PROPOSED ACTION:	Issuance of an Incidental Harassment Authorization to ExxonMobil Production Company to Take Marine Mammals by Harassment Incidental to Conductor Pipe Installation Activities at Harmony Platform in the Santa Barbara Channel offshore of California
TYPE OF STATEMENT:	Environmental Assessment
LEAD AGENCY:	U.S. Department of Commerce, National Oceanic and Atmospheric Administration National Marine Fisheries Service
RESPONSIBLE OFFICIAL:	Donna S. Wieting, Director, Office of Protected Resources, National Marine Fisheries Service
FOR FURTHER INFORMATION:	Howard Goldstein National Marine Fisheries Service Office of Protected Resources, Permits and Conservation Division 1315 East West Highway Silver Spring, MD 20910 301-427-8401
LOCATION:	Harmony Platform is located in the Santa Barbara Channel, situated between the Channel Islands and the east-west trending coastline of California. The Harmony Platform's geographical position is 34º 22' 35.906" North, 120º 10' 04.486" West.
ABSTRACT:	This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources, Permits and Conservation Division's proposal to issue an Incidental Harassment Authorization to the ExxonMobil Production Company for the taking, by Level B harassment, of small numbers of marine mammals, incidental to conducting conductor pipe installation activities at the Harmony Platform in the Santa Barbara Channel offshore of California.

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LIST OF ABBREVIATIONS OR ACRONYMS

AEP	auditory evoked potential
BiOp	Biological Opinion
CFR	Code of Federal Regulations
Commission	Marine Mammal Commission
dB	decibel
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*)
ExxonMobil	ExxonMobil Production Company
FONSI	Finding of No Significant Impact
FR	*Federal Register*
ft	feet
IHA	Incidental Harassment Authorization
ITA	Incidental Take Authorization
ITS	Incidental Take Statement
km	kilometer
km/hr	kilometer per hour
kts	knots
m	meter
mi	mile
mph	miles per hour
MMPA	Mammal Protection Act of 1972, as amended (16 U.S.C. 1631 *et seq.*)
µPa	microPascal
nmi	nautical miles
PSO	Protected Species Observer
rms	root mean square

EXECUTIVE SUMMARY

The National Marine Fisheries Service (NMFS), Office of Protected Resources, Permits and Conservation Division has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. §§ 4321 *et seq*.), the Council on Environmental Quality (CEQ) regulations in 40 CFR §§ 1500-1508, and NOAA Administrative Order 216-6.

ES.1 Description of the Proposed Action

ExxonMobil plans to install conductor pipes using impact hammer pipe-driving at the Harmony Platform in the Santa Barbara Channel offshore of California. We (National Marine Fisheries Service, Office of Protected Resources, Permits and Conservation Division) propose to issue an Incidental Harassment Authorization (IHA) to the ExxonMobil Production Company (ExxonMobil), a division of the ExxonMobil Corporation, under the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. §§ 1631 *et seq*.) for the taking of small numbers of marine mammals, incidental to installing six conductor pipes via hydraulic impact hammer pipe-driving at the Harmony Platform, Santa Ynez Production Unit, located in the Santa Barbara Channel offshore of California. We do not have the authority to permit, authorize, or prohibit ExxonMobil's conductor pipe installation activities at Harmony Platform offshore of California.

Our proposed action results from ExxonMobil's request for an authorization to take marine mammals, by harassment, incidental to conducting conductor pipe installation activities at Harmony Platform in the Santa Barbara Channel offshore of California. ExxonMobil's impact hammer pipe-driving activities, which have the potential to cause marine mammals to be behaviorally disturbed, require an Incidental Take Authorization (ITA) from us under section 101(a)(5)(D) of the MMPA.

ES.2 Scope of this Environmental Assessment

Our NEPA analysis evaluates effects to marine mammals and their habitat associated with the decision for which we are responsible (i.e., whether or not to issue an IHA that includes prescribed means of incidental take, mitigation, measures, and monitoring requirements). This EA titled, *Environmental Assessment on the Issuance of an Incidental Harassment Authorization to the ExxonMobil Production Company to Take Marine Mammals by Harassment Incidental to Conductor Pipe Installation Activities at Harmony Platform in the Santa Barbara Channel Offshore of California*, therefore, focuses primarily on the environmental effects of authorizing the take of marine mammals incidental to ExxonMobil's activities.

We published a notice for the proposed IHA in the *Federal Register* (79 FR 36743, June 30, 2014; [NMFS, 2014]) (available at: http://www.gpo.gov/fdsys/pkg/FR-2014-06-30/pdf/2014-15224.pdf) which provided a detailed description of the proposed conductor pipe installation activities and environmental information and issues related to it. ExxonMobil provided NMFS with an IHA application titled *Incidental Harassment Authorization Harmony Platform Santa Ynez Production Unit* (Maxon Consulting, 2014) and an addendum titled *Assessment of Airborne and Underwater Noise from Pile Driving Activities at the Harmony Platform* (Mathews, 2014). The IHA application and addendum were prepared by Maxon Consulting, Inc. and JASCO Applied Sciences Ltd., respectively. The IHA application provided a detailed description of the proposed conductor pipe installation activities as well as information on marine mammals; type, number and estimation method for take; potential impacts on marine mammals and marine mammal habitat; and mitigation,

monitoring, and reporting measures. The IHA addendum provided information on acoustic metrics, marine mammal exposure criteria, underwater and airborne sound modeling, and a discussion on estimating impacts, distances, and mitigation systems. We incorporate this notice and IHA application and addendum by reference.

We anticipate that an IHA to take small numbers of marine mammals incidental to ExxonMobil's specified activities in a specific geographic region, if issued, would affect marine mammals and their habitat. We have prepared this EA to assist in determining whether the direct, indirect, and cumulative impacts related to our issuance of an IHA under the MMPA for marine mammals for ExxonMobil's activities is likely to result in significant impacts to the human environment. This EA is intended to inform our decision on issuing the IHA..

ES.3 Alternatives

Our Proposed Action (Preferred Alternative) represents the authorization of take incidental to the applicant's conductor pipe installation activities, along with required monitoring and mitigation measures for marine mammals that would minimize potential adverse environmental impacts. The IHA includes prescribed means of incidental take, mitigation and monitoring measures, and reporting requirements.

For the No Action Alternative, we would not issue an IHA to ExxonMobil for the taking, by Level B harassment, of small numbers of marine mammals incidental to the conductor pipe installation activities.

- The No Action Alternative also includes the full suite of activities conducted by ExxonMobil for the conductor pipe installation activities. Because we do not have the authority to permit, authorize, or prohibit the impact hammer pipe-driving activities themselves, ExxonMobil may decide to: (1) continue with the conductor pipe installation activities with the inclusion of mitigation and monitoring measures sufficient to preclude any incidental take of marine mammals; (2) continue the conductor pipe installation activities and be in violation of the MMPA if take of marine mammals occurs; or (3) choose not to conduct the conductor pipe installation activities.
- For purposes of this NEPA analysis, however, we have focused on the potential environmental effects that could arise from undertaking the conductor pipe installation activities without the mitigation and monitoring measures for marine mammals prescribed in the IHA for incidental take in order to meaningfully evaluate the primary environmental issues – the impact on marine mammals from these activities in the absence of protective measures.

ES.4 Environmental Impacts of the Proposed Action

ExxonMobil's proposed conductor pipe installation activities would involve active acoustics that have the potential to cause marine mammals to be behaviorally disturbed.

- The impacts to marine mammals of conducting the impact hammer pipe-driving are specifically related to acoustic activities. These activities are expected to have a negligible impact and be temporary in nature. We do not expect the activities to result in significant impacts to marine mammals or to their role in the ecosystem.
- The Preferred Alternative includes a suite of mitigation measures intended to minimize potential adverse interactions with marine mammals and their habitat. We acknowledge that

the incidental take authorized by the IHA could result in insignificant, unavoidable adverse impacts. However, we believe that the issuance of an IHA would not result in significant direct, indirect, or cumulative impacts on marine mammal species or their habitats.

The analysis in this EA, including the documents we incorporate by reference, serve as the basis for determining whether our issuance of an IHA to ExxonMobil for the taking, by Level B harassment, of small numbers of marine mammals incidental to the conduct of the conductor pipe installation activities at Harmony Platform in the Santa Barbara Channel offshore of California would result in significant impacts to the human environment.

CHAPTER 1 – INTRODUCTION AND PURPOSE AND NEED

1.1 DESCRIPTION OF PROPOSED ACTION

The Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1631 *et seq*.) prohibits the incidental taking of marine mammals. For a marine mammal to be incidentally taken, it is either killed, seriously injured, or harassed. The MMPA defines harassment as any act of pursuit, torment, or annoyance which: (1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment). There are exceptions to the MMPA's prohibition on take, such as the authority at issue here for us to authorize the incidental taking of small numbers of marine mammals by harassment upon the request of a U.S. citizen provided we meet certain statutory and regulatory procedures and make certain determinations. We describe this exception set forth in the MMPA at section 101(a)(5)(D) in more detail in Section 1.2.

In response to ExxonMobil's request, we (NMFS, Office of Protected Resources, Permits and Conservation Division) propose to issue an IHA to ExxonMobil under section 101(a)(5)(D) of the MMPA, which would allow ExxonMobil to take of small numbers of marine mammals, incidental to the conduct of conductor pipe installation activities at the Harmony Platform in the Santa Barbara Channel offshore of California, September 2014 through September 2015. We do not have the authority to permit, authorize, or prohibit ExxonMobil's impact hammer pipe-driving activities off the coast of California.

Our proposed action is an outcome of ExxonMobil's request for an IHA to take marine mammals incidental to conducting the proposed conductor pipe installation activities at Harmony Platform in the Santa Barbara Channel offshore of California. ExxonMobil's impact hammer pipe-driving activities have the potential to cause marine mammals to be behaviorally disturbed by exposing them to elevated levels of sound, which is anticipated to result in take that would otherwise be prohibited by the MMPA. ExxonMobil therefore requires an IHA for incidental take and has requested that we provide it through the issuance of an IHA under section 101(a)(5)(D) of the MMPA. Our issuance of an IHA to ExxonMobil is a major Federal action under the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.), the Council on Environmental Quality (CEQ) regulations in 40 CFR §§ 1500-1508, and NOAA Administrative Order (NAO) 216-6. Thus, we are required to analyze the effects of our proposed action on the human environment and determine whether they are significant such that preparation of an Environmental Impact Statement (EIS) is necessary.

This EA titled, *Environmental Assessment on the Issuance of an Incidental Harassment Authorization to the ExxonMobil to Take Marine Mammals by Harassment Incidental to Conductor Pipe Installation Activities at Harmony Platform in Santa Barbara Channel offshore of California*, addresses the potential environmental impacts of two choices available under section 101(a)(5)(D) of the MMPA, namely:

- Issue the IHA to ExxonMobil for Level B harassment take of marine mammals under the MMPA during the conductor pipe installation activities, taking into account the prescribed means of take, mitigation measures, and monitoring requirements that would be required by the IHA; or

- Not issue an IHA to ExxonMobil, in which case, for the purposes of NEPA analysis only, we assume the activities would proceed and cause incidental take without the mitigation and monitoring measures prescribed in the IHA.

We have identified one action alternative as reasonable and, along with the No Action alternative, have carried two alternatives forward for evaluation in this EA.

1.1.1 Background on the Applicant's MMPA Application

On March 3, 2014, NMFS received an IHA application from ExxonMobil for the taking of marine mammals incidental to impact hammer pipe-driving activities. Along with the IHA application, NMFS received an addendum titled *Assessment of Airborne and Underwater Noise from Pile Driving Activities at the Harmony Platform*. ExxonMobil propose to install six conductor pipes by hydraulic hammering at the Harmony Platform, Santa Ynez Production unit, in the Santa Barbara Channel offshore of California. Acoustic stimuli (i.e., increased underwater and airborne sound) generated during the conductor pipe installation activities are likely to result in the take of marine mammals. The project's estimated dates are from mid-September to mid-December 2014, but the action could occur anytime within a 12-month period from the effective date of the IHA. NMFS determined that the IHA application was adequate and complete on April 28, 2014. This IHA would be effective from September 17, 2014 through September 16, 2015.

On June 30, 2014, NMFS published a notice of a proposed IHA in the *Federal Register* (79 FR 36743) disclosing the effects on marine mammals, making preliminary determinations, and including a proposed IHA. NMFS considered and addressed all public comments as a component of the marine mammal impact analysis required by the MMPA in order to reach a determination that only Level B harassment would occur as a result of the proposed activities. We describe the relevant public comments on the notice of a proposed IHA in Section 1.3.5 and the ExxonMobil-supported conductor pipe installation activities in more detail in Section 2.2.

1.1.2 Marine Mammals in the Action Area

Section 3 and 4 of ExxonMobil's IHA application include more detailed information regarding the biology, distribution, seasonality, life history, and occurrence of the marine mammal species in the proposed project area. Further information on the biology and local distribution of marine mammal species in the action area and others in the region can be found in the NMFS Marine Mammal Stock Assessment Reports, which are available online at: http://www.nmfs.noaa.gov/pr/sars. Marine mammals under our jurisdiction that could be adversely affected by the proposed conductor pipe installation activities include:

Mysticetes

- Blue whale (*Balaenoptera musculus*)
- Fin whale (*B. physalus*)
- Humpback whale (*Megaptera novaeangliae*)
- Sei whale (*B. borealis*)
- Bryde's whale (*B. edeni*)
- Minke whale (*B. bonaerensis*)
- Gray whale (*Eschrichtius robustus*)
- North Pacific right whale (*Eubalaena japonica*)

Odontocetes

- Baird's beaked whale (*Berardius bairdii*)
- Blainville's beaked whale (*Mesoplodon densirostris*)
- Cuvier's beaked whale (*Ziphius cavirostris*)
- Perrin's beaked whale (*Mesoplodon perrini*)
- Lesser beaked whale (*Mesoplodon peruvianis*)
- Stejneger's beaked whale (*Mesoplodon stejnegeri*)
- Ginkgo-toothed beaked whale (*Mesoplodon ginkgodens*)
- Hubb's beaked whale (*Mesoplodon carlhubbsi*)
- Bottlenose dolphin (*Tursiops truncatus*)
- Striped dolphin (*Stenella coeruleoalba*)
- Short-beaked common dolphin (*Delphinus delphis*)

- Long-beaked common dolphin (*Delphinus capensis*)
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)
- Northern right whale dolphin (*Lissodelphis borealis*)
- Risso's dolphin (*Grampus griseus*)
- Killer whale (*Orcinus orca*)
- False killer whale (*Pseudorca crassidens*)
- Short-finned pilot whale (*Globicephala macrorhynchus*)
- Sperm whale (*Physeter macrocephalus*)
- Pygmy sperm whale (*Kogia breviceps*)
- Dwarf sperm whale (*Kogia sima*)
- Harbor porpoise (*Phocoena phocoena*)
- Dall's porpoise (*Phocoenoides dalli*)

Pinnipeds

- California sea lion (*Zalophus californianus*)
- Steller sea lion (*Eumetopias jubatus*)
- Pacific harbor seal (*Phoca vitulina richardii*)
- Northern elephant seal (*Mirounga anugustirostris*)
- Guadalupe fur seal (*Arctocephalus townsendi*)
- Northern fur seal (*Callorhinus ursinus*)

1.2 BACKGROUND FOR PURPOSE AND NEED

The MMPA and the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.) prohibit "takes" of marine mammals and of threatened and endangered species, respectively, with only a few specific exceptions. The applicable exceptions in this case are an exemption for incidental take of marine mammals in sections 101(a)(5)(D) of the MMPA and 7(o)(2) of the ESA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if we make certain findings and provide a notice of a proposed IHA to the public for review. Entities seeking to obtain authorization for the incidental take of marine mammals under our jurisdiction must submit such a request (in the form of an application) to us. Section 101(a)(5)(D) of the MMPA also establishes a 45-day time limit for our review of the application for an IHA, followed by a 30-day public notice and comment period on any proposed authorization for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, we must either issue or deny the IHA.

In the case of a Federal action that may affect marine mammal species listed as threatened or endangered under the ESA, the action agency responsible for funding, authorizing, or carrying out the action must consult with NMFS under section 7 of the ESA to ensure that its action is not likely to jeopardize a listed species or result in the adverse modification or destruction of any designated critical habitat. The section 7 consultation process for this action is described in Section 1.4.1. Consultation is completed when NMFS issues a Biological Opinion (BiOp). The BiOp includes, among other things, an Incidental Take Statement (ITS), which must specify measures the Secretary considers necessary or appropriate to minimize the impact of such take. Any incidental take that occurs consistent with the terms and conditions in the ITS is not considered prohibited take under the ESA and is thus exempted.

NMFS has promulgated regulations to implement the Incidental Take Authorization (ITA) provisions of the MMPA (50 CFR Part 216) and has produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for permits. All applicants must comply with these regulations and application instructions in addition to the provisions of the MMPA. Applications for an IHA must be submitted according to regulations at 50 CFR § 216.104.

1.2.1 PURPOSE OF ACTION

The primary purpose of our proposed action, the issuance of an IHA to ExxonMobil, is to authorize (pursuant to the MMPA) ExxonMobil's request to take marine mammals incidental to ExxonMobil's proposed activities. The IHA, if issued, would exempt ExxonMobil from the take prohibitions contained in the MMPA. To authorize the take of small numbers of marine mammals in accordance with section 101(a)(5)(D) of the MMPA, we must evaluate the best available scientific information to determine whether the take would have a negligible impact on marine mammals or stocks and have an unmitigable impact on the availability of affected marine mammal species for subsistence use. We cannot issue an IHA if it would result in more than a negligible impact on marine mammals or stocks or result in an unmitigable impact on subsistence use. The statute also establishes substantive requirements. We must set forth the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat (i.e. mitigation), paying particular attention to rookeries, mating grounds, and areas of similar significance. If appropriate, we must prescribe the means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. IHAs must also include requirements or conditions pertaining to the monitoring and reporting of such taking in large part to better understand the effects of such taking on the species. A proposed IHA must be published in the *Federal Register* for public notice and comment. The purpose of this action is therefore to develop an IHA that meets statutory and regulatory requirements if it is feasible to do so.

1.2.2 NEED FOR ACTION

As noted above this section, the MMPA establishes a general moratorium or prohibition on the take of marine mammals, including take by Level B (behavioral) harassment. The MMPA establishes a process discussed in Section 1.2.1 by which individuals engaged in specified activities within a specified geographic area may request an IHA for the incidental take of small numbers of marine mammals.

On March 3, 2014, ExxonMobil submitted an application demonstrating both the need and potential eligibility for issuance of an IHA in connection with the conductor pipe installation activities described in Section 1.1.1. NMFS must review the IHA application to determine if the action proposed is consistent with applicable statutes and regulations, and determine whether and how the agency can develop an IHA authorizing take by Level B harassment incidental to the activities described in ExxonMobil's IHA application. The need for this action is therefore established and framed by the MMPA and our responsibilities under section 101(a)(5)(D) of the MMPA, its implementing regulations, and other applicable requirements which will influence our decision making, such as section 7 of the ESA which is discussed in more detail below this section. In order for an alternative to be considered reasonable, it must meet the statutory and regulatory requirements. The previously mentioned purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects. We are thus developing and analyzing alternatives of developing and issuing an IHA, not alternative means of the applicant carrying out the underlying activities described in its application. However, we recognize that the mitigation measures developed and included in a final IHA might affect those activities.

1.3 THE ENVIRONMENTAL REVIEW PROCESS

NEPA compliance is necessary for all "major" federal actions with the potential to significantly affect the quality of the human environment. Major federal actions include activities that are fully or partially funded, regulated, conducted, or approved by a federal agency. Because our issuance of an IHA would allow for the taking of marine mammals consistent with provisions under the MMPA and incidental to the applicant's activities, we consider this a major federal action subject to NEPA.

Under requirements of NAO 216-6 section 6.03(f)(2)(b), we prepared this EA to determine whether the direct, indirect, and cumulative impacts related to the issuance of an IHA for incidental take of marine mammals under the MMPA during the conductor pipe installation activities at Harmony Platform in Santa Barbara Channel offshore of California are likely to be significant. If we deem the potential impacts to be not significant, this analysis, in combination with other analyses incorporated by reference, may support the issuance of a Finding of No Significant Impact (FONSI) for the proposed IHA.

1.3.1 LAWS, REGULATIONS, OR OTHER NEPA ANALYSES INFLUENCING THE EA'S SCOPE

We have based the scope of the proposed action and the nature of the two alternatives (i.e., whether or not to issue the IHA including prescribed means of take, mitigation measures, and monitoring requirements) considered in this EA on the relevant requirements in section 101(a)(5)(D) of the MMPA. The scope of our analysis is thus bounded by our decision making discussed in Section 1.3.2. We conclude that this analysis fully describes the potential impacts associated with the issuance of an IHA to ExxonMobil for take incidental to impact hammer pipe-driving activities with required mitigation and monitoring measures for marine mammals.

MMPA APPLICATION AND NOTICE OF THE PROPOSED IHA

The MMPA and its implementing regulations governing the issuance of an IHA (50 CFR § 216.107) require that NMFS publish a notice of preliminary determinations and a proposed IHA in the *Federal Register* (FR) within 45 days of receipt of an adequate and complete application for an IHA.

The regulations published by the Council on Environmental Quality (CEQ regulations) 40 CFR §1502.25 encourage federal agencies to integrate NEPA's environmental review process with other environmental review laws. We rely substantially on the public review process for proposed IHAs under the MMPA and its implementing regulations to develop and evaluate relevant environmental information and provide a meaningful opportunity for public participation as we develop corresponding EAs. We fully consider public comments received in response to our publication of the notice of proposed IHA during the corresponding NEPA review process. We describe the relevant public comments on the notice of a proposed IHA in Section 1.3.5.

On June 30, 2014, we published a notice of a proposed IHA with our preliminary determinations in the *Federal Register* (79 FR 36743). The notice included a detailed description of the environmental issues and impacts of relevance related to the issuance of an IHA; and potential mitigation and monitoring measures to avoid and minimize potential adverse impacts to marine mammals and their habitat. We explained in that notice that we would use it to provide all relevant environmental information to the public and to solicit the public's comments on the

potential environmental effects related to the proposed issuance of the IHA and issues for consideration in this EA.

This EA titled, *Environmental Assessment on the Issuance of an Incidental Harassment Authorization to ExxonMobil Production Company to Take Maine Mammals by Harassment Incidental to Conductor Pipe Installation Activities at Harmony Platform in Santa Barbara Channel offshore of California*, incorporates by reference and relies on the ExxonMobil's April 2014 IHA application, our notice of a proposed IHA (79 FR 36743, June 30, 2014), and the environmental analyses contained in these documents to avoid duplication of analysis and unnecessary length.

Our notice of a proposed IHA (79 FR 36743, June 30, 2014) included a detailed description of the proposed project, an assessment of the potential impacts on marine mammals, mitigation and monitoring measures, reporting requirements planned for this project, and preliminary determinations required by the MMPA. The notice provided information on our proposal to issue an IHA to ExxonMobil to incidentally harass, by Level B harassment only, 30 species of marine mammals during the proposed three month conductor pipe installation activities. Within the notice of the proposed IHA (79 FR 36743, June 30, 2014), we considered the applicant's proposed action and proposed mitigation and monitoring measures that would effect the least practicable impact on marine mammals, including:
(1) proposed exclusion zones;
(2) shut-down procedures;
(3) ramp-up procedures;
(4) platform-based visual mitigation monitoring; and
(5) in-water and in-air acoustic monitoring.

We preliminarily determined, based on implementation of the required mitigation and monitoring measures, that the impact of conducting the proposed conductor pipe installation activities at Harmony Platform in Santa Barbara Channel offshore of California, would result, at worst, in a modification in behavior and/or low-level physiological effects (Level B harassment) of certain species of marine mammals, both of which would be insignificant.

PROPOSED NEPA ANALYSIS ON THE CONDUCTOR PIPE INSTALLATION ACTIVITIES AND ISSUANCE OF AN ASSOCIATED IHA

After conducting an independent review for sufficiency and adequacy of the information and analyses provided by ExxonMobil, we incorporate by reference the following relevant analyses on ExxonMobil's proposed action as well as a discussion of the affected environment and environmental consequences within the following documents per 40 CFR 1502.21 and NAO 216-6 § 5.09(d):

- ExxonMobil's 2014 *Incidental Harassment Authorization Application Harmony Platform Santa Ynez Production Unit* (Maxon Consulting, 2014); and
- *Assessment of Airborne and Underwater Noise from Pile Driving Activities at the Harmony Platform: Preliminary Assessment*, technical report prepared by JASCO Applied Sciences, Ltd (Mathews, 2014).

In summary, ExxonMobil's analyses conclude that with incorporation of monitoring and mitigation measures proposed by ExxonMobil, the potential impacts of the proposed action to

marine mammals would be would be limited to localized changes in behavior and distribution near the conductor pipe installation activities and would qualify as Level B harassment under the MMPA. ExxonMobil did not identify any significant environmental issues or impacts.

1.3.2 Scope of Environmental Analysis

Given the limited scope of the decision for which we are responsible (i.e., whether or not to issue the IHA that includes prescribed means of take, mitigation measures and monitoring requirements) this EA (relying on the environmental review and analyses performed by ExxonMobil, the IHA application and the notice of proposed IHA collectively incorporated by reference herein) is intended to provide more focused information on the primary issues and impacts of environmental concern related specifically to our issuance of the IHA authorizing the take of marine mammals incidental ExxonMobil's activities and mitigation measures to minimize the effects of that take. For these reasons, this EA does not further evaluate effects to the elements of the human environment listed in Table 1 because these other elements will not be affected by our action. This EA is intended to provide more focused information on the primary issues and impacts of environmental concern related specifically to our issuance of the IHA.

Table 1. Components of the human environment not requiring further evaluation.

Biological	Physical	Socioeconomic / Cultural
	Air Quality	Commercial Fishing
	Essential Fish Habitat	Military Activities
	Geography	Oil and Gas Activities
Amphibians	Land Use	Recreational Fishing
Humans	Oceanography	Shipping and Boating
Non-Indigenous Species	State Marine Protected Areas	National Historic Preservation Sites
Seabirds	Federal Marine Protected Areas	National Trails and Nationwide Inventory of Rivers
	National Estuarine Research Reserves	Low Income Populations
	National Marine Sanctuaries	Minority Populations
	Park Land	Indigenous Cultural Resources
	Prime Farmlands	Public Health and Safety
	Wetlands	Historic and Cultural Resources
	Wild and Scenic Rivers	
	Ecologically Critical Areas	

1.3.3 NEPA Public Scoping Summary

NAO 216-6 established agency procedures for complying with NEPA and the implementing NEPA regulations issued by the CEQ. Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, we requested comments on the potential environmental impacts described in the MMPA IHA application and in the *Federal Register* notice of the proposed IHA (79 FR 36743, June 30, 2014). The CEQ regulations further encourage agencies to integrate the NEPA review process with review under the environmental statutes. Consistent with agency practice we integrated our NEPA review and preparation of this EA with the public review process required by the MMPA for issuance of an IHA.

The *Federal Register* notice of the proposed IHA with our preliminary determinations (79 FR 36743, June 30, 2014), supporting analyses, and the corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments to us for consideration in both the MMPA and NEPA decision-making processes.

The *Federal Register* notice of the proposed IHA (79 FR 36743, June 30, 2014) summarized the purpose and need of the proposed action; included a statement that we would prepare an EA for the proposed action; and invited interested parties to submit written comments concerning the IHA application and our preliminary analyses and findings including those relevant to consideration in the EA. The notice of the proposed IHA was available for public review and comment from June 30 to July 30, 2014.

This process served the public participation function for this EA in terms of scoping for the action and providing the public a meaningful opportunity to participate in the environmental decision-making process. In addition, we posted the IHA application and addendum on our website at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications concurrently with the release of our *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014). This EA is based primarily on the information included in in our *Federal Register* notice (79 FR 36743, June 30, 2014), the documents it references, and the public comments provided in response. At the conclusion of this process, we will post the final EA, and, if appropriate, the FONSI, on the same website.

1.3.4 RELEVANT COMMENTS ON OUR *FEDERAL REGISTER* NOTICE

During the 30-day public comment period on the notice of the proposed IHA (79 FR 36743, June 30, 2014), we received comments from approximately 4,700 private citizens as supporters of Sierra Rise and Sierra Club, the Center for Biological Diversity (CBD), California Coastal Commission (CCC), and the Marine Mammal Commission (Commission). Public comments on the notice of the proposed IHA postmarked by July 30, 2014 are a part of the public record and are available on our website. The majority of comments from SierraRise and Sierra Club related to the potential environmental impacts associated with our authorizing potential take of marine mammals incidental to ExxonMobil's action, including:

- A request to deny the issuance of the IHA to ExxonMobil because they believed that the activity would lead to impairment, injury, and death of marine mammals in the action area.

We briefly summarize CBD's comments here. Generally, CBD commented as follows:

- The project threatens to impact endangered whales, specifically blue (*Balaenoptera musculus*), humpback (*Megaptera novaeangliae*), western population of North Pacific gray (*Eschrichtius robustus*), North Pacific (*Eubalaena japonica*), and sperm (*Physeter macrocephalus*) whales, and these impacts not negligible.
- The Level A and Level B harassment thresholds are inadequate and ignore the best available science.
- Mitigation measures are inadequate to ensure the least practicable impact and additional mitigation measures are necessary. NMFS must fully analyze additional mitigation measures, including time-area restrictions, larger exclusion zones, air curtains or other noise reduction technologies, and cease pipe-driving during low visibility.

- NMFS must ensure full compliance with environmental laws including NEPA, Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, Coastal Zone Management Act, and Outer Continental Shelf Lands Act.

We briefly summarize CCC's comments here. Generally CCC recommended that we:

- Support an adaptive approach in which exclusion and disturbance zones are adjusted based on in-situ data collected during actual project activities.
- Use a more conservative approach and use the model-generated 160 dB re 1 µPa threshold as the initial exclusion zone that would trigger a shut-down of impact hammer pipe-driving activities.
- As a consequence of unusually warm waters off of Southern California, consider revising incidental take calculations to include cetacean species such as Bryde's whale, false killer whale, and short-finned pilot whale, that may be present in numbers and locations beyond those that can be reflected accurately by density estimates from long-term survey and abundance datasets.
- Provide copies of the sound source validation and 90-day monitoring reports described in the notice of the proposed IHA to the CCC. If monitoring indicates impacts greater than anticipated, CCC intends to continue to work with NMFS to assure the activity can be modified accordingly to minimize effects on marine mammals.

On July 28, 2014, we received comments from the Commission on the notice of the proposed IHA (79 FR 36743, June 30, 2014). The Commission provides comments on all proposed ITAs as part of its established role under the MMPA (§ 202 (a)(2), "*humane means of taking marine mammals"*).

We briefly summarize the Commission's comments here. Generally, the Commission recommended that we:

- Revise the density estimates for blue and fin whales to reflect the density information from Redfern et al. (2013), and for gray whales, Cuvier's beaked whales, *Mesoplodon* spp., and bottlenose dolphins to reflect the best available abundance estimates from Carretta et al. (2013); the corrected density estimates should then be used in NMFS's revised take estimates.
- Revise take estimates for all species/stocks to account for the total number of days of potential exposure (i.e., 18.6 days), ensuring a more accurate estimate of potential takes.
- Increase its estimated numbers of takes for sperm whales and short-beaked common dolphins to reflect the minimum typical group size for each species (i.e., at least 2 and 450 animals, respectively).
- Only authorize an in-season adjustment in the size of the exclusion and/or disturbance zones if the size(s) of the estimated zones are determined to be too small.

We fully considered all of the public comments in preparing the final IHA and this EA by reviewing the pertinent comments and information provided us. We will provide responses to the public comments fin the *Federal Register* notice announcing the issuance of the IHA.

1.4 OTHER PERMITS, LICENSES, OR CONSULTATION REQUIREMENTS

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action. We incorporate those descriptions by reference in this EA and briefly summarize them in this section.

1.4.1 U.S. ENDANGERED SPECIES ACT OF 1973

Section 7 of the ESA require consultation with the appropriate federal agency (either NMFS or the U.S. Fish and Wildlife Service) for actions funded, authorized, or carried out by federal agencies (i.e., federal actions) that "may affect" a species listed as threatened or endangered or that may affect designated critical habitat under the ESA. The regulations at 50 CFR § 402 specify the requirements for these consultations with NMFS.

ExxonMobil has requested authorization for the incidental take of the following marine mammals that are listed as endangered under the ESA under our jurisdiction: blue, fin, sei, humpback, and sperm whales.

Our issuance of an IHA is a federal action that is subject to the requirements of section 7 of the ESA. As a result, we are required to ensure that the action of our issuance of an IHA to ExxonMobil is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. In order for us to authorize the incidental take of blue, fin, sei, humpback, and sperm whales, we have engaged in a formal consultation with the NMFS, West Coast Regional Office, Protected Resources Division. We initiated formal consultation on June 24, 2014 on our proposed action. NMFS, West Coast Regional Office, Protected Resources Division, issued a Biological Opinion in September 2014 concluding that the conductor pipe installation activities and associated IHA are not likely to jeopardize the continued existence of any listed species. The Biological Opinion also concluded that designated critical habitat does not occur in the action area.

1.4.2 MARINE MAMMAL PROTECTION ACT

We discuss the MMPA and its provisions that pertain to the proposed action described within Section 1.2.

1.4.3 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1801 et seq.), Federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSA.

We determined that issuance of the IHA and mitigation and monitoring measures required by the IHA for the action would not result in adverse effects to EFH. Therefore, we determined that EFH consultation is not required.

1.4.4 COASTAL ZONE MANAGEMENT ACT

Congress enacted the Coastal Zone Management Act (CZMA, 16 U.S.C. 1451 et seq.) to encourage states to manage land and water uses that may affect coastal uses and resources. Once state coastal management programs and the policies within them receive federal approval from

NOAA, federal agency activities that may have reasonably foreseeable effects on coastal uses or resources are required to be consistent with those enforceable policies.

As the lead federal agency for the IHA, NMFS considered whether the action would have effects on the coastal resources of any state along the U.S. West Coast. As concluded in the notice of the proposed IHA (79 FR 36743, June 30, 2014), any potential impacts from the conductor pipe installation activities would mainly be to marine species in close proximity to the Harmony Platform and would be of a short duration and temporary in nature. The Harmony Platform is located at 34º 22' 35.906" North and 120º 10' 04.48" West, which is located approximately 10 km (5.4 nmi) off the coast of California, in federal waters. NMFS discussed issuance of the IHA and ExxonMobil's planned conductor pipe installation activities with the California Coastal Commission. NMFS concluded that it has met all of the responsibilities under the CZMA.

CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 INTRODUCTION

The NEPA and the implementing CEQ regulations (40 CFR §§ 1500-1508) require consideration of alternatives to proposed major federal actions and NAO 216-6 provides agency policy and guidance on the consideration of alternatives to our proposed action. An EA must consider all reasonable alternatives, including the Preferred Alternative. It must also consider the No Action Alternative, even if it does not meet the stated purpose and need, so as to provide a baseline analysis against we can compare the other alternatives.

To warrant detailed evaluation as a reasonable alternative, an alternative must meet our purpose and need. In this case, as we previously explained, an alternative will only meet the purpose and need if it satisfies the requirements under section 101(a)(5)(D) the MMPA (see Chapter 1), which serves as the alternative's only screening criteria. We evaluated each potential alternative against these criteria. Based on this evaluation, we have identified one action alternative as reasonable and, along with the No Action Alternative, have carried two alternatives forward for evaluation in this EA.[1]

We did not carry forward alternatives that we considered not reasonable for detailed evaluation in this EA. Section 2.3.4 presents alternatives considered but eliminated from further review. The Preferred Alternative includes a suite of mitigation measures intended to minimize potentially adverse interactions with marine mammals. This chapter describes both alternatives and compares them in terms of their environmental impacts and their achievement of objectives.

As described in Section 1.2.1, we must prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider ExxonMobil's proposed mitigation measures, as well as other potential measures, and assess the benefit of the considered measures to the potentially affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);

[1] For instances involving Federal decisions on proposals for projects, the single action alternative would consider the effects of permitting the proposed activity which would be compared to "No action" alternative. In this case, the proposed activity (issuance of the IHA) would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity (NEPA; Section 1502.14(d)). 40 CFR Sec. 1508.23 states that if an agency subject to NEPA has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal, the effects can be meaningfully evaluated.

- A reduction in the number of times individual marine mammals are taken (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

2.2 CONDUCTOR PIPE INSTALLATION ACTIVITIES

ExxonMobil's IHA application, and our notice of the propose IHA (79 FR 36743, June 30, 2013) describe the conductor pipe installation activities in detail. We incorporate those descriptions by reference in this EA and briefly summarize them here. ExxonMobil proposes to install six conductor pipes by hydraulic impact hammer pipe-driving at Harmony Platform, Santa Ynez Production Unit, in the Santa Barbara Channel offshore of California.

2.2.1 DESCRIPTION OF EXXONMOBIL'S PROPOSED CONDUCTOR PIPE INSTALLATION ACTIVITIES

ExxonMobil plan to install six conductor pipes by hydraulic hammering at Harmony Platform. The conductor pipe installation activities are estimated to occur from mid-August to mid-November 2014, but the action could occur anytime within a 12-month period from the effective date of the IHA. Harmony Platform is located 10 kilometers (km) (5.4 nautical miles [nmi]) off the coast of California, between Point Conception and the City of Santa Barbara. Harmony Platform is one of three offshore platforms in ExxonMobil's Santa Ynez Production Unit, and is located in the Hondo field (Lease OCS-P 0190) at a water depth of 336 meters (1,200.8 ft). Harmony Platform was installed on June 21, 1989 with the sole purpose of producing crude oil and gas condensate. It began production of crude oil, gas, and gas condensate on December 30, 1993.

A conductor pipe is installed prior to the commencement of drilling operations for oil and gas wells. It provides protection, stability/structural integrity, and a conduit for drill cuttings and drilling fluid to the platform. It also prevents unconsolidated sediment from caving into the wellbore, and provides structural support for the well loads. Drilling activities are currently ongoing at Harmony Platform utilizing the existing conductors and wells. The platform jacket structure (see Figure 1-2 of the IHA application) currently has conductors installed in 51 out of 60 slots, as approved by the Bureau of Ocean Energy Management (BOEM, formally the Minerals Management Service [MMS]) in the original Development Production Plan. Addition of eight straight conductors at the Harmony Platform was approved by the Bureau of Safety and Environmental Enforcement (BSEE) on February 11, 2013 to maintain current production levels from the existing platform. Conductor installation with a hydraulic hammer is the same method that was used to install conductors on all three Santa Ynez Production Unit platforms from 1981 (Hondo) through 1993 (Harmony and Heritage). Pipe-driving the conductors are the only proven installation method that enables management of potential interferences with the existing platform infrastructure that will also reach the target depth. Non-pipe-driving conductor installation

methods are not deemed feasible at this time due to increased risk to platform structural integrity, offset well collision, and shallow-hole broaching.

The total length of a single conductor pipe is approximately 505 m (1,656.8 ft). Each conductor consists of multiple sections of 66.04 centimeter (cm) (26 inch [in]) diameter steel pipe that will be sequentially welded end-to-end from an upper deck of the platform (see Figure 1-2 of the IHA application), and lowered into the 366 m water column through metal rings (conductor guides) affixed to the jacket structure that orient and guide the conductor. Once the conductor reaches the sediment surface, gravity-based penetration (i.e., the conductor will penetrate the seabed under its own weight) is expected to reach approximately 30 m (98.4 ft) below the seabed. A hydraulic hammer (S-90 IHC) with a manufacturer's specified energy range of 9 to 90 kiloJoules (kJ) will be located on the drill deck and used to drive the conductor to a target depth of approximately 90 to 100 m (295.3 to 328.1 ft) below the seabed; therefore, only roughly 60 m (196.9 ft) of each 505 m (1,656.8 ft) long conductor pipe will require hydraulic driving. The S-90 IHC hydraulic hammer will sit on the conductor throughout pipe-driving operations, but a ram internal to the hammer will stroke back and forth using hydraulic pressure to impart energy to the conductor. No physical dropping of a weight will be employed to drive the conductor.

The S-90 IHC hydraulic hammer has an estimated blow rate of about 46 blows per minute. The portion of a complete conductor that must be actively driven (hammered) into the seafloor consists of 5 to 7 sections, which are sequentially welded end-to-end. Setup and welding will take 3.5 to 7.3 hours per section, mostly depending on the type of welding equipment used (e.g., automated welder). Impact hammer pipe-driving will take an estimated 2.5 to 3.3 hours for each section, depending primarily on sediment physical properties, which affect penetration rate. Complete installation of each conductor is estimated at approximately 14 days based on 24-hour (continuous) operations. Table 1-1 of the IHA application presents a summary of driving activities and estimated number of joints [requiring welding] for each conductor pipe). Figure 1-3 of the IHA application shows the estimated time in days for each of these activities that are required to install a single conductor pipe. ExxonMobil conservatively assumes that active hammering will be 3.3 hours, followed by 7.3 hours of hammer downtime (i.e., "quiet time," a time at which other activities are performed in preparation for the next section of pipe) over approximately 53 hours (2.2 days) of the approximately 14 days required to install one conductor pipe. This schedule produces 4.125 days (99 hours) of cumulated hammer driving for all six conductors over the project duration. Figure 1-4 depicts the 3.3 hour pipe-drive/7.3 hour downtime cycle for an isolated 24-hour period, showing a maximum of 9.4 hours of hammer driving. In the event that efficiencies produce a 2.5 hour drive/3.5 hour downtime cycle, a maximum of 10 hours of hammer pipe-driving could occur in a single 24-hour period. The complete installation of the conductor pipes is estimated at 14 days of continuous operation.

Table 2. Summary of conductor pipe installation activities and associated characteristics of each conductor pipe at Harmony Platform.

Conductor Pipe Activity	Pipe Length (m)	Estimates Number of Joints	Pipe-Driving Required	Estimated Number of Days[3]
Installation level to sea level	49 (160.8 ft)	4	No	2
Sea level to	366 (1,200.8 ft)	28	No	5.6

seafloor				
From 0 to ~30 m below seafloor	30[1] (98.4 ft)	3	No	0.9
From ~30 m to ~90 m below seafloor	60 (196.9 ft)	5 to 7	Yes[2]	0.69
Hammer downtime	NA	NA	No	1.52
Clean up and completion	NA	NA	No	3.6

[1] Estimated range of gravity-based penetration.

[2] See Figure 1-4 of the IHA application.

[3] See Figure 1-3 of the IHA application.

Platform Specifications

The Harmony Platform is owned and operated by ExxonMobil and has a personnel capacity of 132 people. The Harmony Platform, located in the Santa Barbara Channel, was installed on June 21, 1989 and first began production on December 30, 1993. The lease location for the Santa Ynez Production Unit is OCS-P0190. Support vessels and helicopters are used routinely as part of normal platform operations and will be utilized to provide necessary support for activities during the project. There are no anticipated changes in logistics from current operations associated with the planned project. The contractors responsible for protected species and noise monitoring during the planned project will use existing, routine transportation vessels.

The Harmony Platform has a minimum of two locations as likely observation stations from which Protected Species Observers (PSO) will watch for marine mammals before and during the conductor pipe installation activities. The station on the upper deck has an approximately 360º view around the Harmony Platform to monitor the Level B harassment buffer zone. At least one station on the lower deck will monitor the Level A harassment exclusion zone. More details of the Harmony Platform can be found in the IHA application and online at: http://www.boem.gov/BOEM-Newsroom/Offshore-Stats-and-Facts/Pacific-Region/Pacific-Platform-Operators.aspx#Exxon.

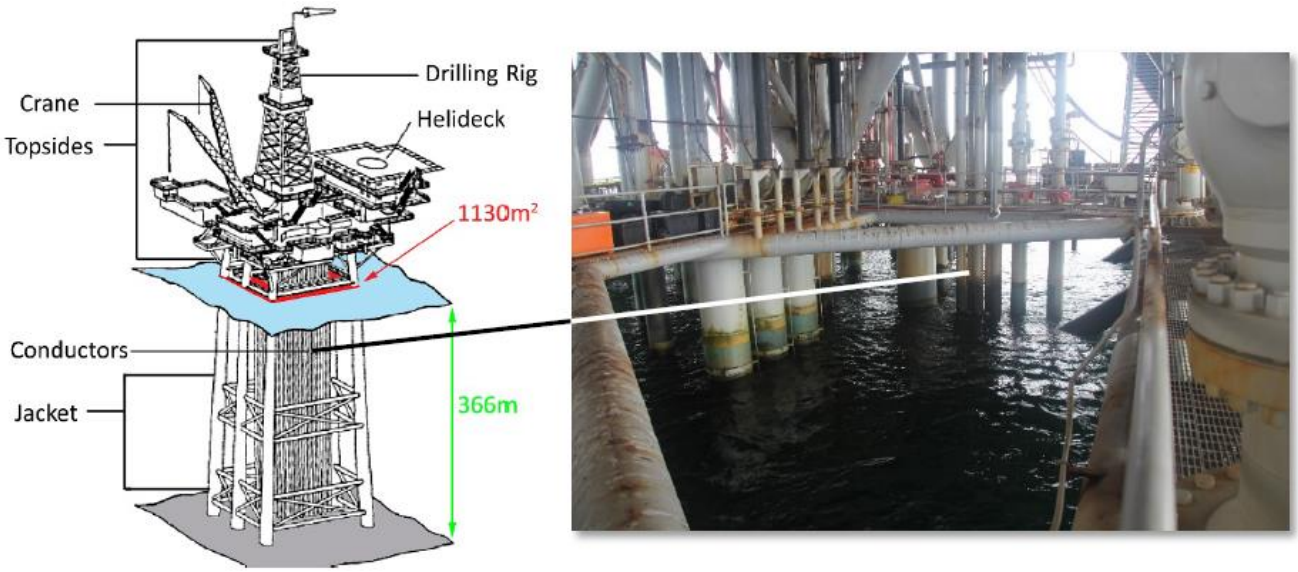

Figure 1. Schematic of general platform configuration showing platform area at sea level and water depth (left), and photograph showing exposed conductor pipes and Harmony Platform infrastructure at sea level (right).

Acoustic Source Specifications - Predicted Sound Levels for the Pile-Driving Activities

The predicted in-water sound field during impact hammer pipe-driving of the conductor pipes at the Harmony Platform were modeled by JASCO Applied Sciences, Ltd (JASCO). See JASCO's "Assessment of Airborne and Underwater Noise from Pile-Driving Activities at the Harmony Platform" for a detailed description of ExxonMobil's modeling for this planned action, which is provided as an addendum to the IHA application. NMFS refers the reviewers to that document for additional information. Sound levels emitted from the conductor pipe were estimated using underwater recordings (Illingworth and Rodkin, 2007) for impact pipe-driving of 61 to 76.2 centimeter (cm) (24 to 30 inch [in]) steel piles (i.e., pipes) back calculated to 1 m from the sound source, assuming a combination of cylindrical and spherical spreading. Sound level at the source was then scaled to the anticipated energy range of 9 and 90 kJ for the impact hammer and coupled to an acoustic model of a representative steel pipe (Claerbout, 1976; Reinhall and Dahl, 2011). Only modeled results associated with the maximum hammer energy of 90 kJ were used to estimate potential impacts and calculate take.

Each 505 m (1,656.8 ft) long conductor pipe is assembled from 12 m (39.4 ft) long sections welded end-to-end, and then lowered from a top deck of the platform through 366 m (1,200.8 ft) of water until the pipe encounters the seafloor and penetrates approximately 60 m of the seabed under its own weight. Because of the extremely long length of the conductor pipe compared to those represented in the literature, the pipe was modeled as a line array of 12 sources at 30 m (98.4 ft) intervals (i.e., over 360 m [1,181.1 ft] pipe length). This procedure produced a more realistic estimates of the maximum sound SPL (rms) from impact hammer pipe-driving of Harmony Platform's conductor pipes, compared with a single sound source representation (e.g., mid-pipe) that is generally used for shorter pipes (piles). At the maximum hammer energy of 90 kJ, the corresponding maximum sound pressure throughout the water column is estimated at 202 dB (rms) at 1 m from the conductor pipe (see Figure 6-1 of the IHA application). The predicted sound levels were used by ExxonMobil and NMFS to determine the buffer and exclusion zones for the conductor pipe installation activities.

Table 3 (Table 6-4 of the IHA application) summarizes the modeled distances at which in-water (160, 180, and 190 dB [rms]) and in-air (90 and 100 dB [rms]) sound levels are expected to be received from the impact hammer pipe-driving operating at a water depth of 366 m. For in-water noise, sound propagation and corresponding maximum distances were modeled using JASCO's model Full Waveform Range-dependent Acoustic Model (FWRAM), which is based on a modified version of the U.S. Navy's parabolic Range-dependent Acoustic Model (RAM) to account for an elastic seabed. FWRAM enhances RAM by accounting for seabed dissipation of acoustic energy and incorporates local bathymetry, seafloor geoacoustics, and underwater sound speed profiles. Physical data specific to the Harmony Platform location were used by JASCO to model sound propagation (see Table 2-1 and Figure 2-2 of the IHA application). Representative data include sediment grain size and density, and water column salinity/temperature, as these properties affect seafloor geoacoustic properties and in-water sound speed, respectively. Routines in FWRAM were used to model sound as SPL (rms) over water column depth and distance from the conductor pipe based on maximum hammer energy (90 kJ). Figure 6-2 of the IHA application shows water depth versus distance from the conductor pipe (sound source), where the 160 dB isopleth represents the maximum distance for in-water Level B harassment for marine mammals. The maximum distances are generally higher in the top 100 m (328.1 ft) of the water column.

To evaluate potential seasonal effects on sound propagation in the water column, year-round conditions using selected monthly averages (i.e., January, April, August, and November) of water column salinity and temperature were modeled along one azimuth, south of the Harmony Platform. Results showed no significant seasonal variations (<1 dB [rms]) up to 1 km (0.5 nmi) from the Harmony Platform. Potential differences in sound propagation with direction from the Harmony Platform also were investigated by JASCO. There were not significant differences in the sound field modeled for four equally spaced transects out to 1 km from the Harmony Platform.

For in-air noise, JASCO used in-air sound levels calculated from recordings of pipe-driving tests performed by ExxonMobil using a 90 kJ energy hammer that is planned for use on this planned action. The tests used the S-90 hammer at 90% of its maximum energy with a steel pipe of unknown size. The estimated sound levels represent A-weighted received levels, calculated at six distances between 0 and 12 m (0 to 39.4 ft), and indicated a source level of 132.4 dB re 20 µPa (rms) (A-weighted). Calculated distances from the sound source to the Level B harassment threshold for in-air noise (SPL [rms]) using spherical spreading loss are shown below and in Table 6-4 of the IHA application. Using the JASCO model, Table 2 (below) shows the distances at which three rms underwater sound levels and two rms in-air sound levels are expected to be received from the impact hammer pipe-driving activities. The 180 and 190 dB re 1 µPam (rms) distances are the safety criteria (i.e., exclusion zone) for potential Level A harassment as specified by NMFS (2000) and are applicable to cetaceans and pinnipeds, respectively. If marine mammals are detected within or about to enter the appropriate exclusion zone, the impact hammer pipe-driver will be shut-down immediately.

Table 3. Modeled maximum distances to which in-water sound levels ≥190, 180 and 160 dB re 1 µPa (rms) and in-air sound levels ≥90 (for harbor seals) and 100 dB re 20 µPa (rms) (for all other pinnipeds) could be received during the pipe-driving activities (based on maximum hammer energy of 90 kJ) in the Santa Barbara Channel off the coast of California.

Source	Water Depth (m)	Predicted RMS Radii Distances (m) for In-Water Pipe-Driving			Modeled RMS Radii Distances (m) for In-Air Pipe-Driving	
		160 dB	180 dB	190 dB	90 dB	100 dB
90 kJ Impact Hammer Pipe-Driver	366	325 (1,066.3 ft)	10 (32.8 ft)	3.5 (11.5 ft)	123 (403.5 ft)	41 (134.5 ft)

NMFS expects that acoustic stimuli resulting from the impact hammer pipe-driving associated with the conductor pipe installation activities has the potential to harass marine mammals.

2.2.2 Specified Time and Specified Area

ExxonMobil estimates that the planned conductor pipe installation activities will occur from mid-September to mid-December 2014, but the planned activities could occur anytime within a 12-month period from the effective date of the planned IHA. Precise scheduling is not presently available due to logistical and regulatory uncertainties. ExxonMobil originally requested the IHA for an August start date to allow for flexibility in scheduling operations, equipment, and personnel, as well as to ensure sufficient time to arrange for monitoring field services. The estimated duration of the planned project is 91 days. Under normal working conditions, the planned project is expected to include approximately 84 days of installation activity on the Harmony Platform bounded by 7 days of project mobilization/demobilization activities. It will take approximately 14 days to install each conductor pipe (6 conductors x 14 days = 84 days). Figure 2-1 of the IHA application includes a timeline of pipe-driving activities over the approximate three month duration. Of the estimated 84 days, hammer pipe-driving will occur over 30 intermittent intervals of 2.5 to 3.3 hours each for a combined total of 4.125 days, or 5% of the entire planned project (3.3 hours x 5 joints x 6 conductors = 99 hours or 4.125 days).

Therefore, we propose to issue an IHA that is effective from September 17, 2014 to September 16, 2015.

Harmony Platform is located in the Santa Barbara Channel, which is approximately 100 km (54 nmi) long and 40 km (21.6 nmi) wide, situated between the Channel Islands and the east-west trending coastline of California. The Santa Barbara Channel is the site of several other producing oil fields, including Ellwood, Summerland, Carpinteria offshore, and Dos Cuadras. The Santa Barbara basin is the prominent feature of the Santa Barbara Channel, with sill depths of approximately 250 m (820.2 ft) and 450 m (1,467.4 ft) at eastern and western entrances, respectively, with shallow (60 m or 196.9 ft) inter-island passages to the south. Harmony Platform's geographical position is 34º 22' 35.906" North, 120º 10' 04.486" West, at a water depth of 366 m (1,200.8 ft) on the continental slope below a relatively steep (7.5%) descent. The Harmony Platform is 43.5 km (27 miles) southwest of Santa Barbara, California (see Figure 1 of the IHA application). It is 4.7 km (2.5 nmi) from the shelf break, which is typically defined at the 100 m (328.1 ft) isobaths (USGS, 2009). It is 3.3 km (1.8 nmi) from the nearest buffered 200 m (656.2 ft) contour, which has been noted for its association with higher recorded densities of cetacean species (Redfern et al., 2013). It is also located 10 to 15 km (5.4 to 8.1 nmi) north of a common traffic route used by vessels to access the ports of Long Beach and Los Angeles. Figure

1-1 of the IHA application includes the location of the Harmony Platform, general site bathymetry, and Santa Barbara area boundaries.

Site Bathymetry and Sediment Physical Characteristics – Harmony Platform is located below a relatively steep (7.5%) descent from the shelf margin, which is defined by the 100 m contour in this area (USGS, 2009). It sits at a water depth of 366 m, just above the northern rim of the Santa Barbara Basin which is roughly confined by the 400 m (1,312.3 ft) contour, descending to depths exceeding 600 m (1,968.5 ft). Depths below the Harmony Platform are defined by a gentle slope (ca. 1%), which extends to the 600 m contour at the basin maximum. To the west of the platform, the slope attenuates to about 3% grade between 100 m and 400 m contours, near the western sill of the basin. To the east, the slope becomes steeper, approaching 15% grade between 100 m and 400 m contours, at 20 km (10.8 nmi) east of the platform.

Harmony Platform is located on unconsolidated fine-grained silty-clay and clayey-silt sediments. Table 2-1 of the IHA application describes the sediment physical characteristics and geoacoustical profile in the vicinity of the Harmony Platform. These sediments are typical of slope depths proceeding into the basin where sediments may be 2,000 m (6,561.7 ft) thick. Stein (1995) reported similar sediment grain characteristics from core segments penetrating 196 m (643.1 ft) below the sediment surface at a basin depth of 565 m (1,853.7 ft). Sediments were primarily of terrigeneous origin, dominated by quartz and clay minerals montmorillonite and illite. These sediments are similar in quartz content and clay-mineral composition to suspended sediment introduced by the Santa Clara River, which has an average annual sediment load of about 600,000 m^3 (2.1 x 10^7 ft^3) (Brownlee and Taylor, 1981). These turbid sediment plumes, arising primarily from the Santa Clara River to the east and from Santa Maria and Santa Inez Rivers north of Point Conception, may extend more than 5 km (2.7 nmi) from shore and inshore from Harmony Platform during periods of heavy runoff.

Sediments at Harmony Platform and throughout the Santa Barbara Channel slopes and basin reflect terrigeneous origins from coastal watersheds (mainly the Santa Clara River), with relatively minor inclusions of marine biogenic origin (e.g., calcareous and diatomaceous fractions). Shell fragment debris dislodged from the jacket structure during peak storm wave surges and from periodic maintenance has been observed around the periphery of the jacket in ROV surveys, but significant debris was not observed at the conductor pipe locations designated from this project. No known hard substrates have been identified by the former Minerals Management Service and NMFS surveys within 5 km of the Harmony Platform (Keller et al., 2005). Extending from shore to the 100 m shelf break, hard substrate is common, supporting extensive kelp beds at depths less than 20 m (65.6 ft), on cobbles and boulders. Further offshore, at depths of about 65 m (213.3 ft) to the shelf break, regions of folded ridges and pinnacles up to 3 m (9.8 ft) in relief have been recorded (USGS, 2009).

Hydrodynamics and Water Column Physical Properties – Hydrodynamic and seawater properties at the Harmony Platform are complex as a result of shifting wind and current patterns that occur in the Santa Barbara Channel in response to changing coastline orientation at Point Conception (Beckenbach, 2004). The Santa Barbara Channel is a cross-roads for large scale water masses moving along the California coast. Waters from north of Point Conception are cooled by coastal upwelling as they move southward. Most of these waters pass outside the Channel Islands but some enter the Santa Barbara Channel at its west end. Warmer waters from the south are driven poleward by the Southern California Countercurrent. Mean nearshore circulation in the entire Southern California Bight is dominated by this current (Hickey, 1993),

which enters the Santa Barbara Channel from the east. Water mass properties are determined by relative inputs to the Santa Barbara Channel from eastern and western entrances.

Hydrodynamics – Aud et al. (1999) determined that transport from the east accounted for 60% of the water entering the Santa Barbara Channel with 33% originating from the southern portion of the western entrance and the remaining 7% from southern inter-island passages. These contrasting source waters mix in the Santa Barbara Channel, often forming complex patterns visible in satellite images of sea surface temperature. They represent the more persistent large scale movement of water masses, which are driven by dynamic processes on scales much larger than the Santa Barbara Channel. Current speed fluctuations exhibit significant variation, typically ranging from 10 to 40 cm s^{-1} (Hickey, 1992), extending to a depth of 200 m (656.2 ft), and tending to follow longshore isobaths. Seasonal mean currents over the continental slope are 20 to 30 cm s^{-1}. However, surface circulation may be driven by winds that create rapidly developing high energy surface flows that vary in direction over scales of several kilometers. In the Santa Barbara Channel, wind stress from the northwest creates surface flows characterized by cyclonic, and occasionally anti-cyclonic, flow vortices which propagate westward. These occur intermittently throughout the year, and may last for months (Beckenbach, 2004; Oey, 2001). Vertical upwelling along the coast is also a feature of the water mass, occurring primarily from spring through fall (Harms and Winant, 1998). Inlet water mass movement in the vicinity of Harmony Platform is from west to east, extending to basin sill depth, with highly variable patterns of flow at the surface under the periodic influence of gyre vortices lasting from days to months, meandering from east to west, typically from spring to fall.

Water Column Physical Properties – Seasonal changes in water column stability (density structure) result from changes in temperature and salinity that occur seasonally from air-sea surface interactions, and from periodic fluctuations in relative contributions of different source waters (e.g., eastern and western flows). The water column is density stratified as temperatures decline and salinity increases with depth. Seasonal effects are evident with the strongest density gradient occurring during summer months, primarily within the upper 25 m (82 ft). Water column profiles of salinity, temperature, and calculated sound speed are illustrated in Figure 2-2 of the IHA application. Temperatures range from approximately 13 to 16.5º Celsius (C) (55.4 to 61.7º Fahrenheit [F]) at the surface, become nearly isothermal (9 to 9.5º C or 48.2 to 49.1º F) at 150 m (492.1 ft) depth, likely varying little to the platform depth of 366 m (1,200.8 ft). Seasonal salinities varied little, ranging from about 33.3 to 33.7% at the surface to 34 to 34.1% to 150 m depth. Figure 2-2 of the IHA application shows salinity, temperature, and underwater sound speed profiles in the vicinity of the Harmony Platform derived from the U.S. Naval Oceanographic Office's Generalized Digital Environmental Model (GDEM) database. The profile for sound speed correlates strongly with temperature, which is the main determinant of water density structure.

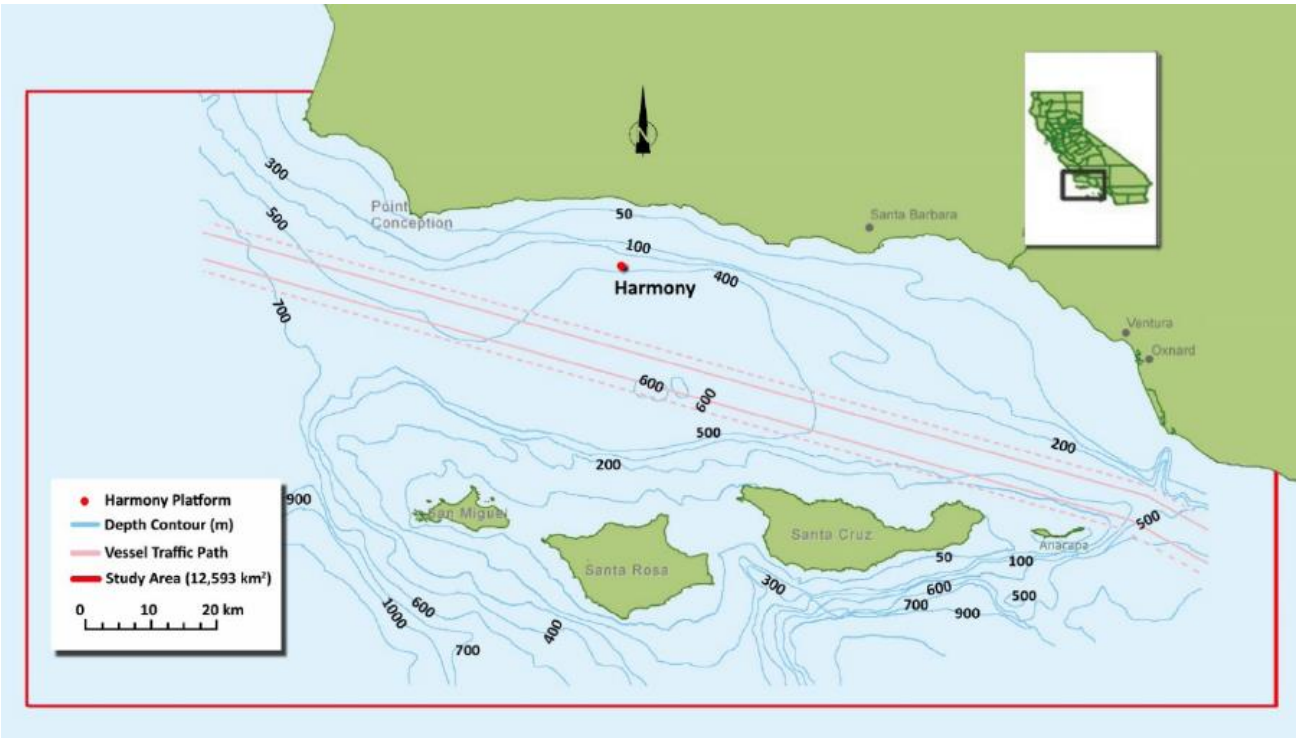

Figure 2. Location of Harmony Platform, general site bathymetry, and Santa Barbara Channel action area boundaries. Total study area estimated at 12,593 km^2.

2.3 DESCRIPTION OF ALTERNATIVES

2.3.1 ALTERNATIVE 1 – ISSUANCE OF AN AUTHORIZATION WITH MITIGATION MEASURES

The Proposed Action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an IHA (valid from September 2014 through September 2015) to ExxonMobil allowing the incidental take, by Level B harassment, of 30 species of marine mammals during the approximately 3 month conductor pipe installation activities subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the IHA, if issued.

ExxonMobil's analyses in its IHA application and our *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014) analyzed the potential impacts of this alternative in detail. We incorporate those analyses by reference in this EA and briefly summarize the mitigation and monitoring measures and reporting requirements likely to be incorporated in the final IHA, if issued, as well as information about the take estiamtes, in the following sections.

MITIGATION AND MONITORING MEASURES

As described in Section 1.2.1, we must prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider ExxonMobil's proposed mitigation measures, as well as other potential measures, and assess how such measures could benefit the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one

another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or mortality wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and
- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

To reduce the potential for disturbance from acoustic stimuli associated with the activities, ExxonMobil and/or its designees have proposed to implement the following monitoring and mitigation measures for marine mammals:

(1) establishment of exclusion zones to avoid injury to marine mammals and visual monitoring of the exclusion zones by Protected Species Observers (PSOs);

(2) shut-down procedures when PSOs detect marine mammals within or about to enter the exclusion zones while the impact hammer is operating;

(3) ramp-up procedures; and

(4) in-water and in-air acoustic monitoring to validate modeled sound levels and collect ambient noise level measurements.

After evaluating the public comments, we proposed the following additional mitigation measure that we determined meets the criteria described above:

(5) procedures for situations and species of particular concern such as emergency shut-down procedures for North Pacific right whales sighted at any distance from the platform; and avoidance of concentrations of blue, fin, sei, humpback, or sperm whales.

If we issue the IHA to ExxonMobil, we would include these mandatory requirements, described in further detail below, which we believe would achieve the MMPA's requirement of prescribing the means of effecting the least practicable impact on species or stock of marine mammals and their habitat.

Proposed Buffer and Exclusion Zones: We have established various threshold criteria for injury and harassment that may result from exposure to acoustic stimuli. These thresholds are expressed as the root mean square (rms) of all sound amplitudes measured over the duration of an impulse with a base unit of decibels referenced to one micropascal (re 1 µPa [rms]); the relevant thresholds for ExxonMobils's action are 190 dB re 1 µPa (rms) for potential injury to pinnipeds; 180 dB re 1 µPa (rms) for potential injury to cetaceans; and 160 dB re 1 µPa (rms) for potential Level B (behavioral) harassment from pulsed sounds (e.g., impact hammer pipe-driving).

ExxonMobil will establish a 160, 180, and 190 dB re 1 µPa (rms) buffer and exclusion zone for marine mammals, cetaceans, and pinnipeds, respectively, before starting the impact hammer pipe-driving based upon the modeled radii in their IHA application and shown here in Table 2.

Table 4. Modeled maximum distances to which in-water sound levels ≥190, 180, and 160 dB re 1 µPa (rms) an in-air sounds levels ≥90 (for harbor seals) and 100 dB 20 µPa (rms) (for all other pinnipeds) could be received during the impact hammer pipe-driving activities (based on maximum hammer energy of 90 kJ) in the Santa Barbara Channel off the coast of California.

Source	Water Depth (m)	Predicted RMS Radii Distances (m) for In-Water Pipe-Driving			Modeled RMS Radii Distances (m) for In-Air Pipe-Driving	
		160 dB	180 dB	190 dB	90 dB	100 dB
90 kJ Impact Hammer Pipe-Driver	366	325 (1,066.3 ft)	10 (32.8 ft)	3.5 (11.5 ft)	123 (403.5 ft)	41 (134.5 ft)

NMFS has determined that for acoustic effects, the use of acoustic thresholds in combination with corresponding exclusion zones are an effective way to consistently apply mitigation measures to avoid or minimize the impacts of an action. ExxonMobil will use NMFS's thresholds to establish a mitigation shut-down or exclusion zone (i.e., if an animal enters or about to enter an area calculated to be ensonified above the level of an established threshold a sound source is shut-down).

Shut-Down Procedures: ExxonMobil would shut-down the pipe-driving activities if a marine mammal is seen within or approaching the exclusion zone for the hydraulic impact hammer. ExxonMobil would not resume pipe-driving activities until the marine mammal(s) has cleared the exclusion zone, or until the PSO is confident that the animal has left the vicinity of the platform.

Ramp-Up Procedures: ExxonMobil would initiate a ramp-up procedure beginning with an initial set of three strikes from the impact hammer at 40% energy, followed by a 30 second waiting period, then two subsequent three strike sets.

Visual Monitoring: During pipe-driving activities at Harmony Platform in Santa Barbara Channel, ExxonMobil would place at least three PSOs aboard the platform for the conductor pipe installation activities and would watch for marine mammals near the platform during daytime and nighttime pipe-driving activities. The PSOs would watch for marine mammals for at least 30 minutes prior to the planned start of pipe-driving activities and would conclude visual

observations 30 minutes after pipe-driving activities stop. The PSOs would record data to estimate the numbers of marine mammals exposed to various received sound levels and to document reactions or lack thereof. ExxonMobil would also use the data to estimate numbers of animals potentially 'taken' by harassment (as defined in the MMPA). The PSOs would also provide information needed to order a shut-down of the hydraulic impact hammer source when a marine mammal is within or about to enter the exclusion zone.

The proposed activities will be conducted on a continual 24-hour basis; therefore, some of the 2.5 to 3.3 hours of active impact hammer pipe-driving periods will be expected to occur during non-daylight hours. To facilitate visual monitoring during non-daylight hours, the exclusion zones would be illuminated to allow for more effective viewing by the PSO. Lighting would not be expected to attract marine mammals. The areas where the exclusion zones occur fall within the jacket structure of the platform, and therefore could be easily illuminated by lights and monitored during non-daylight hours. For the buffer zone, which would extend out to 325 m (1,066.3 ft) from the conductor pipe, PSOs will be stationed on an upper deck of the Harmony Platform to monitor for marine mammals during pipe-driving activities. During non-daylight hours, PSOs would utilize night-vision devices and other appropriate equipment to monitor for marine mammals. If nighttime visual aids are insufficient, ExxonMobil proposes to use daytime visual counts of marine mammals as an estimate of the number of marine mammals present during non-daylight hours (within a 24 hour period), noting that diurnal activities for most marine mammals are expected to vary somewhat.

The PSOs would also observe during selected daytime periods when the pipe-driving is not occurring for comparison of sighting rates and behavior without pipe-driving activities. In addition to visual monitoring during pipe-driving activities, baseline monitoring of marine mammals would be performed up to one week before and one week after conductor pipe installation activities, as well as during selected period in between impact hammer pipe-driving activities.

Acoustic Monitoring: Acoustic monitoring would be conducted to obtain and validate modeled in-water and in-air sound levels during the pipe-driving activities. Each hydrophone (in-water) and microphone (in-air) would be calibrated following the manufacturer's recommendations prior to the start of the project and checked for accuracy and precision at the end of the data collection for each conductor pipe or as practical during conductor pipe installation activities. Background in-air and in-water sound levels would be measured at Harmony Platform in the absence of pipe-driving activities to obtain ambient noise level, and recorded over a frequency range of 10 Hz to 20 kHz. Noise level measurements would be conducted before, during, and after the project. The measured in-air and in-water sound data would be used to recalibrate and refine the sound propagation model used to determine buffer and exclusion zones. Also, sound pressure levels associated with ramp-up techniques would be measured.

Special Procedures for Situations of Species of Concern: It is unlikely that a North Pacific right whale will be encountered during the conductor pipe installation activities. However, because of its rarity and conservation status, the pipe-driving activities will be shut-down immediately if one is visually sighted at any distance from the Harmony Platform. The pipe-driving activities shall not resume (with ramp-up) until 30 minutes after the last documented North Pacific right whale visual sighting. Concentrations of humpback, sei, fin, blue, and/or sperm whales shall be avoided if possible (i.e., exposing concentrations of animals to 160 dB), and the sound source shall be shut-down if necessary. For purposes of this planned conductor

pipe installation activities, a concentration or group of whales will consist of three or more individuals visually sighted that do not appear to be traveling (e.g., feeding, socializing, etc.).

REPORTING MEASURES

ExxonMobil would submit a comprehensive report to NMFS within 90 days after the end of the conductor pipe installation activities. The report would describe the impact hammer pipe-driving activities that were conducted and sightings of marine mammals near the operations. The report would provide full documentation of methods, results, and interpretation pertaining to all monitoring. The 90-day report would summarize the dates and times of impact hammer pipe-driving activities, and all marine mammal sightings (i.e., dates, times, locations, activities, and associated conductor pipe installation activities). The report would also include estimates of the number and nature of exposures that could result in takes of marine mammals by harassment or in other ways.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A harassment), serious injury or mortality (e.g., equipment interaction, and/or entanglement), ExxonMobil shall immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources. ExxonMobil may not resume activities until we are able to review the circumstances of the prohibited take.

TAKE ESTIMATES

ExxonMobil modeled the number of different individuals that could be exposed to acoustic sounds with received levels greater than or equal to 160 dB re 1 µPa on one or more occasions by multiplying the species densities by the area of the Level B harassment buffer zone (0.3188 km^2) and the aggregated hours of impact pipe-driving. NMFS received comments during the public comment period on the proposed IHA stating that the take estimates should account for multiple days of exposure rather than aggregated hours of exposure. NMFS agrees, and has revised the take estimates accordingly. NMFS also received comments during the public comment period on the proposed IHA stating that NMFS should account for the potential exposure of marine mammal species more typical of subtropical latitudes that have been sighted off of southern California and in the Santa Barbara Channel due to unusually warm waters. NMFS agrees and proposes to authorize take for a total of 32 species of marine mammals based on this consideration.

As described above, based on public comments received on the *Federal Register* notice of the proposed IHA, we re-evaluated the mitigation and monitoring proposed for incorporation in the IHA and the estimated take. NMFS determined, based on the best available information, that the revised mitigation measures (which include procedures for species of special concern) and revised take estimates are presently the most feasible and effective measures for implementation. Thus, the Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA, issuance of an IHA, along the required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

2.3.2 ALTERNATIVE 2 – NO ACTION

We are required to evaluate the No Action Alternative per CEQ NEPA regulations (C.F.R. § 1502.14). The No Action Alternative serves as a baseline to compare the impacts of the Proposed Action.

Under the No Action Alternative, we would not issue an IHA to ExxonMobil for the taking, by Level B harassment, of small numbers of marine mammals, incidental to the conduct of conductor pipe installation activities at Harmony Platform in Santa Barbara Channel offshore of California. For the purposes of this EA, NMFS assumes under the No Action Alternative that ExxonMobil would conduct the proposed conductor pipe installation activities without an exemption from the MMPA against the take of marine mammals. NMFS also assumes that ExxonMobil would conduct the conductor pipe installation activities in the absence of the protective monitoring and mitigation measures for marine mammals that would be required by the IHA. We take this approach to meaningfully evaluate the primary environmental issues, the impact on marine mammals from these activities in the absence of protective measures.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

We considered whether other alternatives could meet the purpose and need and support ExxonMobil's conductor pipe installation activities. These alternatives are described briefly below.

We considered an alternative that would allow for the issuance of an IHA with no required mitigation or monitoring but eliminated that alternative from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reasons, we do not analyze this alternative further in this document.

We also considered an alternative that would for the issuance of an IHA to ExxonMobil with all of the mitigation, monitoring, and reporting measures contained in Alternative 1, as well as the following additional measures considered by ExxonMobil or suggested during the public comment process on the notice of the proposed IHA (79 FR 36743, June 30, 2014).

- **Time-area restrictions**: The CBD recommended that NMFS analyze time-area restrictions as a mitigation measures, including restricting activities when blue whales aggregate in the Santa Barbara Channel during June through November. NMFS does not believe that time-area restrictions are a necessary mitigation measure because Harmony Platform is located in an area of the lowest blue whale density around the Channel Islands and second lowest krill density in the California Current (see Santora et al., 2011, Figure 5).

- **Larger exclusion zones**: The CBD recommended that NMFS fully analyze larger exclusion zones as a mitigation measure. A detailed acoustic modeling report by JASCO titled "Assessment of Airborne and Underwater Noise from Pile Driving Activities at the Harmony Platform" was provided with the IHA application, and includes detailed information on the computer model, uncertainties, and associated input parameters used to calculate distance to the buffer (Level B harassment) and exclusion (Level A harassment) zones. NMFS evaluated the report and determined that it provided sufficient support to establish predicted buffer and exclusion zones. These predicted underwater sound levels will be assessed when the monitoring data is analyzed for the first conductor pipe, and the buffer and exclusion zones will be revised as necessary based on the results of the sound source verification.

- **Air bubble curtains or other noise reduction technologies**: The CBD recommended that NMFS included bubble curtains or other noise reduction technologies as a mitigation measure. ExxonMobil evaluated the potential use of air bubble curtains to reduce the underwater sound generated during pipe-driving activities in a water depth of 365.8 m (1,200 ft). The use of an air bubble curtain is not feasible due to interference of the jacket infrastructure at Harmony Platform, and the water depth and current speed (greater than 10 meters per second) at the activity site, which prevents the ability to maintain a constant air bubble density along the conductor length that would be effective at reducing underwater sound from the conductor pipe installation activities. The conductor pipes are being installed in 365.8 m of water through 76.2 cm (30 in) guides that are attached to structural members on the Harmony Platform; therefore, an air bubble curtain would be ineffective at reducing the output sound level, as bubbles would be dispersed and carried by currents away from the pipe and redirected by interference from the surrounding jacket members and conductor infrastructure. Because the conductors pass through 365.8 m of water column, another issue that eliminated this sound reduction technique was that the air nozzles used to generate the air bubbles would most likely freeze-up before reaching the sea bottom due to the pressure and cold temperatures of the water, which would render the air bubble curtain ineffective. All known applications of air bubble curtains that have effectively reduced sound by 20 to 30 dB have been used at depths shallower than 365.8 m and in waters with current velocities that are less than those commonly encountered in Santa Barbara Channel.

  ExxonMobil also evaluated the potential use of a dewatered cofferdam to reduce the underwater sound generated during conductor pipe installation activities. The installation of a dewatered cofferdam around each conductor installation is not feasible due to the 365.8 ft water depth and corresponding pressure. In addition, each conductor has a limited footprint and has subsea interference from the jacket infrastructure. Also, a cofferdam would have to be driven into the sea bottom at a depth of 365.8 m to provide structural stability and protection from water currents, which would create additional potential impacts to marine mammals in the action area.

  ExxonMobil also explored a physical noise abatement technology using flexible air-filled resonators that are lowered in multiple long hoses along the sides of each conductor prior to conductor pipe installation activities. The resonators would be filled with air in a hose-like structure that would close the gap around the conductors. This technology is not fully developed, and the scale of this noise abatement system would be unprecedented and impossible to install around Harmony Platform. The deepest known noise abatement system was installed in approximately 36.6 m (120 ft) of water, which is just one tenth of the depth where the planned conductor pipe installation activities will occur. This technology also has the same limitations as a bubble curtain, in that it uses air as the delivery system to fill the resonator and attenuate sound. At a water depth of 365.8 m, air would likely form hydrates prior to filling the resonators, which would render this approach ineffective.

- **Cease pipe-driving during low-visibility conditions**: The CBD recommends that NMFS restrict conductor pipe installation activities so that they do no occur during low visibility. ExxonMobil is providing artificial lighting for conductor pipe installation activities during nighttime and low visibility operations at the +15 ft level of the Harmony Platform. NMFS believes that this lighting will provide adequate visibility to allow observation of the 3.5 m and 10 m exclusion zones for pinnipeds and cetaceans, respectively, as well as the surrounding areas.

The potential environmental impacts of this alternative would be similar to the impacts of the proposed action (Alternative 1). However, because these additional mitigation measures are not considered practicable or feasible by NMFS and ExxonMobil or would not meet the criteria for mitigation measures described in Section 2.3.1, we eliminated this alternative from further consideration and do not analyze it further in the document.

CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter describes existing conditions in the project area. Descriptions of the physical and biological environment of the action area are contained in the documents incorporated by reference (see Section 1.3.1) and summarized here. We incorporate those descriptions by reference and briefly summarize or supplement the relevant sections for marine mammals in the following subchapters.

3.1 PHYSICAL ENVIRONMENT

We are required to consider impacts to the physical environment under NOAA NAO 216-6. As discussed in Chapter 1, our proposed action and alternatives relate only to the proposed issuance of our IHA of incidental take of marine mammals and not to the physical environment. Certain aspects of the physical environment are not relevant to our proposed action (see subchapter 1.3.2 - Scope of Environmental Analysis). Because of the requirements of NAO 261-6, we briefly summarize the physical components of the environment here.

3.1.1 MARINE MAMMAL HABITAT

The proposed action area is in the Santa Barbara Channel in the U.S. Exclusive Economic Zone of the Pacific Ocean.

Oceanographic conditions, including occasional El Nino and La Nina events, influence the distribution and numbers of marine mammals present in the northeast Pacific Ocean, including California, resulting in considerable year-to-year variation in the distribution and abundance of many marine mammal species (LGL, 2008).

More information on the physical conditions and marine mammals habitat (including vegetated shores, soft shores, hard shores, aquatic beds, soft bottoms, hard bottoms, and structures) in the Southern California action area can be found in the U.S. Navy's *Hawaii-Southern California Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (Navy, 2013) (available at: http://hstteis.com/Home.aspx), which we incorporate here by reference.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 MARINE MAMMALS

Thirty-seven marine mammal species under our jurisdiction may occur in the proposed action area, including 8 mysticetes (baleen whales), 23 odontocetes (toothed whales, dolphins, and porpoises), and 6 pinnipeds (seals and sea lions). More information on the status, abundance, and seasonal distribution of the stocks or species of marine mammals likely to be affected by the proposed activities can be found in ExxonMobil's IHA application (available at: http://www.nmfs.noaa.gov/pr/pdfs/permits/exxonmobil_harmony_iha_application2014.pdf), which we incorporate here by reference.

We also presented information on the marine mammal species under our jurisdiction that may occur in the proposed action area in the *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014), which we incorporate by reference here. Table 3 (see below) presents information on the habitat, occurrence, range, regional abundance, and conservation status of marine mammals that may occur in or near the proposed conductor pipe installation activities offshore of California in the Pacific Ocean. Our agency's Stock Assessment Reports, http://www.nmfs.noaa.gov/pr/sars/species.htm provide the latest abundance and life history information about each stock.

All of the marine mammals are protected under the MMPA and several of these species are listed as threatened or endangered under the ESA and thus depleted under the MMPA, including the blue, fin, humpback, sei, and sperm whales (see Table 3 below).

Table 5. The habitat, occurrence, range, regional abundance, and conservation status of marine mammals that may occur in or near the proposed conductor pipe installation area off the coast of California in the Pacific Ocean. (See text and Table 3-1 in ExxonMobil's IHA application for further details.)

Species	Habitat	Occurrence	Range	Best Population Estimate (Minimum)[1]	ESA[2]	MMPA[3]
Mysticetes						
North Pacific right whale (*Eubalaena japonica*)	Coastal and pelagic	Rare	North Pacific Ocean between 20 to 60º North	NA (26) – Eastern North Pacific stock	EN	D
Gray whale (*Eschrichtius robustus*)	Coastal and shelf	Transient during seasonal migrations	North Pacific Ocean, Gulf of California to Arctic – Eastern North Pacific stock	19,126 (18,107) – Eastern North Pacific stock 155 (142) – Western North Pacific population	DL – Eastern North Pacific stock EN – Western North Pacific population	NC – Eastern North Pacific stock D – Western North Pacific population
Humpback whale (*Megaptera novaeangliae*)	Pelagic, nearshore waters, and banks	Seasonal, sightings near northern Channel Islands	Cosmopolitan	1,918 (1,855) – California/Oregon/Washington (CA/OR/WA) stock	EN	D
Minke whale (*Balaenoptera acutorostrata*)	Pelagic and coastal	Less common in summer, small number around northern Channel Islands	Tropics and sub-tropics to ice edges	478 (202) – CA/OR/WA stock	NL	NC
Bryde's whale (*Balaenoptera edeni*)	Pelagic and coastal	Rare, infrequent summer off California	Tropical and sub-tropical zones between 40º North and 40º South	NA – No stock for CA/OR/WA	NL	NC
Sei whale (*Balaenoptera borealis*)	Primarily offshore, pelagic	Rare, infrequent summer off California	Tropical to polar zones, favor mid-latitude temperate areas	126 (83) – Eastern North Pacific stock	EN	D
Fin whale (*Balaenoptera physalus*)	Continental slope, pelagic	Year-round presence	Tropical, temperate, and polar	3,051 (2,598) – CA/OR/WA stock	EN	D

			zones of all oceans			
Blue whale (*Balaenoptera musculus*)	Pelagic, shelf, coastal	Seasonal, arrive April to May, common late-summer to fall off Southern California	Tropical waters to pack ice edges	1,647 (1,551) – Eastern North Pacific stock	EN	D
Odontocetes						
Sperm whale (*Physeter macrocephalus*)	Pelagic, deep sea	Common year-round, more likely in waters >1,000 m	Tropical waters to pack ice edges	971 (751) – CA/OR/WA stock	EN	D
Pygmy sperm whale (*Kogia breviceps*)	Pelagic, slope	Seaward of 500 to 1,000 m, Limited sightings in Southern California Bight	Tropical to warm temperate zones (temperate preference)	579 (271) – CA/OR/WA stock	NL	NC
Dwarf sperm whale (*Kogia sima*)	Deep waters off the shelf	Rare	Tropical to warm temperate zones (warmer preference)	NA – CA/OR/WA stock	NL	NC
Baird's beaked whale (*Berardius bairdii*)	Pelagic	Primarily along continental slope late spring to early fall	North Pacific Ocean and adjacent seas	847 (466) – CA/OR/WA stock	NL	NC
Cuvier's beaked whale (*Ziphius cavirostris*)	Pelagic	Possible year-round occurrence	Cosmopolitan	6,590 (4,481) – CA/OR/WA stock	NL	NC
Blainville's beaked whale (*Mesoplodon densirostris*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	Temperate and tropical waters worldwide	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC
Perrin's beaked whale (*Mesoplodon perrini*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	North Pacific Ocean	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC

Lesser beaked whale (*Mesoplodon peruvianis*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	Temperate and tropical waters Eastern Pacific Ocean	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC
Stejneger's beaked whale (*Mesoplodon stejnegeri*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	North Pacific Ocean	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC
Ginkgo-toothed beaked whale (*Mesoplodon ginkgodens*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	Temperate and tropical waters Indo-Pacific Ocean	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC
Hubbs' beaked (*Mesoplodon carlhubbsi*)	Pelagic	Rare, continental slope region, generally seaward of 500 to 1,000 m depth	North Pacific Ocean	694 (389) – Mesoplodon spp. CA/OR/WA stock	NL	NC
Killer whale (*Orcinus orca*)	Pelagic, shelf, coastal, pack ice	Varies on inter-annual basis, likely in winter (January to February)	Cosmopolitan	240 (162) – Eastern North Pacific Offshore stock 346 (346) – Eastern North Pacific Transient stock 354 (354) – West Coast Transient stock	NL	NC
False killer whale (*Pseudorca crassidens*)	Pelagic	Rare	Tropical to warm temperate zones	NA – No stock for CA/OR/WA	NL	NC
Short-finned pilot whale (*Globicephala macrorhynchus*)	Pelagic, shelf, coastal	Uncommon, more common before 1982	Warm temperate to tropical waters, ~50º North to 40º South	760 (465) – CA/OR/WA stock	NL	NC
Bottlenose dolphin (*Tursiops truncatus*)	Offshore, inshore, coastal, estuaries	Offshore stock – Year-round presence Coastal stock –	Tropical and temperate waters between 45º North and South	1,006 (684) – CA/OR/WA Offshore stock 323 (290) – California Coastal stock	NL	NC

		Limited, small population within 1 km of shore				
Striped dolphin (*Stenella coeruleoalba*)	Off continental shelf	Occasional visitor	Tropical to temperate waters, 50º North to 40º South	10,908 (8,231) – CA/OR/WA stock	NL	NC
Short-beaked common dolphin (*Delphinus delphis*)	Shelf, pelagic, seamounts	Common, more abundant in summer	Tropical to temperate waters of Atlantic and Pacific Ocean	411,211 (343,990) – CA/OR/WA stock	NL	NC
Long-beaked common dolphin (*Delphinus capensis*)	Inshore	Common, more inshore distribution, year-round presence	Nearshore and tropical waters	107,016 (76,224) – California stock	NL	NC
Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)	Offshore, slope	Common, year-round, more abundant November to April	Temperate waters of North Pacific Ocean	26,930 (21,406) – CA/OR/WA, Northern and Southern stock	NL	NC
Northern right whale dolphin (*Lissodelphis borealis*)	Pelagic	Common, more abundant November to April	North Pacific Ocean, 30 to 50º North	8,334 (6,019) – CA/OR/WA stock	NL	NC
Risso's dolphin (*Grampus griseus*)	Deep water, seamounts	Common, present in summer, more abundant November to April	Continental slope and outer shelf of tropical to temperate waters	6,272 (4,913) – CA/OR/WA stock	NL	NC
Dall's porpoise (*Phocoenoides dalli*)	Shelf, slope, offshore	Common, more abundant November to April	North Pacific Ocean, 30 to 62º North	42,000 (32,106) – CA/OR/WA stock	NL	NC
Harbor porpoise (*Phocoena phocoena*)	Coastal and inland waters	AK to Point Conception, CA	Shallow temperate to sub-polar waters of Northern Hemisphere	NA	NL	NC
Pinnipeds						
California sea lion (*Zalophus californianus*)	Coastal, shelf	Common, Channel Island breeding	Eastern North Pacific Ocean – Alaska to	296,750 (153,337) – U.S. stock	NL	NC

		sites in summer	Mexico			
Steller sea lion (*Eumetopias jubatus*)	Coastal, shelf	Rare	North Pacific Ocean – Central California to Korea	49,685 (45,916) – Western stock 58,334 to 72,223 (52,847) – Eastern stock	EN – Western stock DL – Eastern stock	D
Pacific harbor seal (*Phoca vitulina richardii*)	Coastal	Common, haul-outs and rookeries in Channel Islands, bulk of stock north of Point Conception	Coastal temperate to polar regions in Northern Hemisphere	30,196 (26,667) – California stock	NL	NC
Northern elephant seal (*Mirounga angustirostris*)	Coastal, pelagic when not migrating	Common, haul-outs and rookeries in Channel Islands, December to March and April to August, spend 8 to 10 months at sea	Eastern and Central North Pacific Ocean – Alaska to Mexico	124,000 (74,913) – California breeding stock	NL	NC
Northern fur seal (*Callorhinus ursinus*)	Pelagic, offshore	Common, small population breeds on San Miguel Island May to October	North Pacific Ocean – Mexico to Japan	12,844 (6,722) – California stock	NL	NC
Guadalupe fur seal (*Arctocephalus townsendi*)	Coastal, shelf	Rare, observed in Channel Islands	California to Baja California, Mexico	7,408 (3,028) – Mexico to California stock	T	D
Fissipeds						
Southern sea otter (*Enhydra lutris nereis*)	Coastal	Mainland coastline from San Mateo County to Santa Barbara County, CA San Nicolas Island	North Pacific Rim – Japan to Mexico	2,826 (2,723) – California stock	T	D

NA = Not available or not assessed.

[1] NMFS Marine Mammal Stock Assessment Reports

[2] U.S. Endangered Species Act: EN = Endangered, T = Threatened, DL = Delisted, and NL = Not listed.

[3] U.S. Marine Mammal Protection Act: D = Depleted, S = Strategic, and NC = Not Classified.

3.2.2 PROTECTED SPECIES (OTHER THAN MARINE MAMMALS)

The only potentially affected non-marine mammal ESA-listed species consist of one marine invertebrate (white abalone [*Haliotis sorenseni*]) and one reptile (leatherback sea turtle [*Dermochelys coriacea*]). There are no other ESA-listed species of marine flora, fish, or birds that occur near the Harmony Platform site that would be potentially affected by the pipe-driving-related noise. The white abalone is found from Point Conception south to the tip of Baja California in open low and high relief rock or boulder habitat that is interspersed with sand channels. They are depth restricted (approximately 200 ft) and feed on macro algae (e.g., kelp). Although it is possible that larvae could reach and attach to upper portions of the jacket structure of the platform, there are no macro algae to sustain them. The endangered black abalone (*Haliotis cracherodii*) is not considered as it is limited to intertidal and subtidal rocks. The leatherback sea turtle has been observed in the Southern California Bight, including the Santa Barbara Channel region on rare occasions; however, there is insufficient abundance of preferred prey (i.e., brown sea nettles) to attract leatherback sea turtles to the action area. Harmony Platform is located approximately 48.3 km (30 miles) south of Point Arguello, the southern-most extent of critical habitat for this species offshore of California.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

This chapter of the EA analyzes the impacts of the two alternatives (i.e., whether or not to issue the IHA which includes prescribed means of incidental take, mitigation measures, and monitoring requirements for marine mammals only) and addresses the potential direct, indirect, and cumulative impacts of our issuance of an IHA for Level B harassment take of marine mammals during the conductor pipe installation activities. The ExxonMobil's analyses in the IHA application and our *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014) facilitate an analysis of the direct, indirect, and cumulative effects of our proposed issuance of an IHA.

In developing this EA, NMFS adhered to the procedural requirements of NEPA, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500-1508), and NOAA's (i.e., NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act) procedures for implementing NEPA.

The following definitions will be used to characterize the nature of the various impacts evaluated with this EA:

- *Short-term or long-term impacts*. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period. Long-term impacts are those that are more likely to be persistent and chronic.
- *Direct or indirect impacts*. A direct impact is caused by a proposed action and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct impact of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.
- *Minor, moderate, or major impacts*. These relative terms are used to characterize the magnitude of an impact. Minor impacts are generally those that might be perceptible but, in their context, are not amenable to measurement because of their relatively minor character. Moderate impacts are those that are more perceptible and, typically, more amenable to quantification or measurement. Major impacts are those that, in their context and due to their intensity (severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27) and, thus, warrant heightened attention and examination for potential means for mitigation to fulfill the requirements of NEPA.
- *Adverse or beneficial impacts*. An adverse impact is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.
- *Cumulative impacts*. CEQ regulations implementing NEPA define cumulative impacts as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." (40 CFR 1508.7) Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time within a geographic area.

4.1 EFFECTS OF ALTERNATIVE 1 – ISSUANCE OF AN IHA WITH MITIGATION

Alternative 1 is the Preferred Alternative under which we would issue an IHA to ExxonMobil for the taking, by Level B harassment, of 32 species of marine mammals, incidental to conductor pipe installation activities at Harmony Platform in Santa Barbara Channel offshore of California. We would incorporate the mitigation, monitoring, and reporting measures described in Section 2.3.1 in this EA into a final IHA.

The ExxonMobil's 2014 IHA application and our *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014) describe, the potential effects of sounds from impact hammer pipe-driving on marine mammals. We incorporate those descriptions by reference and briefly summarize or supplement the relevant sections in the following subchapters.

4.1.1 IMPACTS TO MARINE MAMMAL HABITAT

Our proposed action would have no additive or incremental effect on the physical environment beyond those resulting from the conductor pipe installation activities itself, which are evaluated in the referenced documents (ExxonMobil's 2014 IHA application and our *Federal Register* notice requesting comments on the proposed IHA [79 FR 36743, June 30, 2014]). The proposed addition of the six conductor pipes to the existing 51 conductor pipes would not substantively change the physical structure.

The effects of conductor pipe installation activities at Harmony Platform would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitats. ExxonMobil's proposed conductor pipe installation activities are not located within a marine sanctuary, wildlife refuge, a National Park, or other conservation area. The issuance of an IHA would not affect physical habitat features, such as substrates and water quality. The main impact associated with the activity will be temporarily elevated noise levels and the associated direct effects on marine mammals, discussed in Section 4.1.2.

Prey: The conductor pipe installation activities will not result in any permanent impact on habitats used by the marine mammals in the action area, including the food sources they use (i.e., fish and invertebrates), as this impact is temporary and reversible. In examining impacts to fish as prey species for marine mammals, we expect fish to exhibit a range of behaviors including no reaction or habituation (Pena et al., 2013) to startle responses and/or avoidance (Fewtrell and McCauley, 2012). We expect the conductor pipe installation activities will have no more than a temporary and minimal adverse effect on any fish or invertebrate species. Although there is a potential for injury to fish or marine life in close proximity to the Harmony Platform, we expect that the impacts of the conductor pipe installation activities on fish and other marine life specifically related to acoustic activities would be temporary in nature, negligible, and would not result in substantial impact to these species or to their role in the ecosystem.

4.1.2 IMPACTS TO MARINE MAMMALS

The impacts of the conductor pipe installation activities on marine mammals are specifically related to acoustic activities. We expect that impacts to marine mammals that could be encountered within the action area would be limited to temporary behavioral responses (such as brief masking of natural sounds) and temporary changes in animal distribution. We interpret these effects on marine mammals as falling, at most, within the MMPA definition of Level B (behavioral) harassment for those species managed by us. NMFS included a discussion of the potential effects of this action on marine mammals in the notice of the proposed IHA (79 FR 36743, June 30, 2014), which we incorporate here by reference. This discussion includes the

effects of sound from impact hammer pipe-driving on mysticetes, odontocetes, and pinnipeds including tolerance, masking, behavioral disturbance, hearing impairment, and other non-auditory physical effects.

Under Alternative 1 (Preferred Alternative), we would authorize the incidental, Level B harassment only, in the form of temporary behavioral disturbance, of 32 species of marine mammals and would expect no significant impact on marine mammals, their habitats, or their role in the environment.

ExxonMobil proposed a number of monitoring and mitigation measures for marine mammals as part of its IHA application. NMFS re-evaluated these mitigation measures after receiving public comments on the notice of the proposed IHA. In analyzing the effects of the preferred alternative, we conclude that the following required monitoring and mitigation measures would minimize and/or avoid impacts to marine mammals:

(1) establishment of exclusion zones to avoid injury to marine mammals and visual monitoring of the exclusion zones by Protected Species Observers (PSOs);
(2) shut-down procedures when PSOs detect marine mammals within or about to enter the exclusion zones while the impact hammer is operating;
(3) ramp-up procedures;
(4) in-water and in-air acoustic monitoring to validate modeled sound levels and collect ambient noise level measurements; and
(5) procedures for situations and species of particular concern such as emergency shut-down procedures for North Pacific right whales sighted at any distance from the platform; and avoidance of concentrations of blue, fin, sei, humpback, or sperm whales.

ExxonMobil did not request authorization to take marine mammals by Level A harassment in its IHA application because its environmental analyses indicate that marine mammals would not be exposed to levels of sound likely to result in Level A harassment (we refer the reader to the IHA application and addendum). Consequently, ExxonMobil's request for take by Level A harassment is zero animals for any species.

We do not anticipate that take by injury (Level A harassment), serious injury, or mortalities would occur, nor would we authorize take by injury, serious injury, or mortality. We expect that harassment takes would be at the lowest level practicable due to the incorporation of the mitigation and monitoring measures proposed in ExxonMobil's IHA application.

Conductor Pipe Installation Activities Timing: We expect the activity to result in limited to temporary behavioral responses (such as brief masking of natural sounds) and temporary changes in animal distribution.

Acoustic Thresholds: We have determined that for in-air and in-water acoustic effects, the use of acoustic thresholds in combination with corresponding buffer and exclusion zones is an effective way to consistently apply measures to avoid or minimize the impacts of an action. ExxonMobil will use NMFS's acoustic thresholds to establish a mitigation shut-down or exclusion zone for potential acoustic injury and behavioral disturbance (i.e., if an animal is about to enter or enters an area calculated to be ensonified above the level of an established threshold a sound source is shut-down).

Estimated Take of Marine Mammals by Level B Incidental Harassment: ExxonMobil has requested take by Level B harassment incidental to their proposed conductor pipe installation activities. Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the impact hammer pipe-driving are expected to result in the behavioral disturbance of marine mammals.

We estimate that 32 species of marine mammals under our jurisdiction could be potentially affected by Level B harassment over the course of the proposed IHA. For each species, the proposed take numbers are small (all estimates are less than six percent) relative to the overall, regional or stock population size. Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (i.e., 24 hour cycle). Behavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall et al., 2007). While we anticipate that the conductor pipe installation activities may occur on consecutive days, the estimated duration of the impact hammer pipe-driving would last no more than 90 operational days. Additionally, the conductor pipe installation activities would be increasing sound levels in the marine environment in a relatively small area surrounding the Harmony Platform (compared to the range of the animals), and some animals may only be exposed to and harassed by sound for short periods of time (i.e., less than day).

Table 4 outlines the density estimates for species in the action area, the number of Level B harassment takes that we propose to authorize in the IHA, the percentage of each species or stock proposed for take as a result of the ExxonMobil's activities, and the population trend for each species.

Table 6. Estimated densities and possible number of marine mammal species that might be exposed to sound levels greater than or equal to 160 dB re 1 µPa (pipe-driving activities) during ExxonMobil's proposed conductor pipe installation activities in the Santa Barbara Channel offshore of California.

Species	Density in Action Area (#/km^2)[1]	Calculated Take from Pipe-Driving Activities In-Water (i.e., Estimated Number of Individuals Exposed to Sound Levels ≥ 160 dB re 1 µPa)[4]	Calculated Take from Pipe-Driving Activities In-Air (i.e., Estimated Number of Individuals Exposed to Sound Levels ≥ 90 dB re 20 µPa for harbor seals and 90 dB re 20 µPa for all other	Total Authorized Take [6]	Abundance[7]	Approximate Percentage of Population /Stock Estimate (for authorized take)[8]	Population Trend[7]

			pinnipeds)[5]				
Mysticetes							
North Pacific right whale	NA	0	0	0	NA (26) – Eastern North Pacific stock	NA	NA
Eastern North Pacific Gray whale	1.5188	3.063	0	10	19,126 (18,107) – Eastern North Pacific stock 155 (142) – Western North Pacific population	0.05	Increasing over past several decades – Eastern North Pacific stock
Humpback whale	0.0055[3]	0.0332	0	2	1,918 (1,855) – CA/OR/WA stock	0.1	Increasing
Minke whale	0.04	0.2418	0	2	478 (202) – CA/OR/WA stock	0.42	NA
Bryde's whale	NA	0	0	2	NA	NA	NA
Sei whale	0.01	0.0605	0	2	126 (83) – Eastern North Pacific stock	1.58	NA
Fin whale	0.0065[3]	0.0392	0	2	3,051 (2,598) – CA/OR/WA stock	0.07	Increasing
Blue whale	0.006[2]	0.00362	0	2	1,647 (1,551) – Eastern North Pacific stock	0.12	NA
Odontocetes							
Sperm whale	0.0000542[2]	0.000327	0	2	971 (751) – CA/OR/WA stock	0.21	NA
Pygmy sperm whale	0.05	0.302	0	1	579 (271) – CA/OR/WA stock	0.17	NA
Dwarf sperm whale	NA	0	0	0	NA – CA/OR/WA stock	NA	NA
Baird's beaked whale	0.001224[2]	0.0074	0	6	847 (466) – CA/OR/WA stock	0.71	NA
Cuvier's beaked whale	0.5233	3.1633	0	4	6,590 (4,481) – CA/OR/WA	0.06	Declining off CA/OR/WA

					stock		
Mesoplodon beaked whale	0.0551	0.3331	0	2	694 (389) – CA/OR/WA stock	0.29	Declining off CA/OR/WA
Killer whale	0.07464	0.4512	0	10	240 (162) – Eastern North Pacific stock 346 (346) – Eastern North Pacific Transient stock 354 (354) – West Coast Transient stock	4.17/2.89/2.82	NA – Eastern North Pacific Offshore stock; NA – Eastern North Pacific Transient stock; Increasing – West Coast Transient stock
False killer whale	NA	0	0	50	NA	NA	NA
Short-finned pilot whale	0.06	0.3627	0	40	760 (465) – CA/OR/WA stock	5.26	NA
Bottlenose dolphin	0.0799	0.4829	0	10	1,006 (684) – CA/OR/WA stock	0.99	NA – CA/OR/WA Offshore stock; NA – CA Coastal stock
Striped dolphin	0.002711[2]	0.0164	0	20	10,908 (8,231) – CA/OR/WA stock	0.18	NA
Short-beaked common dolphin	0.946007[2]	5.7186	0	450	411,211 (343,990) – CA/OR/WA stock	0.11	Varies with oceanographic conditions
Long-beaked common dolphin	8.5	51.3825	0	120	107,016 (76,224) – CA stock	0.11	Increasing over last 30 years
Pacific white-sided dolphin	0.068630[2]	0.4149	0	30	26,930 (21,406) – CA/OR/WA stock	0.11	NA
Northern right whale dolphin	0043996[2]	0.2659	0	100	8,334 (6,019) – CA/OR/WA stock	1.19	NA
Risso's dolphin	0.053323[2]	0.3223	0	10	6,272 (4,913) – CA/OR/WA stock	0.16	NA
Dall's porpoise	0.028931	0.1749	0	50	42,000 (32,106) – CA/OR/WA stock	0.12	NA

Harbor porpoise	0	0	0	0	NA	NA	NA
Pinnipeds							
California sea lion	23.6	142.662	17.997	143 + 18 = 161	296,750 (153,337) – U.S. stock	0.05	Increasing
Steller sea lion	NA	0	0	0	49,685 (42,366) – Western stock 58,334 (72,223) – Eastern stock	NA	Declining – Western stock; Increasing – Eastern stock; Declining in CA
Pacific harbor seal	2.4	14.508	5.491	15 + 6 = 21	30,196 (26,667) – CA stock	0.07	Increased 1981 to 2004
Northern elephant seal	9.85	59.5433	7.512	60 + 8 = 68	124,000 (74,913) – CA breeding stock	0.05	Increasing through 2005
Northern fur seal	0.79	4.7756	0.602	5 + 1 = 6	12,844 (6,722) – California stock	0.05	Increasing
Guadalupe fur seal	NA	0	0	0	7,408 (3,028) – Mexico to CA stock	NA	Increasing

NA = Not available or not assessed.

[1] Planned action area (12,593 km^2) in the Santa Barbara Channel off the coast of California.

[2] OBIS-SEAMAP SERDP-SDSS NMFS SWFSC summer density data for the California Current ecosystem.

[3] Redfern et al. (2013)

[4] Calculated take is the estimated number of animals in the in-water ensonified buffer zone multiplied by the number of days (18.6).

[5] Calculated take is the estimated number of animals in the in-air ensonified buffer zone multiplied by the number of days (18.6).

[6] Authorized take includes calculated takes for animals in the ensonified in-water and in-air buffer zones. Authorized takes for cetaceans were increased to account for group size.

[7] NMFS Marine Mammal Stock Assessment Reports (Caretta et al., 2013)

[8] Total authorized (and calculated) takes expressed as percentages of the species or stock.

Take estimates were calculated for in-water (cetaceans and pinnipeds) and in-air (pinnipeds only). The estimates are based on the following information:

- Thresholds for marine mammals to in-water and in-air noise;
- Sound levels at the conductor pipe from hammer strike;
- Sound propagation (transmission/spreading loss) through the environment (i.e., air, water);
- Maximum distances from the sound sources to the corresponding impact zones (based on Level A and Level B harassment thresholds) for marine mammals;
- Density estimate for each species of marine mammals (calculated as stock abundance divided by 12,592 km^2 [3,671.2 nmi^2]area [except where noted]); and
- Number of takes for each species of marine mammals within a group (calculated as density multiplied by buffer/exclusion zone multiplied by days of activity).

Our *Federal Register* notice of the issuance of the IHA, if warranted, will contain a complete descriptions of how we derived the take estimates. We do not expect the activity to impact rates of recruitment or survival for any affected species or stock. The conductor pipe installation activities would not take place in areas of significance for marine mammal feeding, resting, breeding, or calving and would not adversely impact marine mammal habitat.

Under Alternative 1, the proposed action has no unmitigable adverse impact to subsistence uses, because there are no permitted subsistence uses of marine mammals in the region.

4.2 EFFECTS OF ALTERNATIVE 2– NO ACTION ALTERNATIVE

Under the No Action Alternative, we would not issue an IHA to ExxonMobil for the taking, by Level B harassment, of small numbers of marine mammals, incidental to the conduct of a conductor pipe installation activities at Harmony Platform in Santa Barbara Channel offshore of California. As a result, ExxonMobil would not receive an exemption from the MMPA. For the purposes of this EA, NMFS assumes under the No Action Alternative that ExxonMobil would conduct the proposed conductor pipe installation activities without an exemption from the MMPA against the take of marine mammals. NMFS also assumes that ExxonMobil would conduct the conductor pipe installation activities in the absence of the protective monitoring and mitigation measures for marine mammals that would be required by the IHA.

4.2.1 IMPACTS TO MARINE MAMMAL HABITAT

Under the No Action alternative, the conductor pipe installation activities would have no additive effects on the physical environment beyond those resulting from ExxonMobil's conductor pipe installation activities, which we evaluated in the referenced documents. This alternative would result in similar effects on the physical environment as Alternative 1.

4.2.2 IMPACTS TO MARINE MAMMALS

Under the No Action Alternative, ExxonMobil's conductor pipe installation activities would likely result in additional impacts to marine mammals (i.e., increased amounts of Level B harassment to marine mammals and possibly takes by injury [Level A harassment], serious injury, or mortality), specifically related to acoustic activities, compared to the Proposed Action, due to the absence of mitigation and monitoring measures required under the IHA.

While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, we would expect the numbers to be larger than those presented in Table 6 because of the lack of restrictions imposed on ExxonMobil's conductor pipe installation activities. ExxonMobil could take significantly more marine mammals by harassment due to the lack of required mitigation measures including shut-downs for marine mammals.

If the conductor pipe installation activities proceeded without the protective monitoring and mitigation measures and reporting requirements required by a final IHA under the MMPA and ESA, the direct, indirect, or cumulative effects on marine mammals of not issuing the IHA would include the following:

- Marine mammals that could be encountered within the action area could experience acoustic injury, temporary behavioral responses (such as brief masking of natural sounds), and temporary changes in animal distribution because of the lack mitigation measures required in the IHA;
- Incidental take of marine mammals would likely occur at levels we have already identified and evaluated in our *Federal Register* notice on the proposed IHA (79 FR 36743, June 3, 2014) (see Table 4 [above] for the estimated number of individuals and takes authorized by marine mammal species). The *Federal Register* notice on the proposed IHA (79 FR 36743, June 30, 2014) has a description of the potential effects on marine mammals from the acoustic stimuli that includes one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical or physiological effects; and
- NMFS would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock of marine mammals; assess the anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses, or comply with the MMPA's requirement to increase the knowledge of the species.

  Under Alternative 2, the action has not unmitigable adverse impact to subsistence uses, as there are no permitted subsistence uses of marine mammals in the region.

4.3 COMPLIANCE WITH NECESSARY LAWS – NECESSARY FEDERAL PERMITS

We have determined that the issuance of an IHA is consistent with the applicable requirements of the MMPA, ESA, MSA, CZMA, and our regulations. Please refer to Section 1.4 of this EA for more information.

NMFS Office of Protected Resources, Permits and Conservation Division, initiated and engaged in formal consultation with NMFS West Coast Regional Office (Protected Resources Division) under section 7 of the ESA on the issuance of the IHA to ExxonMobil under section 101(a)(5)(D) of the MMPA for this activity.

The formal consultation under section 7 of the ESA concluded with a Biological Opinion for the NMFS's Office of Protected Resources, Permits and Conservation Division. All parties must comply with the relevant terms and conditions of the ITS corresponding to the Biological Opinion issued to us. ExxonMobil must comply with the mitigation and monitoring requirements included in

the IHA in order to be exempted from prohibition on take of listed endangered marine mammal species otherwise prohibited by section 9 of the ESA.

4.4 UNAVOIDABLE ADVERSE IMPACTS

The ExxonMobil's IHA application and our *Federal Register* notice requesting comments on the proposed IHA (79 FR 36743, June 30, 2014) summarize unavoidable adverse impacts to marine mammals or the populations to which they belong or on their habitats occurring in the action area. We incorporate those documents here by reference.

We acknowledge that the incidental take authorized by the IHA would potentially result in unavoidable adverse impacts. However, we do not expect ExxonMobil's conductor pipe installation activities to have adverse consequences on the viability of marine mammals in the action area and we do not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving and recovering in the wild. Numbers of individuals of all species taken by harassment are expected to be small (relative to species or stock abundance), and the conductor pipe installation activities would have a negligible impact on the affected species or stocks of marine mammals. Further, there would not be an unmitigable adverse impact to subsistence uses of marine mammals, as not such uses are permitted in the region.

4.5 CUMULATIVE EFFECTS

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR§1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

Impacts to marine mammal populations generally include the following: past, present, and reasonably foreseeable future commercial whaling; altered prey base and habitat quality as a result of global climate change; past, present, and reasonably foreseeable future predation, exposure to biotoxins and the resulting bioburden; past and future research activities in the area; vessel noise and collisions; and commercial fisheries. These activities account for cumulative impacts to regional and worldwide populations of marine mammals, many of which are a small fraction of their former abundance and are listed as endangered or threatened under the ESA and depleted under the MMPA.

Despite these regional and global anthropogenic and natural pressures, available trend information indicates that most local populations of marine mammals in the Pacific Ocean, and specifically in the Harmony Platform area, are stable or increasing (Caretta et al., 2013). The proposed conductor pipe installation activities would add another, albeit temporary, activity to the marine environment in the Pacific Ocean.

The U.S. Navy's *Hawaii-Southern California Training and Testing Environmental Impact Statement/Overseas Environmental Impact Statement* (Navy, 2013), National Science Foundation (NSF) and Scripps Institution of Oceanography's *Environmental Assessment of a Marine Geophysical Survey by the R/V Melville in the Santa Barbara Channel, November 2008* (LGL, 2008), and NMFS Southwest Fisheries Science Center's 2013 *Draft Programmatic Environmental Assessment for Fisheries Research Conducted and Funded by the Southwest Fisheries Science Center* summarizes the potential cumulative effects to marine mammals or the populations to which

they belong or on their habitats occurring in the action area. This section incorporates these documents by reference and provides a brief summary of the human-related activities affecting the marine mammal species in the action area.

4.5.1 IMPACT PIPE-DRIVING ACTIVITIES

Other conductor pipe installation activities have been and may be conducted in this region in the future. However, at the present time, the action proponents and NMFS are not aware of other conductor pipe installation activities planned to occur in the proposed action area during the September 2014 to September 2015 timeframe. Any future authorizations would have to undergo the same permitting process and would have to take the conductor pipe installation activities into consideration when addressing cumulative effects.

4.5.2 RESEARCH ACTIVITIES

In November 2008, Scripps Institution of Oceanography, with research funding from the NSF, conducted a 12-day low-energy seismic survey and test coring cruise in the Santa Barbara Channel. The survey used an electromechanical boomer, sparker system, and a small airgun array. The seismic survey tested the feasibility of extending the remarkable high-resolution paleoclimate record in the Santa Barbara Basin established in 1992 and 2005 from approximately 7,000 years ago back to approximately 1.2 million years ago. This was done by conducting detailed three dimensional modeling of the structure and outcrop stratigraphy of the northern shelf to locate optimal corer sites, and by conducting high-resolution seismic reflection site surveys, test coring, and core analyses of the northern shelf and an elevated portion of the mid-channel area called the Mid-Channel Trend. The seismic survey identified subsequent optimal and safe coring strategies suitable for recovering a continuous paleoclimate record from the shallow marine sediments in Santa Barbara Basin in the future as part of the Integrated Ocean Drilling Program.

NMFS Southwest Fisheries Science Center (SWFSC) conducts research aimed at monitoring protected species and fish stock recruitment, survival and biological rates, abundance and geographic distribution of species and stocks, and providing other scientific information needed to improve understanding of complex ecological processes along the U.S. West Coast, throughout the eastern tropical Pacific Ocean, and off Antarctica. In order to conduct these fisheries and ecosystem research surveys, various types of nets, lines, sound sources, and other sampling equipment are used. The surveys are conducted in all seasons and within three primary geographic areas. The gear types fall into several categories: pelagic trawl gear used at various levels in the water column, pelagic longlines with multiple hooks, bottom-contact trawls, and other gear (various fine-meshed plankton nets, active and passive acoustic instruments, video recording equipment, Conductivity Temperature Depth profiler, etc.)

4.5.3 MILITARY TESTING AND TRAINING ACTIVITIES

Various military activities occur in the southern California action area that potentially impact the marine environment including the U.S. Navy's target and missile launch Activities at San Nicolas Island, California; launch and harbor maintenance activities at Vandenburg Air Force Base near Lompac, California; U.S. Navy's Hawaii Southern California Training and Testing; and the U.S. Navy's Silver Strand Training Complex exercises near San Diego Bay, California.

4.5.4 Oil and Gas Activities

Offshore oil and gas development has occurred in leased tracts in California waters from the mean high tide line to 4.8 km (3 miles) offshore, and in federal waters from 4.8 to 17.7 km (3 to 11 miles) offshore. Twenty platforms, one island (Rincon Island), and approximately 290 km (nmi) of associated pipelines are located off Santa Barbara County; 16 of the platforms and approximately 250 km (155.3 miles) of pipelines are in the Santa Barbara Channel (MMS, 2000). Federal Outer Continental Shelf leases within the area yield approximately 93,200 barrels of oil per day and approximately 112,000 million cubic feet of natural gas per day (County of Santa Barbara Energy Division, 2001 in NOAA, 2006). To date, seven relatively small offshore oil structures have beem removed from state waters of the Santa Barbara Channel. The most recent project occurred in 1996 when Chevron removed Hope, Heidi, Hilda, and Hazel Platforms from water depths ranging from 30.5 m to 42.7 (100 to 140 ft). No new platforms have been erected off of California since 1989 (Love et al., 2003), and it is unlikely that any leasing will occur in the future (McCrary et al., 2003).

4.5.5 Vessel Traffic, Vessel Noise, and Collisions

Vessel traffic in the proposed action area will consist of fishing vessels, as well as other commercial (cargo), cruise, and pleasure vessels. Vessel noise could affect marine animals in the action area. Shipping noise generally dominates ambient noise at frequencies from 20 to 300 Hz (Richardson et al., 1995). Baleen whales are thought to be more sensitive to sound at these low frequencies than are toothed whales. There may be some localized avoidance by marine mammals of commercial ships operating routinely in and near the action area. On infrequent occasions, whales and ships collide resulting in injury or death to the animal (Laist et al., 2001; Moore and Clarke, 2002).

The Santa Barbara Channel is a major thoroughfare for oceangoing ships traveling between domestic and international ports along the Pacific coast of North America, and for large vessels traveling between ports in North America and Asia. Nearly 40% of vessels calling at California ports are from a Far Eastern port such as Japan, China, or Korea; 20% are from a North American port such as Canada or Mexico; and 13% are from a South American port (California State Lands Commission, 2001 in NOAA, 2008). Containerized trade at the Port of Los Angeles/Long Beach, which is the busiest container port in North America, grew 150% from 1995 to 2006 (Port of Long Beach, 2007), and the Santa Barbara Channel is a main thoroughfare for this trade. Approximately 75% of the departing vessel traffic from Los Angeles/Long Beach leaves northbound and 65% of arriving vessel traffic comes southbound, passing through the Santa Barbara Channel. For the year 2006, an estimated 6,980 vessels (including container ships and other large vessels) going to or coming from the ports of Los Angeles/Long Beach transited the Santa Barbara Channel (McKenna, 2007 in NOAA, 2008).

The Channel Islands are popular diving destinations. Dive charters based in Santa Barbara and Ventura usually take divers to the Northern Channel Island (San Miguel, Santa Rosa, Santa Cruz, and Anacapa), whereas those based in San Pedro, Long Beach, and San Diego most often visit the Southern Channel Islands of San Nicolas, Santa Barbara, Santa Catalina, and San Clemente (Krival, 2001). In 2007, there were 8 vessels based in Santa Barbara, Ventura, and Oxnard that bring visitors to the Channel Islands National Marine Sanctuary, primarily for whale watching (CINMS, 2007).

4.5.6 FISHING

The fishing industry impacts marine mammals. For example, the average annual mortality of dolphins as bycatch in the eastern Pacific ocean during 2000 to 2005 was approximately 1,550 (IATTC, 2007). Also, commercial fisheries may accidentally entangle and drown or injure cetaceans during fishing operations or by lost and discarded fishing gear (e.g., Northridge and Hoffman, 1999). Humpback whales, perhaps because of their abundance in coastal waters where nets are commonly used or because of the many barnacles, they seem to be extremely vulnerable to entanglement in fishing gear (Lien, 2002). Trites et al. (1997) suggested that fisheries might indirectly compete with cetaceans by reducing the amount of primary production accessible to cetaceans, thereby negatively affecting their numbers.

Historically, the action area has been fished using several gear types targeting multiple species: (1) purse seines for coastal pelagic fish such as sardine, northern anchovy, mackerel, and squid; (2) trawls for shrimp, sole, flounder, and halibut; (3) hook and line or longline for rockfish; (4) traps for crab and lobster; (5) drift/set gillnets for shark and swordfish; and (6) trolls for albacore and salmon. Commercial fishing occurs within the action area on a seasonal, quota, and trip limit basis and in response to market forces throughout the year (MMS, 2005). Total landings in the Santa Barbara area in 2006 were approximately 23,000 tonnes (CDFG, 2008).

The commercial catch has varied over the long term because of decadal-scale changes in environmental conditions (coastal pelagics), warming from El Nino events (tunas, herring, and squid), the depletion and regulation of many stocks (including several rockfish), and domestic and international market conditions (Mason, 2004). The fishery likely will continue, although it likely will not increase in intensity in the future. In her analysis of historical patterns from 74 years of commercial landings from California waters, Mason (2004) noted that the declining trend in the total value of landings, despite increased total landings, raises concern for the future of the fishing economy. Thus, future growth in the commercial fishing industry is not likely.

The commercial passenger fishing vessel (CPFV, also known as “partyboat”) fleet is a valuable recreational and economic unit in California (Young, 1969). Dotson and Charter (2003), in an analysis of the 1959 to 1998 database for the Southern California CPFV fleet, reported that angler effort has been consistent throughout the time series at about 620,000 passengers per year. The annual fish catch average 4.25 million fish from 1963 to 1991 but has declined since 1992 to 2.5 million fish in 1998. The increasing popularity and availability of private boats may be the major area of growth in coastal fishing (Dotson and Charter, 2003). In southern California, private boats in 1998 accounted for 45% of the recreational fishing effort as opposed to 23% of the CPFV fleet (NMFS, 2000 in Dotson and Charter, 2003).

4.5.7 CLIMATE CHANGE

The 2007 Intergovernmental Panel on Climate Change concluded that there is very strong evidence for global warming and associated weather changes and that humans have “very likely” contributed to the problem through burning fossil fuels and adding other “greenhouse gases” to the atmosphere (IPCC, 2007a, 2007b). This study involved numerous models to predict changes in temperature, sea level, ice pack dynamics, and other parameters under a variety of future conditions, including different scenarios for how human populations respond to the implications of the study.

Increased ocean temperatures will reduce oxygen, and atmospheric CO_2 will reduce ocean pH and threaten the health of the marine ecosystem. Ocean circulation patterns will change, with less mixing of cold and warm water in tropical and subtropical areas, affecting the ability of near-surface species to reach nutrients at lower depths (NJCAA, 2014). At more northern latitudes mixing could actually increase with melting of sea ice, but general ocean warming will alter migration and breeding patterns and push species further northward (NJCAA, 2014).

With the large degree of uncertainty on the impact of climate change to marine mammals in the northeast Pacific Ocean, we recognize that warming of this region could affect the prey base and habitat quality for marine mammals. Nonetheless, we expect that the conductor pipe installation activities and the issuance of the IHA to ExxonMobil would not result in any noticeable contributions to climate change.

Issuance of an IHA to ExxonMobil is not related to other actions with individually insignificant, but cumulatively significant impacts. There are currently no reasonably foreseeable projects planned for the Harmony Platform area under NMFS's authority. Any future authorizations would have to undergo the same permitting process and would have to take the conductor pipe installation activities into consideration when addressing cumulative effects.

We have issued incidental take authorizations for other impact hammer pipe-driving activities that may have resulted in the harassment of marine mammals, but they are dispersed both geographically (throughout the U.S.) and temporally, are short-term in nature, and all use mitigation and monitoring measures to minimize impacts to marine mammals. Because of the relatively short time that the project area will be ensonified (not more than approximately 90 operational days), the action will not result in synergistic or cumulative adverse effects that could have a substantial effect on any species.

The impacts of conducting the conductor pipe installation activities on marine mammals are specifically related to in-air and in-water acoustic activities, and these impacts are expected to be temporary in nature, and would not result in substantial impacts to marine mammals or to their role in the ecosystem. As described in Richardson et al. (1995), marine mammals are likely acclimated and tolerant to a certain degree of anthropogenic disturbance, including noise. Based on the summation of the activity in the area provided in this section, NMFS believes that the incremental impact of an IHA to ExxonMobil's proposed conductor pipe installation activities, when combined with other potential stressors (e.g., human recreational activities, military training and testing activities, research activities, vessel traffic, commercial fishing, etc.), would not be expected to result in a significant cumulative effect to the human environment from past, present, and future activities. The potential impacts to marine mammals, their habitats, and the human environment from the proposed action are expected to be minimal based on the limited and temporary in-air noise footprint and mitigation and monitoring requirements of the IHA described in Section 2.3.1.

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CHAPTER 6 – REFERENCES

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