



MARINE MAMMAL COMMISSION

3 April 2015

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, Maryland 20910-3226

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application from Shell Gulf of Mexico Inc. (Shell) seeking an incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA). Shell is seeking authorization to take small numbers of marine mammals by harassment incidental to exploratory drilling activities in the Alaskan Chukchi Sea during the 2015 open-water season. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 4 March 2015 notice (80 Fed. Reg. 11726) announcing receipt of the application and proposing to issue the authorization subject to certain conditions.

Some issues raised in previous Commission letters reflect ongoing concerns that apply more broadly to incidental take authorization applications, not just to Shell's application. For example, the Commission has recommended numerous times that NMFS adjust density estimates used to estimate the numbers of potential takes by incorporating some measure of uncertainty¹ when available density data are either out of date or originate from other geographical areas and temporal scales and that it formulate a policy or other guidance setting forth a consistent approach for how applicants should incorporate uncertainty in density estimates. The Commission would welcome the opportunity to work with NMFS as it develops such policies.

Background

Shell has proposed to conduct exploratory drilling at up to four drill sites at its Burger prospect in the Chukchi Sea, Alaska, during the 2015 open-water season (July through October). Drilling would occur 105 to 125.5 km from shore, in waters 43.7 to 45.8 m in depth. Shell would use two drilling units, the *Noble Discoverer* and the semi-submersible *Transocean Polar Pioneer*. Other acoustic sources associated with drilling include the construction of a mudline cellar at each drill site, dynamic positioning of supply and support vessels when tending to a drilling unit, anchor handling, ice management activities, and zero-offset vertical seismic profiling (ZVSP) using a seismic airgun array.

NMFS's preliminary determination is that the proposed exploratory drilling and associated activities would result in temporary modification of the behavior of small numbers of up to 12 species of marine mammals, but that the total taking would have a negligible impact on the affected

¹ Including using the maximum density when other measures of uncertainty are not provided.

species or stocks. NMFS does not anticipate any take of marine mammals by death or serious injury. NMFS also believes that the potential for temporary or permanent hearing impairment from Shell's proposed drilling and associated activities would be at the least practicable level because of the proposed mitigation measures. The mitigation, monitoring, and reporting measures include—

- (1) conducting sound source verification measurements for the drilling units, support vessels, airgun array, and other sources not measured in previous seasons and adjusting the Level A and B harassment zones, as necessary;
- (2) using a sufficient number of trained protected species observers on both drilling units and all support vessels during active drilling and airgun operations and before and during start-ups of airguns day and night;
- (3) using standard ramp-up, power-down, and shut-down procedures for airgun operations;
- (4) prohibiting initiation of airgun operations during nighttime or low visibility conditions after an extended shutdown;
- (5) reducing vessel speed to a maximum of 5 knots or less and avoiding multiple changes in vessel direction and speed when a vessel is within 274 m of whales;
- (6) avoiding injury to whales by reducing vessel speed and changing direction as necessary when weather conditions diminish visibility;
- (7) limiting aircraft overflights to an altitude of 457 m or higher and a horizontal distance of 305 m or greater when marine mammals are present (except during takeoff, landing, or an emergency situation);
- (8) conducting aerial photographic surveys in waters over the drill site and conducting nearshore aerial surveys when weather does not permit flying offshore;
- (9) deploying acoustic recorders widely across the U.S. Chukchi Sea to obtain information on the distribution of marine mammals in the region;
- (10) reporting injured and dead marine mammals to the NMFS Office of Protected Resources and the Alaska regional stranding coordinator(s) using NMFS's phased approach and suspending survey activities, if appropriate; and
- (11) submitting field and technical reports and a final comprehensive report to NMFS.

The Commission understands that NMFS does not typically authorize the taking of marine mammals incidental to mudline construction and anchor handling. If NMFS intends to authorize the taking of marine mammals incidental to these types of activities, the Commission believes that NMFS should provide guidance and follow a consistent approach in assessing the potential for taking by Level B harassment², including whether applicants should include requests for authorizations of such taking in their applications. Therefore, the Commission recommends that NMFS develop criteria (e.g., based on source levels and effects on specific species or stocks) and guidance for determining when applicants should request taking of marine mammals by Level B harassment from mudline construction and anchor handling.

Availability of marine mammals for subsistence

Shell has developed a plan of cooperation in consultation with North Slope communities outlining measures that it would implement to minimize any adverse effects on the availability of marine mammals for subsistence. That plan includes requirements to maintain the minimum

² Those types of sources do emit source levels sufficient to reach the Level A harassment threshold.

approach distances and operational requirements outlined in the previous section, as well as (1) developing and implementing a communications plan before initiating exploration drilling operations, (2) employing subsistence advisors to provide consultation and guidance regarding whale migration and subsistence activities, (3) refraining from bringing its drilling units and support vessels into the Chukchi Sea before July 1, (4) obtaining real-time ice and weather forecasting, and (5) placing booms in the water prior to all fuel transfers between vessels. Shell also has signed a conflict avoidance agreement with the Alaska whaling communities outlining measures that it would implement to minimize impacts on bowhead whale hunts. Based on the survey design, the timing and location of the proposed exploration drilling operations, and the proposed mitigation measures, NMFS has preliminarily determined that the proposed taking would not have an unmitigable adverse impact on the availability of marine mammals for subsistence use by Alaska Natives.

Take estimates

When estimating the number of bowhead takes, Shell assumed that 50 percent of all bowheads would avoid the Level B harassment zone during exploratory drilling and related support activities. That assumption was based on studies of bowhead whale behavioral response to drilling sounds in the Arctic. Based on this assumed avoidance, Shell reduced the estimated number of bowheads that would be taken by incidental harassment by 50 percent. The Commission generally does not agree with using assumptions of marine mammal avoidance of certain activities when estimating takes, unless the studies supporting such assumptions were based on the same or very similar circumstances³ and NMFS has determined that such avoidance would not result in an abandonment or significant alteration of behavioral patterns for instances such as this when NMFS has reduced the number of Level B harassment takes. If NMFS intends to adjust take estimates based on assumed levels of avoidance, the Commission believes that NMFS should provide guidance and follow a consistent approach in the adjustment of those estimates. Therefore, the Commission recommends that NMFS develop criteria for marine mammal avoidance that specifies the types of information needed to support such assumptions, including the affected species or stocks, behavioral state (migrating, feeding, calving, resting, etc.), geographic area, season, activity or sound source(s), and how avoidance should be used in various take estimation analyses

Mitigation and monitoring measures

NMFS has proposed that Shell monitor for marine mammals for 30 minutes before and continuously during airgun operations. No post-activity monitoring appears to have been proposed. However, post-activity monitoring is needed to ensure that marine mammals have not been taken in unexpected or unauthorized ways or in unanticipated numbers. Some types of taking (e.g., taking by death or serious injury) may not be observed until after the activity has ceased. Accordingly, the Commission recommends that NMFS require Shell to monitor for marine mammals for 30 minutes before airgun operations begin, while those activities are being conducted, and for 30 minutes after those operations have ceased.

³ Including the target species and behavioral state (e.g., migrating, feeding, calving, resting, etc.), location, timing, and activity or source.

Ms. Jolie Harrison
3 April 2015
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Peer review panel recommendations

The Commission understands that the peer review panel met during the public comment period for this notice to discuss Shell's marine mammal mitigation and monitoring plan. The recommendations of the panel will not be available until after the close of the comment period. If NMFS issues the incidental harassment authorization for Shell's proposed drilling activities, the Commission recommends that NMFS incorporate the peer review panel's recommendations into the authorization.

I trust these comments will be helpful. Please let me know if you or your staff have questions with regard to this letter.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style with a large initial "R".

Rebecca J. Lent, Ph.D.
Executive Director

Cc: Jon Kurland, National Marine Fisheries Service Alaska Regional Office

Alaska Eskimo Whaling Commission
P.O. Box 570 • Barrow, Alaska 99723
(907) 852-2392 • Fax: (907) 852-2303 • Toll Free: 1-800-478-2392

April 3, 2015

VIA ELECTRONIC MAIL to: ITP.Guan@noaa.gov

Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 Silver Springs, MD 20910

Re: Comments on Proposed Incidental Harassment Authorization for Shell Gulf of Mexico Inc. (Shell) to take marine mammals, by harassment, incidental to offshore exploration drilling on Outer Continental Shelf (OCS) leases in the Chukchi Sea, Alaska.

Dear Ms. Harrison,

On behalf of the Alaska Eskimo Whaling Commission (AEWC), thank you for the opportunity to comment on the proposed incidental harassment authorization (IHA) for Shell Gulf of Mexico Inc. (Shell) for take of marine mammals incidental to offshore exploration drilling in the Chukchi Sea. We appreciate the opportunity to provide feedback to the National Marine Fisheries Service (NMFS) on the draft IHA and proposed statutory findings. As you know, the AEWC represents the eleven bowhead whale subsistence hunting villages of Barrow, Nuiqsut, Kaktovik, Point Hope, Wainwright, Kivalina, Wales, Savoonga, Gambell, Little Diomede, and Point Lay. Our villages rely on the living resources of the Beaufort and Chukchi Seas for the majority of our food and for the continuation of our subsistence society and culture.

The whaling captains of our constituent villages formed the AEWC in 1980, for the purpose of protecting our bowhead whale resource and subsistence hunt. We carry out our responsibilities through locally delegated tribal authority and through federal authority delegated pursuant to the NOAA-AEWC Cooperative Agreement. Alaskan Native subsistence takes of marine mammals are exempt from the Marine Mammal Protection Act's (MMPA) moratorium on the take of marine mammals.¹ In addition, Congress has given our subsistence livelihood priority over other uses of the marine environment, requiring that other users mitigate the impacts of any activities with the potential to adversely affect the availability of our subsistence resources.²

¹ 16 U.S.C. § 1371(b)(1).

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

Each year we devote substantial resources toward negotiating a Conflict Avoidance Agreement (CAA) with oil and gas companies to mitigate the impacts of oil and gas exploration on our subsistence lifestyle and our way of life. Shell will be signing the 2015 CAA, and we want to express our deep appreciation for the company's willingness to engage with the AEW in these important negotiations and to commit to ongoing work with the local community to ensure the protection of our subsistence traditions. Shell has worked closely with AEW through the CAA Process, and its plans incorporate input from our whalers.

The following comments focus on the analysis NMFS provides in the Federal Register, which should be strengthened to improve the basis for the agency's findings with respect to impacts on subsistence.

The analysis in the Federal Register of potential impacts to subsistence uses should begin with a discussion of whether the operator has signed the CAA and, if so, what the CAA includes as mitigation measures for our subsistence activities. By setting forth that discussion - and by incorporating those mitigation measures into the IHA, along with the measures already discussed by NMFS - the agency provides itself a firm, rational basis to issue a "no unmitigable adverse impact" finding, as required by the MMPA.

The draft IHA for Shell incorporates mitigation measures from the CAA, including the use of Marine Mammal Observers and Inupiat Communicators,³ the Com-Centers and the General Communications Scheme,⁴ Sound Signature Tests,⁵ Monitoring Plans,⁶ Cumulative Noise Impacts Study,⁷ and General Provisions for Avoiding Interference with Bowhead Whales or Subsistence Whale Hunting Activities.⁸

Additional mitigation measures from the CAA should also be included in the proposed IHA, including: Standardized Log Books,⁹ Shore-Based Service and Supply Areas,¹⁰ and

³ 2015 Open Water Season Programmatic Conflict Avoidance Agreement Section 201 [CAA].

⁴ CAA Sections 202 and 203.

⁵ CAA Section 402. The draft IHA should include additional aspects of this mitigation measure from the CAA, including: conducting the test within 72 hours of initiating activity, recording information on the date, time, vessel speed, vessel route, vessel load, weather conditions, and equipment operating on the vessel, conducting the test at mutually agreed upon by the operator and AEW, and providing transportation for observation by AEW, the NSB, and village whaling captains.

⁶ CAA Section 403.

⁷ CAA Section 404.

⁸ CAA Section 501.

⁹ CAA Section 204.

¹⁰ CAA Section 504.

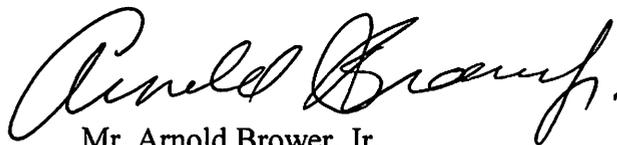
Termination of Operations and Transit Through the Bering Strait.¹¹ These measures should be included under Section 9 of the proposed IHA.¹²

In addition, the Federal Register notice should identify each of our whaling communities that may be affected by Shell's activities. The notice states that "subsistence communities in the Chukchi Sea that have the potential to be impacted by Shell's offshore drilling program include Point Hope, Point Lay, Wainwright, Barrow, and possibly Kotzebue and Kivalina."¹³ The notice should also identify the villages of Wales, Gambell and Savoonga, whose subsistence hunting could be affected by the ship traffic transiting the Bering Sea.

In the environmental assessment (EA), NMFS should include, in its analysis of the effectiveness of mitigation measures, input from the Peer Review Panel. The EA should also specifically identify each of the planned operations for the Beaufort and Chukchi Seas during the 2015 open water season and address the potential cumulative effects of these activities. This is critical to protecting our subsistence uses as mandated by Congress in passing the Marine Mammal Protection Act. In addition, NMFS should consider the cumulative effects of the multiple sound sources from this project. As the Peer Review Panel stated, it is "imperative" cumulative impacts be addressed "explicitly" for the planned activities.

Thank you again for the opportunity to comment on the proposed IHA for Shell. Please feel free to contact our office if you have any questions regarding our input.

Sincerely,



Mr. Arnold Brower, Jr.
Executive Director

¹¹ CAA Section 505. Shell's IHA application notes, "Transit entirely out of the Chukchi Sea by all vessels associated with exploration drilling may take well into the month of November due to ice, weather, and sea states." Application for Incidental Harassment Authorization for the Non-Lethal Taking of Whales and Seals in Conjunction with Planned Exploration Drilling Activities During 2015 Chukchi Sea, Alaska (Rev. Feb. 2015) at 1-12.

¹² 80 Fed. Reg. at 11773.

¹³ 80 Fed. Reg. at 11768.

North Slope Borough

OFFICE OF THE MAYOR

P.O. Box 69
Barrow, Alaska 99723
Phone: 907 852-2611 or 0200
Fax: 907 852-0337



Charlotte E. Brower, Mayor

April 14, 2015

Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Via email: ITP.guan@noaa.gov

RE: Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska; Notice; RIN 0648-XD655

Dear Ms. Harrison,

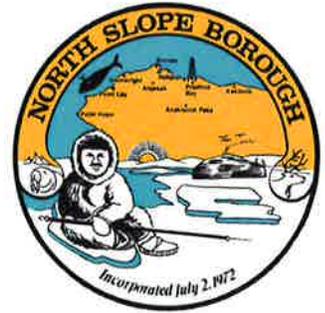
It has come to our attention that there is an error in the original letter. We are submitting this letter as a replacement to the letter dated April 3, 2015.

Thank you for your consideration.

North Slope Borough

OFFICE OF THE MAYOR

P.O. Box 69
Barrow, Alaska 99723
Phone: 907 852-2611 or 0200
Fax: 907 852-0337



Charlotte E. Brower, Mayor

April 3, 2015

Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Via email: ITP.guan@noaa.gov

RE: Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska; Notice; RIN 0648-XD655 -- Corrected

Dear Ms. Harrison,

The National Marine Fisheries Service (NMFS) has received an application from Shell Gulf of Mexico Inc. (Shell) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to offshore exploration drilling on Outer Continental Shelf (OCS) leases in the Chukchi Sea, Alaska. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to Shell to take, by Level B harassment only, 12 species of marine mammals during the specified activity.¹

The North Slope Borough (Borough or NSB) is writing to request a 30-day extension to the comment period. The prospect of exploration in the Chukchi Sea is an important undertaking, with impacts to our people on the North Slope of Alaska. There are many moving parts to allow Shell to move forward with its 2015 plans. As you know the Bureau of Ocean Energy

¹ Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska; Notice; 80 Fed. Reg. 11,725, 11,726 (March 4, 2014).

Management (BOEM) only recently approved the Record of Decision for the Second Supplemental Environmental Impact Statement, which reaffirmed Lease Sale 193. In addition, Shell's Chukchi Sea Exploration Plan is incredibly detailed; yet because it has not yet been "deemed submitted" by BOEM, we have not had the opportunity to review all the details.²

NMFS states that "Shell's proposed 2015 exploration drilling program is similar to those conducted in 2012" and that Shell had received an IHA in the Chukchi (77 FR 27322; May 9 2012) Seas, Alaska, during the 2012 Arctic open-water season (July through October).³ The one major change is that Shell is proposing to have two drill rigs operating simultaneously in the Chukchi Sea. This was not part of the 2012 efforts where one rig was located hundreds of miles away in the Beaufort Sea. Nor has this approach to drilling occurred before in the Alaskan Arctic. Having two drill rigs operating near one another could cause major impacts. Without evaluating the entire Exploration Plan we cannot fully evaluate how all aspects of the operation will move forward, nor can we evaluate the cumulative impacts on marine mammals.

In addition, the Public Notice discusses the use of "an independent peer review panel to review Shell's 4MP for Exploration Drilling of Selected Lease Areas in the Alaskan Chukchi Sea in 2015. The panel was scheduled to meet in early March 2015, and will provide comments to NMFS shortly after they meet. After completion of the peer review, NMFS will consider all recommendations made by the panel, incorporate appropriate changes into the monitoring requirements of the IHA (if issued), and publish the panel's findings and recommendations in the final IHA notice of issuance or denial document."⁴ It would be useful to the Borough to have the benefit of this feedback and proposed changes when evaluating the IHA.

About the Borough

The North Slope Borough (Borough) is the regional municipal government for the northern 89,000 square miles of Alaska. Our coastline stretches from the U.S.-Canadian border, across to the western border of Alaska. The vast majority of our residents are Inupiat Eskimos who rely heavily on marine mammals for cultural and nutritional needs.

In the broadest sense, the primary goal of the Borough is to maintain a healthy environment supporting Inupiat subsistence practices, while at the same time promoting economic growth and responsible resource development. Together, these provide the services, facilities, and jobs that allow our communities to function safely amidst the myriad challenges of the Arctic.

As you know, the subsistence harvest of marine mammals and other marine resources is vital to our North Slope communities. Our people depend on these animals for nutrition and to maintain our culture. We seek to ensure that any activities occurring in our oceans are conducted in such a manner that they do not impact our subsistence harvests, marine resources, or their habitat.

² BOEM, Shell - Chukchi Sea Exploration Plan, <http://www.boem.gov/About-BOEM/BOEM-Regions/Alaska-Region/Leasing-and-Plans/Plans/Shell---Chukchi-Sea-Exploration-Plan-and-Supporting-Documents.aspx> (last visited April 2, 2015).

³ 80 Fed. Reg. 11,726.

⁴ 80 Fed. Reg. 11,759.

Through decades of experience, we have found that, with proper mitigation and monitoring, surveys like that being proposed can be conducted without significant adverse effects. In allowing an extension, the Borough would be able to draw on the expertise of our scientific staff, consult with our affected communities, marine mammal user groups, local hunter organizations, other North Slope organizations, and knowledgeable individuals. In the future, we hope that applicants and NMFS will work harder to allow more time for the meaningful participation of the North Slope community.

The Borough has actively participated in many public processes, related to offshore development in the Arctic Ocean, including the joint effort BOEM and the National Marine Fisheries Service (NMFS) to develop a Supplemental Draft EIS (SDEIS) looking at “Effects of Oil and Gas Activities in the Arctic”. We also provided comments on the Proposed Guidance on Acoustics and on many IHA’s, including Shell’s 2012 IHA application (attached). We would incorporate those comments by reference. We are also providing a few immediate concerns, in the event we do not receive an extension.

Timing

NSB is concerned about the timing of the proposed authorization. We have repeatedly asked that industry not enter the Chukchi Sea until after July 15th, which will allow for the completion of the beluga whale hunt in Point Lay. This will help mitigate some of the impacts to our subsistence harvests. We have heard from Shell that they do not anticipate arriving until after this date; yet this IHA would allow Shell to move into the Chukchi beginning on July 1.⁵

Mitigation Measures

The IHA provides some mitigation measures. The Borough wants to ensure that all appropriate mitigation measures are required for the permit. This includes:

- Coordination with the Alaska Eskimo Whaling Commission (AEWC) and other Alaska Native marine mammal user groups as appropriate, and participation in the well-established and effective Conflict Avoidance Agreement (CAA) process;
- The best available technologies and best management practices should be mandatory for both seismic and exploratory drilling, including zero discharge;
- Sufficient monitoring and mitigation requirements must be implemented, and their effectiveness verified, to protect subsistence species, habitat and subsistence hunters; and
- Appropriate acoustic and visual monitoring must be required.

New Data

In evaluating Shell’s proposal, it is important to evaluate new data available on surface currents. The data are collected from surface current drifters and high frequency radar. Summaries of both

⁵ 80 Fed. Reg. 11,727.

are available on a University of Alaska Fairbanks website.⁶ There is also some information from the surface drifters on our Department of Wildlife Management's website.⁷

The Borough has also been conducting studies of tagged Ringed and Spotted Seals to better understand migration patterns, habitat use areas, and foraging and diving behavior for use in the development of robust monitoring and management strategies.⁸

Conclusion

Thank you for considering our request for an extension to provide more detailed comments on this application. We ask that the Borough have additional opportunities to collaborate with NMFS staff as critical decisions are being made with respect to this proposed activity.

Sincerely,



Charlotte E. Brower
Mayor

cc: Jacob Adams, Sr., CAO
John Boyle, Special Counsel
Lauren Berdow, Borough Attorney
Dawn Winalski, Assistant Borough Attorney
Rhoda Ahmaogak, Director, Planning Department
Taquik Hepa, Director, Wildlife Management

Attachment: NSB Comments to NMFS, Shell IHA for 2012 exploration drilling in the Chukchi Sea, Dec. 09, 2011

⁶ University of Alaska Fairbanks and BOEM, Chukchi and Western Beaufort Circulation Studies.
<http://dm.sfos.uaf.edu/chukchi-beaufort/>

⁷ North Slope Borough, Department of Wildlife Management. Satellite-tracked Surface Drifter Measurements off Barrow and Wainwright, Alaska,
<http://www.north-slope.org/departments/wildlife-management/studies-and-research-projects/oceanography-and-sea-ice/oceanography-and-sea-ice-research#OceanDriftersProject>

⁸ North Slope Borough, Department of Wildlife Management, Ringed Seal Research, www.north-slope.org/departments/wildlife-management/studies-and-research-projects/ice-seals/ringed-seal-research



Shell Exploration & Production Company

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April 3, 2015

Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Via Overnight Delivery & Electronic Delivery (ITP.Guan@noaa.gov)

RE: Shell Gulf of Mexico Inc. Comments on 2015 Proposed Incidental Harassment Authorization, Exploration Drilling Program in the Chukchi Sea, Alaska

Dear Ms. Harrison,

This is to convey to you the comments of Shell Gulf of Mexico Inc. (Shell) on the Federal Register notice published by the National Marine Fisheries Service (NMFS) on March 4, 2015 (80 FR 11726) regarding the proposed issuance of an Incidental Harassment Authorization (IHA) for Shell's Exploration Drilling Program in the Chukchi Sea, Alaska in 2015. Please consider the following comments:

1) Page 11773 (8)(c):

Shell requests the 180 dB re 1 μ Pa rms radius be listed as 1.38 km, not 1.28 km. The value of 1.38 is the value proposed in the Marine Mammal Monitoring and Mitigation Plan, and also in Table 1 of the preamble of the FR notice on page 11753.

2) Page 11772 (7)(e):

Shell requests that the language in this section be clarified to reflect the Marine Mammal Monitoring and Mitigation Plan (4MP) regarding the number of protected species observers (PSOs) that will be on watch aboard the drilling units, each of which will be staffed with five PSOs. Shell has committed to at least one PSO aboard each support vessel. Shell requests the following adjusted language:

"Utilize two, NMFS-approved, vessel-based Protected Species Observers (PSOs) (except during meal times and restroom breaks, when at least one PSO will be on watch) aboard the drilling units to visually watch for and monitor marine mammals near the drilling units or support vessel during active drilling or airgun operations...day or night. At least one PSO will be aboard each support vessel to conduct watch. The vessels' crew shall also assist..."

3) Pages 11773-11774, Sections 10(c)(i) and 11(a) respectively and pages 11757 and 11759 in the preamble to the proposed IHA language:

Shell has concerns over the requirement to deliver sound source verification (SSV) results for the Zero-offset Vertical Seismic Profile (ZVSP) airgun array to NMFS within 120 hours of completing the test. These concerns center on project safety and a lack of operational practicability. Some of the recorders required to measure sound threshold radii of the ZVSP airgun array must be moored to the seafloor within the anchor pattern of the drilling unit. Recovery of these recorders while the drilling unit remains anchored, however, poses considerable safety concerns. Grappling, the most reliable method of recovery, or recovery by acoustic release of the recorders introduce risks to the crews of the drilling unit and the recovery vessel. These risks include entanglement of grappling lines with anchor lines, and disruption or disablement of critical communications equipment from acoustic interference.

Delivery of ZVSP airgun array measurements within 120 hours originated in previous Arctic IHAs and monitoring plans for 3D seismic surveys to ensure that the pre-season, modeled radii of Level A exclusion zones were sufficient to mitigate successfully. These 3D seismic surveys involved considerably larger airgun arrays than Shell's proposed 2015 ZVSP arrays, greater seismic activity over a larger geographic area, and pre-season modeling that was not nearly as accurate as present-day modeling technology. ZVSP arrays proposed by Shell for 2015 were modeled using JASCO's state-of-the-art Marine Operations Noise Model. These model results were maximized over all water depths to identify the most conservative 95th percentile distances to Level A thresholds, and then multiplied by 1.5 as an additional safeguard to ensure sufficient establishment of ZVSP exclusion zones for monitoring and mitigation. For all of these reasons, Shell is confident that the pre-season Level A exclusion zones are conservative, and protective.

Additionally, Shell would conduct at most only one more ZVSP survey following measurement of the ZVSP airgun array. A ZVSP survey is only 10-14 hours in duration, and the majority of marine mammals are expected to avoid these surveys at distances greater than the Level A exclusion zones. These additional considerations, coupled with a high degree of confidence in pre-season modeling of ZVSP radii, and safety concerns surrounding recovery of SSV recorders while the drilling unit remains onsite, lead Shell to request that the requirement to report SSV results to NMFS within 120 hours of the test be removed from the proposed IHA.

4) Page 11756 of the preamble to the proposed IHA language:

Text on this page indicates, "Preliminary vessel characterization measurements will be reported in a field report to be delivered 120 hours after the recorders are retrieved and the data downloaded." Shell did not intend to include this requirement in the IHA application, and does not believe it necessary for the following reasons:

- One of the primary objectives of Shell's 2015 sound source characterization (SSC) of its exploration drilling program is a comprehensive analysis of underwater sounds across the entire operational season, which necessitates that recorders remain deployed as long as is practicable;
- There is no connection between measurements of vessel sounds and mitigation, and Shell does not believe there is anything to be gained by reporting preliminary vessel measurements prior to a more comprehensive analysis of the data; and,

- Per the proposed IHA language in Section 11(a), Shell will present detailed results of drilling and vessel SSCs in the 90-day report.

5) Sections 7(b) and 7(c) of the proposed IHA language on page 11772:

Section 7(b) indicates vessels must, "Avoid multiple changes in direction and speed when within 900 feet (300 yards/274 m) of whales". This statement appears to be contradicted by the statement in Section 7(c) that states, "When weather conditions require, such as when visibility drops, support vessels must reduce speed and change direction, as necessary (and as operationally practicable), to avoid the likelihood of injury to whales."

Shell strongly supports the intent of these measures, which is to operate responsibly when in close proximity to whales or when weather conditions pose challenges to visual monitoring. The requirements have led to confusion for PSOs and vessel operators in the past could result in ill-advised vessel movement in the future. Based on 2012 drilling season data, program vessels are anticipated to operate at speeds of 9 knots or less, and changes in direction in poor visibility may not be warranted given PSOs cannot fully assess the distribution of marine mammals around the vessel to make an informed request for course alteration. Shell believes that the stipulation in Section 7(b) is sufficient to meet mitigation objectives and avoid injury to whales, and that Section 7(c) should be removed.

6) Section 6: of the proposed IHA language on page 11773:

There is an important ZVSP mitigation measure omitted from this section that has been included in previous Arctic IHAs for marine seismic surveys, which states:

"If, for any reason, electrical power to the airgun array has been discontinued for a period of 10 minutes or more, ramp-up procedures shall be implemented. Only if the PSO watch has been suspended, a 30-minute clearance of the exclusion zone is required prior to commencing ramp-up. Discontinuation of airgun activity for less than 10 minutes does not require a ramp-up."

Shell recommends that this language be included in Section 7 of the issued IHA. These statements ensure that the necessary mitigation measures will be in place following a shutdown of the ZVSP airgun array, and that a ZVSP survey will be completed as quickly as possible over the course of 10 to 14 hours. The 10 minutes stipulation must be included to avoid extending the duration of the ZVSP survey while PSOs await conditions that support ramp-up procedures following a mechanical shutdown of less than 10 minutes.

7) Section 10(a) of the proposed IHA language on page 11773:

Shell finds the following statement to be potentially confusing.

"The Holder of this Authorization shall designate biologically-trained PSOs to be aboard the drilling units and all transiting support vessels."

Shell suggests the following revision to avoid confusion between an academically degreed biologist and non-degreed biologist, both of which, when properly trained can perform the duties of a PSO; and that the number of PSOs on different vessel types be clarified per the 4MP:

"The Holder of this Authorization shall designate trained PSOs aboard drilling units, icebreakers, and anchor handlers. All support vessels will be staffed with at least one trained PSO. The PSOs are required to..."

8) Acoustic Impacts on page 11732:

The following statements are made on page 11732:

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 30 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 in Water: functional hearing is estimated to occur between approximately 75 Hz and 100 kHz; and*
- *Otariid pinnipeds in Water: functional hearing is estimated to occur between approximately 100 Hz and 40 kHz.*

Shell notes that the functional hearing frequency ranges are inconsistent with those presented in Southall et al. (2007). Specifically, the low frequency and pinniped hearing groups. The extension of the hearing range of low-frequency cetaceans is not supported by empirical evidence. There is no evidence indicating that mysticetes hear above 20-22 kHz, and there are no empirical data to support expansion to 30 kHz. Shell also notes that these ranges appear to be drawn from the draft acoustic criteria which are still under review and have not been finalized. Shell request NMFS provide justification for the ranges listed above including associated references. In particular, industry has noted in prior comments to NMFS regarding the draft acoustic criteria, that the above frequency range for the low frequency cetaceans is not supported by best available science.

9) Clarification on Shell Approach to Take Estimation

As Shell progresses its exploration drilling program in the Chukchi Sea, refinements of the risk assessment models for estimating takes of marine mammals from drilling related activities has also progressed based on learnings from ongoing monitoring and mitigation programs. The refinements incorporated into the 2015 IHA application include: 1) Aggregation of sound producing sources based on operational planning. Many of the inputs to the sound propagation model are measured values from multi-year sound source characterization studies. 2) The inclusion of a population turnover factor as recommended by the Marine Mammal Commission

and from past peer reviews of the 4MP. 3) The inclusion of an avoidance (animal movement away from a sound source) probability function for ringed seals and bowhead whales. While there is considerable uncertainty in avoidance levels for marine mammal species generally, much is known regarding bowhead whale behavior in the vicinity of drilling activities.

NMFS has acknowledged this position as clearly indicated in the Notice of Issuance for Shell's 2012 drilling IHA in the Beaufort Sea (77 Fed. Reg. 27284, 27288 [May 9, 2012]):

"Bowheads may engage in avoidance behavior preventing their exposure to these levels of sound, and, even if exposed, may not exhibit a behavioral reaction."

In addition, NFMS specifically recognizes (77 FR 27290 [May 9, 2012]) the following:

"Although it is possible that marine mammals could react to any sound levels detectable above the ambient noise level within the animals' respective frequency response range, this does not mean that such a reaction would be considered a take. According to experts on marine mammal behavior, whether a particular stressor could potentially disrupt the migration, breathing, nursing, breeding, feeding, or sheltering, etc., of a marine mammal, i.e., whether it would result in a take, is complex and context specific, and it depends on several variables in addition to the received level of the sound by the animals."

The NMFS position is well supported by a large body of evidence indicating that bowhead whales avoid anthropogenic activities and associated underwater sounds depending on the context in which these activities are encountered (LGL et al. 2014; Koski and Miller 2009; Moore 2000; Moore et al. 2000; Treacy et al. 2006). Increasing evidence suggests that proximity to an activity or sound, coupled with an individual's behavioral state (e.g., feeding vs traveling) among other contextual variables, as opposed to received sound level alone, strongly influences the degree to which an individual bowhead whale demonstrates avoidance or other behaviors (reviewed in Richardson et al. 1995b; Gordon et al. 2004; Koski and Miller 2009; Ljungblad et al. 1988; Miller et al. 2005; Moore 2000; Moore et al. 2000; Treacy et al. 2006).

Shell requests that NMFS continue to recognize the scientific evidence for avoidance of bowhead whales from drilling related activities, and that demonstrable probability functions (dose-response curves) can be established for use in animal movement models. Therefore, the NMFS should not deviate from its prior position in 2012, which asserted that avoidance does not always rise to a level that constitutes a Level B take.

Shell appreciates the opportunity for comment. If you have any questions please contact Greg Horner at Greg.Horner@Shell.com

Thank you,



Shell Exploration & Production Company
Alaska Venture Support Integrator, Manager

Associated References

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Conservation's Northern Voice

Jolie Harrison, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
ITP.Guan@noaa.gov

April 3, 2015

Re: Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska

Dear Ms. Harrison:

NMFS proposes to allow the incidental take of 12 marine mammal species resulting from Shell's exploration drilling activities in the Chukchi Sea that are scheduled to begin in July 2015. NMFS should deny Shell's application. Shell's 2015 drilling program is bigger, dirtier, and louder than any the company previously has proposed, and its bungled 2012 attempt to drill demonstrates the company is not ready to operate in the Arctic Ocean. Additionally, there is a complete lack of demonstrated oil spill response and rescue capability in the Arctic Seas. The proposed IHA blatantly permits the harassment of large numbers of marine mammals, including threatened ringed seals and endangered bowhead.

There is no scientific basis for concluding that Shell's activities will harm only small numbers of marine mammals or that the impacts will be no more than negligible. Moreover, the sound thresholds NMFS uses are admittedly outdated, and there is a lack of programmatic analysis of the effects of oil and gas exploration and development in the Arctic. These major gaps in up-to-date information, combined with Shell's proven inability to operate safely in the Arctic, make the issuance of the proposed IHA premature at best.

In 2012, Shell claimed to have the most technologically advanced, environmentally-sensitive drilling plan ever put forth for the Arctic. Notwithstanding its preparation, Shell's attempt to drill in the Arctic was a disaster. Shell's ill-fated 2012 drilling season started in June when its drilling fleet failed air pollution tests. Rather than coming into compliance with its air pollution permit Shell asked EPA to make an exception. The EPA granted an exception. In July, one of Shell's drillships, the *Noble Discoverer* slipped its anchor in Dutch Harbor, Alaska, and either grounded or came very close to grounding. In August, Shell's oil response barge the *Arctic Challenger* failed to meet Coast Guard Certification standards and was held back in Seattle. Because it could not mobilize an oil response vessel Shell was forced to scale back its plans to preparatory drilling only.

On September 9, Shell finally began drilling but had to stop the same day because of a large ice floe. Later that week its containment dome, which was undergoing tests in Puget Sound, failed and was “crushed like a beer can.” In November the *Noble Discoverer*’s engine backfired and started a fire. Later that month the Coast Guard detained the vessel in Seward, Alaska, for serious problems with the ship’s safety and pollution discharge systems. The grand finale came on New Year’s Eve, when Shell’s other drillship, the *Kulluk*, ran aground near Kodiak, Alaska, after multiple failures with towing operations. In February 2013, the Coast Guard announced that it had found 16 serious safety and environmental violations on the *Kulluk*. Shell was forced to scrap the drillship. Various government reports faulted Shell for failures ranging from inadequate operations planning to inadequate oversight of contractors, and indeed Shell’s primary contractor, Noble, has now pled guilty to eight environmental felonies committed during the drilling season. Shell’s experience in 2012 shows conclusively that Shell is incapable of operating safely in the Arctic environment.

NMFS’s proposed IHA for Shell fails to comply with the Marine Mammal Protection Act in a number of key respects. First, it authorizes the takes of more than small numbers of several marine mammal species, including species listed under the Endangered Species Act (ESA). Second, it fails to ensure that Shell’s activities will have no more than a negligible impact on marine mammal species. Third, it does not impose mitigation measures that ensure that the activities will have the least practicable adverse impacts on marine mammals in the Chukchi Sea.

Among NEPA’s many requirements, the analysis of a range of alternatives is perhaps the most important. Another essential aspect of NEPA is the analysis of cumulative impacts, which acknowledges that the harm from numerous factors may be greater than the sum of its parts. NMFS’s alternatives analysis in the environmental assessment (EA) for the proposed IHA is an improvement over prior NEPA documents but is still inadequate. Its cumulative impacts analysis, on the other hand, is embarrassingly deficient and does not come close to meeting the mandates of NEPA, especially with regard to climate change.

Thank you for the opportunity to comment on this proposal. As NMFS has finally acknowledged, Shell cannot legally proceed with its Arctic drilling program without authorization from NMFS to harass marine mammals in the Chukchi Sea. We hope NMFS will withdraw the proposed authorization because of the many deficiencies outlined above.

Jessica Girard

Arctic Program Director

Northern Alaska Environmental Center

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P (907) 452-5093

www.northern.org



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

Please Say NO to Arctic Drilling that Impacts Thousands of Marine Mammals

1 message

Michelle Buerger <webmaster@oceanconservancy.org>
Reply-To: Michelle Buerger <stargirl_46@hotmail.com>
To: ITP.Guan@noaa.gov

Fri, Apr 3, 2015 at 11:33 PM

Apr 3, 2015

Ms. Jolie Harrison
1315 East-West Highway
Silver Spring, MD 20910

Dear Ms. Harrison,

Thank you for the opportunity to submit comments in response to the National Marine Fisheries Service's (NMFS) proposal to issue an Incidental Harassment Authorization (IHA) in conjunction with Shell's proposed drilling activities in the Chukchi Sea. I am extremely concerned about the negative impacts that Shell's drilling operations would have on whales and seals in the region, and I urge you to deny Shell's application for an IHA.

The environmental assessment prepared by NMFS indicates that Shell's proposed activities could adversely affect more than 6,000 whales and more than 50,000 seals. The activities proposed by Shell could disrupt vital life functions and behaviors--including migration, breathing, nursing, breeding, feeding or sheltering--of tens of thousands of animals. These Arctic species, some of which are listed as threatened or endangered under the Endangered Species Act, are already feeling the effects of rapid climate change and loss of seasonal sea ice. Impacts from Shell's proposed drilling activities would only compound their stress.

The Marine Mammal Protection Act (MMPA) is a precautionary law that requires applicants to show that their proposed operations will not adversely affect the resource or the ecosystem. Federal regulations prohibit NMFS from issuing an IHA for activities that have the potential to result in serious injury. 50 C.F.R. § 216.107. Although NMFS finds it unlikely that Shell's proposed activities will cause serious injury, the potential for serious injury does exist, and Shell's application should be denied on that basis. Moreover, the MMPA prohibits NMFS from authorizing the take of more than small numbers of marine mammals. 16 U.S.C. § 1371(a)(5)(D)(i). As noted above, Shell's activities could affect tens of thousands of marine mammals--more than a "small number" by any measure. Again, Shell's application should be denied.

Shell has failed to demonstrate that it is capable of operating safely and responsibly in Arctic waters. Its proposed operations have the potential to cause serious injury and could negatively affect large numbers of marine mammals. NMFS should abide by the requirements and

the intent of the MMPA and its implementing regulations and should deny Shell's application.

Sincerely,

Michelle Buerger

WI 53711



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

RE: Oil Spills in the Arctic Ocean

1 message

Trevor <birdridge@gmail.com>

Fri, Apr 3, 2015 at 10:19 PM

To: ITP.Guan@noaa.gov

Dear NOAA,

As the son of a commercial fisherman / plaintiff in the Exxon Valdez oil spill, I have witnessed the adverse impact of oil spills on wildlife, and on the people who live and depend on the sea.

There is a high chance of a major oil spill in the Arctic Seas upon drilling, where oil-spill response is highly limited. It is reckless to allow drilling. Please, do not allow oil-drilling operations in the Arctic Ocean. It is not appropriate, given the risks of a major oil spill.

Trevor Scott
PO Box 281
Girdwood, Alaska 99587



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

DRILLING

1 message

Leonard Bobincheck <jojeftr@gmail.com>

Fri, Apr 3, 2015 at 10:02 PM

To: ITP.Guan@noaa.gov

i am totally in disagreement with any disruption of the artic ocean or any of the alaskan state we tend to disrupt many natural wilderness and species of inhabitation of many different species (please do not permit it " as a res of the (TERRATORY) OF ALASKA) BACK IN THE EARLY 1949 & 50s ' IT IS THE (ILAST) OF OUR NATURAL WILD LAND PLEASE DO NOT DISTURB IT ANY MORE THAN IT HAS BEEN ALREADY! ONCE GONE UN LIKE THE MONEY THAT CAN BE GOTTEN IN OTHER WAYS THAT NATURAL RESORCE CANNOT BE BROUGHT BACK (REMEMBER VALDAZ 0???????)



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

Shell Oil Lease -- NO!

1 message

Kurt Sahl & Kathleen Mertens <bluesky@scn.org>

Fri, Apr 3, 2015 at 5:21 PM

To: ITP.Guan@noaa.gov

My name is Kurt Sahl and I'm writing to you from Seattle, Washington.

As you may know, Seattle will soon become the staging area for the Shell Oil drilling fleet that will begin testing in the Chukchi Sea. This development took place while Seattle slept. It was a disingenuous and farcical backhand slap to our city and the people who live along the Chukchi Sea coast. I am writing in the hope that NOAA will deny Shell Oil an Incidental Harassment Authorization. The consequences are too grave, the stakes too high, and the time not right to proceed with drilling when the decisions are made thousands of miles away.

There are no standards high enough for exploratory drilling in this most sensitive of marine locations. The threats to marine life are sufficient to refuse Shell access to this area. There can be no compensation great enough for just one episode of malfeasance such as the nation witnessed two years ago and was documented in the NY Times Magazine earlier this year. It's unfortunate Shell has chosen this place to extract a non-renewable resource in the names of profit and freedom. As a citizenry, we cannot permit transnational energy corporations access to one of the most remote and pristine areas on Earth.

Please pass along my comments and I appeal to whomever reads this to please, please, deny Shell Oil an IHA.
Regards, Kurt Sahl



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

Comment on Chukchi Sea Oil Exploration

1 message

Terri Foechterle <mamabearf@gmail.com>

Fri, Apr 3, 2015 at 2:25 PM

To: ITP.Guan@noaa.gov

As a lifelong Alaskan resident, I am writing to express my deep concerns and absolute opposition to permitting Shell Oil to drill in the vital ecosystem of the Chukchi Sea.

Seismic operations carried out during the course of exploration will cause irreparable harm to at least 12 marine species, including many whale and seal species that provide subsistence livelihood to the Native people of that region, who are themselves a part of the ecosystem.

Industrial noise from offshore oil operations will permanently alter the character of the Arctic ocean environment, to the detriment of Alaskan fisheries that supply a huge percentage of healthy fish species to food markets all over the world. Allowing this massive noise impact to ocean species, dependent on sonar capabilities for nearly every aspect of their lives, is in direct contrast to the laws enacted to protect many of the endangered species included in this group.

While Shell has promised to address some of the concerns raised by their past violations, they have also fought existing regulations aimed at preventing an oil spill disaster in the fragile northern ocean environment and have demonstrated their unpreparedness and unwillingness to place environmental safety over profits.

In addition, an environmental impact study by the BOEM concluded that there is a *75% chance of a major oil spill* in the Arctic Seas, where oil-spill response is essentially nonexistent.

Drilling in the Chukchi Sea is the wrong answer for our economy and our future. Before any such action could be reasonably considered, much more needs to be done to protect against another industrial disaster. We haven't reached that point yet, and I urge you to reject Shell's permit applications until we have.

Sincerely,

Terri Foechterle
Wasilla, Alaska



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

Incidental Harassment Authorization for Shell

1 message

Carol Mullen <icicarol@hotmail.com>

Fri, Apr 3, 2015 at 8:38 PM

To: "ITP.Guan@noaa.gov" <itp.guan@noaa.gov>

Dear Folks at NOAA,

I feel very strongly that you should **not** grant Shell Oil an Incidental Harassment Authorization permit.

The proposed seismic surveys will harm marine life, including species that are the life blood of Alaska Native coastal communities encompassing their culture, economy, and subsistence livelihood.

Permitting harassment to endangered species, bearded seals and four subspecies of ringed seals who inhabit Alaskan Arctic Oceans, is in direct contradiction with increased protections of these mammals.

Fisheries are a foundation of our coastal economies, disrupting this economy effects nearly every Alaskan.

Industrial noise from offshore oil operations will forever transform the Arctic marine sound-scape into an industrial noise-scape - compromising commercial and recreational fisheries, disrupting migratory marine mammals, and threatening other marine life.

Thank you for making the right decision for the planet and future generations.

Sincerely,

Carol Mullen



Shane Guan - NOAA Federal <shane.guan@noaa.gov>

Deny Shell Oil's Incidental Harassment Authorization permit

1 message

Deborah Filipelli <dfilipelli@mcn.org>

Fri, Apr 3, 2015 at 6:51 PM

To: ITP.Guan@noaa.gov

The following represents my position in strong opposition for a permit approval by Shell Oil for an Incidental Harassment Authorization.

The proposed seismic surveys will harm marine life, including species that are the life blood of Alaska Native coastal communities encompassing their culture, economy, and subsistence livelihood.

Permitting harassment to endangered species, bearded seals and four subspecies of ringed seals who inhabit Alaskan Arctic Oceans is in direct contradiction with increased protections of these mammals.

Fisheries are a foundation Alaska's coastal economies. Disrupting this economy effects nearly every Alaskan.

Industrial noise from offshore oil operations will forever transform the Arctic marine sound-scape into an industrial noise-scape - compromising commercial and recreational fisheries, disrupting migratory marine mammals, and threatening other marine life.

Deborah Filipelli, Ph.D.



April 3, 2015

VIA EMAIL

Ms. Jolie Harrison, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
ITP.Guan@noaa.gov

Re: Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska, 80 Fed. Reg. 11,726 (Mar. 4, 2015)

Dear Ms. Harrison:

The National Marine Fisheries Service (NMFS) has issued a proposed incidental harassment authorization (IHA) pursuant to the Marine Mammal Protection Act (MMPA) for the exploration drilling activities that Shell seeks to begin this summer in the Chukchi Sea. The analysis supporting the proposed IHA estimates that Shell's activities would harass more than 50,000 ringed seals, more than 2,500 bowhead whales, and more than 2,500 gray whales, among other species. Science, law, and good public policy dictate that the NMFS use precaution when making decisions that will affect these populations, many of which already are suffering the negative consequences of a rapidly changing climate. Because NMFS has not done so here, Oceana, Ocean Conservancy, and Audubon Alaska request that NMFS deny Shell's application and withdraw the proposed IHA.

The Arctic is unique and threatened. It is home to iconic species of wildlife, including whales, walrus, and polar bears, and coastal communities that have depended on the ocean to support their subsistence way of life for millennia. The region is also changing rapidly, including significant warming that has contributed to both the loss of sea ice and increasing potential for industrial activities like those proposed by Shell. In this context, choices about whether and under what conditions to allow additional stress to marine mammal populations must be made carefully and as part of a holistic planning process.

NMFS has not fulfilled that obligation. The agency has made it clear that a programmatic environmental impact statement (EIS) is needed to evaluate the environmental impacts of proposed and reasonably foreseeable oil and gas exploration in the Beaufort and Chukchi seas. The agency started the process of preparing that EIS more than five years ago, but has yet to finalize the analysis. Pending completion of that document, NMFS should not—as it has done here—rely on environmental assessments to evaluate the impacts of proposed IHAs. In addition,

Ms. Jolie Harrison

April 3, 2015

Page 2

NMFS is also in the process of revising and updating the acoustic thresholds that it uses to estimate the number of individual animals likely to be affected by a proposed activity. NMFS should not authorize Shell's activities until it has completed its revision of these thresholds.

Moreover, NMFS should be particularly concerned about issuing an IHA to Shell. The company has not proven it can operate safely or within the confines of government approvals. Its failed 2012 season led to investigations, fines, and significant risk to the marine environment. Shell, however, refuses to acknowledge these problems. Shell's President claimed that the company "finished the 2012 drilling season, didn't have any incidents there, we didn't have any accidents. . . It was done safely; it was done from an environmental perspective, the way we wanted it done." Particularly given Shell's refusal to recognize past failures, NMFS has no reason to give the company the benefit of the doubt or to bend important ocean safeguards to allow Shell to drill exploration wells in the Chukchi Sea.

Finally, we agree with the substantive concerns about compliance with the MMPA and NEPA that are raised in a separate letter submitted today on behalf of Earthjustice and other conservation organizations.

Thank you for the opportunity to comment on this proposal. We look forward to working with you on this and other issues related to healthy Arctic Ocean ecosystems.

Sincerely,



Susan Murray
Deputy Vice President, Pacific
Oceana
175 S. Franklin St., Suite 418
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**ALASKA WILDERNESS LEAGUE—CENTER FOR BIOLOGICAL DIVERSITY
EARTHJUSTICE—ENVIRONMENTAL INVESTIGATION AGENCY
GREENPEACE—NATURAL RESOURCES DEFENSE COUNCIL
NORTHERN ALASKA ENVIRONMENTAL CENTER
OCEAN CONSERVATION RESEARCH—SIERRA CLUB**

April 3, 2015

VIA EMAIL

Jolie Harrison, Chief
Permits, Conservation, and Education Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
ITP.Guan@noaa.gov

Re: Taking Marine Mammals Incidental to an Exploration Drilling Program in the Chukchi Sea, Alaska, 80 Fed. Reg. 11,726 (Mar. 4, 2015)

Dear Ms. Harrison:

The undersigned groups submit the following comments on the National Marine Fisheries Service's (NMFS) March 4, 2015, issuance of a proposed incidental harassment authorization (IHA) pursuant to the Marine Mammal Protection Act (MMPA). NMFS proposes to allow the incidental take of 12 marine mammal species resulting from Shell's exploration drilling activities in the Chukchi Sea that are scheduled to begin in July 2015. NMFS should deny Shell's application.

Shell's 2015 drilling program is bigger, dirtier, and louder than any the company previously has proposed, and its bungled 2012 attempt to drill demonstrates the company is not ready to operate in the Arctic Ocean. Moreover, there is a recognized dearth of necessary data about the marine environment of the Chukchi Sea and a complete lack of demonstrated oil spill response and rescue capability. NMFS repeatedly has warned in the past that the lack of information about the Chukchi Sea hinders the agency's ability to meet its MMPA obligations, and the United States Geological Survey's (USGS) 2011 report further has reinforced the need for additional studies in order to evaluate the potential impacts from offshore industrial activities.

Even based on the information that does exist, the impacts of the proposed exploration drilling on marine mammals exceed the protective standards imposed by the MMPA. The proposed IHA blatantly permits the harassment of large numbers of marine mammals, including threatened ringed seals and endangered bowhead whales. It does not guarantee that impacts to species will be negligible because its analysis of the effects of the noise and disturbance that would be produced by Shell's activities is incomplete and does not reflect the best available

science. Nor does the proposed IHA include sufficient mitigation to reduce adverse impacts to the “least practicable.” In addition to its failings under the MMPA, NMFS’s analysis of the proposed action under the National Environmental Policy Act (NEPA) is cursory and inadequate. Each of these points is discussed in more detail below.

Missing Information Precludes NMFS from Adequately Analyzing Impacts under the MMPA and NEPA

There is no scientific basis for concluding that Shell’s activities will harm only small numbers of marine mammals or that the impacts will be no more than negligible. Moreover, the sound thresholds NMFS uses are admittedly outdated, and there is a lack of programmatic analysis of the effects of oil and gas exploration and development in the Arctic. These major gaps in up-to-date information, combined with Shell’s proven inability to operate safely in the Arctic, make the issuance of the proposed IHA premature at best.

I. Data Gaps

There are large gaps in basic scientific information about both the Chukchi Sea ecosystem and marine mammal responses to noise. These gaps prevent adequate analysis of the potential impacts of Shell’s proposed activities on wildlife. The United States Geological Survey found that baseline data for many marine mammal species in the Arctic are still needed, including information on current abundance, seasonal distribution, movements, population dynamics, foraging areas, sea-ice habitat relationships, and age-specific vital rates.¹ In its most recent draft programmatic EIS, NMFS itself recognized, “[i]t is not currently possible to predict which behavioral responses to anthropogenic noise might result in significant population consequences for marine mammals, such as bowheads, in the future.”² The gaps in information preclude defensible small numbers and negligible impact findings under the MMPA and constrain the designing of adequate mitigation measures. They also undermine assessment of the potential effects of the proposed surveying pursuant to NEPA.³

II. Programmatic EIS

NMFS has been in the process of preparing a programmatic EIS for Arctic Ocean oil and gas exploration since 2006. The initiation of the process showed that NMFS recognized the need to understand and manage the potentially serious cumulative effects of multiple activities that could occur each year in the region. But NMFS’s multi-year exercise in foot-dragging has drawn

¹ U.S. Geological Survey, *An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska*, Circular 1370 at 59, 179 (2011). The need for this baseline information is apparent even for bowhead whales, one of the better studied species in the Arctic. *Id.* at 52, 179-182. The report confirms that more research is also necessary to accurately assess marine mammal reactions to different types of noise and that more work is needed to characterize the seasonal and spatial levels of ambient noise in both the Beaufort and Chukchi seas. *Id.* at 176, 178.

² National Marine Fisheries Service (NMFS), *Effects of Oil and Gas Activities in the Arctic Ocean*, Supplemental Draft Environmental Impact Statement at 4-119 (March 2013) (SDEIS).

³ See 42 C.F.R. § 1502.22 (requiring federal agencies to identify “incomplete or unavailable information” relevant to the reasonably foreseeable adverse impacts under assessment, and to provide that information if it is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant).

into doubt the agency's commitment to minimizing impacts. The cumulative, long-term effects of increased noise and other impacts from oil and gas activity must be addressed properly before further activity is authorized. A number of the undersigned groups have raised this issue to NMFS previously. We repeat the main points here.

Although NMFS has begun a comprehensive analysis of oil and gas activities in the Arctic, it has not yet finished the job. As the agency has acknowledged, a programmatic EIS process is necessary to address the overall, cumulative impacts of increased oil and gas activity in the Arctic Ocean and effectively mitigate those effects. This approach is consistent with the mandate of NEPA. NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision making" so that "the agency will not act on incomplete information, only to regret its decision after it is too late to correct."⁴ Conducting an upfront, "coherent and comprehensive" analysis of the environmental impacts of expanded seismic and drilling activities will enable NMFS to make informed decisions and provide adequate protection for the affected resources.

NEPA regulations mandate that NMFS not proceed with authorizations for individual projects like Shell's until its programmatic EIS is complete. Specifically, agencies are explicitly prohibited from undertaking any major action covered by a programmatic EIS that is underway: "While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment."⁵

NMFS has made it clear that the programmatic EIS is necessary for an adequate evaluation of the environmental impacts of approving currently proposed and reasonably foreseeable oil and gas exploration activity in the Beaufort and Chukchi seas. In light of this ongoing programmatic EIS process, it is unlawful for NMFS to authorize marine mammal harassment associated with new industrial activity. Only by evaluating the cumulative, long-term impacts of noise associated with expanding levels of seismic exploration and exploratory drilling can the full and potentially synergistic effects of the various individual projects be understood and adequately protective mitigation measures be put in place.⁶

⁴ *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998) (quoting *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 371 (1989)).

⁵ 40 C.F.R. § 1506.1(c). The regulation requires any activity covered by the program to meet a stringent three-part test in order to qualify for an exception to the general rule. It must be: justified independently of the program; accompanied by an adequate environmental impact statement; and not prejudicial to the ultimate decision on the program. 40 C.F.R. § 1506.1(c). The proposed seismic surveying does not meet all of the requirements. Shell's plans are inseparable from the issues to be addressed in the programmatic EIS and must be considered in the larger context to avoid compromising future options for protecting vulnerable resources in the Arctic.

⁶ NMFS has also not completed Endangered Species Action consultation, reinitiated in 2014, for listed species affected by Chukchi Lease Sale 193. *See* Lease Sale 193 Record of Decision (Mar. 2015) at 12. Without having completed such consultation NMFS cannot accurately assess how Shell's activities will effect listed species in the Chukchi Sea.

III. Revision of Acoustic Thresholds

NMFS also is currently in the process of revising and updating its acoustic thresholds “to incorporate newer science and utilize improved methods.”⁷ The new criteria will likely increase the estimated number of bowhead whales, other cetaceans, and ice seals that could be disturbed by exploratory activities, and in some cases the increased level of disturbance could be large.⁸ It is irrational to proceed with outdated thresholds when NMFS already has developed a more appropriate method. NMFS should not issue further IHAs until it has completed its revision of acoustic thresholds for Level B take.

IV. Shell’s 2012 Drilling Season

In 2012, Shell claimed to have the most technologically advanced, environmentally-sensitive drilling plan ever put forth for the Arctic. Notwithstanding its preparation, Shell’s attempt to drill in the Arctic was a disaster. Shell’s ill-fated 2012 drilling season started in June when its drilling fleet failed air pollution tests. Rather than coming into compliance with its air pollution permit Shell asked EPA to make an exception. The EPA granted an exception. In July, Shell lost control of one of its drillships, the *Noble Discoverer*, which either then grounded or came very close to grounding in Dutch Harbor, Alaska. In August, Shell’s oil response barge the *Arctic Challenger* failed to meet Coast Guard Certification standards and was held back in Seattle. Because it could not mobilize an oil response vessel Shell was forced to scale back its plans to preparatory drilling only.

On September 9, Shell finally began drilling but had to stop the same day because of a large ice floe. Later that week its containment dome, which was undergoing tests in Puget Sound, failed and was “crushed like a beer can.” In November the *Noble Discoverer*’s engine backfired and started a fire. Later that month the Coast Guard detained the vessel in Seward, Alaska, for serious problems with the ship’s safety and pollution discharge systems. The grand finale came on New Year’s Eve, when Shell’s other drillship, the *Kulluk*, ran aground near Kodiak, Alaska, after multiple failures with towing operations. In February 2013, the Coast Guard announced that it had found 16 serious safety and environmental violations on the *Kulluk*. Shell was forced to scrap the drillship. Various government reports faulted Shell for failures ranging from inadequate operations planning to inadequate oversight of contractors, and indeed Shell’s primary contractor, Noble, has now pled guilty to eight environmental felonies committed during the drilling season. Shell’s experience in 2012 shows conclusively that Shell is incapable of operating safely in the Arctic environment.

The IHA Does Not Comply with the Marine Mammal Protection Act

NMFS’s proposed IHA for Shell fails to comply with the Marine Mammal Protection Act in a number of key respects. First, it authorizes the takes of more than small numbers of several marine mammal species, including species listed under the Endangered Species Act (ESA). Second, it fails to ensure that Shell’s activities will have no more than a negligible impact on marine mammal species. Third, it does not impose mitigation measures that ensure that the

⁷ Arctic SDEIS at 4-13 through 4-18.

⁸ *Id.* at 4-14 through 4-16.

activities will have the least practicable adverse impacts on marine mammals in the Chukchi Sea. We discuss each of these deficiencies in turn.

I. Small Numbers

The proposed IHA estimates Shell's activity would take 2,582 bowhead whales (13.2 percent of the population⁹), 2,581 gray whales (13.5 percent of the population), and 50,433 ringed seals (16.8 percent of the population) in the first year of its operations alone.¹⁰ NMFS apparently proposes to authorize this level of take.¹¹ These numbers represent neither a "small" number of marine mammals nor a "small" proportion of the affected stock. A "definition of 'small number' that permits the potential taking of as much as 12% of the population of a species is plainly against Congress' intent."¹² The proposed authorization, as written, is contrary to the MMPA small numbers limitation.

NMFS does not attempt to explain how its take estimates meet the "small numbers" requirement. In fact, the IHA here disregards this statutory requirement. Although the statutory language is mentioned, NMFS does not attempt to define small numbers, nor does it undertake any sort of analysis of what small numbers might be. The Ninth Circuit has confirmed that the MMPA requires the authorizing agencies (in this case NMFS) to separately find both that only small numbers of marine mammals will be harmed and that the impacts to the species or stock will be negligible.¹³ While NMFS attempted to rationalize its determination that impacts to the species or stocks will be negligible, it undertook no such analysis regarding small numbers.

In failing to separately analyze the small numbers standard and the negligible impact standard, NMFS defied clear congressional intent. As the Ninth Circuit stated in *CBD v. Salazar*, "[l]egislative history confirms our reading of the statute if such confirmation is needed. The House Report accompanying Section 101(a)(4)-(5) of the MMPA indicates that Congress intended 'small numbers' and 'negligible impact' to serve as two separate standards."¹⁴ The requirement that NMFS authorize the take of only "small numbers" of individual animals is no mere technicality. Congress's intent was that the MMPA protect not only populations, but

⁹ Although NMFS does not explain the origins of the IHA's population estimates, it appears the IHA's bowhead population estimate is based on the North Slope Borough's 2011 bowhead census, which estimated a population of 16,892 whales, with an annual growth rate of 3.7 percent. NMFS's own population estimate for bowhead whales in the Bering-Chukchi-Beaufort stock is significantly lower: 7,000-10,000 whales. See

<http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bowheadwhale.htm>. Given the significant discrepancies between these estimates NMFS should apply a precautionary approach and use its own official population estimate.
¹⁰ 80 Fed. Reg. at 11,766.

¹¹ NMFS in various places states it believes the take estimates are conservative and may overstate the actual number of marine mammals taken. As described above, with respect to bowhead whales, at least, NMFS likely understates the number of whales that will be taken. In any case, the MMPA is clear that NMFS must ensure the number of takes it authorizes is small and the impacts negligible, even if it anticipates takes will be lower than authorized. See *Conservation Council for Hawaii v. National Marine Fisheries Serv.*, Civ. No. 13-00684 (D. Hawaii, March 31, 2015).

¹² *Natural Res. Def. Council v. Evans*, 279 F. Supp. 2d 1129, 1152 (N.D. Cal. 2003). In 2008, NMFS acknowledged that harassment of 12-14% of western Arctic bowheads represented "a sizeable portion" of the stock. 73 Fed. Reg. 66,106, 66,111 (Nov. 6, 2008).

¹³ *Ctr. for Biological Diversity v. Salazar*, 695 F.3d 893, 907 (9th Cir. 2012).

¹⁴ *Id.* at 911.

individual marine mammals.¹⁵ While the “negligible impact” standard should serve to protect the species or population as a whole, the “small numbers” requirement guarantees that Congress’s directive to protect individual marine mammals is carried out. The IHA here violates the MMPA because it does not guarantee that only small numbers of marine mammals will be taken.

In addition, with respect to bowhead whales, even the large take numbers NMFS estimates likely are an underestimate. Whereas in 2012 the agency assessed take in the Chukchi Sea assuming static density, it now recognizes animals move through the ocean, and it assesses take assuming there will be a turn-over of animals in the ensonified zone every 24 hours. For bowhead whales, however, it discounts the number of whales it estimates will be taken by 50 percent.¹⁶ It bases this reduction on two historical studies that showed bowhead whales avoided drilling by 18-20 km, where sounds in the water were less than 120 dB.¹⁷ However, the fact that bowhead whales may begin to avoid drilling when encountering sounds below 120 dB should counsel caution and an increase the take estimate, not a discount. Whale diversion below 120 dB cannot be a basis for reducing the estimate of take, since the diversion itself is presumptively take. Further, the 120-dB level B take threshold for whales already takes into account that some individual whales divert at lower sound thresholds.¹⁸ Consistent with this approach, when NMFS has in the past taken bowhead movement into account in assessing take, as it did in its IHA for Shell’s Beaufort Sea drilling in 2012, it has not employed a further discount.¹⁹ NMFS has not justified the 50% discount, and it should not employ any discount here. Finally, NMFS itself acknowledges that sounds from Shell’s operations, namely anchor handling, will reach beyond 20 km from the operations.²⁰

II. Negligible Impact

There are a number of problems with NMFS’s negligible impact analysis. Generally speaking, it fails to account for the known fact that marine mammals respond to impulsive sounds well below the 120-dB and 160-dB thresholds. It also underestimates the effects of anthropogenic sound on marine mammals. These failings bring NMFS’s negligible impacts conclusions into question for all of the marine mammals that will be harassed. Moreover, NMFS’s negligible impact analysis for ringed seals—of which more than 50,000 may be harassed—does not incorporate the best available science or demonstrate that impacts will be negligible.

¹⁵ See 16 U.S.C. § 1362 (18)(A) (definition of “harassment” expressly applies to acts that affect “a marine mammal or marine mammal stock in the wild.”); see also *Natural Res. Def. Council v. Evans*, 364 F. Supp. 2d at 1083 1109 (N.D. Cal. 2003) (“In expressing concern about harassment to ‘a marine mammal,’ Congress was concerned about harassment to individual animals.”).

¹⁶ 80 Fed. Reg. at 11,766-67.

¹⁷ *Id.*

¹⁸ See 77 Fed. Reg. 27,322, 27,326 (May 9, 2012) (“The 120-dB and 160-dB acoustic criteria are generalized thresholds based on the available data that is intended to assist in the accurate assessment of take while acknowledging that sometimes animals will respond at received levels below that and sometimes they will not respond in a manner considered a take at received levels above 120 dB.”). See also *id.* at 27,290, 27,295.

¹⁹ 77 Fed. Reg. 27,284, 27,311 (May 9, 2012).

²⁰ 80 Fed. Reg. at 11,766, 11,764.

A. Marine Mammals Respond to Noise at lower levels

The proposed IHA calculates harassment based on the exposure of marine mammals to impulse sounds (airgun surveying) at or above 160 dB and non-impulse sounds (drilling and ice breaking) at or above 120 dB. NMFS's uniform marine mammal harassment thresholds, however, do not consider the documented reactions of specific Arctic species to much lower received levels. Critically, the generic thresholds do not reflect the MMPA definition of harassment to include even those actions with the "potential" to disturb marine mammals. That definition supports the conclusion that all of the animals in a population are harassed "if there is the *potential* for the act to disrupt the behavioral patterns of the most sensitive individual in the group."²¹

For example, migrating bowheads may respond to non-impulsive noise below the 120-dB threshold: a recent USGS report notes reactions to drillship noise at 110-115 dB.²² Migrating bowheads may avoid icebreaking at distances of up to 25 kilometers.²³ The USGS report also recognizes the well-documented phenomenon of beluga whales responding to icebreakers at great distances, considered "among the most cited and dramatic in the literature."²⁴ Reactions have been detected as far as 80 kilometers away.²⁵ Drilling noise has also provoked reactions in beluga whales below the 120-dB threshold.²⁶ Harbor porpoises similarly have been shown to be exceptionally sensitive to noise, and NMFS has used 120 dB as the appropriate threshold when authorizing marine mammal take for Navy sonar activities.²⁷

For impulsive sounds, studies confirm that migrating bowhead whales react at levels well below 160 dB. A 2007 comprehensive review of existing literature found that for migrating bowheads "the onset of *significant behavioral disturbance* from multiple pulses occurred at [received levels] around 120 dB re: 1 μ Pa[.]"²⁸ Gray whales are also known to react to impulsive sounds below 160 dB.²⁹ Moreover, a single seismic survey has been shown to cause endangered fin and humpback whales to stop vocalizing—a behavior essential to breeding and foraging—over an area at least 100,000 square nautical miles in size, and can cause baleen whales to abandon habitat over the same scale.³⁰ Similarly, a low-frequency, high-amplitude fish mapping

²¹ *Natural Res. Def. Council*, 279 F. Supp. 2d at 1157 (emphasis added).

²² USGS report at 92; *see also* USGS Report at 181.

²³ NMFS, Biological Opinion, Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska; and Authorization of Small Takes Under the Marine Mammal Protection Act at 82 (July 18, 2008) (2008 BiOp).

²⁴ USGS Report at 183.

²⁵ *Id.*

²⁶ Southall, et al., Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations, 33(4) *Aquat. Mamm.* 446, 464 (Table 16); 466 (Table 17) (2007).

²⁷ 73 Fed. Reg. 60,754, 60,806 (Oct. 14, 2008) (noting harbor porpoise data suggesting "a very low threshold level of response [to a variety of sound sources] for both captive and wild animals").

²⁸ Southall, et al., Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations, 33(4) *Aquat. Mamm.* 446, 452 (2007) (Southall 2007) (emphasis added). *See also* 76 Fed. Reg. at 69,971 (noting "strong" avoidance reactions).

²⁹ National Research Council, *Ocean Noise and Marine Mammals* at 93-94 (2003).

³⁰ Clark, C.W., and Gagnon, G.C., Considering the temporal and spatial scales of noise exposures from seismic surveys on baleen whales (2006) (IWC Sci. Comm. Doc. IWC/SC/58/E9); *see also* MacLeod, K., Simmonds, M.P., and Murray, E., Abundance of fin (*Balaenoptera physalus*) and sei whales (*B. borealis*) amid oil exploration and development off northwest Scotland, *Journal of Cetacean Research and Management* 8: 247-254 (2006).

device was recently found to silence humpback whales at distance of 200 km, where received levels ranged from 88 to 110 dB.³¹ These examples are consistent with the broader literature showing a range of responses below the 120-dB threshold for non-impulsive sounds and the 160-dB threshold for impulsive sounds. NMFS's continued use of outdated thresholds is irrational.

Moreover, in its review of anthropogenic sound impacts, NMFS relies on just a few limited studies—some of which are as much as 40 years old, contain very low sample sizes and rely on outdated technology and science—and uses these narrow results to generalize across species. More recent studies with improved technology and science demonstrate that the true magnitude and extent of anthropogenic sound impacts on marine mammals is significantly more severe than older studies revealed.³²

B. NMFS Underestimates the Effects of Anthropogenic Noise on Marine Mammals

NMFS fails to consider numerous severe and population level effects of anthropogenic noise on marine mammals. Weilgart (2007) demonstrates that the estimated received sound levels for various marine species are often not high enough to cause hearing damage, but nonetheless result in physiological, behavioral, and ecological impacts at both individual and population levels.³³ As a result, NMFS's reliance on only a few limited studies regarding temporary impacts to organisms' auditory systems is outdated and is not a singularly appropriate indicator for noise impacts. Furthermore, short-term effects are inappropriate proxies for true biologically significant impacts on cetaceans, particularly at long-term and population levels. Localized and transient auditory impacts can have severe and prolonged population consequences for which NMFS has not accounted.

In addition, NMFS underestimates the number of takes resulting from non-auditory disturbance and impacts. More recent studies³⁴ demonstrate that, in addition to auditory impairment and/or permanent damage, marine mammals are clearly affected by sound energy events in numerous other ways and at far greater distances (as much as 3,000 km)³⁵ and geographic extents (300,000 km²).³⁶ This can include increased neuroendocrine and adrenocortical damage and stress levels,³⁷ critical habitat abandonment,³⁸ masking,

³¹ Risch, D., Corkeron, P.J., Ellison, W.T., and van Parijs, S.M., Changes in humpback whale song occurrence in response to an acoustic source 200 km away, PLoS ONE 7(1): e29741. doi:10.1371/journal.pone.0029741 (2012).

³² See, e.g., Weilgart, L. S. (2007). The impacts of anthropogenic ocean noise on cetaceans and implications for management. *Canadian Journal of Zoology*, 85(11), 1091-1116.

³³ *Id.*

³⁴ See *id.*

³⁵ Nieuwkerk, S. L., Stafford, K. M., Mellinger, D. K., Dziak, R. P., & Fox, C. G. (2004). Low-frequency whale and seismic airgun sounds recorded in the mid-Atlantic Ocean. *The Journal of the Acoustical Society of America*, 115(4), 1832-1843.

³⁶ International Whaling Commission. 2005. Report of the Scientific Committee. Annex K. Report of the Stranding Working Group on Environmental Concerns. *J. Cetacean Res. Management*, 7(Suppl.):267-305.

³⁷ Weilgart (2007); Romano, T.A., Keogh, M.J.I, Kelly, C., Feng, P., Berk, L., Schlundt., C.E., Carder, D.A., and J.J. Finneran. 2004. Anthropogenic Sound and marine Mammal Health: Measures of the Nervous and Immune Systems Before and After Intense Sound Exposure. *Can. J. Fish and Aquat. Sci.* 61:1124-1134.

no/reduced/raised vocalizations (which have accompanying physiological behavioral, and demographic impacts),³⁹ natural sound and prey obstructions along with physiological damage to prey and reduced prey abundances,⁴⁰ decreased foraging and/or foraging efficiency,⁴¹ decreased mating and recruitment,⁴² and increased hemorrhaging,⁴³ diffuse congestion,⁴⁴ nitrogen

³⁸ International Whaling Commission (2005); International Whaling Commission. 2007. Report of the Scientific Committee. Annex K. Report of the Stranding Working Group on Environmental Concerns. J. Cetacean Res. Management, 9(Suppl.):227-296; Morton, A.B. and H.K. Symonds. 2002. Displacement of *Orcinus orca* (L.) By High Amplitude Sound in British Columbia. ICES J. Mar. Sci. 59:71-80; Olesiuk, P.F., Nichol, L.M., Sowden, M.J., and J.K.B. Ford. 2002. Effect of Sound Generated by an Acoustic Harassment Device on the Relative Abundance and Distribution of Harbor Porpoises (*Phocoena phocoena*) in Retreat Passage, British Columbia. Mar. Mamm. Sci. 18:843-862; Jones, M.L., Swartz, S.L. and M.E. Dahlheim. 1994. Census of Gray Whale Abundance in San Ignacio Lagoon: A Follow-up Study in Response to Low Whale Counts Recorded During an Acoustic Playback Study of Noise Effects on Gray Whales. Rep. No. NTIS PB94195062 to the U.S. Marine Mammal Commission. Washington, D.C.; Cosens, S.E. and Dueck, L.P. 1993. Ice Breaker Noise in Lancaster Sound, NWT, Canada: Implications for Marine Mammal Behavior. Mar. Mamm. Sci. 9:285-300; Finley, K.J., Miller, G.W., Davis, R.A. and Greene, C.R. 1990. Reactions of Belugas, *Delphinapterus leucas*, and narwhals, *Monodon monoceros*, to Ice-breaking Ships in the Canadian High Arctic. Can. Bull. Fish Aquat. Sci. 224:97-117.

³⁹Croll, D.A., Clark, C.W., Acevedo, A., Tershy, B., Flores, S., Gedamke, J., and J. Urban. 2002. Only Male Fin Whales Sing Loud Songs. Nature (London). 417:809; Erbe, C. 2002. Underwater Noise of Whale-watching Boats and Potential Effects on Killer Whales (*Orcinus orca*), Based on an Acoustic Impact Model. Mar. Mamm. Sci. 18:394-418; Stearns, S.C. and Hoekstra, R. 2000. Evolution: An Introduction. Oxford University Press, London; Tyack, P.L. and C.W. Clark. 2000. Communication and Acoustic Behavior of Dolphins and W/hales. Pp. 156-224. In: Hearing by Whales and Dolphins. W. Au., A.N. Popper, and R. Fay (eds). Springer Handbook of Auditory Research Series. Springer-Verlag, New York; Erbe, C. and D.M. Farmer. 2000. Zones of Impact Around Ice-breakers Affecting Beluga Whales in the Beaufort Sea. J. Acoust. Soc. Am. 108:1332-1340; Lesage, V., Barrette, C. Kingsley, M.C.S. and B. Sjare. 1999. The Effect of Vessel Noise on the Vocal Behavior of Belugas in the St. Lawrence River Estuary, Canada. Mar. Mamm. Sci. 15:65-84; Andre, M. Kamminga, C. and D. Ketten. 1997. Are Low-frequency Sounds a Marine Hazard: A Case Study in the Canary Islands. In: Proceedings of the Underwater Bio-Sonar Systems and Bioacoustics Symposium, Loughborough University, Leicestershire, UK. 16-17 December 1997. Institute of Acoustics, Hertfordshire, UK; Todd, S., Stevick, P., Lien, J. Marques, F., and Ketten, D. 1996. Behavioural Effects to Underwater Explosions in Humpback Whales (*Megaptera novaeangliae*). Can. J. Zool. 74:1661-1872; Au, W.W.L. 1993. The Sonar of Dolphins. Springer-Verlag, New York.

⁴⁰ McCauley, R.D., Fewtrell, J., and A.N. Popper. 2003. High Intensity Anthropogenic Sound Damages Fish Ears. J. Acoust. Soc. Am. 638-642; Weilgart (2007); Slotte, A., Hansen, K., Dalen, J. and E. One. 2004. Acoustic Mapping of Pelagic Fish Distribution and Abundance in Relation to a Seismic Shooting Area off the Norwegian West Coast. Fish Res. 67:143-150; Hassel, A. Knutsen, T., Dalen, J., Skaar, K., Lokkeborg, S., Misund, O.A., Ostensen, O., Fonn, M., and E.K. 2004. Influence of Seismic Shooting on the Lesser Sandeel (*Ammodytes marinus*). ICES J. Mar. Sci. 61:1165-1173; Engas, A. Lokkeborg, S., Ona, E., and A.V. Soldal. 1996. Effects of Seismic Shooting on Local Abundance and Catch Rates of Cod (*Gadus morhua*) and Haddock (*Melanogrammus aeglefinus*). Can. J. Fish Aquat. Sci. 53:2238-2249; Skalski, J.R., Pearson, W.H. And C.I. Malme. 1992. Effects of Sounds From a Geophysical Survey Device on Catch-Per-Unit-Effort in a Hook-And-Line Fishery for Rockfish (*Sebastes* spp.). Can. J. Fish Aquat. Sci. 49:1357-1365; Lokkeborg, S. 1991. Effects of a Geophysical Survey on Catching Success in Longline Fishing. ICES C.M. B:40; Dalen, J. and Knutsen, G.M. 1987. Scaring Effects on Fish and Harmful Effects on Eggs, Larvae and Fry by Offshore Seismic Explorations. Pp. 93-102. In: Progress in Underwater Acoustics. H.M. Merklinger (ed.). Plenum Press, New York.

⁴¹ Weilgart (2007); International Whaling Commission (2007); Aguilar Soto, N., Johnson, M., Madsen, P.T., Tyack, P.T., Bocconcelli, A., and J.F. Borsani. 2006. Does Intense Ship Noise Disrupt Foraging in Deep-Diving Cuvier's Beaked Whales (*Ziphius cavirostris*)? Mar. Mamm. Sci. 22:690-699.

⁴² Weilgart (2007).

⁴³ National Oceanic and Atmospheric Administration and U.S. Department of the Navy. 2001. Joint Interim Report: Bahamas Marine Mammal Stranding Event of 15-16 March 2000. U.S. Department of Commerce, Washington, D.C.

⁴⁴ Fernandez et al. (2005).

supersaturation of up to 400-900 percent,⁴⁵ embolisms,⁴⁶ vestibular responses such as vertigo,⁴⁷ resonance in air sacs,⁴⁸ and mortalities, particularly of younger individuals due to less physiological development and lower resistance.⁴⁹ Importantly, many of these impacts can occur at sound levels < 120-150 dB and at distances significantly greater than the proposed exclusion zones.⁵⁰ For some whale species with relatively low intrinsic rates of increase, what may appear to observers as “minor” effects may cause population declines.⁵¹

It is important to note that many of these effects are not limited to seismic airgun testing and also include associated ship (particularly ice breaking), air and underwater construction activities.⁵² Furthermore, species presence in activity areas does not necessarily indicate tolerance. Many species can be strongly motivated to remain in areas and risk disturbance when they have critical foraging needs or reproductive drivers.⁵³ In fact, in some cases, permanent auditory damage has already occurred from anthropogenic sound sources, and such damage should not be misinterpreted as assumed tolerance.⁵⁴ To the contrary, such damage significantly hinders those individuals’ abilities to avoid further impacts or to function effectively and perform all normal tasks necessary for survival.⁵⁵

Moreover, noise exposure is likely to result in stress, and stress can impair an animal’s immune system.⁵⁶ Stress can occur even in the absence of any behavioral change or exclusion

⁴⁵ Tyack, P.L., Johnson, M. Aguilar Soto, N., Sturlese, A., and P.T. Madson. 2006. Extreme Diving of Beaked Whales. *J. Exp. Biol.* 209:4238-4253.

⁴⁶ Cox, T.M., Ragen, T.J., Read, A.J., Vos, E., Baird, R.W., Balcomb, K., Barlow, J., Caldwell, J., Cranford, T., Crum, L., D’Amico, A., D’Spain, G., Fernandez, A., Finneran, J., Gentry, R., Gerth, W., Gulland, F., Hildebrand, J., Houser, D., Hullar, T., Jepson, P.D., Ketten, D., McLeod, C.D., Miller, P., Moore, S., Mountain, D., Palka, D., Pongranis, P., Rommel, S., Rowles, T., Taylor, B., Tyack, P., Wartzok, D., Gisiner, R., Mead, J., and L. Benner. 2006. Understanding the Impacts of Anthropogenic Sound on Beaked Whales. *J. Cetacean Res. Manag.* 7:177-187.

⁴⁷ *Id.*

⁴⁸ Weilgart (2007); Cox et al. (2006).

⁴⁹ Weilgart (2007); Bejder, L. 2005. Linking Short and Long-term Effects of Nature-based Tourism on Cetaceans. Ph.D. Thesis. Department of Biology, Dalhousie University, Halifax, N.S.; Miller, P.J.O., Biasson, N., Samuels, A., and P.L. Tyack. 2000. Whale Songs Lengthen in Response to Sonar. *Nature (London)*, 405:903.

⁵⁰ Weilgart (2007); International Whaling Commission (2005); Nieukirk et al. (2004).

⁵¹ Whitehead et al. (2000).

⁵² Weilgart (2007).

⁵³ Weilgart (2007); Bejder, L., Samuels, A., Whitehead, H. and Gales, N. 2006. Interpreting Short-term Behavioural Responses to Disturbance Within a Longitudinal Perspective. *Anim. Behav.* 72:1149-1158; Augeri, D.M. 2005. On the Biogeographic Ecology of the Malayan Sun Bear. Ph.D. Dissertation. School of Biological Sciences, University of Cambridge, Cambridge, UK. 333 pp; Stillman, R.A. and J.D. Gross-Custard. 2002. Seasonal Changes in the Response of Oystercatchers *Haematopus ostralegus* to Human Disturbance. *J. Avian Biol.* 33:358-365; Frid, A. and L. Dill. 2002. Human-Caused Disturbance Stimuli as a Cause of Predation Risk. *Conservation Ecology*, 6(1):11; Gill, J.A., Norris, K., and Sutherland, W.J. 2001. Why Behavioural Responses May Not Reflect The Population Consequences of Human Disturbance. *Biol. Conserv.* 97:265-268; Gill, J. A., and W. J. Sutherland. 2000. Predicting the Consequences of Human Disturbance from Behavioural Decisions. Pages 51-64. In: L. M. Gosling and W. J. Sutherland, editors. *Behaviour and Conservation*. Cambridge University Press, Cambridge, UK. 450 pp.; Gill, J. A., W. J. Sutherland, and A. R. Watkinson. 1996. A Method to Quantify the Effects of Human Disturbance on Animal Populations. *Journal of Applied Ecology* 33:786- 792.

⁵⁴ Weilgart (2007); Bejder et al. (2006).

⁵⁵ Augeri (2005); Stillman and Goss-Custard (2002); Frid and Dill (2002); Gill et al. (1996); Gill et al. (2001); Gill and Sutherland (2000).

⁵⁶ Wright, A.J. et al., Do Marine Mammals Experience Stress Related to Anthropogenic Noise?, *International Journal of Comparative Psychology* 20:274-316; Romano T.A., M.J. Keogh, C. Kelly., P. Feng, L. Berk, C.E.

from habitat. The consequences will depend on the duration of exposure, population condition and other factors like exposure to pathogens and immunosuppressing compounds. Indeed, the Navy has conservatively assumed in its EISs for active sonar training that any effect sufficient to produce a behavioral response that causes take under the MMPA will also produce a stress-response and contribute to a marine mammal's allostatic load.⁵⁷ A recent New England Aquarium study of North Atlantic right whales, the closest relative of the bowhead whale, indicates that shipping noise alone can induce chronic stress in marine mammals.⁵⁸ NMFS must incorporate chronic stress into its impact analysis; without such analysis its negligible impact conclusions are irrational.

C. *Effects on seals are not negligible*

Ringed seals were recently listed as threatened under the Endangered Species Act because the loss of their sea ice habitat will likely drive the seals to extinction if climate change continues unabated.⁵⁹ Despite ringed seals' precarious position, NMFS's negligible impact analysis for the threatened species is cursory, inadequate and misleading. Despite authorizing the take of more than 50,000 ringed seals, which is nearly 17 percent of the entire population, in its negligible impact analysis NMFS relies on the unsupported statement that "[f]ew seals are expected to occur in the proposed project area."⁶⁰ This is blatantly inconsistent with the level of take authorized. Moreover, NMFS asserts that "Shell's proposed activities would occur at a time of year when the ice seal species found in the region are not molting, breeding or pupping."⁶¹ This statement is uncited and does not reflect the best available science. Shell's activities are likely to have a more than negligible impact on threatened ringed seals, especially at the beginning and end of the drilling season.

Early season impacts. Ice management and ice-breaking activities in July, as well as heavy vessel traffic and noise pollution, have the potential to disrupt essential ringed seal molting activities and degrade molting habitat in a large area surrounding the drilling site, with potentially harmful effects on ringed seal survival. Ringed seals leave the water for long periods of time to bask in the sun on pack ice and landfast ice during the molting period that lasts through mid-to-late July off Alaska.^{62,63} Scientists have reported that ringed seals in Alaskan

Schlundt, D.A. Carder, J., Finneran, Anthropogenic Sound and Marine Mammal Health: Measures of the Nervous and Immune Systems Before and After Sound Loud Enough to Shift Hearing Threshold, *Canadian Journal of Fisheries and Aquatic Sciences* 61:1124–1134 (2004).

⁵⁷ See e.g., U.S. Navy, Southern California Range Complex: Environmental Impact Statement/ Overseas Environmental Impact Statement, at 3.9-102 (2008).

⁵⁸ Rolland, R.M., Parks, S.E., Hunt, K.E., Castellote, M., Corkeron, P.J., Nowacek, D.P., Wasser, S.K., and Kraus, S.D., Evidence that ship noise increases stress in right whales, *Proceedings of the Royal Society B: Biological Sciences* doi:10.1098/rspb.2011.2429 (2012).

⁵⁹ 77 Fed. Reg. 76706 (Dec. 28, 2012).

⁶⁰ 80 Fed. Reg. 11767.

⁶¹ *Id.*

⁶² Kelly, B.P., J. L. Bengtson, P. L. Boveng, M. F. Cameron, S. P. Dahle, J. K. Jansen, E. A. Logerwell, J. E. Overland, C. L. Sabine, G. T. Waring, and J. M. Wilder 2010a. Status review of the ringed seal (*Phoca hispida*). U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-212, 250 p.

⁶³ Kelly, B. P., O. H. Badajos, M. Kunnsaranta, J. R. Moran, M. Martinez-Bakker, D. Wartzok, and P. Boveng. 2010b. Seasonal home ranges and fidelity to breeding sites among ringed seals. *Polar Biology* 33:1095–1109.

waters spend about 30 percent of their time in July basking on sea ice.⁶⁴ Seals spend long bouts on top of the sea ice (with a median bout duration of nine hours) to maintain elevated skin temperatures for regenerating skin and hair.⁶⁵ NMFS has emphasized that sea ice habitat for molting is essential for ringed seal conservation, where disruption of molting could incur increased energetic costs: “Sea ice habitat suitable as a platform for basking and molting is essential to conservation of the Arctic ringed seal because molting is a biologically important, energy-intensive process that could incur increased energetic costs if it were to occur in water, or increased risk of predation if it were to occur on land.”⁶⁶ NMFS has also stated that ringed seals would be at increased risk from parasites and disease if they were unable to successfully complete their molt.⁶⁷

Shell’s proposed ice management and ice-breaking activities have the potential to disrupt essential ringed seal molting activities in July in a large region surrounding the drilling site, which could have harmful consequences for ringed seal survival. The ice management fleet includes two ice management vessels, two anchor handler/icebreakers, and two ice-scouting vessels. The sea ice habitat area affected by ice-breaking activities is substantial. The ice management vessels will operate at distances of 20 miles (32 km) from the drilling site, while the ice-scouting vessels will operate at distances of 30 miles (48 km) from the drilling site,⁶⁸ which equates to an affected area of ~2827 square miles or more surrounding the drilling site. Ice management activities include continual vessel movements to deflect ice floes and ice-breaking activities. Ice management is predicted to occur in July and October⁶⁹ when ice is typically present in the drilling area of the Chukchi Sea.

Continual disturbance from ice management vessels and ice-breaking activities will flush molting seals from ice floes and interrupt the long basking periods needed for successful molting. Ice management activities are likely to reduce ringed seal use of sea ice habitat in the large region (~2827 square miles) surrounding the drilling site. Ice-breaking activities are also likely to degrade the quality of the sea ice habitat for molting seals in this region.

Late season impacts. Ice management and ice-breaking activities, vessel traffic, and noise disturbance in September and October have the potential to displace large numbers of ringed seals and prevent them from occupying wintering areas and breeding areas in the offshore pack ice, with potential harms to survival. Studies have established that ringed seals winter and breed in the offshore pack ice areas in the Chukchi Sea where Shell’s drilling activities will occur. Surveys by Bengtson et al. (2005) documented ringed seals during the spring breeding season in the offshore pack ice area that encompasses the Burger Prospect.⁷⁰ Recent surveys using acoustic recorders found that ringed seals are present year-round in the northeastern Chukchi Sea at locations ranging up to 200 km from shore. Increased call rates and changes in call repertoire during the winter and spring suggest that ringed seals are breeding in these

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ 79 Fed. Reg. 73014.

⁶⁷ *Id.*

⁶⁸ 80 Fed. Reg. 11727.

⁶⁹ *Id.*

⁷⁰ Bengtson, J. L., L. M. Hiruki-Raring, M. A. Simpkins, and P. L. Boveng. 2005. Ringed and bearded seal densities in the eastern Chukchi Sea, 1999-2000. *Polar Biology* 28:833-845 (see Figure 1 and Table 2 of this study).

areas.^{71,72} Studies in shorefast ice off Alaska have also found that ringed seals exhibit strong fidelity to breeding sites from year to year and are confined to very small ranges for up to 10 months each year, with the exception of the summer months of August and September.⁷³ When shorefast ice forms in September and October, ringed seals re-occupy nearly the identical home range used the previous winter and spring.⁷⁴ Although similar studies have not been conducted in pack ice, it is possible that ringed seals may show similar site fidelity to wintering and breeding areas in pack ice. When shorefast and pack ice start to consolidate and thicken in fall, ringed seals use their claws to keep breathing holes open in the ice.

Shell's proposed ice management and ice-breaking activities, vessel traffic, and noise disturbance in September and October will create a large footprint of disturbance that has the potential to displace returning ringed seals from their wintering areas and from areas that they would later use for breeding in the spring. Disturbance, particularly in October, that prevents seals from creating and maintaining breathing holes in consolidating and thickening sea ice may preclude seals from using those areas in the winter and spring after Shell's drilling-related activities have ended. In addition to ice management activities and the heavy vessel activity in the drilling region, three resupply vessels will potentially make trips between Kotzebue Bay and the drilling site,⁷⁵ and in the event that oil spill response is needed, nearshore oil spill response vessels including a barge and tug will move between Kotzebue Bay and the spill area,⁷⁶ causing additional impacts to seals and seal habitat (including landfast ice habitat in fall) in a large region between the coast and the offshore drilling area. These disturbances that displace ringed seals from pack ice and landfast ice habitat could have negative impacts on ringed seal survival and recruitment.

III. Least Practicable Adverse Impact and Mitigation Measures

The MMPA requires NMFS to prepare regulations setting forth "permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat."⁷⁷ NMFS has failed to meet that requirement here. The mitigation measures NMFS has proposed are inadequate for protecting marine mammals from adverse impacts. NMFS has also failed to analyze the full range of available mitigation measures, especially with regard to time/area restrictions.

⁷¹ Hannay, D.E. et al. 2013. Marine mammal acoustic detections in the northeastern Chukchi Sea, September 2007-July 2011. *Continental Shelf Research* 67: 127-146.

⁷² Jones, J.M. et al. 2014. Ringed, bearded, and ribbon seal vocalizations north of Barrow, Alaska: seasonal presence and relationship with sea ice. *Arctic* 67: 203-222.

⁷³ Kelly, B. P., O. H. Badajos, M. Kunasranta, J. R. Moran, M. Martinez-Bakker, D. Wartzok, and P. Boveng. 2010b. Seasonal home ranges and fidelity to breeding sites among ringed seals. *Polar Biology* 33:1095-1109.

⁷⁴ *Id.*

⁷⁵ 80 Fed. Reg. 11727.

⁷⁶ *Id.* at 11728.

⁷⁷ 16 U.S.C. § 1371(a)(5)(A)(i)(II)(aa). *See also Conservation Council et al. v. NMFS et al.*, Civ. No. 13-00684 (D. Hawaii, Mar. 31, 2015) (holding that Navy's mitigation measures failed to ensure the least practicable adverse impact because they did not adequately consider time/area restrictions).

A. The proposed mitigation measures are inadequate

The proposed IHA's mitigation measures rely on visual monitoring of exclusion zones to keep marine mammals from encountering potentially injurious levels of noise. Past monitoring reports demonstrate the difficulty of monitoring these zones. For example, the ION Geophysical 90-day report stated there was serious, impaired visibility for protected species observers at distances greater than 2.2 miles.⁷⁸ The Open Water Peer Review Panel reviewing Shell's 2013 proposed activities also noted serious limitations of visual monitoring, stating for example that "the ability to sight animals declines with distance, and disturbance of animals beyond sighting distance may go undetected," and "observations become less efficient to the point of being completely ineffective as sighting conditions deteriorate (e.g., nighttime, high sea state, precipitation or fog)."⁷⁹ The ION Geophysical 90-day report noted that night vision devices and infrared camera systems had limitations: "[n]ights with fog, no ambient light, or heavy seas made observations nearly impossible."⁸⁰ Given the known inadequacies of these mitigation measures, it is irrational to rely upon them in determining how many marine mammals will be harassed or whether the impacts will be negligible.

B. The proposed mitigation measures omit reasonable time/area restrictions

NMFS should include provisions in the IHA that restrict Shell's operations based on geographic location, and/or time of year. For example, NMFS could restrict activities in certain areas, including subsistence use areas; areas of high productivity or diversity; areas that are important for feeding, migration, or other parts of the life history of species; or areas of biogenic habitat, structure-forming habitat, or habitat for endangered or threatened species. NMFS should examine the extent to which such restrictions may be more effective in reducing impacts to marine mammals than the use of monitored safety and exclusion zones. Area restrictions for Shell's proposed surveying might exclude activities such as helicopter flights, icebreaking and vessel traffic from sensitive habitats such as Hanna Shoal and migration corridors to such sensitive habitats. Time restrictions might require Shell to shut down its operations during peak migration periods through the proposed action area. In designing these mitigation measures, NMFS should avail itself of Western science, but should also seek input and traditional knowledge from North Slope communities, organizations and individuals.

The EA Does Not Comply with the National Environmental Policy Act

Among NEPA's many requirements, the analysis of a range of alternatives is perhaps the most important. Another essential aspect of NEPA is the analysis of cumulative impacts, which acknowledges that the harm from numerous factors may be greater than the sum of its parts. NMFS's alternatives analysis in the environmental assessment (EA) for the proposed IHA is an improvement over prior NEPA documents but is still inadequate. Its cumulative impacts

⁷⁸ ION Geophysical, Marine Mammal Monitoring and Mitigation During a Marine Seismic Survey by ION Geophysical in the Arctic Ocean, October-November 2012: 90-Day Report, at 4-6 through 4-7 (February 2013) (ION Report).

⁷⁹ 2013 NMFS Open Water Peer Review Panel Monitoring Plan Recommendations Report at 3-4.

⁸⁰ ION Report at xii.

analysis, on the other hand, is embarrassingly deficient and does not come close to meeting the mandates of NEPA, especially with regard to climate change.

I. Alternatives Analysis

In preparing an EIS, agencies must “rigorously explore and objectively evaluate all reasonable alternatives” to the proposed action.⁸¹ Agencies must identify and assess those alternatives that would “avoid or minimize adverse effects of [proposed] actions upon the quality of the human environment.”⁸² The discussion of alternatives “is the heart of the [EIS].”⁸³ Further, the “consideration of alternatives is critical to the goals of NEPA” even where a proposed action does not trigger the EIS process.⁸⁴

As an initial matter, we applaud NMFS for finally treating the no action alternative as a true no action alternative. In this EA NMFS has admitted that Shell cannot legally proceed with its exploration plan without MMPA authorization from NMFS, and that all potential harms would be avoided were NMFS to refuse MMPA authorization. We also appreciate NMFS’s inclusion of two realistic alternatives that include fewer impacts than the preferred alternative. We do, however, believe that NMFS could explore a wider range of alternatives. The two lower-impact alternative analyses essentially result in the same or similar levels of impacts to one another. Additional alternatives could include the closures of particular areas, as described above in the discussion of time/area restrictions.

II. Cumulative Impacts of Climate Change

NMFS gives short shrift to cumulative impacts. In the absence of the long-delayed programmatic EIS, full consideration of cumulative impacts is especially important here. Yet NMFS undergoes virtually no original analysis of cumulative impacts for this IHA. Nowhere is this more obvious than in the section discussing the cumulative impacts of Shell’s activities and climate change. The climate change section in the EA appears to have been copied and pasted from prior EAs for other oil and gas activities.⁸⁵ The most recent study cited in this section is from 2011, and NMFS heavily relies on a climate assessment that was published in 2004. It should go without saying that the state of climate science has advanced by leaps and bounds in the past decade. NMFS’s failure to even attempt to engage the recent science on climate change and how it is affecting Arctic species is unsupportable.

For example, the section about cumulative impacts of climate change states that “there are insufficient data to make reliable predictions of the effects of Arctic climate change on the

⁸¹ 40 C.F.R. § 1502.14(a).

⁸² *Id.* at § 1500.2(e).

⁸³ *Id.* § 1502.14.

⁸⁴ *See, e.g., Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228-29 (9th Cir. 1988).

⁸⁵ In fact, in addition to reflecting past EAs, much of the draft EA here mirrors Shell’s IHA application. While it is reasonable for NMFS to rely to some extent on the applicant’s information, it is inappropriate for the agency to directly include a corporation’s analyses, descriptions, conclusions, and proposed mitigation measures without critical analysis. *See Conservation Council for Hawaii*, Civ. No. 13-00684 at *44 (stating that “NMFS only summarizes the Navy’s indication of impracticality without analyzing it at all. NMFS cannot just parrot what the Navy says. If NMFS is accepting the Navy’s position, NMFS must articulate a rational basis for that decision”).

Alaska ringed seal stock.”⁸⁶ To the contrary, NMFS itself predicted that the ringed seal will be in danger of extinction in the foreseeable future because of the loss of its sea ice habitat.⁸⁷ The entire rule listing ringed seals as threatened under the ESA contains data and predictions on this very topic, yet NMFS does not even mention the listing rule. NMFS applies this same head-in-the-sand approach to all Arctic species suffering from climate change, concluding that “[m]ore research is need to determine the magnitude of the impact, if any, of global warming to marine mammal species in the Arctic an subarctic regions.”⁸⁸ While the future will certainly bring more certainty about the effects of climate change on Arctic species, there is a wealth of existing data NMFS has utterly ignored. In addition to not engaging the most relevant science, NMFS has not even attempted to apply that science to the activities it is authorizing. In so doing, NMFS has failed to consider an important aspect of the problem and failed to use the best available science.

Thank you for the opportunity to comment on this proposal. As NMFS acknowledges, Shell cannot legally proceed with its Arctic drilling program without authorization from NMFS to harass marine mammals in the Chukchi Sea. We hope NMFS will withdraw the proposed authorization because of the many deficiencies outlined above.

Sincerely,

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⁸⁶ EA at 83.

⁸⁷ 77 Fed. Reg. 76707.

⁸⁸ EA at 84.