Down	Power Down	None	Total
Beluga Whale	0	0	0	0	10	10
Killer Whale	0	0	0	0	0	0
Harbor Porpoise	0	1	0	0	3	4
Steller Sea Lion	0	0	0	0	1	1
Harbor Seal	0	4	0	0	23	27
Unidentified Large Cetacean	0	1	0	0	0	5
Unidentified Pinniped	0	0	0	0	5	1
Total	0	6	0	0	42	48

Aerial Survey

Aerial surveys continued to occur daily during the month of August. Aerial surveys were conducted with *Rediske Air* from a twin-engine Islander fixed-wing aircraft in Nikiski. The flight route typically departed from Nikiski, traveled across the inlet to the Susitna River, south to the McArthur River, with 2-4 transects spaced approximately 2 km apart over the project area and then returned to Nikiski (Figure 3; red polygon).



Figure 3. Aerial surveys departed from Nikiski, traveled across the inlet to the Susitna River, south to the McArthur River and over the project area before returning to Nikiski (red polygon). Land-based observation took place at the OSK Bluff Site.

Extended Shut Down

When a large cetacean was observed within in the project area operations ceased for 30 minutes or until the animal was observed leaving the safety zone. In the case the unidentified large cetacean sighting, the marine mammal monitoring team used a 45-60 minute clearing time to account for the potential long dive time of this animal.

3.5 Implementation of Conservation Recommendations

The conservation recommendations described in the Biological Opinion issued by NMFS were not stated as a condition, but rather designed to minimize adverse effects to the Cook Inlet beluga whale from in-water noise generated by the airguns during the *Cook Inlet 3D Seismic Program*. At this time APACHE has not implemented any of the conservation recommendations suggested by NMFS. If any of the conservation recommendations are implemented, NMFS will be notified and the effectiveness of the recommendation will be reported.