BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XE473

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to an Anchor Retrieval Program in the Chukchi and Beaufort Seas

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received an application from Fairweather, LLC (Fairweather) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to an anchor retrieval program in the Chukchi and Beaufort seas, Alaska, during the open-water season of 2016. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to Fairweather to incidentally take, by Level B Harassments, marine mammals during the specified activity.

DATES: Comments and information must be received no later than [*insert date 30 calendar days after date of publication in the FEDERAL REGISTER*].

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is *itp.guan@noaa.gov*. Comments sent via e-mail, including all attachments, must not exceed a 25-megabyte file size. NMFS is not responsible for comments sent to addresses other than those provided here.

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.nmfs.noaa.gov/pr/permits/incidental.html* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

An electronic copy of the application may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION CONTACT**), or visiting the internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.html*. The following associated documents are also available at the same internet address: Plan of Cooperation. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

NMFS is also preparing draft Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and will consider comments submitted in response to this notice as part of that process. The draft EA will be posted at the foregoing internet site.

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce to allow, upon request, 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 geographical region if certain findings are made and either regulations

are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will 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. NMFS has defined "negligible impact" in 50 CFR 216.103 as "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."

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [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 [Level B harassment].

Summary of Request

On February 2, 2016, NMFS received an application from Fairweather for the taking of marine mammals incidental to conducting anchor retrieval activities in the U.S. Chukchi and Beaufort seas. After receiving NMFS comments, Fairweather made revisions and updated its IHA application and marine mammal mitigation and monitoring plan on February 8, 2016. NMFS considers the IHA application complete as of February 8, 2016.

Fairweather proposes to retrieve anchor equipment left by Shell Offshore, Inc. (Shell) during its 2012 and 2015 exploration drilling programs in the U.S. Chukchi and Beaufort seas. The proposed activity would occur between July 1 and October 31, 2016. Noise generated from anchor handling activities and vessel's dynamic positioning thrusters could impact marine mammals in the vicinity of the activities. Take, by Level B harassments, of individuals of eight species of marine mammals may result from the specified activity.

Description of the Specified Activity

Dates and Duration

Fairweather's proposed anchor retrieval activity is planned for the 2016 open-water season (July through October, 2016). Vessels will mobilize from Dutch Harbor in late June to arrive in Kotzebue area by early July to start the anchor retrieval program. Fairweather anticipates operations will be complete by late August with all vessels out of the theater, with the exception of the Norseman II, which would remain in the area for final data collection until October.

At each site, active anchor retrieval activities with the use of thrusters are expected to occur within two to seven days with the thrusters operating only part of the time; unseating typically takes less than half an hour for each anchor. Additionally, locating anchors using high-frequency sonar are expected to take one to three days at each site before and after anchor retrieval, although take of marine mammals is not expected to result from exposure to these high frequency sources. Therefore, operations that may result in incidental harassment to marine mammals would occur over approximately 10 days total on each site throughout the season with the noise sources operating only part of the time over those days.

Specified Geographic Region

Fairweather will retrieve mooring systems that were left as part of Shell's exploration program at five locations (Figure 1 of the IHA application): 1) Good Hope Bay in Kotzebue Sound, 2) Burger A site in the Chukchi Sea, 3) Burger V site in the Chukchi Sea, 4) Kakapo in the Chukchi Sea, and 5) Sivulliq site in the Beaufort Sea. Using four specialized Anchor Handling Towing Supply Vessels (AHTSVs), the mooring systems are scheduled for retrieval in the open water season of 2016 (July through September). AHTSVs will mobilize from Dutch Harbor in late June to arrive in Kotzebue area by early July. Multiple retrieval scenarios have been developed to retrieve all of the systems within one season; actual timing of retrieval at each of the sites will depend on vessel configuration, ice, weather, and timing of subsistence activities in Kotzebue and Beaufort Sea.

The Kotzebue location is approximately 20 kilometers (km, 12 miles [mi]) offshore of the village of Kotzebue, on the northwest coast of Alaska. The average depth in the Kotzebue project area is approximately 9 meters (m, 29 feet [ft]). The Burger A and Burger V locations are approximately 100 km (64 mi) offshore and approximately 126 km (78 mi) northwest of the closest village of Wainwright. Water depths in the Burger prospect area average 40-48 m (130-157 ft). The Kakapo location is approximately 110 km (68 mi) offshore to the northwest of the village of Point Lay, also on the northwest coast of Alaska. Water depths in the Kakapo area are similar to Burger, averaging 40 m (130 ft). The Sivulliq location is approximately 25 km (15 mi) offshore of the North Slope of Alaska in between Prudhoe Bay to the west and Kaktovik to the east. The average water depth at the Sivulliq project area is approximately 30-35 m (98-115 ft).

Detailed Description of Activities

I. Anchor Retrieval

The goal of the retrieval program will be to complete operations efficiently and safely within one season, taking into consideration ice, weather, and subsistence harvest activities. Preliminary calculations indicate the vessels will have sufficient fuel onboard to have endurance to remain offshore with minimal fuel transfers at sea. The number of crew changes and vessel resupply will depend on the progress of the retrieval program, but, if necessary, will take place in Kotzebue, Wainwright, or Prudhoe Bay. Through the Olgoonik Fairweather, LLC joint venture, Fairweather has provided crew change and logistic support for multiple vessels in all three locations since 2008. A small, flat-bottom crew change vessel is available at each location to transfer personnel, equipment, and groceries from shore to the AHTSV. Helicopters will not be used in this program, unless in an emergency situation.

Vessels will mobilize from Dutch Harbor in late June to arrive in Kotzebue area by early July. Delmar (the owners of some of the mooring systems and onboard anchor handling technicians) and Fairweather have developed multiple scenarios to retrieve all of the systems within one season. Each AHTSV vessel is a different size and each will hold different amounts of equipment depending on deck space, storage reel space, chain locker space, storage location, and equipment type to meet stability requirements. If subsistence harvest activities are taking place, Fairweather will not retrieve anchors until cleared (by the communities) to do so. The vessels will move into the Chukchi Sea to retrieve the Burger and Kakapo anchors, depending on ice presence. As soon as the passage to Barrow around Point Barrow is ice free and safe for passage to the Beaufort Sea, two of the four vessels will immediately transit to the Sivulliq site. Typically, this occurs in late July/early August. Retrieval operations will be completed and vessels out of the Beaufort prior to the August 25th commencement for the Nuiqsut/Kaktovik

bowhead whale harvest. Once the Sivulliq anchors are retrieved, the two vessels will return to the Chukchi Sea to complete any remaining operations.

Once on site, the retrieval of each anchor and associated mooring system typically takes approximately four hours to complete. There is typically one to two vessels onsite, only one of which will be retrieving an anchor. Depending on weather and number of the mooring lines/anchors, one site is expected be completed between two and seven days. Anchors will be retrieved in one of two ways. The first is by locating the float rope connected to each of the mooring systems with the remotely operated vehicle (ROV) and retrieving the anchor from the opposite side of the anchor, working towards the anchor itself. The second method will be employed if the float rope cannot be located, or the vessel retrieving does not have an ROV. A grappling hook will be deployed and to grasp the mooring chain along the anchoring system. From that point, the anchor system will be pulled on the back deck with retrieval on the non-anchor side first, then the anchor side, and all the way to the anchor.

Over this period, the anchor winch and thrusters will used to pull to unseat and retrieve anchors from the seafloor. Depending on water depth and anchors depth, this typically takes 15-20 minutes per anchor. Thruster usage while maintaining station using Dynamic Positioning (DP) will vary depending on weather and sea conditions. Thruster percentages are automatically increased and decreased based on the sea state and weather. If weather conditions are poor, the thrusters will need to work harder to maintain position. Anchors at Burger A and Kakapo locations are wet stored (they were not seated deeply in place) and will not require unseating.

It has been reported that during anchor handling, noises from operating vessels' dynamic positioning thrusters, coupled with other machinery noises generated from anchor deployments and retrieving using winch and steel cables, were the loudest among all activities in the Arctic

(LGL, et al. 2014). Although noise levels from anchor handling operations are not expected to cause hearing impairments or injury to marine mammals, these noise levels are high enough to cause behavioral harassment to marine mammals in the vicinity. These noises sources are non-impulsive, and are considered "continuous" in current NMFS noise analysis.

2. Use of Sonar Equipment

If necessary, Fairweather proposes to use a geo-referenced interferometric sonar or multi-beam sonar with magnetometer to provide accurate imagery of the anchors and associated gear prior to retrieval and after the retrieval to confirm removal of anchor equipment. The device is mounted in a towfish towed by the Norseman II (just below the sea surface, or deep-towed). The sound frequencies used in sonar usually range from 100 to 500 kiloHertz (kHz); higher frequencies yield better resolution but less range. The actual device has not been decided, but the following systems would be representative of what would be used:

- A multi-beam echosounder operates at an rms source level of a maximum of 220 dB re 1 μPa @1m. The multi beam echosounder emits high frequency (240 kHz) energy in a fan-shaped pattern of equidistant or equiangular beam spacing. The beam width of the emitted sound energy in the along-track direction is 1.5 degrees, while the across track beam width is 1.8 degrees. (Teledyne Benthos Geophysical 2008; Konsberg 2014)
- A single-beam echosounder operates at an rms source level of approximately 220 dB re 1 μPa @1m. The transducer selected uses a frequency of 210 kHz. The transducer's beam width is approximately 3 degrees. (Teledyne Benthos Geophysical 2008; Konsberg 2014)

- A dual frequency sonar system will operate at about 400 kHz and 900 kHz. The rms source level is 215 dB re 1µPa @ 1m. The sound energy is emitted in a narrow fan-shaped pattern, with a horizontal beam width of 0.45 degrees for 400 kHz and 0.25 degrees at 900 kHz, with a vertical beam width of 50 degrees. (Teledyne Benthos Geophysical 2008; Konsberg 2014)

In the 2013 Shell 90-day report (Bisson et al., 2013), JASCO measured all the various sources associated with the seismic survey program, including sonar. They measured the distance to the 160 dB threshold to be 130 m, resulting in an ensonified area of 0.053 km^2. More importantly, available evidence suggests that marine mammals do not hear at frequencies above 180-200 kHz, and therefore we do not believe that take is likely to result from exposure to these sources.

3. Ice Forecasting and Ice Management

The anchor retrieval program is located in an area characterized by active sea ice movement, ice scouring, and storm surges. In anticipation of potential ice hazards that may be encountered, we will utilize real-time ice and weather forecasting to identify conditions that could put operations at risk, allowing the vessels to modify their activities accordingly. These observations will be made by experienced ice and weather specialists whose sole duty is to provide information and provide advice on any ice-related threats. These observers and advisors will be based in Anchorage. This real-time ice and weather forecasting will be available to personnel for planning purposes and as a tool to alert the fleet of impending hazardous ice and weather conditions. Potential data sources for ice forecasting and tracking include:

- Potential unmanned aerial support operated by Tulugaq II LLC from vessels for ice scouting.

- Radarsat Data Synthetic Aperture Radar - provides all-weather imagery of ice conditions with very high resolution.
- Moderate Resolution Imaging Spectroradiometer (MODIS) - a satellite providing lower resolution visual and near infrared imagery.
- Other publically available remote sensing satellite data such as Visible Infrared Imaging Radiometer Suite, Oceansat-2 Scatterometer, and Advanced Very High Resolution Radiometer.
- Reports from Ice Specialists on the ice management vessel and anchor handler and from the Ice Observer on the vessels.
- Information from the NOAA ice centers and potentially the University of Colorado.

The proposed 2016 anchor handling fleet will consist of two ice-classed vessels. The only time ice management is likely for this project is around Point Barrow. The goal of the project is to transit into the Beaufort Sea as soon as ice conditions allow, which is typically in late July. If vessels transit into the area and ice moves in, they may be required to manage ice floes. Fairweather does not anticipate active ice management except for a few days near Point Barrow during the transit. Therefore, we have analyzed potential impacts of ice management for two days in the Barrow area.

Description of Marine Mammals in the Area of the Specified Activity

The Chukchi and Beaufort Seas support a diverse assemblage of marine mammals. Table 2 lists the 12 marine mammal species under NMFS jurisdiction with confirmed or possible occurrence in the proposed project area.

Table 2. Marine mammal species with confirmed or possible occurrence in the proposed action area.

Species/Stocks	Conservation Status	Habitat	Population Estimate
Beluga whale (*Delphinapterus leucas*) – Eastern Chukchi Stock	ESA – Not Listed	Offshore, coastal, ice edges	3,710
Beluga whale (*Delphinapterus leucas*) – Beaufort Stock	ESA – Not Listed	Offshore, coastal, ice edges	32,453
Killer whale (*Orcinus orca*)	ESA – Not Listed	Widely distributed	2,084
Harbor porpoise (*Phocoena phocoena*) – Bering Sea Stock	ESA – Not Listed	Coastal, inland waters, shallow offshore waters	48,215
Bowhead whale (*Balaena mysticetus*) – Western Arctic Stock	ESA – Endangered	Pack ice, coastal	13,796
Gray whale (*Eschrichtius robustus*) – Eastern Pacific Stock	ESA – Not Listed	Coastal, lagoons, shallow offshore waters	19,126
Minke whale (*Balaenoptera acutorostrata*)	ESA – Not Listed	Shelf, coastal	810
Humpback whale (*Megaptera novaeangliae*) – Western North Pacific Stock	ESA – Endangered	Shelf slope, mostly pelagic	6,000-14,000
Fin whale (*Balaenoptera physalus*) – Northeast Pacific Stock	ESA – Endangered	Shelf, coastal	1,368
Bearded seal (*Erignathus barbatus*)	ESA – Not listed	Pack ice, shallow offshore waters	155,000
Spotted seal (*Phoca largha*)	ESA – (Arctic DPS Not Listed)	Pack ice, coastal haul outs, offshore	391,000
Ringed seal (*Pusa hispida*)	ESA – Not listed	Land-fast & pack ice, offshore	300,000
Ribbon seal (*Histriophoca fasciata*)	ESA – Not Listed	Pack ice, offshore	90,000-100,000

Among these species, bowhead, humpback, and fin whales are listed as endangered or threatened species under the Endangered Species Act (ESA). In addition, walrus and the polar bear could also occur in the U.S. Chukchi and Beaufort seas; however, these species are managed by the U.S. Fish and Wildlife Service (USFWS) and are not considered in this Notice of Proposed IHA.

Of all these species, bowhead and beluga whales and ringed, bearded, and spotted seals

are the species most frequently sighted in the proposed activity area. The proposed action area in Chukchi and Beaufort seas also include areas that have been identified as important for bowhead whale reproduction during summer and fall and for beluga whale feeding and reproduction in summer.

Most spring-migrating bowhead whales would likely pass through the Chukchi Sea prior to the start of the planned anchor handling activities. However, a few whales that may remain in the Chukchi Sea during the summer could be encountered during the anchor handling activities or by transiting vessels. More encounters with bowhead whales would be likely to occur during the westward fall migration in late September through October. Most bowheads migrating in September and October appear to transit across the northern portion of the Chukchi Sea to the Chukotka coast before heading south toward the Bering Sea (Quakenbush et al. 2009). Some of these whales have traveled well north of the planned operations, but others have passed near to, or through, the proposed project area.

Two stocks of beluga whales occur in the proposed anchor retrieving project areas: the Eastern Chukchi stock and the Beaufort Sea stock. The Eastern Chukchi Sea belugas move into coastal areas, including Kasegaluk Lagoon, in late June and animals are sighted in the area until about mid-July (Frost et al. 1993). This movement indicated some overlap in distribution with the Beaufort Sea beluga whale stock during late summer. Summer densities of beluga whales in offshore waters are expected to be low, with somewhat higher densities in ice-margin and nearshore areas. If belugas are present during the summer, they are more likely to occur in or near the ice edge or close to shore during their northward migration. In the fall, beluga whale densities offshore in the Chukchi Sea are expected to be somewhat higher than in the summer because individuals of the eastern Chukchi Sea stock and the Beaufort Sea stock will be

migrating south to their wintering grounds in the Bering Sea (Allen and Angliss 2014).

Ringed seals are year-round residents in the Bering Sea, Norton and Kotzebue Sounds, and throughout the Chukchi and Beaufort Seas and are the most frequently encountered seal in the area (Allen and Angliss 2015). They occur as far south as Bristol Bay in years of extensive ice coverage but generally are not abundant south of Norton Sound except in nearshore areas (Frost 1985). Ringed seals will likely be the most abundant marine mammal species encountered in the Chukchi Sea during anchor retrieval operations.

During spring when pupping, breeding, and molting occur, spotted seals are found along the southern edge of the sea ice in the Okhotsk and Bering seas (Quakenbush 1988; Rugh et al. 1997). In late April and early May, adult spotted seals are often seen on the ice in female-pup or male-female pairs, or in male-female-pup triads. Sub-adults may be seen in larger groups of up to 200 animals. During the summer, spotted seals are found primarily in the Bering and Chukchi seas, but some range into the Beaufort Sea (Rugh et al. 1997; Lowry et al. 1998) from July until September. Spotted seals are expected to occur near the planned anchor handling activities in the Chukchi Sea, but they will likely be fewer in number than ringed seals.

Bearded seals occur over the continental shelves of the Bering, Chukchi, and Beaufort seas (Burns 1981b). During the summer period, bearded seals occur mainly in relatively shallow areas because they are predominantly benthic feeders (Burns 1981b). During winter, most bearded seals in Alaskan waters are found in the Bering Sea. From mid-April to June as the ice recedes, some of the bearded seals that overwinter in the Bering Sea migrate northward through the Bering Strait. During the summer they are found near the widely fragmented margin of sea ice covering the continental shelf of the Chukchi Sea and in nearshore areas of the central and western Beaufort Sea (Allen and Angliss 2015). Bearded seals are likely to be encountered

during anchor handling activities, and greater numbers of bearded seals are likely to be encountered if the ice edge occurs nearby.

Further information on the biology and local distribution of these species can be found in Fairweather's application (see **ADDRESSES**) and the NMFS Marine Mammal Stock Assessment Reports, which are available online at: *http://www.nmfs.noaa.gov/pr/sars/species.html*.

Potential Effects of the Specified Activity on Marine Mammals

This section includes a summary and discussion of the ways that the types of stressors associated with the specified activity (e.g., operation of dynamic positioning thrusters) have been observed to or are thought to impact marine mammals. The discussion may also include reactions that we consider to rise to the level of a take and those that we do not consider to rise to the level of a take (for example, with acoustics, we may include a discussion of studies that showed animals not reacting at all to sound or exhibiting barely measurable avoidance). This section is intended as a background of potential effects and does not consider either the specific manner in which this activity will be carried out or the mitigation that will be implemented or how either of those will shape the anticipated impacts from this specific activity. The "Estimated Take by Incidental Harassment" section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken by this activity. The "Negligible Impact Analysis" section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this section, the "Estimated Take by Incidental Harassment" section, the "Proposed Mitigation" section, and the "Anticipated Effects on Marine Mammal Habitat" section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that on the affected

marine mammal populations or stocks.

When considering the influence of various kinds of sound on the marine environment, it is necessary to understand that different kinds of marine life are sensitive to different frequencies of sound. Based on available behavioral data, audiograms have been derived using auditory evoked potentials, anatomical modeling, and other data. Southall *et al.* (2007) designate "functional hearing groups" for marine mammals and estimate the lower and upper frequencies of functional hearing of the groups. The functional groups and the associated frequencies are indicated below (though animals are less sensitive to sounds at the outer edge of their functional range and most sensitive to sounds of frequencies within a smaller range somewhere in the middle of their functional hearing range):

- Low frequency cetaceans (13 species of mysticetes): functional hearing is estimated to occur between approximately 7 Hz and 25 kHz;
- Mid-frequency cetaceans (32 species of dolphins, six species of larger toothed whales, and 19 species of beaked and bottlenose whales): functional hearing is estimated to occur between approximately 150 Hz and 160 kHz;
- High frequency cetaceans (eight species of true porpoises, six species of river dolphins, *Kogia*, the franciscana, and four species of cephalorhynchids): functional hearing is estimated to occur between approximately 200 Hz and 180 kHz;
- Phocid pinnipeds (true seals): functional hearing is estimated between 75 Hz to 100 kHz; and
- Otariid pinnipeds (sea lions and fur seals): functional hearing is estimated between 100 Hz to 48 kHz.

Species found in the vicinity of Fairweather anchor retrieval operation area include four low-frequency cetacean species (Bowhead whale, gray whale, humpback whale, and fin whale), two mid-frequency cetacean species (beluga whale and killer whale), one high-frequency cetacean species (harbor porpoise), and four pinniped species (ringed seal, spotted seal, bearded seal, and ribbon seal).

The proposed Fairweather anchor retrieving operation could adversely affect marine mammal species and stocks by exposing them to elevated noise levels in the vicinity of the activity area. Noise sources that could potentially cause harassment include anchor retrieving activity and limited ice management.

Exposure to high intensity sound for a sufficient duration may result in auditory effects such as a noise-induced threshold shift—an increase in the auditory threshold after exposure to noise (Finneran et al., 2005). Factors that influence the amount of threshold shift include the amplitude, duration, frequency content, temporal pattern, and energy distribution of noise exposure. The magnitude of hearing threshold shift normally decreases over time following cessation of the noise exposure. The amount of threshold shift just after exposure is the initial threshold shift. If the threshold shift eventually returns to zero (i.e., the threshold returns to the pre-exposure value), it is a temporary threshold shift (Southall et al., 2007).

Threshold Shift (noise-induced loss of hearing) – When animals exhibit reduced hearing sensitivity (i.e., sounds must be louder for an animal to detect them) following exposure to an intense sound or sound for long duration, it is referred to as a noise-induced threshold shift (TS). An animal can experience temporary threshold shift (TTS) or permanent threshold shift (PTS). TTS can last from minutes or hours to days (i.e., there is complete recovery), can occur in specific frequency ranges (i.e., an animal might only have a temporary loss of hearing sensitivity

between the frequencies of 1 and 10 kHz), and can be of varying amounts (for example, an animal's hearing sensitivity might be reduced initially by only 6 dB or reduced by 30 dB). PTS is permanent, but some recovery is possible. PTS can also occur in a specific frequency range and amount as mentioned above for TTS.

The following physiological mechanisms are thought to play a role in inducing auditory TS: effects to sensory hair cells in the inner ear that reduce their sensitivity, modification of the chemical environment within the sensory cells, residual muscular activity in the middle ear, displacement of certain inner ear membranes, increased blood flow, and post-stimulatory reduction in both efferent and sensory neural output (Southall et al., 2007). The amplitude, duration, frequency, temporal pattern, and energy distribution of sound exposure all can affect the amount of associated TS and the frequency range in which it occurs. As amplitude and duration of sound exposure increase, so, generally, does the amount of TS, along with the recovery time. For intermittent sounds, less TS could occur than compared to a continuous exposure with the same energy (some recovery could occur between intermittent exposures depending on the duty cycle between sounds) (Kryter et al., 1966; Ward, 1997). For example, one short but loud (higher SPL) sound exposure may induce the same impairment as one longer but softer sound, which in turn may cause more impairment than a series of several intermittent softer sounds with the same total energy (Ward, 1997). Additionally, though TTS is temporary, prolonged exposure to sounds strong enough to elicit TTS, or shorter-term exposure to sound levels well above the TTS threshold, can cause PTS, at least in terrestrial mammals (Kryter, 1985). Although in the case of Fairweather's anchor retrieving program, NMFS does not expect that animals would experience levels high enough or durations long enough to result in TS given that the noise levels from the operation is a very low.

For marine mammals, published data are limited to the captive bottlenose dolphin, beluga, harbor porpoise, and Yangtze finless porpoise (Finneran et al., 2000, 2002, 2003, 2005, 2007, 2010a, 2010b; Finneran and Schlundt, 2010; Lucke et al., 2009; Mooney et al., 2009a, 2009b; Popov et al., 2011a, 2011b; Kastelein et al., 2012a; Schlundt et al., 2000; Nachtigall et al., 2003, 2004). For pinnipeds in water, data are limited to measurements of TTS in harbor seals, an elephant seal, and California sea lions (Kastak et al., 1999, 2005; Kastelein et al., 2012b).

Lucke et al. (2009) found a threshold shift (TS) of a harbor porpoise after exposing it to airgun noise with a received sound pressure level (SPL) at 200.2 dB (peak-to-peak) re: 1 μPa, which corresponds to a sound exposure level of 164.5 dB re: 1 μPa^2 s after integrating exposure. NMFS currently uses the root-mean-square (rms) of received SPL at 180 dB and 190 dB re: 1 μPa as the threshold above which permanent threshold shift (PTS) could occur for cetaceans and pinnipeds, respectively. Because the airgun noise is a broadband impulse, one cannot directly determine the equivalent of rms SPL from the reported peak-to-peak SPLs. However, applying a conservative conversion factor of 16 dB for broadband signals from seismic surveys (McCauley, et al., 2000) to correct for the difference between peak-to-peak levels reported in Lucke et al. (2009) and rms SPLs, the rms SPL for TTS would be approximately 184 dB re: 1 μPa, and the received levels associated with PTS (Level A harassment) would be higher. This is still above NMFS' current 180 dB rms re: 1 μPa threshold for injury. However, NMFS recognizes that TTS of harbor porpoises is lower than other cetacean species empirically tested (Finneran & Schlundt, 2010; Finneran et al., 2002; Kastelein and Jennings, 2012).

Marine mammal hearing plays a critical role in communication with conspecifics, and interpretation of environmental cues for purposes such as predator avoidance and prey capture. Depending on the degree (elevation of threshold in dB), duration (i.e., recovery time), and

frequency range of TTS, and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious (similar to those discussed in auditory masking, below). For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that occurs during a time where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during time when communication is critical for successful mother/calf interactions could have more serious impacts. Also, depending on the degree and frequency range, the effects of PTS on an animal could range in severity, although it is considered generally more serious because it is a permanent condition. Of note, reduced hearing sensitivity as a simple function of aging has been observed in marine mammals, as well as humans and other taxa (Southall et al., 2007), so one can infer that strategies exist for coping with this condition to some degree, though likely not without cost.

In addition, chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark et al. 2009). Acoustic masking is when other noises such as from human sources interfere with animal detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Under certain circumstances, masking of important acoustic cues for marine mammals could inhibit their ability to maximize feeding or breeding opportunities, potentially effecting important vital rates that could translate to effects on survival and reproduction.

Masking occurs at the frequency band which the animals utilize. Therefore, since noise generated from vessels dynamic positioning activity is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by odontocetes (toothed

whales). However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (e.g., Clark et al. 2009) and cause increased stress levels (e.g., Foote et al. 2004; Holt et al. 2009).

Unlike TS, masking, which can occur over large temporal and spatial scales, can potentially affect the species at population, community, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than 3 times in terms of sound pressure level (SPL)) in the world's ocean from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic noise sources, such as those from vessel traffic and anchor retrieving contribute to the elevated ambient noise levels, thus increasing potential for or severity of masking.

Finally, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson et al. 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where noise sources are located; and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries).

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing,

motivation, experience, demography) and is also difficult to predict (Southall et al. 2007). Currently NMFS uses a received level of 160 dB re 1 μPa (rms) to predict the onset of behavioral harassment from impulse noises (such as impact pile driving), and 120 dB re 1 μPa (rms) for continuous noises (such as operating DP thrusters). No impulse noise is expected from the Fairweather's anchor retrieval operation. For the Fairweather's anchor retrieval operation, the 120 dB re 1 μPa (rms) threshold is considered because only continuous noise sources would be generated.

The biological significance of many of these behavioral disturbances is difficult to predict. However, the consequences of behavioral modification could be biologically significant if the change affects growth, survival, and/or reproduction, which depends on the severity, duration, and context of the effects.

Anticipated Effects on Marine Mammal Habitat

Project activities that could potentially impact marine mammal habitats by causing acoustical injury to prey resources and disturbing benthic habitat from anchor retrieving. Regarding the former, however, acoustical injury from thruster noise is unlikely. Previous noise studies (e.g., Greenlaw et al. 1988, Davis et al. 1998, Christian et al. 2004) with cod, crab, and schooling fish found little or no injury to adults, larvae, or eggs when exposed to impulsive noises exceeding 220 dB. Continuous noise levels from ship thrusters are generally below 180 dB, and do not create great enough pressures to cause tissue or organ injury. However, the elevated noise levels could cause temporary habitat abandoning by prey species.

Retrieving of the anchors will result in some seafloor disturbance and temporary increases in water column turbidity. Previous drilling units were held in place during operations with systems of six-eight anchors for each unit. The embedment type anchors were designed to

embed into the seafloor thereby providing the required resistance. The anchors generally penetrated the seafloor on contact. Both the anchor and anchor chain will disturb sediments during the retrieval process, creating a trench or depression with surrounding berms where the displaced sediment is mounded. Some sediment will be suspended in the water column during the removal of the anchors. The depression with associated berm, collectively known as an anchor scar, remains when the anchor is removed. Shell estimated that each anchor would impact a seafloor area of up to about 233 m^2 (2,510 ft^2). We assume the retrieval process will result in disturbance of this area, but the anchors will be removed and the area will most likely be recolonized.

Over time the anchor scars will be filled due to natural movement of sediment. The duration of the scars depends upon the energy of the system, water depth, ice scour, and sediment type. Anchor scars were visible under low energy conditions in the North Sea for five to ten years after retrieval. Scars typically do not form or persist in sandy mud or sand sediments but may last for nine years in hard clays (Centaur Associates, Inc. 1984). The energy regime, plus possible effects of ice gouge in the Arctic Ocean, suggests that anchor scars will be refilled faster than in the North Sea.

Proposed Mitigation

In order to issue an incidental take authorization (ITA) under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant). NMFS implementing regulations at 50 CFR 216.104(a)(11) require incidental take applications

to include information about the availability and feasibility of equipment, methods, and manner of conducting the activity and other means of effecting the least practicable adverse impact on the affected species or stocks and their habitat, and on their availability for subsistence uses.

For the proposed Fairweather open-water anchor retrieval operations in the Chukchi and Beaufort seas, Fairweather and its contractor worked with NMFS to propose the following mitigation measures to minimize the potential impacts to marine mammals in the project vicinity as a result of the activities. The primary purpose of these mitigation measures is to detect marine mammals and avoid vessel interactions during the anchor retrieval operation. The following are mitigation measures proposed to be included in the IHA (if issued).

(a) Establishing and Monitoring Exclusion Zone for Anchor Retrieval and Ice Management

(1) Protected species observers (PSOs) would establish and monitor a safety zone of 500 m for anchor retrieval activity and ice management. The modeled safety zone for anchor retrieval is 220 m from the source.

(2) When the vessel is positioned on-site, the PSOs will 'clear' the area by observing the 500m safety zone for 30 minutes; if no marine mammals are observed within those 30 minutes, anchor retrieval or ice management will commence.

(3) If a marine mammal(s) is observed within the 500-m of the anchor retrieval and/or ice management safety zone during the clearing, the PSOs will continue to watch until the animal(s) is gone and has not returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.

(4) Once the PSOs have cleared the area, anchor retrieval or ice management operations may commence.

(5) Should a marine mammal(s) be observed within or approaching the 500-m safety zone during the retrieval or ice management operations, the PSOs will monitor and carefully record any reactions observed.

(b) Establishing and Monitoring Exclusion Zone for Sonar Activity. Although NMFS does not expect marine mammals would be taken by high-frequency sonar used for locating anchors, Fairweather requests that the following mitigation and monitoring measures related to sonar operations be implemented.

(1) PSOs would establish and monitor an exclusion zone of 500 m for sonar activity. The modeled exclusion zone for sonar activity is 220 m from the source.

(2) Prior to starting the sonar activity, the PSOs will 'clear' the area by observing the 500 m exclusion zone for 30 minutes; if no marine mammals are observed within those 30 minutes, sonar activity will commence.

(3) If a marine mammal(s) is observed within the 500-m exclusion zone during the clearing, the PSOs will continue to watch until the animal(s) is gone and has not returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.

(4) Once the PSOs have cleared the area, sonar activity may commence.

(c) Establishing Zones of Influence (ZOIs)

PSOs would establish and monitor ZOIs where the received level is 120 dB during Fairweather's anchor retrieval operation and where the received level is 160 dB during sonar activity.

(d) Vessel Speed or Course Measures

If a marine mammal is detected outside the 500 m sonar exclusion zone for sonar activities or during transit between sites, based on its position and the relative motion, is likely to

enter those zones, the vessel's speed and/or direct course may, when practical and safe, be changed. The marine mammal activities and movements relative to the vessels shall be closely monitored to ensure that the marine mammal does not approach within either zone. If the mammal appears likely to enter the respective zone, further mitigation actions will be taken, i.e., either further course alterations or shut down in the case of the sonar. During actual anchor handling, the vessel is stationary on site.

In addition, the vessel shall reduce its speed to 5 kt (9.26 km/h) or lower when within 900 ft (274 m) of cetaceans or pinnipeds. Further, Fairweather shall avoid transits within designated North Pacific right whale critical habitat. If transit within North Pacific right whale critical habitat cannot be avoided, vessel operators are requested to exercise extreme caution and observe the of 10 kt (18.52 km/h) vessel speed restriction while within North Pacific right whale critical habitat. Within the North Pacific right whale critical habitat, all vessels shall keep 2,625 ft (800 m) away from any observed North Pacific right whales and avoid approaching whales head-on consistent with vessel safety.

(e) Shutdown Measures

If an animal enters or is approaching the 500-m exclusion zone, sonar will be shut down immediately. Sonar activity will not resume until the marine mammal has cleared the exclusion zone. PSOs will also collect behavioral information on marine mammals beyond the exclusion zone.

Mitigation Conclusions

NMFS has carefully evaluated Fairweather's proposed mitigation measures and considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable impact on the affected marine mammal species and stocks and

their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measures are expected to minimize adverse impacts to marine mammals;
- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
- The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).

2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to received levels of activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to received levels of activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).

4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to received levels of activities expected to result in the take of marine

mammals (this goal may contribute to 1, above, or to reducing the severity of harassment takes only).

5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.

6. For monitoring directly related to mitigation – an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the applicant's proposed measures, as well as other measures. considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammals species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance. Proposed measures to ensure availability of such species or stock for taking for certain subsistence uses are discussed later in this document (see "Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses" section).

Proposed Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Fairweather submitted a marine mammal monitoring plan as part of the IHA application. The

plan may be modified or supplemented based on comments or new information received from the public during the public comment period or from the peer review panel (see the "*Monitoring Plan Peer Review*" section later in this document).

Monitoring measures prescribed by NMFS should accomplish one or more of the following general goals:

1. 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.

2. 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 or visual stimuli), through better understanding of one or more of the following: the action itself and its environment (e.g. sound source characterization, propagation, and ambient noise levels); the affected species (e.g. life history or dive pattern); the likely co-occurrence of marine mammal species with the action (in whole or part) associated with specific adverse effects; and/or 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).

3. 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).

4. An increase in our understanding of how anticipated individual responses, to individual stressors or anticipated combinations of stressors, may impact either: the long-term fitness and survival of an individual; or the population, species, or stock (e.g. through effects on annual rates of recruitment or survival).

5. An increase in our understanding of how the activity affects marine mammal habitat,

such as through effects on prey sources or acoustic habitat (e.g., through characterization of longer-term contributions of multiple sound sources to rising ambient noise levels and assessment of the potential chronic effects on marine mammals).

6. An increase in understanding of the impacts of the activity on marine mammals in combination with the impacts of other anthropogenic activities or natural factors occurring in the region.

7. An increase in our understanding of the effectiveness of mitigation and monitoring measures.

8. An increase in the probability of detecting marine mammals (through improved technology or methodology), both specifically within the safety zone (thus allowing for more effective implementation of the mitigation) and in general, to better achieve the above goals.

Proposed Monitoring Measures

Monitoring will provide information on the numbers of marine mammals potentially affected by the anchor retrieval operation and facilitate real-time mitigation to prevent injury of marine mammals by vessel traffic. These goals will be accomplished in the Chukchi and Beaufort seas during 2016 by conducting vessel-based monitoring to document marine mammal presence and distribution in the vicinity of the operation area.

Visual monitoring by Protected Species Observers (PSOs) during anchor retrieval operation, and periods when the operation is not occurring, will provide information on the numbers of marine mammals potentially affected by the activity. Vessel-based PSOs onboard the vessels will record the numbers and species of marine mammals observed in the area and any observable reaction of marine mammals to the anchor retrieval operation in the Chukchi and Beaufort seas.

Visual-based PSOs

Vessel-based monitoring for marine mammals would be done by trained protected species observers (PSOs) throughout the period of anchor retrieval operation. The observers would monitor the occurrence of marine mammals onboard vessels during all daylight periods during operation. PSO duties would include watching for and identifying marine mammals; recording their numbers, distances, and reactions to the survey operations; and documenting "take by harassment."

A sufficient number of PSOs would be required onboard each survey vessel to meet the following criteria:

- 100% monitoring coverage during all periods of anchor retrieval operations in daylight;
- Maximum of 4 consecutive hours on watch per PSO; and
- Maximum of 12 hours of watch time per day per PSO.

PSO teams will consist of Inupiat observers and experienced field biologists. Each vessel will have an experienced field crew leader to supervise the PSO team. The total number of PSOs may decrease later in the season as the duration of daylight decreases.

(1) PSOs Qualification and Training

Lead PSOs and most PSOs would be individuals with experience as observers during marine mammal monitoring projects in Alaska or other offshore areas in recent years. New or inexperienced PSOs would be paired with an experienced PSO or experienced field biologist so that the quality of marine mammal observations and data recording is kept consistent.

Resumes for candidate PSOs would be provided to NMFS for review and acceptance of their qualifications. Inupiat observers would be experienced in the region and familiar with the marine mammals of the area. All observers would complete a NMFS-approved observer training course designed to familiarize individuals with monitoring and data collection procedures.

(2) Specialized Field Equipment

The PSOs shall be provided with Fujinon 7 X 50 or equivalent binoculars for visual based monitoring onboard all vessels.

Laser range finders (Leica LRF 1200 laser rangefinder or equivalent) would be available to assist with distance estimation.

Marine Mammal Behavioral Response to Vessel Disturbance Study

As part of the Chukchi Sea Environmental Studies Program (CSESP), marine mammal biologists collected behavioral response data on walruses and seals to the vessel. The objectives of the observer on the CSESP program were to collect information on marine mammal distribution and density estimates using standard line-transect theory; in other words, the program was not a mitigation program for any particular seismic activity. Because the vessels in this program will be transiting a large portion of the time, Fairweather proposes to utilize this opportunity to collect information on responses of marine mammals, particularly walruses and seals, to vessel disturbance.

As part of the standard Fairweather's observation protocol, observers will record the initial and subsequent behaviors of marine mammals, a methodology they refer to as 'focal following'. Marine mammals will be monitored and observed until they disappear from the PSO's view (PSOs may have to follow the marine mammals by moving to new locations in order to keep the marine mammals in constant view). Observers will also record any perceived

reactions that marine mammals may have in response to the vessel. When following the animal observers will use either a notebook or voice recorder to note any changes in behavior and the time when these changes occur. Time of first observation, time of changes in behavior, and time last seen will be recorded. Behaviors and changes in behaviors of marine mammals will be recorded as long as they are in view of the boat. After the animal is out of sight, PSOs will summarize the observation in the notes field of the electronic data collection platform. It may be difficult to find the animal being followed after it dives and if this happens, PSO will stop focal follow observation.

For groups of marine that are too large to monitor each animal one or more focal animals, e.g., cow/calf pair, subadult female, adult male, etc., will be chosen to monitor until no longer observable. For a sighting with more than one animal, the most common behavior of the group will be recorded. Focal animals will be chosen without bias in relation to age and sex, but as observations accumulate and specific age/sex categories are underrepresented, focal animals may be chosen from those underrepresented categories if possible.

A separate section in the 90-day report (see below) will be provided with a summary of results of vessel disturbance, with the ultimate goal of a peer-reviewed publication.

Monitoring Plan Peer Review

The MMPA requires that monitoring plans be independently peer reviewed "where the proposed activity may affect the availability of a species or stock for taking for subsistence uses" (16 U.S.C. 1371(a)(5)(D)(ii)(III)). Regarding this requirement, NMFS' implementing regulations state, "Upon receipt of a complete monitoring plan, and at its discretion, [NMFS] will either submit the plan to members of a peer review panel for review or within 60 days of

receipt of the proposed monitoring plan, schedule a workshop to review the plan" (50 CFR 216.108(d)).

NMFS has established an independent peer review panel to review Fairweather's 4MP for the proposed anchor retrieval operation in the Chukchi and Beaufort seas. The panel met via web conference in early March 2016, and provided comments to NMFS in mid-April 2016. NMFS is currently working with Fairweather on recommendations made by the panel, and will incorporate appropriate changes into the monitoring requirements of the IHA (if issued).

Reporting Measures

(1) Monitoring Reports

The results of Fairweather's anchor retrieval program monitoring reports would be presented in weekly, monthly, and 90-day reports, as required by NMFS under the proposed IHA. The initial final reports are due to NMFS within 90 days after the expiration of the IHA (if issued). The reports will include:

- Summaries of monitoring effort (e.g., total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors affecting visibility and detectability of marine mammals);
- Summaries that represent an initial level of interpretation of the efficacy, measurements, and observations, rather than raw data, fully processed analyses, or a summary of operations and important observations;
- Information on distances marine mammals are sighted from operations and the associated noise isopleth for active sound sources (i.e., anchor retrieval, ice management, side scan sonar);

- Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare);
- Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover;
- Estimates of uncertainty in all take estimates, with uncertainty expressed by the presentation of confidence limits, a minimum-maximum, posterior probability distribution, or another applicable method, with the exact approach to be selected based on the sampling method and data available;
- A clear comparison of authorized takes and the level of actual estimated takes; and

The "90-day" reports will be subject to review and comment by NMFS. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS.

(2) Notification of Injured or Dead Marine Mammals

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as a serious injury, or mortality (e.g., ship-strike, gear interaction, and/or entanglement), Fairweather would immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinators. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;

- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Fairweather to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Fairweather would not be able to resume its activities until notified by NMFS via letter, email, or telephone.

In the event that Fairweather discovers a dead marine mammal, and the lead PSO determines that the cause of the death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Fairweather would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the

circumstances of the incident. NMFS would work with Fairweather to determine whether modifications in the activities are appropriate.

In the event that Fairweather discovers a dead marine mammal, and the lead PSO determines that the death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Fairweather would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators, within 24 hours of the discovery. Fairweather would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Fairweather can continue its operations under such a case.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [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 [Level B harassment].

Takes by Level B harassments of some species are anticipated as a result of Fairweather's proposed anchor retrieval operation. NMFS expects marine mammal takes could result from noise propagation from anchor retrieving activities, which includes the operation of dynamic thrusters and other machinery noises generated from anchor retrieving using winch and steel cables. NMFS does not expect marine mammals would be taken by collision with vessels,

because the vessels will be moving at low speeds, and PSOs on the vessels will be monitoring for marine mammals and will be able to alert the vessels to avoid any marine mammals in the area.

For non-impulse sounds, such as those produced by the dynamic positioning thrusters and anchor handling during Fairweather's anchor retrieval operation, NMFS uses the 180 and 190 dB (rms) re 1 μPa isopleth to indicate the onset of Level A harassment for cetaceans and pinnipeds, respectively; and the 120 dB (rms) re 1 μPa isopleth for Level B harassment of all marine mammals.

The estimates of the numbers of each species of marine mammal that could potentially be exposed to sound associated with the anchor retrieval activity are calculated by multiplying the area of ensonified areas by animal densities. Specifically, the ensonified area for anchor retrieving activities is the area where received noise levels are above 120 dB, during the periods when these activities would be occurring. For the 2015 IHA application for Shell's exploration drilling in the Chukchi Sea (Shell 2015), JASCO modeled the anchor handling activity using their estimated distance to 120 dB isopleths at 14,000 m (JASCO 2013). This yields an estimated 120 dB ensonified area of 615 km^2.

The duration of sound-producing activity was calculated for each site. Although each anchor site has different configurations and numbers of anchors, Fairweather assumes it would take up to seven days per site to remove all anchors. Because the vessels will not be operating at full power during the entire time, Fairweather assumes half of the time (3.5 days) will be exceeding 120 dB. With five (5) anchor sites, this results in 17.5 days of anchor handling activity that may result in disturbance.

Description of the Sound Sources

Anchor Retrieving: During Shell's 2012 exploratory program in the Beaufort and Chukchi seas, sound source verifications (SSVs) were conducted of all activities conducted near both Burger and Sivulliq during the open water season (LGL et al. 2014). Detailed descriptions of the sound measurements and analysis methods can be found in Chapter 3 of the Shell 2012 90-day report to NMFS (Austin et al. 2013). Anchor handling activities were measured at 143 dB at 860 m, the loudest activity was when "seating" the anchors (LGL et al. 2014). It is assumed that the unseating of anchors will be similar in power needed from the vessel, so this source is suitable to estimate area ensonified. In the report, JASCO extrapolated the distance to the 120 dB threshold using a simple spreading loss of 20 log R, resulting in a radius of 12,000 m. This radius was used to estimate the area ensonified for this application.

Each anchor site has different configurations and numbers of anchors, but Fairweather assume it will take up to seven (7) days per site to remove all anchors. Because the vessels will not be operating at full power during the entire time, Fairweather assumed half of the time (3.5 days) will be utilizing the high power to unseat anchors. With five (5) anchor sites, this results in 17.5 days of anchor handling activity that may result in disturbance.

Ice Management: Although highly unlikely, it may be necessary for ice management near Point Barrow while transiting to the Sivulliq site. During exploration drilling operations on the Burger Prospect in 2012, encroachment of sea ice required the Discoverer to temporarily depart the drill site. While it was standing by to the south, ice management vessels remained at the drill site to protect buoys that were attached to the anchors. Sounds produced by vessels managing the ice were recorded and the distance to the 120 dB re 1 μPa rms threshold was calculated to occur at 9.6 km (JASCO et al. 2014). The total calculated ensonified area would be 290 km^2.

Fairweather assumes that it could take place over a two (2) day period near Point Barrow.

Estimates of Marine Mammal Densities

The densities of marine mammals per species were calculated using 2009-2014 Aerial Surveys of Arctic Marine Mammals (ASAMM) data (http://www.afsc.noaa.gov/nmml/cetacean/bwasp/index.php) for bowhead, beluga, and gray whales in the Beaufort and Chukchi Seas and the Shell 2015 IHA application (Shell 2015) for all other species. The ASAMM density data are separated by depth, month, year, and location. The maximum calculated density with the depth strata in which the anchor system is located, the month (based on project activity timing), year (maximum of 2009-2014), and location (Chukchi vs. Beaufort) was used. For example, anchor handling only occurs in the summer, so density data from July and August were used; side scan sonar may occur at the beginning and end of the project, so density data were separated into summer and fall. The Shell 2015 IHA included average and maximum density estimates for area, month, and location. The maximum calculated density was used in take estimates for these other species, regardless of area, month, or location.

Bowhead Whale

The bowhead whale density estimate is separated into the Chukchi Sea and Beaufort Seas based on the ASAMM study areas for aerial data collected 2008-2014. For each depth stratum, the maximum density estimate was used for summer and fall (Table 3). The bowhead whale densities in the Chukchi Sea range up to 0.0145 whales/km^2 in the summer and up to 0.1813 whales/km^2 in the fall, with the highest density for both seasons in the 50-200 m north region. The bowhead whale densities in the Beaufort Sea range up to 0.2883 whales/km^2 in the summer and up to 0.1310 whales/km^2 in the fall, both in the east 21-50 m region.

Beluga Whale

The beluga whale density estimate is separated into the Chukchi Sea and Beaufort Seas based on the ASAMM study areas for aerial data collected 2008-2014. For each depth stratum, the maximum density estimate was used for summer and fall (Table 3). The beluga whale densities in the Chukchi Sea range up to 0.1633 whales/km^2 in the summer in the 0-35 m north region and up to 0.0495 whales/km^2 in the fall in the 50-200 m north region. The beluga whale densities in the Beaufort Sea range up to 0.7924 whales/km^2 in the summer and up to 0.1425 whales/km^2 in the fall, both in the east 51-200 m east region.

Gray Whale

The gray whale density estimate is only in the Chukchi Sea based on the ASAMM study areas for aerial data collected 2008-2014. For each depth stratum, the maximum density estimate was used for summer and fall (Table 3). The gray whale densities in the Chukchi Sea range up to 0.2594 whales/km^2 in the summer and up to 0.1732 whales/km^2 in the fall, with the highest density for both seasons in the 50-200 m south region.

Other Cetaceans

Shell (2015) derived average and maximum density estimates for summer and fall from all available open water research and monitoring data. For the purposes of this project, the maximum of the density estimates were used, regardless of whether the density was for summer or fall (Table 3). The maximum density is 0.0044 whales/km^2 for the harbor porpoise; 0.0004 whales/km^2 for the fin, humpback, and killer whale; and 0.0006 whales/km^2 for the minke whale.

Seals

Shell (2015) derived average and maximum density estimates for summer and fall from all available open water research and monitoring data. For the purposes of this project, the maximum of the density estimates were used, regardless of whether the density was for summer

or fall (Table 3). The maximum density is 0.6075 seals/km^2 for the ringed seal; 0.0203 seals/km^2 for the bearded seal; and 0.0122 seals/km^2 for the spotted seal.

Table 3. Expected Densities of Whales and Seals in Area of the Chukchi and Beaufort Seas.

Species	Density (#/km^2)			
	Chukchi Sea		Beaufort Sea	
	Summer	Fall	Summer	Fall
Bowhead whale	0.0145	0.1813	0.2883	0.1310
Beluga whale	0.1633	0.0495	0.7924	0.1425
Gray whale	0.2594	0.1732	NA	NA
Fin whale	0.0004		0	
Humpback whale	0.0004			
Minke whale	0.0006			
Harbor porpoise	0.0044			
Killer whale	0.0004			
Ringed seal	0.6075			
Bearded seal	0.0203			
Spotted seal	0.0122			

Calculation of Exposures

The estimates of the numbers of each marine mammal species that could potentially be exposed to sound associated with the anchor retrieval program, specifically the unseating of anchors, potential side scan sonar survey, and potential ice management, were estimated using multiplying the following three variables: 1) the area (in km^2) of ensonification for disturbance for each activity, 2) the duration (in days) of the sound activity, and 3) the density (# of marine mammals/km^2) as summarized in Table 3. It is important to note that these estimates are based on worst-case (and unlikely) sound levels and duration, and the maximum reported density estimates that do not account for the movement of animals near the anchor site during retrieval activities.

Since the two stocks occur in the Beaufort and Chukchi seas and one cannot distinguish them visually, the pooled densities in different seasons represent the presence of both stocks.

The current abundance estimate for the Eastern Chukchi Sea Stock is 3,710 individuals and the abundance estimate for the Beaufort Sea Stock is 39,258 individuals (Allen and Angliss 2014), resulting in a combined total estimate of 42,968 individuals. The Eastern Chukchi Sea Stock is, therefore, considered to represent 8.6% of the combined population and the Beaufort Sea Stock is considered to represent 91.4% of the same. Therefore, the estimated takes of each beluga stock were based on the proportion of these stocks, with 8.6% account for the Eastern Chukchi Sea Stock, and 91.4% account for the Beaufort Sea Stock for both summer and fall.

A summary of the total number of estimated exposures per species, per sea, and per season is provided in Table 4.

Table 4. Summary of Number of Marine Mammals Potentially Exposed to Level B Harassment.

Species	**Chukchi Sea**	**Beaufort Sea**	**Abundance**	**Total**	**% of stock or population**
Bowhead whale	37.41	620.51	19,534	658	3.37%
Gray whale	197.41	0	20,990	197	0.94%
Beluga whale (E. Chukchi stock)	33.55	19.98	3,710	54	1.47%
Beluga whale (Beaufort stock)	356.56	212.38	39,258	569	1.45%
Fin whale	3.68	0	10,103	4	0.04%
Humpback whale	3.68	0.86	1,652	4	0.27%
Minke whale	5.52	1.29	1,233	7	0.55%
Harbor porpoise	40.46	9.48	48,215	50	0.10%
Killer whale	3.68	0.86	2,347	4	0.19%
Ringed seal	5,586.67	1,308.58	249,000	6,895	2.77%
Bearded seal	186.68	43.73	155,000	230	0.15%
Spotted seal	112.19	26.28	460,268	138	0.03%

The estimated Level B harassment takes as a percentage of the marine mammal stock are less than 3.37% in all cases (Table 4). The highest percent of population estimated to be taken is 3.37% by Level B harassment of the bowhead whale.

Analysis and Preliminary Determinations

Negligible Impact

Negligible impact is "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" (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, effects on habitat, and the status of the species.

To avoid repetition, this discussion of our analyses generally applies to all the species listed in Table 4, given that the anticipated effects of Fairweather's anchor retrieving operation on marine mammals (taking into account the proposed mitigation) are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are pointed out below.

No injuries or mortalities are anticipated to occur as a result Fairweather's anchor retrieving operation, and none are proposed to be authorized. Additionally, animals in the area are not expected to incur hearing impairment (i.e., TTS or PTS) or non-auditory physiological effects. The takes that are anticipated and authorized are expected to be limited to short-term

Level B behavioral harassment in the form of brief startling reaction and/or temporarily vacating the area.

Any effects on marine mammals are generally expected to be restricted to avoidance of a limited area around Fairweather's proposed activities and short-term changes in behavior, falling within the MMPA definition of "Level B harassment." Mitigation measures, such as controlled vessel speed and dedicated marine mammal observers, will ensure that takes are within the level being analyzed. In all cases, the effects are expected to be short-term, with no lasting biological consequence.

Of the 11 marine mammal species likely to occur in the proposed anchor retrieving area, bowhead, humpback, and fin whales are listed as endangered or threatened under the ESA. These species are also designated as "depleted" under the MMPA. None of the other species that may occur in the project area are listed as threatened or endangered under the ESA or designated as depleted under the MMPA.

The project area of the Fairweather's proposed activities is within areas that have been identified as biologically important areas (BIAs) for feeding for the gray and bowhead whales and for reproduction for gray whale during the summer and fall months (Clarke et al. 2015). In addition, the coastal Beaufort Sea also serves as a migratory corridor during bowhead whale spring migration, as well as for their feeding and breeding activities. Additionally, the coastal area of Chukchi and Beaufort seas also serve as BIAs for beluga whales for their feeding and migration. However, the Fairweather's proposed anchor retrieving operation would only occur in 5 locations totaling maximum 10 days. As discussed earlier, the Level B behavioral harassment on marine mammals from the proposed activity is expected to be brief startling

reaction and temporary vacating of the area. No long-term biologically significant impacts to marine mammals are expected from the proposed anchor retrieving activity.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from Fairweather's proposed anchor retrieving operation in the Chukchi and Beaufort seas is not expected to adversely affect the affected species or stocks through impacts on annual rates of recruitment or survival, and therefore will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

The requested takes represent less than 3.37% of all populations or stocks potentially impacted (see Table 4 in this document). These take estimates represent the percentage of each species or stock that could be taken by Level B behavioral harassment. The numbers of marine mammals estimated to be taken are small in proportion to the total populations of the affected species or stocks.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, NMFS finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

Subsistence hunting is an essential aspect of Iñupiat life, especially in rural coastal villages. The Iñupiat participate in subsistence hunting activities in and around the Chukchi and Beaufort Seas. The animals taken for subsistence provide a significant portion of the food that will last the community through the year. Marine mammals represent on the order of 60-80

percent of the total subsistence harvest. Along with the nourishment necessary for survival, the subsistence activities strengthen bonds within the culture, provide a means for educating the younger generation, provide supplies for artistic expression, and allow for important celebratory events.

The MMPA requires that any harassment not result in an unmitigable adverse impact on the availability of species or stocks for taking (101(a)(5)(D)(i)(II)). Unmitigable adverse impact is defined as (50 CFR 216.103):

- An impact resulting from the specified activity that is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by:
- Causing marine mammals to abandon or avoid hunting areas;
- Directly displacing subsistence users; or,
- Placing physical barriers between the marine mammals and the subsistence users; and
- Cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

In the following sub-sections, the major animals used for subsistence by villages of the upper-west and north coast of Alaska are discussed (bowhead whale, beluga whale, and all three common species of seals [ringed, spotted, and bearded seals]).

Bowhead Whale

Anchor handling-related vessel traffic may traverse some areas used during bowhead harvests by Chukchi and Beaufort villages. Bowhead hunts by residents of Wainwright, Point Hope, and Point Lay take place almost exclusively in the spring prior to the date on which the vessels would commence the proposed anchor handling program. From 1984 through 2009, all

bowhead harvests by these Chukchi Sea villages occurred only between April 14 and June 24 (George and Tarpley 1986; George et al. 1987, 1988, 1990, 1992, 1995, 1998, 1999, 2000; Philo et al. 1994; Suydam et al. 1995a,b, 1996, 1997, 2001a,b, 2002, 2003, 2004, 2005a,b, 2006, 2007, 2008, 2009, 2010), while vessels will not enter the Bering Sea (northbound) prior to July 1. However, fall whaling by some of these Chukchi Sea villages has occurred since 2010 and is likely to occur in the future, particularly if bowhead quotas are not completely filled during the spring hunt, and fall weather is accommodating. A Wainwright whaling crew harvested the first fall bowhead for these villages in 90 years or more on October 7, 2010, and another in October of 2011 (Suydam et al. 2011, 2012, 2013). No bowhead whales were harvested during fall in 2012, but 3 were harvested by Wainwright in fall 2013.

Barrow crews have traditionally hunted bowheads during both spring and fall; however, spring whaling by Barrow crews is normally finished before the date on which anchor handling operations would commence. From 1984 through 2011 whales were harvested in the spring by Barrow crews only between April 23 and June 15 (George and Tarpley 1986; George et al. 1987, 1988, 1990, 1992, 1995, 1998, 1999, 2000; Philo et al. 1994; Suydam et al. 1995 a, b, 1996, 1997, 2001a, 2002, 2003, 2004, 2005a,b, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013). Fall whaling by Barrow crews does take place during the time period when anchor handling activities would be completed, with vessels out of the Chukchi Sea by the end of August. From 1984 through 2011, whales were harvested in the fall by Barrow crews between August 31 and October 30, indicating that there is potential for vessel traffic to affect these hunts. Most fall whaling by Barrow crews, however, takes place east of Barrow along the Beaufort Sea coast therefore providing little opportunity for the anchor handling program to affect them. For example, Suydam et al. (2008) reported that in the previous 35 years, Barrow whaling crews

harvested almost all their whales in the Beaufort Sea to the east of Point Barrow. As all anchor sites are over 100 miles from Barrow, NMFS does not anticipate any conflict with Barrow harvest. In the event the sonar survey for Sivulliq is taking place as Barrow is harvesting, the Norseman II will traverse 50 mi offshore around Barrow.

Nuiqsut and Kaktovik crews traditionally hunt during the fall, harvesting in late August through September. The Alaska Eskimo Whaling Commission (AEWC) requires that all industry activities cease working east of 150° W by August 25th for the start of whaling for those communities. The anchor handling vessels will enter the Beaufort Sea as soon as ice at Point Barrow allows for safe passage and will complete the Sivulliq anchor retrieval well before August 25th. If a sonar survey is required on this site, it will take place after the completion of the fall hunt and has been cleared by both communities.

Beluga Whales

Beluga whales typically do not represent a large proportion of the subsistence harvests by weight in the communities of Wainwright and Barrow, the nearest communities to the planned anchor handling project area. Barrow residents hunt beluga in the spring (normally after the bowhead hunt) in leads between Point Barrow and Skull Cliffs in the Chukchi Sea, primarily in April-June and later in the summer (July-August) on both sides of the barrier island in Elson Lagoon/Beaufort Sea (Minerals Management Service [MMS] 2008), but harvest rates indicate the hunts are not frequent. Wainwright residents hunt beluga in April-June in the spring lead system, but this hunt typically occurs only if there are no bowheads in the area. Communal hunts for beluga are conducted along the coastal lagoon system later in July-August.

Belugas typically represent a much greater proportion of the subsistence harvest in Kotzebue, Point Lay, and Point Hope. Point Lay's primary beluga hunt occurs from mid-June

through mid-July, but can sometimes continue into August if early success is not sufficient. Point Hope residents hunt beluga primarily in the lead system during the spring (late March to early June), but also in open water along the coastline in July and August. Belugas are harvested in spring mid-June through mid-July in Kotzebue, but the timing can vary based on beluga movement. Belugas are harvested in coastal waters near these villages, generally within a few miles from shore. In the Chukchi, the anchor retrieval sites are located more than 60 mi (97 km) offshore, therefore proposed anchor handling in the project area would have no or minimal impacts on beluga hunts.

The retrieval of anchors around Kotzebue is located nearshore and has the most potential for disturbance to beluga harvest. Fairweather will be required to communicate with the Kotzebue Whaling Commission, AEWC, and Com Center (if established) during operations in this area to avoid any conflict. Vessels will move offshore if Fairweather is not cleared to conduct activities.

Disturbance associated with vessel traffic could potentially affect beluga hunts. However, all of the beluga hunt by Barrow residents in the Chukchi Sea, and much of the hunt by Wainwright residents would likely be completed before anchor handling activities would commence. Additionally, vessel traffic associated with the anchor handling program will be restricted under normal conditions to designated corridors that remain onshore or proceed directly offshore thereby minimizing the amount of traffic in coastal waters where beluga hunts take place. The designated vessel traffic corridors do not traverse areas indicated in recent mapping as utilized by Point Lay or Point Hope for beluga hunts, and avoids important beluga hunting areas in Kasegaluk Lagoon that are used by Wainwright.

Seals

Seals are an important subsistence resource and ringed seals make up the bulk of the seal harvest. Most ringed and bearded seals are harvested in the winter or in the spring before the anchor handling program would commence, but some harvest continues during open water and could possibly be affected by the planned activities. Spotted seals are also harvested during the summer. Most seals are harvested in coastal waters, with available maps of recent and past subsistence use areas indicating seal harvests have occurred only within 48-64 km (30-40 mi) of the coastline. The anchor handling retrieval sites are located more than 103 km (64 mi) offshore, so activities are thought to possibly have an impact on subsistence hunting for seals. Since most seal hunting is done during the winter and spring when the anchor handling program is not operational, NMFS considers that the potential effects to seal hunting are largely avoided.

Mitigation measures to be implemented include participation in operational Com Centers (below). With these mitigation measures and the nature of the proposed action, we are confident that any harassment of seals resulting from the 2016 anchor handling program will not have an unmitigable adverse impact on the availability of seals to be taken for subsistence uses.

Plan of Cooperation or Measures to Minimize Impacts to Subsistence Hunts

Regulations at 50 CFR 216.104(a)(12) require IHA applicants for activities that take place in Arctic waters to provide a Plan of Cooperation (POC) or information that identifies what measures have been taken and/or will be taken to minimize adverse effects on the availability of marine mammals for subsistence purposes.

Fairweather has prepared a draft POC, which was developed by identifying and evaluating any potential effects the proposed anchor retrieving operation might have on seasonal abundance that is relied upon for subsistence use.

Specifically, Fairweather will take important time periods into consideration when planning its anchor retrieving operation, including the beluga whale subsistence activities near Kotzebue and in the Chukchi Sea, and bowhead whale subsistence activities in the Chukchi and Beaufort seas. Fairweather plans to enter the Beaufort Sea as soon as Point Barrow is ice-free and be finished at the Sivulliq location well before the August 25th commencement date of bowhead whaling. Although not anticipated with the proposed schedule, if crew changes are needed, they will occur at either Wainwright or Prudhoe Bay depending on the location of the vessel. Fairweather will work with the community of Wainwright through its joint venture with Olgoonik Corporation. Through the establishment of village liaisons and onboard PSOs, Fairweather will ensure there are no conflicts with subsistence activities.

Fairweather has developed a Communication Plan and will implement this plan before initiating the anchor handling program. The Plan will help coordinate activities with local Com Centers and thus subsistence users, minimize the risk of interfering with subsistence hunting activities, and keep current as to the timing and status of the bowhead whale hunt and other subsistence hunts. The Communication Plan includes procedures for coordination with Com Centers to be located in coastal villages along the Chukchi Sea during the proposed anchor handling activities.

Fairweather attended the AEWC meeting in Barrow from February 3-5 and presented the project components and developing mechanisms to work with the communities to present consistent and concise information regarding the planned anchor handling program. Fairweather intends to sign a Conflict Avoidance Agreement (CAA).

Throughout 2016, Fairweather will continue its engagement with the marine mammal commissions and committees active in the subsistence harvests and marine mammal research.

Endangered Species Act (ESA)

Within the project area, the bowhead, humpback, and fin whales are listed as endangered under the ESA. NMFS' Permits and Conservation Division has initiated consultation with staff in NMFS' Alaska Region Protected Resources Division under section 7 of the ESA on the issuance of an IHA to Fairweather under section 101(a)(5)(D) of the MMPA for this activity. Consultation will be concluded prior to a determination on the issuance of an IHA.

National Environmental Policy Act (NEPA)

NMFS is preparing an Environmental Assessment (EA), pursuant to NEPA, to determine whether the issuance of an IHA to Fairweather for its anchor retrieval operation in the Chukchi and Beaufort seas during the 2016 Arctic open-water season may have a significant impact on the human environment. NMFS has released a draft of the EA for public comment along with this proposed IHA.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Fairweather for anchor retrieval operation in the Chukchi and Beaufort seas during the 2016 Arctic open-water season, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The proposed IHA language is provided next.

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

(1) This Authorization is valid from July 1, 2016, through October 31, 2016.

(2) This Authorization is valid only for activities associated with anchor retrieval related activities in the Chukchi and Beaufort seas. The specific areas where Fairweather's operations

will be conducted are within the Chukchi and Beaufort seas, Alaska, as shown in Figure 1 of Fairweather's IHA application.

(3)(a) The species authorized for incidental harassment takings by Level B harassment are: beluga whales (*Delphinapterus leucas*); bowhead whales (*Balaena mysticetus*); gray whales (*Eschrichtius robustus*), humpback whale (*Megaptera novaeangliae*), fin whale (*Balaenoptera physalus*), killer whale, (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), ringed seal (*Phoca hispida*), bearded seals (*Erignathus barbatus*); spotted seals (*P. largha*); and ribbon seals (*Histriophoca fasciata*).

(3)(b) The authorization for taking by harassment is limited to the following acoustic sources and from the following activities:

(i) Anchor retrieval operation; and

(ii) Vessel activities related to anchor retrieval operation, such as ice management.

(3)(c) The taking of any marine mammal in a manner prohibited under this Authorization must be reported within 24 hours of the taking to the Alaska Regional Administrator (907-586-7221) or his designee in Anchorage (907-271-3023), National Marine Fisheries Service (NMFS) and the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at (301) 427-8401, or her designee (301-427-8418).

(4) The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, at least 48 hours prior to the start of anchor retrieval activities (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible).

(5) Prohibitions

(a) The taking, by incidental harassment only, is limited to the species listed under condition 3(a) above and by the numbers listed in [Table 6 of this Notice]. The taking by serious injury or death of these species or the taking by harassment, injury or death of any other species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this Authorization.

(b) The taking of any marine mammal is prohibited whenever the required source vessel protected species observers (PSOs), required by condition 7(a)(i), are not onboard in conformance with condition 7(a)(i) of this Authorization.

(6) Mitigation

(a) Establishing Safety and Exclusion Zones

(i) Establish a 500-m safety zone for anchor retrieving and ice management (although Level A takes are not expected when a marine mammal occur in this zone).

(ii) Establish a 500-m exclusion zone for sonar operations.

(b) Clearing Marine Mammals for Safety Zone before Anchor Retrieval or Ice Management Activities:

(i) When the vessel is positioned on-site, the protected species observers (PSOs) will 'clear' the area by observing the 500-m safety zone for 30 minutes; if no marine mammals are observed within those 30 minutes, anchor retrieval and/or ice management will commence.

(ii) If a marine mammal(s) is observed within the 500-m safety zone during the clearing, the PSO will continue to watch until the animal(s) is gone and has not

returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.

(iii) Once the PSO has cleared the area, anchor retrieval and/or ice management operations may commence.

(iv) Should a marine mammal(s) be observed within the 500-m safety zone during the retrieval operations, the PSO will monitor and carefully record any reactions observed. PSOs will also collect behavioral information on marine mammals beyond the safety zone.

(c) Safety Zones Related to Sonar Operations

(i) Prior to starting the sonar activity, the PSO will 'clear' the area by observing the 500-m exclusion zone for 30 minutes; if no marine mammals are observed within those 30 minutes, sonar activity will commence.

(ii) If a marine mammal(s) is observed within the 500-m exclusion zone during the clearing, the PSO will continue to watch until the animal(s) is gone and has not returned for 15 minutes if the sighting was a pinniped, or 30 minutes if it was a cetacean.

(iii) Once the PSO has cleared the area, sonar activity may commence.

(iv) If an animal enters the 500-m exclusion zone, sonar will be shut down immediately. Sonar activity will not resume until the marine mammal has cleared the exclusion zone. PSOs will also collect behavioral information on marine mammals beyond the exclusion zone.

(d) Vessel Movement Mitigation:

(i) If a marine mammal is detected outside the 500-m safety zone for anchor handling or the 500-m exclusion zone for sonar activities and, based on its position and the relative motion, is likely to enter those zones, the vessel's speed and/or direct course may, when practical and safe, be changed.

(ii) The marine mammal activities and movements relative to the vessels will be closely monitored to ensure that the marine mammal does not approach within either zone. If the mammal appears likely to enter the respective zone, further mitigative actions will be taken, i.e., either further course alterations or shut down in the case of the sonar.

(iii) Vessel shall reduce its speed to 5 kt (9.26 km/h) or lower when within 900 ft (274 m) of cetaceans or pinnipeds.

(iv) Fairweather shall avoid transits within designated North Pacific right whale critical habitat. If transit within North Pacific right whale critical habitat cannot be avoided, vessel operators are requested to exercise extreme caution and observe the of 10 kt (18.52 km/h) vessel speed restriction while within North Pacific right whale critical habitat.

(v) Within the North Pacific right whale critical habitat, all vessels shall keep 2,625 ft (800 m) away from any observed North Pacific right whales and avoid approaching whales head-on consistent with vessel safety.

(e) Mitigation Measures for Subsistence Activities:

(i) For the purposes of reducing or eliminating conflicts between subsistence whaling activities and Fairweather’s anchor retrieval program, Fairweather shall develop and implement a communication plan with subsistence communities.

(ii) Fairweather will prepare a daily report of project activities, sea conditions, and subsistence interactions, and send to all interested community leaders.

(iii) The daily reports will include a contact address and phone number where interested community leaders can convey any subsistence concerns.

(iv) Fairweather shall monitor the positions of all of its vessels and exercise due care in avoiding any areas where subsistence activity is active.

(v) Vessel transiting:

(A) The vessels will enter the Bering Strait and continue to the Chukchi Sea on or after 1 July, minimizing effects on marine mammals that frequent open leads and minimizing effects on spring and early summer bowhead whale hunting.

- The transit route for the vessels will avoid known protected ecosystems such as the Ledyard Bay Critical Habitat Unit (LBCHU), and will include coordination through Com Centers.
- PSOs will be aboard vessels.
- When within 805 m of whales, vessels will reduce speed, avoid separating members from a group and avoid multiple changes of direction.
- Vessel speed will be reduced during inclement weather conditions in order to avoid collisions with marine mammals.
- Personnel will communicate and coordinate with the Com Centers regarding all vessel transit.

- Vessels transiting in the Beaufort Sea east of Bullen Point to the Canadian border shall remain at least 5 miles offshore during transit along the coast, provided ice and sea conditions allow. During transit in the Chukchi Sea, vessels shall remain as far offshore as weather and ice conditions allow, and at all times at least 5 miles offshore.

(B) From August 31 to October 31, transiting vessels in the Chukchi Sea or Beaufort Sea shall remain at least 20 miles offshore of the coast of Alaska from Icy Cape in the Chukchi Sea to Pitt Point on the east side of Smith Bay in the Beaufort Sea, unless ice conditions or an emergency that threatens the safety of the vessel or crew prevents compliance with this requirement. This condition shall not apply to vessels actively engaged in transit to or from a coastal community to conduct crew changes or logistical support operations.

(C) Vessels shall be operated at speeds necessary to ensure no physical contact with whales occurs, and to make any other potential conflicts with bowheads or whalers unlikely. Vessel speeds shall be less than 10 knots in the proximity of feeding whales or whale aggregations (6 or more whales).

(D) 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:

- Reducing vessel speed to less than 5 knots within 900 feet of the whale(s);
- Steering around the whale(s) if possible;
- Operating the vessel(s) in such a way as to avoid separating members of a group of whales from other members of the group;
- Operating the vessel(s) to avoid causing a whale to make multiple changes in direction; and
- Checking the waters immediately adjacent to the vessel(s) to ensure that no whales will be injured when the propellers are engaged.

(vii) Fairweather 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, 2016. Any vessel that encounters weather or ice that will prevent compliance with this date shall coordinate its transit through the Bering Strait to a point south of 59 degrees North latitude with the appropriate Com-Centers. Fairweather 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.

(7) Monitoring:

(a) Vessel-based Visual Monitoring:

(i) Vessel-based visual monitoring for marine mammals shall be conducted by NMFS-approved protected species observers (PSOs) throughout the period of survey activities.

(ii) PSOs shall be stationed aboard the operating vessels through the duration of the anchor retrieval operation.

(iii) A sufficient number of PSOs shall be onboard the survey vessel to meet the following criteria:

(A) 100% monitoring coverage during all periods of survey operations in daylight;

(B) maximum of 4 consecutive hours on watch per PSO; and

(C) maximum of 12 hours of watch time per day per PSO.

(iv) The vessel-based marine mammal monitoring shall provide the basis for real-time mitigation measures as described in (6)(b) above.

(v) Results of the vessel-based marine mammal monitoring shall be used to calculate the estimation of the number of "takes" from the marine surveys and equipment recovery and maintenance program.

(b) Protected Species Observers and Training

(i) PSO teams shall consist of Inupiat observers and NMFS-approved field biologists.

(ii) Experienced field crew leaders shall supervise the PSO teams in the field. New PSOs shall be paired with experienced observers to avoid situations where lack of experience impairs the quality of observations.

(iii) Crew leaders and most other biologists serving as observers in 2016 shall be individuals with experience as observers during recent marine mammal monitoring projects in Alaska, the Canadian Beaufort Sea, or other offshore areas in recent years.

(iv) Resumes for PSO candidates shall be provided to NMFS for review and acceptance of their qualifications. Inupiat observers shall be experienced in the region and familiar with the marine mammals of the area.

(v) All observers shall complete an observer training course designed to familiarize individuals with monitoring and data collection procedures. The training course shall be completed before the anticipated start of the 2016 open-water season. The training session(s) shall be conducted by qualified marine mammalogists with extensive crew-leader experience during previous vessel-based monitoring programs.

(vi) Training for both Alaska native PSOs and biologist PSOs shall be conducted at the same time in the same room. There shall not be separate training courses for the different PSOs.

(vii) Crew members should not be used as primary PSOs because they have other duties and generally do not have the same level of expertise, experience, or training as PSOs, but they could be stationed on the fantail of the vessel to observe the near field, especially the area around the airgun array, and implement a power-down or shutdown if a marine mammal enters the safety zone (or exclusion zone).

(viii) If crew members are to be used as PSOs, they shall go through some basic training consistent with the functions they will be asked to perform. The best approach would be for crew members and PSOs to go through the same training together.

(ix) PSOs shall 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.

(x) Fairweather shall train its PSOs to follow a scanning schedule that consistently distributes scanning effort according to the purpose and need for observations. All PSOs should follow the same schedule to ensure consistency in their scanning efforts.

(xi) PSOs shall be trained in documenting the behaviors of marine mammals. PSOs should record the primary behavioral state (i.e., traveling, socializing, feeding, resting, approaching or moving away from vessels) and relative location of the observed marine mammals.

(c) Marine Mammal Observation Protocol

(i) PSOs shall watch for marine mammals from the best available vantage point on the survey vessels, typically the bridge.

(ii) PSOs shall scan systematically with the unaided eye and 7 x 50 reticle binoculars, and night-vision equipment when needed.

(iii) Personnel on the bridge shall assist the marine mammal observer(s) in watching for marine mammals.

(iv) Monitoring shall consist of recording of the following information:

(A) The species, group size, age/size/sex categories (if determinable), the general behavioral activity, heading (if consistent), bearing and distance from vessel, sighting cue, behavioral pace, and apparent reaction of all

marine mammals seen near the vessel (e.g., none, avoidance, approach, paralleling, etc.);

(B) The time, location, heading, speed, and activity of the vessel, along with sea state, visibility, cloud cover and sun glare at (I) any time a marine mammal is sighted, (II) at the start and end of each watch, and (III) during a watch (whenever there is a change in one or more variable);

(C) The identification of all vessels that are visible within 5 km of the vessel from which observation is conducted whenever a marine mammal is sighted and the time observed;

(D) Any identifiable marine mammal behavioral response (sighting data should be collected in a manner that will not detract from the PSO's ability to detect marine mammals);

(E) Any adjustments made to operating procedures; and

(F) Visibility during observation periods so that total estimates of take can be corrected accordingly.

(vii) Distances to nearby marine mammals will be estimated with binoculars (7 x 50 binoculars) containing a reticle to measure the vertical angle of the line of sight to the animal relative to the horizon. Observers may use a laser rangefinder to test and improve their abilities for visually estimating distances to objects in the water.

(viii) PSOs shall 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 shall 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.

(ix) Additional details about unidentified marine mammal sightings, such as "blow only," mysticete with (or without) a dorsal fin, "seal splash," etc., shall be recorded.

(x) Fairweather shall use the best available technology to improve detection capability during periods of fog and other types of inclement weather. Such technology might include night-vision goggles or binoculars as well as other instruments that incorporate infrared technology.

(d) Field Data-Recording and Verification

(i) PSOs shall utilize a standardized format to record all marine mammal observations.

(ii) Information collected during marine mammal observations shall include the following:

(A) Vessel speed, position, and activity

(B) Date, time, and location of each marine mammal sighting

(C) Number of marine mammals observed, and group size, sex, and age categories

(D) Observer's name and contact information

(E) Weather, visibility, and ice conditions at the time of observation

(F) Estimated distance of marine mammals at closest approach

(G) Activity at the time of observation, including possible attractants present

(H) Animal behavior

(I) Description of the encounter

(J) Duration of encounter

(K) Mitigation action taken

(iii) Data shall be recorded directly into handheld computers or as a back-up, transferred from hard-copy data sheets into an electronic database.

(iv) A system for quality control and verification of data shall be facilitated by the pre-season training, supervision by the lead PSOs, and in-season data checks, and shall be built into the software.

(v) Computerized data validity checks shall also be conducted, and the data shall be managed in such a way that it is easily summarized during and after the field program and transferred into statistical, graphical, or other programs for further processing.

(e) Marine Mammal Behavioral Response Study

(i) PSOs will collect behavioral response data to the presence of vessels during transit on walruses and seals or during its anchor retrieving operations.

(ii) PSOs will record the initial and subsequent behaviors of marine mammals using a focal following approach. Marine mammals will be observed until they disappear from the PSO's view. Observers will also record any behaviors that marine mammals may have in response to the vessel.

(9) Reporting:

(a) The results of Fairweather's anchor retrieval program monitoring reports will be presented in weekly and monthly reports and a 90-day final report. The initial final reports are due to NMFS within 90 days after the expiration of the IHA. The reports will include

(i) Summaries of monitoring effort (e.g., total hours, total distances, and marine mammal distribution through the project period, accounting for sea state and other factors affecting visibility and detectability of marine mammals);

(ii) Summaries that represent an initial level of interpretation of the efficacy, measurements, and observations, rather than raw data, fully processed analyses, or a summary of operations and important observations;

(iii) Information on distances marine mammals are sighted from operations and the associated noise isopleth for active sound sources (i.e., anchor retrieval, ice management, side scan sonar);

(vi) Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare);

(v) Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover;

(vi) Estimates of uncertainty in all take estimates, with uncertainty expressed by the presentation of confidence limits, a minimum-maximum, posterior probability distribution, or another applicable method, with the exact approach to be selected based on the sampling method and data available; and

(vii) A clear comparison of authorized takes and the level of actual estimated takes.

(b) The draft report shall be subject to review and comment by NMFS. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. The draft report will be considered the final report for this activity under this

Authorization if NMFS has not provided comments and recommendations within 90 days of receipt of the draft report.

(c) In the unanticipated event that the construction activities clearly cause the take of a marine mammal in a manner prohibited by this Authorization (if issued), such as an injury, serious injury, or mortality, Fairweather shall immediately cease all operations and immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinators. The report must include the following information:

(i) Time, date, and location (latitude/longitude) of the incident;

(ii) Description of the incident;

(iii) Status of all sound source use in the 24 hours preceding the incident;

(iv) Environmental conditions (e.g., wind speed and direction, sea state, cloud cover, visibility, and water depth);

(v) Description of marine mammal observations in the 24 hours preceding the incident;

(vi) Species identification or description of the animal(s) involved;

(vii) The fate of the animal(s); and

(viii) Photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with Fairweather to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Fairweather may not resume their activities until notified by NMFS via letter, email, or telephone.

(d) In the event that Fairweather discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively

recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Fairweather will immediately report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinators. The report must include the same information identified above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Fairweather to determine whether modifications in the activities are appropriate.

(e) In the event that Fairweather discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Fairweather shall report the incident to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinators, within 24 hours of the discovery. Fairweather shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Fairweather can continue its operations under such a case.

(10) Activities related to the monitoring described in this Authorization do not require a separate scientific research permit issued under section 104 of the Marine Mammal Protection Act.

(11) The Plan of Cooperation outlining the steps that will be taken to cooperate and communicate with the native communities to ensure the availability of marine mammals for subsistence uses, must be implemented.

(12) This Authorization may be modified, suspended, or withdrawn if the holder fails to abide by the conditions prescribed herein or if the authorized taking is having more than a

negligible impact on the species or stock of affected marine mammals, or if there is an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

(13) A copy of this Authorization and the Incidental Take Statement must be in the possession of each vessel operator taking marine mammals under the authority of this Incidental Harassment Authorization.

(14) Fairweather is required to comply with the Terms and Conditions of the Incidental Take Statement corresponding to NMFS' Biological Opinion.

Request for Public Comments

NMFS requests comment on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for Fairweather's proposed anchor retrieval operation in the Chukchi and Beaufort seas. Please include with your comments any supporting data or literature citations to help inform our final decision on Fairweather's request for an MMPA authorization.

Dated: May 16, 2016.

_____

Donna S. Wieting,

Director,

Office of Protected Resources,

National Marine Fisheries Service.

[FR Doc. 2016-11799 Filed: 5/18/2016 8:45 am; Publication Date: 5/19/2016]