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Executive Summary

ExxonMobil Production Company has filed applications for the Offshore Power System Repair Project: Amended (OSPR:A) for its Santa Ynez Unit (SYU) operations to Federal, State, and local regulatory agencies for review and approval. The proposed project involves four principal elements:

1. installing approximately 17 miles (27 kilometers) of new power cable (Cable C-1) between the onshore Las Flores Canyon (LFC) Processing Facility and Platform Heritage;
2. installing approximately 4 miles (6 kilometers) of new power cable (Cable D-1) between Platforms Harmony and Hondo;
3. removing a 5-mile (8 kilometer) section of failed power cable (Cable C) from an onshore point at the southern end of LFC to the shelf break (approximately state-federal boundary), and;
4. removing Cables C-1 and D-1 and the remaining 12 miles (19 kilometers) of failed Cable C on the Outer Continental Shelf (OCS) at the end of SYU life.

The proposed project would restore redundancy to the offshore electrical power system that supports SYU oil and gas production operations at Platforms Hondo, Harmony, and Heritage. The redundancy was lost in November of 1999 when a failure occurred in Power Cable C that connects Platform Heritage and the onshore Cogeneration Facility in Las Flores Canyon. Based on investigations, ExxonMobil believes the Cable C ground fault is the result of either insulation failure or installation related damage that resulted in early insulation failure. The proposed project would also involve installation of a fiber optic cable and communication equipment at the SYU facilities to improve communication reliability between the platforms and LFC.

ExxonMobil proposes to remove the failed cable from an onshore point located near the southern end of LFC to the shelf break, approximately one-quarter mile (0.5 kilometer) beyond the State Tidelands/OCS boundary. The remaining 12 miles (19 kilometers) of failed Cable C on the OCS would be removed with the removal of the other facilities at the end of the SYU project life, estimated to occur between 2020 and 2030.

ExxonMobil estimates that the proposed project would require a total 4-8 weeks to complete. The cable removal and installation phases of the project would require 14-21 days to complete. The work is expected to commence and be completed sometime between the third quarter of 2003 and October 2005. ExxonMobil proposes to use a dynamically positioned (DP) vessel to install the power cables as well as to remove a portion of the failed cable.

The Minerals Management Service (MMS) is the lead agency for conducting environmental review pursuant to the requirements of the National Environmental Policy Act (NEPA). Santa Barbara County (SBC) Planning & Development Department, Energy Division is the lead agency for conducting environmental review pursuant to the California Environmental Quality Act (CEQA). The two agencies entered into an agreement to prepare a joint NEPA/CEQA document to facilitate project review by regulatory agencies, the public, and other interested parties.

This Mitigation Negative Declaration (MND) / Environmental Assessment (EA) establishes the current environmental and regulatory setting, provides an assessment of project-specific and cumulative impacts, and includes recommended mitigation measures to reduce impacts in the following resource areas:

- Aesthetics/Visual Resources
- Agricultural Resources
- Air Quality
- Onshore Biological Resources
- Benthic Environment
- Commercial Fishing Operations
- Marine Mammals
- Essential Fish Habitat (EFH)
- Endangered White Abalone
- Cultural Resources
- Energy
- Environmental Justice
- Fire Protection
- Geologic Processes
- Hazardous Materials/Risk Of Upset
- Historic Resources
- Land Use
- Noise
- Public Facilities
- Recreation
- Transportation/Circulation
- Water Quality.

A summary of project impacts and mitigation measures follows this opening text.

The document concludes that all potentially significant impacts associated with the proposed project can be reduced to less than significant levels with the implementation of applicant-proposed and agency-recommended mitigation measures.

The document also analyzes, in detail, alternatives to the proposed project, including:

- **Alternative A: Deferred Removal of Failed Cable to the Shelf Break.** This alternative involves the installation of two new cables (C-1 and D-1) and deferred removal of the failed cable (Cable C) in State waters and the OCS until the end of SYU life.

- **Alternative B: Removal of Failed OCS Cable in the Near Term (2003-2007).** This alternative involves the installation of two new cables and removal of the failed cable in State waters and on the OCS.

- **Alternative C: No Project Alternative.** Under Alternative C, the project would not be conducted.

Numerous federal, state, and local agencies will use this MND/EA in their decision-making process. ExxonMobil must secure permits or approvals from the Minerals Management Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, National Marine Fisheries Service, California State Lands Commission, California Coastal Commission, California Department of Fish & Game, California Parks Department, Regional Water Quality Control Board, Santa Barbara Air Pollution Control District, and Santa Barbara County Planning & Development Energy and Building & Safety Divisions.

The proposed project falls within the jurisdiction and regulatory authority of several agencies. The recommended mitigation measures include numerous plans that require review and comment and/or approval from multiple agencies. As lead NEPA and CEQA agencies, the MMS and SBC will take the lead role in coordinating comments from multiple agencies on compliance plan submittals. In addition, the MMS and SBC will take the lead role in facilitating expeditious resolution of issues that may arise during actual field operations, working with responsible agencies for input as necessary.

Environmental Impact & Mitigation Summary Table

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
Aesthetics/Visual Res. Temporary impacts to visual character	Offshore construction vessels and night lighting	Offshore	Insignificant	Shielding or re-aiming of lights to minimize glare from night lighting shall be utilized onshore and on vessels offshore when within 1/2 mile from shore unless conflicts with USCG requirements. (VIS-1)	Insignificant	SLC, SBC
	Onshore night lighting (possible)	Onshore	Insignificant	Utilize shields onshore to minimize glare on Hwy 101 from night lighting. (VIS-1)	Insignificant	SBC
Air Quality Potential violation of NO_2 standard due to project emissions.	Diesel engines of the cable-laying vessel.	Offshore	Insignificant	ExxonMobil shall implement the project in accordance with an Emissions Reporting Plan. Limit total project construction emissions as well as potential to emit from the installation of the power cable to less than 25 tons of any affected pollutant in a 12-month period, as defined by APCD Rules 201.D.2 and 202.F.3. (AQ-1)	Insignificant	MMS, APCD
	Incidental emissions from stationary equipment on the vessel.	Offshore	Insignificant	Determine, on a daily basis, fuel use and emissions from the installation of the power cable to verify compliance with APCD rules and regulations. (AQ-2)	Insignificant	MMS, APCD
				Require construction vessels and		MMS, APCD

[1] Impact levels for proposed project assume incorporation of applicant-proposed mitigation as part of project description.
[2] In some cases, impact levels differ under CEQA vs. NEPA due to differences in agency significance criteria.
[3] See appropriate resource section for full mitigation language including timing
[4] Residual impacts assume incorporation of all mitigation measures (applicant-proposed and agency-recommended).

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				internal combustion engines to use sufficient low sulfur fuel. (AQ-3) Prepare a contingency plan for the scenario where the total project emissions of any affected pollutant, except CO, is projected to exceed 80% of the above 25 ton/year limit. (AQ-6)		APCD, SBC
Potential violation of daily emission threshold limits.	Diesel engines and stationary equipment emissions associated with cable retrieval operations.	Offshore	Potentially significant but mitigable	Contribute financial support to the SBCAPCD Innovative Technology Fund for emissions over 240 lbs/day NO_X. (AQ-5)	Insignificant	APCD, SBC
Increase in particulate matter due to grading operations.	Excavation in lower LFC.	Onshore	Insignificant	Implement dust control measures onshore. (AQ-4)	Insignificant	APCD, SBC
Onshore Biological Resources Impacts to sensitive species – California red-legged frog and southwestern pond turtle.	Lower canyon construction within range of sensitive species.	Onshore	Insignificant	ExxonMobil shall include awareness training for sensitive species located in Corral Creek. (BIO-1)	Insignificant	SBC
Benthic Resources Bottom sediment disturbance and cleaning of failed cable	Retrieval of failed cable & placement of new cable	Offshore	Insignificant	Contractors shall use DP vessel to lay new power cables. (BE-1)	Insignificant	MMS, SLC
Bottom sediment disturbance or direct impact to benthic resources.	Vessel anchoring	Offshore	Insignificant	Where feasible, contractors shall use installation techniques that minimize or avoid environmental impacts such as turbidity and scarring. (BE-2) (See also RMM-7).	Insignificant	MMS, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
Direct physical impacts to hard bottom habitat.	Placing a concrete mattress or new power cable on rocky outcrops	Offshore	Insignificant	A pre-installation marine biological survey of the nearshore area shall be performed prior to work. Specific scope and methodology to be approved by agencies in advance. (BE-3)	Insignificant	SLC, SBC, MMS, CDFG, NMFS
				A post-installation marine biological survey shall be conducted to identify any impacts from construction. Specific scope and methodology to be approved by agencies in advance. (BE-4)		SLC, SBC, MMS, CDFG, NMFS
				Contractors shall use ROV to monitor and videotape portions of installation activities. Rocky outcrops shall be avoided wherever feasible. (BE-5)		MMS, SLC
				ExxonMobil shall cast sand excavated at or near the conduit at least 15' downslope into the sand channel. (BE-6)		SLC, SBC, CDFG, NMFS
				ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities. (BE-7)		MMS, SLC, SBC
				ExxonMobil shall develop a restoration and restoration-monitoring plan within 90 days of the submission of the post-installation survey, if significant impacts to kelp, non-listed abalone and/or hard bottom habitats are detected. (BE-8)		SLC, SBC, CDFG

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				ExxonMobil shall adhere to the Southern California Eelgrass Mitigation Policy and use native species for restoration. (BE-9) If non-listed abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, ExxonMobil shall either move anchor(s) at least 50' away to avoid any direct impacts to abalone or have a qualified biologist move abalone pursuant to procedures reviewed and approved by the agencies. (BE-10) ExxonMobil shall conduct a post-installation ROV or diver video survey along newly installed cable in State waters to verify as-built condition and confirm seafloor cleanup and restoration. (BE-11)		SLC, SBC, CDFG, NMFS SLC, SBC, CDFG, NMFS SLC
Commercial Fishing Potential interference with commercial fishing operations in the area.	Temporary preclusion of fishing areas from project vessels & anchoring Loss of trawling areas due to cable placement Potential damage to fishing gear from debris on sea floor	Offshore Offshore Offshore	Insignificant Insignificant Insignificant	ExxonMobil and all contractors shall comply with vessel traffic corridors. (CF-1) JOFLO shall be kept informed of construction activities. (CF-2) Offshore personnel shall view the WSPA Fisheries and Wildlife Training Program. (CF-3) ExxonMobil shall file advisory with	Insignificant Insignificant Insignificant	MMS, SLC MMS, SBC MMS, SLC MMS, SLC,

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				U.S. Coast Guard for publication in Local Notice to Mariners and shall notify fishers at least 15 days prior to construction. (CF-4)		SBC
				ExxonMobil shall continue to consult with JOFLO and fishers during planning and construction to identify and mitigate project-related impacts. If unanticipated conflicts with commercial fishing operations should arise, ExxonMobil shall resolve through appropriate measures such as physical modification of problem area, establishment of temporary preclusion zones, off-site mitigation. (CF-5)		MMS, SLC, SBC
				ExxonMobil shall review installation procedures with JOFLO to minimize impacts to commercial fishing. (CF-6)		MMS, SLC, SBC
				ExxonMobil shall require contractor to recover any escaped fan channel supports, if used. (CF-7)		MMS
				ExxonMobil shall require contractors to recover all items lost overboard to the extent feasible. Logs shall be maintained on project vessels. (CF-8)		MMS, SLC
				ExxonMobil shall require contractor to scout for traps in nearshore area that may interfere with the project. Temporary relocation of traps shall be coordinated through JOFLO. (CF-9)		MMS, SLC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				Inside 30 fathoms, where corridors have not been established specifically for the project area, ExxonMobil shall establish temporary vessel traffic corridors reviewed and approved by JOFLO. (CF-10) ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. (CF-11) See also BE-1, BE-2, and BE-4.		SLC, MMS MMS, SLC, SBC
Marine Mammals Disturbance of marine mammals due to noise associated with cable-laying and removal activities.	DP vessel and other project-related vessels	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall implement an agency-approved Marine Mammal Monitoring Plan. (MM-1)	Insignificant	MMS, SLC, SBC
Increase in risk that a large marine mammal might become entangled in an anchor line or be hit by a vessel due to construction activities and associated vessel traffic.	DP vessel and other project-related vessels as well as anchoring	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall provide awareness training for offshore personnel re: marine mammals in area and potential project-related impacts. (MM-2)	Insignificant	MMS, SLC, SBC
Essential Fish Habitat Disturbance to essential fish habitat.	Bottom sediment disturbance and cleaning of failed cable	Offshore	Insignificant	See BE-1 – BE-10.	Insignificant	

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
	Anchoring Placing a concrete mattress or the new power cable on rocky outcrops.	Offshore Offshore	Insignificant Insignificant		Insignificant Insignificant	
Endangered White Abalone Potential direct or indirect impacts to white abalone.	Bottom sediment disturbance and cleaning of failed cable, and anchoring	Offshore	Insignificant	If a white abalone(s) is detected during the pre-construction survey near the conduit terminus, the project shall not begin until the animal is relocated or an appropriate alternative is implemented. (AB-1) See also: BE-1 through BE-6, BE-8 and BE-10.	Insignificant	NMFS, CDFG, SLC, SBC
Cultural Resources Potential damage to marine cultural sites.	Vessel anchoring and placement and removal of power cables.	Offshore	Insignificant	Contractors shall avoid potential offshore cultural resources by a 300-foot radius to the extent possible. (ARCH-1) ExxonMobil shall provide contractors with coordinates of potential sites in order to comply with ARCH-1. (ARCH-2) Review of avoidance procedures shall be included in pre-construction compliance meeting. (ARCH-3)	Insignificant	MMS MMS MMS

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				ExxonMobil shall utilize an ROV to monitor construction in areas of potential cultural resources. (ARCH-4)		MMS
				ExxonMobil shall immediately halt construction if a previously unidentified cultural resource is detected that could be impacted by project activities. (ARCH-5, ARCH-10)		SBC, MMS
				ExxonMobil shall use an ROV with color-imaging sonar to monitor cable placement in the area of potential cultural resource No. 3. (ARCH-6)		MMS
				If the cable needs to be laid outside the previously surveyed area, ExxonMobil shall utilize the ROV to conduct a survey prior to installation. (ARCH-7)		MMS
				ExxonMobil shall notify agencies of pre-construction meeting with contractor regarding cultural resource avoidance (ARCH-8)		MMS, SLC
				ExxonMobil shall provide for inspectors to be present near archaeological sites, if requested by agencies. (ARCH-9)		MMS, SLC
				If a previously undetected resource site(s) is discovered, ExxonMobil shall notify MMS and SLC immediately and avoid the site. If site is unavoidable, ExxonMobil shall perform an		MMS, SLC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				investigation to assess significance. If site is significant, MMS/SLC shall inform applicant how to protect resource. (ARCH-10)		
				Onshore excavation shall be limited to 5 feet below ground surface and 3 feet below cable entry point at north end of tunnel for 25'. (ARCH-11)		SBC
Potential impacts to onshore archaeological site(s).	Excavation work in lower LFC area	Onshore	Insignificant	If potential cultural material is encountered during excavation, work shall be halted until an SBC-approved archaeologist and Native American representative are consulted. Protection of resource shall be per SBC guidelines. (ARCH-12)	Insignificant	SBC
				ExxonMobil shall organize a pre-construction meeting to discuss onshore cultural resources with onsite construction personnel. (ARCH-13)		SBC
Fire Protection						
Introduction of ignition source into high fire hazard area.	Construction equipment in lower canyon	Onshore	Insignificant	A project-specific onshore Fire Protection Plan shall be prepared for the project. (FIRE-1)	Insignificant	SBC
	Construction work in classified area (tunnel)	Onshore	Potentially significant but mitigable	Cable C-1 must meet API RP 500 and NFPA 70 requirements through tunnel; construction operations must meet appropriate specifications. (FIRE-2)	Insignificant	SBC
Geologic Processes						
Disturbance to sea floor.	Installation of cable and/or anchoring	Offshore	Insignificant	Contractors shall utilize current industry standards in engineering designs. (GEO-	Insignificant	MMS, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				1) Utilize an ROV that shall monitor selected portions of the installation activities. (GEO-2)		MMS, SLC
Potential for erosion-related impacts during excavation work in rainy season.	Grading work in lower LFC area.	Onshore	Insignificant	WQ-3 applies here also.	Insignificant	SBC
<u>Hazardous Materials/ Risk of Upset</u> Risk of spills of lubricating oils, hydraulic fluids, waste oils.	Offshore vessel and cable laying operations	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	Contractors shall maintain all petroleum products in contained areas and practice good housekeeping. (RMM-1)	Insignificant	MMS, SLC
				All project-related materials shall be loaded at port, to the extent possible. (RMM-2)		MMS, SLC, SBC
				ExxonMobil shall prepare a project-specific Oil Spill Response Plan. (RMM-3)		MMS, SLC, SBC
				ExxonMobil shall provide oil spill response training for project and contract personnel. (RMM-4)		MMS, SLC, SBC
Risk of fuel oil spills.	Refueling at sea	Offshore	CEQA: Potentially significant but mitigable; NEPA:	All vessels shall be refueled at designated ports or per an approved refueling plan. (RMM-5)	Insignificant	MMS, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
			Insignificant			
Potential damage to existing pipelines or power cables.	Anchoring accidents	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	Anchors shall be set at least 250' from active pipelines and power cables. (RMM-6)	Insignificant	SLC, MMS
				An anchoring plan shall be prepared and approved by agencies. (RMM-7)		MMS, SLC, SBC
Potential damage to existing pipelines or power cables.	Accidental release of cable	Offshore	Insignificant	ExxonMobil shall prepare a Critical Operations and Curtailment Plan. (RMM-8)	Insignificant	MMS, SLC, SBC
				Applicant shall prepare a Cable Release Prevention Plan. (RMM-9)		MMS, SLC, SBC
Potential damage to existing pipelines or power cables in tunnel.	Accident during removal or installation of cable through onshore tunnel.	Onshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall prepare a Safety Plan for tunnel work. (RMM-10)	Insignificant	SBC
				ExxonMobil shall prepare an Execution Plan for cable removal/installation procedures in tunnel. (RMM-11)	Insignificant	SBC, SLC
				ExxonMobil shall de-energize cables and shut-in oil and gas pipelines during cable pulling operations through onshore/nearshore conduit unless they demonstrate operations can be performed safely while in operation. (RMM-12)		SBC, SLC
				See also FIRE-2		
Land Use Potential inconsistency with existing CCC Coastal Development	Deferral of removal of failed OCS cable.	Offshore	CEQA: Potentially significant but	ExxonMobil shall remove newly installed power cables as well as remaining failed Cable C in their	Insignificant	MMS, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
Permit for SYU project; cumulative impact.			mitigable; NEPA: Insignificant	entirety at the end of the SYU project life. (LUS-1)		
Public Facilities						
Landfilling of waste.	Removal of approximately 300 tons of failed cable	Onshore	Insignificant	ExxonMobil shall submit a Recycling Feasibility Analysis for County review and comment. (PUB-1)	Insignificant	SBC
	Eventual removal of newly installed cable.	Onshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall submit a Recycling Feasibility Analysis for agency review and approval for new cable in state waters and onshore, along with other SYU facilities, as part of abandonment application at the end of project life. (PUB-2)	Insignificant	SLC, SBC
Recreation						
Impacts to recreationalists on public bike path at El Capitan State Park.	Use of construction equipment and vehicles on bike path	Onshore	Insignificant	ExxonMobil shall obtain and comply with all conditions of approval set forth in its State Parks TUP. (REC-1)	Insignificant	SBC, State Parks
				During any time that the south tunnel manhole is accessed, safety barriers shall be erected and speed limits for vehicle traffic along the bike path shall be adhered to pursuant to State Parks rules. (REC-2)		SBC, State Parks
Potential damage to bike path.	Use of construction equipment and vehicles on bike path	Onshore	Insignificant	In order to ensure public safety, signs shall be posted alerting cyclists and pedestrians to project-related work being conducted along the bike path. (REC-3)	Insignificant	SBC, State Parks
				ExxonMobil shall submit photo-documentation of the physical condition of the bike path before and after access		SBC, State Parks

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
Permit for SYU project; cumulative impact.			mitigable; NEPA: Insignificant	entirety at the end of the SYU project life. (LUS-1)		
Public Facilities						
Landfilling of waste.	Removal of approximately 300 tons of failed cable	Onshore	Insignificant	ExxonMobil shall submit a Recycling Feasibility Analysis for County review and comment. (PUB-1)	Insignificant	SBC
	Eventual removal of newly installed cable.	Onshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall submit a Recycling Feasibility Analysis for agency review and approval for new cable in state waters and onshore, along with other SYU facilities, as part of abandonment application at the end of project life. (PUB-2)	Insignificant	SLC, SBC
Recreation						
Impacts to recreationalists on public bike path at El Capitan State Park.	Use of construction equipment and vehicles on bike path	Onshore	Insignificant	ExxonMobil shall obtain and comply with all conditions of approval set forth in its State Parks TUP. (REC-1)	Insignificant	SBC, State Parks
				During any time that the south tunnel manhole is accessed, safety barriers shall be erected and speed limits for vehicle traffic along the bike path shall be adhered to pursuant to State Parks rules. (REC-2)		SBC, State Parks
Potential damage to bike path.	Use of construction equipment and vehicles on bike path	Onshore	Insignificant	In order to ensure public safety, signs shall be posted alerting cyclists and pedestrians to project-related work being conducted along the bike path. (REC-3)	Insignificant	SBC, State Parks
				ExxonMobil shall submit photo-documentation of the physical condition of the bike path before and after access		SBC, State Parks

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies)
				to the south manhole tunnel and be responsible for any maintenance or repair work necessary if there is evidence of damage during construction. (REC-4)		
Water Quality						
Degradation of water quality due to increased turbidity.	Anchoring	Offshore	Insignificant	BE-2 also applies to this impact.	Insignificant	
Degradation of water quality due to discharges to marine water.	Water jetting, flushing and pigging, where necessary, the conduit and J-tubes	Offshore	Insignificant	ExxonMobil shall provide results of samples taken of the seawater in the J-tubes to EPA and submit other information in order to receive permission to conduct flushing. (WQ-1)	Insignificant	EPA, MMS
	Removal and cleaning of short segments of cable in preparation for installation of the new cable	Offshore	Insignificant	ExxonMobil shall work with the CCRWQCB in order to receive permission to conduct conduit flushing operations. (WQ-2) See also BE-1 and BE-2.	Insignificant	CCRWQCB, MMS, SLC, SBC
Potential erosion-related impacts during excavation work in rainy season (Nov 1 – Apr 1).	Excavation work in lower LFC canyon during rainy season	Onshore	Insignificant	An erosion control plan shall be prepared if work is conducted in the rainy season. (WQ-3)	Insignificant	SBC

1.0 INTRODUCTION, PURPOSE AND NEED, AND REGULATORY BACKGROUND

1.1 Project Overview

On August 19, 2002, ExxonMobil Production Company (hereafter referred to as ExxonMobil) submitted an application for the Offshore Power System Repair Project: Amended (OSPR:A) for its Santa Ynez Unit (SYU) operations to Federal, State, and local regulatory agencies for review and approval. The proposed project involves: (1) installing approximately 17 miles (27 kilometers) of new power cable (Cable C-1) between the onshore Las Flores Canyon (LFC) Processing Facility and Platform Heritage; (2) installing approximately 4 miles (6 kilometers) of new power cable (Cable D-1) between Platforms Harmony and Hondo; (3) removing a 5-mile (8 kilometer) section of failed power cable (Cable C) from an onshore point at the southern end of LFC to the shelf break (approximately state-federal boundary), and; (4) removing Cables C-1 and D-1 and the remaining 12 miles (19 kilometers) of failed Cable C on the OCS at the end of SYU life.

The proposed project would restore redundancy to the offshore electrical power system that supports SYU oil and gas production operations. The redundancy was lost in November of 1999 when a failure occurred in Power Cable C that connects Platform Heritage and the onshore Cogeneration Facility in Las Flores Canyon. The replacement cable (Cable C-1) proposed to be installed between Platform Heritage and LFC would be located on existing OCS and State Tidelands leases. The new cable (Cable D-1) to be installed between Platforms Harmony and Hondo would be located on existing OCS leases. ExxonMobil also proposes to install fiber optic cable and communication equipment at the SYU facilities to improve communication reliability between the platforms and LFC.

The project description states that the failed cable would be removed from an onshore point located near the southern end of LFC to the nearshore conduit, which is located about 800 feet (245 meters) offshore. Approximately 5 miles (8 kilometers) of failed Cable C would also be removed from the conduit terminus to the shelf break. At SYU, the location of the shelf break occurs approximately one-quarter mile (0.5 kilometer) beyond the State Tidelands/OCS boundary where the water depth ranges from 350-400 feet (100-125 meters). The project description states that the remaining 12 miles (19 kilometers) of the failed Cable C on the OCS would be removed with the removal of the other facilities at the end of the SYU project life. The end of life of SYU is estimated to occur between 2020 and 2030.

ExxonMobil estimates that the project would require 4-8 weeks to complete. The cable removal and installation phases of the project would require 14-21 days to complete. The work is expected to commence and be completed sometime between the third quarter of 2003 and October 2005. The extended installation window is required for ExxonMobil to secure the services of a dynamically positioned (DP) vessel to install the power cables. The lead-time required to secure the services of such a vessel typically exceeds one year. ExxonMobil has informed regulatory agencies that it does not plan to contract the services of a DP vessel until it has obtained all required permits for the project. If ExxonMobil obtains all necessary permits by the first or second quarter of 2003, it may be able to secure the services of a DP vessel and complete the project in 2003.

1.2 Purpose and Need for the Proposed Action

The following text describes the purpose and need of the project applicant and the three primary Federal, State and local agencies that have regulatory jurisdiction over the project. The agencies are the U.S. Department of the Interior's Minerals Management Service (MMS), California State Lands Commission (SLC), and the Santa Barbara County Planning and Development Department (SBC). The MMS regulates oil and gas exploration and development on Federal OCS leases. The SLC regulates oil and gas exploration and development activities on State Tidelands leases. SBC reviews onshore and offshore oil and gas exploration and development activities to ensure that they are conducted in accordance with Local Coastal Development Plans that have been adopted by the County and certified by the California Coastal Commission consistent with the requirements of the Coastal Zone Management Act.

ExxonMobil's proposed project would restore and enhance the offshore SYU power system by restoring redundancy and adding an equal level of redundancy to Platform Hondo to allow continued development and production of oil and gas resources from the SYU leases.

1.3 Decisions to be Made

The following text describes the decisions that must be made by MMS, SBC and SLC and other Federal, State and local government agencies that have regulatory jurisdiction over the project.

MMS: The MMS reviews proposed project to ensure that the proposed cable installation and removal operations would be conducted in accordance with ExxonMobil's contractual lease agreements with MMS and the MMS approved Development and Production Plan (DPP) for SYU. The MMS also reviews the project to ensure operations would be conducted in a safe and environmentally sound manner consistent with Federal OCS oil and gas operating regulations.

The MMS also reviews ExxonMobil's proposal to defer removal of the failed power cable (Cable C) on the Federal OCS until the end of SYU life. In accordance with its contractual OCS lease instruments with MMS, ExxonMobil must remove all devices, works, and structures from the premises no longer subject to the lease in accordance with applicable OCS oil and gas regulations at the end of lease termination (end of SYU life). Pursuant to Federal OCS oil and gas regulations, MMS can also order a failed power cable to be removed prior to the end of project life, if the cable presents a potential obstruction that poses a hazard to other uses (e.g. commercial fishing) of the seabed.

SLC: ExxonMobil must obtain SLC approval to install a new power cable (Cable C-1) and remove the failed cable (Cable C) from the existing State Tidelands lease (Lease PRC 7163). The SLC must approve an amendment to its existing State Tidelands lease before the project can commence.

SBC: ExxonMobil must obtain SBC approval of a revision to the County-approved Final Development Plan (FDP) for the proposed project. SBC served as lead CEQA agency for review of the original SYU project. Several existing permit conditions, both onshore and offshore, are invoked by the proposed cable replacement project. In addition, a grading permit must be obtained from SBC Building and Safety Division for onshore excavation work.

SBCAPCD: Pursuant to Santa Barbara County Air Pollution Control District (APCD) Rule 210 and under authority delegated by the Federal Environmental Protection Agency (Title 40 of the Code of Regulations, Part 55), ExxonMobil must obtain an APCD Authority to Construct Permit for removing the 5-mile (8 kilometers) segment of the failed Cable C to the shelf break.

U.S. Army Corps of Engineers (ACOE): Pursuant to Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act, ExxonMobil must obtain ACOE authorization to install and remove cable in the navigable waters of the U.S. and conduct associated excavation operations.

National Marine Fisheries Service (NMFS): The Southwest Fisheries Science Center of NMFS has applied to the National Oceanic and Atmospheric Administration for a Scientific Research and Enhancement permit pertaining to white abalone which are listed as an endangered species under the Endangered Species Act (a white abalone was discovered near the SYU nearshore conduit during a pre-installation survey conducted by ExxonMobil in 2001). The permit would allow NMFS to remove any white abalone that may be present in the project area at the time of construction and relocate them to a NMFS husbandry facility.

U.S. Environmental Protection Agency (EPA): Pursuant to the Clean Water Act, ExxonMobil may be required to obtain authorization from the EPA to flush the platform j-tubes prior to cable installation.

California Regional Water Quality Control Board (RWQCB): Pursuant to Clean Water Act, ExxonMobil may be required to obtain a Section 401 permit from the RWQCB if the removal and installation of cable is determined to have the potential to result in adverse impacts to water quality. ExxonMobil may also have to obtain RWQCB authorization to flush materials from the nearshore conduit to accommodate installation of the new cable.

California Coastal Commission (CCC): Portions of the project seaward of the mean high tide line would require review and approval by the CCC. Additionally, the landward portions of the project are within the Commission's appeal jurisdiction, so a Coastal Development Permit decision by the County may be appealed to the Commission. The Commission would also review the portions of the project in federal waters (more than 3 miles offshore) for consistency with the state's Coastal Zone Management Plan.

California State Parks: Construction equipment would need access to the southern portion of the tunnel requiring use of El Capitan Bike Path. ExxonMobil would obtain a Temporary Use Permit from State Parks for such use.

1.4 CEQA and NEPA Lead Agencies

All Federal permitting agencies have agreed that the MMS is the lead agency for conducting an environmental review of the project pursuant to the requirements of the National Environmental Policy Act (NEPA). The MMS has reviewed the proposed project and has determined that the project requires the preparation of Environmental Assessment (EA). All State and local permitting agencies have agreed to have SBC act as the lead agency for conducting environmental review of the project as required by the California Environmental Quality Act (CEQA). On November 25, 2002, SBC completed an Initial Study for the proposed project in

accordance with the requirements of CEQA. Based on the Initial Study, SBC determined that a Mitigated Negative Declaration could be prepared for the project.

The MMS and SBC have agreed to prepare a joint Mitigated Negative Declaration/ Environmental Assessment (MND/EA) for ExxonMobil's proposed project to facilitate review of the project by regulatory agencies, the public, and other interested parties. This MND/EA was prepared in accordance with the requirements of CEQA and NEPA. The MND/EA addresses potential offshore and onshore environmental impacts resulting from ExxonMobil's proposed project as well as several alternatives to the proposed project. The consideration of reasonable alternatives is required by NEPA but not mandated by CEQA for projects that qualify for review under an MND.

Pursuant to the OCS Lands Act, as amended, the MMS is responsible for regulating OCS oil and gas operations on the OCS. This document in no way changes MMS' authority granted by law or regulations and is not intended to, nor shall it be interpreted as limiting, modifying, delegating or waiving MMS' regulatory jurisdiction and authority.

1.5 SYU Facilities and Operational Configuration

ExxonMobil's SYU offshore facilities include three OCS platforms, Hondo, Harmony, and Heritage, and a series of connecting pipelines and power cables (see Figure 1). Platform Heritage is located approximately 8 miles (13 kilometers) from shore, Platform Harmony 6 miles (10 kilometers) from shore, and Hondo 5 miles (8 kilometers) from shore. Approximately 50 miles (80 kilometers) of pipeline and 50 miles (80 kilometers) of power cable have been installed on OCS and State Tidelands leases to support SYU operations.

In addition to the pipelines and power cables, three decommissioned SYU pipelines and one power cable are located on Federal Lease OCS-P 0188 in the SYU. The three pipelines (oil, gas, and water) and power cable connected Platform Hondo and ExxonMobil's decommissioned Offshore Storage and Treatment Vessel (OS&T). The pipelines and the 1,500 foot (455 meter) segment of the power cable resting on the seabed (the suspended catenary segment of the cable was removed) were approved to be decommissioned in place until the end of SYU life by MMS in 1994 when the OS&T was removed. The pipelines each measure about 8,000 feet (2,440 meters) in length. The decommissioned power cable has a length of approximately 6,500 feet (1,980 meters).

The three SYU platforms currently produce about 54,000 barrels of dry oil per day (b/d) and 83 million cubic feet of gas per day (mmcfd). The oil pipelines transport a mixture of sour crude and water (50 percent water) produced from the Monterey formation to the LFC oil and gas processing facility. The mixture also includes natural gas liquids produced at Platforms Harmony and Heritage. The emulsion pipelines are all concrete coated.

The gas pipelines transport sour gas produced at the platforms to the LFC facility (see Figure 2). Maximum permitted H_2S concentration in the produced gas is 20,000 parts per million (ppm). Current H_2S concentrations in the gas is approximately 3800 ppm. Each platform has a gas production rate of approximately 20-40 mmscfd. Gas is processed at the Pacific Offshore Pipeline Company (POPCO) LFC processing facility. The electrical power required to operate the platforms is provided by the cogeneration facility with backup, as needed, provided by the Southern California Edison grid.

OPSR PROJECT DESCRIPTION - Existing SYU Offshore Facilities

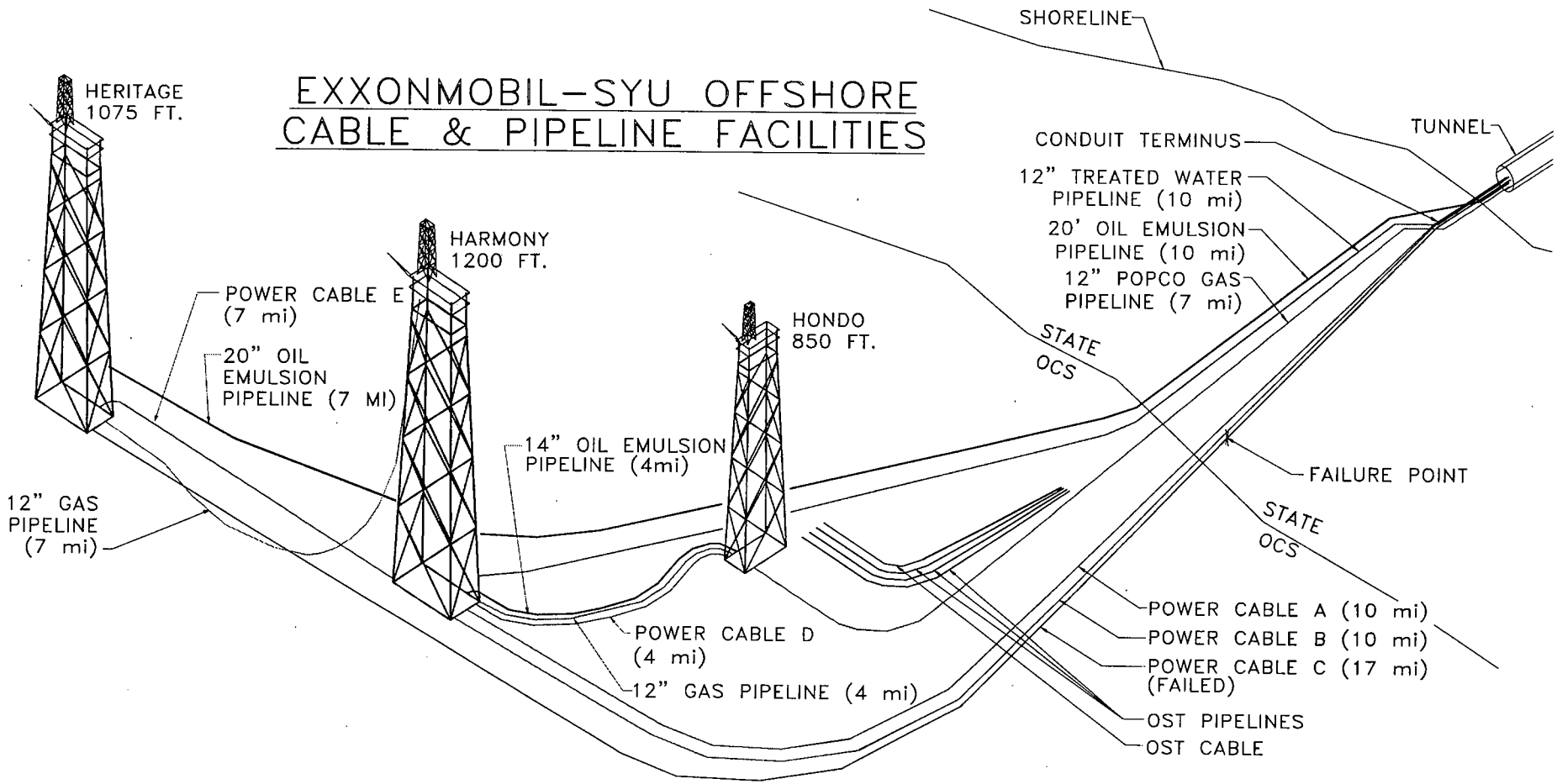
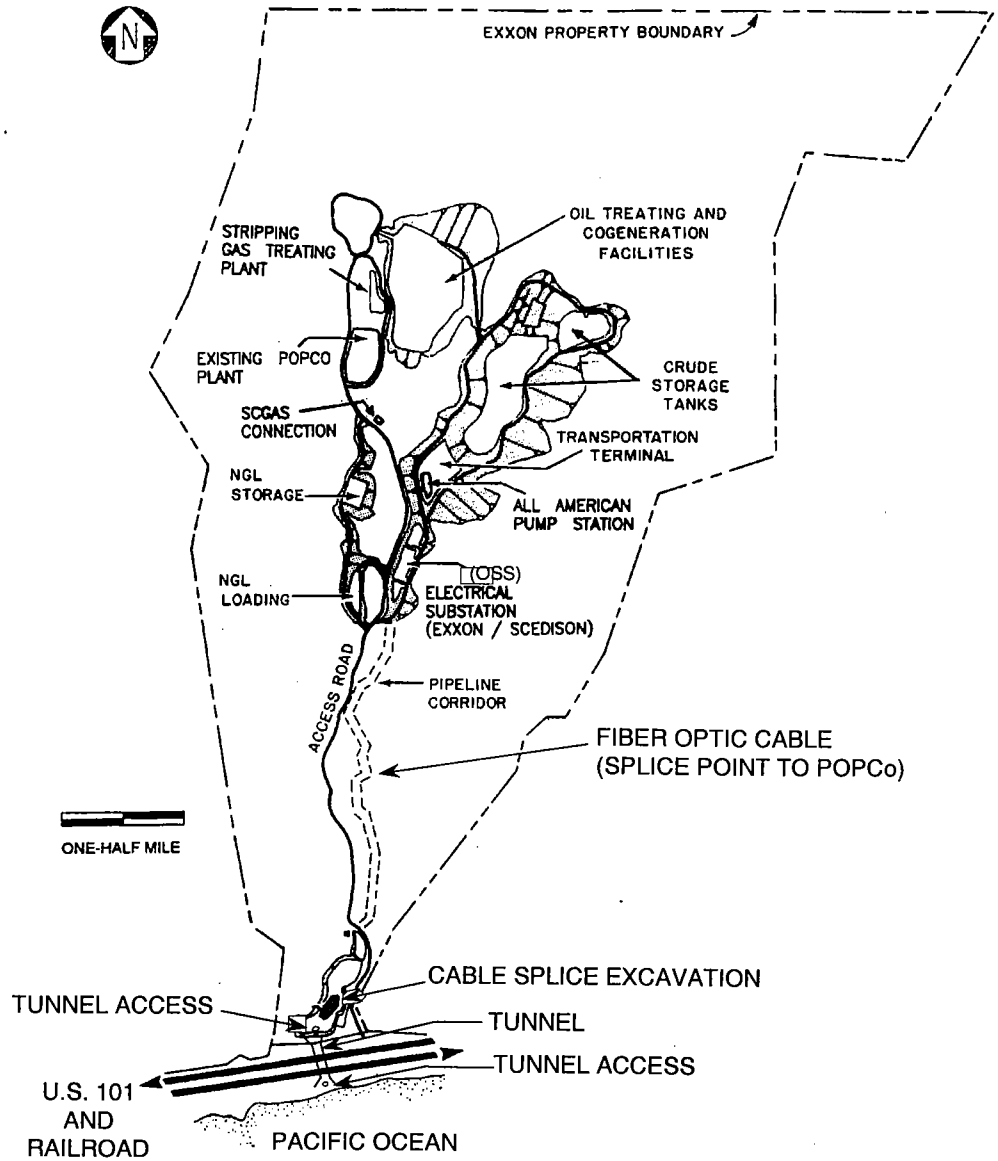


Figure 1

OPSR PROJECT DESCRIPTION - Existing Onshore SYU LFC Facilities



ExxonMobil *Production*

Figure 2

Produced water is transported via a 12-inch (30 centimeter) pipeline from LFC to Platform Harmony. Produced water is treated to meet the EPA National Pollutant Discharge Elimination System Permit requirements. The water is disposed into the ocean at Platform Harmony through a deep-water diffuser.

A series of five offshore power cables have been installed between the platforms and the onshore cogeneration facility. Power Cables A, B, and C connect the platforms with the cogeneration facility. The two remaining cables (D and E) connect Platforms Hondo and Harmony, and Heritage and Harmony.

Three pipelines (a 20-inch emulsion, a 12-inch water and a 12-inch gas) and three power cables (A, B, and C, 6 inch cables) are buried in the lower canyon of LFC. The pipelines and power cables are located on racks that have been installed through the tunnel under Highway 101 to an area above the beach at El Capitan State Beach. From the south end of the tunnel, the pipelines and three 12-inch (30 centimeter) diameter conduits, each containing a power cable, are buried in a trench that extends out into the ocean to the conduit terminus at an approximate 25-foot (8 meter) water depth. The trench is covered with armor rock to provide protection from storm damage and erosion. The pipelines and power cables are laid on the ocean bottom from the end of the trench and conduit to the platforms (Figure 3).

The failed cable is part of Circuit C (land cable and submarine Cable C) that originates at the Offshore Substation (OSS) at LFC and ends on Platform Heritage. The onshore portion of the circuit, which is approximately 1 mile (1.6 km) in length, begins as a direct buried, land based cable and transitions to submarine cable approximately 800 feet (245 meters) north of the shoreline at the south end of LFC. The transition splice from land cable to submarine cable occurs approximately 200 feet (60 kilometers) north of the cable/pipeline tunnel that extends beneath Highway 101 and the Union Pacific railroad tracks. The offshore portion of the circuit, which is approximately 17 miles in length, begins at the end of the conduit and continues to a J-tube at Platform Heritage.

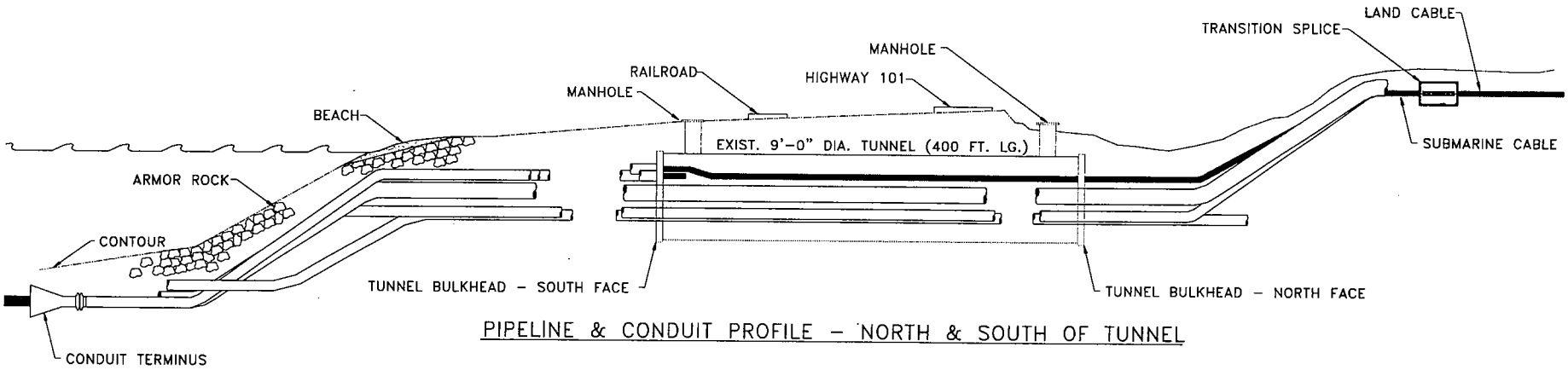
Currently, communications between LFC and the three platforms is via digital microwave radio. The system includes equipment located at each facility as well as East Ridge and Santa Ynez Peak. Both voice and data communications are carried over the microwave system. The system is built in a looped configuration for redundancy.

1.6 Regulatory Background and History

The SYU is composed of 16 OCS leases that are located in northwestern Santa Barbara Channel. The majority of leases were acquired by Exxon Corporation (hereafter referred to Exxon) and its partners during OCS Lease Sale P-4 in 1968. The first oil and gas discovery occurred in this area in 1968. In 1971, Exxon submitted a DPP for developing the leases to the U. S. Geological Survey (predecessor to the MMS). The DPP included alternative plans for processing the oil onshore and offshore. In 1974, the U.S. Geological Survey approved the DPP.

Santa Barbara County permits were issued in 1974 for the development of onshore oil and gas processing facilities in Las Flores Canyon to process the oil and gas produced at Platform Hondo, which was installed in 1976. In 1975, the County approved the onshore component of the project.

OPSR PROJECT DESCRIPTION
Pre-installation Survey and Inspection - Tunnel Area



PIPELINE & CONDUIT PROFILE - NORTH & SOUTH OF TUNNEL

Area of Shallow Water, Marine Biological and Conduit Inspection

Area of Onshore Cable Area Inspection

Figure 3

In 1976, the CCC approved a Coastal Development Permit for the SYU Project. However, Exxon objected to certain requirements of this permit and did not accept it. Continuing disagreements between the CCC and Exxon over oil transportation and air quality requirements led to the initial development of SYU by Exxon installing the OS&T near Platform Hondo and shipping the oil to refineries via marine tanker. Oil production at Hondo began in 1981 with the commencement of oil treatment at the OS&T. Beginning in 1984, produced gas was transported via the POPCO pipeline to an onshore gas processing plant in LFC.

In 1982, Exxon submitted a revised DPP to the MMS for expanded development of the SYU, with three additional platforms: Harmony, Heritage, and Heather. In addition to the new platforms, the revised DPP proposed a consolidated onshore processing and storage facility at LFC, a consolidated marine terminal at LFC (the application for construction of the marine terminal was later withdrawn by Exxon), and subsea and onshore pipelines and power cables to connect these components.

Santa Barbara County approved the FDP for expanded development of SYU in September of 1987. The FDP permit conditions required Exxon to discontinue use of the OS&T within 30 days after the time that the onshore oil processing facilities were fully operational and debugged. In addition, Exxon was required to remove the OS&T and its mooring from the OCS within one year after initial production from Harmony and Heritage. The FDP also required Exxon to install power cables to provide electricity to the platforms from onshore generation facilities.

The jackets and topsides of Platforms Heritage and Harmony were installed in 1990 and 1992 respectively. The subsea and onshore pipelines and power cables were installed in 1991 and 1992. The LFC processing facility was dedicated in October of 1993 and brought on line in early December of 1993 when the first oil was delivered by pipeline from Platform Harmony. The OS&T was removed in 1994. The oil, water, and fuel gas lines and power cable from Platform Hondo to the OS&T were approved to be decommissioned in place by MMS until the end of SYU life.

1.7 Corporate Merger

Exxon Corporation and Mobil Corporation merged in late 1999 to become Exxon Mobil Corporation. Exxon Corporation was the original owner and Exxon Company, U.S.A. was the original operator of the SYU facilities. The owner of the facilities changed to Exxon Mobil Corporation. The name of the operator changed to ExxonMobil Production Company. There were no changes in operations personnel or to the facilities as a result of this merger. ExxonMobil holds all responsibility for complying with the terms and conditions of all SYU permits.

2.0 PROJECT BACKGROUND, DESCRIPTION, AND ALTERNATIVES

2.1 Location and Cause of Power Cable Failure

In November 1999, one of the three power cables supplying electricity to ExxonMobil's SYU offshore production operations failed. The failure occurred in Cable C that provides power from LFC to Platform Heritage. Isolating the failed circuit and switching all the electrical power to the two remaining cables restored power to the platforms.

ExxonMobil conducted testing of the cable following the failure. These tests indicated a direct ground fault on a single phase of the three phase cable in 245 feet (75 meters) of water, 27,650 feet (8,430 meters) from OSS in LFC where the circuit originates. The survey indicated the fault to be located just inside the State Tidelands/OCS boundary. A Remotely Operated Vehicle (ROV) was utilized to inspect the cable on either side of the fault. The inspection determined that no external damage was visible at the fault point or in the vicinity of the fault point.

Based on test results and inspections, the Cable C ground fault is believed to be the result of either insulation failure or installation related damage that resulted in early insulation failure. External damage was eliminated as a failure mechanism by the ROV inspection of the exact fault location. Cyclic loading and voltage spiking were also eliminated as a cause after review of the power system and metering information.

ExxonMobil considered repairing the failed section of Cable C by splicing the cable and replacing the failed segment with new cable. This option was not considered viable due to the design of the failed Kerite cable. A review of the cable design determined that the cable did not have compacted or compressed conductors with integral water blocking material. This design would allow water that entered the cable through a fault to propagate, at a minimum, to the next splice point (approximately every 6,000 feet [1,830 meters]). In addition, there is no guarantee that a splice point would stop all water since the concept was never tested. Any repair would require that the cable be picked up until a section without water intrusion was located in both directions from the fault.

Another concern was the lack of an external covering over the armor wires. The omission of this external layer combined with conductor limitations in the long continuous power cables limits the ability to recover and reuse the cables without damaging them in the process. The design has the tendency to place added stress on the conductors during recovery. The stresses from lifting, reeling and re-installing the cable deemed any recovery and repair attempt impractical to obtain the required circuit life.

2.2 Pre-Installation Surveys and Inspections

ExxonMobil has conducted a series of surveys and inspections during the past two years to collect the environmental and technical information required to develop engineering plans for implementing the project. The surveys cover the area from the onshore power cable splice point located within the grounds of the LFC, through the tunnel under Highway 101 to the nearshore conduit terminus, and continuing to the three platforms. The surveys and inspections that have been completed include the following:

(1) An ROV video inspection survey of the failed Cable C-1 from the POPCO pipeline crossover in 90 foot (27 meter) water depth to Platform Harmony in 1,218 foot (380 meter) water depth (Divecon 7/2000);
(2) A review of marine growth on the cable approximately 4,000 feet (1,219 meters) on either side of the Cable C ground fault (Ecomar 9/2000);
(3) A shallow water geophysical survey of the area around the conduit terminus (Fugro 7/2001);
(4) A biological dive survey of the marine biology around the conduit end and potential anchor locations (de Wit 8/2001);

(5) A side scan sonar survey of the proposed Cable C-1 and D-1 routes from the nearshore area to the three platforms (Fugro 9/2001); and
(6) An ROV inspection of the platform J-tubes and associated cables, pipeline and cable crossover points and several unidentified anomalies found along the proposed cable route (Dominion 10/2001).
(7) An inspection of selected portions of the onshore cable location from the north side of the tunnel to the cable splice point in LFC (ExxonMobil 2/2002);
(8) An expanded marine biological dive survey of a 26-acre (10.5 hectare) area around the location where the work activities are proposed (de Wit 4/2002).

2.3 Proposed Routes of Power Cables C-1 and D-1

Figure 4 shows the proposed routes ExxonMobil has selected for Cables C-1 and D-1. ExxonMobil is proposing to install Cable C-1 up to 2,000 feet (610 meters) south of the existing cables on the OCS portion of the route. In State waters, Cable C-1 would be installed parallel to the existing cables. The Cable D-1 route would be routed from an unused J-tube on the west side of Platform Harmony to a J-tube on the north side of Platform Harmony. This route would cross an existing power cable (Cable E), the oil emulsion line from Platform Heritage, the oil emulsion pipeline to shore, and the water pipeline to shore. ExxonMobil would use a special protective duct technology product (Uraduct or equivalent) to provide separation at pipeline and power cable crossings.

ExxonMobil's reasons for selecting the proposed route for Cable C-1 are explained in a letter dated March 20, 2002 to MMS, SBC and other regulatory agencies. The following text describes the proposed route for the cable and summarizes ExxonMobil's reasons for selecting the route.

ExxonMobil evaluated several potential cable routes for the Cable C-1 prior to selecting the route proposed in its permit applications. In State waters, the selected Cable C-1 route runs in the same corridor (parallel to and within approximately 50 feet [15 meters] of the existing cables) from the nearshore conduit terminus to just outside the 3-mile State Tidelands/OCS boundary. On the OCS, ExxonMobil selected a route south of the existing cables that would place the C-1 Cable approximately 1,000 feet (305 meters) from the Hondo and Harmony backdown buoy anchor locations. This route was chosen as a safety and risk reduction measure. The concern was that if Cable C-1 was laid adjacent to the existing power cables, a failure of the buoy support cables or the associated anchor could cause the cable to drop on the C-1 cable or cause the anchor to drag over it and damage Cable C-1. The proposed route moves Cable C-1 outside the location where this type of damage could occur and thereby eliminates the potential for a future accident that would require a significant repair effort.

ExxonMobil noted that the placement of the Hondo and Harmony buoy anchors is based on several criteria: (1) providing quick vessel response time to the platforms for emergencies; (2) providing appropriate position based on prevailing currents; (3) maintaining an ExxonMobil and industry minimum spacing of approximately 1,000 feet (350 meters) up-current from the seabed cables south of the platforms; and (4) requiring a safe separation based on design practices be maintained from other subsea structures. Moving the buoy anchors to accommodate closer spacing of the C and C-1 power cables was therefore not considered a viable option.

ExxonMobil determined that a C-1 route south of the buoy anchors is required to meet all of the criteria. The route south of the Hondo and Harmony platforms places the C-1 cable in a safe

OPSR PROJECT DESCRIPTION - Proposed SYU Offshore Facilities

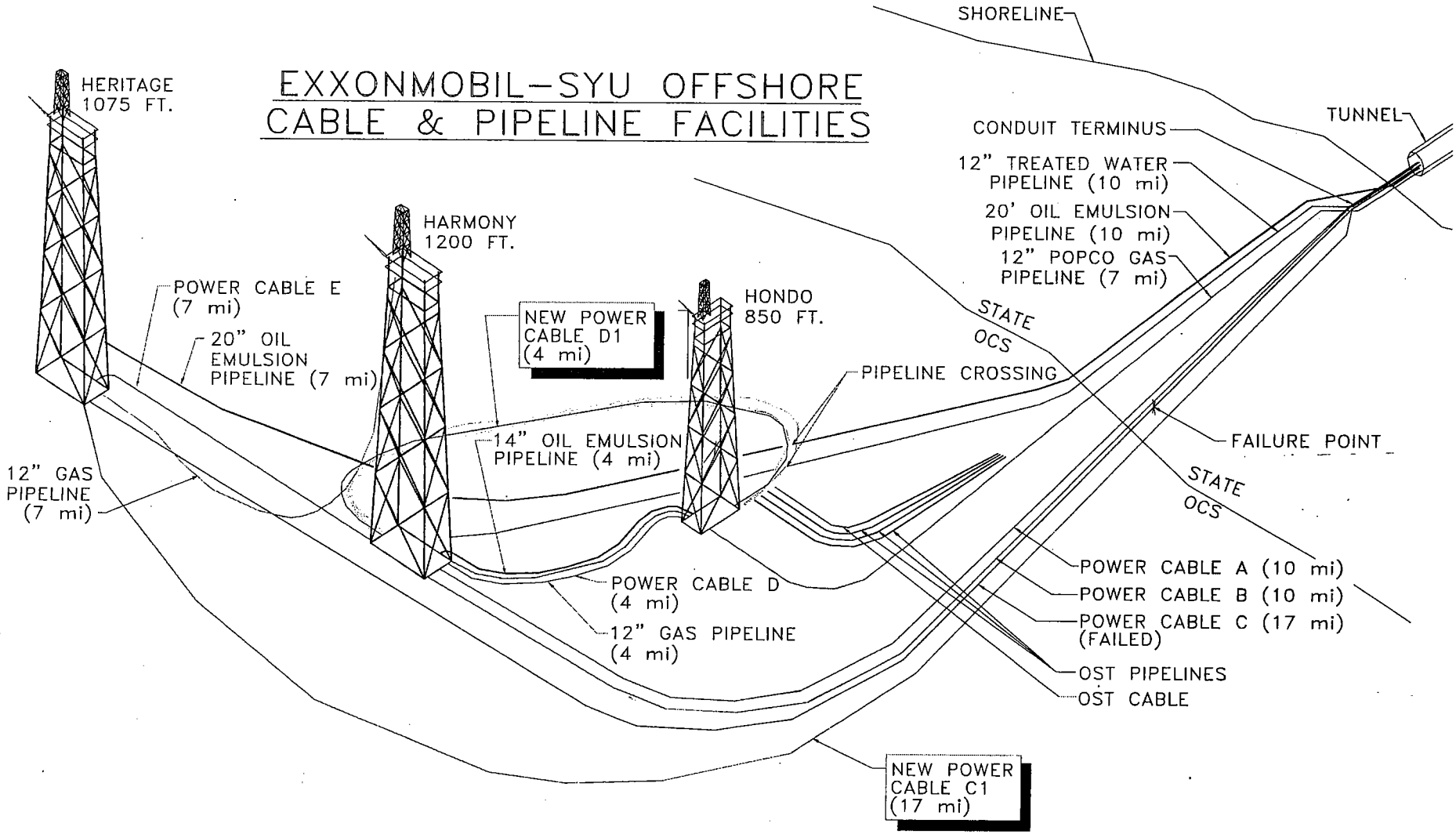


Figure 4

location over 500 feet (150 meters) up-current of both the Hondo and Harmony anchor buoy anchors, maintains the 1,000 feet (350 meters) minimum separation down-current to the remaining subsea cables, and results in an approximate 1,000 to 2,000 feet (350 to 700 meters) of separation between the C-1 cable and the existing cables and the Platform Heritage gas pipeline.

Based on its analysis, ExxonMobil determined that a 1,000 to 2,000 feet (350 to 700 m) separation between the C and C-1 cables would be sufficient to accommodate any future Cable C-1 repair work in water depths of 800 to 1,400 feet (245 to 425 meters). ExxonMobil stated that since there is a finite probability for failure of one or more of the other SYU power cables (A, B, or E) at some point in the future, the route chosen for the Cable C-1 provides space and cable route options should that situation develop.

2.4 Project Description

The following text was excerpted in part from ExxonMobil's August 19, 2002 project description. In its August 19, 2002 project description, ExxonMobil described the project as consisting of five distinct activities, the final activity of which would be removal of failed Cable C from the nearshore conduit to the shelf break. Phase 5 work has been combined with Phase 1 in this description because those activities would be conducted during same time period as the Phase 1 activities.

The proposed project consists of four distinct phases. The first phase is the removal of the failed Cable C at the circuit ends (Platform Heritage and nearshore conduits/tunnel, and a segment of the remaining OS&T cable at Platform Hondo), removal of the failed Cable C from the nearshore conduit to the shelf break, and preparation of the J-tubes on Platforms Hondo, Harmony and Heritage. The second phase is the installation of electrical communication equipment on the platforms and at LFC. The third phase is the preparation for and installation of the new cables. The fourth phase is the startup and operation of the cable systems. Several of the phases may overlap. The proposed installation window is sometime between the third quarter of 2003 and October of 2005. ExxonMobil projects that the entire project would require 4-8 weeks to complete. The cable removal and installation phases of the project would require 14-21 days to complete.

Phase I: Removal of Existing Cable Segments and Failed Cable C from the Nearshore Conduit to the Shelf Break

Onshore and State Tidelands Operations – Removal of Cable Segments: Several sections of Cable C and OS&T cable would need to be removed before the new and replacement cables could be installed. To allow installation of Cable C-l, the failed Cable C would need to be removed from an area on the north side of the tunnel, from the tunnel, from the near shore conduits, and from the J-tube at Platform Heritage. In addition, a segment of the previously decommissioned OS&T cable in a J-Tube on Platform Hondo would be removed to allow the installation of Cable D-l. An estimated 7,000 to 8,000 feet (2,135 to 2,440 meters) of cable would be removed during these operations.

To prepare for removal of the C cable, it would first need to be located on the sea floor where it enters the conduit leading to the tunnel, in approximate water depth of 25 feet (8 meters). An initial inspection would be conducted by divers working off a small diver-support vessel anchored adjacent to the conduit area. Divers using hand held water jets would excavate the

conduit opening.

Later, the conduit opening and an area around the opening would be re-excavated, if necessary. Cable C would be uncovered and cut approximately 30-75 feet (10-25 meters) from the conduit opening.

Access to the man ways at both ends of the tunnel would be required. Inside the tunnel, the cable would first be prepared for removal. Equipment would be brought into the tunnel and would be installed to facilitate removal. Safety, ventilation and other equipment would be required to facilitate the crews doing the work.

Removal of Cable C would require excavation on the north side of the tunnel in order to expose the tunnel bulkhead and the cable so it could be properly handled. After the land side of Cable C is cut and pulling assemblies installed on both ends of the cable, a winch on either the DP vessel or a supply/work vessel would pull the cable from the end of the conduit onto the deck where it would be rolled on a reel or cable containment tub. Once the cable is completely removed from the tunnel and conduit and the conduit is proofed and prepared, the supply/work vessel, if used, would retrieve any anchors. The removed cable is expected to be disposed in either the Safety Kleen Facility in Buttonwillow, California or another facility out of state.

OCS Operations – Removal of Cable Segments: The Cable C in the existing J-Tube on the Platform Heritage would be removed to allow reuse of the J-Tube by Cable C-l. A DP vessel would be positioned adjacent to the J-tube opening. As an option, an anchored supply/work vessel may conduct this work. An ROV would locate the cable on the sea floor adjacent to the J-Tube at the Platform Heritage. The ROV would use a water jet to uncover any portion of the J-tub mouth or cable that may be buried. The cable would first be prepared for cutting and then cut at an appropriate distance from the platform, approximately 1,800-2,000 feet (550-610 meters).

Once Cable C is cut on the sea floor and at Platform Heritage, the cut cable would be pulled out of the J-tube and onto the vessel deck where it would be rolled on a reel or cable containment tub. The removed cable would be expected to be disposed in either the Safety Kleen Facility in Buttonwillow, California or another facility out of state. A concrete mattress (approximately 8 feet [2.5 meters] by 8 feet [2.5 meters]) would be placed over the end of Cable C remaining on the seafloor. The concrete mattress would be installed by DP Cable Lay vessel with assistance from an ROV. After these operations are complete, the supply/work vessel, if used, would retrieve its anchors.

At Platform Hondo the existing abandoned OS&T cable J-Tube would be cleaned and reused for the new Cable D-l. The DP vessel would be positioned adjacent to the J-tube opening. As an option, an anchored supply/work vessel may conduct this work. An ROV would locate the OS&T cable on the sea floor adjacent to the J-Tube at the Platform Hondo. The ROV would use a water jet to uncover the J-tube mouth and cable that is buried in the vicinity of the J-tube. The OS&T cable would be cut at an appropriate distance, approximately 1,300-1,500 feet (395-460 meters) from the platform.

Once OS&T cable is cut on the sea floor and at Platform Hondo, the cut cable would be pulled out of the J-tube and onto the vessel deck where it would be rolled on a reel or cable containment

tub. The removed cable would be expected to be disposed in either the Safety Kleen Facility in Buttonwillow, California or another facility out of state. A concrete mattress (approximately 8 feet [2.5 meters] by 8 feet [2.5 meters]) would be placed over the end of the OS&T cable remaining on the seafloor. The concrete mattress would be installed by DP Cable Lay Vessel with assistance from an ROV. After these operations are complete, the supply/work vessel, if used, would retrieve its anchors.

At Platform Heritage, an existing spare J-tube located on the west side of the platform would be used for the installation of Cable C-1. The DP vessel would be positioned adjacent to the J-tube opening. As an option, an anchored supply/work vessel may conduct this work. The J-tube would be inspected, pigged and refurbished, if necessary, prior to use by Cable D-1. After these operations are complete, the supply/work vessel, if used, would retrieve its anchors.

State Tidelands and OCS Operations – Removal of Failed Cable C from The Nearshore Conduit to Shelf break: Approximately 26,000 feet (7,925 meters) of failed Cable C would be retrieved from the nearshore conduit area to the shelf break just south of the State Lands lease on the OCS using the DP vessel. The retrieval of the Cable C would not commence until the segment of the failed cable in the conduit has been removed from the nearshore conduit. As was described above, the cut end of the Cable C-1 would be located approximately 30-75 feet (10-25 meters) south of the conduit. Divers using hand-held water jets and eductors would expose the cable end area. The end of the cable would be lifted onto the DP vessel. As the DP vessel proceeds seaward, the retrieved cable would be pulled onto the deck and loaded on a reel or into a cable containment tub.

At the POPCO pipeline crossing, there may be two concrete mats covering the failed Cable C. Divers working off of a diver support vessel would remove sediment on the mats and cut the interconnecting rope or wire between the concrete tiles. The concrete tiles would be removed to clear a path for the cable retrieval.

The DP lay vessel would continue to pick up the failed Cable C to a location to be determined in the vicinity of the shelf break just south of the State Lands lease on the OCS in approximately 350 to 400 feet (110-120 meters) of water depth. At a specified location, the cable would be cut and the seaward end would be laid on the seafloor. The DP lay vessel or a separate workboat would place a concrete mattress over the cut end of the cable. The retrieved Cable C would be removed from the vessel when it reaches a port, cut into manageable sections and transported to a recycling center or landfill for disposal.

Phase II: Equipment Installation on OCS Platforms and LFC

Electrical equipment would be installed on Platforms Harmony and Hondo to allow for the operation of Cable D-1. In addition, communication equipment would be installed on all three platforms and at LFC to replace portions of the microwave systems with fiber optics systems. Existing supply vessels would be used for Phase II.

On Platform Hondo, a new cable termination cabinet would be added near the existing 35kV switchgear. The new cabinet would include both the existing Cable D and the new Cable D-1. NEPA 70 TC rated power cable would be run from the new cable termination cabinet to the splice point above the J-tube.

A fiber optic cable would be installed between Cable D-1 splice point on the platform to the platform's radio room on the Drill Deck. A fiber optic modem would be installed in the radio room. NEPA 70 TC rated power cable would be run from the new switchgear to the splice point above the J-tube.

On Platform Harmony, an additional electrical switchgear section would be added to the existing 35kV switchgear located in the electrical equipment room on the Production Deck. NEPA 70 TC rated power cable will be run from the new switchgear to the splice point above the J-tube. A fiber optic cable would be installed between Cable D-1 splice point on the platform to the platform's radio room on the Mezzanine Deck. A fiber optic modem would be installed in the radio room.

On Platform Harmony, no additional electrical switchgear would be needed. NEPA 70 TC rated power cable would be run from the existing switchgear to the splice point above the J-tube. A fiber optic cable would be installed between Cable D-1 splice point on the platform to the platform's radio room on the Mezzanine Deck. A fiber optic modem would be installed in the radio room.

At LFC, a fiber optics modem would be installed at the LFC microwave trailer to provide simultaneous transfer of data and voice communications over the fiber optic to Platform Heritage.

Phase III: Submarine Cable Installation

The submarine cable installation would consist of preparing the platforms and the land portion for the new cable and then installing the cable sections. The cables could be installed in one operation or two parts. Preparation would include temporary installation work areas and adding temporary installation equipment at Platforms Heritage, Harmony, Hondo and the area north of the tunnel at the transition splice.

Prior to the arrival of the cable laying vessel, cable pulling and rigging equipment would be placed on all three platforms and the land area directly north of the tunnel as well. The platforms would be prepared to allow pulling of the cable from the vessel and up to the platform. A winch, cable rollers, quadrant blocks and other cable installation equipment would be preinstalled. Installation of this equipment would require temporary welding to structural members for attachment points. The temporary removal of some decking may be required to allow equipment to be positioned.

The land area directly north of the tunnel would have cable pulling and rigging equipment installed. In addition, the transition splice of Cable C would be excavated and exposed. The land cable from the Offshore Substation in LFC would be separated from the transition splice and prepared so it can be connected to Cable C-l (Figure 5).

Both Cables C-1 and D-1 would be installed with a DP vessel. This vessel would not use anchors during the normal installation activities. For the alternative option, installation activities in the nearshore area, a supply/work vessel would be utilized that would use anchors. An ROV associated with the vessel would be used during selected phases of the subsea installation.

OPSR PROJECT DESCRIPTION - PHASE III:
Cable Installation- Cable C1 Tunnel Section Shore Pull-in

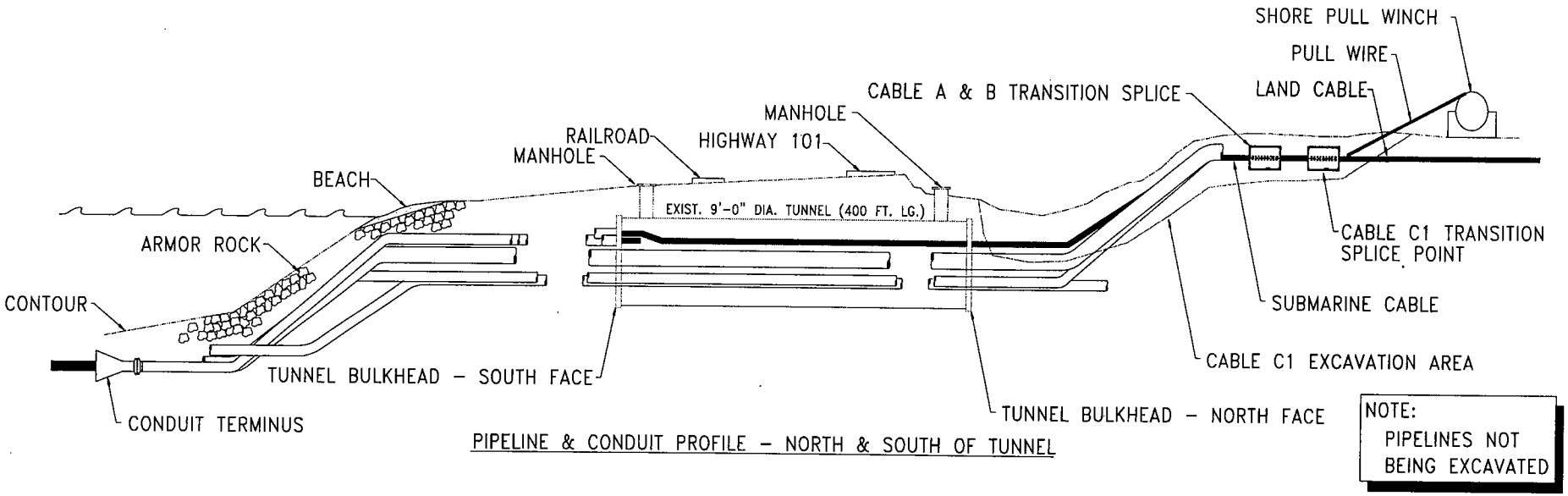


Figure 5

Onboard measurement of the touchdown point and as laid position would be periodically monitored by the ROV during installation. Other supply/work vessels may also be required to support the installation.

The installation of the Cable C-1 would start by installing one end of the cable in the existing J-tube at Heritage. The platform winch would pull the cable from the vessel, down to the bottom of the J-Tube, up the J-Tube and onto the platform using a pre-installed wire rope. An ROV would monitor the cable as it enters the J-Tube. Once sufficient cable is on the platform, the vessel would begin laying the cable in a predetermined route to the shore. The cable route would cross the POPCO gas pipeline where the water depth approximates 80-85 feet (25 meters). The gas pipeline is buried to a depth of approximately 4-6 feet (10-2.0 meters) and is covered by concrete mats. A special protective duct product would be applied to Cable C-1 in the area of the crossings.

For the alternative option, installation activities, the DP cable lay vessel would stop the lay operations approximately 1,200 feet (365 meters) from the conduit terminus where the water depth approximates 55 feet (2.0 meters). The cable would be cut, capped and laid on the seafloor. For the continuation of the alternative option installation activities, a supply type vessel would anchor in the area adjacent to the cut and capped end of Cable C-1. Divers will connect a clamp with a wire line to the cable. Once the cable is on the vessel, the cap would be removed and the cable spliced and tested. The vessel would lay the cable as described below.

For the nearshore cable installation, including the alternative above, when the vessel approaches the 55 foot (20 meter) water depth level, the cable length required to traverse the conduit, tunnel and short shore section would be measured. The cable would be cut, the end prepared and the length floated on buoys. A winch would pull the Cable C-1 onshore through the existing conduit. The cable would then be installed through the tunnel on a roller-mounted rack and through the excavated area to where the new transition splice will be located. Approximately 400-500 cubic yards (300-380 cubic meters) of material would be excavated onshore.

Once all the cable is installed, the cable would be tested. After sufficient testing and cable discharge, the cable would be terminated at the transition splice and at Platform Heritage. Upon completion of testing, termination and securing the cable, the excavated area on the shore would be filled with selective back fill.

The installation of Cable D-1 would start by installing one end of the cable in the spare J-tube at Platform Harmony. A platform winch would pull the cable from the vessel, down to the bottom of the J-Tube, up the J-Tube and onto the platform. An ROV would monitor the cable as it enters the J-Tube. Once sufficient cable is on the platform, the vessel would begin laying the cable in a predetermined route to Platform Hondo. The route would include the crossing of three pipelines (Platform Heritage to Platform Harmony 20” oil pipeline, Platform Harmony to LFC 20” oil pipeline, and Platform Harmony to LFC 12” water pipeline) and one power cable (Cable E). A special protective duct product would be applied to Cable D-1 in the area of the crossings.

As the vessel approaches Platform Hondo, the cable length required to traverse the OS&T J-tube and platform would be measured. The cable would be cut, the end prepared and the length suspended off the side of the vessel. The Cable D-1 would be pulled through the existing J-tube and onto the platform. Once all the cable is generally in place, the cable would be terminated and

tested. After sufficient testing and cable discharge, the cable would be secured at Platforms Harmony and Hondo.

Phase IV: Start-up

The newly installed switchgear and any associated cabling would be tested prior to final cable connections. Upon completion of the testing of the cable and cable interconnection to the switchgear, energization preparations would begin. Energization plans would be reviewed and platform power distribution systems would be properly configured for load balance. With close coordinating with production operations, circuit energization and power flow monitoring would begin as the platform load increases as production is returned.

Upon completion of the installation, all installation equipment would be removed from the land section and offshore platforms. Temporarily removed decking will be replaced and temporary work platforms will be removed.

2.5 Alternatives to the Proposed Project

The alternatives to ExxonMobil's proposed project that are carried forward for analysis in this MND/EA are as follows: Alternative A: Deferred Removal of Failed Cable to the Shelf Break; Alternative B: Removal of Failed OCS Cable in the Near Term (2003-2007); and Alternative C: the No Project Alternative. Alternative A involves the installation of two new cables (C-1 and D-1) and deferred removal of the failed cable (Cable C) in State waters and the OCS until the end of SYU life. Alternative B involves the installation of two new cables and removal of the failed cable in State waters and on the OCS. Under Alternative C, the project would not be conducted.

In addition, two other alternatives were considered but not carried forward in the MND/EA analysis. The first alternative involved using a specially equipped supply vessel to remove cable on the OCS. The second alternative involved installing diesel or gas powered engines on the platforms to generate the power required for operating the production equipment. The alternatives considered but not analyzed and those carried forward in the analysis are described below.

Removal of OCS Cable Using a Supply Boat: The use of a supply boat to remove the failed Cable C was not carried forward for analysis because it was not considered feasible due to technical and safety concerns. The removal of a power cable from the seabed ideally requires the use of a DP vessel that uses its engines to maintain its position over the cable in various sea conditions. Supply boats lack this capability as they are not designed to operate in a dynamically positioned mode. The inability of a supply boat to maintain its position above a power cable during lifting operations could result in the breaking of the cable and an uncontrolled drop of the cable to the sea floor. This could result in serious injuries to personnel on the support boat and result in damage to surrounding pipelines and power cables. The MMS has informed ExxonMobil and other regulatory agencies that it would not approve the use of a supply boat to remove cable on the OCS because it is not considered to be Best and Safest Technology (BAST), which is required by Federal OCS oil and gas regulations.

Installing Diesel or Gas Powered Engines: Installing diesel or gas powered engines on the platforms to generate electrical power was not considered feasible because each platform

requires about 20 megawatts of electrical generation to operate the production equipment. The size of the equipment required to generate this much power would too large for the platforms and would take several years to build. The Santa Barbara County Air Pollution Control District has indicated it would be very difficult to obtain the necessary permit with associated offsets to operate such a large emissions source. In obtaining permits for the SYU Expansion Project, ExxonMobil also agreed to utilize power cables to provide electricity to the platforms from onshore generation facilities.

Alternatives Analyzed in the MND/EA

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
This alternative involves installing two new cables (C-1 and D-1) and deferring removal of the failed C Cable to the shelf break until the end of SYU life, at which time it would be removed with other SYU facilities. This alternative is the same as the proposed project except that removal of approximately 5 miles (8 km) of failed Cable C from the nearshore conduit to the shelf break would be delayed until the end of SYU life, which ExxonMobil estimates will occur between 2020 and 2030. The project would commence and be completed sometime between 2003 and October 2005. The project would require 13 to 20 days to complete, 1 day less than ExxonMobil's proposed project. The vessel spread for this alternative is the same as the proposed project.

Alternative B: Removal of Failed OCS Cable in the Near Term (2003-2007)
This alternative involves installing two new cables (C-1 and D-1), removing approximately 5 miles (8 kilometers) of failed C Cable from the nearshore conduit to the shelf break, and removing approximately 12 miles (20 kilometers) of failed cable on the OCS. Under this alternative, the removal of a 5,000 foot (1,525 meters) segment of the failed cable located southwest of Platform Harmony would be deferred until the end of SYU life. This cable segment is located between two points where the Heritage to Harmony gas pipeline overlays the failed cable. The risks associated with removing this cable segment were determined to outweigh the benefits. Alternative B would be conducted in two phases. Phase 1 would involve the installation of two new cables (C-1 and D-1) and removal of the failed Cable C from the nearshore conduit to the shelf break, which is the same as the proposed project. Phase 1 would be conducted between 2003 and October 2005. Phase 2 would involve using a DP barge to remove the failed Cable C on the OCS, which is located in water depths ranging from approximately 350-1,200 feet (110-365 meters). Phase 2 would be conducted between 2003-2007. Phase 1 work would require an estimated 14-21 days to complete. Phase 2 work would be conducted using a different vessel spread and require an estimated 12-14 days to complete. The vessel spread for Phase 1 is identical to the proposed project. Phase 2 will require deployment of a DP barge, a support tug, and a dive support vessel.

Alternative C: No Project Alternative
This alternative is the No Project Alternative. Under this alternative the proposed project would not occur and the two new power cable would not be installed. In addition, the removal of the failed Cable C from the nearshore conduit to the shelf break would be deferred until the end of SYU life. The adoption of this alternative would avoid all of the potential adverse impacts resulting from the proposed project discussed in this MND/EA.

3.0 REASONABLY FORESEEABLE PROJECTS AND ACTIONS CONSIDERED IN THE CUMULATIVE ANALYSIS

A cumulative impact analysis has two parts:

1) Development of a cumulative scenario, specific to the proposed project, and an assessment of cumulative impacts from past, present, and reasonably foreseeable projects;

2) An analysis of the expected impacts from the proposed project when added incrementally to the cumulative scenario developed above.

This section provides a brief description of projects that have been considered in the analysis of cumulative impacts in this MND/EA. A project or other anthropogenic or natural event with which the proposed project could have cumulative impacts was evaluated using the following criteria (40 CFR 1508.7):

- The project/event should be *reasonably foreseeable*, which is defined as those for which formal applications have been approved, submitted, or are pending and;
- The project/event could have *impacts in space (geographically)* that co-occur with the proposed project or;
- The project/event could have *impacts in time (temporally)* that co-occur with the proposed project.

Two types of project were considered:

1) A list of approved and pending OCS, State Tidelands, and onshore oil-and-gas development projects in the vicinity of the Santa Ynez Unit;
2) Other non-energy activities that do or may occur in the vicinity of the Santa Ynez Unit.

The oil and gas projects described in this section include federal OCS oil and gas projects, State Tidelands, and onshore oil and gas development projects. All of the projects described are located in the Santa Barbara Channel and Santa Maria Basin offshore Santa Barbara County. Additionally included are projects located onshore on the Gaviota Coast. Please note that the timing for many of these projects is speculative and approvals may or may not ultimately occur.

3.1 Federal OCS Oil and Gas Projects

Projects Identified but not Carried Forward in the Cumulative Analysis: There were two Federal OCS oil and gas projects identified for possible inclusion in the cumulative analysis. However, the status of the projects was determined to be very uncertain at present. Thus, they do not meet the criteria for reasonably foreseeable projects as described above and have not be considered in the analysis of cumulative impacts in this EA/MND. The projects and their present status are briefly described below.

Delineation Drilling Activities Offshore Santa Barbara County: The MMS has received several applications from various oil companies for Suspension of Production (SOP) and permission for

exploration and development of new oil and gas reserves (MMS, Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, CA, Draft EIS, MMS2001-046, June 2001). These include projects related to the Rocky Point, Bonito, Sword, Santa Maria, Lion Rock, Point Sal and Purisima Units. The federal leases in this area were under suspension of operations (SOO) due to a California Offshore Oil and Gas Energy Resources (COOGER) Study. There are limited data available on most of these projects, as delineation wells are needed in order to determine if and where development could occur. Further, in June 2001, the District Court for the Northern District of California issued a decision in California v. Norton that, in effect, placed a hold on all of the proposed oil and gas development projects offshore California. The extent of the delay is unknown at this time.

Arguello, Inc. Rocky Point Project
Arguello, Inc. resubmitted an application for development of the Rocky Point Unit in August 2002. As previously mentioned, the Rocky Point Unit contains two of the leases in question and processing of the original application was halted pending a court decision on the MMS lease extensions (*California v. Norton*). The revised application involves development of the half-lease (P-0451-2) that is not involved in the *California v. Norton* litigation, and therefore processing of this application may be allowed to proceed. Arguello proposes to develop an OCS lease in the Rocky Point Unit by drilling up to 8 extended-reach wells from the three existing OCS platforms in the Point Arguello Unit, Platforms Hermosa, Harvest and Hidalgo. All of the wells would be directionally drilled using existing well slots on the platforms. Drilling of the Rocky Point Unit wells would last approximately 2-3 years with production lasting approximately 8-10 years. Oil and gas processing would occur offshore at the existing platforms with the existing equipment. Drilling and production are expected to end by 2011-2012, which would allow for the Rocky Point Unit reserves to be produced within the remaining productive life of the Point Arguello platforms, which is estimated to be concluded by the year 2015. The application has been deemed incomplete by the County pending more detailed information regarding the applicant's ability to access the reservoir.

3.2 State Tidelands Projects

Projects Identified and Carried Forward in the Cumulative Analysis: The following State Tidelands oil and gas projects do meet the criteria cited above for consideration in the analysis of cumulative impacts in this MND/EA.

Molino Project: The Molino Project, permitted by Santa Barbara County in 1996, involves the use of extended reach technology from an onshore site to recover natural gas reserves in offshore State Tidelands lease Tracts PRC 2894, 2199, and 2920. The drilling site is located just east of the Gaviota facility. It was initially forecast that the project could produce up to 60 million standard cubic feet of sales quality gas per day and up to 1050 barrels per day of natural gas liquids over a project life of 20 to 25 years. The wells drilled to date have yielded no natural gas, and it is uncertain whether any additional drilling will be conducted. The project is currently idle, and the County of Santa Barbara will determine whether decommissioning of the facility is appropriate. The permit will be revoked if an extension is not approved by the end of 2002. Decommissioning, if required, would result in increased truck and heavy equipment traffic along US Highway 101 in the Gaviota area near Las Flores Canyon.

ARCO PRC-421 Pier Remnant (Bird Island) Removal Project : ARCO plans to remove the PRC-421 (a state lease) Pier Structure located on state tidelands, approximately 400 to 900 feet

offshore the Ellwood coast. The structure is commonly known as Bird Island and is a remnant of a large pier complex that made up the Ellwood Field originally constructed in the early 1930s. ARCO has proposed to abandon the deteriorated structure because of potential safety concerns from falling debris or a catastrophic failure. The proposed project involves the removal of columns to below the mudline using externally placed explosives, as well as the removal of other structures and debris associated with the pier. ARCO anticipates that the entire project will take one to two months to complete, including mobilization and demobilization. Actual removal activities will occur within approximately two weeks. The applicant has proposed conducting field work so as to avoid gray whale migration. This project is currently undergoing environmental review and would likely take place during the construction window of the proposed project (2003-2005).

Projects Identified but not Carried Forward in the Cumulative Analysis: The following State Tidelands oil and gas projects were considered but did not meet the criteria cited above for consideration in the analysis of cumulative impacts in this MND/EA.

Nuevo Energy Company Tranquillon Ridge Project: Nuevo Energy Company and Mission Resource Corporation submitted a request to allow development (drilling and production operations) of a proposed California State Lease (Tranquillon Ridge Oil Field). The proposed Tranquillon Ridge Project would include directionally drilling up to 30 wells from Platform Irene into the State Tidelands, using extended-reach technology. The proposed project would have a life of 30 years. Reserves are estimated at 170 to 200 million barrels of oil and 40 to 50 billion standard cubic feet of gas. Oil produced from the Tranquillon Ridge Field would be processed at the Lompoc Oil and Gas Processing (LOGP) Facility. The County Planning Commission denied the project and the Board of Supervisors upheld the appeal. This project is located along the north coast of Santa Barbara County and therefore would not be likely to directly add cumulatively to impacts associated with the OPSR project. It does, however, represent cumulative and continued presence of oil and gas operations along the central/south coast of California.

Venoco Extended Field Development: Venoco has filed permit applications for a boundary extension of State Lease PRC 3242 to permit drilling into the eastern portion of the South Ellwood Field from Platform Holly, located in State waters offshore Coal Oil Point. The proposed project also includes decommissioning of most of the Ellwood Onshore Facility and all of the Marine Terminal as well as construction of a new offshore pipeline to Ventura County. One alternative of the project would include a pipeline alternative with a tie-in to the All American Pipeline system at Las Flores Canyon. This project is in the early stages of planning. If the project is approved, construction would not coincide with the proposed project.

3.3 Onshore Oil and Gas Projects – Gaviota Coast

The following onshore oil and gas projects do meet the criteria cited above for consideration in the analysis of cumulative impacts in this EA/MND.

ExxonMobil/POPCO Process Synergy Project: The Process Synergy Project was approved by the Santa Barbara County Planning Commission in July 2001. The project involves integrating the POPCO and more modern ExxonMobil gas plants. However, this project has been delayed due to design complications. ExxonMobil engineers are currently redesigning the project and

anticipate resubmittal later in 2003. Construction would be expected to occur between Fall 2003 and Spring 2004. This project could add to traffic impacts to and from Las Flores Canyon.

ARCO Alegria Project*:* In July 2002, ARCO Environmental Remediation LLC received approval from Santa Barbara County Planning Commission for the decommissioning of ARCO's Alegria facility and associated onshore piping located within the Gaviota Marine Terminal. The permits authorize ARCO Environmental Remediation LLC to remove above and belowground structures associated with the Alegria Facility and to perform site assessment, remediation and restoration. The project is located approximately 7 (13 km) miles west of Las Flores Canyon. The project is expected to begin in 2002 and be completed within 18 months.

Unocal Cojo Point Conception Project: Santa Barbara County has approved Unocal's request to remove all near-surface foundations and pipelines and to excavate and remediate hydrocarbon contaminated soils and subsurface plumes under the Phase II Abandonment Plan. The project location is approximately 30 miles west of Las Flores Canyon. Work is expected to start and be completed in 2003.

Reconfiguration of Point Arguello Gaviota Facility: Arguello, Inc. and ChevronTexaco resubmitted an application to Santa Barbara County in 2002 for the removal of excess equipment at the Gaviota Processing Facility. The project was approved by the Planning Commission in June 2002, and will be conducted in three phases. Phase 1 (approximately 3 months in duration) will reduce the visual profile of the facility by taking down the tallest items of equipment that are most visible from Highway 101. Phase 2 (approximately 3 years in duration) will remove all saleable process equipment. During Phase 3 (approximately 10 months in duration), the remainder of the excess process equipment will be removed from the site. The project is located approximately 7 miles (13 km) west of Las Flores Canyon. Work is underway and is expected to be completed in 2015.

Dos Pueblos Golf Links Project: The proposed Dos Pueblos Golf Links project site is located along the coastal bluff, approximately 10 miles (16 km) east of Las Flores Canyon. The project site was used for oil and gas development and production by ARCO from 1928 through 1997. The applicant proposes to construct an 18-hole links style golf course and 9-hole par 3 course and related development.

Following issuance of County project approvals in 1991 and 1998, the construction of the ARCO Dos Pueblos Golf Links project has been on hold for 3 years pending resolution of appeals filed at the CCC in January 1999. However, the developer's recent acquisition of federal permits to address the issues of the appeals has again placed the project before County and State agencies. Construction could begin as early as 2003 and would take 1-1.5 years to complete.

GREKA Las Flores Canyon / Erburu Lease Well Abandonment Work: Greka is working with the Santa Barbara County Petroleum Office and the State Department of Gas and Geothermal Resources to abandon the El Capitan onshore field. The majority of the project is located adjacent to Las Flores Canyon to the east; however, some of the work yet to occur is located in Las Flores Canyon. Work is currently underway and is expected to be completed in 2003.

3.4 Other Energy and Non-Energy Activities

The following other energy and non-energy activities do meet the criteria cited above for consideration in the analysis of cumulative impacts in this MND/EA.

Existing Federal OCS Operations: There are 79 existing Federal OCS leases offshore California. Forty-three of the leases are developed and 36 are undeveloped. There are 23 oil and gas platforms located on the Federal OCS. The majority of the platforms (19) are located off the coast of Santa Barbara County and Ventura County. A total of 38 fields have been discovered in the California OCS, including 14 fields in the offshore Santa Maria Basin, 22 fields in the Santa Barbara Channel, and 2 fields in the offshore Los Angeles Basin.

As of December 31, 1998, daily production from 12 producing fields was 127 thousand barrels of oil and 145 million cubic feet of gas, and a total of 915 million barrels of oil and 873 billion cubic feet of gas had been produced. Remaining reserves in the 79 active leases are estimated to be 1,586 million barrels of oil and 1,857 billion cubic feet of gas; these estimates include 337 million barrels of oil and 1,078 billion cubic feet of gas in developed leases and 1,249 million barrels of oil and 779 billion cubic feet of gas in undeveloped leases.

Operational impacts associated with the development and production of oil and gas resources from these existing facilities have been fully analyzed, mitigated and permitted by applicable Federal, State and local authorities.

The risk of an oil spill from the existing OCS facilities have previously been individually and cumulatively analyzed, and reviewed (MMS, 2001; SAIC 1984a). Oil spill response planning as required by MMS has been implemented and is currently in place. Oil spill prevention and response efforts offshore California are coordinated between the MMS and the California Office of Oil Spill Prevention and Response (OSPR). Among other measures, this coordination provides for the sharing of technical expertise in drilling, production, pollution prevention, and other related areas of offshore operations and safety.

Offshore Tankering Operations*:* Oil spills resulting from vessel collisions and other marine transportation-related accidents have the potential to cause significant impacts on the marine, coastal, and human environments, and contribute to cumulative environmental risks. Marine transportation of Alaskan and foreign-import oil is an activity that occurs offshore California. In 2000, 877 oil tankers visited the ports of Los Angeles/Long Beach and El Segundo. Of these tankers, 192 were U.S. flagged and 685 were foreign flagged (R. Crispino, marine Exchange, pers. comm., March 2001). U.S. flagged oil tankers voluntarily stay off the coastline 50 miles, thus avoiding the Santa Barbara Channel altogether.

Marine Vessel Traffic: Traffic in and near the Santa Barbara Channel is generated by the Ports of Los Angeles, Long Beach, and Port Hueneme and by the anchorages of Gaviota, Santa Barbara, Carpinteria, Ventura, Mandalay Beach, and El Segundo (ADL, 1984). Approximately 93 percent of the vessels in the Santa Barbara Channel use the Vessel Traffic Separation Scheme (VTSS) (ADL, 1984). This is an internationally sanctioned set of traffic lanes that has been established for marine safety. The lanes in the Channel are 1 nautical mile wide and the separation zone is 2 nautical miles. The estimated annual traffic through the Santa Barbara Channel VTSS is 6,000 vessel movements (U.S. Navy, 2000). The Santa Barbara Channel is also extensively used by smaller commercial, fishing, and recreational vessels.

Military Operations and Commercial Space Launches: The Santa Ynez Unit is located in the vicinity of the Naval Air Warfare Center Weapons Division (NAWCWD) Point Mugu Sea Range (PMSR). The PMSR covers a 36,000 square-mile (93,240 sq km) area offshore San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties. The PMSR currently supports test and evaluation of sea, land, and air weapons systems as well as various categories of training activities. The NAWCWD has recently proposed to expand operations in the PMSR and has prepared a Draft Environmental Impact Statement/Oversea Environmental Impact Statement (DEIR/OEIS) for the proposal (Department of the Navy, 2000), which provides a detailed discussion of the operations conducted in the PMSR. The operations include missile testing, and training exercises including fleet, amphibious, and special warfare training. The PMSR has been operated by the Department of the Navy for more than 50 years.

Commercial Fishing Activities: Commercial fisheries off southern and central California date back to the mid-nineteenth century. Commercial fishing occurs at various locations of the coast of southern and central California. The nearshore waters along the coast and the waters just off the Channel Islands contain giant kelp beds that provide habitats for numerous species of commercially important fish and shellfish species. The majority of fish are caught within these areas.

Fishes in southern and central California waters support important commercial and recreational fisheries; more than 100 species appear in the catches. The commercial landings at southern and central California ports account for about 4 percent of the total U.S. catch (approximately 2.7 x 10^9 kg, or 6 x 10^9 lb). Los Angeles area ports rank among the top 10 ports in the U.S. in quantity and value of commercial catch. Recreational fishermen in southern and central California land about 60 percent of the total recreational catch in California, or about 5 percent of the total U.S. recreational landings. More than 80 percent of this catch is made by fishermen on private and commercial passenger vessels.

About 64 commercial fish and shellfish species are fished using up to 15 gear types, the most common of which are trawl, drift and set nets, purse seines, traps, and hook-and-line gear. Troll gear, harpoons, and diving are also common in certain areas of southern and central California. Many fishers in the area do not fish for a single species or use only one gear type. Most switch fisheries during any given year depending on the market demand, prices, harvest regulations, weather conditions, and fish availability. There are 12 major ports between San Diego and Point Sur that provide more than 1,500 commercial fishing berths.

Point Source Discharges: Six Publicly Owned Treatment Works (POTWS), or sewage treatment plants discharge treated effluent to the Santa Barbara Channel. These are all small dischargers according to EPA criteria (less than 25 million gallons [95 million liters] discharged per day), whose effluents are at a mixed primary/secondary level of treatment (SCCWRP, 1996). In addition several power plants spaced along the coastlines of southern Santa Barbara and Ventura counties do discharge heated water, and some chlorine is used to prevent fouling of heat exchangers. Venoco has an ocean outfall line off the coast of Ellwood where treated produced water from the Ellwood Onshore Facility is discharged under a Regional Water Quality Control Board permit.

Non-Point Source Water Ocean Discharges: Urban and storm water runoff is the largest source of unregulated pollution to waterways and coastal areas of the United States. Locally, urban and storm runoff results in an increase in health risks to swimmers near storm drains, high concentrations of toxic metals in harbor and ocean sediments, and toxicity to aquatic life. Storm water runoff from urban areas is a major source of pollution in the coastal waters of the Southern California Bight (SCB) (CCC, 2002). Because runoff is an untreated pollution source, it contains high concentrations of contaminants and is a significant health hazard to humans. The SCB has multiple sources of nutrients, particulates and contaminants that discharge into the coastal ocean, including submerged outfalls, rivers, creeks, storm drains, atmospheric inputs, ocean dumping, and advection (Anderson et al., 1993).

The runoff systems in southern California are different from those in other areas because the flow is mostly confined to the winter months. Over the dry months, contaminants accumulate in the flow systems and are then released as pulses when winter storms strike. During winter storms, these drainage systems release most of the fresh water that flows into the coastal ocean.

4.0 POTENTIALLY SIGNIFICANT EFFECTS CHECKLIST

The 1984 Santa Ynez Unit/Las Flores Canyon Development and Production Plan Final Environmental Impact Statement/Report and Supplemental EIS/EIR (83-EIR-22) provide a comprehensive analysis of the environmental impacts associated with the development of oil and gas resources in the project area. The EIS/EIR included a detailed analysis of impacts associated with the construction of up to four platforms (Platform Heather was never constructed), pipelines and the onshore Las Flores Canyon facilities.

The resources analyzed in the EIS/EIR included: air quality, climatology and meteorology, geology, surface water, groundwater, cultural resources, terrestrial biology, marine biology, socioeconomics (which included regional growth, tourism, recreation, aesthetics, land use, energy, noise, traffic and commercial and recreational fishing), system safety and reliability, physical oceanography and marine water quality.

Santa Barbara County and the MMS conducted a coordinated review to identify the resources that have the potential to be impacted by the proposed project. As part of this Draft Mitigated Negative Declaration/Environmental Assessment, all of the key issue areas covered by the Santa Barbara County Environmental Threshold and Guideline Manual (with 1995 and 1996 updates) were reviewed to determine which issue areas could possibly be impacted as a result of the implementation of the offshore portion of the project. These issue areas include geologic processes, water resources/flooding, transportation/circulation, air quality, biological resources, archaeological resources, ethnic resources, historic resources, noise, land use, public facilities, energy, fire protection, recreation, aesthetics/visual resources, housing, and risk of upset/hazardous materials. Significance criteria for assessing impacts are outlined in each section.

The following issue areas were identified as having the most potential of being affected by the offshore portion of the proposed project:

- Air Quality
- Marine Biological Resources (including Essential Fish Habitat and Benthic Resources)

- Risk of Upset/Hazardous Materials

As with the offshore analysis, all of the key issue areas were reviewed to determine which issue areas may be impacted as a result of the proposed project to onshore resources. As a result of that review, the following issue areas were identified as having the most potential of being affected by the onshore portion of the proposed project:

- Fire Protection
- Risk of Upset/Hazardous Materials

The discussion on marine biological resources is divided into several focused sections. These include Essential Fish Habitat, White Abalone, Benthic Resources, and Marine Mammals. The purpose is to facilitate the federal consultation process with the U.S. Fish & Wildlife Service and National Marine Fisheries Service.

4.1 Aesthetics/Visual Resources

4.1.1 Environmental & Regulatory Setting

Onshore: The existing onshore oil and gas processing facilities are located in Las Flores Canyon along the Gaviota Coast, approximately 20 miles (32 km) west of the City of Santa Barbara. The processing facilities are screened from public view by the topography of the canyon. In addition, the nearest public roads, Calle Real and US Highway 101, are located approximately 2 miles (3.2 km) south of the facilities. The LFC lower parking lot, guard shack and principal areas of onshore excavation for the proposed project, however, are visible from US Highway 101 and Calle Real. South of US Highway 101 and the UPRR railroad tracks, a manhole exists providing access to the tunnel. The manhole and signs indicating the presence of the pipelines and power cables are visible to recreationalists walking or riding along the bike path and beach goers in the area. The onshore facilities were considered a Class II and III visual impact in the original project EIR (84-EIR-22).

Offshore: The existing offshore facilities consist of three platforms located in federal waters, between 5 and 8 miles (8 to 13 km) offshore. In addition to the platforms, there are numerous subsea cables and pipelines. The pipelines and power cables are buried beneath the surf zone and are therefore not visible from the beach area. The platforms were considered a Class I visual impact in the original project EIR (84-EIR-22). Pursuant to their County-issued Final Development Plan permit, ExxonMobil contributes to the Santa Barbara County Coastal Resources Enhancement Fund annually to help mitigate visual impacts from two of their three platforms (Harmony and Heritage).

4.1.2 Project Impact Assessment

The classification of a project's visual or aesthetic impacts as beneficial or adverse, and insignificant or significant, is subject to personal and cultural interpretation. Assessing the visual impacts of a project involves two major steps. First, the visual resources of the project site must be evaluated. Important factors in this evaluation include the physical attributes of the site, its relative visibility to the public and its relative uniqueness. In terms of visibility, four types of areas are especially important: coastal and mountainous areas, the urban fringe and travel corridors. Second, the potential impact of the project on visual resources located onsite and on views in the project vicinity that may be partially or fully obstructed by the project must be

determined. Determining compliance with local and state policies regarding visual resources is also an important part of visual impact assessment. Based on these criteria, the proposed project would not create significant impacts on visual resources.

The project would not generate any long term adverse impacts to aesthetic or visual resources nor would impacts to the visual character of the area (scenic Gaviota coast) be exacerbated. Potential impacts caused by the proposed project would be temporary and would be primarily limited to offshore construction vessels and night lighting. Work is proposed to occur 24 hours per day on the platforms and vessels. Construction activities would be expected to last 4 to 8 weeks. Onshore work activities would normally occur during daylight hours except for operational shut down periods when work would be continuous. Night glare from vessel lighting and construction equipment would be visible to the public. All new structures would be located on the seafloor, within an existing underground tunnel or within previously developed areas of the canyon.

Onshore work would be limited to previously disturbed areas of the canyon. The only portion of construction activity that would be visible to the public (along Calle Real and US Highway 101 northbound) would be excavation in the lower canyon. The proposed project would be visually compatible with the height, scale and design of the existing facility. All impacts would be temporary.

4.1.3 Mitigation Measures

To minimize impacts to the maximum extent feasible, the following mitigation measure is recommended:

VIS-1: Shielding or re-aiming lights to minimize glare from night lighting shall be utilized onshore and on vessels offshore when within 0.5 mile from shore unless such shielding would conflict with US Coast Guard requirements. Enforcement Agency: SLC, SBC

Residual impacts would be temporary and insignificant.

4.1.4 Cumulative Impacts

The proposed project would not extend the life of the project and therefore would not prolong the Class I impacts caused by the existing platforms. There are no cumulative impacts associated with the project.

4.1.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. Implementation of Alternative A would decrease the duration of the project-related activities by approximately one day. This would be expected to result in a very minor decrease in potential impacts on visual resources below those of described for the proposed project. Due to the temporary nature of the project, impacts to visual resources would not be significant. The removal of the failed cable at the end of the SYU project life (2020 to 2030) would take approximately one week due to the economy of removal of other SYU offshore facilities. There would be no changes in onshore impacts. Impacts could occur during the decommissioning of the SYU facilities. The project will undergo detailed CEQA and NEPA review at the time of decommissioning.

Alternative B - Removal of Failed OCS Cable
Implementation of Alternative B would increase the duration the project-related impacts by approximately 2 to 3 weeks with a separate DP barge mobilization effort occurring (sometime between 2003 and 2007). Impacts to visual resources would be like those described for the proposed project though slightly greater due the presence of construction and equipment vessels offshore necessary to remove the failed cable on the OCS. There would be no changes in onshore impacts. Overall, impacts to visual resources for Alternative B would be temporary and less than significant.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. Under this alternative, ExxonMobil would not install new power cables or remove the failed cable at this time. The failed cable would be removed, along with other SYU facilities sometime between 2020-2030, at the end of the project life. Therefore, under Alternative C, there would be no aesthetic or visual impacts at this time. Impacts could occur during the decommissioning of the SYU facilities. The project will undergo detailed CEQA and NEPA review at the time of decommissioning.

4.2 Agricultural Resources

4.2.1 Environmental and Regulatory Setting

The portion of the project site that is not developed with oil and gas-related facilities is zoned for agricultural use (AG-II-320). Leased property in the lower canyon is currently utilized as an avocado orchard.

4.2.2 Project Impact Assessment

The project involves the replacement of an offshore power cable with onshore work limited to the already developed lower canyon area. No agricultural land would be taken out of use if the proposed project is implemented. There would be no effect upon any state or local farmlands. Onshore work would be limited to the footprint of existing development.

4.2.3 Mitigation Measures

No mitigation measures are required.

4.2.4 Cumulative Impacts

The project would not contribute to cumulative impacts to Agricultural Resources.

4.2.5 Alternatives Analysis

None of the alternatives would have an effect on onshore Agricultural Resources.

4.3 Air Quality

4.3.1 Environmental and Regulatory Setting

The proposed project is located in the OCS, offshore Santa Barbara County within the South Central Coast Air Basin. The climate, meteorology, air quality, and air quality trends of the Santa Barbara County area have been described in detail in several planning and environmental documents and are best summarized in the Santa Barbara County 2001 Clean Air Plan (CAP) (SBCAPCD, 2001). Santa Barbara County can be described as having a Mediterranean climate, characterized by warm, dry summers and cooler mildly damp winters. The unique combination of prevailing wind conditions generated by a persistent offshore high pressure system and the

topography of coastal mountains results in variations of airflow are conducive to the formation and retention of air pollutants.

The Federal Government has established ambient air quality standards to protect public health (primary standards) and, in addition, has established secondary standards to protect public welfare. The State of California has established separate, more stringent ambient air quality standards to protect human health and welfare. California and National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter 10 microns (PM_{10}), suspended particulate matter 2.5 microns ($PM_{2.5}$) and lead. In addition, California has standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

The Federal attainment status of Santa Barbara County is found in 40 CFR 81.305. Currently, Santa Barbara County is in attainment of all the National Ambient Air Quality Standards except the 1-hour ozone standard. Santa Barbara County is presently classified as a "serious" nonattainment designation for the ozone standard. The SBCAPCD Board of Directors adopted the 2001 CAP in November of 2001, which includes a request for the EPA to redesignate the County as a 1-hour ozone standard attainment area due to Santa Barbara County not violating the one-hour federal ozone standard for the three year period 1997-2000. The CAP includes an approved Maintenance Plan for the Federal 1-hour ozone standard as well as providing for attainment of the 1-hour state ozone ambient air quality standard at the earliest practicable date and demonstration that the County will continue to attain the federal standard through 2015. Santa Barbara County is also considered a nonattainment area for both the California ozone and 24-hour PM_{10} air quality standards.

Section 328 of the 1990 Clean Air Act Amendments (CAAA) transfers authority for air quality on the OCS to the EPA. On September 4, 1992, the EPA Administrator promulgated requirements (40 CFR Part 55) to control air pollution from OCS sources to attain and maintain Federal air quality standards and to comply with CAAA provisions for the Prevention of Significant Deterioration. The promulgated regulations require OCS sources to comply with applicable onshore air quality rules in the corresponding onshore area (COA). The EPA delegated authority to the SBCAPCD on November 5, 1993 to implement and enforce the requirements of 40 CFR Part 55. The full transfer of authority to SBCAPCD to regulate OCS air emissions pursuant to 40 CFR Part 55 transpired on September 4, 1994. The SYU Platforms Harmony, Heritage, and Hondo are currently permitted and within the jurisdiction of the SBCAPCD.

The following documents provide discussion of air quality impacts associated with SYU Project activities. The references are organized in chronological order from the original SYU Project through the subsequent SYU Project modifications and may be referenced for additional information. Various Authority to Construct (ATC) permits and Permits to Operate (PTO) have been issued by the SBCAPCD regarding SYU modifications and operations. As these permits are regulatory authorizations and do not contain discussions of air quality impacts, they have not been incorporated in this chronology and may be further referenced by contacting SBCAPCD offices.

Original SYU DPP -- Exxon, 1982. Details on the original SYU Development and Production Plan (DPP) are discussed in Exxon (1982a). The Environmental Report (Exxon 1982b)

submitted at the same time as the DPP performed an analysis of air quality as required by MMS regulations.

An Environmental Impact Statement/Report (EIS/R) (SAI, 1984a) was prepared to evaluate the effects of the DPP and potential alternatives. An air quality analysis on the proposed OCS development and potential alternatives was also prepared (SAI, 1984b).

SYU DPP Project Modifications -- Exxon, 1985. The modifications proposed for the SYU Project in 1985 are discussed in Exxon (1985). The only modification that had any effect on air quality was the proposed moving of the Single Anchor Leg Mooring (SALM) from 5,000 feet (1,520 meters) to 14,000 feet (4,300 meters) offshore.

SYU DPP Project Modifications -- Exxon, 1987. On June 10, 1987, Exxon applied to the SBCAPCD for an ATC permit. The application was based on a Final Development Plan resulting from negotiations between Exxon and Santa Barbara County. The modifications to the project schedule reduced the estimate of peak air emissions due to construction activities.

The Supplemental EIR (ADL, 1986), concluded that project emissions of the precursor pollutants, NOx and ROC, could result in significant increases in ozone. These potential impacts were addressed through Exxon's commitment of appropriate NOx and ROC offsets.

An EA (MMS, 1988) was prepared on the 1987 modifications to the approved 1985 DPP. The EA noted the finding in the 1987 ATC 5651 (SBCAPCD, 1987) of a net air quality benefit for Santa Barbara County as a result of modifications to the DPP and that the effects of the DPP modification on onshore air quality would be insignificant.

SYU DPP Project Emissions Revision -- Exxon, 1991. Changes in the proposed equipment (primarily marine vessels and barges) and schedule for construction of the platforms prompted a review by the County of all the construction activities planned for the OCS region.

An EA (MMS, 1991) was prepared to analyze the proposed modifications to the SYU pipeline and power cable development activities in the revised DPP. The EA noted that through the use of emission offsets and mitigation measures, the project would result in a net air quality benefit to the county and would not have significant effects on air quality.

SYU OS&T Abandonment EA -- MMS, 1994. An EA (MMS, 1994) was prepared to assess the environmental impacts associated with the abandonment and removal of Exxon's Offshore and Storage Treatment Vessel (OS&T). The EA concluded that through Exxon's commitment of NOx and ROC offsets and specific mitigation measures, the project would result in a net air quality benefit to the county and that environmental effects concerning air quality were considered insignificant.

3-D Seismic Survey EA -- MMS, 1995. An EA (MMS, 1995) was developed to assess the environmental impacts associated with conducting a 3-D seismic survey on the SYU Unit. The EA concluded that through Exxon's commitment of NOx and ROC contemporaneous offsets and specific conditions of compliance with ATC permit 9429, the project would result in a net air quality benefit to the county and that environmental effects concerning air quality were considered insignificant.

Platform Heritage to Platform Harmony Pipeline Project EA -- MMS, 1997. An EA (MMS, 1997) was developed to assess and evaluate the environmental impacts associated with the installation of an approximate 7-mile gas pipeline between Platforms Heritage and Harmony. The EA concluded that the proposed project would be monitored to ensure that the project fall below emission thresholds of 25 tons per year of any affected pollutant set for equipment used in pipelaying operations as provided in SBCAPCD Rule 201.D.2. Emissions from the operational phase of the project were fully offset to result in a net air quality benefit to Santa Barbara County. Therefore, environmental effects to Santa Barbara County air quality from the proposed project were considered insignificant.

SBCAPCD Rules and Regulations
The SBCAPCD does not require a permit for engines used in construction activities. However if the combined emissions from all construction equipment used have the potential to exceed 25 tons of any pollutant (except carbon monoxide) in a 12-month period emission offsets would be required pursuant to SBCAPCD Rule 804. Notwithstanding the exemption for construction activities, equipment used for dredging of waterways, pile-driving adjacent to or in waterways or pipe-laying and derrick barges are subject to permit when the potential to emit of such equipment is equal to or greater than 25 tons of any affected pollutant during any consecutive 12 month period. The SBCAPCD has made the determination that power cable laying projects fall under the construction exemption and exclusion provision applicable to pipe-laying derrick barges.

SBCAPCD rules do not exempt the requirement to obtain permits for equipment used to demolish/remove any part of, or the entire stationary source. Consistent with California Health and Safety Code Section 42301.13(a), demolition/removal activities are exempt from the SBCAPCD requirement to obtain emission offsets.

Table AQ-1 provides a summation of the Santa Barbara County APCD threshold requirements relating to the application of Best Available Control Technology (BACT), Air Quality Impact Analysis (AQIA), and emission offsets.

Table AQ-1
Santa Barbara County APCD BACT, AQIA, and Emission Offset Requirements

BACT Requirements	$\geq$ 25 lbs./day for any non-attainment pollutant (except CO) $\geq$ 150 lbs./day for CO, based on Potential to Emit
AQIA Requirements	$\geq$ 120 lbs./day for any non-attainment pollutant; $\geq$ 550 lbs./day for CO; $\geq$ 80 lbs./day for PM_{10}, based on Net Emissions Increase
Offsets Requirements	$\geq$ 55 lbs./day or $\geq$10 tons/yr. for any non-attainment pollutant; $\geq$ 150 lbs./day or $\geq$25 tons/yr. for CO; $\geq$ 80 lbs./day or $\geq$15 tons/yr. for PM_{10}, based on Net Emissions Increase

Construction Emissions
Significance criteria have not been presently established by either Santa Barbara County or the SBCAPCD for short-term construction emissions. Emissions from construction operations are normally considered to be of short duration and are typically below 25 tons per year of any criteria pollutant**.** The SBCAPCD generally considers air quality impacts from a construction

project to be significant if the project emissions of any criteria pollutant exceed 25 tons in a 12-month period.

Operations Emissions
Santa Barbara County, as the lead agency under CEQA, considers the subject project as a temporary construction project. Therefore, the County-adopted significance criteria for operational emissions of 25 lbs/day does not apply to this project.

SBCAPCD has determined that a permit is required for the cable retrieval portion of the project. The following significance criteria would apply as provided in the Environmental Review Guidelines for the Santa Barbara County Air Pollution Control District (revisions adopted by the APCD Board on Nov. 16, 2000) (SBCAPCD, 2000).

"A proposed project will not have a significant air quality effect on the environment, if: Operation of the project will:

- Emit (from all project sources) less than the daily trigger for offsets set in the APCD New Source Review Rule, for any pollutant[5]; and
- Emit less than 25 pounds per day of NOx or ROC from motor vehicle trips only; and
- Not cause or contribute to a violation of any California or National Ambient Air Quality Standard (except ozone); and
- Not exceed the APCD health risk public notification thresholds adopted by the APCD Board; and
- Be consistent with the adopted federal and state Air Quality Plans".

4.3.2 Project Impact Assessment
Emissions resulting from the proposed power cable installation may have a potential to increase concentrations of pollutants onshore. The primary regulated pollutants of concern in Santa Barbara County are oxides of nitrogen (NOx) and reactive organic compounds (ROC). Both NOx and ROC are considered precursors to ozone formation, for which Santa Barbara County is in nonattainment. The major pollutant of concern associated with projects of this type and duration are NOx emissions due to the extensive use of propulsion and stationary combustion equipment. There is a potential for NO_2 standard violations to be caused by NOx emissions from this project.

Cable Removal and Installation Impacts 2002-2005
As described in Section 2.0, the proposed project would involve the removal of approximately 5 miles (8 kilometers) of failed power cable and installation of 21 miles (33 kilometers) of new cable in the vicinity of the SYU project facilities. This section analyzes impacts to air quality that

[5] When the SBCAPCD significance thresholds were adopted by the SBCAPCD Board of Directors in 1995, the New Source Review triggers for emission offsets were 240 lbs./day for NOx and ROG. The NSR rule was modified in 1997 and NOx and ROG offset triggers were changed to 55 lbs./day. The Santa Barbara County Counsel has opined that until the significance thresholds are revisited by the Board of Directors, the NSR triggers in effect at the time the significance thresholds were adopted (i.e., 1995) are appropriate.

would be expected to occur as a result of cable removal and installation activities. Impacts that could occur from removal of the new cables (C1 and D1) and the remaining failed cable (Cable C) at the end of SYU life are analyzed in the following section.

The applicant provided an Emission Basis Report (EBR) containing equipment specifications and emission estimate information specific to the proposed project, including both offshore and onshore equipment.

The emission estimates were based on five phases for the proposed project: pre-project surveys, cable removal / path clearance, cable installation, cable laying, and post-project surveys. Based on information contained in the report, the construction phase of the project involving installation and laying of the power cable are the only phases of the project that would result in additional SYU emissions. The project phases would be scheduled to occur in mostly sequential progression with all phases assumed to occur over a 2-3 month period. The projected emissions from the proposed project would result primarily from the main diesel engines of the cable-laying vessel and additional incidental emissions from stationary equipment on the vessel.

The proposed cable lay vessel for the project is the Giulio Verne. The Giulio Verne is a Dynamically Positioned (DP) Italian flagged lay vessel. Additional offshore equipment includes associated cable laying engines and generators, support equipment, supply and support vessels, and helicopter usage. Emission estimates were based on the reasonable worst-case operation of each activity. Vessel days on-station would be expected to range from 14-21 days for all vessels including contingency times for weather and other activity delays over a 2-3 month period. Expected duration of the DP vessel on-station to install the power cable and remove the portion of the existing failed cable from the shore up to the shelf break (approximately up to the 3-mile limit line) is estimated at approximately 7 days. The duration of the cable retrieval operation is expected to be approximately one day.

Information contained within the EBR was provided to the SBCAPCD to determine expected emissions and permit applicability to SBCAPCD Rules and Regulations. Information within the EBR formed the basis of this analysis and can be referenced as necessary at SBCAPCD offices. Rule 202 .F. provides specific permit exemption criteria for internal combustion engines used during various operations. Rule 202.F.3 relates to construction activities exempt from obtaining a permit if the total emissions are below 25 tons per year of any affected pollutant (except carbon monoxide) during any consecutive 12 month period and additionally provides that emission offsets must be obtained if that level is exceeded. The 25-ton emission limitation is the level below which the SBCAPCD considers that construction projects will result in insignificant air quality impacts. SBCAPCD considers the cable laying portion of the proposed project to be a construction activity and thus exempt from permit if the Potential to Emit of the DP vessel is below 25 tons per year.

The removal of the existing failed cable up to the shelf break is considered a “demolition” project and would require an SBCAPCD permit. The cable retrieval would be subject to SBCAPCD permitting Rules and Regulations including BACT but would not need to provide offsets consistent with California Health and Safety Code Section 42301.13(a). The SBCAPCD considers these emissions to be "demolition" not “construction” emissions. Prior to issuing the APCD permit, the NOx and ROG emissions above the operational significance threshold of 240

pounds per day would need to be mitigated in order to bring the impacts to a level of insignificance.

DP Cable Lay Vessel Giulio Verne. The Giulio Verne has 5 main diesel engine-generators that produce electrical power to drive the propulsion, DP and other operating systems. For the proposed project, only three engines would be in service. Each engine is rated at 2,200 bhp and has electronic controls, turbochargers, aftercoolers, and high-pressure injectors for controlling NOx emissions. Additional cable lay engines are rated at 675 bhp, two at 218 bhp and a backup engine to operate the winch at 120 bhp. These engines are equipped with NOx controls including turbocharging, aftercoolers and high-pressure injectors. The applicant would submit an Emissions Reporting Plan detailing the internal combustion engines used, the duration of their use, the fuel consumed, and the calculated emissions 60 days prior to project commencement. The plan is intended to ensure that the potential to emit for the equipment on the DP Lay vessel is less than 25 tons per 12 month period by providing limitations on vessel equipment and project duration. Peak construction and cable removal emissions for the Giulio Verne and support vessels are presented in Table AQ-2.

Support Vessels. Additional support vessels have been proposed for the various project phases and surveys. The primary support vessel would be the M/V American Patriot with the main engines equipped with four degree timing retard, turbocharging, and enhanced intercooling for NOx emission control. Additional on board ancillary equipment do not have NOx emission controls.

The pre-installation shallow water survey would utilize the M/V Chart Maker with NOx controls including direct fuel injection, exhaust turbocharger and an aftercooler. The marine biological survey would utilize the M/V Solera that controls NOx emissions through turbocharging, intercooling and electronically controlled fuel injection. The surveys would be expected to last between 1-2 days each.

Support vessels for the installation phase include the dive support vessel M/V Truth with NOx control equipment including turbocharging, intercooling and electronically controlled fuel injection. The M/V Casitas would be used for ROV survey and support and is not equipped with NOx emission controls. The M/V Deanna Lee would provide side scan sonar support and is not equipped with NOx emission controls. An as yet to be identified tugboat will also be utilized for correct anchor placement and it is conservatively assumed that it is not equipped with controls for NOx. Table AQ-2 includes the emission estimates for the support vessels for the various project phases.

The estimated peak hour NOx emissions from the SYU OCS construction was modeled in the 1987 ATC (SBCAPCD, 1987) to determine onshore impacts and was used for comparative analysis in the 1991 DPP Revision and subsequent EA (MMS, 1991). The jacket installation phase of the construction was modeled as it represented the largest estimated peak hour NOx emissions (721 lbs./hr). Model results show that neither the California or Federal NO_2 standard would be violated. Additionally, the modeled data was further verified by no exceedances of this standard occurred at any of the monitoring sites in Santa Barbara County (SBCAPCD, 1991) during the June 1989 jacket launch for the Harmony platform or October 1989 jacket launch for Heritage. In addition, no exceedances of the annual NO_x standard occurred at the applicable monitoring sites (SBCAPCD, 1991).

Table AQ-2 Estimated Peak Construction Emissions

Project Phase	NO_X	ROC	CO	SO_X	PM	PM_{10}
Peak Hourly (lbs./hr)						
Pre-Project Surveys	32.2	1.9	5.7	0.4	2.3	2.2
Cable Removal/Path Clearance	50.0	3.0	9.2	0.6	3.4	3.2
Cable Installation	70.5	9.1	23.1	1.2	5.9	5.7
Cable Laying	103.0	10.3	28.0	1.5	7.9	7.6
Post-Project Surveys	1.6	0.2	0.6	0.1	0.3	0.2
Cable Retrieval – Shelf Break	169.4	24.3	60.6	11.7	14.2	13.6
Total Hourly Emissions*	**426.7**	**48.8**	**127.2**	**15.5**	**34.0**	**32.5**
Peak Daily (lbs./day)						
Pre-Project Surveys	663.9	37.6	113.3	9.0	47.1	45.4
Cable Removal/Path Clearance	419.0	26.4	79.5	5.1	28.6	27.5
Cable Installation	1,605.1	211.7	534.4	26.4	134.7	129.4
Cable Laying	1,689.2	208.3	536.2	27.3	137.5	132.2
Post-Project Surveys	19.3	1.8	7.5	0.6	3.0	3.0
Cable Retrieval – Shelf Break	3,388.2	486.5	1,212.5	234.0	283.4	272.2
Total Daily Emissions*	**7,784.7**	**972.3**	**2,483.4**	**302.4**	**634.3**	**609.7**
Peak Quarterly (tpq)						
Pre-Project Surveys	2.1	0.1	0.4	0.0	0.2	0.2
Cable Removal/Path Clearance	2.0	0.1	0.4	0.0	0.2	0.2
Cable Installation	7.4	0.9	2.3	0.1	0.3	0.3
Cable Laying	3.8	0.5	1.2	0.1	0.3	0.3
Post-Project Surveys	0.0	0.0	0.0	0.0	0.0	0.0
Cable Retrieval – Shelf Break	1.7	0.2	0.6	0.1	0.1	0.1
Total Quarterly Emissions	**17.0**	**1.8**	**4.9**	**0.3**	**1.1**	**1.1**
Peak Annual (tpy)						
Pre-Project Surveys	2.1	0.1	0.4	0.0	0.2	0.2
Cable Removal/Path Clearance	2.0	0.1	0.4	0.0	0.2	0.2
Cable Installation	7.4	0.9	2.3	0.1	0.3	0.3
Cable Laying	3.8	0.5	1.2	0.1	0.3	0.3
Post-Project Surveys	0.0	0.0	0.0	0.0	0.0	0.0
Cable Retrieval – Shelf Break	1.7	0.2	0.6	0.1	0.1	0.1
Total Annual Emissions	**17.0**	**1.8**	**4.9**	**0.3**	**1.1**	**1.1**

* total hourly and daily emissions for all sequential phases added together

Comparison of the peak hour modeled emissions to the proposed project highest emitting phase peak NOx emissions (169.4 lbs/hr) show that the peak hour emissions would be considerably less than those previously analyzed. Table AQ-3 displays the estimated peak hour emissions for the projects.

Table AQ-3 Peak Hour Emissions

Peak Hour Emissions (lbs./hr)	NOx	ROC	SO_2	CO	PM	PM_{10}
Proposed Project (Retrieval Phase)	169.4	24.3	60.6	11.7	14.2	13.6
1987 ATC 5651 Jacket Installation	721.0	16.0	36.0	111.0	33.0	31.0

A comparison of the projected worst case emissions for the proposed project to the previously analyzed SYU pipeline emissions in the SYU DPP Revisions is displayed Table AQ-4. The projected worst case power cable laying phase NOx emissions of 17.0 tons would be considerably less than the previously analyzed 323.6 tons of NOx emissions in the 1991 EA and would therefore not be expected to result in any exceedences of either the California or Federal NO_2 ambient air standards. Therefore, significant impacts on air quality would not be expected as a result of the proposed power cable repair project.

Table AQ-4 Total Emissions

Total Emissions (tons)	NOx	ROC	SO_2	CO	PM	PM_{10}
Proposed Project (Cable Laying Phase)	17.0	1.8	4.9	0.3	1.1	1.1
1991 DPP Revision Pipeline Installation	323.6	12.2	26.9	113.6	43.4	41.6

Cable Removal Impacts at End of SYU Life
No additional impacts are estimated at this time from the removal of the failed OCS cable simultaneous with the removal of the SYU facilities at the end of the project life. All impacts associated with complete removal of the failed OCS cable would occur in the future with removal of all associated SYU power cables, pipelines and platforms and total decommissioning emissions can not be estimated at this time.

However, impacts from the removal of the failed Cable C may be assumed to be less significant in the future as the emissions resulting from the removal of the power cable will not occur simultaneously with the operational emissions of the SYU platforms. Therefore, removal of the failed cable would not add to the increased emission loading potential with operational emissions in the SYU Unit area. Additional factors that are unpredictable at the present time are the technological advances that may be expected for both cable retrieval operations and emission control technology which may further reduce any air quality impacts associated with removal at the end of the facility life.

Onshore Construction Impacts
Onshore impacts to air quality from the proposed project would result primarily from equipment used for the excavation of earth and materials adjacent to the power cable conduit tunnel at Las Flores Canyon. Approximately 400 - 500 cubic yards of material would be expected to be excavated. Onshore equipment includes various pieces of construction equipment including a

winch (200 bhp), backhoe (125 bhp), front end loader (125 bhp), air compressor (80 bhp), and a generator (25 bhp). It is expected that these pieces of equipment would be exempted from permit by SBCAPCD Rule 202.F.1 or 202.F.2. If SBCAPCD determines these provisions do not apply, the applicant intends to qualify the equipment for the construction exemption under 202.F.3.

Dust mitigation measures have been proposed to reduce and further minimize particulate matter impacts resulting from the grading required of this activity. Given the project location and minimal volume of earth to be moved, ambient particulate matter standards would not be expected to be exceeded.

Worker commute trips and supply/equipment delivery trips would additionally be expected to contribute approximately 30 additional workforce trips. In addition, there would be an estimated 3 truck trips per day involved with the transport of supplies and 10 total truck trips associated with transporting the retrieved cable from Port Hueneme in Ventura County to the landfill located in Kern county. Cable disposal trips would not be expected to all occur on the same day. Worker commute trips and supply/equipment delivery trip impacts to Santa Barbara County would be considered to be minimal due to the short duration of the project (4-7 days) and are presented in Table AQ-5 below.

Table AQ-5 Mobile Source Emissions

Trip Type	Trips	Miles/Trip	NOx	ROG
Worker Commute	30/day	12	1.15 lbs/day	1.02 lbs/day
Supply Trucks	3/day	50	5.24 lbs/day	0.36 lbs/day
Cable Disposal (Ventura/Kern)	10	120	41.88 lbs.	2.92 lbs.

4.3.3 Mitigation Measures

The power system repair project description contained the following mitigation measures to be implemented by ExxonMobil to further reduce and minimize impacts to air quality: Text appearing in italics denotes augmentation or other modification by the agencies.

The project description contained the following mitigation measures to be implemented by ExxonMobil to further reduce and minimize impacts to air quality. These mitigation measures will be enforced by agencies listed for each mitigation measure.

AQ-1: ExxonMobil shall implement the OPSR:A Project in accordance with the provisions of the Emissions Reporting Plan and any subsequent approved modification to the plan. This plan shall provide detailed information regarding the internal combustion engines used, the duration of their use, the fuel consumed, and the calculated emissions. The plan shall be submitted to the RS, ODOS and SBCAPCD, for review and approval 60 days prior to commencement of cable laying activities.

The plan shall limit the potential to emit of the equipment on the DP Lay vessel used for the installation of the power cables at the SYU stationary source to less than 25 tons per year of any affected pollutant during any consecutive 12 month period. The plan shall include limitations on the DP Lay vessel equipment use as well as the project duration to demonstrate that the Potential to Emit for the DP Lay vessel will be below 25 tons per year.

The plan shall also limit the combined actual emissions from all construction equipment used in the installation of the power cables at the SYU stationary source to less than 25 tons of any pollutant, except carbon monoxide, in a 12 month period. The plan shall include detailed information on the engines used and methods to measure fuel consumption to demonstrate that the actual emissions for the project will be below 25 tons per year. *Enforcement Agency: MMS, APCD.*

AQ-2: Determine, on a daily basis, fuel use and emissions from the installation of the power cable when within 25 miles of SYU. At the conclusion of the project, the applicant shall prepare and submit a summary of the daily and total fuel use and emissions associated with the project to verify compliance with SBCAPCD rules and regulations and SYU and project specific permit conditions. *Enforcement Agency: MMS, APCD.*

AQ-3: Require construction vessel and other associated IC engines to comply with the SYU PTO condition (i.e. Platform Harmony 9.C.5(b)(viii)) by using fuel with less than 0.2% sulfur by weight when operating within Santa Barbara County. *Enforcement Agency: MMS, APCD.*

AQ-4: Dust generated by onshore construction activities shall be kept to a minimum with a goal of retaining dust on site. The dust control measures shown below shall be followed. *Enforcement Agency: APCD, SBC.*

a. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and create a crust after each day's activities cease.

b. During construction of the onshore portion of the project, water trucks will be used as necessary to keep all areas of vehicle movement damp enough to reduce dust from leaving the site. At a minimum, this should include wetting down such areas in the late morning and after work is completed for the day.

AQ-5: The applicant shall contribute financial support to the SBCAPCD Innovative Technology Fund to compensate for any emission potential over 240 lbs. NOx per day associated with the retrieval of failed Cable C to the shelf break. *Enforcement Agency: APCD, SBC.*

Agency Recommended Mitigation Measures

AQ-6: Prepare a contingency plan prior to cable installation for the scenario where the total project emissions of any affected pollutant, except CO, is projected to exceed 80% of the above 25 ton/year limit. This plan shall identify potential measures that could be implemented by the contractors to reduce, defer or eliminate emissions without adversely impacting safety or completion of the project. In addition, daily fuel use with pollutants emitted to date and projected toward project completion shall be provided to MMS and the SBCAPCD. Enforcement Agency: MMS, APCD.

Residual impacts would be temporary and insignificant.

Conclusions-Proposed Project
The potential impacts to onshore air quality resulting from emissions from vessels and equipment used in the SYU offshore power system repair project (cable installation phase) would be considered to be insignificant based on the significance criteria utilized in this analysis. The cable laying phase of the project would be considered to be a construction operation exempt from permit under SBCAPCD Rules 201.D.2 and 202.F.3 provided the Potential to Emit of the DP lay vessel stays below 25 tons per year. The 25-ton emission limitation contained in the aforementioned rules is the level below which the SBCAPCD considers that projects of this type and duration would result in insignificant air quality impacts.

The retrieval of the failed cable to the shelf break would require an Authority to Construct permit and be subject to all provisions of SBCAPCD Rules and Regulations with the exception of providing emission offsets. Exxon/Mobil has proposed to provide compensation to the SBCAPCD Innovative Technology Fund for any emission potential over 240 lbs. per day associated with the retrieval of failed cable C to the shelf break. As the peak daily emissions for the cable retrieval are estimated at 3,388.2 lbs., approximately 3,148.2 lbs. would need to be compensated for in the Innovative Technology Fund. SBCAPCD considers compensation to the Innovative Technology Fund to levels below the emission offset threshold to result in insignificant air quality impacts from demolition operations. Mobile source emissions would be expected to be minimal based on the short duration of the project.

The Emission Reporting Plan would be used to limit equipment usage and project duration to ensure compliance with Rule 201.D.2 limiting the potential to emit of the project to less than 25 tons of any affected pollutant during any consecutive 12 month period. Emission limitations placed upon the project would be additionally assured by daily monitoring of emissions to ensure compliance with SBCAPCD threshold levels. Threshold levels would be preserved through identified contingency measures to be implemented for the project if the project reaches 80% of the emission limitation as identified in the daily monitoring reports. The contingency measures would be implemented when actual emissions generated to date plus the projected emissions required to complete the project exceed 20 tons. The potential for violations of the ambient air standards would be further minimized through implementation of the aforementioned project conditions to mitigate emissions associated with the power cable project.

4.3.4 Cumulative Impacts
Cumulative air quality impacts and consistency with the policies and measures in the Air Quality Supplement of the Comprehensive Plan, other general plans, and the CAP should be determined for all projects (i.e., whether the project exceeds the CAP emission projections or growth assumptions). As the project's mitigated emissions would be below the SBCAPCD adopted thresholds of significance for air quality impacts, the project would be consistent with the adopted 2001 Clean Air Plan.

No other projects are presently proposed for the affected OCS area during the proposed two to three week proposed project period. SBCAPCD rules have deemed that power cable laying projects that result in emissions below the 25 ton level are considered to be insignificant. Previously identified potential impacts have been addressed through the applicant's commitment of the aforementioned mitigation measures. To date, the SYU Expansion Project emissions of NOx and ROC have been well below permitted levels, and no exceedences of the NO_2 standard have occurred at applicable monitoring sites during the highest emission intensive phases of the

OCS construction. Thus, the emissions associated with the power cable laying and short-term cable removal operations would not be expected to result in any cumulative exceedences of applicable air quality standards.

4.3.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of the SYU life. (See Section 2.0, Alternatives to the Proposed Project).

The potential impacting factors would be the same as described for the proposed project. Emissions resulting from the proposed power cable installation would have a potential to increase concentrations of pollutants onshore. Emission estimates were based on the reasonable worst case operation of each activity. Vessel days on-station would be expected to range from 13-20 days for all vessels including contingency times for weather and other activity delays over a 2-3 month period. Expected duration of the DP vessel on-station to install the power cable is estimated at approximately 7 days. Expected impacts of the Alternative A scenario would be the same as those described and analyzed in the proposed project with total emissions and time on station being slightly less (1 day) than the proposed project. Table AQ-6 provides the peak and total emission estimates for Alternative A.

Table AQ-6 Peak and Total Installation Emissions - Alternative A

Project Phase	NO_X	ROC	CO	SO_X	PM	PM_{10}
Peak Hourly Emissions	103.0	10.3	28.0	1.5	7.9	7.6
Peak Daily Emissions	1,689.2	208.3	536.2	27.3	137.5	132.2
Total Quarterly Emissions	13.4	1.5	3.9	0.2	1.1	1.1
Total Emissions	13.4	1.5	3.9	0.2	1.1	1.1

No additional impacts are estimated at this time from the removal of the failed cable in OCS waters simultaneous with the removal of the SYU facilities at the end of the project life (2020 - 2030). All impacts associated with complete removal of the failed cable would occur in the distant future with removal of all associated SYU power cables, pipelines and platforms and total decommissioning emissions cannot be estimated at this time. While emissions from the removal of the failed Cable C may be assumed to be approximately the same as those estimated for the proposed project, the impacts may be considered less significant in the future as the emissions resulting from the removal of the power cable would not occur simultaneously with the operational emissions of the SYU platforms.

Worker commute trips and supply/equipment delivery trips would additionally be expected to contribute approximately 30 additional workforce trips. In addition, there would be an estimated 3 truck trips per day involved with the transport of supplies and 5 total truck trips associated with transporting the retrieved cable from Port Hueneme in Ventura County to the landfill located in Kern county. Cable disposal trips would not be expected to all occur on the same day. Worker commute trips and supply/equipment delivery trip impacts would be considered to be minimal due to the short duration of the project (3-6 days) and are presented in Table AQ-7 below.

Table AQ-7 Mobile Source Emissions - Alternative A

Trip Type	Trips	Miles/Trip	NOx	ROG
Worker Commute	30/day	12	1.15 lbs/day	1.02 lbs/day
Supply Trucks	3/day	50	5.24 lbs/day	0.36 lbs/day
Cable Disposal (Ventura/Kern)	5	120	20.94 lbs.	1.46 lbs.

The potential impacts to onshore air quality resulting from emissions from vessels and equipment used in the Alternative A power cable installation only scenario would be considered to be insignificant based on the significance criteria utilized in this analysis. The proposed project is considered to be a construction operation exempt from permit under SBCAPCD Rules 201.D.2 and 202.F.3. Rule 202.F.3 relates to construction activities exempt from obtaining a permit if the total emissions are below 25 tons per year of any affected pollutant (except carbon monoxide) during any consecutive 12 month period and additionally provides that emission offsets must be obtained if that level is exceeded. The 25-ton emission limitation is the level below which the SBCAPCD considers that construction projects of this type and duration would result in insignificant air quality impacts. Emissions expected with Alternative A (13.4 tons NOx) would be below the 25-ton threshold level contained in Rule 202.F.3. and would therefore be considered to result in insignificant impacts to air quality.

Alternative B: Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted sometime between the third quarter of 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phase 2 is projected to occur between 2003 and 2007.

Approximately two to three construction vessels including a DP barge, tug and support vessel in addition to on-board equipment operated by I.C. engines would be required to retrieve the cable. The DP barge anticipated for this would have four thruster engines, two power generation engines, an HPU engine, a crane engine, anchor winch engines, air compressor engines, ROV generator engines, two auxiliary skiffs with engines, and two cable handling machines with engines. The tug and support vessel would both have two main engines, two generator engines, and the support vessel would additionally have an excavation pump and compressor engines. The estimated duration to for the retrieval of the failed cable in OCS waters would be estimated to be approximately one week.

Emission estimates for the Alternative B retrieval of the failed cable in OCS waters are contained in Table AQ-8 below. The estimated total emissions for the OCS removal would be 7.9 tons of NOx and the peak daily NOx emissions are approximately 2,167 lbs. The total emissions expected with both the installation phase and removal phase are expected to be 23.8 tons of NOx.

Table AQ-8 Peak and Total OCS Removal Emissions - Alternative B

Project Phase	NO_X	ROC	CO	SO_X	PM	PM_{10}
Peak Hourly (lbs./hr)						
Cable Retrieval	93.1	5.9	19.7	1.4	7.3	7.1
*Cable Support **	27.0	2.4	17.6	1.2	1.9	1.8
Total Hourly Emissions	**120.1**	**8.4**	**37.3**	**2.6**	**9.2**	**8.9**
Peak Daily (lbs./day)						
Cable Retrieval	1,749.1	103.1	360.8	26.8	137.6	132.9
Cable Support	418.0	29.2	219.9	15.6	27.2	26.5
Total Daily Emissions	**2,167.0**	**132.3**	**580.7**	**42.3**	**164.8**	**159.4**
Peak Quarterly (tpq)						
Cable Retrieval	5.9	0.3	1.2	0.1	0.5	0.5
Cable Support	1.9	0.2	2.2	0.2	0.1	0.1
Total Quarterly Emissions	**7.9**	**0.6**	**3.4**	**0.2**	**0.6**	**0.6**
Peak Annual (tpy)						
Cable Retrieval	5.9	0.3	1.2	0.1	0.5	0.5
Cable Support	1.9	0.2	2.2	0.2	0.1	0.1
Total OCS Removal	**7.9**	**0.6**	**3.4**	**0.2**	**0.6**	**0.6**
Total Installation/Shelf	**15.9**	**1.7**	**4.5**	**0.2**	**1.3**	**1.2**
Total Installation & Retrieval Emissions	**23.8**	**2.3**	**7.9**	**0.4**	**1.9**	**1.9**

* Cable support emissions include Transport/supply trucks

The removal of the existing failed OCS cable would be considered a "demolition" project and would require an SBCAPCD Authority to Construct permit. The cable retrieval would be subject to SBCAPCD permitting Rules and Regulations including BACT but would not need to provide offsets consistent with California Health and Safety Code Section 42301.13(a). Therefore, even with the application of BACT, the daily NOx emissions of 2,167 pounds from the retrieval operations would most likely not be able to be mitigated below the daily emission threshold limits of 240 pounds. Prior to issuing the APCD permit, the NOx and ROG emissions above the operational significance threshold of 240 pounds. per day would need to be mitigated in order to bring the impacts to a level of insignificance.

Worker commute trips and supply/equipment delivery trips would additionally be expected to contribute approximately 30 additional workforce trips. In addition, there would be an estimated 3 truck trips per day involved with the transport of supplies and 20 total truck trips associated with transporting the retrieved cable from Port Hueneme in Ventura County to the landfill located in Kern county. Cable disposal trips would not be expected to all occur on the same day. Worker commute trips and supply/equipment delivery trip impacts would be considered to be minimal due to the short duration of the project and are presented in Table AQ-9 below.

Table AQ-9 Mobile Source Emissions - Alternative B

Trip Type	Trips	Miles/Trip	NOx	ROG
Worker Commute	30/day	12	1.15 lbs/day	1.02 lbs/day
Supply Trucks	3/day	50	5.24 lbs/day	0.36 lbs/day
Cable Disposal (Ventura/Kern)	20	120	83.77 lbs.	5.83 lbs.

The potential impacts to onshore air quality resulting from demolition emissions from vessels and equipment used to retrieve the failed Cable C in OCS waters would be considered significant based on the significance criteria utilized in this analysis. Emissions would exceed the significance criteria of 240 lbs. per day of NOx for the duration of the project and presently available mitigation would not be sufficient to bring the OCS cable retrieval below daily significance thresholds.

Alternative C: No Project Alternative
Alternative C assumes that the installation of the two new cables to re-establish redundancy in the SYU electrical system would not occur. Therefore, no emissions from cable lay vessels and support equipment needed for the laying of the new power cables would occur. This alternative would not involve any additional emissions beyond those presently contained in the applicant's Permits to Operate (PTO) for their SYU facilities. Thus, this alternative would not result in any impacts to air quality that have not been previously addressed and mitigated.

4.4 Onshore Biological Resources

4.4.1 Environmental and Regulatory Setting

The ExxonMobil onshore facilities are located in Las Flores Canyon. Vegetation and habitat in the canyon include Las Flores Creek and Corral Creek to the east (and south of the confluence of Las Flores and upper Corral Creeks), chaparral to the north, grassland and coastal sage scrub to the west and coastal sage scrub and grassland to the south. Most of the areas disturbed in the upper canyon area during project construction were non-native grasslands with scattered stands of coastal sage scrub. Ruderal and cultivated plant communities were also present due to past land use. In addition, vegetation along both creeks was impacted. Streamside vegetation consisted of well-developed riparian woodland dominated by large sycamores and occasional coast live oaks. The understory was comprised of small trees including willow and elderberry with other shrubs, vines and herbs. Oak woodland and chaparral habitats occurred toward the northern end of the project site on slopes of the Vaqueros formation (Exxon SYU Las Flores Canyon Revegetation 1994 Monitoring Report, SAIC, 1994).

To mitigate project impacts, ExxonMobil has participated in extensive revegetation efforts and an annual revegetation survey is performed. Onshore work in the canyon would be limited to the lower canyon parking area, used mostly as a secondary entrance to the canyon and an area for equipment and vehicle parking during construction efforts.

Annual biological surveys are conducted in Las Flores Canyon as mitigation for impacts related to project construction and operation. No endangered species are known to occur within the existing POPCO and ExxonMobil plant areas. However, several sensitive species are known to occur in Las Flores and Corral Creeks as documented in the annual biological surveys. Such species include the California red-legged frog (a federally-listed threatened species), the Southwestern Pond Turtle (state species of special concern), the California Newt (state species of special concern) and the Two-Striped Garter snake (state species of special concern). The Southern steelhead (endangered) and California red-legged frog (threatened) are protected under the Federal Endangered Species Act. Southern Steelhead and its habitat are listed as endangered. The United States Fish and Wildlife Service (USFWS) has jurisdiction over the California red-legged frog and the National Marine Fisheries Service (NMFS) has jurisdiction over the steelhead. The NMFS designated all Santa Barbara County streams and rivers below Bradbury and Twitchell dams as critical habitat for the steelhead trout (March 17, 2000). Corral and Las

Flores creeks, located within Las Flores Canyon, are included within this critical habitat designation.

In addition, since the initial survey, other sensitive species have been observed in and near Las Flores and Corral creeks during the course of subsequent surveys, including the Coast Range newt, Golden eagle, Prairie falcon, Yellow warbler, Coastal black-tailed jackrabbit, Mountain lion and American badger.

The most recent biological survey was conducted in May 2002 (Garcia & Associates, *2002 Survey Final Report: Ninth Annual Survey*, 8/12/02). Twelve stations are surveyed along Las Flores and Corral Creeks every year, the closest station to the onshore construction area (ABS-1) is located approximately 400 feet northwest of the proposed excavation area. No sensitive herptiles have been observed at this station during the nine years of the survey. The station is considered to be suitable habitat for Southwestern Pond Turtle but only marginal habitat for California red-legged frog and Two-Striped Garter snake.

While Las Flores and Corral Creeks are designated critical habitat for steelhead trout, a four-foot culvert located on the south side of US Highway 101 has been considered too high to be negotiated by migrating steelhead. As a result, no steelhead would be expected to be located in either creek and surveys have not been conducted since 1993.

An autumnal monarch butterfly aggregation site was found in 1998 in Sycamore trees along the Corral Creek, behind the three adobe structures in the lower canyon (*Monarch Butterfly Overwintering Sites in Santa Barbara County*, Althouse and Meade, August 1999). Approximately 2000 butterflies were documented, although significantly less have been documented during subsequent site visits. This site is notable as one of few aggregation sites that occur on native trees. Santa Barbara County Policy requires the protection of butterfly habitat and limits work that could potentially disturb aggregation and roost sites between October and February. The onshore excavation work would be located approximately 200 feet from the site.

4.4.2 Project Impact Assessment

The term “biological resources” refers to plant and animal species and habitats that support plant and animal species. Based on a preliminary site assessment and review of existing historical resource information (designated environmentally sensitive habitat areas, biological resources maps, reports, surveys and Natural Diversity Database Maps), the lead agency determines whether resources on a site are biologically valuable and whether a project may result in a significant impact to biological resources.

Assessment of impacts must account for both short term and long term impacts. Disturbance to habitats or species may be significant, based on substantial evidence if they 1) substantially limit reproductive capacity through losses of individuals or habitat or 2) substantially limit or fragment range and movement (geographic distribution or animals and/or seed dispersal routes). Based on these criteria, the proposed project would not create any significant impacts on biological resources.

Flora: There would be no loss or disturbance to any unique, rare or threatened plant community as a result of the proposed project. Neither would there be a reduction in the numbers or restriction in the range of any unique, rare or threatened plant species or a reduction in extent,

diversity or quality of native vegetation. No vegetation with any habitat value or existing habitat would be impacted by the proposed project. Lastly, no specimen trees would be removed during the proposed project. The onshore portion of the project would be limited to previously disturbed areas in the lower canyon. Excavation necessary to expose the failed cable and install the new cable is estimated to be approximately 400 to 500 cubic yards of material. No vegetation would be removed or disturbed. The excavation location is approximately 500 feet east of Corral Creek; therefore no impacts to riparian habitat would result.

Fauna: The onshore project area would be limited to the already developed lower canyon parking lot approximately 500 feet from riparian habitat. An autumnal monarch butterfly roost site is located in the lower canyon, approximately 200 feet from the proposed project area. Santa Barbara County policy requires that development be set back 50 feet from any potential butterfly aggregation or roosting sites. It is not anticipated that the proposed project would have the potential to impact the known butterfly roost site.

While the project area would be approximately 500 feet from the creek, Southwestern Pond Turtle and California red-legged frog are mobile and could be found in the construction area. In order to make workers aware of the sensitivity of these species, since 1994 ExxonMobil has prepared a pamphlet describing the protection status and potential occurrence of these species in Corral and Las Flores creeks. The pamphlets have been distributed during safety briefings, held at least once a month. The pamphlet is distributed to ExxonMobil personnel as well as contractors and subcontractors. The pamphlet cautions workers to avoid handling either species and to be aware of their potential occurrence on roads near creeks. With the dissemination of this information during a pre-construction meeting, there would be no impacts to any listed or sensitive species as a result of the proposed project.

4.4.3 Mitigation Measures

BIO-1: ExxonMobil shall include awareness training for its contractors of the sensitive species located in Corral Creek. The training shall include a description of the species, protection status under the law, the potential range of movement, and what to do in the event one is found within the construction area. This training should be incorporated into the pre-construction meeting(s) with construction personnel to perform the work. Agency representatives shall be invited to attend the meeting(s). Enforcement Agency: SBC.

Residual impacts would be expected to be temporary and insignificant.

4.4.4 Cumulative Impacts

An additional excavation project is currently underway in the lower canyon area (see Section 3.3), involving the abandonment of oil and gas production equipment; however, due the location and temporary nature of both projects, biological impacts would not be exacerbated.

4.4.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. Onshore biological impacts associated with this alternative would be identical to those described for the proposed project.

Alternative B - Removal of Failed OCS Cable
Alternative B involves the completion of the proposed project along with removal of the failed power cable from OCS waters. Onshore biological impacts associated with this alternative would be identical to those described for the proposed project.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. Under this alternative, ExxonMobil would not install new power cables or remove a portion of the failed cable at this time. No excavation work would occur in the lower canyon area. Therefore there would be no impacts to onshore biological resources. Impacts could occur during the decommissioning of the SYU facilities. The project will undergo detailed CEQA and NEPA review at the time of decommissioning.

4.5 Benthic Environment

4.5.1 Environmental and Regulatory Setting

Extensive regional descriptions of the benthic environments in the proposed project area were prepared by Dames and Moore (1982b); SAI (1984); SAIC (1986), and Chambers Group (1987a,b,c). Numerous biological surveys have been conducted to further characterize the marine biological communities of the area (e.g., Dames and Moore, 1982a,b; Chambers Group, 1982 and 1987a; State Lands Commission, 1995). Previous site-specific surveys of the nearshore benthic environment include Dames and Moore (1991 and 1992). De Wit (2001 and 2002) recently performed two additional biological surveys specifically for the proposed project at the nearshore site. Much of this information has been previously presented (MMS, 1988, 1991, and 1997), and is summarized below.

Because of their relative rarity and special value as habitat for species of scientific, recreational, commercial, and education interest, nearshore rocky reefs are given special protection by the SBC Local Coastal Plan. Offshore rocky reefs and hardbottom sites share the ecological values of shallow reefs, and are additionally sensitive to impacts because of the relative stability and slow recovery rates of deep ocean locations and biota. Offshore hardbottom sites in the proposed project area are protected through numerous conditions placed by MMS and SBC on their respective approvals of activities within the SYU.

The environmental setting for the proposed project includes both nearshore and offshore locations. The nearshore site is located on the Gaviota coast, near the mouth of Corral Creek, west of Capitan, Santa Barbara County, California (Figure 4). The nearshore marine habitats and biota are typical of that found in similar water depths along the Santa Barbara Channel coastline. The seafloor habitat inshore of the 35-feet isobath includes armor rock covering existing pipelines and conduits, boulder fields, broken rock, and bedrock ridges interspersed with sand. A sand channel from 20-50 feet (6-15 meters) wide runs parallel to and on the eastern side of the conduits into about 80 feet of water depth. The sand channel was created during the 1983 installation of the POPCO pipeline (de Wit, 2002). The seafloor deeper than 35 feet is predominantly sedimentary.

The rock and boulder fields are typical of areas influenced by coastal streams and the shale ridges are characteristic of the nearshore solid substrate found throughout the area (de Wit, 2002). These habitats support a patchy turf red algal complex comprising, among others, species of *Gracillaria* sp., *Rhodymenia* sp., *Gracilariopsis* sp., and various coralline algae. Red and purple urchins *(Strongylocentrotus franscicanus* and *S. purpuratus*) are common to locally

abundant. Other common macroinvertebrates include sea cucumbers (*Parastichopus* spp.), bat stars (*Asterina=Patria miniata*), giant and sun stars (*Pisaster giganteus* and *Pycnopodia helianthoides*, respectively), Kellet's whelk (*Kelletia kelletii*), the sea hare (*Aplysia californica*), and the giant keyhole limpet (*Megathura crenulata*). Spiny lobsters (*Panulirus interruptus*) are present in the crevices between the individual rocks. Recruit and juvenile-size giant kelp plants, *Macrocystis pyrifera*, were common to abundant in water depths deeper than 12 feet (3.7 meters) and where urchins were not present. Fish species include kelp bass (*Paralabrax clathratus*), barred sandbass (*P. nebulifer*), senorita (*Oxyjulius californica*), and white perch (*Phanerodon furcatus*).

There is one species of abalone that is listed as endangered under the Endangered Species Act; the white abalone (*Haliotis soensoni*). All other California abalone species are non-listed but considered regionally rare along the California coast. Twenty-one total abalone, 12 non-listed red (*H. rufescens*), eight non-listed pink (*H. corrugata*), and one listed white (*H. sorensoni*) were observed on rock substrate during the 2002 survey (de Wit, 2002). Please see the section on white abalone (4.9) for further information and details. The non-listed black abalone (*H. cracherodii*) was not observed during either 2001 or 2002 survey (de Wit, 2001 and 2002). It is likely that black abalone were present, historically, in the intertidal and shallow subtidal region west of Santa Barbara. However, black abalone have not been detected during recent years of intertidal monitoring at long-term study sites near the proposed project location (Steve Lee, pers. comm., 2002).

The nearshore sand habitats support abundant polychaete worms (*Diopatra ornata*), sand stars (*Astropecten* sp.), and sand dollar (*Dendraster excentricus*) communities. Surf grass (*Phyllospadix torreyi*) is common from 10 feet (3 meters) to a depth of approximately 15 feet (4.5 meters). Where the sedimentary habitat dominates, large and scattered patches of eelgrass (*Zostera* sp.) are found in water depths down to around 42 feet (12.5 meters) and as shallow as 15 feet (4.5 meters). Usually found in water depths greater than 30 feet (9 meters), eelgrass was found during 2002 in 18 feet (5.5 meters) of water east of the Goleta sewage discharge pipeline (reported in de Wit, 2002). Winter storm wave activity would likely remove eelgrass from such shallow water depths. Historically, eelgrass has not been found inshore of the 30 feet (9 meters) isobath at the nearshore SYU site (de Wit 2002).

The offshore seafloor environment is dominated by sand and silty sediments that extend from the nearshore starting at about 50 feet deep to the platforms in 800-1200 feet (244-366 meters) of water depth. Silty sediments surround the offshore platforms and lay between platforms Harmony and Hondo.

According to high resolution geophysical data (side-scan sonar), there is an area of scattered hardbottom habitat with a few low- to medium-relief (1-5 feet (0.3-1.5 meters) features at the shelf-break in about 265-445 feet (80-135 meters) of water depth (ExxonMobil, 2002a). This scattered habitat straddles the State and Federal waters boundary about 4-5 miles (6.5-8 kilometers) along the power cable route. Chambers Group (1987a,b) noted a number of species in this shelf-break rocky habitat including the solitary coral *Paracyathus stearnsi*; the anemones *Metridium senile* and *Corynactis californica*; the crinoid *Florimetra serritissima*, the sea star *Mediaster aequalis*; and various species of hydroids, tube worms, bryozoans, and sponges. In addition, the rocky areas provide shelter/habitat for several species of rockfishes (*Sebastes* spp.), as well as shelter for several crab species (e.g., *Cancer anthonyi*).

A turf and transition zone (to the surrounding soft bottom) from the shelf-break harbors several dominant species including the seapens *Acanthoptilum gracile* and *Stylatula elongata*; the sea cucumber *Parastichopus californicus*; and the pink sea urchin *Allocentrotus fragile*. Evidence of superficially buried rocks was noted due to the presence of *Paracyathus* sp. and *Metridium* sp. protruding from an otherwise muddy bottom. Seapens, seastars, sea urchins, shrimp, and sea cucumbers dominate the soft bottom macrobiota in the area (Chambers Group, 1987a), whereas polychaete worms, clams, and amphipods characterize the infauna (Dames and Moore, 1982b).

According to the high resolution geophysical data (side-scan sonar), there is a scattered area of relief about 800-1000 feet (245-365 meters) south of the J-tube seafloor location, at Platform Heritage (ExxonMobil 2002a). Review of videotape from an ROV survey (ExxonMobil, 2002b) of the proposed power cable route reveals that this area is all low-relief (< 1 feet (0.3 meters)) consolidated sediment or clay lumps with no observable epibiota. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

4.5.2 Project Impact Assessment

The impact analysis for the benthic environment in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability.
- Substantially limit reproductive capacity through losses of individuals or habitat.
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement).
- A measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area.

For an impact to be locally significant, the size of the localized area would be relatively small compared with that of an ecologically equivalent area in the immediate region. The threshold for significance is determined by scientific judgment, and considers the relative importance of the habitat and/or species affected.

Impacts of regional significance are judged by the same criteria as those for local significance, except that the impacts cause a change in the ecological function within several localized areas or a single large area. The amount of affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the importance of the species and/or habitat affected and its relative sensitivity to environmental perturbations.

Cable Installation and Removal Impacts 2002-2005

As described in Section 2.0, the proposed project would involve removal of approximately 5 miles (8 kilometers) of failed power cable and installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to the benthic environment that would be expected to occur as a result of cable removal and installation

activities. Impacts that would occur from removal of the new cables (C1 and D1) and the remaining failed Cable C at the end of SYU life, are analyzed in the following section.

Three major types of activities associated with the proposed project, which could impact the benthic environment are: bottom sediment disturbance and cleaning of failed cable, anchoring, and placing a concrete mattress or the new power cable on rocky outcrops. Bottom sediment disturbance and cleaning of the failed cable at the surface would increase turbidity that could cause physical irritation, reduce available light, and subject benthic biota to an increase in sediment deposition. Anchoring could directly crush species or habitat and could also cause an increase in turbidity. Laying a concrete mattress or the new power cable physically on rocky outcrops could crush species or break-up habitat. There should be no impacts on hardbottom features from removing the failed power cable to the shelf-break.

Bottom sediment disturbance and cleaning of failed cable. As described in Section 1.0, a number of activities would disturb seafloor sediments and increase turbidity in the upper water column both in the nearshore and offshore environments. Table WQ-3 on water quality lists sources, locations, and estimated quantities of sediment that would be resuspended during the proposed project.

Overall, the proposed project would be expected to result in minimal, temporary, localized increases in turbidity. However, CDFG (Tom Napoli, pers. comm., 2002) expressed concern for the potential effects on shallow nearshore species from localized suspended sediment. In the shallow nearshore, divers working at and seaward of the conduit terminus would excavate sand in order to uncover the failed cable and clear the conduit. To accommodate concerns and further minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that the applicant cast excavated sand, via a hose, 15 feet (4.5 meters) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. The site where the failed cable crosses the POPCO pipeline is in about 80-85 feet (24-26 meters) of water and excavation work around a concrete mattresses resting on top of the failed Cable C1 at the crossing would result in temporary and highly-localized increases in turbidity on the bottom. Offshore around the platforms, excavation work would result in temporary and highly-localized increases in turbidity on the bottom. The POPCO pipeline crossing and the offshore sites are located within large sedimentary environments dominated by sand and silty sediments. Retrieval of the failed cable would disturb a small amount of sediment on the bottom. Surface cleaning of the failed cable would result in a temporary and highly-localized turbid cloud beneath and around the cable-reel vessel beginning at least 75 feet (20 meters) south of the conduit terminus, continuing out to the shelf break, and near the offshore platforms. As reported by de Wit (2001 and 2002), sediment found in the nearshore area appears to have a sandy texture that would rapidly resettle when disturbed either on the bottom or when washed from the failed cable at the surface. In addition, the natural exposure of the nearshore Gaviota coast contributes to periods of high-energy surf with periodic strong surge and increased turbidity. Consequently, the marine species found in the nearshore habitat are hardy and able to adjust to periods of turbid conditions. Given the projected levels of activity and implementation of proposed mitigation measures, the effects of turbidity would be expected to be highly-localized and temporary causing insignificant impacts.

It is unlikely that the expanded marine biological survey (de Wit, 2002) detected 100 percent of the abalone in the nearshore area. Additional abalone may be present or the previously detected

abalone may move from their present location. They would however, be located on hard substrate such as armor rock, boulders, or a rock ledge. Although armor rock is closer, natural rocky areas are greater than 100 feet (30 meters) away from any excavation or disturbance that would increase turbidity at, around, or south of the conduit terminus. As previously mentioned, to accommodate concerns and further minimize the impacts from turbidity, the permitting agencies would require that the applicant cast excavated sand, via a hose, 15 feet (4.5 meters) south, downslope, into the sand channel between the failed cable and the POPCO pipeline. Given the distance of the nearshore abalone habitat from planned activities and implementation of proposed mitigation measures, the effects of turbidity on abalone would be expected to be insignificant.

Anchoring: As described in Section 1.0, anchoring would take place at the nearshore site and offshore near the platforms. Use of a DP vessel would eliminate potential impacts to hardbottom habitats at the shelf-break from anchoring. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

Four of the nine nearshore anchors would be placed on sandy sediment near the conduit terminus, at least 40 feet (12 meters) away from rocky habitats or kelp, but within scattered eelgrass habitat. Any abalone would be located on a hard substrate at least 40 feet (12 meters) from any anchor location. The five remaining anchor sites would be placed on sandy sediments outside of eelgrass habitat. According to de Wit (2002) one anchor location (1-C) appears to be on the edge of rocky habitat. To avoid potential impacts, the permitting agencies would specify that the applicant reposition the location for anchor 1-C to ensure that it is at least 40 feet (12 meters) from rocky habitat. However, CDFG (Tom Napoli, pers. comm., 2002) expressed concern for the potential effects on shallow nearshore species from anchoring. To further avoid potential impacts to non-listed abalone, the permitting agencies would specify that, if a non-listed abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, the applicant would perform one of two actions: either move anchor(s) to avoid any direct impacts on non-listed abalone, or have a qualified biologist move non-listed abalone as directed by the appropriate permitting agencies. Offshore, anchors would be positioned outside of environmental and safety preclusion zones.

Anchors (nearshore or at the platforms) would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS). Anchors would have chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. Controlled mooring using DGPS pre-set anchors and vertical anchor placement and retrieval would prevent crushing of any rocky habitat, sargassum, or kelp plants. However, touchdown of the anchors would likely impact eelgrass.

Based on the anchor touchdown locations and eelgrass densities as reported by de Wit (2001 and 2002), it is estimated that up to 110 feet^2 (10 meters^2) of seafloor could be affected by each of the large anchors (a conservative estimate that assumes the anchors would swing 360 degrees from their touchdown point). If all four anchoring locations are utilized with the anticipated anchors placed at each site, it is estimated that no more than 3 plants per anchor location could be impacted or a total of about 12 eelgrass plants for all four locations. Additionally, 12 eelgrass plants growing in sediment that covers portions of the failed cable could be impacted when the failed cable is removed from the nearshore area. To mitigate the impacts from the potential

destruction of 24 eelgrass plants, the permitting agencies would require that the applicant adhere to the Southern California Eelgrass Mitigation Policy (see Appendix A) and include a requirement to use native species, e.g., *Zostera marina*, for restoration purposes where appropriate. Therefore, any adverse impacts on eelgrass would be expected to be temporary and insignificant.

Placing a Concrete Mattress or Power Cable on Rocky Outcrops: A concrete mattress would be placed over the cut end of the failed cable on the OCS beyond the State and Federal waters boundary in approximately 350-400 feet 100-120 meters) of water depth. Using the DP vessel, or a separate work boat, the applicant would be able to avoid hardbottom in this area by at least 15 feet (4.5 meters). Impacts on the benthic environment from a concrete mattress being placed on the bottom would be expected to be insignificant.

Using the DP vessel, the applicant would be able to lay the new cable along a route that would avoid most hardbottom habitats by 50 feet (15 meters) or greater. In addition, the applicant has stated that they will utilize an ROV to monitor power cable installation operations in the shelf-break hardbottom area. To avoid impacts, the permitting agencies will specify that the area along the proposed route in this region, from about 250-500 feet (75-150 meters) water depths, be monitored with an ROV during cable installation. If the ROV observes a rocky outcrop, the ROV would assist the DP vessel in adjusting its route to avoid a feature. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

There is a single feature, which lies across the cable route that is unavoidable while laying the replacement cable. This feature is located about 4-5 miles (6.4-8 kilometers) from shore, in about 265-275 feet (70-85 meters) of water, is approximately 1600 feet (490 meters) long and from 25-50 feet (7.5-15.5 meters) wide with about 1-3 feet (0.3-1 meters) of vertical relief, and lies across the SYU-approved pipeline/power cable corridor. Review of videotape from an ROV survey (ExxonMobil, 2002b) of the original, failed power cable as it crosses this feature reveals that no part of the feature was crushed or scoured by laying the original cable and that original cable has not moved from its original position. The proposed project would lay the replacement cable across about 25 feet (7.5 meters) of the shelf-break feature. The replacement cable has a diameter of 6 inches (15 centimeters) and would therefore contact approximately 12.5 feet^2 (1.0 meter^2) of the feature. The cable weighs approximately 18 pounds per feet (per 0.3 meter) and would not be expected to move once it is laid. Impacts from the new cable contacting 12.5 feet^2 (1.0 meter^2) of a single hardbottom feature at the shelf-break are expected to be insignificant based on the facts that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is laid, and the impacted surface area is an exceedingly small amount of the total surface area of the feature.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts on the benthic environment that are expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed C Cable on the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Deferral of Cables C1 and D1 and the remaining segment of failed Cable C on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore

platforms and their associated pipelines and power cables. It is estimated that it would take 2-3 years to remove all SYU facilities. Removal of the OCS segment of failed Cable C and the new C1 and D1 cables would take an estimated 2-3 weeks. This project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.5.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts on the benthic environment. Text appearing in italics denotes augmentation or other modification by the agencies.

BE-1: ExxonMobil shall select contractors who shall use a DP vessel to lay the new power cable from shore to Platform Heritage and between Platforms Harmony and Hondo. *Enforcement Agency: MMS, SLC.*

BE-2: ExxonMobil shall require contractors, whenever feasible, to utilize appropriate installation techniques that minimize or avoid environmental impacts such as turbidity and anchor scarring. This shall be accomplished by following procedures included in the Anchoring Plan required by Mitigation Measure RMM-7. *Enforcement Agency: MMS, SLC, SBC.*

BE-3: ExxonMobil shall perform a pre-installation marine biological survey of the nearshore project area prior to any installation work adjacent to the conduit. *The scope and methodology of the survey shall be submitted for review and approval to MMS, SLC and SBC in consultation with CDFG and NMFS, as appropriate. Preliminary survey results shall be submitted to agencies within 2 weeks of completion of the pre-installation survey. Final report shall be submitted within 30 days of completion of the pre-installation survey. Enforcement Agency: SLC, SBC (in consultation with CDFG and NMFS).*

BE-4: ExxonMobil shall, within 90-days of the completion of the project, conduct a post-installation marine biological survey to identify any impacts to the nearshore area that could have resulted from construction activity. *The scope and methodology of the survey shall be submitted for review and approval to MMS, SLC and SBC in consultation with CDFG and NMFS, as appropriate. Preliminary survey results shall be submitted to agencies within 30 days of completion of the post-installation survey. Final report shall be submitted within 60 days of completion of the post-installation survey. Enforcement Agency: SLC, SBC (in consultation with CDFG and NMFS).*

BE-5: ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the DP vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped with a copy provided to agencies include cablelaying along the route approximately 4-5 miles (6.4-8 km) from shore, in approximately 250-500 feet (75-150 meter) water depth. *Enforcement Agency: MMS, SLC.*

Agency Recommended Mitigation Measures

BE-6: ExxonMobil shall cast sand excavated at or near the conduit, via a hose, 15 feet (4.5 meter) south, downslope, into the sand channel between the failed cable and the POPCO pipeline

away from armor rock, boulder fields, broken rock, or bedrock ridges. Enforcement Agency: SLC, SBC, CDFG, NMFS.

BE-7: ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the cable laying vessel, support vessels, and ROV vessels. Agency biologists may observe the extent, distribution, and type of habitat that could be present near anchors or in the path of the proposed power cable. In the event that rocky habitat is observed during cable installation, the applicant shall adjust its anchors or operations, if at all possible, to avoid the habitat or notify the appropriate regulatory agencies for further direction if rocky habitat is unavoidable. All agency personnel on ExxonMobil contracted vessels shall be advised of and adhere to ExxonMobil safety requirements. Enforcement Agency: MMS, SLC, SBC.

BE-8: ExxonMobil shall develop a restoration and restoration-monitoring plan within 90 days of the submission of the post-installation survey, if significant impacts to kelp, abalone, and/or hard bottom habitats are detected. The final restoration and restoration-monitoring plan shall be submitted for review and approval to MMS, SLC, and SBC in consultation with NMFS and CDFG, as appropriate prior to implementation. The final restoration plan shall be implemented within 60 days of approval and the restoration-monitoring plan shall extend for a 3-year period. Enforcement Agency: SLC, SBC, and CDFG.

BE-9: ExxonMobil shall adhere to the Southern California Eelgrass Mitigation Policy and include a requirement to use only native species, e.g., *Zostera marina*, for restoration purposes, where appropriate. Enforcement Agency: SLC, SBC, CDFG and NMFS.

BE-10: If a non-listed abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, ExxonMobil shall perform one of two actions. Either ExxonMobil shall move anchor(s) at least 50 feet (15 meter) away to avoid any direct impacts on abalone, or ExxonMobil shall have a qualified biologist move abalone pursuant to procedures reviewed and approved by MMS, NMFS, CDFG, and SBC. Enforcement Agency: SLC, SBC (in consultation with CDFG and NMFS).

BE-11: ExxonMobil shall conduct a post construction ROV or diver video survey, with voice overlay, along the length of the completed cable installation in State waters to verify the as-built condition of the cable. Such survey shall also include the entirety of the area affected by the proposed project, including all anchor locations, to confirm seafloor cleanup and site restoration. Enforcement Agency: SLC.

Residual impacts would be expected to be insignificant.

Conclusions-Proposed Project
According to the significance criteria established for this document, an impact on the benthic environment would be considered to be locally significant if it results in a measurable change in population abundance and/or species composition beyond normal variability, substantially limits reproductive capacity through losses of individuals or habitat, substantially limit or fragment range and movement, or results in a measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area. Increases in turbidity would be expected to be highly-localized and temporary, causing insignificant impacts. The

temporary loss of up to 24 eelgrass plants would be mitigated by measures ExxonMobil is proposing to adopt and by the additional measures the agencies would require; therefore, any adverse impacts on eelgrass from anchoring or removing cable would be expected to be insignificant. Based on the distance of the nearshore abalone habitat from planned activities and implementation of the proposed mitigation measures, the effects of the project on non-listed abalone would be expected to be insignificant. Impacts on the benthic environment from a concrete mattress being placed on the bottom would be expected to be insignificant. Impacts from the new cable contacting 12.5 ft^2 (1.2 m^2) of a single hardbottom feature at the shelf-break would be expected to be insignificant based on the facts that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is laid, and the impacted surface area is an exceedingly small amount of the total surface area of the feature. Overall, the impacts on the benthic environment from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

4.5.4 Cumulative Impacts

The draft EIS for Delineation Drilling Activities in Federal waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on the benthic environment and seafloor resources. The EIS identifies several activities that may impact the benthic environment including: commercial fishing operations, fiber optic cable installation operations, ongoing and reasonably foreseeable oil and gas activities in Federal and State waters, and non-anthropogenic and anthropogenic sources of sediment and contaminants.

Cumulative impacts on nearshore benthic habitats and communities could take the form of degradation or elimination of rocky shallow subtidal habitat in the region west of Santa Barbara. The shallow subtidal habitat is a dynamic environment that experiences regular resuspension of sediments and strong water surges and pounding through wave action. Although these areas face southward and are therefore somewhat protected, they still experience periodic strong winter storm conditions (especially during El Niño events) that inundate the shallow habitats with freshwater runoff, increase turbidity, move boulders and rocks, uproot sargassum, eelgrass, and kelp plants, and scour large amounts of sand. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, but rock movement and sand scouring can be long-term.

Cumulative impacts on offshore benthic habitats and communities could also take the form of degradation of sensitive and rare offshore hardbottom communities. The offshore communities are considered to be rare in the western Santa Barbara Channel due to the preponderance of soft bottom and limited extent of viable hard bottom communities. The rarity of these communities, in effect, causes them to be sensitive.

The CDFG, Marine Region, has identified (Leet et al., 2001) several fishing and non-fishing activities that may cause adverse impacts to benthic communities along the Pacific Coast. Major issues are the impact of environmental events like El Niño on animal and plant species, over-harvest of species such as abalone and nearshore rockfish, interactions between fisheries and marine mammals, pollution from human activities, and competition among user groups, both consumptive and non-consumptive.

The NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to Essential Fish Habitat (EFH) along the Pacific Coast and within the SYU.

These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the California coastal habitat and all of these activities and impacting agents exist in the southern California coastal zone around the Santa Barbara Channel. As a result, marine water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

The proposed proposed project activities would cause locally insignificant impacts (e.g., highly-localized, temporary turbid conditions, temporary impact on about 24 eelgrass plants, and contact with 12.5 feet^2 (1.2 meters^2) of a rocky feature at the shelf-break) on the benthic environment. In conclusion, this project is not expected to add significantly to cumulative impacts on the benthic environment in the Santa Barbara Channel.

4.5.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative A would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative A would decrease the duration of the project-related activities by approximately 1 day. This would be expected to result in a minor decrease in potential impacts on the benthic environment below those described for the proposed project. Deferral of removal of the failed power cable until the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project. Full removal of the power cable at this later date would not be expected to result in a measurable increase or decrease in potential impacts on the benthic environment in the project area from those described for this alternative.

Alternative B: Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted between the third quarter of 2002 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phase 2 is projected to occur between 2003-2007. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative B would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative B would increase the duration of the project-related activities in the near term by approximately 12-14 workdays with separate mobilization efforts over a 2-3 week period sometime between 2003 and 2007. However, all added work related to this alternative would occur on the OCS. This would be expected to result in a very minor increase in potential impacts on the benthic environment above those described for the proposed project.

Alternative C: No Project Alternative
Alternative C is the No Project Alternative. (See Section 2.0, Alternatives to the Proposed Project) Under this alternative, the applicant would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of all power cables would occur when the SYU offshore facilities are decommissioned. Thus, none of the impacts on the benthic environment expected to result from cable-laying or removing activities associated with the proposed action would occur under Alternative C.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Removal of all power cables when the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables and would last 2-3 years.

The potential impacting factors for Alternative C would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative C would have removal of all power cables occur when the SYU offshore facilities are decommissioned sometime between 2020 and 2030 and would decrease both the duration and scope of activities relative to those expected for the proposed project. This would be expected to result in a very minor decrease in potential impacts below those described for the proposed project.

4.6 Commercial Fishing Operations

4.6.1 Environmental and Regulatory Setting

Commercial fishing activities in the SYU and within the Santa Barbara Channel have been described in previous studies and environmental documents (Fusaro et al., 1986; Kronman 1995; MMS 1995, 1997, and 2001; SAI, 1984).

The SYU project area supports a diverse assemblage of valuable fishery resources. These resources, in turn, support important commercial and recreational fisheries (Fusaro et al., 1986; MBC, 1986; Leet et al., 1992 and 2001). Major fisheries within or near the proposed project area include trapping for crab and lobster; purse seining for anchovy, bonito, mackerel, squid, and other pelagic fish; trawling for spot prawn, ridgeback shrimp, sea cucumbers, and halibut; diving for urchins; and drift and set gillnetting for thresher shark, bonito shark, swordfish, white seabass, and barracuda.

The project area traverses two California Department of Fish and Game (CDFG) Fish Blocks, 655 and 656. Table CF-1 contains information from CDFG on the types of fishing performed in these blocks and their related catches over a ten year period. Table CF-2 contains information from CDFG on commercial fishing vessels and their local port of origin. About 10 miles (6 kilometers) of Block 655 would be traversed by project-related activities. The only portion of block 656 that could be impacted is the area along the pipeline route between platforms Harmony and Heritage, an area that receives minimal fishing pressure due to the extreme depths over 1100 feet (335 meters). CDFG Fish Blocks are "10-minute squares," encompassing 82 miles^2 (212 kilometers^2). Commercial fishing operations occur within the proposed project area throughout the year. Conflicts between fisheries and fishing and oil and gas activities on the California OCS can generally be separated into two categories: (1) potential effects on managed

fish species and Essential Fish Habitat (see Section 4.8), and (2) space-use, or operational conflicts discussed below.

Four commercial fisheries could be impacted because of space-use conflicts by the proposed project: the purse seine fishery, drift gillnet fishers, the trawl fishery and the trap fishery (Gordon Cota, pers com., 2002; Mike McCorkle, pers. com., 2002). These four fisheries contributed over 70 percent of the total catch from 1992 to 1997 in fishing block 655 (Table CF-1). Diving for urchins contributed approximately 25 percent of the total catch during the same period; however this fishery is not expected to occur near the proposed project area.

Purse Seining. The numbers of purse seiners and their location within the Santa Barbara Channel are highly variable and uncertain (Table CF-2). The species fished are primarily pelagic, such as anchovy, mackerel, squid and bonito. Because purse seiners follow schools of these pelagic fish, it is difficult, if not impossible, to predict how large or where the fleet will be at a given time. When working an area, the purse seine fleet is made up of a group of vessels. While searching, the vessels often move on erratic or zigzag courses, trying to spot schools visually or on their sonar. Although the season for pelagic fishes is open all year, the CDFG sets catch quotas. When quotas are filled, the fishery is over for that year unless an extended quota is subsequently issued. Purse seining for mackerel, bonito, squid, sardine and anchovy could be expected throughout the area. The purse seine fishery averaged over 198,000 lbs/yr over the past 10 years in CDFG fishing block 655 (Table CF-1).

Trawling. Trawlers in the Santa Barbara Channel target Pacific Ocean shrimp, spot and ridgeback prawn, sea cucumbers, rockfish, and various species of sole. They also fish seasonally in shallow State waters for halibut. This is a mobile fishery in which a trawl net or double rig is towed behind the fishing vessel at slow speed, either in midwater or, more commonly in the Santa Barbara Channel, along the bottom. The trawler deploys the net(s) in areas where fish or shellfish are noted on the fathometer, or where trawling has been successful previously. Trawling occurs year-round in the Santa Barbara Channel at depths of 180-1,080 feet (55-330 meters) (Fusaro, 1986). Ridgeback prawn and sea cucumbers dominate the trawl catch in block 655. The trawl fishery averaged over 89,000 lbs/yr over the past 10 years from CDFG fishing block 655 (Table 1xx). Ridgeback prawn is fished in the proposed project area from Oct. 1 through May 30 in water depths of 90 fathoms (fm) (165 meters) and shallower (Mike McCorkle, pers. com., 2002). The peak season is in the spring from late February to June. Sea cucumbers are trawled in the proposed project area between 60 and 90 fm (110 to 165 meters) in winter, and from the offshore 1 mile (1.6 kilometers) line out to 40 fm (73 meters) in summer (Mike McCorkle, pers. com., 2002). The peak season is from June through September.

Drift Gillnetting. Due to drift gillnetting restrictions in State waters, all drift gillnetting occurs in Federal waters. The target species are thresher and bonito shark and swordfish. In the Santa Barbara Channel, drift gillnetting occurs for swordfish and thresher shark from August 15 through January 31 and for bonito shark year-round. The peak season is from October through December. During the summer months, some driftnetting for white seabass and barracuda may occur in the proposed survey area. One end of the net is attached to the fishing vessel, while the other is secured to a free-floating buoy marked with a flag, light, and radar reflector. The net also has floats on top and weights on the bottom that can be changed to make the net fish at or below the surface. The vessel and net drift together. The net is either stacked on the deck or rolled on a reel. With the vessel under way, the buoy is set over the stern or side, pulling the net into the

water. Rollers on the stern or side keep the net from snagging as it is played out. The net and buoy are hauled in from the leeward side of the vessel. As the net comes aboard, the fish are removed from the net, which is then restacked or reeled up for the next set. The drift net fishery averaged over 6,500 lbs/yr of shark and swordfish over the past 10 ears in blocks 655 (Table CF-1).

Trap Fishing. Trap fishing for lobster and crab is a fixed gear operation. The crab season is year-round, and the lobster season is from October to mid-March. Traps (pots) are baited and deployed in fishing grounds. The pots are commonly left to fish or soak for about three days, and then are retrieved. The fishing vessel pulls alongside the pot buoy(s), grapples the buoy on deck, feeds the line through a pinch-puller of some kind, and raises the pot from the sea floor. The crabs or lobster are taken from the pot; it is rebaited and redeployed. Normal fishing practice dictates the movements of trap location: if the traps are fishing well, they are left where they are. If the traps are not catching much, they will usually be moved to a new location. In practice this means that groups, or strings, of gear will be moving from one location to another on an unpredictable time schedule dictated by crab and lobster population movements. It is therefore difficult to predict the location of any particular string of gear at a given time. Most full-time fishermen have at least 50-70 pots, and many fishermen have upwards of several hundred pots arranged in strings of from 5 to 25 individual traps set along particular depth contours. From a practical standpoint in locating and avoiding a string(s) of pots, it is important to consider the effects of tide and current strength on the line and buoy, and windage on the buoy. During conditions of high tide, strong currents, or high winds, buoys may be below sea surface and invisible. Both lobster and crab are cannibalistic, so any lost or unretrievable pots will continue to fish for a period of time, removing them from the fishable stock. An average of over 17,000 lbs/yr of crab and lobster were harvested from CDFG fishing block 655 over the last 10 years (Table CF-1).

4.6.2 Project Impact Assessment

The impact analysis for the commercial fisheries in this document adopts the following significance criteria. An impact from the proposed project is significant if it is likely to cause any of the following:

- Fishermen are precluded from 10 percent or more of the fishing grounds during the proposed project;
- 10 percent or more of a type of fishermen are precluded from a fishing area for all or most of a fishing season; or
- A decrease in catchability of target species exceeds 10 percent of the average annual landing.

Cable Removal and Installation Impacts 2002-2005

As described in Section 2.0, the proposed project would involve the removal of approximately 5 miles (8 kilometers) of failed power cable and installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to commercial fishing operations that would be expected to occur as a result of cable removal and installation. Impacts that would occur from the removal of the new cables (C1 and D1) and the remaining Cable C at the end of the SYU life are analyzed in the following section.

The potential operational conflicts associated with the proposed project include vessel traffic, project-associated obstructions due to anchoring, the power cables themselves, and any project-associated items lost overboard, and space-use conflicts.

Vessel traffic. As described in Section 1.0, ExxonMobil projects that 4-5 vessels would be involved in the cable installation: a DP cable-laying vessel, a supporting tug, a dive vessel, and one or two supply/work vessels. Two support skiffs would also be deployed during the project. The offshore activities associated with the proposed project would be expected to occur over a 4- to 8-week period, although the applicant estimates that the cable laying and removal operations would take 14-21 workdays. The proposed project is tentatively scheduled to take place sometime between the third quarter of 2003 and October 2005.

Overall, the proposed project would be expected to result in a temporary, minimal increase in area vessel activity. Following the proposed activities, supply and crewboat vessel traffic would be expected to return to current SYU baseline levels. Currently, three crewboats typically are in the SYU area at any time, and crewboats normally make 2-3 round trips per day between the SYU platforms and Ellwood Pier (or other local piers and ports). The applicant estimates that up to 6 additional crewboat trips could occur during the project period. In addition, one supplyboat typically is in the field at any time and supplyboats normally make 1 trip per day between the SYU platforms and Ellwood Pier (or other local ports).

The Santa Barbara Channel Oil Service Vessel Traffic Corridor Program is intended to minimize interactions between oil industry operations and commercial fishing operations. It was developed cooperatively between the two industries through the Joint Oil/Fisheries Liaison Office (JOFLO). All vessels associated with the proposed project would use the vessel traffic corridors in transits to and from local harbors and ports. In addition to providing transit corridors in and out of area ports, the program routes support traffic along the Channel seaward of an outer boundary line. East of Gaviota, the 30-fathom line defines the outer boundary. Inside 30 fathoms, where corridors have not been established specifically for the project area, the permitting agencies would specify that the applicant establish temporary vessel traffic corridors reviewed and approved by JOFLO for the duration of the project. In addition, the permitting agencies would specify that the applicant include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. This method of reducing vessel conflicts has been shown to be effective during past OCS activities. Thus, the impact to commercial fishing operations attributed to increased vessel traffic associated with the proposed project would be expected to be negligible.

Project-associated obstructions. The construction activities associated with the prepared project have the potential to cause short-term and long-term obstructions to trawl fishermen in the project area. These potential obstructions could be due to anchoring, the power cables themselves, and any project-associated items lost overboard.

Anchoring. While the majority of the work would be performed using a DP vessel, thereby avoiding use of anchors, anchoring of supply/work vessels and a dive vessel would be required in the nearshore conduit terminus area, and offshore at platforms Hondo, Harmony, and Heritage. Anchor scars caused by dragging the anchors as they are being set, may cause short to long-term trawling difficulties depending on the bottom soils where the anchors are placed

(Centaur Associates, Inc., 1984). Anchor scars would not impact trawl fishermen in the nearshore conduit terminus area since trawling is prohibited within one mile (1.6 kilometers) of shore in this area. The water depths at platforms Harmony and Heritage are generally too deep for the trawl vessels common to the Santa Barbara Channel. Thus, only the anchoring operations at platform Hondo would be of concern to commercial trawling activities in the area.

Two separate activities associated with the proposed project and requiring anchoring would occur at platform Hondo: exposing the J-tube and cable; and removing the cable and pigging the tube. The cable removal and pigging operations required at platform Hondo would be scheduled to take approximately one day to complete. A supply/work vessel would deploy one pre-set anchor (up to 30k pounds). The anchor would be set and retrieved vertically according to a site-specific mooring analysis. By using an anchor of sufficient holding power, drag related scarring could be minimized to the 10-100 feet (3-30 meters) necessary to properly set the anchor. Exposing the J-tube and OS&T cable at platform Hondo would be expected to take 1-2 days to complete. The supply/work vessel associated with this activity would also deploy one pre-set anchor in the same manner previously described. The two anchoring events at platform Hondo would not be expected to have an adverse impact on commercial trawling operations in the area.

Power Cables and Lost Debris. The applicant proposes to lay approximately 17 miles (27 kilometers) of new power cable from the Las Flores Canyon Plant to Platform Heritage. The project also proposes to remove the failed cable C from the nearshore conduit to the shelf break, a distance of approximately 5 miles (8 kilometers).

Commercial fishing gear damage and loss problems attributed to obstructions and lost debris related to offshore California oil and gas activities have been identified since at least 1966 (Richards, 1990). Since 1983, JOFLO has served as an information clearinghouse with primary responsibility for inter-industry communications. A search of the JOFLO inter-industry interactions records on the proposed project area has found no incident in the vicinity of either the existing or proposed power cable route that could be attributed to the existing cables. The power cables are approximately 6 inches (15 centimeters) in diameter, and weigh approximately 18 lbs/feet (27 kg/m). Due to the weight and small diameter of the power cables, they are partially buried and thus pose a low risk of snagging or entangling a trawl net. No adverse impact to commercial fishing operations due to the new or the existing power cables in the proposed area would be expected. In the unlikely event that commercial fishing conflicts attributable to the new power cables in the SYU area develop in the future, the permitting agencies may require additional mitigations that may include physical modification of identified problem areas, removal of the abandoned cable, or offsite, out-of-kind measures.

The applicant proposes to require its contractors on the cable lay and support vessels for the project to maintain logs that identify the date, time, location, depth, and description of all items lost overboard. To the extent reasonable and feasible, the applicant proposes to require its contractors to recover all items lost overboard during activities associated with the project. No adverse impact to commercial fishing operations due to project-related lost debris in the proposed project area would be expected.

Space-use conflicts. As previously discussed, 4-5 vessels (a DP cablelaying vessel, a supporting tug, a dive vessel, and one to two supply/work vessels) and two support skiffs would be involved in the proposed project over 14 – 21 days.

The DP cablelaying and retrieval vessel and two support skiffs would be onsite an estimated 2-3 weeks to install and remove cable. During deployment and retrieval operations, the cablelaying vessel would move very slowly and may pose a minor obstruction to trawl, drift gillnet, and purse seine operators in the area. The following describes each of these fishery methods along with issues related to maneuverability while nets are deployed, and analyzes the impacts associated with the proposed project.

Trawl: The trawl fishery is a mobile fishery. But with nets deployed, a trawling vessel is not readily maneuverable. The net is on the bottom and in fairly deep water can be a mile behind the vessel. Trawlers often work on the top edges of steep drop-off slopes; to turn into deeper water would force the net to drop off these slopes. This causes loss of fishing time since the net has to be picked up and reset. Similarly, rocky outcrops, wrecks, or other debris are located randomly with respect to the trawl grounds. These features are hazards to the trawler because of their potential to snag and hang up the net. Through trial and error, trawlers become aware of most of the snags to avoid in favored grounds. Knowledge of these snags also limits the potential maneuverability of the trawler when towing a net(s). Turning into such a snag may mean loss or damage to the net(s), and potential hazard to the vessel itself if the hang is significant and/or weather/sea conditions are unfavorable. Since turning into such obstructions would be hazardous, most trawlers would have to stop towing and pull their gear in rather than turn.

The ridgeback prawn and sea cucumber trawl fisheries are both active in the proposed project area. During deployment and retrieval operations, the cablelaying vessel would move very slowly, and experienced trawlers would likely be able to avoid conflicts with only minor inconvenience. Considering also the short duration of the cablelaying vessel on the trawl grounds, and the limited area, the impact to commercial trawlers would be expected to be insignificant. Proposed mitigation measures would further minimize any impact.

Drift Gillnet: Drift gillnets may be a mile or mile and half in length and have restricted ability to maneuver. The end of the gillnet not attached to the fishing vessel usually has a radar reflector/lighted buoy attached to it, but may not be immediately obvious because it is so far from the vessel. Since drift gillnetting is usually done at night, and often during the darker phases of the moon, it is difficult for other vessels to be aware of the configuration of drift gillnet operations. A drift gillnet up to 6,000 feet (2000 meters) long and 60-100 feet (20-30 meters) deep can be fished anywhere from right at the surface to 30-40 feet (10-15 meters) below the surface. Since drift gillnetters drift with the current, this fishery would be precluded from an increasing large area up-current of the cablelaying vessel. The preclusion zone would be a triangular-shaped area up-current, with the apex at the cablelaying vessel. Since gillnets are restricted from state waters, only a very small area between the 3-mile state seaward boundary and platform Hondo would potentially be affected. Given this very small area of activity for the drift gillnet fishery, no impact to this fishery would be expected from the proposed project.

Purse Seine: The purse seine fleet is very mobile, and consists of a group of vessels. While searching, the vessels often move on erratic or zig-zag courses, trying to spot schools of fish visually or on sonar. When a school of fish is spotted, the vessel maneuvers into position near the school and launches the skiff, which drags the seine around the school of fish and back to the mother vessel. The purse line of the seine is rapidly winched in to close the bottom of the net, and the entire net is brought in with a power block and winch. A successful set and haul usually

takes from 30 to 90 minutes, depending on the size of the fish school, weather, and other factors. With nets deployed, purse seiners are essentially dead in the water and drift with the current. Purse seining would thus be precluded from a triangle-shaped area up-current of the cablelaying vessel. Due to the highly mobile nature of this fishery and the limited area of the proposed project, only minor inconveniences would be expected to occur during the cablelaying phase of the project.

Trap: Both crab and lobster traps can be expected in the nearshore project area. A dive boat with a two to four anchor spread would be onsite at the conduit terminus area for two to four days. A supply/work vessel would be onsite with a four to six anchor spread for an additional 5 to 10 days. Assuming a 6 to 1 anchor scope in 25 feet (8 meters) water depth at the conduit terminus, all traps would be precluded from within the anchor spread radius of approximately 165 feet (50 meters) around the vessels for 2-3 weeks. Trap fishing would also be precluded from an area approximately 1/4 mile (400 meters) downcurrent of the work vessel for one day while the cable is floated in a controlled bight to be pulled through the conduit to shore. Due to the short duration and the limited area of the proposed project, only minor inconveniences to the trap fishery would occur. The proposed mitigation measures would further minimize any impact.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts to commercial fishing operations that would be expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed C Cable on the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Deferral of Cables C1 and D1 and the remaining segment of failed Cable C on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that 2-3 years would be required to remove all SYU facilities Removal of the OCS segment of failed Cable C and the new C1 and D1 cables would take an estimated 2-3 weeks. This project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.6.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to commercial fishing operations. Text appearing in italics denotes augmentation or other modification by the agencies.

CF-1: ExxonMobil shall require all construction and operations vessel transits associated with the project to comply with the vessel traffic corridors established by the Joint Oil/Fisheries Committee. *Enforcement Agency: MMS, SLC.*

CF-2: ExxonMobil shall keep the Joint Oil/Fisheries Liaison office in Santa Barbara abreast of construction activities as they progress. *Enforcement Agency: MMS, SBC.*

CF-3: ExxonMobil shall require all offshore personnel to view the Western States Petroleum Association Fisheries and Wildlife Training Program. *Enforcement Agency: MMS, SLC.*

CF-4: ExxonMobil shall *file a timely advisory with the local U.S. Coast Guard District office, with a copy to the Long Beach Office of the SLC, for publication in the Local Notice to Mariners and shall* notify fishermen at least 15 days prior to the commencement of construction activities as specified in Santa Barbara County FDP Condition X-10*. Enforcement Agency: MMS, SLC, SBC.*

CF-5: ExxonMobil shall continue to consult with JOFLO and commercial fishermen, as appropriate, during the planning stages *and construction* to identify and mitigate *any unanticipated* impacts regarding the power cable project. *If the JOFLO determines that conflicts with commercial fishing operations in the SYU area develop during this project, ExxonMobil shall make all reasonable efforts to satisfactorily resolve any issues with affected fishermen. Possible resolutions may include physical modification of identified problem areas on the new cables, the establishment of temporary preclusion zones, or off-site, out-of-kind, measures. Evidence of consultations shall be provided to the MMS, SLC, SBC. Enforcement Agency: MMS, SLC, SBC.*

CF-6: ExxonMobil shall review design concepts and installation procedures with JOFLO to minimize impacts to commercial fishing to the maximum extent possible. *Enforcement Agency: MMS, SLC, SBC.*

CF-7: ExxonMobil shall require the contractor to recover any fan channel support, if used, prior to demobilization in the event they escape. *Enforcement Agency: MMS.*

CF-8: ExxonMobil shall require contractors, to the extent reasonable and feasible, to recover all items lost overboard during activities associated with the proposed project. Logs shall be maintained on the cable lay and support vessels that identify the date, time, location, depth, and description of all items lost overboard. *Enforcement Agency: MMS, SLC.*

CF-9: ExxonMobil shall require the contractor to scout the nearshore conduit terminus area to determine the presence of any traps that could interfere with the cable pull operations. If any traps are found, the affected fishermen shall be contacted through JOFLO and requested to relocate the traps for the project duration. If the traps have not been moved by the time project activities are scheduled to begin, any traps that could interfere with the activities shall be relocated and then returned to the original site at the end of the work. *Enforcement Agency: MMS, SLC.*

Agency Recommended Mitigation Measures

CF-10: Inside 30 fathoms, where corridors have not been established specifically for the proposed project area, ExxonMobil shall establish temporary vessel traffic corridors reviewed and approved by JOFLO for the duration of the project. Enforcement Agency: SLC, MMS.

CF-11: ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. Enforcement Agency: MMS, SLC, SBC.

In addition to these mitigation measures, please refer to the following mitigation measures from other resource sections: BE-1, BE-2 and BE-4.

Residual impacts would be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact from the proposed project is significant if it is likely that fishermen would be precluded from 10 percent or more of the fishing grounds during the proposed project, that 10 percent or more of a type of fishermen are precluded from a fishing area for all or most of a fishing season, or that a decrease in catchability of target species exceeds 10 percent of the average annual landing. Inside 30 fathoms, where corridors have not been established specifically for the proposed project area, the permitting agencies would specify that ExxonMobil establish temporary vessel traffic corridors reviewed and approved by JOFLO. In addition, the permitting agencies would specify that ExxonMobil include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. Thus, the impact to commercial fishing operations attributed to increased vessel traffic associated with the proposed project would be expected to be insignificant. The two anchoring events at platform Hondo would not be expected to have an adverse impact on commercial trawling operations in the area. No adverse impacts on commercial fishing operations would be expected from the power cables themselves. No adverse impacts on commercial fishing operations would be expected from project-related debris. Considering also the short duration of the cablelaying vessel on the trawl grounds, and the limited area, the impact to commercial trawlers would be expected to be insignificant. Given this very small area of activity for the drift gillnet fishery, no impact to this fishery would be expected from the proposed project. Due to the highly mobile nature of the driftnet fishery and the limited area of the proposed project, only insignificant inconveniences would be expected to occur during the cablelaying phase of the proposed project. Due to the short duration and the limited area of the proposed project, only insignificant inconveniences to the trap fishery would be expected to occur. Implementation of the proposed mitigation measures would further minimize conflicts with commercial fishing. Overall, the impacts on commercial fishing operations from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

4.6.4 Cumulative Impacts
The draft EIS for Delineation Drilling Activities in Federal waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on the commercial fishing industry of southern California. The EIS identifies several activities that contribute to space-use and preclusion conflicts with commercial fishing operations including: on-going and proposed oil and gas activities in Federal and State waters; tankering and shipping; and commercial and recreational fishing. The EIS also identifies several activities that damage the fish resource including: dredging and discharge of dredged materials; oil and gas development; aquaculture; coastal development and non-point source pollution; agricultural run-off, and; commercial and recreational overfishing.

The NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to Essential Fish Habitat (EFH) along the Pacific Coast and within the SYU. These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the California coastal habitat and all of these activities and impacting agents exist in the southern California coastal zone around the Santa Barbara Channel. As a result, marine

water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

Several fish stocks in the Santa Barbara Channel are depressed resulting in management decisions to restrict some gear types, place fish size and bag limits, and close fisheries. It is difficult to apportion the reasons for a fishery's demise among overfishing, habitat degradation, pollution, and natural variability of the population. In 1999, several rockfish species that occur in the Santa Barbara Channel were declared overfished for the entire west coast of the U.S. (Leet et al., 2001). Recent predictions of population trends indicate that rockfish populations may take many decades to recover to sustainable levels.

Given the short duration of the proposed project, the small project area, and proposed mitigation measures, no significant impacts to commercial fishing operations from routine operations would be expected to occur from the proposed project. In conclusion, the project is not expected to add significantly to cumulative impacts on commercial fishing operations in the Santa Barbara Channel.

4.6.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative A would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative A would decrease the duration of the project-related activities by approximately 1 day. This would be expected to result in a minor decrease in potential impacts below those described for the proposed project. Inside 30 fathoms, where corridors have not been established specifically for the project area, the permitting agencies would specify that the applicant establish temporary vessel traffic corridors reviewed and approved by JOFLO. In addition, the permitting agencies would specify that the applicant include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. Thus, the impact to commercial fishing operations attributed to increased vessel traffic associated with the project would be expected to be negligible.

Anchor scars would not impact trawl fishermen in the nearshore conduit terminus area since trawling is prohibited within one mile (1.5 kilometers) of shore in this area. The two anchoring events at platform Hondo would not be expected to have an adverse impact on commercial trawling operations in the area.

No adverse impact to commercial fishing operations due to the new or the existing power cables in the proposed area would be expected. In the event that commercial fishing conflicts attributable to the new power cables in the SYU area would develop in the future, the permitting agencies may require additional mitigations that may include physical modification of identified problem areas, removal of the abandoned cable, or offsite, out-of-kind measures. During deployment and retrieval operations, the cablelaying vessel would move very slowly, and experienced trawlers would likely be able to avoid conflicts with only minor inconvenience. Considering also the short duration of the cablelaying vessel on the trawl grounds, and the

limited area, the impact to commercial trawlers would be expected to be low. Since gillnets are restricted from State waters, only a very small area between the 3-mile State seaward boundary and platform Hondo would potentially be affected. Given this very small area of activity for the drift gillnet fishery, no impact to this fishery would be expected from the proposed project. Due to the highly mobile nature of this fishery and the limited area of the proposed project, only minor inconveniences would be expected to occur during the cablelaying phase of the project.

Due to the short duration and the limited area of the proposed project, only minor inconveniences to the trap fishery would occur. The proposed mitigation measures would further minimize any impact to commercial fishing. Overall, the impacts on commercial fishing operations from Alternative A would be expected to be insignificant and mitigated to the maximum extent feasible.

Deferral of removal of the failed power cable until the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project. Full removal of the power cable at this later date would not be expected to result in a measurable increase or decrease in potential impacts on commercial fishing operations in the project area from those described for this alternative.

Alternative B: Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted sometime between the third quarter of 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phases 2 would be projected to occur between 2003-2007 (see Section 2, Alternatives to the Proposed Project).

The potential impacting factors for Alternative B would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative B would increase the duration of the project-related activities by approximately 12-14 workdays. This would be expected to result in a minor increase in potential impacts above those described for the proposed project. Inside 30 fathoms, where corridors have not been established specifically for the project area, the permitting agencies would specify that the applicant establish temporary vessel traffic corridors reviewed and approved by JOFLO. In addition, the permitting agencies would specify that the applicant include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. Thus, the impact to commercial fishing operations attributed to increased vessel traffic associated with the proposed project would be expected to be negligible.

Anchor scars would not impact trawl fishermen in the nearshore conduit terminus area since trawling is prohibited within one mile (1.5 kilometers) of shore in this area. The two anchoring events at platform Hondo would not be expected to have an adverse impact on commercial trawling operations in the area.

No adverse impact to commercial fishing operations due to the new or the existing power cables in the proposed area would be expected. In the unlikely event that commercial fishing conflicts attributable to the new power cables in the SYU area develop in the future, the permitting agencies may require additional mitigations that may include physical modification of identified

problem areas, removal of the abandoned cable, or offsite, out-of-kind measures. During deployment and retrieval operations, the cablelaying vessel would move very slowly, and experienced trawlers would be able to avoid conflicts with only minor inconvenience. Considering also the short duration of the cablelaying vessel on the trawl grounds, and the limited area, the impact to commercial trawlers is expected to be low.

Since gillnets are restricted from State waters, only a very small area between the 3-mile State seaward boundary and platform Hondo would potentially be affected. Given this very small area of activity for the drift gillnet fishery, no impact to this fishery would be expected from the proposed project. Due to the highly mobile nature of this fishery and the limited area of the proposed project, only minor inconveniences would be expected to occur during the cablelaying phase of the proposed project. Due to the short duration and the limited area of the proposed project, only minor inconveniences to the trap fishery would occur. The proposed mitigation measures would further minimize any impact to commercial fishing. Overall, the impacts on commercial fishing operations from Alternative B would be expected to be insignificant and mitigated to the maximum extent feasible.

Alternative C: No Project Alternative
Alternative C is the No Project Alternative. Under this alternative, the applicant would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of the remaining portion of the power cable would be deferred until the SYU offshore facilities are decommissioned. Thus, none of the impacts on managed species and EFH expected to result from cable-laying activities associated with the proposed action would occur. (See Section 2.0, Alternatives to the Proposed Project)

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Removal of all power cables when the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables and would last 1-2 years.

The potential impacting factors for Alternative C would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative C would have removal of all power cables occur when the SYU offshore facilities are decommissioned sometime between 2020 and 2030 and would decrease both the duration and scope of activities relative to those expected for the proposed project.

Table CF-1
Primary Commercial Fish Catch (lbs) from CDFG Fish Block 655 (1989-1999).*

		1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Average
Purse Seine	Bonito				203,234		8,935			57,291	303,348		71,601
	Tuna				94,041								11,755
	Mackerel				200,500		395,000		5,074		21,273		77,731
	Sardine				80,500						40,285		15,098
	Squid							4,950	132,870	6,081		210,577	44,310
	Total				578,275		403,935	4,950	137,944	63,372	364,906	210,577	220,495
Drift Net	Shark (all spp.)				6,805	26,274	6,124				6,456	2,665	6,041
	Total				6,805	26,274	6,124				6,456	2,665	6,041
Hook and Line	Rockfish (all spp.)							2,903	19,837	8,091			3,426
	Sheephead				99				1,110	347	20,958	1,112	2,625
	White seabass							3,375	10,759	1,966			1,789
	Shark (all spp.)							1,618	4,989	4,881		228	1,302
	Total							7,896	35,585	14,938	20,958	1,112	9,142
Dive	Urchins				147,341	92,298	107,205	130,640	80,060	67,842			104,231
	Total				147,341	92,298	107,205	130,640	80,060	67,842			104,231
Trap	Rock Crab				12,133	5,164		6,627	39,022	19,790	26,079	16,006	13,869
	Lobster				1,757	1,253		2,032	6,547	11,514	10,667	4,597	4,263
	Total				13,890	6,417		8,659	45,569	31,304	36,746	20,603	18,132
Trawl	Sea cucumber				15,200	29,800	13,102	22,300		34,050	18,079	3,160	15,077
	Halibut						3,014		2,849	1,320		1,008	910
	Ridgeback Shrimp				1,655			34,711	141,981	216,139	18,985	22,631	48,456
	Spot Prawn						5,295	811		12,030			2,015
	Total				16,855	29,800	21,411	57,822	144,830	263,539	37,064	26,799	66,458
Total catch (all spp.)					774,082	163,683	546,929	225,305	468,090	462,290	478,062	269,689	423,516

* CDFG data

Table CF-2
Commercial Fishing Vessels within the Santa Barbara Channel Harbors (1990-1999)

Harbor	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Annual Average
Line Gear											
Port Hueneme	6	5	1	4	4	9	7	4	7	5	5
Oxnard	47	41	24	35	46	59	54	59	49	61	48
Santa Barbara	57	64	73	77	94	90	91	109	71	83	81
Ventura	88	94	78	103	77	75	54	47	40	33	69
Gill Net or Purse Seine											
Port Hueneme	24	27	15	24	34	48	63	50	34	90	41
Oxnard	26	16	6	17	28	10	20	13	20	20	18
Santa Barbara	62	59	40	42	27	21	33	20	24	27	36
Ventura	80	68	50	55	49	53	56	40	38	61	55
Pot or Trap											
Port Hueneme	4	4	3	2	3	5	2	6	2	4	4
Oxnard	53	27	20	25	34	56	64	60	55	48	44
Santa Barbara	98	87	87	78	100	99	102	96	98	85	93
Ventura	38	35	39	33	34	42	57	36	42	29	39
Troll											
Port Hueneme	0	0	0	0	1	1	0	2	0	1	<1
Oxnard	1	0	0	0	0	12	4	7	13	2	4
Santa Barbara	1	5	0	5	8	56	23	22	34	20	17
Ventura	4	0	2	3	2	14	9	6	16	5	6
Other Gear											
Port Hueneme	36	62	45	4	16	22	2	2	2	3	19
Oxnard	126	116	116	119	111	118	90	84	74	72	103
Santa Barbara	287	308	319	297	280	215	176	144	130	134	229
Ventura	156	142	155	101	83	61	38	38	26	21	82

4.7 Marine Mammals

4.7.1 Environmental and Regulatory Setting

Marine mammals in the Santa Barbara Channel have been described in detail in previous studies and environmental documents (e.g., Bonnell et al., 1981, 1983; Bonnell and Dailey, 1993; Dohl et al., 1981, 1983; ADL, 1984a, 1986; SAI, 1984a; Barlow, 1995; Barlow et al., 1995, 1997, 2001; Barlow and Gerrodette, 1996; Koski et al., 1998; FWS, 2000; DeLong and Melin, 2000; Forney et al., 2000; MMS, 1988, 1991, 1994, 1995, 2000, 2001; Stewart and Yochem, 2000). At least 34 species of marine mammals inhabit or visit California waters. These include six species of pinnipeds (seals and sea lions), 27 species of cetaceans (whales, porpoises, and dolphins), and the sea otter. Pinnipeds breed on the Channel Islands and on offshore rocks and isolated beaches along the mainland coast; thousands also move through the area during their annual migrations. Cetaceans, including a number of endangered species, use area waters as year-round habitat and calving grounds, important seasonal foraging grounds, or annual migration pathways. The sea otter, a year-round resident of the mainland coast north of Point Conception, is appearing in increasing numbers in the western Channel and around the northern Channel Islands (FWS, 2000).

In the U.S., two laws currently regulate human activities where marine mammals might be adversely affected. These include the Marine Mammal Protection Act of 1972, which prohibits the intentional taking, import, or export of any marine mammal without a permit, and the Endangered Species Act of 1973, which extends similar protection to species listed as threatened or endangered. The threatened or endangered marine mammal species found in southern California waters include six whales (blue, humpback, fin, sei, right, and sperm whales), two pinnipeds (Guadalupe fur seal and Steller sea lion), and the California sea otter.

Two of the endangered whale species, the blue whale (*Balaenoptera musculus*) and humpback whale (*Megaptera novaeangliae*), feed on krill in the western Santa Barbara Channel and southern Santa Maria Basin during summer and fall (Calambokidis et al., 1990; Calambokidis, 1995; Reeves et al., 1998; Mate et al., 1999; Forney et al., 2000; Barlow et al., 2001). Although also present in the Channel during summer, fin whales generally are distributed somewhat farther offshore and south of the northern Channel Island chain (Leatherwood et al., 1987; Bonnell and Dailey, 1993). The other two endangered baleen whales, sei and northern right whales, are rare in California waters (Barlow et al., 1997).

Sperm whales (*Physeter macrocephalus*), also an endangered species, are present offshore California year-round, with peak abundance from April to mid-June and again from late August through November (Dohl et al., 1981, 1983; Gosho et al., 1984; Barlow et al., 1997, 2001). They are primarily a pelagic species and are generally found offshore in waters with depths of greater than 3,200 ft (1,000 m) (Bonnell and Dailey, 1993).

The two threatened pinniped species, Steller sea lions *(Eumetopias jubatus)* and Guadalupe fur seals *(Arctocephalus townsendi*), do not breed in the area and presently are uncommon in southern California waters (Stewart et al., 1987b; Bonnell and Dailey, 1993; DeLong and Melin, 2000).

Southern sea otters (*Enhydra lutris nereis*) now range in nearshore waters from near Año Nuevo Island south to approximately Point Conception (Riedman and Estes, 1990; FWS, 2000). Since

1998, 100-150 sea otters have moved south and east of Point Conception along the Channel in the early spring, with most returning to waters north of the Point by mid-summer (FWS, 2000).

Two species of pinnipeds, California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*), commonly occur in the Santa Barbara Channel and nearshore waters of the Santa Maria Basin. San Miguel Island is the major southern California rookery island for California sea lions, the most frequently encountered marine mammals in southern California waters (Bonnell and Dailey, 1993; Koski et al., 1998; Forney et al., 2000; Environmental Consulting, Inc., 2001). Sea lions haul out on the lower decks and structures of OCS platforms and on associated mooring buoys.

Harbor seals haul out on nearshore rocks and beaches along the mainland coast and on the northern Channel Islands; major mainland haul-out sites near the project area are located near the Carpinteria Pier, Dos Pueblos, Ellwood Pier, Point Conception, and Rocky Point (Hanan et al., 1992). Individual harbor seals are frequently sighted in waters near the Santa Ynez Unit facilities (MMS, unpubl. data).

Northern elephant seals (*Mirounga angustirostris*) and northern fur seals (*Callorhinus ursinus*) also breed on San Miguel Island, but are uncommon in project area waters (Bonnell and Dailey, 1993; Environmental Consulting, Inc., 2001). Elephant seals range widely at sea and spend much of their time under water (Le Boeuf et al., 1989, 2000; DeLong et al., 1992). Fur seals forage in deeper waters beyond the continental shelf, generally 20 nm (40 km) or more from shore (Bonnell et al., 1983; Bonnell and Dailey, 1993).

The small odontocetes, or toothed whales, most often seen in the project area are common dolphins (*Delphinus capensis* and *D. delphis*), Dall's porpoise (*Phocoenoides dalli*), Risso's dolphin (*Grampus griseus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and bottlenose dolphin (*Tursiops truncatus*) (Bonnell and Daily, 1993; Barlow et al., 1997; MMS, unpubl. data). Common dolphins, the most abundant cetaceans off California, move through area waters in groups of up to several thousand animals. Bottlenose dolphins are most commonly encountered along the shoreline.

The gray whale (*Eschrichtius robustus*) migrates through southern California waters twice a year on its way between Mexican breeding lagoons and feeding grounds in the Bering Sea. The southbound migration of gray whales through the Southern California Bight begins in December and lasts through February; the northbound migration is more prolonged, lasting from February through May with a peak in March (Leatherwood, 1974; Bonnell and Dailey, 1993; Rugh et al., 1999). The northward migration occurs in two waves (Dohl et al., 1981; Herzing and Mate, 1984; Poole, 1984). The first wave, composed mainly of whales other than cows with calves, begins moving northward in February (Braham, 1984). The second, cow/calf phase of the spring migration generally peaks 7 to 9 weeks after the peak of the first migration (Herzing and Mate, 1984; Poole, 1984). Although individual animals may be sighted throughout the year, gray whales are generally absent from southern California waters from August through November.

Minke whales (*Balaenoptera acutorostrata*), the smallest of the baleen whales, occur year-round in southern California waters (Dohl et al., 1983; Barlow et al., 1997; Forney et al., 2000), where

they are often sighted near the northern Channel Islands (Leatherwood et al., 1987; Bonnell and Dailey, 1993; Koski et al., 1998; Environmental Consulting, Inc., 2001).

4.7.2 Project Impact Assessment

The impact analysis for the marine biological resources in this document adopts significance criteria developed for all biological resources, including threatened and endangered species. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.
- Displacement of a major part of the population from either feeding or breeding areas or from migration routes for a biologically important length of time.
- A measurable loss or irreversible modification of habitat in several localized areas or in 10 percent of the habitat in the affected area.
- Disturbance resulting in biologically important effects on behavior patterns.

For marine mammals (including threatened and endangered species), the phrase "biologically important length of time" is assumed to mean one season or more. Depending on the species and the circumstances, a season could be a breeding season (e.g., California sea lion breeding season), feeding or foraging season (e.g., blue whale feeding period off southern California), or a migratory period (e.g., gray whale migration).

In addition to the aforementioned significance criteria, SBC uses the following additional criterion for determining significance under CEQA:

- Adverse change to or the reduction in a population or habitat used by a State or Federally listed endangered, threatened, regulated or sensitive species. Any "take" of a listed species shall be considered significant.

Cable Installation and Removal Impacts 2002-2005

As described in Section 2.0, the proposed project would involve removal of approximately 5 miles (8 kilometers) of failed power cable and installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to marine mammals that would be expected to occur as a result of cable removal and installation activities. Impacts that would occur from removal of the new cables (Cable C1 and D1) and the remaining failed Cable C at the end of SYU life are analyzed in the following section.

Two major types of potential impact would be expected to occur as the result of the proposed activities. Noise associated with the cable-laying and removal activities would be a source of possible disturbance to marine mammals. In addition, the construction activities and associated vessel traffic could increase the risk that a large marine mammal, such as a baleen whale, might become entangled in an anchor line or be hit by a vessel.

Noise Disturbance: As described in Section 4.18, four to five vessels would be involved in the cable installation: a DP cable-laying vessel, a supporting tug, a dive vessel, and one or two supply/work vessels. Two support skiffs would also be deployed during the project. The

applicant estimates that the cable laying and removal phase of the operations would take 14-21 workdays. The offshore activities associated with all phases of the proposed project would be expected to occur over a 4- to 8-week period. The proposed project is scheduled to take place sometime between 2003 and October 2005.

Overall, the proposed project would be expected to result in a minor increase in area vessel activity. Three crewboats typically are in the SYU area at any time, and crewboats normally make 2-3 round trips per day between the SYU platforms and Port Hueneme (or other local piers and ports). ExxonMobil estimates that up to 6 additional crewboat trips could occur during the proposed project period.

In addition, one supply boat typically is in the field at any time and supply boats normally make 1 trip per day between the SYU platforms and Ellwood Pier (or other local ports). The applicant estimates that up to 6 additional trips could occur during the project period.

Available information on the potential impact of noise and other OCS-related disturbances on marine mammals was reviewed by Hill (1978); Geraci and St. Aubin (1980, 1985); Terhune (1981); Gales (1982); Malme et al. (1983, 1984, 1989); Richardson and Malme (1993); and Richardson et al. (1991, 1995). Vessels are the major contributors to overall background noise in the sea (Richardson et al., 1995). Sound levels and frequency characteristics are roughly related to ship size and speed. The dominant sound source is propeller cavitation, although propeller "singing," propulsion machinery, and other sources (auxiliary machinery, flow noise, wake bubbles) also contribute. Vessel noise is a combination of narrowband tones at specific frequencies and broadband noise. For vessels the approximate size of crew and supply boats, tones dominate up to about 50 Hz. Broadband components may extend up to 100 kHz, but they peak much lower, at 50-150 Hz. These sounds are within the frequency range of sounds produced and known or assumed to be heard by marine mammals, with highest levels concentrated at the low frequencies that are assumed to be most audible to large baleen whales, such as the gray whale.

The source levels and frequency ranges of sounds produced by cable- and pipe-laying vessels have apparently not been measured directly. However, diesel-powered vessels of the approximate size of the lay vessel can be expected to generate sounds at broadband source levels above 180 dB, with most of the energy below 200 Hz (Richardson et al., 1995). The use of thrusters to dynamically position the cable-laying vessel would not be expected to change the overall noise level, because the thrusters are operated from the central engines, which operate continuously throughout the laying process.

Richardson et al. (1995) also gives estimated source levels of 156 dB for a 16-m crew boat (with a 90-Hz dominant tone) and 159 dB for a 34-m twin diesel (630 Hz, 1/3 octave). Broadband source levels for small, supplyboat-sized ships (55-85 m) are about 170-180 dB. Most of the sound energy produced by vessels of this size is at frequencies below 500 Hz. Many of the larger commercial fishing vessels that operate off southern California fall into this class.

In general, seals often show considerable tolerance of vessels. Sea lions, in particular, are known to tolerate close and frequent approaches by boats (Richardson et al., 1995).

Although sea otters often allow close approaches by boats, they sometimes avoid heavily disturbed areas (Richardson et al., 1995). Garshelis and Garshelis (1984) reported that sea otters in southern Alaska tend to avoid areas with frequent boat traffic, but will reoccupy those areas in seasons with less traffic.

Odontocetes, or toothed whales, also often tolerate vessel traffic, but may react at long distances if confined (e.g., in shallow water) or previously harassed (Richardson et al., 1995). Depending on the circumstances, reactions may vary greatly, even within species. Although the avoidance of vessels by odontocetes has been demonstrated to result in temporary displacement, there is no evidence that long-term or permanent abandonment of areas has occurred. Sperm whales may react to the approach of vessels with course changes and shallow dives (Reeves, 1992), and startle reactions have been observed (Whitehead et al., 1990; Richardson et al., 1995).

As summarized in Richardson et al. (1995), there have been specific studies of reactions to vessels by several species of baleen whales, including gray (e.g., Wyrick, 1954; Dahlheim et al., 1984; Jones and Swartz, 1984), humpback (e.g., Bauer and Herman, 1986; Watkins, 1986; Baker and Herman, 1989), bowhead (e.g., Richardson and Malme, 1993), and right whales (e.g., Robinson, 1979; Payne et al., 1983). There is limited information on other species.

Low-level sounds from distant or stationary vessels often seem to be ignored by baleen whales (Richardson et al., 1995). The level of avoidance exhibited appears related to the speed and direction of the approaching vessel. Observed reactions range from slow and inconspicuous avoidance maneuvers to instantaneous and rapid evasive movements. Baleen whales have been observed to travel several kilometers from their original position in response to a straight-line pass by a vessel (Richardson et al., 1995).

Few quantitative data are available on the effects of dredging and marine construction noise on marine mammals (Richardson et al., 1995). In two instances, migrating gray whales passing within 2.5-4 nm (4.5-7.5 km) of a platform construction site in the Santa Barbara Channel were not observed to react to pile-driving activities (Dames and Moore, 1990). Observations from studies in the Arctic indicate that white whales (belugas) and bowheads may tolerate considerable dredge noise, but are more sensitive to moving tug-dredge combinations than to stationary dredges (Malme et al., 1989).

The applicant's offshore pipelines and power cables project in 1991/1992, a Marine Mammal Monitoring Program was conducted by biologists from and under contract to the Santa Barbara Museum of Natural History (SBMNH, 1992). The monitoring program was conducted between December 1991 and March 1992, during the gray whale migration. Although no entanglement, physical contact, or overt startle reactions were observed during the monitoring study, gray whales were observed to alter course in apparent reaction to construction activities (SBMNH, 1992). However, animals moved through the project area throughout the project period, and there was no evidence that the construction activities interfered with the gray whale migration.

Based on the results of these studies, it would be expected that cetaceans, including gray whales, would respond to noise produced by the cable-laying vessel and associated support vessels with short-term changes in swimming speed, increased intervals between blows, and small deflections in course, and that they would resume normal course and speed after passing the source of the

sound. These temporary effects would not have a significant impact on marine mammals in the project area.

Entanglement/Collision: Proposed equipment and vessel activity in the project area also increases the probability that a marine mammal might become entangled in an anchor line and drown or that a boat might hit an animal. Mooring lines and ROV support lines may also present some risk of entanglement. However, there have been no documented cases of marine mammal entanglement in anchor or mooring lines during operations on the Pacific OCS. Neither the DP lay vessel nor the support tug would be expected to anchor within the project area during normal operations, although the dive vessel and a workboat would anchor during operations in the nearshore area adjacent to the conduit terminus, deploying 4-6 and 2-4 anchors, respectively. Workboats may anchor by a single anchor in the OCS area adjacent to the SYU platforms. Given the limited scope of this anchoring activity in time and space and the small associated risk, no impacts would be expected from anchor-line entanglement.

Based on experiences in southern California, MMS and SBC believe that accidental collisions between cetaceans and support vessel traffic are unlikely events. Although large cetaceans have been struck by freighters or tankers, and sometimes by small recreational boats (Barlow et al., 1995), no such incidents have been reported with crew or supply boats off California (MMS, unpubl. data).

Cable-lay vessels move very slowly during cable deployment operations and are even less likely to present a collision risk to large cetaceans. Only one possible incident of this type has been reported—in January 2001, a gravely injured gray whale calf was sighted in the vicinity of a fiber-optic cable-laying operation off Morro Bay (Burton and Harvey, 2001). While the cause of its injuries could not be ascertained, the animal was observed swimming within a few meters of the DP cable-lay vessel.

Pinnipeds are very nimble and considered very unlikely to be struck by vessels. The same is true for southern sea otters. However, the single documented instance of a collision between a marine mammal and a support vessel involved a pinniped—an adult male elephant seal struck and presumably killed by a supply vessel in OCS waters in the Santa Barbara Channel in June 1999.

In their 1984 Biological Opinion on the plan for proposed oil and gas development and production activities in the SYU, the National Marine Fisheries Service (NMFS) concluded that the probability of a collision between vessels and marine mammals was so low that no significant impacts on mammal populations were expected (SAI, 1984a). Since the only large vessel involved with this project will be the cable-laying vessel itself, the risk of vessel collision with large cetaceans is expected to be very small. The risk of vessel collision is further reduced by the fact that, with the exception of mobilization/demobilization activities, the cable-lay vessel would be moving extremely slowly as the cable is being deployed.

If the cable-laying removal operations occur outside of the gray whale migration period (approximately December to June), such interactions would be considered unlikely. Other large whale species, such as humpback and blue whales, do occur in the Santa Barbara Channel, but are considered uncommon in the project area (MMS, 1997, 2000; Koski et al., 1998; Environmental Consulting, Inc., 2001). As stated above in the Environmental and Regulatory

Setting section, fin and sperm whales are uncommon in the Channel. Thus, no harassment of threatened or endangered marine mammals would be expected.

If the project activities do overlap with the gray whale migration season, it would be expected that whales will continue to move through the project area, exhibiting the minor reactions observed during the 1991/92 pipelines and power cables project. In addition, the applicant would work with NMFS, MMS, SBC and other agencies to implement appropriate mitigation in order to further reduce potential impacts, so no significant impacts would be expected. Therefore, under NEPA, the potential project impacts are considered insignificant.

Under CEQA, the project could potentially have a significant impact utilizing the additional criterion supported by SBC. ExxonMobil has proposed to implement a marine mammal monitoring program if the work occurs during the months of April and May, which marks the peak northward gray whale migration period. Because of the fact that other sensitive species are resident or migrate through the channel at different times of year and could potentially be in the project area, SBC believes that marine mammal monitoring would be appropriate for cable laying operations at other times of year as well. Therefore, under CEQA, the project is considered to have a potentially significant, but mitigable impact (see MM-1).

Cable Removal Impacts at End of SYU Life: This section analyzes the impacts to marine mammals that would be expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed C Cable on the OCS at the end of SYU life.

ExxonMobil currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Deferring the removal of Cables C1 and D1 and the remaining segment of failed Cable C on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that 2-3 years would be required to remove all SYU facilities. Removal of the OCS segment of failed Cable C and the new C1 and D1 cables would take an estimated 2-3 weeks. This project will be subjected to detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.7.3 Mitigation Measures

Applicant Proposed Mitigation
The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to marine mammals. The appearance of italicized text denotes augmentation or other modification by the agencies.

MM-1: *Applicant shall implement an agency-approved marine mammal monitoring plan (MMMP) during cable laying and retrieval operations*. The plan shall include the following elements:

a) A minimum of two *NMFS-qualified* marine mammal observers shall be located on the cable-lay vessel to conduct observations, with at least one observer on duty during all cable-laying activities.

b) Shipboard observers shall fax a daily sighting report to NMFS and MMS. This report shall be used to determine whether observable effects to marine mammals are occurring.
c) The observers shall have the appropriate safety and monitoring equipment to conduct their activities (including night-vision equipment).
d) The observers shall set a 1,640-ft (500-m) hazard zone around the cable-lay vessel for the protection of large marine mammals (i.e., whales) and shall have the authority to stop any activity if it appears likely that a whale could enter the hazard zone.
e) Applicant shall *immediately* contact *the Santa Barbara Marine Mammal Center* for assistance should a marine mammal be observed to be in distress. In the event that a whale becomes entangled in any cables or lines, the observer shall notify the Santa Barbara Marine Mammal Center and required agencies, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal occurs, the observer shall immediately notify the required regulatory agencies.
f) The vessel captain shall have the final authority on vessel operations to ensure the safety of the vessel, its equipment, and the people on board and shall cooperate with the observers to minimize the potential for damage to marine mammals or the environment. The vessel captain and *ExxonMobil* project management shall be responsible for ensuring that the OPSR MMMP is implemented.
g) A report summarizing the results of the monitoring activities shall be completed within 90 days following completion of these activities and submitted to the required agencies *(NMFS, MMS, SLC, CCC, and SBC)*.

The plan shall be submitted for review and approval to MMS and SLC at least 60 days prior to commencement of construction activities and to SBC prior to approval of the Coastal Development Permit.

Enforcement Agency: MMS, SLC, SBC.

MM-2: Applicant shall provide awareness training prior to the start of construction for all project-related personnel and vessel operators as to the most common types of marine mammals likely to be encountered in the project area and the types of activities that have the most potential for affecting the animals. In addition, the applicant shall require all offshore personnel to view the Western States Petroleum Association (WSPA) Fisheries and Wildlife Training Program video. *Enforcement Agency: MMS, SLC.*

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this MND/EA, an impact to marine biological resources would be considered to be locally significant if it is likely to directly or indirectly cause measurable change in species composition or abundance beyond that of normal variability, or a measurable change in ecological function within a localized area. Observable effects of noise and disturbance on marine mammals from the proposed project cable-laying and removal operations would be expected to be restricted to temporary changes in direction of movement. Given the projected levels of equipment and activity and the timing of activities, the effects of noise and disturbance on marine mammals from this project would be expected to be insignificant. Implementation of the mitigation measures proposed by ExxonMobil and modified

by the agencies would decrease the probability that adverse impacts would occur due to collision or entanglement. ExxonMobil, in consultation with NMFS, MMS and SBC, would implement the marine mammal monitoring plan to further reduce potential impacts. No significant impacts to marine mammals in the project area would be expected under NEPA.

According to the additional significance CEQA criterion used by SBC, an impact to marine biological resources would be considered to be significant if it is likely to cause an adverse change to or the reduction in a population or habitat used by a State or Federally listed endangered, threatened, regulated or sensitive species. In addition, any "take" of a listed species would be considered significant. As discussed above, SBC believes the marine monitoring effort should occur beyond the timeframe proposed by the applicant. As a result, potential impacts to marine mammals under CEQA would be considered potentially significant but mitigable.

4.7.4 Cumulative Impacts

The DEIS for Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on marine mammals in southern California waters. The EIS identifies ongoing and proposed oil and gas activities in Federal and State waters, Alaskan and foreign-import tankering, military operations, commercial fishing activities, shipping activities, subsistence hunting, whale watching, and marine pollution as potential anthropogenic sources of cumulative impacts to marine mammals in the area. Potential non-anthropogenic sources of potential cumulative impact identified include disease, marine toxins and El Niño events. The EIS concludes that incidental take in commercial fishing operations is currently the primary source of anthropogenic impacts to marine mammals in the area, although these impacts are expected to decrease as additional restrictions and mitigation measures are imposed on coastal fisheries.

Multiple sources of noise and disturbance, including stationary oil and gas activities (construction, drilling, and production), ship and boat noise, aircraft, and seismic survey noise, occur in the Santa Barbara Channel and nearby waters. Although some oil and gas activities off southern California, such as construction and seismic surveys, have declined over the last decade, overall vessel traffic, including commercial, military, and private vessels, is increasing. These increasing levels of noise and disturbance should result in more frequent masking of marine mammal communications, behavioral disruption, and short-term displacement. And, in other areas, there is some evidence for long-term displacement of marine mammals due to disturbance, particularly in relatively confined bodies of water (summarized in Richardson et al., 1995).

However, marine mammal populations in California waters have generally been growing in recent decades (Bonnell and Dailey, 1993; Barlow et al., 1997, 2001; Forney et al., 2000) despite a gradual increase in a wide variety of human activities in the area. There is no evidence that these activities have resulted in adverse impacts on marine mammal populations. Given the low levels of noise and disturbance associated with the proposed cable-laying activities, this project would not be expected to add significantly to cumulative impacts on marine mammals in the Santa Barbara Channel. This is expected to be true even if the project activities overlap with the end of the gray whale migration through the area. In their analysis of the impacts of OCS activities on gray whales prepared in support of the determination to remove the species from the List of Threatened and Endangered Species, NMFS (1992) concluded that the cumulative

impacts from oil and gas activities may have the potential to adversely affect the eastern North Pacific gray whale stock, but that these impacts are not likely to jeopardize its continued existence either through direct exposure or through the loss of food resources.

In conclusion, no significant impacts to marine mammals would be expected to occur from the proposed project. Further, given the low levels of noise and disturbance associated with the cable-laying activities, this project would not be expected to add significantly to cumulative impacts on marine mammals in the Santa Barbara Channel.

4.7.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break will be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative A would decrease the duration of the project-related activities in the near term by approximately 1 day. This would be expected to result in very minor decreases in potential impacts below those described for the proposed project. Observable effects of noise and disturbance on marine mammals from the proposed project cable-laying operations would be expected to be restricted to temporary changes in direction of movement. Given the projected levels of equipment and activity and the timing of activities, the effects of noise and disturbance on marine mammals from this alternative are expected to be insignificant. The applicant, in consultation with NMFS and MMS, would implement the marine mammal monitoring plan (see MM-1) to further minimize potential impacts.

Deferral of removal of the failed power cable until the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project. Full removal of the power cable at this later date would not be expected to result in a measurable increase or decrease in potential impacts to marine mammals in the project area from those described for this alternative. Impacts on marine mammals in the project area would be expected to be insignificant.

Alternative B - Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted between 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phase 2 would be projected to occur between 2003 and 2007. (See Section 2.0, Alternatives to the Proposed Project)

Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative B would increase the duration of the project-related activities by approximately 12-14 workdays and would involve a second mobilization effort. This would be expected to result in minor increases in potential impacts above those described for the proposed project. Observable effects of noise and disturbance on marine mammals from the proposed project cable-laying and removal operations would be expected to be restricted to temporary

changes in direction of movement. Given the projected levels of equipment and activity and the timing of activities, the effects of noise and disturbance on marine mammals from this alternative would be expected to be insignificant. The applicant, in consultation with NMFS and MMS, would implement the marine mammal monitoring plan (see MM-1) to further reduce potential impacts.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. Under this alternative, ExxonMobil would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of the remaining portion of the power cable would be deferred until the SYU offshore facilities are decommissioned. Thus, none of the impacts on marine mammals expected to result from cable-laying activities associated with the proposed action would occur. Expected impacts from cable removal would be the same as those described for the proposed project.

Implementation of Alternative C would defer cable-removal operations until sometime between 2020 and 2030 and would decrease both the duration and scope of activities relative to those expected for the proposed project. This would be expected to result in a minor decrease in potential impacts below those described for the proposed project.

4.8 Essential Fish Habitat (EFH)

4.8.1 Environmental and Regulatory Setting

Under Section 305 (b) (2) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1801 et seq) as amended by the Sustainable Fisheries Act on October 11, 1996, Federal agencies are required to consult with the Secretary of Commerce on any actions that may adversely affect Essential Fish Habitat (EFH). The Department of Commerce published a final rule (50 CFR Part 600) in the Federal Register (January 17, 2002, Volume 67, Number 12) that detailed the procedures under which Federal agencies would fulfill their consultation requirements.

Congress defined EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. 1802(10)). The EFH regulations further interpret the EFH definition as follows. “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. “Substrate” includes sediment, hardbottom, structures underlying the waters, and associated biological communities. “Necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem. “Spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle.

Section 600.920 (e)(1) of the final rule states that Federal agencies may incorporate an EFH Assessment into documents prepared for other purposes such as NEPA documents. Section 600.920 (h) describes the abbreviated consultation process that the MMS and SBC is following for the proposed project proposed by the applicant. The purpose of the abbreviated consultation process is to address specific Federal actions that may adversely affect EFH, but do not have the potential to cause substantial adverse impacts.

Sections of the present document for the proposed project are intended to serve as an EFH Assessment for EFH consultation. As set forth in the regulations, EFH Assessments must include: 1) a description of the action; 2) an analysis of the potential adverse effects of the action on the managed species and EFH; 3) the Federal agency's conclusions regarding the effects of the action on managed species and EFH; and 4) proposed mitigations if applicable.

Section 1 of this document contains a description of the proposed project. Below is a discussion of the managed species that may be present within the area where project activities would take place, and an impact analysis of the proposed project on managed species and EFH including cumulative impacts, proposed mitigations and conclusions.

Species Managed under Fishery Management Plans (FMP): The environmental setting for the OPSR Project includes both nearshore and offshore locations. The Pacific Fishery Management Council (PFMC) manages 90 species of fish under three Fishery Management Plans: 1) Coastal Pelagics Fishery Management Plan; 2) Pacific Salmon Fishery Management Plan; and 3) Pacific Groundfish Fishery Management Plan. Many but not all of the managed species could be found during their life cycle within the areas where the proposed project would take place.

The nearshore site is located on the Gaviota coastline in the northwestern Santa Barbara Channel (Fig. 4). At least fifteen species listed under the Pacific Groundfish Management Plan and two species listed under the Coastal Pelagics Fishery Management Plan frequent kelp beds and reefs in less than 120 ft (40 m) of water off the coast of Santa Barbara, California, and could be present during some life stages in the nearshore area of the OPSR Project (Table EFH-1) (Leet et al., 2001; Love et al., 1999; Schroeder, 1999a,b). The pelagic species could be present for short-time periods as schooling adults whereas many of the groundfish species could be present for much longer time periods as both adults and juveniles. The juveniles of many rockfish species use the protection of shallow algae and kelp canopies for early development before settling over deeper water depths or to the bottom. Benthic rockfish juveniles could be found in sargassum and eelgrass beds. Cabezon, lingcod and greenlings could be present as adults, in egg masses (nests) on substrate, and as settled juveniles in sargassum, kelp or eelgrass beds (Leet et al., 2001; Love 1996).

The offshore region within the crossing from nearshore to the offshore platforms begins in an area of sand and soft sand and proceeds for about 16 mi (25 km) in a southwesterly direction to Platform Heritage. At least 31 species listed under the Pacific Groundfish Management Plan and all species listed under the Coastal Pelagics Fishery Management Plan could be found in this region between the SYU nearshore area and the offshore platforms and could be present during some life stages in the area of the proposed project (Table EFH-2) (Leet, et al., 2001; NMFS, 1998a,b; Orr et al., 1998).

The three platforms are located from about 15-18 mi (8-13 km) to the southwest of the nearshore site. At least 39 species listed under the Pacific Groundfish Management Plan and three species listed under the Coastal Pelagics Fishery Management Plan frequent platforms off the coast of Santa Barbara, California, and could be present during some life stages in the offshore area of the proposed project (Table EFH-3) (Love et al., 1999; Schroeder, 1999b). The pelagic species could be present for short-time periods as schooling adults whereas many of the groundfish species could be present for much longer time periods as both adults and juveniles. Adult rockfish,

cabezon, lingcod and greenlings may become semi- to permanent residents and young-of-the-year rockfish may use mid-water depths under platforms as a nursery area before settling at the platforms themselves or elsewhere (Leet et al., 2001; Love et. al.,1999). An inestimable amount of pelagic eggs and larvae of many managed species could pass through the platforms as plankton (Love, 1996).

4.8.2 Project Impact Assessment

The impact analysis for the EFH in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability.
- Substantially limit reproductive capacity through losses of individuals or habitat.
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement).
- A measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area.

Impacts of regional significance are judged by the same criteria as those for local significance, except that the impacts cause a change in the ecological function within several localized areas or a single large area. The amount of affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the importance of the species and/or habitat affected and its relative sensitivity to environmental perturbations.

Cable Removal and Installation Impacts 2002-2005

As described in Section 2.0, the proposed project would involve removal of approximately 5 miles (8 kilometers) of failed power cable and the installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to managed species and EFH that would be expected to occur as a result of cable removal and installation activities. Impacts that would occur from removal of the new cables (C1 and D1) and the remaining failed Cable C at the end of the SYU life, are analyzed in the following section.

Three major types of activities associated with the proposed project that could impact EFH are: bottom sediment disturbance and cleaning of failed cable, anchoring and placing a concrete mattress or the new power cable on rocky outcrops. Bottom sediment disturbance and cleaning of the failed cable at the surface would increase turbidity that could cause gill irritation or clogging, decrease the ability of fish to sight-feed, reduce available light, and subject eelgrass, sargassum, kelp and benthic biota to an increase in sediment deposition. Anchoring could directly crush species or habitat and could also cause an increase in turbidity. Laying the power cable physically on rocky outcrops could crush species or break-up habitat. There would be no impacts anticipated on hardbottom features from removing the failed power cable to the shelf-break.

Bottom sediment disturbance and cleaning of failed cable. As described in Section 1.0, a number of activities would disturb seafloor sediments and increase turbidity in the upper water column both in the nearshore and offshore environments. Table WQ-3 in Water Resources Section lists sources, locations and estimated quantities of sediment that will be resuspended during the proposed project.

Overall, the proposed project would be expected to result in minimal, temporary increases in turbidity. In the shallow nearshore, divers working at and seaward of the conduit terminus would excavate sand in order to uncover the failed cable and clear the conduit. However, CDFG (Tom Napoli, pers. comm., 2002) expressed concern for the potential effects on shallow nearshore species from localized suspended sediment. In the shallow nearshore, divers working at and seaward of the conduit terminus would excavate sand in order to uncover the failed cable and clear the conduit. To accommodate concerns and further minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that the applicant cast excavated sand, via a hose, 50 ft (15 m) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. The site where the failed cable crosses the POPCO pipeline is in about 80-85 feet (24-26 m) of water, excavation work around a concrete mattresses resting on top of the failed Cable C1 at the crossing would result in temporary and highly-localized increases in turbidity on the bottom. Offshore around the platforms, excavation work would result in temporary and highly-localized increases in turbidity on the bottom. The POPCO pipeline crossing and the offshore sites are located within large sedimentary environments dominated by sand and silty sediments. Retrieval of the failed cable would disturb a small amount of sediment on the bottom. Surface cleaning of the failed cable would result in a temporary and highly-localized turbid cloud beneath and around the cable-reel vessel beginning at least 75ft (22 m) south of the conduit terminus, continuing out to the shelf break, and near the offshore platforms. As reported by de Wit (2001 and 2002), sediment found in the shallow nearshore area appears to have a sandy texture that would rapidly resettle when disturbed either on the bottom or when washed from the failed cable at the surface. In addition, the natural exposure of the nearshore Gaviota coast contributes to periods of high-energy surf with periodic strong surge and increased turbidity. Given the projected levels of activity and implementation of proposed mitigation measures, the effects of turbidity would be expected to be highly-localized and temporary causing insignificant impacts.

Anchoring: As described in Section 1, anchoring would take place at the nearshore site and offshore near the platforms. Use of a dynamically positioned (DP) vessel would eliminate potential impacts to hardbottom habitats at the shelf-break from anchoring. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

Four of the nine nearshore anchors would be placed on sandy sediment near the conduit terminus, at least 40 ft (12 m) away from rocky habitats or kelp, but within scattered eelgrass habitat. The five remaining anchor sites would be placed on sandy sediments outside of eelgrass habitat. According to de Wit (2002) one anchor location (1-C) appears to be on the edge of rocky habitat. The anchoring plan to be submitted by the applicant and approved by the appropriate regulatory agencies shall specify that the location for anchor 1-C be repositioned to ensure that it is at least 40 ft (12 m) from rocky habitat. Offshore, anchors would be positioned outside of environmental and safety preclusion zones.

Anchors (nearshore or at the platforms) would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS). Anchors would have chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. Controlled mooring using DGPS pre-set anchors and vertical anchor placement and retrieval would prevent crushing of any rocky habitat, sargassum or kelp plants. However, touchdown of the anchors would likely impact eelgrass.

Based on the anchor touchdown locations and eelgrass densities as reported by de Wit (2001 and 2002), it is estimated that up to 110 ft^2 (10 m^2) of seafloor could be affected by each of the large anchors (a conservative estimate that assumes the anchors would swing 360 degrees from their touchdown point). If all four anchoring locations are utilized with the anticipated anchors placed at each site, it is estimated that no more than 3 plants per anchor location could be impacted or a total of about 12 eelgrass plants for all four locations. Additionally, 12 eelgrass plants growing in sediment that covers portions of the failed cable could be impacted when the failed cable is removed from the nearshore area. To mitigate the impacts from the potential destruction of 24 eelgrass plants, the agencies would require that the applicant adhere to the Southern California Eelgrass Mitigation Policy (see Appendix A) and include a requirement to use native species, e.g., *Zostera marina*, for restoration purposes where appropriate. The temporary loss of eelgrass plants would be mitigated by measures the applicant proposes to adopt and by the additional measures the permitting agencies will require; therefore, any adverse impacts on eelgrass would be expected to be insignificant.

Placing a concrete mattress or power cable on rocky outcrops: A concrete mattress would be placed over the cut end of the failed cable on the OCS beyond the State and Federal waters boundary in approximately 350-400 ft (100-120 m) of water depth. Using the DP vessel, or a separate work boat, the applicant would be able to avoid hardbottoms in this area by at least 50 ft (15 m). Impacts on managed species and EFH from a concrete mattress being placed on the bottom would be expected to be insignificant.

Using the DP vessel, the applicant would be able to lay the cable along a route that would avoid most hardbottom habitats by 50 ft (15 m) or greater. In addition, the applicant would utilize a Remotely Operated Vehicle (ROV) to monitor power cable installation operations in the shelf-break hardbottom area. To avoid impacts, the permitting agencies would specify that the area along the proposed route in this region, from about 250-500 ft (76-152 m) water depths, be monitored with an ROVduring cable installation. If the ROV observes a rocky outcrop, the ROV would assist the DP vessel in adjusting its route to avoid a feature. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

There is a single feature that lies across the cable route that would be unavoidable while laying the replacement cable. The feature is located about 4-5 mi (6.5-8 km) from shore, in about 265-275 ft (70-85 m) of water, is approximately 1600 ft (490 m) long and from 25-50 ft (7.5-15.5 m) wide with about 1-3 ft (0.5-1 m) of vertical relief, and lies across the Santa Ynez Unit approved pipeline/power cable corridor. Review of videotape from an ROV survey (ExxonMobil, 2002b) of the original, failed power cable as it crosses this feature reveals that no part of the feature was crushed or scoured by laying the original cable and that original cable has not moved from its

original position. The proposed project would lay the replacement cable across about 25 ft (7.5 m) of the shelf-break feature. The replacement cable has a diameter of 6 in (15 cm) and would therefore contact approximately 12.5 ft^2 (1.0 m^3) of the feature. The cable weighs approximately 18 lbs per ft (per 0.3 m) and is not expected to move once it is placed. Impacts from the new cable contacting 12.5 ft^2 (1.2 m^2) of a single hardbottom feature at the shelf-break would be expected to be insignificant based on the fact that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is placed, and the impacted surface area is an exceedingly small amount of the total surface area of the feature.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts to managed species and EFH that would be expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed C Cable on the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of the SYU facilities would occur sometime between 2020 and 2030. Deferral of Cables C1 and D1 and the remaining segment of failed Cable C on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and associated pipelines and power cables. It is estimated that 2-3 years would be required to remove all SYU facilities. Removal of the OCS segment of failed Cable C and the new C1 and D1 cables would take an estimated 2-3 weeks. The project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.8.3 Mitigation Measures
In order to further minimize impacts on managed species and EFH, regulatory agencies would require the applicant to implement the following mitigation measures from other resource sections: BE-1 through BE-10.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact on managed species and EFH would be considered to be locally significant if it results in a measurable change in population abundance and/or species composition beyond normal variability, substantially limits reproductive capacity through losses of individuals or habitat, substantially limits or fragments range and movement, or results in a measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area. To minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that ExxonMobil cast excavated sand, via a hose, 15 feet (4.5 meters) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. Increases in turbidity would be expected to be highly-localized and temporary causing insignificant impacts. The temporary loss of 24 eelgrass plants would be mitigated by measures ExxonMobil proposes to adopt and by the additional measures the permitting agencies would require; therefore, any adverse impacts on eelgrass from anchoring would be expected to be insignificant. Impacts on EFH from a concrete mattress being placed on the bottom would be expected to be insignificant.

Impacts from the new cable contacting 12.5 feet^2 (1.2 meters^2) of a single hardbottom feature at the shelf-break would be expected to be insignificant based on the facts that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is laid, and the impacted surface area is an exceedingly small amount of the total surface area of the feature. Overall, impacts on managed species and EFH from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

4.8.4 Cumulative Impacts

Cumulative impacts on nearshore EFH and managed species could take the form of degradation or elimination of rocky shallow subtidal habitat in the region west of Santa Barbara. The shallow subtidal habitat is a dynamic environment that experiences regular resuspension of sediments and strong water surges and pounding through wave action. Although these areas face southward and are therefore somewhat protected, they still experience periodic strong winter storm conditions (especially during El Niño events) that inundate the shallow habitats with freshwater runoff, increase turbidity, move boulders and rocks, uproot sargassum, eelgrass, and kelp plants and scour large amounts of sand. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, but rock movement and sand scouring may be long-term.

Cumulative impacts on offshore EFH and managed species could also take the form of degradation of sensitive and rare offshore hardbottom communities. The offshore communities are considered to be rare in the western Santa Barbara Channel due to the preponderance of soft bottom and limited extent of viable hard bottom communities. The rarity of these communities, in effect, causes them to be sensitive.

The CDFG, Marine Region, has identified (Leet et al., 2001) several fishing and non-fishing activities that may cause adverse impacts on EFH and managed species along the Pacific Coast and within the SYU. Major issues are the impact of environmental events like El Niño on animal and plant species, over-harvest of species such as nearshore and shelf rockfish, interactions between fisheries and marine mammals, pollution from human activities and competition among user groups, both consumptive and non-consumptive.

The NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to EFH and managed species along the Pacific Coast and within the SYU. These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting and commercial fishing. Most of these activities occur throughout the California, Oregon and Washington coastal habitat and all of these activities and impacting agents exist in the southern California coastal zone. As a result, marine water quality has been impacted by municipal, industrial and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

The proposed project activities would cause locally insignificant impacts (e.g., highly-localized, temporary turbid conditions, temporary impact on about 24 eelgrass plants, and contact with 12.5 ft^2 (1.2 m^2) of a rocky feature at the shelf-break) on managed species and EFH. In conclusion, this project is not expected to add significantly to cumulative impacts on managed species and EFH in the Santa Barbara Channel.

4.8.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative A would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative A would decrease the duration of the project-related activities by approximately 1 day. This would be expected to result in a minor decrease in potential impacts on EFH below those described for the proposed project. To minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that the applicant cast excavated sand, via a hose, 15 ft (4.5 m) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. Increases in turbidity would be expected to be highly localized and temporary causing insignificant impacts. The temporary loss of 12 eelgrass plants would be mitigated by measures the applicant proposed to adopt and by the additional measures the permitting agencies would require; therefore, any adverse impacts on eelgrass from anchoring would be expected to be insignificant. Impacts from the new cable contacting 12.5 ft^2 (1.2 m^2) of a single hardbottom feature at the shelf-break would be expected to be insignificant based on the facts that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is placed, and the impacted surface area is an exceedingly small amount of the total surface area of the feature. Overall, impacts on managed species and EFH from Alternative A would be expected to be insignificant and mitigated to the maximum extent feasible.

Deferral of removal of the failed power cable until the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project. Full removal of the power cable at this later date would not be expected to result in a measurable increase or decrease in potential impacts on managed species and EFH in the project area from those described for this alternative.

Alternative B: Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted between the third quarter of 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phases 2 would be projected to occur between 2003-2007. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative B would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative B would increase the duration of the project-related activities in the near term by approximately 12-14 workdays with separate mobilization efforts over a 2-3 week period sometime between 2003 and 2007. However, all added work related to this alternative would occur on the OCS. This would be expected to result in a minor increase in potential impacts on EFH above those described for the proposed project. To

minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that the applicant cast excavated sand, via a hose, 15 ft (4.5 m) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. Increases in turbidity would be expected to be highly localized and temporary causing insignificant impacts. The temporary loss of 24 eelgrass plants would be mitigated by applicant-proposed measures and by the additional measures the permitting agencies would require; therefore, any adverse impacts on eelgrass from anchoring would be expected to be insignificant. Impacts from the new cable contacting 12.5 ft^2 (1.2 m^2) of a single hardbottom feature at the shelf-break would expected to be insignificant based on the facts that the DP vessel would slowly lay the cable under loose tension onto the seafloor, the cable would not move once it is placed, and the impacted surface area is an exceedingly small amount of the total surface area of the feature. Overall, impacts on managed species and EFH from Alternative B would be expected to be insignificant and mitigated to the maximum extent feasible.

Alternative C: No Project Alternative
Alternative C is the No Project Alternative. (See Section 2.0, Alternatives to the Proposed Project) Under this alternative, the applicant would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of the remaining portion of the power cable would be deferred until the SYU offshore facilities are decommissioned. Thus, none of the impacts on managed species and EFH expected to result from cable-laying activities associated with the proposed action would occur.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Removal of all power cables when the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantling and removal of three offshore platforms and their associated pipelines and power cables and would last 2-3 years.

The potential impacting factors for Alternative C would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative C would have removal of all power cables occur when the SYU offshore facilities are decommissioned sometime between 2020 and 2030 and would decrease both the duration and scope of activities relative to those expected for the proposed. This would be expected to result in a very minor decrease in potential impacts below those described for the proposed project. It is expected that cable removal activities would increase turbidity and involve anchoring in the nearshore area and if necessary at the platforms. Use of a DP vessel would eliminate potential impacts to hardbottom habitats at the shelf-break from anchoring. It is expected that increases in turbidity would be highly-localized and temporary causing insignificant impacts. Any temporary loss of eelgrass plants would be mitigated by measures either proposed by the applicant and/or by the additional measures the agencies would require; therefore, any adverse impacts on eelgrass from would be insignificant. Overall, impacts on managed species and EFH from Alternative C would be mitigated to the maximum extent feasible and would be expected to be insignificant.

Table EFH-1. Fish species managed under Pacific Fishery Management Plans that could be present in the nearshore project area.

Common Name	Scientific Name
Managed under Groundfish:	
Cabezon	*Scorpaenichthys marmoratus*
Lingcod	*Ophiodon elongatus*
California scorpionfish	Scorpaena guttata
Kelp greenling	*Hexagrammos decagrammus*
Leopard shark	*Triakis semifasciata*
Black-and-yellow rockfish	*Sebastes chrysomelas*
Blue rockfish	*Sebastes mystinus*
Calico rockfish	Sebastes dalli
China rockfish	*Sebastes nebulosus*
Copper rockfish	*Sebastes caurinus*
Gopher rockfish	*Sebastes carnatus*
Grass rockfish	*Sebastes rastrelliger*
Kelp rockfish	*Sebastes atrovirens*
Olive rockfish	*Sebastes serranoides*
Treefish rockfish	*Sebastes serriceps*
Managed under Coastal Pelagics:	
Northern Anchovy	*Engraulis mordax*
Jack Mackerel	*Trachurus symmetricus*

Table EFH-2.
Fish species managed under Pacific Fishery Management Plans that could be present between nearshore and the offshore platforms.

Common Name	Scientific Name
Managed under Groundfish:	
Curlfin sole	*Citharichthys sordidus*
Dover sole	*Microstomus pacificus*
English sole	*Parophrys vetulus*
Pacific sanddab	*Citharichthys sordidus*
Petrale sole	*Eopsetta jordani*
Ratfish	*Hydrolagus colliei*
Leopard shark	*Triakis semifasciata*
Soupfin shark	*Galeorhinus galeus*
Spiny dogfish	*Squalus acanthias*
California skate	*Raja inornata*
Aurora rockfish	*Sebastes aurora*
Widow rockfish	*Sebastes entomelas*
Bank rockfish	Sebastes rufus
Blackgill rockfish	*Sebastes melanostomus*
Bocaccio	*Sebastes paucispinis*
Calico rockfish	*Sebastes dalli*
California scorpionfish	*Scorpaena guttata*
Chilipepper	*Sebastes goodei*
Copper rockfish	*Sebastes caurinus*
Cowcod rockfish	*Sebastes levis*
Flag rockfish	*Sebastes rubrivinctus*
Gopher rockfish	*Sebastes carnatus*
Greenspotted rockfish	*Sebastes chlorostictus*
Greenstriped rockfish	*Sebastes elongatus*
Honeycomb rockfish	*Sebastes umbrosus*
Speckled rockfish	*Sebastes ovalis*
Starry rockfish	*Sebastes constellatus*
Stripetail rockfish	*Sebastes saxicola*
Thornyhead	*Sebastolobus sp.*
Lingcod	*Ophiodon elongatus*
Sablefish	*Anoplopoma fimbria*
Managed under Coastal Pelagics:	
Northern anchovy	*Engraulis mordax*
Pacific sardine	*Sardinops sagax*
Pacific mackerel	*Scomber japonicus*
Jack mackerel	*Trachurus symmetricus*
Market squid	*Loligo opalescens*

Table EFH-3.
Fish species managed under the Pacific Groundfish Fishery Management Plan recorded at oil and gas platforms in southern California.

Common Name	Scientific Name
Managed under Groundfish:	
Pacific sanddab	*Citharichthys sordidus*
Widow rockfish	*Sebastes entomelas*
Bank rockfish	*Sebastes rufus*
Black rockfish	*Sebastes melanops*
Black-and-yellow rockfish	*Sebastes chrysomelas*
Blue rockfish	*Sebastes mystinus*
Bocaccio	*Sebastes paucispinis*
Brown rockfish	*Sebastes auriculatus*
Calico rockfish	*Sebastes dallii*
California scorpionfish	*Scorpaena guttata*
Canary rockfish	*Sebastes pinniger*
Chilipepper	*Sebastes goodei*
Copper rockfish	*Sebastes caurinus*
Cowcod rockfish	*Sebastes levis*
Darkblotched rockfish	*Sebastes crameri*
Flag rockfish	*Sebastes rubrivinctus*
Gopher rockfish	*Sebastes carnatus*
Grass rockfish	*Sebastes rastrelliger*
Greenblotched rockfish	*Sebastes rosenblatti*
Greenspotted rockfish	*Sebastes chlorostictus*
Greenstriped rockfish	*Sebastes elongatus*
Honeycomb rockfish	*Sebastes umbrosus*
Kelp rockfish	*Sebastes atrovirens*
Olive rockfish	*Sebastes serronides*
Rosy rockfish	*Sebastes rosaceus*
Sharpchin rockfish	*Sebastes zacentrus*
Squarespot rockfish	*Sebastes hopkinsi*
Starry rockfish	*Sebastes constellatus*
Stripetail rockfish	*Sebastes saxicola*
Treefish	*Sebastes serriceps*
Vermilion rockfish	*Sebastes miniatus*
Yelloweye rockfish	*Sebastes ruberrimus*
Yellowtail rockfish	*Sebastes flavidus*
Thornyhead	*Sebastolobus sp.*
Cabezon	*Scorpaenichthys marmoratus*
Kelp greenling	*Hexagrammos decagrammus*
Lingcod	*Ophiodon elongatus*
Pacific whiting	*Merluccius productus*
Spiny dogfish	*Squalus acanthias*
Managed under Coastal Pelagics:	
Northern anchovy	*Engraulis mordax*
Pacific sardine	*Sardinops sagax*
Jack mackerel	*Trachurus symmetricus*

4.9 Endangered White Abalone (*Haliotis sorenseni*)

4.9.1 Environmental and Regulatory Setting

In the 1990s, less than one white abalone, *Haliotis sorenseni*, per acre could be found in surveys conducted by Federal and State biologists. The rarity of this species within its historical center of abundance prompted the NMFS to list it as a candidate species under the Endangered Species Act (ESA) in 1997. In May 2001, the white abalone became the first marine invertebrate to receive Federal protection as an endangered species. The ESA regulates human activities where listed species might be adversely affected by prohibiting intentional take.

The white abalone is a marine, rocky benthic, herbivorous, broadcast spawning gastropod. The shell is oval-shaped, very thin and deep. They can be up to 10 inches (25 cm), but are usually 5-8 inches (13-20 centimeters). This species usually dwells in deep waters from 80 to over 200 feet (24-60 meters) from Point Conception (southern California) southward to Baja California. White abalone were reported to be more common along the mainland coast at the northern end of the range, while in the mid-portion of the California range it was more common on the islands (especially San Clemente and Santa Catalina Islands) (Cox, 1960; Leighton, 1972; NMFS, 2002).

This species has occurred in shallower depths near its northern most limit (Hobday and Tegner, 2000). Specifically, localized mainland areas in the Coal Oil Point region west of Santa Barbara have supported white abalone in water depths less than 60 feet (20 meters) (Greg Sanders, pers. comm., 2002; Pete Haaker, pers. comm. 2002). Speculation concerning reasons for its presence in shallow water include a localized decrease in competition with red abalone and/or a localized decrease in predation from sea otters without a concomitant increase in harvest (as reported in Hobday and Tegner, 2000). The vertical distribution limits may also be controlled by water temperature.

White abalone are found in open low relief rock or boulder habitat surrounded by sand (with a variety of algal/invertebrate cover), usually near the rock-sand interface, (Davis et al., 1996; Hobday and Tegner, 2000; Lafferty, 2001). Sand may be important in forming channels for the movement and concentration of algal drift, although white abalone are reported to feed less on drift material than congeneric species (Hobday and Tegner, 2000). Common algae in the white abalone habitat include the kelps *Laminaria farlowii, Agaruq fimbriatum*, and *Macrocystis pyrifera*, and a variety of red algae.

White abalone may live dozens of years and attain a length of about 10 inches. Unlike more mobile animals, abalones are slow-moving creatures confined to a small area for their entire life. They reproduce by broadcasting their eggs and sperm into the seawater. For fertilization to occur, the spawners need to be within 3 feet (1 meter) of a member of the opposite sex. No neighbor means that the remaining animals are effectively sterile.

In August 2001, a pre-construction marine biological survey was completed in the nearshore area (Fig. 4) for the proposed project (de Wit, 2001). The underwater survey was centered on a corridor that has armor rock over pipelines and conduits housing existing power cables including the failed Cable C. During the initial survey, a single abalone, assumed to be a white was observed on the armor rock in 22 feet (7 meters) of water approximately 50 feet (15 meters) shoreward (north) of the power cable conduit terminus. The specimen was not removed but the

white peripodium and highly convex shell with three elevated respiratory pores were characteristic of *H. sorenseni*.

An Expanded Marine Biological Survey was completed in April 2002 (de Wit, 2002). The expanded survey was performed specifically to 1) characterize the habitats and dominant macroepibiota of the nearshore project area and to 2) locate and identify any abalone within two areas. The areas were east and west of the conduit corridor, approximately 825 feet long by 800 feet wide (200 meters x 240 meters), respectively, and centered on the terminus. The second survey did not find the initial white abalone; however, an empty shell that matched the characteristics of the shell of the single individual was found near its original location. Matching external characteristics of the shell with video taken during the August 2001 survey strongly suggested it was the same animal. The shell was retrieved and it has been recently confirmed that the individual was a white abalone (Tom Napoli, pers. comm., 2002; Ian Tanaguchi, pers. comm., 2002). A single mature sea otter was also observed at the site and it is possible that the sea otter had eaten the abalone individual during the period between the two surveys.

The second survey located 21 additional abalone one of which is thought to be a *H. sorenseni*. This white abalone was located in about 25 feet (8 meters) of water about 600 feet (180 meters) east and slightly north of the conduit terminus near the base of an isolated boulder (de Wit, 2002).

The applicant would perform another survey, this time a pre-installation marine biological survey of the nearshore project area just prior to any installation work adjacent to the conduit. At that time, if a white abalone(s) is detected near the vicinity of the conduit terminus, project activities would not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative. The applicant would include the permitting agencies and NMFS and the CDFG in any discussions and/or approval for the design of a pre-installation survey. In addition, project conditions would specify that the applicant include the permitting agencies and NMFS and CDFG in any discussions and/or approval for the design of a restoration and restoration-monitoring plan that may be necessary if impacts to white abalone or sensitive habitats are incurred. The NMFS has applied for a Scientific Enhancement Permit pertaining to *H. sorenseni* that would enable the agency to remove white abalone from the wild and maintain and husband individuals at their Southwest Fisheries Science Center in La Jolla.

4.9.2 Project Impact Assessment

The impact analysis for white abalone resources in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond normal variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.

- Substantially limit reproductive capacity through losses of individuals or habitat.

- Substantially limit or fragment range and movement (geographical distribution and normal route of movement).

- A measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area.

For an impact to be locally significant, the size of the localized area would be relatively small compared with that of an ecologically equivalent area in the immediate region. The threshold for significance is determined by scientific judgment, and considers the relative importance of the habitat and/or species affected.

Impacts of regional significance are judged by the same criteria as those for local significance, except that the impacts cause a change in the ecological function within several localized areas or a single large area. The amount of affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the importance of the species and/or habitat affected and its relative sensitivity to environmental perturbations.

Cable Removal and Installation Impacts 2002-2005
As described in Section 2.0, the proposed project would involve removal of approximately 5 miles (8 kilometers) of failed power cable and the installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to the endangered white abalone that would be expected to occur as a result of cable removal and installation activities. Impacts that would occur from removal of the new cables (C1 and D1) and the remaining failed Cable C at the end of the SYU life, are analyzed in the following section.

Two major types of activities associated with the proposed project, that could impact the endangered white abalone are: bottom sediment disturbance and cleaning of failed cable, and anchoring. Bottom sediment disturbance and cleaning of the failed cable at the surface would increase turbidity that could deposit sediment onto white abalone, cause physical irritation, reduce available light, and subject algal species upon which white abalone feed to an increase in sediment disposition. Anchoring could directly crush species or habitat and could also cause an increase in turbidity.

Bottom sediment disturbance and cleaning of failed cable. As described in Section 1.0, a number of activities would disturb seafloor sediments and increase turbidity in the upper water column in the nearshore environment. Table WQ-3 on water quality lists sources, locations, and estimated quantities of sediment that would be resuspended during the proposed project.

Overall, the proposed project would be expected to result in minimal, temporary, localized increases in turbidity. In the shallow nearshore, divers working at and seaward of the conduit terminus would excavate sand in order to uncover the failed cable and clear the conduit. To minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that the applicant cast excavated sand, via a hose, 15 feet (4.5 meters) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. The surface cable cleaning will result in a turbid cloud beneath and around the cable-reel vessel. The cable-reel vessel would begin to retrieve and clean cable at least 75 feet (20 meters) south of the conduit terminus. As reported by de Wit (2001 and 2002), sediment found in the shallow nearshore area appears to have a sandy texture that would rapidly resettle when disturbed either on the bottom or when washed from the

failed cable at the surface. In addition, the natural exposure of the nearshore Gaviota coast contributes to periods of high-energy surf with periodic strong surge and increased turbidity. Consequently, the marine species found in the nearshore habitat are hardy and able to adjust to periods of turbid conditions.

As stated above, the conduit terminus is about 600 feet away from the second white abalone. Any increase in turbidity from work at or near the conduit would not impact or affect the white abalone at that distance. However, it is unlikely that the expanded marine biological survey detected 100 percent of all the potential abalone in the area. Additional white abalone may be present or the previously detected abalone may move from its present location. White abalone would however, be located on hard substrate such as armor rock, boulders, or a rock ledge. Although armor rock is closer, natural rocky areas are greater than 100 feet (30 meters) away from any excavation or disturbance that would increase turbidity at, around, or south of the conduit terminus. To minimize the impacts from turbidity within the shallow nearshore habitat, MMS and SBC would require that the applicant cast excavated sand, via a hose, 15 feet (4.5 meters) south, downslope, into the sand channel between the failed cable and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. In addition, if a white abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, project activities would not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative. Based on the location of the white abalone and its habitat with relation to the planned activities and implementation of the proposed mitigation measures, no impacts on endangered white abalone would be expected from the proposed project.

Anchoring: As described in Section 1.0, anchoring would take place at the nearshore site. Four of the nine nearshore anchors would be placed on sandy sediment near the conduit terminus, at least 40 feet (12 meters) away from rocky habitats or kelp, but within scattered eelgrass habitat. Any abalone would be located on a hard substrate at least 40 feet (12 meters) from any anchor location. According to deWit (2002) one anchor location (1-C) appears to be on the edge of rocky habitat. To avoid potential impacts, the permitting agencies would specify that the applicant reposition the location for anchor 1-C to ensure that it is at least 40 feet (12 meters) from rocky habitat.

All anchors would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS). All anchors would have chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. Controlled mooring using DGPS pre-set anchors and vertical anchor placement and retrieval would prevent crushing of any rocky habitat or attached biota and would limit any increase in turbidity to the initial touchdown of the anchors that are too far away to impact or affect the individual white abalone. If a white abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological, project activities would not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts to the endangered white abalone that would be expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed Cable C on the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Deferral of the OCS portion of the cable removal until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables and would require an estimated 2-3 years to complete. Removal of the OCS segment of the failed cable and the new cables would take 1-2 weeks within a 2-3 week period. This project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.9.3 Mitigation Measures
The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to the white abalone. Text appearing in italics denotes augmentation or other modification by the agencies.

AB-1: If a white abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, ExxonMobil would not begin project activities until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative. *Enforcement Agency: NMFS, SLC, SBC, CDFG.*

In addition to these mitigation measures, please refer to the following mitigation measures from other resource sections: BE-1 through BE-6, BE-8 and BE-10.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact to the white abalone would be considered to be locally significant if it results in a measurable change in population abundance and/or species composition beyond normal variability, or results in a measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area. For threatened and endangered species, this includes any change in population that would be likely to hinder the recovery of a species, substantially limit reproductive capacity through losses of individuals or habitat, or substantially limit or fragment range and movement. Based on the location of the known white abalone with relation to the planned activities that would be mitigated to the maximum extent feasible, no impacts to endangered white abalone would be expected from the proposed project.

4.9.4 Cumulative Impacts
Currently, the white abalone is frequently found alone, and has little chance for successful fertilization (NMFS, 2002). Because populations are only small fractions of former numbers, recovery would be complicated by loss of genetic diversity from genetic bottlenecks, genetic drift, and founder effects. Abalone are also vulnerable to various bacterial and parasitic infections. The fishery was historically managed using size limits and seasons, but such methods

failed because they did not account for density dependent reproduction and assumed regular successful settlement of the larvae (Lafferty, 2001).

Cumulative impacts on white abalone could take the form of degradation or elimination of rocky shallow subtidal habitat in the coastal region west of Santa Barbara. This shallow subtidal habitat is a dynamic environment that experiences regular resuspension of sediments and strong water surges and pounding through wave action. Although the Gaviota coast faces southward and is therefore somewhat protected, they still experience periodic strong winter storm conditions (especially during El Niño events) that inundate the shallow habitats with freshwater runoff, increase turbidity, move boulders and rocks, uproot sargassum, eelgrass, and kelp plants, and scour large amounts of sand. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, but rock movement and sand scouring can be long-term. In addition, sea otter predation may have a substantial impact on any white abalone located in water depths less than 80 feet (24 meters) in the region near Pt. Conception.

There are several activities that may cause adverse impacts to white abalone along the Pacific Coast, especially in southern California (NMFS 1998a,b). These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the California coastal habitat and all of these activities and impacting agents exist in the southern California coastal zone around the Santa Barbara Channel. As a result, marine water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

With implementation of mitigations, no impacts to the endangered white abalone from routine operations would be expected to occur as a result of the proposed project. In conclusion, this project would not expected to add significantly to cumulative impacts on the endangered white abalone.

4.9.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

The potential impacting factors for Alternative A would be the same as described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative A would decrease the duration of the project-related activities by approximately 1 day. This would be expected to result in a very minor decrease in potential impacts on the white abalone below those described for the proposed project. Based on the location of the white abalone with relation to the planned activities that are mitigated to the maximum extent feasible, no impacts on endangered white abalone are expected from Alternative A.

Deferral of removal of the failed power cable until the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale

project. Full removal of the power cable at this later date would not be expected to result in a measurable increase or decrease in potential impacts on the white abalone in the project area from those described for this alternative. Impacts on endangered white abalone in the project area are expected to be insignificant.

Alternative B: Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and would be conducted sometime between the third quarter of 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phases 2 is projected to occur between 2003-2007. (See Section 2.0, Alternatives to the Proposed Project)

Expected impacting factors would be the same as those described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative B would increase the duration of the project-related activities in the near term by approximately 12-14 workdays with separate mobilization efforts over a 2-3 week period sometime between 2003 and 2007. However, all added work related to this alternative would occur on the OCS, beyond the habitat of the endangered white abalone. As is the case under the proposed project, this would be expected to result in no impacts on white abalone. Based on the location of the white abalone with relation to the planned activities that are mitigated to the maximum extent feasible, no impacts on endangered white abalone are expected from Alternative B.

Alternative C: No Project Alternative
Alternative C is the No Project Alternative. (See Section 2.0, Alternatives to the Proposed Project) Under this alternative, the applicant would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of all power cables would occur when the SYU offshore facilities are decommissioned. No impacts on the white abalone that are expected to result from cable-laying or removing activities associated with the proposed action would occur under Alternative C.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime between 2020 and 2030. Removal of all power cables when the SYU offshore facilities are decommissioned would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables and would last 2-3 years.

Expected impacting factors for Alternative C would be the same as those described for the proposed project. Expected impacts would be essentially the same as those described for the proposed project. Implementation of Alternative C would have removal of all power cables occur when the SYU offshore facilities are decommissioned sometime between 2020 and 2030 and would decrease both the duration and scope of activities relative to those expected for the proposed. This would be expected to result in a very minor decrease in potential impacts below those described for the proposed project. It is expected that cable removal activities would increase turbidity and involve anchoring in the nearshore area and if necessary at the platforms. It is expected that increases in turbidity would be highly-localized and temporary. Based on the

location of the white abalone with relation to the planned activities that would be mitigated to the maximum extent feasible, no impacts on endangered white abalone would be expected from Alternative C.

4.10 Cultural Resources

4.10.1 Environmental and Regulatory Setting

Cultural resources include any prehistoric or historic sites, buildings, districts, structures, traditional use areas or objects considered to be important to a culture, subculture or community for scientific, traditional, religious or other reasons. Cultural resources encompass three categories: archaeological resources (both historic and prehistoric), architectural resources and traditional cultural resources.

Onshore: The onshore portion of the project has been subject to numerous archaeological investigations by professional archaeologists. Floodplain areas at the mouth of Corral Canyon (in the vicinity of onshore work) have been subject to extensive subsurface monitoring and testing programs that (a) assessed the location, integrity and the scientific, historic and ethnic significance of cultural resources in the floodplain; and (b) resulted in the recommendation of professionally adequate mitigation measures for future construction in the floodplain areas. Five sites were identified within a ¼ mile area near the mouth of Corral Canyon at the southern end of the ExxonMobil property. These sites are identified as SBA-85, SBA-1675, SBA-1731, SBA-1733, and SBA-1732.

The earliest archaeological work was conducted by Rodgers (1929) who identified SBA-85, a large prehistoric site on a marine terrace overlooking the mouth of Corral Creek. Surveys in 1973 (Spanne and Fagan) documented the boundaries of SBA-85, documented its disturbance and recorded SBA-1344, a prehistoric and historic site since determined to be insignificant (Perez, 1975). SBA-1733 was identified by Spanne in 1982. The site is a prehistoric archaeological site in the floodplain of Corral Canyon Creek. Subsequent investigations by the Office of Public Archaeology (OPA) (Neff, 1983) indicated that SBA-1733 may be a scientific and ethnically significant cultural resource because it has vertical and horizontal integrity, is ethnically significant to local Native Americans and because the site can yield information important to the study of prehistory.

In 1982, OPA conducted investigations at a prehistoric village site (SBA-1731) near the beach at the mouth of Corral Canyon. These investigations were conducted to mitigate impacts resulting from the installation of the POPCO pipeline. Results of the investigation (Moore and Luce, 1983), indicates that SBA-1731 may also be scientifically and ethnically significant.

Prior to initiation of construction, ExxonMobil was required to prepare a Cultural Resources Management Plan (CRMP), approved by the County and the State Office of Historic Preservation. All construction activities were required to be performed in accordance with the approved plan. Four of the sites identified in the EIR (SBA-1801, SBA-1344, SBA-1731 and SBA-1733) were determined to be subject to the CRMP. Impacts included capping sites with fill, cutting into site deposits, removal of structures, surface disturbance and off road vehicle use. The CRMP provided procedures to minimize impacts to these and newly discovered cultural resources including, but not limited to, test excavations, additional historical research and data recovery excavations prior to construction and monitoring during construction activities.

Offshore: The MMS, under various Federal laws and regulations, ensures that regulated OCS activities do not adversely affect significant cultural resources. The National Historic Preservation Act of 1966, Section 106, requires Federal agencies to identify historic properties that their actions could affect, determine whether or not there could be a harmful or adverse affect, and if so, to try to avoid or reduce the effect. The section also requires consultation with State historic preservation officers and tribal historic preservation officers. The Archaeological and Historic Preservation Act of 1974 requires Federal agencies to notify the Secretary of the Interior when they find that any federally permitted activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archaeological data.

The applicant received approval of the Historic Properties Treatment Plan (HPTP) for the original SYU project in January 1988 from the U.S. Army Corps of Engineers and the California State Office of Historic Preservation (Dames and Moore, 1988). The potential archaeological resources described herein are included in the approved HPTP.

Four potential cultural resource nautical sites were located during geophysical surveys of the SYU offshore facilities in the 1980s. Of the four nautical sites with possible cultural potential, three are in Federal waters and one is in State waters in the general vicinity of the proposed project area. Two of the sites described below, number three (in OCS waters) and four (in State waters), could be within the zone of potential disturbance from operations described for the proposed project.

According to Macfarlane (1982) and Dames and Moore (1988), the archeological resources listed below occur within the *general* area of the proposed project. *Only items 3 and 4*, below, are near the current power cable project. The actual locations are not listed in this public document in order to preserve the potential archaeological resources.

1. A large rectangular feature measuring 100 feet (30 m) long by 40 feet (12 m) wide by 6.3 feet (2 m) high, with an associated scatter of smaller objects; a possible scour or drag mark was also noted. Although this feature may be a mound of sediment deposited by anchoring activity, its height above the sea floor and the possible debris surrounding it suggest that it may be a cultural resource.

2. A "T" shaped configuration of four objects, measuring 25 feet (8 m) across and 100 feet (30.5 m) long. The linear configuration suggests a cultural origin; it may be associated with oil exploration activities or may be an archeological resource.

3. A complex feature measuring approximately 50 - 100 feet (15 - 30 m) wide, 160 feet (49 m) long, and as much as 16 feet (5 m) high. The lack of bedrock or hard sediments in the area that might indicate a geologic origin for the feature means that this site must be considered a potential cultural resource. Although the feature may have resulted from anchoring, lack of specific identification, regarding the site means that the feature must be considered to be potentially significant.

4. A linear feature of variable height that may either be a construction-related feature or a cultural resource.

ExxonMobil contracted with Fugro for the current power cable project to conduct a side scan sonar survey of the proposed Cable C1 and D1 routes from the nearshore area to the three SYU platforms (Fugro, 2001).

The reported locations of site #3 and #4 are approximately 500 - 600 feet (150 – 185 meters) from the centerline of the proposed power cable location.

4.10.2 Project Impact Assessment

Significant impacts to cultural resources occur when the integrity of a significant or potentially significant site or isolated artifact is eliminated or reduced. In Section 5.6.2 of the SYU FEIS/R (SAI, 1984a), local cultural resources were described as significant in terms of criteria established in the Code of Federal Regulations (36 CFR 60.6), in that the sites may be likely to yield information important in history or prehistory. These criteria are complemented, and sometimes nearly duplicated by criteria set forth in Section 21083.2 of the California Public Resources Code (PRC) which modifies the CEQA provisions pertaining to cultural resources. Section 21083.2 states that mitigation measures may only be applied to "unique" resources, defined as those that have a high probability of meeting any of the following criteria: (1) contain information needed to answer important, research questions that are of demonstrable public interest; (*2*) have special or particular qualities, such as being the oldest of its type or best available example; and (3) are directly associated with a scientifically recognized important prehistoric or historic event or person. In addition, PRC Section 6313(c) states that any submerged cultural site or submerged historic resource remaining in state waters for more than 50 years shall be presumed to be culturally or historically significant.

Cable Removal and Installation Impacts – 2002-2005: As described in Section 2.0, the proposed project would involve removal of approximately 5 miles (8 kilometers) of failed power cable and installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to cultural resources that would be expected to occur as a result of cable removal and installation activities. Impacts that would occur from removal of the new cables (Cable C1 and D1) and the remaining failed Cable C at the end of SYU life are analyzed in the following section.

Onshore: No cultural or ethnic resources or human remains would be adversely impacted by the proposed project. One site, SBA-1733, appears to be potentially located in the immediate project area, however, the site was capped by approximately 10 feet of fill material during original project construction. Excavation required as part of the project would be limited to five feet below ground surface. All documented sites are on private property (owned by ExxonMobil) with strict security, therefore the likelihood for vandalism or other disturbance to resources is low.

Offshore: The two sources of potential offshore cultural resource impact under the proposed project are from the anchoring of vessels and from the placement and removal of power cable.

Anchoring: The applicant proposes to use a DP Cable Lay Vessel for the proposed project. The applicant estimates that the cable laying and removal phase of the operations would take 14-21 workdays. The offshore activities associated with all phases of the proposed project would be expected to occur over a 4- to 8-week period. The DP Cable Lay Vessel would not anchor during

the project activities except for an emergency situation. However, supply/work vessels could anchor adjacent to the platforms and they could use an anchor up to 30,000 lbs. (13,600 kg) and maintain an approximate distance of 2000 – 3000 feet (610 – 915 meters)from a platform in alignment with a cable J-tube. The anchors would be positioned a minimum distance of 250 feet (75 m) from any pipeline or power cable. If supply/work vessels are used at Platform Heritage during cable removal and pigging, a single offshore pre-set anchor would be used. The anchor handling procedures are proposed by the applicant to include the following: use of an anchor handling plan, anchor placement in pre-selected areas, utilizing work vessel anchor installations and removals techniques such as straight up and down placement of the anchors and use of anchor-tenders, where necessary, to help place the anchors. The unplanned need for deployment of anchors by the support vessel may be anticipated in the course of construction during an emergency/safety situation.

Since all emergency/safety anchor deployments would be outside the 300 feet (90 m) protective buffer zone surrounding any identified cultural resource, and since any anchor lines that may cross over the buffer zone would be suspended in the water column, (i.e., no anchor would contact the bottom near the cultural resource), no impacts to any identified cultural resources would be expected to result from anchoring activities.

Cable Placement and Removal. The zone of disturbance from power cable installation would essentially be limited to the length and width of the power cable. During power cable installation, an ROV would be used to ensure that any potential cultural resource is not disturbed. The power cable route for this project would be within the area previously surveyed and evaluated for environmental impacts. Evaluation of side-scan sonar data of the pipeline route (Fugro, 2001) reveals no previously unidentified cultural resources. In addition, the pre-installation ROV survey conducted as part of the proposed project would further decrease the likelihood of impact to previously undetected cultural resources.

The placement of the new power cable or removal of the old cable by the DP Cable Lay Vessel would not be expected to impact the identified cultural resource sites since they are located about 500 – 600 feet (150 – 185 m) from the centerline of the power cable.

Cable Removal Impacts at End of SYU Life: This section analyzes the impacts to cultural resources that are expected to occur to as a result of removing Cables C1 and D1 and the remaining segment of the failed C Cable on the OCS at the end of SYU life.

ExxonMobil estimates that decommissioning of its SYU facilities would occur sometime between 2020 and 2030. Deferral of Cables C1 and D1 and the remaining segment of failed Cable C on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, this would involve the decommissioning and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that 2-3 years would be required to remove all SYU facilities. Removal of the OCS segment of the failed Cable C and the new C1 and D1 would take an estimated 2-3 weeks. This project will be subjected to detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

4.10.3 Mitigation Measures

As stated above, two sites are within the zone of potential disturbance from the proposed cable installation operations. The potential threat to these sites, as well as the other two sites located outside of the project area is from anchoring and the cable placement and removal.

The applicant has committed to the protection of cultural resources during cable placement and removal and has proposed the following procedures as agreed upon in consultation with the California State Office of Historic Preservation and included in the SYU Expansion Project Cultural Resource Plan. Text appearing in italics denotes augmentation or other modification by the agencies.

ARCH-1: Require contractors to avoid potential *offshore* cultural resources by a 300 feet (90 m) radius to the extent possible during all offshore construction activities. This protective zone is to account for routine uncertainties in using remote sensors to precisely locate potential cultural resources in deep waters. *Enforcement Agency: MMS.*

ARCH-2: Provide all vessel operators working in these areas with the coordinates of the probable location of the potential sites and instruct them to remain outside of the 300 feet (90 m) protective zone. *Enforcement Agency: MMS.*

If complete avoidance of the zone is not possible, further investigations of the affected zone may be conducted through more intensive geophysical field surveys or ROV inspection. If further study indicates that the affected location is the remains of a shipwreck, the significance of the resource would be evaluated, and a mitigation plan would be developed, if appropriate.

ARCH-3: Include a review of avoidance procedures for the cultural resource areas during the pre-construction environmental compliance meeting. *Enforcement Agency: MMS.*

ARCH-4: Utilize an ROV to monitor installation activities during cable laying operations in the areas of potential cultural resources. The ROV would allow real time monitoring and detection of potential cultural resources. If a potential cultural resource site is encountered during cable placement and removal operations, the operator would immediately notify the MMS. *Enforcement Agency: MMS.*

ARCH-5: The applicant shall immediately halt cable laying operations if a previously undetected cultural resource site that could be impacted by ongoing operations is discovered. After the applicant has notified MMS of the discovery, if investigations determine that the resource is significant, MMS shall inform the operator how to protect the resource. *Enforcement Agency: MMS.*

Agency Recommended Mitigation Measures (Offshore)

Implementation of the following mitigation measures would further reduce impacts to the maximum extent feasible.

ARCH-6: ExxonMobil shall use an ROV equipped with a color-imaging sonar with a range of at least 300 feet (90 m) radius in polar-scanning mode to monitor cable placement and removal

activities in the area of potential cultural resource no. 3. If a previously undetected resource site is discovered, then ARCH-10, below applies. Enforcement Agency: MMS.

ARCH-7: In the event that the cable needs to be laid outside of the previously surveyed area, ExxonMobil shall use the ROV described in ARCH-6, above, to identify potential cultural resources prior to installation. If a previously undetected resource site is discovered, then ARCH-10, below applies. Enforcement Agency: MMS.

ARCH- 8: The applicant shall arrange for responsible agencies to attend a meeting with the cablelaying contractor ship's captain to review cultural site avoidance procedures prior to commencing cablelaying activities. Enforcement Agency: MMS, SLC.

ARCH-9: The MMS and/or SLC retain the option for inspectors to be present on a vessel at the sites to ensure that proper cablelaying and removal procedures are conducted. Enforcement Agency: MMS, SLC.

ARCH-10: If a previously undetected resource site is discovered, the applicant shall immediately notify MMS and California State Lands Commission and avoid the site. If the resource site is unavoidable, the applicant shall immediately halt cablelay or removal operations and perform an investigation, according to MMS/SLC instructions, to assess whether the site is significant. If the site is significant, the MMS/CSLC shall inform the applicant how to protect the resource. Enforcement Agency: MMS, SLC.

Agency Recommended Mitigation Measures (Onshore)

While impacts to onshore archaeological resources from the proposed project are not expected to be significant, the following mitigation measures would minimize potential impacts to the maximum extent feasible. In addition, FDP conditions of approval already in-place (Conditions XIII – XIII-6) should be implemented for the onshore portion of the proposed project.

ARCH-11: All onshore construction plans shall clearly state that excavation shall be limited to 5 feet below ground surface and to 3 feet below the cable entry point at the tunnel north wall for a distance of approximately 25 feet north of the wall. Evidence of compliance with this mitigation measure shall be documented prior to land use clearance and monitored by the County's EQAP Monitor or County Staff in the field. Enforcement Agency: SBC.

ARCH-12: If potential cultural material is encountered during excavation, work shall be halted until a Planning and Development-qualified archaeologist and Native American representative are consulted. Protection of archaeologically significant material shall be in accordance with County Guidelines. Enforcement Agency: SBC.

ARCH-13: A pre-construction meeting shall be organized to educate onsite construction personnel as to the sensitivity of archaeological resources in the area. ExxonMobil personnel shall instruct all construction and project personnel to avoid removing cultural materials from the property. Evidence of compliance with this mitigation measure shall be documented prior to land use clearance. Agency personnel shall be invited to attend the meeting. Enforcement Agency: SBC.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
The four offshore sites in the general area of the proposed project are potentially significant under the criteria described above. Significant impacts to cultural resources occur when the integrity of a significant or potentially significant site or isolated artifact is eliminated or reduced. All anchor deployments would be located outside of the cultural resource 300 feet protective buffer zones. This avoidance measure ensures that disturbances to known potential cultural resources would be minimized. Therefore, anchoring operations would not impact known cultural resources. All of the sites are located away from the cable placement and removal location, therefore, these activities would not result in impacts. As such, impacts to known offshore cultural resources would be insignificant, assuming the implementation of mitigation measures.

Excavation work in the lower canyon would not be expected to result in any adverse impacts to onshore cultural resources due to the depth of excavation and amount of fill material over known sites. As such, impacts to known onshore cultural resources would be insignificant, assuming the implementation of mitigation measures.

4.10.4 Cumulative Analysis
The source of cumulative impacts to submerged cultural resources is physical disturbance from non-project related activities. The sources include commercial trawl fishing, anchoring, other cable/fiber optic laying activities, and unauthorized removal of artifacts by recreational scuba divers. Because of stringent monitoring and mitigation of local, State, and Federal agencies for actions that may affect cultural resources, permitted actions are likely to cause little cumulative impact.

Since no other offshore operations are expected to take place during the cablelaying and removal operations in this area, and given the insignificant impacts of the ExxonMobil's cablelaying and removal operations on cultural resources, MMS and SBC anticipate that the incremental addition of the proposed action to cumulative impacts on cultural resources would be insignificant.

4.10.5 Alternatives Analysis
Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project)

Impacts to the archaeological resource No. 3 would likely be the same as described above for the Proposed Action. With the assumption that all anchor deployments would be located outside of the cultural resource 300 feet (90 m) protective buffer zones, disturbances to known potential cultural resources would be minimized. Therefore, anchoring operations would not impact known cultural resources. All of the sites are located away from the cable removal location, therefore, these activities would not result in impacts. As such, impacts on known cultural resources would be insignificant under this Alternative, assuming the implementation of the mitigation measures, described above.

Alternative B - Removal of Failed OCS Cable
Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. (See Section 2.0, Alternatives to the Proposed Project) This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and will be conducted between 2003 and October 2005. Phase 2 involves the removal of failed cable on the OCS. For the purposes of this analysis, Phases 2 would be projected to occur between 2003-2007.

Impacts to archaeological resources would likely be the same as described above for the Proposed Action. With the assumption that all anchor deployments are to be located outside of the cultural resource 300 feet (90 m) protective buffer zones, disturbances to known potential cultural resources would be minimized. Therefore, anchoring operations would not impact known cultural resources. All of the sites are located away from the cable removal location, therefore, these activities would not result in impacts. As such, impacts on known cultural resources would be insignificant under this Alternative, assuming the implementation of the mitigation measures, described above.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. (See Section 2.0, Alternatives to the Proposed Project) Under this Alternative, the applicant would not install new power cables or remove the failed cable at this time. Therefore, under Alternative C, there would be no impacts to the identified cultural resources at this time. Impacts could occur during the decommissioning of the SYU facilities in 2020-2030. This project would be subjected to detailed NEPA and CEQA review in the future. With the assumption that all anchor deployments are to be located outside of the cultural resource 300 feet (90 m) protective buffer zones, disturbances to known potential cultural resources would be minimized. Therefore, anchoring operations would not impact known cultural resources. All of the sites are located away from the cable removal location; therefore, these activities would not result in impacts. As such, impacts on known cultural resources would not occur at this time under this Alternative, and would be insignificant during the decommissioning of the SYU facilities in 2020-2030, assuming the implementation of the mitigation measures, described above.

4.11 Energy

4.11.1 Environmental and Regulatory Setting

Energy needs for both onshore and offshore SYU facilities (including the POPCO gas plant) are supplied by a 49 MW cogeneration plant, comprised of a gas and steam turbine. Natural gas produced offshore runs the 39 MW gas turbine and steam generated in a heat recovery section from process boilers runs the 10 MW steam turbine. Any excess power may be sold to the local utility. If additional electrical power is needed, it may be purchased from the Southern California Edison grid.

4.11.2 Project Impact Assessment

A project may be expected to have the potential for significant impacts to energy if it creates a substantial increase in demand upon existing energy sources or requires the development or extension of new sources of energy. The proposed project would not increase demand for energy. The replacement of the failed power cable would re-establish the existing level of power to the platforms. Energy needs for the project would be supplied by existing sources or from onsite

generation (via ExxonMobil's cogeneration plant). There would be a slight decrease in energy production and consumption during the time SYU is down for cable connections at platforms, onshore and during tunnel work. The proposed project would not extend the life of the project or require the development of new sources of energy.

4.11.3 Mitigation Measures

No mitigation would be required as there would be no impacts from the proposed project.

4.11.4 Cumulative Impacts

Given the fact that the proposed project would re-establish the existing level of power to the platforms and not lead to an increase in power generated or consumed, there are no cumulative impacts on energy usage foreseen.

4.11.5 Alternatives Analysis

Alternative - A Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. Implementation of Alternative A would decrease the duration of the project-related activities by approximately one day. Removal of the failed cable from the OCS at the end of the SYU project life (2020 – 2030) would be undertaken with other facility removal. Energy consumption for removal work could be slightly less as the process for removal may be more efficient (e.g., the DP vessel could remove two cables at one time) at the end of the project life. Advances in technology could also result in slight energy savings. As with the proposed project, there would be no significant energy impacts from this alternative.

Alternative B - Removal of Failed OCS Cable
Implementation of Alternative B would increase the duration of the project by approximately 2 to 3 weeks with a separate mobilization effort occurring (sometime between 2003 and 2007). Energy consumption in terms of vessel fuel use would be slightly greater than for the proposed project. As with the proposed project, there would be no significant energy impacts from Alternative B.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. Under the No Action Alternative, ExxonMobil would not install new power cables or remove the failed cable at this time. The failed cable would be removed, along with other SYU facilities sometime between 2020-2030, at the end of the project life. Therefore, under Alternative C, there would be no energy impacts at this time. Impacts could occur during the decommissioning of the SYU facilities. The project would undergo detailed CEQA and NEPA review at the time of decommissioning.

4.12 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 13084 to address questions of equity in the environmental and health conditions of impoverished communities. In response to this Executive Order an Environmental Justice analysis of the community affected by a Federal action is required. The U.S. Census Tract (Tract 2910) directly affected by the proposed project had a year 2000 minority population of 33.7 percent which is lower than the State of California minority population of 40.5 percent, and higher than the 24.9 percent for the entire U.S. The 1999 median annual income of the directly affected community was $70,550 compared to $47,493 for the State of California and $41,994 for the United States. The percentage of the

population living at or below the poverty level in 1999 was 5.5 percent or approximately one-half of the 10.6 percent experienced in California, and 58 percent of the United States poverty level of 9.6 percent. Based on the demographic and economic characteristics of the directly affected community there does not appear to be an Environmental Justice concern from the project.

4.13 Fire Protection

4.13.1 Environmental and Regulatory Setting

Onshore: Las Flores Canyon is a designated high fire hazard zone. Fire risk was identified as a Class I impact (significant and avoidable with mitigation) in the Exxon FEIR (83-EIR-22). Design safety features were incorporated into the overall facility design to minimize fire and explosion probability, including automatic shutdown valves, emergency relief devices and control of ignition sources. In addition, a comprehensive training program and operations procedures have been implemented as part of the Safety Inspection and Maintenance Plan (SIMP). Lastly, the integrated canyon-wide Fire Protection Plan (FPP) was implemented to evaluate the potential fire hazards associated with the ExxonMobil onshore facilities and explain the measures taken to mitigate fire-related hazards. Design features, including the selection of equipment and process systems, were incorporated to minimize fire and explosion probability.

As part of the development of the FPP, qualified fire protection engineers performed a fire hazard analysis of the facility using national standards and industry practices as guidelines. In addition to the fire hazard analysis, the following five additional analyses were conducted or used as part of ExxonMobil's Risk Management Program: 1) LFC Facilities Hazards Identification Analysis (Arthur D. Little, Inc., 1988); 2) SYU Expansion Project, Hazards and Operability Study HAZOPS), (NUS Corp., 1989); 3) SYU Expansion Project, Preliminary HAZOPS Review (Technica, 1991); 4) SYU Expansion Project Risk Assessment of LFC Facilities (Technica, 1993); and 5) Final Risk Assessment for Ammonia Transportation to the Chevron Gaviota Facility (Arthur D. Little, Inc., 1991).

Offshore/Platforms: Design safety features were incorporated into the overall platform design to minimize fire and explosion probability, including automatic shutdown valves, emergency relief devices and control of ignition sources. The platforms must comply with Code of Federal Regulations 30 CFR 250.803(b)(8), fire fighting systems, and 30 CFR 250.803(b)(9), fire and gas detection system. In addition, the platforms must comply with American Petroleum Institute (API) Recommended Practice (RP) 14G Fire Prevention and Control on Open Type Offshore Production Platform and API RP 14 F, Recommended Practice for Design and Installation of Electrical Systems for Offshore Production Platforms, as incorporated by reference in 30 CFR 250.

4.13.2 Project Impact Assessment

A project would be expected to have the potential for significant impacts to fire protection if it introduced development in an existing high fire hazard area without appropriate fire prevention measures or involved high fire risk operations.

Onshore: Las Flores Canyon is a designated high fire hazard zone and is located in a high fire area. The proposed project would not increase the risk of fire beyond that analyzed in previous

environmental documents and would not introduce new development into the area. There would be no additional operational risk associated with this project upon completion of the cable installation. However, construction activities in the lower canyon and tunnel areas do present a fire risk.

Existing fire fighting equipment onshore includes adequate firewater pressure, storage, hydrants and other ancillaries. The proposed project would not hamper fire prevention techniques as the project would be located within the existing area of development and Santa Barbara County Fire Station #18 is located approximately 5 miles (8 km) west of Las Flores Canyon. According to County Fire Department officials, response time is 3 to 10 minutes. (See Hazardous Materials/Risk of Upset section for further discussion.)

Santa Barbara County Building & Safety Officials have classified the tunnel as Class I, Division 1. The tunnel contains three electrical power cables, a gas pipeline, an oil emulsion pipeline and a produced water line. When ExxonMobil's oil emulsion pipeline was installed in 1993, a flange/isolation assembly was installed on the 20" Oil Emulsion Pipeline inside the tunnel. According to the manufacturer's cut sheet drawing and the information provided by ExxonMobil engineers, the flange/isolation assembly has been welded, epoxy-sealed and pressure-tested which limits source risk. According to American Petroleum Institute (API) Recommended Practice (RP) 500, Classification of Locations for Electrical Installations at Petroleum Facilities and NFPA 70 (National Electric Code) (NEC), the area is classified as Class I, Division 1 due to the presence of the flange/isolation assembly inside the tunnel and below grade location of the tunnel with inadequate ventilation. Class I Division 1 locations are locations where flammable gases or vapors could be present during normal operations. Any equipment present within such classified areas must meet certain specifications for fire protection. In addition, any work in classified areas must be performed in accordance with specific safety procedures as outlined in API RP 500 and NFPA 70 (NEC). Due to inadequate ventilation, the tunnel is also classified as confined space.

The applicant has met with SBC Building and Safety Building Official and engineers to request a reclassification of the tunnel to Class I, Division 2, based on the characteristics of the flange/isolation assembly. The reclassification could be approved with a variance from SBC Building and Safety Division. The approval would be contingent upon the applicant coating the cable through the tunnel with an appropriate flame retardant material. The applicant is presently working with the County Building & Safety Division to determine that the project complies with API RP 500 and NFPA 70 (NEC).

Offshore: The proposed project would not increase the risk of fire and would not introduce new development into the area. Existing fire fighting equipment offshore includes adequate fire hose stations, handheld portable fire extinguishers and both dry chemical and hard line deluge fire suppression systems. Operators are required to test fire detection and suppression systems at prescribed regular intervals. MMS conducts inspections of platform fire detection and suppression systems. There would be no additional operational risk associated with this project upon completion of the cable installation.

4.13.3 Mitigation Measures

The Las Flores Canyon Facilities FPP was prepared pursuant to Santa Barbara County Final Development Plan Permit Condition XI-2.i to mitigate fire-related hazards associated with the project facilities. The plan addresses each area of the facility and associated risks and hazards,

fire protection measures, process control and monitoring instrumentation, fire suppression systems and emergency training. As the FPP does not specifically address the tunnel, the FPP should be supplemented as necessary.

FIRE-1: A project-specific onshore FPP shall be prepared for the project. The plan shall be submitted to Santa Barbara County System Safety Reliability Review Committee for review and approval prior to approval of the Santa Barbara County Coastal Development Permit. Enforcement Agency: SBC

FIRE-2: The applicant shall work with SBC Building and Safety to ensure that the proposed project complies with applicable code and with API RP 500 and NFPA 70 (NEC) for the tunnel area. Enforcement Agency: SBC.

Residual impacts would be expected to be insignificant.

4.13.4 Cumulative Impacts

Although the SYU facilities are located in a rural, high fire hazard area, the proposed project with mitigation would not exacerbate existing fire risk conditions.

4.13.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break, resulting in approximately one less day of work. There would be no additional impacts from this alternative. Removal of the failed cable would be deferred until the end of the life of the project (2020 – 2030) at which time all offshore facilities would be removed.

Alternative B - Removal of Failed OCS Cable
There would be no additional impacts from Alternative B. Removal of the failed cable from the OCS would not result in additional construction time onshore, where the threat and potential impacts of fire is greatest. This alternative would result in an increase in the duration of construction and supply vessels in OCS waters to remove the failed cable in a separate mobilization effort (between 2003 – 2007) of approximately 2 to 3 weeks.

Alternative C - No Project Alternative
The potential temporary increase in fire hazards associated with equipment usage during construction work would be avoided by the No Project alternative. However, as the increase in risk is anticipated to be minor and completely mitigable, this alternative is not considered beneficial for Fire Protection purposes.

4.14 Geologic Processes

4.14.1 Environmental and Regulatory Setting

Onshore: The onshore portion of the project is located within the western portion of the Transverse Ranges Province, characterized primarily by east-west trending topographic and structural elements. The local topography consists of a narrow beach area, coastal plain, foothills belt and the southern slopes of the Santa Ynez Mountains. The coastal plain is generally less than 3000 feet wide and

ranges in elevation from 50 to 200 feet. The area is overlain by alluvial sediments that have been deposited on one or more of the uplifted marine abrasion platforms. The present surface is flat and slopes gradually seaward. The underlying geologic units that consist of cemented sandstone tend to develop steep canyon slopes and narrow valley floors.

The original project EIR (83-EIR-22) analyzed impacts associated with regional geologic formations, including faults. Seismic capabilities of faults within 60 miles (100 km) of the project were evaluated. Seventeen active faults and 12 potentially active faults were identified. Potential impacts from seismic conditions were not determined to be significant.

Offshore: Numerous regional and site-specific seismic investigations have been conducted to assess geologic conditions over the life of the project, including several for the proposed project. The project area is located in the Smooth Slope and Fan Provinces, two of three physiographic provinces that comprise the SYU area. Water depths range from 300 feet (at the shelf edge) to over 1500 feet. Slope gradients are generally low, ranging from a maximum of 7 degrees (12 percent) to a minimum of 2 degrees (4 percent) or less at the slope/basin interface (Exxon, 1983).

A geophysical survey was conducted in September 2001 to document current conditions of the existing and proposed cable route (*Pre-Lay Cable Route Survey, Platform Heritage to Shore and Platform Harmony to Platform Hondo*, Fugro West, Inc., March 1, 2002). In addition, the proposed cable route in shallow water, from 15 to 75 feet ocean depth, was surveyed and reported in a separate report (*Pre-Lay Cable Route Survey, Shallow Water Geophysical Survey*, Fugro West, Inc., July 27, 2001). The objectives of the surveys included mapping the location of the proposed cable route, identifying and mapping seabed features in the project area, identifying and mapping submarine cables and pipelines within the project area, identifying and mapping bathymetric data in the project route and providing coordinates of any anomalies.

Data was collected using single beam bathymetry, side scan sonar, sub-bottom profiler and magnetometer. Seafloor features were mapped along the proposed cable routes from the sonar data. Features identified included topographic sea floor features such as mounds, depressions, rises, scour and areas of disrupted seabed, anchor drag and trawl scars. Areas of seafloor change, debris and bedrock outcrop were also mapped as part of the survey.

Prominent seafloor features identified along the proposed Cable C-1 route primarily include anchor scars, impact depressions and rock or hard bottom areas near Platform Heritage and at the shelf break. In addition, a fan channel is located between Platforms Harmony and Heritage. The seabed floor surrounding Platform Heritage is relatively free of features with the exception of several large areas of rock south of the structure.

No prominent seafloor features were noted along the proposed Cable D-1 route. With the exception of seabed scars and several small sonar targets in the vicinity of Platform Hondo, the proposed cable route is clear.

4.14.2 Project Impact Assessment

Impacts are considered potentially significant if the proposed project, including all mitigation measures, could result in substantially increased erosion, landslides, soil creep, mudslides or unstable slopes. In addition, impacts are considered significant if people or structures would be

exposed to major geologic hazards upon implementation of the proposed project. Impacts related to geology have the potential to be significant if the proposed project is located on land having substantial geologic constraints or involves excessive grading or cut and fill operations. Impacts are also considered significant if they would result in a prominent permanent change in topography or bathymetry.

Onshore: The proposed project would be located within the existing SYU development. The lower canyon area where onshore work would be located is flat and graded with compact fill (see Section 4.5). Approximately 400 to 500 cubic yards of excavation would be required to expose the north end of the tunnel and power cable. All earthmoving work would be limited to the previously graded areas. A minimal volume of fill (less than 10 cubic yards) may be necessary for heat transfer capabilities.

The proposed project would not exacerbate or produce unstable earth conditions, due to the relatively small quantity of excavation and the location. There would be no cuts, fills or grading with the proposed project and no temporary or permanent changes in topography. The area of the proposed onshore excavation is not located in an area of any unique geologic, paleontologic or physical feature. Due to the location and limited amount of excavation, no increase in wind or water erosion of soils is expected, either on or off the site. However, should the work occur during the rainy season (November 1 – April 1) erosion control measures would be necessary. Work in the lower canyon would be outside the creek setback and work on the south side of Highway 101 would be limited to tunnel access from a paved bike and pedestrian path.

Offshore: The new cable would be anticipated to conform to the fan channel; no long spans are anticipated nor would there be the need for any cable supports. The new cable, measuring 6 inches in diameter,would likely be covered with sediment over time and not result in a measurable change to the bathymetric profile of the seafloor. No permanent modifications to the ocean floor would be anticipated as anchoring has been minimized by use of a dynamically positioned vessel. An anchoring plan has been prepared for non-DP vessels for use in the event of unanticipated weather that would ensure that anchor locations are in areas with no potential for impacts (e.g., hard bottom impacts). Laying of the cable and removal of portions would not cause any subsea landslides or other potentially damaging geologic process. Temporal and localized turbidity would result, however the affect of such action would not be significant (see Water Quality section).

4.14.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to geologic resources. Text appearing in italics denotes augmentation or other modification by the agencies.

GEO-1: Contractors shall be required to utilize current industry standards in engineering designs. *Enforcement Agency: MMS, SLC, SBC.*

GEO-2: Utilize an ROV that shall monitor *selected portions* of the installation activities during the cable lay operations. *If previously unidentified hard bottom areas are observed, the cable route shall be adjusted, as necessary, with agency approval, to avoid resources. Enforcement Agency: MMS, SLC.*

In addition to these mitigation measures, please refer to the following mitigation measure from other resource sections: WQ-3.

Residual impacts would be expected to be insignificant.

4.14.4 Cumulative Impacts

The proposed project would not substantially contribute to any onshore cumulative impacts as the area of temporary disturbance is not in a sensitive geologic area. Further, excavation would be limited a previously developed portion of the canyon.

The proposed project would contribute to the accumulation of manmade structures and oil and gas infrastructure on the sea floor until the end of the life of the project. For the purposes of this analysis, it is not anticipated that the proposed project would significantly contribute to cumulative impacts associated with modifications to geologic processes. As conditioned, the new cables would be removed at the end of the SYU life so as not to contribute to manmade seafloor structures in perpetuity.

4.14.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
There would be no additional geologic impacts from Alternative A. This alternative would, however, contribute approximately 34,000 feet (5100 cubic feet) of oil and gas infrastructure on the sea floor until the end of the life of the project. Due to the low profile of the cable, this is would not be considered a significant change in bathymetry. This alternative would not have any additional impacts on onshore resources.

Alternative B - Removal of Failed OCS Cable
There would be additional temporary impacts from Alternative B associated with turbidity (see Water Quality section); however, the longer term impact of adding roughly one acre of infrastructure would be avoided. The failed cable in OCS waters is located in a previously surveyed area. A DP vessel would be used to remove the cable, which would not require anchoring except under emergency conditions, thereby minimizing potential impacts to the ocean floor. This alternative would not have any additional impacts on onshore resources.

Alternative C - No Project Alternative
There would be no potential for geologic impacts with the No Project Alternative. The existing failed cable would remain in place until the end of the SYU life, some time between 2020 and 2030. Impacts could occur during the decommissioning of the SYU facilities. The project would undergo detailed CEQA and NEPA review at the time of decommissioning.

4.15 Hazardous Materials/Risk of Upset

Marine Research Specialists (MRS) provided extensive technical assistance in the preparation of this section of the MND/EA.

This section provides an analysis of potential upset events associated with the proposed project and provides estimates of their probability of occurrence. An upset is defined as an accident or other event that results in the release of petroleum hydrocarbons or other hazardous materials. An accident or upset must occur before there is an impact to assess. This section describes upset

events that could occur, regardless of how likely or unlikely the event. The information below describes the potential upset events, regulatory setting, oil spill response capability, and risk analysis methodology and probabilities. This section also describes mitigation measures agencies would require to ensure the risks of oil spills and potential environmental impacts are mitigated to the maximum extent feasible. The risks associated with alternatives to the proposed project are also discussed.

Cable Installation and Removal Operations
As described in Section 2.0, the project would involve removal of approximately 5 miles of failed cable C, and installation of two new cables (C1 and D1) in the vicinity of the project facilities described above.

In the nearshore area, the project would involve removing Cable C from the conduit and the tunnel that convey the cable through the surf area. After cable C is cut onshore and prepared for removal, the DP vessel would pull the cut portion of the cable through the tunnel and the conduit. This would be done using the reeling/winching equipment onboard the vessel with a control winch at the splice point in the lower LFC area.

Cable C crosses the POPCO gas pipeline within the State waters approximately 1,600-1,800 feet offshore of the cable conduit terminus. A recent shallow water geophysical survey performed in July 2001 showed the POPCO gas line to be buried by approximately 2 feet of sediment in this area. An articulated concrete mat, laid at the time of original installation, covers each power cable to keep it in place. Removal of the cable in the vicinity of the gas pipeline would be done with the help of divers and remotely operated vehicle (ROV). Divers would cut out concrete blocks along the length of the mat to free the cable. The remaining portions of the mat would remain in place.

Cable C-1 would then be installed through the same conduit and placed in the same location in the tunnel where the failed cable C is currently situated. Cable C1 would be installed approximately 1,000-2,000 feet south from the existing power cables in the OCS, in the State waters the new cable would parallel the existing cables.

Cable D-1 would cross the route of the existing operational cable E, the oil emulsion pipeline from Platform Heritage, the oil emulsion pipeline to shore and the treated water pipeline. ExxonMobil is proposing to use a special protective duct technology (e.g., Ultraduct) to provide protection to the existing pipelines and power cable. The duct would envelop the cable in the region where the cable might touch other structures located on the seafloor in order to ensure spacing between the cable and other facilities and to provide impact and abrasion protection. In the OCS cable C-1 would be laid approximately 1,000 feet from Platforms Hondo and Harmony backdown buoy anchor locations. ExxonMobil has proposed this location so that in case of a buoy support cable or anchor failure, the anchor would not cause damage to the new cable. The new cable would be laid approximately 1,000 to 2,000 feet from the existing cables and the gas pipelines from Platform Heritage.

The cable lay vessel that would be involved in the cable installation and removal would maintain at least 1400-2000 feet (426-610 meters) distance from the tops of each platform, which is well within the vessel's capability to safe maneuver in the vicinity of the structures without a collision

in any foreseeable weather conditions. (Under 33 CFR 147, 500 meters is the radius of the three platforms safety zone for the vessels over 100 feet long that do not service the facilities.)

The proposed cable would be installed from a cable installation vessel equipped with a dynamic positioning (DP) system that is specifically designed for installations of cables in deep waters (Figure 4). The cable lay vessel is approximately 437 feet (133 m) long, with a deadweight tonnage of 8,840 metric tons and is capable of handling a maximum of 2,500 metric tons of cable. At 20.9 lbs/ft cable weight in air the capability of the vessel is approximately 80 km or 50 miles of cable.

The vessel is powered by five diesel generator sets. The vessel fuel consumption is 15-20 tons per day during transit and 7-11 tons per day during cable installation operations; the fuel tank capacity is 650 tons; thus the vessel could lay cable for approximately 60-90 days without refueling. Since the cable removal and installation phases are expected to last 14-21 days, the vessel would not need to refuel during the project.

The vessel is equipped with a sophisticated computer-controlled dynamic positioning system "SIMRAD SDP 21" that is capable to maintain the vessel's position over the cable in various sea conditions without use of anchors or tug boats. The same vessel would be utilized in the proposed removal of the failed cable C portions.

Crude Oil and Gas Physical Properties
A spill of crude oil from the pipeline could damage the environment if oil is spilled on land or in rivers, creeks, or the ocean, and could produce public safety concerns from fires that may arise if the oil burns. Flammable vapors (i.e., propane, butane, and pentane) may also emanate from the crude oil, and there may be safety hazards arising from toxic vapors in the crude oil (primarily benzene and hydrogen sulfide).

Physical properties of crude oil are needed to assess the effects of a potential spill from a damaged pipeline. These data are summarized below.

Project Crude Oil Properties

API Gravity at 60ºF	15.5 (Heritage) – 21.9 (Harmony)
Water Content	~40%
H_2S content, ppm	25
Sulfur Content, wt% dry	4.30-5.18
Viscosity, centistokes at 50ºF	818 (Hondo) – 36,500 (Heritage)

Source: ExxonMobil Oil Spill Response Plan, 2000.
Notes: F = Fahrenheit

Because the emulsion mixture transported by the project pipelines has a large percentage of water (currently close to 40% water) impacts would be limited to environmental as opposed to safety impacts. The large volume of water in the emulsion inhibits the release of flammable vapor in the event of an oil spill, thus minimizing potential fire and explosion hazards.

The gas pipelines (Heritage to Harmony, Harmony to Hondo, and Hondo to LFC) contain sour gas with a current H_2S content of 3,800 (permitted limit of 20,000 ppm). The pipelines operate at 1,100 psig. The Hondo to LFC POPCO owned and operated line has a maximum flow rate of 90 mmscfd.

4.15.1 Environmental and Regulatory Setting

Potential upset events for the proposed project can be characterized as minor accidents or major accidents (Table RMM-1). Minor accidents could result in small spills of petroleum hydrocarbons, including fuels, lubricants, waste oils, and hydraulic fluids in volumes ranging from a few drops to several gallons. For the proposed project, SBC and MMS identified two potential spill scenarios for minor accidents: (1) incidental spills of lubricating oils, hydraulic fluids, and waste oils, and (2) incidental spills of fuel oil during offshore refueling operations.

Table RMM-1
Overview of Potential Upset Events and
Estimated Probability of Occurrence

Minor Accidents	***Probabilities****
1. Incidental spillage of petroleum hydrocarbons from the DP and support vessel.	Unlikely
2. Incidental fuel oil spills.	Unlikely
Major Accidents	
1.Dropping or dragging of anchor with possible damage to pipeline.	Unlikely
2. Accidental release of cable with possible damage to pipeline.	Highly Improbable
3. Impact by the DP vessel with a platform	Rare
4. Removal and installation of the cable in the conduit tunnel with possible damage to the pipeline.	Highly Improbable

* The numerical probabilities are provided in Table RMM-2

Major accidents are those which have the potential to result in larger spills. For the proposed project, SBC and MMS identified four potential major accident scenarios that could result in an oil spill: (1) anchoring damage to a pipeline, (2) dropping cable and damaging a pipeline, (3) vessel collisions with the platform, and (4) damage to a pipeline during cable installation and removal work in the onshore tunnel.

The MMS and SBC have determined, based on technical information and analyses provided by ExxonMobil, and a review conducted by an independent consultant, that the potential for these upset events ranges from unlikely (such events occur, but are not likely during this project) to rare (such events have occurred on a worldwide basis, but only a few times) to highly improbable (such events have never occurred but conceivably could) (Table RMM-2). The information presented below describes the upset events that could result from routine operations and an accident in greater detail, and ExxonMobil's and industry's oil spill response capability. The information demonstrates that oil spill response planning and capabilities are more than

adequate to respond to any spills that could reasonably result from this project. The text also identifies additional mitigation measures agencies would require to further minimize the potential for an oil spill.

Regulatory Setting
Many regulations and standards exist to assure the safe construction and operation of pipelines carrying materials such as crude oil and natural gas, and facilities associated with these pipelines. The SYU facilities were built to meet these standards and are currently in compliance with applicable Federal, State and local pipeline safety requirements. Cable installation and removal activities on the OCS and State Tidelands would be conducted in accordance with Federal OCS oil and gas regulations (Title 30, Part 250, Code of Federal Regulations) and State oil and gas regulations, respectively. Furthermore, Federal, State, and local regulatory requirements would apply to any potential accidental release that could occur during power cable removal and installation.

Title 30, Part 254 of the Code of Federal Regulations defines the requirements for oil spill response for all operators in the OCS. In addition, condition XI-2.e of the ExxonMobil Final Development Plan issued by the County also outlines requirements for oil spill contingency planning for SYU operations. Among other things, each operator must have an approved Oil Spill Response Plan (OSRP) and be capable of implementing the plan in the event of an oil spill. ExxonMobil's OSRP was most recently updated and approved by MMS in the fall of 2002 (ExxonMobil, 2002). The information below is provided as an overview of ExxonMobil's response capabilities.

SYU Oil Spill Response Capability
ExxonMobil maintains an OSRP for the three SYU platforms and the associated pipelines. The OSRP is approved by the MMS and undergoes biennial revisions. The SYU OSRP contains the full range of response and coordination actions, reporting and notification information, information on the response capabilities of the company and various response contractors, spill identification and assessment procedures, sensitive resources identification and protection methods, response and cleanup planning, and oil and debris removal and disposal procedures. The plan also contains detailed description of the actions that would be undertaken in case of an oil spill at the SYU offshore facilities.

ExxonMobil and Clean Seas are the primary response equipment providers for incidents at the SYU facilities. The equipment is located on all three SYU platforms and on the crew and supply boats, and includes various booms, sorbent pads, storage bags, skimmers and hand tools (a list of the available equipment is located in Appendix E of the SYU OSRP).

The closest locations to the project that the Clean Seas' Oil Spill Response Vessels (OSRV) are present (normally moored) are near Santa Barbara Harbor (2.5-3.5 hours response time) and Point Conception (1.3-2 hours response time). The closest piers that can be used to load the support vessels with the response equipment from the various facilities and contractors are Ellwood Marine Terminal and the Gaviota Marine Terminal.

The company's emergency response organization operates under the tiered response concept in which resources are cascaded to the appropriate level as dictated by incident circumstances. The

first tier of the response organization, comprised of onsite personnel and equipment dedicated to a specific ExxonMobil facility or operation, is the Onsite Response Team (ORT). The ORT response times range from several minutes (for the incidents at the facilities) to 1-2 hours (for incidents at different sections of the pipelines). Clean Seas fast-response vessel could also be summoned for site characterization assistance, if needed. The Clean Seas various vessels response times range from 1.3 to 2 hours.

If resources exceeding those of the ORT are required, the second tier of ExxonMobil's response organization – the Santa Barbara Channel Emergency Local Interfunctional Response Team (SBC ELIRT) - would respond. The SBC ELIRT is one of several ELIRTs established by ExxonMobil to provide spill response capabilities for regional areas of operation in the continental United States. ExxonMobil recently held a SBC ELIRT tabletop drill involving many regulatory agencies and contract personnel on November 12, 2002. In the event that an incident is beyond the response capabilities of the SBC ELIRT, the third tier of ExxonMobil's response organization – the North America Regional Response Team (NARRT) – would be mobilized to supplement SBC ELIRT response operations.

Risk Analysis Methodology
An analysis of risk considers two components:

- The probability or likelihood of the occurrence of the upset event, and
- The result of the upset event.

Definitions of various probabilities of occurrence are presented in Table RMM-2. This table has been modified from a similar systems safety table in the Joint EIS/EIR prepared for the San Miguel Project (URS, 1985) and used in similar offshore oil projects. The occurrence of an upset event has been defined for probabilities ranging from virtually certain (0.999) to highly improbable (less than 1 in a million or 10^{-6}).

Table RMM-2
Definitions of Probability of Occurrence

Group	Descriptor	Probability of Occurrence	Description
1	Highly Improbable	Less than 1 in a million ($< 10^{-6}$)	Such events have never occurred but conceivably could
2	Rare	Between 1 in a million and 1 in ten thousand ($> 10^{-6} < 10^{-4}$)	Such events have occurred on a worldwide basis, but only a few times
3	Unlikely	Between 1 in ten thousand and 1 in one hundred ($> 10^{-4}$ to $< 10^{-2}$)	Such events occur, but are not likely during this project
4	Likely	Between 1 in one hundred and less than one ($> 10^{-2}$ to < 1)	Such events are likely to occur during this project
5	Virtually Certain	0.999	Such events can be expected to occur more than once during the project

4.15.2 Project Impact Assessment

The potential upset events that could occur for this project and result in an oil spill are:

1. Incidental spills of lubricating oils, hydraulic fluids, and waste oils.
2. Incidental fuel oil spills.
3. Anchoring accidents.
4. Accidental release of the cable during lifting operations.
5. Collision of the DP vessel or Supply/Work vessel with a platform.
6. Accident during removal and installation of the cable in the onshore tunnel.

Potential risks associated with the project are described below along with agency required mitigation measures.

Potential Upset Event 1 - Incidental Spills of Lubricating Oils, Hydraulic Fluids and Waste Oils

The operation of supply and crew vessels as well as the DP vessel would involve the use of petroleum hydrocarbons. Such materials include:

- Lubricating oils
- Hydraulic fluids
- Waste oils

Transfer of these materials to or from the DP vessel or spillage of these materials on any vessel could result in their release to the marine environment. The probability that this upset event would occur is estimated to be unlikely (such events occur, but are not likely during this project).

MMS believes that incidental spillage of lubricating oil, hydraulic fluids, and waste oil would be very unlikely result in a significant impact to the marine environment due to the small volume of such spills, oil spill response capability, and resources in the immediate area.

SBC considers any reportable spill to the marine environment to be potentially significant. SBC has therefore determined that Potential Upset Event 1 could result in potentially significant impacts. The risk of such an occurrence, however, would be mitigated to a level of insignificance by implementing mitigation measure RMM-1 (see Section 4.15.3).

Potential Upset Event 2 - Incidental Fuel Oil Spills

Project vessels would be expected to refuel at Port Hueneme. Although not anticipated for this project, refueling could occur at the platforms using tote tanks. The SYU project is permitted to use this method of refueling and has used it on rare occasions in the past.

There would be no boat-to-boat fuel transfers. Skiffs on the DP vessel would be fueled only when they are onboard the DP vessel. The DP vessel carries a 90 day fuel supply. Due to the short duration (14-21 days) of cable installation and removal activities, refueling of the DP during the project would not be required.

Supply boats currently transfer diesel fuel to permanent tanks onboard the platforms. These refueling operations are comparable in scope to refueling operations involving tote tanks. From January 1993 to November 2000, a total of 36 diesel spills occurred during supply boat refueling operations at Pacific OCS platforms. The spills resulted in a total release of approximately 50 gallons (189 liters) of diesel fuel. Of these, 11 spills occurred at ExxonMobil facilities where a total of about 5 gallons (19 liters) were spilled.

Refueling of the project vessels from platform-based tote tanks could introduce the possibility of a release of diesel oil to the marine environment due to a leaking connection, failed loading hose or incorrect practices and procedures. The probability that this upset event would occur is estimated to be unlikely (such events occur but are not likely during this project). This risk would be present in the OCS region (offshore environment) only, since that is where the platforms are located. The risk would be mitigated to insignificance through implementation of the measures outlined in Section 4.15.3.

Potential Upset Event 3 - Anchoring Accidents

Many project activities would require the use of anchors, some of which would be as large as 30,000 pounds (13,608 kg). While anchors would only be placed in pre-surveyed locations, a safe distance from the existing cable and pipeline facilities, the potential exists for inadvertent anchor placement and damage to the existing cables and pipelines. The probability that this upset event would occur is estimated to be unlikely (such events occur, but would not be likely during this project). There have been no upset events involving anchors and pipelines in the history of oil and gas operations in the Pacific Region. Only one event has occurred in State waters. That event resulted in a spill of 126 gallons of oil (Platform Emmy in the Long Beach area, 1989). Anchoring accidents have occurred in the Gulf of Mexico Region where the location of many pipelines was not known, or where other forces, such as hurricanes, caused mobile drilling or vessels to drag their anchors. In the Pacific Region, the locations of offshore pipelines and power cables have been accurately mapped and the severity of storms is much less severe. Consequently, the chances of similar events occurring are very remote.

ExxonMobil would be required to comply with agency requirements to anchor within previously surveyed anchor zones that are located a safe distance from pipelines, cables, platforms, hard bottom areas, and cultural features. Pursuant to SLC requirements, all anchors must be set a minimum of 250 feet (75 meters) from active pipelines and power cables in State waters.

ExxonMobil has provided the following preliminary information on vessels and anchoring requirements for the proposed project:

1. Preconstruction Marine Biological Surveys
    a. Dive boat would deploy 2-4 anchors of up to 5,000 pounds (2,268 kg) each.
    b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.
2. Inspection of Conduit Terminus
    a. Supply/work vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.

   b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

3. Conduit Preparation, Clearance and Cable Cutting at Conduit Terminus
   a. Supply/work vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
   b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

4. Cable Removal and Pigging at Conduit Terminus.
   Use of a DP cable vessel would eliminate anchoring for this activity. However, if the DP vessel becomes unavailable for this portion of the project, items (a) and (b) below would occur.
   a. Supply/work vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
   b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

5. Exposure of J-Tube and OS&T Cable at Platform Hondo
   a. Supply/work vessel would deploy 4-6 anchors spread of up to 30,000 pounds (13,608 kg) each.
   b. Anchors would be placed outside of preclusion zone.

6. Cable Removal and Pigging at Platforms Hondo and Harmony
   Use of a DP cable vessel would eliminate anchoring for this activity. However, if the DP vessel becomes unavailable for this portion of the project, items (a) and (b) below would occur.
   a. Supply/work vessel would deploy one pre-set anchor of up to 30,000 pounds (13,608 kg) at the platform.
   b. Anchors would be placed outside of preclusion zone.

7. Conduit Cable Installation Support
   a. Supply/work vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
   b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

8. Post Construction Marine Biological Survey
   a. Dive boat would deploy 2-4 anchors of up to 5,000 pounds (2,268 kg) each.
   b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

If an anchor was accidentally dropped on a power cable or if an anchor came into contact with a cable (e.g. an anchor drag due to storm conditions or during retrieval operations), damage to the cable could occur and result in a shutdown of the SYU operations. All three SYU platforms have back up generator equipment for controlled safe shutdowns in the event of a power failure. Platform Harmony has a redundant power supply cable; therefore, the power to Platform Harmony could be quickly restored. Presently there is no redundant cable system to Platforms Hondo and Heritage. If Cables D or E were damaged, Platforms Hondo or Heritage, respectively, would be shutdown until the damaged cable is repaired.

An anchor that is dropped on a pipeline or comes into contact with a pipeline could cause a rupture in the pipeline. If a gas pipeline were punctured, some produced gas could reach the surface, depending on the depth of the release. A gas release would have minimal public health or environmental impacts due to the remote location of the platforms and the natural process of water-soluble components in the produced gas being absorbed by seawater. Dispersion through the water column would prevent toxic concentrations of hydrogen sulfide gas, which is soluble in water, from being present at the sea surface.

A release from the SYU treated water pipeline would cause a release of water that meets the NPDES Permit requirements for ocean discharge and would have minimal impacts on the marine environment.

Assuming that anchor damage to an oil pipeline has occurred and the impact is great enough to produce a leak in the pipeline, the fate of the released crude oil can be estimated using both the National Oceanic and Atmospheric Administration (NOAA) GNOME model and the MMS OSRA models (see ExxonMobil OSRP). Oil spill trajectories were reviewed in previous environmental analyses for the SYU Project (SAIC, 1984; ADL 1987). Emergency response operations would rely on the local ExxonMobil and regional Clean Seas capabilities. Additional information on response capabilities are discussed in ExxonMobil's SYU Oil Spill Response Plan.

The likelihood of an oil spill from the emulsion pipeline under this scenario is considered very unlikely due to the design of the pipeline (concrete coated) and the protective measures that have been taken to minimize the potential for anchoring accidents. However, under the SBC significance criteria, risks from anchoring would be considered potentially significant. The mitigation measure described in Section 4.15.3 would reduce the risk to insignificant levels.

Potential Upset Event 4 – Accidental Release of Cable and Damage to Nearby Structures

Under one potential upset event scenario, an accidental release of cable during cable pulling and removal activities could damage existing oil and gas infrastructure, thereby causing a release of crude oil, produced gas or produced water to the marine environment. The probability that this upset event would occur is considered to be highly improbable (such events have never occurred but conceivably could). Four things would have to happen in order for this upset event scenario to occur:

1. The cable would have to be accidentally and uncontrollably released in water depths in excess of 400 feet (120 meters);
2. The cable would have to fall in the "plunging stalk" mode, as described below;
3. A simultaneous failure of the DP vessel navigation system (or human error) would have to occur; and,
4. The dropped cable would have to hit a pipeline and produce a leak.

If these four events occurred, the cable could potentially impact one of the existing emulsion, gas, or water pipelines causing failure of those facility components.

Risks to seafloor facilities (pipelines and power cables) are a function of the length of cable associated with the break (the depth), the associated weight of any equipment attached to the cable and the mode of cable laydown. A recent study conducted for ExxonMobil by Petro-Marine (September 2002) assessed various potential cable "failure" locations and the associated dynamics and potential impact damage. This report is included as Appendix B of this document.

The chance of an accident that resulted in the release of the cable was assumed to be one-in-a-thousand. ExxonMobil was not able to find any statistical data to better define this situation. Discussions between ExxonMobil and the installation contractor determined that this estimate was appropriate for the types of activities contemplated for this project. This is based on the installation contractor's cable installation and removal experience, which spans a period of 16 years (1986-2002). No cable has ever been dropped during that time; therefore this probability analysis is considered to be conservative. In addition, SBC's independent risk consultant, MRS Environmental, supports the use of this release rate based on work performed on similar offshore fiber optics cable installation and retrieval projects off the California Coast.

The report indicated that there are a number of different cable laydown modes that could occur given a cable failure. These are:

1. Stiff catenary laydown - the cable essentially lays down on the seabed floor, most likely in shallow water (< 50 feet [15 m]);
2. Hammerhead laydown - the cable end lays down quicker than the rest of the cable causing a more sudden impact, most likely in shallow water (< 50 feet [15 m]);
3. "Spaghetti pile" without clamp - the cable loops around like spaghetti with no clamp attached to the end, normally occurs in deeper water;
4. "Spaghetti pile" with clamp - the cable loops like spaghetti but has a 200 pound (91 kg) clamp on the end, normally occurs in deeper water, and
5. Plunging stalk - the cable plunges directly downward, normally occurs in deeper water (> 400 feet [122 m]).

Velocities and impact forces were based on engineering calculations made by ExxonMobil and reviewed by MMS, SLC and an independent consultant MRS Environmental, under contract to SBC. Damages to seafloor equipment were assessed using finite element analysis assuming that any deformation of the pipe or other electrical cables would constitute damage.

As seen in Table RMM-3, the plunging stalk failure mode produces substantially more force upon impact than any other failure mode. The plunging stalk mode is the only mode that could cause damage to the emulsion pipeline. Both the "spaghetti pile" with clamp and the plunging stalk modes could cause damage to the electrical cables. Analysis of failures at 1,250 feet (380 meters) depth produced the same results.

Table RMM-3
Cable Laydown and Damage Assessment Results at 450 Ft (135 meter) Depth

Impact Mode	Velocity (ft/sec)	Water Depth (ft/m)	Impact Force (lbs./kg)	Cable Damage	Pipeline Damage
Stiff catenary laydown	NA	<50/15	NA	None	None
Hammerhead laydown	NA	<50/15	NA	None	None
Spaghetti pile without clamp	5.5	All depths	1,248/566	None	None
Spaghetti pile with clamp	5.5	All depths	1,883/854	Yes	None
Plunging stalk	67.3	>400/122	137,000/62,143	Yes	Yes

Source: ExxonMobil SYU Offshore Power System Repair, Amended Project. Cable Retrieval Risk Assessment, PMBCI, September 2002.

A "plunging stalk" failure mode cannot occur in water depths less than 400 feet (120 meters). This occurs primarily on the shelf and is where the cables are in close proximity to the emulsion, gas or water pipelines.

Failure in the "hammerhead laydown" mode could cause damage and potential failure to one of the existing electrical cables.

An inadvertent cable release during retrieval would most likely occur if the cable has been cut and is suspended from the vessel while being raised or lowered. This could occur during cable removal from the J-tubes at Platform Hondo and Heritage and at the shelf break where the existing inoperable cable would be cut on the DP vessel and laid back on the sea floor. It could also occur at Platform Hondo during cable installation and at the near-shore location near the conduit entrance.

Risks to the existing facilities on the seafloor would be similar in all of the above listed cases and would be a strong function of water depth and the mode of cable laydown. Current facility design and environmental conditions would help to minimize the impact damage. These include coating of some of the pipelines with concrete and self-burying of the near shore pipelines.

In order to put the potential risk in context, event probabilities have been estimated for the various accident scenarios and potential consequences (e.g., damage to existing cables and pipelines). Tables RMM-2 and RMM-3 present the probabilities of occurrence of damage to seafloor infrastructure in the event a cable is dropped during installation or removal. Table RMM-4 provides a more detailed evaluation of potential for damage to active SYU pipelines and power cables from a dropped cable, taking into consideration factors such as the distance to these existing structures and water depth. As these tables show, the probability of the various cable accidents and resultant equipment failures range from zero to seven in ten million. While these low probabilities indicate that most events are highly improbable for damage to seafloor infrastructure to occur**,** to meet the CEQA requirements to address potential worst-case impacts, and to identify mitigation measures, all potential damage scenarios to the project cables and pipelines were evaluated.

Damage to other power cables and the pipelines by a dropped cable would be similar to those from anchoring accidents. The potential for releases of gas, water and oil, would also be similar. The possibility of damaging multiple cables is considered extremely remote because the only scenarios that could cause cable damage are those that have small impact areas (the clamp and

the plunging stalk), and thus a low likelihood of occurring. Damage to a power cable could result in a shutdown of SYU operations. Due to the depths at which the plunging stalk mode would occur (minimum 400 feet), any gas that could be released from a ruptured gas pipeline would dissipate before it reached the surface.

As discussed for Upset Event 3, the fate of a crude oil release can be estimated using both the NOAA GNOME model and the MMS OSRA models, as was done in the ExxonMobil OSRP. The likelihood of an oil spill from the emulsion pipeline under this scenario is considered to be virtually impossible, because the following series of very unlikely events would have to occur: (1) the cable would have to be accidentally and uncontrollably released in water depths in excess of 400 feet (120 meters), (2) the cable would have to fall in the "plunging stalk" mode, (3) a simultaneous failure of the DP vessel navigation system (or human error) would have to occur, and (4) the dropped cable would have to hit an oil pipeline and produce a leak.

Due to remote possibility of such an event occurring, a discussion of impacts associated with such an event is limited to this section of the document. The mitigation measures outlined below would reduce potential impacts to insignificant levels

Potential Upset Event 5 – Collision of the DP Vessel or Supply/Work Vessel with a Platform

A DP vessel or a supply/work vessel operating near a platform could collide with a platform due to human error or if the propulsion systems of the vessels failed. Such an event could result in an oil spill. Information provided by ExxonMobil demonstrates that the DP and supply/work vessel would remain at least 1,400 to 2,000 feet (425-610 meters) from the platform during the cable removal and installation operations. Both of the vessels would have state-of-the-art navigation and GPS positioning systems. The vessels would also have back-up propulsion systems that can be used if the primary system fails. This would minimize the potential for a vessel/platform collision. The probability that this upset event would occur is estimated to be rare (such events have occurred on a worldwide basis, but only a few times) and therefore considered insignificant for this project. Therefore there are no mitigation measures proposed for this upset scenario.

Table RMM-4

Evaluation of Potential for Damage to Active SYU Components from Dropped Cable

(Evaluation assumes worst case where cable can fall within an area formed by a cone with an apex angle of 90 deg at water surface.)

Activity	Location	Water Depth (ft)	Potential ImpactZone (ft^2)	Active P/L & PC Within Zone	Distance To P/LAnd PC (ft)	Potential For Impact	Plausible Damage Mode (Note 1)	Probability (Note 2 & 3)
OPSR:A Project Cable C1 and D1 Installation								
Cable Installation (Cable C1)	Conduit Terminis	25	1,965	Cable A	10	Yes	None (Buried)	Zero
				Cable B	5	Yes	None (Buried)	Zero
				POPCO P/L	70	No	N/A	
				HA Emulsion P/L	55	No	N/A	
				Treated Water P/L	50	No	N/A	
Cable Installation (Cable C1)	Platform Heritage Remove Cable C from J-Tube	1100	3,801,340	Cable E	300	Yes	SP w/C & PS	1.95×10^{-7}
				HE Gas P/L	645	Yes	PS	3.28×10^{-7}
				HE Emulsion P/L	1,015	Yes	None (Beyond PS Impact Zone)	Zero
Cable Installation (Cable C1)	Platform Heritage Cable C1 J-Tube Pull-In	1090	3,732,535	Cable E	30	Yes	SP w/C	1.80×10^{-7}
				HE Gas P/L	385	Yes	None (Cable Swinging Not Falling)	Zero
				HE Emulsion P/L	710	Yes	None (Cable Swinging Not Falling)	Zero
Cable Installation (Cable D1)	Platform Hondo Remove OS&T Cable from J-Tube	790	1,960,670	Cable A	690	Yes	SP w/C	1.99×10^{-7}
				Cable B	765	Yes	SP w/C	9.69×10^{-8}
				POPCO Gas P/L	360	Yes	PS	6.43×10^{-7}
				HA Gas P/L	805	No	N/A	
				HO Emulsion P/L	740	Yes	None (Beyond PS Impact Zone)	Zero
				HA Emulsion P/L	1,320	No	N/A	
				Treated Water P/L	1,245	No	N/A	

Table RMM-4 Continued

Activity	Location	Water Depth (ft)	Potential ImpactZone (ft^2)	Active P/L & PC Within Zone	Distance To P/L and PC (ft)	Potential For Impact	Plausible Damage Mode (Note 1)	
Cable Installation (Cable D1)	Platform Harmony Cable D1 J-Tube Pull-In	1195	4,486,285	Cable E	60	Yes	SP w/C	1.76×10^{-7}
				HE Gas P/L	330	Yes	None (Cable Swinging Not Falling)	Zero
				HE Emulsion P/L	430	Yes	None (Cable Swinging Not Falling)	Zero
				HA Emulsion P/L	575	Yes	None (Cable Swinging Not Falling)	Zero
Cable Installation (Cable D1)	Platform Hondo Cable D1 J-Tube Pull-In (Dwg. No. 8783-9)	800	2,010,625	Cable A	710	Yes	SP w/C	2.04×10^{-7}
				Cable B	805	No	N/A	
				POPCO Gas P/L	330	Yes	None (Cable Swinging Not Falling)	Zero
				HA Gas P/L	535	Yes	None (Cable Swinging Not Falling)	Zero
				HO Emulsion P/L	480	Yes	None (Cable Swinging Not Falling)	Zero
				HA Emulsion P/L	1,260	No	N/A	
				Treated Water P/L	1,165	No	N/A	

Note 1: SP w/C-Spaghetti Pile with Clamp; PS-Plunging Stalk; SP w/C & PS-Spaghetti Pile with Clamp & Plunging Stalk; N/A-Not Applicable
Note 2: Assumption: 1 time out of a 1000 cable will be dropped (no data available)Calculation: (Area of each P/L or PC in potential impact zone / Area of impact zone)
Note 3: E-7 equal to 1 / 10,000,000

Potential Upset Event 6 - Accidental Damage to Pipelines/Cables in the Onshore Tunnel

Removal and installation of cables in the conduit tunnel could cause damage to the existing cables or to the pipelines in the tunnel, however it wold be highly unlikely for the reasons described below. The cable removal and installation operations would be conducted by winching the cables through the tunnel on a specially designed tray equipped with rollers for easy movement. The three power cables located in the tunnel are located on a tray above the emulsion pipeline. A treated water pipeline is also located in the tunnel. The POPCO gas pipeline is separated by a walkway and a handrail from the other pipelines and cables (See Figure 6). This arrangement provides for protective spacing between the cables and the pipelines. Therefore, abrasion of the cable against existing pipelines is not possible. In addition, the tension and alignment of the cable during retrieval and installation would be continuously monitored through the tunnel and controlled on both ends. Consequently, it would be very unlikely that a pipeline or cable could be damaged by abrasion during cable removal and installation operations. ExxonMobil is currently preparing detailed execution procedures for cable installation and retrieval tunnel to be reviewed by State Lands Commission and Santa Barbara County to ensure appropriate safety measures are incorporated. The potential for a more severe accident resulting in a rupture of an oil, gas or treated water line is considered highly improbable (such events have never occurred but conceivably could). Absent execution of proper engineering and safety practices, SBC considers this impact to be potentially significant but mitigable. Under NEPA, the impact would be considered insignificant due to the remote probability of occurrence. The mitigation measures in Section 4.15.3 are recommended to minimize risk.

Damage to one of the other cables could cause operational problems by shutting down the platforms. In addition, damage to one of the other cables could require the replacement of the newly damaged cable, which would be a project similar to the one being evaluated in this document. This impact is considered to be insignificant. In addition, as discussed in Section 4.13 (Fire Protection), because of the classification of the tunnel (Class 1, Division 2), all work in the tunnel must comply with API RP 500 and NEC 70.

Conclusions – Proposed Project

Table RMM-5 presents the upset events, probabilities, impact classifications, mitigation measures, and residual impacts with mitigation measures for the upset events that were assessed for this project. The classification of impacts as potentially significant for Upset Events 1 and 2 is based on SBC's environmental impact significance criteria (any reportable oil spill is considered potentially significant). The MMS considers potential impacts from the incidental spillage of petroleum hydrocarbons from the DP and support vessel or incidental fuel oil spills to be insignificant. With proper planning, procedures, and safety plans, as well as good vessel housekeeping operations, all potentially significant impacts can be mitigated to insignificant levels.

CROSS SECTION OF TUNNEL

Existing Pipelines & Power Cables

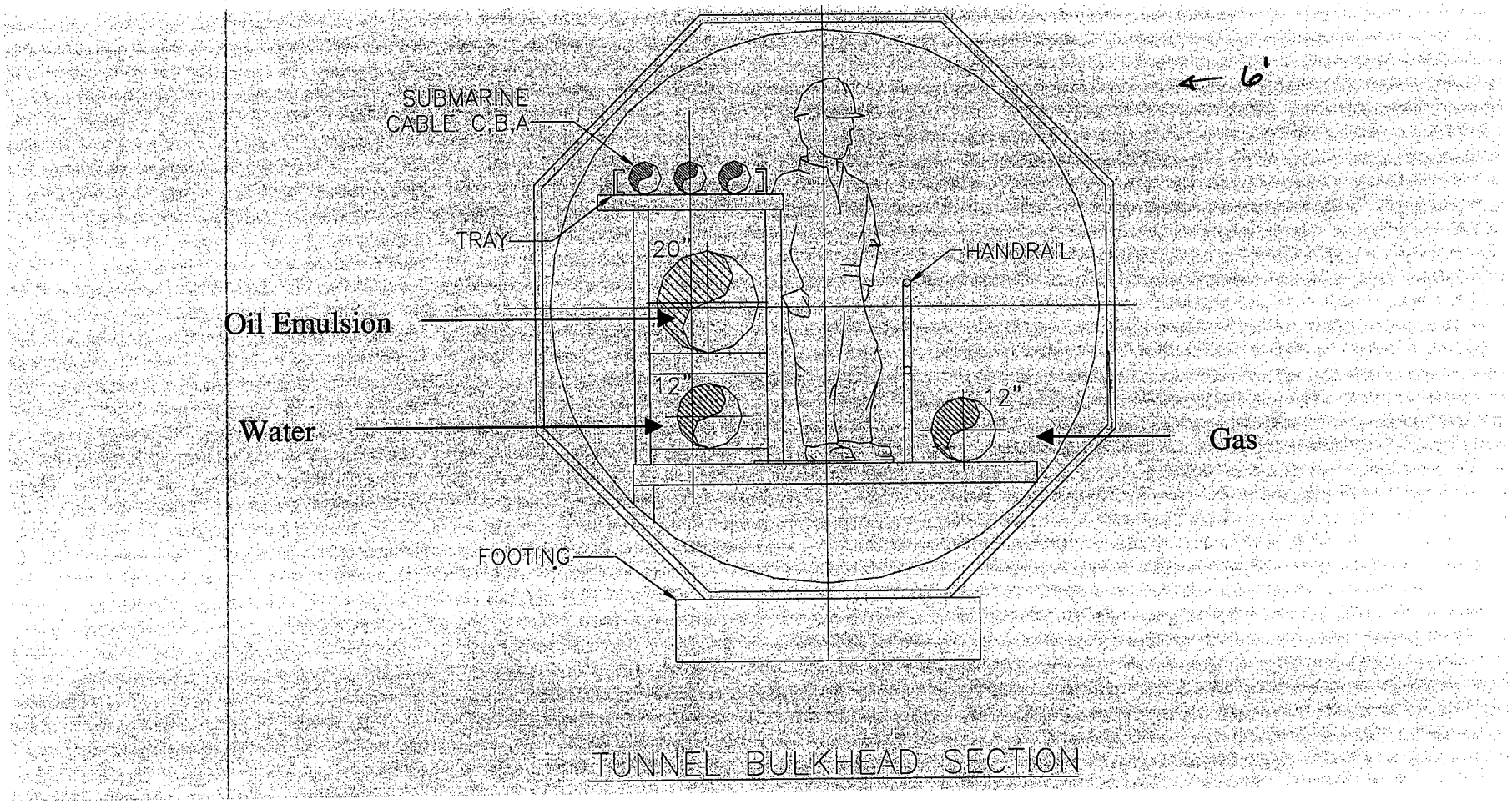


Figure 6

Table RMM-5
Probability, Potential Impact, Mitigation, and Residual Impact for Potential Upset Events

(This information is required by the California Environmental Quality Act.)

Upset Event	Probability of Upset Event	Impact Classification*	Mitigation Measure	Residual Impact
1. Incidental spillage of petroleum hydrocarbons from the DP and support vessel.	Unlikely	CEQA: Potentially significant NEPA: Insignificant	RMM-1 through 4	Insignificant with mitigation (Class II)
2. Incidental fuel oil spills.	Unlikely	CEQA: Potentially significant NEPA: Insignificant	RMM-5	Insignificant with mitigation (Class II)
3. Anchoring accidents.	Unlikely	CEQA: Potentially significant NEPA: Insignificant	RMM-6 and 7	Insignificant with mitigation (Class II)
4. Accidental release of cable with plausible damage to pipeline.	Highly Improbable	CEQA: Potentially significant NEPA: Insignificant	RMM-8 and 9	Insignificant with mitigation (Class II)
5. Impact by the DP vessel with a platform	Rare	Insignificant	None	Insignificant (Class III)
6. Potential damage to existing pipelines or power cables during removal and installation of cable in tunnel.	Highly Improbable	CEQA: Potentially significant NEPA: Insignificant	RMM-10 through 12	Insignificant with mitigation (Class II)

* The classification impact levels differ under CEQA vs. NEPA due to differences in agency significance criteria.

4.15.3 Mitigation Measures

Mitigation Measures for Potential Upset Event 1 – Incidental Spills of Lubricating Oils, Hydraulic Fluids, and Waste Oils

RMM-1. ExxonMobil shall ensure that all construction contractors maintain good housekeeping practices to avoid washing of lubricants or other hydrocarbons from deck into the ocean or dropping of debris overboard. All lubricating oils, hydraulic fluids, waste oils and related materials shall be stored in contained areas. Enforcement Agency: MMS, SLC.

RMM-2. ExxonMobil shall ensure that all materials related to cable pulling and laying operations are loaded on the DP vessel at applicable port locations and transfer of materials at sea should be avoided to the extent feasible. No crane lifts of materials and equipment shall be made over operating pipelines and power cables. Enforcement Agency: MMS, SLC, SBC

RMM-3. ExxonMobil shall prepare a project-specific Oil Spill Response Plan (OSRP) that clearly identifies responsibilities of contractor and ExxonMobil personnel. The plan shall list and identify the location of oil spill response equipment and response times for deployment. The plan shall be submitted to the MMS, SLC and SBC at least 60 days prior to commencement of cable installation and removal operations. Enforcement Agency: MMS, SLC, SBC.

RMM-4. ExxonMobil shall provide OSPR training to primary contractors and sub-contractors to ensure clear understanding of responsibilities and prompt oil spill response procedures. If any contractors are to be responsible for boom deployment, ExxonMobil shall conduct a boom deployment drill prior to commencement of power cable removal and installation operations. ExxonMobil shall notify MMS at least 72 hours before the drill so MMS can witness boom deployment operations. Enforcement Agency: MMS, SLC, SBC.

Mitigation Measure for Potential Upset Event 2 - Incidental Fuel Oil Spills

RMM-5. ExxonMobil shall refuel all vessels involved in the project at onshore facilities (ports/piers) or according to an agency approved refueling plan. The plan shall be submitted to MMS, SLC, and SBC for review and approval at least 60 day prior to construction commencement. There shall be no boat-to-boat fuel transfers, with the exception of skiffs on the DP Lay vessel, which are only fueled when on the vessel. Enforcement Agency: MMS, SLC, SBC.

Risk Mitigation Measures for Potential Upset Event 3 – Anchoring Accidents

RMM-6. ExxonMobil shall set all anchors a minimum of 250 feet (75 meters) from active pipelines and power cables. Enforcement Agency: SLC, MMS.

RMM-7. ExxonMobil shall submit an Anchoring Plan to SLC and MMS at least 60 days prior to commencement of cable installation and removal operations and to SBC for review and approval prior to approval of the Coastal Development Permit. The plan shall list all of the vessels that will anchor during the project and the number and size of anchors to be set. The plan shall include detailed maps showing anchoring sites identified during the pre-construction biological surveys, including re-positioning of anchor 1-C to ensure that it is at least 40 feet (12 m) from rocky habitat. The plan shall also describe the navigation equipment that would be used to ensure anchors are accurately set and anchor handling procedures that would be followed to prevent or minimize anchor dragging. Enforcement Agency: MMS, SLC, SBC.

Mitigation Measures for Potential Upset Event 4 – Accidental Release of the Cable and Damage to Nearby Structures

RMM-8. ExxonMobil shall prepare a Critical Operations and Curtailment Plan for offshore cable installation and removal operations that describes weather and sea conditions that would require curtailment of operations. The plan shall be submitted to MMS, SLC, and SBC at least 60 days prior to commencement of the cable installation and removal operations. Enforcement Agency: MMS, SLC, SBC.

RMM-9. ExxonMobil shall prepare and submit a Cable Release Prevention Plan which details the specific measures to be taken at all locations where a cable is suspended and could fail and fall to the ocean floor. The plan shall detail design measures, engineering measures, safety measures, and redundancy in safety equipment. The plan shall be submitted to MMS and SLC at least 90 days prior to construction and to SBC for review and comment prior to Coastal Development Permit approval. Enforcement Agency: MMS, SLC, SBC.

Mitigation Measure for Potential Upset Event 6 – Accidental Damage to Pipelines/Cables in the Onshore Tunnel

RMM-10. ExxonMobil shall prepare a Safety Plan for Tunnel Cable Installation and Removal Operations that describes procedures that will followed and safety measures that will be taken to ensure damage to other cables and pipelines does not occur. The plan shall include the method proposed to enable continuous monitoring of cable pull activities in the tunnel. The procedures shall identify activities during which SYU operations will be shutdown. The plan shall include a hazards study evaluation of cable installation and removal operations in the tunnel using an appropriate method (e.g., "What-If" or "Checklist"). The study shall identify potential failure modes, protection devices or systems, safety procedures and redundant safety equipment or measures (levels of protection). Procedures and safety plan shall be submitted to SBC at least 90 days prior to commencement of the project and to the Santa Barbara County System Safety Reliability Review Committee (SSRRC) prior to approval of the Coastal Development Permit. Enforcement Agency: SBC.

RMM-11. ExxonMobil shall prepare an Execution Plan describing cable removal and installation procedures in the onshore tunnel. The plan shall describe measures that will be taken to minimizing the tension/stress that will be placed on cables during cable pulling operations. Detailed plans shall be submitted to SLC and SBC at least 90 days prior to commencement of cable removal and installation operations and to the Santa Barbara County System Safety Reliability Review Committee (SSRRC) prior to approval of the Coastal Development Permit. Enforcement Agency: SBC, SLC.

RMM-12. ExxonMobil shall de-energize the cables and shutdown the oil and gas pipelines in the tunnel during cable pulling operations in the tunnel, unless ExxonMobil can clearly demonstrate to SBC and SLC that cable pulling operations can be performed safely while the cables and pipelines in the tunnel are operating. Enforcement Agency: SBC, SLC.

See also mitigation measure FIRE-2.

Residual impacts would be expected to be insignificant.

4.15.4 Cumulative Impacts

The proposed project is not expected to significantly contribute to risk of upset conditions on a cumulative basis. Risks associated with the cable installation and retrieval operation in conjunction with ongoing SYU operations are described in Section 4.15.2. There are no other offshore operations expected to take place during the cablelaying and removal operations in this area.

4.15.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
This alternative involves installing two new cables (C1 and D1) and deferring removal of the failed C Cable to the shelf break until the end of SYU life, at which time it would be removed with the other SYU facilities. Upset events as related to the proposed project are discussed below. No additional impacts are expected.

Potential Upset Event 1 – Incidental Spills of Lubricating Oils, Hydraulic Fluids, and Waste Oils:
Near-term impacts associated with incidental materials spills would be slightly reduced as the time associated with vessel operations would be reduced by one day. However, the potential for the upset event would be transferred to the SYU abandonment timeframe (2020-2030). The potential for upset event would not necessarily be transferred to the SYU abandonment timeframe as dividing the project into multiple parts would increase the opportunities for the vessel to refuel at port and thereby reduce the possible need for at-sea refueling.

Potential Upset Event 2 - Incidental Fuel Oil Spills: Spills associated with refueling operations would be slightly reduced as the time of operation requirements on the DP vessels would be reduced by one day, thereby reducing the possibility that refueling would be required. The potential for upset event would not necessarily be transferred to the SYU abandonment timeframe as dividing the project into multiple parts would increase the opportunities for the vessel to refuel at port and thereby reduce the possible need for at-sea refueling.

Potential Upset Event 3 - Anchoring Accidents: The potential for damage to sub-sea infrastructure would be reduced under this alternative. Upset events associated with removal of the cable and the potential for damage to the sub-sea infrastructure would be transferred to the SYU abandonment timeframe. However, as the pipelines and cables would not be operating and would also be in the process of being abandoned, damage to them would not likely produce spills or operation impacts (assuming they had been abandoned and evacuated first). Residual hydrocarbons may remain even after flushing the lines. As the project would still involve installation of cables between platforms, there is still a potential for seafloor oil and gas infrastructure damage associated with the project.

Potential Upset Event 4 - Accidental Release of Cable: The potential for damage to sub-sea oil; and gas infrastructure would be reduced under this alternative. Upset events associated with removal of the cable and the potential for damage to the sub-sea infrastructure would be transferred to the SYU abandonment timeframe. However, as the pipelines and cables would not be operating and would also be in the process of being abandoned, damage to them would not likely produce spills or operation impacts (assuming they had been abandoned and evacuated first). Residual hydrocarbons may remain even after flushing the lines. As the project would still involve installation of cables between platforms, there is still a potential for seafloor infrastructure damage associated with the project.

Potential Upset Event 5 - Collision of a DP Vessel or Supply/Work Vessel with a Platform: Upset events associated with vessel impacts to platforms would remain as these events are associated with cable laying operations (which would not change under this alternative).

Potential Upset Event 6 - Accidental Damage to Pipelines/Cables in the Onshore Tunnel: The potential for upset events associated with cable operations in the onshore tunnel would be reduced but not eliminated as this alternative would still require installation of a cable in the tunnel.

Alternative B: Removal of Failed OCS Cable:
This alternative involves the proposed project plus removing approximately 12 miles (19 km) of the failed Cable C between the shelf break and the platforms. This alternative would place vessels on the ocean for a longer period in the near-term, but the same total period including the long-term SYU abandonment project. Impacts would be similar to the proposed project, in that all the impacts could also be mitigated to insignificance. The probability of impact Risk-4 (Accidental Release of Cable) occurring would be increased with this alternative, but would still remain virtually impossible with proper engineering, planning, and execution.

Should full removal of the OCS cable be required at this time, MMS would require shutdown of existing pipeline operations during critical portions of the removal operations to further minimize potential spill risk. Given the shutdown of the pipelines during removal of this portion of the cable, impacts would be nearly identical to those identified in Risk-4. Table RMM-6 presents the probabilities of occurrence of damage to seafloor oil and gas infrastructure in the event a cable is dropped during installation or removal of the OCS portion.

Damage could occur to the nearby existing power cables A, B, D, and E from a dropped cable. The risk of damage to power cables is very low (about 3 in 10,000,000) If such an event occurred, power would be lost to one or more of the SYU platforms resulting in a shutdown of the affected platforms. Although this could result in shutdown of operations at the platform, there is no risk of an oil spill if this occurred. If power supply to the platforms were interrupted, the diesel-powered generators on the platforms would be used to provide limited power for essential operations. The use of diesel engines would result in an increase in air emissions.

Damage could also occur to the nearby Heritage gas pipeline from a dropped cable. Due to the water depths at which the plunging stalk mode would occur on the OCS, any gas that could be released from a ruptured gas pipeline would dissipate before it reached the surface. The risk for potential damage to the Platform Harmony jacket is approximately two in 100,000. However, damage to the jacket would not result in spillage of hydrocarbons.

The removal of the additional Cable C portions would require the cutting of the failed cable near where the cable crosses the gas pipeline. This would increase the likelihood of a cable release and subsequent dropping of the cable to the seafloor. Such an event would increase the risk of sub-sea infrastructure damage and hazardous release. Removal of the cable during the SYU abandonment phase would substantially reduce the risk of oil or gas release as the seafloor infrastructure would no longer be used for transport of these materials (the pipelines would be cleaned and purged, though some residual hydrocarbons may remain).

Alternative C: No Project Alternative:
Under this alternative the proposed project would not occur and the two new power cables would not be installed. In addition, the removal of the failed Cable C from the nearshore conduit to the shelf break would be deferred until the end of SYU life. The potential for damage to seafloor oil and gas infrastructure would no longer be present. Upset events associated with cable removal and installation in the onshore tunnel would also no longer be present. Upset events associated with vessel operations (refueling, incidental materials releases) would be the same as SYU abandonment.

Table RMM-6

Evaluation of Potential for Damage to Active SYU Components from Dropped Cable – Alternative B

(Evaluation assumes worst case where cable can fall within an area formed by a cone with an apex angle of 90 deg at water surface.)

Activity	Location	Water Depth (ft)	Potential ImpactZone (ft^2)	Active P/L & PC Within Zone	Distance To P/LAnd PC (ft)	Potential For Impact	Plausible Damage Mode (Note 1)	Probability (Note 2 & 3)
OCS Failed Cable C Retrieval (Alternative B)								
Cable Retrieval	He Gas P/L Crossing	1235	4,791,650	Cable A,B & D	835	Yes	SP w/C & PS	1.79E-07
				Cable E	490	Yes	SP w/C & PS	1.52E-07
				HE Gas P/L	205	Yes	PS	3.45E-07
				HA Gas P/L	1,195	Yes	None (Beyond PS Impact Zone)	Zero
				HO Emulsion P/L	1,195	Yes	None (Beyond PS Impact Zone)	Zero
				HE Emulsion P/L	915	Yes	None (Beyond PS Impact Zone)	Zero
				HA Platform	490	Yes	SP w/C & PS	2.09E-05

Note 1: SP w/C-Spaghetti Pile with Clamp; PS-Plunging Stalk; SP w/C & PS-Spaghetti Pile with Clamp & Plunging Stalk; N/A-Not Applicable
Note 2: Assumption: 1 time out of 1000 cable will be dropped (an upset event of this kind has never occurred - no data available)Calculation: (Area of each P/L or PC in potential impact zone / Area of impact zone)
Note 3: E-7 equal to 1 time out of 10,000,000

4.16 Historic Resources

4.16.1 Environmental and Regulatory Setting:

Two historic structures are located near the mouth of Corral Canyon north of U.S. Highway 101 (Exxon EIR, 83-EIR-22). The structures are believed to have been built in the 1870s by Bruno Orella, a local cattle rancher (Heff, 1983). Both buildings are listed in the California Inventory of Historic Resources and are considered historically significant. One of the structures was reconstructed prior to construction of the original Exxon project. The adobes were rehabilitated and given landmark status by Resolution 94-436 adopted by the Board of Supervisors in August 1993 as mitigation for original construction of the Exxon project.

4.16.2 Project Impact Assessment

Onshore: Excavation work would be located approximately ½-mile south of the Orella Adobes and therefore there would be no foreseeable impacts from the proposed project. The applicant does not propose to use the structures for offices or any other function associated with the project.

Offshore: Not applicable.

4.16.3 Mitigation Measures

No mitigation would be required and no residual impacts would result from the proposed project.

4.16.4 Cumulative Impacts

There would be no cumulative impacts associated with the proposed project.

4.16.5 Alternatives Analysis

Alternatives: None of the project alternatives would alter the impacts associated with the proposed project.

4.17 Land Use

4.17.1 Environmental and Regulatory Setting

The onshore and coastal land use plans/policies that govern the SYU project are contained within the California Coastal Act, Santa Barbara County Comprehensive Plan and implementing Article III Zoning Ordinance and the Local Coastal Plan and implementing Article II Coastal Zoning Ordinance. While the majority of ExxonMobil's onshore processing facilities are located on the inland side of the coastal zone boundary, the onshore portion of the proposed project lies within the coastal zone.

The CCC concurred with the consistency certification made by ExxonMobil for the offshore portion of the original project. The CCC found that while the proposed development adversely affected the coastal zone, it met the policies of the California Coastal Management Plan and was therefore found to be generally consistent with the CCMP and the policy requirements of Chapter 3 of the Coastal Act.

Onshore: The Las Flores Canyon property is a parcel comprised of approximately 1500 acres owned by ExxonMobil. Thirty four acres are developed with the ExxonMobil and Pacific Offshore Pipeline oil and gas processing facilities. The surrounding parcel is zoned AG-II-100, Agriculture,

100-acre minimum parcel size and both facilities are located on property zoned M-CR, Coastal-Related Industry. The Comprehensive Plan land use designation is AG-II-100, 100-acre minimum parcel size with a Petroleum Resource Industry Overlay. Historic land use was agricultural and oil and gas development.

The project site is located within the South Coast Consolidation Planning Area and is one of two designated consolidated oil and gas processing sites on the Santa Barbara County South Coast (Exxon Final EIR/S, 83-EIR-22). Continued oil and gas processing is allowed, and any new processing would be encouraged to occur, in Las Flores Canyon.

The County is currently finalizing Oil and Gas Abandonment Policies that would put into effect standards for on and offshore decommissioning and abandonment of oil and gas processing facilities in Santa Barbara County. While there are no officially adopted County policies to-date, the practice has been to require removal of abandoned structures located in dynamic environments, especially stream crossings, surf zone areas, etc. unless there are significant and compelling environmental reasons to allow them to remain.

Offshore: The existing pipelines and cables are located within a State Lands lease to the OCS boundary (3 miles offshore). The pipelines and cables continue into OCS waters under existing OCS oil and gas leases with the MMS. The California Coastal Commission issued a permit for the onshore and State Waters portion of the original project and has consistency review authority over federal action(s) taken on the project under the Coastal Act. The CCC found the original project consistent with the California Coastal Act as part of the State's obligation to determine federal consistency with projects located in federal jurisdiction that may affect state waters.

Condition #3 of the applicant's CCC permit addresses the abandonment of project facilities as follows:

> *Prior to termination of the operation of any of the facilities authorized by this permit, Exxon shall apply for a coastal permit for the abandonment of the subject facilities. A permit application for facility abandonment shall include plans for site restoration.*

ExxonMobil initially proposed to meet this condition by submitting a plan for removal of the entire failed cable at the end of the SYU project life. As this proposal did not meet the intent of the permit condition, the applicant revised the proposed project to include removal of the failed cable to the shelf break. Since the project has been revised to incorporate removal of the failed cable to the shelf break (just beyond the state water boundary), ExxonMobil does not need to expand their SLC right-of-way and would meet the requirements of their CCC permit.

4.17.2 Project Impact Assessment

A project could be expected to have the potential for significant land use impacts if it conflicts with existing regulations, policies or requirements or if the proposed project introduces structures incompatible with surrounding land uses.

Onshore: As currently proposed, the project would not introduce any land uses incompatible with existing land uses nor would it involve the installation of any incompatible structures. The

proposed project involves the removal and replacement of the failed power cable and the installation of a fiber optic cable to the facilities located at the upper canyon facilities. The power cable would be installed in the same conduit as the failed cable. The fiber optic cable would be installed along an existing pipe rack; no structural modifications would be required. The proposed project is consistent with all local land use plans, policies and existing project conditions.

Offshore: The proposed project would not result in incompatible land uses beyond those evaluated in the original project EIR (SAIC, 1984) for installation and operation of all the SYU facilities (platforms, pipelines and power cables). Potential conflicts with fishing activities – commercial and sport – were addressed in previous environmental analyses as discussed in Section 4.6 (Commercial Fishing) of this document.

As proposed, the project would not result in conflicts with existing land use regulations, policies or requirements currently in place. The project would result in the installation of approximately 4 miles of armored cable in state waters within an existing pipeline/power cable corridor leased from the State Lands Commission. An equal amount of cable (failed cable C) would be removed in state waters.

In federal waters, approximately 13 miles (21 km) of new cable would be installed (Cable C-1 from state waters boundary to Platform Heritage and D-1 from Platforms Harmony to Hondo) and 11 miles (18 km) of power cable (failed Cable C) would remain on the OCS sea floor until the end of the life of the SYU project. The portion of the new cable on the OCS would be as much as 3000 feet outside the existing pipeline/cable corridor (see Figure 4 in Project Description). With the installation of the two new cables without removal of the abandoned cable, the project would result in an increase in approximately 1 acre of oil and gas infrastructure on the seafloor until the end of the life of SYU operations.

The applicant's project description states "all of the remaining sections of the failed Cable C in the OCS would be removed consistent with a plan which calls for removal of the failed cable simultaneous with the removal of other facilities at the end of SYU project life." Further, the applicant has agreed to accept a condition on their project that specifically requires removal of the cables at the end of the SYU project life. The applicant's plan is consistent with its contractual OCS lease instruments with MMS and OCS oil and gas regulations which require that, within one year of the termination of a lease in whole or in part, ExxonMobil must remove all structures, machinery, equipment, tools, and materials from the lease. The requirement to remove all structures and other facilities is the joint and several responsibility of all leases and owners of operating rights under the lease at the time the obligation accrues, and each future lessee or owner of operating rights, until the obligation is satisfied. Thus, if ExxonMobil should decide to sell its interests in SYU before the end of the SYU project life, it would retain full responsibility for removing all structures and facilities should a future lessee not be able to meet its obligations.

To further ensure compliance with OCS lease terms and conditions, MMS uses various financial security instruments (bonds) to ensure compliance with lease and regulatory requirements. The MMS requires OCS operators to provide a General Lease Surety Bond before it would issue a lease or approve a lease assignment or an operational activity plan. General Surety Bond levels

are set at the following levels based on the level of lease activity: $50,000 (no development), $200,000 (exploration) and $500,000 (development and producing) and Areawide Bonds of $300,000, $1,000,000, and $3,000,000. ExxonMobil has a $3,000,000 Areawide Bond for its SYU OCS operations. The MMS can also require operators to obtain supplemental bonds to insure financial capability to meet the decommissioning and site clearance obligations. If an operator defaults on its decommissioning and site clearance obligations and the existing bond is insufficient to meet remaining its obligations, MMS can require the previous lessees to cover any decommissioning or site clearance obligations they were responsible for creating.

The conversion of offshore oil and gas infrastructure (primarily platforms) to artificial reefs has been a topic of ongoing discussion that culminated in proposed state legislation (Senate Bill 1, Rigs to Reefs). Determining that no sound scientific evidence exists to-date to support such use of oil and gas infrastructure, the Santa Barbara County Board of Supervisors urged Governor Davis to veto the bill, which he did in 2001.

The proposed deferral of removal of the failed cable in OCS waters differs from the Rigs to Reefs approach in that the applicant does not propose to abandonment the cable in-place past the end of the project life. As stated above, the applicant has agreed to accept a permit condition that requires removal of the remaining failed cable as well as the newly installed cables at the end of the SYU project life. It has been the position of the CCC that offshore structures should be promptly removed when no longer in use. The CCC must review this project to determine its consistency with the California Coastal Act.

Removal of the OCS portion in the near term is evaluated as Alternative B in this document.

4.17.3 Mitigation Measures

The following measure is recommended to ensure consistency with land use policies and potential impacts on a cumulative basis:

LUS-1: The applicant shall remove newly installed power cables as well as the remaining failed Cable C in their entirety at the end of the SYU project life. Application for removal shall be submitted to appropriate federal, state, and local agencies within one year of ceased production unless an extension is granted. Full cable removal shall occur within one year of obtaining discretionary permits unless an extension is granted. Enforcement Agency: MMS, SLC, CCC, SBC.

Residual impacts would be expected to be less than significant.

4.17.4 Cumulative Analysis

As stated above, the proposed project complies with existing land use regulations and policies. Allowing the failed cable (in OCS waters) to remain in place until the end of the life of the project would add to the total oil and gas-related structures in the Santa Barbara Channel. However, given that this 21 miles of cable is in the same general area and would be removed along with the existing pipelines and power cables associated with the SYU project at the end of the SYU project life, it would not be considered a significant impact. Existing MMS regulations could be invoked to

require removal of all or portions of the cable in the future if it should conflict with other users of the OCS. Further, a condition of project approval would mandate that the cables be removed in a timely manner at the end of project life.

4.17.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. The entire failed cable would be removed when the SYU offshore facilities are decommissioned (2020-2030). This alternative is inconsistent with existing requirements of the CCC-issued CDP for the SYU project, which dictate timely removal of equipment no longer in use. It is also inconsistent with the expressed desire of the County Board of Supervisors (majority) when considering rigs-to-reef legislation in 1999-2000. Alternative A, therefore, would result in a significant and unmitigated land use impact.

Alternative B - Removal of Failed OCS Cable
There would be no additional onshore land use impacts with Alternative B. Removal of the OCS portion of the failed cable would be considered beneficial from a land use perspective as it would ensure the timely removal of abandoned oil and gas facilities. Doing so would eliminate any potential future conflict with fishers or other ocean uses.

Alternative C - No Project Alternative
There would be no land use impacts or implications with the Alternative C. The applicant would not replace the failed power cable and would continue to rely on the remaining two. Removal of the power cable would be deferred until the SYU offshore facilities are decommissioned.

4.18 Noise

4.18.1 Environmental and Regulatory Setting

Onshore: Current noise in the project area is generated from traffic on US Highway 101 and Calle Real, ranching operations and the ExxonMobil and POPCO facilities. Sensitive receptors in the general vicinity of the project site are rural residences and recreationalists enjoying Refugio and El Capitan State Beach Parks. The project site is located in an agriculturally and recreationally zoned area with few residences. The closest residence is located approximately nearly one mile southwest of the project site.

The final SEIR (83-EIR-22) prepared for the ExxonMobil SYU project identified short and long term noise impacts ranging from Class I to Class III. A Baseline Noise Survey and Noise Monitoring and Control Plan were prepared in 1987 for the project. Primary sources of noise were identified from construction, highway and railroad traffic, plant operation, crew and supply boats, helicopters and offshore facilities. Impacts were mitigated through the following measures: penalties for unnecessary helicopter noise exposure; restrictions on the hours and travel routes of operation of crew and supply boats; strict adherence to daytime construction hours; and monitoring and reporting of noise levels along property boundaries.

Noise complaints were filed with the county from residents of adjacent canyons. The applicant implemented the LFC Integrated Noise Monitoring and Control Plan in 1997 to mitigate impacts associated with facility noise related to construction and ongoing operations. Equipment

modifications were implemented between 1997 and 1998 to address the complaints. In 2001, ExxonMobil requested that the annual noise monitoring requirement be suspended as the compliance goals set forth in the LFC Integrated Noise Monitoring and Control Plan had been met since the implementation of the plan. Further, no noise complaints for operational or construction activities had been received in over four years. Based on the record of compliance and no complaints, Santa Barbara County suspended the requirement for annual surveys with the understanding that the requirement may be reinstated at any time if any noise complaints are received.

Offshore: As stated above, the Final SEIR (83-EIR-22) identified construction-related noise from crew and supply boats, helicopters and offshore facilities as a Class I impact. Noise generated by crew and supply boats was determined to have a potentially significant but mitigable (Class II) impact on coastal residents. Noise generated by offshore oil activities and the potential impact on the California gray whale was a controversial aspect discussed in the original project EIR. The impacts from the original project were considered insignificant, however, the cumulative impact of noise from all such oil and gas-related projects was considered potentially significant. Changes in migration patterns of the California gray whale were determined to be a potential result of oil and gas production-related noise. However, subsequent studies performed during construction operations concluded that project-related construction did not affect migratory patterns. The proposed project is not anticipated to cause significant impacts on gray whales or other marine mammals. Please see the Marine Mammals section for further discussion of noise impacts related to marine mammals.

4.18.2 Project Impact Assessment

Magnitude of sound involves determining three variables: magnitude, frequency and duration. A proposed project would be considered to have a significant impact on the public if it generated noise levels in excess of 65 dBA and could affect sensitive receptors or outdoor living areas. In addition, noise from grading and construction activity proposed within 1600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities, would generally result in a potentially significant impact. Significance criteria for offshore work and potential impacts to marine mammals are discussed in the Marine Mammal section.

Onshore: Short term noise impacts would be generated from construction-related activities, including excavation in the lower canyon and work in the tunnel. In addition, while not anticipated to be significant or of lasting duration, access needed to the south end of the tunnel would be on a public bike path. Typical construction equipment noise levels would be expected to be approximately 65 dBA at 1600 feet, thereby only impacting receptors within this range. No sensitive receptors are located within 1600 feet of the project site. El Capitan State Beach and campground is located to the south of the project site and residences are located in adjacent canyons. However, these facilities are all located more than 1600 feet from any construction activity. There would be no long or short-term exposure of people to noise levels exceeding County thresholds; however, campers at El Capitan could consider construction noise at night a nuisance. Long-term ambient noise levels would not change as a result of the proposed project.

Onshore construction activities are proposed to occur eight to 12 hours per day, five days per week, with Saturdays reserved for overtime. The oil and gas facilities operate continuously, although they

are located more remotely, over one mile north of the project site. The duration of the impacts would be expected to last the duration of the project, approximately 4 to 8 weeks.

Offshore: Due to the limited time that offshore vessels would be near shore, no onshore noise impacts from offshore sources would be anticipated. Please refer to the Marine Mammals section for a discussion of potential noise impacts to marine mammals.

4.18.3 Mitigation Measures

Existing agency permit conditions in place for the SYU facility are adequate to ensure noise impacts associated with the project remain insignificant. No additional mitigation measures are recommended for onshore noise impacts.

Please refer to the Marine Mammal section for a discussion of recommended mitigation measures for offshore noise impacts as they relate to marine mammals.

4.18.4 Cumulative Impacts

The proposed project would temporarily exacerbate cumulative noise impacts, however, such impacts are temporary in nature would be considered insignificant.

4.18.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. There would be a minor decrease in the duration of offshore noise impacts (approximately 1 day) with this alternative. Noise impacts associated with this alternative would be insignificant.

Alternative B - Removal of Failed OCS Cable
Alternative B involves the completion of the proposed project along with removal of the failed power cable from OCS waters. The additional abandonment work would require a second vessel mobilization effort and extend the temporary offshore impacts to recreational boating activities by as much as two to three weeks. There would be an incremental increase in offshore noise associated with the longer duration of demolition (cable removal) work under Alternative B. However, the duration would be relatively short and therefore the noise impacts would be considered insignificant.

Alternative C - No Project Alternative
Under the No Project alternative, the new cables would not be installed and failed cable would remain in place. There would be no construction work on or offshore and therefore no noise impacts under the No Project alternative. Impacts that could occur during the decommissioning of the SYU facilities would undergo detailed CEQA and NEPA review at that time.

4.19 Public Facilities

4.19.1 Environmental and Regulatory Setting

This section focuses on solid waste disposal as the only public facility that could potentially be impacted by the proposed project is landfill capacity and/or that of a recycling center(s).

Demand for public facilities was reviewed extensively in previous environmental documents prepared for the SYU onshore and offshore facilities (FEIR and SEIR, 83-EIR-22). Demands for

wastewater treatment and solid waste disposal were anticipated to increase as a result of the original project, however, the impact was ultimately determined to be adverse but not significant.

The closest landfill to the project site is Tajiguas Landfill located along the Gaviota coast in Santa Barbara County. ExxonMobil routinely uses the privately-owned and operated Buttonwillow Landfill in Kern County to dispose of its SYU non-hazardous wastes.

4.19.2 Project Impact Assessment

A project is considered to have a significant impact on public facilities if it would generate such substantial amount of waste as to exceed established national standards or thresholds for waste generation or exceed existing landfill capacity. The County of Santa Barbara Solid Waste Thresholds includes information provided through the adopted Source Reduction and Recycling Element (County of Santa Barbara, 1996). A project is considered to result in significant impacts to landfill capacity if it would generate 196 tons per year of solid waste. The County Thresholds also mandate consideration of recycling efforts when evaluating waste impacts from new projects in the county. Kern County has no established waste disposal thresholds of significance (personal Communication, D. Ferguson, Kern County Waste Management Department, July 2002).

The primary source of solid waste generated from the proposed project would be from removal of the failed cable from shore to the shelf break (approximately 5 miles, or 8 km). This aspect of the project would result in approximately 313 tons, or 768 cubic yards of solid waste. Based on its weight, this volume would exceed Santa Barbara County thresholds; however, ExxonMobil proposes to dispose of the material at a private landfill in Kern County, which has documented ample capacity and does not have solid waste thresholds.

The Clean Harbors (formally Safety Kleen) Buttonwillow facility has approximately 10.7 million cubic yards of remaining capacity with 0.96 million cubic yards currently available. According to a company representative, the facility accepts up to 4050 tons of material per day for landfilling. The proposed project would constitute approximately 5% of the daily material accepted at the landfill by weight. ExxonMobil has submitted a letter from the landfill operator verifying the landfill's ability to accept up to 1000 tons of copper cable. (The entire length of failed cable including the OCS portion is approximately 850 tons). Therefore, impacts from solid waste disposal are not considered significant.

With the exception of the failed cable, waste generated during construction would not be anticipated to be different from or significantly more than current operational wastes.

Currently there are 48 miles of subsea power cable associated with the SYU project. The proposed project would result in a net increase of 16 miles of cable (21 miles for newly installed Cables C-1 and D-1; 5 miles of failed Cable C removed). The proposed project would therefore increase the amount of power cable ultimately requiring removal and landfilling or recycling by 33%. This could present a potentially significant impact; however the options for recycling and disposal would be fully evaluated at the end of the SYU project life.

Consistent with County policies and practice, the County of Santa Barbara has requested that the applicant recycle the removed cable, however, at this time a domestic buyer has not been located and the economic feasibility of recycling versus landfilling is questionable. Research to-date

indicates that recycling the failed cable may not be feasible locally, in state or domestically at this time. ExxonMobil has indicated that there may be markets overseas, however, environmental oversight and regulations of such practices are generally not as strict as those in the U.S. Recycling operations could cause significant environmental impacts (i.e., air impacts if the cable is burned). The applicant has indicated that the likelihood of finding a buyer domestically to allow the economic feasibility of recycling may be greater if all the cable is recycled at once (i.e., at the end of the SYU project life).

4.19.3 Mitigation Measures

The following mitigation measure is recommended to mitigate impacts to the maximum extent feasible:

PUB-1: Prior to approval of the Santa Barbara County coastal development permit, ExxonMobil shall submit a Recycling Feasibility Analysis for County review and comment. The analysis shall clearly demonstrate and document inquiries made by ExxonMobil and/or its contractors for cable recycling and responses received, including any conditions and/or limitations to recycling. Enforcement Agency: SBC.

PUB-2: ExxonMobil shall submit a Recycling Feasibility Analysis for agency review and approval for the newly installed cable in state waters and onshore as part of its facility-wide abandonment application at the end of the SYU life. Enforcement Agency: SLC, SBC.

Residual impacts would be expected to be insignificant.

4.19.4 Cumulative Analysis

The proposed project would add a net 16 miles (26 km) of power cable to the approximately 48 miles (77 km) of existing cable offshore which would ultimately need to be properly removed and disposed of at the end of the project life. The cumulative impacts associated with the proposed project involve the capacity of landfills and the options for recycling. While Kern County does not presently have solid waste thresholds, landfill capacity is a finite resource. Recycling of unused equipment would be an even greater concern at the end of the SYU project life when tens of miles of pipelines, power cables, as well as other equipment from platforms and the onshore plant will need to be removed. As indicated above, while there are environmental benefits to be realized, recycling does not appear to be feasible locally, in state or domestically at this time. On a cumulative basis, the project's contribution of 16 miles (26 km) of cable is not considered a significant impact given the total amount of oil and gas infrastructure present on the Santa Barbara Channel seafloor.

4.19.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break

The failed cable from shore to the shelf break (approximately 5 miles) as well as the OCS portion (approximately 13 miles) would be left in-place until the end of the life of the project with this alternative. As a result, impacts associated with solid waste disposal would be less than those estimated for the proposed project. The 5 miles, or 313 tons, of cable would not need to be landfilled at this time. Impacts would be insignificant.

Cable recycling may be more feasible at the end of the life of the project due the substantial quantity of materials to be removed at that time (68 miles of cable) along with potential advances in technology that would allow the copper (the portion of the cable with the recycle value) to be more easily separated from the other materials.

Alternative B - Removal of Failed OCS Cable
This alternative calls for the removal of the entire length of the failed Cable C in the near term. Approximately 21 miles (14,000 cubic feet or 850 tons of material) would need to be disposed of via a recycling center and/or landfill. At the agencies' request, ExxonMobil has pursued recycling options, however as indicated above, no local, state or domestic market has proven economically feasible to-date. Recycling would likely be environmentally preferred over disposing of the cable at a landfill. However, if no feasible recycler can be identified, the 850 tons of cabled would be trucked to Kern County and landfilled. The Buttonwillow landfill in Kern County has provided written documentation of available capacity for up to 1000 tons of material. Given this capacity and the fact that Kern County has no solid waste thresholds of significance, the impacts associated with this alternative would be less than significant.

Alternative C - No Project Alternative
The entire length of failed Cable C would be left in-place until the end of the life of the project under the Alternative C. There would be no impacts to public or private landfills as no material would be disposed of at this time. Recycling and landfill options would need to be considered at the end of the SYU project life when all SYU related equipment would need to be removed pursuant with MMS and SLC lease terms, as well as SBC conditions of approval.

4.20 Recreation

4.20.1 Environmental and Regulatory Setting

Construction of the original SYU project led to a finding of Class I (adverse and unavoidable) and Class II (adverse but mitigable) socioeconomic impacts. These findings were in part due to the closure and potential damage to the coastal bikeway during project construction (Santa Barbara County *Findings of Approval*, September 15, 1987). As mitigation, Santa Barbara County permit condition (IV.e.7) required that ExxonMobil reconstruct a total of 1.6 miles of coastal bikeway after the completion of nearshore SYU construction (1990) and abandonment of the El Capitan Marine Terminal facilities (1991). In 1993, Santa Barbara County Parks and Recreation Department indicated that ExxonMobil had satisfied this condition (letter to Santa Barbara County Planning and Development from Santa Barbara County Parks and Recreation Department, April 23, 1993).

In addition, Class II recreational impacts were identified in the original project EIR (83-EIR-22) (overcrowding of campgrounds by temporary workers) and were fully mitigated. Class III impacts were identified in relation to potential impacts to recreational fishing. These impacts were determined to be insignificant.

4.20.2 Project Impact Assessment

A project would be determined to have the potential for significant impacts to recreation if it could have a substantial impact on the quality or quantity of existing recreational opportunities, conflict with established recreational uses of an area or conflict with biking, hiking or equestrian trails on a long-term basis.

The majority of the onshore work is located on private property zoned M-CR, coastal-related industry and would therefore not impact adjacent recreational areas (El Capitan State Beach and campground). Onshore work off private property would be limited to accessing the tunnel via a manhole on the south side of US Highway 101. Access to the manhole would be by way of the county bike path, which runs along the bluff above the beach. Based on the applicant's submittal, the tunnel manhole would be open for approximately 10 days (5 days at a time). Equipment to be brought along the bike path would include a pick up truck, generator, air blower, safety equipment and proofing equipment. There is an existing vehicle turn around area at the southern tunnel access point; therefore, none of the necessary equipment and vehicles needed to access the manhole would block the bike path.

Based on discussions with State Parks, a Temporary Use Permit (TUP) would be required to utilize the bike path. Impacts would be expected to be greater if the project is conducted during summer months, when there is significantly more recreational traffic along the bike path, however, with mitigation, the impacts are not expected to be significant.

The offshore portion of the project has the potential to temporarily impact recreational boating activities as well as temporarily impacting the quality of existing recreational activities (El Capitan State Beach) due to the presence of increased construction and supply vessels. Nearshore work would require approximately one week to complete. Based on the temporary nature of the project, impacts would not be considered significant.

4.20.3 Mitigation Measures

The following mitigation measures are recommended to mitigate impacts to recreational resources to the maximum extent feasible:

REC-1: The applicant shall obtain and comply with all conditions of approval set forth in its State Parks TUP. The permit shall be obtained and a copy submitted to the County of Santa Barbara Planning & Development prior to onshore construction work. Enforcement Agency: State Parks, SBC.

REC-2: During any time that the south tunnel access manhole is open, safety barriers shall be erected in the immediate area to ensure public safety. In addition, speed limits for vehicle traffic along the bike path shall be adhered to pursuant to State Parks rules implemented to for public safety. The County EQAP monitor shall verify compliance in the field. Enforcement Agency: State Parks, SBC.

REC-3: In order to ensure public safety, signs shall be posted alerting cyclists and pedestrians to project-related work being conducted along the bike path when access to the tunnel is required. Notices shall be posted at least 24 hours prior to any vehicle access and proof of noticing submitted to the County Planning & Development Department. Enforcement Agency: State Parks, SBC.

REC-4: The applicant shall submit photodocumentation of the physical condition of the bike path before and after access to the south manhole tunnel. ExxonMobil shall be responsible for any maintenance or repair work necessary if there is evidence of damage during construction. The

applicant shall coordinate with El Capitan State Parks for pre and post-construction inspections. Enforcement Agency: State Parks, SBC.

Residual impacts would be expected to be insignificant.

4.20.4 Cumulative Impacts

Impacts from the proposed project would be temporary and localized. While there may be other projects along the Gaviota coast that would occur contemporaneously, impacts associated with this project would not substantially contribute to adverse impacts to recreational resources.

4.20.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break

Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. This alternative would have slightly less impacts to recreational boating activities and onshore recreational users as the project schedule for offshore vessel activity would be shortened approximately 1 day. Onshore work would remain unchanged from that described for the proposed project. With incorporation of the recommended mitigation measures, recreational impacts would not be significant.

Alternative B - Removal of Failed OCS Cable

Alternative B involves the completion of the proposed project along with removal of the failed power cable from OCS waters. The additional abandonment work would require a second vessel mobilization effort and extend the temporary offshore impacts to recreational boating activities by as much as two to three weeks. There would be a slight increase in potential impacts to offshore recreational activities due to the extended presence of construction and supply vessels. Given that this added abandonment work would occur on the OCS, at least 3 miles offshore, the incremental impacts associated with this alternative would be negligible. Onshore recreational impacts associated with this alternative would be identical to those described for the proposed project.

Alternative C - No Project Alternative

Alternative C is the No Project Alternative. Under this alternative, the applicant would not install new power cables or remove a portion of the failed cable at this time. No excavation work would occur in the lower canyon area and there would be no need to access the tunnel via the State Parks bike path. Therefore there would be no impacts to recreational resources. Impacts that could occur during the decommissioning of the SYU facilities would undergo detailed CEQA and NEPA review at that time.

4.21 Transportation/Circulation

4.21.1 Environmental and Regulatory Setting

Access to the project site and the main roadways in the vicinity include US Highway 101 and Calle Real. Highway 101 handles most traffic to and from the site, Calle Real, a frontage road, is used to access the facility within several miles east and west of the site. The applicant has an agreement with the County of Santa Barbara to upgrade Calle Real to meet current design specifications regarding roadway safety.

As identified in the project EIR (83-EIR-22), transportation impacts were identified related to parking during peak construction periods. Mitigation resulting from this impact was the Parking and

Transportation Plan (1987 and Revised TSMP, 1990), which identified appropriate ridesharing and/or shuttle services for offsite parking. The TSMP also included development of a new parking lot (referred to as the Goleta Parking Lot) at the West End of Hollister Avenue in Goleta. The Goleta lot was intended to supplement an existing lot to accommodate both onshore and offshore workers during peak construction periods. The Goleta Parking Lot required a separate County Final Development Plan (88-FDP-017) and preparation of a Supplemental EIR (89-SD-01). Additional mitigation was developed during the Planning Commission's review of the parking lot, including the revised TSMP to reduce traffic and associate short term air quality impacts. After use during project construction, ExxonMobil relinquished its lease on the Goleta Parking Lot in 1999.

4.21.2 Project Impact Assessment

A project will ordinarily have a significant effect on transportation/circulation if it will cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. The need for private or public road maintenance or the need for new roads would also cause a potentially significant effect on the environment. In addition, effects on existing parking facilities or the demand for new parking could result in a potentially significant impact.

The largest traffic-related impacts of oil-related projects are due to the temporary effects of construction, start up and drilling compared with long term impacts associated with operations (83-EIR-22). The onshore construction workforce would average 10-20 additional workers (round trips) per day during average construction periods. The peak increase would be approximately 25 additional workers per day. During onshore work, trucks delivering materials and equipment and removing construction debris and equipment would be expected to generate an additional 0 to 5 truck trips per day over current levels. These numbers are well below those evaluated and mitigated for during original SYU project construction. The increase would be temporary and there would be no permanent increase in employees working onsite or truck trips. The additional traffic on Highway 101 and Calle Real would not be considered significant.

The proposed project would not result in the need for private or public road maintenance or construction nor would the proposed project affect existing parking facilities or create the demand for new facilities. As previously mentioned, the existing roadways are adequate for the temporary increase in vehicular traffic and parking for onshore and offshore work could be adequately handled through existing parking facilities. No transit systems (including rail) would be impacted as a result of the proposed project as no public roadways would be closed.

Temporary impacts to waterborne traffic may be expected as vessels may be required to modify routes to accommodate project construction vessels. In addition, a temporary increase in helicopter trips would be anticipated. However, these impacts would be considered temporary and insignificant.

During work necessary to access the manhole tunnel on the south side of US Highway 101, vehicles would need to travel on a county bike path. This is not expected to limit recreational access or travel along the bike path (see Recreation section). However, impacts to the bikeway could occur, as they did during project construction in 1993. As discussed in Section 4.20, this was mitigated through a condition requiring that ExxonMobil fund and repair any damage caused to the bikeway from construction-related activities. A similar requirement for this project would ensure no permanent damage to the bikeway (See Mitigation Measure REC-4).

4.21.3 Mitigation Measures

The project would not result in any significant impacts to traffic or circulation. No mitigation measures are required.

4.21.4 Cumulative Analysis

Impacts from the proposed project would be temporary and localized. The ExxonMobil/POPCO Process Synergy Project could overlap in timing. This would principally affect traffic on Calle Real Road and the entrance to Las Flores Canyon. However, there is currently ample capacity on Calle Real and Highway 101 in this area to handle truck and construction worker traffic for both projects. The proposed project would not substantially contribute to cumulative adverse impacts on transportation or circulation.

4.21.5 Alternatives Analysis

Alternative A - Deferred Removal of Failed Cable to the Shelf Break
Alternative A involves the completion of the proposed project without removal of the failed power cable from the nearshore conduit to the shelf break. There would be no change in onshore transportation impacts with the alternative project. Onshore work would remain unchanged from that described for the proposed project. With the incorporation of the mitigation measures for the proposed project, transportation impacts would not be significant.

Alternative B - Removal of Failed OCS Cable
Alternative B involves the completion of the proposed project along with removal of the failed power cable from OCS waters. Onshore work would remain unchanged from that described for the proposed project. With the incorporation of the mitigation measures for the proposed project, transportation impacts would not be significant.

Alternative C - No Project Alternative
Alternative C is the No Project Alternative. Under this alternative, ExxonMobil would not install new power cables or remove a portion of the failed cable at this time. No excavation work would occur in the lower canyon area and there would be no need to access the tunnel via the State Parks bike path. Therefore there would be no impacts to transportation or circulation. Impacts that could occur during the decommissioning of the SYU facilities would undergo detailed CEQA and NEPA review at that time.

4.22 Water Quality

4.22.1 Environmental and Regulatory Setting

Onshore: The onshore portion of the project would be located within the developed portion of the existing facilities in the lower Las Flores Canyon area. The nearest water body to the onshore portion of the proposed project is Corral Creek, located approximately 500 feet west of the existing pipeline/cable right of way and proposed construction area. Water quality in the creek is monitored regularly by ExxonMobil in accordance with their RWQCB-required Storm Water Pollution Prevention Plan (SWPPP) and Santa Barbara County-required Surface Water Quality Monitoring Program.

Water used at the facility is obtained from onsite groundwater wells (83-EIR-22); no additional water usage would be required for the project.

Offshore: Marine water quality in the project area has been fully described in Dames and Moore (1982); SAI (1984); ADL (1984); Chambers Group (1987a, b), and MMS (2001). The commonly measured chemical oceanographic parameters and their ranges are given in Table WQ-1.

Three agencies provide regulations for water quality issues: the U.S. Environmental Protection Agency (EPA), the U.S. Coast Guard (USCG) and the California State Central Coast Regional Water Quality Control Board (CCRWQCB). The EPA, through the Clean Water Act (as amended), resulting in the National Pollutant Elimination Discharge System (NPDES) regulations, sets limits on specific discharges.

The USCG vessel regulations, via the Federal Water Pollution Control Act, ensure that vessel effluents such as sewage and cooling water do not leave a sheen or other foreign material on navigable waters.

Table WQ-1
Key Water Quality Parameters
Typical Units of Measure and Characteristics

Parameter (Units)	**Characteristics**
Temperature (°C)	Ocean surface temperatures minimums of 12-13 °C in April and maximums of 15-19 °C in July-October
Salinity (^{o}/oo – parts per thousand)	33.2-34.3 ^{o}/oo
Dissolved oxygen (DO) (mg/L or ml/L)	5-6 ml/l at the surface, decreasing with depth to about 2 ml/l near 200 m to as low as 1 ml/l below 350 m.
pH (unitless)	7.8 to 8.1.
Nutrients (µg-atoms/l)	Nutrients and micronutrients include nitrogen, phosphorus, and silicon iron (Fe), manganese (Mn), Zn, Cu, cobalt (Co), molybdenum (Mo), vanadium (V), vitamin B12, thiamin and biotin. Concentrations show depletion near the surface, increasing with depth.
Turbidity (mg/L)	Concentrations average near 1 mg/L, but range from 0.93 – 1.5 mg/L in the nearshore, surface waters (BLM, 1978). Levels near the sea floor average 0.4 mg/L and range from 0.1 to 1.4 mg/L; offshore regions average 0.15 mg/L and range from 0.07 – 0.32 mg/L. Periods of highest turbidity correspond to periods of highest upwelling, highest primary production, river runoff, and nearshore current and wave action.
Organic materials (µg/l)	Naturally-occurring organic materials include a variety of molecules ranging from hydrocarbons to biogenic-based substances.

Sources: Dames and Moore (1982); SAI (1984); ADL (1984); Chambers Group (1987a, b).

Sources of marine pollution in the Santa Barbara Channel include publicly owned treatment works (municipal sewage), power plant discharges, and river runoff (MMS, 2001). Very few industrial or power plant outfalls exist in the area.

The nearest municipal discharge to the proposed project area is from the town of Goleta. This plant collects and treats wastewater from the cities of Goleta, Santa Barbara, and other outlying communities. The municipality discharges 5.2 million gallons per day of wastewater at a mixed

primary/secondary level of treatment (Table WQ-2). Specific components (concentrations and mass emissions of metals, hydrocarbons, synthetic organics, etc.) of this and other Santa Barbara Channel outfalls are found in publications by the Southern California Coastal Water Research Project (SCCWRP), in particular see SCCWRP (1996).

Table WQ-2
Publicly-owned Treatment Works Discharging into Santa Barbara Channel

POTW Name	Level of Treatment	Volume (millions gallon/day)	Distance from Project Area (miles)
Goleta	Primary/Secondary	5.2	1
Santa Barbara	Secondary	8.1	22
Montecito	Secondary	1.1	29
Summerland	Tertiary	0.17	30
Carpinteria	Secondary	1.5	32
Oxnard	Secondary	19.5	51

Source: SCCWRP (1996)

River runoff could contribute various natural and man-made pollutants ranging from suspended sediments to pesticides. River runoff is difficult to quantify and is seasonally variable. Nevertheless, material from the Santa Ynez River sometimes flows eastward around Point Conception and provides sediment to the project area, particularly during periods of high flow. In addition, the numerous small, intermittent creeks which drain into coastal waters near the SYU area, may also provide a sizeable amount of sediment during periods of high flow (pers. comm. Jon Warrick, August, 2002).

4.22.2 Project Impact Assessment

Onshore: The replacement of the failed cable onshore in the lower canyon would not alter the movement of water in fresh water stream or drainages. All construction activities would occur in the lower canyon parking area, a dirt lot, and would not impact percolation rates, drainage patterns or the rate and amount of surface water runoff. No impacts, including drainage into or out of surface waters (i.e., Corral Creek) would be anticipated as construction activities would be limited in scope and duration and located well outside the 100-foot buffer zone. If, however, construction work is scheduled to occur during the rainy season (November 1 – April 1), erosion from the construction area could conceivably reach Corral Creek causing a temporary increase in sediment loading. As discussed in Section 4.4 (Onshore Biological Resources), the creek provides habitat for several protected species. In this instance, erosion control measures should be employed to avoid temporary degradation of water quality in the creek.

Offshore: The impact analysis for water quality in this document adopts the following significance criteria:

- An impact from the proposed project is considered to be significant if it causes in an unreasonable degradation to water quality as measured by contributions to changes in standard, measurable parameters (see Table WQ-1 for water quality parameters);
- Persistent and not reversed by natural dispersive processes within a few days;
- Extend beyond the project area; or
- Cause physiochemical changes that impact the marine ecosystem.

The term "unreasonable degradation" follows EPA's regulations at 40 CFR 125.121(e)(1-3): (1) Significant adverse changes in ecosystem diversity, productivity and stability of the biological community within the area of discharge and surrounding biological communities; (2) Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; (3) Loss of esthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

State California Ocean Plan Water Quality Standards requirements (California State Water Resources Control Board, 2001) are substantively included in this significance criteria. Applicable ones include physical, chemical and biological characteristics which prohibit such things as discoloration of the ocean surface, reduction of natural light, increases in the deposition of inert solids which result in changes in biological communities, changes in dissolved oxygen and pH, and degradation of marine communities.

Cable Removal and Installation Impacts 2002-2005:
As described in Section 2.0, the proposed project would involve the removal of approximately 5 miles (8 kilometers) of failed power cable and the installation of 21 miles (33 kilometers) of new cable in the general vicinity of the existing SYU facilities. This section analyses impacts to water quality that would be expected to occur as a result of cable removal and installation activities. Impacts that would occur from removal of the new cables (C1 and D1) and the remaining failed cable (Cable C) at the end of SYU life are analyzed in the following section. Impacts to water quality could also occur from the anchoring of construction vessels. The location and timeframe, the type of activity, and the estimated amounts and type of sediment that could be resuspended are given in Table WQ-3.

The major sources of impacts to water quality from the power cable excavation, removal and installation would be:

- Water jetting to expose the ends of the J-tubes at Platforms Hondo and Harmony, the end of the conduit nearshore, and the ends of the cables prior to cutting and removal;
- Flushing and pigging, where necessary, the conduit and J-tubes;
- Anchoring;
- Removal and cleaning of short segments of cable in preparation for installation of the new cable;
- Installation of the new power cable; and
- Removal of the failed cable to the shelf break.

Water jetting: The applicant proposes to use water jetting to expose the nearshore conduit, cable ends, and J-tubes. Diver- or ROV-supported water jets would be used to clear sediment from above and around the end of the conduit, J-tubes and cable ends. The cable is buried at the conduit and at

Platform Hondo, while it is embedded about two inches into the seafloor at Platforms Harmony and Heritage. The amounts of sediment which could be suspended at the conduit are estimated to range from 30 to 60 cubic yards (yd^3). The sediment in this area is sand-sized. Jetting activities would raise this sandy particulate into the water column, but since sand is relatively heavy, it would sink to the sea floor within a few feet from the point of disturbance.

Further offshore, near the platforms, sediments are characterized by finer silt-sized particles with some clay. Near Platform Hondo, 22-44 yd^3 of clayey silt would be disturbed. Most of this sediment would settle within a few tens of feet of the point of disturbance, while the remainder would disperse with the ambient currents. Neither the J-tubes nor the cable at Platforms Harmony and Heritage are buried. Thus, less than one cubic yard at each platform would be expected to be disturbed. The sediment is similar to that at Platform Hondo, and would settle relatively quickly and not degrade water quality.

Flushing and Pigging: Prior to the installation of the new cable, the nearshore conduit and the J-tubes may need to be flushed and pigged to remove sediment or other material that could impede the insertion of the new cable. It is anticipated that approximately 1 cubic yard of sediment would be displaced from inside the conduit and J-tubes to outside and be dissipated by the local currents. Other material inside the conduit and J-tubes might include minor amounts of rust and some organic material. This would also be dissipated by the local currents and not degrade the water quality.

Anchoring: Anchoring by work, supply, and dive-support vessels would also slightly contribute to increased turbidity. At all locations where anchoring is necessary, less than one cubic yard would be resuspended when anchors are placed onto the sea floor and when the anchors are raised. Negligible impacts to water quality would occur due to anchoring activities.

If the applicant opts to use a dynamically positioned (DP) vessel to remove the power cable from the conduit and J-tubes, one anchoring event at both Platforms Hondo and Harmony would not occur. The applicant is also considering laying the power cable in two parts: first, use the DP vessel to lay the power cable to the 55-feet (16 m) water depth, which is approximately 1,200 feet (365 m) from the end of the conduit, and second to use an anchored supply vessel to lay the remaining length of power cable to the end of the conduit. Neither of these options would cause either a greater or lesser impact to water quality than that which is currently proposed.

Portions of Failed Cable Removed and Cleaned as Part of the Installation Process: Approximately 1300-1500 feet of existing cable would be removed from the seafloor at Platform Hondo and approximately 1800-2000 feet of cable would be removed from the seafloor at Platform Heritage. The cable is completely buried at Platform Hondo up to 2 feet in sediment. At Platform Heritage, the cable is embedded into the seafloor approximately 2 inches. Removal of the failed cable at Platform Hondo would result in the temporary resuspension of approximately 50 cubic yards of clayey silt sediments. Similarly, cable removal would result in the temporary resuspension of approximately 5 cubic yards of silty sediment at Platform Heritage. This activity would not substantially degrade water quality.

Cleaning the cable of marine fouling organisms and sediment would be necessary before it is wound onto the reel and involves pulling the cut end of the cable to the surface, water blasting it to remove any adhering sediment and marine growth, and winding it onto a reel for disposal. Approximately 6

to 8 yd^3 of material would be removed from the cable during this part of the project in four locations: the nearshore conduit terminus, and from the J-tubes at Platforms Hondo, Harmony, and Heritage. The cleaning process would result in a turbid cloud beneath and around the cable-reel vessel and would dissipate within a short period of time.

Power Cable Installation: The installation of the new power cable from the nearshore conduit to Platform Heritage would resuspend about 45 yd^3 of sediment from the seafloor. Sediment characteristics would range from sandy in the nearshore area to silty sand on the outer shelf to clayey silt near the platforms. During the installation of the cable between Platforms Harmony and Hondo, a negligible amount of sediment (less than one cubic yard) would be suspended. A negligible impact to water quality would occur from this phase of the project.

Removal of the Failed Cable to the Shelf Break: This portion of the project involves removal of the failed power Cable C from the nearshore conduit to the shelf break, a distance of approximately 5 miles (8.0 km). Removal of the remaining portion of the power cable would be deferred until the SYU offshore facilities are decommissioned. Actual cable removal operations would take approximately one day.

Activities during this portion of the proposed project that could result in turbidity and impacts to water quality would be:

- Removal of the cable from the seafloor;
- Cleaning the exposed cables onboard the reel vessel;
- Burying the cable end at the shelf break; and
- Anchoring.

Removal of the Cable from the Seafloor: About 120 yd^3 of sediment would be disturbed over a distance of 5 miles (8 km) as the cable is retrieved from the seafloor. The cable is completely buried for approximately the first 2 miles (3.5 km) and embedded in the seafloor the remaining 3 miles (4.5 km), in water depths greater than approximately 200 feet (60 m). Most of the turbidity would occur close to the seafloor, particularly where the sediments are sandy. These would settle within a few feet of the point of disturbance. Further offshore, where the sediments are finer and the proportion of silt increases, the turbid cloud would stay in suspension longer and be dispersed by bottom currents. It is estimated that much of the disturbed sediment would settle to the bottom within a few tens of feet of the point of disturbance while the finer sediments would drift down-current, gradually dispersing. No significant impact to water quality would be anticipated from this turbidity.

Some sediment would adhere to the cable on its way to the surface, leaving a gradually decreasing trail of sediment in the water column. Most of the disturbed sediment would remain close to the sea floor, settling out relatively quickly, as discussed above, while the remainder would be dissipated by the currents throughout the water column. Impacts to the water quality would be negligible.

Cleaning of the Cables: Once onboard the cable-reel vessel, water blasting would be used to clean the cable of any remaining sediment and marine organisms that are still adhering to the cable. About 30 yd^3 of material would be washed off the cable and onto the sea surface,

generating a continuous cloud of turbidity below and around the vessel. However, while the clouds of sediment raised by these operations would be continuous while the activity is occurring, it would be spread over a wide area and be dissipated by local waves and currents. Thus, impacts to water quality would be negligible.

Cutting and Burying the Cable Ends At The Shelf Break: A very small amount of sediment would be raised (about 1-2 yd^3) during this part of the project. Impacts to water quality would be negligible.

Anchoring: Less than one cubic yard of sediment would be suspended due to the anchoring activities proposed to occur near the end of the conduit. Since the sediment is mostly sandy where anchoring would occur, only a negligible impact to water quality would result.

Impacts to the water quality due to increases in turbidity could occur from this portion of the overall decommissioning process because of the removal of the cables from the seafloor and cleaning the exposed cables onboard the reel vessel. There would be little or no anchoring, assuming the cable-reel vessel had dynamic-positioning capability.

Cable Removal Impacts at the End of SYU Life
Estimates of the amounts of sediment disturbed from the removal of the new and failed cables in 20 to 30 years are as follows, assuming a similar sedimentation rate as has occurred during the nearly 10 years since the current power cables were installed (Table WQ-3):

- Cable C1: nearshore conduit to the shelf break – 100 yd^3;
- Cable C1: OCS portion – 50 yd^3;
- Cable D1: 20 yd^3; and
- Cable C: OCS portion – 50 yd^3 from current sediment plus an additional 50 yd^3 sedimentation in 20 to 30 years;

totaling an estimated 270 yd^3 of disturbed sediment when these cables are removed at the end of the SYU life.

There is a small net deposition of sedimentation on the shelf. In 20 to 30 years, an estimated six to ten inches of sediment could bury the new power cable on the shelf. The slope and mid-channel net sedimentation rates have been measured to be 0.04 – 0.08 in/year (1-2 mm/year) (Jon Warrick, pers. comm. August, 2002). Over the next 20 to 30 years, this is 0.8 – 2.3 in (20 to 60 mm). About half of this sediment is from biogenic origins (diatom shells, for example) and the other half from turbid flows from the shelf. Based on this rate of sedimentation, neither the new (Cable C1 and D1) nor the failed power cable (Cable C) would be buried over the next 20 to 30 years.

Some sediment would adhere to the cable on its way to the surface, leaving a gradually decreasing trail of sediment in the water column. Impacts to the water quality would be negligible because most of the disturbed sediment would remain close to the sea floor, settling relatively quickly while the remainder will be dissipated by the currents throughout the water column.

Cleaning of the Cables: Once onboard the cable-reel vessel, water blasting would be used to clean the cable of any remaining sediment and marine organisms that are still adhering to the cable. An estimated 185 yd^3 of material would be washed off all the cables and onto the sea surface, generating a continuous cloud of turbidity below and around the cable-reel vessel. Expected impacts would be the same as those described for the proposed project. However, while the clouds of sediment raised by these operations would be continuous while the activity is occurring, it would be spread over 33 miles (53 km) and be dissipated by local waves and currents. Thus, impacts to water quality would be negligible.

4.22.3 Mitigation Measures

WQ-1: Provide results of samples taken of the seawater in the J-tubes to EPA and submit other information (such as volume, number of times to discharge, etc.) to EPA in order to receive permission to conduct flushing (see response to MMS comments, page 10, March 2002 and personal communication, Eugene Bromley, U.S. EPA, Region 9, May 2002). Enforcement Agency: EPA, MMS.

WQ-2: Work with the CCRWQCB by providing samples of the material within the conduit and, if required by the CCRWQCB, submit a Low Threat Permit in order to receive permission to conduct conduit flushing operations (see response to MMS comments, page 10, March 2002 and personal communication, Mike Higgins, CCRWQCB, May 2002). Enforcement Agency: CCRWQCB, MMS, SLC, SBC.

WQ-3: If onshore work is proposed to occur during the rainy season (November 1 – April 1), ExxonMobil shall submit an erosion control plan, along with grading plans, to ensure proper drainage or containment of manmade structures and sediment and debris away from Corral Creek. Plans shall be submitted to Santa Barbara County Planning and Development for review and approval prior to construction work onshore. Enforcement Agency: SBC.

In addition to these mitigation measures, please refer to the following mitigation measures from other resource sections: BE-1 and BE-2.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact to marine water quality is considered to be significant if changes in water quality parameters result in unreasonable degradation to the water quality. The only notable impacting agent is turbidity raised from various seafloor-associated activities. No significant impacts to water quality would be expected.

4.22.4 Cumulative Impacts

Onshore: The proposed project could result in temporary and localized impacts to onshore water resources. However, these impacts would be fully mitigated through proper erosion control measures. None of the projects listed in the "Foreseeable Projects" section of this document would exacerbate adverse impacts to water quality. The ExxonMobil/POPCO Process Synergy Project, should it occur simultaneously, would take place in the upper canyon area, approximately 1 mile from the proposed project work site.

Offshore: The draft EIS for Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on water quality offshore southern California. The EIS identifies ongoing and proposed oil and gas development and production projects in federal and state waters and various non-oil and gas activities including, municipal and industrial wastewater discharges, river runoff, and other nonpoint sources. While there are no major point-source discharges near the project area, the Santa Ynez River and the small creeks located along the local coastline do contribute nonpoint source material to the project area, especially during winter storms. The relatively small amount of turbidity produced by project activities would be effectively hidden in the large natural sedimentation signal contributed from these natural sources. In conclusion, no significant cumulative impacts to water quality would be expected to occur from the proposed project.

4.22.5 Alternatives Analysis

Alternative A: Deferred Removal of Failed Cable to the Shelf Break

Alternative A is the same as the proposed project with the exception that removal of the failed Cable C segment from the nearshore conduit to the shelf break would be deferred until the end of SYU life. (See Section 2.0, Alternatives to the Proposed Project) Major sources of turbidity would be identical to that described in the discussion of the proposed project. See Table WQ-3 for the activities associated with the proposed project that could result in turbidity and impacts to water quality and Table WQ-4A for the activities and sedimentation amounts that are specific to the alternative.

Implementation of Alternative A would be estimated to result in the disturbance of 100 yd^3 more sediment compared to the proposed project. About 150 yd^3 sediment would be disturbed since the failed power cable on the shelf would not be removed during the proposed project. Also, the small amount of sediment disturbed from anchoring activities (<1 yd^3) would not occur. However, because this area of the shelf is an area of net deposition (Jon Warrick, pers. comm. August, 2002), removal of the failed cable at the end of the SYU life would result in the disturbance of an estimated 250 yd^3 of sediment, an increase of 100 yd^3 compared to the proposed project. Lastly, deferral of the removal of the failed power cable until the SYU offshore facilitates are decommissioned would mean that this activity would occur as a small part of a large-scale project and contribute only a fraction to the total sediment disturbance that could occur during decommissioning activities. Thus, the impact to water quality from this alternative would be considered insignificant.

Alternative B: Removal of Failed OCS Cable

Alternative B is the proposed project plus removal of the failed Cable C on the OCS within 5 years of the proposed project. (See Section 2.0, Alternatives to the Proposed Project) This alternative would be conducted in two phases. Phase 1 is identical to the proposed project and will be conducted between 2003 and October 2005. Impacts to water quality during Phase 1 would be identical to those described for the proposed project.

Phase 2 involves the removal of failed cable C on the OCS, a length of 12 miles (19.3 km). For the purposes of this analysis, Phase 2 is projected to occur between 2003-2007. See Table WQ-3 for the activities associated with the proposed project and Table WQ-4B for the activities that are specific to this alternative.

Implementation of Alternative B could increase the amount of sediment disturbed by about 150 yd^3 from four sources: sediment from seafloor during cable removal, marine growth removal onboard the cable-reel vessel, burying cable ends at the gas line crossings and anchoring. This would result in an increased amount of turbidity compared to the proposed project. However, all of the sediment disturbance is offshore, in deep water. The silty portion would settle within a few tens of feet of the point of disturbance while the finer sediments would disperse with the currents. Impacts to water quality would be insignificant. About one mile of cable would be removed at the end of the SYU life. This would cause only a negligible impact to water quality at that time. In addition, this activity would be occurring as a very small part of a large-scale project and be unnoticed during the overall decommissioning operations.

Alternative C: No Project Alternative
Alternative C is the No Project Alternative. (See Section 2.0, Alternatives to the Proposed Project) Under this alternative, the applicant would not replace the failed power cable and would continue to rely on the two remaining power cables to service Platform Heritage. Removal of the remaining portion of the power cable would be deferred until the SYU offshore facilities are decommissioned. Thus, none of the impacts on water quality expected to result from cable-installation activities associated with the proposed action would occur.

If this alternative is adopted no impact to water quality would occur until decommissioning of the entire field in 20 to 30 years. However, when the SYU is decommissioned, cable removal and cleaning would result in an estimated 415 – 465 yd^3 of sediment disturbed ranging from sandy nearshore to silty sand and clayey silt offshore plus sediment and organic debris during cable cleaning. Expected impacts to water quality would be insignificant.

Further, deferral of the OCS portion of the cable removal until that time would mean that this activity would occur as a small part of a large-scale project, involving the dismantlement and removal of three offshore platforms and their associated pipelines and power cables, lasting 2-3 years.

Table WQ-3
Activities from the Proposed Project that Could Result in Turbidity in the Water Column

Location/Timeframe	Activity	Amount and Type of Sediment Resuspended*
Nearshore Pre-construction biological survey (1-2 days)	Anchoring of diver-support vessel (2-4 anchors up to 5,000 lb ea.)	<1 yd^3 – Sand
Nearshore conduit terminus (4-8 days)	Exposure of the conduit terminus by water jetting	10-20 yd^3 – Sand
	Supply/work vessel (4-6 anchors up to 10,000 lb ea.) Three separate events: • Inspection of conduit terminus (1-2 days) • Conduit preparation, clearance and cable cutting (2-4 days) • Cable removal and pigging (1-2 days; if DP vessel used, no anchoring necessary for this step).	<1 yd^3 – Sand
	Water flushes of conduit (if necessary)	1 yd^3 – Sand
	Exposure by water jetting of cable segments to be cut and removed	20-40 yd^3 – Sand
	Cleaning of cable on the vessel prior to placing on the reel	<1 yd^3 – Sand
	Installation of cable C1 by supply/work vessel, 1 day: 4-6 anchors up to 10,000 lb ea.	<1 yd^3 – Sand
Platform Hondo (3-5 days)	Anchoring of ROV support vessel, 1-2 days: 1 anchor up to 30,000 lb (option to use DP vessel with no anchoring)	<1 yd^3 – Silt
	Exposure by water jetting of 50' of J-tube and cable (1-2 days)	22-44 yd^3 – Silt/clay
	Cable removal and water flushes (if necessary) and pigging of J-tube, 1 day: 1 anchor up to 30,000 lb.	Approx. 50 yd^3 – Silt
	Cleaning of the portion of former OS&T cable (cable D) removed from J-tube	3 yd^3 – Some sediment plus organic debris from marine growth
	Installation of the new cable between Platforms Hondo and Harmony	1 yd^3 – Silty/clay
Platform Harmony (1-2 days)	Anchoring of ROV support vessel (option to use DP vessel with no anchoring)	<1 yd^3 – Silt
	Exposure by water jetting of J-tube (necessary only if J-tube is buried wholly or in part)	<1 yd^3 – Silty/clay
	Cable removal and water flushes (if necessary) and pigging of J-tube, 1 day: 1 anchor up to 30,000 lb.	<1 yd^3 – Silt

* The term <1 yd^3 indicates any amount of sediment or other material ranging from 1 to 27 ft^3 (27 ft^3 = 1 yd^3).

Table WQ-3 (cont') Activities from the Proposed Project that Could Result in Turbidity in the Water Column		
Location/Timeframe	***Activity***	**Amount and Type of Sediment Resuspended***
Platform Heritage (1-2 days)	Anchoring of ROV support vessel (option to use DP vessel with no anchoring)	<1 yd^3 – Silt
	Exposure by water jetting of J-tube and end of cable (necessary only if J-tube and cable are buried wholly or in part)	<1 yd^3 – Silty/clay
	Cable removal and water flushes of J-tube (if necessary) and pigging, 1 day: 1 anchor up to 30,000 lb.	Approx. 5 yd^3 – Silt
	Cleaning of the portion of cable C removed from J-tube	3 yd^3 – Some sediment plus organic debris from marine growth
	Installation of new cable from nearshore conduit to Platform Heritage	45 yd^3 – Range from sandy nearshore to silt/clay offshore
Nearshore conduit to the shelf break. (5-7 days)	Removal and cleaning of 5 mi of cable; • Sediment from seafloor • Marine growth • Burying cable end • Anchoring	120 yd^3 – Range from sandy nearshore to silty sand offshore 29 yd^3 – Some sediment plus organic debris from marine growth 1-2 yd^3 – Silty sand < 1 yd^3 – Sand **Total – 150 yd^3**
Nearshore Post-construction biological survey (1-2 days)	Anchoring of diver-support vessel (2-4 anchors up to 5,000 lb ea.)	<1 yd^3 – Sand
Removal of cables at end of SYU life (20-30 yrs) Timeframe: 12-14 days		**Disturbed sediment:** – range from sandy nearshore to silty sand offshore plus some organic debris from marine growth from cable cleaning.
Conduit to Platform Heritage	Removal of the new cable C1: 17 mi (27.3 km)	150 yd^3
Shelf break to Platform Heritage	Removal of the OCS portion of the failed cable C: 12 mi (19.3 km)	50 yd^3 from current sediment plus an additional 50 yd^3 sedimentation in 20 to 30 years
Between Platforms Harmony and Hondo	Removal of cable D1: 4 miles (6.4 km)	21 yd^3 **Total – 271 yd^3** **Marine growth removal:** 185 yd^3
* The term <1 yd^3 indicates any amount of sediment or other material ranging from 1 to 27 ft^3 (27 ft^3 = 1 yd^3).		

Table WQ-4A
List of activities in Alternative A that could result in turbidity and potential impacts to water quality

Description	Location/Timeframe/Activity	Amount and Type of Sediment Resuspended*
Deferred Removal of Failed Cable on the Shelf Break to End of SYU Life	*Location: Shelf* Timeframe: 5-7 days Activity: Removal of 5 miles on the shelf during the decommissioning process.	Amount of sediment disturbed: 250 yd^3 Type of sediment disturbed: Sandy at the nearshore conduit, then predominantly silt, with some clay offshore plus organic debris from marine growth during cable cleaning

Table WQ-4B
List of activities in Alternative B that could result in turbidity and potential impacts to water quality

Description	Location/Timeframe/Activity	Amount and Type of Sediment Resuspended*
Proposed Project Plus Near-term Removal of OCS Cable C	Location: Shelf break to Platform Heritage Timeframe: 12-20 days for cable removal and cleaning. Activity: Proposed project plus removal of 12 mi of cable from the shelf break to Platform Heritage between 2003-2007.	Amount of sediment disturbed: • Sediment from seafloor: 50 yd^3 • Marine growth: 71 yd^3 • Burying cable ends: 1-2 yd^3 • Anchoring: < 1 yd^3 **Alternative total**: 149 yd^3 Type of sediment disturbed: Silty sand and clayey silt offshore plus organic debris during cable cleaning.

Table WQ-4C
List of activities in Alternative C that could result in turbidity and potential impacts to water quality

Description	Location/Timeframe/Activity	Amount and Type of Sediment Resuspended*
No Action Removal of all cable during decommissioning process at end of SYU life.	Location: Shelf and OCS Timeframe: 20-30 years Activity: Removal of all cable during decommissioning process	Amount of sediment disturbed: 413 – 464 yd^3 Type of sediment disturbed: Range from sandy nearshore to silty sand and clayey silt offshore plus organic debris from marine growth during cable cleaning.

5.0 COORDINATION AND CONSULTATION

This section describes the consultation and coordination process that was conducted by MMS and SBC in preparing this MND/EA. The process involved: (1) MMS, SBC and ExxonMobil coordination meetings with Federal, State and local government regulatory agencies, (2) MMS Endangered Species Act and Essential Fish Habitat consultation with NMFS and USFWS, (3) circulation of an administrative draft of the MND/EA to agencies for review and comment, and (4) release of the final MND/EA to the public for review and comment.

Agency/ExxonMobil Coordination Meetings

ExxonMobil first initiated consultation with Federal, State and local agencies in May of 2001 when it met individually with included MMS, CCC, SBCPDD, SBCAPCD, and SLC to review its preliminary project description for its Offshore Power System Repair Project (OSPR). During May of 2001 ExxonMobil also met with representatives of the Joint Oil Fisheries Liason Office to solicit their views on the proposed project.

On November 16, 2001, ExxonMobil submitted a project description and formal applications to MMS, SBC, SLC and other agencies for the OSPR project. MMS and SBC subsequently scheduled a joint agency meeting to review the scope of the project and solicit agency comments on the project.

Since this time, MMS, SBC and ExxonMobil have held monthly meetings or conference calls with other regulatory agencies to review the status of the project and discuss technical, regulatory and environmental issues.
Based on the input received from agencies at these meetings, ExxonMobil revised its proposed project to provide additional information and address technical, regulatory and environmental concerns identified by the agencies. The revisions were incorporated in ExxonMobil project amendments dated February 15, March 20, May 16, and August 19, 2002.

Endangered Species Act Consultation

The Endangered Species Act (ESA) requires Federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat. The following federally listed species were initially identified by MMS as potentially impacted by the proposed activities: white abalone (*Haliotis sorenseni*), blue whale (*Balaenoptera musculus*), fin whale (*B. physalus*), sei whale (*B. borealis*), humpback whale (*Megaptera novaeangliae*), northern right whale (*Eubalaena glacialis*), sperm whale (*Physeter macrocephalus*), Guadalupe fur seal (*Arctocephalus townsendi*), Steller sea lion (*Eumetopias jubatus*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and olive ridley sea turtle (*Lepidochelys olivacea*).

White Abalone. In May 2001, the white abalone, *Haliotis sorenseni,* became the first marine invertebrate to receive Federal protection as an endangered species. In August 2001, a pre-construction marine biological survey in the OPSR Project nearshore area found a white abalone on armor rock in 22 ft (7 m) of water approximately 50 ft (15.2 m) shoreward (north) of the

power cable conduit terminus. The permitting agencies decided that the OPSR Project might have an effect on that individual. This decision triggered the need for the Federal agency permitting the nearshore work to consult (under the ESA) with NMFS.

The Office of Protected Species of NMFS, Long Beach, CA, was contacted in a letter dated November 21, 2001, by the Army Corps of Engineers, Los Angeles District, (ACOE) regarding the individual white abalone. The NMFS, Office of Protected Species, specifically Cathy Eisle Campbell, became involved in the OPSR Project during November 2001 and has continued on a regular basis during monthly teleconferences and directly with MMS on a more frequent basis. Because the OPSR Project extends from on land out to about 17 miles offshore, it was agreed in December 2001 between the ACOE, MMS, and NMFS that MMS would take the lead on further Consultation with NMFS regarding white abalone.

A second marine survey in April 2002 found the empty shell of the initial white abalone and located 21 additional live abalone, one of which is thought to be a *H. sorenseni*. This second white abalone was located about 600 ft (181 m) east and slightly north of the conduit terminus near the base of an isolated boulder (de Wit, 2002). The NMFS decided that the second white abalone was at too great a distance from activities for the OPSR Project to have an effect on that individual.

ExxonMobil will perform another survey, a pre-installation marine biological survey of the nearshore project area just prior to any installation work. At that time, if a white abalone(s) is detected near the vicinity of the conduit terminus, ExxonMobil has stated that project activities will not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative. Project conditions specify that ExxonMobil include the permitting agencies and NMFS and the California Department of Fish and Game (CDFG) in any discussions and/or approval for the design of a pre-installation survey. In addition, project conditions specify that ExxonMobil include the permitting agencies and NMFS and CDFG in any discussions and/or approval for the design of a restoration and restoration-monitoring plan that may be necessary if impacts to white abalone or sensitive habitats are incurred. The NMFS has applied for a Scientific Enhancement Permit pertaining to *H. sorenseni* that will enable the agency to remove white abalone from the wild and maintain and husband individuals at their Southwest Fisheries Science Center in La Jolla.

Marine Mammals and Sea Turtles. Informal consultation on federally listed marine mammals and sea turtles began in August, 2002, with a series of telephone conversations with Joseph Cordaro of the NMFS Office of Protected Species, Long Beach, CA. As described in the MND/EA, the proposed project will be conducted over a limited area, will involve a small number of vessels, and will be brief in duration. The effects on marine mammals from the cable replacement project are expected to be limited to short-term disturbance. Potential impacts will be further reduced by mitigation proposed by ExxonMobil as part of their Modified Marine Biological Impact Reduction Plan (MBIRP). Although blue or humpback whales may be present in the vicinity of the project area in low numbers, they would not be excluded from a significant portion of their foraging habitat in the Santa Barbara Channel. Given their low densities in southern California waters, the listed pinnipeds and sea turtles are not likely to be affected by the proposed project activities.

Based on these analyses and actions, MMS believes that the activities associated with the proposed OPSR project may affect, but are not likely to adversely affect federally threatened and endangered species in the Santa Barbara Channel and will request NMFS' concurrence with this determination through the informal consultation process. To date, the NMFS Office of Protected Species, Long Beach, CA, has reviewed a draft consultation from MMS on the white abalone and draft sections of the MND/EA. The NMFS has stated that they are ready to complete the ESA process whenever the MND/EA is ready for administrative review and the consultation is finalized and forwarded to them.

On May 13, 2002, Greg Sanders of the Ventura FWS office informed MMS that southern sea otters (*Enhydra lutris nereis*) present in the waters of the proposed project area are considered to be part of the San Nicolas Island experimental population and are to be treated as a member of a species that is proposed to be listed for purposes of section 7 of the Endangered Species Act (50 CFR 17.84(d)(5)). Consequently, there currently is no requirement to consult under the ESA on sea otters found in most of southern California.
The federally listed species initially identified by MMS as potentially impacted by the proposed activities include three marine birds: brown pelican (*Pelecanus occidentalis*), California least tern (*Sterna antillarum browni*), and western snowy plover (*Charadrius alexandrinus nivosus*).

The activities associated with this project that could have an effect on listed marine birds include both vessel and helicopter traffic. Vessel traffic could be a problem if it were in close proximity to nesting birds or were in an area where no traffic had occurred previously. However, no listed marine birds nest in the vicinity of the project, and vessel traffic of various types is common throughout the area. Therefore, no effects on listed marine birds are expected from project-related vessel traffic.

Low-flying helicopters (<1,000 ft) can be a problem, especially for nesting marine birds. Helicopter flights associated with this project will originate from either the Santa Barbara or Santa Maria Airports. Helicopter flights to offshore oil platforms already occur from these airports on a daily basis, and the same flight paths will be used for any additional flights associated with this project. Helicopter flights from the Santa Barbara Airport cross the coast at only one location, which is not an area that has either nesting California least terns or western snowy plovers. Flights from the Santa Maria Airport frequently cross the coastline along Vandenberg AFB, which restricts flight altitude to no lower than 1,000 ft (2,000 ft in some areas). Therefore, no impacts on listed marine birds are expected from any additional helicopter flights associated with this project.
From this analysis, MMS has concluded that the activities associated with the proposed OPSR project will have no effects on Federally listed marine birds in the Santa Barbara Channel and that no Section 7 consultation with the FWS is appropriate.

Essential Fish Habitat Consultation

Under Section 305 (b) (2) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1801 et seq) as amended by the Sustainable Fisheries Act on October 11, 1996, Federal agencies are required to consult with the Secretary of Commerce on any actions that may adversely affect Essential Fish Habitat (EFH). The Department of Commerce published a final rule (50 CFR Part 600) in the Federal Register (January 17, 2002, Volume 67, Number 12) that

detailed the procedures under which Federal agencies would fulfill their consultation requirements.

Section 600.920 (e)(1) of the final rule states that Federal agencies may incorporate an EFH Assessment into documents prepared for other purposes such as National Environmental Policy Act (NEPA) documents. Section 600.920 (h) describes the abbreviated consultation process that the MMS and Santa Barbara County (SBC) is following for the OPSR Project proposed by ExxonMobil. The purpose of the abbreviated consultation process is to address specific Federal actions that may adversely affect EFH, but do not have the potential to cause substantial adverse impacts.
To date, the NMFS, Habitat Conservation Division, Long Beach, CA, has reviewed a draft consultation from MMS and draft sections of the MND/EA. The NMFS has stated that they are ready to complete the EFH process whenever the MND/EA is ready for administrative review and the consultation is finalized and forwarded to them.

Agency Comments on Administrative Draft MND/EA

Agency comments received on the Administrative Draft MND/EA have been incorporated into the draft public document. Mitigation measures have been modified and/or added as appropriate to address agency comments.

Public Comments on Draft MND/EA

Public comments on the Draft MND/EA will be incorporated into the final document prior to the project being considered by the various decision-makers. A copy of the comments received will be included as an appendix to the document and changes will appear in underlined and strike-through text.

6.0 CEQA MANDATORY FINDINGS OF SIGNIFICANCE

	Known Signif.	Unknown Poten. Signif.	Poten. Signif. and Mitig.	Not Signif.	Reviewed Under Previous Document
1. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X		X
2. Does the project have the potential to achieve short-term to the disadvantage of long-term environmental goals?			X		X

3. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects and the effects of probable future projects.)				X	X
4. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?				X	X
5. Is there disagreement supported by facts, reasonable assumptions predicated upon facts and/or expert opinion supported by facts over the significance of an effect which would warrant investigation in an EIR?				X	

All adverse impacts identified for the proposed ExxonMobil Offshore Power System Repair Project have been found to be fully mitigable with the incorporation of mitigation measures. Cumulative impacts are discussed throughout the document to address NEPA-required elements. Cumulative impacts were found to be insignificant. As a result, the County of Santa Barbara Planning & Development Department, Energy Division, as lead CEQA agency, has determined that a Mitigated Negative Declaration is the appropriate environmental document for the project.

7.0 NEPA FINDINGS

Based on the evaluation of potential impacts and mitigation measures discussed in this MND/EA, MMS's approval of the installation of ExxonMobil's OSPR:A Project, including implementation of the mitigation measures MMS requires, does not constitute a major Federal action significantly affecting the quality of the human environment, in the sense of NEPA (Section 102(2)(C)).

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APPENDIX A

Southern California Eelgrass Mitigation Policy

APPENDIX A

SOUTHERN CALIFORNIA EELGRASS MITIGATION POLICY

(Adopted July 31, 1991)

(From: http://swr.nmfs.noaa.gov/hcd/eelpol.htm)

Eelgrass (Zostera marina) vegetated areas function as important habitat for a variety of fish and other wildlife. In order to standardize and maintain a consistent policy regarding mitigating adverse impacts to eelgrass resources, the following policy has been developed by the Federal and State resource agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game). This policy should be cited as the Southern California Eelgrass Mitigation Policy (revision 8).

For clarity, the following definitions apply. "Project" refers to work performed on-site to accomplish the applicant's purpose. "Mitigation" refers to work performed to compensate for any adverse impacts caused by the "project". "Resource agencies" refers to National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game.

1. **Mitigation Need.** Eelgrass transplants shall be considered only after the normal provisions and policies regarding avoidance and minimization, as addressed in the Section 404 Mitigation Memorandum of Agreement between the Corps of Engineers and Environmental Protection Agency, have been pursued to the fullest extent possible prior to the development of any mitigation program.

2. **Mitigation Map.** The project applicant shall map thoroughly the area, distribution, density and relationship to depth contours of any eelgrass beds likely to be impacted by project construction. This includes areas immediately adjacent to the project site which have the potential to be indirectly or inadvertently impacted as well as areas having the proper depth and substrate requirements for eelgrass but which currently lack vegetation.

Protocol for mapping shall consist of the following format:

1) Coordinates

Horizontal datum - Universal Transverse Mercator (UTM), NAD 83, Zone 11

Vertical datum - Mean Lower Low Water (MLLW), depth in feet.

2) Units

Transects and grids in meters.

Area measurements in square meters/hectares.

All mapping efforts must be completed during the active growth phase for the vegetation (typically March through October) and shall be valid for a period of 120 days with the exception of surveys completed in August - October.

A survey completed in August - October shall be valid until the resumption of active growth (i.e., March 1). After project construction, a post-project survey shall be completed within 30 days. The actual area of impact shall be determined from this survey.

3. **Mitigation Site.** The location of eelgrass transplant mitigation shall be in areas similar to those where the initial impact occurs. Factors such as, distance from project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating potential sites.

4. **Mitigation Size.** In the case of transplant mitigation activities that occur concurrent to the project that results in damage to the existing eelgrass resource, a ratio of 1.2 to 1 shall apply. That is, for each square meter adversely impacted, 1.2 square meters of new suitable habitat, vegetated with eelgrass, must be created. The rationale for this ratio is based on, 1) the time (i.e., generally three years) necessary for a mitigation site to reach full fishery utilization and 2) the need to offset any productivity losses during this recovery period within five years. An exception to the 1.2 to 1 requirement shall be allowed when the impact is temporary and the total area of impact is less than 100 square meters. Mitigation on a one-for-one basis shall be acceptable for projects that meet these requirements (see section 11 for projects impacting less than 10 square meters).

Transplant mitigation completed three years in advance of the impact (i.e., mitigation banks) will not incur the additional 20% requirement and, therefore, can be constructed on a one-for-one basis. However, all other annual monitoring requirements (see sections 8-9) remain the same irrespective of when the transplant is completed.

Project applicants should consider increasing the size of the required mitigation area by 20-30% to provide greater assurance that the success criteria, as specified in Section 9, will be met. In addition, alternative contingent mitigation must be specified, and included in any required permits, to address situation where performance standards (see section 9) are not met.

5. **Mitigation Technique.** Techniques for the construction and planting of the eelgrass mitigation site shall be consistent with the best available technology at the time of the project. Donor material shall be taken from the area of direct impact whenever possible, but also should include a minimum of two additional distinct sites to better ensure genetic diversity of the donor plants. No more than 10% of an existing bed shall be harvested for transplanting purposes. Plants harvested shall be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Written permission to harvest donor plants must be obtained from the California Department of Fish and Game.

Plantings should consist of bare-root bundles consisting of 8-12 individual turions. Specific spacing of transplant units shall be at the discretion of the project applicant.

However, it is understood that whatever techniques are employed, they must comply with the stated requirements and criteria.

6. **Mitigation Timing.** For off-site mitigation, transplanting should be started prior to or concurrent with the initiation of in-water construction resulting in the impact to the eelgrass bed. Any off-site mitigation project which fails to initiate transplanting work within 135 days following the initiation of the in-water construction resulting in impact to the eelgrass bed will be subject to additional mitigation requirements as specified in section 7. For on-site mitigation, transplanting should be postponed when construction work is likely to impact the mitigation. However, transplanting of on-site mitigation should be started no later than 135 days after initiation of in-water construction activities. A construction schedule which includes specific starting and ending dates for all work including mitigation activities shall be provided to the resource agencies for approval at least 30 days prior to initiating in-water construction.

7. **Mitigation Delay.** If, according to the construction schedule or because of any delays, mitigation cannot be started within 135 days of initiating in-water construction, the eelgrass replacement mitigation obligation shall increase at a rate of seven percent for each month of delay. This increase is necessary to ensure that all productivity losses incurred during this period are sufficiently offset within five years.

8. **Mitigation Monitoring.** Monitoring the success of eelgrass mitigation shall be required for a period of five years for most projects. Monitoring activities shall determine the area of eelgrass and density of plants at the transplant site and shall be conducted at 3, 6, 12, 24, 36, 48, and 60 months after completion of the transplant. All monitoring work must be conducted during the active vegetative growth period and shall avoid the winter months of November through February. Sufficient flexibility in the scheduling of the 3 and 6 month surveys shall be allowed in order to ensure the work is completed during this active growth period. Additional monitoring beyond the 60 month period may be required in those instances where stability of the proposed transplant site is questionable or where other factors may influence the long-term success of transplant.

The monitoring of an adjacent or other acceptable control area (subject to the approval of the resource agencies) to account for any natural changes or fluctuations in bed width or density must be included as an element of the overall program.

A monitoring schedule that indicates when each of the required monitoring events will be completed shall be provided to the resource agencies prior to or concurrent with the initiation of the mitigation.

Monitoring reports shall be provided to the resource agencies within 30 days after the completion of each required monitoring period.

9. **Mitigation Success.** Criteria for determination of transplant success shall be based upon a comparison of vegetation coverage (area) and density (turions per square meter) between the project and mitigation sites. Extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density of shoots is defined by the number of turions per area

present in representative samples within the control or transplant bed. Specific criteria are as follows:

a. a minimum of 70 percent area of eelgrass bed and 30 percent density after the first year.

b. a minimum of 85 percent area of eelgrass bed and 70 percent density after the second year.

c. a sustained 100 percent area of eelgrass bed and at least 85 percent density for the third, fourth and fifth years.

Should the required eelgrass transplant fail to meet the established criteria, then a Supplementary Transplant Area (STA) shall be constructed, if necessary, and planted. The size of this STA shall be determined by the following formula:

$STA = MTA \times (|A_t + D_t| - |A_c + D_c|)$

MTA = mitigation transplant area.

A_t = transplant deficiency or excess in area of coverage criterion (%).

D_t = transplant deficiency in density criterion (%).

A_c = natural decline in area of control (%).

D_c = natural decline in density of control (%).

Four conditions apply:

1) For years 2-5, an excess of only up to 30% in area of coverage over the stated criterion with a density of at least 60% as compared to the project area may be used to offset any deficiencies in the density criterion.

2) Only excesses in area criterion equal to or less than the deficiencies in density shall be entered into the STA formula.

3) Densities which exceed any of the stated criteria shall not be used to offset any deficiencies in area of coverage.

4) Any required STA must be initiated within 120 days following the monitoring event that identifies a deficiency in meeting the success criteria. Any delays beyond 120 days in the implementation of the STA shall be subject to the penalties as described in Section 7.

10. **Mitigation Bank.** Any mitigation transplant success that, after five years, exceeds the mitigation requirements, as defined in section 9, may be considered as credit in a "mitigation bank". Establishment of any "mitigation bank" and use of any credits accrued from such a bank must be with the approval of the resource agencies and be consistent with the provisions stated in this policy. Monitoring of any approved mitigation bank shall be conducted on an annual basis until all credits are exhausted.

11. **Exclusions.**

1) Placement of a single pipeline, cable, or other similar utility line across an existing eelgrass bed with an impact corridor of no more than ½ meter wide may be excluded from the provisions of this policy with concurrence of the resource agencies. After project construction, a post-project survey shall be completed within 30 days and the results shall be sent to the resource agencies. The actual area of impact shall be determined from this survey. An additional survey shall be completed after 12 months to insure that the project or impacts attributable to the project have not exceeded the allowed ½ meter corridor width. Should the post-project or 12 month survey demonstrate a loss of eelgrass greater than the ½ meter wide corridor, then mitigation pursuant to sections 1-11 of this policy shall be required.

2) Projects impacting less than 10 square meters. For these projects, an exemption may be requested by a project applicant from the mitigation requirements as stated in this policy, provided suitable out-of-kind mitigation is proposed. A case-by-case evaluation and determination regarding the applicability of the requested exemption shall be made by the resource agencies.

(last revised 2/2/99)

APPENDIX B

Offshore Power System Repair Project OPSR:A

Cable Retrieval Risk Assessment

(Analysis of Risk of Damage to Existing Components from a Dropped Cable During Retrieval)

September 2002

and Supplement 1: Shallow Water Addendum

October 2002

Prepared by: Petro Marine / BCI Engineering

ExxonMobil

Santa Ynez Unit

Offshore Power System Repair: Amended Project
OPSR:A

Cable Retrieval Risk Assessment
(Analysis of Risk of Damage to Existing Components from a Dropped Cable During Retrieval)

September 2002

Prepared by:
PMBCI
Gene Pharr, PE

Study Summary

PMBCI examined the risk of physical damage to the active SYU cables and pipelines from the dropping of the failed "C" cable with or without the recovery tools attached during retrieval from the seabed. The study evaluated two water depths and three locations: 1) seaward of the shelf break in about 450 feet of water depth and 2) at two gas pipeline crossings of the "C" cable west of the Harmony platform each in about 1250 feet of water depth. The study methodology included the following three steps: 1) analysis of the falling cable dynamics; 2) analysis of the collision impact dynamics and 3) estimation of pipeline or cable damage. As a result of the analysis, five cable laydown modes were examined and three were found to be plausible under study conditions.

1) Stiff Catenary Laydown – (Very shallow water only < 50 ft) [Not considered plausible]
2) Hammerhead Laydown – (Does not occur under assumptions used) [Not considered plausible]
3) Spaghetti Pile Without Clamp – (All water depths)
4) Spaghetti Pile With Clamp – (All water depths)
5) Plunging Stalk – (Deep water only > ~400 ft)

The plausible damage to either a pipeline or a power cable was determined using elastic collision impact analysis. The results of this analysis obtained the following conclusions:

a) None of the pipelines or submarine power cables can be damaged by stiff catenary laydown mode.
b) None of the pipelines or submarine power cables can be damaged by the hammerhead laydown mode.
c) None of the pipelines or submarine power cables can be damaged by the spaghetti pile without clamp laydown mode.
d) None of the pipelines can be damaged by the spaghetti pile with clamp laydown mode.
e) All of the submarine power cables can be damaged by the spaghetti pile with clamp laydown mode.
f) All of the pipelines can be damaged by the plunging stalk mode.
g) All of the submarine power cables can be damaged by the plunging stalk mode.

As shown above, a plausible risk to the operating pipelines and power cables exists at each of the study locations, specifically in the deeper water. It should be noted that the spaghetti pile mode would more easily impact a long linear target such as the submarine cable. For the spaghetti pile with clamp or the plunging stalk modes to damage a pipeline or power cable, they would have to have a direct hit on the component. A tabular summary is provided in the report.

Study Premise

ExxonMobil commissioned PMBCI to examine the risk of damage to the SYU power cables and pipelines if the existing failed "C" cable is dropped during retrieval from the seabed while either the existing cables and pipelines are still in active service or the same operation after all of the cables and pipelines have been decommissioned and removed from service at the end of the SYU field life.

The primary risk examined in this study is that of possible physical damage caused by a dropped object such as the cable being retrieved with or without the recovery tools attached. One phase of this study will be to examine the loading required to cause such a failure. For the situation where the existing power cables or pipelines are still in service, an impact sufficient to cause plastic (e.g. inelastic permanent) deformation of the cable jacket armor wires or the pipeline is defined (for the purposes of this study) as failure. Depending on the actual damage, this type of deformation could require the repair of the cable or pipeline. For the situation where the cables and pipelines have been decommissioned, no repair would be required.

The study assumes, as an obvious conclusion, that the cable being retrieved, and the recovery clamp or end fittings to be employed are not themselves heavy enough to cause damage if they were lowered gently to the sea bottom. The major part of the study will focus on the estimation of the kinetic energy of the falling body. Due to the required calculation assumptions, the unknown physical condition of the cable to be retrieved, and for consistency with common engineering practice for heavy lift marine rigging and salvage operations, a safety factor of at least 3.0 is recommended. Without an adequate safety factor it is not practical to predict that a given scenario avoids damage with consequent risks of loss of service, pollution, and increased risks associated with or arising in additional or corrective work.

Site and Operations

The study evaluates the retrieval of the failed "C" power cable (5.83 inch diameter 35 kv submarine power cable) that has been removed from service and will be replaced as part of the OPSR:A Project. The cable runs between the shore and the Heritage offshore platform passing South of the Hondo and Harmony platforms as shown on the marine survey drawings (reference Pre-Lay Cable Route Survey, September 2001).

The OPSR:A Project purposes to retrieve the portion of the cable from the conduit terminus to the shelf break. The inshore portion of the cable will be retrieved to about 400-450 feet of water to the seaward side of the shelf break in the OCS. As a future operation, the OCS portion of the failed "C" cable could be retrieved from the shelf break to the first gas pipeline crossing west of Harmony platform and then from the second crossing of the gas pipeline to the Heritage platform. Another future operation could be the removal of the entire OCS portion of the failed "C" cable at the end of the SYU field life after the facilities have been shut down.

In the area of the shelf break the purposed approach is for the seaward portion of the "C" cable to be cut at the tension machine on the vessel and lowered to the sea bottom with a nominal 100 pound pulling head attached for future recovery. The cable is nominally parallel and adjacent to the "B" power cable, the "A" power cable, and the 12-inch POPCO pipeline at this location. The first objective of this study is to evaluate if damage could occur to these in-service power cables or pipelines if the "C" cable were dropped at this point.

The future retrieval operation of the OCS portion of the "C" cable would proceed by lifting the inshore end of the cable at the 400-450 water depth and recovering it onto the cable recovery vessel through a traction device. A nominal 3-knot current from approximately West to East will contribute to the cable catenary tension during recovery.

For this analysis the recovery of the cable on the OCS will proceed to a point to the East and slightly South of the Harmony platform. The point will be selected such that the catenary lift-off point remains short of where the "C"

cable crosses under the 12-inch gas pipeline West of the Harmony platform. The cable will be cut at this point and lowered to the sea bottom with a nominal 100 pound pulling head attached.

The second objective of this study is to determine if this cable were dropped at this point would it damage any of the in-service power cables or pipelines at that location. The cables at that location are the "A", "B", and "D" submarine power cables. The pipelines are the 20-inch oil emulsion pipeline, the 12 inch treated water pipeline, the 14-inch oil emulsion pipeline, and the 12-inch sales gas pipeline.

For this analysis the recovery of the cable on the OCS will continue West of the second crossing of the 12 inch gas pipeline located West of the Harmony platform to the Heritage platform. At this location, the cable will be cut on the sea bottom and lifted with a 200-pound cable clamp.

The third objective of this study is to determine if the cable, with the clamp tool attached, were dropped at this point would it damage any of the in-service cables or pipelines at this location. The "E" power cable, 12-inch gas pipeline, and 20 inch oil emulsion pipelines are at this location.

Study Methodology

The study methodology included the following three steps to address the study objectives:

1.) Falling Cable Dynamics

For each of the three locations, how can the cable fall? How fast will it go? With what kinetic energy will it strike the seafloor or one of the study target cables or pipelines? In simple terms, how hard does it hit?

2.) Collision Impact dynamics

The "C" cable being retrieved and the lifting clamp or end fitting will be falling on the study target bodies with kinetic energies predicted in step 1. The force imparted to the target body will be predicted as a collision of elastic bodies. The work done to bring the falling body to rest is the integral of the force exerted with respect to the falling body deformation. The same amount of work is done by the equal and opposite forces deforming the target body.

3.) Pipeline or Cable Damage Estimate

The pipelines are analyzed by a linear finite element analysis to determine the magnitude of force applied in the anticipated patterns that would result in initiation of a failure if acting alone. As it is not practical to evaluate other actual stresses as may be present, a safety factor of three is recommended to provide rational assurance that damage will not result from combined stresses due to both the predicted impact event and "ambient" stresses from operating and service conditions.

The cables spiral armor will be effective principally in resisting transverse cuts or abrasion. It will not be effective in preventing lateral loads from being transferred to the conductors. The HV Kerite conductor insulation is a material with physical behavior characteristics like a high durometer rubber and a tensile strength of 550 psi. The target cables are primarily subject to damage either by a stabbing type of impact in which the armor wires are pushed aside, perhaps by broken armor wires protruding from the falling cable, or by direct

crushing forces transmitted through the armor to the conductor core. This high rate impact load can cause a longitudinal splitting and consequent failure if the peak tensile stresses exceed the tensile strength.
A linear finite element analysis of the conductor has been performed to determine the loading that would initiate such a failure. A safety factor of at three is recommended to insure the validity of safe loading predictions. No data is available for the known characteristic of most insulating materials to exhibit reduced dielectric strength under high shear stress loadings therefore the suggested safety factor of three may not be adequate to prevent dielectric breakdown if the cables are energized at the time of impact.

Falling Cable Dynamics

Analyses of the cable catenaries with loading from typical water currents were performed for a wide variety of conditions at 450 and 1250 water depths. These analyses indicated that to avoid exceeding allowable cable tension the horizontal force at the traction (upper) end must be limited. The maximum cable tension without current loading would be at the upper end. Due to the current forces transverse to the cable, both the horizontal and vertical forces are markedly increased and the maximum cable tension will occur in the sag bend rather than the upper end. The profile that must be adopted to prevent excessive tension in the three knot current is steeper at the upper end than might be used for a "no-current" cable laying or recovery operation. The manufacturers suggested maximum cable tension of 21,680 pounds should be observed. As the cable is known to have failed, the possibility of a local physical defect either due to fault currents or galvanic action is considered high. Although the cable is being retrieved without expectation of reuse, higher tension than the manufacturer has recommended could cause a tensile failure at a local physical defect. There is no assurance that such a failure will not occur at an even lower load. All normal precautions to stay clear of highly tensioned multipart lines should be observed. If such an unanticipated tension failure does occur at a tension less than the recommended 21,680 pound limit, the results will be very similar to the cases considered at the previously described three locations.

The cable could be dropped due to a rigging failure or handling error at any of the three study locations. The first analysis is for a 3-knot current loaded catenary in 450 feet of water, within permissible maximum tension limits. Two time steps for a direct integration time-history dynamic analysis are shown in Figure 1. This analysis does not converge to a solution as instabilities develop from the inability of the modeled cable to sustain compressive loads.

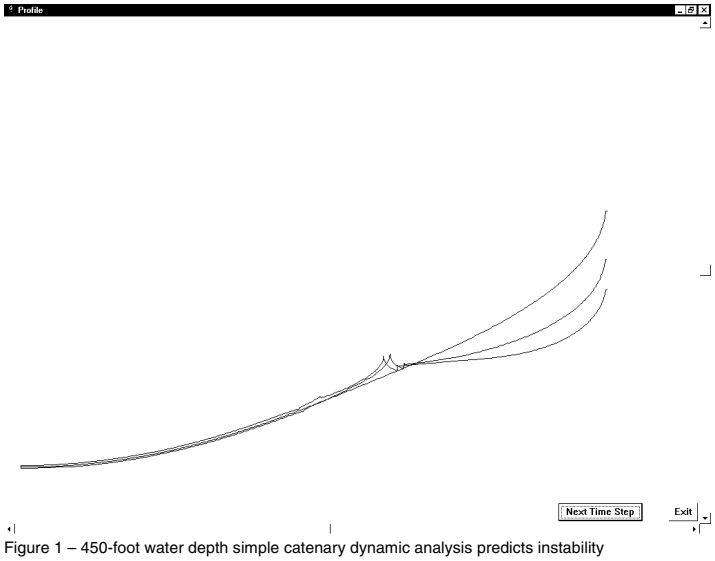

Figure 1 – 450-foot water depth simple catenary dynamic analysis predicts instability

Several useful inferences may be drawn even though a full direct solution fails. These will be discussed further after looking at other examples. The water depth for this case is 450 feet. The lift-off point is 842.28 feet from the able head, which is 11.17 feet above the waterline.

A second analysis using a similar profile for 1250 feet of water follows. This current loaded profile is for minimum tension while retaining control of the lift-off point. The lift-off point is 341.34 feet from the cable head, which is 11.14 feet above the waterline. Note that for this minimum tension case in 1250 feet of water, the cable head is nearly vertical. Five time steps from the cable release are shown in Figure 2. Just as in the 450-foot water depth case, compressive instabilities develop, and the solution fails to converge.

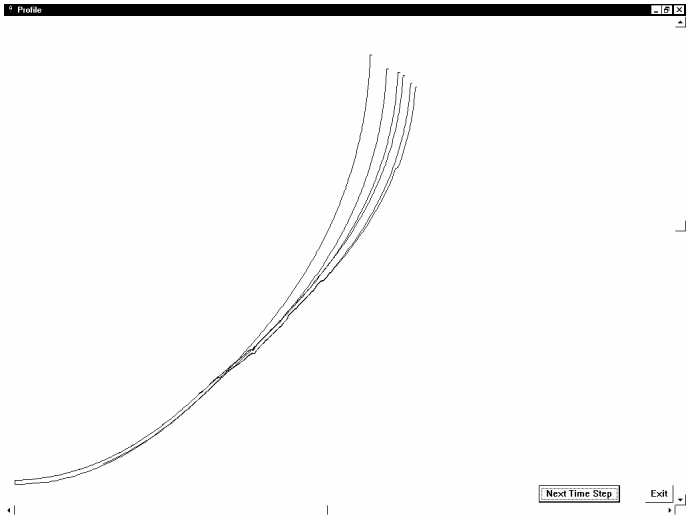

Figure 2 – 1250-foot water depth minimum tension simple catenary dynamic analysis predicts instability

By contrast, the current loaded profile for maximum tension was also evaluated. The lift-off point is 1482.88 feet from the cable head, which is 11.38 feet above the waterline. For this maximum tension case in 1250 feet of water the cable head is still at a high angle. Two time steps from the cable release are shown in Figure 3. Just as in the other cases, compressive instabilities develop, and the solution fails to converge.

The maximum tension profile for 1250 feet of water follows.

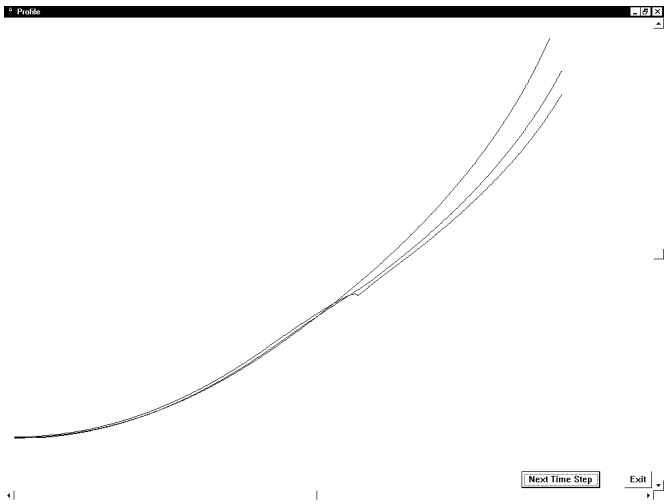

Figure 3 – 1250-foot water depth maximum tension simple catenary dynamic analysis predicts instability

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These analyses and others all failed to converge to simple solutions with the cable on bottom and in every case the development of instability due to axial compression was the reason.

The "C" cable has three HV insulated conductors and a single layer of 46 BWG #4 galvanized steel wires coated with 55 mils of high density polyethylene. The coated armor wires are in a single left lay layer with a 39-inch spiral pitch. The armor wires are not contained within a sheath or connected together.

Traditional rational analysis to proceed beyond the above evaluation suggests five specific modes to consider for the manner in which the dropped cable may reach the sea bottom:

1.) Stiff Catenary Laydown Mode

If the cable were able to sustain the compression that arises without significant local buckling or out of plane deformation, it would come down with in-plane lateral motion only. A single touchdown point would move along the seabed from the prior-to-release lift-off point to the cable head.

A number of factors work against development of this case. The single layer spiral armor will cause the slacking cable to spiral and compression will amplify the inherent spiral. This effect will cause out of plane motion to initiate. The spiral armor itself is unable to sustain direct compression and it can open up forming basket(s). At any local defect such as where a basket exists or armor wires are displaced from their normal lay or wires have been broken, corroded, or damaged in any way, a weak spot is formed where compressive force will cause a concentration of p-delta moment amplification effects.

The simple stiff catenary laydown can only occur in very shallow water (perhaps less than 50 feet of water depth). This mode is not expected in the study water depth range. Further analysis of this mode was not pursued as it is not expected to occur.

2.) Hammerhead Laydown Mode

This laydown mode is the same as above except that the cable end fixture acting as a concentrated weight causes the cable end to fall faster such that it hits bottom ahead of the adjacent cable.

This mode is also not expected to develop in the study water depths. The Stiff Catenary Laydown from which this mode would develop does not occur and the cable end fittings employed are not heavy enough to have significant effect.

3.) Spaghetti Pile Mode Without Clamp

As the cable cannot sustain compressive loading without lateral displacement and bending it will curl into a spaghetti pile. As the curling cable falls, there will be multiple touchdown points in unpredictable locations and sequences along and to both sides of the nominal cable path. In all cases the touchdown velocity will be approximately the terminal velocity for lateral motion of the cable. The individual impact points may be very slightly higher than the nominal terminal velocity as adjacent cable segments are inclined with respect to the general motion.

This mode is expected to occur at all the study location water depths. The lateral distribution of the impact points could be higher in the deeper water but remains unpredictable. As the cable reaches its terminal velocity in less than its own diameter there is no other significant difference between the 450 and 1250-foot water depths.

A typical impact point kinetic energy for the spaghetti pile would be approximately:

$$E_k = \frac{m \cdot v^2}{2} = \frac{\left(\frac{200}{32.2}\right) \cdot \left(3.75^2\right)}{2} = 43.7 \ \ ft \cdot lbf$$

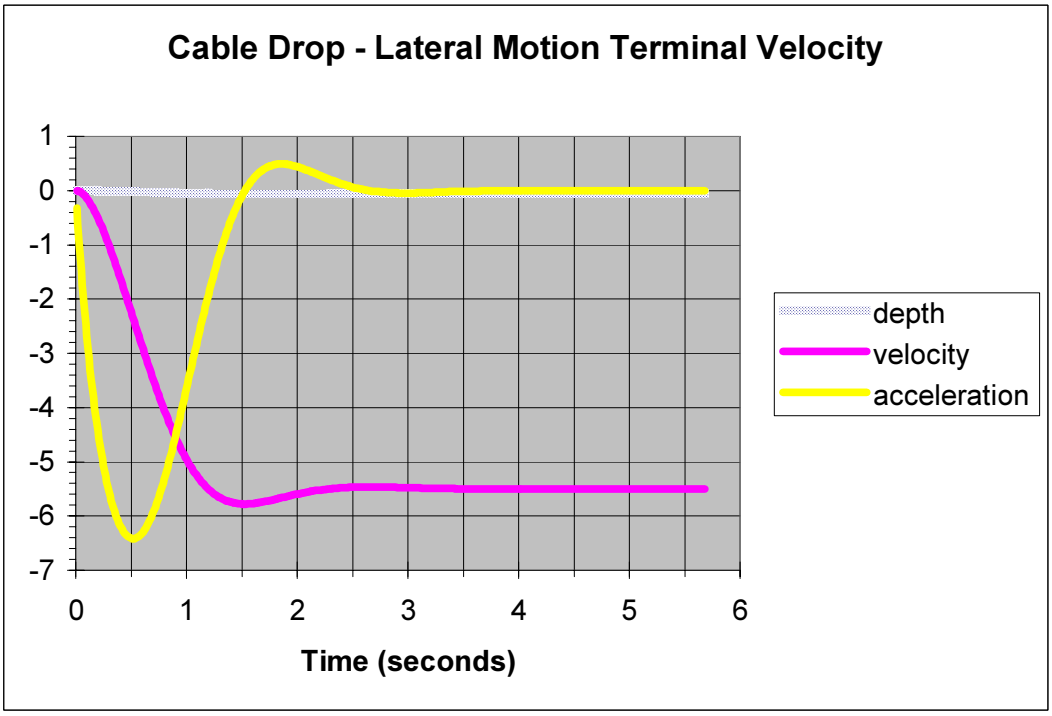

Figure 4 – Dynamic Terminal Velocity Study by Morison's Equation

The terminal velocity for the "C" cable free falling in seawater at 70° F is 5.50 feet per second. The cable diameter is 5.38 inches. The values for Cd and Cm are 0.70 and 1.6.

As can be seen in Figure 4, starting from rest the terminal velocity is reached in about 2.5 seconds and with a lateral motion of less than the cable diameter.

[5.5 feet per second is 3.75 miles per hour; about walking speed.]

4.) Spaghetti Pile Mode With Clamp

This mode is the same as the previous mode except that a 200-pound end clamp is located a few feet from the end of the cable. The edge of this clamp can strike the pipe like a knife-edge and at a slightly higher kinetic energy.

At the end clamp the kinetic energy could be:

$$E_k = \frac{m \cdot v^2}{2} = \frac{\left(\frac{400}{32.2}\right) \cdot \left(4.00^2\right)}{2} = 99.4 \ \ ft \cdot lbf$$

5.) Plunging Stalk Mode

The axial hydrodynamic forces, which are commonly ignored in many cases, are substantially less than the lateral forces described by Morison's Equation. If a segment of cable is falling in the direction of its longitudinal axis then its terminal velocity is governed by the weaker axial flow surface boundary layer effects and it will fall faster and for a much greater distance before reaching terminal velocity.

Figure 5 shows a 400-foot "stalk" falling vertically. It reaches terminal velocity at 67.3 feet per second (45.9 miles per hour) when the drag equals the submerged weight of 3500 pounds after plunging 122 feet. Note this is radically different from the lateral terminal velocity.

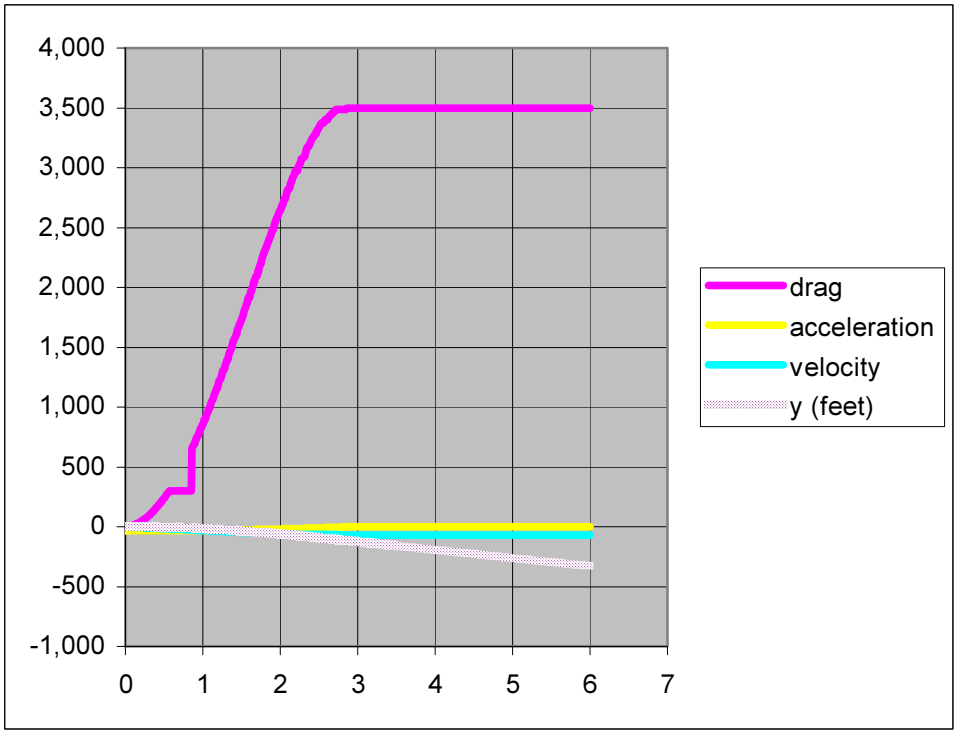

Figure 5 – Axial Flow Terminal Velocity Study

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The kinetic energy for a 400-foot stalk at terminal velocity, as could develop in 1250 feet of water, is:

$$E_k = \frac{m \cdot v^2}{2} = \frac{\left(\frac{400 \cdot 18.85}{32.2}\right) \cdot \left(67.3^2\right)}{2} = 530293 \ \ ft \cdot lbf$$

This is a plausible worst case for the 1250 water depth locations. At the 450-foot water depth the plausible stalk length is more like 150 feet.

$$E_k = \frac{m \cdot v^2}{2} = \frac{\left(\frac{150 \cdot 18.85}{32.2}\right) \cdot \left(39.9^2\right)}{2} = 69898 \ \ ft \cdot lbf$$

This mode is more plausible in deeper water depths. It is also more likely to be initiating at points of existing cable damage.

Elastic Collision Impact Dynamics

1) 400 foot Plunging Stalk Impact

Weight of impacting object (in force units): $W := 7540 \cdot lbf$

Velocity of the impacting object: $V := 67.3 \cdot fps$

Stiffness of object being impacted: $k_1 := 1.5 \cdot kpi$

Stiffness of the impact object - This value is typically just estimated. As a guide line, some selected values of k_2, and the corresponding combined stiffness k, follows: $k_2 := 150 \cdot kpi$

for
- $k_2 = k_1$ $k = 1/2 * k_1$ (for equal stiffnesses)
- $k_2 = 2 * k_1$ $k = 2/3 * k_1$
- $k_2 = 3 * k_1$ $k = 3/4 * k_1$
- $k_2 = 7 * k_1$ $k = 7/8 * k_1$
- $k_2 = 10^{15}$ $k = k_1$ (for infinitely stiff impact object)

Calculate the kinetic energy at impact as a function of the velocity at impact, V:

$$E_F(V) := \frac{W}{2 \cdot g} \cdot V^2$$

$$E_F(V) = 6368.645 \text{in} \cdot \text{kips}$$

Derive the formula for converting energy of a moving object into an impact force on the body being impacted:

The energy absorbed by the impacted object, as well as the energy absorbed by the impacting object , is equal to the area under each one 's force/deflection curve. Since th e area is a triangle, the energy , $E = \frac{1}{2} \cdot R \cdot y$, where R is the force, which is equal between the two objects, and y is the deflection. The total energy is equal to the sum of the energy absorbed by both.

Therefore $E = \frac{1}{2} \cdot R \cdot y_1 + \frac{1}{2} \cdot R \cdot y_2$ **and by substitution** $E = \frac{1}{2} \cdot R \cdot \frac{R}{k_1} + \frac{1}{2} \cdot R \cdot \frac{R}{k_2}$

Simplifying $E = \frac{1}{2} \cdot R^2 \cdot \left(\frac{1}{k_1} + \frac{1}{k_2} \right)$ **and** $R = \sqrt{\frac{2 \cdot E}{\frac{1}{k_1} + \frac{1}{k_2}}}$

And further simplifying $R = \sqrt{2 \cdot \frac{k_1 \cdot k_2}{k_1 + k_2} \cdot E}$

Where the effective stiffness of the two body combination is:

$$k := \frac{k_1 \cdot k_2}{k_1 + k_2}$$

$$k = 1.5 \text{kpi}$$

Calculate the impact force as a function of the combined stiffness and the speed of the impacting body:

$$R(k, V) := \sqrt{2 \cdot k \cdot E_F(V)}$$

Therefore for the 400 foot plunging stalk at a 1250 foot water depth:

The resulting impact force between bodies is:

$$R(k, V) = 137.538 \text{kips}$$

2) Similarly, for the 150 foot plunging stalk at a 450 foot water depth:

The resulting impact force between bodies is:

$$R(k, V) = 49.93 \text{kips}$$

3) For the Spaghetti Pile Mode with Clamp Mode:

The resulting impact force between bodies is:

$$R(k, V) = 1.883 \text{kips}$$

4) For the Spaghetti Pile without Clamp Mode:

The resulting impact force between bodies is:

$$R(k, V) = 1.248 \text{kips}$$

Pipeline and Cable Damage Estimates

The most easily damaged pipeline would be the 20-inch diameter pipe with a 0.5-inch wall thickness (oil emulsion line). The force required to yield the pipe is 42,730 pounds. With a safety factor of 3.0, as recommended, this says the applied force should be limited to 14,243 pounds. As shown in Figure 6, this is substantially less than the plunging stalk forces of 137,530 or 49,930-pound forces for the 400 and 150-foot cases, respectively. Damage to the 20-inch pipeline at any of the three study locations is therefore plausible.

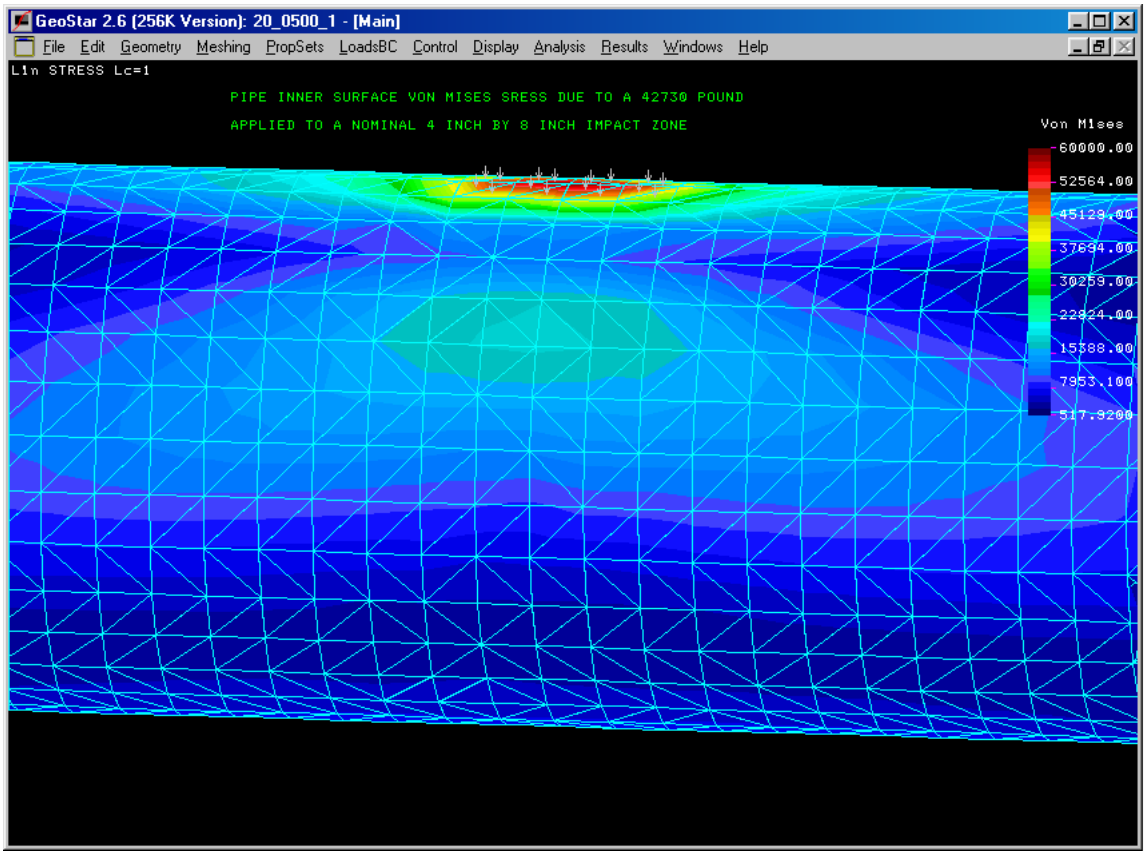

Figure 6 – Finite Element Analysis for 20ϕ0.500 60-ksi-yield stress pipeline for load to cause yield, distributed over an impact zone for the plunging stalk mode

Conversely, for the general case of the spaghetti pile mode, the 1,248 pounds is insufficient to cause damage to the most easily damaged pipeline.

For the spaghetti pile with clamp impact case, the force required to yield the pipe is 31,796 pounds as shown in Figure 7. This force is less than the case shown in Figure 6 since the clamp impact is applied for the finite element analysis as a concentrated line load transversely to the pipe axis rather than spread over a larger impact area. This simulates the knife edge effect of the clamp edge striking the pipe at an angle. With the recommended safety factor of 3.0, the applied load should be limited to 10,599 pounds. As this is substantially more than the 1,883 pounds for the clamp impact in the spaghetti pile with clamp mode, no pipeline damage will occur.

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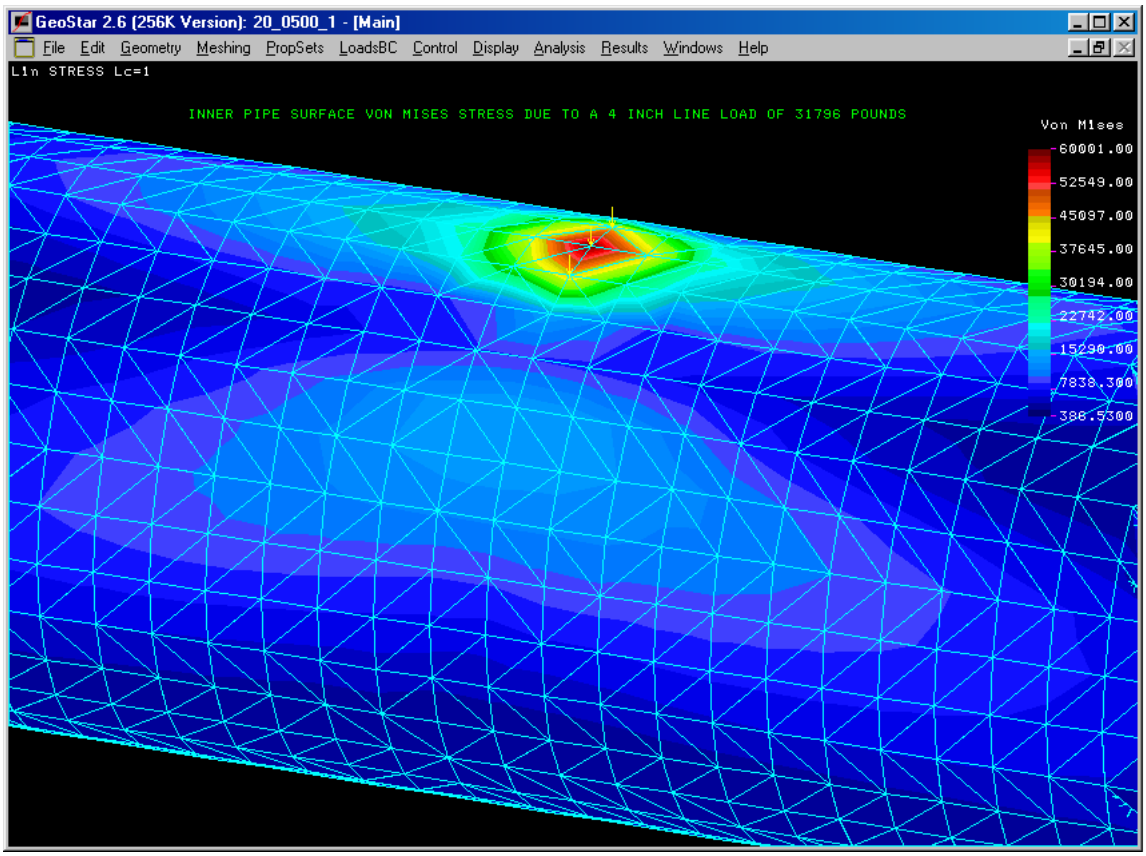

Figure 7 – Finite Element Analysis for 20ϕ0.500 60-ksi-yield stress pipeline for load to cause yield, applied like a knife-edge for the spaghetti pile with clamp mode.

The pipeline most resistant to impact damage would be the nominal 12-inch pipe with a 0.625-inch wall thickness (gas pipeline). The load required to yield the pipe is 107,500 pounds. With the safety factor of 3.0, the load should be limited to 35,833 pounds. The impact pattern assumed on the pipe is shown in Figure 8.

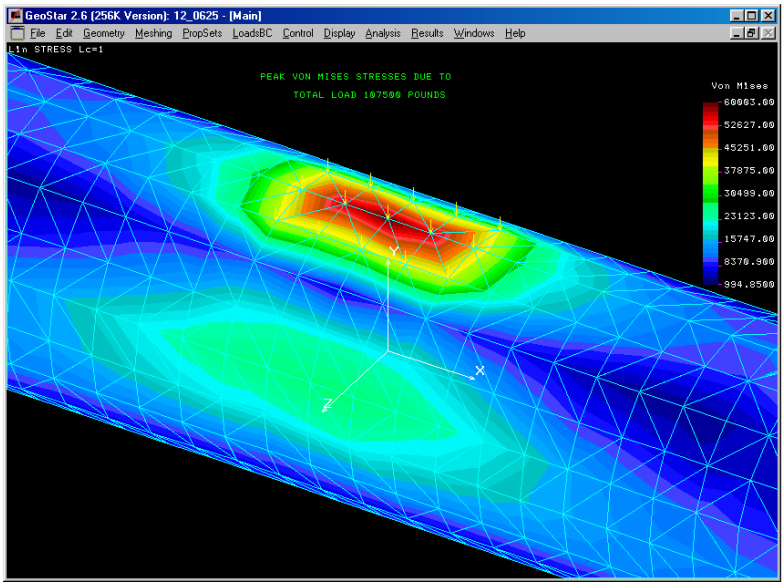

Figure 8 - Finite Element Analysis of 12.75ϕ0.625 60 ksi yield pipeline for load to cause yield, distributed over an impact zone for the plunging stalk mode

The 137,530-pound and 49,930 pound forces from the 400 and 150 foot plunging stalk modes, respectively, both exceed 35,833 pounds. Therefore, any of the pipelines at any of the study locations can plausibly be damaged by an impact in the plunging stalk mode.

Finite element analysis of the cable primary conductor assembly reveals the HV Kerite insulation reaches a 550-psi Von Mises stress with a 5223 pound per inch transverse loading. The spiral armor is deemed to be effective to distribute the knife-edge load for about one inch, or 4 armor wire diameters.

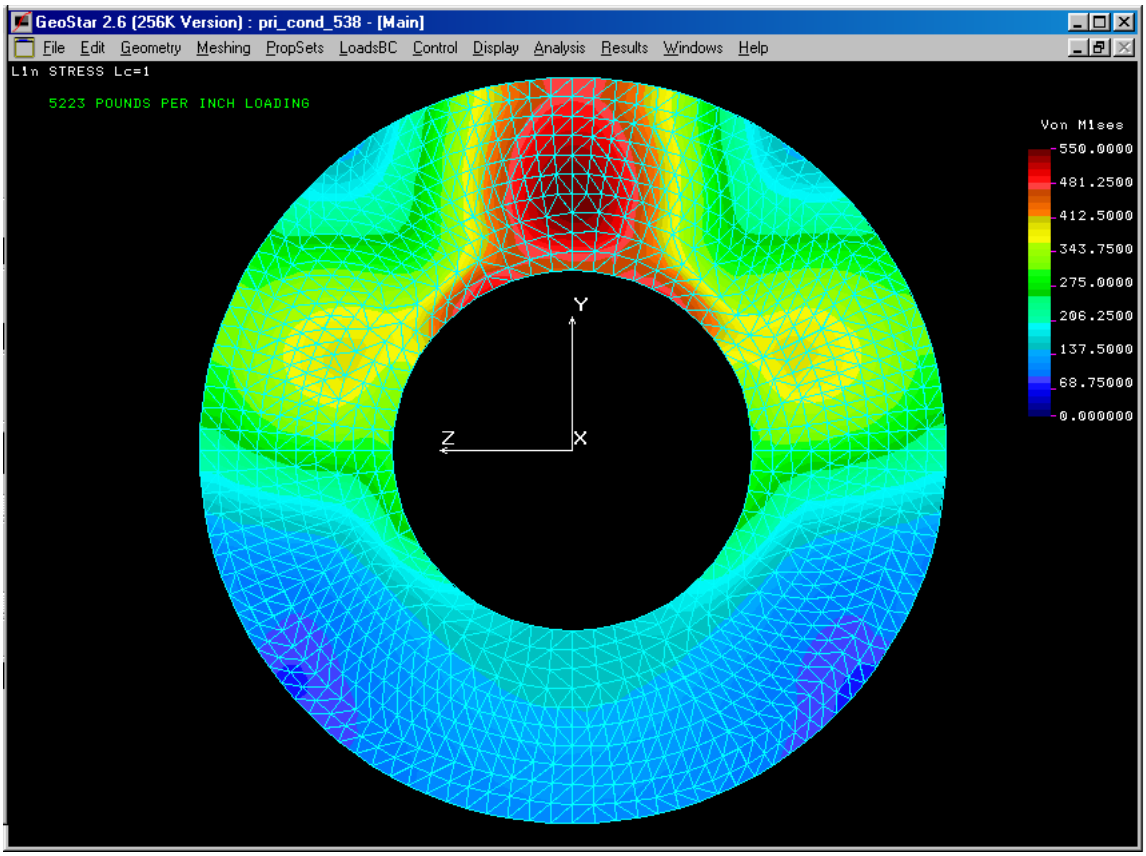

Figure 9 –

The cable analysis stress plot in Figure 9 shows a loading of 5,223 pounds per inch will cause a longitudinal splitting of the HV Kerite insulation layer of the conductors. With a safety factor of 3.0, the loading should be limited to 1,741 pounds. This means that the spaghetti pile with clamp mode impact (1883 pounds) or either plunging stalk mode impact can fail any of the cables.

A summary tabulation of plausible damage is shown in the following table:

location – water depth	Item	Plausible damage during retrieval operation from dropped "C" cable				
		stiff catenary laydown mode (mode 1)	hammerhead laydown mode (mode 2)	spaghetti pile mode without clamp (mode 3)	spaghetti pile mote with clamp (mode 4)	plunging stalk mode (mode 5)
1 - 450	12 inch POPCO	no	no	no	no	yes
1 - 450	"A" cable	no	no	no	yes	yes
1 - 450	"B" cable	no	no	no	yes	yes
2 - 1250	"A" cable	no	no	no	yes	yes
2 - 1250	"B" cable	no	no	no	yes	yes
2 - 1250	"D" cable	no	no	no	yes	yes
2 - 1250	20 inch oil emulsion	no	no	no	no	yes
2 - 1250	12 inch treated water	no	no	no	no	yes
2 - 1250	14 inch oil emulsion	no	no	no	no	yes
2 - 1250	12 inch sales gas	no	no	no	no	yes
3 - 1250	"E" cable	no	no	no	yes	yes
3 - 1250	12 inch gas	no	no	no	no	yes
3 - 1250	20 inch oil emulsion	no	no	no	no	yes

ExxonMobil

Santa Ynez Unit

Offshore Power System Repair: Amended Project
OPSR:A

Cable Retrieval Risk Assessment
(Analysis of Risk of Damage to Existing Components from a Dropped Cable During Retrieval)

Supplement 1: Shallow Water Addendum
(Supplementary findings Italicized)

October 2002

Prepared by:
PMBCI
Gene Pharr, PE

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Study Summary

PMBCI examined the risk of physical damage to the active SYU cables and pipelines from the dropping of the failed "C" cable with or without the recovery tools attached during retrieval from the seabed. The study evaluated two water depths and three locations: 1) seaward of the shelf break in about 450 feet of water depth and 2) at two gas pipeline crossings of the "C" cable west of the Harmony platform each in about 1250 feet of water depth. The study methodology included the following three steps: 1) analysis of the falling cable dynamics; 2) analysis of the collision impact dynamics and 3) estimation of pipeline or cable damage. As a result of the analysis, five cable laydown modes were examined and three were found to be plausible under study conditions.

A supplementary examination of damage potential at 300, 150, and 50-foot water depths was performed to consider plausible damage. The same five cable laydown modes were considered with the following summary findings:

1) Stiff Catenary Laydown – (Very shallow water only < 50 ft) [Not considered plausible]

This mode and the Spaghetti Pile Without Clamp mode (mode 3) converge to the same thing when the curl radius of the Spaghetti Pile is very long. In very shallow water this would be the case. The upper bound of kinetic energy for this case may therefore reasonably be taken as the same as mode 3.

2) Hammerhead Laydown – (Does not occur under assumptions used) [Not considered plausible]

This mode and the Spaghetti Pile With Clamp mode (mode 4) converge to the same thing when the curl radius of the Spaghetti Pile is very long. In very shallow water this would be the case. Although considered implausible at the 450 foot and higher water depths considered in the original study, this mode is indistinguishable from mode 4 in very shallow water and would occur. The upper bound of kinetic energy for this case may reasonably be taken as the same as mode 4 thereby eliminating the need for separate consideration.

3) Spaghetti Pile Without Clamp – (All water depths)

This mode, and mode 1 which is identical for very shallow water, will occur at the supplementary study water depths of 300, 150 and 50 feet. The kinetic energy at impact will be the same as for deeper study depths. The impact kinetic energy is the same as the falling cable reaches terminal velocity for transverse motion in a very short distance. The distance to reach terminal velocity is small with respect to even the shallowest supplementary study depth of 50 feet.

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4) Spaghetti Pile With Clamp – (All water depths)

This mode, and mode 1 which is identical for very shallow water, will occur at the supplementary study water depths of 300, 150 and 50 feet. The kinetic energy at impact will be the same as for deeper study depths. The impact kinetic energy is the same as the falling cable reaches terminal velocity for transverse motion in a very short distance. The distance to reach terminal velocity is small with respect to even the shallowest supplementary study depth of 50 feet.

5) Plunging Stalk – (Deep water only > ~400 ft)

For the base study this mode was considered as requiring a water depth of 400 feet or more to develop. The reason for this is best understood by considering the mechanism by which this mode develops. If an arbitrary length of cable is falling at an arbitrary angle, being neither perfectly horizontal nor perfectly vertical, it has a component of motion transverse to the cable and another longitudinal with respect to the cable axis. The longitudinal motion is trivial if the cable is nearly horizontal. The transverse motion becomes trivial as the cable axis approaches vertical. The hydrodynamic forces resisting these two motions are very different in character. The transverse drag forces can be very large and terminal velocity can be reached in less than one foot when cable submerged weight is the only driving force. The longitudinal drag force is very much smaller and a vertical segment may accelerate for approximately 100 feet to reach terminal velocity.

As the falling cable reaches lateral terminal velocity very rapidly, but it requires a considerably longer time (and distance) to reach longitudinal terminal velocity, then the axis of the falling cable will rotate from nearly horizontal to nearly vertical during this acceleration. This mode is also predicated on the assumption that a kink, defect, or point of local damage in the cable exists at the lower end of the developing plunging stalk. Sufficient falling time and falling distance exist for the original study water depths of 450 feet or more.

At the supplementary study depths of 300, 150, and 50 feet these conditions are not met.

At 50 feet the development of a plunging stalk cannot have proceeded significantly. The seabed impact geometry would closely approximate mode 3.

At 150 feet a shorter plunging stalk could develop but there would not be sufficient time and distance for it to reach longitudinal terminal velocity. It is estimated that a stalk of quarter the mass of that considered by the original study could reach one-third the original study velocity. This means that a developing plunging stalk in 150 feet of water might impact a target with approximately one thirty-sixth (2.8%) of the energy of a deep water plunging stalk.

At 300 feet, if the stalk length were one-third that of a deep-water plunging stalk and the impact velocity was two-thirds of terminal velocity then the impact kinetic energy would be 4/27ths (14.8%) of the deep-water plunging stalk.

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These reduced kinetic energy impacts were evaluated in the same way as the original deeper water cases and added to the tabulations below.

The plausible damage to either a pipeline or a power cable was determined using elastic collision impact analysis. The results of this analysis obtained the following conclusions:

a) None of the pipelines or submarine power cables can be damaged by stiff catenary laydown mode *at any water depth.*
b) None of the pipelines or submarine power cables can be damaged by the hammerhead laydown mode *at any water depth.*
c) None of the pipelines or submarine power cables can be damaged by the spaghetti pile without clamp laydown mode *at any water depth.*
d) None of the pipelines can be damaged by the spaghetti pile with clamp laydown mode *at any water depth.*
e) All of the submarine power cables can be damaged by the spaghetti pile with clamp laydown mode *at any water depth.*
f) All of the pipelines, *in water depths exceeding 450 feet* can be damaged by the plunging stalk mode. *At the shallow water depths considered by this supplement:*
    a. In 50 feet of water a plunging stalk mode cannot be expected to initiate.
    b. For the partially developed plunging stalk mode in 150 feet of water the force exerted on the target is 8.3 kips. As this is less than the 14.2 kip maximum safe load for the weakest of the pipelines, no pipeline damage from a partially developed plunging stalk mode impact will occur in 150 feet of water.
    c. For the partially developed plunging stalk mode in 300 feet of water the force exerted on the target is 19.2 kips. As this is more than the 14.2 kip maximum safe load for the weakest of the pipelines, but less than the 35.8 kip maximum safe load for the strongest pipeline, some of the pipelines could be damaged by a partially developed plunging stalk mode impact in 300 feet of water.
g) All of the submarine power cables can be damaged by the plunging stalk mode *at any water depth.*

As shown above, a plausible risk to the operating pipelines and power cables exists at each of the study locations, specifically in the deeper water. It should be noted that the spaghetti pile mode would more easily impact a long linear target such as the submarine cable. For the spaghetti pile with clamp or the plunging stalk modes to damage a pipeline or power cable, they would have to have a direct hit on the component. A tabular summary is provided *below to include the supplementary locations at 300, 150, and 50 feet of water.*

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A summary tabulation of plausible damage is shown in the following table:

location – water depth	Item	Plausible damage during retrieval operation from dropped "C" cable				
		stiff catenary laydown mode (mode 1)	hammerhead laydown mode (mode 2)	spaghetti pile mode without clamp (mode 3)	spaghetti pile mote with clamp (mode 4)	plunging stalk mode (mode 5)
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1 - 450	"A" cable	no	no	no	yes	yes
1 - 450	"B" cable	no	no	no	yes	yes
2 - 1250	"A" cable	no	no	no	yes	yes
2 - 1250	"B" cable	no	no	no	yes	yes
2 - 1250	"D" cable	no	no	no	yes	yes
2 - 1250	20 inch oil emulsion	no	no	no	no	yes
2 - 1250	12 inch treated water	no	no	no	no	yes
2 - 1250	14 inch oil emulsion	no	no	no	no	yes
2 - 1250	12 inch sales gas	no	no	no	no	yes
3 - 1250	"E" cable	no	no	no	yes	yes
3 - 1250	12 inch gas	no	no	no	no	yes
3 - 1250	20 inch oil emulsion	no	no	no	no	yes
4 - 300	*12 inch POPCO*	*no*	*no*	*no*	*no*	*no*
4 - 300	*"A" cable*	*no*	*no*	*no*	*yes*	*yes*
4 - 300	*"B" cable*	*no*	*no*	*no*	*yes*	*yes*
4 - 300	*"C" cable*	*no*	*no*	*no*	*yes*	*yes*
4 - 300	*12 inch treated water*	*no*	*no*	*no*	*no*	*no*
4 - 300	*20 inch oil emulsion*	*no*	*no*	*no*	*no*	*yes*
5 - 150	*12 inch POPCO*	*no*	*no*	*no*	*no*	*no*
5 - 150	*"A" cable*	*no*	*no*	*no*	*yes*	*yes*
5 - 150	*"B" cable*	*no*	*no*	*no*	*yes*	*yes*
5 - 150	*"C" cable*	*no*	*no*	*no*	*yes*	*yes*
5 - 150	*12 inch treated water*	*no*	*no*	*no*	*no*	*no*
5 - 150	*20 inch oil emulsion*	*no*	*no*	*no*	*no*	*no*
6 - 50	*12 inch POPCO*	*no*	*no*	*no*	*no*	*no*
6 – 50	*"A" cable*	*no*	*no*	*no*	*yes*	*no*
6 - 50	*"B" cable*	*no*	*no*	*no*	*yes*	*no*
6 – 50	*"C" cable*	*no*	*no*	*no*	*yes*	*no*
6 - 50	*12 inch treated water*	*no*	*no*	*no*	*no*	*no*
6 – 50	*20 inch oil emulsion*	*no*	*no*	*no*	*no*	*no*

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