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NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Supplemental Environmental Assessment

on the Issuance of an Amendment to Scientific Research Permit No. 808-1735 for Vessel Surveys and Tagging of Beaked Whales in Antarctic Waters

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Document Supplemented:	Environmental Assessment on the Issuance of Two Scientific Research Permits for Vessel Surveys and Suction Cup Tagging Studies of Baleen Whales

Abstract: NOAA's National Marine Fisheries Service (NMFS), Office of Protected Resources, proposes to issue a major amendment to a scientific research permit for takes of marine mammals in the wild, pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*). The objective of the proposed research is to gain valuable baseline data on the biology, ecology, distribution, and behavior of rarely seen Arnoux's beaked whales in the Southern Ocean. The authorized action area for the proposed research would not change. Currently authorized research activities in the Southern Ocean would not be affected by the proposed amendment request. Under NOAA Administrative Order 216-6, NMFS' issuance of scientific research permits pursuant to MMPA Section 104 is, in general, categorically excluded from requirements of the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) to prepare an environmental assessment (EA) or environmental impact statement (EIS). NMFS prepared an EA in 2007 for issuance of the original permit. The EA analyzed research activities on baleen whales in the North Atlantic and Southern Oceans. Based on the analysis in the 2007 EA, NMFS determined that issuance of the original permit would not significantly impact the quality of the human environment but could result in "Level A harassment," as defined in the MMPA, of marine mammals. The proposed amendment would add Arnoux's beaked whales to the species that may be taken during vessel surveys for currently authorized research activities. The amendment would not alter any other aspects of the permitted

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activities. This Supplemental EA evaluates the potential impacts to the human environment from issuance of the proposed permit amendment by supplementing the 2007 EA's analysis of potential impacts on marine mammals.

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 Description of Action

In response to a request from Andrew Read, Ph.D., Duke University, NMFS proposes to issue an amendment to a scientific research permit (No. 1058-1733) that authorizes "takes"[1] by "Level A and B harassment"[2] of marine mammals in the wild pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*).

1.1.1 Background

Permit No. 808-1735 authorizes the permit holder to take humpback (*Megaptera novaeangliae*), blue (*Balaenoptera musculus*), fin (*B. physalus*), sei (*B. borealis*), and Antarctic minke (*B. bonaerensis*) whales in the Southern Ocean to examine their foraging behavior relative to krill patches. The permit authorizes the close approach of whales during vessel surveys for photo-identification, behavioral observation, tracking, and incidental harassment. A subset of whales may be suction-cup tagged during surveys. The permit is valid through May 31, 2012.

Dr. Read requests authorization to take Arnoux's beaked whales (*Berardius arnuxii*) during vessel surveys in the same manner as species already authorized by the permit. No other change in take would occur. The location and manner of take would not change as a result of this amendment. The amendment would be valid until the permit expires on May 31, 2012.

1.1.2 Purpose and Need

This section has not changed from that described in Section II. Purpose and Need of the previous Environmental Assessment (EA) prepared for Permit No. 808-1735 (NMFS 2007b). The primary purpose of the NMFS scientific research and enhancement special exception permitting program is to authorize takes of marine animals and/or endangered species for scientific purposes, to provide a better understanding of their basic biology and ecology, and to evaluate the cause(s) of population decline in order to develop conservation and protective measures to ensure species recovery.

The need for the proposed action arises from several sources. First, NMFS has a responsibility to implement the MMPA to conserve and recover marine mammal species under its jurisdiction, which includes species contained in the proposed action. The MMPA prohibits takes of marine animals with only a few very specific exceptions, including for scientific research/enhancement purposes. Hence, the applicant is required to obtain a permit to conduct the proposed research. Permit issuance criteria require that research activities are consistent with the purposes and

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[1] Under the MMPA, "take" is defined as to "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." [16 U.S.C. 1362(18)(A)] The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" is further defined by regulations (50 CFR §222.102) as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering."

[2] "Harass" is defined by regulation (50 CFR §216.3) as "Any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing a disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B harassment)."

policies of these Acts and that such activities would not have an adverse impact on the species or stocks.

A second reason for the proposed action is the need for additional information on the basic biology and ecology of the extremely rare Arnoux's beaked whale in the Southern Ocean. Very little is known or published on this species because it is so rarely seen. However, while conducting his permitted research, Dr. Read has sighted these whales. Dr. Read therefore has a rare opportunity to increase our understanding of the species' distribution, biology, ecology, movement patterns and behavior. This work would also allow researchers to generate a catalog of known individuals that can be used for a visual mark-recapture study.

Pursuant to Section 6.03f.2(a) of NOAA Administrative Order (NAO) 216-6, scientific research permits are generally categorically excluded from the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) requirements to prepare an environmental assessment (EA) or environmental impact statement (EIS). However, NMFS concluded that further environmental review was warranted to determine whether significant environmental impacts could result from issuance of the proposed scientific research permit. Therefore, this document evaluates the relevant effects of research activities involving close approach to Arnoux's beaked whales.

1.1.3 Objectives

In addition to the research objectives described in the 2007 EA prepared for Permit No. 808-1735, Dr. Read proposes to gain valuable baseline data on the biology, ecology, distribution, and behavior of Arnoux's beaked whales.

1.2 Other EA/EIS that Influence Scope of this Supplemental EA (SEA)

In response to the original application for a scientific research permit submitted by Dr. Read, NMFS prepared an EA on the issuance of a scientific research permit for vessel surveys and suction-cup tagging of baleen whales in the North Atlantic and Southern Ocean (NMFS 2007b). The EA examined the environmental consequences of two alternatives: No Action (denial of the permit) and the Proposed Action (permit issuance), which included mitigation measures that would be implemented as part of the permitted research. This was a batched EA that included analysis of Dr. Mark Baumgartner's proposed research in the Southern and North Atlantic Oceans. Dr. Read is not authorized to conduct research in the North Atlantic nor requesting work there as part of the proposed action.

A Finding of No Significant Impact (FONSI) was signed on June 25, 2007, based on information indicating that the short-term impacts of conducting vessel surveys would result in Level A harassment of some individual large whales, and that such harassment of individual animals was expected to have negligible impacts on the target animals and the species. An accompanying biological opinion was prepared for this action, which concluded that Permit No. 808-1735 would not jeopardize any endangered species or destroy or modify any critical habitat (NMFS 2007a).

Therefore, this SEA incorporates sections of the 2007 EA, where applicable, as noted in this document.

1.3 Scoping Summary

The purpose of scoping is to identify the issues to be addressed and the significant issues related to the Proposed Action, as well as to identify and eliminate from detailed study the issues that are not significant or that have been covered by prior environmental review. An additional purpose of the scoping process is to identify the concerns of the affected public and federal agencies, states, and tribes. Council on Environmental Quality (CEQ) regulations implementing NEPA do not require that a draft EA be made available for public comment as part of the scoping process.

Under the MMPA and its implementing regulations governing issuance of special exception permits for scientific research (50 C.F.R. §216.33), upon receipt of a valid and complete application for a new permit and the preparation of any required NEPA documentation, NMFS must publish a notice of receipt in the *Federal Register*. The notice summarizes the purpose of the requested permit and invites interested parties to submit written comments concerning the application. Pursuant to 50 CFR §216.33 (d)(2), NMFS consulted with the Marine Mammal Commission (MMC) in reviewing the application for a scientific research permit under the MMPA. The MMC provided comments on the request; however, their comments did not change the scope of this document or the proposed permit amendment. During this time, NMFS published a notice in the *Federal Register* that the application was available for public comment. No comments from the public were received.

This SEA does not evaluate impacts of the Proposed Action on the social or economic environment. The proposed permit amendment would not change the manner or extent of socioeconomic impacts as analyzed in the 2007 EA, which determined that the activities would have no measurable impact on these aspects of the human environment. This SEA therefore appropriately focuses on potential impacts on the biological environment that may result from the proposed changes in takes.

1.4 Federal Permits, Licenses, and Entitlements Necessary to Implementation of the Action

No changes in the applicable laws, permits, etc. would result from the proposed action. However, the laws applicable to the proposed action are identified here since they were not previously described in the 2007 EA prepared for Permit No. 808-1735.

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action, as well as who is responsible for obtaining them. Even when it is the applicant's responsibility to obtain such permissions, NMFS is obligated under NEPA to ascertain whether the applicant is seeking other federal, state, or local approvals for their action.

1.4.1 National Environmental Policy Act

The NEPA was enacted in 1969 and is applicable to all "major" federal actions significantly affecting the quality of the human environment. A major federal action is an activity that is fully or partially funded, regulated, conducted, or approved by a federal agency. NMFS issuance of permits for research represents approval and regulation of activities. While NEPA does not dictate substantive requirements for permits, licenses, etc., it requires consideration of environmental issues in federal agency planning and decision making. The procedural

provisions outlining federal agency responsibilities under NEPA are provided in the Council on Environmental Quality's implementing regulations (40 CFR Parts 1500-1508).

NOAA has, through NAO 216-6, established agency procedures for complying with NEPA and the implementing regulations issued by the Council on Environmental Quality. NAO 216-6 specifies that issuance of scientific research permits under the MMPA is among a category of actions that are generally exempted (categorically excluded) from further environmental review, except under extraordinary circumstances. When a proposed action that would otherwise be categorically excluded is the subject of public controversy based on potential environmental consequences, has uncertain environmental impacts or unknown risks, establishes a precedent or decision in principle about future proposals, may result in cumulatively significant impacts, or may have an adverse effect upon endangered or threatened species or their habitats, preparation of an EA or EIS is required.

While issuance of scientific research permits is typically subject to a categorical exclusion, as described in NAO 216-6, NMFS is preparing an SEA for this action to provide a more detailed analysis of effects to protected species. This SEA is prepared in accordance with NEPA, its implementing regulations, and NAO 216-6.

1.4.2 Marine Mammal Protection Act

The MMPA prohibits takes of all marine mammals in the United States (including territorial seas) with a few exceptions. Permits for *bona fide*[3] scientific research on marine mammals, or to enhance the survival or recovery of a species or stock, issued pursuant to section 104 of the MMPA are one such exception. These permits must specify the number and species of animals that can be taken, and designate the manner (method, dates, locations, etc.) in which the takes may occur. NMFS has sole jurisdiction for issuance of such permits and authorizations for all species of cetacean, and for all pinnipeds except walrus[4].

NMFS may issue a permit or authorization pursuant to section 104 of the MMPA to an applicant who submits with their application information indicating that the taking is required to further a *bona fide* scientific purpose. An applicant must demonstrate to NMFS that the taking will be consistent with the purposes of the MMPA and applicable regulations. If lethal taking of a marine mammal is requested, the applicant must demonstrate that a non-lethal method of conducting research is not feasible. NMFS must find that the manner of taking is "humane"[5] as defined in the MMPA. In the case of proposed lethal taking of a marine mammal from a stock listed as "depleted" NMFS must also determine that the results of the research will directly benefit the species or stock, or otherwise fulfill a critically important research need.

NMFS has promulgated regulations to implement the permit provisions of the MMPA (50 CFR Part 216) and has produced Office of Management and Budget-approved application instructions

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[3] The MMPA defines bona fide research as "scientific research on marine mammals, the results of which – (A) likely would be accepted for publication in a refereed scientific journal; (B) are likely to contribute to the basic knowledge of marine mammal biology or ecology; or (C) are likely to identify, evaluate, or resolve conservation problems."

[4] The U.S. Fish and Wildlife Service has jurisdiction for walrus, polar bears, sea otters, and manatees.

[5] The MMPA defines humane in the context of the taking of a marine mammal, as "that method of taking which involves the least possible degree of pain and suffering practicable to the mammal involved."

that prescribe the procedures (including the form and manner) necessary to apply for permits. Applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the range of potential actions (alternatives) determined reasonable with respect to achieving the stated objective. This chapter also summarizes the expected outputs and any related mitigation of each alternative.

2.1 Alternative 1—Proposed Action (Issuance of Amended Permit with Standard Conditions)

Under the Proposed Action alternative, a permit amendment would be issued for activities proposed by Dr. Read as follows. Please refer to Ch. 1.1.1 for a summary of the takes currently authorized by Permit No. 808-1735. A more detailed table of currently authorized and proposed takes can be found in Appendix 1.

Overview

Dr. Read requests authorization to take Arnoux's beaked whales during vessel surveys in the same manner as species already authorized by the permit. He is requesting to approach up to 200 animals of any age annually for behavioral observations, photo-identification and incidental harassment. An additional 10 annual takes would be authorized for approach, incidental harassment, photo-identification, observation, and suction-cup tagging of adult or juvenile whales. Dr. Read intends to tag three to five animals per year but multiple attempts to tag an animal may be required. To account for missed or failed tagging attempts which also are considered 'takes' under the MMPA, 10 annual takes would be authorized for tagging efforts. Beaked whales would be approached, photographed, observed and tagged using the same methods and tag units previously described for Permit No. 808-1735.

No other change in authorized takes would occur. The manner of take, location and duration of research would not change as a result of the amendment and therefore remains as described in the 2007 EA. The amendment would be valid until the permit expires on May 31, 2012.

Mitigation Measures: Permit No. 808-1735 currently contains conditions that mitigate or minimize harassment and serious injury of protected species, including non-target species. All permit conditions would remain in effect and unchanged as a result of the proposed amendment. Because the manner of take and methodologies would not change, no additional conditions would be added to the permit.

All other aspects of the research under Permit No. 808-1735 would remain unchanged.

2.2 Alternative 2—No Action

The No Action alternative is the status quo. No permit amendment would be issued, the original permit would remain valid, and the research under Permit No. 808-1735 would proceed as originally authorized. No other permit actions or requests would be affected by this action.

Active permits would remain active and new permit requests would be processed on a case-by-case basis.

CHAPTER 3 AFFECTED ENVIRONMENT

This chapter presents baseline information necessary for consideration of the alternatives, and describes the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if implemented. The effects of the alternatives are discussed in Chapter 4.

In the original 2007 EA, NMFS determined that issuance of the permit and conduct of the associated research would not have measurable impacts on the physical, social, or economic environment, but could result in "Level A harassment," as defined in the MMPA, of large whales. The 2007 EA analysis focused on potential impacts on the biological environment, especially large whales. The proposed major amendment would add takes for the harassment of Arnoux's beaked whales during vessel surveys and tagging, but would not change the location, manner of take, or duration of the permit.

This SEA evaluates the potential impacts on the human environment from issuance of the proposed permit amendment by supplementing the original EA's assessment of potential impacts on marine mammals, specifically those that may result from the proposed additional takes. This SEA evaluates whether conditions in the affected environment have changed, and related updates are presented in the following summary of the information provided in the 2007 EA.

3.1 Biological Environment

In the 2007 EA, NMFS identified a wide variety of marine species, in addition to the authorized large whale species (humpback, Antarctic blue, fin, Antarctic minke, and sei whales), found within the action area, including other marine mammals, invertebrates, and marine fish. The discussion in the 2007 EA focused on the distribution and abundance of various species that may be present at the time of the proposed study.

As a result of the analyses in the 2007 EA, NMFS determined that a variety of marine life—including other cetaceans, marine fish, and sea turtles—were not likely to be significantly adversely affected. Finfish and krill are found in the action area, however, sea turtles are not found in the Southern Ocean. Given that researchers would not attempt to interact with other species and that the proposed vessel surveys involve routine vessel movements through the water, NMFS determined that the proposed research would not affect non-target species any differently than other vessels in their vicinity. NMFS therefore determined these research activities would not be likely to significantly adversely affect non-target species.

Because the proposed takes would occur during previously authorized vessel surveys, the Proposed Action would affect only the target species: Arnoux's beaked whale. The proposed takes would not result in the harassment or harm of any non-target species or impacts to the physical or socioeconomic environment beyond what was previously described in the 2007 EA. The status of non-target species and the physical environment have not changed and would not

be impacted in a manner not previously described. No significant social or economic impacts of the proposed actions are interrelated with significant natural or physical environmental effects. Thus, the SEA does not include further analysis of impacts to the physical or socioeconomic environment of the Proposed Action.

Arnoux's Beaked Whale

Arnoux's beaked whale is not endangered or threatened under the Endangered Species Act or depleted under the MMPA. It is listed on Appendix I of the Convention on International Trade in Endangered Species. This species has a long gray body, bulbous melon, small dorsal fin positioned far on the back, and two pairs of teeth on the lower jaw (Reeves et al. 2002). Animals can measure up to 9.8 m in length (Reeves et al. 2002). They are known to perform deep dives for tens of minutes. Their diet is thought to include squid (Perrin et al. 2002). Animals have been observed south of 34°S primarily in small groups of 10 or fewer animals. Friedlander et al. (2010) observed whales on two occasions around the Antarctic Peninsula in larger groups of 25 and 60 whales that were socially active. These coastal sightings may indicate that this species is not solely epipelagic (Friedlander et al. 2010). Not enough information is known to determine a population size or trend for this species. There are no known threats to this species.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter represents the scientific and analytic basis for comparison of the direct, indirect, and cumulative effects of the alternatives. Regulations for implementing the provisions of NEPA require consideration of both the context and intensity of a proposed action (40 CFR Parts 1500–1508).

4.1 Effects of Alternative 1: Proposed Action (Issuance of Amended Permit with Standard Conditions)

Under the Proposed Action alternative, Arnoux's beaked whales would be harassed during research as specified in Appendix 1. Because the proposed amendment would only target individual whales during currently authorized vessel surveys, NMFS does not expect the Proposed Action to impact other (non-target) species. The following discussion, therefore, focuses on the impacts of the proposed research to the target species for which takes are proposed.

4.1.1 Environmental Consequences to the Biological Environment

NMFS is proposing to authorize the takes listed in Appendix 1 for the close vessel approach, photo-identification, behavioral observation, suction-cup tagging, and incidental harassment of Arnoux's beaked whales. The 2007 EA analyzed the effects of these activities for humpback, blue, minke, fin, and sei whales in the Southern Ocean. As discussed in the 2007 EA, the most likely impact of these activities is the harassment of individual whales. NMFS determined that such harassment would be minimal and temporary, with animals resuming their previous behaviors within minutes. No serious injury or mortality would result from these activities. Further, the proposed activities considered individually and as a group were found not likely to disrupt the migration, breathing, nursing, feeding, breeding, or sheltering behavior of large

whales. Based on the 2007 analysis, NMFS determined that disturbance from these activities is not likely to have a significant effect on target animals, populations, or species of large whales.

Because the proposed takes of Arnoux's beaked whales would occur in the same manner as analyzed in the 2007 EA, NMFS expects any harassment from these activities to be similar to those described and analyzed for humpback, blue, minke, fin, and sei whales. Specifically, individual animals would experience minimal, short-term disturbance from these activities. Because these activities do not result in serious injury, mortality, or reduced reproductive success of individual animals, the proposed takes are not expected to result in population- or species-level impacts. Therefore, NMFS does not expect Arnoux's beaked whales to be significantly impacted by close approaches, photo-identification, behavioral observation, suction-cup tagging, and incidental harassment during vessel surveys.

Summary of Effects

The most likely cause of harassment from the proposed research activities is disturbance from the close approach of the research vessel and tagging of target individuals. However, disturbance would be temporary and animals would be expected to recover from any harassment quickly (within minutes). Existing permit conditions would limit the potential for harassment during vessel surveys, including coordination of research activities with other researchers working on the target species in the same area. None of the proposed activities would be expected to result in serious injury, mortality, or reduced reproductive success of individuals. NMFS does not expect population- or species-level impacts. Because the methods would not change from that previously described in the 2007 EA, NMFS does not expect impacts to public health or safety. Therefore, NMFS does not expect the Proposed Action to significantly impact the target species or other portions of the human environment.

4.2 Effects of Alternative 2: No Action

In this case, the No Action alternative is effectively the Proposed Action alternative evaluated in the 2007 EA. Based on the analyses in that EA, NMFS determined that issuance of the permit and conduct of the associated research would not significantly impact the quality of the human environment. A limited number of large whales, as specified in the permit, may be harassed during authorized vessel surveys. However, this alternative would prevent the harassment of Arnoux's beaked whales by Dr. Read, as the proposed amendment would not be issued. Impacts to other portions of the affected environment would not change from the manner in which they were described and analyzed in the 2007 EA.

4.3 Summary of Compliance with Applicable Laws, Necessary Federal Permits, Licenses, and Entitlements

As summarized below, NMFS has determined that the proposed research is consistent with the purposes, policies, and applicable requirements of the MMPA and NMFS regulations. NMFS' issuance of the permit amendment would be consistent with the MMPA.

4.3.1 Marine Mammal Protection Act

Dr. Read submitted an application that included responses to all applicable questions in the application instructions. The requested research is consistent with applicable issuance criteria in the MMPA and in NMFS' implementing regulations. The views and opinions of scientists or

other persons or organizations knowledgeable of the marine mammals that are the subject of the application or of other matters germane to the application were considered, and support NMFS's initial determinations regarding the application.

The amended permit would contain standard terms and conditions stipulated in the MMPA and in NMFS' regulations. As required by the MMPA, the amended permit would specify (1) the effective date of the permit, (2) the number and kinds (species and stock) of marine mammals that may be taken, (3) the location and manner in which they may be taken, and (4) other terms and conditions deemed appropriate. Other terms and conditions deemed appropriate relate to minimizing potential adverse impacts of specific activities (e.g. capture, sampling, etc.), coordination among permit holders to reduce unnecessary duplication and harassment, monitoring of impacts of research, and reporting to ensure permit compliance.

4.4 Comparison of Alternatives

In general, the potential for adverse impacts on the human environment does not differ greatly between alternatives. Under both alternatives a limited number of whales would be temporarily harassed during research activities. The main difference is that, under the Proposed Action, the permit would authorize takes for the approach, observation, photography, incidental harassment, and suction-cup tagging of Arnoux's beaked whales during vessel surveys. Harassment to all whales would be minimal and short-term. Although the Proposed Action would authorize harassment of individual whales, the level and nature of take is not expected to significantly impact the species or any other portion of the human environment, as the activities would not result in serious injury, mortality, or reduced fecundity. Both alternatives require that research activities be conducted in compliance with mitigating conditions of the permit. In terms of research objectives, the Proposed Action would allow researchers to answer important biological and ecological questions that have the potential to inform the understanding of the biology and ecology of the target species which may ultimately aid conservation and management efforts. The No Action alternative would impede these efforts and a rare opportunity to gain valuable information on the species would be lost.

4.5 Mitigation Measures

Current conditions in Permit No. 808-1735 would remain in effect to mitigate and minimize impacts to the target species and other portions of the environment. As discussed in the 2007 EA, the mitigation measures are extremely conservative, given that available information does not indicate a potential for injury or mortality from the research as described in the Proposed Action.

4.6 Unavoidable Adverse Effects

The mitigation measures imposed by permit conditions are intended to reduce, to the maximum extent practical, the potential for adverse effects of the research on the targeted species as well as any other species that may be incidentally harassed during the course of research. However, as discussed above and in the 2007 EA, the most likely effect would be the disturbance of target whales caused by the presence of the research vessel and/or during tag attachment. This may temporarily interrupt normal activities, but animals would resume these activities within minutes. The effect on the animals is not expected to have a significant long-term effect on individuals or the population. In other words, while individual whales may exhibit temporary disturbance or

evasive behaviors in response to the activities of researchers, the impact to individual animals is not likely to be significant because the reactions will be short-lived.

4.7 Cumulative Effects

Cumulative effects are defined as those that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

As presented in the 2007 EA—considering the non-injurious and non-lethal nature of the proposed research activities; the minimal, temporary harassment that target animals would experience; the mitigation measures that would be employed, and that these types of research activities are not novel to the marine environment—the proposed research would contribute a negligible increment over and above the effects of the baseline activities currently occurring in the Southern Ocean. As discussed earlier, NMFS expects that the Proposed Action would not have a significant effect on either the human or marine environment. The Proposed Action is only directed at specific target whales and would not have a significant impact on non-target species in the action area. Therefore, the following analysis of cumulative effects focuses solely on the target species where directed takes are requested.

Arnoux's beaked whales have no known threats. This species has not been known to be taken by commercial whaling. Similar to the large whale species authorized in Permit No. 808-1735, the target whales may be exposed to other human activities, including vessel traffic, ecotourism, commercial krill fishing, and scientific research, as described and analyzed in the 2007 EA. However, these activities occur to a far lesser degree in the Southern Ocean due to its remote location and minor human presence. Further, the rare observance of the target species suggests that human interactions and potential impacts to the species from such activities are extremely limited.

4.7.1 Scientific Research Permits

This section updates the NMFS scientific research permits discussed and analyzed in the 2007 EA, as the Proposed Action would authorize Arnoux's beaked whales not previously considered. All other portions of the 2007 assessment of cumulative impacts remain valid.

One other permit, No. 14097 held by NMFS Southwest Fisheries Science Center (SWFSC), authorizes research activities on Arnoux's beaked whales in the Southern Ocean. This permit expires in June 2015. The SWFSC may conduct vessel surveys, photo-identification, and biopsy sampling but is not authorized to tag this species. Therefore, the applicant's request would not duplicate authorized research on Arnoux's beaked whales but rather would provide valuable information to supplement and complement the SWFSC's work. Further, the applicant often collaborates with the SWFSC on Antarctic research and it is unlikely that their work would overlap in space or time given the size of the Southern Ocean.

No other permit applications are being processed for this species.

Permit No. 14097 does not authorize activities likely to result in the serious injury or mortality of any animal. Further, no such incidences have been reported by permitted whale researchers for the proposed activities. Therefore, the number of takes proposed by Dr. Read, when added to the SWFSC's currently authorized research activities in the action area, is not expected to result in a significant adverse impact on the target whales or any other protected species. In addition, all permits issued by NMFS, including the proposed permit amendment, for research on marine mammals contain conditions requiring the Permit Holders to coordinate their activities with the NMFS Regional Offices and other Permit Holders conducting research on the same species in the same areas, and, to the extent possible, share data to avoid unnecessary duplication of research and disturbance of animals.

NMFS acknowledges that repeated disturbance of some individual whales could occur. However, NMFS expects that the temporary harassment of individuals would dissipate within minutes, and therefore animals would recover before being targeted for research by another Permit Holder. Further, NMFS has taken steps to limit repeated harassment and avoid unnecessary duplication of effort through permit conditions requiring coordination among Permit Holders. NMFS would continue to monitor the effectiveness of these conditions in avoiding unnecessary repeated disturbances.

4.7.2 Summary of Cumulative Effects

Although there are no known threats to Arnoux's beaked whales, they may be impacted by a few human activities in the Southern Ocean. However, given the remoteness of the area and lack of civilization, the intensity of these activities is substantially lower than in other waters, such as the North Atlantic Ocean, which are more accessible to developed nations and large populations. In addition, it is important to note that the human activities that could impact the target beaked whales are not occurring simultaneously on the same individuals on a daily basis and most human impacts are not known to cause serious injury or mortality of whales. Further, the target large whales are not exposed to all human activities at all times. The short-term stresses (separately and when added to other stresses these whales face in the environment) resulting from the proposed research activities would be expected to be minimal to targeted whales. Behavioral reactions suggest that harassment is brief, lasting minutes, before animals resume normal behaviors. NMFS expects any effects of harassment to dissipate before animals could be harassed by other human activities. Significant cumulative impacts are not expected since no serious injury or mortality is expected (resulting in no direct loss of animals from the population) nor an appreciable reduction in the fecundity of target individuals. Therefore, the proposed research would contribute a negligible increment of harassment over and above the effects of the baseline activities currently occurring in the marine environment of the proposed action area over the life of the permit. Although the effects of repeated or chronic disturbance from scientific research activities should not be dismissed, the potential long-term benefits and value of information gained on these species also must be considered. The proposed research would provide valuable information on the species' biology and ecology that in turn may be used to improve conservation efforts and reduce the effects of human activities on these populations.

CHAPTER 5 LIST OF PREPARERS AND AGENCIES CONSULTED

This document was prepared by Amy Hapeman with the Permits, Conservation and Education Division of NMFS' Office of Protected Resources in Silver Spring, Maryland.

Agencies Consulted
Marine Mammal Commission
National Science Foundation, Polar program

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APPENDIX 1: Proposed Takes for Permit No. 808-1735-01 in the Southern Ocean.

The following table includes takes currently authorized by Permit No. 808-1735 and proposed takes (bold font) that would be authorized as a result of the Proposed Action.

Species	Annual Number of Takes	Research Activities
Humpback whale (*Megaptera novaeangliae*)	250	Close approach[5] for vessel survey, photo-ID, tag monitoring, behavioral observation, incidental harassment
	45	Suction cup tagging of DTAG (including associated close approach and photo-ID)
Blue whale (*Balaenoptera musculus*)	50	Close approach for vessel survey, photo-ID, tag monitoring, behavioral observation, incidental harassment
	15	Suction cup tagging of DTAG (including associated close approach and photo-ID)
Fin whale (*Balaenoptera physalus*)	50	Close approach for vessel survey, photo-ID, tag monitoring, behavioral observation, incidental harassment
	15	Suction cup tagging of DTAG (including associated close approach and photo-ID)
Sei whale (*Balaenoptera borealis*)	50	Close approach for vessel survey, photo-ID, tag monitoring, behavioral observation, incidental harassment
	15	Suction cup tagging of DTAG (including associated close approach and photo-ID)
Minke whale (*Balaenoptera bonaerensis*)	50	Close approach for vessel survey, photo-ID, tag monitoring, behavioral observation, incidental harassment
	15	Suction cup tagging of DTAG (including associated close approach and photo-ID)
Arnoux's beaked whale (*Berardius arnuxii*)	**200**	**Close approach for vessel survey, photo-ID, tag monitoring, behavioral observation, and incidental harassment**
	10	**Suction cup tagging of DTAG (including associated close approach, observation, and photo-ID)**

[5] For purposes of the permit, an "approach" is described as a continuous sequence of maneuvers (episode) [involving a vessel or researcher's body in the water], including drifting, directed toward a whale or group of whales for the purpose of conducting authorized research which involves one or more instances of coming closer than 100 yards to that whale or group of whales.