

Chapter 3

The Proposed Action Including Alternatives

Table of Contents

- 3 The Proposed Action Including Alternatives
 - 3.0 Introduction 3-3
 - 3.1 Proposed Action 3-3
 - 3.2 Onshore Disposal of Muds and Cuttings 3-7
 - 3.3 No-Action Alternative 3-8
 - 3.4 Alternatives Not Considered For Further Analysis 3-8
 - 3.5 Comparison Of Alternatives 3-10

Chapter 3

The Proposed Action Including Alternatives

3 THE PROPOSED ACTION AND ALTERNATIVES

3.0 INTRODUCTION

The following discussions summarize the detailed impact analyses found in Section 5.2. These are true summaries and do not include all the supporting information upon which the conclusions are based. The reader should study the entire EIS document, especially all of Section 5.2, *Environmental Impacts of the Proposed Action and Alternatives*, and not rely exclusively on the Summary of Impacts as the sole basis of understanding the conclusions. These summaries are limited to the impact of the Proposed Action (Delineation Drilling) and alternatives. Cumulative impacts are assessed under the cumulative analysis in Section 5.2 and are not summarized here.

Alternatives to the Proposed Action include those identified during the public and agency scoping process. All of the alternatives identified were evaluated as to whether they would 1) attain the basic objectives of the project, 2) be technically feasible, 3) be economically feasible, and 4) offer environmental advantages over the Proposed Action. Alternatives carried forward for environmental review are described in this chapter: The Proposed Action, Onshore Disposal of Mud and Cuttings, and No Action. The impacts of the alternatives are discussed in Chapter 5. Alternatives considered, but not carried forward in the environmental analysis are discussed in Section 3.4 of this chapter.

During the formal public scoping process for the proposed delineation activities, several issues or concerns relating to project alternatives were identified. These include:

- MMS should evaluate a reasonable range of alternatives.
- Development should not be allowed to occur.

- The entire area should be designated a marine sanctuary.
- MMS should buy back the leases.
- The least polluting, most technologically advanced drilling unit should be used.
- Identify specific times to drill on each unit to avoid specific impacts.
- Identify different locations to position the drilling unit to reduce impacts.
- Identify alternative methods of disposal of drill muds, including onshore disposal.

3.1 ALTERNATIVE 1: PROPOSED ACTION

The operators of the four subject units: Bonito, Point Sal, Purisima Point, and Gato Canyon are preparing to submit revisions to their approved EP's. The revisions are expected to propose drilling 4-5 delineation wells from a semi-submersible type mobile offshore drilling unit (MODU) into the four different units: 1 on the Point Sal Unit, 1 on the Purisima Point Unit, 1 to 2 on the Bonito Unit, and 1 on the Gato Canyon Unit as described in detail in chapter 2. A delineation well is designed to gather additional information about the nature and extent of the hydrocarbon reservoirs in areas already explored. The summary of impacts from the Proposed Action follows:

Air Quality: The potential for a drilling equipment permit exemption threshold level to be exceeded (Santa Barbara APCD Rule 202. F.6; 25 tons/yr) has only been determined for the Bonito Unit project, and only if a two-well scenario is realized over the same 12-month period. All the proposed delineation activities are above New Source Review (NSR) threshold emission levels for Best Available Control Technology (BACT), emission offsets and air quality impact analysis. The proposed delineation activities will be required to comply with those provisions in Santa Barbara County Air Pollution Control District

(SBCAPCD) Rules and Regulations. Equipment and emissions not related to drilling operations will require a Permit to Operate from SBCAPCD, and emission sources subject to the permit will be in accordance with NSR provisions to ensure a net air quality benefit.

The potential for violations of the ambient air standards are considered negligible due to the short duration of the proposed delineation activities and the implementation of proposed emission control measures, by the operator, to minimize impacts from the drilling equipment and support vessels. The potential impacts to onshore air quality resulting from the proposed delineation activities are considered low based on the significance criteria levels utilized in this analysis.

Water Quality: Impacts to water quality will be low because the proposed delineation activities do not cause or contribute to changes in standard, measurable water quality parameters resulting in unreasonable degradation to water quality. This is due to the following reasons:

- Water quality impacts would be limited to the discharge of drilling muds and cuttings;
- Only one well would be drilled at each site (1-2 for the Bonito Unit);
- While changes to standard, measurable water quality parameters would occur during the discharge of muds and cuttings, they would be transient and temporary and limited to between 100 and 5,000 m from the discharge point;
- Discharges would be in accordance with approved NPDES permit.

The other discharges (see section 5.2.2) will cause negligible impacts to water quality due to the treatment systems required and the small volume of the discharge. The Proposed Action will have low impacts on water quality.

Rocky and Sandy Beach Habitats: There are no impacts from the Proposed Action on rocky or sandy beach habitats.

Seafloor Resources: Physical impacts to hard bottom seafloor resources are moderate for all Units except the Gato Canyon Unit, which are low. These impacts are due to the potential to impact stable hard bottom communities with anchors and chains. As discussed in section 5.2.1, impacts are expected to be low for the Gato Canyon Unit since the biological stipulation has been invoked on this lease due to the presence of potential hard bottoms on this lease. Drilling individual wells with multiple anchoring events and drilling of several wells with multiple anchoring events near sensitive hard substrate habitat is likely to re-

sult in long-term impacts to plants and animals, and alter habitat in several localized areas, which is a moderate impact.

Due to the comparatively low volume of mud discharged during the drilling of delineation wells, the water depth of proposed wellsites, and proximity of wellsites to identified hard substrate, impacts on seafloor resources from drilling discharges are expected to be low to moderate. Wellsites located a distance of 1,000 m from identified hard bottom substrate would result in low impacts to seafloor resources. Discharges from wellsites located within 1,000 m could produce moderate impacts to hard bottom habitat due to smothering, depending on the actual distance from the feature, predominate currents and quality of the habitat on the feature. Impacts on seafloor resources from the proposed delineation wells are moderate, due to the potential to impact hard bottom communities. Site-specific mitigation would reduce identified moderate impacts to low impacts for each wellsite, assuming biological surveys confirm the presence of hard bottom habitat.

Kelp Beds: There are no identified impacts to kelp resources from the proposed delineation wells. Crew boats will adhere to approved vessel traffic corridors that purposely avoid transit through kelp beds.

Fish Resources: Drilling muds and cuttings from the Proposed Action could potentially affect fish species through direct toxicity through exposure in the water or ingestion of prey that have bioaccumulated toxins from the discharges. The EPA biological assessment for the proposed reissuance of its General NPDES permit for offshore OCS facilities in southern California waters concludes that direct toxicity to listed fish species, or their food base, should be minimal (SAIC, 2000a, b). All such discharges are required to meet NPDES water quality criteria, which were established to protect biological resources outside the 100 m mixing zone. Given the short-term nature and limited scope of the proposed drilling and testing program, negligible effects to marine fish resources and Essential Fish Habitat (EFH) are expected from drilling discharges. No produced water is expected to be discharged from any of the proposed drilling/well testing activities. Thus no impacts to fish resources in the project area are expected from the proposed delineation drilling activities. Physical impacts to seafloor resources from anchoring operations could be moderate, due to the potential to impact high relief hard bottom communities. However, five delineation wells with 40 anchoring events (8 anchors per well), are unlikely to cause sufficient disturbance to be felt at a population or regional level for fish resources or EFH. A small number of fish would be expected to be lost after the explosive removal of a wellhead. However, given the short duration of the project, few fish would be expected to be attracted to the wellhead, and

a low mortality is expected. Overall, impacts from this source are expected to be low. Negligible effects to fish resources and EFH are expected. Overall, activities associated with the proposed delineation activities are expected to cause negligible to low impacts to fish resources and EFH in the project area.

Marine and Coastal Birds: No impacts to marine and coastal birds are expected as a result of operations associated with the proposed projects, including helicopter traffic and well abandonment, either for all units combined or any individual unit.

Marine Mammals: Effects to marine mammals from noise and disturbance resulting from most activities associated with the proposed delineation activities, including drilling, support vessel and barge traffic, helicopter traffic, and delineation well abandonment, are expected to be restricted to temporary (less than 1-hour), localized disturbances. These impacts are considered to be negligible. The use of explosives for delineation well abandonment also raises the possibility that a marine mammal could be killed, injured, or suffer hearing damage. Overall, impacts from this source are expected to be low and could be further reduced through mitigation. Overall, activities associated with the proposed delineation activities are expected to cause negligible to low impacts to marine mammals in the project area. These impacts would be common to all units.

Threatened and Endangered Species: Activities associated with the proposed delineation activities are expected to result in temporary (less than 1-hour), localized disturbances to blue, fin, and humpback whales in the project area. These impacts are considered to be negligible to low. No impacts to sei, right, or sperm whales, Steller sea lions, Guadalupe fur seals, or southern sea otters are expected from these activities. No impacts to California brown pelicans, California least terns, bald eagles, snowy plovers, western snowy plovers, and light-footed clapper rails are expected as a result of operations associated with the proposed delineation activities, including helicopter traffic and well abandonment. Because the Proposed Action does not include any onshore activities, no impacts to threatened and endangered plants are expected either for all units combined or any individual unit. Impacts to leatherback and loggerhead sea turtles are expected to be negligible while no impacts are expected for green and Pacific Ridley sea turtles. No adverse impacts to the California red-legged frog would be expected to result from the Proposed Action. No impacts are expected to tidewater gobies or steelhead trout. Tidewater gobies, which are found in shallow coastal lagoons, stream mouths and shallow areas of bays will not be impacted by effluent discharges, anchoring events, or the potential explosive removal of delineation wells. While steelhead trout migrate widely along the Pacific Coast, and may pass

through the vicinity of the proposed delineation drilling activities, no impacts from effluent discharges, anchoring, or explosive removal of wellheads would be expected.

Estuaries and Wetlands: There are no identified impacts on wetland or estuarine resources from the operations associated with the proposed delineation wells.

Refuges, Preserves and Marine Sanctuaries: Although activities associated with the Proposed Action will not occur within sanctuary or park boundaries, there are some resources that can be highly mobile and may move in and out of these areas. Impacts to these resources are expected to range from none to low. Impacts to these resources may be found in Section 5.2.1 through Section 5.2.24. The impacts to the biological resources of the Channel Islands and Monterey Bay National Marine Sanctuaries and the Channel Islands National Park are summarized in Table 5.2.11-1.

Onshore Biological Resources: No impacts to onshore biological resources are expected as a result of operations associated with these projects, either for all units combined or any individual unit.

Cultural Resources: No known or suspected cultural resources are within the area that could be affected by proposed operations from the proposed delineation activities, including anchoring and drilling. No vessels have been reported as lost within these units. However, as a result of prior remote sensing surveys or gear loss claims from fishermen additional data analysis and survey have been ordered for the area of operation to identify any sites that would need to be avoided. Section 5.2.13 provides a detailed discussion of the status and activities for each unit.

Visual Resources: The effect of the Proposed Action on visual resources is negligible on each of the four units. The visual resource impact area (VRIA) either does not cross the shoreline on three of the four units (Pt. Sal, Purisima Point, and Bonito). Furthermore, on these units, meteorological conditions will generally obscure the MODU visibility from a shoreline that offers little public access. The VRIA from the Gato Canyon Unit drill site does cross the shoreline for a short distance in the vicinity of El Capitan State Beach, but does not encompass public viewing areas. Although present during a portion of the peak tourism and recreation season (the time of most intense viewing), no direct project impact results since the public viewing area is outside the VRIA.

Recreation: No impacts to recreation have been identified as a result of delineation well drilling on the Gato Canyon, Bonito, Purisima Point, or Point Sal Units.

Community and Tourism Resources: Community characteristics and tourism resources impacts from operations are negligible because of the short dura-

tion, remote location near areas already experiencing energy development, and low intensity of the action.

Employment and Population: The proposal is expected to employ 110 people directly on the MODU. Employment on the MODU is expected to use workers who live on the MODU while working and return to their home base during their off times. In addition to the 110 employees directly connected to the MODU 35 other workers are expected to support the drilling activities. The additional support workers are expected to be current employees of service providers to the offshore industry and no new employees are anticipated as a result of this proposal. Over the 14-month period routine supplies will be supplied by onshore services. The required services from one MODU over a short period of time will stimulate business for support services, but is insufficient to require any measurable changes to employment. Population increases result from increased employment and immigration associated with employment opportunities. With no anticipated increase in local employment it is unlikely that any measurable immigration will occur. No impacts on employment and population are anticipated from the proposal. Given there will be only a small demand for local workers, no change in employment from the proposed project is expected. With no change in employment, the Proposed Action will have no effect on the population.

Housing: No change in population is expected from the proposal. Therefore, no change in the demand for housing is expected from the Proposed Action.

Infrastructure. Crew and supply vessels trips are anticipated to increase as a result from the proposal. The maximum change from the proposal results in a short-term increase in supply vessel trips of 9.09%. The maximum increase in truck traffic as a result of the Proposed Action is a short-term increase of 72 trucks at the Port of Hueneme. The increase in truck traffic at the Port of Hueneme would be for less than 3 days. The extremely short-term nature of the increase in truck traffic reduces an otherwise moderate impact to low. The maximum change at the Port of Long Beach is less than one percent of daily truck traffic for any unit. The level of change is low. The proposal has no long-term impacts.

Public Finance and Service: The proposal is not expected to result in a measurable change in the demand for public or private services. No new public or private services are anticipated as a result of the proposal.

Non-residential Land Use: The Proposed Action is expected to have no impact on non-residential land uses since no new facilities will be needed for the project.

Commercial Fishing and Kelp Harvest: The proposed well sites are all located within established com-

mercial fishing grounds for all the major gear types of the region. Fishermen of all gear types will be precluded from fishing in the vicinity of the MODU for up to 90 days at each well site. This represents over half the open season for some target species and will likely impact the peak fishing season of one or more species regardless of the timing of the proposed project. The trawl fishery may also experience long-term impacts due to artificial obstructions, such as drill muds and cuttings, anchor scars, and lost debris. Because of these conflicts, fishermen will lose valuable fishing time and space during the project, and in the case of trawlers, perhaps even after the completion of the project. Furthermore, fishermen who are precluded from the MODU site will likely fish alternate areas during the proposed project. This may result in overcrowding of alternate fishing grounds and could impact the income of the primary fishers of those grounds.

The measures the operators have proposed to reduce conflicts and encourage communication with the commercial fishing industry during the proposed project have been shown to be effective during past OCS activities. If the measures are incorporated, the impacts to the commercial fishing industry should be addressed and minimized to the maximum extent feasible. The impacts would be expected to be low.

Marine Recreational Fishing: The proposed well sites are all located outside the major marine recreational fishing areas of the region. Depending on oceanographic conditions and seasons, trolling for pelagic species can occur throughout the Santa Maria Basin and the Santa Barbara Channel. Trolling vessels would be expected to avoid an area up to 1,525 m (5,000 ft) around the proposed well sites while the MODU is on site. An increase in navigational hazards to marine recreational fishermen would be expected due to increased vessel traffic associated with the proposed project. Since the total area lost to recreational fishing is small and of short duration, low impacts would be expected to marine recreational fishermen in the project area.

Military Activities: The following conclusion applies to all units where MODU drilling is proposed. The potential impact of routine MODU drilling operations on military operations is considered low based upon the significance criteria used in the analysis. The analysis shows there will be a modest increase in supply boat traffic and a small increase in helicopter traffic in Military Warning Area W-532 during the 2002-2003 MODU drilling period. The analysis also demonstrates that the existing military lease stipulations have been very effective in avoiding conflicts between oil and gas and military operations. The only possible effect the proposed MODU drilling project could have on military operations in the area would be the inability of operations personnel to comply with the lease

stipulations during a launch countdown. The likelihood of such a situation over the short duration of the project is considered extraordinary. This conclusion is consistent with the military impact analysis conducted in the 1984 Point Arguello EIS/EIR, which considered the impacts associated with the construction of three platforms, pipelines, and the Gaviota onshore processing facility, as well as the construction of up to eight platforms in the area-wide build-out scenario.

Environmental Justice: The Proposed Action is not expected to result in onshore impacts in the study area and therefore is not anticipated to have a disproportionate effect on low income and minority communities.

3.2 ALTERNATIVE 2: ONSHORE DISPOSAL OF MUDS AND CUTTINGS

This alternative remains the same as the Proposed Action, except that it requires that all mud and cuttings be barged to shore for onshore disposal at an approved disposal site, instead of onsite discharge into the water column (under an EPA NPDES permit). The operation would entail storing the mud and cuttings in bins, transporting the bins to shore via workboat, and trucking the bins to an approved disposal site. Appendix 3.1 provides a description of Alternative 2. Detailed analysis of the estimated impacts of Alternative 2 are located in Section 5.4. Please reference these sections for detailed information.

Impacts from Alternative 2 are expected to be the same as those estimated under Alternative 1, the Proposed Action (Section 5.2) for the following resources:

Rocky and Sandy Beach Resources; Kelp Beds; Fish Resources; Marine and Coastal Birds; Marine Mammals; Threatened and Endangered Species; Estuaries and Wetlands; Refuges, Preserves, and Marine Sanctuaries; Onshore Biological Resources; Cultural Resources; Visual Resources; Recreation; Community and Tourism Resources; Employment and Population; Housing; Public Finance and Service; Non Residential Land Use; Commercial Fishing and Kelp Harvest; Marine Recreational Fishing; and Military Activities.

The sources of impacts associated with Alternative 2 are the same as those related activities discussed for Alternative 1, the Proposed Action. However, the impacts to some resources would be different from the impacts of Alternative 1. These impacts are described below.

Air Quality: Alternative 2 is expected to increase total emissions ranging between 8-36 percent greater than those predicted for the Proposed Action due to the projected increase in vessel and truck trips in Ventura County. However, the increase in total emis-

sions is not expected to increase the peak hour emissions projected and modeled for the site preparation stage of the Proposed Action. Therefore, based on peak hour emissions, no increases to onshore predicted concentrations affecting the ambient air standards are expected with this alternative as the emissions do not overlap with the modeled emissions during the site preparation stage. Emission increases projected from the vessel emissions will be subject to permit and emission offset requirements per SBCAPCD Rules and Regulations. Impacts to Santa Barbara County air quality from the proposed alternative are considered to be low. Onshore impacts from additional tanker truck trips will occur in Ventura County. Increases in onshore mobile source emissions will add approximately 1.6 tons of NO_x over 14 months to the Ventura County mobile-source emission budget. The proposed increase in on-road emissions is considered to have low impacts to Ventura County air quality. Therefore, overall impacts to regional air quality from Alternative 2 are expected to be low.

Water Quality: Impacts to water quality from Alternative 2 remains the same as for the Proposed Action, except that no impacts to water quality will occur due to the discharge of drilling muds and cuttings. The initial phase of drilling each well under both Alternative 1 and Alternative 2 involve disposition of drilling fluid (composed of seawater and gel) and cuttings on the sea floor (see section 5.2.2.1 for description of effects) until casing is set. For Alternative 2, at this point all subsequent drilling muds and cuttings will be returned to the drilling rig, cleaned, and barged to shore. As noted in Section 5.2.2.1, drilling muds and cuttings discharges from the drilling of the five proposed wells, will cause a low impact to water quality. The other discharges (produced water, well treatment completion and workover fluids, deck drainage and domestic and sanitary wastes) that could occur from the drilling activities, also described in Section 5.2.2.1, will cause a negligible impact to water quality. Thus, under this alternative, negligible impacts to water quality will occur from the non-muds and cuttings discharges. However, if during the lifting the bins of drilling muds and cuttings onto the supply boat by crane, a bin is dropped into the sea and the muds are spilled, a negligible impact to water quality will occur. This is because a maximum of 35 bbl of muds and cuttings will be exposed to being spilled at any one time. If there is measurable amounts of hydrocarbon, or other contamination in the muds, water quality will be impacted no worse than at a negligible level. Impacts to water quality from Alternative 2 would be reduced from low to negligible.

Seafloor Resources: Alternative 2 would all but eliminate the introduction of turbidity at the wellsite locations (a small amount of cuttings with seawater would be discharged until the first casing string is

drilled) and would avoid smothering impacts to potentially sensitive hard substrate communities at all wellsites. Therefore, impacts would go from moderate to low for seafloor resources.

Infrastructure: Onshore disposal of drilling of muds and cuttings will have a short-term impact on the number of truck trips from the Port of Hueneme. The impact of the truck trips from the Port of Hueneme will result in a 36% percent increase in truck traffic for up to 6 days. Due to the extremely short time periods, this impact is low.

3.3 ALTERNATIVE 3: NO-ACTION ALTERNATIVE

Alternative 3 would result in no delineation drilling on the four units. The opportunity for development of the oil and gas reserves may be precluded. As discussed in section 5.5, the no action could occur under 3 different scenarios. First, MMS reviews the revisions to the EP's and disapproves the plans based on the OCSLA and MMS regulatory requirements, no further activity will occur unless MMS changes its determination that probable serious harm will occur. For example, unanticipated advances in technology may allow some activities to continue without probable serious harm. This would constitute a new Proposed Action and would receive full NEPA, safety and operational analysis. Second, MMS approves the plan but the operator decides not to drill. Third, MMS reviews the revisions to the EP's and requires modifications. The applicant may decide not to pursue the Proposed Action. As a result of the No Action, the 4-5 delineation wells do not get drilled. The applicant could legally submit development plans proposing activities to recover the resources; however, this would be more difficult without the information from delineation wells. A new development plan would undergo full NEPA, safety and operational analysis prior to a decision being made to allow the activity to proceed.

If Alternative 3 is selected, all impacts associated with the Proposed Action would be eliminated. This alternative would therefore result in no effect on the sensitive resources and activities discussed in Chapter 5. The incremental contribution of the Proposed Action to cumulative effects would also be foregone, but effects from other activities, including existing OCS activities and potential development of the 36 undeveloped leases, would remain.

The potential oil and natural gas resources from the Proposed Action could remain undeveloped. Strategies that could provide replacement resources for lost domestic OCS oil and gas production include a combination of energy conservation; onshore domestic oil and gas supplies; alternative energy sources; and imports of oil, natural gas, and liquefied natural gas. These alternatives, except conservation, have environmental impacts of their own. Increased imports

of foreign oil are assumed to be the largest replacement source. This is thoroughly analyzed in the Final EIS prepared by the Minerals Management Service for the Department of Interior's 5 year *Outer Continental Shelf Oil and Gas Leasing Program: 1997-2002*. In the event import tankers are substituted, the probability of a large spill associated with import tankering could increase.

3.4 ALTERNATIVES NOT CONSIDERED FOR FURTHER ANALYSIS

A number of issues or concerns related to alternatives are not discussed further because the issue or concern provides MMS no guidance relative to the identification of alternatives:

- MMS should evaluate a reasonable range of alternatives.

This EIS considers 3 alternatives: The Proposed Action, No Action, and Onshore Disposal of Muds and Cuttings. MMS decisions will be made on each of the EP's individually, and the EIS is written so that the effects associated with any one of the proposed activities can be considered separately. In addition, mitigation is discussed for a number of the resource categories to address environmental concerns.

- Development should not be allowed to occur.

While the intent of this recommendation may be different, the effects are analyzed as the No Action Alternative.

A number of alternatives have been proposed for evaluation in the EIS. Each of the proposed alternatives is evaluated as to whether it would meet the Purpose and Need in Chapter 1, whether they would be technically feasible, whether they would be economically feasible, and whether they could offer environmental advantages over the Proposed Action.

- Area designation as a marine sanctuary.
- Buy-back of leases.

These two proposed alternatives are not evaluated because they would not meet the Purpose and Need

- An alternative employing different drilling locations to reduce impacts was suggested for the Proposed Action (See appendix 3.2 for a description of this proposed alternative).

This alternative is not evaluated because it does not allow the same flexibility to reach all parts of the reservoir. However, the relocation of the drill rig for

a short distance will be considered as mitigation on a site-by-site basis.

- The use of the least polluting, most technologically advanced drilling unit was proposed as an alternative.

This alternative was not evaluated because it does not offer environmental advantages over the Proposed Action. The MMS requires the use of Best Available and Safest Technology (BAST) for conducting operations on the OCS. The BAST standard assures the use of the most technologically advanced drilling unit balanced with the requirement that the technology also assure safety. Standards are set by the EPA for ocean discharges and SBCAPCD for air emissions. These limitations account for the use of the least polluting drilling unit.

- The EIS should include as a Project Alternative the use of a different MODU that might minimize adverse impacts to the marine environment.

One such MODU, a jackup rig, could minimize the anchor impacts that are associated with semi-submersible MODU's. However, because the water depth drilling capability of a jackup rig is limited to 450 feet of water, a jackup rig would not be capable of drilling three of the five proposed wells. Mobilization of a second MODU would increase the cumulative environmental effects and operator costs. Because mobilization of a jack up was not feasible from a technical or economic standpoint, the Project Alternative to use a jackup rig was not considered reasonable. Appendix 3.3 provides further detail on why the Project Alternative to use a jackup rig was not analyzed.

The operators' proposal to mobilize a single MODU to the Pacific OCS Region is considered to be environmentally and economically preferred over past exploration/delineation drilling projects where an operator would independently mobilize its own MODU. Mobilizing a single MODU addresses three concerns: the cumulative environmental impacts of the proposed delineation activities, the availability of MODU's and the associated equipment, and the economic impact of mobilizing a MODU to the Pacific OCS Region.

Using a single MODU to sequentially drill the proposed delineation wells would minimize cumulative air emissions and other environmental impacts that would otherwise occur if the MODU drilling took place on the units simultaneously. To facilitate the sequential drilling of these wells, the MMS, by letter dated November 4, 1998, requested that operators work together to utilize a single MODU to drill the delineation wells on their leases. In response to the MMS request, the operators formed a committee to work towards contracting a single MODU. Part of the committee's work is to conduct a worldwide re-

view of available semi-submersible MODU's that are capable of operating in the Pacific OCS Region and satisfy each operator's drilling requirements.

Using a single MODU addresses the limited availability of MODU's and associated equipment. Worldwide utilization for some types of MODU's has reached 90 percent. It is likely that the MODU contracted by the operators will have to be mobilized from a location outside North America. The availability of equipment required to transport a large MODU up to halfway around the world is limited.

Mobilizing a single MODU is also a more reasonable alternative from an economic standpoint. The operators have agreed to share the costs and responsibility associated with the MODU mobilization and demobilization operations while retaining independent authority over each of their drilling programs. Each operator independently mobilizing a MODU would translate into a substantial increase in cost for each operator.

- The suggestion that alternatives identify specific times to drill on each unit to avoid specific impacts was proposed.

This was not included as an alternative. However, specifying specific times of year when drilling would be allowed will be considered as mitigation on a case-by-case basis.

- Alternative methods to dispose of drill muds offshore.

This proposed alternative was not evaluated because it is not technically feasible and does not offer environmental advantages over the Proposed Action.

Alternative methods of offshore drill mud disposal include shunting and down-hole disposal (onshore disposal is considered a feasible alternative to the Proposed Action and is analyzed as Alternative 2: Onshore Disposal of Muds and Cuttings).

In general, shunting uses piping to discharge muds below the sea surface or away from the drill site or both. Shunting has little environmental advantage because impacts occur in a slightly different location. However, it may be considered as an appropriate mitigation on a case-by-case basis.

Down-hole disposal is not technically feasible for exploration. Disposal wells are designed for that purpose. A disposal well is drilled into a non-hydrocarbon bearing formation or part of a formation that exhibits the necessary porosity and permeability. The well bore and cap rock must be assessed for integrity indicating that near-surface formations would not be fractured and conduits for transmitting hydrocarbons would not be created. It is unknown whether the proposed sites exhibit the necessary integrity (See appendix 3.4 for more details of this proposed alternative).

3.5 COMPARISON OF ALTERNATIVES

Table 3.5-1 provides a comparison of the impact levels of the Proposed Action (Alternative 1), Onshore Disposal of Muds and Cuttings (alternative 2), and the No Action (Alternative 3).

Alternative 1, the Proposed Action (delineation drilling). Overall the impacts expected due to the Proposed Action range from no impact to moderate impact. There are no impacts greater than moderate expected for the Proposed Action. No impacts are expected for kelp resources, marine and coastal birds, marine mammals, wetland or estuarine resources, onshore biological resources, cultural resources, recreation, employment and population, housing, public or private services, and non-residential land uses.

The potential for violations of the ambient air standards are considered negligible due to the short duration of the proposed delineation activities and the implementation of proposed emission control measures to minimize impacts from the drilling equipment and support vessels. Since the total area lost to recreational fishing is small and of short duration, negligible impacts would be expected to marine recreational fishermen in the project area. Impacts to community characteristics and tourism resources are identified as negligible as well.

Impacts to fish resources and essential fish habitat (EFH), marine mammals, and visual resources are expected to be negligible to low. Impacts to the water quality will be low because the project does not cause or contribute to changes in standard, measurable water quality parameters resulting in unreasonable degradation to the water quality. Commercial fishermen could experience moderate impacts due to preclusion from their fishing grounds during the peak fishing months. Low impacts to commercial fishing will be expected from vessel traffic associated with the proposed project. Proposed mitigation measures (if implemented) will further minimize the impacts. The potential impact of routine MODU drilling operations on military operations is considered low based upon the significance criteria used in this analysis. Impacts on seafloor resources from the proposed delineation wells are moderate, due to the potential to impact hard bottom communities, but would be reduced to low with mitigations. Table 3.5-2 presents the potential impacts of the proposed action, the existing or proposed mitigations available, and the effectiveness of the mitigation. Existing mitigations include existing regulations and stipulations, and mitigations identified by the operator. Proposed mitigations are mitigations identified in an analysis but are not part of the proposal or existing suite of mitigations.

Alternative 2, Onshore Disposal of Muds and Cuttings, precludes the discharge of muds and cuttings offshore. Muds and cuttings would be barged to

shore for onshore disposal at an approved disposal site. This would require storing the mud and cuttings in bins, transporting the bins to shore via workboat, and trucking the bins to an approved onshore disposal site. All other assumptions are the same as those for the Proposed Action and impacts would be expected to be the same as those estimated under Alternative 1, the Proposed Action.

This alternative would eliminate all potential impacts to the offshore environment from muds and cuttings discharges, but would increase the following:

- drilling time,
- drilling rig personnel,
- offshore and coastal vessel traffic,
- road/highway transportation to disposal sites,
- air emissions from onshore transportation,
- offshore containers and storage of liquid materials on rigs,
- shore-base support,
- onshore transportation.

Impacts from Alternative 2 are expected to be the same for most resources with the exception of the following resources. For air quality, Alternative 2 is expected to increase total emissions ranging between 8-36 percent greater than those predicted for the Proposed Action due to the projected increase in vessel and truck trips. However, the increase in total emissions is not expected to increase the peak hour emissions projected and modeled for the site preparation stage of the Proposed Action. Therefore, no increases to onshore predicted concentrations affecting the ambient air standards are expected with this alternative, as the emissions do not overlap with the modeled emissions during the site preparation stage. Emission increases projected from the vessel emissions will be subject to permit and emission offset requirements per SBCAPCD Rules and Regulations. Onshore impacts from additional tanker truck trips will occur in Ventura County. Increases in onshore mobile source emissions will add approximately 1.6 tons of NOx over 14 months to the Ventura County mobile-source emission budget. Overall impacts to regional air quality from Alternative 2 are expected to be low. Impacts to water quality from Alternative 2 remains the same as for the Proposed Action, except that no impacts to water quality will occur due to the discharge of drilling muds and cuttings. Initial drilling fluid and cuttings will be deposited onto the sea floor. Once this phase of the drilling operations is over, all drilling muds and cuttings will be returned to the drilling rig, cleaned, and barged to shore. This alternative would

all but eliminate the introduction of turbidity at the wellsite locations (a small amount of cuttings with seawater would be discharged until the first string is drilled) and would avoid smothering impacts to potentially sensitive hard substrate communities at all wellsites. Onshore disposal of muds and cuttings would add about 2 supply boat trips per week to the support traffic estimated to occur as part of the proposed delineation activities. Onshore disposal of drilling of muds and cuttings will have a short-term impact on the number of truck trips from the Port of Hueneme. The impact of the truck trips from the Port of Hueneme will result in a 36% percent increase in truck traffic for up to 6 days. While a short-term increase in traffic is generally considered to be a moderate impact, the extremely short time periods this impact is likely to occur reduces the impact to low.

Alternative 3, the No-Action Alternative equates to no delineation drilling on the four units. Thus, none of the potential impacts discussed under either Alternative 1 or Alternative 2 would occur. However, if the operators make a decision to pursue development, each operator would submit a separate Development and Production Plan (DPP) to the MMS. The DPP(s) would be subject to full review and public coordination under the NEPA, the OCS Lands Act, and all other required Federal, State, and local laws and regulations. Therefore, the impacts due to the Proposed Action (Delineation Drilling) would not occur but the impacts due to potential development could occur.

Table 3.5-1. Comparison of environmental consequences of alternatives.

Resource	Alternatives		
	1- Proposed Action	2- Onshore Disposal Muds/Cuttings	3- No Action*
Air Quality	The potential impacts to onshore air quality resulting from the proposed delineation activities are considered low based on the significance criteria levels utilized in this analysis. The potential for violations of the ambient air standards are considered negligible due to the short duration of the projects and the implementation of project proposed emission control measures to minimize impacts from the drilling equipment and support vessels. The proposed action will have low impacts on water quality.	Overall impacts to regional air quality from Alternative 2 are expected to increase somewhat, but are expected to remain low.	No Impact
Water Quality		Impacts to water quality from Alternative 2 would be reduced from low to negligible.	No Impact
Rocky and Sandy Beach Habitats	There are no impacts from the proposed action on rocky or sandy beach habitats.	Same as Alternative 1	No Impact
Seafloor Resources	Impacts on seafloor resources from the proposed delineation wells are moderate, due to the potential to impact hard bottom communities. Assuming biological surveys confirm the presence of hard bottom habitat site-specific mitigation measures would reduce impacts from moderate to low for each wellsite.	Would all but eliminate the introduction of turbidity at the wellsite locations (a small amount of cuttings with seawater would be discharged until the first casing string is set in place) and would avoid smothering impacts to potentially sensitive hard substrate communities at all wellsites. Impacts would remain moderate due to anchoring, but would be remain low for discharges.	No Impact
Kelp Beds	Since the area affected by the proposal is very limited, no impacts are expected to kelp resources.	Same as Alternative 1	No Impact
Fish Resources	Overall, activities associated with the proposed exploration activities are expected to cause negligible to low impacts to fish resources and EFH in the project area.	Same as Alternative 1	No Impact
Marine and Coastal Birds	No impacts to marine and coastal birds are expected as a result of operations associated with the proposed delineation activities, including helicopter traffic and well abandonment.	Same as Alternative 1	No Impact

Table 3.5-1. Comparison of environmental consequences of alternatives (continued).

Resource	Alternatives		
	1 - Proposed Action	2 - Onshore Disposal Muds/Cuttings	3 - No Action*
Marine Mammals	Overall, activities associated with the proposed delineation activities are expected to cause negligible to low impacts to marine mammals in the project area. These impacts would be common to all units.	Onshore disposal of muds and cuttings would add about 2 supply boat trips per week to the support traffic estimated to occur as part of the proposed delineation activities. The effects of this alternative on marine mammals remain the same as those described for the proposed action (negligible to low).	No Impact
Threatened and Endangered Species	Activities associated with the proposed delineation activities are expected to result in: negligible to low impacts to blue, fin, and humpback whales in the project area; no impacts to sei, right or sperm whales, Steller sea lions, Guadalupe fur seals, or southern sea otters or threatened and endangered birds; and negligible impacts to sea turtles.	Onshore disposal of muds and cuttings would add about 2 supply boat trips per week to the support traffic estimated to occur as part of the proposed delineation activities. The effects of this alternative on threatened and endangered species remain the same as those described for the proposed action (none to low).	No Impact
Estuaries and Wetlands	The proposed action does not impact wetland or estuarine resources	Same as Alternative 1	No Impact
Refuges, Preserves and Marine Sanctuaries	Effects of the proposed action are discussed for the individual resource within these protected areas.	Same as Alternative 1	No Impact
Onshore Biological Resources	The proposed delineation activities do not entail any onshore activities, and therefore, no impacts to onshore biological resources are expected.	Same as Alternative 1	No Impact
Cultural Resources	No known or suspected cultural resources are within the area that could be affected by proposed operations from the proposed delineation activities, including anchoring and drilling.	Same as Alternative 1	No Impact
Visual Resources	The effect of the proposed action on visual resources is negligible on any of the four Units.	Same as Alternative 1	No Impact

Table 3.5-1. Comparison of environmental consequences of alternatives (continued).

Resource	Alternatives		
	1 - Proposed Action	2 - Onshore Disposal Muds/Cuttings	3 - No Action*
Recreation	No impacts to recreation have been identified as a result of exploratory drilling on the Gato Canyon, Bonito, Purisima Point, or Point Sal Unit.	Same as Alternative 1	No Impact
Community and Tourism	Community characteristics and tourism resources impacts from operations are negligible because of the short duration, remote location near areas already experiencing energy development, and low intensity of the action.	Same as Alternative 1	No Impact
Employment and Population	No impacts on employment and population are anticipated from the proposal. Given there will be only a small demand for local workers, no change in employment from the proposed project is expected. With no change in employment, the proposed action will have no effect on the population.	Same as Alternative 1	No Impact
Housing	No change in population is expected from the proposal. Therefore, no change in the demand for housing is expected from the proposed action.	Same as Alternative 1	No Impact
Infrastructure	Crew and supply vessel trips are anticipated to increase as a result from the proposal. The changes from each unit are shown in Table 5.2.19-1. The maximum change from the proposal results in a short-term increase in supply vessel trips is 9.09%. The level of change is low and considered to be insignificant. The proposal has no long-term impacts.	Onshore disposal of drilling of muds and cuttings will have a short-term impact on the number of truck trips from the Port of Hueneme. The impact of the truck trips from the Port of Hueneme will result in a 36% percent increase in truck traffic for up to 6 days. Since the time period is extremely short this impact is low.	No Impact

Table 3.5-1. Comparison of environmental consequences of alternatives (continued).

Resource	Alternatives		
	1- Proposed Action	2- Onshore Disposal Muds/Cuttings	3- No Action*
Public Finance and Service	The proposal is not expected to result in a measurable change in the demand for public or private services.	Same as Alternative 1	No Impact
Non Residential Land Use	The proposed action is expected to have no impact on non-residential land uses since no new facilities will be needed for the project.	Same as Alternative 1	No Impact
Commercial Fishing and Kelp Harvest	Fishermen could experience moderate impacts due to preclusion from their fishing grounds during the peak fishing months. Low impacts to commercial fishing will be expected from vessel traffic associated with the proposed project. Proposed mitigation measures will further minimize the impacts.	Same as Alternative 1	No Impact
Marine Recreational Fishing	Since the total area lost to recreational fishing is small and of short duration, negligible impacts would be expected to marine recreational fishermen in the project area.	Same as Alternative 1	No Impact
Military Activities	The potential impact of routine MODU drilling operations on military operations is considered low based upon the significance criteria used in this analysis.	Same as Alternative 1	No Impact

* No Action means that the proposed action (P.A.)(Delineation Drilling) would not occur. However, if the operators make a decision to pursue development, each operator would submit a separate Development and Production Plan (DPP) to the MMS. The DPP(s) would be subject to full review and public coordination under the NEPA, the OCS Lands Act, and all other required federal, state, and local laws and regulations. Therefore, the impacts due to the Proposed Action (Delineation Drilling) would not occur but the impacts due to potential development could occur.

Table 3.5-2. Proposed Action impacts and mitigations.

Resource Impacted/IPF ¹	Mitigation		Description	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Air Quality:</i> The major impact agents expected from the proposed activity are emissions from equipment associated with exploratory drilling operations (main and crane engines) and emissions from crew/supply vessels and helicopter support for the drilling operations.</p>	X		<p>The proposed projects are above NSR threshold emission levels for BACT, emission offsets; and air quality impact analysis and will be required to comply with those provisions in SBCAPCD Rules and Regulations. Equipment and emissions not related to drilling operations will require a Permit to Operate from SBCAPCD and emission sources subject to the permit will be in accordance with NSR provisions to ensure a net air quality benefit.</p> <p>Increased NOx and SO₂ emissions from exploratory drilling operations on the MODU will be minimized through the application of the following project proposed emission control measures on the main engines, 4 degree injection timing retard, turbo-charging, enhanced inter-cooling with seawater, and low sulfur diesel fuel (0.05 wt.%S). The crew and supply boats supporting the exploratory drilling activities will utilize the same control measures as are planned for the drilling rig. Additionally, the support vessels will limit their cruising speed to 80 percent of full power.</p>	<p>The potential impacts to onshore air quality resulting from the proposed delineation projects are considered low based on the significance criteria levels utilized in this analysis. The potential for violations of the ambient air standards are considered low due to the short duration of the projects and the implementation of proposed emission control measures to minimize impacts from the drilling equipment and support vessels.</p>
<p><i>Water Quality:</i> Sources of pollution that could affect water quality during the operations of the exploration activities are turbidity raised from the sea floor during the placement and recovery of the drilling vessel anchors and from discharges emanating from the drilling vessel.</p>	X		<p>A mitigation that will be part of the proposal, via Environmental Protection Agency (EPA) regulation, is the National Pollutant Discharge Elimination System (NPDES) permit in place at the time of the proposed drilling projects. Historically, mobile offshore drilling units (MODUs) have acquired Individual NPDES permits in order to drill exploratory wells offshore California. If the new General permit is in place by the time these proposed operations occur, the MODU will operate under that General permit. In any case, either an Individual or the new General permit will be required by EPA for any of the delineation drilling operations to commence.</p>	<p>The new General NPDES permit will be in place by the time these proposed wells are drilled. The level of monitoring and more strict limitations on all the effluents, including drilling discharges will help to ensure that water quality is protected. Overall, activities associated with the proposed exploration activities are expected to cause low impacts to water quality.</p>

Table 3.5-2. Proposed Action impacts and mitigations (continued).

Resource Impacted/IPF ¹	Mitigation		Description	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Seafloor Resources</i> The major impact agents expected from the proposed activity are physical impacts to hard bottom seafloor resources, due to the potential to impact stable hard bottom communities with anchors and chains, and impacts on seafloor resources from drilling discharges from the delineation wells.</p>	X	X	<p>The Biological Lease Stipulation, which has been specifically invoked on those leases where hard bottom habitat is believed to exist, provides the legal framework for mitigating impacts to sensitive biological resources.</p> <p>The primary mitigation for physical impacts from the delineation drilling is avoidance.</p> <ul style="list-style-type: none"> To avoid physical disturbance from the hole and drill plate, move wellsite at least 92 m (300 feet) from identified hard bottom substrate. This mitigation is not needed at this time, as no proposed wellsites are currently located on a feature. This mitigation may be used in the future if wellsite relocations are needed for other environmental or technical reasons. To avoid impacts from anchors and chains. Require an anchoring plan that identifies specifically, based on the MODU, the proposed anchor locations by wellsite. This plan should clearly demonstrate avoidance to identified hard bottom habitat with a buffer dictated by the precision of the data. The plan should also detail anchor handling procedures with an anchor handling boat, use of a vertical retrieval system and a weather shut down plan to ensure anchors are not placed during inclement weather and do not drag on the seafloor at any time. Require operator to meet with MODU personnel to familiarize them with the plans. MMS would inspect the operations in the field to ensure the plan is followed and any variances in the field are approved prior to placement. To avoid potential smothering impacts from drill cuttings and muds on hard bottom habitat, move wellsite locations at least 1,000 m (3,280 feet) away from identified hard bottom habitat. To avoid potential impacts from drill cuttings, move wellsites locations at least 300m (984 feet) from habitat. If within 1000 m (3280 feet) of the habitat, to avoid impacts from drill muds, establish an ongoing discharge monitoring program which permits discharge only when currents are moving away from the identified biological communities. Current meters need to be placed at the site so that current direction at the discharge point is known. Shutting of discharges away from identified communities may also be considered, in addition to monitoring at the surface, if the predominant current regime tends to move mud toward features. Mitigate on a case-by-case basis as needed to ensure that significant smothering impacts are not occurring on identified hard bottom habitat features. To avoid potential impacts from drilling muds and cuttings on the identified habitat, require a zero discharge of muds and cuttings within 1,000 m (3,280 feet). Discharges may either be placed downhole, shunted outside a 1,000 m (3,280 feet) distance from the habitat, barged to shore (covered in Alternative 2), or a combination of these measures to accomplish the objective. 	<p>In the past where MMS has invoked the stipulation and carried out its provisions through avoidance and appropriate mitigation, the stipulation has been shown to be highly successful in reducing impacts to hard bottom communities (MEC, 1995).</p> <p>Drilling of exploratory and development wells, placing platforms and constructing pipelines, discharging muds and cuttings are all activities which can impact seafloor resources. Indeed, it is large part because of the potential cumulative impact on regionally important hard substrate resources that extensive mitigation has been required by MMS to protect even small areas of hard substrate habitat. However, it has been shown in detailed field studies of exploratory oil and gas drilling activities (MEC, 1995) and platform and pipeline construction activities (Dunaway and Schroeder, 1989; Hardin et al., 1993) that these mitigation measures have been effective in mitigating impacts to hard bottom habitat. Therefore, cumulative residual impacts to these habitats and resources from previous oil and gas activities are low.</p>

1 Impact Producing Factor

2 Existing = existing regulations and stipulations and mitigations identified by the operator

3 Proposed = mitigations identified in an analysis but are not part of the proposal or existing suite of mitigations

Table 3.5-2. Proposed Action impacts and mitigations (continued).

Resource Impacted/IPF ¹	Mitigation		Description	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Fish Resources:</i> The primary impact-producing activities associated with the proposed project are delineation drilling operations and related activities, which will be common to all units. The impacting agents will include drilling discharges, anchoring of the MODU, and explosive abandonment of the exploratory wells, if this option is used.</p>	X	X	<p>The primary mitigation requirements include avoidance of hard bottom substrate to the maximum extent feasible. Avoiding impacts to marine fish resources from the use of explosives for well abandonment on the Pacific OCS would require implementation of a wildlife mitigation plan similar to those employed for platform removal in California State waters (Howorth, 1997) and in the MMS Gulf of Mexico OCS Region (NTL 99-G21). Typically, such a plan has included the use of shipboard observers or divers (possibly supplemented by aerial surveys), the establishment of a safety zone around the detonation site for marine mammals and birds, and monitoring of the zone to ensure that no large numbers of fish are present when the charge is detonated.</p> <p>Under section 402 of the Clean Water Act, the Environmental Protection Agency (EPA) is authorized to issue National Pollutant Discharge Elimination System (NPDES) permits to regulate the discharges of pollutants to waters of the U.S., the territorial sea, contiguous zone, and ocean.</p>	<p>Implementation of this mitigation would make it unlikely that any large fish mortality would occur as a result of well abandonment operations associated with the proposed delineation activities. Impacts to marine fish resources would be low.</p> <p>The EPA biological assessment for the proposed reissuance of its General NPDES permit for offshore OCS facilities in southern California waters concludes that direct toxicity to listed fish species, or their food base, should be minimal (SAIC, 2000a, b). All such discharges are required to meet NPDES water quality criteria, which were established to protect biological resources outside the 100 m mixing zone. Significant impacts from routine OCS discharges generally have not been associated with fish.</p>

Table 3.5-2. Proposed Action impacts and mitigations (continued).

Resource Impacted/IPF ¹	Mitigation		Description	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Marine Mammals</i></p> <p>The major impact agents expected from these proposed activities are noise and disturbance and drilling discharges. The potential use of explosives in the abandonment of the delineation wells also raises the possibility of lethal impacts to marine mammals.</p>	X		<p>Avoiding impacts to marine mammals and sea turtles from the use of explosives for well and platform abandonment on the Pacific OCS would require implementation of a wildlife mitigation plan similar to those employed for platform removal in California State waters (Howorth, 1997) and in the MMS Gulf of Mexico OCS Region (NTL 99-G21). Typically, such a plan has included the use of shipboard observers or divers (possibly supplemented by aerial surveys), the establishment of a safety zone around the detonation site, and monitoring of the zone to ensure that no animals are present when the charge is detonated.</p>	<p>Implementation of this mitigation would make it unlikely that any marine mammal injury or mortality would occur as a result of well abandonment operations associated with the proposed delineation activities. Since 1986, during explosive removals of offshore platforms in the Gulf of Mexico (where a 915-m safety zone is employed), no confirmed marine mammal blast injuries or mortality have been reported. Impacts to marine mammals would be negligible.</p>
<p><i>Archaeological Resources</i></p> <p>Drilling operations can directly impact prehistoric cultural resources by drilling through buried archaeological deposits. Indirect impacts may result by the accidental deposition of ferro-magnetic debris on the seafloor that would mask the detection of potential archaeological resources by remote sensing instruments.</p>	X		<p>For OCS development, operators are required to either avoid potential sites or conduct further investigations of potential sites to document their true nature and design further mitigation, if necessary.</p> <ul style="list-style-type: none"> • Prior to start of operations, the preferred mitigation is to move or modify operations so there is no effect to known significant archaeological resources or to anomalies or geomorphic features that may represent areas containing archaeological resources. • Alternatively, the operator may conduct additional investigations and submit a report to establish to the satisfaction of the MMS, the State Historic Preservation Office (SHPO), and others that an archaeological resource is or is not present or will not be adversely affected by operations. The investigation is conducted by an archeologist and geophysicist using survey equipment and techniques identified by the MMS. MMS will inform the operator of any mitigating measures necessary to alleviate or minimize the potential effects on significant archaeological resources, such as data recovery and artifact curation. • After start up, if any archeological resource is discovered, immediately halt operations in the area of the discovery and inform the MMS POCS Regional Director. If further investigation determines that the resource is significant, MMS will inform the operator on how to protect the resource. 	<p>Impacts are not anticipated as a result of the anchoring or exploration drilling from the proposed projects since these operations will avoid potential resource sites.</p>

1 Impact Producing Factor

2 Existing = existing regulations and stipulations and mitigations identified by the operator

3 Proposed = mitigations identified in an analysis but are not part of the proposal or existing suite of mitigations

Table 3.5-2. Proposed Action impacts and mitigations (continued).

Resource Impacted/IPF ¹	Mitigation		Description	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Commercial Fishing and Kelp Harvest:</i> Fishermen precluded from fishing in the vicinity of the MODU for up to 90 days at each well site. Trawl fishery may also experience long-term impacts due to artificial obstructions, such as drill muds and cuttings, anchor scars, and lost debris.</p>	X		<p>To minimize potential conflicts with commercial fishermen resulting from this project, industry proposes, or plans to negotiate, the following mitigation measures for the proposed project:</p> <ul style="list-style-type: none"> • Industry will consult with the Joint Oil/Fisheries Liaison Office to identify and contact potentially affected fishers and fleets. • Industry will hold meetings with representatives of the potentially affected fishing fleets to provide information to all potentially affected fishermen describing the location of the proposed drilling program, the area to be traversed, the planned dates of initiation and completion, and to obtain feedback. • Industry will prepare a Notice to Fishermen and Claim Form to be sent to all potentially affected fishermen who would likely be precluded from fishing during the proposed operations explaining the procedures for submitting a claim for lost revenue. This process will include meeting with individual fishermen to discuss each claim submitted, and the determination of a fair and reasonable mitigation/remuneration based on historic fish catch records using the appropriate mitigation/remuneration methodology. • A local fisherman will captain a scout boat to survey the proposed well site area prior to the MODU arriving onsite. The scout boat captain will attempt to contact the owner of any gear found at the site and arrange for relocation of the gear. • Industry will notify fishermen in writing 30 days prior and verbally 3 days prior to the commencement of operations. Notifications will be sent to the U.S. Coast Guard, Santa Barbara County Planning and Development Department, Energy Division, the Joint Oil/Fisheries Liaison Office, and the Marine Advisory Newsletter in Goleta. Notices will also be distributed to and posted at area fuel docks, ice supply houses, wholesale fish buyers, and Harbor Master's offices in the area harbors. • Industry will notify the Joint Oil/Fisheries Liaison Office immediately following the completion of the drilling program. • Industry will immediately notify MMS of any conflict with commercial fishermen before, during, and after the drilling operations. • Industry will ensure that all vessels and work boats associated with the proposed project will comply with the traffic corridors established by the Joint Oil/Fisheries Liaison Committee. • Industry and boat captains associated with the proposed project will keep logs documenting equipment lost overboard. Industry will notify MMS of all lost items. • Industry will require all offshore personnel involved in the proposed project to attend the Western States Petroleum Association's Fisheries Training Program, appropriately abridged. • Industry will hold at least two pre-survey coordination meetings with MMS and other interested agencies to review the status of the implementation of these mitigation measures. • MMS will consult with both industries to verify that conflicts have been discussed and negotiated to the satisfaction of both industries. If negotiations between the operators and commercial fishermen fail to resolve conflicts to the satisfaction of MMS, MMS will meet with both industries to identify space-use conflicts and feasible mitigation measures. 	<p>If the proposed mitigation measures are incorporated, the majority of impacts to the commercial fishing industry will be addressed and minimized to the maximum extent feasible. The impacts would be expected to be low.</p>
		X		

1 Impact Producing Factor

2 Existing = existing regulations and stipulations and mitigations identified by the operator

3 Proposed = mitigations identified in an analysis but are not part of the proposal or existing suite of mitigations

Table 3.5-2. Proposed Action impacts and mitigations (continued).

Resource Impacted/IPF ¹	Mitigation		Description of mitigation	Effectiveness of mitigation
	Existing ²	Proposed ³		
<p><i>Military Operations:</i> (1) space-use conflicts with military operations, and (2) hazards to project personnel from missile and target debris.</p>	X		<p>Military Stipulations: (1) require that all vessel and aircraft traffic within designated Military Warning Areas be coordinated with the USAF and the Navy, (2) authorize the U.S. Government to temporarily suspend offshore oil and gas operations and require evacuation of personnel in the interests of national security, (3) require lessees to control electromagnetic emissions so as not to interfere with military operations, and (4) limit the liability and hold the U.S. Government harmless from any damage or injury resulting from the programs and operations of the military. Military lease stipulations are attached to all of the leases where MODU drilling is planned. The suspensions require that all vessel and aircraft traffic be coordinated with the USAF and Navy, authorize the U.S. Government to temporarily suspend offshore operations, require evacuation and/or sheltering of personnel, control electromagnetic emissions, and limit liability of the U.S. government. To further reduce potential hazards to offshore personnel, the MMS Pacific OCS Region has required offshore operators conducting operations in Military Warning Areas to develop Evacuation and Sheltering Plans for each offshore facility, including platforms, semi-submersibles, jack-ups, and ships. The plans describe specific procedures that must be followed to ensure proper notification, communication, and coordination between VAFB, Navy, MMS, and offshore oil and gas personnel.</p>	<p>During the 15-year operational history of the platforms, no military operations have been delayed, canceled, or relocated due to routine offshore oil and gas activity. In addition, there have been no accidents (vessel/aircraft collisions, deaths, or serious injuries) involving oil and gas activities and military operations on the Sea Range since the initiation of OCS exploration and development activities more than 30 years ago.</p>

1 Impact Producing Factor

2 Existing = existing regulations and stipulations and mitigations identified by the operator

3 Proposed = mitigations identified in an analysis but are not part of the proposal or existing suite of mitigations

