United States Department of the Interior
Geological Survey
Pacific OCS Region
Los Angeles, California

OCS ENVIRONMENTAL ASSESSMENT

May 16, 1980

Operator Chevron, U.S.A., Inc.

Plan Type Exploration

Lease OCS-P 0205,

Block 46 N., 61 W.

Platform NA

Date Submitted April 17, 1980

Prepared by F. J. Schambeck, Oil and Gas Supervisor
Pacific OCS Region

Related Environmental Documents
Final EIS for OCS Sale No. 35
Santa Barbara Channel Oil and Gas Development EIS
Final EIS For OCS Sale No. 48

ENVIRONMENTAL ASSESSMENT

CHEVRON U.S.A., Inc.

AS OPERATOR
PLAN OF OPERATION (EXPLORATION)
OFFSHORE SANTA BARBARA COUNTY, CALIFORNIA

OCS-P 0205, WELL NO. 3

X. APPENDICES

Appendix 1.	A. Endangered and Threatened Species Clearance B. Biological Opinions regarding oil and gas development of the OCS in Southern California
Appendix 2.	Cultural Resource survey - a survey was not required for this lease.
Appendix 3.	Oil Spill Contingency Plan, OCS Pacific Region. This document was previously submitted to the USGS. Copies are on file in the Public Information Room of the USGS in Los Angeles, CA.
Appendix 4.	See Chevron's Environmental Report (Appendix 5) and U.S. Geological Survey District Geologist's input (Appendix 6) for pertinent maps and diagrams.
Appendix 5.	Non-proprietary copy of the Environmental Report and the Plan of Exploration
Appendix 6.	U.S. Geological Survey District Geologist's input
Appendix 7.	Review Comments and Related Correspondence from other Agencies and/or the Public

I. Description of the Proposed Action

The United States Geological Survey (USGS) is considering issuing a permit to Chevron U.S.A., Inc. to drill one exploratory oil and gas well on Federal Lease OCS-P 0205 approximately 12 miles (19 km.) offshore southwest of Ventura and 6.5 miles (10 km.) northeast of Anacapa island. Figures 1 and 2 of Chevron's Environmental Report (ER) show the location of the lease and the proposed location of the well on that lease (Appendix 5). The Lambert Grid Zone VI Coordinates for the well is listed on the appropriate Application for Permit to Drill (APD) in Chevron's Plan of Exploration (Appendix 5). Lease OCS-P 0205 is included within the Santa Clara Unit and, therefore, approval of the proposed well will require Secretarial level consideration.

A thorough discussion of the proposed project is contained in Section 1.0 "Introduction" and Section 2.0 "Description of Proposed Action" of the ER on pages 1 through 11 (Appendix 5). The certificate of coastal zone consistency appears as page 61 of the ER.

A description of the floating drilling vessel Glomar Coral Sea is given in Appendix A of the ER as well as the Plan of Exploration (Appendix 5).

II. Description of Affected Environment

This subject is discussed as Section 3.0 "Environmental Setting" on pages 11 through 52 of the Environmental Report (Appendix 5). Specifically, the geology of the area is covered on pages 12 through 18 of the ER. Additional information has been furnished by the USGS District Geologist in Los Angeles (Appendix 6).

Meteorology is discussed on pages 19 through 21 of the ER.

Physical oceanography is covered on pages 21 through 24 of the ER.

Other uses of the area are contained in various sections of the ER. These include commercial fishing, kelp harvesting, flora, and fauna which are included in Section 3.5 "On-site Flora and Fauna," pages 24 through 49. Refuges, preserves, marine sanctuaries, and related subjects are discussed in Section 3.6 "Environmentally Sensitive Areas," pages 49 through 62. Shipping, military use, small craft boating, sport fishing, and other mineral uses are contained in Section 3.7 "On-Site Uses of the Area," page 52.

No pipelines, cables, or ocean dumping activities exist in the area of proposed action.

The subject of socio-economic impacts is discussed in Sections 2.2 "Onshore Support and Storage Facilities," 2.3 "Personnel Requirements of Offshore, Onshore and Transportation Activities," and 2.4 "Routes and Frequency of Travel between Offshore and Onshore Facilities" on pages 5 and 6 of the ER. Also, Section 2.6 "Estimated Requirements for Major Supplies, Services, and Resources" on page

11 of the ER contains information on the services and supplies which will be required by the proposed exploratory drilling project. Due to the on-going nature of the oil business in the area, no increase in employment is expected to occur as a result of this project. As such, no increased unemployment would be expected following its termination. No measurable impact will result in the population and industry centers of Carpinteria and Port Hueneme which will serve as bases for goods and services. Public concern for the brown pelican has been made known due to the proximity of the drill site to Anacapa Island. This subject is highlighted in the Environmental Report in section 3.5 Flora and Fauna, particularly pages 29 through 40.

III. Environmental Consequences

This aspect of the proposed project is discussed in Section 4.0 "Assessment of Direct Effects on the Environment" on pages 53 through 61 of the ER (Appendix 5).

A. Geological Hazards

The subject of geologic hazards is adequately discussed in the input furnished by the District Geologist (Appendix 6). The hazard analysis conclusions are as follows:

> "Holocene sediments up to 23 m. thick consisting of unconsolidated silts amd clays overlie a disturbed zone that apears to be a possible Plio-Pleistocene slump deposit. The operator indicates that this zone caused no unusual problems during the drilling of well P-0205-2 (122 m. northwest of proposed site)... No evidence of shallow faulting in the vicinity of the proposed site was observed on the geophysical profiles... A possible seep occurs 670 m. west of the proposed site... An area of possible gasified shallow sediments occurs near the eastern boundary of the survey area about 1.5 km. from the proposed site."

B. Meterology

Only temporary limitation or suspension of various project activities may occur due to severe weather conditions. This is thoroughly covered in Chevron's Critical Operations and Curtailment Plan previously submitted and placed on file with USGS. Section 4.1(a) "Air Quality" on page 53 of Chevron's ER (Appendix 5) states that only minor, short-term impacts on air quality can be expected in the vicinity of the proposed drill sites.

C. Physical Oceanography

Sea temperature, currents, tides, sea state, and water depth are not expected to have any significant effect on the proposed exploratory drilling. Any short-term delays caused by high seas are discussed in the Critical Operations and Curtailment Plan.

The short-term, minor degradation of water quality which will result from NPDES permit discharges is discussed in Section 4.1(b) "Marine Environment" on page 54 of Chevron's ER (Appendix 5). The effects possible in the unlikely event of an oil spill are covered on page 55 of that document.

D. Other Uses of the Area

Impacts on other uses of the area will be minimal as discussed in Section 3.7 "On-Site Uses of the Area" on page 52 of the ER (Appendix 5).

The proposed drill site is located within the southerly "buffer zone" of the northbound sea lane, and shipping lanes pass to the north and south of this site. The U.S. Coast Guard has approved the proposed activity; notification of the temporary activity will be published internationally as a Notice to Mariners (Appendix B of the ER, Appendix 5). Justification for choosing this location for the proposed activity is given in section 2.0, Description of Proposed Action, pages 2 and 3 of the ER (Appendix 5).

The drilling vessel to be used for the proposed project will be equipped with all the aids to navigation as called for by 33 CFR 67.

E. Cultural Resources

Cultural resources are discussed in Section 3.8 "Archeological and Cultural Resources," on page 52 of the ER (Appendix 5). The Bureau of Land Management comments on cultural resources are found in Appendix 7. They recommended approval of the proposed activity.

F. Flora and Fauna

Various agencies have been contacted in reference to possible impacts on the flora and fauna present in the area of the proposed action. According to the National Marine Fisheries Service since the drilling will take place in the summer, there will be no affect on the gray whale. They did mention that the exploratory well site was located within the proposed Channel Island's sanctuary. NMFS concluded that they had no objection to the proposed action (Appendix 7). NMFS has studied the question of possible impact on certain marine mammal species. In their September 15, 1979 Endangered Species Act, Section 7 consultation on OCS oil and gas projects (Appendix 1), NMFS stated that, "... the identified activities are not likely to jeopardize the continued existence of any of the endangered or threatened species in question."

The Bureau of Land Management (Appendix 7) stated: "We have found no significant impacts on biological resources... We recommend approval of the Exploration Plan and Environmental Report."

U. S. Fish and Wildlife Service reviewed the proposed project and has no objections (Appendices 1 and 7).

In addition, representatives from Chevron's Environmental Section and USGS met with staff members of the California Coastal Commission and a brown pelican expert on April 15, 1980 to discuss the possible impacts of this exploratory project on the Anacapa Island pelican population. A second meeting is scheduled before the Coastal Commission Hearing on OCS-P 0205-3 to decide on a drilling date which would have the least effect on the breeding populations.

Based upon the information received from the operator, National Marine Fisheries Service, Bureau of Land Management, and Fish and Wildlife Service (Appendices 1 and 7), we have determined that approval of the proposed action will not affect any endangered or threatened species or critical habitat.

G. Socio-Economics

The negligible socio-economic impact which would result from the proposed exploratory drilling is discussed in Section 2.3 "Personnel Requirements of Offshore, Onshore and Transportation Activities" on page 5 of the ER (Appendix 5). No unusual demand for goods and services will be expected to occur as a result of the proposed action. This subject is covered in Section 2.6 "Estimated Requirements for Major Supplies, Services and Resources" on page 11 of the ER (Appendix 5).

No onshore support facilities will be built or enlarged as a result of this exploratory drilling project. As such, no discussion of this subject is required. The only environmental impacts which are to be expected from the project are temporary, localized degradations of offshore air and water quality which are discussed in Section 4.5 "Unavoidable and Irreversible Impacts" on page 60 of the ER (Appendix 5).

H. Accidents

Discussion of possible, but not probable, minor and major accidents which could result in a hydrocarbon spill and the associated impacts is contained in Section 4.1(b) "Marine Environment" on pages 54 through 56 and Section 4.5 on page 60 of the ER (Appendix 5). Chevron's Oil Spill Contingency Plan, which was previously submitted to USGS, adequately outlines prevention, control, and clean-up measures which will minimize any potential impacts. These measures are summarized in Section 2.1 "Oil or Waste Material Prevention, Reporting and Cleanup" on pages 3 and 4 of the ER.

IV. Alternatives to the Proposed Action

One alternative to drilling the exploratory well on OCS-P0205 is disapprov-

ing the activity as proposed. Under existing law and terms of the lease, the Department of the Interior must respond to legitimate applications to drill on valid leases providing all terms and conditions are met. In light of the above, the Nation's ugent need for domestic oil and gas, and in consideration of the minimal impacts posed to the environment by this proposed action, disapproval is not considered to be viable alternative.

Another alternative is approving the activity subject to specific operating stipulations; such as:

Relocation of the proposed drill site to a different part of the lease. Based an available geologic data, no increase in the possibility of locating hydrocarbons or decrease in potential hazardous conditions would result. No difference in envirormental impact would result from relocation.

V. Unavoidable Adverse Environmental Effects

There are some adverse environmental effects which may, or will, occur as a result of drilling the proposed exploratory wells. These include the following:

- Short-term disturbance of bottom sediment;
- Minor alteration of bedrock structure;
- Short-term increase in local turbidity, with associated effects on water quality and marine biota;
- Minor short-term decrease in local (offshore) air quality;
- Short-term preclusion of the area from competing uses such as commercial and sport fishing;
- Possible minor temporary disruption of normal activities of marine mammals;
- Possible temporary disruption of use/activities and resources due to oil spills.

All practical measures to eliminate, or at least decrease, these effects will be taken.

VI. Controversial Issues

As noted in Section III F. consideration of possible impacts on the brown pelican from this proposed well has been made. At this time information received from the operator, National Marine Fisheries Service, U. S. Fish and Wildlife Service, and the Bureau of Land Management indicates that no impact is expected. The California Coastal Commission (CCC) will consider this matter in detail in their staff report for the CCC consistency concurrence hearing scheduled in June 1980.

It is also noted that the subject well is located slightly within the proposed Channel Islands Marine Sanctuary now under study.

VII. Finding of No Significant Impact (FONSI)

The USGS has examined the impacts of the proposed action, one exploratory well on OCS-P 0205 in the preceding pages of the environmental assessment. The following summary shows the evaluation of these impacts against each of the parameters listed for "significance" in 40 CFR 1508.27 and the background impact reference for our reasons of determining the no-impact or no-significant-impact category.

Key
NI - No impact
NS - No significant impact

CEQ Parameter 40 CFR 1508.27(b)	Severity of Impact Level/Degree of Significance	EA Page and Paragraph Reference
1. Beneficial and/or adverse effects.	NS	Pages 2-4
2. Public health & safety.	NS	Page 4
3. Unique characteristics of the geographical area.	NI	
4. Effects highly controversial.	NI	
5. Highly uncertain effects or unique or unknown risks.	NS	Appendix 1
6. Establishes precedent for future actions or is a decision in principle about future action.	NI	
7. Assessment of cumulative actions and impacts thereof. Note 400 CFR 17.	NS	Page 5
8. Effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural historical resources.	NI	
9. Effects on endangered or threatened species or their habitat that have been determined to be critical under the Endangered Species Act of 1973.	NS	Page 3
10. Threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.	NI	
11. Other related NEPA and environmental documents	Documents available:	Cover sheet

VIII. Environmental Assessment Determination

In my opinion, approval of Chevron's proposed action involving the drilling of one exploratory well on OCS-P 0205, described in this environmental assessment, does not constitute a major Federal action significantly affecting the quality of human environment in the sense of NEPA section 102 (2)(c). In rendering this opinion, I have given special consideration to 30 CFR 250.34-4 (compliance with NEPA).

F. J. Schaumbeck — 5/16/80

Oil and Gas Supervisor, Pacific Region — Date

I determine that preparation of an environmental impact statement is not required.

R Y Stone — 5/16/80

Conservation Manager, Pacific Region — Date

IX. References

See references cited in Chevron's Environmental Report (Appendix 5), the cover page of this Environmental Assessment, and the appendices.

X. Appendices

APPENDIX 1

A. Endangered and Threatened Species Clearance

B. Biological Opinions

1. Opinion Regarding Oil and Gas Exploration and Certain Activities in Southern California from the U.S. Fish and Wildlife Service, November 1, 1979

2. Opinion discussing development of OCS Oil and Gas Reserves in the Southern California Bight from the National Marine Fisheries Service, September 25, 1979

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

An environmental review for the following activity has been conducted in accordance with Section 402.04 of Part 402, Chapter IV. Endangered Species Act of 1973 (16 U. S. C. 1531 et. seg.):

Chevron U. S. A., Inc.
As Operator
Plan of Operation (Exploration)
Offshore Santa Barbara County, California
OCS-P 0205, Well No. 3

The following determination has been made for this activity to identify if it may jeopardize the existence of any endangered species or result in the destruction or adverse modification of critical habitat.

X 1. The above activity will not jeopardize the continued existence of any endangered species or result in the destruction or adverse modification of critical habitat.

____ 2. The above activity may jeopardize the continued existence of an endangered species or result in the destruction or adverse modification of critical habitat and a consultation is recommended with U. S. Fish and Wildlife Service and/or National Marine Fisheries Service.

F. J. Schambeck
Oil and Gas Supervisor

6/16/80
Date

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

NMFS Bio. Opinion
Sale-48 Prior

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Washington, D.C. 20235

NOTED

F6:TRL

SEP 25 1979

Mr. J. S. Cragwall, Jr.
Acting Director
Geological Survey
U.S. Department of the Interior
Reston, Virginia 22092

Dear Mr. Cragwall:

This letter responds to your May 18, 1979, request for formal consultation pursuant to Section 7 of the Endangered Species Act, as amended, regarding the possible impact to listed species from Outer Continental Shelf (OCS) oil and gas exploration activities in southern California. The enclosed biological opinion concludes that the identified activities are not likely to jeopardize the continued existence of listed species.

The opinion recommends that the Geological Survey allow the utilization of offshore storage and treatment facilities only under the most stringent safety guidelines possible and only when no other alternatives are available.

I look forward to continued cooperation in future consultations.

Sincerely yours,

for Terry L. Leitzell
Assistant Administrator
for Fisheries

Enclosure

Endangered Species Act

Section 7 Consultation

Agency:	United States Geological Survey
Activity or Program:	Development of Outer Continental Shelf Oil and Gas Reserves in the Southern California Bight
Consultation Conducted by:	National Marine Fisheries Service, Regional Director, Southwest Region

Summary:

By memorandum of May 18, 1979, the Director of the Geological Survey (GS) requested formal consultation on all Outer Continental Shelf (OCS) oil and gas exploration, development, and production activities in the Southern California Bight according to regulations promulgated under Section 7 of the Endangered Species Act of 1973, as amended. To assist me in responding to the request, a team was appointed consisting of representatives from National Marine Fisheries Service (NMFS) Southwest Region and Central Office. Although not participating as team members, the Southwest Fisheries Center and the Northwest and Alaska Fisheries Center were helpful in providing information used in the formulation of our biological opinion.

The team met June 5-7, 1979, with representatives of GS and the Fish and Wildlife Service consultation team to discuss ongoing and proposed GS activities in the Southern California Bight. These activities are the result of development of tracts leased in pre-lease sale 35 offerings, lease sale 35, and lease sale 48.

After reviewing available information and discussing effects of ongoing and proposed activities with GS, the consultation team recommended that GS allow the utilization of offshore storage and treatment (OS&T) facilities only under the most stringent safety guidelines possible and only when no other alternatives are available. The team also recommended that GS work with NMFS, Fish and Wildlife Service and any other concerned agencies to establish a program to monitor cumulative impacts of OCS oil and gas development on the threatened and endangered species in the area. The team concluded that the identified activities are not likely to jeopardize the continued existence of any of the endangered or threatened species in question.

Proposed Action

The project area includes the U.S. contiguous zone from Point Conception to the California-Mexico border. Five groups of tracts within the project area have been identified as potential oil and gas producing areas. These areas are the Santa Barbara Channel, the Santa Rosa Ridge, Santa Barbara Island, San Pedro Bay, and Tanner-Cortes Bank.

There are currently 15 platforms located in the Santa Barbara Channel, eight in State waters and seven in Federal waters. The majority (10) are located southwest of Carpenteria. The other five are located in the west end of the Channel; four are in State waters between Coal Oil Point and Point Conception, and one, the Hondo platform, is in Federal waters approximately five miles south of Refugio Cove. Forty subsea completions have been installed in the Santa Barbara Channel, all in State waters. An OS&T is planned for installation near Hondo platform as soon as it receives Environmental Protection Agency approval. The OS&T will separate the crude oil from the oil-water emulsion that comes from the wells. The crude oil will be stored and water will be piped back to the platform for injection into the formation. At regular intervals, depending on the rate of production, the OS&T will transfer the crude oil to shuttle tankers for transport to onshore refineries.

The only other existing platforms in the Southern California Bight are two in State waters south of Huntington Beach. There are, however, four platforms planned for installation in late 1979. Two of these will be placed in the east end of the Santa Barbara Channel and two will be placed in San Pedro Bay. There are no platforms or subsea completions in any of the other groups of tracts.

GS has estimated that approximately 371 wells will have to be drilled to adequately explore leased tracts for oil deposits. Exploration of leased tracts is currently being conducted by four drilling ships. Since there are no plans to bring in additional exploration vessels, the necessary exploratory wells will be drilled without an increase in the current overall level of activities related to exploration during the course of the project. If more drilling ships are required in order to speed up the exploration process, the cumulative environmental impacts would probably remain the same, but the increased level of activity in the short term would be more likely to have an immediate adverse impact on the species involved. An additional 87 platforms, 86 subsea completions, and over 1,000 miles of pipelines have been estimated to be required to fully develop these offshore fields. The length of time necessary for this development is 25 years and the total life of the project is estimated to be 40 years.

The distribution of the oil fields in the OCS appears to be patchy. The subsea completions are expected to be concentrated around the deep water (300m.) oil fields at the west end of the Santa Barbara Channel, in the southern half of the San Pedro Bay group of tracts, and around the Tanner-Cortes Bank. Where ecologically and economically feasible, pipelines will be used to bring crude products to existing refineries on shore. When pipelines prove infeasible, OS&T's coupled with tanker and barge transportation will be utilized. GS estimates that four OS&T systems may be required during the development of the Southern California Bight oil and gas reserves.

Endangered Species Present in the Project Area

The species of concern in the consultation were as follows:

blue whale (Balaenoptera musculus)
fin whale (B. physalus)
sei whale (B. borealis)
humpback whale (Megaptera novaeangliae)
sperm whale (Physeter catadon)

gray whale (Eschrictius robustus)
right whale (Eubalaena glacialis)
Pacific ridley turtle (Lepidochelys olivacea)
green sea turtle (Chelonia mydas)
loggerhead turtle (Caretta caretta)
leatherback turtle (Dermochelys coreacea)

All of these are either casual visitors or migrants through the Southern California Bight.

The North Pacific population of blue whales is approximately 1,700 individuals. A significant portion migrates through the project area from May through July on their way to their summer feeding grounds and again from September to February during their return migration to their wintering grounds in the warm waters off southern Baja California. The probable migratory pathway and distribution of the blue whale in the Southern California Bight has been described as generally offshore, very near or outside of the Channel Islands, and along the Santa Rosa Ridge to Tanner-Cortes Banks. While they are frequently observed around the Channel Islands, they are seldom seen from shore.

The North Pacific population of the fin whale numbers approximately 17,000 individuals. Fin whales may be found west of the Channel Islands year round. They are, however, most abundant in late spring or early summer.

Sei whales in the North Pacific number about 9,000 whales. Little is known about their migratory habits. Sei whales may be found off Southern California, west of the Channel Islands during the late summer or early fall. There is also a possibility that these whales may be feeding in the southern California Bight.

Sperm whales are the most abundant of the large whales in the North Pacific, numbering about 300,000 individuals. They are common in the project area from April until the middle of June and again from late August to mid-November, indicating a northward migration in the spring and return migration in the fall. The boundaries of the migratory path are not well known but probably are quite broad.

The humpback whale is one of the most severely depleted of the whale stocks. The North Pacific population is estimated at approximately 850 individuals. A portion of this population migrates from Alaska south to its calving and breeding grounds off the western coast of Baja California, where it spends the winter months. During the summer these whales may be found in any portion of their range.

The most prominent whale occurring in the Southern California Bight is the gray whale. The current population is estimated at about 15,000 whales. Its rather narrow migratory path along the California coastline makes it the most frequently observed endangered whale as well as the species most likely to be adversely impacted as a result of OCS development. Essentially, the entire population of gray whales migrates through the project area from late September through December on its southern migration to the calving and breeding grounds in Baja California, and again on its northward migration between February and June. Juvenile gray whales have been known to take up residence for extended periods in the kelp beds along the coast and around the Channel Islands, in order to feed on the crustaceans living in the kelp canopy.

The most depleted species stock is the North Pacific population of Pacific right whales which numbers only about 220 individuals.

Individuals of all four species of listed sea turtles may be found in the project area. They are probably transient portions of their respective populations feeding at the northern limits of their ranges. They are not known to nest here. There is no historical evidence of any nesting beaches north of Guerro Negro Lagoon, Baja California Sur, Mexico, and there are no known nesting beaches remaining on the Baja Peninsula.

Probable Impacts

The most probable source of adverse impacts on endangered species in the project area are oil spills from various sources; increased vessel traffic due to the greater number of platform support vessels as well as increased tanker and barge traffic; and increased levels of noise resulting from exploration, construction, and production activities.

The severest impacts are likely to result from a catastrophic event resulting in a large oil spill. Such events include blowouts, the sinking of or breaking up of tankers, and accidents involving OS&T's. The probability of an oil spill occurring during the life of this project has been estimated by GS to be 100%. In the light of this high probability we recognize that the availability of oil spill containment and clean-up equipment reduces the likelihood of severe impacts resulting from a spill when it does occur.

There are few data available pertaining to the effects of oil on endangered species. Some anecdotal information indicates that gray whales swim through naturally occurring oil slicks in the Santa Barbara Channel. There is no way to access the long term or chronic effects of contacting oil. Some of the adverse effects which could result from contact with an oil spill include eye damage, inhalation of toxic fumes or aerosols, ingestion of oil, and the fouling of baleen plates.

The species most likely to be impacted by an oil spill is the gray whale. If a large spill occurred during the whales migration, a significant portion of the population could encounter the spill, and possibly suffer one or more of the adverse effects listed above.

A catastrophic spill would have the most severe impact on the North Pacific population of right whales. The probability of right whales encountering such a spill is small, because their population is so depleted. Although there has not been a documented sighting of a right whale in the project area since 1956, the elimination of just a few individuals could result in the loss of the recruitment of an entire season.

We are not aware of any information on the effects of oil on sea turtles. Presumably they would be susceptable to the same sorts of ill effects as the cetaceans. Since the few sea turtles occurring in the project area are feeding at the northern extent of their range and since there are no nesting beaches in or near the project area, the impacts of a spill on the sea turtle populations is expected to be slight.

OS&T's appear to represent a threat to the environment because they require unnecessary handling of oil at sea. The OS&T planned for installation near the Hondo platform in the Santa Barbara Channel will be located outside of the three-mile territorial sea where it will encounter the full force of the severe winter storms that occur in the Channel. Although the mooring system is designed to withstand a hundred year storm, should the the OS&t break loose it would probably ground and break up, resulting in a spill of up to 200,000 barrels of oil. There is also the threat of a collision between the OS&T and the shuttle tankers that it would load. Even though the possibility of such accidents is remote, the threat of such accidents could be eliminated by utilizing onshore storage and and treatment facilities coupled with nearshore marine terminals for shuttle tankers.

Increased vessel traffic increases the probability of the occurrance of whale-vessel collisions. Every year a few whales wash ashore with definite signs of injury resulting from confrontations with large vessels. We do not know how many whales are killed or seriously injured in this manner each year nor do we know the impact of this mortality on endangered species populations.

The gray whale is most likely to be impacted by increased vessel traffic because it is most abundant endangered species in the project area and its migratory route coincides with traffic lanes in the Southern California Bight. Vessel traffic could be one of the stimuli pushing the gray whale migration offshore.

Noise in the Southern California Bight issues from several sources, including commercial vessel traffic, pleasure craft traffic, fishing operations, military operations and OCS mineral development. There are no data available that indicate the relative amounts of noise contributed by each of these sources. Therefore, we are not able to predict what the impacts of noise from OCS oil and gas development on endangered species will be.

However, increased activities will increase noise levels by some degree. Our concern is that noise levels in the Southern California Bight may reach a threshold resulting in the abandonment of migratory routes and feeding grounds by endangered whales.

Estimates prior to the mid-1960's indicated only 5-10% of the gray whale population migrated along offshore routes. Recent observations indicate a higher percentage of the population is utilizing offshore routes around the Channel Islands. The reasons for this apparent offshore shift are not clear. The increasing population, currently 15,000 whales, up from 3,000 in 1952, may be expanding the migratory path seaward as a result of population pressures, or the gray whales may be migrating further offshore in an effort to avoid noise from human activities which have increased substantially in the last 20 years.

In October, 1978, humpback whales were observed feeding on Northern anchovies over the Santa Rosa Ridge. Additional feeding areas may be found around the Tanner-Cortes Bank. If noise levels reach a threshold the whales may abandon these areas, thus diminishing available feeding areas and increasing competition on remaining feeding grounds.

Conclusions:

Based on current population estimates and data on distribution of species, NMFS concludes that development of OCS oil and gas reserves in the Southern California Bight is not likely to jeopardize the continued existence of any of the endangered species under consideration.

With the exception of the gray whale, endangered cetaceans are widely distributed in the North Pacific. Their distributions serve to protect them from being inundated by activities in a relatively small portion of their ranges.

The gray whale is the species most likely to be impacted by this project because of its biannual migration through the project area. This population is recovering from heavy exploitation by commercial whalers and is approaching pre-exploitation levels. Based on this resiliency and the fact that it is a migrant through the area and not a resident, NMFS has determined that the continued existence of this species is not likely to be jeopardized.

The right whale population, if impacted by the project, is likely to suffer severely. However, the small population is widely distributed and no individuals have been reported in the project area in over 20 years. Therefore, the probability of this project jeopardizing this species is small.

The distribution and migration of Pacific ridley, green, loggerhead, and leatherback sea turtles in the eastern North Pacific is poorly known. There are no nesting beaches in the project area nor are there any nesting beaches outside the project area that would be impacted by oil from a catastrophic spill in the project area. The sea turtles found in the project area are apparently feeding near the northern limits of their ranges and, although a few individuals of each species may suffer impacts from the project, the project is not likely to jeopardize the continued existence of any of the endangered sea turtle populations.

Recommendations:

We recommend that GS establish a program to monitor the impacts of OCS oil and gas development in the Southern California Bight. The purpose of this program would be to centralize information already available to various offices within GS, so that other agencies could have access to that information. The type of information we are interested in includes, among other things, location and cause of chronic pollution, results of exploratory activities so that we may anticipate the development of areas which may be important to endangered species, and any reports on behavior of animals around drill-ships and platforms.

We recommend that GS cooperate with NMFS in the placement of observers aboard exploratory vessels and platforms when in the opinion of the Regional Director, Southwest Region, NMFS the placement of an observer may yield data useful in the determination of impacts of oil and gas development on endangered species. The Southwest Region currently reviews Environmental Reports for plans of exploration and development and could as part of the review consider the benefit of placing an observer on board a particular vessel or platform without consuming much additional time. Should the Regional Director decide to place an observer aboard a vessel or platform we would expect GS assistance in providing support.

We recommend OS&T's be utilized only when onshore storage and treatment facilities and near shore marine terminals are not feasible. NMFS is concerned with the use of OS&T's. OS&T's require extra handling of oil while at sea thus increasing the chance of a spill that could impact endangered species. We further recommend that any OS&T's that are installed be closely monitored by GS and that GS in consultation with Coast Guard — and NMFS develop and implement strict procedural guidelines, for the safe transfer of oil from the OS&T to shuttle tankers, prior to the initiation of the proposed operations. These guidelines should include, among other things, criteria for the cessation of transfer of oil during high seas or inclement weather.

We recommend that GS contact the Regional Director, Southwest Region, NMFS to initiate development of a monitoring program and OS&T operational guidelines.

Finally, we recommend that consultation be reinitiated in the event that studies, being funded by the Bureau of Land Management, on the effects of noise and oil pollution on marine mammals produce information relevant to this opinion, or data indicating potential adverse impacts on listed species of whales and sea turtles become available, or should another species in the project area be listed as threatened or endangered.

FWS Bio. Opinion
Sale 48 ; Prior

United States Department of the Interior

FISH AND WILDLIFE SERVICE
WASHINGTON, D.C. 20240

In Reply Refer To:
FWS/OES 375.419
USGS 79-2

NOV 1 1979

Memorandum

To: Director, U.S. Geological Survey

From: acting Director

Subject: Biological Opinion Regarding Oil and Gas Exploration and Certain Development Activities in Southern California

On April 24, 1979, the Fish and Wildlife Service (FWS) sent a memorandum to the U.S. Geological Survey (GS) requesting initiation of consultation under Section 7 of the Endangered Species Act of 1973, as amended, for Outer Continental Shelf (OCS) oil and gas exploration, development, and production activities on tracts in the OCS Sale No. 35 area (Southern California). By memorandum dated May 18, 1979, (Attachment 1) GS requested consultation with the FWS and expanded the scope of the request to include all lease sale activities off Southern California not previously subject to Section 7 consultation.

In response to this request, I appointed a consultation team by memorandum dated May 30, 1979, (Attachment 2) to assist me in determining whether the subject exploration, development, and production activities off Southern California are likely to jeopardize the continued existence of Endangered or Threatened species or result in the destruction or adverse modification of Critical Habitat of such species.

The team was comprised of Nancy Sweeney, Brian Kinnear, Steve Tonjes, and David Watts, Office of Endangered Species, Washington, D.C.; and Ralph Swanson, Sacramento Area Office, FWS.

On June 5 and 6, 1979, the FWS consultation team and National Marine Fisheries Service (NMFS) representatives met with GS representatives in Los Angeles, California, to discuss the exploration, development, and production activities in Southern California and their impact on Threatened and Endangered species within the area. A list of the participants is attached (Attachment 3).

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

The consultation team reviewed reports, publications, and correspondence from knowledgeable sources on the species considered in this consultation identified below, and numerous telephone contacts were made with other experts. Information contained in the Final Environmental Impact Statements (FEIS) for OCS Sales 35 and 48, Southern California, was carefully evaluated to ascertain the effects of the exploration activities on listed species and their habitats. In addition, development plans were reviewed for seven development tracts. Copies of pertinent records and documents are included in an administrative record maintained at the Office of Endangered Species and are incorporated herein by reference.

Project Description

GS has primary regulatory authority for exploration, development, and production activities in the OCS after the issuance of the leases by the Bureau of Land Management (BLM).

Exploration of the OCS requires certain onshore support facilities including office space, helicopter and/or fixed-wing aircraft facilities, docks for boating activities, and supply bases. Due to the uncertain nature of oil exploration, companies are generally unwilling to construct new facilities to support exploration activities and usually prefer to utilize existing areas and facilities. At present, the numerous onshore facilities in Southern California being used for exploration activities will support any proposed new exploration.

Therefore, the biological opinion is based on the assumption that existing onshore facilities will continue to be utilized for exploration activities. Should the use pattern of these facilities be changed or additional onshore facilities be required which may affect listed species or their habitats, GS must reinitiate consultation.

Development and production (development/production) activities planned for seven specific tracts are included in this consultation. In the future, GS will review each development/production plan to insure compliance with Section 7.

Development/production plans include the location for the platform placement, possible transportation routes (pipelines and/or barges, tankers), and identification of specific onshore facilities and their intended use, i.e. storage, refinement, etc. These plans have more specific information than do the exploration plans.

Your request for consultation included the following species: bald eagle (Haliaeetus leucocephalus), American peregrine falcon (Falco peregrinus anatum), southern sea otter (Enhydra lutris nereis), brown pelican (Pelecanus occidentalis), California least tern (Sterna albifrons browni), light-footed clapper rail (Rallus longirostris levipes), Aleutian Canada goose (Branta canadensis leucopareia), San Clemente loggerhead shrike

(Lanius ludovicianus mearnsi), San Clemente sage sparrow (Amphispiza belli clementeae), Smith's blue butterfly (Shijimiaeoides enoptes smithi), San Clemente broom (Lotus scoparius ssp. traskiae), San Clemente Island bush-mallow (Malacothamnus clementinus), San Clemente Island larkspur (Delphinium kinkiense), San Clemente Island Indian paintbrush (Castilleja grisea), olive Ridley sea turtle (Lepidochelys olivacea), green sea turtle (Chelonia mydas), loggerhead sea turtle (Caretta caretta), and leatherback sea turtle (Dermochelys coriacea).

After reviewing the proposed activities and biological data on the above species, we have determined that the following species will not be affected because they are not known to occur in the impact area from the proposed exploration and the specific development/production activities. They are the Aleutian Canada goose, San Clemente loggerhead shrike, San Clemente sage sparrow, Smith's blue butterfly, San Clemente broom, San Clemente Island bushmallow, San Clemente Island larkspur, and San Clemente Island Indian paintbrush. Therefore, they are not considered in this consultation.

The sea turtles listed above were also included in your consultation request. The NMFS has jurisdiction over Endangered and Threatened sea turtles while they are in the aquatic environment; they are under the jurisdiction of the FWS onshore. Since these four sea turtles have no known nesting sites within the proposed project area, we defer consultation to NMFS.

We feel that two additional species should be included in this consultation: El Segundo blue butterfly (Shijimiaeoides battoides allyni) and salt marsh bird's beak (Cordylanthus maritimus ssp. maritimus).

The following species are included in this biological opinion: El Segundo blue butterfly, bald eagle, American peregrine falcon, southern sea otter, California brown pelican, California least tern, light-footed clapper rail, and salt marsh bird's beak.

After evaluating the proposed activities and their effects on the following eight species, it is my biological opinion that these activities, as proposed, are not likely to jeopardize the continued existence of the species.

A summary of the biological data and considerations of the consultation team are provided for each of the eight species.

El Segundo Blue Butterfly (Shijimiaeoides battoides allyni)

The El Segundo blue butterfly is an insect endemic to the Southern California coastal strand. This species was listed as Endangered on June 1, 1976. Critical Habitat has not yet been designated for this species.

This butterfly is limited to two small remnants of the once extensive El Segundo Dunes system (36 square miles) extending from the Los Angeles Airport to San Pedro, in Los Angeles County. Its current distribution is limited to dunes adjacent to the Los Angeles Airport and a small parcel of commercially owned land on the Chevron oil refinery in El Segundo.

The El Segundo blue is dependent upon coastal dune habitat which contains two species of buckwheat (Eriogonum) that provide the butterfly with nesting, feeding, and resting habitat. The conversion of this essential dune habitat to urban developments threatens the continued survival of this species.

Onshore activities such as the placement of pipelines and the location of refineries, present the greatest threat to the destruction of this species' habitat. However, since existing onshore facilities are to be used, proposed oil and gas exploration or development/production activities are not expected to jeopardize the continued existence of this species.

Bald Eagle (Haliaeetus leucocephalus)

The bald eagle was listed as Endangered in 43 of the contiguous 48 States including California, and Threatened in the remaining five States on February 14, 1978. Critical Habitat has not yet been determined for this species. This large bird occurs from Alaska to northern Mexico and lives in association with aquatic habitats such as lakes, large rivers, and estuaries.

Bald eagles nested on the Channel Islands until the mid 1950's. Reproductive failure, probably due to pesticide contamination of its food sources, and habitat losses have been the chief causes for the eagle's decline and present status. The reintroduction of the bald eagle to the northern Channel Islands is planned for the future. In addition, Santa Catalina is also being considered for eagle hacking within the near future.

Successful reintroduction of bald eagles to their former nesting range in California will result in the increased numbers utilizing coastal areas.

The potential impacts to the eagle from proposed oil and gas exploration and development/production activities are disturbance to its nesting areas resulting from onshore activities and the possibility of an oil spill reaching the coast and subsequently oiling the eagles and/or contaminating the food source. Oiled eagles returning to the nest to incubate could contaminate the eggs or nestlings. Toxicological studies have indicated that even small amounts of oil applied to an egg are toxic to the embryo.

Recent information indicates that bald eagles may be wintering on the Channel Islands. Since no onshore development is proposed for the Islands, the impacts from an oil spill to wintering eagles would be limited to the contamination of the eagle's food source or feather contamination of individual eagles.

However, the present concentrations of California's eagle population are located along inland lakes and rivers, and are removed from the impacts of coastal oil and gas development activities.

American Peregrine Falcon (Falco peregrinus anatum)

The American peregrine was listed as Endangered on June 2 and October 13, 1970, and a portion of the peregrine's Critical Habitat was designated in the August 11, 1977, Federal Register. This subspecies once occurred widely through much of North America from southern Alaska and Canada, to northern Mexico. This peregrine is migratory in the northern portion of its breeding range, but exhibits less migratory behavior toward the southern portion of its range. In California, the species once occurred throughout the State where cliff faces and steep rocky slopes provided suitable nesting locations. The mountains, sea coast, and Channel Islands historically harbored significant populations.

The species has suffered a drastic decline throughout its range primarily due to reproductive failure resulting from pesticide contamination of its avian prey. Currently, less than fifty known pairs remain in California and the species has been extirpated from the Channel Islands.

Several historic eyries are located along the coast from Point Conception south to the Mexican border. At present, however, only one active nest site, located west of Santa Barbara, exists along this reach of the coast. Considerable effort is currently being expended toward recovery of this species, chiefly through captive propagation and reintroduction. The Channel Islands include several sites where reintroduction efforts may eventually be made. Natural expansion of American peregrines is anticipated with the decreased usage of residual pesticides.

The falcons prey heavily upon coastal birds. The potential impacts on the American peregrine falcon from oil and gas exploration and development/ production activities are identical to those on the bald eagle.

At this time, there are no proposals for new onshore facilities along the Southern California coast, particularly in the vicinity of Point Conception. Should additional facilities be proposed, GS must reinitiate Section 7 consultation. The Oilspill Risk Analysis, prepared by GS for the Southern California (Proposed Sale 48) Outer Continental Shelf Lease Area, arbitrarily divides the California coast into segments and projects the probability of oil impacting these segments from various offshore lease locations. According to this analysis, the probability of an OCS related oil spill reaching the vicinity of the one active peregrine nest is less than ten percent. Since the Critical Habitat is outside of the area considered in this consultation, that habitat will not be destroyed or adversely modified by the proposal.

Transient American peregrines may be found in small numbers along the coast, especially during migration and winter periods. We recommend that the majority of the estuaries, bays, lagoons, and rivers have available cleanup equipment to close off these areas within two hours of a spill occurrence. This action would minimize the impact of the oil, should it reach the shore.

Southern Sea Otter (Enhydra lutris nereis)

The southern sea otter was listed in the Federal Register as Threatened on January 14, 1977. Critical Habitat has not yet been determined for this species.

Historically, the southern sea otter was found in relative abundance along the California coast. The principal population decreases resulted from commercial harvest by fur traders during the 1800's, and the population was brought to near extinction at the turn of the century.

In 1938, the southern sea otter was identified off Point Sur, California and that population has expanded to an estimated high of 1,856 individuals (1976 census) with a range between Point San Luis (San Luis Obispo County) to Ano Nuevo Point (Santa Cruz County). A few wandering individuals have been sighted to the north and south of these range limits. Provided the population continues to increase at the current census rate, it is presumed that the population will extend its range to the Channel Islands and mainland south of Point Conception. Because the area considered in this consultation is part of the southern sea otter's historical range, it will be considered in this consultation.

The southern sea otter is an opportunistic predator which forages in both the rocky and soft sediment communities, seldom ranging beyond the 20-30 fathom depth curve.

An oil spill could affect sea otters in several ways. When trying to determine these effects, the physical configuration and the amount of oil on the surface of the water must be considered. The oil is influenced by environmental factors including wind, waves, temperature, suspended sediments, and time. Direct contact with oil would mat the coat and decrease the otter's natural insulation against temperature loss. Constant preening to maintain the insulating quality of the coat would result in the direct injestion of some petroleum products. As stated in the DES for Sale No. 48, "Accidental exposure of two sea otters to a small but unknown amount of oil (probably diesel) in an experimental holding pool on Amchitka Island resulted in fur matting, progressively severe distress, emergence from the water, and death by exposure within several hours" (K.W. Kenyon, unpublished data). "The oil in this case formed a visible sheen comparable to that sometimes present in harbor areas where gulls appear unaffected by it."

The sea otter feeds on benthic organisms such as abalone, pismo clams, and urchins.

There are natural factors which affect the persistence of oil such as dilution, evaporation, photo-oxidation, sedimentation by adsorption on suspended particles and microbial degradation. Because of these factors, it makes it difficult to determine the effects of oil on benthic communities. Oil which settles to the bottom, depending upon the factors identified above, could kill benthic organisms by smothering the organisms or from its toxic effects.

In the event of an oil spill, another major effect on otters would be the local loss of food sources. The secondary effect would be the long term contamination of shellfish populations which may also result in the injestion of petroleum products by the sea otters.

The southern sea otter does not presently inhabit the area considered in this consultation. Should the otter move into this area during the life of these activities, GS must reinitiate Section 7 consultation to determine whether the ongoing activities are likely to jeopardize the continued existence of the sea otter.

California Brown Pelican (Pelicanus occidentalis californicus)

The California brown pelican was originally listed as Endangered on October 13, 1970. Critical Habitat has not yet been determined for this species. All subspecies of brown pelicans were listed on December 2, 1970.

The only regular breeding colonies of this subspecies in the United States are located on Anacapa Island and nearby Scorpion Rock. This nesting population is augmented from late July through early November by large numbers of pelicans which regularly disperse north from Mexican waters. These migrants are generally gone again by early December; however, it has been recently determined that some may be recruited into the Anacapa breeding population.

Pelicans rarely are found far from salt water, or farther than 20-30 miles offshore. They forage intensively in the Santa Barbara Channel. Their major food is small fishes (primarily anchovy), which they capture near the surface by plunge-diving from the air.

During the late 1960's and early 1970's, the Anacapa colony suffered catastrophic nesting failure induced by DDT and its derivatives accumulating in the reproducing adults. Following the ban on this pesticide, the fledging rate has continued to fluctuate widely but has not dropped to the low numbers experienced earlier.

Pelicans may be affected by oil spills through contamination of their plumage as they dive for food or drift on the surface. This may contribute to direct mortality or result in reduced hatchability of eggs oiled from the fouled plumage of an adult bird. Individual pelicans that have been found oiled have responded well to treatment.

In accordance with the Oilspill Risk Analysis, we have identified ten segments which contain habitats important to the listed species and are susceptible to damage from oil (Attachment 4). Of these ten, Anacapa, Segment 50, has the greatest projected likelihood of being hit by oil from the greatest number of sources (Attachment 5).

It is difficult to predict from oil spill probabilities what the effects of oil activities might be on Anacapa. The only known incident of significant numbers of pelicans being oiled was after a spill from the Navy vessel Manatee in August 1973. Concentrations of light tar washed up on beaches from San Clemente south into Mexico. Twenty to 25 juvenile pelicans were found oiled. In contrast, no pelicans were reported oiled as a result of the January 1969, Santa Barbara blowout. Judging only from location of the spills, the results should have been reversed, but timing was the determinant in these cases. The San Clemente spill occurred in the late summer, when large numbers of pelicans were dispersed throughout the area; the Santa Barbara spill occurred in the winter, just following a severe storm, when relatively few pelicans were in the area and fewer still would have been far from shelter. While the breeding grounds and feeding areas surrounding Anacapa Island are extremely vulnerable locations, the San Clemente spill indicates that large amounts of oil anywhere within the pelicans' range could cause significant damage at the wrong time of year.

No pelican losses from OCS activities off Southern California have been reported to date, nor from nearby activities in the State tidelands. Additional threat from OCS Sale 48 has been considerably reduced by the withdrawal of tracts that were close to Anacapa.

To assist GS in carrying out their responsibility for the conservation of the listed species, the following recommendations are given.

From Attachment 5, the following tracts, transportation routes, and pipeline routes indicate a high probability of an oil spill contacting Anacapa Island. Tracts leased before Sale No. 48: 166, 202, 203, 204, 205, 208, 210, 215, 216, 217, 233, 234, 240, and 241. Tracts leased in Sale No. 48: 337, 346, 347, and 361. Transportation Route: T6 and T7. Pipeline Route: L4 and L6.

We recommend that GS require the lessee to assign a high priority and prescribe specific measures for the protection of Anacapa Island in all Oil Spill Contingency Plans submitted to GS for exploration or development/production within the above listed tracts, and for activities that might result in substantially increased tanker traffic over the identified transportation routes.

In accordance with OCS Operating Order No. 7, the proper authorities must be notified in the event of an oil spill occurrence. We would like to insure maximum protection to Anacapa Island by further recommending that GS require the oil spill containment equipment, which is maintained on the invididual platforms, also be required to respond to a spill from another platform in the area.

California Least Tern (Sterna albifrons browni)

The California least tern was listed as Endangered in the Federal Register on October 13, 1970. Critical Habitat has not yet been designated for this subspecies.

The least tern migrates from Mexico each spring to establish breeding colonies on the California coast. It occupies coastal habitats from the Pacific coast of Baja California to the San Francisco Bay from April to September.

The least tern usually chooses a nesting location in an open expanse of sand, dirt, or dried mud close to a lagoon or estuary where food can be obtained. Prey consists of small fish such as the northern anchovy (Engraulis mordax), deepbody anchovy (Anchoa compressa), jacksmelt (Atherinopsis californiensis), topsmelt (Atherinops affinis), California grunion (Leuresthes tenuis), shiner surfperch (Cymatogaster aggregata), California killifish (Fundulus parvipinnis), and mosquitofish (Gambusia affinis). The reduction in numbers of least terns has resulted from the loss of feeding and nesting habitats and disruption of nest sites by human-associated activities.

Potential threats to the California least tern from oil and gas activities are related to oil spills and increased human activities in coastal areas where nesting colonies occur. The birds could be contaminated by a spill as they dive for food. This may contribute to direct mortaility or result in reduced hatchability of eggs oiled from the fouled plumage of an adult bird. Oil spills cause severe damage when they enter coastal wetlands, and could destroy essential feeding areas for the terns.

To assist GS in implementing its responsibility for the conservation of the species, the following recommendation is given. GS should require that the Oil Spill Contingency Plans include provisions for the deployment of adequate containment equipment into the areas listed below to prevent the entry of an advancing oil spill. The necessary equipment must be onsite, within two hours, on any of these areas that are threatened by a spill.

The areas identified in the Recovery Plan as essential habitat for least terns are: Mission Bay; Sweetwater Marsh Complex; Tijuana River Estuary; South San Diego Bay; North San Diego Bay; Los Penasquitos Lagoon; San Diequito Lagoon; San Elijo Lagoon; Batiquitos Lagoon; Agua Hedionda Lagoon; Buena Vista Lagoon; Santa Margarita River; Santa Ana River; Anahiem Bay/ Huntington Harbor; San Gabriel River/Alamitos Bay; Harbor Lake; Terminal Island; Playa del Rey; Mugu Lagoon; and Ormond Beach (Attachment 4).

Light-footed Clapper Rail (Rallus longirostris levipes)

The light-footed clapper rail was listed as Endangered on October 13, 1970. Critical Habitat has not yet been designated for this subspecies. Histori-

cally, the clapper rail's range extended from Santa Barbara County, California, to San Quintin Bay, Baja California, Mexico. Currently, this subspecies probably occurs in 16 California marshes and at least two marshes in Baja California. Distribution is along approximately 200 miles of United States coastline from Goleta Slough in Santa Barbara County south to the Tijuana Estuary in San Diego County.

Food consists of various invertebrates (crustaceans, mollusks and annelids) found in tidal coastal marshes. Past decline of the species has been attributed to the loss of over 65 percent of its former habitat as well as overhunting prior to 1939.

Potential threats from oil and gas activities could be from oil spills and increased human activities in the estuaries where existing populations live. The population estimate of 1976 suggested a total population of 250 birds distributed throughout 16 locations in California. Of these, five are in public ownership and may contain over 40 percent of the estimated population in California. Through the efforts of the Light-Footed Clapper Rail Recovery Team, a plan to stabilize this species through land acquisition and marsh management has been approved.

According to the Oilspill Risk Analysis, the possibility of an oil spill hitting clapper rail habitat is low. In addition, with the use of existing onshore facilities, no increased human disturbance from these activities is likely.

In order to assist GS in carrying out its responsibility to conserve the species, it is recommended that GS require the lessee to deploy the required containment equipment onto those areas identified in the Draft Recovery Plan as essential clapper rail habitat (Attachment 4). The necessary equipment should be onsite within two hours of an oil spill to prevent the entry of any advancing spill. Those areas to be included in the Oil Spill Contingency Plans for exploration and development/production are: Mission Bay; Sweetwater River complex; Tijuana River Estuary; South San Diego Bay; San Diego River mouth; Los Penasquitos Lagoon; upper Newport Bay; Anaheim Bay; Mugu Lagoon area; Carpinteria Marsh; and Goleta Slough.

Salt Marsh Bird's Beak (Cordylanthus maritimus ssp. maritimus)

Salt marsh bird's beak is an annual herb (15-30 cm high) with purple flowers, that inhabits the upper elevations of tidal salt marshes. Populations of bird's beak are associated with pickleweed (Salicornia) and salt grass (Distichlis) near elevations at and above high tide. The bird's beak was listed as Endangered in the Federal Register on September 28, 1978. Critical Habitat has not yet been determined for C. m. maritimus.

Historically, this subspecies occurred from Carpinteria in Santa Barbara County south to San Diego County and northern Baja California, Mexico.

Today, distribution is restricted to the Sandyland Marsh (Carpinteria) in Santa Barbara County, Point Mugu in Ventura County, and the Tijuana River Estuary in San Diego County.

Destruction of coastal salt marshes is the major factor responsible for the elimination of this wetland species.

The Carpinteria Marsh area and the Tijuana River Estuary are in public ownership; and since existing onshore facilities will be utilized, the potential for further destruction of the bird's beaks' existing habitat from OCS activities has been reduced. The probability of an oil spill reaching this species' habitat is minimal.

Although the remaining populations of the salt marsh bird's beak are located inside protected estuaries and along the upper elevations of tidal salt marshes, the potential for inundation by an OCS related oil spill still exists.

In order to assist GS in carrying out their responsibility to conserve the listed species, it is recommended that GS require the necessary containment equipment be deployed to those three areas identified above within two hours of an oil spill. This requirement should be a part of the Oil Spill Contingency Plan for each exploration and development/production plan.

Development Plans

This consultation includes three existing development activities and four proposed development plans. A discussion of these development tracts follows:

The three existing development tracts are located in the Santa Barbara Channel (tracts 166, 240, and 241). The proposed development plans for tracts 188, 202, and 217 are also located in the Santa Barbara Channel. The remaining development plan (tract 300) is located south of Long Beach.

There are two platforms on tract 166—Hogan and Houchin—located five miles south of Carpinteria. These platforms are sending 4,600 barrels of oil per day via pipeline to existing facilities at La Conchita. Crew boats make two or three round trips a day from existing facilities at Carpinteria.

Another tract under development, tract 241, has three platforms sending 20,024 barrels of oil per day via existing pipeline to the Rincon facilities. These platforms require two to three crew boat trips a day from Carpinteria.

The third producing tract is tract 240, containing platform Hillhouse. This tract is located ten miles south of Summerland. The platform is serviced by two or three crew boats a day from Carpinteria. The 7,752 barrels of oil per day is transported by connecting pipeline to the tract 241 pipeline which goes to the Rincon facilities.

There are four proposed development plans being considered in this consultation. The first is a proposal for tract 217 for platform Grace. The estimated production is 16,000 barrels of oil per day by 1982. The tract is located 12 miles south-southwest of Rincon. It is proposed to connect this platform to the State platform Hope via pipeline, then to Carpinteria via existing pipeline. An additional pipeline proposal associated with this platform, is a 5.8 mile overland pipeline from Carpinteria south to Ventura. This pipeline is south of Carpinteria Marsh.

Tract 188 is located five miles south of Refugio Cove and platform Hondo will be placed on the tract. It is estimated that a production rate of 60,000 barrels of oil per day will be produced by 1982. The oil will be transported by pipeline to an offshore storage and transport (OS&T) vessel. This OS&T vessel will be located within the same tract. It is anticipated that two to three crew boat trips per day will originate from Carpinteria and two helicopter trips per week out of Ventura or Santa Barbara will be servicing this platform. From the OS&T vessel the oil will be tankered to an existing onshore facility.

Platform Girty is proposed for tract 202, located four miles southwest of Oxnard. Oil production is estimated to be 6,000 barrels per day and will travel via pipeline to a proposed onshore facility south of McGrath Lake at Ventura. It is estimated that three boat trips a day and three to four helicopter trips a month from Ventura will be needed to service this platform. From the proposed facility in Ventura, the oil will go to the Carpinteria facilities and then to Rincon facilities. There are two proposed onshore pipeline routes from Carpinteria to Rincon—one directly to Rincon, the other from Carpinteria to Rincon via La Conchita.

The fourth proposed development plan is located on tract 300, seven miles south of Long Beach. There will be two platforms on this tract, Ellen and Elly, with an estimated production rate of 16,000 barrels of oil per day by 1982. A proposed pipeline will connect these platforms to Long Beach refinery facilities. Three to four crew boats a day and two helicopter trips per week from Huntington Beach are anticipated to serve this tract. There is a proposal to place a platform, Eureka, on the adjacent tract, number 301. This platform will be joined to those on 300 by pipeline.

The four proposed development plans (tracts 188, 202, 217, and 300) specifically address the proposed pipeline routes and the onshore facilities to be used. We have reviewed the proposals and believe that the proposed pipeline routes and the construction of the onshore facility are not likely to jeopardize the continued existence of the listed species or destroy or adversely modify the Critical Habitat of the American peregrine falcon. However, Section 7 consultation must be reinitiated should any of the following occur which may affect listed species or their Critical Habitats: (1) alternative pipeline route be planned; (2) the construction of additional onshore facilities; (3) a change in the use pattern be conducted at the onshore facilities mentioned above; or (4) a new species be listed.

Cumulative Effects

There are numerous offshore and coastal projects and activities in Southern California. Those known to the Office of Endangered Species which could have an impact on the Endangered and Threatened species are considered in this consultation.

The Standard Oil Company of Ohio (SOHIO) pipeline project proposes to transport Alaskan crude oil from Valdez, Alaska to a new (unconstructed) unloading facility at Long Beach, California by tanker. Fourteen tankers will be required, each making 23 round trips per year, to transport the oil. From Long Beach, 500,000 barrels of oil per day will be transported by pipeline to Midland, Texas.

Additional increases in tankers carrying oil out of California can be attributed to the Naval Petroleum Production Act transporting oil from Elk Hills in the San Joaquin Valley to Port Hueneme via pipeline. It is proposed that 350,000 barrels of crude oil a day be sold to any interested party, which makes it difficult to predict the transport routes. However, it could possibly go to the Los Angeles/Long Beach area or even to the east coast traveling through the Panama Canal.

The Chanslor-Western Oil and Development Company has proposed to explore the Vaca Tar Sands. Because the oil would be extremely viscous, an oil processing plant or coking facility would probably be needed at the project site before being shipped by pipeline.

Additional vessel traffic can be expected in the San Pedro and Santa Barbara Channels from the Space Shuttle program.

There are two nuclear power plant proposals. The first, at Diablo Canyon in San Luis Obispo County, has been constructed, but start-up has not been granted. The second plant is in operation but has proposed to expand the facilities. This one is located at San Onofre, Orange County.

There are several Liquified Natural Gas (LNG) facilities proposed for Southern California. None have received approval yet. The onshore LNG plant would be at Point Conception and the offshore sites being considered are: Beachers Bay; Chinese Harbor; San Pedro Point; Smugglers Cove; East Channel Shelf; and Camp Pendleton. If the onshore LNG facility at Point Conception is approved, it will be processing gas from Alaska (400 million cubic feet a day) and from Indonesia (500 million cubic feet a day). This would increase tanker traffic (190 trips a year) into Point Conception.

The Office of Coastal Zone Management (OCZM) has proposed a marine sanctuary be designated around the northern Channel Islands and Santa Barbara Island which would exclude oil and gas activities within six nautical miles of the islands. Concurrently, the OCS Sale No. 48 excluded those tracts within six nautical miles of the Channel Islands and Santa Barbara Island.

The State of California leases tracts within three nautical miles of the coast. These activities generate the placement of pipelines, increased crew boats/supply boats and helicopters servicing the rigs, possible construction of additional processing facilities, and increased tankering.

There are several U.S. Army Corps of Engineers projects in the area including maintenance dredging, beach erosion, and harbor deepening projects.

All of the above projects potentially increase the disturbance to Endangered and Threatened species' habitat and/or increase the possibility of an oil spill occurring within the Southern California area considered in this consultation.

An individual project or activity may have no significant impact upon the listed species, but when considered in light of the numerous projects within the same area, significant impacts could occur.

With accelerated offshore oil and gas activities, the probable risk of oil spills also increases. Additional oil spillage could increase the impacts to Endangered and Threatened species. Due to this, immediate oil spill containment response is extremely necessary.

An increase in onshore activities presents another possible impact to the listed species. There are numerous coastal activities in this area. Due to the stress on the coastal area, changes in OCS related onshore activities must be evaluated carefully.

Conclusion

This biological opinion covers the oil and gas exploration activities for those tracts leased prior to OCS Sale 35, and those leased in OCS Sale 35 and 48. It also covers the seven development tracts identified above.

We have rendered our conservation recommendations for the protection of the El Segundo blue butterfly, the California brown pelican, the California least term, the light-footed clapper rail, and the salt marsh bird's beak. Any activity or program authorized, funded, or carried out by a Federal agency which may affect any listed species or its Critical Habitat, will require Section 7 consultation.

The GS is reminded of their continuing responsibility to review their activities in light of their Section 7 obligations. Should additional onshore facilities be proposed, or the use pattern of existing facilities be changed, or a new species be listed that may be affect by exploration activities, Section 7 consultation must be initiated if a "may affect" determination is made. Also, should the construction of additional onshore facilities be proposed, different pipeline routes be proposed, a change in

the use pattern of the existing onshore facilities be proposed, or a new species be listed which may be affected by the development plans contained in this consultation, Section 7 consultation must be reinitiated.

GS must review all development/production plans not covered by this consultation in light of Section 7(c) of the Endangered Species Act of 1973, as amended.

We would like to thank GS for their consideration in providing the necessary information needed to conduct this consultation.

Robert S. Cook

Robert S. Cook

Attachment (5)

APPENDIX 5

Non-proprietary Copy of the Environmental Report and Plan of Exploration

ENVIRONMENTAL REPORT (EXPLORATION)
FOR
PROPOSED EXPLORATORY WELL P-0205-3
SANTA BARBARA CHANNEL
OFFSHORE SOUTHERN CALIFORNIA
FEDERAL OCS LEASE BLOCK 0205

TO DIRECTOR,
THE UNITED STATES GEOLOGICAL SURVEY

Prepared by Chevron U.S.A. Inc.
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February 27, 1980

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ENVIRONMENTAL REPORT (EXPLORATION)

1.0 INTRODUCTION

Chevron U.S.A. Inc. proposes to drill an exploratory well in the Santa Barbara Channel region of the Pacific Ocean, about 12 miles southwest of the City of Ventura and about 6.5 miles north of Anacapa Island (Figure 1). The proposed well will be located in Federal OCS lease P-0205. This lease lies in the southern part of the Santa Clara Unit (Figure 2).

This project will be of temporary duration. The active drilling phase will probably last about 45 to 60 days, after which evaluation and abandonment procedures will probably last another 15 to 25 days. It will take about 6 days to move in and then out of this location. This results in a total of about 60 to 90 days for the project. The proposed activity will commence on or after June 10, 1980, and terminate prior to November 6, 1980 (Appendix B).

The submission of this Exploration Environmental Report, which will be accompanied, or followed by, an Exploration Plan for these wells, is intended to fulfill the requirements of Section 250.34-3 of CFR Title 30, Part 250 as published in the Federal Register Vol. 44, No. 180 - Friday, September 14, 1979. The sequence of topics conforms with Section 250.34-3(a)(1)(i) and (ii), (2), and (3), inclusive, of the above cited regulations.

Information available in recent applicable environmental studies and environmental impact statements has been referenced extensively in this report. Data has been summarized from other reports by state agencies and independent authors. Information applying specifically to this project has been furnished by the professional staff of Chevron U.S.A. Inc.

Copies of referenced material are available at many university or college libraries in California, at U. S. Geological Survey libraries in Menlo Park and Los Angeles, or in the library of the Standard Oil Company of California, San Francisco. In the event any reviewing agency has difficulty in obtaining a copy of a particular reference, one of the parties listed under item 5.0 of this report should be contacted.

The general environment in the area of the project, including information on the oceanography, submarine geology, sensitive and hazardous areas, potential project impacts, alternatives and mitigations, and many other aspects, is amply discussed in a number of the references listed in the bibliography. Considering the extensive nature of these prior studies, and in order to avoid redundancy, data which is directly applicable to this project is often simply referenced in this report.

The impacts of the proposed projects on the environment, as analyzed in the following presentation, are concluded to be negligible in magnitude and temporary in nature. If the proposed exploratory project results in the confirmation of a commercially developable accumulation of oil or gas, or both, then a plan for the development of the resource will be required. In this event, another Environmental Report for the development phase also will be required per 30 CFR 250.34-3(b).

2.0 DESCRIPTION OF PROPOSED ACTION

Chevron is proposing to drill a third exploratory well on OCS parcel P-0205 (Figure 2). The purpose of the well is to delineate a significant oil accumulation which was discovered by the P-0205-1 well and which underlies the northeastern portion of the parcel, largely beneath the existing northbound sea lane. The P-0205-2 well was drilled vertically from a location 200 ft. west of the proposed P-0205-3 well and was a dry hole, penetrating the structure south of the area of oil accumulation. The proposed P-0205-3 well will be directionally-drilled northward, beneath the sea lane, to evaluate the position and reservoir character of the oil-bearing zones as they occur on the south flank of the structure. These zones occur in the Pliocene, Miocene and Oligocene sediments at depths of approximately 3,000 to 7,000 ft. subsea, and because of the geometric relationships cannot be tested by a single hole drilled southward from the location of the P-0205-1. Results of the P-0205-3 will provide the basis for deciding whether the accumulation will be developed.

The proposed well is to be drilled from a location within the buffer zone south of the sea lane. This location and the programmed well-course will enable the well to evaluate all proven or potential zones indicated by the discovery well or by two delineation wells, the P-0209-2 and P-0204-1, drilled on the north flank of the structure in 1979. The selected wellcourse, though deviated nearly one mile northerly from the surface location, can be drilled, logged and tested with little chance of mechanical problems. The directional program calls for building angle at the rate of 5° per 100 ft., below the surface casing, to a maximum deviation of 45° from vertical. These parameters, though regularly followed both offshore and onshore, are in the upper range of effective exploratory drilling.

An alternative drill-site requiring more extreme deviation was carefully evaluated. That drill-site was located approximately 1400 ft. farther south, outside of the buffer zone. Its program would require building angle at 6.5° per 100 ft., below the surface casing, to a maximum deviation of 60° from vertical, holding that angle for about 3000 ft., then dropping angle (at 3°/100 ft.) to 45° for the remainder of the well. The alternative well-course would penetrate the shallow hydrocarbon zone at a position lower than it was found in the P-0205-2 well, and thus could not make a useful test of that zone. The course of the alternate well is 950 ft. longer and would require at least one additional week of drilling, even if there were no mechanical difficulties. However, the extreme deviation of 6.5°/100 ft., when combined with the 8000 ft. which must be drilled beyond that dog-leg, introduces a high probability of repeated mechanical failures. Friction and torque in the drill-string would lead to its parting, and ensuing lengthy fishing jobs. The intermediate casing string may be worn through in the dog-leg; such key-seating would require the well to be plugged back and redrilled. Logging and testing in so highly-deviated a well is difficult, time-consuming, and often ineffectual. (Producing wells drilled from a platform can successfully

reach these high deviations because much less logging and testing is required, and they can be started through curved or canted conductor pipes.) Drilling from a location south of the buffer zone would add weeks or perhaps months to the project and provide a significantly less complete evaluation; for all the above reasons, the alternate location has been rejected. The U. S. Coast Guard has approved the proposed location within the buffer zone as fully consistent with maritime safety, and notification of the temporary activity will be published internationally as a Notice to Mariners.

Chevron plans to use a floating drilling vessel, the Glomar Coral Sea, a 400-foot-long ship-shaped drilling vessel. The self-propelled Coral Sea (described fully in Appendix B of the Exploration Plan) carries a 142-ft. derrick with a 1-million-lb. hook load capacity, drilling through a 20 x 22 ft. centerwell. Electric power for the rig is supplied by diesel generators--6 main plus 1 emergency. The vessel is held on location by 12 30,000-lb. anchors. The well will be drilled to a total depth of 9,700 ft. (subsea depth: 7,600 ft.). Water depth at the proposed drillsite is 767 ft. (234 m). Location of the proposed well is shown on Figures 2 and 3, and described in detail in the accompanying Exploration Plan.

Nearby pending actions include several development and exploratory projects in the eastern Santa Barbara Channel. These projects, and their distance from the proposed P-0205-3 well, are: Union's Platform Gilda, 5 miles to the north; Union's Platform Gina, 7 miles to the east, and Shell's proposed P-0361-1 exploratory well, 7 miles to the northeast. Final permits are pending on all three projects.

2.1 Oil or Waste Material Spill Prevention, Reporting and Clean-up

Procedures for preventing oil spills and for dealing with minor spills of oil or waste materials are discussed in detail in Section 2 of the accompanying Exploration Plan, which describes: personnel training and supervision; oil-spill equipment and materials carried on the drillship or on the accompanying workboat; procedures for handling minor spills. Additional details regarding handling of waste materials will be found in the NPDES Permit (CA0110087) (Appendix A) issued by the EPA to Global Marine for the drillship Glomar Coral Sea.

2.11 Reporting, Control and Clean-Up

Procedures for reporting, control and clean-up are fully described in Chevron's Oil Spill and Emergency Contingency Plan for Santa Barbara Channel OCS Leases (Ref. 1) and in Clean Seas, Inc. Oil Spill Clean-Up Manual (Ref. 2), both of which have been previously submitted to the U.S. Geological survey, California Coastal Commission and other agencies. Any hydrocarbon spill which reaches the water is required to be reported immediately to the U.S. Coast Guard (at Santa Barbara, or nearest available) and to the U.S. Geological

Survey (District Engineer at Ventura, or nearest available). Spills which could drift into State waters must be reported to the California State Office of Emergency Services. Chevron's "on-site" operating foreman (or in his absence, the Contract Drilling Foreman) is responsible for notifying the above government agencies, Chevron's Drilling Superintendent (or next available alternative), and -- if the spill appears to exceed five to ten barrels -- Clean Seas, Inc.

The clean-up steps involved in spills exceeding five (5) barrels of hydrocarbons are as follows:

1. Alert the local spill cooperative immediately. For the Santa Barbara Channel area this will be Clean Seas, Inc. Next, the appropriate cooperative and/or contractor will be called to bring their clean-up equipment if it is apparent that the "on board" equipment cannot handle the spill. Mr. Waage, General Manager of Clean Seas, estimated that this equipment can reach the proposed well site within 4-6 hours.

2. Assess wind and current direction to determine the possible path of the spilled hydrocarbons.

3. Deploy the containment boom stored on the vessel and surround the spill.

4. Use skimmer stored on board the vessel to recover oil retained by the boom.

5. Utilize the spill cooperative (Clean Seas) equipment as needed to effect rapid and complete clean-up of the spill.

6. Use absorbent goods to remove final traces of hydrocarbons.

Chevron will activate the Major Oil Spill Contingency Plan whenever a major hydrocarbon spill occurs (i.e., a major spill is considered to be over 1000 barrels or a continuous discharge for several days that will exceed 1000 barrels). In this event, Chevron will utilize all feasible equipment and manpower resources to effect a rapid clean-up.

2.12 Sites and Methods of Disposal

Oil/water mixtures which have been recovered and are contained in tanks or other containers can be separated in temporary on-site separators or in treatment tanks at local oil production facilities (such as Chevron's Carpinteria plant) and the recovered oil then sent to a refinery.

Oil-contaminated sorbents and debris and non-reclaimable liquid oil would be taken by truck or boat-and-truck to an approved Class I disposal site for burial. These sites include:

Calabasas Landfill (Los Angeles Co.)
Carney and Sons (J&J Disposal) in Oxnard
Simi Valley Landfill (Ventura Co.)
Casmalia Landfill (Santa Barbara Co.)

In the near future, biodegradable oily wastes may be disposed of by land-farming at several sites now being developed or planned in Southern California.

2.2 Onshore Support and Storage Facilities

Onshore services will originate from the Carpinteria, Ventura and Port Hueneme areas. Because the support services and storage facilities required for this project are already in existence at these locations, no increase in their size or complexity will occur. Also, because the project uses a temporary, self-propelled vessel, acquisition of lands, rights-of-way, and easements is not anticipated.

2.3 Personnel Requirements of Offshore, Onshore and Transportation Activities

At this time it is anticipated that a drilling vessel, the Glomar Coral Sea, will drill the proposed exploratory well. A crew boat will be employed to transport working personnel and contracted services to and from the drilling vessel. Materials and supplies will be transported by a supply boat. A helicopter service will be contracted for medical emergencies and other situations as they arise. Local vendors furnishing various materials and offering services will also be employed in support of this exploratory activity.

Population growth in the affected coastal areas will be temporary and minimal. Most employees directly associated with the drilling vessel are transient. Their homes and families are located outside the affected coastal area. The work schedule of these employees (usually 7 days on and 7 days off) is such that their employer transports them between job and home. The categories of people who are likely to reside in the affected coastal area include current Chevron employees and employees of local suppliers of materials or services. The need to hire additional employees to support this operation is not anticipated.

About 140 persons are expected to be employed during the proposed exploratory operations: drilling vessel (110 total but 70 on board at any one time); supply boat with a crew of 6; crew boat with a crew of 2; Chevron personnel (6 total, 2 on board at any one time); and 18 miscellaneous service company personnel (each on short periods of service).

2.4 Routes and Frequency of Travel Between Offshore and Onshore Facilities

A contracted crew boat will transport personnel to the well site from the pier at Carpinteria. The current plans call for about 15 trips per month using this service.

Supplies taken to the drilling vessel will originate from facilities at Port Hueneme. The supply boat will probably not utilize the shipping lanes but follow a direct route north of, and clear of, both lanes. On the return trip, the supply boat will carry any wastes from the drilling vessel which require onshore disposal. About 25 trips per month from Port Hueneme are anticipated.

Helicopter service to the drilling vessel is expected to originate from the Ventura Marina (Rotoraides). Helicopter service will operate as required (emergencies and special situations) with an estimated 5 trips per month as needed by Chevron U.S.A. An estimated 15 trips per month by USGS inspection personnel are also anticipated.

2.5 Solid and Liquid Wastes and Pollutants

The various discharges to the environment from the drilling vessel will be divided into 2 categories: solid and liquid wastes, and gaseous pollutants. The solid and liquid wastes will be treated and discharged according to the NPDES permit (Appendix A). Besides the exhaust and combustion products from power generation engines, the only other gaseous emissions will be from the flaring of encountered natural gas.

2.51 Solid and Liquid Wastes

Solid and liquid wastes will be treated and discharged to the environment in accordance with the issued NPDES permit. The alternative to offshore discharge is barging the wastes ashore and trucking them to appropriate disposal facilities. The environmental impact of onshore disposal of solid and liquid wastes will be mainly related to air pollution. A task force of the Western Oil and Gas Association (Ref. 3) recently estimated the air emissions involved in disposing of 6000 barrels of cleaned muds and cuttings from one 10,000 ft. well. Barges making 50-mile round-trips would generate a total of 340 lbs. of hydrocarbons, 1620 lbs. of NO_x, and 7200 lbs. of CO. Trucks taking the wastes 70 miles round-trip would emit a total of 12.0 lbs. of particulates, 25.9 lbs. of SO_2, 266 lbs. of CO, 42.6 lbs. of hydrocarbons and 193 lbs. of NO_x. The air quality in Santa Barbara county has been declared as non-attainment for oxidants.

Wastes from the drilling vessel will consist of the following:

(i) Excess water-based drilling mud
(ii) Drilled hole cuttings
(iii) Excess wet cement
(iv) Sanitary wastes
(v) Kitchen, shower and washing machine wastes
(vi) Garbage wastes, biodegradable and trash
(vii) Deck drainage and washdown water
(viii) Engine room drainage
(ix) Engine cooling water (non-contact)
(x) Water generated from subsurface formation tests
(xi) Brine from potable water maker

It is estimated that approximately 215,000 gallons of excess drilling mud will be disposed of during the drilling of the proposed well (Ref. 3). A typical drilling mud will be used in the proposed exploratory well. This will contain fresh water, montmorillonite clays, barium sulfate, and additives such as caustic, organic polymers, and lignite derivatives. These additives are not highly toxic in the concentrations used. When discharged to the ocean, the mud disperses readily and the additives are diluted to undetectable levels a short distance away (Refs. 4, 5, 6, 7 & 8). If the drilling mud has become contaminated with oil from a subsurface formation, it will not be discharged into the ocean but will be transported ashore and disposed of in an approved dump site.

It is estimated that 9,300 cubic feet of cuttings will be generated during the drilling of the proposed well. They will contain only those constituents contained in the drilling mud. Any cuttings which might inadvertently contain entrained oil will be transported ashore to be disposed of in an approved dump site.

It is anticipated that approximately 800 cubic feet of excess mud-contaminated cement will be disposed of to the ocean, in accordance with the NPDES Permit, during the drilling of the proposed well. Cement, like drilling fluids, contains no highly toxic substances. It disperses readily in ocean water and becomes undetectable within a very short distance from the point of discharge. For a current reference to aspects of the preceding paragraphs refer to the Ecomar, Inc. and Shell Oil Co. study at Tanner Banks (Ref. 4).

Sanitary wastes will be processed in an aeration-type sewage plant approved by the U. S. Coast Guard for marine service. The effluent will be treated with chlorine in accordance with conditions set out in the NPDES Permit. The estimated discharge is 5000 gallons per day.

The kitchen, shower, and washing machine wastes are basically non-toxic, containing only food, soap, and biodegradable detergents and cleaning agents. These wastes are estimated to amount to 40 gals. per day per man, resulting in a total of 2800 gals. per day for a 70-man crew.

Trash and garbage (paper containers, wiping materials, etc.) will be placed in suitable portable containers which will be transported ashore for disposal in an approved dump site. An estimated 110 lbs. per day of this waste will be generated by a crew of 70 men.

The drilling vessel is designed to contain all deck drainage and wash-down water which will be processed in a suitable oil-water separator prior to ocean disposal. The quality of this effluent is controlled by conditions set out in the NPDES Permit. It is estimated that about 1,000 gallons per day will be generated in this manner. Both sea water and fresh water will be present in this discharge.

It is estimated that engine room drainage will range between 30 and 50 gallons per day. Normally this water will contain minimal quantities of lubricating oils. Excess oil contamination will be disposed of onshore.

Engine cooling water (non-contact) discharge will have served to cool engine water jackets and as such will not contact any pollutants. Temperature increases will be minimal (2° - 4°F) at the design circulating rate of 2,000 gallons per minute (2,880,000 gpd).

The maximum amount of waste water generated from subsurface formation tests is estimated at 15,000 gallons for each of the proposed wells. Any oily water derived from these tests will be transported ashore for suitable disposal in an approved dump site or processed in the deck drain oil-water separator prior to disposal of the waste water in the ocean according to applicable discharge regulations.

As a result of distilling sea water as a source of potable and domestic water, approximately 14,000 gpd of concentrated brine is produced as a by-product. This brine is non-toxic and will result in no pollution upon ocean discharge.

2.52 Gaseous Pollutants

Gaseous emissions associated with this project are primarily exhaust and combustion products. The emissions will occur during the period of time it takes to drill and abandon the proposed well (estimated at 60 to 90 days). The specific emission sources include:

1. Generators used to supply power for the drilling operations.

2. Supply and crewboat engines and helicopters.

3. Drill ship movement to and from the proposed site.

4. Natural gas flaring.

In the course of evaluating each proposed well we anticipate flaring about 1500 MCF of gas during drillstem tests. The emissions from this type of operation are generally considered to be low and because of the temporary nature of the project, are not considered significant.

Table 1 is a summary of the estimated quantities of gaseous emissions resulting from each proposed exploratory drilling operation using EPA AP-42. Units are in pounds/hour unless otherwise indicated (Ref. 9).

TABLE 1

SUMMARY OF ESTIMATED GASEOUS EMISSIONS (Avg. per well)
(lbs/hr)

	CO	NO	SO	Unburned Hydrocarbons	Average Operating Time (Total Time, Hours)
Prelim, site prep.	14.3	6.6	4.4	6.3	54
Drill ship movement	7.0	32.4	2.2	3.1	18
Drilling Operations*	25.3	117.6	7.9	11.1	1680
Support vessels					
supply boats	46.7	215.0	14.3	20.5	125
crew boats	4.8	22.0	1.5	2.1	100
Helicopter	14.0	1.4	0.4	1.3	17
Natural Gas					
Flaring	480.0	neg.	neg.	33.0	-
Total Per well (Tons)	26.18	113.80	7.75	11.00	

*Represents average. Actual hourly rates will vary greatly depending upon the activity taking place.

2.6 Estimated Requirements for Major Supplies, Services and Resources

This section discusses the approximate amount of any significant demand for major supplies, equipment, goods, services, water, aggregate, energy or other resources within the affected Coastal area.

This drilling operation will not place any demands on the resources within the affected area other than those which the area has been experiencing with past and present exploration work. The following demands for supplies and equipment required for the actual drilling work, average per well, are estimated to be:

- 200 to 310 tons oilfield casing (less any recovered).
- 4,700 to 6,300 cubic feet cement (neat).
- 20,000 cubic feet mud (barite, bentonite and miscellaneous mud additives).
- 25 oilwell rock bits.
- Food to prepare three meals per day for 100 persons.
- Soap and laundry detergent (100 lbs. detergent, 20-30 gals. bleach).
- Linen supplies for 100 persons.
- Miscellaneous items to maintain vessel.
- 10 tons sand (for sandblasting), 500 gallons paint.
- 3,200 barrels of diesel fuel (plus 925 barrels for crew and supply boats, and 35 barrels of aviation gasoline for helicopters).

In addition to the above, the following services will be required during the proposed drilling operation: directional services, well logging, perforating, well testing, drilling fluids engineering, mud logging and oilwell cementing. The planned drilling vessel has the capability to distill water for drilling and crew requirements.

3.0 ENVIRONMENTAL SETTING

The following summary of environmental conditions in the area of the proposed exploratory well P-0205-3 has been prepared to accompany the Exploration Plan as it is submitted with a request for a permit to drill this well.

This Environmental Report (Exploration) includes, as required, available information that is accurate and applicable to the geographic area. The following information is from "the most recent Environmental Impact Statement(s) for the area" as well as other generally available and current publications.

The area which will be affected by the proposed exploratory well is located in the southeast corner of the Santa Barbara Channel (Figure 1). The federal tract involved is part of the Santa Clara Unit which includes 8 tracts in the east end of the Santa Barbara Channel, extending from 6 to 12 miles west from the Montalvo coastline. Location of the Santa Clara Unit boundary, Parcel P-0205, and the proposed well location are shown on Figure 2.

Thirteen (13) exploratory wells and fifteen (15) shallow core holes have been drilled within the unit area since the granting of these Federal leases. Four of these wells were drilled within the southern area to evaluate the same structure (Figure 2). Information from these wells and seismic data (mostly proprietary) along with published data are the primary source of information used in the analysis of potential geologic hazards.

3.1 Site-Specific Geology

The proposed drilling site in Parcel P-0205 is located at the eastern end of the Santa Barbara Channel (Figure 1) about 6.5 miles north of Anacapa Island. The regional geology of the Channel area has been described in considerable detail by Vedder and others (Ref. 10), the U. S. Geological Survey (Ref. 11) and Sylvester and Darrow (Ref. 12). These reports provide a comprehensive geologic summary of the stratigraphy and structure of the region. Figure 4 shows the relationship of Parcel P-0205 to the significant structural features of the area. The Santa Clara Unit lies astride one of these features, the Montalvo or 12-Mile Trend. This structural feature is part of an anticlinal trend that extends westward from the offshore part of the West Montalvo oil field for about 20 miles. Offshore, this broad anticlinal trend is bounded at depth on the north by a reverse fault that is referred to in numerous reports as the Oakridge fault. The history of tectonic activity along this trend as well as within the Santa Barbara Channel has been discussed in reports by Greene (Ref. 13), Vedder and others (Ref. 10), and two reports by Dames and Moore (Refs. 14 and 15).

The Montalvo Trend oil accumulation is located in OCS Parcels P-0215, P-0216, and P-0217 approximately 3 miles north of a parallel structure on which this well is being drilled. The trapping structure in Parcels P-0204 & 0205 is comprised of a symmetrical east-west anticline. Minor faulting is associated with this structure. There is no evidence based on the shallow geophysical data, that these faults extend above minus 4,000 ft. sub-sea.

Also, within the Santa Clara Unit no significant shallow faults have been noted from any of the shallow high-resolution geophysical surveys. Based on limited drilling information, the deeper portion of the structure appears to be cut by an occasional northeasttrending tension fault which likewise does not extend above minus 4,000 ft. sub-sea. The sedimentary strata penetrated in the Unit area range from upper Cretaceous to Recent. The deepest stratigraphic penetration on the Unit is in the Exxon Well, P-0205, No. 1, (Figure 2) which bottomed in Cretaceous-age interbedded marine sandstones, siltstones, and shales at a drilled depth of 12,801 feet.

A review of wells drilled in the lease blocks 0204, 0205, 0208 and 0209 indicate that the following strata will be penetrated:

Age	Formation	Rock Unit
Recent-Upper Pleistocene		Unconsolidated sand and mud
Lower Pleistocene	San Pedro	Marine and non-marine mudstone, sandstone, siltstone, and conglomerate
Upper Pliocene	Repetto	Marine sands, clays, siltstones
Miocene	Santa Margarita	Siltstone and shales
Miocene	Monterey	Marine chert, siliceous shale with limestone to siltstones and sands at base
Miocene	Topanga	Marine sands and shales
Oligocene-Upper Eocene	Sespe	Non-marine sands, shales, conglomerates

Oil and/or gas accumulations are expected in the Pliocene, Miocene and Oligocene rocks and will range in depth from approximately 3,000 to 7,000 feet subsea.

3.11 Bathymetry

Depths and ocean floor conditions have been reported by NOAA (Ref. 16) and have been mapped and analyzed by Nekton Inc. (Ref. 17) utilizing waterborne surveys. Nekton's detailed mapping (Figure 3) is in general agreement with the more regional bathymetry shown on the NOAA charts.

Water depth at the proposed drill-site is 767 ft. (234 m).

The ocean floor in this area is very flat with a gentle slope to the west at about 6 ft. per mile, resulting in a slope ratio of 1:880 (0.1% or 0°4').

The sea floor is quite smooth. There are no bathymetric features which might be related to seafloor geologic hazards.

3.12 Bottom Sediments

The bottom sediments at the proposed drill site consist of a thin layer (i.e., 10 to 20 feet) of unconsolidated muds mixed with silt and clay. These mud-line sediments are immediately underlain by sediments of similar lithology that are stiffer and better consolidated. At all of the sites the mud-line sediments rest on Holocene silts and clays that are over 20 feet in thickness. The composition of these sediments are described in detail in reports by Dames & Moore (Refs. 14 and 15).

3.13 Shallow Geologic Hazards

(1) Landslide Potential:

Nekton (Ref. 17) did not detect any features indicative of recent submarine landslides or slumping within Parcel P-0205. Upslope to the north of the parcel, a zone of hummocky seafloor topography immediately below the shelf break suggests possible slide activity within the geologically Recent past. Within the parcel and including the proposed drill-site, Nekton (Ref. 17, p. 10) has described what they interpret to be a buried submarine fan underlying a part of the basin floor (See Fig. 3). This feature is clearly shown on the sparker, and especially the minisparker, lines. It consists of a zone of disturbed or incoherent bedding which extends to a depth of up to 75 ft. below the sea floor. The zone has many of the features of a submarine landslide. Its internal structure suggests that much of the deposit moved downslope as a sheet which crumpled as it came to rest, producing transverse ridges parallel to the toe of the slide. The head of the slide has rotated into the slope. The slide was apparently the result of Plio-Pleistocene uplift of the Montalvo or 12-Mile Trend to the north of P-0205. Poorly-consolidated sediments on the over-steepened south flank of that structure moved onto the basin floor as an earth block slide and earth flow. By this process of slope reduction and basin filling the sea floor has achieved a stable equilibrium condition. The age of the slide is indicated by the layer, up to 20-30 ft. thick, of post-deformational sediments which has buried the slide and now creates a smooth, gently-sloping ocean floor. Pockets between the transverse ridges contain up to 50 ft. of well-bedded horizontal sediments. The average rate of deposition in the deep central portion of the Santa Barbara Basin is about 2 mm per year (Ref. 11, p. II-43), which would suggest that the slide was at least 3000 to 7500 years old. The sea floor in the area of the

proposed drill-site is obviously stable; the P-0205-2 well was drilled through the disturbed zone only 200 ft. from the proposed drillsite without any problems or unusual conditions.

(2) Scouring and Erosion:

From ocean floor studies made to date, there is no evidence of any scouring action in the vicinity of the proposed well site. Dames and Moore in their report (Ref. 14) on soil boring and foundation investigation note that soils recovered at a proposed platform site consisted of silt with little or no cohesion. They conclude that a soil of this type can be susceptible to scouring from turbulence or currents created around platform legs. They estimate a possible scour depth on the order of 1 leg-diameter below the mudline if water velocities exceed 1 ft/sec. There is no evidence of any bottom currents of this magnitude in this area.

(3) Hydrocarbon Seepages and Shallow Gas:

No oil seeps have been noted or found in the Santa Clara Unit area. Insignificant gas plumes, however, are apparent at the mud-line from the high-resolution geophysical surveys run in water depths of less than 350 feet. It is also noted that some 21 deep and shallow holes have been drilled on all of the parcels in the Santa Clara Unit, yet no significant gas shows were reported within the shallow sedimentary section between the mud-line and 800 feet in any of these holes. Below 1,000 feet, after surface casing has been set, mud-logging units in operation on several of these holes have reported minor shale gas commencing at that depth.

(4) Shallow Faulting

No shallow faults were noted from the surveys run by Nekton Inc. (Ref. 17). Beneath the disturbed zone noted in (1) above, the sparker and minisparker records show continuous reflections, without break or offset, to depths of several hundred feet.

3.14 Deep Geologic Hazards

The usual deep drilling hazards encountered while penetrating hydrocarbon-bearing formations may be found during the drilling of the proposed well. As part of the blowout and oil spill prevention plan, Chevron's drilling program will contain a casing program that will be in accordance with OCS Order No. 2 - Drilling Procedures.

The deepest hole drilled in the area, Exxon P-0205-1 (Figure 2), went to a depth of 12,854 feet. Like the other three exploratory wells drilled in the immediate area, no above-normal formation pressures were encountered. This proposed well will be directionally drilled from an ocean floor location which is approximately 200 feet east of the P-0205-2. Drilling conditions similar to those encountered during the drilling of the P-0205-2 are anticipated. No serious drilling problems were encountered while drilling the P-0205-2 to a total depth of 12,830 feet.

3.15 Seismicity

Earthquake activity in the Santa Barbara Channel has been adequately covered by the Bureau of Land Management in their 1979 report (Ref. 18), the U. S. Geological Survey's 1969 and 1976 reports (Refs. 10 & 11) and the earthquake reports of 1973 and 1976 by the Seismological Laboratory at the California Institute of Technology (Refs. 19 & 20).

There are no known active faults in the area of the proposed drilling site. The nearest active fault is the Santa Cruz fault, and east-west-trending thrust fault whose near-surface trace is about 8 miles south of the P-0205-3 drill-site (Figure 4). This is also the dominant potentially active fault within the range of Chevron's operation (Table 2) which would establish the design criteria for future development. All other active faults are too far removed to create levels of ground shaking at the proposed drill site which could exceed those from a possible magnitude 7.0 Richter scale earthquake at a 9 Km depth on the Santa Cruz fault. It is estimated from Schnabel and Seed (Ref. 21) that such an earthquake could cause vertical ground accelerations of about .45 g at the drill sites. Since this degree of vertical acceleration is expected to occur during the high frequency part to the ground shaking spectrum it should have little or no effect on the drilling equipment.

TABLE 2

DIRECTLY DETERMINED ROCK ACCELERATIONS

Fault	Magnitude	Distance to the Site*	Site Rock Acceleration
Santa Cruz	7.0	12	0.45
Santa Ynez	7.5	43	0.21
Santa Monica Bay	7.0	54	0.11
Red Mountain	6.5	25	0.22
Pitas Point	6.5	21	0.25
Oakridge	6.5	9	0.31
More Ranch	7.0	35	0.20
San Andreas	8.25	80	0.15
Random Event (directly beneath the site)	6.0	10	0.31

*Hypocentral distance (kilometers)

Earthquake Related Damage

1. Ground Rupture

A study of the published literature and an analysis of the test borings and the high-resolution surveys indicates that there are no shallow fault traces beneath any of the proposed sites. Therefore, ground rupturing will not be a hazard during any nearby earthquakes.

2. Ground Failure

(a) Liquefaction

The only ocean-floor equipment involved in the proposed exploration is the wellhead assembly and the drilling vessel anchors. The subsurface soils at the proposed site can safely support these. The studies to evaluate soil properties and liquefaction potential indicate that the potential for liquefaction at the proposed site is extremely low (Ref. 14).

(b) Slumping

The ocean bottom in the area of the proposed drill-site is nearly flat, and there are no indications of slumping at or near the proposed location. Potential slumping is unlikely.

3. Tsunami

Based on published records and the location of the site in open water, tsunami damage should not be a factor to be considered significant at the proposed drill-site. Tsunami waves do not impact vessels or structures in open water because of their low amplitude and great breadth.

3.16 Subsidence

Since there will not be any significant fluid withdrawals during the drilling and possible testing in the proposed well, subsidence from fluid withdrawals will not occur.

3.17 Hydrology

There are no fresh-water aquifers in the area of OCS Parcel P-0205.

3.18 Hazardous Areas Map

There are no significant geologic hazards in the area of the proposed drill-site, so a map has not been prepared for this Environmental Report. See Reference 17.

3.2 Weather Patterns

Due to its location on the southeast edges of the Pacific High the Southern California Coastal area has a Mediterranean subtropical climate characterized by warm dry summers and mild wet winters. In winter, as the High weakens and migrates southwestward, the southward advance of low-pressure areas brings rainstorms alternating with periods of calm. Mean daily temperatures over the Santa Barbara Channel range from the low 50's in winter to the high 60's in the late summer. Extremes of 20°F and 115°F have been recorded. Annual rainfall averages at Santa Barbara about 17.0 in.; Oxnard - 14.6 in. The rainfall occurs mostly in the winter, November through April. Thunderstorms are less frequent than in any other part of the United States, averaging less than 5 days per year (Ref. 11). Funnel clouds and tropical cyclones ("hurricanes") are almost unknown; only one severe tropical storm has reached the southern California coast in the past 50 years or longer (Ref. 22).

Prevailing winds are from the west-northwest throughout the year (Ref. 18, p. 64, 65), strongest in spring and summer, and average 9 to 10 knots, with a maximum velocity of 35 knots (though gusts to 90 knots have been estimated for a recurrent interval of 100 years - Ref. 11, p. II-174). Winter winds are more variable; "Santa Ana" winds from the northeast may reach velocities of 45 knots (Ref. 18, p. 65). Infrequent strong storm winds may blow from the east or southeast, veering through south to west and northwesterly as the storm passes.

The occurrence of fog is greatest and most extensive in the summer. From April through October, visiblity is reduced to 2 miles or less an average of 20% of the time. From November through March, the same reduction occurs only 6% of the time (Ref. 11).

Even the most extreme weather conditions which might occur in the area of Parcel P-0205 are much less severe than those in many other parts of the world where drilling vessels have operated without difficulty.

3.3 Air Quality

The onshore areas of Santa Barbara and Ventura counties are within the South Central Coast Air Basin. Ambient air quality data for the Santa Barbara Channel region can be obtained from the California Air Resources Board (CARB), the Santa Barbara Air Pollution Control District (SBAPCD), and the Ventura Air Pollution Control District (VAPCD). A number of reports are available giving specific data (Refs. 9, 11, 18, 23). Data are available for total oxidants, carbon monoxide, nitrogen oxides, hydrocarbons, and suspended particulates. 1976 is the latest year for which reasonably complete information is available.

Several studies have noted that there is a lack of air quality data in the offshore area. The nearest stations to the proposed OCS projects are located in the city of Ventura and in downtown Santa Barbara. These are operated by the respective Air Pollution Control Districts. Unfortunately, these station locations are located too far from the proposed drill-sites to be used directly for air quality determinations. However, there are no emission sources of any consequence in the northwestern portion of the channel that can impact air quality at the drill-sites. Thus, air quality at the drill-sites and surrounding region are considered good, and Federal Standards are undoubtedly not exceeded.

Engineering-Science, Inc. (ES) (Ref. 24) was retained by the American Petroleum Institute (API) to determine the effect of outer continental shelf (OCS) activities on the air quality of adjacent states. The purpose of the study was to ascertain whether OCS drilling and producing operations impact the states and if so, to what degree.

Since EPA exempts onshore sources from regulation in non-attainment areas if they have uncontrolled emissions of up to 100 T/Y, ES assumed that it is reasonable to also exempt OCS activities that have the same or less air quality impact at ground level on the shoreline. Therefore, ES also developed curves describing OCS emission rates as a function of the distance from the shoreline that is necessary to give the same onshore maximum impact as a 100 T/Y onshore source.

API provided emission and equipment data for extremely large Gulf Coast and Pacific Coast OCS operations. Impact analyses were conducted for oxides of nitrogen (NO_x) since NO_x is the predominant pollutant emitted from drilling and producing activities. ES developed NO_x concentration isopleths for 500-ton-per-year activities offshore California and Louisiana. Five-hundred-ton-per-year sources represent an extreme case since there are only two OCS activities, Beta and Hondo (Southern California), which approach emissions of that magnitude.

The mix of internal combustion engines and turbines was varied from 97% IC engines to 3% turbines to 80% turbines and 20% IC engines. These parameters followed the API (1979) report submitted to USGS (Ref. 25). These combinations were selected to simulate as nearly as possible actual offshore operations.

Meteorological data were obtained from the nearest onshore weather stations for which STAR data were available. In addition, offshore meteorological data were taken from the Hondo platform and used in preparing analyses for the Santa Barbara Channel.

ES used two EPA dispersion models for the analyses: the Climatological Dispersion Model (CDM) for annual concentrations (Ref. 26) and Point-Multipoint (PTMTP), a short-term multiple source model for 1-hour concentrations (Ref. 27). Both computer codes had been run with a test deck to ensure that proper and valid results would be generated for these analyses.

An analysis was performed for a platform located 5 miles offshore (Figure 5) emitting 500 tons/year of NO_x. The 1-hour maximum surface concentration again would be 26.7 ug/m^3 at 300 meters from the platform. The surface level concentration 10 km from the platform toward shore was 7.8.

The analysis on an annual basis using Santa Barbara Airport meteorological data (Figure 6) calculated a maximum surface level impact of 0.8 ug/m^3 of NO_x occurring 1 km from the platform and decreasing rapidly with distance from the platform (Figure 7). The surface level concentration of NO_2 at the shoreline would be 0.1 ug/m^3 or 1/1000 of the NAAQS, which in the opinion of ES is an insignificant level of NO_2.

Another annual analysis (Figure 8) was prepared on the basis of Hondo Platform meteorological data. There is a striking difference between the two calculations based on Santa Barbara Airport and Hondo Platform meteorological data. The maximum surface level concentration of NO_x is 0.5 ug/m^3, about 40% lower than determined with the Santa Barbara Airport data. Also, the plume is spread over a much greater area and the 0.2 ug/m^3 contour is much farther from the shoreline.

Accordingly, use of actual offshore meteorological data from the Hondo Platform for determining the annual concentrations indicates that onshore air quality effects are even lower than suggested by Santa Barbara data. Comparison of the two analyses (Figures 7 and 8) indicates that the onshore data provides a very conservative estimate of the effects of a Santa Barbara Channel site on the Santa Barbara shoreline. In either event, the impact appears not to be significant.

3.4 Physical Oceanography

3.41 Currents and Waves

As the northwesterly-flowing Southern California countercurrent enters the Santa Barbara Channel, it is shaped by mainland and island coasts and by the California Current into one or more gyres that vary seasonally on a regular basis (Ref. 28). From July to November the current flows northwesterly across the project area, forming the southern portion of a clockwise gyre which occupies the eastern Channel. From November to mid-February the Davidson Current surfaces, forming a complex pattern in the eastern Channel which, in the project area, includes southward and westward-moving components. From mid-February to August, longshore winds cause upwelling and an associated current pattern; currents in the area of Parcel P-05 flow toward the northwest and north during that period. The surface currents in this area of the Santa Barbara Channel are not strong, ranging in velocity from 0.3 to 0.6 knots in summer to 0.5 to 0.7 knots in winter. Subsurface channel currents are primarily related to tides and sea floor topography. They usually have a lower speed than surface currents and differ

most widely from surface currents in both speed and direction during the summer months. Intersea Research Corporation (Ref. 29) found that the subsurface currents had the same general direction as the surface currents during their studies for the proposed Santa Clara Unit pipeline, just north of the location of well P-0205-3.

Tides in the region are the result of interference between diurnal and semi-diurnal components, producing an asymmetry such that there is usually one cycle of greater range and one of lesser range. There are generally two high tides and two low tides each day, with the time between successive high (or low) tides varying from about 10 to 14 hours. Tidal heights along the Southern California coast range from 1 ft. to 8.7 ft., with a mean of 3.7 ft. (Ref. 22, 30).

Bottom currents, related primarily to tides and sea-floor topography, were measured (Ref. 9, p. 5-3) in the area of the Santa Clara Unit subsea pipeline 7 miles to the north, where maximum velocities were 0.5 knots. In the deep portion of the Santa Barbara Channel, maximum measured bottom currents were less than 0.6 knots, and maximum mid-depth currents were 0.2 to 0.3 knots (Ref. 18).

Surface wave conditions in the eastern portion of the Santa Barbara Channel are quite mild because of the few storms passing through the area, and because of the protection from northwesterly winds afforded by the Santa Ynez Mountains. Average significant wave heights are less than 6 ft. Wave direction is generally from west and northwest because of the prevailing winds from this direction (Ref. 11). Storm (wind generated) waves in the eastern part of the Channel are of lesser magnitude than those in the western portion. In the vicinity of the proposed well Riffenburgh's studies indicate a 95% probability that the maximum 100-year-wave will not exceed 36 ft. in height and 790 feet in length (Ref. 11). Moderate swells generated by the prevailing westerly winds may travel eastward through the Channel to reach the project area but it is sheltered, by the Channel Islands, from occasional southerly swell caused by tropical storms or the Hawaiian Lows (Ref. 18, p.88). Tsunamis, which do not develop significant height or force until they impinge upon the shelf at water depths of 50 feet or less, would not be a hazard; at the proposed drilling site, the water depth is 767 feet.

Compared with many areas where drilling vessels have operated successfully, the currents and waves in the Santa Clara Unit are very mild, and should present no problems.

3.42 Water Qualities

The physical and chemical characteristics of the waters in the Santa Barbara Channel vary with the currents, discharges from various onshore sources, and the interactions between these and other processes. A great deal of information is available from the Final EIS for the Development of Oil and Gas in the Santa Barbara Channel OCS, FES/76-13 (Ref. 11, pp. II-214 through II-226) and the EIS Proposed 1979 OCS Sale No. 48 (Ref. 18, pp. 90 through 119).

The surface water temperature in the Southern California Bight fluctuates annually between about 10°C and 17°C. During the summer the waters stratify with a thermocline at a 20- to 30-meter depth. These temperature changes are due to the atmospheric temperature, advection of water from nearby areas, cold water upwellings, and the mixing of warm surface water with cold deeper waters.

The salinity of the area waters varies between about 33.3 o/oo (parts per thousand) and 34.0 o/oo. These fluctuations are caused by precipitation and evaporation at the surface, by freshwater land runoff, advection, and by upwellings.

The hydrogen ion concentration (pH) of the area from Point Conception to the Mexican Border ranges from 7.5 to a maximum of 8.6 with a mean of 8.1

Dissolved oxygen is a result of photosynthesis by marine flora, free exchange with the overlying atmosphere, and turbulent mixing by winds, tides, and currents. The surface is nearly always super-saturated, sometimes as high as 140 percent of saturation. Dissolved oxygen decreases with depth and at 60 m is about 4 mg/l, which is about 50 percent of saturation.

Various inorganic nutrients such as nitrogen, phosphorous, and silica are supplied by upwellings (especially during the spring and summer months), advection and land discharges (rivers and industrial and domestic effluents). These nutrients are depleted by uptake by phytoplankton. Nitrate concentrations vary from 0.01 mg/l to 0.16 mg/l at the surface, and 0.20 mg/l to 0.40 mg/l at 90 m depth. Phosphate varies from about 0.01 mg/l to 0.08 mg/l at the surface and 0.09 mg/l to 0.20 mg/l at 300 m depth; silicate, 0.10 mg/l to 1.40 mg/l at the surface and 0.85 mg/l to 2.38 mg/l at 300 m.

Trace metals such as copper, cobalt, zinc, iron, manganese, boron, molybdenum, and selenium are physiologically essential to biological productivity. However, these same elements can be toxic in concentrated and/or transformed conditions. It is difficult to ascertain general concentrations for trace metals

in sea water due to the limits of detection of analytical equipment and uncertain physical/chemical states of the constituents. Concentrations vary with depth, nearness to shore, upwellings, storm runoff, or depletion by plankton populations.

Along the California coast, the mean visual transparency of the water varies from less than 6 meters to more than 15 meters, lower values occurring close to shore. This visual transparency is dependent upon the quantity and size of suspended particles in the water, and to the kind and quantity of dissolved organic substance, all of which increase nearer the coast.

According to the Central Coast Region, California Regional Water Quality Control Board, the chief water quality problem involves the discharge to state waters of municipal and industrial waste waters, most through short outfalls with minimum dilution and dispersion. There are eleven municipal dischargers and fourteen separate industrial dischargers in the Santa Barbara Channel. All separate industrial dischargers are related to oil production. However, the total constituent mass emission rates contributed by the industrial discharges for total suspended solids and oil and grease are only about two percent of that contributed by the municipal discharges, and the chemical oxygen demand is about seven percent of that of the municipal discharges. All discharges in the OCS must and will adhere to "appropriate standards in effect at the time." This could be OCS Orders 7 and 8 and/or regulations generated by the Federal Water Pollution Control Act Amendments of 1972 and through the NPDES permit process.

3.5 On-Site Flora and Fauna

The northern Channel Islands region of the Southern California Bight is significant due to its location at a major transition point between two biogeographic coastal provinces, the temperate Oregonian and the subtropical Californian (or San Diegan). The biota of this transition zone includes species from the northern Subarctic and Southern Equatorial water masses, along with endemic species and elements from the Central Pacific water mass. Species diversity is higher in this area (approximately 150 miles long) than on either side. San Miguel, Santa Rosa, Santa Cruz, and Anacapa Islands have been designated as Areas of Special Biological Significance (Ref. 18), serving as a funnel for migrating birds, especially shearwaters and brant, as well as a migratory route for gray whales. In addition, the Office of Coastal Zone Management has proposed the designation as a marine sanctuary of the waters surrounding the northern Channel Islands and Santa Barbara Island, extending from the mean high tide line seaward 6 nautical miles (Ref. 18).

3.51 Marine Mammals

A one-year survey of marine mammals in the Southern California Bight was conducted by the University of California at Santa Cruz. Data from this study (cited in Lease Sale 48 EIS, Ref. 18) showed that the northern Channel Islands are a significant area of activity for pinnipeds. Zalophus californianus, the California sea lion, is the most abundant pinniped in the Bight. Ninety percent of the species' population is found on San Miguel and San Nicolas, with the remaining ten percent distributed between Santa Barbara and San Clemente. Anacapa Island serves this species primarily as a haulout location, but it is also used for breeding with the pupping season in June and July. Phoca vitulina, the harbor seal, has its major activities on San Miguel, Santa Rosa, Santa Cruz, Santa Barbara, San Nicholas, and Santa Catalina Islands, but it also hauls out and breeds on Anacapa. Pupping, nursing, and breeding occur from March into June. The population of sea lions in the Southern California Bight in 1975-76 was estimated at 38,800 and that of harbor seals +1,290 (Ref. 18).

The Santa Cruz report included a survey of marine mammals. The Santa Barbara Channel between Anacapa and the mainland is used as a southward migratory route for the gray whale. Table 3 lists the species of cetaceans sighted over or adjacent to island shelves off San Miguel, Santa Rosa, Santa Cruz, Anacapa, and Santa Barbara Islands (Ref. 28).

TABLE 3

CETACEANS SIGHTED OVER OR ADJACENT TO
ISLAND SHELVES OFF SAN MIGUEL, SANTA ROSA,
SANTA CRUZ, ANACAPA AND SANTA BARBARA ISLANDS

Common Name	Species	
*Gray whale	Eschrictius robustus	14 sightings from Jan.-March around northern Channel Islands.
*Fin whale	Balenoptera physalus	1 sighting south of Santa Rosa, Oct.-Dec.
*Humpback whale	Mogaptera novaeangliae	1 sighting west of Anacapa, Jan.-March.
Killer whale	Orcinus orca	5 off Channel Islands, Jan.-Sept.
Pilot whale	Globicephalus macrorhynchus	2 sightings west of Santa Cruz, Oct.-Dec.
Pacific white-sided porpoise	Lagenorhynchus obliquidens	10 sightings - all seasons, all islands.
Dall's porpoise	Phocoenoides dallii	15 sightings, Jan.-March.
Common dolphin	Delphinus delphis	9 sightings, Jan.-March.
Northern right whale dolphin	Lissodelphis borealis	1 sighting off Santa Rosa, Oct.-Dec. 1 sighting south of Santa Cruz, July-Sept.
Baird's beaked whale	Berardius bairdii	6 animals in 1970 south of Santa Cruz - rare.

*Endangered species

Source: Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary (Ref. 28).

3.52 Marine Birds

The northern Channel Islands and Santa Barbara Island are a very important resource area for marine birds, where both numbers and diversity are high (Ref. 18). The islands serve as a nesting habitat for more than 60 species of Southern California's breeding sea birds. The San Miguel-Prince Island complex is the most important rookery in the Bight, followed by Anacapa. The adjacent shelf areas serve as foraging areas, most foraging occurring with 25 km of the islands. Table 4 shows the estimated population in 1975-76 of breeding species on Anacapa Island. Of special importance is the brown pelican, which is an endangered species.

TABLE 4

BREEDING POPULATIONS ON
ANACAPA ISLAND, 1975-76

Western gull	200-6000
Brown pelican	424
Pigeon guillemot	8
Pelagic cormorant	2
Brandt's cormorant	2
Xantus' murrelet	2

Source: Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary (Ref. 28).

California Brown Pelican

The brown pelican (Pelecanus occidentalis californicus), a common seabird of the West Coast, ranges from Mexico as far north as southern British Columbia during its nonbreeding period. This subspecies now has breeding colonies in this area on West Anacapa Island (and possibly Scorpion Rock) and on Isla Coronado Norte. Anderson and Anderson (1976) suggest that this population constitutes a separate ecotype due to difference in breeding seasons and competition for food.

The breeding range has extended historically as far north as Bird Island off Point Lobos in Monterey County, but successful nesting has not occurred there since 1959. Irregular nesting has occurred in the past on Santa Catalina, Santa Cruz, San Miguel, and San Nicolas (Ref. 50). Santa Barbara Island supported a substantial breeding colony early in this century but has not done so until this year (P. Kelly, pers. comm.). The current breeding range of the brown pelican extends from Anacapa Island south along the coast to Isabel Island and the Tres Maris Islands off Nayarit, Mexico. Thus, the California population constitutes the extreme northern limit of the breeding range. The bulk of the breeding population is located in Mexico and the Gulf of California, where over 100,000 pairs breed (Ref. 50).

Dispersal along the Pacific Coast occurs between breeding seasons. Anderson and Anderson (Ref. 51) related the seasonal movement patterns of pelicans to shifts in offshore water masses. The records of northward dispersal in the later summer correlated with the northern movement of warmer water off California, which is probably also accompanied by northern movements of southern warm-water fish species which constitute the pelican's food supply (Ref. 50). The Mexican colonies breed earlier than the California population. Their likewise earlier migratory pattern results in a large influx of birds to the Channel Islands in the late summer and fall, often arriving before Anacapa's young have fledged. Most of the Gulf of California population have left the Southern California Bight by early December, and in the winter a different population, associated with the Davidson Current, is present (Ref. 50).

Pelicans are also reported inland from British Columbia through California, Utah, Nevada, Arizona, and Sonora, Mexico, although these sightings probably do not represent colonization. Birds from Anacapa populations have not been recovered further inland than 10 km (Ref. 50).

A comprehensive study of pelican habitat utilization was conducted by the University of California at Santa Cruz for the Bureau of Land Management over the period 1975-1978 (Ref. 52). A summary of data from that study is presented here.

Pelican population levels in the Bight fluctuate widely throughout the year, with maximum abundances occurring after early June with the annual influx of birds from Mexican nesting colonies. Some 5000 birds were estimated present on land and in open areas in March, April, and May, 1975-1978. Maximum island populations in excess of 10,000 were recorded in September and October 1977, and open ocean estimates exceeded 70,000 individuals in October 1977. The total population estimate at this time was 94,000 birds, approximately 20 times greater than the spring population.

In spring the populations exhibited an annual low and were centered around the Anacapa nesting colony (Fig. 9). In early fall, when most abundant, pelicans were concentrated in eastern Santa Barbara Channel, Santa Monica Basin, and around shallow island shelves (Fig. 9). In late fall (November and early December) as southeastward shift in sightings occurred, and by early winter most pelicans were located either in the Santa Monica Basin-Santa Barbara Island area or between San Clemente Island and the mainland (Fig. 10). Projected density distributions of Brown Pelicans in the Bight were calculated from sighting data. Fig. 11 shows examples for November 1976 and September 1975 and illustrates the typically greater abundance in the Bight in late summer due to traffic of migratory birds from Mexican colonies.

A similar population distribution in 1979 was reported by Gress (Ref. 53) based on radial transects from Anacapa, with highest concentrations (to 1.99/km^2) in transects south of Santa Cruz and in the Santa Barbara Channel north and northwest of Anacapa. Higher concentrations (to 3.89/km^2) occurred in feeding flocks in June and July.

Seasonal variations on Anacapa relate to the nesting season. Total counts from Anacapa Island were shown graphically for two years, 1976-7 and 1977-8 (Ref. 52). Maximum abundances occurred in May (approximately 400) and June (1000), respectively, and minima in January and December (less than 50).

The age ratio of pelicans found along the Southern California mainland was heavily biased toward immatures, especially from August through November. Adults comprised 70% of island population from July onward, and open ocean sightings 80%. This suggests differential habitat selection between age groups.

Anderson (in Ref. 52) reported the following food species and their percentage of the diet during the breeding season off the California Coast: northern anchovy (Engraulis mordax), 87.6%; Pacific saury (Coloabis saira), 8.8%; Pacific mackerel (Scomber japonicus), 3.4%; and blacksmith (Chromis punctipinnis), 0.1%. Pelicans were also observed feeding on California grunion

(Leuristhes tenuis) when available, although this species was not recovered from gut analyses. Gut analyses indicated that anchovies under 300 mm were taken (Ref. 53). The young are fed partially digested regurgitated fish at the nest. Food habits at other times of the year have not been adequately studied.

Foraging occurs in schools of anchovies and involves diving from the surface. Unlike the white pelican, the brown pelican does not feed cooperatively. Foraging ranges depend on the distribution and type of fish schools and can extend as far as 25 miles from the nesting site. Some feeding occurs in kelp beds adjacent to Anacapa, but most foraging occurs along the mainland shelf (R. Schreiber, pers. comm.). Feeding flocks were observed in June and July of 1979 (Ref. 53) on the island shelf of Santa Cruz and on the mainland shelf north of Santa Cruz and showed densities of $2.92/km^2$ and $3.89/km^2$. Feeding flocks in mid-channel north of Anacapa at the time had a density of $1.50/km^2$. Feeding flocks seemed to be located where water depths did not exceed 40 to 50 f. (Refs. 52, 53). Nestlings can survive long periods without feeding, but starvation is a major cause of mortality when food supplies are low, particularly for late-season nestlings (Ref. 54).

In a study of the effect on seabirds of the Santa Barbara oil spill in 1969 (Ref. 55), it was observed that live birds tended to avoid oiled water if possible. This was borne out by data for the Pelicaniformes which showed that 6 dead birds and 31 live birds were collected from an oiled area, while from an unoiled area, 6 dead birds and 260 live birds were found.

Pair bonds are not permanent, lasting for one breeding season only. Brown pelicans are colonial nesters, a characteristic which may have evolved as a response to increased benefits of cooperative feeding and defense of nests and young from predaceous gulls (Ref. 50).

The nesting season for any given pair requires about 18 weeks (Ref. 50). Nesting occurs in the heavy Coreopsis growth on the upper steep slopes of West Anacapa. Fig. 12 shows the distribution of breeding colonies on the island. New nests are constructed each season and are woven of twigs and branches of native shrubs and lined with herbaceous material. Nesting usually begins in late January, but the timing of the breeding season varies from year to year. Breeding in the 1980 season commenced in mid- December on Santa Barbara and the first week in January on Anacapa (P. Kelly, per. comm.). Eggs are incubated for 30 to 35 days and the nestling stage lasts 9-12 weeks. Consequently, some 3 to 6 months can separate the time of the first and last fledging (Ref. 54). Most young have fledged and left the colony by late August (Ref. 52). The brown pelican exhibits deferred maturity. Three-year old birds breed if conditions are optimal; more often breeding is begun from four to seven years (Ref. 56).

Post-fledging mortality rates are high while the young birds are learning feeding skills, but after this stage, the life span is approximately 30 years (Ref. 54).

Schreiber (Ref. 54) studied brown pelican reproductive success in Florida, and his findings are generally applicable to the California population. The normal clutch size is two or three, and the means for early, middle, and late laying periods were 2.5, 2.6, and 2.2 eggs per clutch. Hatching success for these periods was 84%, 70%, and 43%. Similarly, early and middle periods were more successful than late periods in fledglings produced per total nests. Schreiber cites similar findings by Keith for Baja Californian populations, where diminishing food supply in August was identified as the primary factor in the decreased success of late nests.

In this study clutch size and hatching success did not vary significantly over a period of eight years, while fledglings per total nest varied between 1.7 and 0.31 with a mean of 0.93. This parameter is the best measurement of total productivity, and it demonstrates that even in "stable" populations wide differences occur in reproductive success from year to year, depending on particular conditions such as food supply. Low production was due primarily to mortality during the nestling stage. Schreiber feels that this mean figure centering around or slightly below one young fledged per nest is representative of stable populations in general and represents "normal" nesting success in brown pelicans, in contrast to higher figures of 1.2 to 1.5 cited by Anderson et al. (Ref. 57). The species is adapted to a variable, unpredictable food source, and an optimal clutch size of three allows production of several young when food is available.

This study emphasized the need for long-term studies (on the order of 20 years) to adequately assess population parameters of the brown pelican.

Historical estimates of the breeding population on Anacapa (Ref. 52) indicate that some 1000-2000 pairs were nesting from 1914-1917, peaking in 1920 at over 5000 pairs. From 1935-1940 the estimated number of pairs was estimated at about 2000 pairs. In 1963 and 1964 observers estimated around 1000 pairs to be nesting. In 1968 some 200 pairs were present but apparently were not breeding, and in 1969 only four young were fledged (Ref. 57). The breeding population crashed sometime between 1964 and 1968. Reproductive failure in this and subsequent years was attributed to the production of thin-shelled eggs due to the presence in the Bight of DDE, a metabolite of the pesticide DDT. The number of young fledged increased to 305 in 1974 (Ref. 57). Fledging success declined and was very low in 1978 due to reduced food supply (Refs. 50, 57). In 1979, 980 young fledged (Ref. 53). The 1980 nesting season seems to be similar to 1979 at this point. In addition, around 45 pairs of birds are now nesting on Santa Barbara Island (P. Kelly, pers. comm.).

Nesting at Scorpion Rock was successful in 1975 (80 pairs) but not in the subsequent two years (Ref. 52).

DDT and Reproductive Success

Chlorinated hydrocarbon residues are concentrated in vertebrate lipid-storing tissues, especially during periods of stress or starvation. Being at the top of the food web, pelicans are especially vulnerable. They are also among the most sensitive of all birds to the effects of DDE in causing egg-shell thinning. DDE apparently blocks an active transport process that moves calcium from the bloodstream to make it available for deposition in the shell gland (Ref. 50). Studies by Anderson and Hickey (Ref. 58) showed that while normal shell thickness was 0.572 ± 0.010 mm, the many crushed shells that were found were 50-54% thinner than normal, and shells of intact eggs were 20-32% thinner than normal. Twenty percent thinning seems to represent a lower limit above which breakage occurs.

Levels of residues of total DDT metabolites were extremely high, over 1200 ppm on a lipid weight basis. Both shell thinning and contamination were the highest measured anywhere in the pelican range, and the highest measured in any species of bird (Ref. 56). Reproductive success was less than 0.01 young per nest during that time.

High DDE levels in the Bight resulted from the dumping of waste from the major DDT manufacturing plant into the Los Angeles sewer system. When the dumping was stopped, DDE levels in indicator organisms declined and continued to do so for sometime. DDE levels in California waters have now apparently stabilized. Egg shell thickness increased from a mean of 0.288 mm (crushed shells) in 1969 to 0.482 mm in 1974 (intact shells). Corresponding DDE levels in anchovy whole bodies decreased from 3.24 ppm in 1969 to 0.20 ppm in 1974, and in egg contents, from 115.3 ppm to 96.6 ppm. Egg shell thinning in 1975 was 16% (Ref. 57).

Table 4A shows reproductive success from 1969-1980 in the California population. The number of young fledged in the Anacapa/Coronados population increased from 4 to 1185 over this time period, representing a reproductive success of 0.004 and 0.922, respectively. This latter value approximates the figure considered by Schreiber to characterize stable pelican populations elsewhere. The Coronados population recovered somewhat more rapidly than the Anacapa colony and was considered stable as of 1974. The Anacapa population increased to 0.88 in 1975. Very low productivity in 1976-1978 was due to reduced food availability, not to DDE contamination. Productivity returned to 0.78 in 1979, and a similar success is expected for 1980. Whether this productivity figure is sufficient for stability can only be assessed over the long term.

TABLE 4A

PRODUCTIVITY (FLEDGLING PER NEST) FOR
NORTHERN COLONIES OF THE
CALIFORNIA BROWN PELICAN, 1969-1979

	Nests Attempted			No. Young Produced			Productivity		
Year	Anacapa	Coronados	Total	Anacapa	Coronados	Total	Anacapa	Coronados	Total
1969	750	375	1125	4	0	4	0.005	0	0.004
1970	552	175	727	1	3-5	-	0.002	-	-
1971	540	110	650	7	30-40	-	0.013	-	-
1972	261	250	511	57	150	207	0.22	0.60	0.41
1973	247	350	597	34	50-150	-	0.14	-	-
1974	416	870	1286	305	880	1105	0.73	1.01	0.92
1975	292	-	-	256	-	-	0.88	-	-
1976	417	-	-	279	-	-	0.67	-	-
1977	76	-	-	39	-	-	0.51	-	-
1978	210	265	475	37	62	99	0.18	0.23	0.19
1979	1258	960	2218	980	920	1900	0.78	0.96	0.86

Source: 1969-1977 data compiled from Power (Ref. 50).
Anderson et al. (Refs. 51, 57), and 1978-79 data from
Gress et al. (Ref. 53).

Although residual effects of DDE may still be operative, it is apparent from these data that the pelican population has responded positively to mitigation of an environmental pollution hazard and is now again influenced primarily by natural biological control factors.

Effect of Anchovy Abundance on Pelican Populations

Abundance: Intervals of high abundance of pelicans in the Bight accompany periods of oceanic warming. A clear relationship exists between abundance and mean surface temperature (Ref. 52). Migratory birds from Mexican colonies enter the Bight with the influx of warmer water in the winter along with associated fish fauna and especially anchovies. Peak abundances in 1977 were accompanied by large anchovy biomass. This phenomenon has occasionally led to misinterpretation of reproductive status of the California population. The population falls to an annual low in spring and summer when only the endemic population is resident.

Reproductive status: Dependence of seabird populations on availability of a fish food supply has been documented for several species. The collapse of the Peruvian anchoveta fishery attendant on the invasion of warm water known as El Niño in 1975/1958 and again in 1965 was accompanied by over four-fold decreases in guano bird populations (Refs. 59, 60). Related events occurred in the South African pilchard fishery and seabird populations (Ref. 60).

Experimental studies cited by MacCall (Ref. 62) showed that when food availability was reduced to 90% of satiety, reproductive success in ring doves decreased to 50%. Productivity was zero for birds restricted to 70% of food required for satiation.

In the Southern California Bight brown pelican breeding is heavily dependent on abundance and/or availability of anchovies during the prebreeding and breeding periods (Ref. 60).

Availability in the local situation is usually related to overall abundance in the Bight. Feeding areas are variable due to mobility of the anchovy. At Anacapa, pelicans feed mostly in the Santa Barbara Channel during the later phases of the breeding season, but feed wherever the fish are earlier (Ref. 60). Because of the unpredictability of anchovy distributions, these areas cannot be delineated.

Pelicans in the Bight have shown highest reproductive success (measured by number fledged per nest) during periods of high anchovy abundance (Fig. 13), or when anchovies are locally abundant, as occurred at Anacapa in 1979 (Ref. 60). High productivity accompanied by high abundance occurred in 1974

and 1975 (Refs. 50, 61), as well as a similar period in the mid-1960s. Decreased productivity from 1976-1978 was correlated with low anchovy abundance (Ref. 53).

Anderson and coauthors (Ref. 60) have interpreted Fig. 13 to indicate that the estimated minimum anchovy school area necessary for effective pelican reproduction (B_{min}) is 43 sq. mi., or an extrapolated 2.15×10^6 short tons. They emphasized that this corresponds to a productivity of only 0.6 fledglings/nest. This biomass represents about 78% of the long-term mean estimated for the central stock of anchovies and is twice the forage reserve recommended in the Anchovy Managements Plan. A more conservative estimate might be about 60 square miles, which would require a larger foraging reserve.

The pelican population actually consumes negligible proportions of total anchovy biomass. An estimate based on a resident population of 6000 birds with a food requirement of 2 lbs/day, of which 2000 breeders produce 900 young per year which consume 150 lbs each to fledge, resulted in an estimated total requirement of 2,250 short tons/year (or 67.5 short tons/year to produce young), which represents 0.08% of the mean anchovy biomass (Ref. 60). If migrant pelicans were included in this estimate (75,000 birds for three months), the requirement increased to 0.33%. However, the total abundance of the food resource is the controlling factor in determining the status of pelican populations, since a much larger population size is required to produce availability levels such that this ration could actually be consumed.

Pelicans and commercial anchovy fisheries: Anderson (Ref. 60) presented catch data which illustrated that prior to 1979 commercial anchovy catches had no particular effect on pelican populations. He concluded that up to that time quotas and catches were not adversely affecting either anchovy stocks or pelicans.

Anderson discussed dynamic interactions between pelican and anchovy populations (Ref. 60). Pelican productivity levels off asymptotically at higher levels of abundance of prey more rapidly than does human predation. Clutch size, which is genetically fixed in this K-selected species, provides an upper physiological limit to maximum reproductive output. Density-dependent behavioral changes in the prey could result in different school sizes, densities, or distributions which affect the efficiencies of both predators, but not necessarily in the same manner. For example, very dense schooling would render the anchovy population proportionately less vulnerable to pelican predation but more amenable to purse seining. The result of these kinds of interactions is that carrying capacity (K) for the pelicans may be at a maximum while biomass continues to

increase, and predation by man could continue to increase and possibly affect prey availability to the pelican. Commercial fishing might also be affected alternatively or additionally by the density-independent factor of profitability.

These theoretical aspects of a two-predator system have become relevant to the pelican population in the Southern California Bight since potential increases in commercial harvest of anchovies have been provided recently by the Pacific Fisheries-Management Council in the form of increased quotas. Furthermore, the Mexican fishery is increasing. It is not clear at this time whether these factors will reduce food availability for California pelicans (Ref. 60). A management plan for seabird resources has not yet been developed by the appropriate agencies.

MacCall (Ref. 62) has modeled the effects of differential food availability on pelican reproductive success. This simulation illustrated theoretically that where productivity is dependent on food supply, reduced food availability can shift a normally K-selected dynamics to a response more typical of R-selected species, resulting in recurrent periods of reproductive failure and population decimation. MacCall (pers. comm.), a coauthor of the Anchovy Management Plan, emphasizes that in addition to censusing, research to provide life table data is necessary to provide adequate information for formulation of a fisheries plan which will adequately protect the pelican.

Anchovy distribution in the Southern California Bight: Anchovy carrying capacity varies considerably due to environmental stochasticity. The anchovy in Southern California is at the northern end of its range and is associated with southern water. The Southern California Bight is a transition area where several water masses meet, and the relative composition of each varies seasonally and annually. Hence the abundances in the Southern California Bight cannot be predicted accurately. Anchovy abundance and biomass are also difficult to assess accurately. The several methods currently in use sample the population in a biased manner and produce different estimates.

One measure of anchovy abundance is the commercial harvest. When plotted by California Department of Fish and Game statistical blocks, it does not appear that anchovy harvests near Anacapa have contributed a major portion of the total catch in the Bight (Fig. 14). Anderson (Ref. 60) calculated that loss of the area near Anacapa to fishing from an oil spill would amount to a loss of about 15% to 20% of California's anchovy fishing waters. Fig. 14 also illustrates that anchovy abundance was greater in midchannel and along the mainland coast than in the immediate vicinity of Anacapa.

Anchovy distributions have also been estimated by trawling and by acoustic methods. These two methods are also limited in the accuracy of determining biomass, the former due to net avoidance, particularly in the daytime, and the latter due to detection limitations of acoustic equipment at low anchovy densities. Mais (Ref. 61) conducted acoustic surveys which indicated that densities of anchovies were lower in shallow (less than 50 f.) banks and inshore waters than over the basins of the Bight. However, he commented that the technique may have underestimated densities in these areas since schooling there is diffuse. The better inshore concentrations were located between Port Hueneme and Santa Barbara. Anchovy distribution varied seasonally, with a large portion of the population in the fall located inshore and in the more northern part of the Bight, while in late winter, an offshore and southeastward movement occurred coinciding with the onset of major spawning activity (February through May). At this time the population was spread over areas offshore and south of San Pedro. Schools became extremely numerous and small, reaching peak numbers in April and May. In mid-March to June a northward movement was seen with formation of large daytime surface schools during some years. The timing, as well as actual distributions, of these events varied from year to year.

Mais described several different types of schooling behavior and discussed their effect on abundance measurements and suitability for commercial trawling. The most common schooling behavior observed was very small low- density near-surface schools during daylight hours. These schools were usually 5 to 30 m. in diameter and 4 to 15 m. thick, occurring from the surface to 9 to 18 m. Several patterns of dense schooling suitable for trawling were also described.

Mais did not discuss suitability for pelican predation. However, several types of schooling behavior were described in the areas where pelicans feed. A schooling behavior seen in spring or early summer occurring at or near the surface during daylight hours was observed over the basins and channel within 20 miles of shore. Another schooling behavior observed in daylight hours in the flats between Ventura and Santa Barbara throughout the year consisted in a loose extensive scattering layer which could not be enumerated and was not suitable for commercial harvest. This type of schooling also occurred over deeper offshore water. The least common behavior observed in Southern California was the formation of dense schools in shallow inshore areas which normally lay on the bottom but occasionally appeared at the surface during daylight. This was observed mainly in the Ventura-Santa Barbara area in summer and fall.

Data from these studies by Mais were used in calculations of and relationship to reproductive success (Ref. 57).

Effect of human disturbance: It is clear that human disturbance, particularly at the nesting site, has been detrimental to seabirds (Ref. 54). Several species used to breed on Anacapa and no longer do so, and this has been attributed to human disturbance (Ref. 52). The brown pelican colonies were originally located on East Anacapa and relocated to West Anacapa around 1939, which corresponds to the construction of the lighthouse on the easternmost island. However, very few data are available. A study of the effects of sonic booms, aircraft, and boat noise on bird and mammal populations on San Miguel Island is currently being conducted (R. Schreiber, pers. comm.). Hopefully, this study will provide reliable information concerning this problem.

SUMMARY

The available literature concerning the California brown pelican describes a species which is particularly sensitive to environmental perturbations, whether natural or man-made. Salient factors in this sensitivity are the following:

1. The California population is at the extreme northern limit of the breeding range. Such populations are inherently unstable and naturally exhibit high variations in abundance over time, although adverse fluctuations in border populations do not necessarily have significant effects on the success of the species as a whole.

2. This subspecies has become almost entirely dependent on the northern anchovy for food. Reproductive success is heavily dependent on abundance and availability of this resource. Population numbers in the Southern California Bight are also governed by this factor. Both total anchovy abundance in the Bight and local availability, to a lesser degree, are important in this regard. Anchovy distribution is highly unpredictable, and although pelicans are adapted to deal with this variability, there are physiological limits, and hence shortages in this food resource can lead to reproductive failure and population crashes.

3. Anchovy distribution is highly variable due to environmental stochasticity inherent in the complex oceanographic character of the waters of the Southern California Bight. The anchovy is also at the northern limit of its range, and its actual distribution varies seasonally and annually depending on the source of water circulating in the Bight. Abundance is greater elsewhere in the Bight than near Anacapa.

4. Anchovies are a prey species for two predators, birds and man. Commercial fisheries have been regulated up to the present in a manner which seems not to have allowed interference with pelican food requirements. However, the current liberal policy, coupled with increased Mexican fishery, may result in a reduced availability of anchovies to pelicans and other seabirds. A management policy including both anchovies and seabirds is necessary to circumvent this possibility.

5. Pelicans are extremely vulnerable to organochlorine pollutants. The population has apparently largely recovered from the effects of DDE contamination in the Bight, but reproductive success at Anacapa may still be somewhat lower than desirable for maintenance. The potential remains for a similar crash from other chemical pollutants, such as PCB, and monitoring programs are necessary to prevent recorrences.

6. A worst-case oil spill, occurring during the breeding season and beaching on Anacapa could affect foraging efforts near Anacapa but would not affect other available foraging areas. Birds tend to stay out of oiled areas. The effect on primary and secondary productivity (phytoplankton and anchovies) would be minimal due to the nature of their distribution in the Bight. Although such an oil spill would certainly have some adverse effects, the impact is probably less significant to pelican population dynamics than the several other factors involved.

3.53 Fishes

1. Commercial fisheries

Fish populations also show very high abundance and diversity due to sharing of species from different biogeographical provinces.

The highest mean catch in the northern Channel Islands/ Santa Barbara Channel area west of Anacapa Island from 1970-1974 was in Fish Block 665 next to the mainland coast. The annual catch in this block is 5-9 million pounds, compared to nearby Fish Blocks 683 and 664 and also 684 (which extends north from Anacapa and includes the proposed drilling site), where catches are in the range of 1-4 million pounds annually (Ref. 28). These fish blocks showed catches well below the most productive fishing area in the Bight, located off San Pedro. Table 5 shows 5-year averaged data from the California Department of Fish and Game for Fish Block 684 (Ref. 32). The most

TABLE 5

ANNUAL CATCH (LBS) IN FISH BLOCK 684
AVERAGE OVER FIVE YEARS (1971-1975)

Species	Catch in lbs
Northern anchovy	2,862,761
Rockfish (lumped)	197,806
Sea urchin	129,657
English sole	64,120
Pacific bonito	53,841
Trash fish (lumped)	43,431
Bluefin tuna	39,770
Boccaccio	36,430
Jack mackerel	12,420
California halibut	9,547

Source: California Dept. of Fish and Game, Fish Block Data (Ref. 32)

important commercial catch in this area was the northern anchovy, followed by rockfish (species lumped together). The rockfish is an inshore species caught on the island shelf but not at site P-0205. Other commercially important species include sea urchin, English sole, and Pacific bonito.

2. Recreational fishing

The area southeast of Anacapa Island is a popular and productive fishing area, with party-boat fish landings amounting to more than 500,000 fish in 1973-75, while the channel area north of Anacapa is less so, with landings in the range of 100,000 to 249,999 fish for the same period (Ref. 28). Most of the recreational fishing is done in the near neighborhood of the island. Rockfish, kelp, and sand bass are the species caught in greatest abundance.

3. Midwater fishes

The Santa Barbara Basin is relative shallow (600 m), such that it has no true bathypelagic zone. The distribution of resident and transient species sorts according to depth, basin, water mass, and vertical migratory behavior (Ref. 33). Midwater fishes typical of the Santa Barbara Basin include Leuroglossus stilbius, Stenobrachius leucopsarus, Argyropelecus lynchnus, Idiacanthus antrostomus, and Cyclothone signata. Larval fish in the basin include the larvae of anchovy, rockfish, sanddab, Dover sole, and Pacific hake, as well as those of various noncommercial nektonic species.

3.54 Kelp Beds

Macrocystis pyrifera, or giant kelp, occurs in beds around Anacapa Island down to about 100 feet, which are located primarily on the southern side of the island and extend down no greater in depth than about 100 feet (Ref. 31). These beds provide food and habitat for fish and invertebrate and commercial and sport fish species, as well as their larvae. Kelp is harvested from all the northern Channel Islands, including Anacapa, which provides a small portion of the harvest, which averaged 15,364 wet tons annually from 1974-78 (Ref. 28).

3.55 Benthic Macrofauna

Drill-site P-0205-3, at 234 m. (767 ft.) depth is located on a soft mud bottom. The distribution of benthic macrofauna is determined primarily by depth. Fauchald and Jones (Ref. 34) in a study including the Santa Barbara Channel descriptive area, showed that densities were lower in the basin than on the mainland or on insular shelves, the abundance at the site being

approximately 1400/m^2. The species richness also declined with depth (30/sample), while the standing crop was higher at greater depths (780 g/m^2), probably due to occasional large specimens. At their station 878 near lease site P-0205 at 288 m. depth, polychaetes and crustaceans dominated in the samples. Table 6 lists the faunal composition and abundance at station 878. (It is important to note that it requires several years, at least three, and many replicate samples to adequately assess the various kinds of variability inherent in benthic communities.)

TABLE 6

FAUNAL COMPOSITION OF STATION 878
(288 m., LATITUDE 34°8.31, LONGITUDE 119°38.95)

Taxon	Species	Number
Polychaetes	Paraprionospio pinnata	1
	Tauberia gracilis	3
	Nephtys punctata	1
	Harmothoe scriptora	1
	Nothria iridescens	1
Mollusks	Cyclocardia ventricosa	3
Crustaceans	Ampelisca, near macrocephala	6
	Eudorella pacifica	1
	Erichthonius, near hunteri	19
	Maera, near danae	13
	Janiridae unid.	11
Echinoderms	Allocentrotum fragilis	2

Source: Fauchald and Jones, 1978, (Ref. 34).

3.56 Phytoplankton

Composition and abundance of the phytoplankton community in the Southern California Bight is determined by the relative contributions of the different water masses, as well as by upwelling events. Species carried by the California current are mainly northern species originating in Subarctic waters.

Southern (equatorial) species are carried in by the northward-flowing undercurrent (below 200 m. depth), the seasonal northward surface countercurrent, and the seasonal northward Davidson current in the winter (60 km. offshore) (Ref. 12). In the fall, oceanic species are introduced from the Pacific Central Water Mass. Large concentrations of diatoms may be found during upwelling periods. Riznyk (Ref. 35) found 17 dominant species in the Santa Barbara Channel area, including Ceratium furca, C. fuscus, Peridinium spp., Bacteriastrum delicatulum, Chaetoceros compressus, C, decipiens, C. didymus, Coscinodiscus spp., Licmophora abbreviata and Skeletonema costatum.

Productivity and chlorophyl a concentrations in the Southern California Bight and particularly in the Santa Barbara Channel area are higher than in more oceanic waters. Table 7 lists chlorophyl a values at the surface and integrated over the euphotic zone for quarterly periods in 1969 (Ref. 36). A typical annual cycle of phytoplankton productivity is seen where highest values occurred from April through September, with lower values in the late fall and winter.

TABLE 7

QUARTERLY CHLOROPHYL a CONCENTRATIONS
AT THE SURFACE (mg/m^3) AND INTEGRATED
OVER 150 m. (mg/m^2) AT ANACAPA ISLAND IN 1969

	Surface	150 m.
January-March	1.0-1.5	30-50
April-June	0.3-0.4	50-70
July-September	0.5-1.0	50-70
October-December	0.2-0.3	20-25

Source: Owen, 1974 (Ref. 36)

3.57 Zooplankton

As with phytoplankton species, the most abundant zooplankton species in the Santa Barbara Channel area are of Subarctic and Transitional origin, with the presence of Equatorial and Eastern Central Pacific species depending on the circulation conditions at any given time. There are also endemic nearshore species. Ebeling's study of zooplankton community structure in the area (Ref. 33) included the species listed in Table 8 as characteristic of the Santa Barbara Basin. This study did not identify copepods; copepod species encountered in abundance in the Southern California Bight include Calanus pacificus, Acartia clausi, Acartia tonsa, Corycaeus spp., Paracalanus parvus, Rhincalanus nasutus (Ref. 37).

TABLE 8

ZOOPLANKTON COMPOSITION OF THE
SANTA BARBARA BASIN

Taxon	Species
COELENTERATES	Tiaropsidium kelseyi
	Aegina citrea
	Colobonema sericeum
	Atolla wyvellei
	Vogtia sp.
CRUSTACEANS	
Amphipods	Hyperia sp
	Paracallisoma coesus
	Paraphronema crassipes
	Primno macropa
	Phronema sedentaria
	Scina spp.
Decapods	Pasiphaea pacifica
	Pasiphaea emarginata
	Sergestes similis
	Pasiphaea chacei
	Sergestes phorcus
	Lepidopa mupos (larvae)
	"porcelain crab" (larvae)
	Blepharaopoda occidentalis (larvae)
	Emerita analoga (larvae)
Euphausiids	Nyctiphanes simplex
	Thysanoessa spinifera
	Nematoscelis difficilis
	Euphausia pacifica
CTENOPHORES	Pleurobrachia bacheii

Source: Ebeling et al., 1979 (Ref. 33)

Long-term averages of zooplankton standing stock (Smith, Ref. 38) showed that zooplankton abundance in the upper 140 m. of the water column is at a maximum in the spring and summer and a minimum in the winter, when a high concentration band of zooplankton extends from the north past Point Conception and lies offshore in the northern portion of the Southern California Bight. This band includes the northern Channel Islands at some times. Smith's data (median zooplankton volumes from 1951-60) showed plankton volumes in the Anacapa area of 16-64 ml/1000 m^3 in January and 64-256 ml/1000 m^3 from February through July and October.

Fish larvae and eggs are an important part of the plankton. Kramer and Smith (Ref. 39) documented the presence in the northern Channel Islands area of the larvae of sauries, anchovies and rockfish, among others.

3.6 Environmentally Sensitive Areas

Included in this discussion of environmentally sensitive areas is an inventory of such areas in the general region of the Santa Barbara Channel as enumerated below. These are also shown in map form (Figure 15). Other reports (Ref. 40, Chapters 6 and 16) have suggested other values to be included within the "sensitive" categories and the discussion of alternatives and mitigations following would also pertain to these.

In the general region of the Santa Barbara Channel, the following officially protected areas presently exist:

1. State Oil and Gas Sanctuary (No. 1, Fig. 15), (Ref. 40, p. 339).

2. San Miguel, Santa Rosa, Santa Cruz and Anacapa Islands (Nos. 2 and 3, Fig. 15), and Mugu Lagoon to Latigo Point (No. 4, Fig. 15). These are designated as Areas of Special Biological Significance by the State Water Resources Control Board (See: Ref. 11, Vol. 2, p. 600, Ref. 40, p. 338; and Ref. 41).

3. Channel Islands National Monument (No. 5, Fig. 15), of which only Anacapa Island lies in the general region of this project (Ref. 40, p. 336).

4. Federal Ecological Reserve and Buffer Zone (No. 6, Figure 15). (Ref. 11, p. ii-11).

In addition to the above-mentioned areas, the Office of Coastal Zone Management has proposed the designation as a marine sanctuary of the waters surrounding the northern Channel Islands and Santa Barbara Island, extending from the mean high tide line seaward 6 nautical miles (Ref. 28). The proposed drillsite falls approximately 2,000 ft. south of the preferred boundary.

The State Oil and Gas Sanctuary and the Federal Ecological Reserve and Buffer Zone (Nos. 1 and 6, Fig. 15) are 18 to 33 miles northwest of the proposed drill-site. Due to the prevailing winds and currents during the period of the proposed activity, the project will not affect those areas. The area from Mugu Lagoon to Latigo Point (No. 4, Fig. 15) is 18 to 39 miles west of the proposed drill-site. Point Mugu is the habitat of two rare and endangered species, the California least tern and the Belding savannah sparrow.

The California brown pelican (Pelecanus occidentalis), listed as an endangered species, is considered a resident of San Miguel, Santa Rosa, Santa Cruz and Anacapa Islands (see Section 3.52). It is present year-round throughout the Channel region, with peak abundance from September through December (Ref. 28, pE-33). The only established rookeries of the brown pelican are on West Anacapa Island and nearby Scorpion Rock (off northeastern Santa Cruz Island); breeding populations of 212 and 80 pairs were reported in 1975-76 (Ref. 28, p.E-41). Entry to the the north shore of West Anacapa Island is prohibited during breeding season, March 1 to May 31 (Ref. 28, p.F-13). (The proposed drilling activity will not be prior to June 10.) The proposed drill-site is approximately 6.5 miles north of the Anacapa Islands, and 8.5 miles northeast of the eastern end of Santa Cruz Island.

Other nesting species on the Anacapa Islands and Scorpion Rock include the western gull, Brant's cormorant and the double-crested cormorant. Harbor seals use the Anacapa Islands and Scorpion Anchorage (northeast Santa Cruz Island) for pupping and breeding from March into early June. The California sea lion uses the Anacapa Islands as a haul-out area, and possibly for pupping and breeding during June and July. Kelp beds, with their associated resident and transient species, also occur around the Anacapa Islands and eastern Santa Cruz Island.

The proposed project should have little or no effect on biological conditions in the immediate drill-site area. Biological conditions further removed from the proposed drill-site could only be affected by a major oil spill (i.e., over 1000 barrels); Section 4.1(b) discusses the effects of such a spill. Section 2.2 should be referred to for the oil spill preventive measures to be employed by Chevron during the drilling. Available evidence indicates that total exposure of the flora and fauna which occupies the project area, to the discharge of drilling fluids and drill cuttings will result in no adverse effects to measurable numbers of these organisms (Refs. 42 and 4).

There are no known rare or endangered species of flora or fauna residing in the proposed project area. A detailed discussion of marine mammals and birds, fish, and plant resources may be found in the Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary, U.S. Department of Commerce (Office of Coastal Zone Management), 1979. (Ref. 28).

Concern has often been expressed as to the effects of drilling operations on marine mammals, particularly migrating whales. Regarding the California gray whale (Eschrichtius robustus) and the Pacific right whale (Eubalena glacialis), contact was made with Drs. William C. Cummings and Raymond Gilmore, scientists at the Natural History Museum in San Diego. Dr. Cummings was formally Senior Scientist at the Naval Ocean Systems Center in San Diego, and has spent the last 15 years doing bioacoustic and marine biological research related to whales. Dr. Gilmore is considered one of the top authorities in the nation on the California gray whale.

Both Drs. Cummings and Gilmore indicated that the internal navigational systems of whales are highly sophisticated and that it would be very unlikely for such whales to come into contact with any objects in the ocean. They stated that whales are very adept at avoiding even "whale-watching" boats that attempt to follow migrating whales as closely as possible. Also, the gray whale is very accustomed to both natural and man-made objects and noises, and frequently travels in the shipping lanes where noise levels are at their highest. As to the Pacific right whale, the last sighting of such a whale was off the coast of California near San Diego in 1955, and one sighting every 20 years would be about normal for this species. Drs. Cummings and Gilmore both stated their opinion that exploratory drilling of the type proposed does not pose any threat to the whales or their migratory patterns.

A recent report by the National Marine Fisheries Service (Ref. 43) was based on observations from a drillship operating in the migration route through San Pedro Bay during the peak winter migration season. Between 74 and 105 grey whales were observed on 30 occasions. The report noted that "gray whales were not adversely impacted by exploratory drilling activities; none of the whales sighted reacted to the presence of the drilling vessel in a manner detectable by the observer. Either the noise generated by the drilling vessel did not bother the whales or adjustments to the noise (i.e., course changes) were made before the whales swam into the view of the observer."

Commercial and sport fishing will not be materially affected by the presence of a drilling vessel in the project area. The operations contemplated by Chevron are of small dimensions, are of short duration (about 60 to 90 days) and do not involve any construction, large amount of noise or the use of any freighters or other large vessels, other than the drilling vessel itself. The drill-site is in Fish Block 684, for which an average annual catch of 1 to 4 million pounds is reported, primarily anchovy in the winter months (Ref. 28, pp E-70, E-74). The area receives moderate use by recreational fishermen, chiefly on the nearshore island shelf waters (Ref. 28, pp E-77-80). Commercial charter-boat services carry visitors to Anacapa Island; one such operator makes 6 trips per day between June and September (Ref. 28, p. E-94).

3.7 Onsite Uses of the Area

Coastwise shipping lanes through the Santa Barbara Channel pass to the north and to the south of the proposed drill-site, which is located in the "buffer zone" of the northbound sea lane. The U.S. Coast Guard has approved the proposed activity (see Appendix B). The area is a significant locus of commercial and recreational fishing (see also Section 3.5 and 3.6), though this is limited to the pelagic and littoral species.

There appear to be no other known mineral deposits of either commercial or non-commercial value on or adjacent to Parcel P-0205.

There are no submarine pipelines or cables in or near Parcel P-0205.

The area of the proposed activity is not subject to military uses.

3.8 Archeological and Cultural Resources

The proposed exploratory drilling project described herein is located where the water depth is about 767 feet. Therefore, a cultural and archeological evaluation was not made in accordance with NTL 77-3 (dated March 1, 1977).

As a consequence of waterborne geophysical surveys run by Nekton (Ref. 15), no significant obstructions were noted on the sea floor in the area of the proposed exploratory wells (Figure 2), and no archeological or cultural finds were observed to be present.

The Draft Environmental Impact Statement on the Proposed Channel Islands Marine Sanctuary (Ref. 28, p. E-56) notes that there is a low probability of cultural resources being present in areas where the sea floor is deeper than 150 m (485 ft.). This is because such areas were not exposed to human occupation even at the lowest Pleistocene sea-levels. The same report (Ref. 28, Fig. E-16) indicates that there are no known shipwrecks or other underwater archaeological sites in or adjacent to Parcel P-0205. Inasmuch as Chumash Indians travelled between the mainland and the northern Channel Islands, it is possible that occasional artifacts (possibly including the remains of ceremonial burials) might be present in the vicinity of the proposed well. There are no means by which any such artifacts, or objects lost from ships, can be located in the sea-floor muds.

3.9 Existing and Planned Monitoring Systems

Many agencies currently regulate or have authority over specific activities and particular natural resources in the area. No single authority has the responsibility for monitoring the entire system. Because the proposed exploratory well activities will generally have minimal impact on the area, only the operators, who will be drilling

the well, and the USGS Pacific Region Conservation Division, will be maintaining close surveillance during the exploration drilling. Extensive cooperation during the drilling operation will be maintained with the U.S. Coast Guard, the National Marine Fisheries Service, Bureau of Land Management, the California Dept. of Fish and Game, and onshore California county agencies who supervise the disposal of drilling wastes.

During the drilling, shipboard personnel will monitor for oil spills, possible blowouts, disposal of shipboard wastes, hydrocarbon showings, and shipping activity in the area. Procedures for utilizing the blowout prevention system have been submitted to the California State Lands Commission and USGS Conservation Division. All Chevron and contract drilling supervisors and drillers will be given formal well-control training. A site-specific oil spill contingency plan has been prepared and submitted to the USGS Conservation Division. During drilling operations, an on-board mud logging unit equipped with gas detectors and other instrumentation will be operating. The "Coral Sea" is also equipped with a pit-level totalizer on the active mud tanks and a rate-of-return recorder.

4.0 ASSESSMENT OF DIRECT EFFECTS ON THE ENVIRONMENT

This section discusses the impacts on the offshore and onshore environments expected to occur as a result of implementation of the proposed exploratory plan.

These impacts are expressed in terms of magnitude and duration of the proposed operation with special emphasis upon the identification and evaluation of unavoidable and/or irreversible impacts on the environment.

4.1 Offshore Impacts

The only negative impacts on the offshore environment which are expected to occur as a result of drilling the proposed exploratory wells are minor, transitory, local effects on air and water quality in the eastern Channel offshore region. The discharge of wastes to the ocean from these operations will have no discernible impact on the environment, since this will be done in accordance with the NPDES Permit (Appendix A). Unpredictable negative impacts which are not expected to occur, but might occur, include the effects of accidental leakage or spillage of diesel fuel, or of crude oil during the drilling process. The magnitude of such impact is unpredictable, but the duration would be of only a few days since spill containment and clean-up would commence almost immediately.

4.1(a) Air Quality

As indicated in Section 3.3 of this report, air emissions from this operation will consist mainly of exhaust and combustion products from the diesel power generation engines located on the drilling vessel. These emissions will occur for only about 60 to 90 days (duration of

operations). Their magnitude is discussed in Section 3.3. Well tests will last only a few hours and all gas will be flared. Due to favorable circulation and air quality in the area, negative air impacts caused by the project would be dispersed a short distance from the source. Modeling done for Chevron's Platform Grace on P-0217 show no significant impacts on air quality from a peak production of 13,000 barrels per day of crude (Ref. 9). Therefore, it is concluded that the small amount of emissions associated with the drilling of the proposed exploratory well would not cause air quality standards to be exceeded.

Another potential air emission source is a large oil spill (1000 bbls. or more). Technology and regulations make the likelihood of a spill remote. In addition, special programs previously discussed (Sections 2.1 and Exploration Plan) would be placed in effect to control and eliminate a spill as quickly as possible. Thus, a large spill is quite unlikely, but if it occurs, the effect on air quality will be of short duration, with most of the volatile fractions having evaporated within 24 hours.

4.1(b) Marine Environment

The drilling fluid used in the proposed well will be a water-base fluid containing no oil. Bioassay tests conducted on this type of drilling fluid used at other exploratory operations in the Santa Barbara Channel show that the fluid is non-toxic, having a TLm-96 range of 8500 mg/l to over 560,000 mg/l (Refs. 7, 8, 42, 44). The earth removed from the hole in the form of drill cuttings will also be non-toxic because it is similar to sediments continuously deposited by local rivers into the marine environment. The volume of this material is discussed in Section 2.5. Its disposal would occur over the drilling phase of the operations, approximately 45 to 60 days. Studies on the dispersion of drilling mud and drill cuttings released from drilling vessels and platforms show that the materials disperse rapidly with background levels occurring within 300 feet of discharge (Refs. 6, 7, 8, 42, 45). At the proposed location, water depth is 767 feet and the materials will be highly dispersed before settling on the ocean floor. Studies by the California State Department of Fish and Game (Ref. 46) and others (Refs. 4-8, 42, 44, 45, & 47) show that deposition of drill cuttings on the ocean floor and dispersion of small amounts of drilling mud in the ocean environment have had "no adverse effect on the marine environment."

As specified in the NPDES Permit (Appendix A) for the drilling vessel, the volume of oil discharged as deck drainage will not exceed 52 mg/l (approximately 47 ppm, or about .047 gals/day). When compared to the volumes of oil discharged annually by rivers (1.6 million metric tons), natural seeps (0.6 mta), and tankers (2.2 mta), this discharge (15.7 kg. over a 60-day drilling period) will have a negligible effect on the marine environment (Ref. 48).

The NPDES Permit granted to this drilling vessel specifies that domestic and sanitary wastes should not cause visible oil or floating solids, and that the discharge maintains 1/0 mg/l residual chlorine as cited in 40 CFR 435.2 and 435.5. The Environmental Protection Agency has concluded that this type of control for these wastes will ensure that there is no significant adverse effect on the marine environment.

Spillage of diesel fuel might occur as a result of an accident involving a supply boat or during transfer of the fuel to the supply boat or to the drilling vessel. The U.S. Coast Guard enforces regulations covering transfer of fuel and the Coast Guard procedures will be rigorously implemented by the fuel supply and drilling vessels. If an accidental spill of diesel fuel occurs while loading the supply boat or transferring the fuel to the drilling vessel, the volume involved will probably be small enough (a few hundred gallons) that it can be contained and cleaned up by equipment maintained at the onshore loading site and on board the drilling vessel. A larger transfer spill or a spill that might result from a fuel supply vessel accident will be handled by the oil spill co-op in the area in the same manner as described below for a crude oil spill from the drilling vessel (Section 2.11).

A spill of crude oil could occur from the drilling of this well only if it encountered a formation containing sufficient oil at a high enough pressure to flow from the well, and if there were a "concurrent" unavoidable failure in the blowout prevention control equipment, or improper procedures were used in drilling the well. As discussed in Section 3.14, three prior exploratory wells drilled in the immediate area found no indications of above-normal formation pressures, thus eliminating this potential hazard. In any case, drilling crews and vessel operators are trained in proper drilling procedures and in the deployment and use of oil spill prevention and control equipment maintained at the drilling vessel. Note that there has never been a significant spill of crude oil anywhere in U.S. waters as the result of exploratory drilling. In the event of any oil spill (diesel fuel or crude oil), the Chevron U.S.A. Spill Contingency Plan will be implemented immediately and used to contain and clean up the spill. Note that only approved clean-up methodologies will be employed. The potential for damage to the shoreline would be minimized because of the prompt containment and clean-up of the crude oil or diesel fuel, and the small volume of diesel fuel which might be spilled.

The nearest landfall for an oil spill is the Anacapa Islands, 5.7 nautical miles (nmi) to the south. Mr. A. R. Fallon, oceanographer with Chevron Oil Field Research Corporation, has calculated the seasonal probability and arrival time of a spill from the P-0205-3 location reaching the Anacapa Islands. He has defined the impact zone to include the surrounding kelp beds by extending it about 4200 ft. north of the islands themselves. The study uses the seasonal

site-specific current directions and velocities which were utilized in oil-spill trajectory modelling for Sale 48 (Ref. 18, pp. 765-776) and provided by Mr. Thomas Cooke of the Bureau of Land Management. The seasonal wind data were compiled for a recent project elsewhere in the Santa Clara Unit (Ref. 9, pp. 3-1 to 3-6); they comprise an 8-year record from the Point Mugu weather station, transformed (by comparison with ship observations) into site-specific sustained (10-min. average) wind speeds and directions. Tidal currents were ignored because they oscillate back and forth every six hours and tend to parallel the coast and the islands. In computing a vector sum of background current and wind drift, the present study used the same parameters which were used in the BLM model: surface wind drift at 3.5% of the wind speed, and drift direction rotated 20° clockwise of wind direction.

The input data and results are summarized in Table 9. These indicate that a spill at the P-0205-3 location is least likely to reach the Anacapa impact zone in the summer (4.8% of the time), and that season provides the maximum time for containment and evaporation: 23.4 hours average, with the shortest time (7.7 hours) occurring only 0.02% of the time, or one day in 5000. Chevron plans to drill the P-0205-3 well during the summer season.

TABLE 9

SEASONAL OIL-SPILL PARAMETERS, SITE P-0205-3

		Summer	Autumn	Winter	Spring
Currents (BLM Polygon 224): Direction (toward)/Speed (knots)		109°/0.2	296°/0.2	114°/0.2	115°/0.2
Winds: %/Mean Speed (knots)		%/kn	%/kn	%/kn	%/kn
(From)	North	4.4/3.8	10.6/8.4	13.6/11.8	5.8/6.1
	NE	3.4/3.5	9.9/8.2	13.0/9.8	5.6/6.6
	East	0.7/8.6	1.2/13.4	1.1/15.2	0.9/13.2
	SE	4.1/11.1	4.8/13.0	4.8/14.8	5.3/13.3
	South	7.7/10.2	7.1/10.6	7.2/11.6	9.6/11.2
	SW	9.6/10.6	6.3/9.5	4.9/9.8	8.2/11.4
	West	49.8/12.5	30.0/12.7	21.8/14.3	42.4/15.4
	NW	14.5/7.1	27.4/9.1	31.5/10.7	18.8/8.6
	Calm	5.8/0	2.7/0	2.1/0	3.4/0
% of Time that Trajectory Intercepts Anacapa Is.		4.8%	16.0%	14.8%	6.9%
Average Arrival Time (hours)		23.4	14.7	19.8	10.8
Probability (%) of Impact <10 hr.		0.02%	2.01%	5.44%	0.64%
Worst-Case Arrival Time (hrs.)		7.7	4.6	3.4	4.0
% Occurrence of Worst-Case Condition		0.02%	0.14%	0.16%	0.05%

As indicated above, the possibility of any significant oil spill occurring during the drilling of the P-0205-3 well is exceedingly slight. The well will be drilled during the season when any such spill has the lowest chance of reaching Anacapa Island, and when the maximum containment time is available. Should such a spill reach an island or mainland shore, biological and aesthetic impact would occur. However, as was shown in the Santa Barbara spill, the impact would not be lasting but would have some short-duration adverse effects (Refs. 11, 49).

As described in detail in Section 3.52, the nesting and feeding habits of the brown pelican are such that an oil-spill at the P-0205-3 location would have minimal direct impact on the species. Nests are on cliffs high above any surf-carried oil. Foraging (including young birds as soon as they are able to leave the nest) is at great distances, chiefly along the mainland shelf; additionally, the birds have been observed to avoid oil slicks. An oil-spill might have an indirect impact on the brown pelican if it were to affect lower levels on the food chain; the pelican feeds chiefly on anchovy, which feed on plankton. However, there is no evidence that the active oil seeps at Coal Oil Point west of Santa Barbara, which introduce an average of 50 to 70 barrels of oil per day into the Channel waters (Ref. 11, p. II-153), have had an adverse effect on biological productivity. Fish block data, for example (Ref. 28, Fig. E-20), are as high or higher near Coal Oil Point as in more distant portions of the Channel. When the ultimate effect is several steps along the food chain (as from phyloplankton to zooplankton to anchovy to pelican), it is inevitably obscured by the action of currents which transport and diffuse these organisms throughout the Southern California Bight. Thus, an oil-spill at the P-0205-3 location would have no greater an impact on the brown pelicans' food supply than if an equivalent spill occurred in a more distance part of the Bight—and no greater an impact than the equivalent flow of oil from natural seeps.

Noise-related impacts on seabirds and marine mammals will be negligible. Noise from the drilling operations is steady and at a low level. Helicopters and crew and supply boats will approach from Ventura and Carpinteria to the north and Port Hueneme to the east; they will not approach within 5 miles of the islands. Effects of noise from the proposed drilled operation must be considered in context with on-going activities in the vicinity. Large-vessel traffic in the southbound sea lane passes within 2 nautical miles of Anacapa at an average rate of 5.5 vessels per day (Ref. 28, p. E-81). Recreational, charter-boat (common carrier) trips from Ventura to Anacapa average 6 trips per day between June and September (Ref. 28, p. E-94). Recreational overflights are also frequent, though existing California Fish and Game regulations prohibit overflights of Anacapa (but not Santa Cruz Island) below 1000 ft. (Ref. 28, pp. E-98, F-107).

4.2 Onshore Impacts

4.2(a) Air Quality

Aeorvironment, Inc., conducted a study of the air quality impacts resulting from development following proposed OCS Lease Sale #48 (Ref. 23). Using a worse-case tanker scenario, emissions from extensive development were found to be minor. Studies done for Platform Grace on P-0217 (Ref. 9) also show negligible onshore impacts. Therefore emissions discussed in Sections 2.52 and 4.1(a) from a single exploratory well will have no impact on onshore air quality.

4.2(b) Water Quality

There will be no impacts on onshore water supplies. Water is provided by onboard desalinization.

4.3 Socioeconomic Impacts

As discussed in Section 2.4, no significant increase in the population or support facilities will be required. Therefore, the socioeconomic impact is negligible.

4.3(a) Aesthetic Impacts

On clear days the drilling vessel may be visible from the mainland shore, 11 miles away at the closest point, and would be seen from boats travelling to Anacapa Island. The derrick lights will be visible at night from the mainland. The impact of this visual sighting will be negative, neutral or positive, depending on the subjective reaction of the viewer. In any case, the temporary duration of its presence (60-90 days) will result in a negligible transient environmental impact.

4.4 Mitigating Measures

Mitigating measures have been discussed in previous sections as appropriate.

Mitigating and preventive measures are described in:

1) Exploration Plan, (on-board preventive and clean-up equipment and procedures; drilling in accordance with USGS orders and regulations); 2) Introduction, (temporary duration of project); 3) Section 2.1, (handling of waste materials under NPDES Permit); 4) Section 2.11, (containment and clean-up of spills); 5) Section 2.12, (disposal of contaminated material at approved sites); 6) Section 2.2, (no new or expanded onshore facilities required); 7) Section 2.3, (negligible impact of operating and support personnel); 8) Sections 2.51 and 4.1(b), (water-based drilling fluid used); 9) Section 2.51, (dilution

of clean cuttings or cement discharged to ocean); 10) Section 2.51, (oil cuttings disposed of at approved onshore sites); 11) Section 2.51, (sanitary wastes processed in on-board sewage plant); 12) Section 2.51, (trash hauled ashore for disposal); 13) Section 2.51, (deck drainage processed through oil-water separator); 14) Section 2.51, (oily waste water transported to shore); 15) Section 2.51, (oily water from testing hauled ashore to approved disposal site); 16) Section 3.1, (careful site selection and hazards studies); 17) Section 3.13, (no hazard from sea-floor instability); 18) Section 3.13, (shallow gas not a hazard); 19) Section 3.13, (no near-surface faults near drill sites); 20) Section 3.14, (successful prior drilling, casing program follows USGS orders); 21) Section 3.15, (little or no effect from seismic shaking); 22) Section 3.15, (earthquake-induced ground rupture, liquefaction, slumping or tsunami not a hazard); 23) Section 3.16, (no potential for subsidence); 24) Section 3.2, (severe storms rare); 25) Sections 3.3 and 4.2(a), (air quality not significantly affected); 24) Section 3.41, (currents and waves not severe); 24) Section 3.6, (no rare or endangered species residing in area); 28) Section 3.7, (Coast Guard approval for buffer zone location); 29) Section 3.8, (no cultural/archeological sites); 30) Section 3.9, (planned monitoring and surveillance systems); 31) Section 4.1(a), (air quality standards not exceeded); 32) Section 4.1(b), (NPDES Permit limits oil and waste discharges); 33) Section 4.1(b), (prompt containment and clean-up limits potential spill impacts); 34) Section 4.3, (no significant increase in population, no new facilities required).

The main mitigating measure will be utilization of safe and proper operating procedures in all phases of the exploratory drilling program.

4.5 Unavoidable and Irreversible Impacts

Only transitory impacts on offshore air and water quality are expected to occur as a result of drilling these exploratory wells and have been previously discussed. Irreversible impacts would be limited to the deposition of cuttings on the ocean bottom. However, this impact has neither "a beneficial nor detrimental effect on the environment" (Ref. 46). Recent studies show many possible possitive effects from creation of an artificial reef area.

A potential impact could result from a large oil spill. However, any damage sustained by the shoreline, 6 or more miles distant, would likely be minor and of short duration (Ref. 49).

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6.0 CONSISTENCY CERTIFICATION

The proposed activities described in detail in the accompanying Exploration Plan comply with California's Coastal Management Program and will be conducted in a manner consistent with such program.

The only policies of the CCMP which might relate to the proposed activity are contained in Sections 30230, 30232 and 30240. No other policies of the CCMP are relevant to the proposed permitted activity and, therefore, this statement in support of Consistency Certification addresses only those sections which are discussed below.

Section 30230, Protection of Marine Environment

> Marine resources shall be maintained, enhanced and, where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific and educational purposes.

The proposed activities will not adversely affect the living resources of the marine environment. The proposed drill-site is not located within or close to an area of special biological or economic significance (see below). Impact upon transient and resident species in the project area will be negligible. There will be no perceptible effect on commercial fishing because the proposed activities are very localized and of short duration. Discharges into the marine environment are strictly regulated by the Environmental Protection Agency and the U. S. Geological Survey, do not contain hydrocarbons, and are well below any possibly-toxic levels of other substances. Clean well-cuttings will be disbursed by currents or may form a very localized deposit which will be re-colonized by resident benthic species within five years or less. The chance of adverse impact from a significant oil-spill is judged to be extremely slight, in view of the perfect safety record of exploratory drilling in U. S. waters to date. Protective measures are discussed in a separate CCMP policy.

Section 30232, Protection Against Spillage

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Chevron's Exploration Plan protects against the spillage of crude oil, gas, petroleum products and hazardous substances and, in compliance with Pacific Region OCS Order No. 7 of the U. S. Geological Survey, provides effective containment and cleanup facilities and procedures for any accidental spills which might occur. The provisions covering this matter are set forth in detail in Chevron's Oil Spill and Emergency Contingency Plan as previously submitted for OCS P-0215-2.

Section 30240, Environmentally Sensitive Habitat Areas

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

The proposed activities will not take place within an environmentally sensitive habitat area. The nearest such area is Anacapa Island, 6.5 miles to the south. Traffic to and from the proposed drilling site will not pass over or near this or any other sensitive areas. West Anacapa Island and nearby Scorpion Rock are the only California rookeries for the California brown pelican, listed as an endangered species. West Anacapa Island is closed to public entry during the breeding season, March 1 to May 31. The proposed activities are scheduled to take place after June 10, and prior to the peak abundance of brown pelicans in the northern Channel Islands, which occurs during the fall and early winter. Chevron's proposed project is compatible with the continuance of habitat values in the adjacent Channel Islands and in any case, is similar to shipping and other activities in the area which do not appear to have affected such values.

The California Coastal Commission on January 8, 1980, adopted a policy in addition to those expressed in the CCMP, which relates to the proposed establishment of a marine sanctuary in waters surrounding the northern Channel Islands and Santa Barbara Island. That policy would ban development structures and severely restrict exploratory drilling within six nautical miles of the above islands. The area within the 6-nmi radius is deemed to be a necessary buffer zone to protect habitat values on the island shores and in adjacent State waters; it does not itself constitute an environmentally sensitive habitat area. The proposed drilling site is approximately 2,000 feet inside the 6-nmi radius. The Commission's

recently-adopted policy states that: "The operator may conduct oil or gas exploration activities within six nautical miles if the prior exploration has indicated the likelihood of an oil or gas field extending within the six nautical mile area." The proposed P-0205-3 well so qualifies. Its purpose is to evaluate a multi-zone oil accumulation discovered by the P-0205-1 well, to the north, and whose southern edge was penetrated by the P-0205-2 well, a straight hole drilled immediately adjacent to the proposed P-0205-3 location.

We would also like to discuss Section 30262(d) which reads as follows: "Oil and gas development shall be permitted in accordance with Section 30260, if the following conditions are met:....

(d) Platforms or islands will not be sited where a substantial hazard to vessel traffic might result from the facility or related operations, determined in consultation with the United States Coast Guard and the Army Corps of Engineers."

This section is not applicable to the proposed activity of drilling an exploratory well as it relates to oil and gas development operations as distinguished from the drilling of exploratory wells. However, the Coastal Commission has expressed concern about exploratory drilling within the Marine Vessel Traffic Scheme and has cited this section of the CCMP as support for their opposition to exploratory drilling in this area. Therefore, we wish to comment upon this provision in relation to the drilling of proposed exploratory well P-0205-3 within 500 meters of a marine vessel traffic lane. Chevron has consulted with the United States Coast Guard and obtained their approval to the drilling of this well. The Coast Guard has determined that the drilling of a well at the proposed location will not constitute a substantial hazard to vessel traffic provided it receives 120 days' advance notice of the drilling of this well and the drilling vessel is equipped with Class A aids to navigation. Chevron will comply with these requirements imposed by the Coast Guard.

The impact of drilling exploratory wells on the Outer Continental Shelf, as analyzed in the accompanying Environmental Report, is negligible in magnitude and temporary in duration. Such temporary operations will not significantly affect any land or water use in the coastal zone of the State of California and are consistent with the Coastal Zone Management Act as implemented in 15 CFR 930.

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APPENDIX A

Drilling Vessel NPDES Permit

GLOBAL MARINE INC.
GLOBAL MARINE HOUSE
811 WEST SEVENTH STREET
LOS ANGELES, CALIFORNIA 90017
U.S.A.

TELEPHONE: 213-680-9500
CABLE: GLOMARCO
LOS ANGELES
HOUSTON
LONDON

September 22, 1976

Mr. Robert A. Alexander
Standard Oil Company of California
225 Bush Street
San Francisco, California 94104

Dear Bob: Re Permit to Discharge Region 9

GMI has filed with the Environmental Protection ~~Association~~ Agency (Region 9) in San Francisco for a permit to discharge. This will be a five-year permit, when issued, to discharge in all federal leases off shore that have been leased from Point Conception to San Diego.

The ships for which the permit to discharge have been filed are as follows:

CUSS I	GLOMAR GRAND BANKS
GLOMAR 2	GLOMAR JAVA SEA
GLOMAR GRAND ISLE	GLOMAR CORAL SEA
GLOMAR CONCEPTION	

If you need any specific information concerning these permits and an up-to-date status at any time, I suggest you contact Norm Dion directly at our office, extension 260.

Very truly yours,

Jimmy Dean

JD/jr

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
100 CALIFORNIA STREET
SAN FRANCISCO, CALIFORNIA 94111

MODIFICATIONS OF ISSUED NPDES PERMITS FOR GLOBAL MARINE DRILLING VESSELS: CORAL SEA (CA0110087), GRAND BANKS (CA0110109), CONCEPTION (CA0110117), GRAND ISLE (CA0110125), JAVA SEA (CA0110133), GLOMAR II (CA0110142), AND CUSS I (CA0110052)

In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et. seq.; the "Act"), and 40 CFR 125.22(a), the Regional Administrator has made the following modifications:

1. Condition I.A.2.a. in each of the permits (sanitary wastes) is changed to delete the discharge limitations on suspended solids and BOD (5 day).

2. The following condition is added to each of the permits:

During the period beginning the effective date of this permit and lasting through May 31, 1982, the permittee is authorized to discharge from outfall serial number (specified below) blow-out preventer control fluid. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Monitoring Requirements*	
	Measurement Frequency	Sample Type
Total Volume (gallons)**	Monthly	Estimate

* The monitoring requirements shall commence on the effective date of this permit.

** The total volume of blow-out preventer control fluid discharged into the ocean waters each month of the year shall be monitored.

The above condition appears as Condition I.A.7. in permits:

CA0110087	(Discharge 018)
CA0110109	(Discharge 018)
CA0110117	(Discharge 018)
CA0110125	(Discharge 018)
CA0110133	(Discharge 018)
CA0110142	(Discharge 013)

and appears as Condition I.A.6. in permit CA0110052 (Discharge 006).

The permit modifications shall become effective thirty (30) days from the date of signature.

Signed this 29th day of July, 1977.

For the Regional Administrator

R. L. O'Connell

Director, Enforcement Division

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"), Global Marine Incorporated is authorized to discharge:

shower, washing machine, garbage disposal, sink and galley wastewaters (discharge 001) from frame 160;

sanitary wastes (discharge 002) from frame 139;

drill cuttings, drilling muds, and excess cement slurries (discharge 003) from frame 95;

work area deck drainage (discharge 004) from frame 95;

engine room drainage (discharge 005) from frame 158;

engine cooling water (discharge 006) from frame 144;

auxiliary system cooling water (discharges 007, 008, and 009) from frames 148, 127, and 154, respectively; and

accumulated drainage (discharges 010, 011, 012, 013, 014, 015, 016, and 017) from frame 21, the port and starboard sides of frame 44, the port and starboard sides of frame 54, the port and starboard sides of frame 74, and the starboard side of frame 109, respectively,

from the drilling vessel, Global Coral Sea to authorized discharge sites within the waters of the Pacific Ocean beyond the territorial seas off the coast of the State of California in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on December 8, 1976.

This permit and the authorization to discharge shall expire at midnight, September 30, 1981.

Signed this 8th day of November, 1976.

For the Regional Administrator

Director, Enforcement Division

The authorized discharge sites include (by OCS lease parcel number):

in the Santa Barbara Channel from Pt. Conception to Goleta Point,

P-0180	P-0181	P-0182	P-0183	P-0184	P-0185
P-0186	P-0187	P-0188	P-0189	P-0190	P-0191
P-0192	P-0193	P-0194	P-0195	P-0196	P-0197;

in the Santa Barbara Channel north of San Miguel and Santa Rosa Islands,

P-0167	P-0168	P-0169	P-0170	P-0171	P-0173
P-0174	P-0175	P-0176	P-0177	P-0178	P-0179;

in the Santa Barbara Channel from Santa Barbara to Ventura,

P-0166	P-0198	P-0199	P-0200	P-0201	P-0202
P-0203	P-0204	P-0205	P-0206	P-0207	P-0208
P-0209	P-0210	P-0211	P-0212	P-0213	P-0215
P-0216	P-0217	P-0218	P-0219	P-0220	P-0221
P-0222	P-0223	P-0224	P-0226	P-0227	P-0228
P-0229	P-0230	P-0231	P-0232	P-0233	P-0234
P-0235	P-0237	P-0238	P-0240	P-0241;	

in waters south of Santa Rosa and Santa Cruz Islands,

P-0243	P-0244	P-0245	P-0246	P-0247	P-0248
P-0249	P-0250	P-0251	P-0252	P-0253;	

in the San Pedro Channel between San Pedro and Laguna,

P-0293	P-0295	P-0296	P-0298	P-0300	P-0301
P-0302	P-0303	P-0304	P-0306	P-0309	P-0310
P-0311;					

in waters west of Santa Barbara Island,

P-0289 P-0290 P-0291; and

in waters west of San Clemente Island in the Tanner Bank Area,

P-0257	P-0258	P-0259	P-0260	P-0262	P-0263
P-0264	P-0265	P-0266	P-0267	P-0268	P-0269
P-0270	P-0271	(P-0272)	P-0273	P-0274	P-0275
P-0276	P-0277	P-0278	P-0280	P-0281	P-0282
P-0284	P-0285	P-0286	P-0287	P-0288.	

SIC # 1382

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date of this permit and lasting through September 30, 19[illegible] the permittee is authorized to discharge from outfall(s) serial number(s) 001 (domestic wastes).

Such discharges shall be limited and monitored by the permittee as specified below:

a.

Effluent Characteristic	Discharge Limitations				Monitoring Requirements*	
	kg/day (lbs/day)		Other Units (Specify)			
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency**	Sample Type
Flow-m^3/Day (MGD)	-	-	-	-	Once/month	Estimate

b. There shall be no visible oil or floating solids in the receiving waters as a result of the discharge of these wastes.

c. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: discharge 001, subsequent to all treatment processes and prior to entry into the waters of the Pacific Ocean.

* The monitoring requirements shall commence on the effective date of this permit.

** The measurement frequency is once per month with a minimum frequency of once per site.

SHOWER, WASHING MACHINES, GARBAGE DISPOSAL, SINK & GALLEY WASTE WATER

130 Bbls. PERDAY

PART I
Page 3 of 20
Permit No.
CA0110087

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Based on a daily maximum flow of .005 million gallons per day or .0002 cubic meters per second)

2. During the period beginning the effective date of this permit and lasting through September 30, 1981 the permittee is authorized to discharge from outfall(s) serial number(s) 002 (sanitary wastes). SEWAGE

Such discharges shall be limited and monitored by the permittee as specified below:

a. Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements*	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency**	Sample Type
Flow-m^3/Day (MGD)	-	-	-	-	Once/month	Discrete
Suspended Solids	-	2.8(6.3)	-	150 mg/l	Once/month	Discrete
Biochemical Oxygen Demand (5-day)	-	0.9(2.1)	-	50 mg/l	Once/month	Discrete
Residual Chlorine	-	-	1.0 mg/l***	-	Once/month	Discrete

IN ISHIN

b. There shall be no visible floating solids in the receiving waters as a result of these discharges.

c. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: discharge 002, subsequent to all treatment processes and prior to entry into the waters of the Pacific Ocean.

* The monitoring requirements shall commence on the effective date of this permit.

** The measurement frequency is once per month with a minimum frequency of once per site.

*** After a minimum retention time of fifteen minutes, the effluent shall have a minimum chlorine residual of 1.0 mg/l and be maintained as close to this concentration as possible.

1,000,000 5,000GPD

5/1000 900GAL

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

3. During the period beginning the effective date of this permit and lasting through September 30, 1981, the permittee is authorized to discharge from outfall(s) serial number(s) 003 (drilling muds, drill cuttings and cement slurries). Such discharges shall be limited and monitored by the permitee as specified below:

a.

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Discharge Limitations Other Units (Specify)		Monitoring Requirements* Measurement Frequency	Monitoring Requirements* Sample Type
	Daily Avg	Daily Max	Daily Avg	Daily Max		
Total Volume (cubic meters)**	-	-	-	-	Once/site	Estimate

b. There shall be no discharge of free oil as a result of the discharge of drill cuttings and/or drilling muds.

c. There shall be no visible floating solids in the receiving waters as a result of these discharges.

d. The discharge of oil base drilling muds is prohibited.

e. The discharge of drill cuttings, drilling muds and/or excess cement slurries is prohibited in Areas of Special Biological Significance as designated by Bureau of Land Management (BLM) lease contracts. Any subsequent modification of BLM contracts may be basis for a modification of this requirement. Areas of Special Biological Significance presently identified in BLM contracts include, but are not limited to, areas in OCS parcels (P-0272) P-0273, P-0274, P-0277 and P-0278.

* The monitoring requirements shall commence on the effective date of this permit.

** The total volume of drill cuttings and drilling muds discharged at each site shall each be monitored by an estimate sample type.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Based on a maximum flow of .072 million gallons per day or .003 cubic meters per second.

4. During the period beginning the effective date of this permit and lasting through September 30, 19 the permittee is authorized to discharge from outfall(s) serial number(s) 004 (work area deck drainage). OIL WATER SEPARATOR & SKIMMER

Such discharges shall be limited and monitored by the permittee as specified below:

a.

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements*	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency**	Sample Type
Flow-m^3/Day (MGD)	-	-	-	-	Once/month	Composite
Oil and Grease	-	14.2(31.2)	-	52 mg/l	Once/month	Composite

4 OR 24 HR

b. There shall be no visible floating solids in the receiving waters as a result of these discharges.

c. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: discharge 004, subsequent to all treatment processes and prior to entry into the waters of the Pacific Ocean.

* The monitoring requirements shall commence on the effective date of this permit.

** The measurement frequency is once per month with a minimum frequency of once per site.

1000 GAL DAY.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Based on a maximum flow of .014 million gallons per day or .0006 cubic meters per second)

5. During the period beginning the effective date of this permit and lasting through September 30, 1981, the permittee is authorized to discharge from outfall(s) serial number(s) 005 (engine room drainage).

Such discharges shall be limited and monitored by the permittee as specified below:

a.

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements*		
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency	Sample Type	
Flow-m^3/Day (MGD)	-	-	-	-	Quarterly/yr.	Composite	4 CA 24 HR
Oil and Grease	-	2.8(6.2)	-	52 mg/l	Quarterly/yr.	Composite	

b. There shall be no visible floating solids in the receiving waters as a result of these discharges.

c. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: discharge 005, subsequent to all treatment processes, and prior to entry into the waters of the Pacific Ocean.

* The monitoring requirements shall commence on the effective date of this permit.

30 GAL PER DAY

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

6. During the period beginning the effective date of this permit and lasting through September 30, 1981, the permittee is authorized to discharge from outfall(s) serial number(s) 006, 007, 008, and 009 (engine and auxiliary system cooling water).
Such discharges shall be limited and monitored by the permittee as specified below:

a.

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements*	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency**	Sample Type
Flow-m^3/Day (MGD)	-	-	-	-	Once/month	Discrete
Temperature	-	-	-	-	Once/month	Discrete
Oil and Grease***	-	250 (550)	-	15 mg/l	Once/month	Discrete

1 each 24 hr

After a review of effluent monitoring representing at least one (1) year of discharge from the permittee's facility, the Regional Administrator may, upon due notice, revise the permit to establish final temperature limitations. Such a revision of this permit may also include an Implementation Schedule for an abatement program or other appropriate conditions to achieve the final temperature limitations.

b. The use of chemical additives is prohibited.

c. There shall be no visible floating solids in the receiving waters as a result of these discharges.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: discharges 006, 007, 008, and 009, prior to mixture with the waters of the Pacific Ocean and at a point in the receiving waters where there is no thermal influence from the discharge (receiving waters need only be monitored with respect to temperature).

(2000 gpm)

* The monitoring requirements shall commence on the effective date of this permit.

** The monitoring frequency is once per month with a minimum frequency of once per site.

*** The oil and grease limitations described in kg/day (lbs/day) apply to the total discharge from discharges 006, 007, 008, and 009.

A. EFFL LIMITATIONS AND MONITORING REQUIREMENTS

7. During the period beginning the effective date of this permit and lasting through September 30, 1981, the permittee is authorized to discharge from outfall(s) serial number(s) 010, 011, 012, 013, 014, 015, 016, and 017 (accumulated drainage).
Such discharges shall be limited and monitored by the permittee as specified below:

a.

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Discharge Limitations Other Units (Specify)		Monitoring Requirements * Measurement Frequency	Monitoring Requirements * Sample Type
	Daily Avg	Daily Max	Daily Avg	Daily Max		
Flow-m^3/Day (MGD)	-	-	-	-	Quarterly/yr.	Discrete
Oil and Grease	-	-	-	-	Quarterly/yr.	Discrete
Total Volumes (gallons)**	-	-	-	-	Quarterly/yr.	Estimate

After a review of effluent monitoring representing at least one (1) year of discharge from the permittee's facility, the Regional Administrator may, upon due notice, revise the permit to establish final oil and grease limitations. Such a revision of this permit may also include an Implementation Schedule for an abatement program or other appropriate conditions to achieve the final limitations.

b. There shall be no visible floating solids in the receiving waters as a result of these discharges.

c. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: discharges 010, 011, 012, 013, 014, 015, 016, and 017, subsequent to all treatment processes and prior to entry into the waters of the Pacific Ocean.

* The monitoring requirements shall commence on the effective date of this permit.

** Total volume discharged from discharges 010 through 017 during that particular quarter of the year.

013 - 014 } 40 Bbls
015 - 016 } 50 Bbls

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Not applicable

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

3. A "schedule of compliance" means a program composed of two integral parts: (a) plan--description of new or modified facilities to treat and dispose of the effluent; and (b) schedule--a timetable setting forth the date by which all wastewaters will be in compliance with the effluent limitations of this permit. The schedule shall include (if appropriate) dates by which the permittee will accomplish:

   a. Completion of a preliminary engineering plan report;

   b. Completion of construction plans and specifications;

   c. Initiation of construction;

   d. Completion of construction;

   e. Demonstration of compliance with effluent limitations.

MONITORING AND REPORTING

1. *Representative Sampling*

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. *Reporting*

Monitoring results obtained during the previous 3 months shall be summarized for each month and submitted on forms to be supplied by the Regional Administrator, to the extent that the information reported may be entered on the forms. The results of all monitoring required by this permit shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this permit. Unless otherwise specified, discharge flows shall be reported in terms of the average flow over each 30-day period and the maximum daily flow over that 30-day period. Monitoring reports shall be postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on February 28, 1977. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Regional Administrator
Environmental Protection Agency
Region IX, ATTN: E-5/MR
100 California Street
San Francisco CA 94111

State of California
Water Resources Control Board
Attn: Mr. Bill B. Dendy
P.O. Box 100
Sacramento, Ca. 95801

3. *Definitions*

See Part III.

4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

MANAGEMENT REQUIREMENTS

1. *Change in Discharge*

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, or treatment modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. *Noncompliance Notification*

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

a. A description of the discharge and cause of noncompliance; and

b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. *Facilities Operation*

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

4. *Adverse Impact*

The permittee shall take all reasonable steps to minimize any adverse impact to receiving waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. *Bypassing*

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass, in accordance with the procedure specified in Part II.A.2. above.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. Safeguards to Electric Power Failure

See Part III.

RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public

inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

erty Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART III

R REQUIREMENTS

Part I.A.8. Additional Monitoring Requirements: Bioassay of Spent Drilling Muds

Within one (1) year of the effective date of this permit or within the first year of operation in federal waters off the State of California, the permittee shall conduct and report the results of a 96-hour static bioassay determining the LC_{50} (concentration at which fifty percent of the test organisms survived for 96 hours) of spent drilling muds. A sample of spent drilling muds, immediately prior to their intended discharge, shall be collected for analysis from each permitted vessel. The bioassay shall be conducted with a test organism approved, in writing, prior to use, by the Regional Administrator. The following shall be submitted to the Regional Administrator:

(a) the date the sample was collected;

(b) the total volume of spent muds discharged on the date of the sample;

(c) the water depth into which the muds were discharged;

(d) the results of the 96-hour bioassay, including the survival percentages of all dilutions tested and the graph from which the LC_{50} was extrapolated; and

(e) a list of all components, including the weights, used to compose the drilling muds which were discharged. If commercial names are listed, their chemical constituents shall also be provided.

t I.C.3. Definitions

a. "Territorial seas" means that part of the ocean measured three miles seaward from the line of lower low water and the line closing bays, rivers, and historic waters and which is shown on a series of charts prepared by the National Security Council, Law of the Sea Taskforce on the United States Baseline and published by the National Ocean Survey.

b. A "discrete sample" means any individual sample collected in less than fifteen (15) minutes.

c. The "daily maximum" discharge means the total discharge by weight during any calendar day.

d. The "daily maximum" concentration means the measurement made on any single discrete sample or composite sample.

e. "Sanitary wastes" include human body wastes discharged from toilets and urinals.

f. The term "deck drainage" includes all water resulting from platform washings, deck washings, and runoff from curbs, gutters, and drains including drip pans and work areas.

g. A "composite sample" means four (4) samples taken over a twenty-four (24) hour period, analyzed separately and the four samples averaged. The daily maximum limitations for oil and grease are based on the above definition of composite samples.

Part I.C.8. Monitoring Modification

Monitoring, analytical, and reporting requirements may be modified by the Regional Administrator upon due notice.

Part II.A.7. Safeguards to Electric Power Failure

a. The permittee shall, within ninety (90) days of the effective date of this permit, submit to the Regional Administrator a description of the existing safeguards provided to assure that, should there be reduction, loss, or failure of electric power, the permittee shall comply with the terms and conditions of this permit. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures, experienced over the past five years, on effluent quality and on the capability of the permittee to comply with the terms and conditions of the permit. The adequacy of the safeguards is subject to the approval of the Regional Administrator.

b. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or, should the Regional Administrator not approve the existing safeguards, the permittee shall, within ninety (90) days of the effective date of this permit, or within ninety (90) days of having been advised by the Regional Administrator that the existing safeguards are inadequate, provide to the Regional Administrator a schedule of compliance for providing, not later than July 1, 1977, safeguards such that in the event of reduction, loss or failure of electric power, the permittee shall comply with the terms and conditions of this permit. The schedule of compliance shall, upon approval of the Regional Administrator, become a condition of this permit.

Part II.B. Responsibilities

11. Other Affected Authority

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable law or regulation under authority preserved by Section 511 of the Act.

12. Discharge Site Modifications

A minimum of 120 days prior to the initiation of any discharges at a site not authorized by this permit, the permittee shall provide to the Regional Administrator a written request for the modification of the discharge sites authorized in this permit. This written request shall include:

(a) the new site(s), listed by the parcel number(s) assigned in the leasing contracts,

(b) the lambert coordinates of the center of each parcel, and

(c) any additional information necessary to the Regional Administrator for his determinations regarding the modification request.

Until the modifications have been approved by the Regional Administrator and are in effect, any discharge at an unauthorized site is prohibited.

Part III.A. Notification of Relocation

No less than fourteen (14) days prior to any relocation and initiation of discharge activities at an authorized discharge site by the drilling vessel, Glomar Coral Sea, the permittee shall provide to the Regional Administrator and the appropriate state agency, written notification of such actions. The notification shall include the parcel number and exact coordinates of the new site and the initial date and expected duration of drilling activities at the site.

Part III.B. Reapplication

If the permittee desires to continue to discharge, the reapplication shall be submitted no later than 180 days prior to the expiration date of this permit.

APPENDIX B

Coast Guard Approval

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
COMMANDER (m(ocs))
ELEVENTH COAST GUARD DISTRICT
UNION BANK BLDG.
400 OCEANGATE
LONG BEACH, CA. 90822

16650/8
FEB 6 1980

Margaret C. Rourke
Land Department, Western Region
Chevron U.S.A., Inc.
P. O. Box 7643
San Francisco, CA 94120

Ref: Proposed well OCS P-0205 No. 3

Dear Ms. Rourke:

This is to confirm your phone conversation on 23 January 1980 with LT. TERVEEN of my staff, your request to drill an exploratory well in the southern buffer zone of the northbound traffic lane of the Traffic Separation Scheme in Santa Barbara Channel at position 34°06'37.6"N, 119°24'12.8"W has been reviewed. Subject to the following stipulations the Coast Guard has no objection to your request.

The 120 day advance notification requirement will commence upon receipt by this office of written notification of your intent to conduct the referenced operation. That notification must include the name of the drilling rig to be used, the date the drilling operation will commence and the total length of time the drilling rig will be on location. This information is necessary to issue appropriate Notice to Mariners.

If you have any additional comments or questions, please contact LT. J. E. TERVEEN at the above address or call (213) 590-2301.

Sincerely,

D. M. TAUB
Captain, U. S. Coast Guard
Chief, Marine Safety Division
Eleventh Coast Guard District
By direction of the District Commander

Copy to:
CCGDELEVEN(oan)

cc TJM
CAS
2/8/80

February 7, 1980

Well OCS P-0205 No. 3

Commander, Eleventh Coast
Guard District
Union Bank Building
400 Oceangate
Long Beach, California 90822

Dear Sir:

Reference is made to my conversation with your Lt. Trevene on January 23, 1980, in which he advised that the Coast Guard would allow Chevron to drill its proposed Well OCS P-0205 No. 3 at a location in the buffer zone of the Santa Barbara Marine Vessel Traffic Scheme. He further advised that a letter will be forthcoming specifying the conditions imposed on this well by the Coast Guard. He indicated that you would require 120 days' advance notice of the date we propose commencing this well for the purpose of giving International Notice to Mariners.

Chevron anticipates commencing this well on or about June 10, 1980. It may take up to 125 days to drill, test and abandon this well. To provide us with some flexibility in the time that we are allowed on location, we request that your Notice to Mariners show that Chevron will be operating at the location described below from June 10, 1980 until November 7, 1980. If there are changes in our plans, we shall notify you as soon as possible.

Well P-0205 No. 3 is proposed for a location which is described as: Latitude 34° 06' 37.6307", Longitude 119° 24' 12.792".

Please call the undersigned if you have any problems with our operations as proposed herein.

Very truly yours,

Margaret C. Rourke

MCR:fw

bcc: Mr. C. N. Segnar

Please advise us as soon as possible of any change in the time you anticipate drilling this well.

RIA/MCR

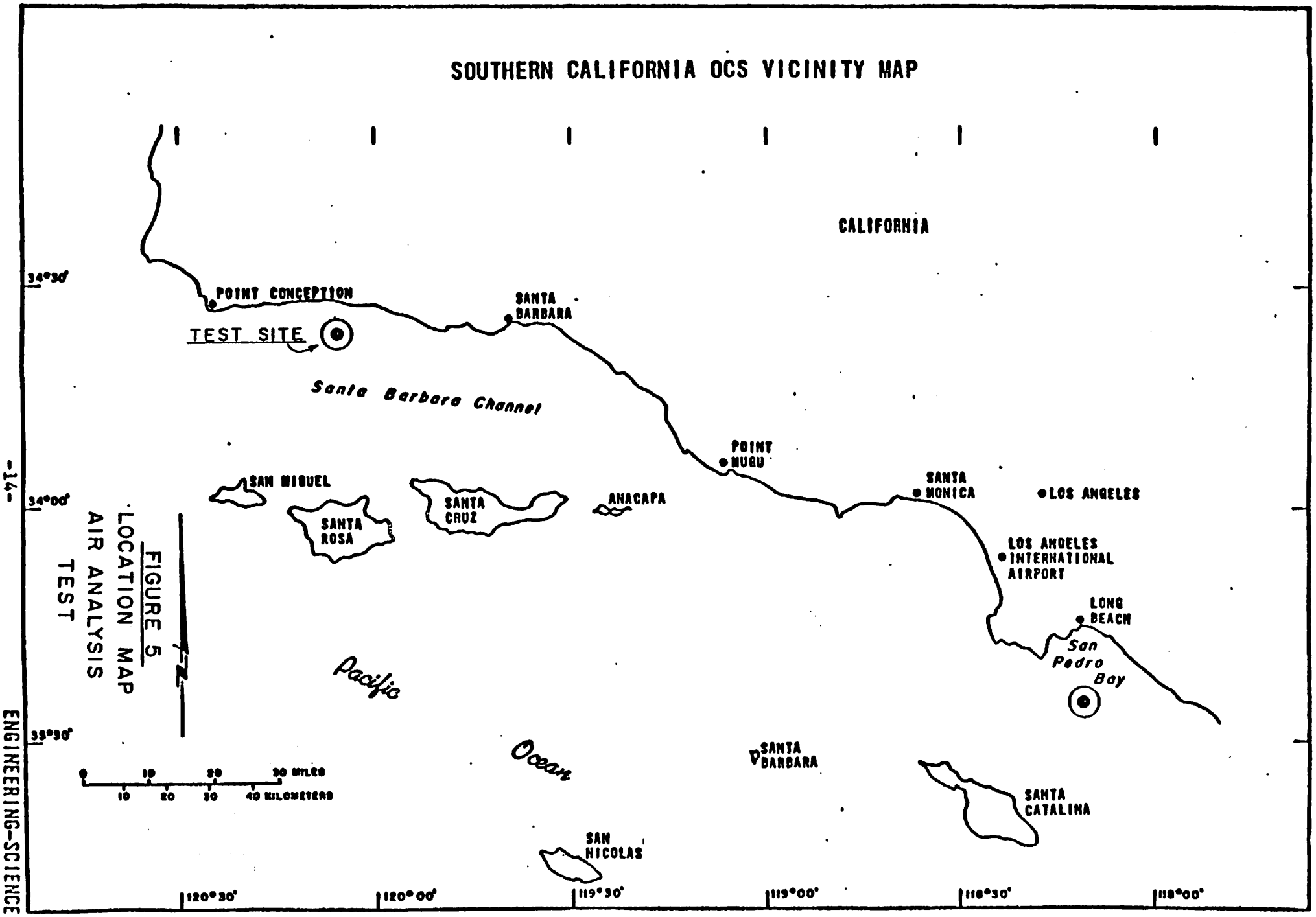
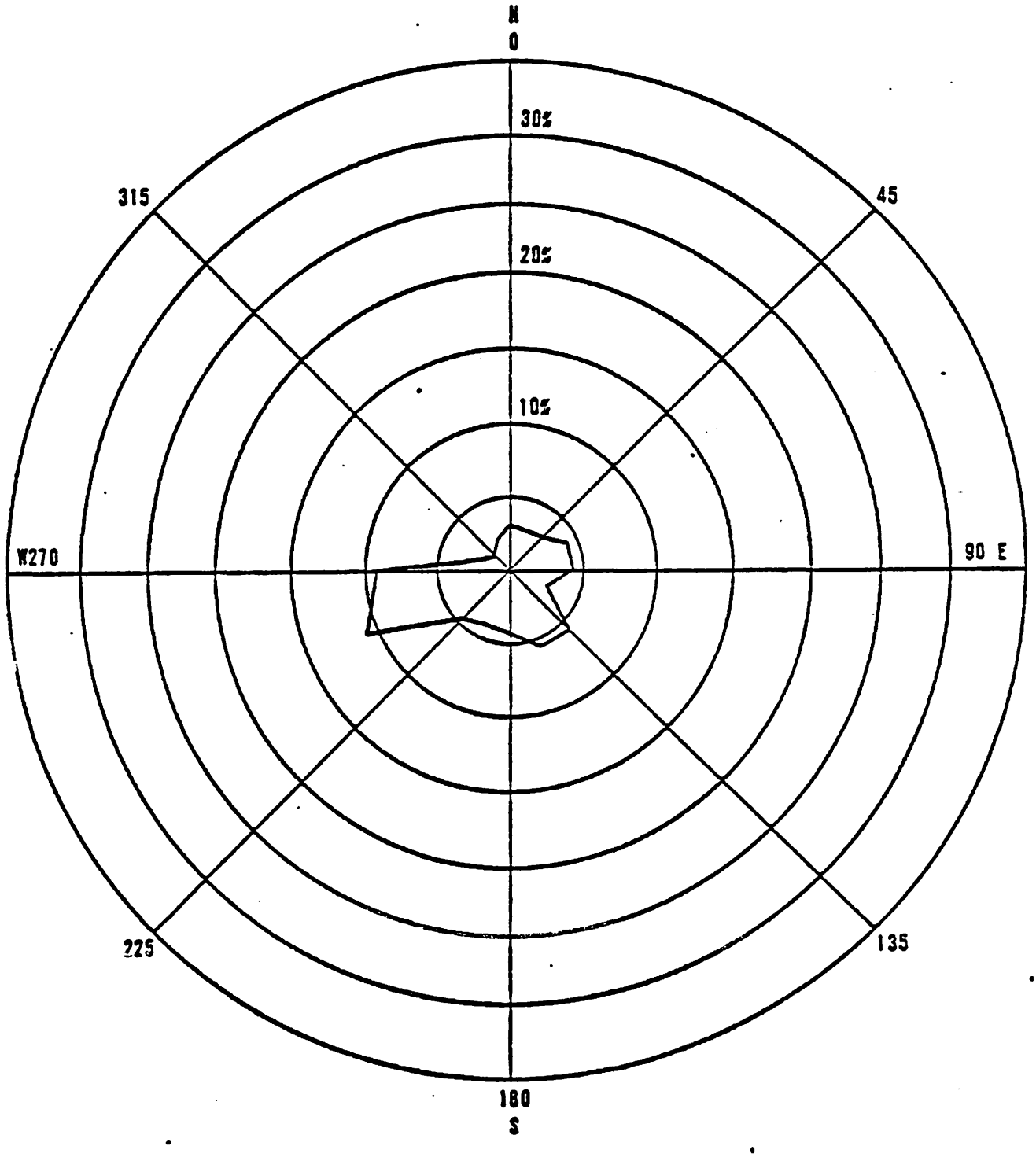


FIGURE 5
LOCATION MAP
AIR ANALYSIS
TEST

ANNUAL WIND ROSE: SANTA BARBARA AIRPORT



PERIOD: 1 SEP. 1976 - 31 AUG. 1977
CALMS: 26.9%
REFERENCE: NATIONAL WEATHER SERVICE

FIGURE 6

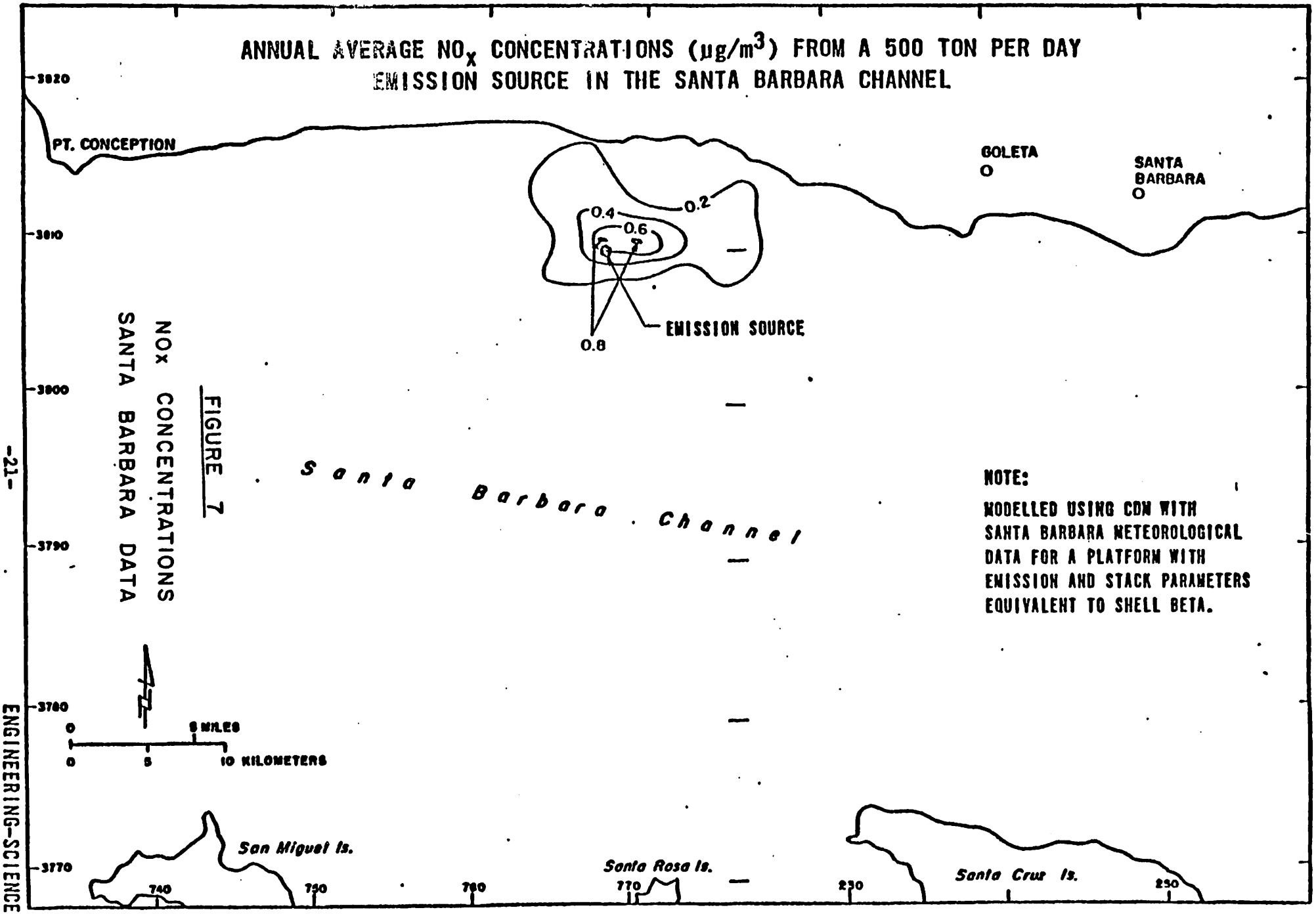


FIGURE 7

NOx CONCENTRATIONS
SANTA BARBARA DATA

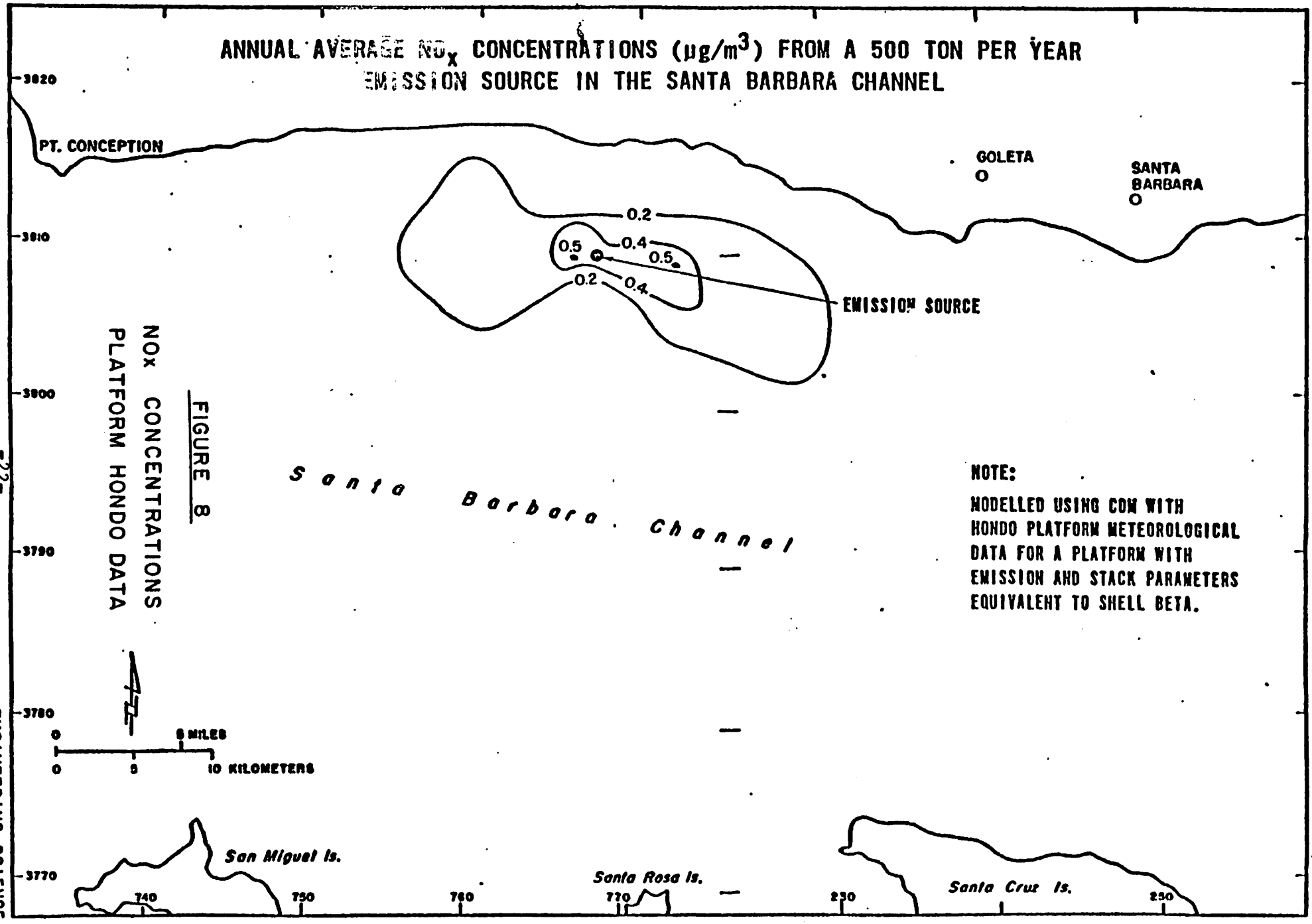


FIGURE 8

NOx CONCENTRATIONS
PLATFORM HONDO DATA

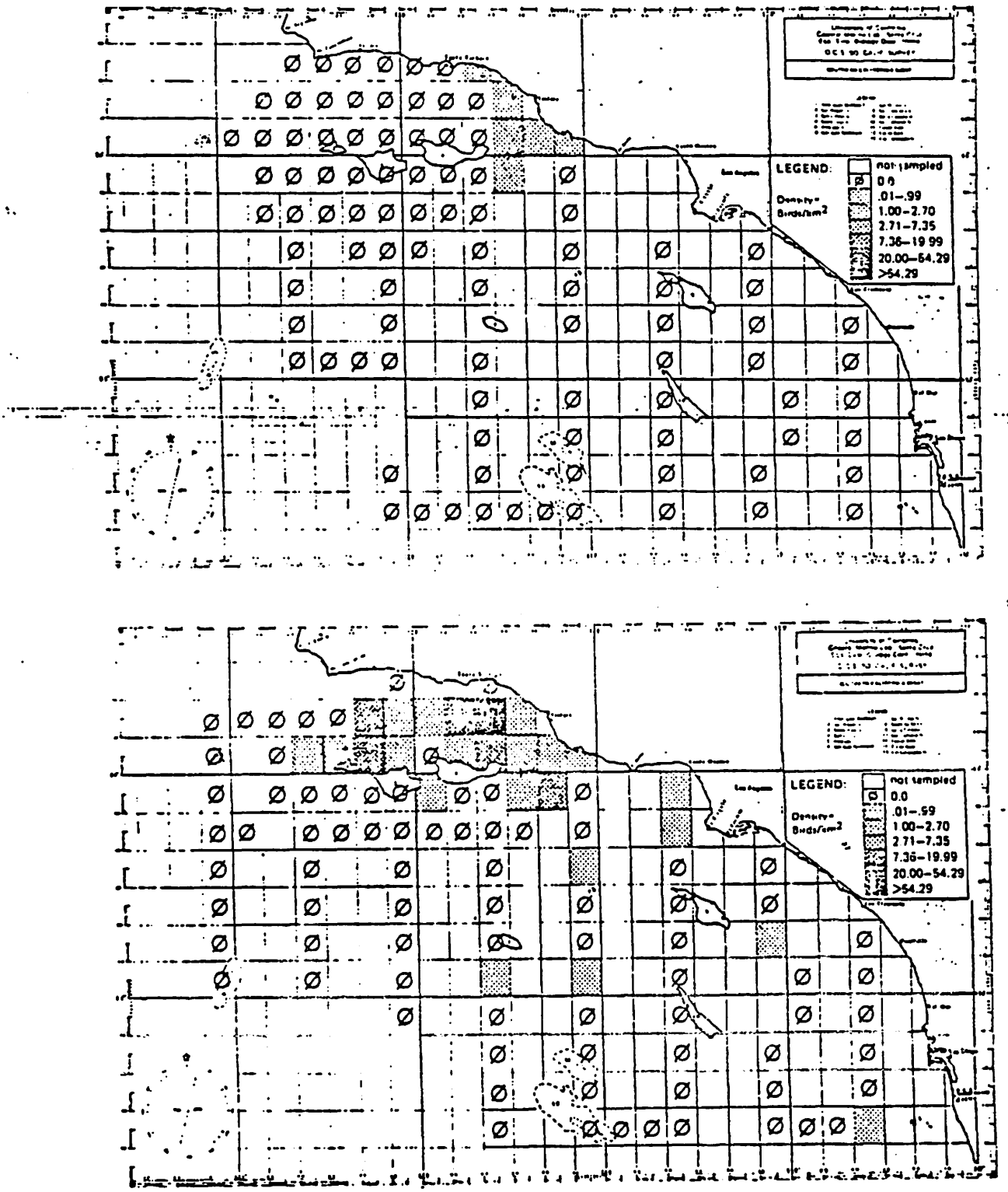


Figure 9 Densities of Brown Pelicans observed during May 1976 (top) and September 1977 (bottom) aerial surveys.

Source: Hunt et al. (Ref. 52)

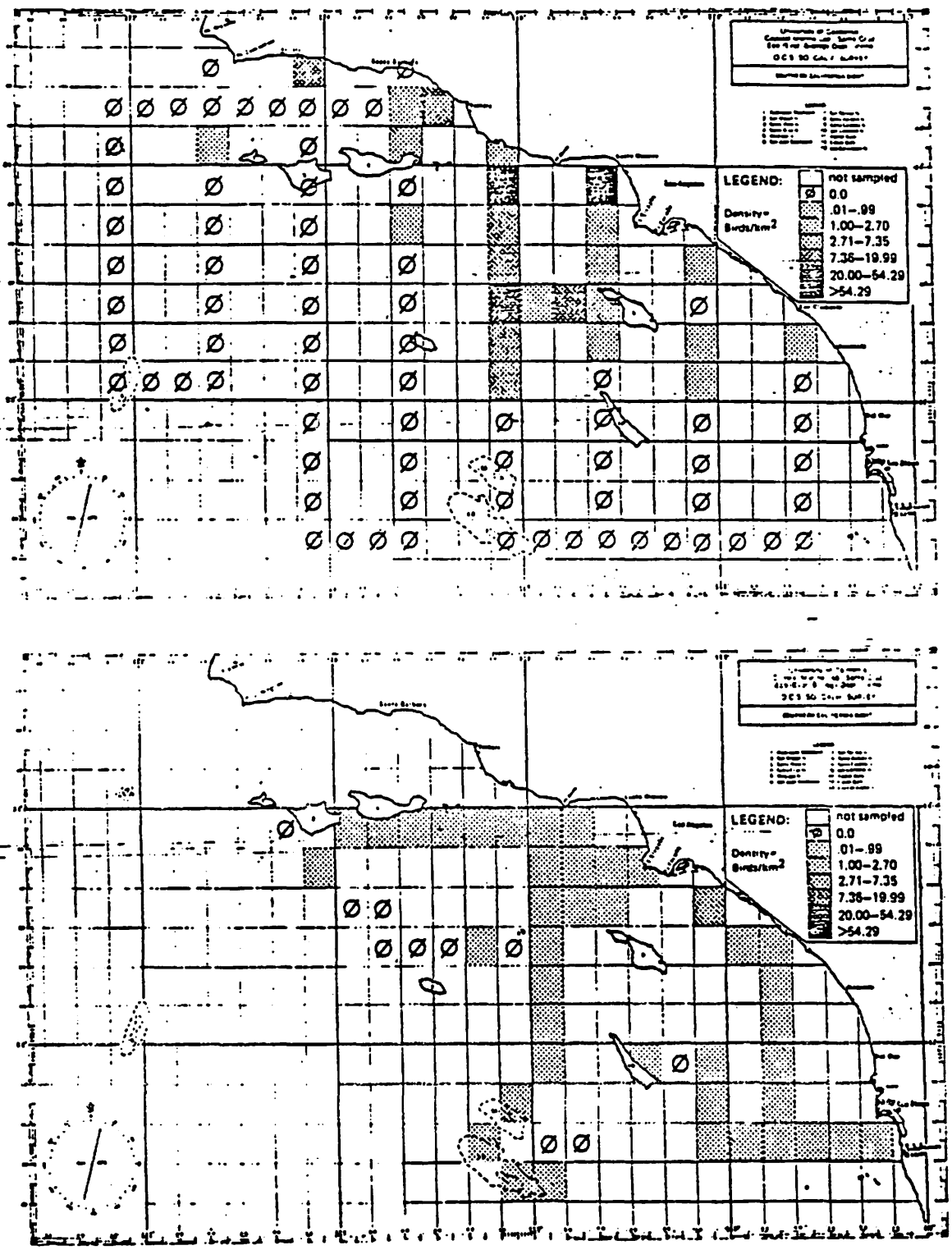


Figure 10 Densities of Brown Pelicans observed during October 1977 aerial surveys (top) and February 1978 ship surveys (bottom).

Source: Hunt et al. (Ref. 52)

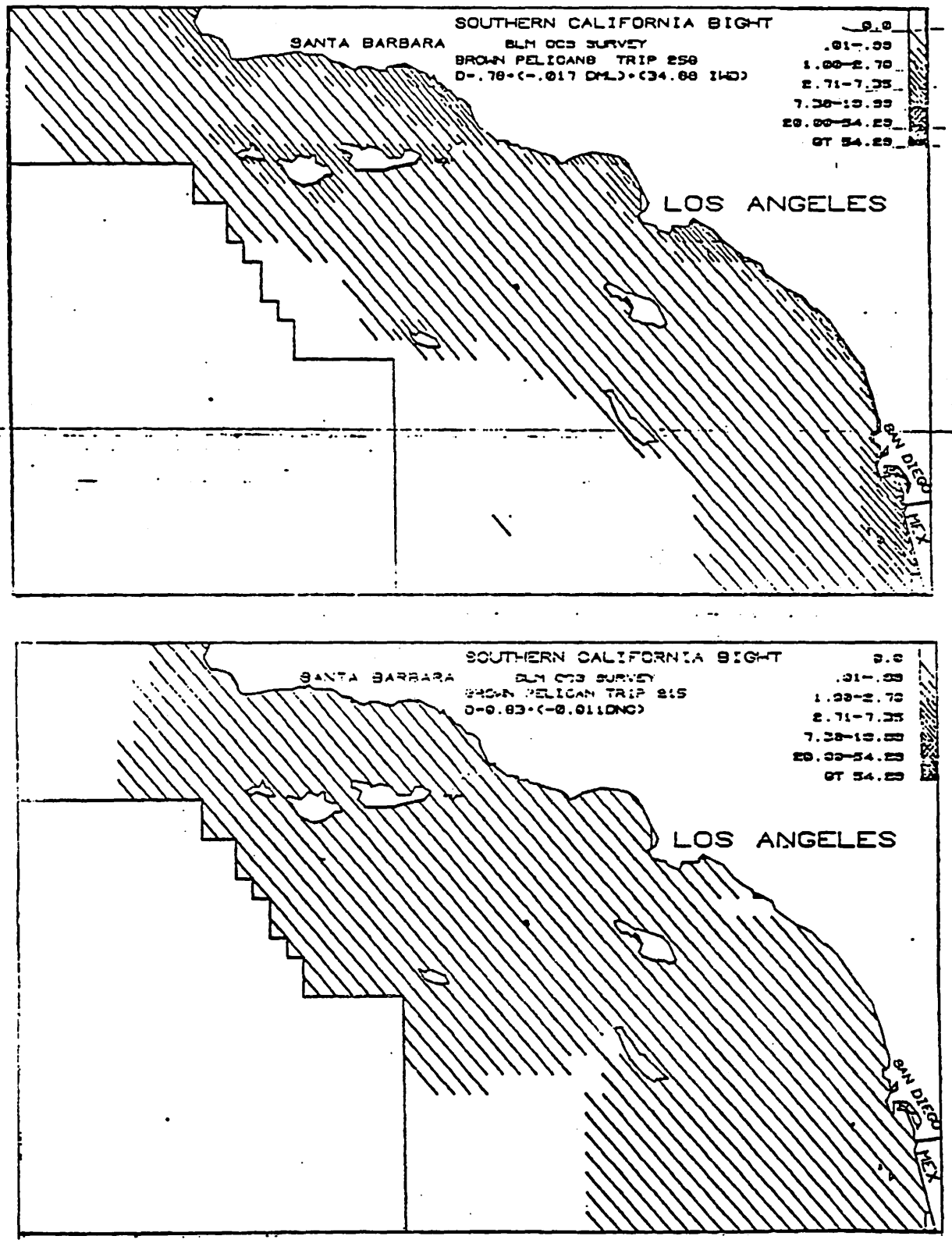


Fig. 11 Projected density distributions of Brown Pelicans (upper) late Nov. 1976; independent variables: DML, IWD; (lower) late Sept. 1975, independent variable: DNC.

Source: Hunt et al. (Ref. 52)

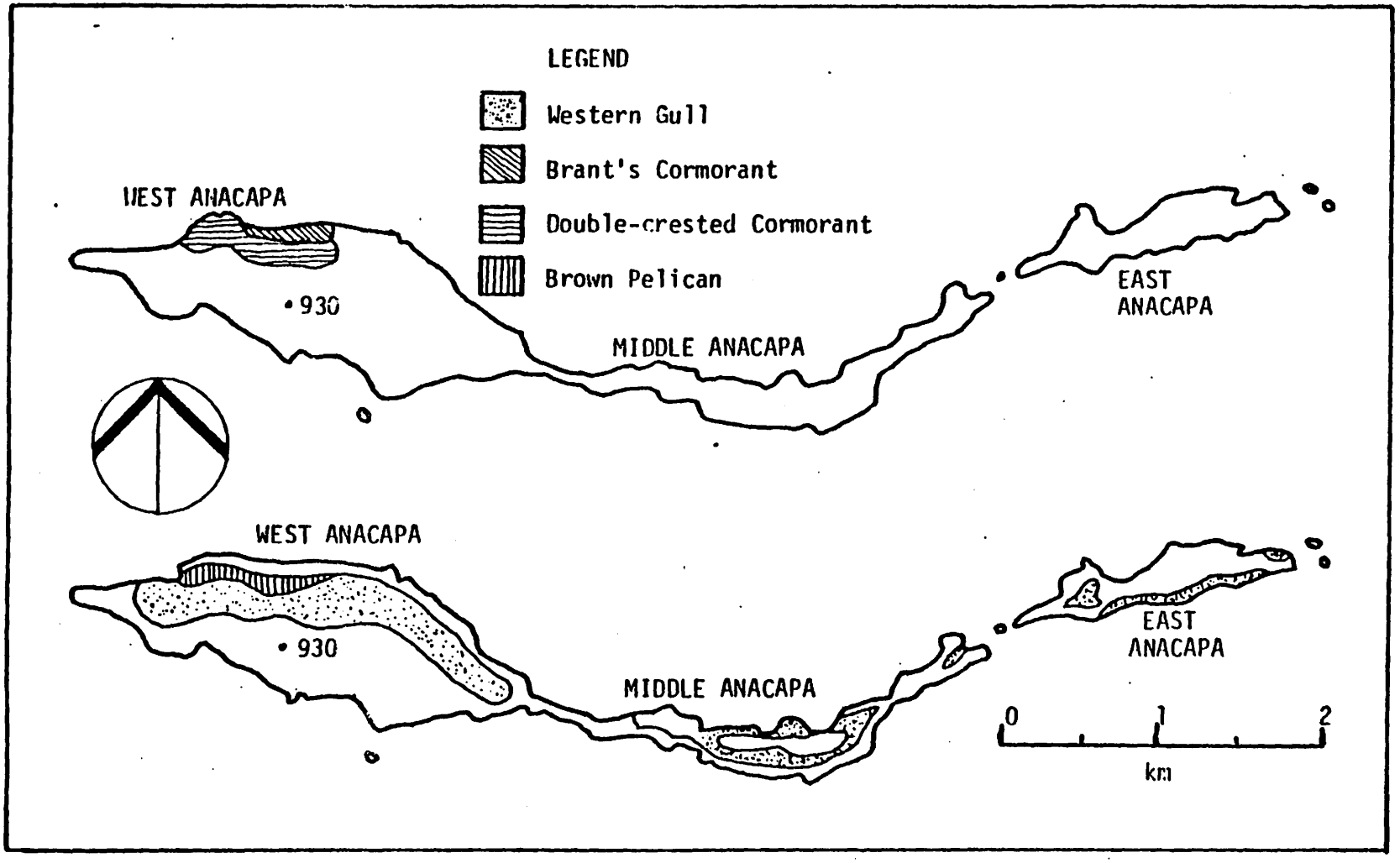


FIGURE 12 Distribution of nesting colonies on Anacapa Island (Distribution of Brandt's cormorant incompletely known).

Source: Briggs et al. (Ref. 56)

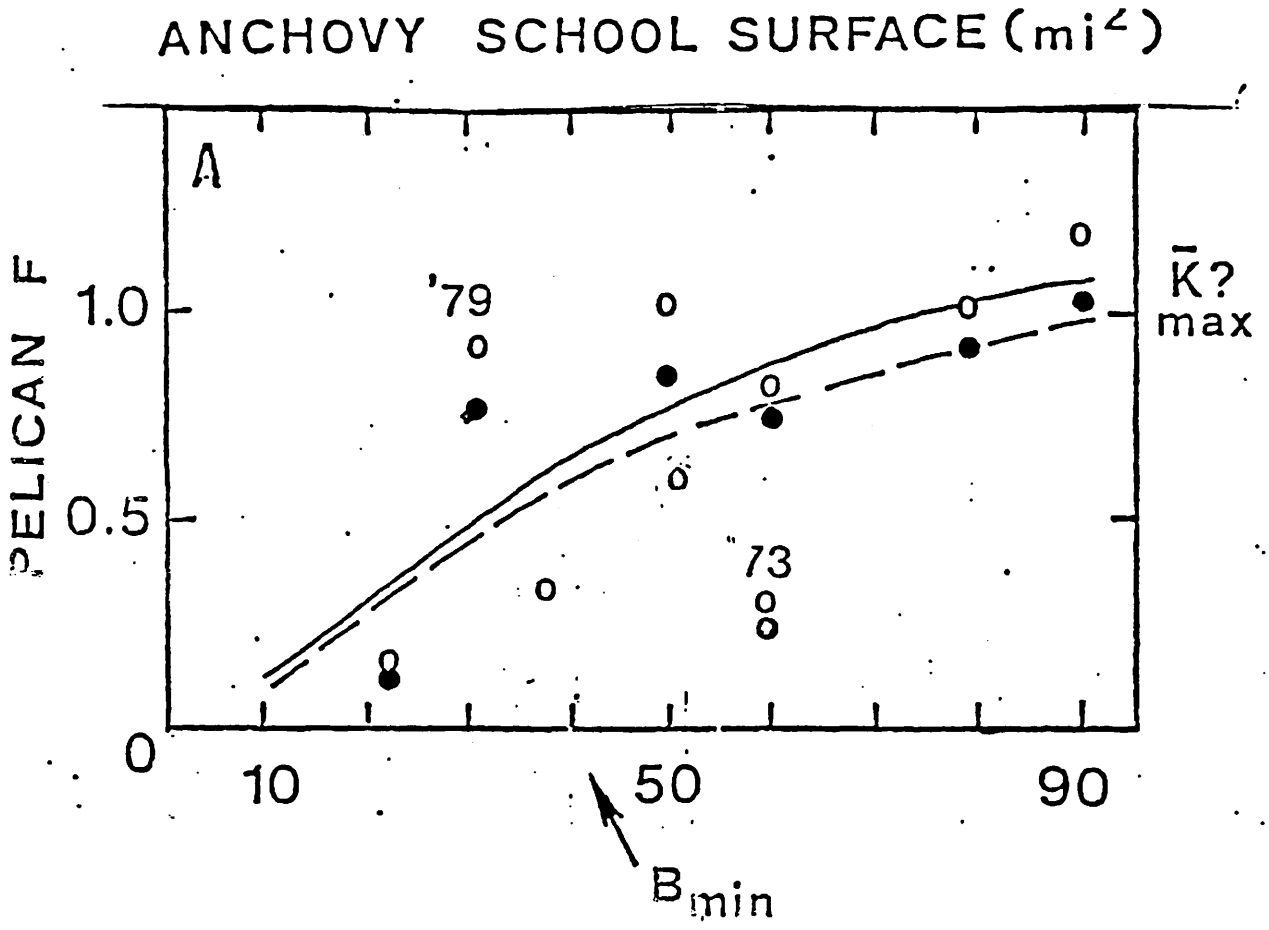


Figure 13: Relationships between brown pelican fledgling rates (F=young fledged/nest) at Anacapa Island (closed circles) and Isla Coronado Norte (open circles) and surface area indices of general anchovy abundance in the Southern California Bight. K represents maximum observed carrying capacity for pelican reproductive rate as represented by anchovy biomass estimates. B_{min} represents minimum anchovy biomass for effective pelican reproduction under average conditions.

Source: Anderson et al. (Ref. 60)

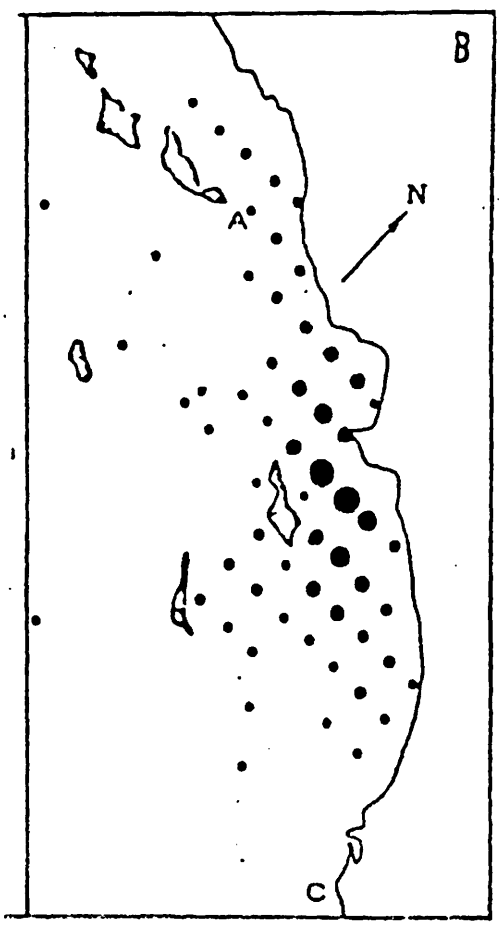


Figure 14: Total anchovy reduction catches by California DFG for 1972 through 1977 in the Southern California Bight during the brown pelican breeding period (February through May). Increasing sizes of circles indicate catches in 10-min. blocks of 1000 1-5000, 5-25,000, 27-75,000, and 75,000 lbs. x 10^6.

Source: Anderson et al. (Ref. 60)

APPENDIX 6

U. S. Geological Survey
District Geologist's Input

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 18, 1980

Memorandum

To: District Geologist, Los Angeles

From: Oil and Gas Supervisor, Pacific OCS Region

Subject: Exploration Plan, Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A., Inc., Unit Operator

The subject plan was deemed submitted on April 17, 1980. We shall need your input for our EA by May 5, 1980.

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

United States Department of the Interior

GEOLOGICAL SURVEY

1340 W. Sixth Street
Suite 100
Los Angeles, California 90017

April 28, 1980

Memorandum

To: Oil and Gas Supervisor, Pacific OCS Region

From: District Geologist, Pacific OCS Region

Subject: Environmental Geology for OCS P-0205

NOTED - DUNAWAY

Introduction

Application has been received from Chevron U.S.A., Inc. for approval of a plan to drill a third exploratory well on OCS Lease P-0205. Lease P-0205 is located at the eastern end of the Santa Barbara Channel about 10.5 km north of Anacapa Island and about 19.3 km southwest of the city of Ventura. The proposed site for well P-0205-3 is located east of the central part of the lease at a water depth of 234 m (figs. 1 & 2). Lease P-0205 is a southern lease in the Santa Clara Unit, a unitization of eight contiguous leases issued to Chevron (2 leases), Exxon (5 leases), and Union (1 lease) with Chevron designated as operator.

The purpose of the well is to test the southern limits of a possible commercial oil accumulation which underlies the northeastern portion of the lease. To date six wells have been drilled by Chevron to test the extent of the field. The proposed P-0205-3 well will be directionally drilled northward beneath an existing northbound sea lane to evaluate the position and reservoir character of oil bearing zones on the south flank of the structure.

Data used for this report includes various published and unpublished reports and information supplied by the applicants.

REGIONAL SETTING

The Santa Barbara Channel is located off the southern California coast south of the City of Santa Barbara. The Santa Barbara Channel is a west-trending submerged basin about 128 km in length and 40 km in width with a maximum depth of 625 m. The channel is physiographically bounded on the north and east by the mainland shorelines of Santa Barbara and Ventura Counties, on the south by the Channel Islands (San Miguel, Santa Rosa, Santa Cruz, and Anacapa Islands), and on the west by the open waters of the Pacific Ocean (fig. 2).

The Santa Barbara Channel is a regional tectonic depression that forms the western extension of the Ventura basin (Greene and others, 1978). The channel is the submerged southwestern extension of the Transverse Ranges structural and geomorphic province (Vedder and others, 1969). The characteristic east-west structural trend of the Transverse Ranges is reflected in the Santa Barbara Channel by major structures formed as a result of north-south compression (Green and others, 1978). To the north, the channel is structurally bounded by the Santa Ynez fault, a left-lateral oblique-slip fault and on the south by the possible west extension of the northeast-trending faults of the Santa Monica/Malibu Coast fault system. On the east, the channel shoals gradually to the shoreline of the Oxnard Plain.

The basin is floored by mildly folded and faulted Quaternary sediments that reach a maximum thickness of 1,200 m (Greene and others, 1978). The shelves and upper slopes of the basin have only a thin veneer of sediment. More than 15,240 m of highly folded and faulted Cretaceous and Tertiary strata underlie the Quaternary basin fill (Vedder and others, 1974).

STRUCTURE

The geologic structure in the general area of the Santa Clara Unit consists of gently folded and considerably faulted Cenozoic strata beneath alluvial cover. The significant structural features in the unit area are depicted in figure 1. These features are part of an anticlinal trend extending westward for 32 km from the offshore extension of the West Montalvo oil field. Offshore this trend is bounded on the north by the Oakridge thrust fault which dips steeply to the south beneath the unit area.

Chevron is presently developing the Montalvo Trend oil accumulation located in OCS leases P-0215, P-0216, and P-0217. The proposed well will test the southern limit of an oil accumulation in a symmetrical east-west trending anticline which extends through OCS Leases P-0204 and P-0205.

STRATIGRAPHY

Surficial sediments in the Santa Barbara Channel are composed of Holocene deposits of sand, silt, and clay.

The generalized stratigraphic section for the Santa Barbara Basin is as follows:

Age	Lithology
Pleistocene	Sand, silt and clay
U. & L. Pliocene	Sand, silt and clay
U. Miocene	Rhyolite, andesite, tuff and basalt breccia
M. Miocene	Siliceous and organic shale, and thin beds of limestone
L. Miocene	Claystone and silty shale
Oligocene	Sandstone and siltstone
Eocene	Sandstone and siltstone
Cretaceous/Jurassic	Conglomerate, sandstone and shale

Compiled from Vedder and others (1969) and Fischer (1972).

SEISMICITY

The Santa Barbara Channel region is seismically active (figs. 3 and 4). A detailed history of the seismic network and earthquake epicenter locations in the area can be found in FES 76-13 (USGS, 1976). The large earthquakes that have occurred in the southern California area (magnitude 6 and greater) are plotted in figure 5. Studies have shown that some of the earthquakes were related to known faults or fault trends in the channel. However, many of the earthquakes appear to be completely unrelated to any known faults.

From June 26 to August 3, 1968, a series of eathquakes shook the Santa Barbara Channel area. This swarm of 63 earthquakes (maximum magnitude 5.2) was located along a northwest-trending gravity and magnetic ridge. Focal mechanism studies indicate that oblique-slip movement occurred along a northwest-trending fault. This indicates the posibility of a deep (10-20 km) northwest-trending structure different from the shallow (to 10 km depth) east-west structures of the Santa Barbara Channel (Sylvester and others, 1970).

A swarm of earthquakes occured offshore near Santa Barbara on August 13, 1978. The largest magnitude was 5.1, followed by more than 200 aftershocks. Since 1932, a seismograph network has been operating

in the southern California area. The earthquake epicenters have been plotted by the California Institute of Technology and show the areas of seismic activity. Figures 3 and 4 show the areas of interest to this study. According to Greene and others (1975), the epicenter locations indicate discrepancies when compared with the U.S. Geological Survey network plots thus making correlation to faults difficult.

TSUNAMI

The only recorded sea inundation of the Santa Barbara area occurred as a result of the 1812 major earthquake located offshore near the City of Santa Barbara. The earthquake reportedly caused a massive tsunami that flooded the south part of the then lightly populated village. In 1927, an earthquake off Point Arguello caused waves up to 2 m high, but the waves only reached the inner beach area. The 1925 (magnitude 6.3) and 1941 (magnitude 6.0) Santa Barbara area earthquakes apparently caused no discernable wave development.

GEOLOGIC HAZARDS ANALYSIS

Slope Stability

The seafloor in the area of the proposed wellsite is very flat and smooth. The geophysical data shows the seafloor slope gradually increasing to a maximum of approximately 6° just below the Oxnard Shelf break. The shelf break, 4 km north-northeast of the proposed site, is the location of the head of a recent submarine landslide. The toe of the slide terminates about 2.4 km north-northeast of the proposed site.

Holocene sediments up to 23 m thick consisting of unconsolidated silts and clays overlie a disturbed zone that appears to be a possible Plio-Pleistocene slump deposit. The operator indicates that this zone caused no unusual problems during the drilling of well P-0205-2 which is located about 122 m northwest of the proposed site.

Faulting

No evidence of shallow faulting in the vicinity of the proposed site was observed on the geophysical profiles.

Shallow Gas Zones and Seeps

High resolution geophysical data often contain too much mechanical noise in the water column to identify seeps. However, bathymetric data indicate that seeps are not common in the area. A possible seep occurs 670 m west of the proposed site.

An area of possible gasified shallow sediments occurs near the eastern boundry of the survey area about 1.5 km from the proposed site.

Renny R. Nichols

Renny R. Nichols

References

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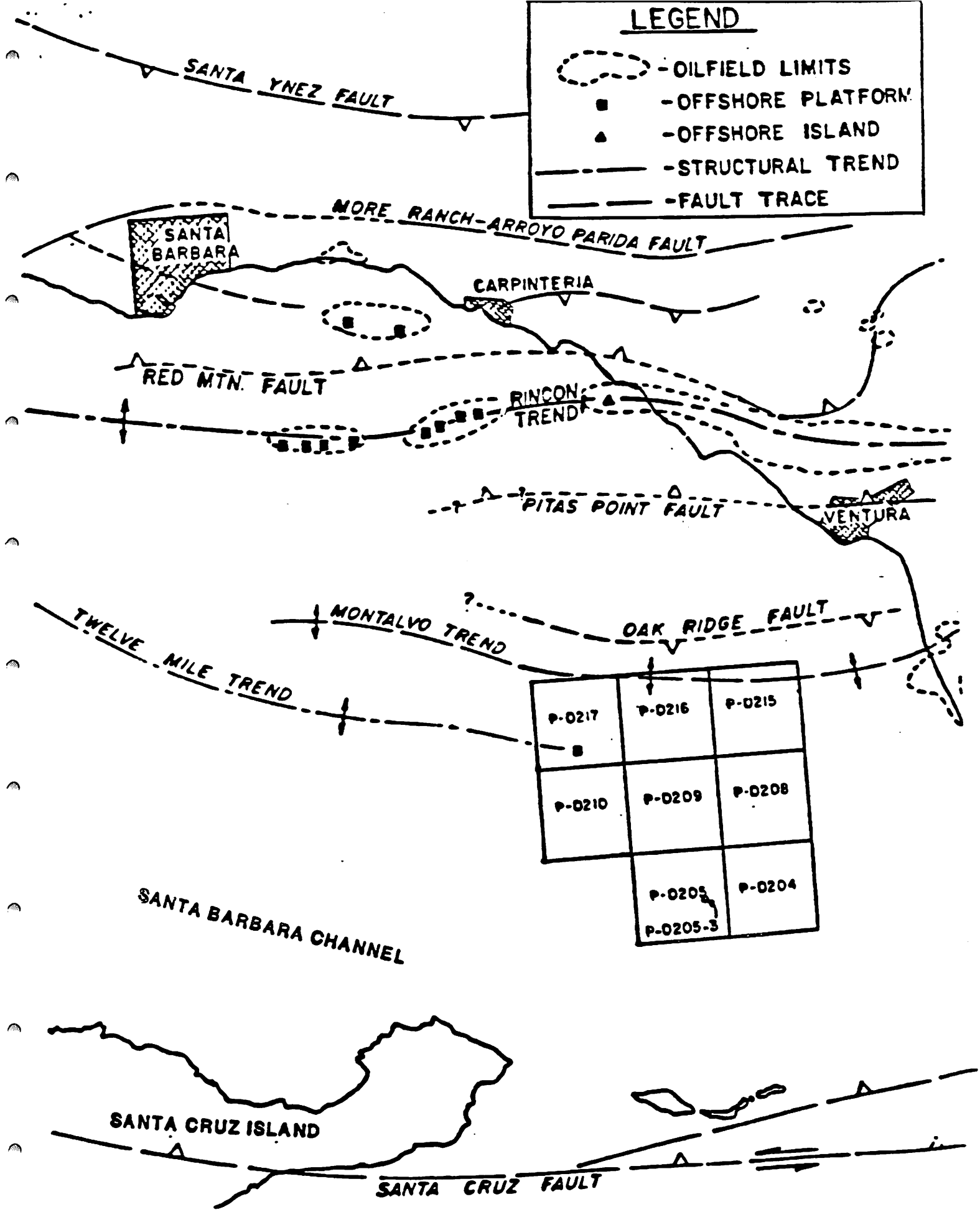


FIGURE 1. INDEX MAP SHOWING STRUCTURAL FEATURES, EASTERN SANTA BARBARA CHANNEL. (MODIFIED FROM CHEVRON, 1980).

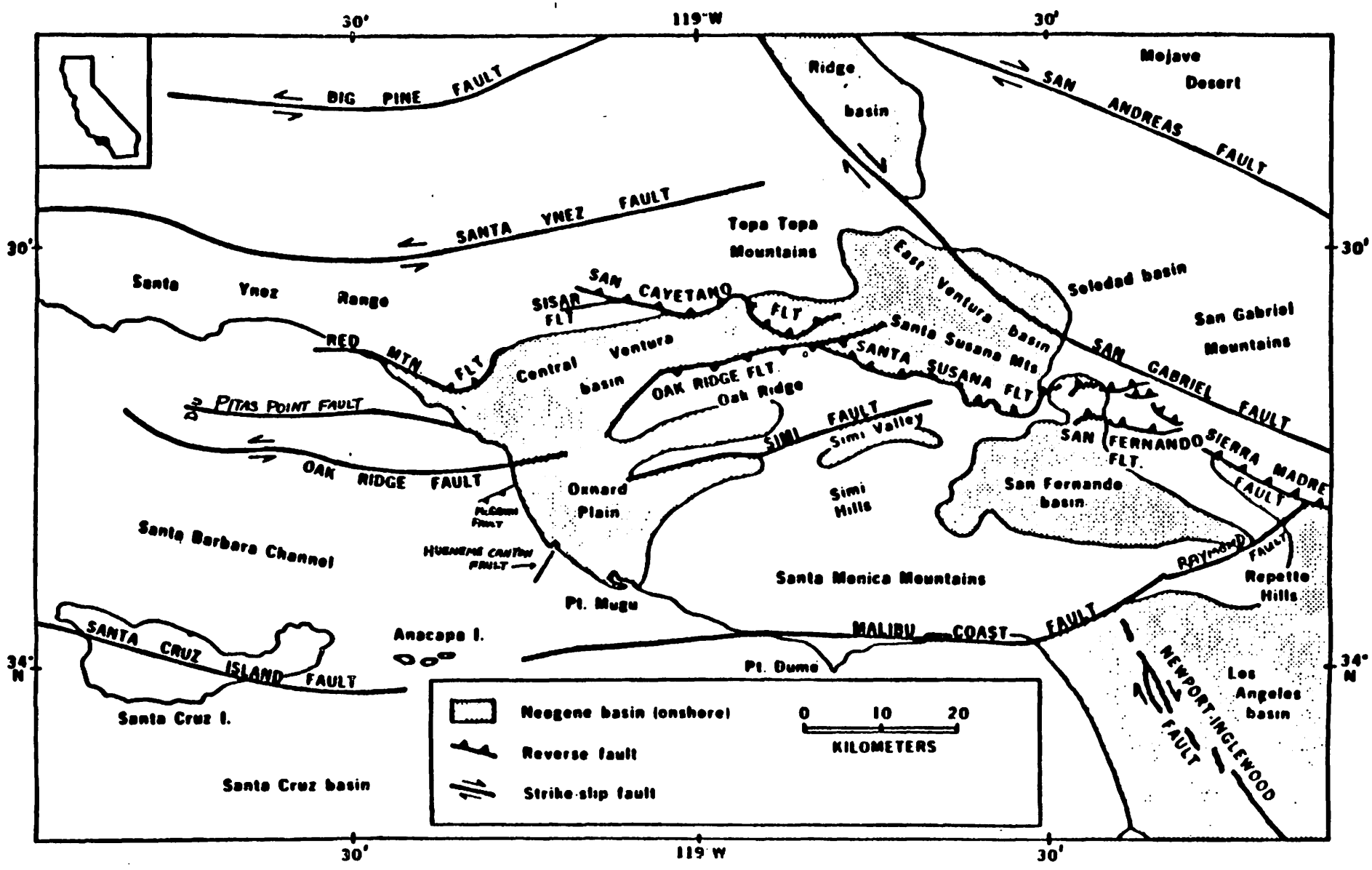
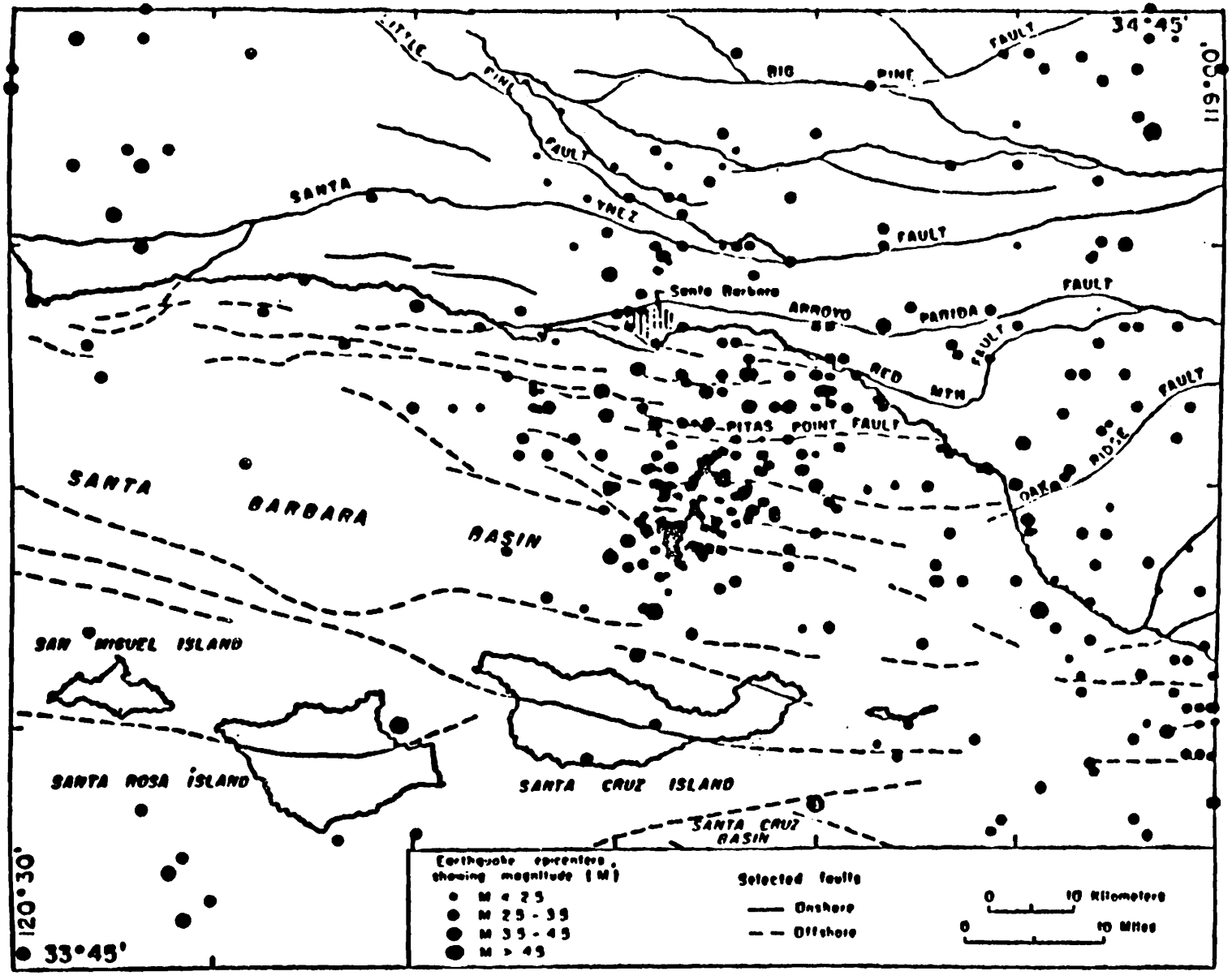
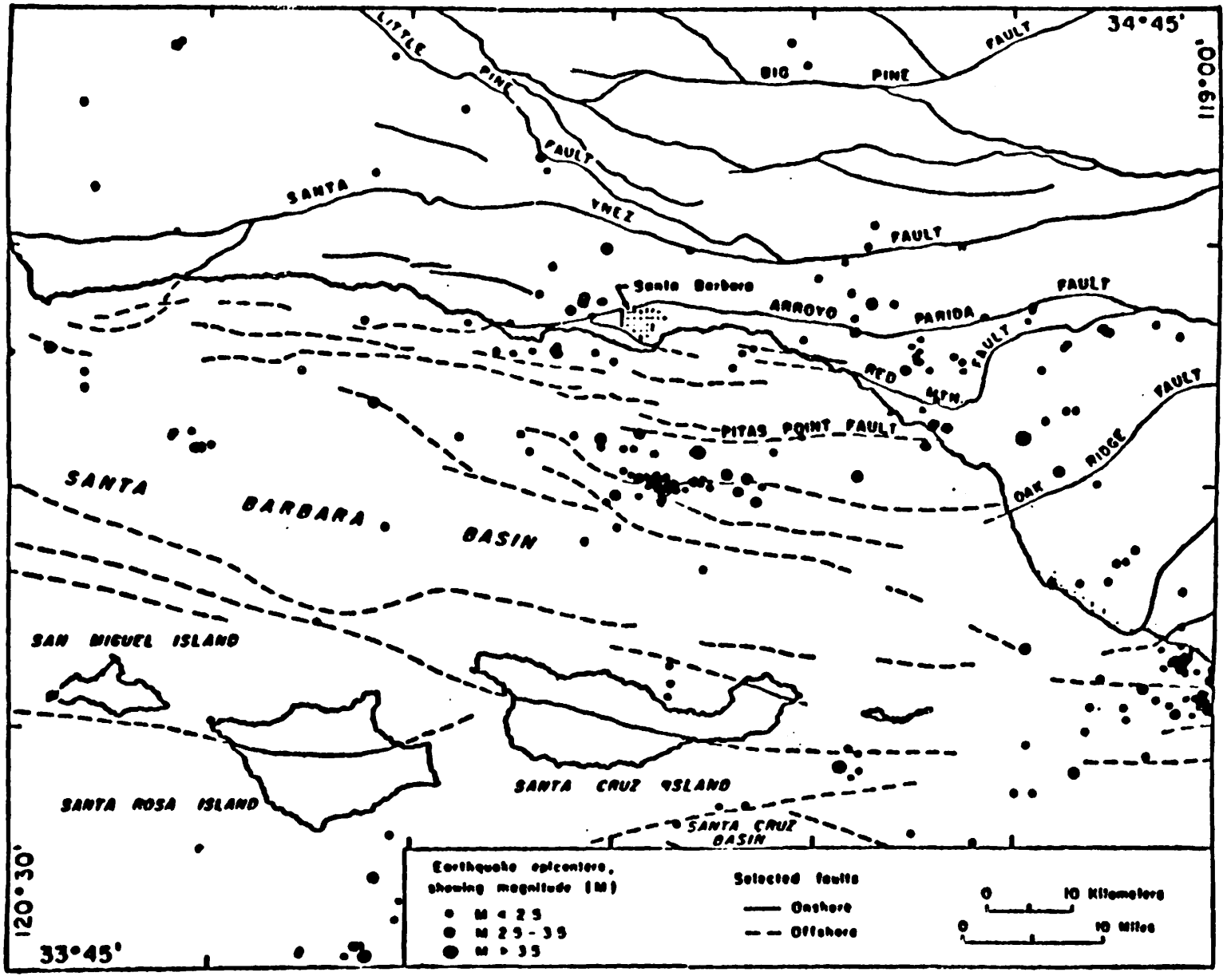


FIGURE 2. TECTONIC MAP OF EASTERN SANTA BARBARA CHANNEL AND ADJACENT ONSHORE AREAS. (FROM: YEATS, 1976).



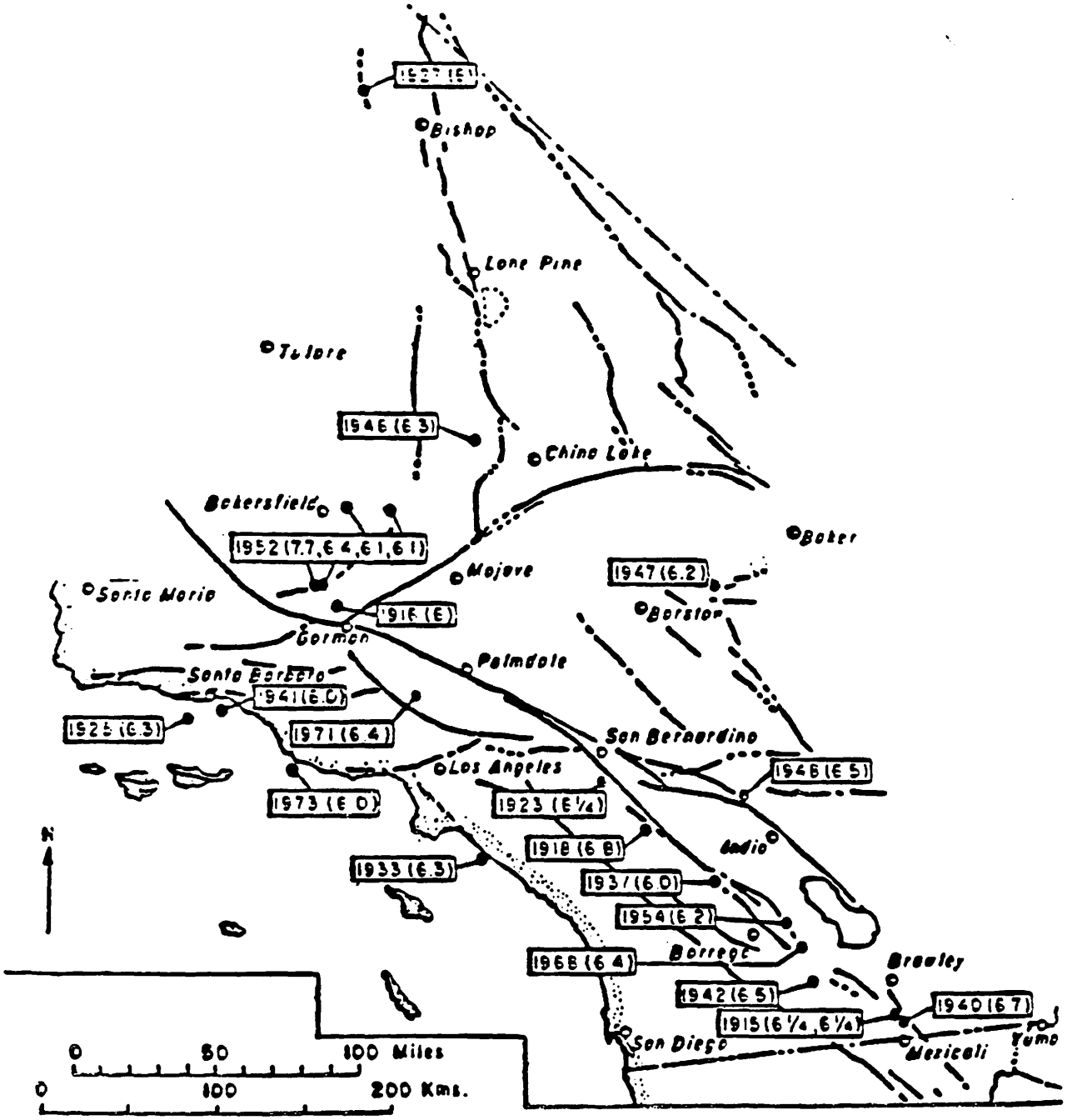
Earthquake epicenters in the Santa Barbara Channel region from 1932 to 1971 as determined by Caltech

FIGURE 3.



Earthquake epicenters in the Santa Barbara Channel region from 1970 to 1973 as determined by USGS

FIGURE 4.



Earthquakes of magnitude 6 and greater in southern California since 1912. Modified from Allen and others, (1965) From Hileman and others, 1973.

FIGURE 5.

APPENDIX 7

Review Comments and Related Correspondence from Other Agencies and/or the Public

- National Park Service
- State of California
- California State Division of Oil and Gas
- California Coastal Commission
- U. S. Office of Coastal Zone Management
  U. S. Coast Guard
- Heritage Conservation and Recreation Service
  U. S. Fish and Wildlife Service
  National Marine Fisheries Service
  Bureau of Land Management
- U. S. Environmental Protection Agency

*No response as of May 5, 1980

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

Memorandum

To: National Park Service, San Francisco, California

From: Oil and Gas Supervisor, Pacific OCS Region

Subject: S. O. 2974 Review, Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc..

Chevron U.S.A. Inc., as operator, has submitted to this office a Plan of Exploration (POE) for proposed drilling at the following location

OCS-P 0205 Well No.	Lambert Grid Zone VI Coordinates	Water Depth (feet)	Proposed Depth (feet)
3	X = 1,045,480' Y = 721,700'	770	9,780

Pursuant to S. O. 2974 (revised), signed August 9, 1978, we are forwarding Chevron U.S.A. Inc.'s POE and Environmental Report (ER) for your review and comment. These copies are non-proprietary and may be retained by your office and made available for public inspection. Due to the 30-day time constraint, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

Should you have any questions regarding the requirements of this memorandum or the enclosed documents, please contact Messrs. Tom Dunaway or Rick Ensele at FTS 798-2846.

F. J. Schambeck

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ⟵ This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

State of California
Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, California 95184

Attention: Mr. Gregory M. Fox

Re: Review of Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3, Chevron U.S.A. Inc. as Unit Operator

Gentlemen:

With the California Coastal Management Program (CCMP) having become effective on August 31, 1978, any plan submitted to the Secretary of the Interior for the exploration or development of a lease in the OCS and which significantly affects any land or water use of California's coastal zone must have attached to it a certification that each activity complies with the CCMP and will be carried out in a manner consistent with the CCMP.

Enclosed with this letter is one "Public Information" copy of the Plan of Exploration and Environmental Report for the Santa Clara Unit, OCS-P 0205, Well No. 3, as submitted to the U. S. Geological Survey by Chevron U.S.A. Inc., the Unit Operator. The required consistency certification appears as section 6.0 on page 41 of the Environmental Report. The California Coastal Commission and the U. S. Office of Coastal Zone Management have also been provided with copies of these documents.

It has been determined that the submission is complete and meets with the requirements of 30 CFR 250.34. As such, the 30-day processing time mandated by the OCS Lands Act Amendments has begun. Please commence your review on receipt of this letter and the enclosed documents. Due to the 30-day time constraint, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

District Deputy
California State Division of Oil and Gas
5190 East Pacific Coast Highway
Long Beach, California 90804

Attention: Mr. R. A. Ybarra

Re: Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc., Unit Operator

Gentlemen:

Enclosed is a "Public Information" copy of the Plan of Exploration and Environmental Report for the proposed drilling of a well on Federal oil and gas lease OCS-P 0205. Per your request, we are sending this set directly to you, rather than through the California Coastal Commission, for your review and comment. Due to a 30-day processing time limit mandated by the OCS Lands Act Amendments, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

Should you have any questions regarding the requirements of this letter or the submitted documents, please contact Messrs. Tom Dunaway or Rick Ensele of this office at (213) 688-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: **Conservation Manager, Pacific OCS Region**
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ⟵ This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

Should you have any questions regarding the requirements of this letter or the submitted documents, please contact Messrs. Tom Dunaway or Rick Ensele at (213) 688-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Pacific Regional Manager
U. S. Office of Coastal Zone Management
National Oceanic and Atmospheric
Administration
3300 Whitehaven Street, N.W.
Washington, D. C. 20235

Attention: Mr. D. Hoydysh

Re: Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc. Unit Operator

Gentlemen:

Chevron U.S.A. Inc., as Unit Operator, has submitted to this office a Plan of Exploration (POE) for the proposed drilling of OCS-P 0205 Well No. 3 on the Santa Clara Unit. It has been determined that the submission is complete and meets the requirements of 30 CFR 250.34. As such, the 30-day processing time mandated by the OCS Lands Act Amendments has begun.

Enclosed with this letter is a "Public Information" copy of the POE and Environmental Report for the subject well as submitted to the U. S. Geological Survey by Chevron. The California Coastal Commission and the California Governor's Office of Planning and Research have also been provided with copies of these documents.

Since this office is currently preparing an Environmental Assessment of the subject action, we would appreciate your comments or suggestions. Due to the 30-day time constraint, only those responses received here on or before May 5, 1980 can be used.

Should you have any questions regarding the requirements of this letter or the submitted documents, please contact Messrs. Tom Dunaway or Rick Ensele of this office at FTS 798-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Commander (MEPPS)
Eleventh Coast Guard District
400 Oceangate
Long Beach, California 90822

Re: Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc., Unit Operator

Dear Commander:

Chevron U.S.A. Inc., as Unit Operator, has submitted to this office a Plan of Exploration and accompanying Environmental Report for proposed drilling at the following location:

OCS-P 0205 Well No.	Lambert Grid Zone VI Coordinates	Water Depth (feet)	Proposed Depth (feet)
3	X = 1,045,480' Y = 721,700'	770	9,780

We have enclosed a "Public Information" copy of each document for your review and comment.

Any comments of yours, if received by this office by May 5, 1980, will be used in the preparation of our Environmental Assessment. Should you have any questions regarding the requirements of this letter or the enclosed documents, please contact Messrs. Tom Dunaway or Rick Ensele at (213) 688-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
COMMANDER (mocs)
ELEVENTH COAST GUARD DISTRICT
UNION BANK BLDG.
400 OCEANGATE
LONG BEACH, CA. 90822

16475/30
5 May 1980

U. S. Department of Interior
Geological Survey
160 Federal Building
1340 West Sixth Street, Room 160
Los Angeles, CA 90317

NOTED - DUNAWAY

Ref: Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3, Chevron U.S.A. Inc.

Dear Mr. Schambeck:

In response to your letter of 21 April 1980, the referenced Plan of Exploration and accompanying Environmental Report for Tract OCS-P 0205 has been reviewed. Subject to our comments herein, the Coast Guard has no objection to the exploratory drilling operation proposed by Chevron U.S.A.

The proposed well location is in the buffer zone south of the northbound traffic lane of the Santa Barbara Channel Traffic Separation Scheme. Chevron U.S.A. has previously received a letter of no objection from this office to conduct this exploratory drilling operation.

The Oil Spill Equipment and Materials Inventory in Table 1 of the Plan of Exploration lists thirteen drums of chemical agents to be maintained on board the drilling vessel. A statement should be added that these agents may only be used with the permission of the cognizant on-scene-coordinator.

In addition to the Aids to Navigation requirements of 33 CFR 67 which will apply to this operation, no buoys will be allowed in the traffic lanes or buffer zones and any anchor cables which extend beneath the traffic lanes must be at one hundred feet below the surface.

Thank you for the opportunity to comment on these documents.

Sincerely,

D. M. TAUB
Captain, U. S. Coast Guard
Chief, Marine Safety Division
Eleventh Coast Guard District
By direction of the District Commander

Copy to: CCGD11(oan)

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

Memorandum

To: Assistant Regional Director; Grants, Federal Coordination and Landmarks, Heritage Conservation and Recreation Services Pacific Southwest Region, San Francisco, California

From: Oil and Gas Supervisor, Pacific OCS Region

Subject: S. O. 2974 Review, Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc.

Chevron U.S.A. Inc., as operator, has submitted to this office a Plan of Exploration (POE) for proposed drilling at the following location

OCS-P 0205 Well No.	Lambert Grid Zone VI Coordinates	Water Depth (feet)	Proposed Depth (feet)
3	X = 1,045,480' Y = 721,700'	770	9,780

Pursuant to S. O. 2974 (revised), signed August 9, 1978, we are forwarding Chevron U.S.A. Inc.'s POE and Environmental Report (ER) for your review and comment. These copies are non-proprietary and may be retained by your office and made available for public inspection. Due to the 30-day time constraint, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

Should you have any questions regarding the requirements of this memorandum or the enclosed documents, please contact Messrs. Rom Dunaway or Rick Ensele at FTS 798-2846.

(Orig. Sgd.) F. J. Schambeck

F. J. Schambeck

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ⟵ This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

Memorandum

To: Regional Director, U. S. Fish and Wildlife Service
Portland, Oregon

From: Oil and Gas Supervisor, Pacific OCS Region

Subject: S. O. 2974 Review, Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc.

Chevron U.S.A. Inc., as operator, has submitted to this office a Plan of Exploration (POE) for proposed drilling at the following location

OCS-P 0205 Well No.	Lambert Grid Zone VI Coordinates	Water Depth (feet)	Proposed Depth (feet)
3	X = 1,045,480' Y = 721,700'	770	9,780

Pursuant to S. O. 2974 (revised), signed August 9, 1978, we are forwarding Chevron U.S.A. Inc.'s POE and Environmental Report (ER) for your review and comment. These copies are non-proprietary and may be retained by your office and made available for public inspection. Due to the 30-day time constraint, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

Should you have any questions regarding the requirements of this memorandum or the enclosed documents, please contact Messrs. Tom Dunaway or Rick Ensele at FTS 798-2846.

F. J. Schambeck

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

LLOYD 500 BUILDING, SUITE 1692
500 N.E. MULTNOMAH STREET
PORTLAND, OREGON 97232

NOTED - DUNAWAY

May 1, 1980

NOTED - ADAMS

MEMORANDUM

To : Oil and Gas Supervisor, Pacific OCS Region, U.S. Geological Survey, Los Angeles, California

From : Acting Regional Director, U.S. Fish and Wildlife Service, Portland, Oregon (OBS)

Subject: Secretarial Order No. 2974 Review, Plan of Exploration: Santa Clara Unit, OCS-P 0205, Well No. 3; Chevron, U.S.A. Inc.

We have reviewed the Plan of Exploration for Well No. 3 on lease OCS-P 0205, and we do not object to the proposed activity.

Thank you for the opportunity to review these materials.

William H. Meyer

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Regional Director
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, California 90731

Attention: Mr. Gerald V. Howard

Re: Plan of Exploration, Santa Clar
Unit, OCS-P 0205 Well No. 3;
Chevron U.S.A. Inc., Unit Operator

Gentlemen:

Chevron U.S.A. Inc., as Unit Operator, has submitted to this office a Plan of Exploration for the proposed drilling of OCS-P 0205 Well No. 3 in the Santa Clara Unit. It has been determined that the submission is complete and meets the requirements of 30 CFR 250.34. As such, the 30-day processing time mandated by the OCS Lands Act Amendments has begun.

Federal regulations require the United States Geological Survey to consult the appropriate agencies with regulatory responsibilities or special expertise requesting assistance in providing input into an environmental analysis. Since this office is currently preparing an Environmental Assessment of the subject action, we would appreciate your comments, suggestions, or requirements. Due to the 30-day time constraint, only those responses received here on or before May 5, 1980 can be used.

Specifically, the U.S. Geological Survey interim guidelines for environmental analyses of offshore operations state:

> "The Area Oil and Gas Supervisor or District Engineer will contact the Fish and Wildlife Service and the National Marine Fisheries, in writing, requesting information on endangered or threatened species and critical habitat for these species in the area of the proposed action. A copy of the request and the responses from Fish & Wildlife

Service and National Marine Fisheries Service will be attached to the environmental analysis. Data supplied by FWS and NMFS will be used in preparing the environmental analysis."

The enclosed documents are "Public Information" copies of Chevron U.S.A. Inc.'s Plan of Exploration and Environmental Report and may be retained by your office. Should you have any questions regarding the requirements of this letter or the submitted documents, please contact Messrs. Tom Dunaway or Rick Ensele of this office at FTS 798-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
300 South Ferry Street
Terminal Island, California 90731

May 8, 1980 F/SWR31:JHL

Mr. F.J. Schambeck
Oil and Gas Supervisor, Pacific Area
U.S. Geological Survey
1340 W. Sixth Street, Room 160
Los Angeles, CA 90017

Dear Mr. Schambeck:

Subject: Plan of Exploration, Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc., Unit Operator

We have reviewed the subject plan and find that those fishery resources for which we have a responsibility will not be significantly affected. However, the plan could impact certain marine mammal species.

Our concerns are for those whale species identified in our September 25, 1979 biological opinion which was issued pursuant to an Endangered Species Act, Section 7 consultation between our respective agencies. That consultation addressed all Geological Survey activities ongoing and proposed for sites that were leased in either lease sale number 40 or prior lease sales in the Southern California Bight.

That consultation contains the information necessary for the completion of your environmental analysis as well as our recommendations for reducing the impacts of mineral development in the Southern California Bight.

We are concerned about this well since it is being drilled within the proposed boundaries of the Channel Islands Marine Sanctuary and within the southern buffer zone of the northbound traffic lane of the U.S. Coast Guard traffic separation scheme. Our concerns are alleviated in part because this well is to be drilled in the summer when no gray whales are in the area and the Coast Guard feels they have ample time to notify mariners of the proximity of the drill-ship to the traffic lane.

We recommend that the crew of the drill-ship be alerted of the proximity of the drilling site to the traffic lane and of the increased potential for a vessel conflict. We also recommend that trial deployment of all spill containment equipment be conducted at the drilling site prior to the initiation of drilling. This will insure the crew's familiarity with the equipment and its proper use, as well as insuring that all the gear is in proper working order. Finally, we recommend that the oil spill containment equipment be checked periodically throughout the duration of the project

to ensure that it remains in good working order.

Should you require any additional information, please contact Mr. Jim Lecky of my staff at FTS 796-2518.

Sincerely yours,

Floyd S. Anders, Jr.

Floyd S. Anders, Jr.
Acting Regional Director

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

Memorandum

To: Manager, Pacific OCS Office
Bureau of Land Management

From: Oil and Gas Supervisor, Pacific OCS Region

Subject: S. O. 2974 Review, Plan of Exploration: Santa Clara Unit, OCS-P 0205 Well No. 3; Chevron U.S.A. Inc..

Chevron U.S.A. Inc., as operator, has submitted to this office a Plan of Exploration (POE) for proposed drilling at the following location:

OCS-P 0205 Well No.	Lambert Grid Zone VI Coordinates	Water Depth (feet)	Proposed Depth (feet)
3	X = 1,045,480' Y = 721,700'	770	9,780

Pursuant to S.O. 2974 (revised), signed August 9, 1978, we are forwarding Chevron U.S.A., Inc's Plan of Exploration, Geological and Geophysical Data, and Environmental Report (ER) for your review and comment. Due to the 30-day time constraint, only those comments received here on or before May 5, 1980 can be used in the preparation of our Environmental Assessment.

The first two documents noted above are considered to be proprietary and have been marked "CONFIDENTIAL". Safeguarding this material must be in accordance with Departmental regulations.

Please acknowledge receipt of this material on the copy of this memorandum and return the copy to this office. Upon completion of your review, the proprietary documents must be returned to this office, the primary office of control. The ER may be retained by your office and made available for public inspection.

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE

Should you have any questions regarding the requirements of this memorandum or the enclosed documents, please contact Messrs. Tom Dunaway or Rick Ensele of this office at FTS 798-2846.

F. J. Schambeck

Enclosures

Receipt acknowledged _____
(Date)

By _____
(Name) (Title) (Office)

cc: Conservation Manager, Pacific OCS Region
District Engineer, Santa Barbara
Chief, Offshore Operations Section
Chief, Environmental Section ← This copy for

UNITED STATES GOVERNMENT

memorandum

DATE: MAY 5 1980

REPLY TO ATTN OF: Manager, Pacific OCS Office

1780.11
OCS-P 0205

SUBJECT: Plan of Exploration OCS-P 0205, Chevron U.S.A., Inc.

TO: Oil and Gas Supervisor, Pacific Region

We have reviewed Chevron's Plan of Exploration and Environmental Report, and our comments are:

1. We have found no legal conflicts nor encumbrances on the lease. Chevron is properly designated as the operator.

2. The oil spill contingency plan is acceptable.

3. We have found no significant impacts on biological resources.

4. Comments on cultural resources are:

   ER,P.52: The statement is made "there is a low probability of cultural resources being present in areas where the sea floor is deeper than 150m (485 ft.)." This is true only of aboriginal resources, not of shipwrecks, which can occur at any depth.

   This tract is located in an area of medium to high sensitivity for shipwrecks. The operator is reminded that according to the cultural resource stipulation:

   > The lessee agrees that if any site structure, or object of historical or archaeological significance should be discovered during the conduct of any operations on the leased area, he shall report immediately such findings to the Supervisor and make every reasonable effort to preserve and protect the cultural resource from damage until the Supervisor has given directions as to its preservation.

We recommend approval of the Exploration Plan and the Environmental Report.

GEOLOGICAL SURVEY
PACIFIC OCS REGION
RECEIVED
MAY 07 1980
FIELD OPERATIONS
LOS ANGELES

William E. Grant

We are returning the following information:

1. Chevron U.S.A. Inc. Operator. 1980. Exploratory Plan Lease OCS-P 0205, Outer Continental Shelf, Santa Barbara Channel Offshore, California. March 7. (confidential)

2. Geological and Geophysical Data. (confidential)

Enclosures

United States Department of the Interior

GEOLOGICAL SURVEY

160 FEDERAL BUILDING
1340 W. SIXTH STREET
LOS ANGELES, CALIFORNIA 90017

April 21, 1980

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Permits Branch
U. S. Environmental Protection Agency, Region 9
215 Fremont
San Francisco, California 94105

Attention: Mr. Ted Durst

Re: Plan of Exploration: Santa Clara Unit OCS-P 0205 Well No. 3; Chevron U.S.A. Inc., Unit Operator

Gentlemen:

Chevron U.S.A. Inc., as Unit Operator, has submitted to this office a Plan of Exploration (POE) for the proposed drilling of OCS-P 0205 Well No. 3 in the Santa Clara Unit. It has been determined that the submission is complete and meets the requirements of 30 CFR 250.34. As such, the 30-day processing time mandated by the OCS Lands Act Amendments has begun.

Enclosed with this letter is a "Public Information" copy of the POE and Environmental Report for the subject well, as submitted to the U. S. Geological Survey by Chevron. Since this office is currently preparing an Environmental Assessment of the subject action, we would appreciate your comments or suggestions. Due to the 30-day time constraint, only those responses received here on or before May 5, 1980 can be used.

Should you have any questions regarding the requirements of this letter or the submitted documents, please contact Messrs. Tom Dunaway or Rick Ensele of this office at FTS 798-2846.

Sincerely yours,

F. J. Schambeck
Oil and Gas Supervisor
Pacific OCS Region

Enclosures

cc: **Conservation Manager, Pacific OCS Region**
District Engineer, Santa Barbara
Chief, Offshore Operations Section
ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE
Chief, Environmental Section ← This copy for