

MINUTE ITEM
This Calendar Item No. 55
was approved as Minute Item
No. 55 by the State Lands
Commission by a vote of 2
to 0 at its 8/10/88
meeting.

CALENDAR ITEM

55

08/10/88
PRC 425
Smith
Gonzalez

A 58
S 37

APPROVAL OF REQUEST TO REPLACE TWO WATER PIPELINES
TO PLATFORM EMMY, STATE OIL AND GAS LEASE PRC 425

LESSEE: Shell Western E&P Inc.
Attn.: D. L. Oreolt
P.O. Box 11164
Bakersfield, California 93389

AREA, TYPE LAND AND LOCATION:
State Oil and Gas Lease PRC 425, issued on
February 10, 1950, contains approximately 835
acres of tide and submerged lands west of
Huntington Beach, Orange County. Oil drilling
and production platform Emmy stands in 47 feet
of water approximately 7000 feet from shore and
was completed in 1963. The two waterlines to
be replaced, an 8-inch diameter line and a
6-inch diameter line, were installed in 1963
and 1967, respectively.

BACKGROUND: Shell Western E&P., Inc. (SWEPI), lessee of
State Oil and Gas PRC 425.1, has requested
permission to replace two deteriorated and
inoperative saltwater pipelines running from
its onshore facilities to Platform Emmy. The
replacement line is proposed as a single
pipeline carrying filtered saltwater serving
the following operational requirements:

1. Water for waterflood injection for
maintaining current oil productive capacity;
2. An adequate and reliable source of water
for the platform fire suppression system
which will back up the limited volume of
on-platform fresh water and the sea water
diesel pumped system;

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3. A source of kill water for controlling possible well kicks.

The original 8-inch water injection line was installed during platform construction in 1963. This line deteriorated due to internal corrosion and has not been functional since 1983. Injection water was rerouted through an available 6-inch waste water line laid in 1967. This 6-inch line has also failed and is currently inoperative. Because the line had to be operated at low pressure to prevent total failure and had to be shut down periodically to patch leaks as they developed, the three functions of the line were severely restricted since May 1987, and since December 1987 have been entirely curtailed.

PROPOSED PROJECT:

Shell has proposed replacement of the two deteriorated pipelines with a new 12-inch diameter line to be laid in the existing pipeline corridor. The single 12-inch pipeline will carry an adequate volume of water at a lower line pressure, to fulfill the waterflood and hazard control requirements at optimum pump power consumption.

AB 884

12/03/88.

OTHER PERTINENT INFORMATION:

1. Pursuant to the Commission's delegation of authority and the State CEQA Guidelines (14 Cal. Adm. Code 15025), the staff has prepared a Negative Declaration EIR ND 440, State Clearinghouse 88042709. Such Negative Declaration was prepared and circulated for public review pursuant to the provision of the CEQA. A copy of this environmental document is attached as Exhibit "C".

Based upon the initial study, the Negative Declaration, and the comments received in response thereto, there is no substantial evidence that the project will have a significant effect on the environment (14 Cal. Adm. Code 15074(b)).

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2. This activity involves lands identified as possessing significant environmental values pursuant to P.R.C. 6370 et. seq. Based upon the staff's consultation CEQA through the review process, it is the staff's opinion that the project, as proposed, is consistent with the use classification.

APPROVALS REQUIRED:

Coastal Commission.

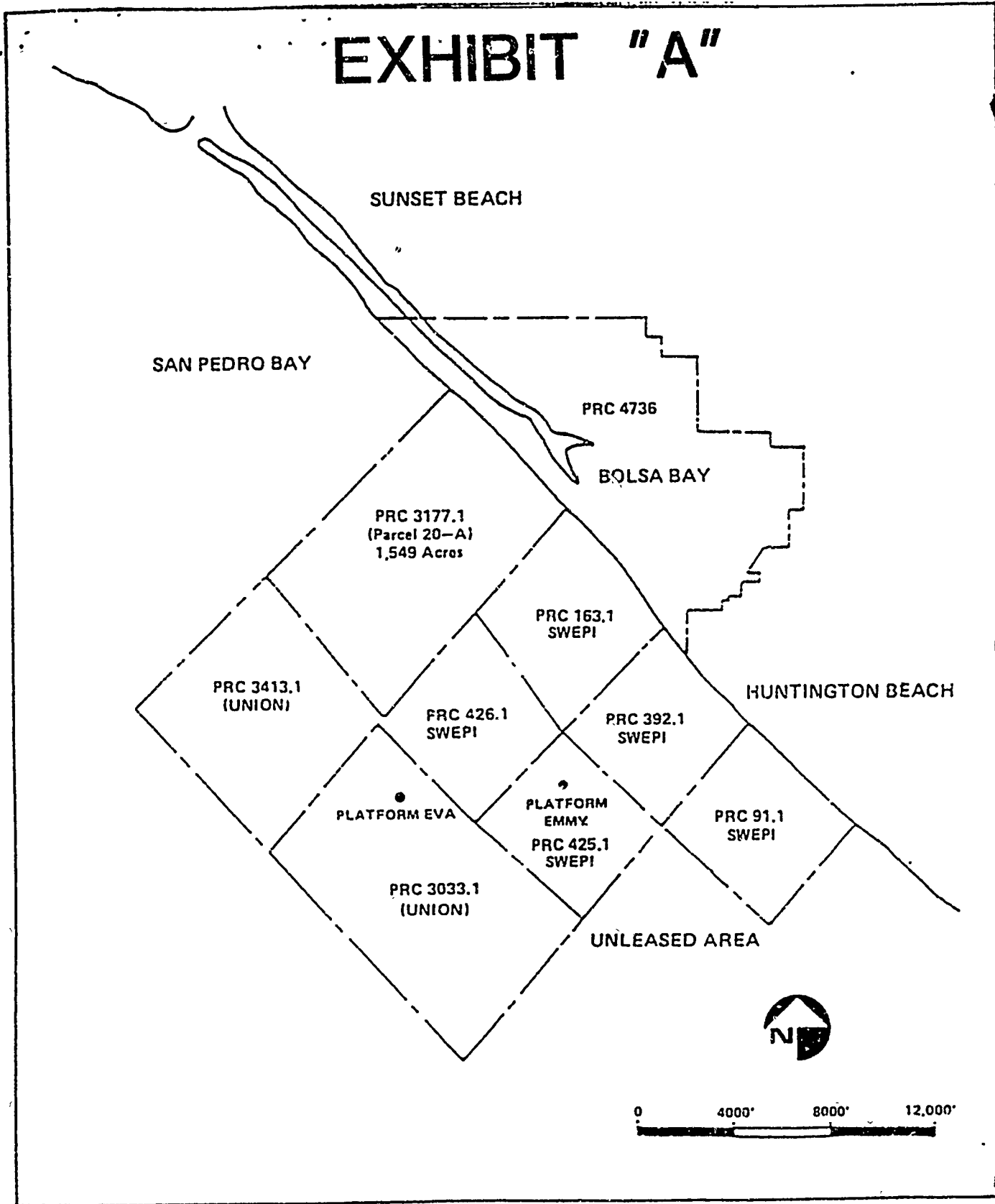
EXHIBITS:

- A. Lease and Platform Location Map.
- B. Pipeline Corridor Map.
- C. Negative Declaration.

IT IS RECOMMENDED THAT THE COMMISSION:

1. CERTIFY THAT A NEGATIVE DECLARATION EIR NO 440, STATE CLEARINGHOUSE #88042709, WAS PREPARED FOR THIS PROJECT PURSUANT TO THE PROVISIONS OF THE CEQA AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.
2. DETERMINE THAT THE PROJECT, AS PROPOSED, WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.
3. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6383 ET SEQ.
4. APPROVE THE INSTALLATION OF A NOMINAL 12-INCH DIAMETER PIPELINE FROM SHELL WESTERN E&P INC. ONSHORE FACILITY TO PLATFORM EMMY.

EXHIBIT "A"

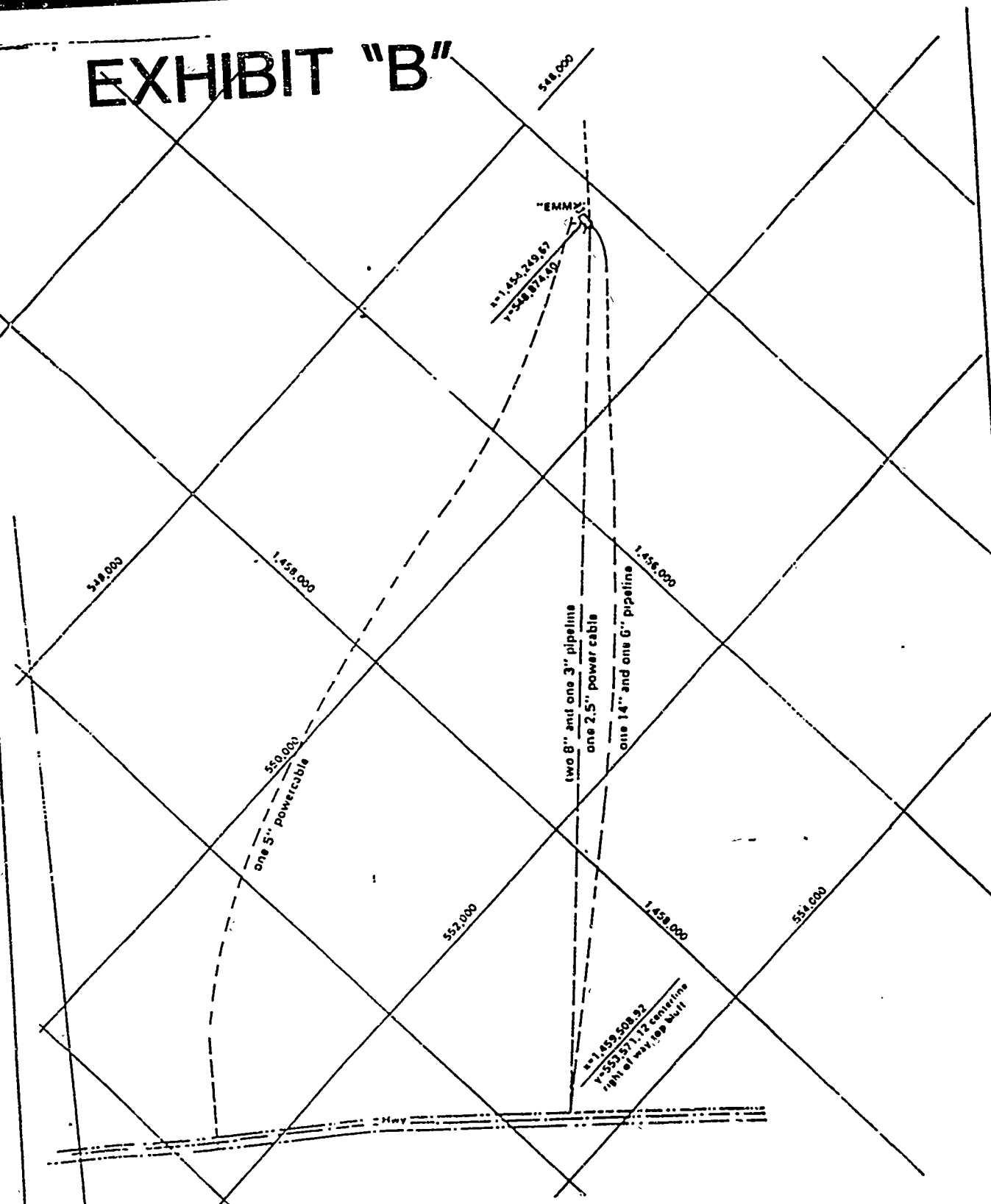


Platform Emmy Location

FIGURE

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EXHIBIT "B"



Offshore Pipeline and Submarine Power Cable Routes to Platform Emmy

FIGURE
2

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EXHIBIT "C"

GEORGE DEUKMEJIAN, Governor



STATE OF CALIFORNIA—STATE LANDS COMMISSION

STATE LANDS COMMISSION
1807 13TH STREET
SACRAMENTO, CALIFORNIA 95814

PROPOSED NEGATIVE DECLARATION

EIR ND 440

File Ref.: PRC 425.1

SCH#: 88042709

Project Title: Replacement of offshore salt-water pipelines
Project Proponent: Shell Western Exploration and Production, Inc. (SWEPI)
Project Location: Offshore the City of Huntington Beach, Orange County
California

Project Description: The replacement of existing salt-water supply lines to Platform Emmy with a new 12 inch pipeline. The pipeline will be constructed on the upland at SWEPI's onshore facilities and pulled by barge beneath the Pacific Coast Highway to Platform Emmy. The salt-water will be used to continue the existing uses of a secondary recovery waterflood, auxillary fire protection, and for well bore pressure control.

Contact Person: Randall Moory

Telephone: 916/322-7828

This document is prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq., Public Resources Code), the State CEQA Guidelines (Section 15000 et seq., Title 14, California Administrative Code), and the State Lands Commission regulations (Section 2901 et seq., Title 2, California Administrative Code).

Based upon the attached Initial Study, it has been found that:

the project will not have a significant effect on the environment.

mitigation measures included in the project will avoid potentially significant effects.

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FORM 13.17 (2/83)	

ENVIRONMENTAL IMPACT ASSESSMENT CHECKLIST - PART II

Form 13.20 (7/82)

File Ref.: PRC 425.1

I. BACKGROUND INFORMATION

A. Applicant: Shell Western Exploration and Production, Inc.
P.O. Box 11164
Bakersfield, CA

B. Checklist Date: 04 /08 /88

C. Contact Person: Randall Moory
Telephone: (916) 322-7828

D. Purpose: Replacement of existing unusable salt-water supply lines to
the platform oil and gas Lease PRC 425.1 offshore Huntington
Beach, Orange County, California

E. Location: See attached.

F. Description:

G. Persons Contacted:
Suzanne Rogalin, California Coastal Commission
Brian Baird, California Coastal Commission

II. ENVIRONMENTAL IMPACTS. (Explain all "yes" and "maybe" answers)

A. Earth. Will the proposal result in:

- 1. Unstable earth conditions or changes in geologic substructures?
2. Disruptions, displacements, compaction, or overcovering of the soil?
3. Change in topography or ground surface relief features?
4. The destruction, covering, or modification of any unique geologic or physical features?
5. Any increase in wind or water erosion of soils, either on or off the site?
6. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet, or lake?
7. Exposure of all people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?

Yes Maybe No

Response grid with checkboxes for Yes, Maybe, and No for each item.

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Yes Maybe No

- B. *Air*. Will the proposal result in:
- 1. Substantial air emissions or deterioration of ambient air quality?
 - 2. The creation of objectionable odors?
 - 3. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

- C. *Water*. Will the proposal result in:
- 1. Changes in the currents, or the course or direction of water movements, in either marine or fresh waters?
 - 2. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?
 - 3. Alterations to the course or flow of flood waters?
 - 4. Change in the amount of surface water in any water body?
 - 5. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?
 - 6. Alteration of the direction or rate of flow of ground waters?
 - 7. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?
 - 8. Substantial reduction in the amount of water otherwise available for public water supplies?
 - 9. Exposure of people or property to water-related hazards such as flooding or tidal waves?
 - 10. Significant changes in the temperature, flow or chemical content of surface thermal springs?

- D. *Plant Life*. Will the proposal result in:
- 1. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?
 - 2. Reduction of the numbers of any unique, rare or endangered species of plants?
 - 3. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?
 - 4. Reduction in acreage of any agricultural crop?

- E. *Animal Life*. Will the proposal result in:
- 1. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects)?
 - 2. Reduction of the numbers of any unique, rare or endangered species of animals?
 - 3. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?
 - 4. Deterioration to existing fish or wildlife habitat?

- F. *Noise*. Will the proposal result in:
- 1. Increase in existing noise levels?
 - 2. Exposure of people to severe noise levels?

- G. *Light and Glare*. Will the proposal result in:
- 1. The production of new light or glare?

- H. *Land Use*. Will the proposal result in:
- 1. A substantial alteration of the present or planned land use of an area?

- I. *Natural Resources*. Will the proposal result in:
- 1. Increase in the rate of use of any natural resources?
 - 2. Substantial depletion of any nonrenewable resources?

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- Yes Maybe No
- J. Risk of Upset.** Does the proposal result in
1. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?
 2. Possible interference with emergency response plan or an emergency evacuation plan?
- K. Population.** Will the proposal result in:
1. The alteration, distribution, density, or growth rate of the human population of the area?
- L. Housing.** Will the proposal result in:
1. Affecting existing housing, or create a demand for additional housing?
- M. Transportation/Circulation.** Will the proposal result in:
1. Generation of substantial additional vehicular movement?
 2. Affecting existing parking facilities, or create a demand for new parking?
 3. Substantial impact upon existing transportation systems?
 4. Alterations to present patterns of circulation or movement of people and/or goods?
 5. Alterations to waterborne, rail, or air traffic?
 6. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?
- N. Public Services.** Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:
1. Fire protection?
 2. Police protection?
 3. Schools?
 4. Parks and other recreational facilities?
 5. Maintenance of public facilities, including roads?
 6. Other governmental services?
- O. Energy.** Will the proposal result in:
1. Use of substantial amounts of fuel or energy?
 2. Substantial increase in demand upon existing sources of energy, or require the development of new sources?
- P. Utilities.** Will the proposal result in a need for new systems, or substantial alterations to the following utilities:
1. Power or natural gas?
 2. Communication systems?
 3. Water?
 4. Sewer or septic tanks?
 5. Storm water drainage?
 6. Solid waste and disposal?
- Q. Human Health.** Will the proposal result in:
1. Creation of any health hazard or potential health hazard (excluding mental health)?
 2. Exposure of people to potential health hazards?
- R. Aesthetics.** Will the proposal result in:
1. The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?
- S. Recreation.** Will the proposal result in:
1. An impact upon the quality or quantity of existing recreational opportunities?

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Yes Maybe No

T. Cultural Resources.

- 1. Will the proposal result in the alteration of or the destruction of a prehistoric or historic archeological site? Yes Maybe No
- 2. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object? Yes Maybe No
- 3. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values? Yes Maybe No
- 4. Will the proposal restrict existing religious or sacred uses within the potential impact area? Yes Maybe No

U. Mandatory Findings of Significance.

- 1. Does the project have the potential to degrade the quality of the environment, 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? Yes Maybe No
- 2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? Yes Maybe No
- 3. Does the project have impacts which are individually limited, but cumulatively considerable? Yes Maybe No
- 4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? Yes Maybe No

III. DISCUSSION OF ENVIRONMENTAL EVALUATION (See Comments Attached)

IV. PRELIMINARY DETERMINATION

On the basis of this initial evaluation:

- I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.
- I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Date: 04 / 27 / 88

Randall
 For the State Lands Commission

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PROJECT DESCRIPTION

Shell Western Exploration and Production, Inc. (SWEPI) proposes to replace two existing salt water pipelines with a new 12 inch salt water pipeline. The new line will lie in the same corridor as the existing pipelines which traverses the sea bottom between SWEPI's onshore facilities at Huntington Beach and Platform Emmy. The location of the pipeline corridor is shown on the attached map.

SWEPI proposes to replace the existing 20 year old lines which are deteriorating and inoperative. The replacement line will continue to supply platform Emmy with filtered salt water which is presently used for:

1. Waterflood injection for maintaining current oil production capacity;
2. A source of water for the platform fire suppression system which serves as a backup for the on-platform fresh water supply; and
3. A source of water to be used during well workover and new well drilling. The water is used for controlling well kicks and killing the well flow.

While the new pipeline will have about 45 percent greater capacity than the original lines, the salt water will not be used for any purpose other than those listed above for existing platform operators.

SWEPI proposes to construct the pipeline on shore and to pull it to the platform using a pull barge anchored offshore. The pipeline will be put together on the bluff overlooking the beach and then pulled through a new 24 inch diameter casing which will be installed beneath the Pacific Coast Highway and through the bluff down to the beach. The pipeline will be weighted with a concrete coating and buried to a minimum of 3 feet in the beach area and the surfzone. The pull barge will either be tied to the platform when pulling the pipe or anchored to the outside of the intermittent rocky outcrops which lie in the pipeline corridor.

The expected time for completing the project is about 2 weeks. The activity of the pull barge will be limited to about 7 days, during which time it will operate 24 hours a day. Welding of the pipeline will require six diesel-powered welding machines which are expected to operate an average of 67 hours each over the 2 week period. A construction schedule for all activities is shown on the attached Figure.

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Once the pipeline is installed, SWEPI will pressure test the line. About 595 barrels (25,000 gal.) of water purchased from the City of Huntington Beach will be used to hydrotest the pipeline and the systems on the platform which are connected to the platform. Water from the test will then be returned to the water treatment facility on SWEPI's onshore area for treatment before disposal offshore through an existing outfall.

In order to reduce impacts to recreation which could occur because of the project, SWEPI will limit their construction to the period from November 1, to May 1. This will reduce the potential impacts which might occur between beach users, recreational boaters, and the construction operations during the high intensity recreation period between May 1, and October 31.

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DISCUSSION OF ENVIRONMENTAL EVALUATIONS:

Item D.1.

The proposed pipeline route follows the existing pipeline corridor between the onshore bluffs at Huntington Beach and the platform. This corridor crosses an intermittent rocky outcrop area which extends from the surf zone to about 2000 feet offshore.

A biological survey of this reef area and the pipeline corridor was conducted by CHAMBERS GROUP, INC. and completed in April, 1988. The purpose of this survey was to determine the marine biological resources which could be affected by the pulling the pipeline to the platform. The survey found little invertebrate growth and no algal growth attached to the rocky substrate. The pipeline route was found to be significantly affected by surf conditions which move sand around and abrade the rocky outcrops regularly. Holes and crevices were found in the rocks which could provide good hiding areas for fish, fish larvae and spiny lobster, however none were observed. A copy of the survey report is attached herewith.

The laying of the pipeline through the reef will have no detrimental impacts to the rocky substrate or organisms using the substrate. However, if anchors were placed on the rocky outcrops some damage would result. SWEPI's anchoring of the lay barge will, however, not result in such impacts. The lay barge will likely be tied to the platform when pulling the pipeline. If the lay barge must be anchored, the anchors will be placed in areas which will not affect rocky outcrops.

Items E.1., E.3., and E.4. See discussion on Item D.1.

Item F.1.

The proposed project involves the welding of the pipeline at SWEPI's onshore fabrication area, the installation of a new 24" casing under the highway and the installation of the pipeline to the offshore area. All of these activities will generate substantial noise from construction activities and metal to metal clanking.

The impacts from the noise generated from the project are not considered significant because of the location where the pipeline construction will

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occur and the time of year in which the installation will occur. Presently the proposed construction area is an operating oil field and the noises from the pipeline construction will be nearly the same as those now occurring at the field. The installation impacts have been mitigated by restricting the conduct of the project to that time period of the year when recreation usage is the lowest. As such, conflicts with other users will be minimized.

Item M.5.

For a period of about 7 days, a pull barge will be located in the offshore area between Platform Emmy and the coast bluffs. This barge will pose a temporary interference to vessel traffic traversing this area. Thus, there will be a temporary interference with both commercial and recreational ocean vessel traffic.

The impact can be mitigated by undertaking construction after November 1, when recreational traffic is less than during the summer months. In addition, a Notice To Mariners will be posted with the Coast Guard which will enable the Coast Guard to advise both commercial and recreational boater of the activity of the barge during the construction period.

Item N.5.

Disruption of recreational activities will occur during pipeline casing construction under the highway and during pipeline installation, a 2 week period. During this period, usage of the beach will be prohibited in the construction area.

After the pipeline is in place, no interference will occur because the pipeline will be buried to a depth of at least 5 feet and will have no impact on recreation.

In order to mitigate the interference with recreational use of the beach, construction activities will occur after November 1, and before May 1, when recreational use is at a minimum.

Item S.1.

See the discussion and mitigation presented in Item N.5.

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**BIOLOGICAL SURVEY
OF
PROPOSED 12-INCH REPLACEMENT PIPELINE ROUTE
BETWEEN PLATFORM EMMY AND ONSHORE FACILITY
HUNTINGTON BEACH, CALIFORNIA**

Prepared for:

**SWEPI
P.O. Box 11164
Bakersfield, California 93389**

Prepared by:

**CHAMBERS GROUP, INC.
2933B Pullman Street
Santa Ana, California 92705
Telephone: (714) 261-5414**

APRIL 1988

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BIOLOGICAL SURVEY OF PROPOSED 12-INCH REPLACEMENT PIPELINE ROUTE
BETWEEN PLATFORM EMMY AND ONSHORE FACILITY.
HUNTINGTON BEACH, CALIFORNIA

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**BIOLOGICAL SURVEY OF PROPOSED 12-INCH REPLACEMENT PIPELINE ROUTE
BETWEEN PLATFORM EMMY AND ONSHORE FACILITY
HUNTINGTON BEACH, CALIFORNIA**

INTRODUCTION

Shell-Western E&P Inc. (SWEPI) proposes to lay a 12-inch replacement water injection line between Platform Emmy and its onshore facilities. The route follows an existing pipeline bundle. Because hard substrate had been identified along the proposed pipeline route, the California State Lands Commission requested that a marine biologist survey the route.

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METHODS

The biological survey was performed by Dr. Noël Davis and Ms. Pamela Morris, both of Chambers Group, on April 15, 1988. Sea conditions were stormy with bumpy, short period swell and 4- to 6-foot surf. Underwater conditions were surgy. Underwater visibility was poor, ranging from 0 to 3 feet. Ocean temperature was 60°F.

SWEPI employee Bill Wilder directed the biologists to the vicinity of the pipeline bundle. The biologists located the three existing pipelines and power cable underwater and followed the pipeline route shoreward all the way in to 18 feet of water which was almost in the surf zone. Notes were made of the nature of the hard substrate and associated biota along the pipeline route.

A second dive was made in the area of rock outcropping. Video was taken of the rocks and pipelines and still photographs were taken using Chambers Group's photojig. The still photos provide photodocumentation and quantitative information of percent cover on the pipeline and adjacent hard bottom area.

The photojig holds a camera and two strobes in fixed position over a 30 cm by 50 cm quadrat. The quadrat photographs were used to generate quantitative information on percent cover of organisms on the rock and pipes. To quantify percent cover, the developed transparency was projected onto a paper with a grid pattern of approximately 500 dots. The number of dots superimposed on each species is then scored with the percent cover values expressed as the number of hits for each species divided by the total number of dots contained in the quadrat. Because of the poor underwater visibility, the video was almost useless.

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RESULTS

In the offshore area where the pipeline was first encountered at a depth of approximately 40 feet, the bottom was sand. The biologists followed the pipeline in towards shore along fairly barren sand bottom. The only organism seen on the sand was the tube worm, Diopatra sp., which is usually the dominant epifaunal organism on sand bottoms at this depth. At 35-foot depth, the pipeline became covered with sand but it was visible again after about 50 feet. Just past the point where the pipelines became uncovered again, hard substrate was encountered. The substrate remained mostly rocky with a few areas of sand the rest of the way in shore to the surf line. The rocky area consisted of low relief. Most of the relief was about one foot in height and no rocks greater than three feet in height were seen. There was very little growth on the rocks. There was a little bit of filamentous algae, an unidentified bryozoan and a few barnacles. The only place where there was substantial cover with biological growth was in about 25 feet of water where the sand tube worm, Phragmatopoma californica was common on the rocks.

At the offshore end of the rock outcrop, in about 35 feet of water, a few small individuals of the rust gorgonian, Muricea californica grew on the rocks. This is an area of violently shifting substrate and these rocks are probably covered and uncovered with sand periodically. The lack of plant growth on these rocks is indicative of the harsh conditions in this area. Normally rocks in shallow water are covered with algae. The lack of algae here is probably related to the constant sand abrasion, periodic burial and low light levels because of the chronically poor visibility. The rocks were high enough to provide crevices and shelter for fishes and lobster. We did not see any lobster but apparently they are sometimes common in this area (Bill Wilder, SWEPI, personal communication). One spider crab,

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Loxorhynchus grandis, was seen. Three species of fish were observed, the kelp bass Paralabrax clathratus, the sand bass Partalabrax nebulifer and the black surf perch Embiotica jacksoni. The sand bass was the most common species with a density of approximately one individual every five meters.

In contrast to the almost barren rocks, the pipelines were covered with a lush growth of the gorgonian Muricea californica. The pipeline also supported fairly heavy growth of the bryozoan Hippodiplosia insculpta. The pipes were usually above the rock areas and in some places were as high as 18 inches above the base of the rocks.

Percent cover on the rocks as compared to the pipe is shown in Table 1. The percentage of pipe that is covered by gorgonians is 61.8 percent. In contrast, the rocks are 73.8 percent bare with only a 2.7 percent gorgonian growth. Average cover of tube worms (Phragmatopoma californica) is 17.9 percent but in the areas of densest growth, at about 25-foot depth, the percent cover was as much as 100 percent on some rocks.

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FIGURE PAGE	2524

CONCLUSIONS

The operation of laying the replacement water injection pipeline over the hard bottom area will have minimal impact on marine life in the area. The hard substrate is nearly barren of growth. In the 25-foot depth zone, sand tube worms will suffer impacts within the localized area in which the pipe contacts the bottom.

The primary value of this hard bottom habitat to marine life is the relief and crevices it provides to lobster, crabs and fishes. This habitat value should not be affected by SWEPI's proposed pipeline installation.

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Table 1
PERCENT COVER ON ROCKS AND ON PIPE

PIPE

<u>Muricea californica</u>	61.8 percent
Bare pipeline	33.3 percent
Unidentified bryozoan	2.4 percent

ROCKS

<u>Hippodiplosia insculpta</u>	1.6 percent
Bare rock	73.8 percent
<u>Muricea californica</u>	2.7 percent
Unidentified bryozoan	1.4 percent
<u>Phragmatopoma californica</u>	17.9 percent
<u>Balanus</u>	2.8 percent