MINUTE ITEM
This Calendar Item No. 54
was approved as Minute Item
No. 54 by the State Lands
Commission by a vote of 3
to 0 at its 8/3/94
meeting.

CALENDAR ITEM

54

A 35

S 18

08/03/94 PRC 1824
W 40654 PRC 3150
Johnson
Gonzalez
Walker

ADOPT MITIGATED NEGATIVE DECLARATION AND APPROVE THE ABANDONMENT AND REMOVAL OF FOUR OFFSHORE OIL PLATFORMS, SANTA BARBARA COUNTY

LESSEE:

Chevron U.S.A. Inc.
Attn: Mr. G. W. Gray
P. O. Box 6917
Ventura, California 93006

AREA, TYPE LAND AND LOCATION:

Oil drilling and production Platforms Hazel and Hilda, located on State oil and gas lease PRC 1824, and Platforms Hope and Heidi on State oil and gas lease PRC 3150 are located on State tide and submerged lands in the eastern portion of the Santa Barbara Channel, Santa Barbara County (Exhibit"A").

BACKGROUND:

Platform Hazel was installed in 1958 and Platform Hilda in 1960. Platforms Hope and Heidi were constructed on lease PRC 3150 in 1965. During the life of the four platforms, production totaled approximately 62.3 million barrels of crude oil and 132.8 million cubic feet of natural gas. All of the platforms were shut-in in 1992.

Chevron plans to abandon and remove Platforms Hope, Heidi, Hilda and Hazel and abandon associated oil and gas pipelines in the manner and under conditions specified in the proposed Mitigated Negative Declaration ND 652, Sch. No. 94051016 (Exhibit "B") and the list of Project Stipulations (Exhibit "C").

In summary, a contractor hired by Chevron, after conducting a seafloor survey of the site to locate subsurface debris and establish anchor and mooring sites for the project removal equipment, will dismantle the platforms in several

distinct procedures including decommissioning of the auxiliary and emergency equipment, sectioning of the platform decks for removal by a derrick barge and cutting of the pilings and conductors to allow for removal of the platform jackets. Mechanical cutting methods will be used for the legs of Platform Hazel and explosive cutting for the piles and conductors of the other three platforms.

In an associated but separate activity, pipelines between Platform Hope and the shoreline will be repositioned and left to service production from Platforms Grace and Gail in Federal waters which previously produced to Platform Hope and then onto shore. The remaining pipelines from Hazel, Heidi and Hilda will be cleaned by flushing and running a "pig" through the lines to remove all hydrocarbons, filled with grout or other inert substances, and abandoned in place. All platform materials will be taken by barge to the Port of Long Beach/Los Angeles for onshore salvage and disposal. The final step in abandonment will be a cleanup of any debris from the removal operations or debris which was located during the initial site surveys.

Chevron U.S.A., Inc. remains the State's lessee on the affected leases, PRC 1824 and PRC 3150.

STATUTORY AND OTHER REFERENCES:

A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13.
B. Cal. Code Regs.: Title 3, Div. 3; Title 14, Div. 6.

AB 884:

08/11/94

OTHER PERTINENT INFORMATION:

1. Pursuant to the Commission's delegation of authority and the State CEQA Guidelines (14 Cal. Code Regs. 15025), the staff has prepared a Proposed Mitigated Negative Declaration identified as EIR ND 652, State Clearinghouse No. 94051016. The Proposed Negative Declaration was prepared and circulated for public review pursuant to the provisions of CEQA.

   During the public comment period, staff received letters from the federal Minerals Management Service (MMS), the California Coastal Commission (CCC), the Santa Barbara County Air Pollution Control District (APCD), and the Energy Division, County of Santa Barbara Resource Management

Department. The major concerns of each agency and staff's responses are summarized below. Staff's detailed responses to each comment received have been furnished to the Commission and each commentor.

Minerals Management Service
The MMS expressed its concern that the placement and use of the derrick barge for the removal of Platform Hope not adversely impact the pipelines that will be rerouted around Platform Hope and remain in place to service Platforms Grace and Gail in the federal OCS. Stipulation 3 in Exhibit "C" has been added to require the placement of the derrick barge on the west side of Platform Hope, i.e., the side opposite the pipelines.

California Coastal Commission
The CCC's comments focused primarily on the issue of abandonment of facilities, both pipelines and platform components, in place versus their removal. Of primary concern was any potential interference with commercial fishing activities that might be restored to the area subsequent to the removal of the platforms. The CCC also suggested that the observers that are proposed, among other purposes, to ensure that no marine mammals are present within a defined zone of potential impact during the use of explosives in the removal procedures be "independent" of Chevron or its contractors.

Staff provided the CCC additional information regarding the considerations that were used to elect to abandon certain facilities and remove others. In addition, Stipulations 2 (independent observers), 4 (test trawls at each former platform location), 5 (underwater surveys of abandoned facilities) and 6 (removal of abandoned facilities at the Commission's discretion) in Exhibit "C" are proposed in further response to the CCC's concerns.

Santa Barbara County Air Pollution Control District
The APCD recommended in their letter of May 24, 1994, that an environmental impact report (EIR) be prepared in deference to the proposed Mitigated Negative Declaration (MND). The District also indicated that the proposed ...abandonment and removal of the platforms constitute a construction activity" for which air emission offsets would be required if pollutant levels were above stated levels.

In a subsequent letter of May 27, 1994, the District indicated that a mitigated negative declaration was appropriate and listed measures that would reduce the identified emission levels. In its response to the District, staff indicated that such measures were specified in the Commission's environmental documentation. On further review, staff determined, on the basis of the information contained in the proposed MND and the District's rules governing "construction" activities, that the regulated emissions associated with the project are below the threshold above which offsets would be necessary.

However, in a letter of July 20, 1994, the District reiterated its position that offsets were required in addition to the measures specified in their letter of May 27. Staff sought additional clarification from the District and were advised that the District now regards the proposed activity as a "new source" rather than a "construction" activity as previously indicated. Under such classification, emissions are evaluated under different threshold criteria.

In sum, while the issues have been better defined and focused, the extent and requirements of Chevron's authorization from the District will require additional discussions between the parties.

Energy Division, County of Santa Barbara

As an "interested agency", the County, through the staff of the Energy Division recommended that an EIR be prepared for the project on the basis of potential air quality impacts (see preceding discussion) and potential impacts to marine resources, i.e., in conjunction with an oil spill and the use of explosives. Staff believes that sufficient information and analyses exist within the proposed MND to mitigate the impacts identified.

The County's comments also addressed issues raised by the CCC as above described. In addition to the stipulations described with respect to the CCC, Stipulation 1 is incorporated in response to the County's specific recommendations.

Based upon the Initial Study, the Proposed Mitigated Negative Declaration, and the comments received in response thereto, and the stipulations incorporated therein, there is

no substantial evidence that the project will have a significant effect on the environment. (14 Cal. Code Regs. 15074(b))

A copy of the environmental document is attached as Exhibit "B".

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 with the Department of Fish and Game and through the CEQA process, it is the staff's opinion that the project, as proposed, is consistent with the use classification.

EXHIBITS:

A. Location Map
B. Negative Declaration
C. Stipulations
D. Mitigation Monitoring Plan

IT IS RECOMMENDED THAT THE COMMISSION:

1. CERTIFY THAT A PROPOSED NEGATIVE DECLARATION, ND 652, STATE CLEARINGHOUSE NO. 94051016, WAS PREPARED FOR THIS PROJECT PURSUANT TO THE PROVISIONS OF THE CEQA AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN AND THE COMMENTS RECEIVED IN RESPONSE THERETO.

2. ADOPT THE MITIGATED NEGATIVE DECLARATION AND DETERMINE THAT THE PROJECT, AS APPROVED, WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.

3. ADOPT THE STIPULATIONS TO THE PROJECT AS CONTAINED IN EXHIBIT "C", ATTACHED HERETO.

4. ADOPT THE MITIGATION MONITORING PLAN, AS CONTAINED IN EXHIBIT "D" ATTACHED HERETO.

5. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6370 ET. SEQ.

6. APPROVE, IN THE MANNER DESCRIBED IN THE DOCUMENTATION CONTAINED IN EXHIBITS "B" AND "C", THE REMOVAL, WITH STIPULATIONS, OF PLATFORMS HAZEL, HILDA, HOPE AND HEIDI FROM STATE OIL AND GAS LEASES PRC 1824 AND 3150 TOGETHER WITH THE ABANDONMENT OF THE ASSOCIATED OIL AND GAS PIPELINES WITH DISPOSAL OF THE PLATFORM STRUCTURE MATERIAL AT THE ONSHORE SITE AS DETAILED IN THE ATTACHED EXHIBIT "B".

7. AUTHORIZE STAFF TO TAKE ALL ACTIONS NECESSARY TO IMPLEMENT THIS PROJECT CONSISTENT WITH: 1) THE COMMISSION'S RULES AND REGULATIONS; 2) SOUND ENGINEERING PRACTICES; AND 3) MAXIMUM FEASIBLE PROTECTION OF THE ENVIRONMENT.

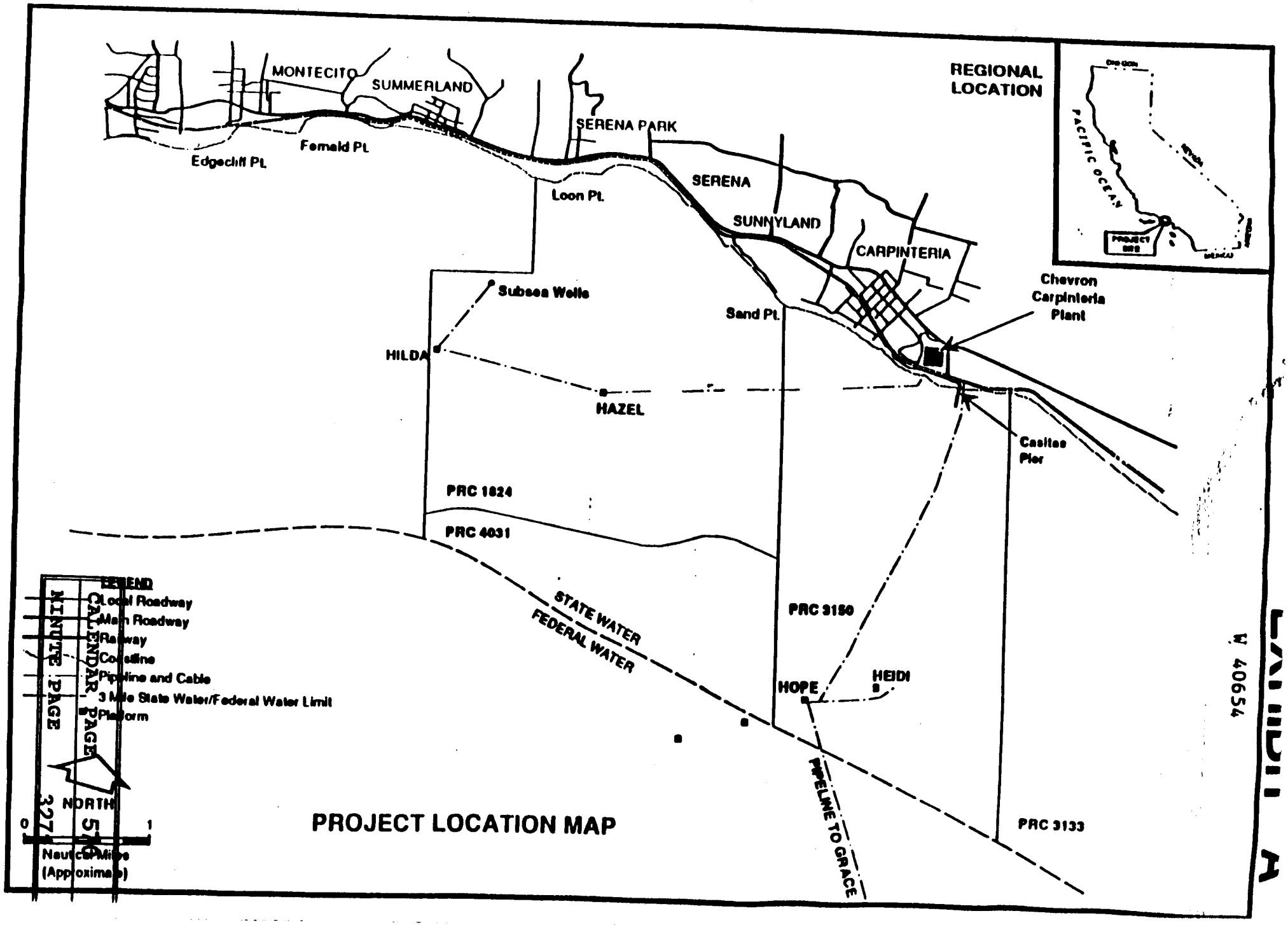

MONTECITO
SUMMERLAND
SERENA PARK
Femald Pt.
Edgecliff Pt.
Loon Pt.
SERENA
SUNNYLAND
CARPINTERIA
REGIONAL LOCATION
PACIFIC OCEAN
PROJECT SITE
Subsea Wells
HILDA
HAZEL
Sand Pt.
Chevron Carpinteria Plant
Casitas Pier
PRC 1824
PRC 4031
PRC 3150
PRC 3133
STATE WATER
FEDERAL WATER
HOPE
HEIDI
PIPELINE TO GRACE
LEGEND
Local Roadway
Main Roadway
Railway
Coastline
Pipeline and Cable
3 Mile State Water/Federal Water Limit
Platform
NINETY PAGE
CALENDAR PAGE
327
NORTH
5
0
1
Nautical Miles
(Approximate)
PROJECT LOCATION MAP
W 40654
EXHIBIT A

FIGURE 1.2-1

STATE OF CALIFORNIA

PETE WILSON, Gov

STATE LANDS COMMISSION

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
THOMAS W. HAYES, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, CA 95

CHARLES WAI
Executive Officer

EXHIBIT B

May 9, 1994
File: W 40654
ND 652
SCH No. 94051016

NOTICE OF PUBLIC REVIEW OF A PROPOSED NEGATIVE DECLARATION (SECTION 15073 CCR)

A Negative Declaration has been 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 Code Regulations), and the State Lands Commission Regulations (Section 2901 et seq., Title 2, California Code Regulations) for a project currently being processed by the staff of the State Lands Commission.

This document is being circulated under a shortened review, pursuant to Public Resources Code, Section 21091(d)(2), and is attached for your review. Comments should be addressed to the State Lands Commission office shown above with attention to the undersigned. All comments must be received by May 31, 1994.

Should you have any questions or need additional information, please call the undersigned at (916) 322-0530.

Goodyear K. Walker

GOODYEAR K. WALKER
Division of Environmental
Planning & Management

Attachment

CALENDAR PAGE	571
MINUTE PAGE	3272

STATE OF CALIFORNIA

PETE WILSON, Gover

STATE LANDS COMMISSION

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
THOMAS W. HAYES, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, CA 958

CHARLES WARREN
Executive Officer

PROPOSED NEGATIVE DECLARATION

File: W 40654
ND 652
SCH No. 94051016

Project Title:	Removal of Offshore Oil Platforms Heidi, Hilda, Hope & Hazel
Project Proponent:	Chevron U.S.A., Inc.
Project Location:	Santa Barbara Channel, offshore Santa Barbara County.
Project Description:	Four offshore oil platforms will be removed and barged to Long Beach Harbor for dismantling.
Contact Person:	Goodyear K. Walker Telephone: (916) 322-0530

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 Code Regulations), and the State Lands Commission regulations (Section 2901 et seq., Title 2, California Code Regulations).

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

/__/ that project will not have a significant effect on the environment.

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

CALENDAR PAGE	572
MINUTE PAGE	3273

CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)

CALENDAR PAGE	575
MINUTE PAGE	3276

CONTENTS (Continued)

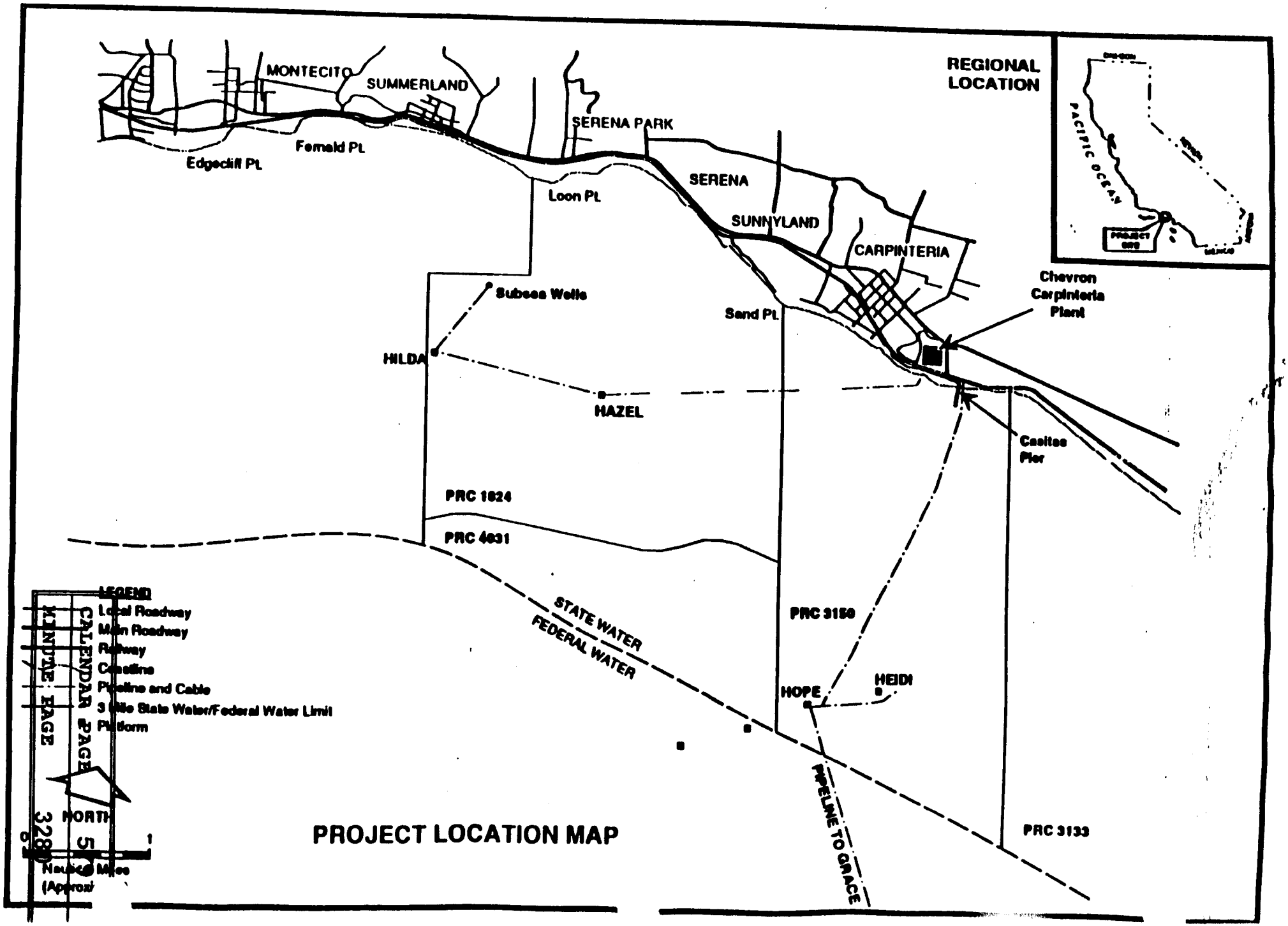
APPENDICES

CALENDAR PAGE	576
MINUTE PAGE	3277

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (Continued)



PROJECT LOCATION MAP

FIGURE 1.2-1

1.0 PROJECT OVERVIEW

1.1 PROJECT PROPONENT

Chevron U.S.A. Production Company

1.2 PROJECT LOCATION

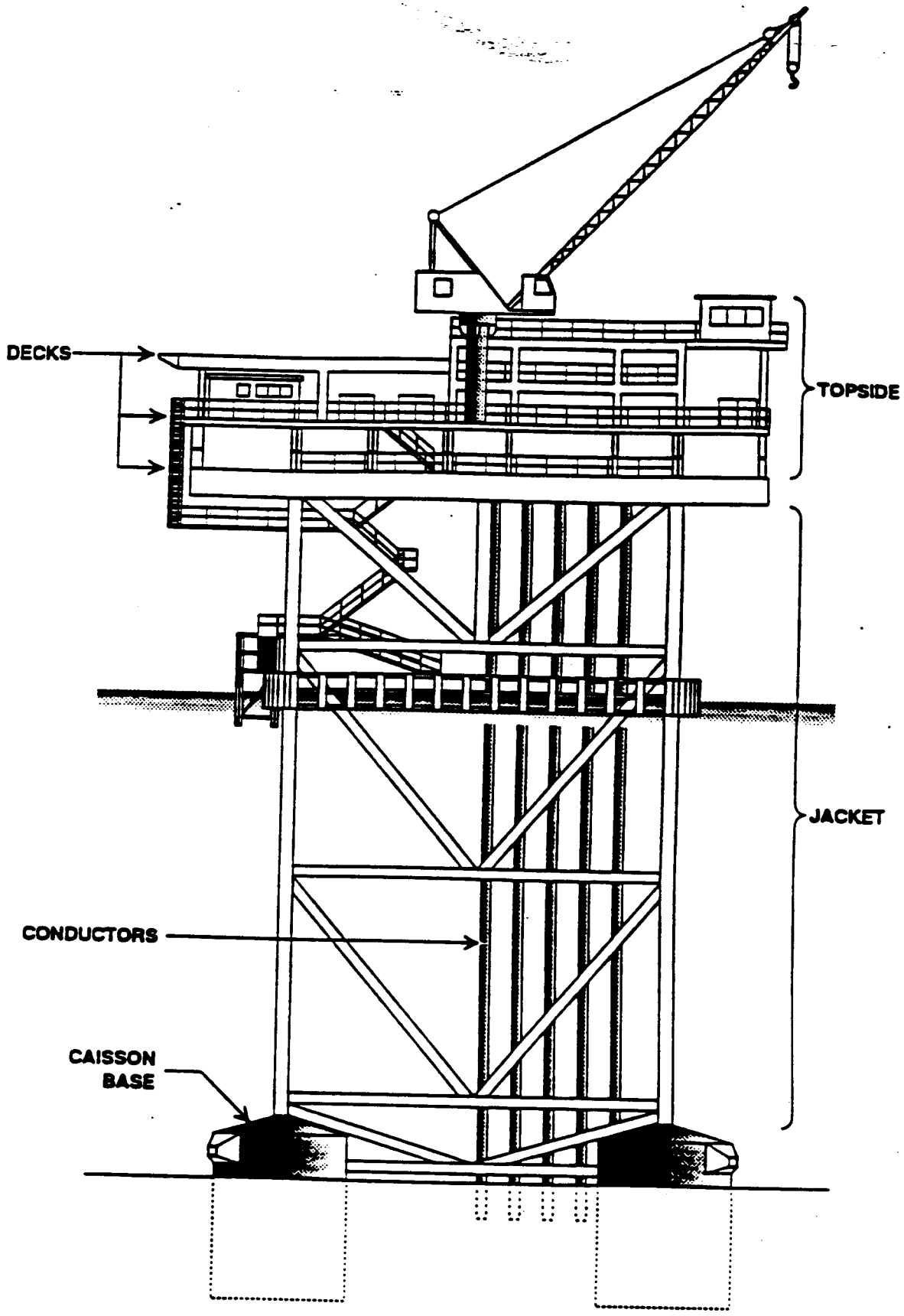
Platforms Hazel and Hilda (State Lease PRC 1824) and Platforms Hope and Heidi (State Lease PRC 3150) are located on State tidelands and submerged lands in the eastern portion of the Santa Barbara Channel, California (see Figure 1.2-1). Two of these platforms, Hope and Heidi, are within a legislative grant to Santa Barbara county, although all rights concerning oil and gas extraction were reserved to the State under the terms of the grant.

1.3 PROJECT BACKGROUND

The production of oil and gas reserves by Chevron within State Leases PRC 1824 and 3150 began in 1958 with the completion of Platform Hazel (see Figure 1.3-1). Construction of Platform Hilda was completed in 1960, Hope in 1965, and Heidi in 1965 (see Figure 1.3-2). The oil production from these offshore facilities is transported by subsea pipelines to Chevron's mainland separation, treatment, and processing facility located within the City of Carpinteria (see Figure 1.2-1). During the life of the four platforms, production has totaled approximately 62.3 million barrels of crude oil and 132.8 million cubic feet of natural gas.

All of the wells on these platforms were shut-in prior to September 1992. After the wells were shut in on each platform, the majority of the oil and gas processing equipment was drained and cleaned. Equipment left in service on the platforms includes wastewater handling facilities, air compressors, saltwater pumps, emergency power generators, navigation lights, fog horns, cathodic protection rectifiers, Platform Hope's vapor recovery compressor, and the pipelines carrying OCS oil and gas via Hope to the Carpinteria Plant. Subsea pipelines between Heidi and Hope, Hope and the Carpinteria Plant, Hilda and Hazel, and Hazel and the Carpinteria Plant have been left operational to handle rainwater and wastewater. The low pressure gas pipeline between Heidi and Hope has been left in service in order to bleed down Heidi's well casings to Hope's vapor recovery compressor.

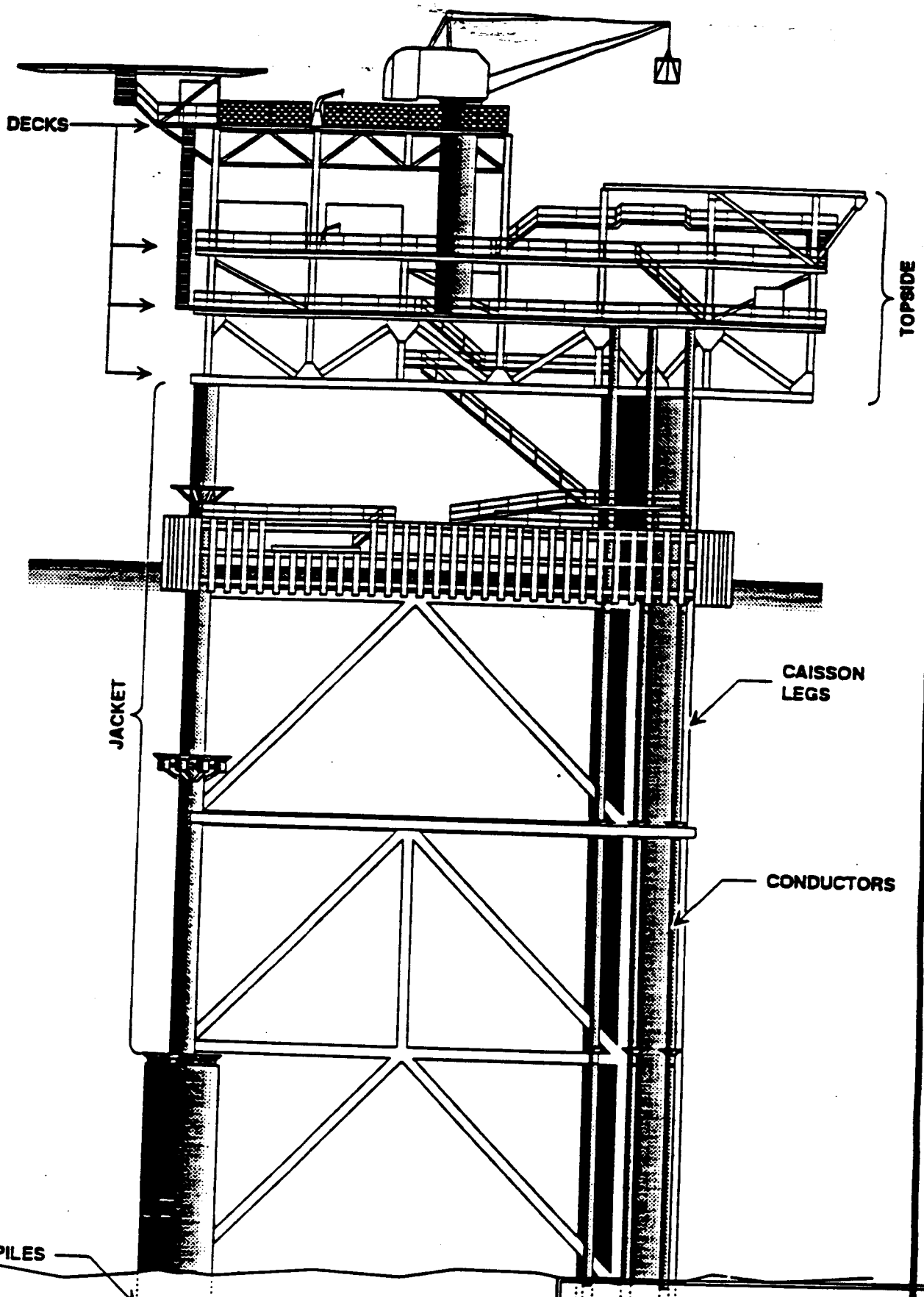
Operations personnel conduct daily walk-throughs of each platform to ensure the proper operation of the equipment that is left in service. A remote alarm system allows personnel at the Carpinteria Plant to monitor critical alarms and functions on each platform.



PLATFORM HAZEL
PROFILE

CALENDAR PAGE	581
MINUTE PAGE	3282

FIGURE 1.3-1



PLATFORM HOPE, HEID[illegible]
& HILDA PROFILE

CALENDAR PAGE 582
MINUTE PAGE 3283

FIGURE 1.3-2

The wells on each platform will be abandoned using procedures and equipment that have been described in Well Plugging and Abandonment Plans submitted and approved by the State Lands Commission and the Department of Oil and Gas. The abandonment rig will be used to cut and recover well conductors located outside the platform legs on all platforms. Decommissioned piping and equipment that can be handled by the existing cranes on the platforms will be cut loose from the platform by work crews and loaded onto the crew boat that services the platforms. The equipment will be transported to Chevron's Casitas Pier where it will be offloaded and stored temporarily at the Carpinteria Plant site. Most of this equipment will be transported to an appropriate facility and scrapped. Some equipment may be reused by Chevron or sold.

1.4 PROJECT OBJECTIVES

Chevron petroleum production facilities located on State Leases PRC 1824 and 3150 can no longer be feasibly operated due to the near depletion of the petroleum resource, and economic costs associated with continuing operations. The dismantling of these facilities by Chevron is being proposed in accordance with the lease stipulations regarding the removal of facilities and restoration of the project site following the completion of oil and gas production operations.

1.5 PROJECT SUMMARY

Chevron proposes to permanently abandon and remove Platforms Hope, Heidi, Hilda, Hazel, and associated oil and gas pipelines. Such activities will result in some short-term impacts associated with removal equipment and vessel operations. Removal and abandonment procedures are further discussed below.

1.5.1 Platform Removal Procedures

Prior to initiating project abandonment operations, preliminary seafloor surveys will be conducted within a 1,000-foot radius of the platforms. The survey work will be conducted using side-scan sonar to identify the location of subsurface debris and to establish potential anchor and mooring sites for project abandonment equipment. Additionally, all sensitive bottom features, including pipelines, rocky outcrops, and kelp beds will be noted during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in the sensitive areas.

Dismantling of the project platforms will require several distinct procedures including decommissioning of auxiliary and emergency equipment, removal of the platform decks or topsides, the cutting of the platform pilings and conductors, and the disposal of the platform

jackets. Figures 1.3-1 and 1.3-2 illustrate the general location of platform pilings, jackets, and decks or topsides.

Initially, cutting torches and welding equipment will be brought to the platforms to complete the decommissioning of the platform auxiliary and emergency equipment. This phase will not require the use of support equipment until the final removal of heavy equipment is to begin. At this time, several support vessels will be brought to the project site including a derrick barge, material barges, tug boats, crew boats, and diving support vessels. The materials barges are expected to be stored on separate moorings near the platforms and tended by a tug boat. Furthermore, during this phase any residual fluids collected during the final cleaning operations will be drained into appropriate containers on a work boat and transported to shore for appropriate treatment or disposal.

Removal of the decks or topsides will include the sectioning of the platform into pieces that provide adequate structural support and are light enough to be removed by the derrick barge. The sizes and weights of decking pieces will be determined by the capacity of the derrick barge to be utilized and the configuration of deck packages. Upon the installation of structural padeyes and rigging preparations, topside deck pieces will be attached to lift slings and a crane hook aboard the derrick barge, and final cuts made to allow the pieces to be lifted aboard the vessel. The deck sections will then be transferred to the material barges and eventually transported to the Los Angeles/Long Beach Harbor to be scrapped.

The final platform removal operation includes the removal of the platforms' jackets. In general, Platforms Hope, Heidi and Hilda have similar configurations with two large caisson legs originally used to float the jackets into place. Platform Hazel, however, contains cement filled caissons bases and will require a different removal technique than that used for the other three platforms.

Before the removal of platform jackets, it will be necessary to cut the pilings that anchor the platforms, and the conductors that were not removed during platform well abandonment. The cutting of the piling and conductors will be performed from inside the caisson legs and skirt pile guides and involve the use of several pieces of specialized equipment. Cutting operations will be performed from a barge and workboats utilizing explosives on three of the platforms, and from the platform decks utilizing mechanical cutting methods on Platform Hazel.

Removal of the Hope, Heidi, and Hilda jackets will occur from the top downward to maximize safety. In addition, the bottom horizontal elevation will be left in place to maintain stability between the 54-inch caisson legs. Each lift is expected to be pulled up and stacked on

the materials barge for storage and eventual transport to the mainland. Once the final piece of jacket has been cut away and removed, all that will remain is the caisson legs, the bottom horizontal elevation, and the caisson bases. Final cuts will then be made on the caisson legs to separate them from the rest of the structure, leaving the bracing between the legs intact.

A derrick barge will then adjust position and a tug will attach a tow bridle to the caisson legs. Pumping will be commenced from a utility vessel to dewater the legs and achieve moderate positive buoyancy. Upon achieving buoyancy, the tug will initiate pulling operations to free the legs from the bottom. Additional pulling forces may be applied by winches on the derrick barge to achieve the breakout force required. The legs will be freed and pumping operations will continue from the utility vessel while the tug tows the legs to a secure location. Upon completion of pumping operations, the legs will be attached to a temporary mooring and towing preparations completed. At this time, the legs may be separated before towing by cutting the connecting bracing and conductor guides alongside the derrick barge.

The smaller caisson bases would be removed one at a time using the derrick barge crane. Once the caisson bases reach the surface, drain holes will be cut into the bases to allow the water to drain as the load is held at the surface. Once drained, the caissons bases would be placed on the materials barge for storage and transport.

Platform Hazel's jacket will be removed from the top downward to maximize safety. Each lift will be stacked on a materials barge for storage and transport. Currently, the bottom horizontal elevation of the platform is below the existing mudline, along with the grouted 27-foot-diameter caisson bases. The bottom horizontal and caisson bases will therefore be left buried in place to minimize bottom disturbance. Platform Hazel legs will be removed to 1 foot below the existing mudline. Once the cutting of the legs has occurred, the removal operations required for this platform would be similar to that described above for Platforms Hope, Heidi, and Hilda.

1.5.2 Pipeline Abandonment

Abandonment operations will include the flushing and pigging of all oil and gas pipelines. Flushing will continue until no visible hydrocarbons are observed. A seep tent shall be used if any lines can not be successfully flushed and plugged. The pipelines will be separated from the platforms, capped, and the ends jetted down below mudline. Pipeline spool pieces connecting the pipeline to the platforms risers will be recovered and blind flanges installed on each pipeline end. Some excavation may be required to expose the pipeline flanges, leaving a trench to be used for burial of the capped pipeline ends. It is expected that the disturbance to the seafloor

will be moderate and natural bottom contours are expected to be restored by current and tidal energy. Also during this period the power cables running between the platforms and shore will be cut, the ends jetted down, and covered with natural sediment.

Pipelines between Platform Hope and the shoreline will be left in service. In the past these pipelines serviced Platforms Hope and Heidi and are currently servicing Platforms Grace and Gail, located in federal waters. As proposed, Platforms Grace and Gail will continue to produce through these pipelines, which include a 10-inch oil (SACS), 12-inch oil (Gail/Grace), and 10-inch gas (Combined Streams).

The pipelines between Platform Hazel and the shoreline will be abandoned in place. These pipelines include an 8-inch out of service oil line, 6-inch gas, and 6-inch oil. The offshore ends of these pipelines will be separated from the platform, capped, and jetted below mudline as described above. The nearshore sections of these pipelines will be filled with grout from the top of the bluff to approximately 800 feet offshore.

The pipelines between platforms Heidi and Hope include a 10-inch gas lift, 10-inch gas, and 10-inch oil. These lines will be abandoned in place as described above. The pipelines between Platforms Hilda and Hazel include an 8-inch out of service oil line, 6-inch gas, and 6-inch oil. These lines will be abandoned in place as described above.

1.5.3 Seafloor Cleanup and Restoration

The final phase of the offshore abandonment project will involve the removal of debris located during the preabandonment surveys and any additional material dropped during removal of the platforms. The debris recovery will be performed over a 1,000-foot radius from the platforms with divers gathering and loading items onto a work boat. During the post-abandonment survey, all anchor scar locations will be logged and final survey maps submitted for commission review.

2.0 PROJECT DESCRIPTION

2.1 PRE-ABANDONMENT DEBRIS SURVEY

A pre-abandonment debris survey will document the quantity and location of suspected debris targets before the removal of the platform structure. This survey will also be used to identify pipelines and hard bottom areas to be avoided during work vessel anchoring operations. This survey will be performed with side scan sonar within a 1,000-foot radius of the platforms in accordance with State Lands Commission (SLC) guidelines.

2.1.1 Equipment

The survey will be performed using a 500-khz side scan sonar system such as the Klien 595 or equivalent. The survey will be conducted from a support vessel with a length of at least 50 feet. Positioning will be provided by a navigation system with 3-meter accuracy. Underwater positioning of the towfish will be based on slant range calculations.

2.1.2 Procedures

Survey lines will be run at 50-meter spacing in lines running East to West and North to South. Coverage will be interrupted by the structure, but the overlapping survey lines will complete coverage within 100 feet of the jacket on all sides. Tow speed will be between 3 and 5 knots.

2.1.3 Data Reduction

The data will be reduced to a suspected target listing showing position, size, and shape of the target.

2.1.4 Debris Recovery

Due to the potential for some small pieces of the platform topsides or jacket to fall during transfer to the materials barge, all debris will be recovered after the removal of the platform structure.

2.2 JACKET DEMOLITION PREPARATIONS

2.2.1 Equipment Spread

This work will be performed from a diving support vessel of about 165-foot Length Overall (LOA), or from a derrick barge. The vessel will be equipped with deep air surface supplied diving equipment, 10,000 psi hydroblasters, and underwater burning gear.

2.2.2 Preliminary Inspection

A remotely operated vehicle (ROV) may be used to plan the details of demolition operations and verify conditions upon which prior planning has been based. The information gathered could include debris locations on the structure, lift sling rigging locations and obstacles, and hull penetrations on caisson legs.

2.2.3 Cleaning

Divers with hydroblasting equipment will remove the marine growth from the legs and subsea bracing of each platform where cuts will be made.

2.2.4 Pre-rigging

Installation of some heavy lift slings may be performed to prepare for the first few lifts.

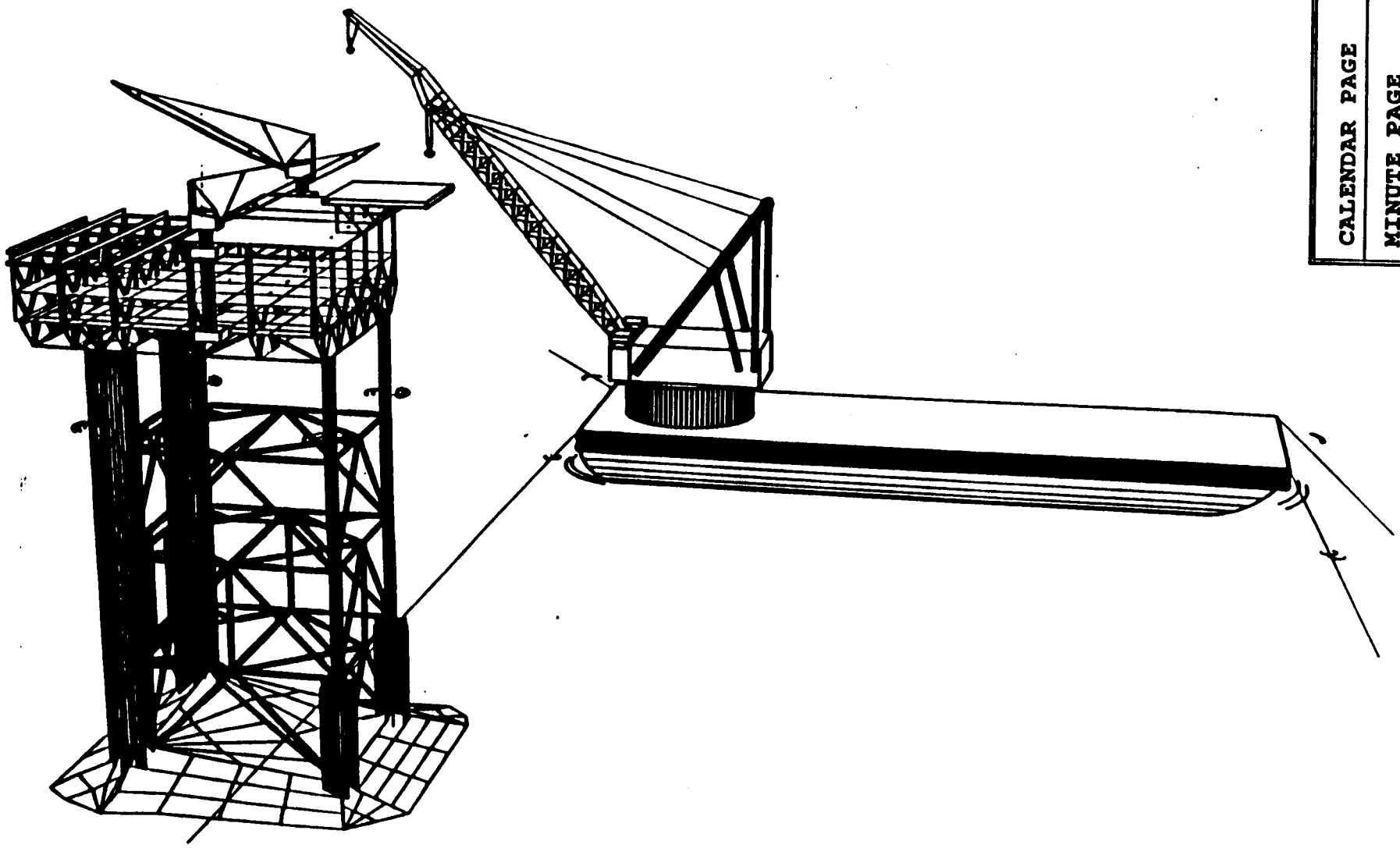
2.3 TOPSIDE REMOVAL

2.3.1 General

Prior to mobilization of the derrick barge and support vessels, a work crew with cutting torches and welding equipment will be brought to the platform. The workers will complete the decommissioning of the platform equipment.

2.3.2 Equipment

The initial stages of this work may be performed from the platform without derrick barge support. The derrick barge with a dedicated tug boat will be brought in when the first heavy lifts are ready to be performed (see Figure 2.3-1). This work may run concurrently with the jacket demolition preparations described in Section 2.5. Materials barges from 180-foot LOA to



SOURCE: International Diving Services

**DERRICK BARGE
TYPICAL CONFIGURATION
(500 TON SHOWN)
PLATFORMS HOPE, HEIDI
AND HILDA**

FIGURE 2.3-1

400-foot LOA will be utilized to receive the deck packages off-loaded. These barges may be stored on separate moorings near the structure and will always be tended by at least one tugboat in the area. Additional vessels, such as crew boats and a diving support vessel, will be used as required.

2.3.3 Cleaning of Tanks

Tanks and piping that have already been drained of operating fluids. They will be cleaned and prepared for removal. Fluids collected during the cleaning operations will be drained into appropriate containers on a work boat and transported to shore for appropriate treatment or disposal. The total volumes involved will total less than one barrel.

2.3.4 Removal of Small Items

The demolition crew will remove any small equipment items or loose material that will hinder the removal of large packages from the structure. The platform cranes or portable cranes may be used to assist in these operations.

2.3.5 Sectioning Decks

Decks will be cut into sections using oxy-acetylene torches, leaving adequate structural support until the rigging is in place for each lift.

2.3.6 Preparation of Rigging

The cutting of access holes and installation of structural padeyes for heavy lifts at specified locations will be a part of the rigging preparations. Certain lifts may be around members without the use of padeyes, as determined by the removal contractor. Heavy lift slings will be installed for the derrick barge crane.

2.3.7 Heavy Lifts

2.3.7.1 Lift Size

The size of the lifts will be determined by the capacity of the derrick barge crane used and the configuration of the deck packages. Many deck packages will be separated and removed in their original installation configuration.

2.3.7.2 Installation of Lift Rigging

The platform rigging crew will attach the lift slings to the crane hook and the crane will lift the slings to take out most of the slack.

2.3.7.3 Final Structural Cuts

The rigging crew will make final cuts to allow the package to be lifted.

2.3.7.4 Derrick Barge Position

The lifts will be made from the derrick barge, which will be anchored on a 4-point moor, positioned alongside the structure. The barge may actually make lifts while positioned on any side of the structure, depending upon its lift capacity and configuration. As described in Section 3.4, Mooring Operations, no heavy lifts will be made over the Gail/Grace pipelines while they are in service during the removal of the platforms.

2.3.7.5 Dynamic Load Preparations

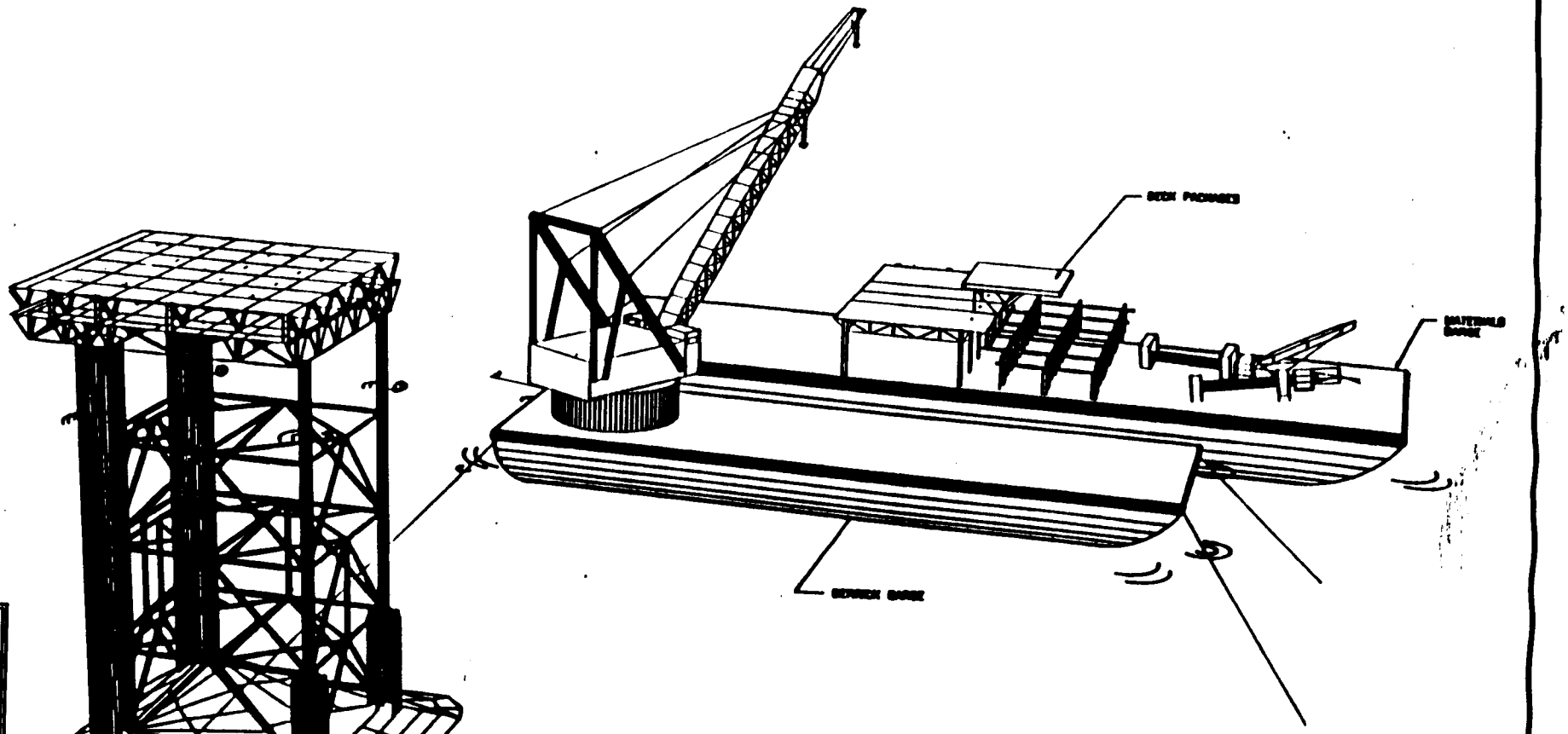
The crane lifts will be somewhat dynamic, due to the barge motion in the swell. Therefore, temporary guides will be installed where necessary to permit the load to be set back down accurately on the platform in the event a lift must be aborted.

2.3.7.6 Off-Loading on Materials Barges

A materials barge will be maneuvered with tug boats alongside the derrick barge, to receive each load. Deck packages will be stacked on the materials barge to maximize space (see Figures 2.3-1 and 2.3-2). The materials barges will be towed to the Los Angeles/Long Beach Harbor when completely loaded, and when the onshore staging area is prepared to receive them.

2.3.8 Remote Mooring

Remote moorings will be used to anchor materials barges before and after loading. These moorings will consist of a 30,000-pound anchor, 2-3/4 inch chain ground leg, dip section, and riser, with a West Coast Buoy.



DECK PACKAGE REMOVAL
PLATFORMS HOPE,
HEIDI AND HILDA

CALENDAR PAGE 592
MINUTE PAGE 3293

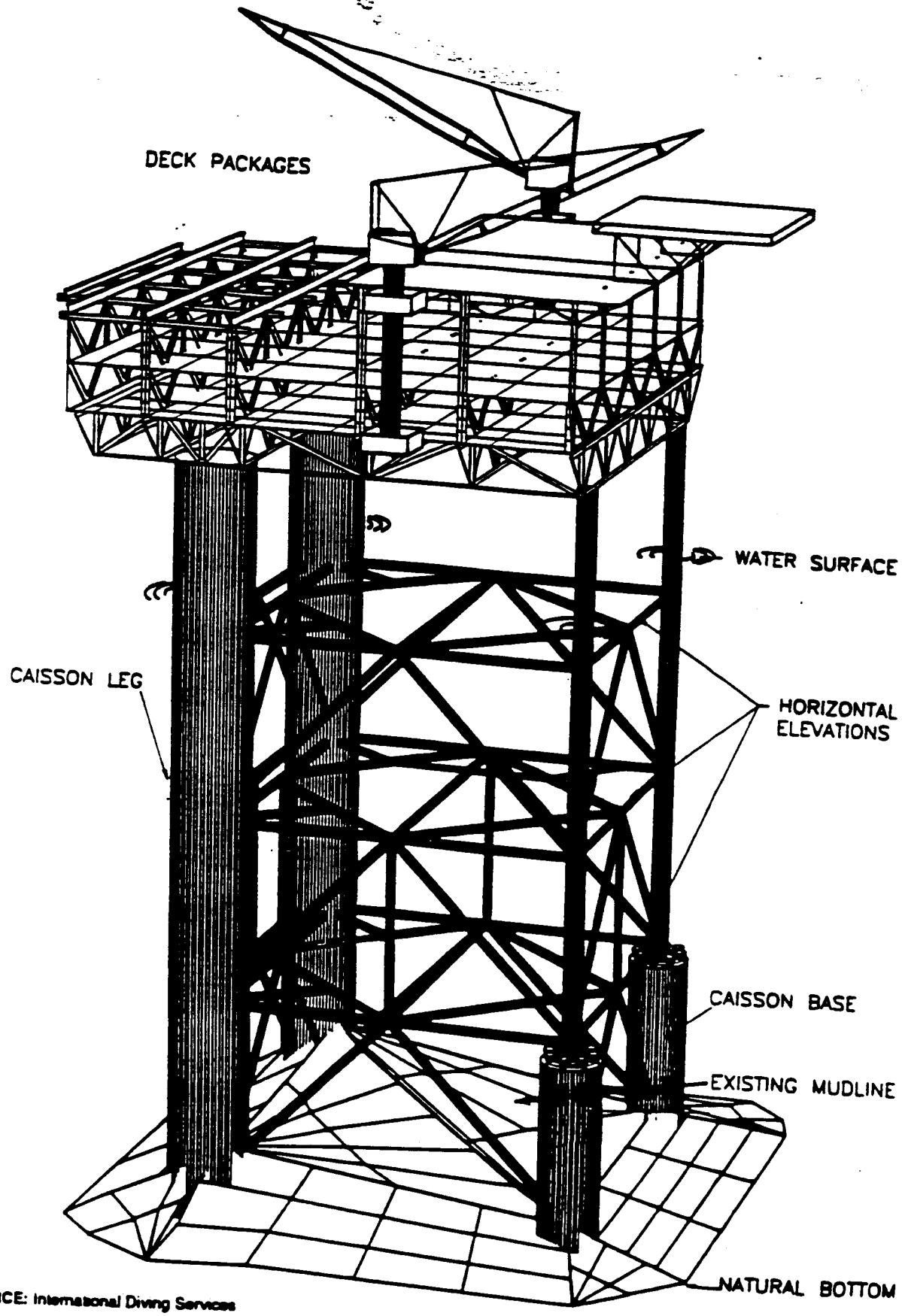
2.4 PILE AND CONDUCTOR CUTTING OPERATIONS

2.4.1 General

A similar method will be used to remove the platform piles and conductors on Platforms Hope, Heidi, and Hilda. Platform Hazel is of a different construction, and it's removal is discussed in Section 2.5.5. Before the platform jackets can be removed, it will be necessary to cut the pilings which anchor the platforms, and any well conductors that were not removed with the well abandonment rig (Figures 2.4-1 and 2.4-2). The cutting of piling and conductors inside the caisson legs and skirt pile guides will involve the use of specialized equipment and techniques. Abandonment criteria for the proposed project fall under the jurisdiction of the State Lands Commission. The California Code of Regulations, Title 14, Division 2, Chapter 4, Section 1745.8 states, "All casing and anchor piling shall be cut and removed from not more that 5 feet below the ocean floor." It should be noted that explosives will be located at least 8 feet below natural mudline. The cut points on Platform Hazel have been selected to avoid significant disturbance to the seafloor associated with removing the caisson basses.

2.4.2 Cutting Method

The use of explosives is the planned method of cutting the platform piles and conductors. The heavy lifts required to remove the jacket structures must be made with a high level of confidence that the piling and conductors anchoring the structure to the seafloor have been completely severed. Several methods were considered for the cutting tasks, including explosive charges and mechanical cutting. The use of explosives has been the dominant method of cutting piles in the Gulf of Mexico where such experience is greatest. The use of explosive charges lowered into piles has been proven as the most reliable method of making complete cuts. Since the piles and conductors will be cut beneath the platform legs and below the mudline, there will be no way to verify that complete cuts have been made in all the piles which anchor a platform leg until a derrick barge begins to lift the leg from the seafloor. If an incomplete cut is discovered at this point, there would be serious safety and logistical concerns associated with aborting the lift and redeploying the cutting equipment in the pile. For this reason, it is critical that a cutting method with a high likelihood of making a complete cut on the first attempt be employed. In the Gulf of Mexico platform removals, explosives have proven to be much more reliable in making complete cuts than mechanical cutters. The poor reliability of mechanical cutters was also noted during the removal of Texaco's Platforms Helen and Herman where the use of casing cutters resulted in problems associated with incomplete cuts. Therefore, explosives represent the most effective means of cutting the piles. The ability to verify that a complete cut has been made by mechanical cutters is difficult. Should incomplete cuts occur, there will be an increased potential for aborted lifts and their associated safety problems.

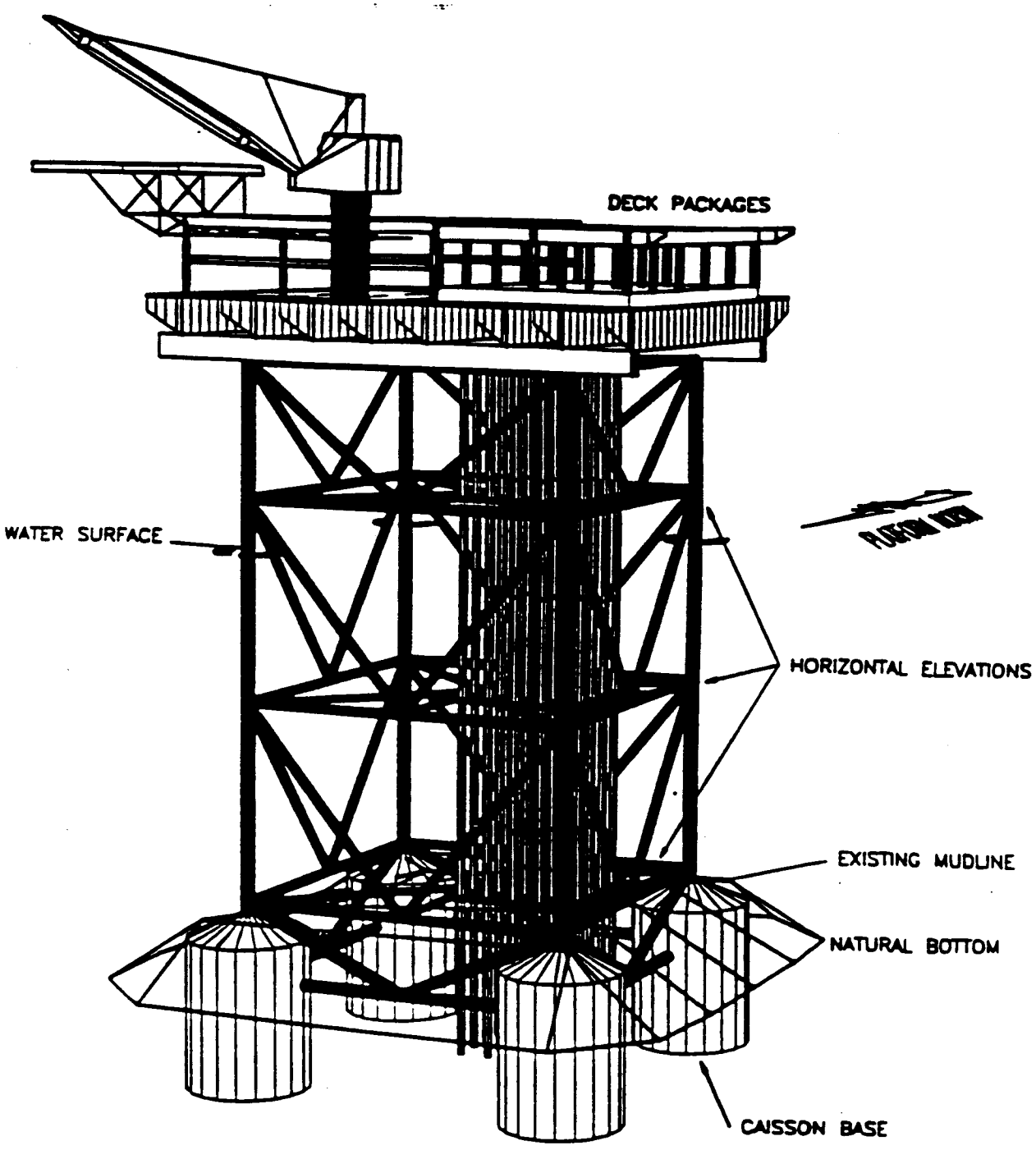


SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
ELEVATIONS

CALENDAR PAGE 594
MINUTE PAGE 3295

FIGURE 2.4-1



SOURCE: International Diving Services

PLATFORM HAZEL
ELEVATIONS

CALENDAR PAGE	595
MINUTE PAGE	3296

FIGURE 2.4-2

A key difference between explosives vs. mechanical cutting operations is the timing in which cutting operations occur. Explosive cuts will be made after the platform topsides have been removed and cutting operations can be conducted from work barges and vessels. Mechanical cutting operations require a stable base and the platform decks would be left in place to position equipment. This exposes the platform to a long time period in which the piles and conductors have been cut and topside removal operations would be completed after cutting. Mechanical cutting operations are expected to take 3 to 4 weeks per platform to complete. Once the cuts are completed, it will take 1 month to remove the platform jacket. This represents an exposure window of 2 months between the beginning of pile cutting to the end of the platform removal. Since explosive cutting would only take 3 or 4 days per platform to complete, the exposure window would only be one month. Once the pile cutting begins, the platform's ability to withstand horizontal loading is reduced. The exposed platform may shift or become damaged during extreme weather conditions or a seismic event. Such unstable conditions would significantly complicate removal operations and result in unsafe working conditions for dismantling crews. Therefore, the use of explosives is the planned method of making the conductor and pile cuts.

2.4.3 Timing of Cutting Operations

The cutting of anchor piling below the jacket legs will leave the structure free-standing. The use of explosives allows the cutting operation to be completed quickly, after the topsides have been removed, and with a shorter time period between initial cutting of piles and jacket removal.

2.4.4 Verification of Pile Internal Clearance and Jetting of Pile

2.4.4.1 Pile Internal Clearance

The piling located in the skirt pile guides has been open to the sea. Verification must be made to ensure that the inside of the pile is clear several feet below the planned cut location. Divers will be used to sound the pile using a gauge lowered on a line at the top of the pile.

2.4.4.2 Pile Jetting

If the pile is not clear, jetting may be performed to provide this clearance. Pile jetting would be performed with a 10,000 psi hydroblaster, in conjunction with a low pressure/high volume jet pump.

2.4.5 Cutting Methodology Using Explosives

2.4.5.1 Internal Cut

The piling and conductors to be cut will be accessed internally to complete the cut. An explosive charge will be lowered from the production deck elevation to a point approximately 3 feet below natural mudline (15 to 25 feet below the existing mudline). As such, all explosive cuts would occur within the piles or conductors and no open water detonations would occur. This will confine the explosive impacts to below the base of the platform legs and below the existing mudline (see Figure 2.4-1).

2.4.5.2 Explosive Charges

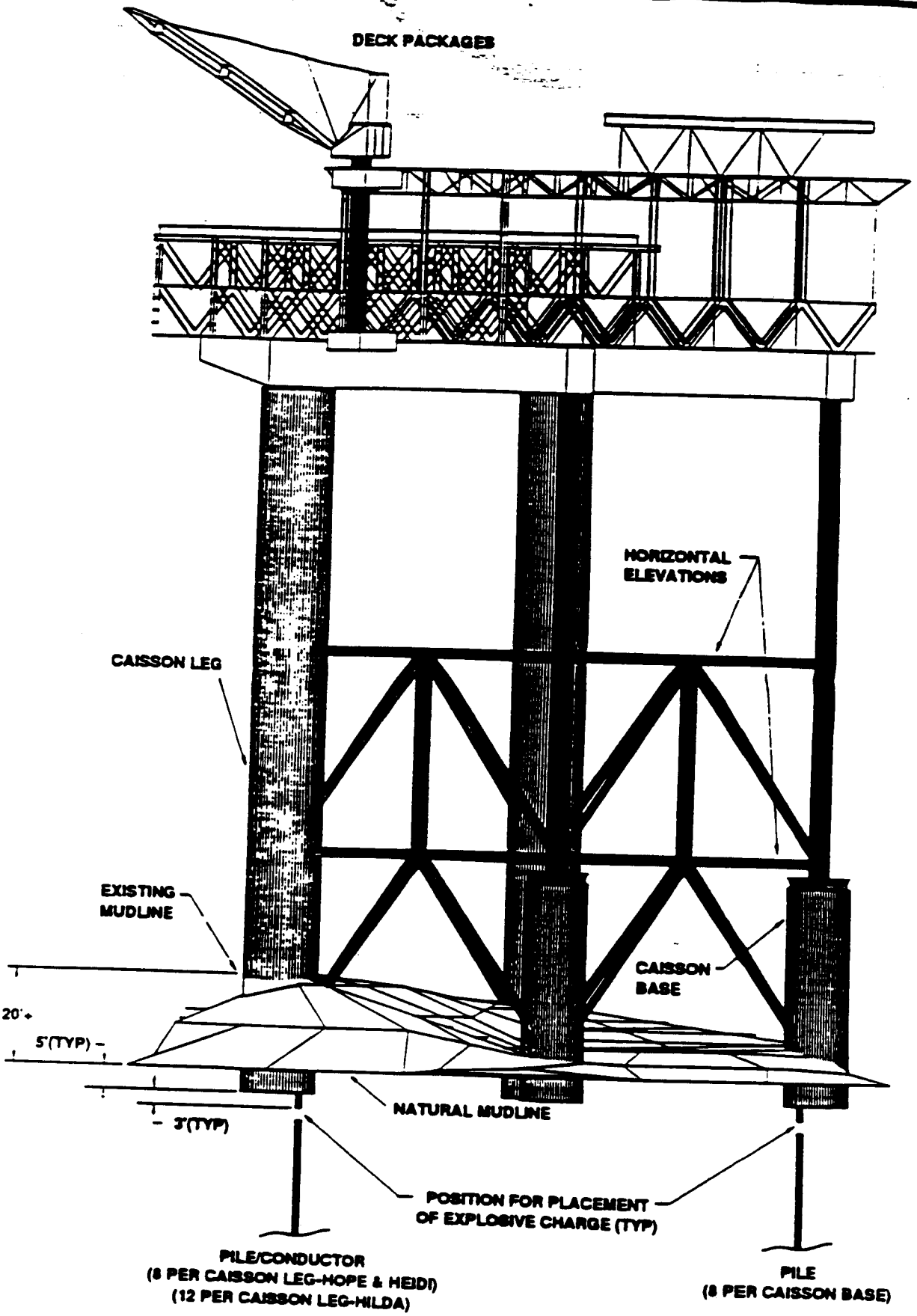
The explosive charges will be cylindrical in shape, and will be lowered down hole with a concrete weight above the charge. The concrete will provide a tamping effect when the charge is detonated. The charge will be designed in accordance with the "collision charge" principle, to detonate from the top and bottom ends simultaneously, creating an outward cutting force when the explosions meet in the center of the charge (see Figure 2.4-3 for placement of charge location, and Figure 1.4-1 in the Discussion of Environmental Impacts for a graphic depiction of this process). The explosive proposed is nitromethane, a binary explosive which consists of two liquids, neither of which is individually classed as an explosive. This allows for simpler and safer transportation and storage of the material. No hazardous substances will be released to the ocean following detonation of the explosive charges. Chemicals used in the explosive charges will become inert gasses following detonation.

2.4.5.3 Explosive Charge Size

There will be 32 to 40 individual charges each containing between 25 and 45 pounds, depending on the material to be cut, of explosive material detonated per platform .

2.4.5.4 Staggered Charges

The detonation of charges will be staggered to limit the water shock forces to the magnitude of one charge at a time.



HOPE, HEIDI, AND HILDA ABANDONMENT
PLACEMENT OF EXPLOSIVE CHARGES
FOR CONDUCTOR/PILE CUTTING OPERATIONS

SOURCE: International Diving Services

CALENDAR PAGE 598
MINUTE PAGE 3299

FIGURE 2.4-3

2.4.5.5 Duration of Cutting Operations Using Explosives

It is estimated that cutting operations will be performed for approximately 3 to 4 days per platform.

2.4.6 Mechanical Cutting Methodologies

As an alternative to explosives, two mechanical cutting methodologies have been evaluated for this work. The first is a casing cutter using a cutting tool on a rotating drill string, and the second is abrasive cutting using a grit entrained high pressure water jet system. In addition, embrittlement techniques were reviewed but not evaluated further due to logistical constraints.

2.4.6.1 Casing Cutter

This method is similar to methods used in normal drilling operations for cutting casing and well conductors for abandonment. In a platform removal application, a portable system would be used without the drilling rig. The system is comprised of a power swivel, drill string, and cutting tool, which are lowered downhole by the platform crane or a portable crane. The casing cutter has a three blade carbide cutter that is lowered into the well in the retracted configuration to the cut location. The blade opens when hydraulic (water) pressure is applied to the bit, and the power swivel turns the assembly on the platform drill deck.

2.4.6.2 Abrasive Cutter

This method incorporates a high pressure water jet with a grit entrainment system to force particles (i.e., copper slag) into the cut at pressures up to 10,000 psi. The cutter nozzle is fitted on a robotic assembly that is lowered down the well conductor or pile. The assembly rotates the cutter nozzle around the circumference of the conductor to be cut. Cutting rates are adjusted based on the wall thickness and number of strings to be cut.

These mechanical cutting methods have not proven to be highly reliable in actual field experience and require a stable work platform (i.e., platform decks).

2.4.6.3 Embrittlement Technique

The embrittlement technique (extreme cold being applied to the structural member followed by a physical blow. The blow results in the crackling and separation at impact point). Such a method may be effective on exposed members, but would be extremely difficult to conduct in

the confined piles and conductors below mudline; therefore this method is not considered practical.

2.5 JACKET REMOVAL

2.5.1 General

After the topside decks have been removed, a dive crew will be used to cut the jacket into liftable sections. Structural members of the platform jacket will be cut by divers with oxy-arc torches.

2.5.2 Aids To Navigation

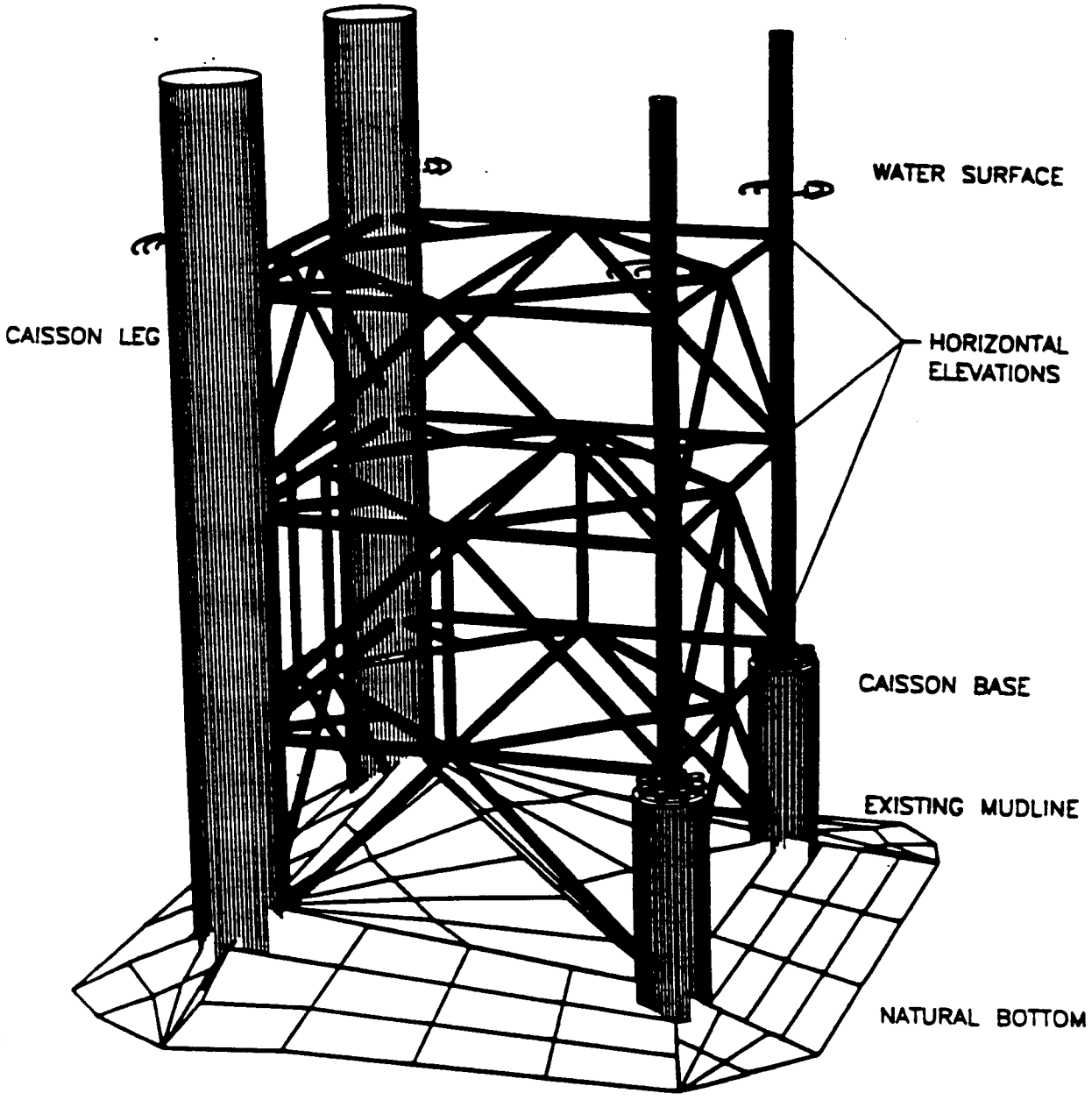
The existing aids to navigation on the platform (lights) will be maintained during the topsides removal and during the jacket removal. These lights will be relocated on the legs after the decks are removed to provide identification at night, if the barge is required to move off location.

2.5.3 Equipment

The derrick barge and tug boat used for topsides removal will be used to remove the jacket. Materials barges from 180-foot LOA to 400-foot LOA will be used to receive the jacket sections lifted. These barges may be stored on separate moorings near the structure and will always be tended by at least one tugboat in the area. Additional vessels, such as crew boats and a diving support vessel, will be used as required.

2.5.4 Removal Plan for Platforms Hope, Heidi, and Hilda

Platforms Hope, Heidi, and Hilda all have similar structural configurations, including two large caisson legs originally used to float the jacket to the project site. Once at the platform installation site, these legs were flooded and sunken in place (see Figure 2.5-1). The reverse of this process will be used to remove the structure. Many details of the jacket removal plan will depend on the equipment used by the demolition contractor selected for this work. A likely sequence of events is described as follows:



SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
WITH DECK PACKAGES REMOVED

CALENDAR PAGE	601
MINUTE PAGE	3302

FIGURE 2.5-1

2.5.4.1 Upper Bracing Removal

The jacket will be removed from the top down to maximize diver safety. Each lift will be stacked on a materials barge for storage and transport. The bottom horizontal elevation will be left in place to maintain some stability between the legs (see Figure 2.5-2).

2.5.4.2 54-Inch Leg Removal

The 54-inch-diameter legs will be removed down to the caisson bases at the bottom horizontal elevation. Each lift will be stacked on a materials barge for storage and transport. This will leave the large caisson legs, the bottom horizontal elevation, and the caisson bases intact.

2.5.4.3 Caisson Leg Removal

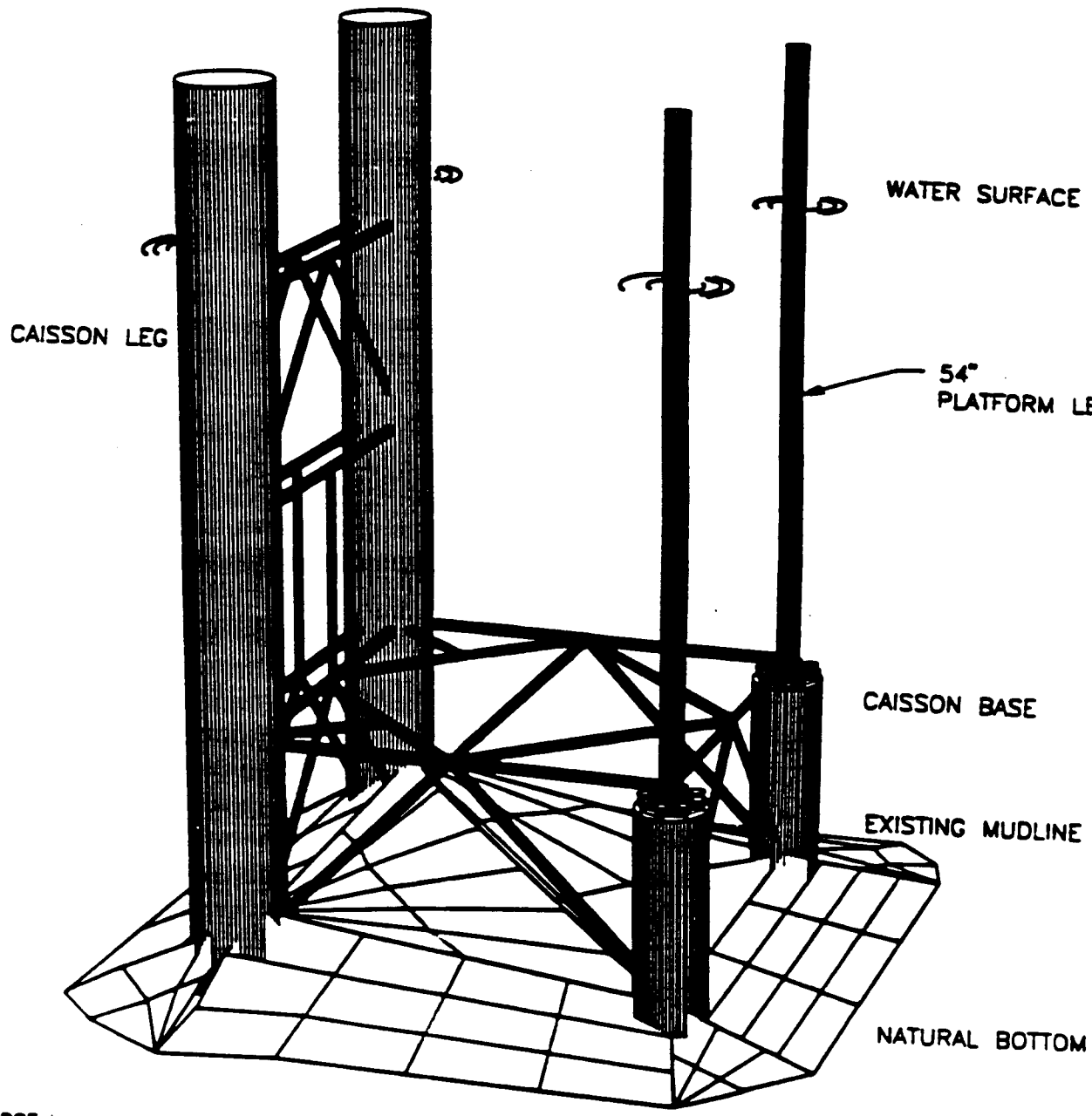
Final cuts utilizing torches will be made on the bottom horizontal bracing to separate the large caisson legs from the rest of the structure. No explosives would be used for this procedure. All bracing between the two caisson legs will be left intact. The derrick barge will adjust position, and a tug will attach a tow bridle to the caisson legs (see Figure 2.5-3). Pumping will be commenced from a utility vessel to deballast a portion of the legs to achieve moderate positive buoyancy. Upon achieving positive buoyancy, the tug will initiate pulling operations to free the caisson legs from the bottom. Additional pulling forces may be applied by winches on the derrick barge to achieve the breakout force required. The legs will be freed, and pumping operations will continue from the utility vessel while the tug tows the legs to a secure location. Upon completion of pumping operations the legs will be moored to a temporary mooring until towing preparations have been completed (see Figure 2.5-4). The legs may be separated before towing by cutting and recovery of connecting bracing and conductor guides alongside the derrick barge.

2.5.4.4 Bottom Bracing Removal

The bottom bracing will be cut and loaded on the materials barge.

2.5.4.5 Caisson Base Removal

The caisson bases for the 54-inch legs will be removed one at a time. Drain holes will be cut in the caissons to allow water to drain as the load is held at the surface. The caisson bases will be placed on the materials barge for transport and disposal (see Figure 2.5-5).

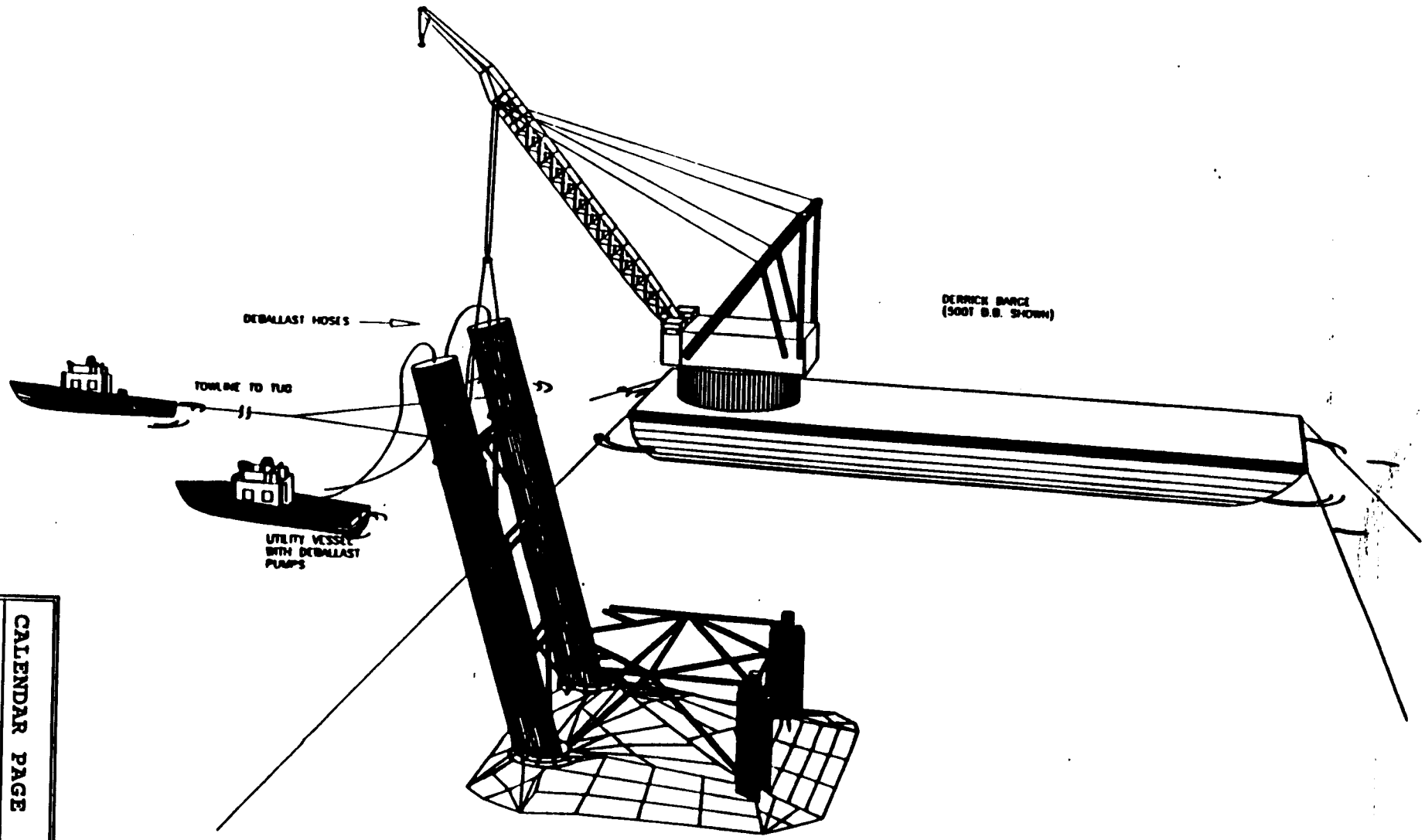


SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
WITH UPPER BRACING REMOVED

CALENDAR PAGE	603
MINUTE PAGE	3304

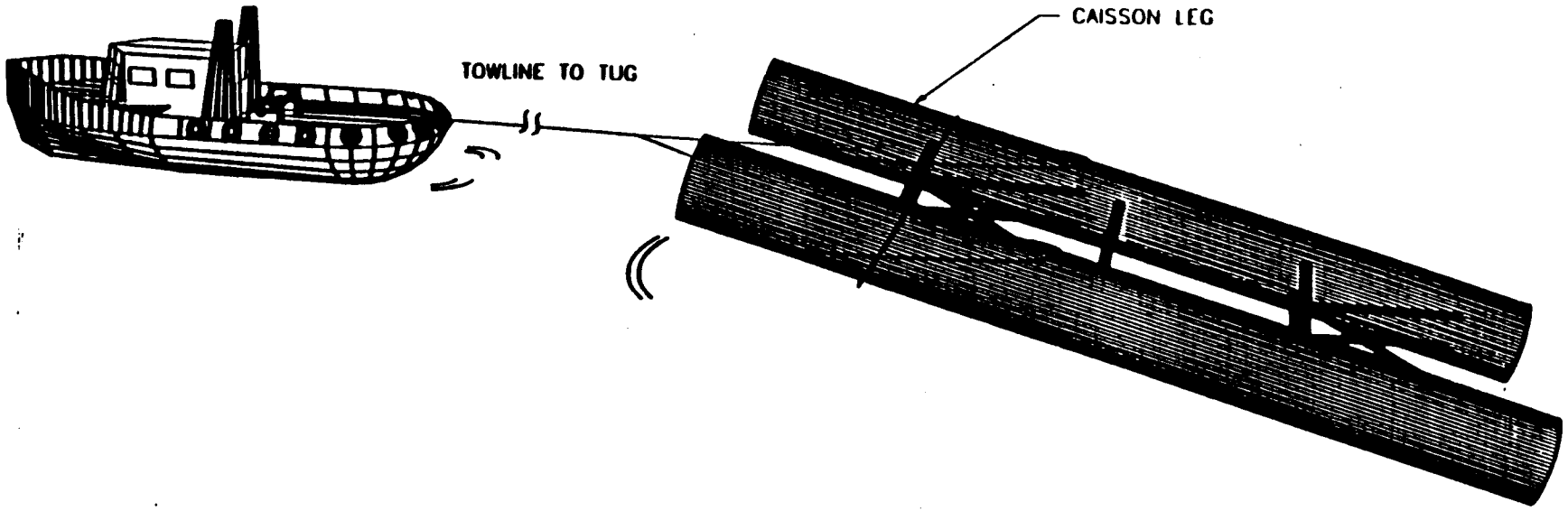
FIGURE 2.5-2



DERRICK BARGE REMOVES CAISSON LEGS PLATFORMS HOPE, HEIDI AND HILDA

CALENDAR PAGE 604
MINUTE PAGE 3005

SOURCE: [illegible]



CAISSON LEGS UNDER TOW DURING FINAL DEBALLASTING PLATFORMS HOPE, HEIDI AND HILDA

SOURCE: International Diving Services

FIGURE 2.5-4

2.5.5 Removal Plan for Platform Hazel

Platform Hazel is a gravity-based structure which utilizes four caisson bases to anchor the jacket structure. These four caisson bases were used to float the jacket to the project site. Once at the platform installation site, these caissons were flooded, sunk in place, and filled with sand and cement.

2.5.5.1 Upper Bracing Removal

The jacket will be removed from the top down to maximize diver safety (see Figures 2.5-6 and 2.5-7). The 36-inch-diameter vertical legs will be removed down to the caisson bases. Each lift will be stacked on a materials barge for storage and transport. This will leave the grouted caisson bases and the bottom horizontal elevation and some vertical diagonal braces buried in place. The legs will be removed at 1 foot below existing mudline, to meet with State Lands Commission abandonment procedures. Explosive cuts will not be made on Platform Hazel. The platform jacket legs will be cut with oxy-acetylene torches near the top of the caisson base which is located just below the existing mudline.

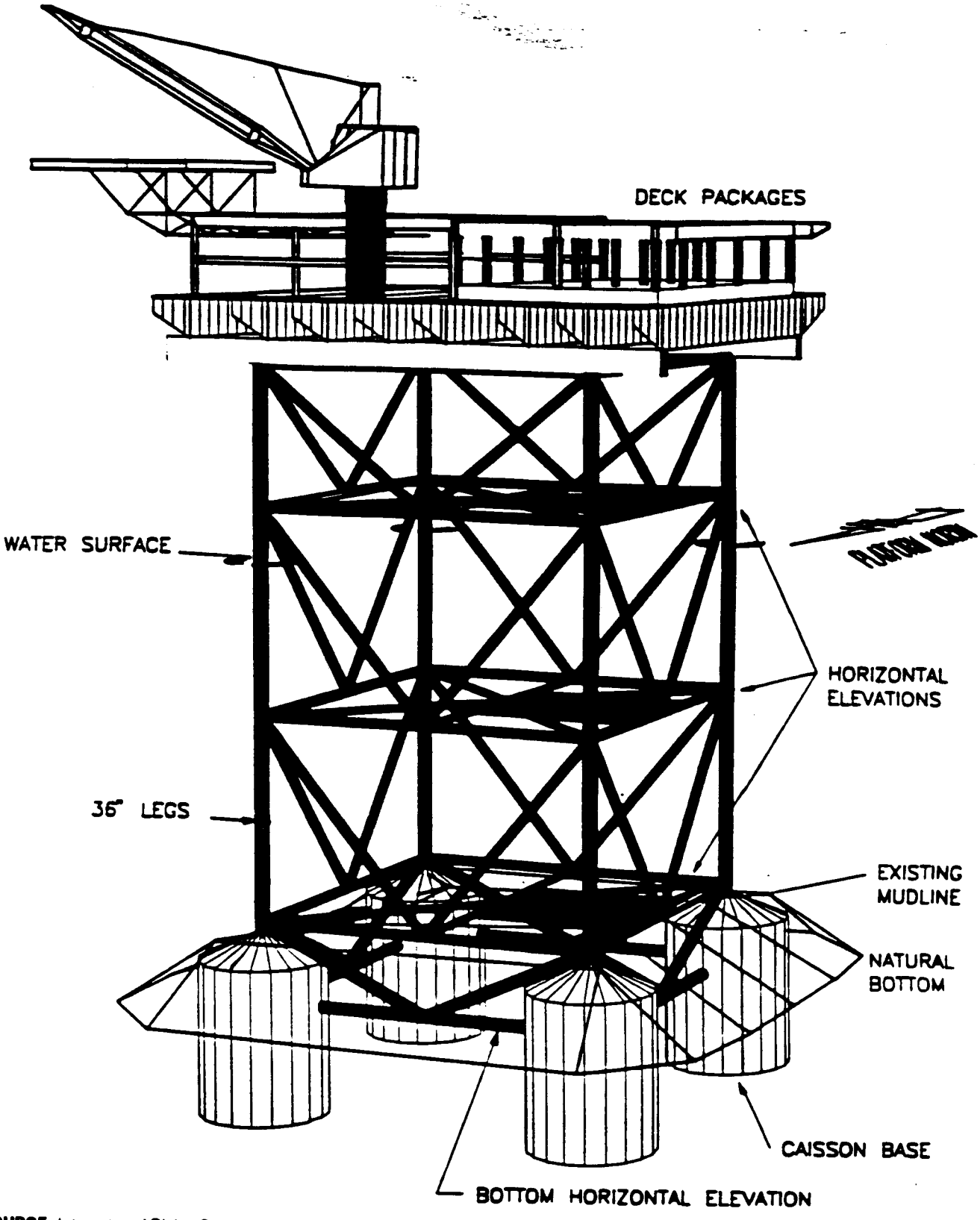
2.5.5.2 Caisson Base Abandonment

The caisson bases for the 36-inch legs will be left in place, along with the connecting tubular braces, all of which are buried. The existing mudline at the platform is now above the top of the caissons (see Figure 2.5-8).

Depth of burial of Platform Hazel's caisson bases and cross members varies across the platform base. Surveys indicate that the disposal pile and associated marine growth reach approximately 26 feet above the natural mudline. Abandonment operations will remove the platform legs to the top of the caisson base or at least 1 foot below mudline, whichever is higher. A post-abandonment survey of the site will confirm the condition of the remaining mound. Should any part of the platform, caissons, or cross members be exposed, Chevron will remove any exposed structural components.

2.5.6 Debris Recovery

The debris on bottom will be recovered by divers after the final heavy lifts have been made. Further debris location will be performed using Mesotech 971 Color Scanning Sonar or equivalent, operated from an ROV or held by a diver. The debris recovery will be performed over a 1,000-foot radius from the platform. Targets located during the pre-abandonment debris

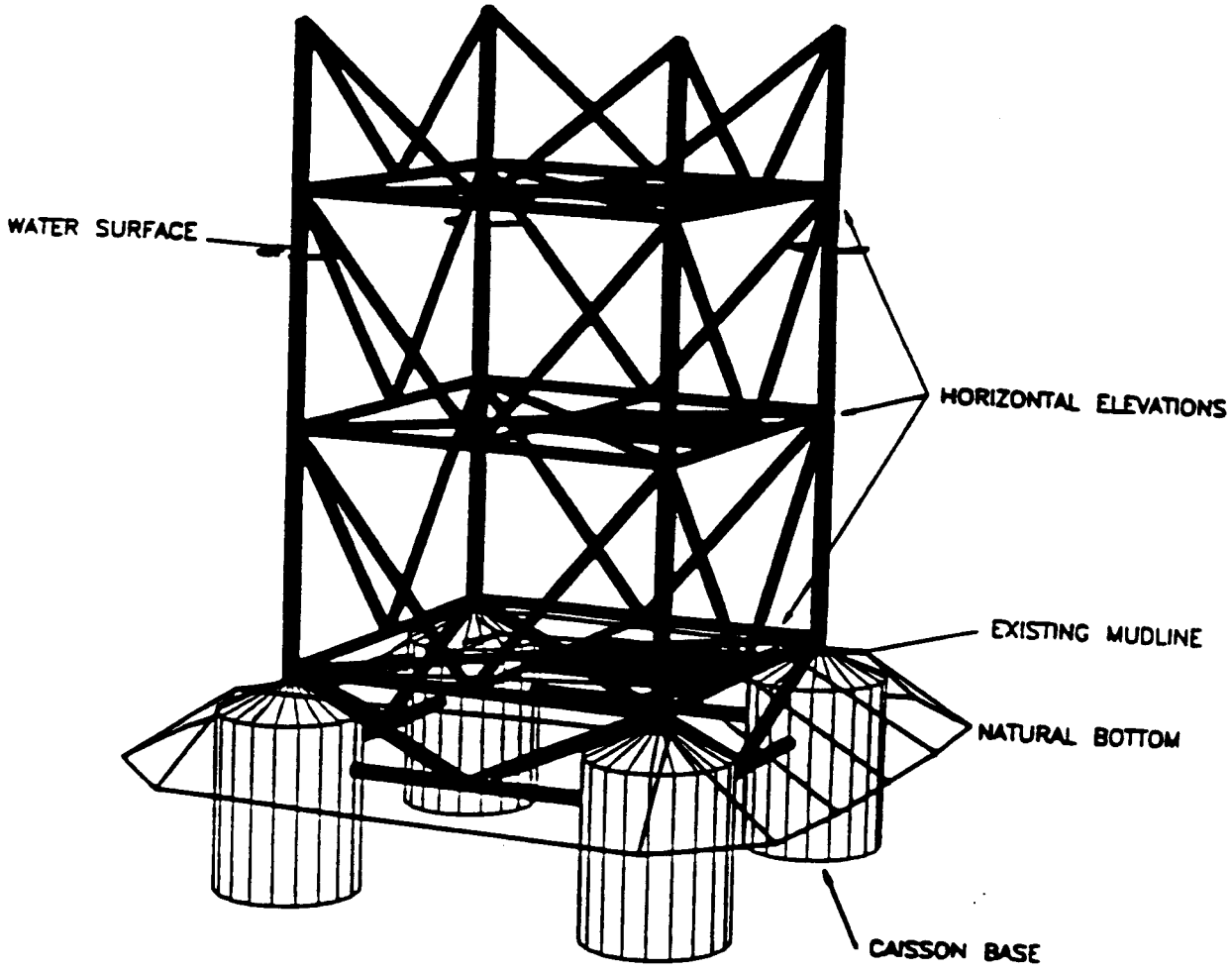


SOURCE: International Diving Services

WELL CONDUCTORS REMOVED
PLATFORM HAZEL

CALENDAR PAGE	607
MINUTE PAGE	3308

FIGURE 2.5-6

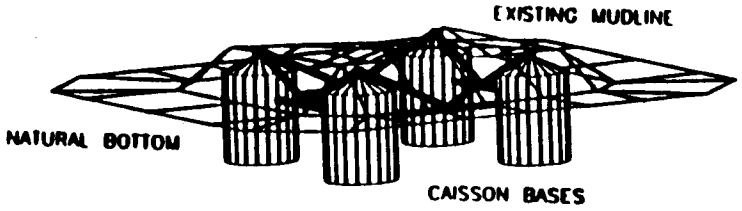


SOURCE: International Diving Services

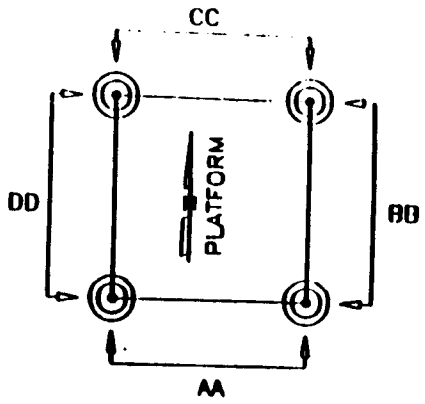
DECK PACKAGES REMOVED
PLATFORM HAZEL

CALENDAR PAGE	608
MINUTE PAGE	3309

FIGURE 2.5-7

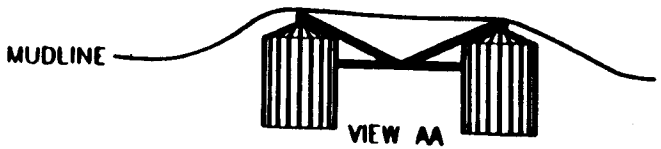


THREE DIMENSIONAL VIEW



VIEW BB
EAST ELEVATION

VIEW DD
WEST ELEVATION



VIEW AA
SOUTH ELEVATION

VIEW CC
NORTH ELEVATION

NOTE:
CAISSON BASES ABANDONED IN PLACE. LEGS WILL BE CUT FLUSH WITH TOP OF CAISSON BASE OR ONE FOOT BELOW EXISTING MUDLINE (WHICHEVER IS HIGHER). VERTICAL DIAGONAL BRACES WILL BE CUT OFF, IF NECESSARY IN LIKE MANNER.

MINUTE PAGE 2240

CALENDAR PAGE 609

SOURCE: ... of Driving Simulation

CAISSON BASES ABANDONED IN PLACE PLATFORM HA...

survey will be verified and identified using an ROV or divers, with the assistance of a satellite surface navigation system integrated to an acoustic tracking system. Targets that are verified as debris will be recovered by divers with assistance from a surface crane onboard the diving support vessel. At the same time the anchor scars left by the derrick barges will be examined and leveled if necessary.

2.6 PIPELINE ABANDONMENT

2.6.1 General

The platform decommissioning operations will include the flushing and pigging of all pipelines as discussed in Section 2.6.2 below. Such operations will be conducted prior to platform structure removals. These pipelines were originally installed on the sea bottom; however, natural sediment deposition has resulted in the burial of most of the pipelines. To avoid disturbance to the natural bottom, the pipelines will be abandoned in place. Annual ROV surveys conducted by Chevron between the years 1986 and 1991 have been reviewed to determine the burial state of the lines. The annual surveys confirmed that all offshore portions of the lines between Platforms Hilda and Hazel and between Hazel and the shoreline are buried approximately 200 feet from the platforms and remain buried through the surf zone. Visual surveys of nearshore regions have also confirmed complete burial of the Hazel pipelines. The pipelines between platforms Heidi and Hope are intermittently exposed but they are completely buried for the majority of their route.

Actual depth of burial cannot be determined from the ROV surveys. Removal of exposed segments of pipeline would result in impacts associated with cutting the segments and burial of the pipeline ends. Bottom disturbance in such a case could be a potentially significant environmental impact, depending on depth of burial, sediments in place, and benthic communities present. Abandonment in place of the entire length also provides bottom stability for the whole pipeline.

The pipelines will be separated from the platform riser, capped, and the ends jetted down below mudline. No pipelines will be cut or opened until testing of flushed seawater confirms removal of residual hydrocarbons to acceptable levels.

2.6.2 Flushing and Pigging of Pipelines

The existing shipping pumps on the platforms will be used to pump a minimum of two pipeline volumes of seawater and two scraper pigs or oversize poly-pigs to remove hydrocarbons

remaining on the interior walls of the pipelines. Additional seawater will be pumped, as necessary, until no visual hydrocarbons are present in the flush water.

Flush water will be pumped to the Carpinteria plant, treated through the oil/water separators, and discharged in accordance with the plant's NPDES permit. Water quality analysis will be conducted on the flushed water as required by the permit.

2.6.3 Removal of Spool Pieces and Pull Sleds

After the pipelines have been flushed, they will be disconnected from the platform risers at the seafloor and capped. Where possible, the pipelines will be disconnected at existing subsea flanges at the seafloor and a blind flange will be installed to cap the line. If an existing subsea flange is not available, the pipeline will be cut at the seafloor using an oxy-arc torch. The pipeline stub will be capped using a cylindrical sleeve with a plate seal welded to one end. The open end of the sleeve will be placed over the end of the pipe stub and three contact bolts will secure the sleeve to the pipe. The annulus between the sleeve and the pipe will be sealed with an epoxy sealing compound.

The pipe spool piece between the pipeline cut location and the platform riser will be disconnected from the riser and recovered. The pipeline risers will be recovered with the platform jackets.

2.6.4 Burial of Pipeline Ends

The pipeline ends will be jetted in 1 foot below mudline using a high volume diver-held hand jet, and the excavation will be backfilled in a similar manner. The pipeline pull sleds will be left in place if the pipelines are below mudline prior to cutting. If the pipelines are exposed at the cut location, the pull sled will be removed to facilitate burial of the pipeline end.

2.6.5 Nearshore Pipeline Abandonment

2.6.5.1 Platform Hope to Shore

Two of the three pipelines running from Platform Hope to shore will continue to transport OCS oil and gas after Hope has been removed, and their abandonment is not included in this project. The third pipeline will be out of service but will remain in place. The nearshore abandonment of this pipeline will be performed in conjunction with the pipelines which are being left in service. The platforms currently serviced by these pipelines include Hope, Heidi, Grace,

and Gail. Platforms Grace and Gail will continue to transport through two of these pipelines, which reach landfall to the east of Casitas Pier and are listed as follows:

10-inch SACS oil/water
10-inch Oil Gail/Grace
10-inch Gas (Combined Streams)

Prior to Platform Hope jacket removal, the 10-inch Gail/Grace oil and the 10-inch gas pipelines will be rerouted 150 feet east of the structure. The proposed pipeline rerouting is being processed as a separate project and will be evaluated under the auspices of the California Coastal Commission in conjunction with the County of Santa Barbara and other responsible agencies.

2.6.5.2 Platform Hazel to Shore

The three pipelines servicing Hilda and Hazel and running to shore will be abandoned in place to minimize environmental impacts associated with removal operations. As such, no disruption of the beach or bluff face will occur. Over an approximately 30-year period, the Hazel-to-shore pipelines have remained buried during numerous severe storms. Monitoring of the pipeline landfall has confirmed that the pipelines have remained buried and future exposure by natural forces is unlikely. In addition, abandonment in place poses no significant risk or hazard and, thus, represents the environmentally superior alternative to the disruption caused by removing the lines across the beach. The pipelines to be abandoned are as follows:

8-inch (Out of Service)
6-inch gas
6-inch oil and water

a. **Pipelines Grouted 800 feet Offshore from Bluff.** Upon completion of the flushing and pigging operations, the nearshore segment of the three pipelines will be grouted. Each line will be grouted in a separate operation from a portable cement unit located onshore. A pig will be inserted into the pipelines at the valve box on the bluff and grout will be introduced and pumped until the pig is at a point where the water depth offshore is -15 feet MLLW (approximately 800 feet) from the bluff. This measurement will be based on volumetric calculations. As previously stated, the pipeline is completely buried from the bluff through the surf zone. Abandonment in place with internal grouting avoids the impacts associated with exposing and removing the pipeline in the surf zone and beach.

2.6.6 Offshore Pipeline Abandonment

2.6.6.1 Platform Heidi to Hope Pipelines

The Heidi to Hope pipelines are comprised of the following lines:

10-inch Gas Lift
10-inch Gas
10-inch Oil and water

These lines will be abandoned in place as described in items 2.6-1 through 2.6-4 above.

2.6.6.2 Platform Hilda to Hazel Pipelines

The Hilda to Hazel pipelines consist of the following lines:

8-inch Out of Service
6-inch Gas
6-inch Oil and water

These lines will be abandoned in place as described in items 2.6-1 through 2.6-4 above.

2.6.6.3 Pipelines to Subsea Wells

Abandonment of the subsea wells located shoreward of Platform Hilda will be conducted as a separate project and evaluated under separate permitting and environmental review. The pipelines between these wells and platform Hilda will be abandoned in place prior to the platform removal as described in items 2.6.2 through 2.6.4 above. The pipelines associated with the subsea wells are as follows:

4-inch Flowline - Pool
4-inch Flowline - Gauge
2-inch Gas Lift
1-inch Hydraulic

2.7 POWER CABLE ABANDONMENT

2.7.1 General

Electrical power supply to each platform is currently provided by subsea cable. Since their installation, these cables have been buried by natural sediment deposition. To avoid disturbance to the natural bottom, these cables will be abandoned in place, except in the case of the shore end of the cable to Platform Hope. The power cables will be cut at the base of each platform and the ends will be jetted down into the bottom.

2.7.2 Cable Cutting

The power cable will be excavated where it enters the mudline using diver-held air lifts. The cable will be cut one foot below mudline with an oxy-arc torch or a mechanical cutter.

2.7.3 Cable End Burial

The cable end will be jetted down an additional foot and covered with natural sediment. A hand jet will be used to backfill around the exposed cable end.

2.7.4 Nearshore Abandonment of Hazel Power Cable

The power cable to Platform Hazel comes ashore at Loon Point in Summerland where it terminates in a switchgear box on the top of the bluff. This cable was buried several feet in the nearshore area when it was installed. To avoid disturbance to the beach and bluff, the cable will be abandoned in place. The cable will be severed at the switchgear box and the cable end will be reburied.

2.7.5 Nearshore Abandonment of Hope Power Cable

The power cable to Platform Hope comes ashore at the end of Casitas Pier. This cable was not trenched originally, and lies near the mudline, where it is possible that it could be exposed in the future. The cable will be severed at the junction box at the end of the pier and at a subsea point 800 feet offshore from the bluff, where it becomes buried deep enough to prevent exposure. The cable between the end of the pier and the subsea cut will be recovered and the end of the cable will be jetted down as described in item 2.7.3.

2.8 SITE CLEARANCE VERIFICATION

2.8.1 General

Verification of site clearance will be performed as part of the final debris recovery operation.

2.8.2 Side Scan Sonar Survey

The survey will be performed using a 500-khz side scan sonar system such as the Klien 595 or equivalent. The survey will be supported from a support vessel with a length of at least 50 feet. Positioning will be provided by a navigation system with 3-meter accuracy. Underwater positioning will be based on slant range calculations.

2.8.3 Procedures

Survey lines will be run at 50-meter spacing in lines running East to West and North to South. Coverage will be with overlapping survey lines with complete coverage of the platform site. Tow speed will be between 3 and 5 knots.

2.8.4 Data Reduction

The data will be reduced in the field and suspect targets will be listed and plotted for target verification survey.

2.8.5 Target Verification

The suspect targets located with side scan sonar will be visually surveyed with an ROV and Mesotech 971 Color Scanning Sonar or equivalent. Suspect targets which are identified as debris will be plotted for recovery operations.

2.8.6 Debris Recovery

The debris located will be recovered by divers to complete the site clearance verification. Pre- and post-abandonment surveys will be conducted within a 1,000-foot radius of the platforms. Test trawls will also be conducted in the area. No trawls are proposed along the pipeline route, as the Department of Fish and Game states that this is a "no trawl" area. It should also be noted

that most of the trawl fishermen in the area have already been supplied rollers for their trawl gear by Chevron to mitigate potential gear impacts from oil and gas pipelines.

2.9 PLATFORM DISPOSAL

2.9.1 General

The platform materials will be taken to the Port of Long Beach/Los Angeles for onshore disposal. The possibility for creating an artificial reef with the jacket materials has been investigated, but the current policy of California's Department of Fish and Game is not to create such reefs from scrap material.

2.9.2 Caisson Legs

The caisson legs will be towed to the scrapping site floating by their own buoyancy. The large size and weight of the legs will make it feasible to use drydock facilities for scrapping.

2.9.3 Other Materials

Various steel scrapping facilities have been identified in the Ports of Los Angeles and Long Beach that have the necessary equipment and permits in place to process the abandoned platforms. The facility that is actually used will depend on its storage capacity, steel processing rate, and availability at the time the platforms are removed. It is possible that more than one facility will be used to process the platforms. The steel processing rate for one of these facilities is 160 tons/day. At this rate, scrapping all of the platform steel would take 16 weeks. Information on the scrapping facility that is selected will be provided when available. Offloading will be performed with the derrick barge or land-based crane, depending on the size of the lifts and reach requirements.

2.9.4 Disposal of Materials that Cannot Be Scrapped

Approximately 13,000 tons of material will be generated from the abandonment project and sent to a scrapping facility. This total includes 2,200 tons of material that will be landfilled, such as cemented pipe strings. The remainder of the material is steel which is suitable for scrapping. The platforms will contain no hazardous materials at the time they are removed.

2.9.5 Vessel Traffic Routes

All vessel traffic associated with the project will stay within designated vessel traffic routes established for shore to platform and inter-platform travel. Materials barges will stay within designated shipping lanes when travelling from the project area to the Port of Long Beach/Los Angeles. It is anticipated that towing will take 40 hours per platform.

3.0 CRITICAL OPERATIONS AND CURTAILMENT PLAN

3.1 INCLEMENT WEATHER CONDITIONS

The final determination for shut down of operations due to inclement weather will be made by the barge superintendent, or vessel captain, in conjunction with the removal contractor project manager. Conditions warranting shut down include heavy swell and high winds, but shut down will also be influenced by the swell period, and the direction of wind and swell. The particular vessels affected and their size will also affect the capability to continue work in marginal conditions. As a general rule, sea states of over 8 feet, and winds in excess of 35 knots may cause a shut down. Some operations which are less weather sensitive may continue, as directed by the removal contractor.

3.2 DYNAMIC LIFTS

The removal of major sections of the platform deck packages by a derrick barge will involve some movement from the barge in the swell. Without preparations, this movement could make it difficult to safely reset the package if the lift is aborted. Any lift where safe resetting of the package may be difficult will be engineered with guides installed to control the package movement horizontally for approximately 2 feet of vertical movement. To prevent damage to the oil and gas pipelines from Platform Grace, no heavy lifts will be made over the pipelines service during the removal of Platform Hope.

3.3 DEPLOYMENT OF DIVERS

Divers may be deployed from the platform, barges, tugs, or other support vessels during the project. The diving supervisor will have radio communication with all other vessels on the project to coordinate traffic in the divers' area. The diving supervisor shall approve vessel traffic in the divers' work zone. All diving operations will be performed in accordance with U.S. Coast Guard regulations.

3.4 MOORING OPERATIONS

The process of setting anchors for barges and workboats will be performed as follows:

- Prior to the platform removal project, the position of any active pipelines and hardbottom features in the area will be verified by the pre-abandonment debris survey. The pipeline and hardbottom area locations will be plotted on the positioning system

used by the anchor handling vessels which will deploy the anchors in preselected locations that are away from active pipelines and hardbottom areas. This procedure should eliminate any risk of damaging the pipeline and sensitive hardbottom areas with an anchor.

- Anchors will be transported near the water surface by a tug, holding the crown wire, and a crown buoy. All anchors shall be deployed and recovered by a tending vessel using a pendant line to lower and raise the anchors vertically.

- The anchor location will be identified by a survey system with 3-meter accuracy.

- The tug will lower the anchor to the seafloor in the surveyed position, followed by tensioning from the barge.

- The crown buoy position will be monitored during tensioning to verify that the anchor remains in an approved location.

- Periodic checks of the crown buoy position will be made.

3.5 USE OF EXPLOSIVES

The use of explosives will be conducted in accordance with all laws and regulations regarding such activity.

- A licensed State of California blasting supervisor will direct the work, and will coordinate the clearance of the site prior to making a shot.

- Explosives will be stored in a safe manner and in well-marked containers. Nitromethane, which will be used as the main charge, is not classed as an explosive when stored prior to mixing.

4.0 OIL SPILL CONTINGENCY

The proposed execution plan has been designed to ensure the safe and effective removal of the four state waters platforms. Prior to removal of the platform structures and abandonment of subsea pipelines, all oil handling facilities will be drained and flushed of residual hydrocarbons. All wells on the platforms will have been plugged and abandoned in compliance with California State Lands Commission and Division of Oil and Gas requirements.

Despite these precautions, the potential for a small operational spill still exists for the proposed operations. Such spills would most likely be associated with diesel fuel transfers or accidental releases. The following section provides an overview of the initial procedures and equipment which will be available in the event of an oil or diesel spill at the project site. Such procedures and equipment have been designed to handle the most likely spill events. Should the spill exceed the capacity of the onsite equipment and personnel, additional resources are available through Chevron's local oil spill response organization and Clean Seas Oil Spill Cooperative. Procedures and equipment for major and minor spill events are outlined in Chevron's Oil Spill Contingency Plan (OSCP) for State Leases. This section provides only a summary of the comprehensive procedures and equipment outlined in the OSCP.

4.1 NOTIFICATION

An important step in the response procedure is notification of others of the incident. Notification is essential to activate the response organizations, alert company management, obtain assistance and cooperation of agencies, mobilize resources and comply with local, state, and federal regulations.

The order of notification is based on the premise that those parties who can mobilize and provide assistance in controlling or minimizing the impacts of an incident be notified first. The notification process encompasses the following categories:

- Company Notification
- Agency Notification
- Response Team Activation
- Third Party Notification
- Notification of Other Interested Parties
- Notification of Families of Team Members
- Periodic Progress Updates and Reports
- Accidents and Casualties Notifications

Figure 4.1-1 illustrates a typical sequence of notifications following an oil spill that enters or threatens to enter the ocean.

4.1.1 Confirmation of Leak Report

Upon receipt of the initial report of an oil spill, the Operations Supervisor will make an immediate assessment of the approximate quantity and extent of the spilled oil. Normally, this initial assessment can be made by rapid inspection at the operations site. The On-Site Operations Supervisor will evaluate the situation and, if the situation warrants, will activate the Immediate Response Team and make the appropriate notifications.

4.1.2 Company Notification

Chevron requires that all emergencies be brought to the immediate attention of its management. The Operations Supervisor or his representative on-site will notify the Operations Manager by radio or telephone with an initial assessment of the extent and nature of the spill. The Operations Manager will inform the Profit Center Manager or his representative who will decide to activate all or part of the Major Spill Response Team. If activation is deemed appropriate, the Profit Center Manager authorizes the activation sequence as shown in Figure 3.2 of Chevron's OSCP for State Leases.

4.1.3 Government Agency Notification

Following the completion of company notifications, Chevron's Operations Supervisor will notify all required government agencies. These agencies include:

USCG National Response Center
(800) 424-8802

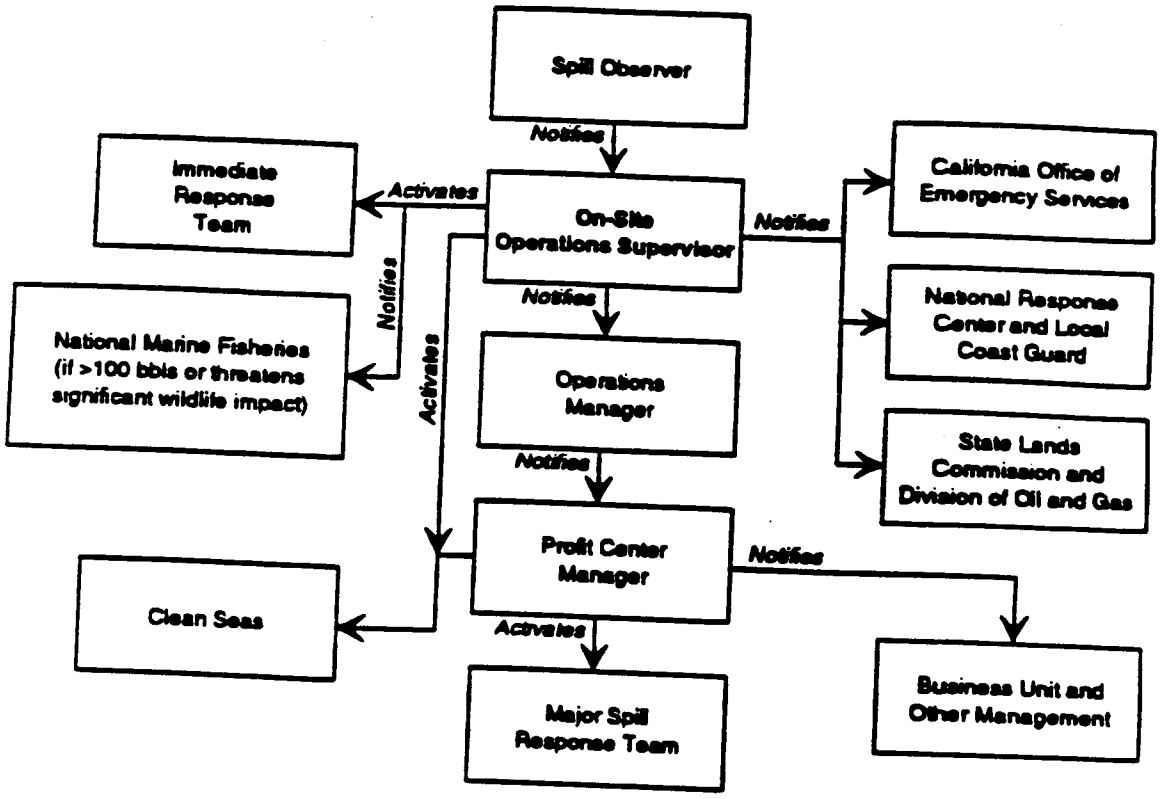
USCG Santa Barbara Office
(805) 962-7430

California Office of Emergency Service
(800) 852-7550

State Lands Commission
(310) 590-5201

4.1.4 Oil Spill Cooperative Notification

Chevron is a partner in the Clean Seas cooperative. The cooperative provides oil spill equipment and resources that are immediately available. If a spill exceeds Chevron's in-company response equipment capability, Clean Seas will be notified immediately. Resources available through Clean Seas are listed in Section 4.4, Available Oil Response Equipment (Resources).



TYPICAL NOTIFICATION PROCEDURE

CALENDAR PAGE	622
MINUTE PAGE	3323

FIGURE 4.1-1

4.2 RESPONSE STRATEGY

4.2.1 General Response Strategy

In the event of a spill from a Chevron facility or associated pipeline in state waters, the appropriate Chevron personnel and government agencies will be notified per the procedures given in Section 3 - Notification, of Chevron's OSCP for State Leases.

If the spill is minor, normally only the Immediate Response Team described in Section 4 - Organization, of Chevron's OSCP for State Leases will be activated. Response procedures for minor spills are discussed in the same section and in Section 9 - Procedures.

If the spill is of major magnitude, both the Immediate Response Team and the Major Spill Response Team will be activated. The Major Spill Response Team is described in Chevron's OSCP for State Leases.

Immediate response to an oil spill will depend on the specific circumstances associated with the spill. In all cases, the safety of the response team will have the highest priority.

Initial response for the project platforms is provided by the crew boat which is normally stationed at the Carpinteria Pier. A containment boom is stored on the stern of the crewboat. Additional equipment and manpower can be provided by Clean Seas and other oil spill cooperatives, Chevron's El Segundo Refinery and other equipment sources. Inventories of onsite equipment are provided in Section 4.4.1. Additional equipment inventories are provided in Chevron's OSCP for State Leases.

4.2.1.1 Immediate Command and Control

Upon becoming aware of a spill, the Chevron Operations Supervisor or his representative will assume command of the spill response operations. This person will make sure that proper action is taken and see that appropriate government agencies are notified. Should the spill be a major spill or become uncontainable with immediately available equipment, then activation of the Major Spill Response Team, described in Chevron's OSCP for State Leases, may be appropriate.

4.2.1.2 Specific Strategies

The specific strategies taken to control, contain, and clean up a spill will vary with the type of oil spilled, the location, the amount, and various other factors. General guidelines for various types of spills are given in the following pages of this section. The Operations Supervisor or his representative should analyze the situation and exercise good judgment in formulating the best plan for the type of spill that occurs. Once oil is spilled on water, action should be taken immediately to control and contain the spill and to minimize environmental damage.

Table 4.2-1. General Response Strategy

First Response to a Spill
Anyone observing a spill should immediately contact the necessary qualified personnel to take emergency action to stop flow at the source safely. Examples of such action are: • Close block valves to stop leaks; • Stop pumps if a tank is being overfilled; • Stop fuel pumps and minimize leakage from fuel lines if a fueling leak occurs.
Preventing Fire and Explosion
Fire and explosion are always dangers during petroleum product spills. Although flammability varies dramatically with the spilled product and the circumstances of the spill, it is essential that all reasonable steps be taken, as soon as possible, to minimize the chance of accidental ignition of the spilled product(s). Examples of such steps are: • Extinguish open flames, such as welding torches, immediately. • Cease all operations involving arc welders, grinders, and other sources of sparks. • Cease all operations which vent oxygen or enriched oxygen mixtures (such as certain diving operations) as soon as feasible. • Shut off electric circuits that might create a fire hazard, if possible. Under some circumstances, even a simple switch or electric motor can cause a dangerous spark. Remember that fans, blowers, electric lights, and electric pumps all have switches and/or electric motors. • Extinguish smoking materials, where appropriate.
General Strategies
• Physical removal of the oil is the preferred action in almost all cases. However, from a practical standpoint, much of the oil spilled during a minor spill will be dispersed by wind and wave action. Effective physical removal will depend on relatively calm weather and water conditions, and the speed with which the oil slick can be contained. • Containment and recovery should only be attempted for crude oil, diesel fuel, lubricating oil, or fuel oils. Containment and recovery should not even be attempted on spills of volatile products such as gasoline. Liquefied petroleum gases (LPG or LNG products, obviously, cannot be contained at all, unless they occur inside a vessel or other structure. Volatile products will normally spread and evaporate quickly. Containing them merely reduces their evaporation rate and increases the hazard of fire or explosion. • Spills remaining in the confines of the platform and not reaching the water will be cleaned up using materials such as sorbent pads to pick up any spilled oil or fuel. Oil soaked absorbents and other contaminated debris will be disposed of at an approved onshore site listed in Section 9 - Procedures, of Chevron's OSCP for State Leases. Good housekeeping practices will be maintained on-board the platform to keep the decks clean of oil and other pollutants.

Table 4.2-2. Strategy for Minor Spills

Minor Spill Strategy
In the event of a minor oil spill the following general procedures will apply:
• Ensure personnel safety. • Stop the flow of the spill. • Begin containment and cleanup procedures. • Notify appropriate Chevron and government entities. Note: It is always better to over-respond.
Spills less than 5 barrels (210 U.S. gallons):
• All items listed above • Deploy containment and/or absorbent boom; use absorbent boom and pads and/or skimmer to pick up oil. • Deploy additional equipment and alert oil spill co-op as necessary. • Maintain cleanup operations until no visible sheen is apparent.
Spills of 5 to 10 barrels (210 to 420 U.S. gallons):
• All items for spills less than 5 barrels. • Alert local oil spill co-op immediately. Call out appropriate cooperative and/or contractor equipment if it is apparent that "onsite" containment and pick-up equipment cannot handle the spill. • Assess wind and current direction to determine possible path of the spilled oil.

*See Sections 7 - Resources, and 9 - Procedures, of Chevron's OSCP for State Leases for specifics of the strategies described above.

4.3 ORGANIZATION OF IMMEDIATE RESPONSE TEAM

Chevron's OSCP for State Leases outlines two related response teams to make up the overall Oil Spill Response Organization. The first is the Immediate Response Team which is primarily composed of on-site Chevron, contract and/or Co-op personnel. The second team is the Major Spill Response Team which is composed of Chevron personnel who are based at various locations and under the overall direction of the Incident Commander during an emergency incident.

The Immediate Response Team is designed to make maximum use of the personnel and equipment onsite during platform removal operations. The team is structured to provide an immediate containment and control capability for minor spills. The team will also initiate control actions for large or uncontained spills regardless of their source.

The Major Spill Response Team's role is to provide assistance to the Immediate Response Team for large or uncontained spills which may require supplementary equipment or

manpower. In this case, the Major Spill Response Team will provide the necessary support in obtaining the additional resources required to contain and clean up the spill and will oversee the entire response operation. Refer to Chevron's OSCP for State Leases for Major Spill Response Strategies and equipment.

4.3.1 Immediate Response Team

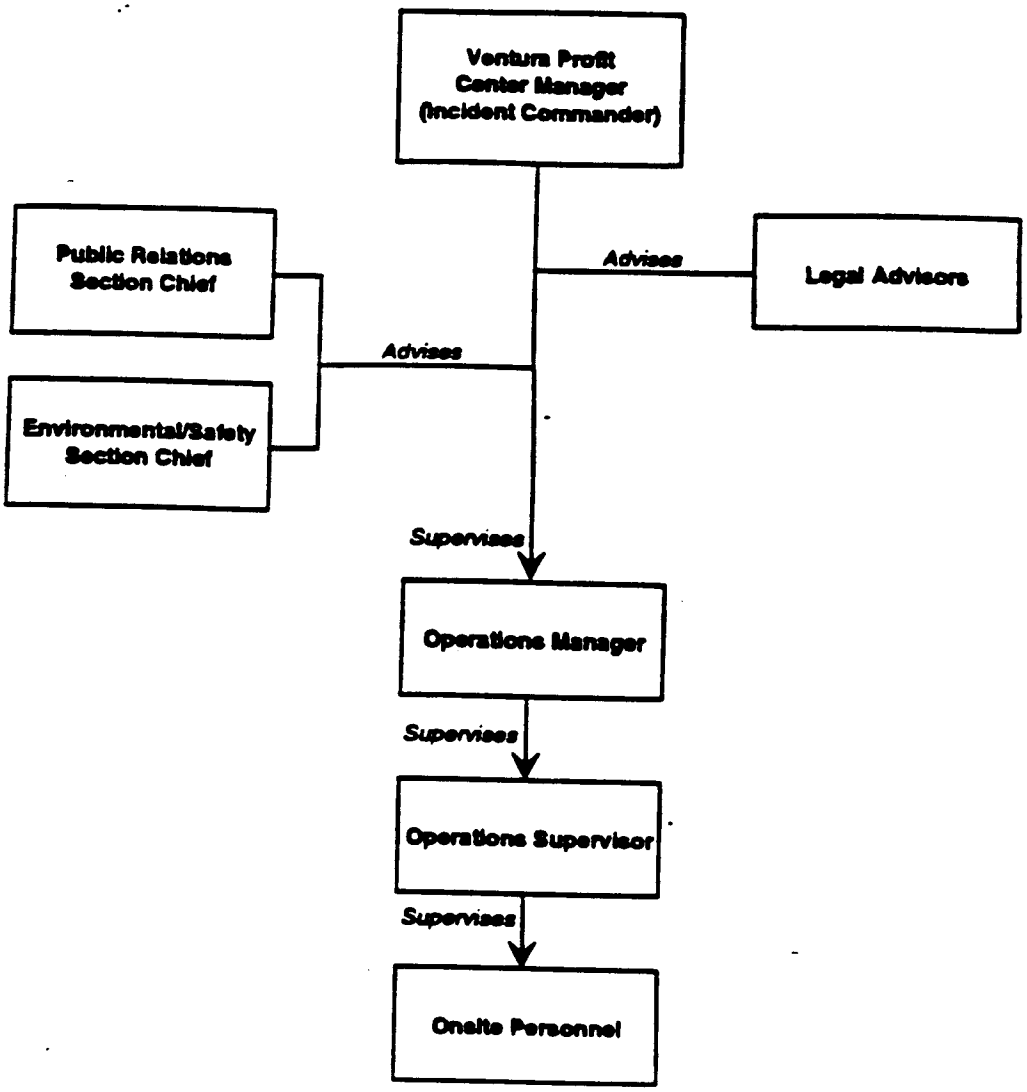
The Immediate Response Team will operate under the direct supervision of the Operations Supervisor, with overall supervision provided by the Incident Commander via telephone or radio communications. This team will respond immediately to any spill which may occur. The Immediate Response Team will utilize oil spill response equipment from crewboats and/or other support vessels. If this equipment is not adequate to contain the spill, the Clean Seas cooperative will be contacted immediately. Upon discovery of an oil spill or the initiation of an equipment deployment drill, the Immediate Response Team should have on-site response equipment deployed and operating within 1 to 2 hours. The organizational structure of the Immediate Response Team is shown in Figure 4.3-1.

Organizations prepared for response to oil spills must be capable of fulfilling responsibilities and requirements established by federal, state, and local laws and regulations. In addition to meeting the specific requirements established by law, Chevron policy is to respond with the best of its available resources and capabilities to prevent or minimize any damage that could result from spilled oil.

4.4 AVAILABLE OIL RESPONSE EQUIPMENT (RESOURCES)

4.4.1 Onsite and Locally Available Equipment

The equipment presented in Table 4.4-1 has historically been maintained on the project platforms. In efforts to retain the same level of spill response during abandonment operations, this equipment will be transferred to onsite support vessels during the platform removal project. In addition, per State Lands Commission Requirement, a minimum of 400 feet of sorbent boom, 5 bales of sorbent pads, and a small motorized boat will be maintained on one of the vessels in the immediate work area throughout the platform removal and pipeline abandonment phases of the project.



IMMEDIATE RESPONSE TEAM

CALENDAR PAGE	627
MINUTE PAGE	3328

FIGURE 4.3-1

Table 4.4-1 Oil Spill Response Equipment Maintained on Project Platforms

Platform Hazel • 360' absorbent boom. • 5 bags absorbent pads (100 pads/bag). • 240' Kepner boom (or equiv.). **Platform Hilda** • 240' Conwed sorbent boom (or equivalent) • 300' Kepner boom (or equivalent) • 5 bags absorbent pads (100 pads/bag). • Oil Skimmer Equipment:* Acme Floating Skimmer, Model 51T Flex hose Inflatable buoy Anchor buoy and line Air Compressor Wilden pump 1200 gallon Kepner Sea container (or equivalent	**Platform Heidi** • 200' absorbent boom. • 6 bags absorbent pads (100 pads/bag). **Platform Hope** • 200' absorbent boom • 5 bags absorbent pads (100 pads/bag). • 150' Kepner boom (or equivalent). • Oil Skimmer Equipment:* Acme Floating Skimmer, Model 51T Flex hose Inflatable buoy Anchor buoy and line Air Compressor Wilden pump 1200 gallon Kemper Sea container (or equivalent) **Crewboat** • 750' Expandi boom with Rotopak (or equivalent)

* Note: Under special circumstances such as drilling and abandonment operations, upon approval of appropriate regulatory agencies, skimming equipment may be transferred from one platform to another.

4.4.2 Clean Seas Equipment

If an oil spill occurs that exceeds the capacity of on-site personnel and equipment, Chevron will request assistance from Clean Seas. Clean Seas is an oil spill cooperative of which Chevron is a member whose operating area includes both the Santa Maria Basin and the Santa Barbara Channel. Major equipment owned by Clean Seas, along with storage locations, are given in this section. Procedures required for activating this equipment are given in Section 9.0 - Procedures, of Chevron's OSCP for State Leases. Due to equipment upgrades, replacements, etc., these inventories are subject to change. Table 4.4-2 provides a partial inventory of Clean Seas equipment contained in storage vans at the Carpinteria facility.

Table 4.4-2. Inventory of Clean Seas Equipment and Materials Effective February 2, 1992

	Quantity	Size
OSRV *Mr. Clean II*		
Offshore Device Advancing Skimmer	2	750 gpm
Expandi 70" Boom	1	1,500 feet
Expandi 43" Boom	1	1,500 feet
Goodyear 12"x14" Boom	1	1,485 feet
Walosep W-4 Skimmer or GT260 or 135 Skimmer	1	90 bbls
15-ton Crane	1	15 foot
Oil or Water Separation Tank	1	200 gal
Skiff	1	–
Dispersant Application System	1	–
Integral Oil Storage Capacity		1,800 bbls
Absorbent Boom	10 bags	–
Absorbent Pads	10 bags	–

Van No. 05 Carpinteria Clean Seas Yard	Van No. 07 Carpinteria Clean Seas Yard
1500' of Super Max Boom Sorbents 13 bales Booms 12 bags Sheets 4 Anchors Shovels Misc. tow lines Buoys Bags for sandbags	1600' of 43" Expandi Boom 660" of 30" Expandi Boom Sorbents 5 bales Booms 14 bags Sheets 5 Sweeps 1 box Bags 20 boxes Blankets 1 box Oil Snare 4 Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines Misc. tools Life jackets

Table 4.4-2. (Cont'd)

Van No. 09 Carpinteria Clean Seas Yard	Van No. 10 Carpinteria Clean Seas Yard
1520' of Sorbent Boom Sorbents 75 bags Sheets 5 Sweeps 100 boxes Oil Snare Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines on reels Misc. buoys 55 gal drums	440' of 14" x 24" Goodyear Boom Sorbents 5 bales Booms 10 bales Sheets 3 boxes Bags 2 boxes Oil Snare 2 - 5,000 gal floating storage bags Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines on reels 55 gal drums Misc. tools Life jackets
Van No. 11 Carpinteria Clean Seas Yard	**Van No. 12 Carpinteria Clean Seas Yard**
800' of 16" Kepner Boom Sorbents 2 bales Booms 11 bales Sheets 1 box Bags 15 Blankets 1 Anchor 75' of 3/4" tow line 2 - 55 gal drums	2 - 14 hp compressors 2 - 2" pumps 2 M15 pumps 2 Marlow pumps 1 gas driven generator Misc. hose floats Blinking lights Life jackets

This list is not intended to correspond to temporary relocation and/or movement of equipment nor to periods when equipment is out of service for repairs or maintenance.

4.5 OFFSHORE SPILL SCENARIOS AND RESPONSE PROCEDURES

4.5.1 Offshore Spill Scenario - Minor Spill

An offshore oil release during the abandonment procedures would most likely be associated with a fuel transfer spill, with pipeline flushing operations, or during separation of the pipelines from the platforms. Potential spill locations would be in the operational areas of the derrick barge and/or near the platforms. In the event of a release of oil or contaminated water, the following procedures will be implemented utilizing the onsite equipment listed in Table 4.4-1.

Table 4.5-1. Response Procedures - Minor Spill

Responsible Person	Action
Onsite Personnel	1. As soon as possible, onsite personnel shall notify the Operations Supervisor and provide him with information on: - the source of the spill; - the type of product spilled; - the status of control operations. 2. Onsite personnel shall immediately conduct containment control operations: - shut down transfer pumps; - close all flow valves; - turn off all sources of ignition; - deploy Conwed sorbent boom. 3. At direction of the Operations Supervisor, onsite personnel shall deploy appropriate equipment and carry out response and recovery operations. - Oil sorbent materials and any other oily debris recovered during response operations shall be stored in suitable containers or plastic bags. - Oil sorbent materials shall be disposed of at a state approved disposal site. 4. Maintain source and oil slick surveillance.
Operations Supervisor	In the event of a minor offshore oil spill during abandonment procedures, the Operations Supervisor shall: 1. Account for all personnel and ensure their safety. 2. Determine whether there is a threat of fire or explosion. 3. If a threat of fire or explosion exists, suspend control and/or response operations as appropriate until the threat is eliminated. 4. Assess the spill situation: - determine the source of the spill; - determine the status of response operations; - estimate spill volume; - estimate speed and direction of the slick's movement; - determine whether onsite containment and recovery equipment is sufficient to respond to the oil spill situation successfully and completely. 5. Notify Operations Manager, Mr. G.W. Gray Work phone: (805) 658-4630 Home phone: (805) 659-1737 Mobile phone: (805) 340-1853 Pager: (805) 531-4621

Table 4.5-1. (Cont'd)

Responsible Person	Action
Operations Supervisor	6. Notify appropriate government agencies (see appendix D for a complete list of appropriate agencies and interest groups). - California Office of Emergency Services Warning Officer 800-852-7550 (24-hour) - U.S. Coast Guard National Response Center 800-424-8802 (24-hour) - U.S. Coast Guard Marine Safety Office (Los Angeles/Long Beach) Commanding Office 213-499-5555 (24-hour) (Santa Barbara Office) 805-962-7430 - State Lands Commission 310-590-5201 (24-hour) 7. Supervise response, cleanup and storage operations. 8. Complete response, cleanup and storage operations. 9. File written reports with appropriate government agencies through Profit Center environmental staff.
Operations Manager	1. Notify Chevron's Incident Commander, Mr. A. Cornelius. Work Phone: (805) 658-4444 Home Phone: (805) 733-0220 Mobile Phone: (805) 689-7275 Pager: (805) 531-4606 2. Decide on Chevron Major Spill Response Team mobilization. 3. Assess the spill situation and request additional Chevron personnel, if required. 4. Maintain overall supervision of Immediate Response Team.

4.5.2 Offshore Spill Scenario - Major Spill

The potential for a major spill during platform removal is considered to be remote due to the precautionary measures taken as part of the abandonment procedures. However, should an oil spill occur that exceeds the capacity of the available equipment and personnel discussed herein, the procedures outlined in Chevon's OSCP for State Leases will be followed.

5.0. DESCRIPTION OF ENVIRONMENTAL SETTING AND DISCUSSION OF ENVIRONMENTAL IMPACTS FOR CHEVRON STATE WATER PLATFORM ABANDONMENTS (HEIDI, HOPE, HAZEL, HILDA)

5.1 ENVIRONMENTAL SETTING AND PROJECT IMPACTS

The following paragraphs discuss the existing regional and local environmental conditions encountered in the vicinity of platforms Heidi, Hope, Hazel, and Hilda, and their associated pipelines. Platforms Hazel and Hilda are located approximately 1.5 nautical miles (nm) from the Summerland coast in 96 feet (29 m) of water. Platforms Hope and Heidi are located 3 miles to the southeast of Hazel, directly off the coast of Carpinteria. Platforms Hope and Heidi are located approximately 2.6 and 2.5 nm from shore, respectively, in 132 ft (40 m) water depth.

Environmental issue areas contained within this document are generally discussed in both regional and platform-specific levels of detail, as well as offshore and onshore components.

A. Earth

Geology

Regional and local geologic conditions described in this section were compiled primarily from the DEIR for Exploratory Drilling Operations Proposed by Chevron U.S.A. Inc. for State Oil and Gas Leases PRC 2199, 3150, and 3184 (CSA, 1985); and the FEIR/EA for the BEACON Beach Nourishment Demonstration Project (Chambers, 1992).

Physiography

The geology of California's coastline can be characterized as dynamic and rapidly changing compared to most of the North American continent and in terms of the geologic time scale. This dynamic character is reflected in the rugged topography of California's coastal ranges and in the frequent earthquakes caused by crustal rock adjustments to changing stresses (Arthur D. Little, Inc., 1984).

Physiography of the Santa Barbara Channel includes the Western Transverse Ranges, the Santa Barbara Basin, the Channel Islands Platform (thought to be the westernmost portion of the Transverse Ranges physiographic province), and the Southern California Mainland

Shelf. The Transverse Ranges represent a unique feature in California coastal geology because of the predominantly east-west trend orientation relative to the underlying structure. The Coastal Ranges to the north and Peninsular Ranges to the south show northwest trending structure that is characteristic for most of California (Science Applications, Inc., 1984).

Mass Sediment Movements

Sediments in the Santa Barbara Channel area that are granular in nature may be prone to liquefaction (Dames and Moore, 1983; McClelland Engineers, Inc., 1983a,b; Nekton, Inc., 1984a). Seafloor instability triggered by seismic, oceanic, or gravitational forcing is recognized as a primary hazard in locating pipelines and platforms (McCulloch, et al., 1980; Richmond, et al., 1981), but is not considered a significant hazard to platform abandonment activities (Dames and Moore, 1983).

Mass movement of sediments is a common naturally occurring phenomenon along the Southern California continental borderland. These movements may take the form of slow sediment transport such as sediment flow or creep, or of sudden mass movements such as slides, slumps, turbidity currents, or liquefaction (Burdick and Richmond, 1982). Areas with evidence of previous seafloor instability have a high potential for future activity. Areas without evidence of previous instability may also pose a hazard if conditions allowing instability exist (Arthur D. Little, Inc., 1984).

The potential for slope instabilities in the Santa Barbara Channel results from several factors. Beyond the shelf break, thick sequences of water-saturated Pleistocene and Holocene sediments have accumulated. Some of these slopes have gradients approaching 6 degrees, and in many places these shallow sediment accumulations contain considerable quantities of trapped gas that weakens the slope sediment shear strength. Although particular areas of slope instability can be identified from evidence of previous disturbance, the evidence is often subtle and inconclusive (Science Applications, Inc., 1984).

Intertidal Surface Geology

In the intertidal region of the project area between Fernald Point and Rincon Point, the relative percentage of intertidal substrate is approximately 5 percent rock, 20 percent boulder, and 75 percent sand. The relative percentages of each change with seasonal sand movement. Many rock and boulder beaches are covered with sand in summer and exposed to rock during winter storms (Chambers, 1992).

Offshore and Onshore Local Geologic Conditions

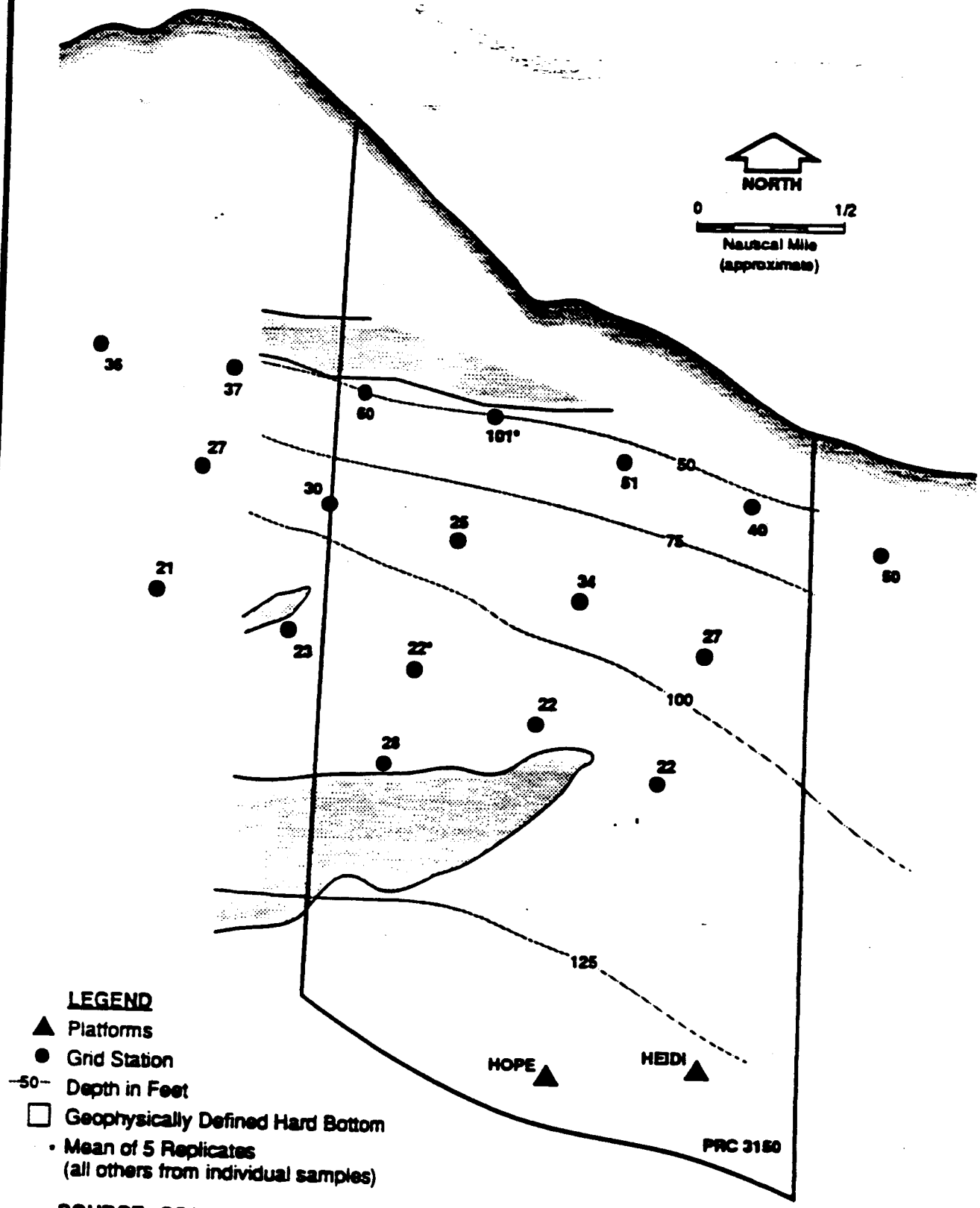
Heidi and Hope

- Bathymetry. In the lease area containing Heidi and Hope (PRC 3150), the seafloor slopes in a generally southwestwardly direction at approximately 0.7 degrees on the northern side and about 0.3 degrees on the southern side. The seafloor is generally smooth and featureless except for sedimentary rock outcrops in the southern and west-central portions. Relief at these locations ranges from 0.3 to 1.5 m (1 to 5 ft) (McClelland Engineers, Inc., 1983a,b).

  Surficial sediments collected during the biological surveys for previous studies in and near PRC 3150 were analyzed for grain size. Figure 1.1.1-1 shows the mean sediment grain size at each of the stations. Mean grain size ranged from 21 to 101 μm and decreased with increasing water depth and distance from shore. Figure 1.1.1-2 shows the spatial distribution of percent sand in the surficial sediments. Nearshore sediments generally contained 40 to 80 percent sand, whereas those farther offshore contained less than 10 percent sand. Silt content ranged from 15.5 to 80.6 percent; nearshore sediments were generally 15 to 50 percent silt, and offshore sediments 70 to 80 percent silt. Clay content ranged from 2.2 to 16 percent, and the values followed a similar nearshore/offshore pattern (CSA, 1985).

- Stratigraphy. Sedimentary rock strata, probably of Tertiary age, underlie Hope and Heidi. These rocks outcrop in the southern and west-central portions of the lease tract. An upper sediment unit overlies the older sedimentary rocks and varies in thickness from zero in the vicinity of the outcrops to a maximum depth of 20 m (65 ft) in the southeastern portion of tract PRC 3150. This sedimentary unit occurs in three east-west trending, shallow, trough-like basins which are separated by seafloor outcrops or sub-seafloor ridges of sedimentary rock strata. Sediment thickness is 11 m (35 ft) in the northeasternmost basin, 12 m (40 ft) in the central basin, and 20 m (65 ft) in the southern basin. Over the top of the sub-seafloor ridges dividing the basins, sediment thickness is generally less than 3 m (10 ft) (McClelland Engineers, Inc., 1983a).

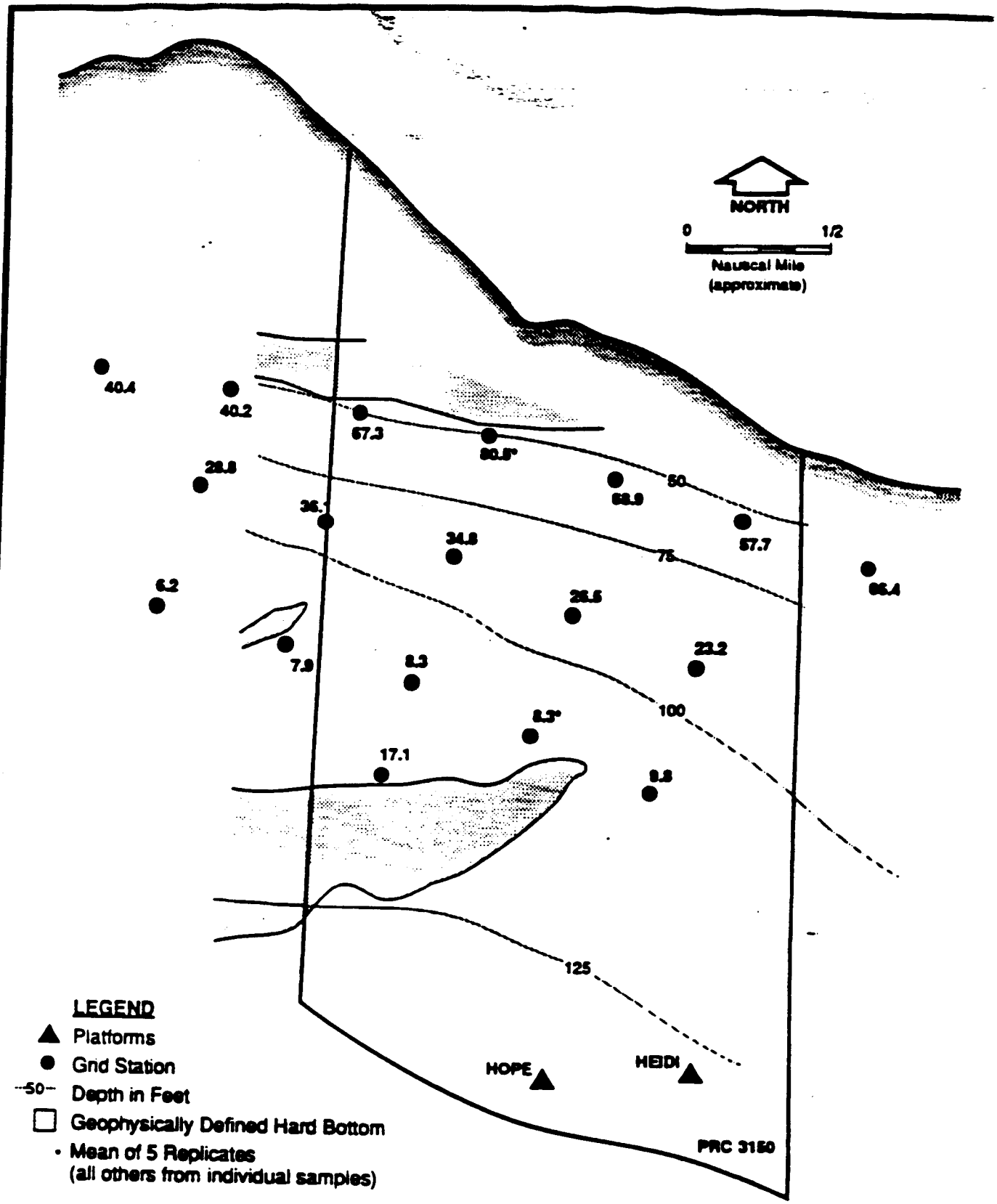
- Structure. Underlying Hope and Heidi in PRC 3150, the shallow structural geology is characterized by generally flat-lying sediment that unconformably overlies older faulted and folded sedimentary rock strata (Figure 1.1.1-3). Upper sedimentary layers seem to be undeformed and unfaulted. An angular unconformity assumed to be an ancient erosional surface separates the upper sedimentary unit from the older-rock strata. In



MEAN GRAIN SIZE (μm) OF SURFICIAL SEDIMENTS FROM LEASE PRC 3150 AND VICINITY

CALENDAR PAGE	636
MINUTE PAGE	3337

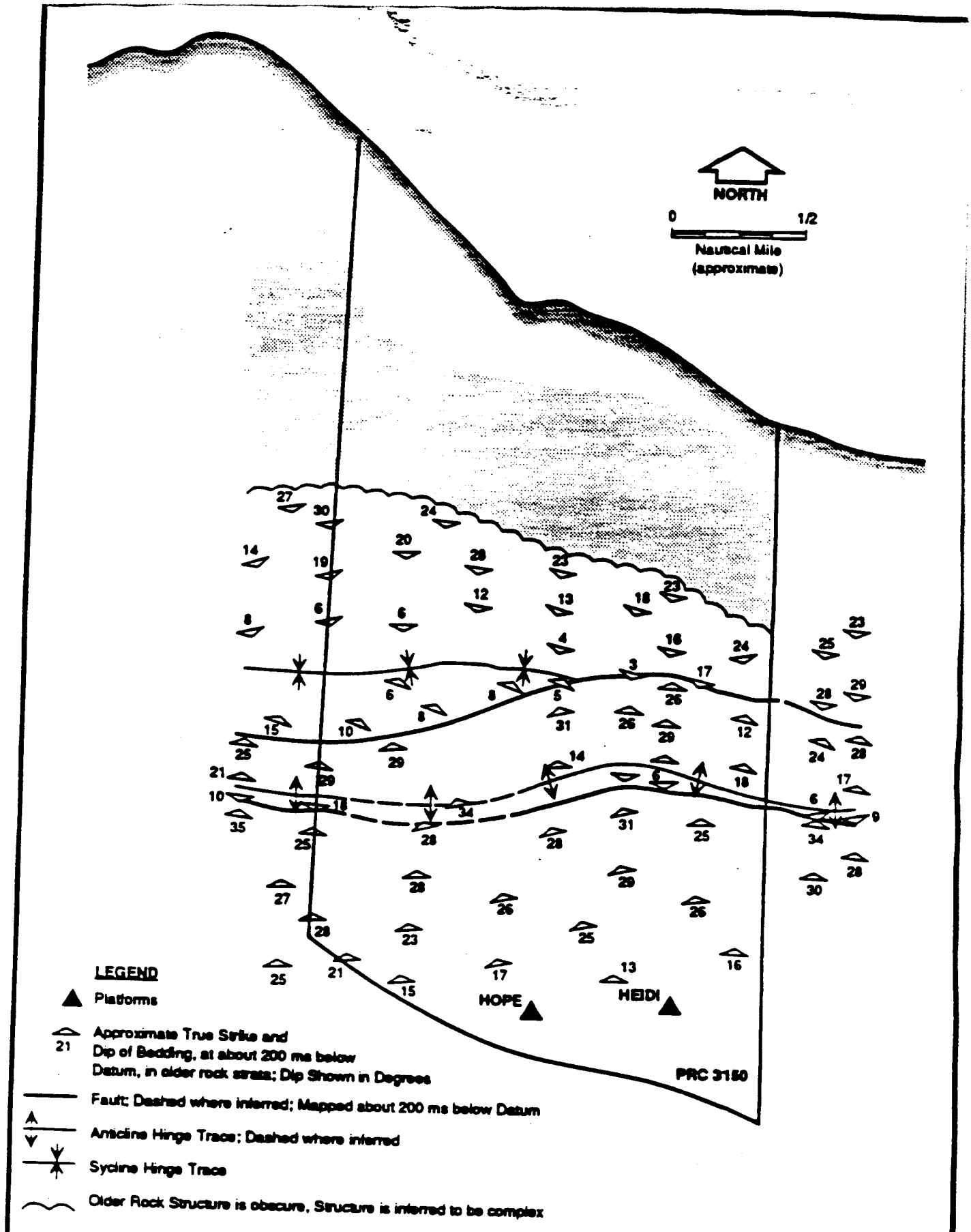
FIGURE 1.1.1-1



PERCENT SAND (DRY WEIGHT BASIS) IN SURFICIAL SEDIMENTS FROM LEASE PRC 3150 AND VICINITY

CALENDAR PAGE	637
MINUTE PAGE	3338

FIGURE 1.1.1-2



STRUCTURE MAP OF LEASE PRC 3150
(Adapted from: McClelland Engineers, Inc., 1983a)

CALENDAR PAGE 638
MINUTE PAGE 2220

FIGURE 1.1.1-3

places, these older rocks are highly faulted and folded. Structural features trend east-west, conforming to the general structural pattern of the Transverse Ranges (CSA, 1985).

Two possibly intersecting faults occur in the lease area containing Hope and Heidi. The southernmost of these faults dips northward while its northern counterpart dips southward, suggesting an intersection at some depth (Figure 1.1.1-3). These faults are exposed only at the rock outcrops. They are covered in the areas where sediment buries the older rocks, suggesting that these faults are inactive. Luyendyk, et al. (1982) suggest that these faults may be associated with the Rincon Creek Fault. Both faults seem to cut only the older rock strata and do not appear to displace the seafloor (McClelland Engineers, Inc., 1983a).

- Seafloor Conditions Below the Platforms. Site specific information regarding the seafloor conditions beneath Hope and Heidi have not been obtained. However, the discussion of the seafloor conditions below Hazel and Hilda provide an approximation of the conditions potentially encountered at Hope and Heidi.

Hazel and Hilda

Site-specific information for the bathymetric, stratigraphic, and structural conditions of Hazel and Hilda at the level of detail provided above is not presently available. However, Simpson (1977) indicates that the ocean area in which platforms Hilda and Hazel are located is characterized by a flat, soft mud seafloor containing few rocks. A natural reef is located inshore of the platforms, northeast of Hazel.

- Seafloor Conditions Below the Platforms. Ayers, et al. (1980a) showed that over 90 percent of discharged drilling-fluid solids settle directly to the bottom, beneath the platform. The distance from the well site and settlement time are primarily a function of current and water depth. As discussed in Section 1.3, Coastal Processes and Water Quality, current speed in the Santa Barbara Channel does not usually exceed 10 cm/sec. Current data obtained in the vicinity of Hazel and Hilda indicate that north to northwest is the predominant direction of the flow of currents. While the precise dispersion radius of mud and cuttings on the seafloor below the platforms under study are not known, previous studies conducted underneath Hazel and Hilda indicate substantial piles at the base of the structures. According to Carlisle, et al., 1964, drill cuttings formed an irregularly shaped pile that reached 25 feet in height and 250 feet in diameter when the initial drilling was completed.

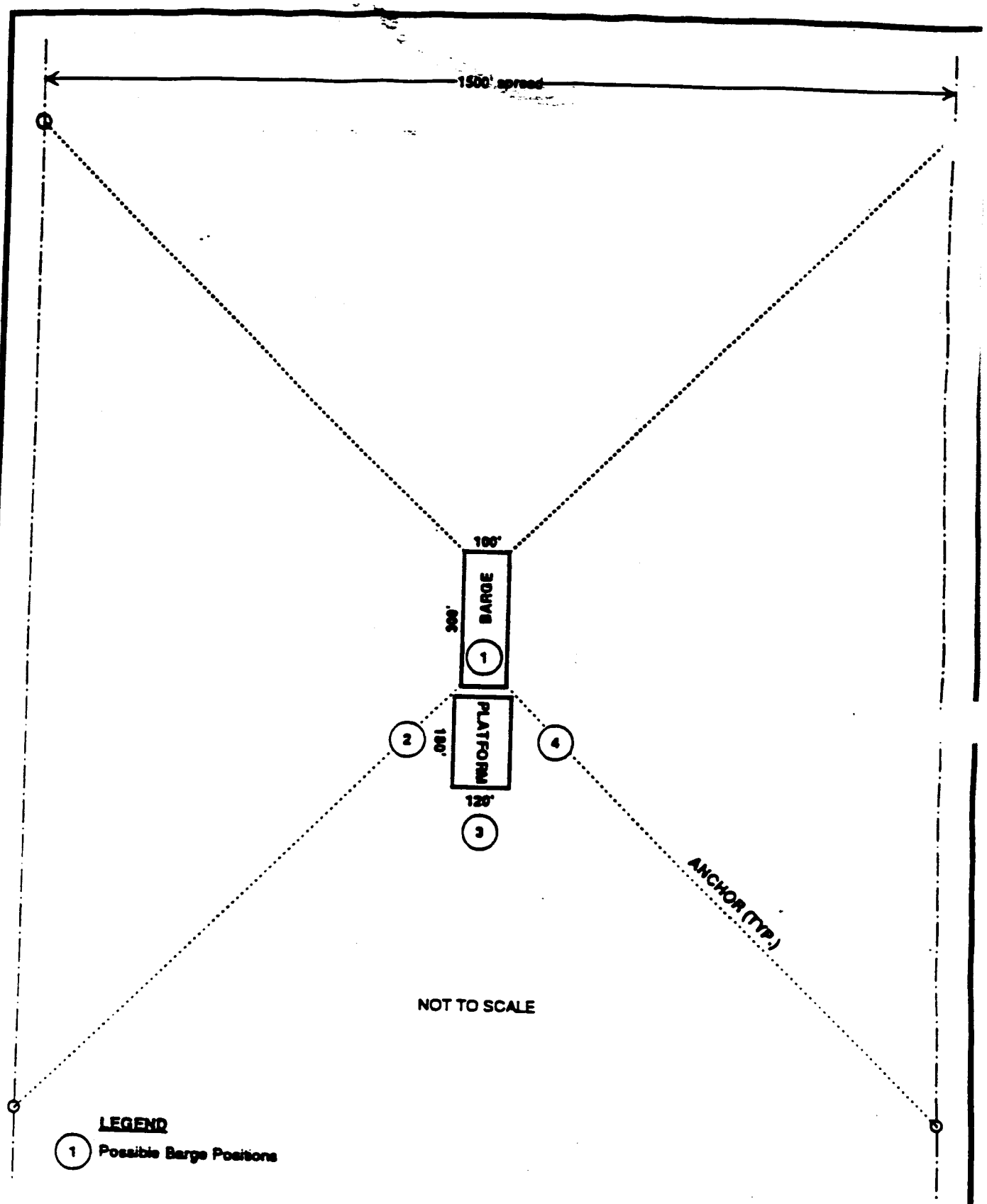
According to a more recent survey conducted in 1976 at platform Hilda, depth readings were taken every 10 feet with an oil-filled depth gauge during high tide. The divers found that the cuttings pile was skewed to the west, reaching a maximum height of 38 feet near the western face of the platform, in the area of the conductors (Simpson, 1977). As the conductors provided the densest area of attachment places for invertebrates on the platform, the study speculates that the pile may have been highest at that location due to the addition of mussel clumps that had torn loose in storm or had fallen from the pipes of their own weight. Carlisle's study indicated that the cuttings pile (without shells at the time), reached a maximum height of 25 feet. The 1976 data suggest that the layer of shells had increased to as deep as 15 feet in some places.

- Nearshore Substrate at Pipeline Landfall. Nearshore substrate at this location is probably Tertiary Age folded and faulted sedimentary rock strata. This is typically overlain by generally flat-lying sediment. The upper sedimentary layers seem to be undeformed and unfaulted (CSA, 1985).

Offshore Impacts

Geologic impacts from the proposed abandonment operations will be localized and short term in nature. Seafloor topography surrounding all platforms and along the pipeline corridors is relatively flat. Vibrations from project removal operations will not induce sediment slides or any other changes to the geologic environment. During derrick and materials barge anchor placement, there will be some localized bottom scarring, and short-term sediment disturbance and redistribution. However, seabottom scarring will be minimized by following the anchor-laying operations described below.

Typical anchor spreads for materials and derrick barges are 2,000 to 3,000 feet (Figure 1.1.2-1). Each anchor weighs approximately 12 tons and is connected to the barge by 1.5-inch-diameter cable onboard the barge. Each anchor typically occupies approximately 70 square feet and is wound on a winch-driven drum. Anchors are vertically placed on the bottom by anchor handling vessels. The barge is then pulled into the required position by winching against the placed anchors. Anchors are picked up by the tending vessel by lifting the anchor vertically with a pendant line. An anchor will bury itself when the required tension is achieved to resist the pulling forces of the barge. Anchors are not dragged on the bottom, but will create a disturbance while they are digging in. Anchor disturbances are generally limited to 16 to 165 feet in length (Centaur, 1984). A correctly placed anchor typically results in a disturbance of about 35 feet. Part of the cable length will also lie on the bottom and cause a minor amount of bottom disturbance. On the



TYPICAL PLATFORM REMOVAL
BARGE MOORING SPREAD

CALENDAR PAGE	641
MINUTE PAGE	3342

FIGURE 1.1.2-1

average, about 150 feet of cable per anchor comes into contact with the bottom and disturbs a swath of about 2 feet; therefore, each anchor and its cable generally disturbs about 300 square feet per anchor position. The procedure of vertically lowering and lifting the anchor greatly reduces bottom scarring which usually occurs when anchors are dragged during conventional setting methods.

Jacket Removal: Hope, Heidi, and Hilda

Platforms Hope, Heidi, and Hilda all have similar configurations with two large caisson legs and two smaller, 54-inch-diameter legs with a caisson base. The piles driven through the caisson legs and caisson bases, and the well conductors that are inside the piles will be severed through the use of explosives. Approximately 25 to 45 pounds of explosives will be used per charge, with between 32 and 40 cuts per platform. Charges will be detonated over a 4- to 5-day period per platform. Upon severance, the caisson legs and caisson bases will be physically lifted from the seafloor, leaving shallow depressions in the seafloor.

Impacts to earth resources will result from both the explosives detonations and from subsequent removal of the severed conductors and pile legs. Explosive charges may result in some localized seafloor impacts; however, cuttings mounds accumulated at the base of the platforms will likely remain largely intact.

In order to avoid further bottom disruption to the seafloor after leg and caisson removal, depressions will not be backfilled. Over time, slumping, slides, and local current action will serve to naturally backfill these holes with sediment. Overall bottom topography near the former platform areas will remain as low-lying mounds. Therefore, impacts to earth resources associated with the jacket removal of platforms Hope, Heidi, and Hilda will be localized, short term, and less than significant.

Jacket Removal: Hazel

The existing bottom at the platform is now above the top of the caisson bases. To avoid extensive disturbance to the seafloor, the caisson bases and buried horizontal members will be abandoned in place. The 36-inch-diameter legs will be removed down to the top of the caisson base or at least one foot below the existing mudline. The grouted caisson bases, the bottom horizontal elevation, and some vertical diagonal braces will remain in place. Removal of the vertical platform structure will result in the creation of shallow holes. In order to avoid further platform disruption, these holes will not be backfilled, as local current action will aid in the natural backfilling process. This action will serve to reduce

impacts to earth resources from platform structure removal to levels of insignificance. These currents have not proved strong enough over the life of the platform, however, to remove the sediments accumulated around the base of the platform, so it is unlikely that the buried structural componants will be exposed over time. As discussed in a previous section, anchor scarring will be minimal due to the use of fly anchors. Therefore, overall impacts to geologic resources from the jacket removal of platform Hazel will be localized, short term, and less than significant.

Offshore Pipeline and Power Cable Abandonment

All pipelines to be abandoned will be flushed, pigged, and capped. The pipelines will be separated from the platform, capped, and the ends will be jetted down below the mudline. The pipeline pull sleds originally used to pull the pipelines to the platforms will be cut free of the pipelines with an oxy-arc torch and recovered. Some excavation will be required to free the sleds, leaving a trench for burial of the pipeline ends. The pipeline ends will be jetted down one foot below mudline using a high volume diver held hand jet. No backfilling will be required. Rather, the trenches will be left to gradually fill in through natural current processes. Surveillance of local bottom composition maps indicate that there are no rocky outcrop features that would interfere with pipeline abandonment operations.

The power cables will be cut at the platforms and the ends will be jetted down at th platform. Where it enters the mudline, the power cable will be excavated and cut with an oxy-arc torch or a mechanical cutter. Excavation will result in temporary displacement and disruption of localized regions of the seafloor. These operations will not result in any permanent changes in topography or subsea relief features.

In efforts to clean extraneous objects from the seafloor surrounding the platforms a debris recovery program will be undertaken by Chevron after the final heavy lifts have been made. The debris recovery will be performed over a 1,000-foot radius from the platform. The integration of this procedure will reduce abandonment impacts to the benthic environment to less than significant levels.

Onshore Impacts

Nearshore Pipeline and Power Cable Abandonment

The nearshore segment of the pipelines and power cables will be abandoned in place. Abandonment operations will entail flushing, pigging, grouting, and capping of all lines.

The pipelines will be flushed with seawater from the offshore platforms to remove any hydrocarbons. The seawater will be treated at the Carpinteria Plant and discharged in accordance with the plant's existing NPDES permit. Class "G" oilfield cement will be pumped into the lines from the plant to approximately 800 feet offshore, beyond the surf zone in the 5-m (15-foot) depth contour. Grouting to this distance will ensure that the lines are adequately weighted, thereby preventing any movement resulting from dynamic nearshore processes. Abandonment of all offshore lines in place will also ensure minimal disruption of bottom contours and sediments. Therefore, nearshore pipeline abandonment activities will not impact any earth processes.

1. Earth Conditions

Offshore - Due to their short-term, temporary nature, none of the offshore operations, including derrick and materials barge anchor placement, platform jacket removal, and offshore pipeline and power cable abandonment will create any significant new impacts to existing earth conditions or geological substructures.

Onshore - None of the nearshore pipeline and power cable abandonment operations such as: flushing, pigging, grouting and capping of all lines will result in significant impacts to any earth conditions or geological substructures.

2. Compaction, Overcovering of Soil

Offshore - A limited amount of seafloor material will be disrupted during anchor placement for materials and derrick barges. Some seafloor disturbance will also occur as a result of explosive detonation during the jacket removal phase for Platforms Hope, Heidi, and Hilda. Excavation of pipeline and power cable ends near their connections with the platforms will result in temporary displacement and disruption of localized regions of the seafloor. As indicated in Offshore Impacts above, local current action will aid in the natural backfilling process. None of these impacts will be long-term or result in any permanent disruption, displacement, compaction, or overcovering of offshore soil.

Onshore - Abandonment of all offshore lines in place will ensure that there will be no disruptions, displacements, compaction, or overcovering of soil in the nearshore/onshore region.

3. Topography

This project, both onshore and offshore, is temporary in nature and will not create any permanent changes in topography, nor will this project create any new significant permanent impacts to ground surface relief.

4. Unique Features

The geology in the project area consists of generally flat-lying sediment that uncomfortably overlies older faulted and folded sedimentary rock strata. The removal and abandonment of the oil production platforms and associated pipelines will not create any new permanent significant environmental effects either offshore or onshore.

5. Erosion

Offshore - Any bottom disruption that may be created on the seafloor by project operations will be naturally restored over time by natural current action. Therefore, no significant erosive impacts are expected.

Onshore - As all onshore and nearshore components of the project will be abandoned in place, there will be no physical disturbances that would result in any erosion. Therefore, no erosional impacts will be associated with these portions of the project.

6. Siltation

Offshore - Localized offshore bottom scarring resulting from project operations will create short-term sediment disturbance and redistribution. However, all scarring is expected to silt in naturally with the aid of ocean currents thus restoring the site to its natural state. Thus, this project is not expected to create any permanent significant impacts to the ocean floor affecting natural siltation.

Onshore - As all onshore and nearshore components of the project will be abandoned in place, there will be no physical disturbances that would result in any changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion. Therefore, no siltational impacts will be associated with the onshore/nearshore portions of the project.

7. Geologic Hazards

The proposed project is within a seismically active area. However, the removal and abandonment of offshore and onshore oil production facilities will not create any new significant geological hazards.

B. Air

Atmospheric Environment

Meteorology

Local and regional meteorological patterns have a primary influence on air quality conditions in Santa Barbara County. These patterns determine the transport and dispersion of pollutants and influence the formation of secondary pollutants such as ozone and aerosols. Meteorological conditions may also indirectly affect response procedures in the case of an accident during the abandonment process.

The factor most responsible for annual weather patterns in the region is a semipermanent high pressure cell centered in the Eastern Pacific Ocean (Reeves et al., 1981). In late spring to early fall, the high deflects storms to the north resulting in dry weather, stable atmosphere, and strong inversions. During winter, the high moves southward and weakens, allowing occasional frontal systems to pass the central coastal region. This movement increases the amount of rain and changes wind and inversion patterns.

Other influences on local weather include the coastal topography and the Pacific Ocean. Coastal topography affects temperature, precipitation, and wind flow. The Pacific Ocean minimizes temperature variations and produces strong sea breezes, especially in summer.

Temperature

Temperatures in the region are generally moderate with a small range of extremes. Offshore temperatures range from 10 to 18°C (50 to 65°F) year-round due to the moderating influence of the Pacific Ocean. Along the coast, maximum daily temperatures in July (representative of summer conditions) are in the 15 to 22°C (60 to 71°F) range. Minimum readings at this time average (13°C) 55°F. Temperatures for January (representative of winter conditions) include a daily average of about (11°C) 52°F with lows averaging (5°C) 42°F and highs in the 13 to 16°C (50 to 60°F) range.

Precipitation

Approximately 90 to 95 percent of the mean annual precipitation occurs between November and April. Coastal areas generally receive less than 50 cm (20 in.) of rainfall per year with the long-term annual average being on the order of 43 cm (17 in.). Offshore areas receive

less precipitation than onshore areas (Jacobs Engineering Group, 1981). Annual rainfall on the Channel Islands ranges from 19 cm (7.5 in.) at San Nicholas Island to an estimated 29 cm (11.5 in.) at San Miguel Island.

Air Pollution Control

Air pollution control is administered on three government levels in the State of California: federal, state, and local. The federal government has established ambient air quality standards to protect the public health and welfare. The State of California has established separate, more stringent standards. The Santa Barbara County Air Pollution Control District (APCD) is responsible for administering air pollution control programs within the County. The air quality of Santa Barbara County is monitored by the SBCAPCD and the California Air Resources Board (CARB).

Ambient Air Quality Standards (AAQS)

Ambient air quality standards are adopted pollutant thresholds considered safe, with an adequate margin of safety, to protect the public health and welfare. Concern is focused on those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise; these people are collectively called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The federal and state standards currently in effect are shown in Table 1.2.1-1.

Table 1.2.1-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[d,f]	Secondary[e,f]
Ozone	1-hour	0.09 ppm (180 µg/m³)	0.12 ppm (235 µg/m³)	Same as Primary Standard
Carbon Monoxide	8-hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	Same as Primary Standard
	1-hour	20.0 ppm (23 mg/m³)	35 ppm (40 mg/m³)	Same as Primary Standard
Nitrogen Dioxide	Annual Average	---	100 µg/m³ (0.05 ppm)	Same as Primary Standard
	1-hour	0.25 ppm (470 µg/m³)	---	Same as Primary Standard
Sulfur Dioxide	Annual Average	---	80 µg/m³ (0.03 ppm)	---
	24-hour	0.05 ppm (131 µg/m³)	365 µg/m³ (0.14 ppm)	---
	3-hour	---	---	1,300 µg/m³ (0.5 ppm)
	1-hour	0.25 ppm (655 µg/m³)	---	---
Suspended Particulate Matter Less Than 10 Microns Diameter (PM_{10})	Annual Geometric Mean	30 µg/m³	---	---
	Annual Arithmetic Mean	---	50 µg/m³	Same as Primary Standard
	24-hour	50 µg/m³	150 µg/m³	Same as Primary Standard
Sulfates	24-hour	25 µg/m³	---	---
Lead	30-day Average	1.5 µg/m³	---	---
	Calendar Quarter	---	1.5 µg/m³	Same as Primary Standard
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m³)	---	---
Vinyl Chloride (Chloroethene)	24-hour	0.010 ppm (26 µg/m³)	---	---
Visibility Reducing Particles	10 AM to 6 PM	In sufficient amount to give extinction coefficient of 0.23 per kilometer when relative humidity is less than 70 percent.	---	---

[a] Californa standards for ozone, carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, and particulate matter (PM_{10}) are values that are not to be exceeded. The sulfate, lead, hydrogen sulfide, vinyl chloride, and visibility-reducing particles standards are not to be equaled or exceeded.

[b] National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1.

[c] Concentration expressed first in units which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of Hg (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas. µg/m³ = micrograms per cubic meter, mg/m³ = milligrams per cubic meter.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the Environmental Protection Agency.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standard within a "reasonable time" after the implementation plan is approved by the EPA.

[f] At locations where the state standards for ozone and/or suspended particulate matter are violated, National standards apply elsewhere.

[g] Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Source: Air Resources Board, 1990. *California Air Quality Data Summary.*

Baseline Air Quality

The air quality of the Santa Barbara area is monitored by the CARB, the APCD, and industry. Air quality monitoring stations operated by the CARB and the APCD are part of the State and Local Air Quality Monitoring System (SLAMS). The majority of the monitoring stations are operated by industry under protocols developed by the APCD as required by permit conditions to detect project-related impacts. These stations are referred to as Prevention of Significant Deterioration (PSD) stations.

The nearest ambient air quality monitoring station in proximity to the platform project areas are located within the cities of Carpinteria and Santa Barbara. The Carpinteria station is located approximately 2 miles north-northwest of the platform sites and the Santa Barbara station is located approximately 7 miles north of the project site. Data from the Carpinteria station is considered most representative of the ambient air quality of the project sites. However, the Carpinteria station currently does not monitor carbon monoxide (CO) or PM_{10} (particulate matter less than 10 microns); therefore, CO and PM_{10} data were taken from the Santa Barbara station.

Ozone and PM_{10} are of primary interest because monitored concentrations of these pollutants in southern Santa Barbara County occasionally exceed State air quality standards. The concentrations of ozone, PM_{10}, CO and NO_2 monitored in the project area from 1989 through 1991 are presented in Table 1.2.1-2. The air quality data indicates that State standards for both ozone and PM_{10} are occasionally exceeded but federal standards are rarely exceeded for ozone and never exceeded for PM_{10}. Exceedances of state or federal standards for carbon monoxide, nitrogen dioxide or sulfur dioxide did not occur in the project area during the period of 1989 through 1991.

Table 1.2.1-2. Air Quality Standard Exceedances

OZONE - Carpinteria (ppm)	1989	1990	1991
Worst Hour	0.10	0.13	0.12
Number of State Exceedances (Hours >0.09 ppm)	1	5	8
Number of Federal Exceedances (Hours >0.12 ppm)	0	1	0
CARBON MONOXIDE - Santa Barbara (ppm)			
Worst Hour	11.0	11.0	9.0
Number of State Exceedances (Hour >20 ppm)	0	0	0
Number of State Exceedances (8 hours >9 ppm)	0	0	0

Table 1.2.1-2 (Continued)

NITROGEN DIOXIDE - Carpinteria (ppm)			
Worst Hour	0.06	0.05	0.07
Number of State Exceedances (Hours >0.25 ppm)	0	0	0
PM_{10} - Santa Barbara (micrograms/cubic meter)			
Worst Sample	83	96	96
Number of State Exceedances (Samples >50)	10	4	8
Annual Geometric Mean (Standard is 30)	40.8	34.5	33.5
Annual Arithmetic Mean (Standard is 50)	42.9	36.9	36.6

Source: California Air Resources Board, Air Quality Summaries, 1989, 1990, 1991

Offshore and Onshore Impacts

Methodology and Significance Thresholds

Methodology and significance thresholds used in this impact analysis are consistent with the *Environmental Thresholds and Guidelines Manual* (Guidelines) (Santa Barbara County, 1990). Generally, emissions are calculated for each source and summed for the entire proposed project. The short-term (construction) and long-term emissions are individually compared to thresholds adopted by the APCD to determine significance.

The short-term threshold for ozone precursors (nitrogen oxides [NO_x]) and reactive organic compounds [ROC]) and PM_{10} is 2.5 tons per 3-month period. Best available control technology is required for sources emitting between 2.5 and 6 tons per 3-month period. Additional mitigation is required for sources emitting greater than 6 tons per 3-month period.

Equipment to be utilized for offshore abandonment and removal operations would generate short-term exhaust or combustion emissions. Emissions during abandonment and removal activities would be produced primarily by power-generating equipment, welding equipment, tug boats, utility vessels, crew boats, and derrick barges. Offshore equipment emissions were calculated using fuel-specific and diesel vessel emission factors from the Environmental Protection Agency (EPA) document, *Compilation of Air Pollutant Emission Factors* (AP-42, 1992 update), which is accepted and utilized by the Santa Barbara County APCD. Emission factors and general assumptions pertaining to project equipment numbers, usage factors, power ratings (i.e., horsepower), and fuel consumption are presented within Appendix B.

1. Emissions

Implementation of the proposed project would include the abandonment and removal of four oil and gas platforms. The primary emission-generating activities would consist of the mobilization of offshore equipment, pre-abandonment activities, pile and conductor cutting, topside removal, jacket removal, debris removal, site clearance verification, and pipeline abandonment. As currently proposed, the four project platforms would be abandoned and removed in pairs (i.e., Hope and Heidi, Hazel and Hilda). Project emissions have been estimated for each pair of platforms (Table 1.2.2-1) and the total project (Table 1.2.2-2). Since the mobilization and demobilization of equipment would occur once for all four platforms, emissions generated due to this activity have been added to the total project.

Emissions would be reduced by utilizing the following Santa Barbara County APCD standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7:

- Equipment shall be maintained as per manufacturer's specifications;
- Catalytic converters shall be installed on all gasoline-powered equipment (if applicable);
- The fuel injection timing shall be retarded on diesel-powered equipment by two (2) degrees from manufacturer's recommendations;
- Gasoline-powered equipment shall be substituted for diesel-powered equipment if feasible;
- Direct injection diesel engines (i.e., Caterpillar D399 or equivalent) shall be used if available;
- Turbocharged diesel engines with intercooling shall be used if available; and
- Reformulated diesel fuel and high pressure injectors shall be used in all diesel-powered removal and abandonment equipment.

The Santa Barbara County APCD guideline document (Scope and Content of Air Quality Sections in Environmental Documents, 1992) indicates that fuel injection retard,

high pressure injections and reformulated diesel fuel would reduce NO_x and ROC emissions of diesel-powered equipment by 40 percent and 15 percent, respectively. Direct injection diesel engines may emit up to 50 percent less NO_x.

Table 1.2.2-1. Emission Estimates - Per Pair of Platforms (i.e., Platforms Hope and Heidi; and Platforms Hazel and Hilda)

Operation	Emission - Total Tons		
	NO_x	ROC	PM_{10}
Pre-Abandonment	0.548	0.042	0.084
Pile and Conductor Cutter	2.158	0.262	0.204
Topside Removal	14.958	1.914	1.494
Jacket Removal	7.586	1.094	0.880
Transport to LB/LA	1.37	0.22	0.160
Debris Removal	0.594	0.102	0.072
Site Clearance Verification	1.062	0.080	0.112
Pipeline Abandonment	0.186	0.136	0.022
Total Tons	28.47	3.86	3.03
Santa Barbara APCD Threshold	2.5 tons/3 months	2.5 tons/3 months	2.5 tons/3 months

Table 1.2.2-2. Total Project Emission Estimates

Operation	Emission - Total Tons		
	NO_x	ROC	PM_{10}
Mobilization/Demobilization of Removal Equipment[a]	0.690	0.098	0.077
Abandonment and Removal - Platforms Hope and Heidi	28.47	3.86	3.03
Abandonment and Removal - Platforms Hazel and Heidi	28.47	3.86	3.03
Total Tons	57.622	7.808	6.130
Santa Barbara APCD Threshold	2.5 tons/3 months	2.5 tons/3 months	2.5 tons/3 months

[a] Mobilization/Demobilization requires one operation for all four platforms.

As indicated on Table 1.2.2-1, the abandonment and removal of Platforms Hope and Heidi would produce approximately 28.47 tons of NO_x, 3.86 tons of ROC, and 3.03

tons of PM_{10}. Abandonment and removal of Platforms Hazel and Hilda would produce the same amount of pollutants. Each pair of platforms to be abandoned and removed would require approximately 45 days to complete. Overall, implementation of the proposed project (Table 1.2.2-2) would contribute approximately 57.622 tons of NO_x, 7.808 tons of ROC and 6.130 tons of PM_{10} to the south central coast air basin. These emissions are covered by the existing SBAPCD permits for the four platforms, which expire early in 1997. While, based on the Santa Barbara APCD thresholds of 2.5 tons per quarter for NO_x, ROC, and PM_{10}, the project abandonment and removal would, within the confines of the time of operation, result in short-term air quality impacts. These emissions are less than those permitted by the SBAPCD on an annual basis until 1997 for all reactants. The values, in tons per year, for the four platforms in operation were 8.7 t/y for NOx, 203.37 t/y for ROC and 1.08 t/y for PM10. After the short-term impacts of the removal operation, there will be a return to zero emissions.

Emissions associated with the cutting up of platforms within the Long Beach/Los Angeles port have been addressed in environmental documentation required for permitting of these scrapping facilities, in accordance with guidelines set by the South Coast Air Quality Management District (SCAQMD).

While the short-term air quality impacts of the proposed project may be considered adverse, project emissions are below those permitted under Chevron's existing Santa Barbara County (1997) APCD permit.

2. Odors

During the operational period, diesel fumes will be noticeable within several hundred yards downwind of the emission source(s). These odors will be noticeable to the workers involved in project operations, but will be dispersed by the prevailing winds long before they would reach any sensitive onshore receptors. No long-term odors will be generated by either the offshore or the onshore portions of the project.

3. Climate

Upon completion, this project will not create any major changes in air movements, temperature, or climate, nor create any abnormal weather conditions.

C. Water

Coastal Processes and Water Quality

Santa Barbara Channel Circulation

The Santa Barbara Channel is a generally east-west oriented coastal region bounded to the north by the land mass extending from Point Conception to Port Hueneme and to the south by the Channel Islands (from east to west: Anacapa, Santa Cruz, Santa Rosa, and San Miguel). Transport into and out of the Santa Barbara Channel is primarily limited to the vertical sections extending from Anacapa Island to Port Hueneme on the eastern end of the Channel and from San Miguel Island to Point Conception on the western end.

Currents within the Santa Barbara Channel are extremely variable and complex, generally of low velocity (5 to 10 cm/sec) and highly dependent upon flow between basins to the north and south (Emery, 1960 in Texaco, 1987). They are the result of several types of phenomena, i.e., wind-driven circulation, density-driven circulation, tides, storm surges, and various types of waves (Newberger, 1982). Flow direction is dependent upon the driving current. Flow is toward the northwest during the Davidson Current period (winter) and southeast during the Southern California Countercurrent period (majority of the year). Flow velocities and directions are affected only slightly by tides.

Episodic currents occasionally affect the waters of the Southern California Bight, e.g., "El Niño," an episodic event of relatively long-term scale that results in abnormally warm water. These events last approximately one year, but occasionally terminate shortly after initiation. El Niño events have occurred most recently in 1957, 1965, 1972, 1976, and 1982-1983, 1985-1986, and 1992-1993.

Wind Driven Currents

Currents in the Santa Barbara Channel may be characterized as weak and variable (National Ocean Service, 1980). Circulation is wind-dominated with a weak easterly nontidal flow predominating during the spring and summer months whereas a westerly set persists in fall and winter. The nearshore tidal current along the north shore of the Channel generally ranges from 0.5 to 1 knot (Chambers, 1992).

Littoral Currents

Movement of littoral materials is in response to wave direction and the configuration of the coast. Waves approach the Santa Barbara Channel predominantly from the west-to-northwest, producing a southerly transport of littoral sands. Less frequent waves from the southeast cause occasional reversals in the direction of littoral transport. Sources of littoral materials include the streams entering the channel basin, eroded coastal rocks and sediment, and sands from coastal dunes (Little, 1985).

Santa Barbara Channel Tides

The tide in the Santa Barbara Channel is classified as a mixed semidiurnal type because there are normally two unequal high and two unequal low waters in a day. The tide enters the Channel through the eastern end, sweeps up the coast, and exits the western end. The peak time difference between these two ends of the Channel is normally 1 hour (Science Applications, Inc., 1984). Maximum tides occur near the coastline and gradually decrease away from shore. Expected tidal induced surface currents have speeds of around 10 cm/sec (0.2 km) in the open Channel (A. H. Glenn and Associates, 1979). Tidal data presented by Science Applications, Inc. (1984) are given in Table 1.3.1-1. Data are for Santa Barbara and Port Hueneme and are typical of expected values in the western and eastern portions of the Channel.

Table 1.3.1-1. Santa Barbara Channel Tides

Extreme High (observed January 1983)	8.0 ft. MLLW
Average Yearly Highest	7.3 ft. MLLW
Mean Higher High Water (MHHW)	5.4 ft. MLLW
Mean High Water (MHW)	4.7 ft. MLLW
Mean Sea Level (MSL)	2.8 ft. MLLW
Mean Low Water (MLW)	1.0 ft. MLLW
Average Yearly Lowest	-1.8 ft. MLLW
Extreme Low (Predicted)	-2.6 ft. MLLW

Source: National Ocean Service, 1988.

Santa Barbara Channel Wave Climatology

Along Southern California, the most protected coastal area is from Point Conception to Ventura. Oceanic waves cannot approach this shoreline without being modified by the Channel Islands (Anacapa, Santa Cruz, Santa Rosa, San Miguel) or drastically refracted over the shelf (Chambers, 1992). Protection afforded by the offshore islands is generally

so complete that significant waves over the shelf are mainly formed in the local area. This restricted fetch allows, for the most part, development of low waves with short lengths and periods.

Winds, waves and swell in the Santa Barbara Channel are produced by four basic meteorological patterns: Eastern Pacific High, Eastern Pacific Low, Tropical Cyclones, and Southern Hemisphere Low.

The Eastern Pacific High (EPH) occurs over the area of interest most of the year especially during the late spring, summer, and fall. Due to the dominating influence of the EPH, waves approach from the west most of the time. Consequently, the primary direction of longshore sediment transport within the littoral cell is toward the east and south (downcoast) (Chambers, 1992).

The Eastern Pacific Low (EPL) generates the largest waves within the Santa Barbara Channel during the months of November to April. These waves generally approach the shoreline from the west to northeast. Not only are these waves high, but they can occur when fluvial discharges from the rivers and streams maximize. Consequently, EPL events may also be responsible for movement of large amounts of sediment in a relatively brief time period (Chambers, 1992).

The Tropical Cyclones (TC) develop off the west coast of Mexico and can produce fairly large waves in Southern California, but their impacts to the project area are basically insignificant. The most important TC to have affected Southern California in the past 75 years occurred in September 1939 and produced significant wave heights of about 4.6 m (15 ft) from the south quadrant at the east end of Santa Barbara Channel (Chambers, 1992).

The Southern Hemisphere Low (SHL) activity occurs during the period from May to October. Although the wave periods are long, 16 to 22 seconds, the wave heights are relatively low (U.S. Army, 1987). Waves generated from SHL activity approach the coastline from the south (Bailard, 1991).

Tsunamis

Tsunamis are long-period waves that are generated by an earthquake or offshore volcano. Their effect is magnified along the shoreline, sometimes producing intense wave action. The tsunamis which have struck the Santa Barbara coast in the past have generally been

generated a considerable distance away. The probability of a locally generated destructive tsunami is considered remote (Science Applications, Inc., 1984).

Water Quality

Santa Barbara Channel waters feature mean surface temperatures from 57°F (14°C) near Point Conception to 59°F (15°C) at the eastern end. Salinity averages about 33.5 parts per thousand with very low variability. Dissolved oxygen generally ranges from six to seven milligrams per liter at the surface and is about 2 milligrams per liter at a depth of 825 feet (250 m). The sea water features low transparency within 1 mile (1.6 km) of the shoreline.

Natural oil, gas, and tar seeps significantly contribute to the levels of oil substances and sediments. More than 2,000 oil, gas, and tar seepage zones have been located in the California offshore area (SLC, 1977). The most widespread seepage occurs along the northernmost part of the Santa Barbara Channel with a concentration in three areas: Coal Oil Point, Point Conception, and the Santa Barbara to Rincon area. The total volume of oil, gas, and tar released in the Channel has been estimated at up to 100 barrels per day (SLC, 1977).

Onshore wells improperly plugged and abandoned from historic oil production activity at the turn of the century in the Summerland Beach area west of Loon Point continue to seep as much as 15 bbls/day of crude oil into the water. A semi-permanent sheen is often seen directly offshore at this location. A state-funded project was recently undertaken which permanently plugged and abandoned a portion of the remaining onshore wells.

The main water quality problem in the Santa Barbara Channel is caused by municipal and industrial discharges. Most disposal outfalls are located close to shore and thus only minimal dilution and dispersion is achieved. The communities of Santa Barbara, Montecito, Summerland, and Carpinteria all discharge secondary-treated sewage to the Channel. The total volume of discharges is approximately 12.23 million gallons per day (Chambers, 1992). These effluents contain about 30 milligrams per liter suspended solids and 60 milligrams per liter of chemical oxygen.

Local Setting

Platform-Specific Conditions

1. Offshore

   - Currents: All Platforms. All four platforms are located within the same basic littoral cell and are thus subject to currents of similar speed and direction. Velocities are within the 5-10 cm/sec range. Current studies of Dr. Terry Hendricks of the Coastal Water Research Project estimates that north to northwest is the predominant direction of the flow of currents near the project platforms (Simpson, 1977).

   - Water Quality (Platform Discharge). The only current discharge from the platforms is sanitary discharge from sewage treatment units, excluding Hazel, which has no discharges.

2. Onshore. As the proposed project will not impact nor be impacted by onshore water resources or water quality, those issues are not addressed.

Offshore Impacts

As the proposed project will be conducted primarily offshore, impacts to water will largely be associated with coastal processes. While the platform removal and pipeline abandonment will be subject to impacts from currents and coastal processes, the project would not result in any changes to currents or alterations of the course or direction of water movements. During the course of the proposed project, removal of the subsea portions of the platforms, and the exposing, cutting, and capping of associated pipelines will result in short term, less than significant turbidity impacts, as discussed below.

During past abandonment operations, water quality problems occurred with the removal of Platforms Helen and Herman in 1988. These problems were associated with pipelines from Platforms Helen and Herman that were not properly flushed and pigged at shutdown in 1973. The inadequate flushing and pigging of these lines caused some release of hydrocarbons during abandonment operations. In addition, no cathodic protection was in place following shutdown of the platforms. Considerable corrosion occurred to these pipelines over the 15 years prior to abandonment operations. The release of oil from these lines was a result of pigging operations during final abandonment operations. The pipelines

involved in the proposed project have been inspected and are in much better physical condition, and, as mentioned above, will be fully flushed and pigged prior to removal.

All conductors, pipelines, and other oil-containing vessels have been flushed in efforts to remove all residual oil. In spite of these precautions, small oil spills may occur while final cleaning is undertaken. These spills will not release more than one barrel (42 gals.) of fluids, as that is the estimated maximum amount of cleaning fluids in use at any one time. The majority of the spilled oil would float at the surface. In such cases, onsite spill response equipment would be immediately deployed. Some of the spilled oil, however, would be dispersed and retained in the water column. The weathering mechanisms that result in surface oil being retained in the water column include dissolution, dispersion, sinking, and sedimentation (MMS, 1989). No hazardous substances will be released to the ocean following detonation of the explosive charges. Chemicals used in the explosive charges will become inert gasses following detonation. Completion of the project will result in a beneficial impact to water quality by eliminating existing discharges from the platforms. No other impacts to water quality or quantity would result from implementation of the proposed project.

Resuspension of Bottom Sediments

1. Jacket Removal: All Platforms. Cuttings piles accumulated at the base of the caissons will likely be disturbed, but remain largely intact, as a result of the removal process. Impacts to water quality will result in short-term turbidity and localized redistribution of bottom sediments. Such increases will be temporary, and low current speeds (approximately 10 cm/sec) in this portion of the channel dictate that redistribution will be confined to a narrow radius around the platforms.

   Observations by Simpson (1977) have indicated that much of the disposal piles located at the platform base may be solidified, with thick layers (18-20 feet) of shells and other material covering the inner layer of hardened drill cuttings. Therefore, due to their weight and composition, cuttings piles will not likely be heavily resuspended by platform removal operations.

   The bottom will also be disturbed by platform removal barge anchors. Figure 1.1.2-1 shows the anchor spread and movements of a typical platform removal barge. See Offshore Impacts, page 8, for a description of the barge mooring process. As discussed in Offshore Impacts, anchors are not dragged on the bottom, but will create a disturbance while they are digging in. A correctly placed anchor typically results in a

physical disturbance on the bottom of about 35 feet (Chambers, 1986). Turbidity plumes of suspended sediment from each anchor will be short-term and localized to an approximately 100-foot radius within the water column. Water quality impacts from anchor placement and removal will be localized, short term, and less than significant. No residual water quality impacts are anticipated.

2. Offshore Pipeline and Power Cable Abandonment. Excavation required to expose pipeline pull sleds and power cables will entail the use of diver-held hand jets. These operations will result in short-term, localized turbidity impacts within the immediate region of the platforms. Turbidity plumes from suspended sediments are anticipated to be confined to a 100-foot radius surrounding areas of operations for short durations. Therefore, offshore water quality impacts from pipeline and power cable abandonment are determined to be less than significant.

Liquid Waste Disposal

All liquid wastes will be pumped to Carpinteria Plant via pipeline or stored in appropriate containers and hauled to shore for disposal. All tanks and storage vessels will be flushed to remove residual hydrocarbons. Spills of small quantities of liquid and solid materials (less than 10 gallons) such as diesel fuel may occur during the removal/abandonment process. With proper supervision, accidental discharges are expected to be infrequent and very small. In the event an oil or diesel spill were to occur in association with the abandonment operations, onsite response equipment will be stationed to quickly and effectively contain and recover the oil. Please refer to Section 4.0, "Oil Spill Contingency Plan" for a discussion of onshore and offshore oil spill contingency equipment and oil spill and response scenarios. Impacts will be short term and less than significant.

Sewage produced by removal work crews will be treated in U.S. Coast Guard approved units, including portable facilities, and discharged to the ocean after chlorination. These effluents should be completely dispersed throughout the water column within a few hundred yards of the platforms. Impacts will be short term and less than significant.

All marine vessels utilized in the removal/abandonment operations will use designated vessel traffic corridors and shipping lanes. This will serve to avoid collisions with other vessels not associated with the proposed project as well as inter-project vessels.

Onshore Impacts

Nearshore Pipeline Abandonment

As the nearshore pipelines will be abandoned in place, there will be no abandonment activities conducted within the nearshore area. Pipeline pigging and flushing operations will be conducted from the platforms. Pipeline grouting will be conducted at the valve box on the bluff. Therefore, as no work will actually be conducted in the nearshore area, there will be no impacts to water quality.

1. Currents

   As indicated in "Offshore Impacts" above, the offshore portion of this project will be subject to the impacts from the currents and coastal processes. However, the project would not result in any changes to currents or alterations of the course or direction of water movements. The onshore portion of this project will not have any impact on the ocean currents.

2. Runoff

   By their nature, neither the offshore nor the onshore portions of the proposed project would affect absorption rates, drainage patterns, etc.

3. Flood Waters

   See #2 above.

4. Surface Water

   See #2 above.

5. Discharge and Turbidity

   Offshore - Removal of the subsea portions of the platforms, and the exposing, cutting, and capping of associated pipelines will result in short-term, less than significant turbidity impacts. Barge anchor placement and removal will also create short-term, localized turbidity impacts.

All liquid and other wastes will be treated prior to discharge to the ocean. All impacts will be short-term and less than significant. Completion of the project will result in a beneficial long-term impact to water quality by eliminating existing discharges from platforms.

Onshore - There will not be any discharges associated with the onshore portion of this project. Short-term, localized turbidity will be created in the nearshore region during the pipeline capping phase. Coastal processes will rapidly disperse suspended sediments. Thus, onshore turbidity impacts will be less than significant.

7. Ground Water Quality

This project will not alter any aquifers nor consume any ground water. There will not be any changes to ground water quantity caused by this project.

8. Water Supplies

This project will have no effect on public water supplies.

9. Flooding

This project will not expose people or property to water-related hazards such as tidal waves or induce flooding.

10. Thermal Springs

No known thermal springs are located either onshore or offshore in the vicinity of this project which could be affected by this project.

D. & E. Plant and Animal Life

Regional Biologic Setting

Offshore

The project area, which encompasses the nearshore region between Fernald Point and Rincon Point, lies at the central portion of the Santa Barbara Channel. The Santa Barbara Channel is bordered on its seaward margin by the northern Channel Islands. In addition to protecting the coastline from significant waves, the islands support unique and important marine communities. Point Conception at the western end of the Santa Barbara Channel and the east-west orientation of the coast provide additional protection from northwest swells. The channel thus comprises a relatively protected and benign environment for marine life (Chambers, 1992).

The Santa Barbara Channel lies along important migration routes for marine mammals, fishes, and seabirds and also contains a rich, diverse assemblage of resident marine life. These abundant marine resources support a number of important commercial fisheries, mariculture, and kelp harvesting. Recreational activities dependent on Santa Barbara Channel marine life include sports fishing, SCUBA diving and snorkeling, bird watching, whale watching, and tide pooling. The Santa Barbara Channel's wealth of marine life also provides a resource for teaching and for scientific research (Chambers, 1992).

The Santa Barbara Channel is considered a biogeographical transition zone between the northern Oregonian Province and the more southerly marine assemblages of Southern California. Point Conception itself is usually pinpointed as the major biogeographic boundary point, but instead of a distinct break in distributions at Point Conception there is a zone of overlap of 4 to 5 degrees latitude (Murray, et al., 1980).

This section describes the marine biological resources of the platform removal project region. The following paragraphs describe important marine flora and fauna beginning with the platforms and the outer waters and progressing to near-shore communities.

1. Marine Flora and Fauna

- Avifauna. The Southern California Bight, in general, and the Santa Barbara Channel, in particular, have been characterized as exhibiting a diverse and abundant marine avifauna (Chambers Consultants and Planners, 1982; USDOI,

MMS, 1983). As a consequence of its location within a portion of the Pacific Flyway and due to the variability of its mainland and insular coastal terrain, the Santa Barbara Channel region, including Santa Barbara and Ventura Counties, provides foraging and breeding habitat for over 250 species of birds (Webster, et al., 1980).

The sandy beach habitats and occasional coastal cliff and nearshore rock prominence of the Channel are typically characterized by the presence of migrating and wintering populations of sandpipers (*Erolia* spp.), plovers (*Charadrius* spp.), and gulls (*Larus* spp.), as well as resident species of plovers, oyster catchers (*Haematopus bachmani*), and gulls. Table 1.4.1-1 lists the common marine bird species of the coastal area of the Santa Barbara Channel.

Dames and Moore (1977b) identified seven species which were characteristic of the offshore areas of the Santa Barbara Channel, including three species of gulls (Heermann's [*L. heermanni*], western [*L. occidentalis*], and Bonaparte's [*L. philadelphia*]) two species of cormorant (Brandt's [*Phalacrocorax penicillatus*] and double-crested [*P. auritus*]), the western grebe (*Aechmophorus occidentalis*), and the endangered brown pelican (*Pelecanus occidentalis*) (Tables 1.4.1-1 and 1.4.1-2).

- Fishes. By virtue of the diversity of habitats it encompasses and its proximity to a major biogeographical boundary (at Point Conception), the Santa Barbara Channel supports a diverse fish fauna. Of 554 species (144 families) of coastal marine fishes found in California waters, 481 species (129 families) are found off Southern California (between Point Conception and the Mexican border) (Miller and Lea, 1974). Most of these Southern California species occur in the Santa Barbara Channel. The fish species most commonly observed by commercial fish spotters while operating off central and Southern California were the Northern anchovy (*Engraulis mordax*) jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Scomber japonicus*), Pacific Sardine (*Sardinops sagax*), and bluefin tuna (*Thunnus thynnus*) (Squire, 1983). A partial list of the most commonly taken fishes by commercial fishing operations in the Santa Barbara Channel is provided in Table 1.8.1-1.

Table 1.4.1-1. Coastal Associated Birds Found Within the Platform Abandonment Project Area

	Seasonal Status		Seasonal Status
Seabirds			
PHALACROCORACIDAE		PODICIPEDIDAE	
Brandt's cormorant	RB	Eared grebe	WV
Double-crested cormorant	RB	Horned grebe	WV
Pelagic cormorant	RB	Pied-billed grebe	RB
		Western grebe	WV
HYDROBATIDAE		ALCIDAE	
Ashy storm petrel	SR	Ancient murrelet	WV
Black storm petrel	SR	Cassin's auklet	SR
Leach's storm petrel	SR	Common murre	WV
		Pigeon guillemot	SR
		Rhinoceros auklet	WV
		Tufted puffin	WV
		Xantus' murrelet	SR
PROCELLARIIDAE		LARIDAE	
Manx shearwater	X	Arctic tern	X
Northern fulmar	WV	Black tern	X
Pink-footed shearwater	X	Black-legged kittiwake	WV
Sooty shearwater	X	Bonaparte's gull	WV
		California gull	WV
		Caspian tern	M
		Pomarine jaeger	X
		Parasitic jaeger	X
		Glaucous-winged gull	WV
		Western gull	RB
		Herring gull	WV
		Ring-billed gull	WV
		Mew gull	WV
		Heerman's gull	WV
		Common tern	X
		Least tern	SR
PELECANIDAE			
Brown pelican	RB		
Migratory Water Fowl			
ANATIDAE		GAVIIDAE	
American wigeon	WV	Arctic loon	WV
Black scoter	WV	Common loon	WV
Blue-winged teal	WV	Red-throated loon	WV
Brant	M		
Bufflehead	WV		
Canvasback	WV		
Cinnamon teal	WV		

Table 1.4.1-1. (Continued)

	Seasonal Status		Seasonal Status
Migratory Water Fowl (continued)			
ANATIDAE (continued)			
Fulvous whistling duck	C		
Gadwal	WV		
Greater scaup	WV		
Green-winged teal	WV		
Lesser scaup	WV		
Mallard	WV		
Northern pintail	WV		
Northern shoveler	WV		
Red-breasted merganser	WV		
Redhead	WV		
Ruddy duck	WV		
Surf scoter	WV		
White-winged scoter	WV		
Wood duck	WV		
Shorebirds			
PHALACROCORACIDAE		HAEMATOPODIDAE	
Brandt's cormorant	RB	Black oystercatcher	M
Double-crested cormorant	RB		
Pelagic cormorant	RB		
SCOLOPACIDAE		CHARADRIIDAE	
Black turnstone	WV	Black-bellied plover	WV
Common snipe	WV	Killdeer	RB
Dunlin	WV	Lesser golden plover	WV
Greater yellowlegs	WV	Semipalmated plover	M
Least sandpiper	WV	Snowy plover	WV
Lesser yellowlegs	WV		
Long-billed curlew	WV		
Long-billed dowitcher	WV		
Marbled godwit	WV		
Red knot	X		
Ruddy turnstone	WV		
Sanderling	WV		
Short-billed dowitcher	X		
Solitary sandpiper	MM		
Spotted sandpiper	WV		
Surfbird	WV		
Wandering tattler	WV		
Western sandpiper	WV		
Whimbrel	WV		
Willet	WV		

Table 1.4.1-1. (Continued)

	Seasonal Status		Seasonal Status
Wetland Birds			
ARDEIDAE		RALLIDAE	
American bittern	WV	American coot	WV
Black-crowned night heron	RB	Black rail	C
Cattle egret	WV	Clapper rail	SUN
Great blue heron	M	Common Gallinule	WV
Great egret	WV	Virginia rail	WV
Green-backed heron		Sora	WV
Snowy egret			
RECURVIROSTRIDAE		THRESKIORNITHIDAE	
American avocet	M	White-faced ibis	M
Black-necked stilt	RB		

RB: **Resident Breeder.** The species is a year-round resident and breeds within the given habitat type.

SR: **Summer Resident.** The species occurs only as spring-summer breeder; migrates south for winter months.

WV: **Winter Visitor.** The species occurs only as a winter visitor and is not known to breed in the region.

M: **Spring/Fall Migrant.** The species occurs within the given habitat only as a spring or fall migrant.

C: **Casual.** Records for the species are few and intermittent for the region.

X: **Transient.** The species occurs as a regular visitor to the project site. Pertains to wide-ranging species with extensive home range territories.

SUN: **Status Uncertain.** Documentation of occurrence or breeding is based on limited information; regional status not clearly defined.

Source: Chambers, 1992

Table 1.4.1-2. Seabird Species

Common Name	Species Name
Common loon	*Gavia immer*
Arctic loon	*Gavia arctica*
Red-throated loon	*Gavia stellata*
Western grebe	*Aechmophorus occidentalis*
Eared grebe	*Podiceps caspicus*
Pink-footed shearwater	*Puffinus creatopus*
Manx shearwater	*Puffinus puffinus*
Sooty shearwater	*Puffinus griseus*
Black storm-petrel	*Oceanodroma melania*
Ashy storm-petrel	*Oceanodroma homochroa*
Least storm-petrel	*Oceanodroma microsoma*
Brown pelican	*Pelecanus occidentalis*
Brandt's cormorant	*Phalacrocorax penicillatus*
Double-breasted cormorant	*Phalacrocorax auritus*
Pelagic cormorant	*Phalacrocorax pelagicus*
Black brant	*Branta nigricans*
Black scoter	*Melanitta nigra*
White-winged scoter	*Melanitta deglandi*
Surf scoter	*Melanitta perspicillata*
Northern phalarope	*Lobipes lobatus*
Parasitic jaeger	*Sterorarius parasiticus*
Pomarine jaeger	*Steroratrius pomarinus*
Western gull	*Larus occidentalis*
Herring gull	*Larus argentus*
California gull	*Larus californicus*
Ring-billed gull	*Larus delawarensis*
Mew gull	*Larus canus*
Heermann's gull	*Larus heermanni*
Bonaparte's gull	*Larus philadelphia*
Common tern	*Sterna hirundo*
Forster's tern	*Sterna forsteri*
Elegant tern	*Thalasseus elegans*
Pigeon guillemot	*Cepphus columba*
Rhinoceros auklet	*Cerorhinea monocerata*
Cassin's auklet	*Ptychoramphus aleutica*
Xantus' murrelet	*Endomychura hypoleuca*

The above are common and scientific names of the seabirds encountered in the study area, Santa Barbara Channel.

Source: Varoujean, et al., 1983