

MINUTE ITEM

10/80  
W 40167  
Kuehn

20. RESUMPTION OF DRILLING OPERATIONS  
MOLINO FIELD, SANTA BARBARA COUNTY

Calendar Item 20 attached was pulled from the agenda prior to the meeting.

Attachment: Calendar Item 20.

CALENDAR ITEM

20.

10/80  
W 40167  
Kuehn  
PRC 2920.1

RESUMPTION OF DRILLING OPERATIONS  
MOLINO FIELD, SANTA BARBARA COUNTY

LESSEE: Shell Oil Company  
1200 Milam  
Houston, Texas 77001

AREA, LAND TYPE AND LOCATION:

The project site is offshore tide and submerged lands at Molino Field which is within the 4,250 acres currently under State lease (PRC 2920.1). Molino Field is located near Gaviota, Santa Barbara County.

PROJECT DESCRIPTION:

Shell Oil Company has requested authorization from the State Lands Commission to drill a 14,000-foot subsea exploratory gas well from a mobile drilling unit to test horizons not penetrated to date on the Molino structure, but which tested productive in the Santa Ynez Unit further offshore in Federal waters. The proposed program is a continuation of development drilling by the lessee to effectively deplete all zones known to be productive in the Molino Field area, evaluate undrilled areas on the lease and produce as much of the remaining recoverable resources from the property as economically feasible. Testing and all subsequent production will be conducted via installation of a subsea wellhead and accompanying flowline system. The flowline system will be installed both offshore and onshore. The existing onshore facilities will not require expansion or modification to process the anticipated production if the well proves successful.

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The basic objective of this proposed project is to identify, recover, process and distribute the natural gas resource within the framework of the existing market system and energy supply and demand requirements.

STATUTORY AND OTHER REFERENCES:

- A. P.R.C.: Division 6, Parts 1 and 2.
- B. Cal. Adm. Code: Title 2, Div 3, Title 14, Div 6.

OTHER PERTINENT INFORMATION:

1. A Final EIR was prepared by Westec Services, Inc., pursuant to CEQA, and implementing regulations. The Final EIR for this project is on file in the principal office of the Commission, and is incorporated by reference as though fully set forth herein. An executive summary of the environmental document is attached hereto as Exhibit "B".

As more fully discussed in the Final EIR, there are some elements of the existing environment that could be significantly impacted by the proposed project. The major effects of the project that may have a significant impact include: Geologic and geotechnical considerations, air quality, marine biology, coastal policies and land use, and marine traffic.

Geologic and geotechnical considerations - Vibratory ground motion is the only geologic hazard that might produce significant impacts requiring mitigating procedures. The project will include proper engineering design that will give consideration to the maximum credible earthquake. Blowout prevention equipment, hydrogen sulphide gas safety procedures and oil spill contingency plans will be provided and adhered to by Shell throughout the entire project.

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Air Quality - Construction and operational phases of the project may produce emissions that exceed limits prescribed by the Federal, State and local agencies. Shell will have to comply with air quality standards of those agencies having jurisdiction; Shell will use the Best Available Control Technology to reduce such pollutants. Shell must obtain a permit from the County of Santa Barbara Air Pollution Control District.

Marine Biology - Potential impacts of the proposed project on marine biology consists of those resulting from day-to-day activities associated with drilling, testing and recovery, and those due to a catastrophic event such as a well blowout or oil spill. The possibility of a significant oil spill associated with the offshore platforms and pipeline exists even though the possibility is low.

Coastal Policies and Land Use - Onshore recreational activities may be temporarily disrupted during construction. The proposed project is generally consistent with the policies of Santa Barbara County and the local coastal plan. To minimize the temporary impact on recreational activities during construction, staging and pipelaying operation will take place during the non-peak use season.

Marine Traffic measures taken to reduce collision risks include:

- a. Coast Guard approved navigation aids.
- b. Distinctive markings for early visual identification.
- c. Notification of marine interests.
- d. Consideration of designating a safety zone around each platform.

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2. This project is situated on State land identified as possessing significant environmental values pursuant to PRC 6370.1 and is classified in a use category, class B, which authorizes limited use. Staff has coordinated this project with those agencies and organizations which nominated the site as containing significant values. Mitigation measures have been included in the project to provide for the protection of the significant environmental characteristics identified.
3. The EIR contains an adequate analysis demonstrating how the proposed project is fully consistent with the Coastal Act and the Commission's Coastal Regulations.
4. Approval of Shell's application would include an amendment to Lease PRC 2920.1 to provide that the lessee comply with the Commission's regulations in effect on October 30, 1980.

AGREEMENT FOR THE PROTECTION OF THIRD PERSONS:

With assistance of the Office of the Attorney General, staff has prepared agreements additional to present lease requirements and acceptable to the lessee, affording increased protection to third persons for any damages arising from operations conducted under the lease. These agreements provide:

1. Shell Oil Company will furnish the State Lands Commission with a Certificate of Insurance in the amount of \$10 million, evidencing insurance against liability for damages to third persons.
2. Procedures shall be established for the prompt processing of all claims and the prompt payment of uncontested claims.

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3. To facilitate the settlement of contested claims by third persons without the necessity of litigation, Shell will agree to arbitration and mediation procedures specified in the Agreement.

EXHIBITS:           A. Location Map.   B. EIR Executive Summary.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT THE FINAL ENVIRONMENTAL IMPACT REPORT HAS BEEN PREPARED FOR THIS PROJECT BY THE COMMISSION FOLLOWING EVALUATION OF COMMENTS AND CONSULTATION WITH PUBLIC AGENCIES WHICH WILL ISSUE APPROVALS FOR THE PROJECT.
2. CERTIFY THAT THE FINAL ENVIRONMENTAL IMPACT REPORT (EIR NO.273) HAS BEEN COMPLETED IN COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970, AS AMENDED, AND THE STATE CEQA GUIDELINES AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.
3. DETERMINE THAT THE PROJECT HAS THE POTENTIAL TO CAUSE A SIGNIFICANT EFFECT ON THE ENVIRONMENT. SPECIFICALLY:
  - A. GEOLOGIC AND GEOTECHNICAL CONSIDERATION - REQUIREMENTS HAVE BEEN INCORPORATED INTO THE PROJECT TO MITIGATE POTENTIAL GEOLOGIC HAZARD EFFECTS OF THE PROJECT.
  - B. AIR QUALITY - MITIGATION REQUIREMENTS TO LESSEN IMPACTS ARE WITHIN THE RESPONSIBILITY AND JURISDICTION OF ANOTHER PUBLIC AGENCY, NOT THE STATE LANDS COMMISSION. SUCH PUBLIC AGENCY CAN AND WILL ADOPT APPROPRIATE MITIGATION MEASURES.
  - C. MARINE BIOLOGY - SUFFICIENT REQUIREMENTS HAVE BEEN INCORPORATED INTO THE PROJECT WHICH MITIGATE THE POTENTIAL SIGNIFICANT EFFECTS AN OIL RELATED PROJECT MAY HAVE ON THE MARINE ENVIRONMENT AS IDENTIFIED IN THE EIR.
  - D. COASTAL POLICIES AND LAND USE - THE PROJECT IS GENERALLY CONSISTENT WITH THE POLICIES OF SANTA BARBARA COUNTY AND THE LOCAL COASTAL PLAN.

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- E. MARINE TRAFFIC - SUFFICIENT CHANGES OR REQUIREMENTS HAVE BEEN INCORPORATED INTO THE PROJECT WHICH MITIGATE THE POTENTIAL SIGNIFICANT EFFECTS THE PROJECT MAY HAVE ON MARINE TRAFFIC AS IDENTIFIED IN THE EIR.
4. FIND THAT ADEQUATE PROVISIONS HAVE BEEN MADE FOR PROTECTION OF THE SIGNIFICANT ENVIRONMENTAL CHARACTERISTICS IDENTIFIED PURSUANT TO SECTION 6370.1, OF THE P.R.C.
5. DETERMINE THAT THE PROJECT IS CONSISTENT WITH THE PROVISIONS OF THE CALIFORNIA COASTAL ACT OF 1976.
6. AUTHORIZE AMENDMENT OF STATE OIL AND GAS LEASE PRC 2920.1 TO PROVIDE FOR COMPLIANCE WITH STATE LANDS COMMISSION REGULATIONS IN FORCE ON OCTOBER 30, 1980.
7. AUTHORIZE THE RESUMPTION OF EXPLORATORY DRILLING OPERATIONS ON STATE OIL AND GAS LEASE PRC 2920.1 IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE LEASE AND THE RULES AND REGULATIONS OF THE STATE LANDS COMMISSION SUBJECT TO THE UNDERSTANDING THAT SHELL OIL COMPANY, AS OPERATOR UNDER SAID LEASES, HAS AGREED TO THE FOLLOWING PROVISIONS:
- A. SHELL OIL COMPANY WILL FURNISH TO THE STATE LANDS COMMISSION A CERTIFICATE OF INSURANCE FROM A RECOGNIZED INSURANCE COMPANY, DOING BUSINESS IN CALIFORNIA, IN THE SUM OF \$10 MILLION, INCLUDING THE STATE AS A NAMED INSURED AND EVIDENCING INSURANCE AGAINST LIABILITY FOR DAMAGES TO THIRD PERSONS ARISING OUT OF ANY AND ALL DRILLING AND PRODUCTION ACTIVITIES UNDER SAID LEASES--WHICH CERTIFICATE SHALL NOT BE CANCELABLE EXCEPT UPON 30 DAYS NOTICE. SHELL OIL COMPANY SHALL AGREE TO KEEP A CERTIFICATE OF INSURANCE MEETING THE ABOVE REQUIREMENTS IN EFFECT AT ALL TIMES UNTIL ALL DRILLING FROM SAID LEASES HAS TERMINATED AND ALL WELLS HAVE BEEN PROPERLY ABANDONED IN THE MANNER REQUIRED BY LAW.
- B. SHOULD ANY EVENT OCCUR WHICH MAY CAUSE A SUBSTANTIAL NUMBER OF CLAIMS FOR DAMAGES TO BE FILED AGAINST SHELL OIL COMPANY AS A RESULT OF OPERATIONS UNDER SAID LEASE, SHELL OIL COMPANY SHALL, WITHIN 10 DAYS AFTER SUCH EVENT, CAUSE TO BE OPENED, OR OPEN, A CLAIMS OFFICE WITHIN THE CITY OF SANTA BARBARA STAFFED WITH SUFFICIENT PERSONNEL WITH AUTHORITY

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TO PROCESS ALL CLAIMS AND TO SETTLE ALL UNCONTESTED CLAIMS BARRING UNUSUAL CIRCUMSTANCES, THE STAFFING OF SAID OFFICE SHALL BE SUFFICIENT TO PROCESS ALL CLAIMS AND SETTLE ALL UNCONTESTED CLAIMS WITHIN 60 DAYS OF THE ESTABLISHMENT OF SAID OFFICE;

- C. ALL DRILLING AND PRODUCTION SHALL BE CONDUCTED UNDER SAID LEASE IN ACCORDANCE WITH APPLICABLE LAW, THE RULES AND REGULATIONS OF THE STATE LANDS COMMISSION AND THE DIVISION OF OIL AND GAS, AND AS REFERRED TO OR DESCRIBED IN THE FINAL ENVIRONMENTAL IMPACT REPORT RELATING TO EXPLORATORY DRILLING OPERATION BY SHELL OIL COMPANY, STATE OIL AND GAS LEASE PRC 2920.1 ADOPTED BY THE STATE LANDS COMMISSION;
- D. SHELL OIL COMPANY SHALL IMPLEMENT AND MAINTAIN PROPERLY AND EFFICIENTLY THE OIL SPILL CONTINGENCY PLAN ON FILE IN THE OFFICE OF THE COMMISSION;
- E. TO FACILITATE THE SETTLEMENT OF CONTESTED CLAIMS BY THIRD PERSONS WITHOUT THE NECESSITY OF LITIGATION, SHELL OIL COMPANY SHALL AGREE TO ARBITRATION AND MEDIATION PROCEDURES ON FILE IN THE OFFICE OF THE COMMISSION.

EXHIBIT "A"  
STATE LANDS COMMISSION  
W 40167

Resumption of Drilling Operations  
PRC 2920.1

SHELL OIL COMPANY (Operator)  
SANTA BARBARA COUNTY

October 1980

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R33W

T. 5N. R. 32 W.

T.5N. R31 W

T5N  
R30W

GAVIOTA

PRC  
2793  
ARCO

PRC  
2894  
CHEVRON

PRC  
2199  
CHEVRON

PRC  
2920  
SHELL

PRC  
2933  
PHILLIPS

PRC  
2198  
Q.C. 9-12-66

PRC  
2955  
TEXACO

PROPOSED  
SUBSEA  
WELLHEAD  
LOCATION

PRC  
4002

PROPOSED  
FLOWLINE  
BUNDLE  
LOCATION

0 10,000 20,000 feet

SCALE: 1 Inch = 10,000 Feet

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# EXHIBIT "B"

## EXECUTIVE SUMMARY

### A. AGENCY JURISDICTION

This Environmental Impact Report (EIR) has been prepared under a contractual agreement with the State Lands Commission utilizing the State EIR Guidelines implementing the California Environmental Quality Act (CEQA) of 1970, as amended. The project, as proposed, involves actions primarily on State Tidelands and therefore the California State Lands Commission is acting as Lead Agency.

### B. PROJECT DESCRIPTION

Utilizing a mobile drilling unit, the Shell Oil Company (Shell) is proposing to resume exploratory drilling operations within State Oil and Gas Lease PRC 2920.1, encompassing the offshore Molino Field of Santa Barbara County. Further, upon confirmation of the presence of commercial quantities of natural gas, Shell also proposes the installation of a subsea wellhead and accompanying flowline system. The flowline system, consisting of a 10.2 cm natural gas line, a 5.1 cm hydraulic control line, and a 5.1 cm glycol supply line will be installed both offshore and onshore.

Approximately 960 m of the flowline bundle will be installed onshore, and 5,030 m offshore, and will connect the subsea wellhead with the existing onshore Molino Gas Processing Plant.

Upon processing of the recovered gas, it will be compressed, metered, and injected into an existing 41 cm pipeline for transmission and ultimate disposition within the southern California consumer market. Therefore, the basic objective of the project, as proposed, is to identify, recover, process, and distribute the natural gas resource within the framework of the existing market system and energy supply and demand requirements.

### C. ENVIRONMENTAL IMPACTS/MITIGATION

In accordance with recent amendments to CEQA stressing a focused environmental report, this document identified the significant environmental issues of the proposed project, and utilizes the extensive data base which exists for the project area. These major issues include:

- Geologic and geotechnical considerations.
- Air quality.
- Marine Biology.
- Coastal policies and land use.
- Marine traffic.

Other issues which received analysis include:

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- Oceanography/water quality.
- Economics and fiscal impacts.
- Archaeology/historic resources.
- Energy Supply and Demand

1. Geologic and Geotechnical Considerations

Geologic processes that could result in environmental impacts are vibratory ground motion and tsunamis. Other processes such as liquefaction, landsliding, turbidity currents, gas-charged sediment, erosion, uplift, and subsidence should not produce significant impacts within the site environment.

Shallow faults detected in the site block during the hazards and cultural resource survey do not appear to offset Holocene strata but do show evidence of late Quaternary tectonic activity. The large east-west trending reverse fault, which projects to the surface about 458 m south of the site, dips to the north beneath the proposed drilling locations. However, because the proposed plan is to drill to 1,165 m and then deviate the well to parallel the fault plane and not transect it, the possibility of the fault rupturing the drill pipe or casing is minimal. Other smaller subsidiary faults or fault splays may be intersected by the well. These intersections will occur at great depth (more than 1,220 m deep) and within competent rock formations (Monterey) thus, if movement should occur, the well would be closed off preventing release of hydrocarbons into the environment. The flowline bundle may cross the projection of some of these small subsurface faults, but also should not cause any adverse environmental impact because the subsurface safety valve is designed to shut-in the well if flow is lost through flowline rupture.

The proposed exploration and production program has been analyzed with respect to plans to mitigate the potential impacts (Sections 4.1.1 and 4.1.2). The blowout prevention equipment, hydrogen sulphide gas safety procedures, and oil spill contingency plans (Section 5.0) are considered to provide adequate mitigation of the impact of such occurrences.

Vibratory ground motion is the only geologic hazard that might produce significant impacts requiring mitigating procedures. Proper engineering design, considering the maximum credible earthquake, is considered sufficient mitigation.

2. Air Quality

Emissions associated with the proposed resumption of drilling activities would occur in two phases: drilling activities (approximately 71 days); and processing of natural gas assuming commercial quantities are discovered.

Drilling activities would include movement and positioning of the drilling unit (move-in), drilling, testing and drillrig move-out. The majority of air emissions associated with drilling would occur either at the offshore drilling site or in an area between the offshore site and the adjacent port areas (due to transit of the support vessels and the drilling rig). Emissions resulting from the production of gas would occur at the onshore Molino Gas Processing Plant located in Canada de la Huerta. The emission levels associated with drilling activities would vary considerably, depending on the operation; however, emissions resulting from gas processing would be relatively constant.

Pollutant species expected to be emitted include nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter, and hydrocarbons, in descending order of magnitude. Hourly nitrogen oxide impacts resulting from drilling activities is estimated at  $143 \mu\text{g}/\text{m}^3$ , approximately one-third of the California one-hour standard of  $470 \mu\text{g}/\text{m}^3$ .

Onshore impact of sulfur oxide emissions are expected to be minimal for all averaging periods. Predicted concentrations of  $9 \mu\text{g}/\text{m}^3$  for the hourly and three-hour periods,  $4 \mu\text{g}/\text{m}^3$  for the daily averages, and  $0.03 \mu\text{g}/\text{m}^3$  for the annual average are all well below applicable state and federal standards.

The modeled daily and annual increment of  $4 \mu\text{g}/\text{m}^3$  and  $0.44 \mu\text{g}/\text{m}^3$  of particulate matter are below the daily and yearly standards of  $100 \mu\text{g}/\text{m}^3$  and  $60 \mu\text{g}/\text{m}^3$ , respectively. However, since there is an existing violation of the California daily standard in the Santa Barbara area, the expected increases may minimally add to the problem. The predicted one- and eight-hour carbon monoxide concentration increases of  $42 \mu\text{g}/\text{m}^3$  are about three orders of magnitude less than the comparable federal standards of  $46 \text{mg}/\text{m}^3$  and  $10 \text{mg}/\text{m}^3$ , respectively.

The maximum 3-hour predicted increase in non-methane hydrocarbons would be  $8 \mu\text{g}/\text{m}^3$  or five percent of the federal 3-hour standard of  $160 \mu\text{g}/\text{m}^3$ . It is not expected that the predicted increase in hydrocarbons would affect ozone concentrations in the area. The larger quantities of nitrogen oxides which would be emitted simultaneously are expected to result in a scavenging effect, thereby inhibiting ozone formation. It should also be noted that the maximum emissions of NMHC would occur for only five days.

Mitigation of identified impacts from the proposed project, as well as the relationship of the project to the existing regulatory framework is described in Appendix B of this document. Mitigation methodology includes the application of best available control technology (BACT) on drilling unit equipment, and the formulation of emission offsets from existing pollution sources.

### 3. Marine Biology

Potential impacts of the proposed exploratory program can be separated into those resulting from routine (day-to-day) activities associated with drilling, testing and recovery, and those due to a catastrophic event such as a well blowout or oil spill. During the envisioned drilling and testing operations, potential impacts on the marine environment will likely result from the transportation of personnel and supplies to and from the drilling operation, anchoring of a semi-submersible drilling unit (or jack-up rig), processing the wastes generated by vessel personnel and activities when onsite, drilling of the well including cleansing and deposition of drill cuttings and drilling muds, recovery and testing of gas and fluids, and thermal discharges into the surrounding environment. The installation of a flowline bundle system, designed to facilitate recovery of gas from the well, presents additional environmental concerns to the benthic environment of the Molino Field.

Although some limited runoff of fuel oils, lubricants and chemicals can be expected during the drilling operations and the transportation of personnel to

and from the drilling unit, potentially environmental impacts should be minimal and localized near the surface. Secondary treatment of sewage will presumably occur aboard the drilling unit prior to its discharge approximately 15 m below the water surface. This disposal of treated sewage at sea will result in minor inputs of nutrients, but dilution should be rapidly accomplished by natural water movement.

The cleansing and deposition of drill cuttings and drilling muds represents a significant source of impact on the marine organisms inhabiting the benthic communities of the Molino Field. The principal impacts of the deposition of drill cuttings and drilling muds are assumed to be similar to those of dredging, in that increased water turbidity and the burial of organisms occur. In addition, however, the presence of chemical agents such as barium and chromium in many drilling muds adds a further complication. The Shell Oil Company anticipates the daily discharge of  $3.4 \text{ m}^3$  of oil-free drilling mud and cuttings.

It is proposed that these waste muds and cuttings will be discharged at the well site, resulting in the deposition of a minimum of  $140 \text{ m}^3$  of discharged materials. Cuttings will be allowed to settle by gravity to the ocean bottom and will be distributed by subsurface current movements according to their settling rates which are dependent upon particle size and density. Generally, organisms inhabiting the benthic environment near the test well will be subjected to the greatest impact due to discharge of drill cuttings and drilling muds, as a portion of the ocean floor will be buried. Increased turbidity of the water will occur over a broader area due to the addition of fine particles of mud and cuttings to the seawater. The particles causing this turbidity can clog the respiratory organs and feeding mechanisms of many of the marine animals inhabiting the benthic environment.

The installation of the flowline bundle will result in the temporary disturbance of the beach and surf-zone environment, as the flowlines will be pulled as a group from the onshore staging areas to the well. This installation procedure involves the attachment of the flowline to a sled which is pulled through the surfzone to its ultimate position at the base of the wellhead. Shell proposes to drag the flowline course with a weighted line to clear a path through the offshore kelp bed resulting in the displacement of numerous mature kelp plants. The flowline will lie on the bottom; consequently, the flowline bundle system and its installation will result in the physical disturbance and burial of organisms inhabiting a portion of the benthic environment of the Molino Field, and provide a small amount of additional hard substrate for colonization by epibiotic fouling organisms.

Mitigation of impacts of the benthic communities can be reduced by the disposal of mud and cuttings at a site onshore, and minimizing the area of kelp habitat disturbed during flowline construction.

#### 4. Coastal Policies and Land Use

Onshore facilities will not significantly alter coastal access or recreational opportunities. However, a temporary disruption of existing onshore activities may result from construction relating to flowline assembly in the staging area and flowline laying operations along the temporary easement and established right-of-way. If the Arroyo Hondo staging site is used a portion of the avocado

groves will be displaced. Although the actual staging activities would be temporary (approximately 35 days) the removal of agriculturally productive trees would create a longer-term impact. Flowline laying operations on the beach, the surf zone and offshore will temporarily interfere with recreational use of that area.

There will likely be no significant impacts associated with use of the Getty Oil Company staging area site. Since major use of Gaviota Beach State Park occurs nearly 1.5 km to the west, these activities would cause a temporary minor impact to coastal recreation (boating, surfing, sightseeing).

The proposed exploratory drilling plan and ensuing field development are generally consistent with the policies of Santa Barbara County and the local coastal plan. The existing Molino Gas Processing Plant will be utilized without major revision.

The proposed pipeline and staging areas will be situated within sites with permitted zoning and land use designations, although the use of the Arroyo Hondo site may require the issuance of a Conditional Use Permit (CUP). In addition, per Policy 6-17, the proposed flowline bundle right-of-way bisects an area regarded as Environmentally Sensitive Habitat (rocky intertidal area). This area is approximately 300 m offshore of the flowline landfall and extends seaward for a distance of 300-500 m.

Use of the Getty Oil Company site for staging activities would avoid significant adverse impacts to agricultural resources. No other significant land-use related impacts are expected to occur thus no mitigation is deemed necessary. To minimize the temporary impact to recreational activities, staging and pipelaying operations should take place during the non-peak use season (September-June).

In reference to the identification of applicable land use planning policies, and regulations involving flowline construction staging locations, the on-site inspection environmental analysis, and regulatory agency review and approval will be required prior to commencement of associated construction activities.

#### 5. Marine Traffic

The mooring of a drilling unit in navigable waters necessarily increases from zero the probability of a ramming accident at such a location. Thus, the evaluation of the environmental consequence of this activity should include an assessment of the incremental maritime hazard and evaluation of its acceptability. A conservative estimate of the probability of a ramming accident involving the drilling unit and a passing vessel is estimated at  $5 \times 10^{-6}$  ramblings/transit for a northbound vessel, and  $2.5 \times 10^{-6}$  ramblings/transit for a southbound vessel.

During the entire period of the project, traffic passing the vicinity of the moored drilling unit is approximately 462 transits northbound and 391 transits southbound. Thus, it may be calculated that an estimated  $3.29 \times 10^{-3}$  ramblings will occur during the projected period.

Although risks associated with the preceding probability estimates appear acceptable, they can be reduced further by actions which, in general, diminish the human error component of the causation probability. Specific actions which affect this factor generally fall in the area of advanced warning to vessel operators.

#### 6. Oceanography/Water Quality

Oceanographic parameters of the Molino area are not expected to be significantly impacted by the proposed exploratory program. The physical behavior of currents, tides, and waves in the project area will not be affected, except on a very small, temporary, and highly-localized scale. Normal currents and tide fluctuations should have no effect on drilling operations. However, the occurrence of very high waves could affect drilling and production operations and contribute to potential accidental oil spills, as discussed in Section 5.0 of this document.

Water quality-related impacts associated with muds and cuttings disposal, and thermal and wastewater discharges can be considered minor in nature, but the spillage of oil may lead to more significant effects. Disposal of muds, cuttings, and wastewater onshore will lessen any already minor impact. The implementation of oil spill containment and cleanup operation will result in mitigating associated impacts, but the effectiveness of such contingency plans are highly dependent on oceanographic and meteorological conditions at the time of the spill. In addition, the specific physical or chemical containment and cleanup method utilized may result in further impacts within the ocean regime.

#### 7. Economics and Fiscal Impacts

The proposed project is potentially composed of two phases, exploratory and production, with the production phase being dependent on the success of the exploratory phase. Employment directly related to the exploratory phase is estimated at 130 persons, which includes approximately 75 jobs associated with drilling vessel operations, 15 jobs related to the supply, work and crew boats, as well as about 40 jobs with other support services (tug operators, onshore material and equipment handlers, etc.). Drilling crews, which generally originate in California, Louisiana and Texas would work 12-hour shifts on a 14-day rotational basis. It is likely that the majority of drilling vessel personnel would be comprised of persons presently in similar jobs, and that the individuals operating the associated support vessels and equipment are currently employed by subcontractors. The remainder of new jobs will be temporary in nature (approximately 30 to 90 days) and thus will not significantly affect the employment structure within the County.

When compared to the existing income in the County, the project generated direct wage income would be minor in nature. Indirect revenues accrued to Santa Barbara and Ventura Counties associated with support services, such as fuel for the drilling unit and associated vessels, mud, and cement supplies will be of a temporary nature and will not significantly affect the existing regional economic structure.

No increases in governmental expenditures are expected other than those related to the administration and review of the exploratory program by permitting agencies. The State of California will accrue an incremental amount of royalties from Shell Oil Company if the exploration proves to be of value and a marketable level of the resource is produced.

8. Archaeology/Historical Resources

The analysis of magnetometry data for submerged sites of human habitation is a present focus of archaeological research, with investigators working actively on all North American coastlines to perfect the methodology. A magnetometry anomaly indicative of an archaeological resource is still largely a matter of interpretation by the survey data researcher. The excursion of gradient distortion (anomaly) evident upon the magnetic record is a function of mass versus distance from the sensor.

There are no potential anomalies in the survey area that cannot be traced with known features such as abandoned wells or distinctive geologic features. The degree of further potential impact is difficult to assess because of the limits of electronic surveying. However, because of the general historical sensitivity of the area, the potential for resource impact cannot be disregarded.

As a result of the on-foot surface survey by WESTEC Services, Inc., and a search of existing literature at the University of California, Santa Barbara, it has been determined that no surface archaeological sites exist within the flowline alignment. Therefore, no impacts are suggested by the proposed flowline construction.

In reference to archaeological review of potential flowline construction staging areas, on-site inspection, environmental analysis, and regulatory agency review and approval will be required prior to commencement of any associated construction activities.

9. Energy Supply and Demand

If any significant discoveries occur within California, it is probable that they will be offshore because of the variety of current proposals for the resumption of drilling. Likewise, gas supplies from the Federal OCS should begin to grow in the near future, also because of increased exploration and production activities. Thus, total federal and state offshore production could reach 2.4 billion m<sup>3</sup> by 1990, compared to 0.6 billion m<sup>3</sup> in 1976. The 1990 production would, however, provide less than 5 percent of that year's projected demand of 51.5 billion m<sup>3</sup>.

Projected yearly Molino field production is estimated at 0.1 billion m<sup>3</sup>. This volume is approximately 0.002 percent of estimated natural gas demand for California during 1980, and would have represented about 18 percent of the total California offshore production during 1978 (the last year for which accurate figures are available).

#### D. ALTERNATIVES OF THE PROPOSED PROJECT

Alternatives to the proposed exploratory and developmental program include withdrawal or denial of the project application ("no project"), delay of the action, or modifications to the proposed drilling method.

Elimination of the project proposal would result in complete absence of any environmental impacts detailed in Section 4.0 of this document. However, the project environs would continue to be modified by natural processes, along with current activities and uses.

Deferring action on the proposed project would result in a delay, and not mitigation, of all related impacts, both positive and negative in nature. If exploration led to the commercial extraction of the resource, postponement could result in an increase in consumption of other fuels (e.g., coal, oil) with an associated increase in air pollutant emissions due to the compositional and combustion characteristics of these other fuels. Potential production from a successful natural gas find in the Molino Field would account for a significant increase in gas volumes from California offshore areas.

At the present time, drilling is the only known technique available to confirm the presence of a hydrocarbon reservoir, and to define its boundaries and chemical characteristics. Offshore exploratory drilling is generally conducted in a manner consistent with the proposed project, although two alternatives are available: 1) directional, or slant, drilling from a location onshore; or 2) drilling from a fixed platform.

#### E. GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

The proposed exploratory program, if successful, will result in growth-inducing impacts related to the identification of recoverable hydrocarbon resources. If the decision is made to commence commercial extraction of the resource, then those impacts associated with production, processing, and transportation of the resource will likely occur. In itself the proposed project will not initiate the generation of growth-related effects on the environment, but additional cumulative impacts associated with other exploratory/production operations in the Santa Barbara Channel region should not be disregarded.

#### F. DETERMINATION OF SIGNIFICANT EFFECTS

Per Article 4, Section 15040 of the Guidelines for Implementation of the California Environmental Quality Act of 1970, as amended, a significant effect on the environment is defined as:

". . . substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the activity including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

Further, the determination of whether a project may have a significant effect on the environment ". . . calls for careful judgement on the part of the public agency involved, based to the extent possible on scientific and factual data." (Article 7, Section 15081(a)).

A mandatory finding of significance (Article 7, Section 15082) by the applicable public agency is required if:

- (a) The project has the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
- (b) The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- (c) The project has possible environmental effects which are individually limited but cumulatively considerable. As used in the subsection, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
- (d) The environmental effects of a project will cause substantial adverse effects on human beings, either directly or indirectly.

With reference to the above stipulations, and utilizing the guidelines established in Article 7, Section 15081 (c), Appendix G, the following summary of environmental impacts deemed to be potentially significant is provided.

#### POTENTIALLY SIGNIFICANT EFFECTS

1. The project as proposed could substantially affect a rare or endangered species of animal or plant, or the habitat of the species. On-site evaluation of the proposed flowline construction staging area has not been performed. However, mitigation of this potential impact will occur by requiring an on-site inspection, environmental impact analysis, and regulatory agency review and approval of any location prior to the commencement of construction activities.
2. The project as proposed could interfere substantially with the movement of a resident or migratory fish or wildlife species. On-site evaluation of the proposed flowline construction staging area has not been performed. However, mitigation of this potential impact will occur by requiring an on-site inspection, environmental impact analysis, and regulatory agency review and approval of any location prior to the commencement of construction activities.

3. The project as proposed could disrupt or alter an archaeological site, historical site or a paleontological site. On-site evaluation of the proposed flowline construction staging area has not been performed. However, mitigation of this potential impact will occur by requiring on-site inspection, environmental impact analysis, and regulatory agency review and approval of any location prior to the commencement of construction activities.
4. The project as proposed will result in the use of large amounts of fuel. Between 9.5 and 11 m<sup>3</sup> of diesel fuel will be consumed per day by the drilling unit, with additional fuel necessary to power support vessels. However, the potential for discovery and extraction of up to 297,150 m<sup>3</sup> of natural gas per day could potentially and indirectly mitigate this impact.
5. The project as proposed could potentially expose people or structures to major geologic hazards. Vibratory ground motion is the only geologic hazard that might produce significant impacts requiring mitigation. However, the application of proper engineering design, considering the maximum credible earthquake, should provide sufficient mitigation of this impact.
6. The project as proposed could substantially diminish habitat for fish, wildlife or plants. These potential impacts could occur as associated with the discharge of oil into the marine environment. Mitigation of these impacts will be provided by the proper design and operation of blowout prevention equipment, and the adequate training of drilling personnel in emergency procedures. Further, and assuming an actual discharge of oil into the marine environment, the application of oil spill containment and cleanup contingency plans specified in Section 5.0 and Appendix A of this document will serve as additional mitigation of impacts. However, as noted in Section 4.6 of this document, complete protection of marine organisms and habitat from hydrocarbon contamination is not possible.