

Offshore Environmental Studies Program

**Fiscal Year (FY) 2006 – 2008
Studies Development Plan**

Pacific OCS Region

**U.S. Department of the Interior
Minerals Management Service
Pacific OCS Region
Camarillo, CA
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SECTION 1.0 PROGRAMMATIC OVERVIEW

1.1 Introduction to the Region

The Environmental Studies Program in the Pacific Outer Continental Shelf (OCS) Region started in 1974. The Program has evolved with changes in the geographic areas of concern and study, in the emphasis of disciplines highlighted for research, and in the emphasis of oil and gas activities from pre-lease activities to post lease activities. In particular, this annual plan reflects the need for information for regulating ongoing oil and gas production and development activities as well as focusing on future decommissioning activities. As the Region has matured and as developed oil and gas fields have reached peaks of production and entered declines, new and innovative ideas for the use of traditional oil and gas platforms have emerged. New uses of oil and gas platforms have included sites for mariculture and Liquefied Natural Gas (LNG) facilities. The need for new or updated environmental studies may well accompany the decisions that MMS may need to make with regard to such innovative and non-traditional uses of offshore facilities. This plan complements and reinforces the Environmental Studies National Strategic Plan.

Existing production and development activities and development of known resources on 43 existing producing leases in Southern California will continue for many years. The region has annual production of 78,000 bbls/day oil from its 23 facilities. It is expected that production from the majority of these facilities will continue for many years. However, decommissioning plans for some of the oldest facilities could be received by the Region within the next 5 years. This balance between ongoing operational and future decommissioning activities is reflected in the studies development plan. Future activities on the 36 undeveloped leases (plus four leases under appeal), however, remain highly controversial and uncertain. The projected OCS activities section of this report more fully discusses the activities we anticipate on existing active leases.

This document presents a strategy for the Pacific Outer Continental Shelf (OCS) Region. It does not apply to the entire Pacific OCS Region, which stretches from the United States-Mexico border to the border with Canada and includes Hawaii, but rather to the Southern California Planning Area (see map inset, figure 1). This plan focuses on the information needed primarily for existing oil and gas production activities and future oil and gas facility decommissioning for the Southern California Planning Area, which occur in the Santa Barbara Channel, the Santa Maria Basin and San Pedro Shelf.

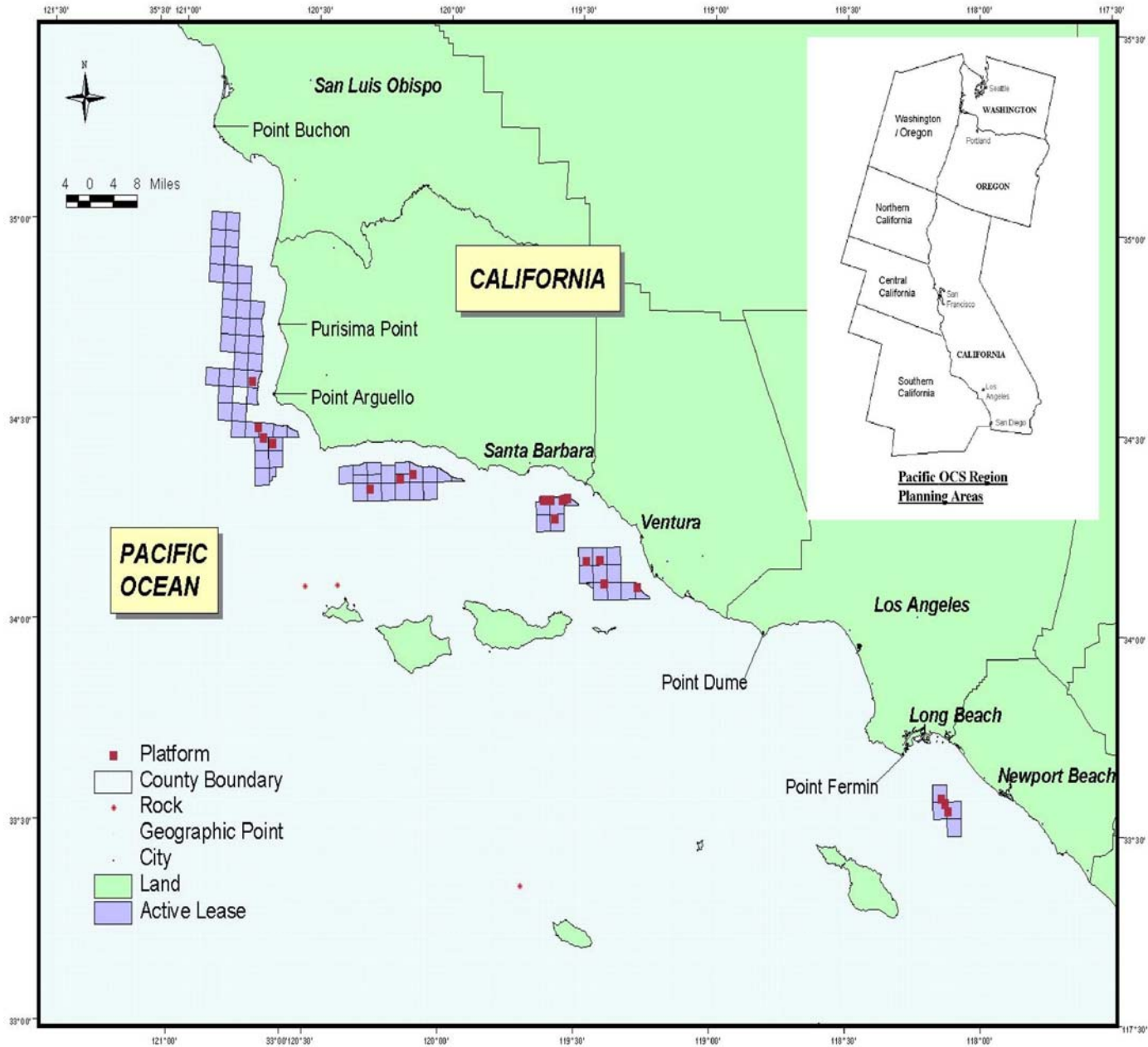
The information which will be obtained through these studies is considered important and relevant to decision making. We consider this information important and appropriate to obtain because it fulfills the following criteria:

- . The study provides significant new or additional information beyond what is already known;
- . The identified study is within the financial scope and time frames of the Program;
- . The information provides insight into significant processes critical for understanding both natural and anthropogenic changes;

The issue can be studied within science's present abilities or understanding of experimental methods to gain the information.

Changes in future OCS oil and gas activities may dictate changes in the strategy. Findings from current or future research may also change the strategy and cause other avenues of research to be incorporated.

If you have any questions regarding this Pacific OCS Region Environmental Studies Development Plan, please contact Dr. Fred Piltz, Pacific OCS Region at (805) 389-7850 or Mary Elaine Dunaway at (805) 389-7848. You can also view the Minerals Management Service and Pacific OCS Region home pages at www.mms.gov for additional information.



1.2 Map of Active Leases

1.3 Projected OCS Activities

Prelease

We anticipate no lease sales for this planning area under the MMS Comprehensive Leasing Program for 2008 – 2012 nor are any projected for the future.

Postlease

The Southern California Planning area contains

- 79 active oil and gas leases (plus four leases under appeal)
- 600 million barrels of oil in proved reserves on existing leases
- Up to one billion barrels in unproved reserves on existing leases

There are 43 producing leases in the Southern California Planning Area with 23 oil and gas platforms in Federal waters. These leases currently produce 78,000 barrels of oil per day and 200 million cubic feet of natural gas per day; a rate which could be sustained into the next decade. Continued production at these facilities and a number of recent proposals to conduct new drilling operations will pose new challenges over the coming decade in the effort to maintain environmentally safe operations with the existing infrastructure. An additional 36 leases are undeveloped and remain in litigation (plus four leases are under appeal). For some of these leases, if they are allowed to move forward, it is expected that extended reach wells drilled from existing facilities would add measurably to sustaining production at existing facilities. Other undeveloped leases would require new platforms for their development.

Decommissioning activities will become an increasingly important part of this Region's activities in the future as older facilities are phased out. Within the next 5 years, decommissioning plans could be received for some existing OCS platforms in Federal waters offshore California. The decommissioning process is envisioned to take about seven years from the receipt of a plan until all activities are completed. Concurrent decommissioning of attached pipelines and onshore facilities is expected for many of these facilities.

Studies are needed to address and monitor the environment adjacent to the existing facilities and these studies become more critical and challenging as the infrastructure continues to age. Examples of the use of environmental studies information include the recent replacement of a power cable to the Santa Ynez Unit (Santa Barbara Channel) offshore platforms. These platforms are powered from electric sources onshore via a cable. The cable needed to be replaced and the MMS used recent data from environmental studies in preparing an Environmental Assessment (NEPA document) for that post lease activity. Studies are needed now to support future decommissioning activities in the Pacific OCS Region. Studies identified highlight critical information gaps and are geared to allow MMS analysts to effectively permit and regulate the oil and gas industry in ongoing production and decommissioning projects.

Several new uses of oil and gas facilities have been proposed recently including using an oil platform as a base for mariculture operations and as a receiving port for Liquefied Natural Gas (LNG).

1.4 Identification of Information Needs

The main areas of information needs fall into the following categories:

a. Understanding environmental impacts of decommissioning Pacific OCS facilities

Decommissioning plans for some of the older facilities could be received by the Region within the next 5 years. The long lead time needed to address environmental issues related to decommissioning deepwater oil and gas platforms means that decommissioning studies will need to be started now.

To address this critical need and to leverage funding, we began the **Decommissioning Studies Initiative** in FY 03. This umbrella initiative provided a mechanism for MMS to address study needs with joint funding by industry and other agencies. We have refined our decommissioning studies needs through the MMS sponsored Decommissioning Studies Workshop (held October 2003). The most cost-effective mechanism for procuring these studies will be through individual contracts rather than one overarching contract. MMS is committed to obtaining co-funding by industry and other agencies to obtain maximum benefit from the studies and to reduce costs to MMS. Studies for decommissioning will be carried out in close coordination with the IDWG (Interagency Decommissioning Working Group), a group of Federal, State and local agencies involved in reviewing Federal OCS decommissioning projects, and with workshop attendees.

The Decommissioning Studies Workshop identified and prioritized studies for three key issue areas: Platform Associated Biota and Fishing; Protected Species, and Onshore Dismantlement, Disposal, and Recycling. Shell mounds and platform reefing are known to be topics of interest but discussion has been postponed until information is available from work currently being conducted on these issues by other agencies.

The Workshop identified important information gaps for all three issues. MMS has carefully reviewed these recommendations and further refined this list by identifying studies: 1) which are site-specific or related to engineering design issues and should be completed by individual operators; 2) that MMS is currently funding or should consider for funding in the future and; 3) that could be jointly funded by MMS, agencies and/or industry. A summary of MMS's review of the Decommissioning Studies Workshop's studies is provided in the table below.

Ongoing MMS studies and studies MMS intends to put forward for funding are shaded; studies in light text are recommended either for industry funding or are not recommended.

The highest priority information needs per the Workshop are underlined.

Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
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Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
Topic: Platform Associated Biota and Fishing		
<u>1. Fish assemblages associated with platforms and pipelines in areas where data are non-existent or limited (Santa Ynez, Beta Unit, Summerland, and all pipelines)</u>	High priority both in timing and need. Need to complete it before other studies initiated. Scheduled for FY 05 procurement.	Platform work funded in FY 05; pipeline surveys proposed for FY 06 .
<u>2. Characterization of natural habitats in the Santa Barbara Channel, Santa Maria Basin, and San Pedro Basin.</u>	Multi-beam study started in FY 04.	MMS/USGS. Funded in FY 04/05
<u>3. Contribution of platforms and pipelines to regional rockfish stocks.</u>	Study would build on data from studies #1 and 2.	Recommended for future year with joint funding with industry.
<u>4. Possible mitigation measures for the effects of explosives on fishes.</u>	Expect to handle the literature search through the study "Summary of Knowledge."	Pilot studies of potentially feasible mitigations are recommended for future year with joint funding with industry. Tier off Gulf of Mexico Region studies. First pilot study, a transplantation experiment is proposed for FY 06.
5. Micro-chemical signatures in fishes and the potential to determine the association of fishes with platforms/pipelines.	Study building upon known methodology applied to platform resident fish.	Funded in FY 05.
6. Oceanographic features and their effects on the distribution and recruitment of fishes (potentially using CODAR).	Large uncertainty about amount and availability of data. Minimal direct relationship and use of information by MMS in decommissioning.	No recommendation for funding at this time.
7. Type and amount of recreational fishing associated with platforms.	Data not needed until closer to start of decommissioning process. Methods known.	Recommended for future year for industry funding.

Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
<u>8. Socioeconomics and value of recreational and commercial fishing associated with platforms, and the multiplying (cascading) economic effects of decommissioning activities on fisheries (tiering off of studies done for Channel Islands National Marine Sanctuary Marine Reserves Working Group).</u>	MMS is not going forward at this time with this study due to the large scope and limited information to be gained relative to the MMS mission.	No recommendation for funding at this time.
<u>9. Amount and usefulness of traditional recreational and commercial fishing grounds that would be returned, or new fishing grounds created, by the total removal of pipelines, platforms, and power cables.</u>	May combine with #10	Recommended for industry funding.
<u>10. An estimate of the amount of habitat removed as a result of decommissioning activities.</u>	Fairly inexpensive study—some may be handled by known calculations.	Recommended for industry funding.
11. Potential indirect effects on regulatory system associated with decommissioning that could affect recreational and commercial fisheries (e.g. effects which lead to fishing closures.)	The expected results of this study were deemed to be appropriate for addressing within appropriate NEPA or CEQA processes.	No recommendation for funding at this time.
12. Additional area of preclusion during decommissioning activities.	Information related to this topic is expected as part of the normal submission in the applicant's plans.	No recommendation for funding at this time.

Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
Topic: Protected Species (Marine Mammals, Birds, and Turtles)		
13. Physical and engineering aspects. Blast effects of charges placed within structures how acoustic impulse varies with charge energy; modeling the generated sound field of explosions, the expected engineering parameters and alternatives for removal in the Pacific OCS; the noise/shock transmission and absorption characteristics of sediment types in the region.	Handle review aspects through study “Summary of Knowledge.”	Recommended for future funding for studies on modeling which tier off work being conducted by MMS/industry in the Gulf of Mexico Region.
14. <u>Ecology of affected species. The fine-scale distribution of affected species in project areas, the degree to which protected species use platforms, diving patterns and breath-hold times of marine mammals and sea turtles.</u>	Handle literature search through study “Summary of Knowledge.” Field surveys are site and project specific.	Recommended for industry funding for fine-scale field surveys.
15. Direct and indirect biological effects. Impacts on species of concern, ranging from startle responses, temporary hearing threshold shifts (TTS), permanent injury, to death; the recovery time of animals from various forms of temporary injury (including TTS); the impacts of multiple exposures on affected animals; the long-term cumulative impacts on animal populations using the platforms.	Need for pinniped TTS study is partly dependent on progress in area-specific modeling efforts and development of mitigation.	Recommended for joint funding for future years for TTS studies.
16. Mitigation. Methods of detecting animals within the safety zone; potential methods of noise attenuation for underwater explosions of various types; the use of acoustic deterrence or attraction to protect species of concern.	Study should concentrate on detecting animals for highest probability of a useful mitigation technique. Previous studies of sound attenuation and acoustic deterrence/attraction have mixed results to date.	Recommended for industry funding.

Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
Topic: Onshore Dismantlement, Disposal, and Recycling		
17. <u>Potential disposal sites (options, incentives, permitting, criteria, and implications).</u>	Combine #17 through 23 (below). Some initial aspects may be researched in study “Summary of Knowledge.”	Recommended for industry funding.
18. <u>Marine growth (removal, regrowth, disposal, volumes, health implications).</u>	See above comment.	See above comment.
19. <u>Logistics and timing (sequencing, inter-agency coordination, manpower, vessels).</u>	See above comment.	See above comment.
20. <u>Inventory of materials (disposal, reuse, environmental benefits/impacts, pipelines).</u>	See above comment.	See above comment.
21. <u>Onshore implications (traffic noise, air quality, water quality, socioeconomics, landfill options).</u>	See above comment.	See above comment.
22. <u>Dismantlement options (effects of options, worker safety, timing, pipelines, reuse, costs).</u>	See above comment.	See above comment.
23. <u>Hazardous materials (HAZMAT) (define, disposal options, volumes, export of metals, landfill options).</u>	See above comment.	See above comment.
Topic: Continuing studies which meet needs identified at the Decommissioning Workshop		
Summary of Knowledge	Addresses comments from the Decommissioning Studies Workshop to learn state-of-the-art and research methods before designing studies for the Pacific.	Deferred until FY 2006.

Studies Information Needs Recommended at the Decommissioning Studies Workshop	Discussion	Funding
Invertebrate assemblages on shell mounds	Decommissioning Studies Workshop did not discuss shell mounds; waiting for public release of California Environmental Impact Report. MMS proposes a shell mound workshop in 2007 pending final EIR from state.	Proposed workshop funding in 2007.
Fate of Juvenile Rockfish	MMS and the California Artificial Reef Enhancement (CARE) Program jointly funded.	Funded in FY 04 and FY 05 by MMS and CARE.
Platform Fish Residence Time	Was mentioned by Decommissioning Studies Workshop attendees as a study gap that MMS had already approved for funding.	Funded in FY 04 and FY 05 by MMS and CARE.

b. Supporting existing oil and gas production activities.

Biological Monitoring

In support of recent proposals to conduct new drilling operations and ongoing production, there is a continued need to monitor the shoreline plant and animal populations proximal to producing facilities. Production from many of these facilities is expected to continue for a number of years. MMS needs to monitor whether or not operations are resulting in environmental impacts and to maintain a readiness along the shoreline to address potential impacts, including those from accidents, from OCS production for the duration of operations.

MMS focus on intertidal biology is due to the high variability of these systems and their proximity to offshore oil and gas resources. Continued study of resources is needed so that potential or real effects from oil and gas operations (including oil spills) are not confused with broader regional changes in marine nearshore and coastal ecosystems.

Marine Mammals and Seabirds and Update of Databases

From 1999-2002, the U.S. Geological Survey (USGS) and Humboldt State University (HSU) worked with MMS to conduct a multi-year study that quantified the at-sea distribution of seabirds and marine mammals off southern California to examine anthropogenic impacts and environmental changes. The survey data for this program were successfully collected and reported on schedule; however, additional work is needed on coupling the database to geographic information system software. To maximize the value of these data for MMS, the information must be coupled to standard MMS geographic information system software such as ArcGIS and made readily available to resource managers for planning decisions. These efforts have great potential for use in education and public outreach goals of the USGS, MMS, Channel Islands National Marine Sanctuary (CINMS), and Channel Islands National Park (CINP). This latter need responds to a strong recommendation from the OCS Scientific Committee at their meeting in April, 2003.

Fate and Effects

The Pacific OCS Region is characterized by thousands of natural oil and gas seeps located offshore in southern California. The oil and tar from these seeps has been used by native Americans for thousands of years. Some of it finds its way onto California beaches where tourists and visitors encounter it. Many of these seeps are adjacent to active Federal oil and gas platforms and the oil on beaches is frequently blamed on the offshore operations. The Region has investigated the biology and ecology of the seeps and more recently has studied the dynamics of transport of seep oil and gas. In cooperation with USGS, we have mapped many additional seeps in the Santa Maria Basin and developed chemical analyses techniques to identify seep and other oils and assign them to their origins. The Region needs to continue seep-related research, given recent significant changes in oil and gas seep discharge volumes in the general vicinity of active OCS oil and gas operations.

SECTION 2.0 PROPOSED STUDY PROFILES

2.1 Introduction

Five studies are proposed for FY 06; one of these is suggested for funding through the USGS/BRD program.

Decommissioning Studies:

Three new decommissioning studies are identified for MMS funding in FY 06, two of which grew out of recommendations made by the Decommissioning Studies Workshop:

A Decommissioning Information Transfer Symposium is proposed for Fiscal Year 2006. It would be part of the next California Islands Symposium which is a major scientific symposium conducted approximately every four years to share research being done in the region. The Symposium offers a unique venue for MMS to disseminate the findings of our ongoing and recently completed studies related to future oil and gas platform decommissioning. The MMS Pacific OCS Region would be a co-sponsor of the Symposium with the Channel Islands National Park Service and the Channel Islands National Marine Sanctuary, who are expected to share the costs of the Symposium. The Proceedings of the Symposium are always highly regarded and frequently referred to in scientific literature, thus offering MMS another avenue to disseminate our research results.

The Decommissioning Transplantation Experiment is proposed as a study to assist the MMS Pacific OCS Region in testing what may become a possible mitigation measure during the decommissioning of oil and gas platforms offshore southern California. Completed and ongoing research by the MMS has shown and continues to provide scientific evidence that the oil and gas platforms are providing critical habitat for commercially important and heavily depleted fish populations in the Santa Barbara Channel and Santa Maria Basin. At least one of these fish species is listed as a Species of Special Concern by NOAA Fisheries and the State, and would receive significant analysis and protection during any future platform decommissioning. The proposed study will attempt to test the feasibility of transplanting fish to locations other than a platform in order to test whether such a program could be used as mitigation during platform decommissioning and subsequent loss of habitat for these fish.

The Fish Assemblages on OCS Pipelines Prior to Decommissioning study follows a successful pilot effort testing the use of Remote Observation Vehicles (ROVs) to collect quantitative data of fish abundance and distribution on pipelines. The pilot study, funded through the Pacific Region's operational funds, indicate that pipelines may serve as significant habitat for commercially important fish and that this habitat could be lost during future oil and gas decommissioning if pipelines are removed. This study proposes to use the methods of surveying the fish developed during the pilot effort to do a more representative and quantitative survey on pipelines in the Santa Barbara Channel and Santa Maria Basin.

Ongoing Operations Support Studies:

Three new studies supporting ongoing operations are proposed for FY 2006.

A Program Support study, the Comprehensive Relational Database for Seabirds, Marine Mammals, and Update of Selected Databases is proposed. The purpose of the Comprehensive Relational Database for Seabirds, Marine Mammals, and Update of Selected Databases is to integrate the seabird and marine mammal datasets already completed through recent MMS/USGS funding and other data sets (such as additional multibeam sonar surveys around platforms that may be decommissioned) expected to be completed within the next year into a comprehensive relational database linked to geographic information system coverages. This responds to another recommendation from the OCS Scientific Committee (number one in the letter from the Chair of the Committee to the Director of MMS) to insure access to the large data sets generated through the Environmental Studies Program.

Fate, Volume and Chemistry of Natural Seeps in the Santa Barbara Channel/Southern Santa Maria Basin –

MMS does not have recent or very reliable estimates of the volume of oil emitted daily from natural seeps directly under or near producing OCS platforms. The most reliable estimates are 35 years old, and in light of the recent dramatic increase in seepage since the December 2004 storms, and newly discovered seepage areas, this is clearly not an accurate number. As the public largely attributes this oil to offshore production spills, it is critical for the program to have a scientifically based estimate of the daily natural oil seepage, be able to reliably differentiate produced oil from natural sources of oil.

Coastal Marine Institute. A continuation of the successful Coastal Marine Institute (CMI) is proposed in response to recommendations from the OCS Scientific Committee and to assist the region in obtaining data and information that are needed to help make decisions about ongoing and future energy projects in the region. Pending Federal legislation may charge the MMS with alternative energy project regulation and permitting responsibilities. The CMI is an ideal vehicle for addressing possible topics that the region may be faced with on short notice relative to alternative energy. In general, literature reviews, data synthesis, and Geographic Information system analyses would be the topics of possible CMI proposals in the next few years.

2.2 Profiles of Studies Proposed for the FY 2006 NSL

Table 1. Pacific OCS Region Studies Proposed for the FY 2006 NSL

Page #SDP	Discipline	Title	Regional Ranking
19	IM	Decommissioning Information Transfer Symposium	1
21	BIO	Decommissioning Transplantation Experiment	2
24	FE	Fate, Volume and Chemistry of Natural Seeps in the Santa Barbara Channel/Southern Santa Maria Basin	3
26	BIO	Cooperative Ecosystem Studies Unit (CESU)	4
28	BIO	Fish Assemblages on OCS Pipelines Prior to Decommissioning	5
30	BIO	Comprehensive relational database for seabirds, marine mammals, and update of selected databases off southern California	6
BIO = Biology IM = Information Management FE = Fates and Effects			

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Decommissioning Information Transfer Symposium

MMS Information Need to be Addressed: The next Symposium will be critical to MMS as the Region gets closer to preparing environmental documents that will be required for decommissioning offshore oil and gas facilities. Dissemination of the results of MMS funded studies that are the foundation of environmental documents is needed to support the ready acceptance of MMS prepared environmental documents (e.g. EISs and EAs). The Symposium has traditionally served as one of the most effective vehicles in disseminating such MMS research. It also has served as a critical forum for feedback to MMS on the quality of the information generated in the Environmental Studies Program as well as providing added direction to those topical areas that may need additional study.

Cost Range: (in thousands) \$50

Period of Performance: FY 2006 – FY 2007

Description:

Background: The Minerals Management Service Pacific OCS region has a long history of supporting the transfer of information gained through the Environmental Studies Program to interested users via Information Transfer Meetings (ITMs) and major regional conferences such as the Fifth California Islands Symposium held in Santa Barbara in 1999. The ITMs have provided a showcase for disseminating the results of studies funded by the MMS such as the important platform decommissioning studies now being done and those that will be completed in the next two years to State agencies, local government agencies, non governmental organizations, academia, and the public. MMS has received numerous compliments for its high quality science as a result of these symposia and for its support of such meetings at which the scientists working for MMS can be questioned directly by attendees and provide for a dialog with those people that need to understand and use the results of MMS funded research. In addition, MMS has been able to receive feedback on its Environmental Studies Program over the years and make it more responsive to the information needs of the region's decision makers.

The Pacific Region has begun to emphasize and implement environmental studies related to future decommissioning of offshore oil and gas facilities. Some of these studies have been completed as of 2004 and many more will have been completed by 2006. The Decommissioning Information Transfer Meeting will occur in FY 2006 and will be a prime opportunity to showcase the MMS decommissioning studies results that have been completed and will be completed by that time. The symposium serves as a forum at which MMS can facilitate discussion about future decommissioning options and help defuse potentially controversial options such as rigs to reefs through timely presentation of these studies.

Objectives: The Pacific OCS Region proposes to participate in a partnership with the Channel Islands National Park Service and the Channel Islands National Marine Sanctuary to provide financial and planning support for the next California Islands Symposium. We have preliminary indications that the Park service will provide matching funds to those supplied by the MMS. This will involve scientists from MMS funded research in the symposium presentations and poster sessions. The objective is to highlight the research that has been accomplished under MMS funding related to future offshore oil and gas decommissioning as well as other MMS funded research.

Methods: The Pacific OCS Region will serve as one of several co-chairs of the next California Islands Symposium with MMS planning sessions on decommissioning related research. The California Islands Symposium allows MMS to leverage its traditional Information Transfer Meeting funds and attract a larger audience. Other co-chair organizations already committed are the Channel Islands National Park and the Channel Islands National Marine Sanctuary (both sponsors and chairs of the most recent Symposium). Funding by MMS will be in conjunction with funding from the National Park Service and direct support from the Sanctuary to provide for the preparation of the proceedings from the symposium, meeting facilities, support for several key note speakers, and preparation of pre-meeting materials.

Date Information is Required: Fiscal Year 2006 or early Fiscal Year 2007.

Revised date: March 7, 2005

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area: Southern California

Title: Decommissioning Transplantation Experiment

MMS Information Need to be Addressed: Decommissioning platforms off California has been a subject of considerable debate, much of which is focused on the regional importance of rockfish populations at these facilities. The Pacific Fishery Management Council designated 13 of the 23 Federal platforms off California as Essential Fish Habitat for rockfish in June 2005. Rockfish are reef-specific and do not move from their platform home. Explosive removal will kill these species due to the nature of rockfish (large swimbladders) and their habit of close association with platforms. MMS will now be required to enter into a formal Consultation for Essential Fish Habitat when proposals to remove these platforms are submitted. MMS will need the knowledge of potential for transplantation of these species to Marine Protected Areas in the region in order to fully evaluate the various options and conditions (including possible mitigation measures) proposed for decommissioning California's offshore oil platforms. These data will be used in both the formal consultation documents and in NEPA documents written by the region at the time of decommissioning.

Cost Range (in thousands): \$ **Period of Performance:** FY 2006 – 2008

Description:

Background: Recent debates regarding offshore petroleum platform decommissioning has raised questions about how these structures function in replenishing local fish stocks. Populations of many deepwater reef-associated species of rockfishes, particularly bocaccio and cowcod, have been shown to be severely depleted due to overfishing. Platforms harbor large numbers of adults of these species, provide complex structure for these fishes to associate with, and reduce fishing pressures due to difficulties fishing within and around the structure, thereby allowing the platforms to function like de facto reserves (Love et al. 2003). Decommissioning in the Pacific Region generates great debate over reefing of platforms and even if reefing should be allowed not all platforms will be reefed. Those that are not reefed will be completely removed. Removal will either kill the fish directly or remove the habitat for these reef-related species. It is unlikely that many of these fish would survive their own trip to a natural reef across the Santa Barbara Channel. Preliminary results from an MMS-funded study have determined that adult rockfish associated with platforms exhibit high site fidelity staying at their home platform throughout the year. Over 100 acoustically tagged fish have not only survived being brought to the surface and tagged but were returned to the bottom and can also be detected moving in and amongst the structure of the platforms. Since rockfish survive surfacing, acoustic tagging and treatment, and return trip to the bottom, the potential for transplantation prior to decommissioning should be tested. If adult rockfish can be transplanted and remain at a new reef in a pre-existing Marine Protected Area (MPA), then

at the time of platform removal MMS could better evaluate the potential impacts, various options, and conditions proposed for decommissioning individual platforms.

Since 2000, the Pflieger Institute of Environmental Research (PIER) has been performing an extensive acoustic study in the California Channel Islands to look at small-scale fish movement. The PIER has an array of 84 acoustic receivers that will remain for another 2-3 years on the islands in locations that include three MPA's to track giant sea bass, white sea bass, and halibut. The PIER has not tagged or tracked rockfish but has verbally agreed that if MMS funds a study involving acoustic tracking we can tune our tags to a frequency that can be detected by their receivers. Our effort would involve monthly visits to the relevant units, downloading the rockfish frequency data, and maintaining those specific receivers. MMS has also initiated discussions with scientists at NOAA Channel Islands National Marine Sanctuary and the Channel Islands National Park Service. Both agencies have verbally agreed to allow rockfish to be transplanted to island MPA's and to coordinate with MMS if we fund a study.

Objectives: The overall objectives are to determine: 1) if adult rockfish can be successfully transplanted from platforms to Marine Protected Areas (MPA's); and, 2) the length of time (at least one year) that the transplanted rockfish remain at their new reef home

Methods: Tagging methods will be the same as those used successfully in the Site-Fidelity on-going research. 1) Fish will be caught from the base of Platforms Gilda and Gail by trap. Fish in the trap will be slowly brought towards the surface, but held at 20m depth to minimize the effects of barotrauma and thermal shock. A team of divers will meet the fish at 20m and those individuals large enough (> 20 cm total length) will be surgically fitted with individually coded acoustic transmitters. The acoustic transmitters will be set at a frequency that can be received by the pre-existing PIER receivers. Prior to release, fish will be measured and tagged with an external Floy dart tag for easy visual identification from a submersible or by divers or fishers. Fish will be held in the trap after tagging until a sufficient number have been tagged and fully adjusted to the depth and temperature.

2) Fish will be held in the traps until ready for transport to an appropriate MPA in the Channel Islands National Marine Sanctuary and/or National Park waters. Trap(s) containing the tagged fish will be held in water tanks on board the vessel. After transport, the traps will be lowered and the fish released at a depth appropriate to the species and capture depth.

3) The pre-existing PIER automated acoustic receivers that are relevant to the transplanted rockfish will be recovered monthly, downloaded, and repositioned if necessary. Receivers will be serviced and fitted with new batteries every 4 months.

4) The survivorship, residence time, site fidelity, and movement patterns of transplanted fishes will be determined at the new reef home. Downloaded data will be entered and maintained in an Access database for later querying and analysis. Transmitters will have a nominal battery life of 2 years (V8SC), with some up to 4 years (V13). Residence time for individuals tagged will be determined by recording the longest period of acoustic contact

relative to the expected expiration date of the transmitter. Survivorship of tagging fish will be ascertained by noted periods of no detection among and between receivers.

Date Information is Required: This information is needed for proper analysis and decision-making prior to expected Pacific OCS oil and gas decommissioning activities in the Santa Maria Basin, Santa Barbara Channel, and San Pedro Basin. Plans for future decommissioning of platforms and associated facilities could be submitted within the next five years. The lead time to analyze these plans, prepare appropriate NEPA documents, and fully permit the decommissioning requires that the data expected from this study be obtained now.

Revised date: September 22, 2005

ENVIRONMENTAL STUDIES PROGRAM: Studies Development Plan FY 2006 – 2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Fate, Volume and Chemistry of Natural Seeps in the Santa Barbara Channel/Southern Santa Maria Basin

MMS Information Need(s) to be Addressed: Recent reliable estimates of the volume of oil emitted daily from natural seeps directly under or near producing OCS platforms are lacking. The most reliable estimates are 35 years old, and in light of the recent dramatic visible increase in seepage since the December 2004 storms, and newly discovered seepage areas, more accurate data are required. As the public largely attributes this oil erroneously to offshore production spills, it is critical for the program to have a scientifically based estimate of the daily natural oil seepage and be able to differentiate produced vs. natural sources of oil reliably. We can then determine the origin of beached oil, and determine if Federal platforms are contributing to the overall tar on local beaches and to assess the possible role that any oil spills from platforms play in the natural ecology of the region.

Cost Range: (in thousands) \$400

Period of Performance: FY 2006-2007

Description:

Background: Historically, a number of efforts have looked at the prolific natural seepage of oil off Coal Oil Point. MMS is completing two efforts, a UCSB CMI study of the transport of oil to the surface by seep gas bubbles, and a USGS/MMS joint study which has developed a reliable chemical method of distinguishing between oil from produced wells and that from natural seeps in the same region.

These two studies have made several important findings. The first study has refined a field technique to estimate the flux of seep oil and gas. The latter study has refined the fingerprinting process to enable differentiation of the highly similar Monterey oil from OCS production and adjacent natural seeps.

These studies made two important additional discoveries which highlight the need to update the seep volume estimates. The MMS/USGS pilot study mapped large new areas of seepage in the western Santa Barbara Channel which are undocumented, and collected numerous samples for fingerprinting. Additionally, UC Santa Barbara scientists, while conducting the MMS transport study, observed a doubling of seepage both in terms of volume and numbers of seeps in the Coal Oil Point area since the December 2004 storms off California. These observations need to be groundtruthed and the volumes quantified for the entire area.

MMS intends that the proposed effort would be a collaborative effort among experts at USGS and the University of California, each providing specialized expertise. Initial discussions with USGS indicate that they would provide substantial match for the study.

Objectives: The purpose of the study is to: 1) Estimate the current oil (and gas) seepage occurring adjacent to OCS operations in the Santa Barbara Channel and Southern Santa Maria Basin, 2) Complete a shared Federal/State fingerprinting library of oil samples from natural and produced sources, including the remaining OCS platforms in the Pacific Region 3) Determine the fate of oil originating from prolific seeps in the Santa Barbara Channel/Santa Maria Basin, 4) Provide for opportunistic fingerprinting of oil sources from spills or large natural events.

Methods: To estimate the seepage, mapping of seeps in unmapped areas would be completed—two significant areas were mapped in the pilot MMS/USGS study at Point Conception and Gaviota using sniffer surveys, hazards and ROV. These techniques, along with the evaluation of aerial photos, would be used to map seep areas. Once larger seep areas are located, new sonar surveys would be conducted, calibrated by direct flux buoy measurements, for comparison with previous sonar surveys in the mid-1990s. Determination of oil to gas ratios from collected seabed and sea surface samples for the major seepage areas, along with flux data will allow estimation of total oil emissions.

Deployment of Acoustic Doppler Current Profiler equipment on the ocean floor at the location of a couple of identified consistent seepages will allow for an estimation of the fate of the oil to be made. That, along with aerial photos, historic Scripps oceanographic data and nearshore CODAR data will provide the ability to determine the fate of seeped oil.

For the fingerprinting, USGS has developed a fingerprinting protocol that has proven effective in distinguishing between natural seep and produced Monterey Formation oils. The State is now also adopting this approach so that their labs can compare results.

Date information is required: There is an immediate need for this information as oiling of birds is currently occurring and may be related to natural seep emission increases. Additional fingerprinting of OCS oil is critical to ensure that resource damage is properly accounted for and not arbitrarily assumed to be OCS related spills.

Revised Date: March 7, 2005

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Cooperative Ecosystem Studies Unit (CESU)

MMS Information Need to be Addressed: MMS requires data and information about the environmental effects (real or potential) of oil and gas operations in the Santa Barbara Channel and Santa Maria Basin. This series of studies is intended to address a wide array of topics relevant to those operations. Specific study efforts identified include the following:

- Analysis of Caged Mussels Downstream of Produced Water Discharges in the Santa Barbara Channel – information would address comments received in most recent EAs for undeveloped leases.
- Shorebird/Coastal Bird Survey of Ventura County – Five Year Survey Update – information would provide more recent data to be used in court (Ninth District California vs Norton) ordered environmental documents.
- Water Column Transport and Fate of Hydrocarbons Using Natural Seeps as a Surrogate for Pipeline Spills – provides information to be used in review of updated oil spill plans submitted by operators.
- Ground Truthing Acoustic Energy Decay Models in the Shallow Water Santa Barbara Channel – provides information to respond to comments and court case on EAs written for the undeveloped leases – also provides information to assist MMS in developing mitigation measures for high energy seismic surveys.
- Update of the Shoreline Inventory Database into ARCGIS – this is needed in order to generate graphics used in revised Development and Production Plans submitted for Tranquillon Ridge field development.
- Age and Growth (Otolith Analysis) of Fish Collected during the Coastal Marine Institute study – this analysis provides an independent measure of fish age and fidelity to oil and gas platforms and therefore a basis for the environmental analysis required for NEPA documents for future decommissioning projects.
- 2007 Bottom Current Measurements - Accurate current measurements close to the ocean floor are needed in proximity to existing pipelines to determine impact of sediment movement and sand scour. Data collected to date is not close enough to the ocean floor to provide adequate input to the models. This information is critical to ongoing operations and pipeline monitoring.

Cost Range: (in thousands) \$250/year

Period of Performance: FY 2006 – FY 2010

Description:

Background: The MMS Pacific OCS Region pioneered the Coastal Marine Institute (CMI) program of MMS with the first Southern California Educational Institute in 1989. The CMI continued and grew through 2005 with a cooperative agreement with the University of

California Santa Barbara. Dozens of projects were completed by scientists and graduate students during the past 16 years and hundreds of peer reviewed journal papers have been published, used in MMS NEPA documents, and referenced in ongoing MMS environmental documents. The Cooperative Ecosystem Studies Unit is an evolution of the CMI concept that will further benefit MMS by reducing overhead rates with major academic research institutions in California and involving innovative approaches to environmental studies. It provides an opportunity for MMS to participate with leading scientists in addressing information needs and translating those needs into data and knowledge useful to the regional decisions makers. The proposed Californian CESU fits within the larger framework provided by the national CESU that MMS has joined as part of the Department of the Interior.

Objectives: The objective of the CESU will be to continue the innovative use of MMS ESP funding to gather and synthesize data for MMS analysts in the Pacific OCS Region. The focus of the CESU supported research will be on data and information in the Santa Barbara Channel and possible future alternative energy mission responsibilities that may accrue to MMS under the new Energy Legislation pending in the U.S. Congress.

Methods: A wide variety of methods are anticipated to be used in tasks that will be approved individually within the context of the CESU. Methods used will range from collecting original data such as coastal bird survey data to statistical analysis of data collected under previous MMS studies in the Santa Barbara Channel and development of GIS databases and coverages from these data.

Date Information is Required: Fiscal Year 2006 through 2010.

Revised date: September 22, 2005

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area: Southern California

Title: Fish Assemblages on OCS Pipelines Prior to Decommissioning.

MMS Information Need to be Addressed: The fate of spent offshore platforms and pipelines off California has been a subject of considerable debate, much of which is focused on the potential importance of the fish populations at these facilities. Data gaps concerning the fish assemblages exist at some of the oldest facilities yet these facilities may be the first to be decommissioned. Knowledge of the potential importance of the population at pipelines and platforms to the depleted Pacific rockfish stocks is essential for fully evaluating the various options proposed for decommissioning California's offshore oil platforms.

Cost Range (in thousands): \$250 **Period of Performance:** FY 2006 - 2008

Description:

Background: It is recognized that knowledge of fish assemblages inhabiting OCS facilities is fundamental to determining the effects of decommissioning on fish populations. Since 1995 the Biological Resources Division (BRD) of the U. S. Geological Survey, the Minerals Management Service, and most recently the California Artificial Reef Enhancement Program, have provided funding to conduct research on the fishes that live around the platforms and on natural rock outcrops of central and southern California. The goal of this research was to determine the patterns of fish assemblages around both platforms and outcrops. A major synthesis of this work was published in 2003 and has been well received. The MMS Decommissioning Workshop recommended this present study to build upon the prior MMS/BRD work where data is non-existent or limited. The largest data gap exists for pipelines which have not been examined for their associated fish or invertebrate assemblages. Information from the pipelines would provide a broader understanding of the regional populations so that specific requirements can be identified for industry when decommissioning these lines. The goal of this investigation is to determine the patterns of fish assemblages on pipelines using the most efficient and cost-effective methods. Permission has been obtained from the operators to perform this research during on-going pipeline inspections to reduce costs since when mobilization and demobilization costs would not be paid by MMS.

Objectives: Research objectives include 1) characterizing the fish assemblages on pipelines, and 2) describing the spatial and temporal patterns of fish diversity, abundance, and size distribution.

Methods: A Pacific OCS Region-funded pilot study in July 2004 determined that the most appropriate, efficient, and cost-effective way to survey pipelines for biological information is with the ROV used for and during pipeline operational inspections. This necessary research

involves ROV surveys at three oil/gas pipelines; one each, north of Point conception, in the Santa Barbara Channel, and in the San Pedro Basin. The exact methods were determined during the pilot study:

Working 24 hours per day, conduct videotaped surveys on the three pipeline bundles from the platform to the beach (~ 10 m water depth) within a range of geographical settings and depths; 2) Conduct the appropriate surveys to determine fish assemblages including (1) species (if known); (2) estimated total length; (3) the habitat that the pipeline occupies (e.g., rock, sand, mud, cobble, boulder); (4) the position of the fish relative to the pipeline and substrate (e. g., in crevice, on pipeline crest, on slope, above structure); and (5) the distance of the fish from the pipeline and the natural substrate.

Date Information is Required: This information is needed for proper analysis and decision-making for future Pacific OCS oil and gas decommissioning activities in the Santa Maria Basin, Santa Barbara Channel, and San Pedro Basin.

Revised date: March 7, 2005

ENVIRONMENTAL STUDIES PROGRAM: Studies Development Plan FY 2006-2008

Region: Pacific OCS Region

Planning Area: Southern California

Title: Comprehensive relational database for seabirds, marine mammals, and update of selected databases off southern California (USGS BRD)

MMS Information Need to be Addressed: The seabird and marine mammal database will provide a detailed summary of current abundance and distribution information to support MMS analysis of potential impacts from and decisions on planned and future projects such as OCS platform decommissioning. . The access to and use of the most recent and accurate data sets are key to performing scientifically credible analyses of any proposals for replacing pipelines and power cables (such as the recent power cable replacements in the Santa Barbara Channel) associated with ongoing oil and gas operations. In addition, future environmental documents prepared for decommissioning will be based on accurate estimates of sensitive species adjacent to the decommissioning operations. This is singularly important in the analysis of potential impacts of explosive removal of platform jackets on resident fish and on local and migratory populations of marine mammals and seabirds.

Cost Range: (in thousands) \$175

Period of Performance: FY 2006 – 2007

Description:

Background: From 1999-2002, the U.S. Geological Survey (USGS) and Humboldt State University (HSU) worked with MMS to conduct a multi-year study that quantified the at-sea distribution of seabirds and marine mammals off southern California to examine anthropogenic impacts and environmental changes. Over 55,000 km were flown, more than 485,000 seabirds (67 species) and 64,000 marine mammals (19 species) were counted, and 1900 locations from 248 radio-marked birds were recorded. Seven client agencies provided matching funds or in-kind support, including the California Department of Fish and Game (CDFG), U.S. Navy (USN), NOAA Channel Islands National Marine Sanctuary (CINMS), NPS Channel Islands National Park (CINP), U.S. Fish and Wildlife Service, Moss Landing Marine Laboratories (MLML), and the Wildlife Health Center (UC Davis). The study provided resource managers with current information on distribution and abundance patterns and related present data to information from the early 1980s (Hunt *et al.* 1979, Briggs *et al.* 1987). Over the past several years, MMS has invested in several database systems to facilitate recovery of critical data for ongoing reviews and in particular to facilitate recovery of data during an oil spill. Additionally, MMS has continued to collect new information throughout the Bight including multibeam side scan sonar survey data from USGS (via a contract with Ocean Imaging, Inc.) and the Monterey Bay Aquarium Research Institute for areas adjacent to oil and gas operations. The purpose of this study is to ensure that existing databases are integrated into standard MMS geographic information system software such as ArcGIS and to

populate databases with new information as it becomes available through the Studies Program.

Objectives: The survey data for this program were successfully collected and reported on schedule; however, work is far from complete. To maximize the value of these data for MMS and other management agencies, the information must be made readily available to resource managers for planning decisions. Furthermore, this work has great potential for use in education and public outreach goals of the USGS, MMS, CINMS, and CINP. Thus, the purpose of this study is to distribute the seabird and marine mammal dataset to client agencies in a comprehensive relational database linked to geographic information system coverages, and to develop a webpage for public access. Another goal is to populate the fisheries database, marine mammals and seabird database, bird database and cultural resource databases with information from recent MMS studies. Studies with results which need to be included to update existing databases include: Ocean Imaging Hardbottom GIS-Database System, new information from the multi-beam BRD Contract for FY 2004-2005 including original data and characterization/bio data, new data from OCS projects such as the recent Crystal Energy - Fugro side-scan survey of area around Platform Grace and the projected pipeline route to shore; new data from OCS projects such as the Hubbs-Sea World Mariculture project and its survey around Platform Grace; new data from the California Department of Fish and Game (CDFG) kelp bed survey; new data from surveys in State waters such as planned for the tar seep study; new data from Channel Islands/Sanctuary/Monterey Bay Aquarium Research Institute (MBARI).

Methods: The database is summarized by density and is stored by species, season, and subarea in geographic information system coverages at scales including 1' and 5' blocks. To maximize management utility for client agencies, a relational database that allows users to query for specific values (densities, totals) and factors (species, season, subarea) is needed. The USGS will work with Point Stephens Research (T. Mecklenburg) to develop database fields for Microsoft Access linked to GIS coverages and a graphical interface. The MMS Pacific OCS Region supported development of this relational database design for fisheries databases, and it has direct application to the seabird and marine mammal survey database. This product will be distributed on CDROM and packaged with Arc Explorer (ESRI, Inc.) software. Data also will be provided to the public on a webpage served with the interactive program ArcIMS (ESRI, Inc., *see* www.werc.usgs.gov/pinsat). New or revised data from recent surveys would be merged into existing MMS databases in the standard MMS software and using the standard MMS formats. Existing MMS data bases used in the Pacific OCS Region include a fisheries database, marine mammal and seabird database, and hard bottom database produced under previous MMS Environmental Studies Program contracts.

Date Information is Required: Fall 2006 to assist with ongoing analysis for current operations and to insure that data are available prior to expected submission of decommissioning projects.

Revised date: March 7, 2005

2.4 Profiles of Studies Proposed for the FY 2007 NSL

Table 2. Pacific OCS Region Studies Proposed for the FY 2007 NSL

Page #SDP	Discipline	Title	Regional Ranking
34	BIO	Environmental Mitigation Monitoring	1
36	BIO	MARINE	2
38	BIO	Update of Commercial and Sports Fisheries Offshore California 1985-2005	3
40		Pipeline Spanning Study in the Eastern Santa Barbara Channel	4
42	IM	Decommissioning Shell Mound Research Workshop	5
IM = Information Management BIO = Biology PS = Protected Species			

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Environmental Mitigation Monitoring

MMS Information Need to be Addressed: Environmental compliance monitoring data (see examples of potential types in methods section below) would be used by the MMS to evaluate mitigation measures and project conditions of post-lease OCS oil and gas operations. In order for the MMS to make better decisions on oil and gas post-lease operations, the agency needs to monitor and observe the operations in the field for environmental mitigation compliance and to determine effectiveness of the measures. Information from environmental mitigation monitoring studies would aid decision-makers to develop more feasible and scientifically defensible mitigation measures and project conditions for future oil and gas operations.

Cost Range: (in thousands) \$ 500

Period of Performance: FY 2007 – FY 2011

Description:

Background An integral part of implementing the OCS Lands Act requires MMS to conduct environmental reviews and prepare environmental documents such as environmental impact statements (EIS) and environmental assessments (EA). During the past decades, the Pacific OCS Region has issued permits for numerous post-lease oil and gas projects. Many of the environmental documents developed for those projects required environmental mitigation measures and associated permit conditions in decision documents. Demonstrated compliance with mitigation measures and project conditions will allow MMS to have oil and gas projects proceed in an environmentally sound and timely manner.

The study is a continuation of the field analysis segment of an earlier 4-year study of the same title that occurred between 1997 and 2001, and a second study of the same name occurring between 2002 and 2006. The studies have been primarily designed to evaluate environmental mitigation effectiveness of measures and project conditions required of post-lease Pacific OCS oil and gas operations. The evaluations consist of field monitoring and observations of Pacific OCS Region oil & gas operations to determine environmental mitigation compliance and effectiveness of the measures.

Objectives The study goals are to observe, sample, and/or monitor post-lease OCS oil and gas operations in the Pacific OCS Region to determine environmental compliance (MMS regulations, Lease Sale Stipulations, National Environmental Policy Act (NEPA) requirements, and non-MMS agency requirements, etc.) with mitigation measures or project conditions and their effectiveness. The type of data collected will depend on factors regarding site-specific concerns related to environmental mitigation monitoring of current and future post-lease projects requiring additional information in the form of studies and

monitoring.

Methods The Santa Barbara Channel and the Santa Maria Basin will be the primary focus of the environmental mitigation monitoring with a secondary focus on the San Pedro Basin. Methodology consists of actual mitigation monitoring to determine the environmental effectiveness of mitigation placed upon projects to determine the most effective and resource protecting mitigation. Examples of potential future field monitoring studies in conjunction with Pacific OCS Region projects of opportunity could include, 1) bio-chemical profiling of shell mounds in the vicinity of the platforms to determine the feasibility of deep water compliance with debris removal; 2) subsea well abandonment studies in the Santa Barbara Channel (e.g., remotely operated vehicle (ROV) site clearance surveys, trawling testing, and sediment and ocean transport); 3) continued studies of the concentration and dilution rates with distance of produced water plumes at representative OCS oil and gas platforms; and 4) collecting drilling discharges and sediment transport samples in the vicinity of hardbottom areas to determine compliance with mitigations to protect those resources. The type of data collected will be determined by Pacific OCS Region environmental management and scientists as specified by the particular project and would depend on the specified approval conditions.

Date information is required: The information and data generated by the time and materials contracts issued under this proposed study are required at various times. The emphasis will be on addressing information needs for planning future decommissioning and for further lease activities on presently undeveloped lease.

Revised Date: June 2005

ENVIRONMENTAL STUDIES PROGRAM: Studies Development Plan FY 2006 – 2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: MARINe (Multi-Agency Rocky Intertidal Network)

MMS Information Need(s) to be Addressed: This information allows MMS to directly assess potential or real impacts to the coastline from OCS operations. In particular, it allows MMS to directly assess impacts to shoreline resources from accidental oil spills. It has been shown that the data collected is sufficient to detect an 8-15% change in species assemblages allowing for a high level of confidence in the data which allows MMS to differentiate between naturally caused impacts and OCS or other anthropogenic impacts. It also fosters continued partnerships with local, State and Federal government agencies involved in monitoring research. The data is actively used by many entities for planning shoreline projects, marine protected areas, and reserves. It implements MMS's mandate to monitor the marine and coastal environment adjacent to OCS operations as described in the OCS Lands Act.

Cost Range: (in thousands) \$800 - \$900

Period of Performance: FY 2007-10

Description:

Background: MMS and its 22 partners in MARINe biannually monitor 70 established rocky intertidal sites across central and southern California using a standardized field protocol and share a common database (www.MARINe.gov). This study provides funding for monitoring 17 of the 24 MMS long-term monitoring sites adjacent to OCS operations. Due to MMS funding limitations, MMS no longer will fund seven sites it has historically funded but will seek additional partners to pick up the funding if possible. If no funding sources are found, then the MARINe network will be reduced to 63 sites. MMS continues to participate actively in the management and oversight of MARINe to access the data critical to our ongoing operations and to fulfill our responsibility to monitor OCS platforms and pipeline operations.

Over the past two years, a large increase in seastars has been observed at many of the MARINe sites on the islands and mainland. This is believed to be caused by predominately colder water temperatures across the Bight. Decreases in owl limpets have also been identified at locations accessible to the public; a decrease believed to result from poaching and collecting by the public. Black abalone are still at the low levels (5% of the original population in the late 1980's and early 1990's) along much of the coastline, though the areal extent affected by withering foot syndrome disease has leveled off. For many years, miles of

coastline continued to be affected and the numbers of abalone fell drastically. It appears that the decline in abalone numbers continues; a combination of loss of animals from withering foot coupled with an absence of recruitment. Evidence of withering foot syndrome were most recently observed at Point Sierra Nevada and Piedras Blancas in northern San Luis Obispo County. It seems unlikely the black abalone will recover. No impacts have been identified from oiling over the recent past, from OCS or non-OCS operations.

One of the true benefits of MARINE, namely, the large network of biologists in the field monitoring a huge stretch of coastline was realized this summer when sick seastars were found at Santa Cruz Island. Within days, biologists along the coast were able to determine the extent of the illness and confirm the presence or absence of illness in the population along remaining sections of coast and conclude that this was a fairly isolated event, at least for now. Biologists will continue to check for evidence of wasting disease in the seastar populations during normal MARINE monitoring. Knowing where population changes occur on a broad scale helps MMS to determine whether oil and gas activities are affecting the environment.

Objectives: This study will provide for the continued monitoring of 17 rocky intertidal sites on the mainland shore immediately adjacent to OCS facilities. Information generated provides the basis for evaluating impacts to the shoreline from OCS activities, especially accidental oil spills. Management and coordination of MARINE and database tasks are included so that MMS has access to the data needed for management decisions.

Methods: Sites are monitored biannually by teams of field biologists, including the MMS MINT team. Barnacles, mussels, seastars, black abalone, surfgrass, limpets, turf weed, rock weed and other algae are either photographed in fixed plots in the field, or measured and counted in irregular, circular or band plots. The sampling protocols are standardized across MARINE and are used by all MARINE field teams. Data is placed in a common database and is reviewed and published by the Science Panel.

Date information is required: These data are used to evaluate incoming DPP revisions, new State/Federal OCS Projects, review LNG applications and pipeline rights-of-way.

Revised Date: March 7, 2005

ENVIRONMENTAL STUDIES PROGRAM: ANNUAL STUDIES PLAN FY 2006-2008

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Update of Commercial and Sports Fisheries Offshore California 1985-2005

MMS Information Need to be Addressed: MMS personnel require such a summary, updated document to assess and predict the potential for impacts to fishers and fisheries from on-going development, potential future development, and decommissioning activities. It will aid MMS to make effective decisions about these OCS activities.

Cost Range (in thousands): \$125 **Period of Performance:** FY 2007 – 2008

Description:

Background: An historical perspective, through 1985, of the commercial and sport fisheries offshore California was completed for the MMS Pacific Region studies program in 1989. This document, MMS 89-0073, has proved to be useful during analysis of the potential impacts of OCS activities on fishers and fisheries. However, it is outdated and there is no summary document from either the state or other federal agencies available for a more recent perspective. There are numerous reports on the commercial and sport fishers and fisheries and information on regulations and restrictions from the Pacific Fishery Management Council. Regulations, fishing restrictions, fishers, and fishing methods have rapidly changed over the past 20 years, yet a concise summary of this information, what has occurred, and how this has affected fishers and fisheries is not readily available, even through the Internet. It is neither necessary nor desirable to interview fishers directly or to provide landings and value data for this effort.

Objectives: Provide a summary document that presents an overview of the commercial and sport fishers and fisheries offshore California 1985-2005.

Methods:

1) Review, from 1985-2005, the past and presently available reports and information on commercial and sport fishers and fisheries offshore California from Morro Bay to Laguna Beach. Compile the data from available reports, journals, general interest publications, fisheries organizations, club newsletters, etc. Speak to recognized knowledgeable persons such as Dr. Craig Fusaro, Joint Oil/Fisheries Liaison Officer, and John Richards, Sea Grant Extension Officer.

2) Review, from 1985-2005, the past and existing regulations, laws, and policies regarding

commercial and sport fishers and fisheries from Morro Bay to Laguna Beach, CA.

3) Produce a document that describes during the period 1985-2005 commercial and sport fishers and fisheries from Morro Bay to Laguna Beach, CA. The document should include the trends and changes that have occurred and relate their importance to OCS activities. For example, the State of California banned trawling for spot-prawn off south-central CA in April of 2003. How many fishers did this affect? Where were the fishers located? Since the area where several platforms are now standing potentially could not be trawled even if the platforms were removed, what might this mean related to OCS activities?

Products: This study will compile and summarize information that is in numerous formats spread over a wide geographic area.

Date Information Required: Fiscal year 2007. This information is needed for proper analysis and decision-making for increased Pacific OCS oil and gas development and/or decommissioning activities in the Santa Maria Basin, Santa Barbara Channel, and San Pedro Basin.

Revised date: June 27, 2005

ENVIRONMENTAL STUDIES PROGRAM: Studies Development Plan FY 2006 – 2007

Region: Pacific Region

Planning Area(s): Southern California

Title: Pipeline Spanning Study in the Eastern Santa Barbara Channel

MMS Information Need(s) to be Addressed: There is insufficient information available about the benthic environment around the pipelines in the Eastern Channel to sufficiently mitigate pipeline scouring problems. Specifically, documentation of the bottom currents which exist both nearshore and offshore along the pipeline routes are needed. Sand transport also needs to be measured in the Eastern Channel as it may contribute to excessive scouring.

Cost Range: (in thousands) \$400

Period of Performance: FY 2007-2008

Description:

Background: The pipeline from Platform Grace to shore has numerous spanning problems, the most serious of which are deep spans near the Platform in deeper water, but other lengthy spans occur nearshore. Without accurate bottom current data, MMS cannot determine proper mitigation requirements for the operator to ensure safe pipeline procedures are followed. This is currently also the location of other applications for new pipelines for LNG facilities which MMS is required to prepare pipeline rights-of-way. MMS needs this information to review pipeline designs for the proposed pipelines.

Objectives: To obtain site-specific bottom current data in the Eastern Santa Barbara Channel near the Platform Grace to shore pipeline which can be used to mitigate potentially hazardous spanning. Sediment transport

Methods: One mooring would be deployed in the Eastern Channel in 150-200 m water depth to evaluate environmental conditions on the pipeline from Grace to shore. It would have an upward-looking ADCP placed in a trawl-protected bottom mount. The ADCP will measure currents in 2 m bins from about 5 m above the bed to 90 m. It will also measure near-bottom wave orbital velocities and the pressure fluctuations associated with these waves for 20 m every 9 hours. A microcat will measure the near-bed temperature and salinity of the water. The instrument will be deployed for a minimum of 2 years. Standard methods will use the measured current and wave profiles to extrapolate the field near the bed. Separate current meters may also be deployed at intervals along the pipeline to provide adequate information about the currents nearshore and offshore. Other localized studies of sediment size and transport may also be added depending on the initial results of the mooring as needed to provide an understanding of the sediment transport causing spans.

Date information is required: The information is needed now. MMS engineers have

identified several spans of concern which are being mitigated currently, but do not have adequate bottom current data in the Eastern Channel to understand or predict future spanning problems on this line or others in this part of the Channel.

Revised Date: 6/25/05

Region: Pacific OCS Region

Planning Area(s): Southern California

Title: Decommissioning Shell Mound Research Workshop

MMS Information Need(s) to be Addressed: The Minerals Management Service Pacific OCS Region conducted a workshop in 2004 that identified a wide variety of information needs to be addressed through the Environmental Studies Program (ESP) and by other agencies and industry. One of the key topics that was deferred from discussion at the workshop in 2003 was the information needed to address potential environmental impacts from removing the shell mounds that accumulate beneath oil and gas platforms offshore California. The topic was deferred pending completion of the Environmental Impact Report by the California State Lands Commission. This EIR is now substantially completed and the MMS as well as its partners in the Interagency Decommissioning Working Group, require a workshop attended by scientific experts on decommissioning to discuss potential research needed for analyzing the possible impacts of removal of shell mounds during the decommissioning process as well as possible environmental mitigation that might be required as part of the removal process.

Coast Range: (in thousands) \$50

Period of Performance: FY 2007

Description

Background: The MMS Pacific OCS Region conducted a workshop in 2004 that brought together scientists, agency representatives, and oil and gas industry representatives to address studies and information that would be needed for future platform and facilities decommissioning in the region. An excellent workshop report gave guidance to the design of the studies for the Pacific Region. This guidance was incorporated into the annual Studies Development Plan (SDP) last year. One of the topics not addressed at the workshop in 2004 was the information needs related to the ecology and fate of shell mounds that accumulate beneath offshore oil and gas platforms. A future workshop was recommended in 2004 to address those information and study needs. This proposal is for such a workshop.

Objectives: The objective of this workshop is to provide a forum for selected scientists, agency representatives, and industry experts to address information needs and make recommendations for research that MMS requires for future decommissioning specifically related to shell mounds.

Methods: A contractor will be hired to help MMS plan and implement the workshop. A workshop location will be located and reserved, a list of invited participants will be developed by MMS, and the workshop convened. The contractor will be responsible in conjunction with MMS for participant logistics to the extent the budget permits. The contractor will be responsible for recording and facilitating the workshop and producing workshop proceedings.

Date Information is Required: The workshop needs to be held in fiscal year 2007 and the

proceedings made available in 2007 in order to be used in writing the SDP for FY 2008 and beyond before future decommissioning projects are submitted to MMS for consideration.

Revised Date March 7, 2005

SECTION 3.0 TOPICAL AREAS FOR YEARS 2008

Contribution to Stock

Once studies have been completed which describe the fish assemblages around OCS platforms and pipelines, estimates of their contribution to fish stock will need to be made in order to assess the impact of decommissioning.

Shell Mounds

Studies will be needed to assess the physical and chemical characteristics of shell mounds. Studies of shell mounds left by decommissioned platforms in State waters indicate the need to understand the concentration of certain chemicals and their potential bioavailability in order to assess potential impacts of shell mound removal. The State of California studies are being completed; their reviews will help design appropriate studies for Federal facilities.

Sand and Gravel

California has signed a Memorandum of Understanding with MMS to inventory sand and gravel resources within Federal waters for beach replenishment and stabilization. The State is interested in the distribution of sand and gravel resources and this topic and mapping of those resources is incomplete for many areas offshore California. Further information on the effects of using sand resources are also needed.

Alternative Energy

Offshore wind and wave energy may be considered in the future to supplement dwindling oil and gas supplies and provide a renewable energy source. Studies will be needed to consider technical requirements offshore California, identify suitable areas and conditions, and examine regional environmental effects.

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