

MINUTE ITEM

This Calendar Item No. 18
was approved as Minute Item
No. 18 by the State Lands
Commission by a vote of 2
to 0 at its 3/28/79
meeting.

CALENDAR ITEM

18.

GENERAL LEASE
RIGHT-OF-WAY USE

3/79
W 21763
Horn
Sanders
PRC 5636

APPLICANT: Shell Oil Company
P. O. Box 2648
Houston, Texas 77001

Attention: D. W. Derry

AREA, TYPE LAND AND LOCATION:
Approximately 23,295 lineal feet (20 feet
wide) (10.696 acres+) offshore from the
cities of Seal Beach and Huntington Beach,
Orange County.

LAND USE: Crude oil pipeline serving Outer Continental
Shelf (OCS) oil and gas development.

TERMS OF PROPOSED LEASE:

Initial period: 30 years from May 1,
1979.

Renewal options: 1 successive period of
10 years.

Public liability insurance: Combined single
limit coverage of \$1,000,000.

Special: Rental Impound: Provides
that rentals in excess
of the minimum annual
rental shall be paid
into a special deposit
account in the State
Treasury pending the
outcome of pending litigation
challenging the Commission's
volumetric rental regula-
tions. Should the regulations
be declared invalid,
the impounded rentals
shall be refunded and
a new reasonable rental
will be determined by
the Commission.

A 57, 58, 73

S 31, 36

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CONSIDERATION: Commencing on the beginning date of the lease, volumetric rental accrues according to the following schedule: The annual rental shall be computed by multiplying each barrel of crude oil crossing over State land by \$0.0028.

The minimum annual rental is \$5,590; the State reserves the right to fix a different rental on each fifth anniversary of the lease.

BASIS FOR CONSIDERATION:

Volumetric rental pursuant to 2 Cal. Adm. Code 2005 & 2006.

PREREQUISITE TERMS, FEES AND EXPENSES:

Applicant will be permittee of upland.

STATUTORY AND OTHER REFERENCES:

A. P.R.C.: Div. 6, Parts 1 & 2.

B. Cal. Adm. Code: Title 2, Div. 3; Title 14, Div. 6.

OTHER PERTINENT INFORMATION:

1. Shell Oil Company has applied to the State Lands Commission for a lease of ungranted State lands offshore from Orange County to construct and operate a 16-inch crude oil pipeline to carry production from Shell's proposed OCS Beta Unit Development. Shell's application was determined "complete" within the meaning of AB 884 - Chapter 1200, Statutes of 1977 on April 27, 1978.
2. Because the project involves federal, State and local actions a combined Environmental Impact Report/Environmental Assessment (EIR/EA) describing the total project has been prepared. The State Lands Commission and the Port of Long Beach have, with federal participation, jointly prepared the document pursuant to the requirements of CEQA. The final EIR/EA for this project dated

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February 21, 1979, 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 "C".

As more fully discussed in the EIR/EA the proposed project has the potential for having a significant effect on the environment. Those major effects of the project that may have significant impact include: Air Quality, Marine Traffic and Oil Spills and Marine Biology.

Air Quality - Construction and operational phases of the project may produce emissions that exceed limits prescribed by federal, State and local agencies. Shell will have to comply with air quality standards of those agencies having jurisdiction; including offsets as may required. Shell will use Best Available Control Technology (BACT) to reduce such pollutants.

Marine Traffic - The location of the proposed platforms in the separation zone of the Gulf of Santa Catalina Traffic Separation Scheme creates concern regarding conflicts with shipping and the potential for collision. 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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Oil Spills and Marine Biology - The possibility of a significant oil spill associated with the offshore platforms and pipeline exists even though the probability is low. Mitigation for oil spills is best accomplished by ensuring that they do not occur, through strict enforcement of operational procedures and USGS OCS orders. Shell is required to update its existing Spill Contingency Plan for this project. The updated Plan will comport with the EIR/EA findings and recommendations. Marine biology impacts are depended on the size and duration of a spill. Any adverse impacts that may occur would tend to be short-term in duration.

3. The EIR/EA discussed the effects of the project on those significant environmental values identified pursuant to P.R.C. 6370.1. The project has been designed to ensure that adequate provisions have been made to protect such significant environmental values.
4. Several of the Coastal Act policies which guide the development of energy facilities could be applicable to this project. However, two policies, P.R.C. 30262 and 30263 are pertinent to this project. The EIR/EA contains an adequate analysis demonstrating how the proposed project is fully consistent with the Coastal Act and the Commission's Coastal Regulations.
5. Approvals: Inasmuch as the Commission is a co-lead agency for the project it will be the first to issue an approval for this project. Other local and State agencies must issue permits in accordance with AB 884 (Chapter 1200, Statutes 1977). The USGS is the principal agency in the federal government which has permitting authority.

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EXHIBITS: A. Land Description. B. Location Map.
 C. EIR/EA Executive Summary.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT A FINAL EIR/EA HAS BEEN PREPARED FOR THIS PROJECT FOLLOWING EVALUATION OF COMMENTS AND CONSULTATION WITH PUBLIC AGENCIES WHICH WILL ISSUE APPROVALS FOR THE PROJECT.
2. CERTIFY THAT THE FINAL EIR/EA #239 HAS BEEN COMPLETED IN COMPLIANCE WITH CEQA, AS AMENDED, AND THE STATE EIR 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; NAMELY:
 - a) AIR QUALITY - MITIGATION REQUIREMENTS TO LESSEN IMPACTS ARE WITHIN THE RESPONSIBILITY AND JURISDICTION OF ANOTHER PUBLIC AGENCY AND NOT THE STATE LANDS COMMISSION. SUCH PUBLIC AGENCY CAN AND WILL ADOPT APPROPRIATE MITIGATION MEASURES.
 - b) 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/EA.
 - c) OIL SPILLS AND MARINE BIOLOGY - SUFFICIENT REQUIREMENTS HAVE BEEN INCORPORATED INTO THE PROJECT WHICH MITIGATE THE POTENTIAL SIGNIFICANT EFFECTS AN OIL SPILL MAY HAVE ON THE MARINE ENVIRONMENT AS IDENTIFIED IN THE EIR/EA.
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; SPECIFICALLY, SECTIONS 30260 THROUGH 30264 OF THE P.R.C., AND ARTICLE 6.5 OF TITLE 2 OF THE CAL. ADM. CODE.
6. AUTHORIZE ISSUANCE TO SHELL OIL COMPANY OF A 30-YEAR GENERAL LEASE - RIGHT-OF-WAY USE IN THE FORM ON FILE

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IN THE PRINCIPAL OFFICE OF THE COMMISSION AND BY REFERENCE MADE A PART HEREOF, FROM MAY 1, 1979, WITH LESSEE'S OPTION TO RENEW FOR 1 SUCCESSIVE PERIOD OF 10 YEARS; IN CONSIDERATION OF ANNUAL RENTAL TO BE PAID AS FOLLOWS:

- a) THE ANNUAL RENTAL SHALL BE COMPUTED BY MULTIPLYING THE NUMBER OF BARRELS OF CRUDE OIL PASSING OVER THE STATE'S LAND BY \$0.0028.
- b) THE MINIMUM ANNUAL RENTAL SHALL BE \$5,590;
- c) THE STATE RESERVES THE RIGHT TO FIX A DIFFERENT RENTAL ON EACH FIFTH ANNIVERSARY OF THE LEASE;

THE LEASE SHALL REQUIRE PROVISION OF PUBLIC LIABILITY INSURANCE IN THE AMOUNT \$1,000,000 PER OCCURENCE FOR BODILY INJURY AND PROPERTY DAMAGE; FOR THE CONSTRUCTION, OPERATION AND MAINTNENACE OF A 16-INCH DIAMETER CRUDE OIL PIPELINE SERVING, EXCLUSIVELY, LESSEE'S OCS BETA UNIT DEVELOPMENT ON THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED AND BY REFERENCE MADE A PART HEREOF.

7. PROVIDE IN THE LEASE FOR PAYMENT OF RENTALS IN EXCESS OF THE MINIMUM ANNUAL RENTAL INTO A SPECIAL DEPOSIT ACCOUNT IN THE STATE TREASURY, PENDING FINAL DISPOSITION OF CURRENT LITIGATION CONCERNING THE VALIDITY OF THE COMMISSION'S RENTAL REGULATIONS; SAID IMPOUNDED RENTALS TO BE REFUNDED AND A NEW REASONABLE RENTAL DETERMINED BY THE COMMISSION SHOULD THE COMMISSION'S VOLUMETRIC RENTAL REGULATIONS BE INVALIDATED.
8. AUTHORIZE THE STAFF AND/OR THE ATTORNEY GENERAL TO TAKE WHATEVER STEPS MAY BE NECESSARY TO EFFECTUATE THIS ACTION.
9. FIND THAT THIS ACTION DOES NOT AMEND OR PREJUDICE THE POSITION OF THE STATE IN ANY PENDING OR FUTURE LITIGATION REGARDING THE FEDERAL OUTER CONTINENTAL SHELF.

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'EXHIBIT "A"

LAND DESCRIPTION

W-21763

A strip of submerged land, 20 feet wide, situated in San Pedro Channel, Orange County, California, said strip being 10 feet on each side of the following described line:

COMMENCING at a point having coordinates of X = 1,425,391.95, Y = 567,978.22; thence S 33° 14' 40" E 5,532.19 feet, more or less, to the intersection of the easterly line of the Grant to the City of Long Beach as described in Chapter 158 of the California Statutes 1935, said line also being the Los Angeles County-Orange County boundary, said point of intersection being the POINT OF BEGINNING; thence along the following four courses:

1. S 33° 14' 40" E 13,453.20 feet;
2. S 29° 18' 57" E 3,501.09 feet;
3. along a tangent curve, concave to the west having a radius of 5,000 feet and central angle of 52° 26' 36", a distance of 4,576.54 feet;
4. S 23° 07' 39" W 1,764 feet, more or less, to the offshore boundary of the State of California.

Bearings, distances and coordinates are based on the California Coordinate System, Zone 6.

END OF DESCRIPTION

Prepared

Melvin L. Schuman

Checked

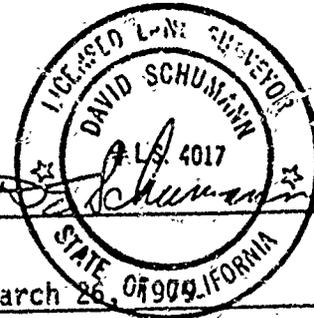
David Schumann

Reviewed

[Signature]

Date

March 26, 1979



(Rev. 3/26/79)

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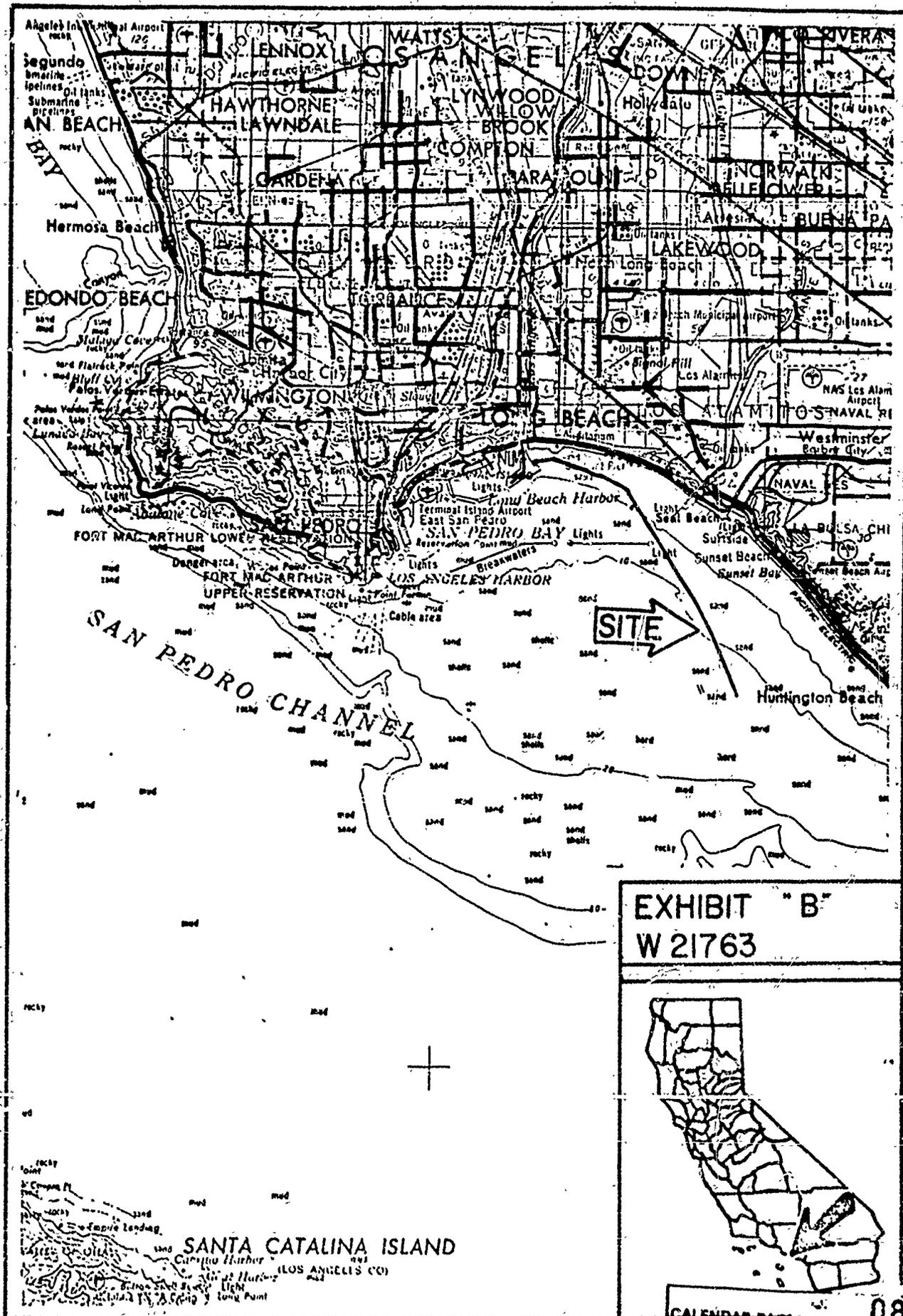


EXHIBIT "B"
W 21763



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EXHIBIT "C"

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

In December, 1975 the Department of the Interior conducted Outer Continental Shelf Lease Sale No. 35, accepting high cash bonus bids for 56 tracts in four general geographic areas off the California coast. One of these areas was San Pedro Bay where a total of 13 tracts were leased. A unit agreement for these tracts has been submitted for preliminary approval in accordance with U.S. Geological Survey regulations. The designated Beta Unit includes leases P-0296, P-0300, P-0301, P-0306, and unleased tract 255. Shell Oil Company is to be the initial operator. Other potential participants in the Beta Unit are Aminoil USA, Inc., Champlin Oil Company, Chanslor-Western Oil and Development Company, Chevron USA, Inc., Hamilton Brothers Oil Company, Occidental Petroleum Company, and Union Oil Company of California. The Beta Unit is located in federal waters approximately nine miles (14.4 km) off Huntington Beach, California.

As a result of exploration efforts, Shell and its co-lessees (Aminoil, Occidental, Hamilton Brothers and Chanslor-Western) have committed leases P-0300 and P-0301 to unitization and development. Recoverable petroleum reserves of 100 to 200 million barrels of oil are estimated to exist on these leases. Decisions regarding development of other leases in the Beta Unit have not been made by their leaseholders. Shell's initial development plans include a drilling platform (Ellen) in 265 feet (81 m) of water connected by a bridge to a nearby production platform (Elly) in 255 feet (78 m) of water. The drilling platform will have slots for 80 wells. It will be connected by pipeline to the production platform. On the production platform the oil will be treated by a process train to separate produced water and gas and then pumped ashore via a 16-inch (0.4 m) subsea pipeline to the Port of Long Beach. Produced water will be reinjected for reservoir pressure maintenance purposes and the produced gas will be used as fuel for platform power generation. No gas will be transported to shore. At the Port of Long Beach the oil will be metered and distributed to existing refinery facilities by connection into a seven company distribution system near the THUMS manifold. No refinery modifications are included as a part of this project. Other shore elements include a small materials staging yard in the Port of Long Beach, and a crew operations boat launch facility, presently planned for Huntington Harbour, where personnel will be transported by boat to the platforms.

Development plans call for a second drilling platform (Eureka) with 60 slots in about 700 feet (213 m) of water about 1.5 miles (2.4 km) south of the shallow-water platforms to develop the southerly part of the reservoir. Thus, there will be three platforms associated with the project. A complete Plan of Development covering all aspects of the project has been submitted by Shell to the U.S. Geological Survey. Oil to be produced is a viscous crude (14-16° API) which is considered sour (high sulfur [3-4%] content). Peak production with two drilling platforms in operation will occur in about 1986 and will be approximately 24,000 barrels (3,800 m³) per day. The field life is estimated at about 35 years, at which time the platforms and other offshore facilities will be removed and the wells sealed. Average production will be about 13,000 barrels (2,070 m³) per day. As a comparison, current U.S. consumption of petroleum products is about 18.1 million barrels/day. Thus, while the total impact of the project in terms of U.S. petroleum production and foreign imports (currently about 7.9 million barrels/day) is small, it nevertheless has important economic consequences which are estimated at about \$2.0 billion over the life of the project, based on current market prices.

The production platform (Elly) has sufficient space for process equipment to treat a total of 40,000 barrels (6,360 m³) per day. Also, the pipeline is designed to handle this production rate. Thus, if Chevron or other Beta Unit leaseholders decide to proceed with development, or if Shell's production warrants, capacity will exist to treat and transport additional field production.

The location of the Shell Beta platforms is in the Separation Zone of the Gulf of Santa Catalina Traffic Separation Scheme. This scheme provides a method of separating inbound and outbound shipping proceeding to or from the Ports of Long Beach and Los Angeles from the Gulf of Santa Catalina. Presently these lanes are used by approximately nine ships per day. Because of concern about collision risks with shipping, the platforms have been situated at a distance greater than 500 meters from the adjacent traffic lanes.

ENVIRONMENTAL REPORT

The project as described involves federal, state, and local actions. The offshore platform sites and a portion of the off-shore pipeline route are in federal OCS waters for which the U.S. Geological Survey serves as the permitting agency. The National Environmental Policy Act (NEPA) covers these actions. A portion of the offshore pipeline will cross State of California lands for which a right-of-way will be required. The

California State Lands Commission is a co-lead agency for this action. The pipeline has its landfall in the Port of Long Beach. Also, onshore distribution and staging facilities are located in the Port and will be subject to Port lease actions. The Port of Long Beach is, therefore, a co-lead agency with the State Lands Commission for actions required under the California Environmental Quality Act (CEQA).

This report serves as both an Environmental Assessment (EA) for NEPA associated reviews and an Environmental Impact Report (EIR) for CEQA mandated actions.

ENVIRONMENTAL IMPACT/MITIGATION

The major environmental effects of this project are in the following categories:

1. Air Quality
2. Oil Spills and Associated Impacts
3. Marine Traffic
4. Energy Supply/Demand and Economics
5. Oceanographic/Water Quality
6. Geotechnical Factors
7. Marine Biology
8. Cultural Resources
9. Other

Each significant impact and proposed mitigation measures are discussed.

1. Air Quality

a. Construction Offshore

The construction and installation of the offshore platform will cause temporary intermittent air quality impacts. These impacts will be insignificant due to the relatively small quantities of emissions and the intermittency of the activity. The major pollutant will be NO_x. However, the increase will amount to only 0.01 percent over current Los Angeles County emissions and this is considered regionally insignificant.

b. Construction Onshore

Fugitive dust emissions from excavation of the onshore site will slightly

Increase dust levels. In this instance, the impacts will be minimal and will be mitigated by the usual dust control method (a water spray).

Exhaust from the workers' automobiles will be the prime source of carbon monoxide, nitrogen oxides and hydrocarbons. The short-term nature of this activity and its limited impact precludes significant effects and no mitigation is required.

c. Operational Phase

The key pollutants of NO_2 , SO_2 , and particulate (TSP) to be emitted by the Beta Project during operation were modeled as inert pollutants using computerized air quality dispersion models. These concentrations were determined using the Texas Air Control Board's Texas Episodic Model (TEM) and the Environmental Protection Agency's (EPA) Air Quality Dispersion Model (AQDM). The Texas Model is used for calculating short-term impacts (one to twenty-four hour) and the AQDM was used for the annual average calculations. These models are both recommended for air quality impact analyses in EPA's guideline document on air quality modeling. Both models assume a steady-state Gaussian plume formula.

• Nitrogen Dioxide

Nitrogen oxide exhaust from the turbines and diesel engines will be the major source of emissions from the platform equipment and drilling rigs. The annual average and short-term models were utilized to calculate the NO_2 impacts at the shoreline and at the three-mile state boundary. Maximum concentrations of NO_2 will occur well out to sea. Onshore and three-mile limit impacts were predicted to be minimal. The worst-case one-hour concentration at the shoreline was $8 \mu\text{g}/\text{m}^3$, well under the state standard of $470 \mu\text{g}/\text{m}^3$. The EPA annual significance level of $1 \mu\text{g}/\text{m}^3$ was also not approached, with shoreline levels estimated at $0.03 \mu\text{g}/\text{m}^3$.

• Sulfur Dioxide

Equipment on the production platform and the crew/supply boats are the major sources of SO_2 . The emissions were reviewed under a number of meteorological conditions and averaging times. In summary, regardless of the standard applied, the

maximum increase in concentration will be significantly below allowable levels of increase. The annual EPA level of significance is $1.0 \mu\text{g}/\text{m}^3$ and project increases are estimated at $0.01 \mu\text{g}/\text{m}^3$. The California standard for one hour of $1310 \mu\text{g}/\text{m}^3$ is far above the one hour $2.0 \mu\text{g}/\text{m}^3$ concentration levels predicted for the project. Thus, no adverse impact is projected.

- Particulates, Carbon Monoxide, and Hydrocarbons

Modeling of the particulate emissions with short-term and annual Gaussian dispersion equations yielded negligible ground level concentrations at the shoreline. Carbon monoxide impacts at the shoreline were also insignificant. The EPA one hour significance level is $2 \mu\text{g}/\text{m}^3$ for CO and the predicted concentration at the shoreline will be $0.002 \mu\text{g}/\text{m}^3$.

The hydrocarbons emitted by the turbines and diesel engines are expected to have little or no impact. The South Coast Air Quality Management District (SCAQMD) requires a new source review to be conducted if the project emits 25 pounds per hour or 250 pounds per day. At maximum loading, the offshore operations will generate only 200 pounds per day of hydrocarbons. Likewise, emissions from the onshore surge tank will be below 250 pounds per day. The maximum combined project hydrocarbon emissions are estimated to be 293 pounds per day.

d. Mitigation

Ultimately, resolution of jurisdictional uncertainties and the attainment or non-attainment status of the project area will determine the required level of mitigation. If it is found that the project is in a non-attainment area, then it is likely that Rule 213 of the SCAQMD will be applied. Under Rule 213 the project would be required to be subjected to an air quality impact analysis because NO_x , SO_x , and hydrocarbon emissions all exceed the limit of 250 pounds per day (2,602, 389 and 293 pounds respectively). The project would also likely be required to provide pollutant offsets. Although offsets for the project are available within the basin from third party sources, Shell and its co-lessees have sufficient internal offsets within the basin and/or in Ventura County to satisfy any necessary reductions.

If the project is within an attainment area and subject to EPA or Department of the Interior jurisdiction, then the project will not require mitigation because the Prevention of Significant Deterioration (PSD) levels will not be exceeded. However, regardless of the jurisdictional issues, Shell proposes to install Best Available Control Technology (BACT) to reduce major pollutants such as either a hydrocarbon vapor recovery system or a double seal floating roof on the onshore surge tank. Further, Shell is pursuing the installation of innovative technology in the form of water injection for the offshore turbines which could reduce NO_x emissions by as much as 65 percent according to the turbine manufacturer. Shell has requested the turbine manufacturer to develop this technology and plans to adopt it for this project when available.

2. Oil Spills and Associated Impacts

The possibility of a significant oil spill associated with the offshore platforms and the pipeline exists even though the probability is low. The causes of a spill might be any number of reasons including well blowout, equipment failure, ship collision, operator error, pipeline failure or damage, and others. To assess the impact of a spill several scenarios were developed and analyzed. These included:

- A 5000-bbl (785 m^3) platform spill
- A 50-bbl (8 m^3) pipeline spill
- A 50-bbl (8 m^3) Long Beach Harbor spill
- A catastrophic 80,000-bbl ($12,720 \text{ m}^3$) platform spill

Prevailing oceanographic and meteorological conditions are such in San Pedro Bay that the likelihood of a sizeable spill reaching shore somewhere between San Pedro and Dana Point is high if spill containment and clean up are not highly effective. A series of trajectories were run indicating the path of dispersion and shore contact.

The impacts of a spill are very dependent on the spill volume, prevailing weather and oceanographic conditions, and spill location. The impacts would include:

- a. Water Quality - Short-term degraded water quality conditions.
- b. Marine Biology - Effects on intertidal, benthic, plankton, fish, marine mammal and bird communities, and marshland resources;
- c. Air Quality - Short term hydrocarbon emissions;
- d. Recreation - Disruption of coastal zone and coastal related tourist activities with attendant economic consequences.

The primary means to mitigate oil spills is to ensure that they do not occur, through strict enforcement of Shell's operational procedures and USGS OCS Orders. Applicable Pacific Area Orders include:

Pacific Area OCS Order No. 2

This Order requires the operators to file an application for drilling which includes information on the drilling platforms or vessel, casing program, blowout prevention equipment, well-control training and safety training of operator's personnel, and a list or description of critical drilling operations.

Pacific Area OCS Order No. 3

This Order regulates the plugging and abandonment of wells which have been drilled for oil and gas.

Pacific Area OCS Order No. 5

This Order sets regulations for the installation, design, testing, operation, and removal of subsurface safety devices.

Pacific Area OCS Order No. 6

This Order pertains to procedures for completion of oil and gas wells.

Pacific Area OCS Order No. 7

This Order concerns the control of pollution to the marine environment and

provides regulations for the disposal of waste materials generated as a result of offshore operations.

Pacific Area OCS Order No. 8

This Order requires that platforms, fixed structures and artificial islands be designed with consideration for geological, geographical, environmental and operational conditions:

Pacific Area OCS Order No. 9

This Order provides approval procedures for oil and gas pipelines in the OCS.

Additionally, other federal agencies are responsible for monitoring and regulatory actions related to spill prevention.

The second method is to ensure prompt action by Shell in the event a spill does occur. In this respect Shell has prepared a Spill Contingency Plan for the Beta Project.

This plan, developed in 1976, will be updated by Shell in 1979 prior to commencement of Beta operations, and submitted to the USGS for approval. Recommendations to enhance the present plan include:

- a. Update time-dependent factors such as personnel responsibilities and equipment inventories (USGS will require periodic updating once approved);
- b. Consider incorporating additional specific commitments from commercial clean-up firms for support services in the event of a major spill;
- c. Provide more detail procedures by personnel assignment for spill handling including use of dispersants;
- d. Consider locating another VIKOMA seapack containment boom on the Beta platforms to provide up to 3000 feet (900m) for immediate deployment;

e. Incorporate pipeline leak location and routine surveillance procedures;
and

f. Incorporate appropriate references to and measures for protection of sensitive bays and estuaries including location of spillbooms and agencies responsible for their deployment.

3. Marine Traffic

The location of the platforms in the separation area of the Gulf of Santa Catalina Traffic Separation Scheme (TSS) creates concern regarding conflicts with shipping and the potential for collision. Approximately nine ships per day use the TSS and this might increase to as many as 11 ships by the year 2000. The annual risk of a collision between a large ship (greater than 500 gross tons) and any of the Beta-platforms is assessed at 0.0046 (or put another way one collision every 217 years). The project life is 35 years. This risk is based on historical data from oil platform collisions in the Gulf of Mexico where traffic and weather conditions create a comparable risk situation. Detail risk estimates for all types of collisions were calculated.

Several findings related to a review of historical collision data in the Gulf of Mexico are worthy of note and have implications on mitigation approaches for the Beta Project. First, the use of charted traffic lanes, designated clear of fixed objects, can reduce the possibility of a ramming. Second, evidence from the Gulf of Mexico indicates that mariners will not always adhere to designated traffic lanes when the opportunity for economic savings exist (i.e., via a short cut). Third, a major factor in large-ship collisions with platforms has been an inability to visually identify the structure both after dark and during conditions of reduced visibility due to inclement weather.

Despite the low probability of a large-ship collision with any of these platforms, measures to reduce this risk should be taken. These include:

a. Approved Navigation Aids. The Coast Guard has approved Shell's plan for platform navigation aids. At a future date, if additional platforms are built in

San Pedro Bay, it may be necessary to augment these aids with a radar identification type system such as RACON.

b. Visual Identification. The platforms should be distinctive in marking and color to ensure earliest possible recognition by ships under all types of conditions.

c. Notification of Marine Interests. Notices to Mariners, Coast Pilot, charts, and other navigation documents and notices should incorporate platform installation and placement data in a timely manner.

d. Safety Zones. In accordance with Inter-Governmental Maritime Consultative Organization (IMCO) Resolution A.379(X) a 500 meter safety zone around each platform should be considered. As presently situated, all Shell Beta platforms are further than 500 meters from the Gulf of Santa Catalina traffic lanes. Hence, no adjustment in either the lanes or the platform locations is necessary to maintain a 500 meter separation.

The pipeline may need to be buried to a depth greater than four feet (1.2 m) in the harbor area to minimize conflicts with harbor activities. Appropriate notices and chart modifications will be required to notify marine interests of the subsea pipeline and to prevent conflicts, particularly with anchoring activities.

4. Energy Supply/Demand and Economics

Prior studies have projected crude oil "best case" demand estimates within California at 2,265,000 barrels (360,000 m³) per day in 1980, and 2,455,000 (390,000 m³) in 1985. When compared with existing 1975 refinery capacities in the State, as augmented by firm, planned additions to these capacities, it has been concluded that the 1980 refining requirements can be met, but that by 1985 an additional refinery capacity of 190,000 barrels (30,000 m³) per day will be required in California. If refinery capacity is limited, the output of the Shell Beta unit, projected at 24,000 barrels (3,816 m³) per day by 1986, might serve to aggravate this situation.

On the other hand, using different sources of information, and certain assumptions, a recent survey of West Coast refineries would imply that sufficient refinery capacity exists within the Los Angeles basin to more than meet the processing needs for the caliber of oil produced by the Shell Beta unit (high sulfur, heavy crude), for both 1980 and 1985. Extrapolation of this survey indicates that the current capacity of Los Angeles area refineries to process high sulfur heavy crude oil is approximately 237,000 barrels (38,000 m³) per day, as contrasted with a projected 1980 production of 181,000 barrels (29,000 m³) per day, and 1985 production of 188,700 barrels (30,000 m³).

During 1978, the United States imported roughly 10,000 (1,600 m³) barrels per day of high sulfur, heavy crude oil. Thus, an additional effect of the expected Shell Beta production of 24,000 (3,816 m³) barrels per day would be to more than satisfy this demand, thereby reducing the nation's dependence, albeit to a small degree, on foreign imports.

Another factor is the expected rapid increase in oil from the North Slope of Alaska. Unless measures are taken to divert this somewhat higher quality oil¹ elsewhere, estimates of a West Coast surplus range from 320,000 to 980,000 barrels (51,000-156,000 m³) per day by 1980 and from 750,000 to 1,800,000 (120,000-286,000 m³) by 1985. Additional production from the Shell Beta Unit would, of course, contribute further to the surplus.

One final effect involves the possibility that production from the Beta Unit will contribute to what appears to be an existing marketing problem on the West Coast for high sulfur, heavy crude oil. Inasmuch as the Shell Beta production will be similar in quality to that currently being produced onshore, concern has been expressed that its introduction to the market would aggravate this condition and result in a surplus of high sulfur, heavy crude in the area. While this potential may exist, it is anticipated that the 1978 amendments to the Department of Energy Entitlement Regulations will alleviate this condition, to the extent that by the time the Beta Unit becomes fully operational, this potential effect will have been essentially eliminated.

The installation and operation of the Shell Beta facilities will serve to increase regional job opportunities over the expected 35 year life of the project. In

¹Less than one percent sulfur by weight versus 3-4 percent for Shell Beta

addition, it will generate increased personal income through direct wages as well as through secondary, multiplier effects on the economy. Furthermore, it will generate royalties to the federal government. While these largely beneficial effects are acknowledged, when compared with the very large baseline figures existing in each of these categories within the Los Angeles-Orange County region, the impact of the Beta Unit is considered negligible.

5. Oceanographic/Water Quality

The platforms and pipeline should have no significant effects on oceanographic conditions. The oceanographic criteria to which the platforms are being designed are considered adequate and conservative based on local conditions and published data.

Water quality and oceanographic conditions at the platform sites and along the pipeline route were verified as corresponding to previously published data for San Pedro Bay by a short-term sampling program conducted for this project. This gives further confidence to the design criteria.

Some short-term water quality impacts may occur as a result of pipeline trenching and burial in Long Beach Harbor, however, if conditions imposed by the pending Corps of Engineers pipeline permit are followed these impacts should be minimized and no long-term significantly adverse effects should result.

Discharge of drill cuttings and muds, as well as waste discharges from the platforms, will cause some highly localized water quality effects near the platforms, but no concentration standards should be exceeded. Contaminated drill cuttings and muds will be disposed at approved shore sites in accordance with Pacific Area OCS Order No. 7.

Thermal discharges from platform cooling systems may result in a maximum temperature change (ΔT) between receiving waters and the discharge water temperature of as much as 21.6 F (12.0C) during winter months. The EPA policy is that 20F (11.1C) is the maximum ΔT for this type discharge. Recognizing that Shell's discharge will only very slightly exceed the maximum ΔT by 1.6F (0.9C), if EPA enforces this criterion, provisions may need to be made to draw cooling water

from deeper depths, to provide additional volume, or to diffuse the discharge into the receiving waters. This should be determined as an element of the E wastewater discharge permit (NPDES).

6. Geotechnical Factors

The impacts of platform and pipeline activities were assessed from a geotechnical standpoint. No geotechnical surveys or new site specific analyses were performed for the environmental report; rather, surveys and baseline research conducted for Shell and others in the project area were used to evaluate impacts. Also, published literature was used as the basis for the seismicity evaluation.

The possibility of well blowout and resulting oil spill due to a failure of the blowout prevention system is low if Pacific Area OCS Orders are followed. Shell's planned reservoir pressure maintenance program using water injection, if properly implemented, should minimize any possibility of induced displacements along existing fractures, ground subsidence, or induced seismic events. The thickness of the capping strata, generally low reservoir pressure, and the well casing program planned for the Beta Project, coupled with revised rules and more stringent regulation of drilling operations, make the possibility of loss of control of a drill well remote.

The likelihood of gravity-induced slumping or surficial soils creep at the platform sites, where seafloor gradients are less than four degrees, is remote.

The design criteria for the shallow-water platforms (Ellen and Elly) as pertain to ground and structural instability due to gravity, seismic and ocean-wave loading, appear conservative and based on state-of-the-art techniques. No adverse impacts are predicted. Moreover, the USGS will conduct a detailed design review of the project before approval. Additional geotechnical evaluations and soil borings are required for the deep-water platform (Eureka) before its design is finalized. No judgment could be made regarding its adequacy. However, if design procedures similar to the shallow-water platforms are used, no adverse impacts are anticipated. The USGS will also review and approve this design.

The platform to shore pipeline design was also reviewed. No adverse impacts are predicted to the pipeline due to subsidence, ground movement (not earthquake associated), gravity loading, or structural integrity along the pipeline route. The potential consequences of earthquake associated fault movements, seismic-induced liquefaction, and ocean wave-induced liquefaction and scour are still being evaluated by the applicant at the present time and results will be available for the Final EIR/EA. Should any mitigation be required it would consist of pipeline realignment or design alteration. Also additional geotechnically-related studies will be required to finalize the deep-water to shallow-water platform pipeline design.

7. Marine Biology

Biological impacts from oil spills are potentially significant depending on the size and duration of a spill. Large-scale spills of greater than 5000 barrels (795 m³) could impact sensitive habitats along the coastline. Species which are the least mobile, such as those found in the intertidal and benthic communities, will be adversely affected, as well as those species which live or feed on the surface of the ocean, such as marine birds. The degree of impact will be related to the efficiency of the Shell Spill Contingency Plan. While these habitat impacts are felt to be adverse, the literature indicates that spill impacts on marine organisms and wildlife tend to be short-term in duration. Over a period of one to two years, most habitats will regenerate themselves.

Trenching for the pipeline in Long Beach Harbor and discharge of drill cuttings from the platforms will result in short-term, adverse biological effects, primarily on the benthic, but also on other marine communities in the immediate impact area. Proper pipeline trenching and burial procedures, and strict control of contaminated drill cuttings should mitigate these effects. The areas impacted are very small.

The platforms themselves will act as artificial reefs and will significantly enhance many elements of the marine biological community. This is a long-term benefit which will include improved recreational fishing in the nearby waters.

8. Cultural Resources

No archaeological/historical resources are known to exist at the platform

sites, along the pipeline route, or at shore facility locations. Because of the potential for historic marine or pre-historic human cultural resources along the pipeline route, the applicant's pipeline route remote sensing survey was augmented with a five transect magnetometer and side scan sonar survey. With the exception of magnetometer disturbances, the results of the other instrument recordings were essentially negative. Seven magnetic disturbances which could not be identified and which are considered potentially significant were recorded along the route. Six of these are considered possibly to be of cultural value; the remaining anomaly is not felt to be a cultural resource, but should be investigated prior to laying the pipeline. While it is likely that these anomalies are modern debris, it is recommended that the six anomalies be investigated with a mobile video unit, if seawater visibility conditions permit. If any cultural resources are identified, they should be evaluated by a qualified marine archaeologist or the pipeline route should be adjusted to avoid the resource location.

9. Other Impacts

There will be some aesthetic impacts associated with the project, primarily with the offshore platforms. Because the platforms are nine miles (14.4 km) offshore, they will be neither dominant nor particularly offensive to onshore viewers. Moreover, at this distance some of the visibility is restricted because of the curvature of the earth.

No mitigation is recommended for visual enhancement of the platforms since their identification by shipping in the TSS is considered an overriding mitigation requirement.

Some relatively minor onshore impacts will result such as construction noise, traffic, and dust. These are short-term in nature and should be handled through local ordinance and permit processes. A potential for parking overload and circulation impacts at the Huntington Harbour Crew Launch facility exists during project construction and may need to be mitigated through acquisition of temporary offsite parking, pooling/bussing arrangements during the construction stage, or utilization of an alternate launch facility.

The project as proposed is consistent with Coastal Zone Policy and the Port of Long Beach Master Plan. Potential construction activity conflicts in the Port with proposed SOHIO and marina development activities can be avoided by appropriate scheduling.

ALTERNATIVES

Several alternatives to the project including the "no project" alternative were evaluated.

By virtue of the fact that the federal government has leased these tracts for oil and gas development, the no project alternative was already evaluated and rejected during the federal OCS Lease EIS process. State and local agencies could deny the project as proposed with the result that some impacts on their jurisdictions could be avoided. In all likelihood such an approach would result in barging of the oil from the platforms to various ports, an inherently more risky process from an environmental standpoint according to Department of Interior studies. The no project alternative, while eliminating environmental impacts, would not allow valuable petroleum resources estimated at 100-200 million barrels to be recovered.

Other alternatives evaluated included alternative pipeline routes to shore and barging of the product. All viable approaches appear more environmentally penalizing, particularly in terms of Coastal Zone conflicts.

Originally, subsea completion systems were considered for the project to avoid marine traffic conflicts in the TSS. The nature of the oil in the Beta Unit is such that it must be artificially lifted (pumped) from the wells. This requires frequent well servicing and would obviate any benefits to marine traffic because of the need for constant rig vessel services in the same area, and at variable locations.

Other alternatives examined included different numbers of platforms or platform locations. So long as the platforms remain at least 500 meters outside the traffic lanes, no major impact on marine traffic is predicted. The scheme that Shell has proposed for this project allows efficient handling of the oil treatment

requirements; other treatment approaches offer no overriding environmental benefits.

The shore facilities are relatively small in area and could be sited at alternative locations, but no particular environmental benefits are foreseen with the exception of the crew launch facility. Location at a more industrialized area might reduce parking and circulation impacts at a congested coastal location. In this respect, a number of sites might be available in the Port of Long Beach or Los Angeles.