MINERALS MANAGEMENT SERVICE
PACIFIC OCS REGION
RECEIVED
JUN 29 1984
FIELD OPERATIONS
LOS ANGELES

PLAN OF DEVELOPMENT AND PRODUCTION

POINT PEDERNALES FIELD

OCS P-0441

SUBMITTED BY

UNION OIL COMPANY OF CALIFORNIA

CO-LESSEES

GULF OIL CORPORATION

SUPERIOR OIL COMPANY

November 1983

EXECUTIVE SUMMARY

Upon discovery of oil on OCS P-0441 Union Oil Company of California as operator investigated various ways and means for developing the reserves and moving the oil to market. Of prime importance was the existence of the Lompoc Oil Field with existing pipelines and the Santa Maria Refinery located in San Luis Obispo County. A number of potential alternate methods for marketing the reserves were investigated from an economic and environmental viewpoint. This Plan of Development and Production and the accompanying Environmental Report is the result of the consideration of a number of alternates. The concerns of the State, County and Local government agencies were given top priority.

The "Plan" calls for one platform located in the southern portion of the lease. As the platform drilling progresses the need for and location of a second platform will be determined. This plan, however, is for one platform and any additional platforms will be the subject of a supplemental plan which will be submitted when the need is determined.

The Santa Maria Refinery has a capacity to handle 20,000 BOPD of OCS P-0441 crude. This plan, therefore, addresses only that oil which can be handled through the existing or upgraded facilities. If additional platforms are required the production rate will not exceed the 20,000 BOPD or such other amount as the refinery system can handle. It is anticipated that additional platforms would be

needed to maintain a production rate of 20,000 BOPD. In the future, if additional oil becomes available at Lompoc, its disposition will be the subject of new permits, environmental studies, etc.

The project can be divided into the following basic parts:

A. The Platform - A 12-pile structure with 72 well slots, designed for a two drilling rig operation and a production deck to handle the anticipated production and provide drilling supplies and mud storage.

B. The Power System - A marine power cable will be installed from shore to supply power purchased from a public utility. The power cable will be designed to deliver 20,000 KVA. This capacity will allow additional platforms to connect into the system at a very minimal cost.

C. The Pipeline System - Three pipelines will be installed. A 16" oil line, an 8-5/8" gas line and an 8-5/8" produced water return line. The lines will cross the beach north of the Santa Ynez River and proceed easterly, north of the Santa Ynez River, to the existing Lompoc Oil Field. The pipeline route, both offshore and onshore, was selected after cultural and biological surveys were performed. The least environmentally sensitive route was chosen.

D. Dehydration System - The oil dehydration system will consist of direct-fired heater-treaters and associated tanks, piping and valves. The equipment will be the same as that used in Union's Mandalay Facility which was installed in the latter part of 1981. Gas will go directly

into the Battles Plant gathering system with no compression or treating required at Lompoc. Since the Battles Plant is existing and will require no modification it is not a part of the plan. A description of the plant is included in Appendix A for information only.

E. Dry Oil Pipeline System - A new 10" heated oil line will be installed in the existing right-of-way to Orcutt where a new heating and pumping station will be installed. From Orcutt the oil will enter existing lines for transport to the Santa Maria Refinery.

F. The Refinery - To process the oil in the Santa Maria Refinery it will be necessary to add certain sulphur and gas handling facilities. This refinery modification will be the subject of an application to San Luis Obispo County, however, the modifications will result in a reduction of air emissions. From the Santa Maria Refinery the oil will enter existing pipelines for transport to Union's San Francisco Refinery located at Rodeo, California. There will be no changes required in either the pipeline or the S.F.R. as a result of handling OCS P-0441 crude.

This "Plan" is designed to handle all of the production by pipeline and to limit air emissions by not generating electrical power. It is designed to handle additional development in the area, however, the disposition of the crude oil from Lompoc by some means other than that described in the "Plan" would be the subject of further permitting.

Best Available Control Technology will be used both onshore and offshore. Air emissions as stated in the Environmental Report will appear to be low, however, they are based on a very similar project which was completed in 1981 and has been operating since that time. The plan and the ER are based on actual recent experience in the Santa Barbara Channel.

Field studies which have been performed include:

1. A shallow seismic survey covering the platform location and the pipeline route.
2. A cultural survey covering the platform location and pipeline route offshore and onshore.
3. A biological survey covering the platform location and pipeline route offshore and onshore.
4. Soil sampling at the onshore site.
5. Detailed onshore pipeline route surveying and investigating.
6. Site specific wind, wave and current studies covering the platform site area and the pipeline route.

Union has and will continue to participate in the Santa Barbara County "Petroleum Transportation Committee" and various industry studies concerning the transportation processing and refining of OCS crude. Union is well aware of the concerns of the county and state agencies. This "Plan" addresses all of the concerns, in that all of the oil will be transported by pipelines, the onshore dehydration facility will be constructed in an existing oil field and existing

or upgraded pipelines will be utilized to transport oil to the existing refinery system located in San Luis Obispo County and Rodeo, California.

This "Plan" and the accompanying Environmental Report along with copies of the various engineering studies is a complete and accurate description of the actions proposed for the development of OCS Tract P-0441.

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EXHIBITS

APPENDIXES

A. Description of the Battles Gas Processing Plant

B. Summary of Industry Guidelines Necessary for Compliance with OCS Orders

C. Contingency Plan for H_2S and SO_2

D. Oil Spill Contingency Plan (Accompaniment)

Union Oil and Gas Division: Western Region

Union Oil Company of California
2151 Alessandro Drive
P.O. Box 6176, Ventura, California 93006
Telephone (805) 656-7600

UNION 76

MINERALS MANAGEMENT SERVICE
PACIFIC OCS REGION
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FIELD OPERATIONS
LOS ANGELES

Richard S. Gillen
Regional Offshore Construction Manager

August 8, 1984

NOTED - DUNAWAY

Minerals Management Service
1340 West 6th Street, Suite 200
Los Angeles, California 90017

Attention: Mr. Ed Lee

Re: Platform Irene DPP

Dear Ed:

Per our meeting of August 8, 1984 I am enclosing 50 copies of page XVI-5 to replace the existing page. This deletes any reference to the list of alternates which have been removed from the Environmental Report.

Yours very truly,

R. S. Gillen

RSG:im
enclosure

SECTION I

INTRODUCTION

Union Oil Company of California, Gulf Oil Corporation and Superior Oil Co., acquired the mineral rights for Lease OCS P-0441, formerly tract 229, at Oil & Gas Lease sale #53 which was held May 28, 1981, for a bonus of $70,742,905.20. The lease contains 4904.9 acres and is located approximately 3 miles west of Pt. Pedernales. Water depths range from 280' on the west to 180' on the east. The adjoining leases and their owners are: to the north P-0438 and west P-0440 both Exxon Corp. to the south P-0444 Arco and to the east California State waters.

One self-contained drilling and production platform will be installed as soon as necessary permits and approvals can be secured, currently thought to be in the third quarter of 1985. The platform will contain conductor guides for 72 wells, and will be designed to permit drilling with two rigs simultaneously.

The initial production rates of the first few wells should range from 2000-3000 BOPD. Gas oil ratio's during the early stages of production are anticipated to approximate 230 ft^3/bbl. The GOR will remain relatively constant until the oil decline starts during the fourth year at which time it will increase gradually to approximately 3000 ft^3/bbl during the ninth year of production.

The initial rates of subsequent wells will decline rapidly as the reservoir pressure drops in the area of the platform. The peak production rate of 15000 BOPD is anticipated early in the life with a ultimate project life of 15 years. The peak gas production is anticipated to be 13,250 MCF/D (Exhibit IV-A). The ultimate recovery from the first platform is estimated at 42.8 million barrels of oil and 51.1 billion cubic feet of natural gas. Subsequent development could increase these estimated recoveries 2 or 3 fold, depending upon the geologic extent and quality of the reservoir rock.

This plan is a complete description of the initial development project for OCS P-0441 to be submitted to the MMS and other concerned agencies as described in OCS Order No. 8 "Platforms and Structures" and OCS Order No. 11 "Oil and Gas Production Rates, Prevention of Waste and Protection of Correlative Rights". It will therefore, include the following: 1) a geotechnical review, 2) field history and geology, 3) reservoir descriptions and evaluations, 4) drilling procedures and facilities, 5) platform structures and sites, 6) platform description and specifications, 7) platform facilities, 8) a description of production and power systems, 9) description of safety, anti-pollution, and control systems, 10) pipeline system, 11) the onshore site, 12) an oil spill contingency plan, 13) a critical operations and curtailment plan, 14) a description of the circumstances under which critical drilling and production operations will be curtailed, 15) the alternatives available to the proposed plan, and 16) an appendix.

This Plan also describes the activities necessary to complete: 1) fabrication and installation of the drilling and production platform in 240 ± feet of water, 2) fabrication and installation of the facilities on said platform necessary to test, measure and transport the production, 3) installation of one or two drilling rigs with necessary associated facilities, 4) installation of an oil pipeline and a gas pipeline to the onshore site and a return pipeline for produced water, 5) installation of onshore facilities necessary to receive, heat, separate, measure and distribute the production, and 6) installation of safety controls and pollution prevention facilities necessary to protect operating equipment and the environment.

The development will be in accordance, in so far as possible within the control of the lease owners, with the schedule, of activities given in Exhibit I-C.

This Plan presents the design parameters which will be used to develop the Pt. Pedernales Field. Detailed engineering will be performed after soil investigations, hazard surveys, biological and archeology surveys, etc., have been completed. Results of the detailed engineering will be submitted to the MMS for approval prior to construction.

Union can process up to 20,000 bbls/day of P-0441 oil in their Santa Maria Refinery, and production will be maintained at this level or less. If additional productive capacity is developed, other

acceptable outlets for the production will be developed.

Elements of this Plan are involved with State and County permitting bodies including, but not limited to, the following:

1. Pipeline Right-of-Ways across State Tide Lands - State Lands Commission

2. Pipeline Right-of Ways across Vandenberg Air Force Base Dept. of Air Force

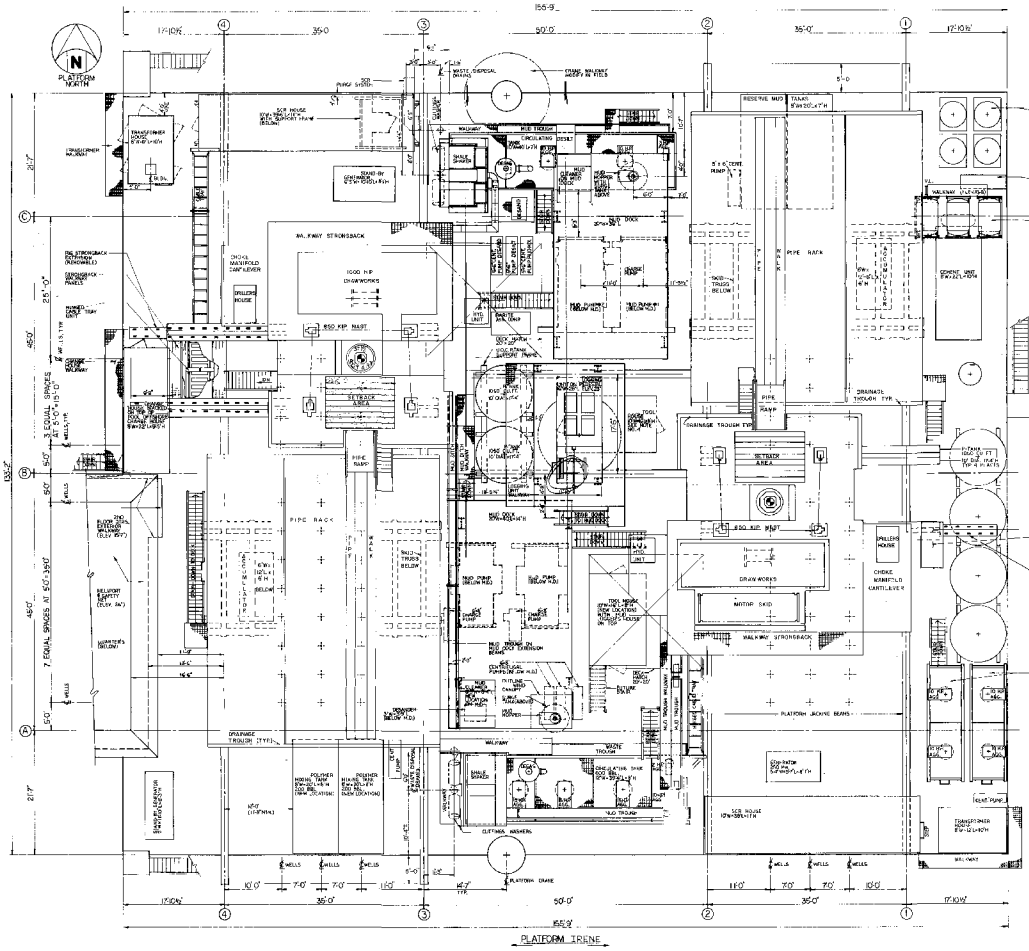
3. Onshore site, etc. - County of Santa Barbara

4. Consistency Certification - California Coastal Commission

5. Permit to Construct in Coastal Zone - California Coastal Commission

6. NPDES Permits - EPA

To allow all decision makers to properly evaluate this plan Union anticipates that an agreement will be developed wherein all involved agencies will participate under a "Lead Agency" concept to develop an environmental document which will satisify the requirements of both the National Environmental Protection Act and the California Environmental Quality Act.



ABBREVIATIONS

P.R.	PIPE RACK
M.U.	MUD UNIT
S.H.	SCR HOUSE
D.H.	DRILLERS HOUSE
T.T.	TOOL TROUGH
D.T.	DRAINAGE TROUGH
ELEV.	ELEVATION

NOTES

1. DIMENSIONS ARE CENTER-LINE UNLESS SHOWN OTHERWISE.
2. ELEVATIONS ARE FROM PLATFORM DATUM.
3. PLATFORM JACK BEAMS ARE 11'6" ABOVE PLATFORM DECK.

UNION OIL CO. OF CALIFORNIA
PLATFORM IRENE

CONTRACTOR | CONTR. JOB NO.

EQUIPMENT LOCATION PLAN
DRILL DECK

NUMBER	NO.	REFERENCE DRAWINGS	REV. NO.	DATE	REVISED	DIRECTORY ALL DRAWING REVISIONS AUTHORIZATION DATE	REV. BY	PLOT BY	CHK'D

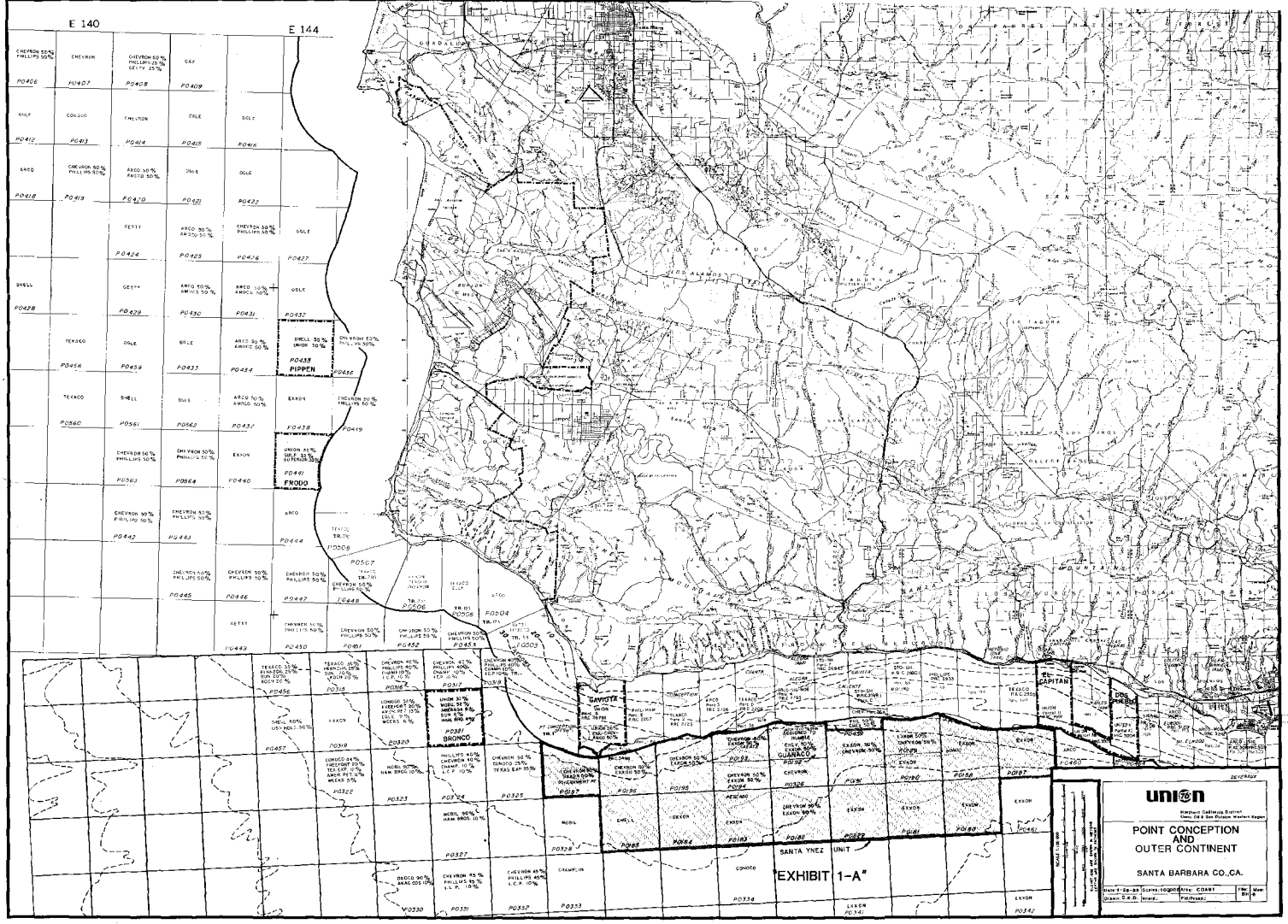
APPROVED FOR CONSTRUCTION

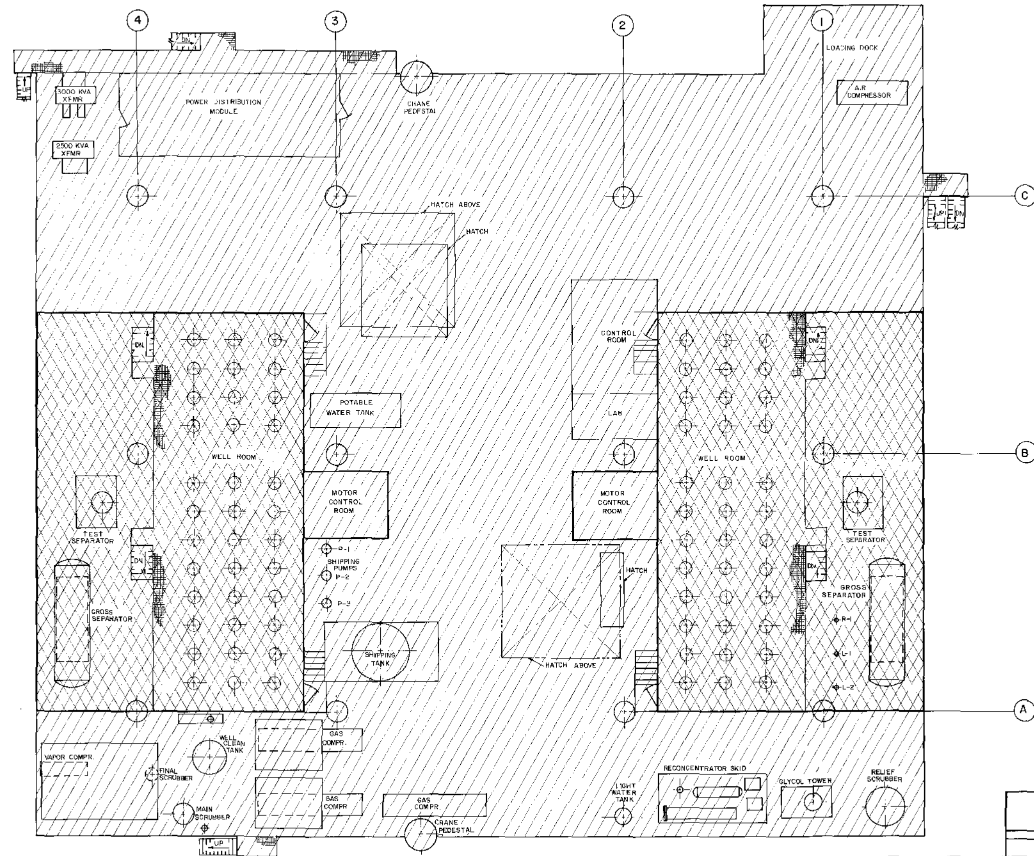
A. F. E.	DATE	REVISED

DRAWN BY: J.F. Foster
CHECKED BY:
TRACED BY:
TRACTN. CHK.:
APPD.:
SCALE: 1/8" = 1'-0"
DATE: 8-24-1983

Union Oil Company of California
Los Angeles, California
union

DRAWING NO. -


E 140
E 144
SANTA YNEZ UNIT
"EXHIBIT 1-A"
union
Northern California District
Gulf Oil & Gas Division Western Region
POINT CONCEPTION
AND
OUTER CONTINENT
SANTA BARBARA CO.,CA.



N

LEGEND:

- CLASS I, DIVISION I
- CLASS I, DIVISION II

WEIGHT LEGEND

TEST SEPARATOR	7,500# EA.
GROSS SEPARATOR	36,000# EA.
SHIPPING TANK	67,000# EA.
WELL CLEAN TANK	17,000#
RELIEF SCRUBBER	34,000#
MAIN SCRUBBER	6,500#
GAS COMPRESSOR	20,000# EA.
VAPOR COMPRESSOR	8,000#
OVERHEAD EXCHANGERS	8,000# EA.
CHANGE ROOM	16,000#
CONTROL ROOM	18,000#
AIR COMPRESSOR	5,000#
WATER TANK	150,000#
FINAL SCRUBBER	4,000#

NUMBER | BY | REFERENCE DRAWINGS

REV. NO. | DATE | REVISED | DESTROY ALL PRINTS BEARING EARLIER DATE | REV. BY | CKD. BY | APP'D

APPROVED FOR CONSTRUCTION

A. F. E. | DATE | SIGNED

DRAWN BY T.A. Foster
CHECKED BY
TRACED BY
TRAC'G. CKD
APP'D
APP'D
SCALE 1/8" = 1'-0"
DATE 3-12-'83

UNION OIL CO. OF CALIFORNIA
PLATFORM IRENE

CONTRACTOR | CONTR. JOB NO.

EQUIPMENT LOCATION PLAN
PRODUCTION DECK

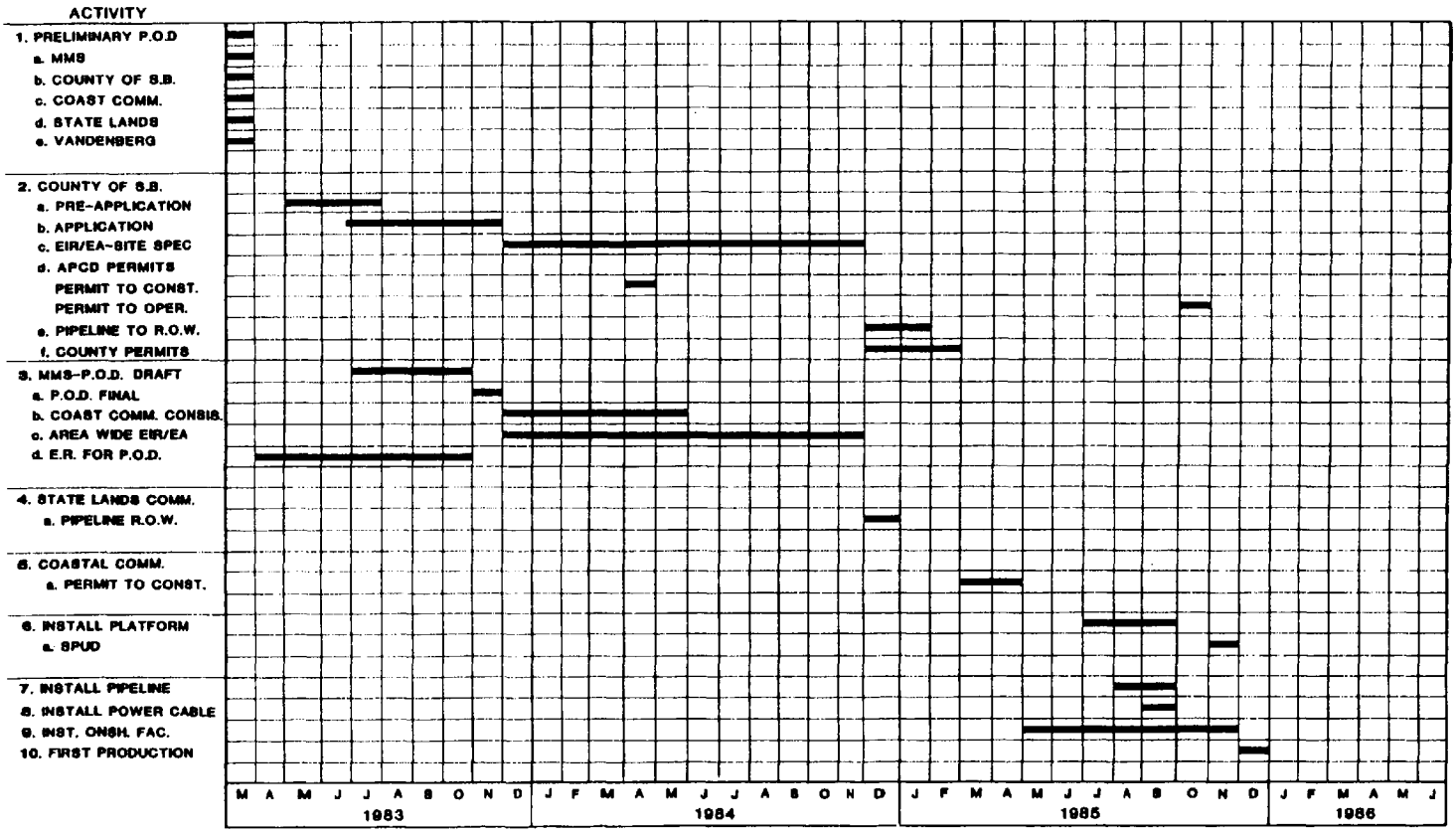
Union Oil Company of California
Los Angeles, California
UNION

DRAWING NO.
SHEETS

POINT PEDERNALES

SCHEDULE OF DEVELOPMENT

EXHIBIT I-C



SECTION II

GEOTECHNICAL REVIEW

In September and October 1981, prior to the drilling of the exploratory wells on Lease OCS P-0441, Nekton Inc. did a shallow drilling hazards survey for Union and its Co-Lessees. The survey incorporated a 3.5 kHz sub-bottom profiler, 41 kHz echo sounder, minisparker, water guns, side scan sonar and magnetometer. The survey grid for potential geologic hazards and delineation of subsurface structures totaled 81 line miles within Lease P-0441 and 410 line miles on areas adjacent to the lease (Exhibit II-A). An additional 137 line miles of survey data employing the magnetometer and side scan sonar systems only were used for extensive cultural resource study.

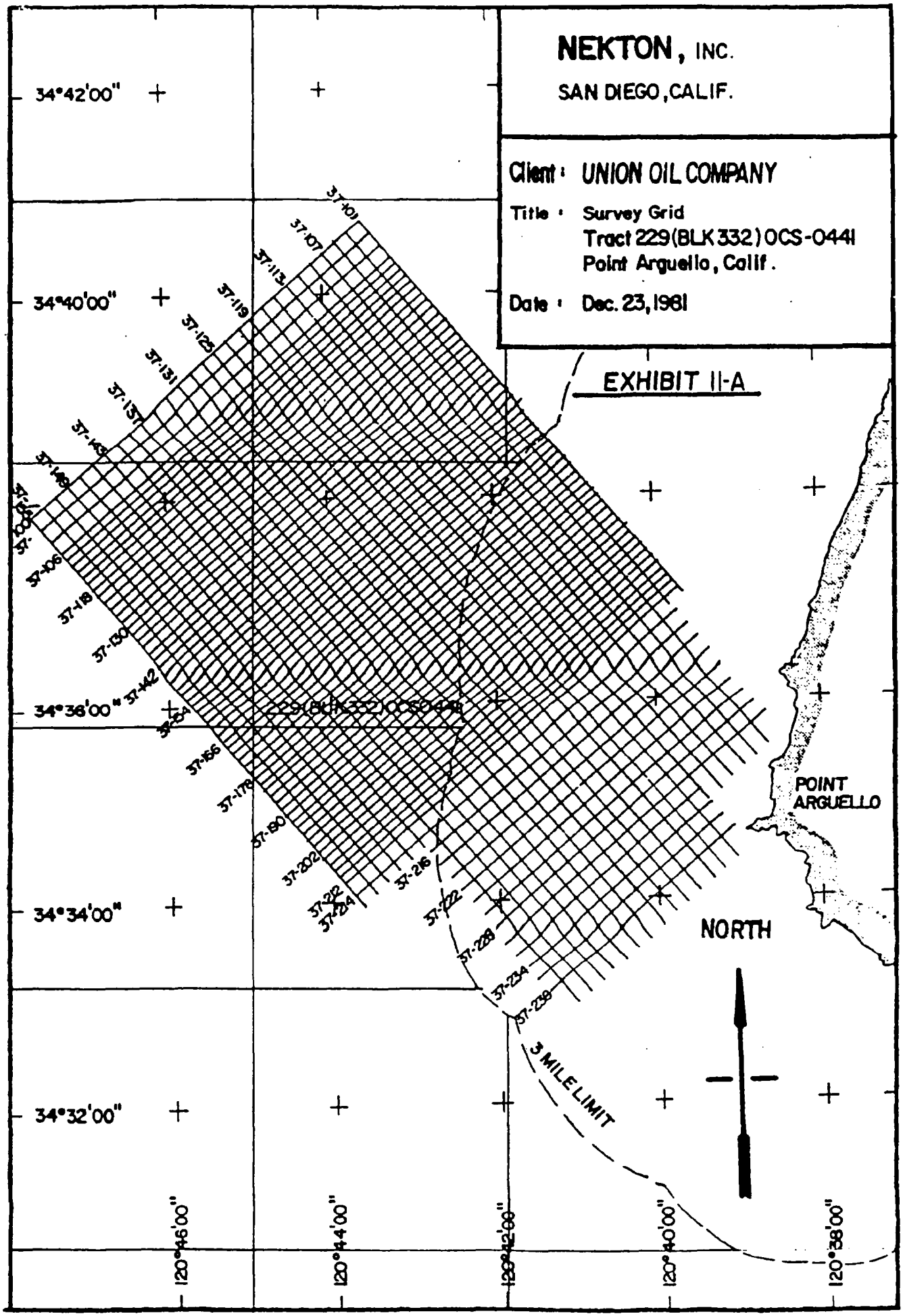
More detailed surveys will be run prior to setting a platform or laying a pipeline. However, the existing data indicates that the proposed platform location (X = 708,200; Y = 3,831,986, UTM Zone 10) and the portion of the proposed pipeline route that lies on Lease OSC P-0441 is in an area of smooth and featureless seabed that dips less than 0.5^{0} west - southwest.

From drop core data and acoustic properties the surface sediments are composed of mostly fine-grained materials, silts and clays, with some sand. Soil borings will be taken and tests will be made at the

proposed platform site in order to develop the soil criteria necessary to design the supporting foundation piling, and to confirm that there is no tendency to liquify under expected earthquake loadings.

There are no identifiable cultural resources on the seafloor that would interfere with drilling operations.

According to the initial shallow hazard survey by Nekton, there are shallow and near surface gas charged sediments along the anticlinal axis of the field on the southwest portion of Lease OCS P-0441. Although the seismic profiles indicated shallow gas, near surface gassy sediments and water column anomalies possibly due to gas seepage, the concentration, pressure and depth to which the sedimentary section is gas-charged could not be determined. It should be pointed out that the first two wells on the lease were drilled in this area and they did not experience any problems with shallow gas and the platform is to be located within 650 feet of well #2.


NEKTON, INC.
SAN DIEGO, CALIF.
Client : UNION OIL COMPANY
Title : Survey Grid
Tract 229 (BLK 332) OCS-0441
Point Arguello, Calif.
Date : Dec. 23, 1981
EXHIBIT II-A
34°42'00"
34°40'00"
34°38'00"
34°34'00"
34°32'00"
120°46'00"
120°44'00"
120°42'00"
120°40'00"
120°38'00"
37-101
37-107
37-113
37-119
37-125
37-131
37-137
37-143
37-148
37-100
37-106
37-118
37-130
37-142
37-154
37-166
37-178
37-190
37-202
37-216
37-212
37-204
37-222
37-228
37-234
37-239
229 (BLK 332) OCS 0441
POINT ARGUELLO
NORTH
3 MILE LIMIT

Section III - Geology

Pursuant to the Freedom of Information Act (5 U.S.C. 552) and its implementing regulations (43 CFR Part 2) and as provided in 30 CFR 550.199(b), the information contained in this section is deleted from the public information copy of this submission.

Proprietary

Not for Public Release

Section IV – Reservoir Evaluation and Bottomhole Locations

Pursuant to the Freedom of Information Act (5 U.S.C. 552) and its implementing regulations (43 CFR Part 2) and as provided in 30 CFR 550.199(b), the information contained in this section is deleted from the public information copy of this submission.

Proprietary

Not for Public Release

SECTION V

DRILLING PROCEDURES AND FACILITIES

The drilling rig used to drill the wells will be rated at 1,000 horsepower and have the capacity of drilling to 12,000 feet TMD using 4-1/2" drill pipe. The rig and related equipment will be specially designed and/or modified for use on an offshore platform. The major components of the drilling rig, including derrick and substructure, will be purchased by Union Oil and maintained on the platform for subsequent use. Other rig equipment as required for development drilling and future workover operations will be provided by contract rig owners. The crews necessary to operate the rig will be supplied by contract offshore drilling companies. The drilling mast will be designed and built in accordance with API Standard 4A for steel derricks.

A skid beam and transverse skid base will be provided to support the rig substructure. This skid base system will be equipped with hydraulic jacks and will be capable of moving the drilling rig over the various well locations on the platform.

The mud system hardware will include an active tank with 500 barrels working capacity and a storage tank of 300 barrels working capacity. Two 1,000 horsepower mud pumps will be provided for the

drilling rig along with a surge tank, mixing pump and hopper. The storage tanks will be designed for emergency use and will normally be separated from the active tanks by a closed valve in the interconnecting piping. Each mud tank will be equipped with agitation devices and transfer pumps.

Returned mud will be treated with dual-tandem shakers, desanders, desilters, degassers, and a cuttings washing system. Mud volume and flowrate will be monitored with a pit volume totalizer, flowrate indicator, and a fill-up measurement device. These systems will be equipped with sensors for remote monitoring and audible alarms at the driller's station and on-site supervisor's office.

The proposed liquid mud system is a lightly treated seawater based drilling fluid which utilizes two types of salt water clays and small concentrations of other additives as required for specific drilling conditions. The major components and additives are listed below:

Component	Concentration(LBS/BBL)
Sepiolite	5-6
Saponite	±25
Polyanionic Cellulose	2.5-3.0
Causticized Lignite	2-5
Chrome-free Lignosulphonate	1
Caustic Soda	0.5-1
Soda Ash	0.5

Corrosion Inhibitor	0.25
Defoamer	0.01-0.02%
Detergent	1-2
Barite	As required for density

The decision to use seawater instead of a fresh water mud system is due to both availability of seawater make up fluid, which typically comprises 92% of the total drilling fluid, and the natural compatability and stabilization of the wellbore afforded by use of a seawater system. This is because the salinity of the seawater is similar to that of the natural waters found in the objective formations. The only change in additives required in using the seawater system involves the clays which are the primary viscosifiers and fluid loss control agents. In a fresh water system, sodium montmorillonite (bentonite) is used in concentrations of 25 to 30 lbs/BBL. The chemical nature of bentonite is such that it will not yield effectively in seawater, and a combination of saltwater clays, sepiolite and saponite in this case, are required for proper rheology and fluid loss characteristics.

The other listed additives are used to control certain properties of the drilling fluid. Polyanionic cellulose is used to reduce fluid loss without increasing visiosity. Lignite and lignosulphonate are fluid thinners which disperse the fine drilled solids as they accumulate in the mud system. Caustic soda is needed to maintain alkalinity of the mud in the 9 to 9.5 pH range. Soda ash is used to reduce the natual hardness of seawater so other additives will

deliver maximum benefits. Detergents are used to disperse reactive clays often found while drilling top hole sections. Corrosion inhibitors protect the metals exposed to the drilling fluid from rusting and defoamers break out any entrained air introduced in surface equipment.

Should any unusual drilling condition require use of other additives, such as an oil/diesel mixture to free a stuck drill string, the contaminated mud will not be discharged. The contaminated fluid will be transferred to a waste tank on the subdeck, and from that point transported to the onshore treating facility in the oil pipeline. Onshore operating personnel will be notified of the shipment and will be prepared to salvage any hydrocarbons for further processing while waste materials are separated and disposed of at approved disposal sites. This method reduces contaminated fluid handling when compared to barging contaminated fluids to shore in a workboat.

The temperature of the discharged muds depend on the true vertical depth of the hole being drilling. In general, temperature of subsurface strata increases with depth. Based on data gathered in exploratory drilling on OCS P-0441, the maximum whole mud temperature at the mud shaker will be 117°F, assuming a depth of 5000 feet TVD. From the shaker area, this mud to be discharged continues to a cuttings washing system, where it is dilluted with seawater. Assuming a mud discharge rate of 2.5 gallons per minute diluted with

wash water (seawater) at a 100 gallons per minute rate, the resulting effluent will be 63.3°F in temperature. This effluent will be discharged at a point approximately 150 feet below MLLW, into an ocean environment with ambient temperature of 60-61°F.

One diesel powered dual pump cementing unit and four 1,000 cubic foot bulk storage tanks will be provided for well cementing and completion operations.

Power for the operation of the rig and related equipment will be provided by a public utility. This will be accomplished through use of an offshore marine power transmission cable, transformers, SCR unit, and platform power distribution center. This method of powering the drilling rig has been determined to have the least environmental impact and is discussed in depth in Section XVI of this document and in the accompanying Environmental Report. The large power demand of the drilling phase lasts a relatively short time, therefore use of public utility power will result in significant economy of operation as compared to alternate power sources.

Blowout prevention equipment used will conform to the standards of API Bulletin RP53 and the provisions of OCS Order 2 "Drilling Operations", Section 5. Before drilling below the conductor casing, a 500 psi working pressure diverter system will be installed and tested. After surface casing is set, a blowout prevention system which includes three ram-type and one annular-type preventer will be

installed. The testing of BOP's and related equipment will be done as suggested by API recommended practices and in accordance with OCS Order 2, Section 5. This includes testing the equipment upon installation, before drilling out of each casing string, and not less then once per week. Additionally, the testing will alternate between all control stations and retesting will be performed should any repairs affecting a pressure seal be required.

The diverter system will be equipped with two 8" diverter lines and full opening pnuematic valves. The system will be designed such that closing of the diverter element will cause at least one line of the system to be open to flow. In addition, all valves will be designed to fail safe. All diverter functions will be controlled by a panel at the driller's station. A schematic of the diverter system is presented in Exhibit V-C.

The blowout prevention equipment, riser assembly, and related equipment which could be exposed to wellbore pressure will be rated to 3000 psi working pressure which exceeds the maximum anticipated surface pressure. The method of pressure calculation is presented in Exhibit V-E. The preventers will consist of two sets of pipe rams, one set of blind rams, and an annular preventer, arranged as shown in Exhibit V-D. This blowout prevention equipment will include a hydraulic actuating system with sufficient capacity to repeatedly operate all functions and a remote control station in the on-site supervisor's office.

Other blowout equipment includes but is not limited to the following:

1. Choke and kill lines equipped with master and control valves.
2. Fill-up line.
3. A choke manifold equipped in accordance with API RP53.
4. Upper and a lower kelly cock designed to be run through the preventers.
5. An inside blowout preventer and a full-opening safety valve in the open position will be on the rig floor during all drilling operations. The safety valve will be fitted with the appropriate cross-over to mate with any drill pipe, collar, or casing connection in use. All necessary keys and wrenches will be stored in an accessible location on the rig floor.
6. A back-pressure valve (float-sub) will be run in the drill string while drilling into potentially pressured zones.

Union will apply to the MMS for field drilling rules. Therefore the typical drilling program and the casing program presented assume that the MMS will issue field drilling rules.

The time to drill and complete a well is estimated to be 30 days. With one rig operating 12 wells per year can be completed. The platform will intitially have only one rig even though the design is adequate for two rigs.

any repairs affecting a pressure seal be required.

EXHIBIT V-A

OCS P-0441

TYPICAL DRILLING PROCEDURE

Assume: 242' Water Depth
110' RKB to MLLW
352' RKB to Mud Line

1. Rig up over desired location.
2. Drill 17-1/2" hole to 672' RKB (320' BML).
3. Underream hole to 26".
4. Run and cement 20" conductor casing at 652' RKB* (300' BML). (See Cementing Detail)
5. Install and function test diverter.
6. Directionally drill 17-1/2" hole to 1372' RKB (1020' BML). Run logs on selected wells.
7. Underream hole to 22".
8. Run and cement 16" surface casing at 1352' RKB (1000' BML).
9. Install and test 3000 psi blowout preventers.
10. Directionally drill 14-3/4" hole to 3867' RKB (3515' BML). Run logs.
11. Run and cement 10-3/4" intermediate casing at 3852' RKB (3500' BML).
12. Directionally drill 9-7/8" hole to 4852' RKB (4500' BML) or as directed by geology. Run logs.
13. Run and cement 7" production liner at 4852' RKB (4500' BML).
14. Run production equipment on 3-1/2" tubing.
15. Remove blowout preventers. Install Christmas tree.

* All depths given as true vertical depths. Measured depths will vary with directional programs.

EXHIBIT V-A

OCS P-0441

TYPICAL DRILLING PROCEDURE

CEMENTING DETAIL

CONDUCTOR CASING - 20"

Hole Size: 26"
Casing Shoe: 300' BML (652' RKB)
Cement Top: MUD LINE (352' RKB)

Volume: 900 CF (Includes 100% excess)

Lead Slurry: 400 CF "G", 4% GEL, 2% $CACl_2$
Tail Slurry: 500 CF "G", 2% $CACl_2$

SURFACE CASING - 16"

Hole Size: 22"
Casing Shoe: 1000' BML (1352' RKB)
Cement Top: Wellhead (60' RKB)

Volume: 1680 CF (Includes 50% excess in open hole)

Lead Slurry: 1030 CF "G", 4% GEL, 2% $CACl_2$
Tail Slurry: 650 CF "G", 2% $CACl_2$

INTERMEDIATE CASING - 10-3/4"

Hole Size: 14-3/4"
Casing Shoe: 3500' BML (3852' RKB)
Cement Top: APPX 2000' BML (2352' RKB)

Volume: 1100 CF (Includes 30% excess)

Lead Slurry: 750 CF "G", 4% GEL
Tail Slurry: 350 CF "G" CMT with fluid loss control

PRODUCTION LINER - 7"

Hole Size: 9-7/8"
Liner Shoe: 4500' BML (4852' RKB)
Liner Top: 3300' BML (3652' RKB)
Cement Top: Liner Top

Volume: 375 CF (Includes 20% excess in open hole)

Slurry: 375 CF "G" CMT W/fluid loss & viscosity control additives.

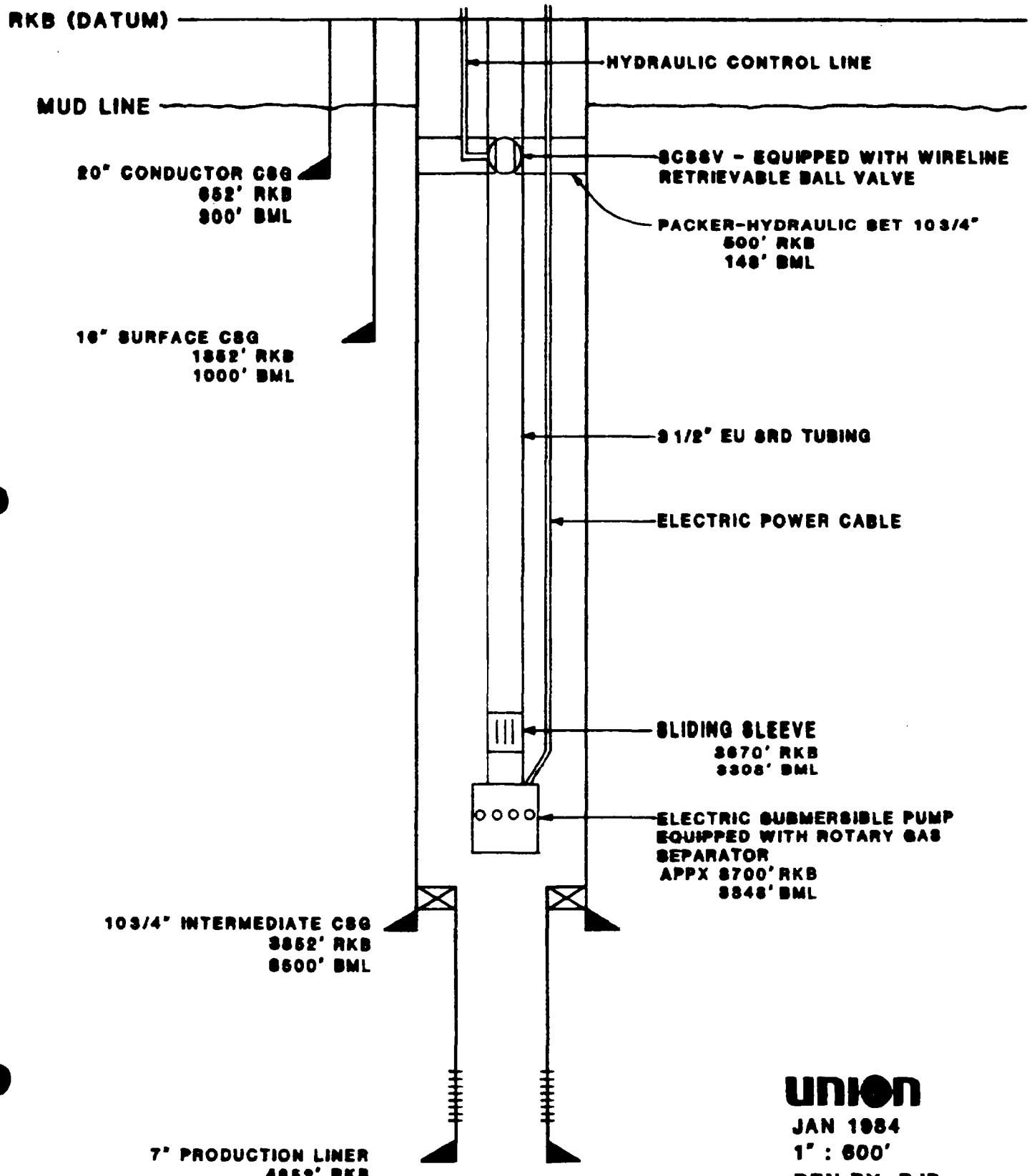
NOTES:

1. All depths given are vertical depths.
2. All cementing procedures will conform to Pacific OCS Order #2. Actual cementing volumes will be determined by caliper logs run prior to the casing string. Cement top of the 10-3/4" intermediate string will depend on presence of hydrocarbon bearing or permeable zones as indentified by log analysis. The cement column will extend at least 500' above such zones.

EXHIBIT V-B

OCS P-0441

TYPICAL COMPLETION DESIGN



union

JAN 1984

1" : 600'

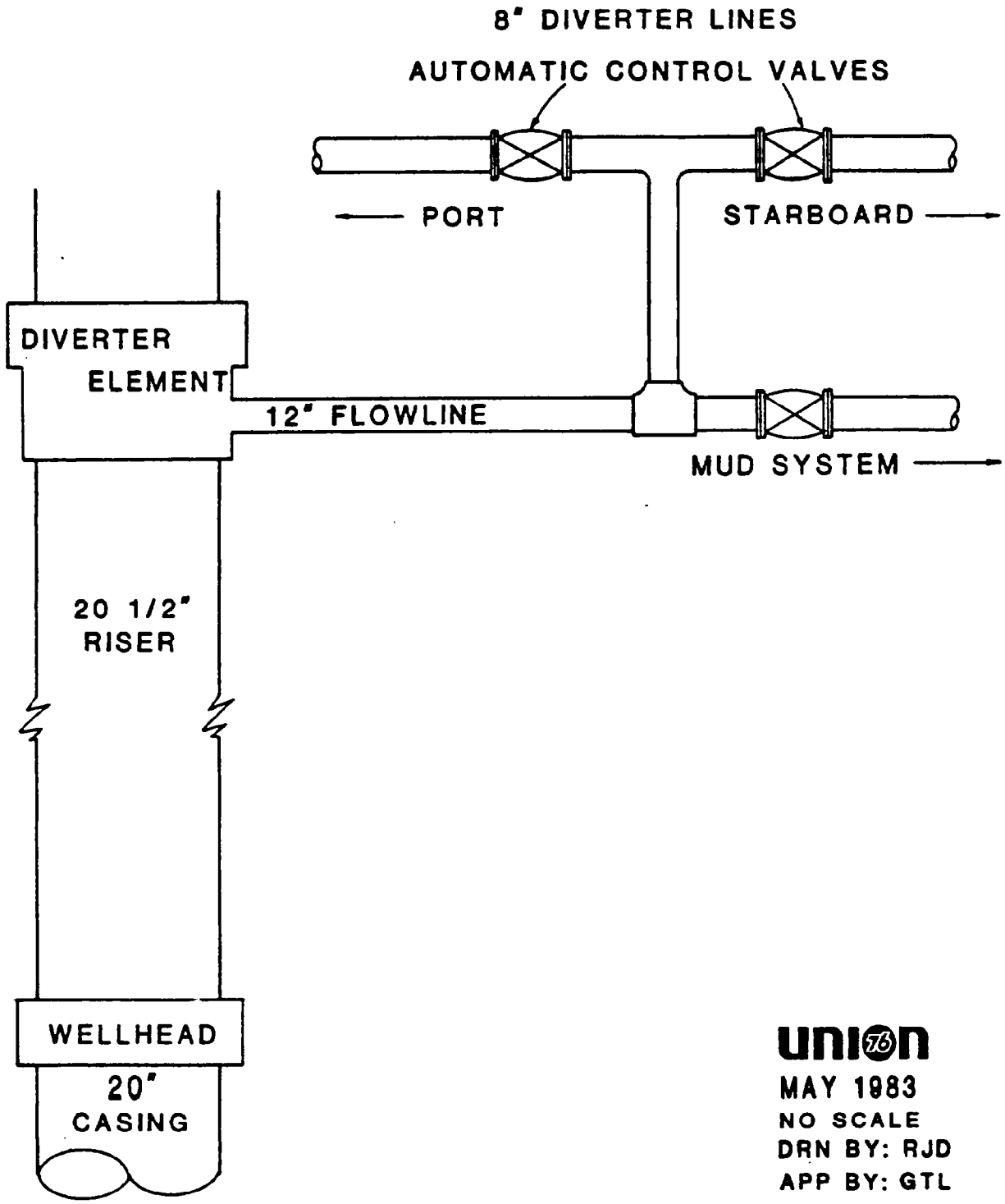
DRN BY: RJD

APP BY: GTL

EXHIBIT V-C

OCS P-0441

DIVERTER SYSTEM



union 76

MAY 1983

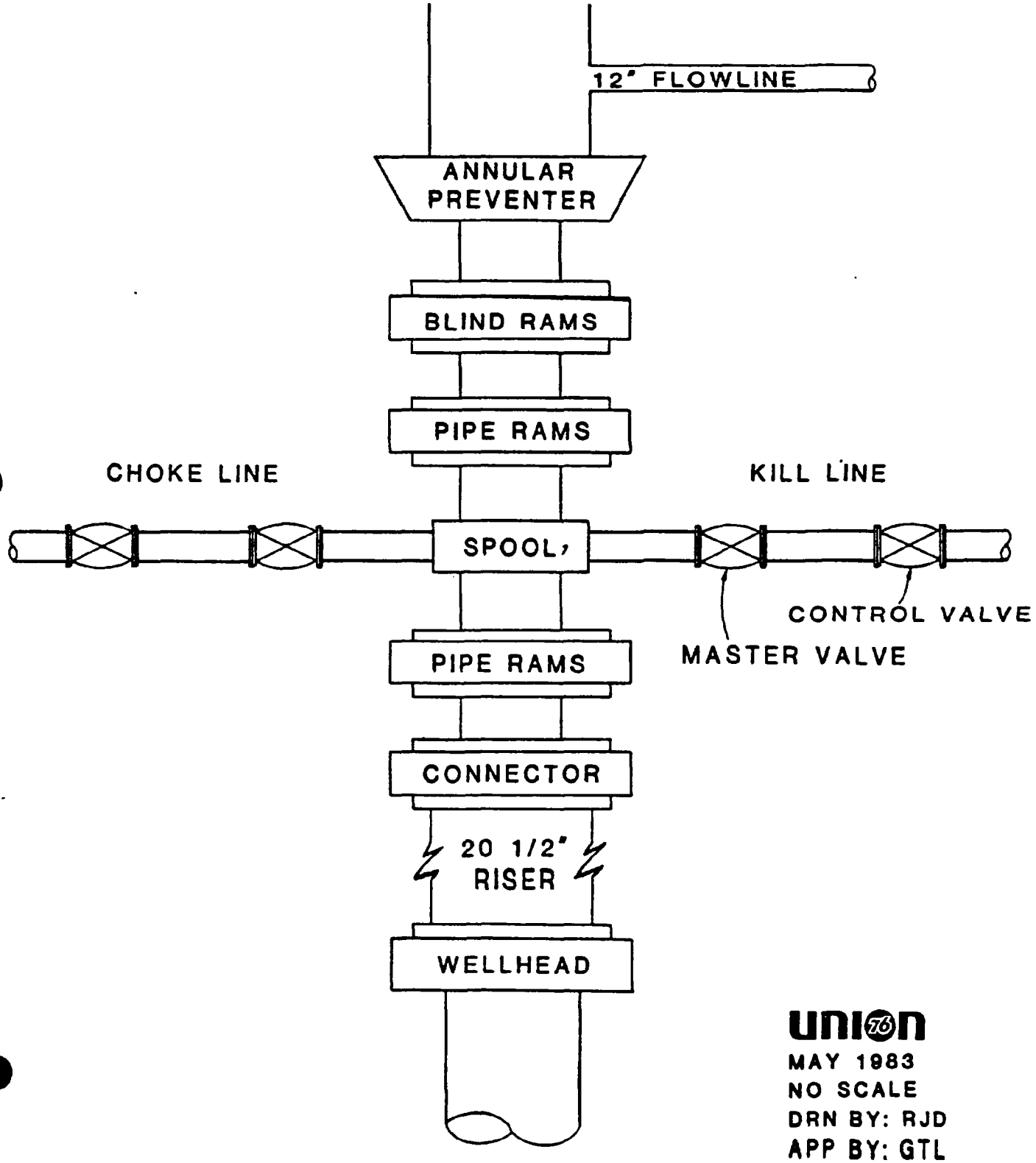
NO SCALE

DRN BY: RJD

APP BY: GTL

EXHIBIT V-D

OCS P-0441
BOP STACK ARRANGEMENT



union 76

MAY 1983
NO SCALE
DRN BY: RJD
APP BY: GTL

EXHIBIT V-E

OCS P-0441

CALCULATION OF MAXIMUM SURFACE PRESSURE

The conservative assumption that gas is weightless will be made for calculation purposes, therefore, no correction will be made which includes the hydrostatic pressure exerted by a column of gas. The maximum theoretical pressure assumes an unloaded, or empty, wellbore subject to a formation pressure gradient of .472 psi/ft*. The maximum anticipated pressure is based on the fracture gradient of the intermediate casing shoe (10-3/4") set at 3500' BML (3742' TVD below MLLW).

Theoretical maximum surface pressure: (Based on pore pressure)

4852' x 0.472 psi/ft* = 2290 psi

Anticipated maximum surface pressure: (Based on fracture gradient)

242' x 0.445 psi/ft + 3500' x 0.73 psi/ft* = 2660 psi

BOP working pressure: 3000 psi

* Data collected from exploratory drilling on OCS P-0441.

EXHIBIT V-F

OCS P-0441

WELL CONTROL PROCEDURE

The following basic procedures have been established for all Union Oil Company drilling operations and will be implemented for the drilling of the wells on Platform Irene if necessary:

(1) If an entry of formation fluids (kick) is SUSPECTED while drilling and/or circulating:

a. Pull kelly above rotary table.
b. Stop pump.
c. CHECK FOR FLOW.
d. If well flows, close annular preventer and proceed with procedure in (3) below.

(2) If KICK is SUSPECTED while pulling or running pipe:

a. Stop pulling or running pipe.
b. Fill hole (if not already full).
c. CHECK FOR FLOW.

d. If well flows, close annular preventer and proceed with procedure in (4) below.

(3) If KICK occurs while on (or near) bottom with Kelly on:

a. Pull Kelly above rotary table.

b. Stop pump.

c. Close annular preventer.

d. GET UNION OIL REPRESENTATIVE ON RIG FLOOR.

e. Close pipe rams.

f. Read drill pipe and casing pressures.

*g. Kill well.

(4) If KICK occurs while pulling or running pipe:

a. Screw drill string safety valve into top of drill string -- close safety valve.

b. Close annular preventer.

c. GET UNION OIL REPRESENTATIVE ON RIG FLOOR.

d. Close pipe rams.

e. Read drill pipe and casing pressures.

*f. UNION OIL REPRESENTATIVE WILL DECIDE TO:

1. Strip back to bottom and kill well (inside BOP will be used for this procedure).

or

2. Kill well with drill string above bottom.

*NOTE: The Union Oil Company Drilling Foreman and Drilling Engineer will determine the most effective method of killing the well. This determination will be based on the size of kick, suspected type of influx, necessary mud weight increase, drill string location, and other pertinent facts. In all cases, a constant bottom-hole pressure method will be used. These methods include the single circulation "Wait and Weight" method, dual circulation "Driller's" method, or a multi-circulation "Concurrent" method.

SECTION VI

PLATFORM STRUCTURE AND SITE

The platform will be 12-leg template-type structure installed in 242 ± feet of water at coordinates x = 708,200 y = 3,831,986 UTM Zone 10.

Lat: 34° 36' 37.411" North

Long: 120° 43' 45.744" West

The structure will be designed to accommodate 72 wells.

The structure will be designed to meet or exceed the latest OCS requirements for the most severe loads that might reasonably be expected to occur during all phases of transportation, installation and subsequent operations. Design considerations will also take into account severe wind, wave and current conditions. Seismic design of the platform will follow the guidelines set forth in API RP2A (fourteenth edition) and will include Zone 4 seismic criteria applied to a three dimensional model using the response spectrum method. The analysis will be done under the supervision of a registered civil engineer well acquainted with the techniques involved in earthquake resistant design of offshore structures.

To assure compliance with OCS order No. 8 "Platforms and Structures" for the Pacific Region, the procedures set out in the following documents will be used to verify the structural integrity of the platform:

a. Operating Procedures for the Platform Verification Program.

b. Requirements for Verifying the Structural Integrity of OCS Platforms.

c. Appendices to Requirements for Verifying the Structural Integrity of OCS Platforms.

The twelve main legs will be framed with horizontal and diagonal bracing which will provide a high degree of redundancy and add substantially to the stability of the platform under severe weather or earthquake loads. The structure will be secured to the ocean floor with piling driven through the main legs and attached to the jacket by welding and grouting.

The following investigations at the site specific will be performed and information obtained will be used to develop final environmental design criteria:

1. Wind, wave and current data.

2. High-resolution seismic and profile data, using boomer, side-scan sonar and bottom profiler around the platform sites and along pipeline and power cable routes.

3. Collect bottom soil samples.

4. Take soil borings for testing at each platform location.

This data will be presented to the MMS, along with the design criteria developed, for their examination and approval. The above studies will provide information on sediments and possible shallow gas at the platform site, data for piling design and driveability and ocean bottom hazards.

The structure will be thoroughly analyzed by an approved Certified Verification Agent. Union Oil Co. of California, Science and Technology Division personnel will be available on a consulting basis for assistance in developing design criteria and in structural analysis.

To facilitate this project, one or more contractors will be engaged to provide engineering, fabrication, transportation and installation. The principal components of the structure are the jacket, piling and deck sections. The various components will be constructed in a suitable fabrication yard and transported to the erection site. The jacket will be launched from a specially constructed barge, uprighted and lowered to the ocean bottom by controlled flooding utilizing equipment aboard the derrick barge for partial support and final positioning. The piling will then be driven to the design depth through each of the 12 jacket legs. The

production and drilling decks will then be positioned atop the piling and welded in place. Two 70 ton diesel-powered cranes will then be installed on pedestals above the drilling deck.

One or two drilling rigs will be installed using the platform cranes. Self contained quarters facilities will be provided for 36 supervisors and crewmen. Life support and water survival equipment will be provided for the maximum number of people to be onboard the platform at any given time. All Union Oil Company employees assigned to the platforms will be trained in first aid and have a valid Red Cross First Aid Card.

Corrosion control of the platform will be accomplished by sacrificial anodes below MLLW, Tidegard 171 in the splash zone and protective paint (inorganic-zinc) or galvanizing where applicable above MLLW.

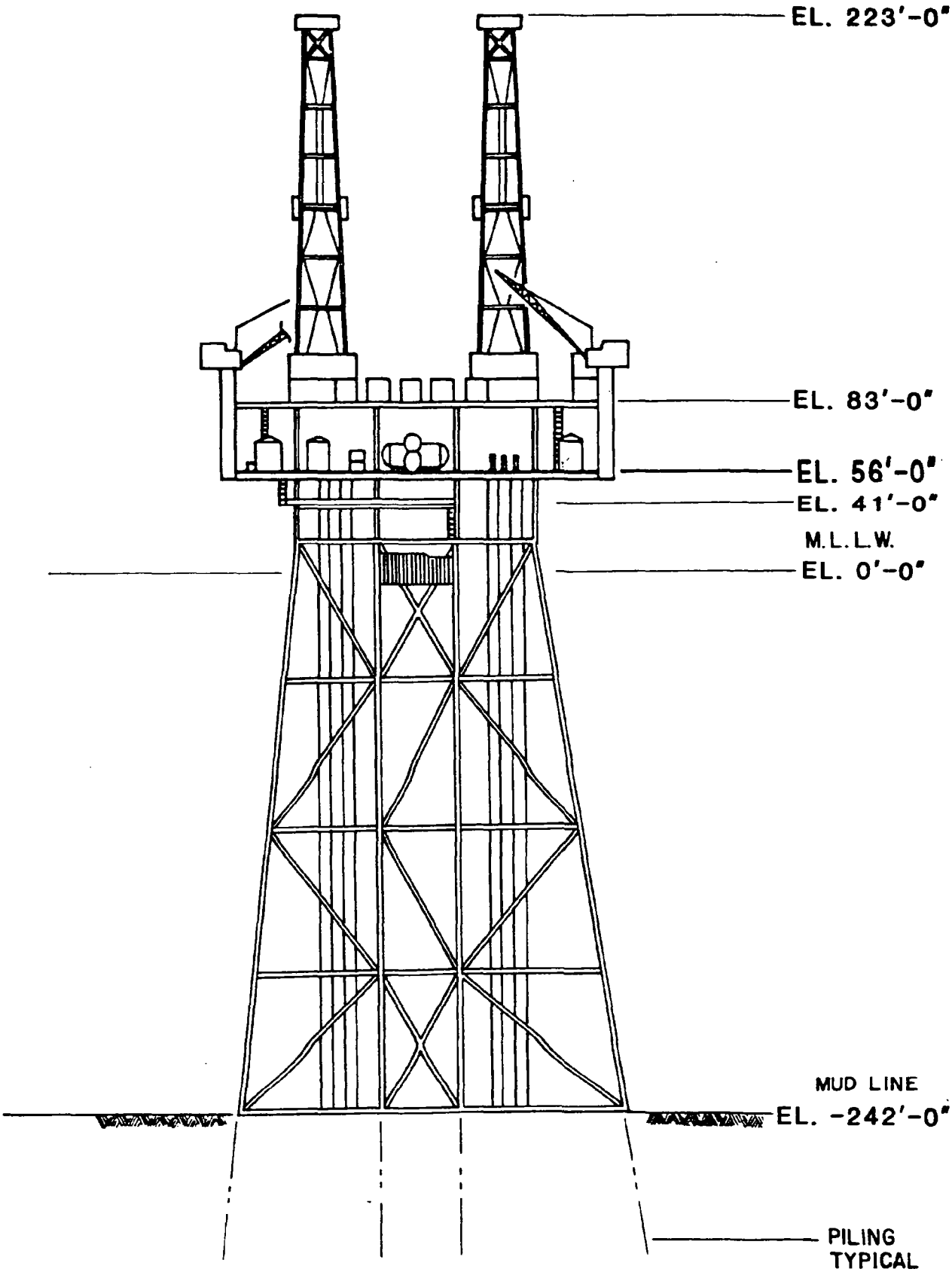
Exhibits VI-A and VI-B are elevations of the platform. Exhibits VI-C and VI-D are layouts of the drilling and production decks.

When the hydrocarbon reserves have been depleted all of the wells will be abandoned in the manner prescribed by the MMS regulations. The platform equipment will be disassembled and transported to a shore base for reuse or disposal. The decks will be cut into sections and hauled to shore for disposal as scrap. The pilings will be cut off below the mudline and the jacket will be refloated by the use of packers set in the legs and displacing the water with

air. The jacket will then be towed to shallow, sheltered water where it will be cut up for salvage. The seafloor will be left with no obstructions.

The pipelines will be abandoned in place after purging with seawater and filling with an inert liquid such as a barite-water mixture. If it is not desirable to abandon the lines in place they will be removed by lifting to the deck of a work barge and cutting into 40' to 60' lengths then hauled to a shore base for disposal.

The power cable will be removed by picking it up with a winch and laying it out on the deck of a barge. It will then be transported to a shore base for salvage.



SOUTH ELEVATION

LOOKING NORTH

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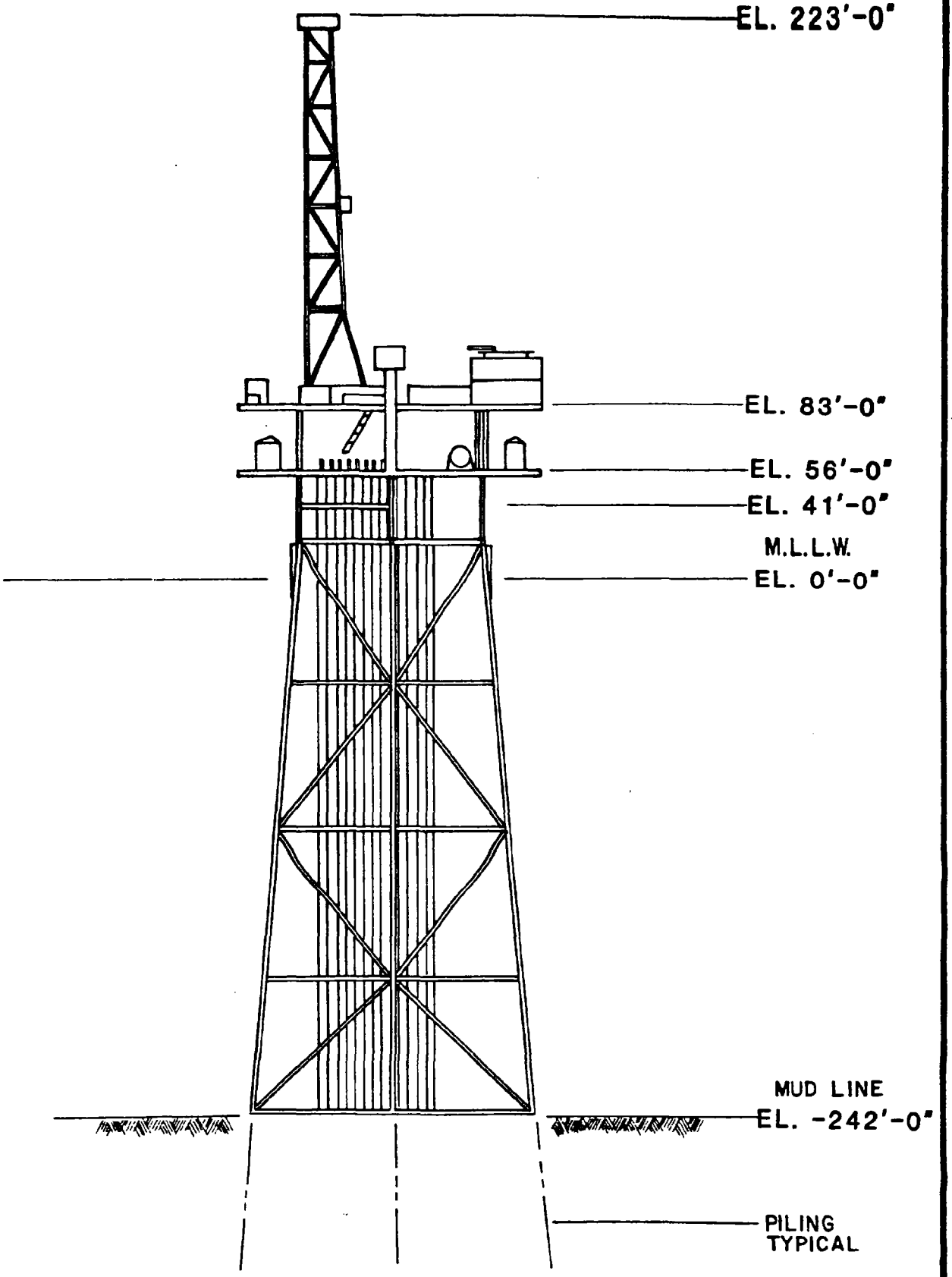
Union Oil Company of California
Los Angeles, California

MEMBER & PILING & EXACT CONFIGURATIONS ARE NOT SHOWN
UNTIL FINAL DESIGN, ENGINEERING & STABILITY CHECKS ARE COMPLETE

EXHIBIT VI - A



EAST ELEVATION

LOOKING WEST

UNION 76

Union Oil Company of California
Los Angeles, California

MEMBER & PILING & EXACT CONFIGURATIONS ARE NOT SHOWN

UNTIL FINAL DESIGN, ENGINEERING & STABILITY CHECKS ARE COMPLETE

EXHIBIT VI-B

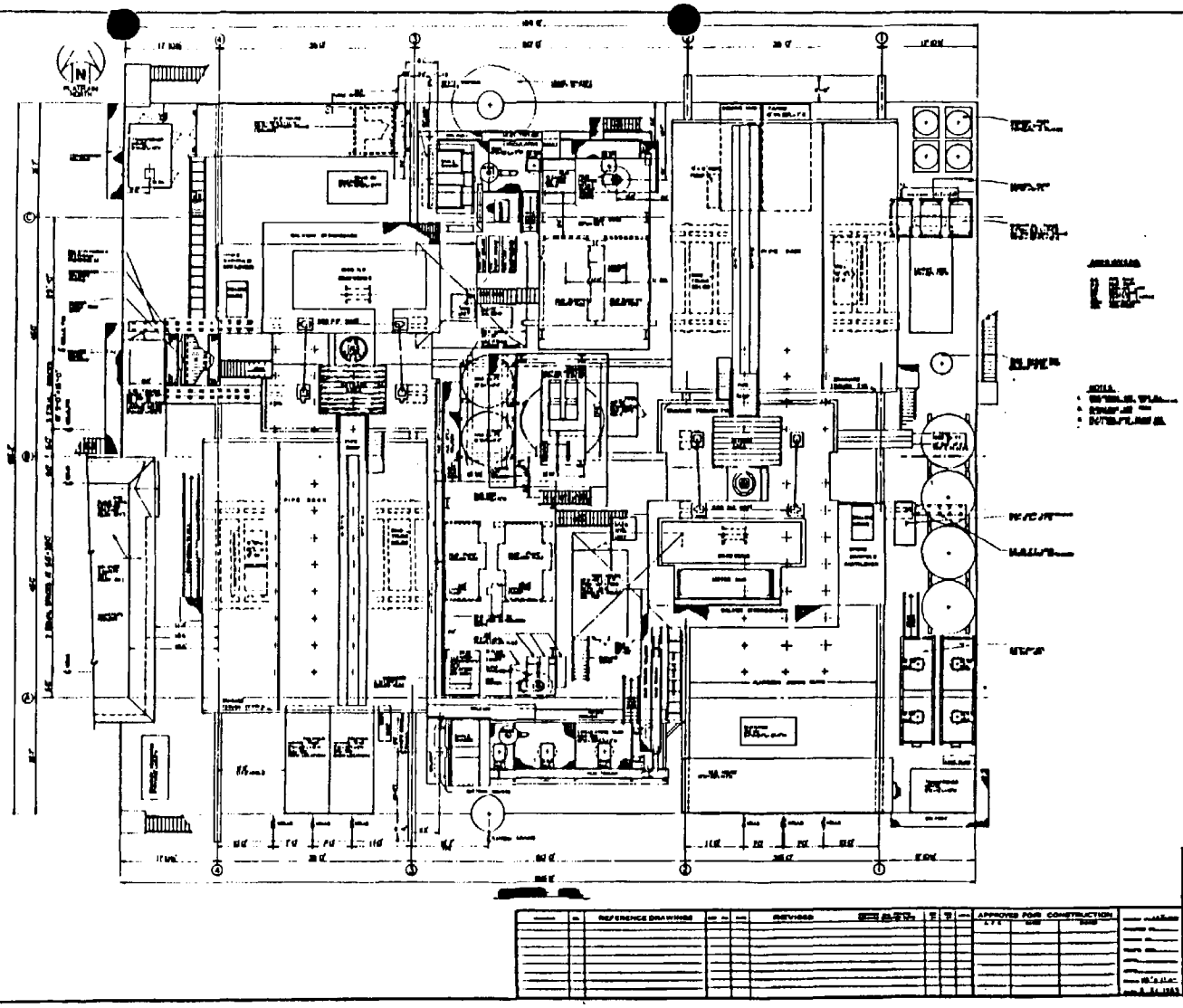


EXHIBIT VII-C

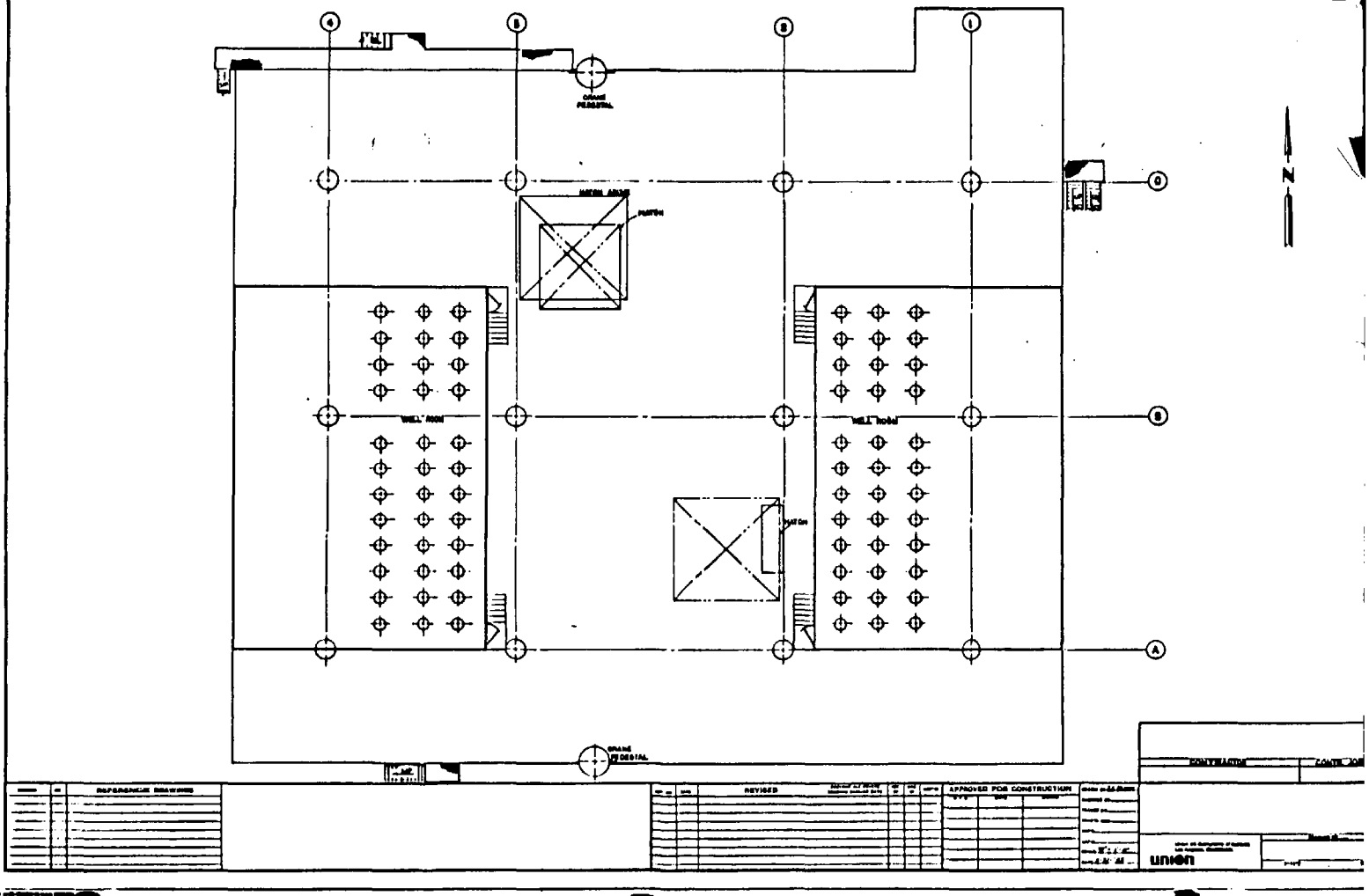

N
REFERENCE DRAWINGS
REVISED
APPROVED FOR CONSTRUCTION
CONTRACTOR
union

EXHIBIT VI-D

SECTION VII

PLATFORM DESCRIPTION AND SPECIFICATIONS

1.	Number of well conductors	72 conductor guides sized for 20" conductors
2.	Water Depth	242 ±
3.	Number of Piles	12
4.	Drill Deck Size	155' by 135'
	Elevation	+83' MLLW
5.	Production Deck Size	155' by 135'
	Elevation	+56' MLLW
6.	Sub Deck	40' by 20'
	Elevation	+41' MLLW
7.	Orientation	The platform will be orientated to offer the least resistance to the maximum wind and wave forces. Consideration shall also be given to the prevailing swell when selecting the boat bumper and platform crane locations.
8.	Piling design	The piling will be designed to support the platform under the worst combination of forces which might occur including the maximum credible earthquake and/or the worst 100 year storm conditions as determined by qualified engineering firms.

9. The platform will be designed to satisfy the following conditions as set out in API RP2A (Fourteenth Edition):

(a) Strength requirements:

The response spectrum approach will be used to analyze the platform's earthquake strength requirements. The API response spectrum for Zone 4-Soil Type B will be used for preliminary design. A site specific response spectra will be provided for the final design. The pile foundation will be modeled using an equivalent stiffness matrix to represent the foundation in the three-dimensional model. For the final design, this stiffness matrix will be provided by the Union retained soils and foundation consultant.

(b) Ductility requirements:

Ductility will be demonstrated by showing that the structure-foundation system can absorb four times the amount of energy absorbed at the strength design requirement without experiencing catastrophic structural failure.

10. Wind and Wave design - 100 year maximum

Maximum wave - 80' crest to trough

Period 15 seconds

Direction of Approach West-Northwest

Maximum Wind 100'/second Sustained

125'/second Gusts

Direction of Approach West-Northwest

11. Current

4'/second at surface

2.5'/second at midpoint

1'/second at bottom

12. Cranes: 2 one on North side of Platform

one on South side of Platform

weight 77,000 pounds

maximum lift 76,000 pounds

(Crane pedestals to be equipped for diesel fuel storage)

13. Heliport 50' X 50' maximum capacity 12,000 pounds

API RP 2-L will be used as a guide for the design of the heliport.

14. Cargo hatch 20' X 20' near center of drill deck.

15. Maximum drilling deck load Maximum dead load 2,546 Kips
Maximum live load 3,990 Kips

16. Maximum production deck load Outside of well rooms, uniform deck loading of 400 lbs/sq. ft.
Maximum live and dead loads will not exceed 2,500 kips

17. Maximum sub-deck loading 100 kips

18. South boat landing 2-level, for secondary use

19. North boat landing 3-level, for primary use

20. Barge and boat bumpers - Tie-offs and barge bumpers, shock cell type, will be provided on the North and South sides of the platforms.

21. Pipeline risers 2 - oil & produced water
2 - gas
2 - water return

The platform will be equipped with 2 sets of risers - One set will be used to tie-in additional production from possible future platforms. All risers will be clamped to the structure in accordance with Department of Transportation regulations.

22. Power cable conductors — Two 6"

23. Sewage disposal conductor — One 4" from +16' to -180' MLLW

24. Drill cutting conductor — Two 12" from +16' to -150' MLLW

25. Seawater pump casing (Firewater)
Four 12" from +16' to -70' MMLW

26. Corrosion protection in splash zone — Tidegard - 171 or equal

27. Protective coating - above splash zone
Ameron Dimetcote D-3 or equal

28. Cathodic protection - below splash zone
Sacrificial anodes attached to the platform jacket

29. Drains — All decks will be equipped with curbs and drains. Drain lines will connect to the sub-deck where effluent will be treated before shipment or disposal.

30. Decks — All decks to be sheet steel, seal welded to the supporting beams. All decks will be equipped with guard rails which conform to OSHA regulations. In so far as possible common walkways will be identified and

special provisions will be made to provide a non-skid surface.

31. Stairs All stairs will be equipped with guard rails which conform to OSHA regulations.

32. Well conductor deck penetrations on the production deck will be 24" ID with a lip extending 2" above the elevation of the deck curb.

33. Well conductor penetrations on the drill deck will be 30" ID with a lip extending 2" above the elevation of the deck curb. A cover will be provided for each penetration.

34. The platform and its appurtenances will comply with all applicable codes, laws and regulation of the Federal Government including, but not limited to, the MMS, USCG, U.S. Corps of Engineers, OSHA, Department of Transportation and Department of Commenence. Where supporting facilities such as pipeline power cables and dehydration and pumping facilities are located in areas under the jurisdiction of State or County agencies the most stringent of the Local or Federal codes will be followed. Appendix B lists the several codes, specifications and recommended practices which will be used to assure compliance.

35. The platform will be equipped with extra oil and gas pipeline risers and power cable conduits for use in the event that it becomes desirable to connect other platforms into the pipelines

and power source. Should additional risers be required they can be installed on the jacket with minimal problems. Ample deck space will be available to accommodate equipment necessary to handle production from other platforms. Subsea pipeline connections are not anticipated.

SECTION VIII

PLATFORM FACILITIES

The platform will be equipped with the following items which are considered support for the drilling and production operations.

1. One electrically driven fire water pump.
2. One electrically driven fire water pump designed to operate on either shore power or power supplied by a diesel driven emergency generator.
3. Two 70 ton (nominal) capacity cranes with 100 feet booms (one each on opposite sides of the drilling deck).
4. One 2.5 ton crane on production deck.
5. Deck drain collection, separation and disposal system.
6. Potable water tank and necessary pumps.
7. Sewage disposal unit. (Similiar to Microphor Marine Sanitation Device - uses bacterial action to reduce sewage to liquid and carbon dioxide.)
8. Public address system.
9. Alarm system.
10. Navigational aids (fog horn + lights) as required by U.S. Coast Guard.
11. Life saving and floatation equipment (life vests, life rafts, escape capsules, buoys, etc.).

12. First aid equipment (company personnel will be qualified through Red Cross First Aid Training).

13. Fire hose reels and fire monitors as required.

14. Fire suppression sprinkler system in well room(s) and other potential fire areas.

15. Automatic chemical fire suppression systems in electrical buildings.

16. Portable chemical fire extinguishers on the rig floor, on the drilling and production decks and in enclosed areas.

17. Microwave telephone communications.

18. Radio communications.

19. Hydrocarbon gas detectors.

20. H_2S detectors.

21. Flame detectors.

22. Heat sensors.

23. Fusible plugs in control system

24. Oil containment and cleanup equipment consisting of:

    (a) 1 - 20 ft $\pm$ Boom Deployment Boat (75 HP)

    (b) 1 - 32 ft Oil Skimmer Deployment Boat (2-100 HP)

    (c) 1 - 1600 ft Expandi Boom

    (d) 1 - Walosep Oil Skimmer (Model W1) or equivalent

    (e) 5 - 500 gallon Floating Oil Storage Bags

    (f) 6 Boxes - Sorbent Boom

    (g) 4 Boxes - Sorbent Pads

(h) 5 Drums - Dispersant (Corexit 9527)

(i) 2 - Backpack Sprayers for Chemical Agent Application

(j) Additional Spill Equipment as required by the MMS Manager

25. Utility air system.

26. Instrument air system - including air dryer.

SECTION IX

PRODUCTION SYSTEM

Although, it is anticipated that initially the wells will flow for a short period of time, electrically driven submersible pumps will be installed to deliver the produced fluid to the surface at a pressure of 200 psig. Gas from the annuli of the various wells will be gathered in the platform gas gathering system. Each well will be equipped with surface controlled subsurface safety valves in both the production tubing and the annulus as well as surface safety valves and flow safety valves. All piping to the intake of the first pressure vessel will be designed to withstand the maximum shut-in well pressure. Safety and anti-pollution control equipment will be designed, selected and installed to comply with OCS Order No. 5 "Production Safety Systems" for the Pacific Region and the latest editions of applicable API Recommended Practices.

Exhibits IX-A, B, C, D, E, and F are typical of the safety and anti-pollution controls which will be used to assure compliance. Each exhibit makes reference to the applicable API Recommended Practice. Symbols used are taken from API Recommended Practice 14C and are the standards of the Instrument Society of America. A complete listing of codes and specifications to be used are included in Appendix B.

Oil from the wellhead will flow to a header system. The header system will be connected to a gross separator or through diverting valves to a test separator. From the gross separator and/or the test separator, fluid will flow to a shipping surge tank for pipeline shipment to the onshore dehydration facility. Shipping pumps will be of the electrically driven submersible type, completely enclosed in especially constructed pump cans. (i.e. there will be no exposure of the pump or sealing mechanism to the atmosphere).

Gas will be gathered from separators and the well annuli, compressed to pipeline pressure, dehydrated by refrigeration to prevent moisture in the pipeline and transmitted to the onshore site. All of the pressure vessels on the platform will be connected to a vapor recovery system which will be connected to the gas gathering system. All pressure vessels containing gas will be connected to an emergency vent gas scrubber and an emergency vent stack. The gas scrubber will be sized to contain entrained liquids which might be carried through the vent system in the event of an emergency shutdown. It is predicted that the brine content of the produced fluid will increase over the life of the field. When the water content of the produced fluid reaches a point where the free water can be separated without the use of heat, a free water knock out vessel will be installed to draw off free water and a water treating system will be installed. The water treating system will contain an induced gas floatation cell and the necessary pumps, filters and vessels. The treated water will then be either injected into the

producing formation or disposed of under an NPDES permit.

Fluid production from the platform will be measured through a transfer meter, then pumped through the pipeline to the onshore site. When the produced fluid reaches the onshore site it will first pass through a heat exchanger where excess heat from the treated oil will be recovered. The fluid will then enter a free water knockout vessel where some gas will be drawn off the top and water off the bottom. The remaining fluid will then pass through an exhaust gas heat exchanger and into the heater treater where it will be heated to the minimum temperature necessary to produce pipeline quality oil. The treated oil will then be routed through a heat exchanger where the temperature will be lowered to 180^{o}F and then to the shipping surge tank. From the shipping tank the oil will be pumped through a Lease Automatic Custody Transfer Unit for measurement and then into the existing upgraded pipeline system for transport to the Santa Maria Refinery.

Water from all sources, i.e., heater treater, free water knockout drains, etc., will be collected and treated in the water treating plant and then pumped back to the platform for disposal. The water treating system will consist of a surge wash tank, an induced gas

floatation cell, a treated water surge tank, a slop oil tank and necessary valves, piping and pumps to handle the water. This system will be completely sealed and connected to the vapor recovery system.

Associated gas produced with the oil will be gathered on the platform and compressed to approximately 300 psig. It will then be dehydrated to prevent liquid fall out in the line. The gas will pass through the gas pipeline to the onshore facility and then to the gathering system of the Union Oil Company owned and operated Battles Gas Processing Plant. Measurement and sampling of the gas will occur at this point. Flash gas and vapor recovery gas from the onshore facility will be compressed to gathering system pressure and commingled with the platform gas before the measurement point.

Fuel gas for the onshore site will be treated for H_2S removal before burning. (H_2S will be removed by caustic wash. The small amount of spent caustic will be disposed of by subsurface injection.)

All onshore vessels, both pressure and atmospheric will be connected to a vapor recovery system which will eliminate any venting of hydrocarbon gases. The dehydrated oil will be heated to a temperature of approximately $200^{o}F$ and gas will flash off at this temperature. Before the oil reaches the shipping pump surge tanks the temperature will be lowered to $180^{o}F$ by exchanging heat with incoming oil. This will result in a true vapor pressure of the oil in the surge tank of 0 psia or less.

Power:

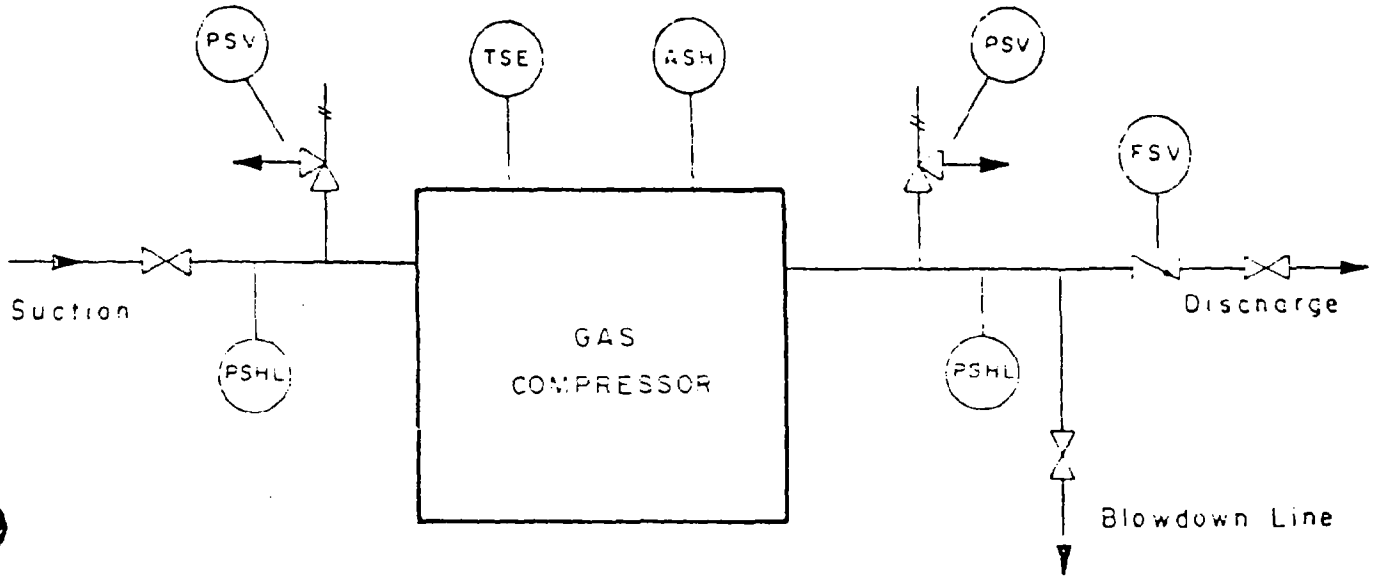
Electrical power to operate the drilling rig(s) and the production equipment on the platform will be supplied by a public utility and transmitted from a point just south of Surf to the platform. The transmission voltage will be 34.5 KV. The capacity of the line will be 20,000 KVA. One drilling rig requires approximately 2,500 KVA at full load. The production load will be about 2,000 KVA per platform. The power cable will be installed to one platform. Provisions will be made for branch circuits to be extended to other potential platforms in the area. Transforming and switching equipment will be installed onshore for a load of 10,000 KVA but since the cable will be sized for 20,000 KVA the capacity can be increased by additional onshore equipment should the need arise.

The platform will be equipped with an auxiliary diesel driven generator of approximately 200 KW capacity. This unit will operate only in an emergency to provide lighting aids to navigation, safety functions and to run one fire pump if necessary. This will occur only in the event of a power failure. Otherwise the generator will only operate 10 or 15 minutes per week to test its reliability.

The power cable will be installed in the same right-of-way as the pipelines when they converge approximately 3,000' offshore. The preferred onshore location of the power cable termination is just south of the Santa Ynez River mouth. This is desirable because the

power company currently has service at this point. The power cable will be buried from the metering station to MLLW to a depth of 6' and covered with 6" of red concrete. Experience has shown that because of the high weight per foot the cable rapidly buries itself. (NOTE) Union currently has three submarine cables installed from the beach to platforms in various areas of the Santa Barbara Channel. These cables totaling 25 miles in length have been in service for up to 14 years. To date there has been no instances of the cables creating a problem for fishermen or small boating interests.

Alternates to a submarine power cable are discussed in Section XVI.



Note: See fig. for typical gas scrubber safety devices.

Ref: API RP 14C Second Edition

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Union Oil Company of California
Los Angeles, California

TYPICAL GAS COMPRESSOR INSTALLATION

EXHIBIT IX-A

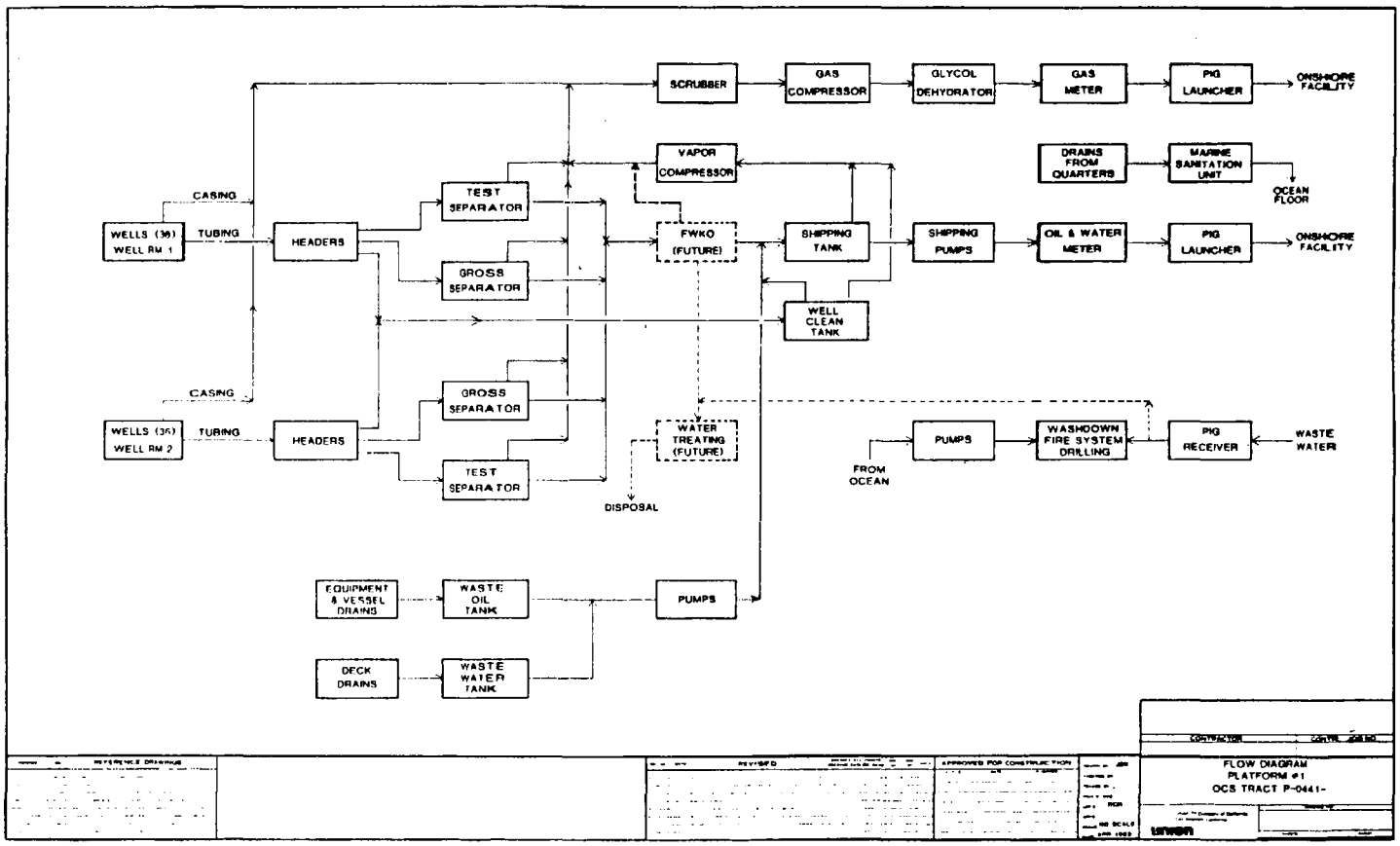
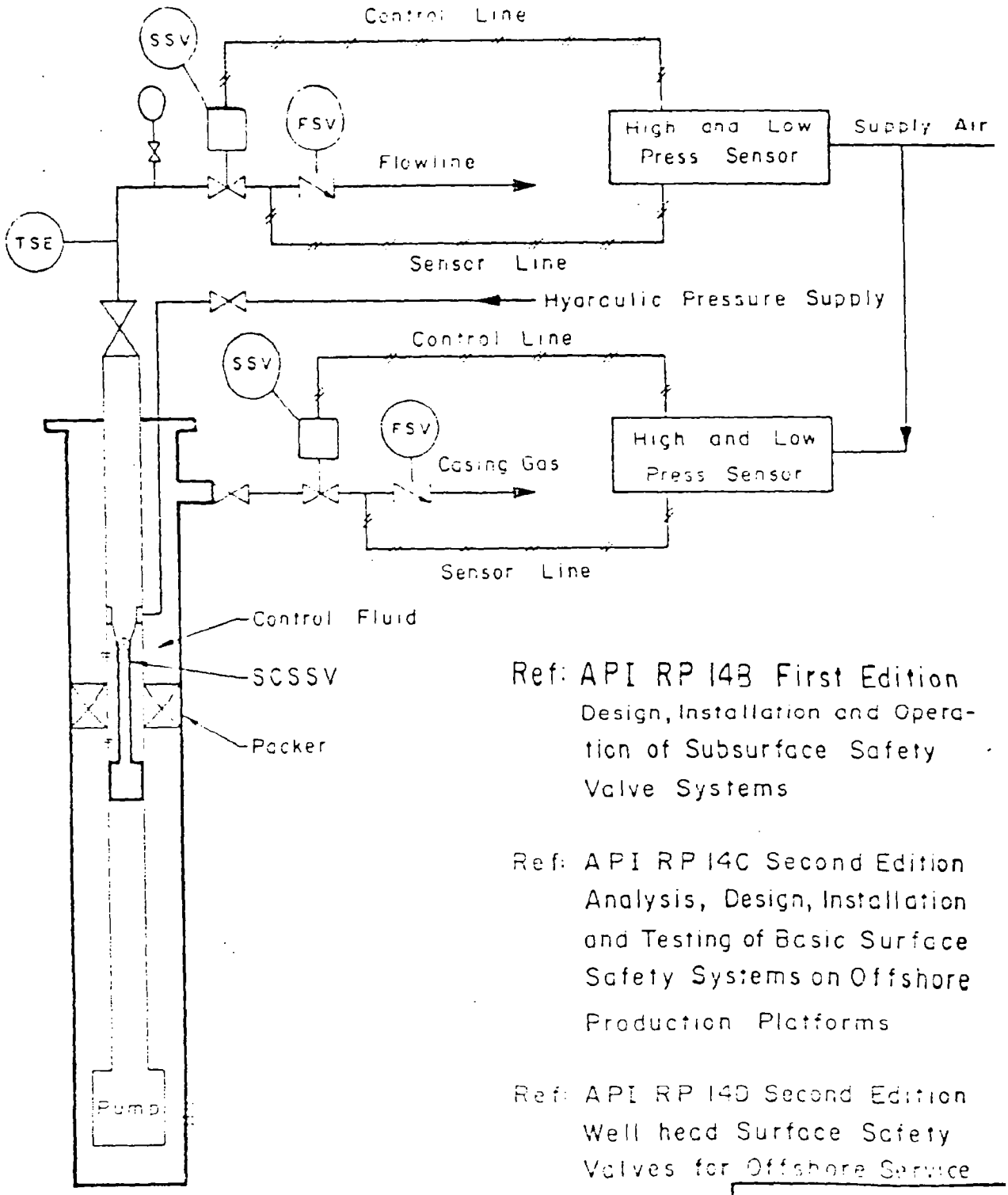

SCRUBBER
GAS COMPRESSOR
GLYCOL DEHYDRATOR
GAS METER
PIG LAUNCHER
ONSHORE FACILITY
VAPOR COMPRESSOR
DRAINS FROM QUARTERS
MARINE SANITATION UNIT
OCEAN FLOOR
CASING
TUBING
WELLS (36) WELL RM 1
HEADERS
TEST SEPARATOR
GROSS SEPARATOR
FWKO (FUTURE)
SHIPPING TANK
SHIPPING PUMPS
OIL & WATER METER
PIG LAUNCHER
ONSHORE FACILITY
WELL CLEAN TANK
CASING
TUBING
WELLS (36) WELL RM 2
HEADERS
GROSS SEPARATOR
TEST SEPARATOR
WATER TREATING (FUTURE)
DISPOSAL
FROM OCEAN
PUMPS
WASHDOWN FIRE SYSTEM DRILLING
PIG RECEIVER
WASTE WATER
EQUIPMENT & VESSEL DRAINS
WASTE OIL TANK
PUMPS
DECK DRAINS
WASTE WATER TANK
FLOW DIAGRAM
PLATFORM #1
OCS TRACT P-0441-

EXHIBIT IX-B



Ref: API RP 14B First Edition
Design, Installation and Operation of Subsurface Safety Valve Systems

Ref: API RP 14C Second Edition
Analysis, Design, Installation and Testing of Basic Surface Safety Systems on Offshore Production Platforms

Ref: API RP 14D Second Edition
Well head Surface Safety Valves for Offshore Service

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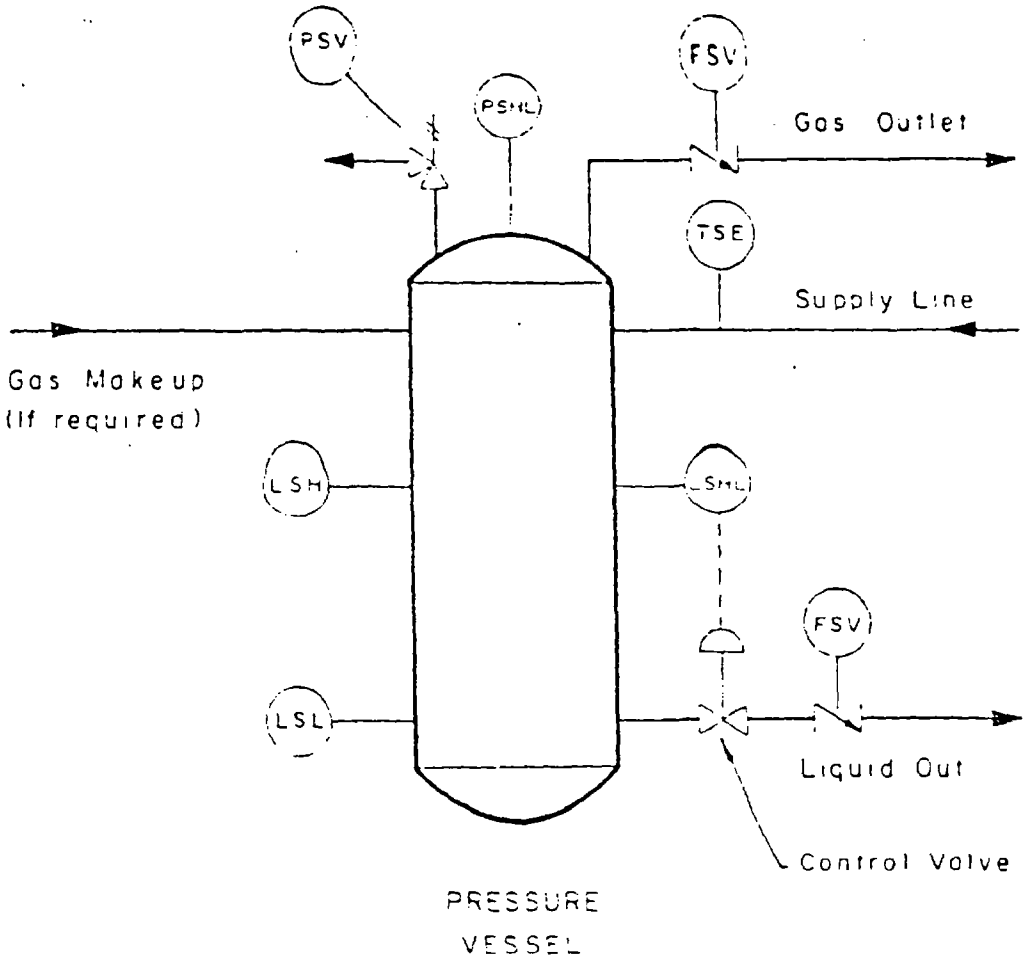
Los Angeles, California

TYPICAL INSTALLATION AND OPERATION OF SURFACE CONTROLLED SUBSURFACE SAFETY VALVES (SCSSV), SURFACE SAFETY VALVES (SSV) AND HIGH AND LOW PRESSURE SENSORS.

EXHIBIT IX-C

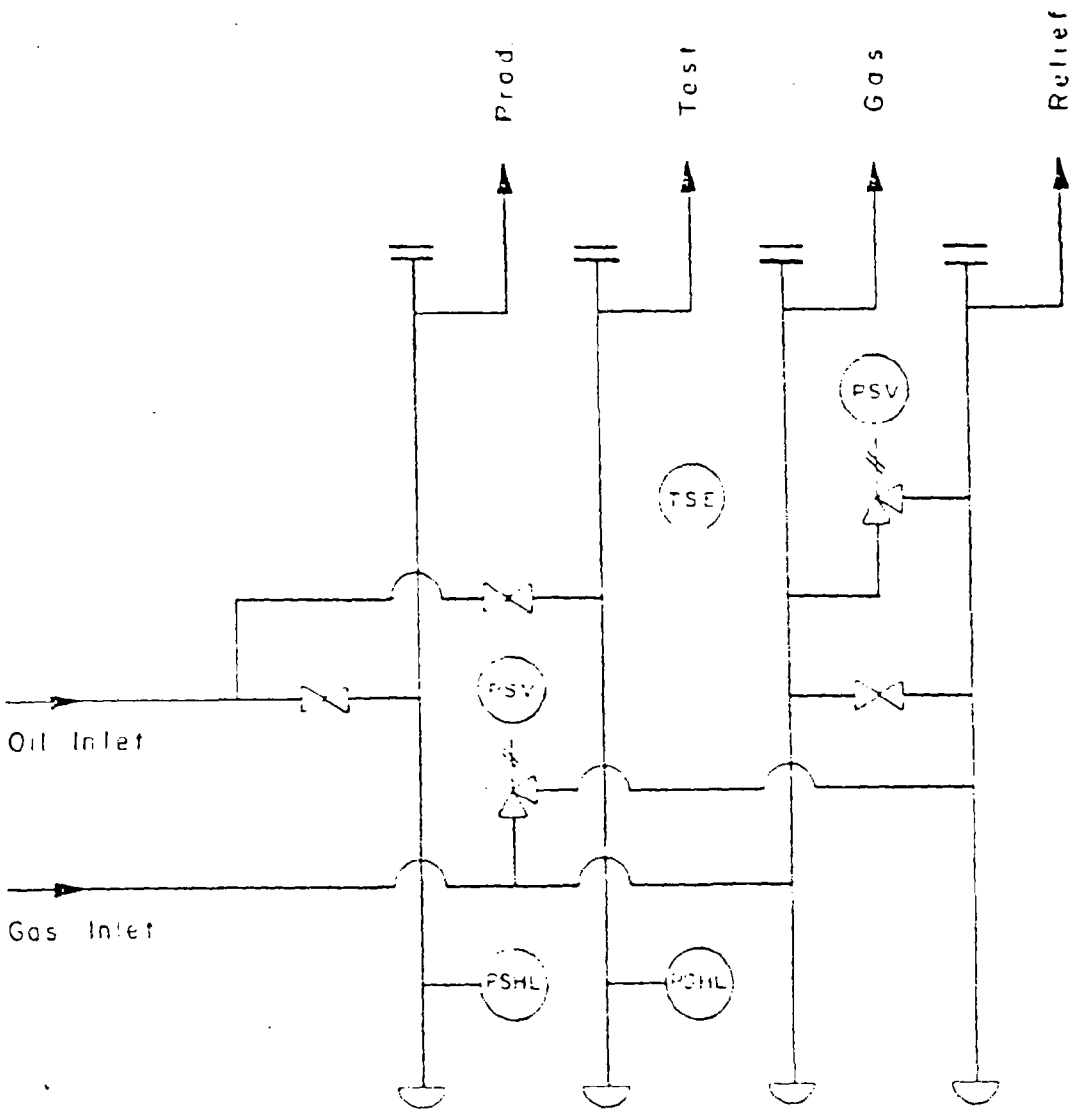


Ref: API RP 14C Second Edition
Analysis, Design, Installation and Testing of Basic Surface Safety Systems on Offshore Production Platforms.

Union Oil Company of California
Los Angeles, California

TYPICAL ALL PRESSURE VESSELS

EXHIBIT IX-D

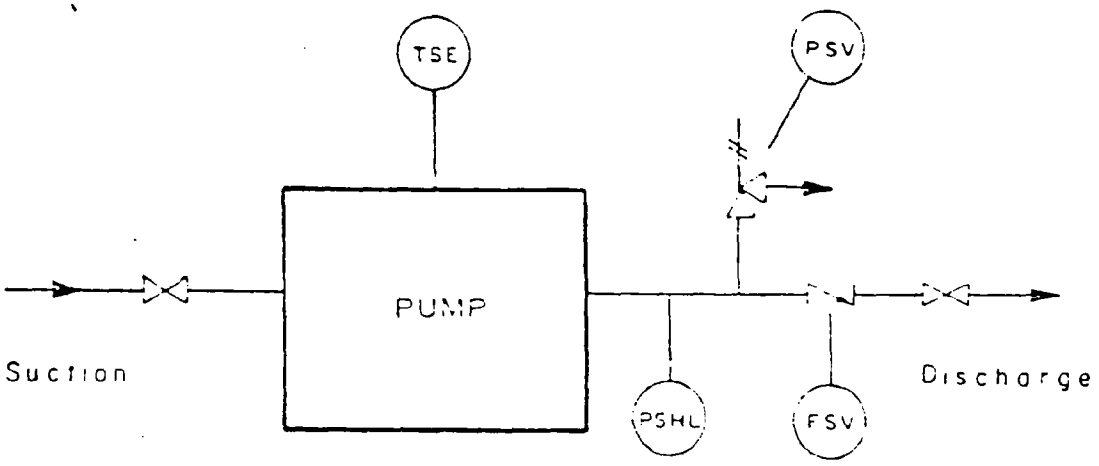


Ref: API RP 14C Second Edition

Union Oil Company of California
Los Angeles, California

TYPICAL HEADER SAFETY DEVICES

EXHIBIT IX-E



Ref: API-RP 14C Second Edition

Union Oil Company of California
Los Angeles, California

TYPICAL PUMP INSTALLATION

EXHIBIT IX-F

SECTION X

SAFETY, ANTI-POLLUTION & CONTROL SYSTEMS

Safety, antipollution and control systems will be installed on all piping, headers, machinery and vessels as required in the manner shown in Section IX, Exhibits A, B, C, D, E and F. The actual control devices will be a combination of electrical and pneumatic controls selected for their proven reliability. Control devices will include but not be limited to the following:

1. High-low pressure alarms and shutdown sensors.
2. High-low liquid level alarm and shutdown sensors.
3. Flow-safety valves.
4. Pressure safety valves.
5. Vibration sensors.
6. High-low temperature alarm and shutdown sensors.
7. Gas detectors - alarm and shutdown sensors.
8. Flame detectors alarm and shutdown sensors.
9. Heat detectors - alarm and shutdown sensors.
10. Thermal plug - shutdown sensors.

All of the above items will be designed and installed to facilitate operational testing. Initially all of the devices will be tested monthly. After a record of reliability has been established a test

schedule, to be approved by the MMS District Supervisor, will be prepared.

All of the safety devices will be connected to a programmable computer which will cause the various preselected alarms and/or shutdown devices to be activated. In addition, an annunciator panel will identify the problem area. A SAFE chart will be prepared and submitted to the District Supervisor for his approval before the first well is drilled. Generally speaking the sequence of events following a signal from one of the safety devices will be as follows:

1. An alarm will sound.
2. The annunciator will indicate the problem.
3. If the problem is not corrected the shutdown device will activate.
4. When the shutdown device is activated the platform will shutdown.
5. In addition to closing the surface safety valves the subsurface safety valves will also be closed.

Produced fluid and gas will continue to move off the platform through the pipelines until the pumping and compression equipment is automatically shutdown due to either low levels or low pressure. If the malfunction is pipeline related, products would not be pumped off the platform, but instead the vessels and scrubbers would automatically shut in and contain the production.

A contingency plan describing actions to be taken in the event of encountering hydrogen sulfide gas while drilling is included in Appendix C.

[redacted]

SECTION XI

PIPELINE SYSTEMS

It will be necessary to install three pipelines from the platform to the onshore site. Approximately 9.2 miles will be offshore and 10.8 miles will be onshore. The 16" oil pipeline will be equipped with Series 900 ASA ring joint fittings and have a working pressure of 2160 psig. Test pressure will be 3240 psig. API RP1111 will be used as a guide for design along with 30 CFR Part 256 subpart N, (Grants of Pipeline Rights-of-Way on the Outer Continental Shelf) D.O.T. Reg. 49, Part 195 and ANSI B31.4. Safety and pollution control equipment will include automatic shutdown valves, flow safety valves, pressure sensors high and low and a metering system to provide continuous comparison of input and output.

Initial peak production will be 20,000 BFPD. The line will be designed to handle 36,000 BFPD with a 1000 psig pressure drop. Pumping pressure on the platform will be 1050 psig and receiving pressure at the onshore site will be 50 psig. Should it become desirable to increase the throughput of the line additional pumps will be added on the platform to bring the pumping pressure to 2100 psig. This will accommodate a throughput of 72,000 barrels of gross fluid per day. Provisions will be made to install a pumping station at the midpoint of the line. (Approximately one mile inland). By lowering the pressure to 50 psig at the midpoint pumping station the capacity of the line can be increased to 100,000 barrels of gross fluid per day. The reason for providing for increasing the

capacity of the line is to consolidate facilities with other operators who might discover oil in the area which could be served by the facility.

The preferred pipeline route is northeast from the platform to a point approximately one-half mile north of the Santa Ynez River and one mile offshore then directly onshore to a site between the existing bluffs and sand dunes. From the shore the route would follow the river valley to Union Fee property and hence thru valleys to the onshore site. The route is shown on Exhibit XI A.

The 8" gas pipeline will be designed to transport natural gas to the onshore site where it will connect with the existing system. This line will also be designed to have an operating pressure of 2160 psig and a test pressure of 3214 psig. API RP1111 will be used as a guide for design along with 30 CFR 256 subpart N, Department of Transportation Reg. 49 Part 192 and ANSI B 31.8. Safety and pollution control equipment will include automatic shutdown valves, flow safety valves and pressure sensors high and low. This line will follow the same route as the oil pipeline. The line will have a capacity of 10 MMCF/D with a pressure of 400 psig at the platform and up to 40 MMCF/D with 950 psig at the platform.

A third 8" line will also be constructed to the same design specifications as the oil line. The line will be used to transport produced water back to the platform for disposal. The route will be the same as the other lines. The line will have a capacity of 30,000 barrels of produced water with a 750 psig pressure drop.

All of the lines will be externally coated with a 70 mil high density polyethylene protective coating. Cathodic protection will be provided by sacrificial anodes cast on the pipe in a manner which will not create a hazard to fishing interests. Through the surf zone and the area effected by the mouth of the Santa Ynez River the pipelines will be coated with concrete and buried to a depth of 3 to 6 feet. The onshore portion of the lines will be similarly protected by polyethylene coating and sacrificial anodes. The pipelines will be buried to a minimum of 3 feet cover. No river crossings will be required.

The preferred offshore portion of the pipeline is shown on Exhibit XI-A. This route extends from the platform northeast to a point approximately one-half mile north of the Santa Ynez River and one mile offshore, then directly onshore to a site between the bluffs and sand dunes. The route was adjusted to avoid rock outcrops and other sensitive areas. The preferred onshore route would cross Vandenberg Air Force Base (approximately 7 miles) to Union Fee property and on to the onshore site. This route is shown as preferred Route #1 on Exhibit XI-B.

If it is not possible to obtain a right-of-way from Vandenberg Air Force Base an alternate route utilizing county roads has been identified. This route is shown as alternate Route #2 on Exhibit XI-B. The offshore portion of this route would be the same as the power cable route and would come onshore at the same location. The route will be adjusted to avoid any impacts on a possible shipwreck which was identified in the vicinity of the right-of-way during the

offshore portion of the cultural survey. Generally the onshore portion of the line would follow Ocean Park Road. From Floradale Avenue to the onshore site two routes have been identified. 2A turns north along Floradale, crosses the Santa Ynez River, then northeasterly to the preferred route.

2B continues along Central Avenue to Highway 1 then turns north along Highway 1 until it intersects the preferred route.

The most probable method of installation of the offshore portion of the line is the pull method either from the beach or from a specially equipped barge. In either of these methods the three pipelines will be individually but simultaneously welded together and as sections are completed the pipelines will be pulled offshore to the platform. Each weld will be x-rayed for defects as it is completed. Buoyance will be added to minimize the drag on the pipelines as they are pulled to the platform. The buoys will be attached by wrapping a nylon or steel sling around the lines and connecting the buoy to the sling. Thus the pipelines will be pulled in a bundle but where the sling is cut to remove the buoy the lines will no longer be attached to each other. All installation buoys will be removed after the lines are in place. The lines will be pulled in three sections. The first section will be approximately 26,000' long, the second section 18,000' long and the third section approximately 4,000' long. The first section will be flanged and bolted to the platform risers, the second section will be flanged and bolted to the first section, the third section will be flanged and bolted to the second section and the onshore portion will be

welded directly to the third section. Therefore there will be flanged connections at 4,000' from MLLW, 22,000' from MLLW, and at the platform.

The onshore staging area will be 100' wide and 600' long. It is located between rocks to north and sand dunes to the south. The area chosen is a smooth sand beach. Access to the area will be from Lompoc west on Highway 246 to Renwick Avenue, then north across the Santa Ynez River on to Vandenberg Air Force Base paved roads which go directly to the staging area.

The alternate route has a similar staging area south of the Santa Ynez River and would be the same size. Access from Lompoc would be by Highway 246 directly west to the site.

At the platform, the lines will be connected by divers, underwater, to preinstalled pipeline risers. The other method of pipeline installation is to use a lay barge. In this method, a barge equipped with welding stations and a stinger transverses the pipeline route laying the pipeline as it moves along.

The method of burial through the surf line involves a minimum of trenching with a tractor or backhoe. Seaward from the surf line, the pipelines will be buried by divers jetting the sand from under the lines and allowing them to sink. As the pipelines sink, the jetted sand will settle back in place over the pipelines with a minimum of disturbance to the ocean floor. There are no plans for dredging in connection with the pipeline installation.

To assist in the detailed design of the pipelines it will be necessary to conduct a number of studies. Since most of the pipeline route is in State of California waters these studies will be designed to conform to requirements of the California State Lands Commission and the California Coastal Commission, as well as the MMS. These studies will include, but not be limited to, the following:

1. Survey grid to comply with NTL 82-2 and will include
   (a) Acoustic Reflection Profiling
   (b) Sea-Floor Imaging
   (c) Water-Column Recordings
   (d) Magnetic Survey
   (e) Geotechnical Information
   (f) Navigation System to Comply with NTL 82-2
   (g) Data Records for all Systems
   (h) Data Copies
   (i) Data Analysis
   (j) Geotechnical Evaluation
   (k) Such other investigations as may be desirable or required

Before the hazard survey is conducted the program will be submitted to MMS and State Agencies for approval. A wind, wave and current study will also be performed to provide information to design the pipelines for stability.

Before the pipelines are installed a detailed set of certified plans will be submitted for approval. Final design will address all information obtained from the various investigations mentioned above.

PIPELINE SAFETY AND POLLUTION CONTROL EQUIPMENT

The pipelines will be equipped with automatic shutdown valves and flow safety valves (check valves). The flow safety valves will be installed at various onshore locations to prevent back flow in the event of a line failure. The automatic valves will be operated by the platform shutdown systems. They will be tested at intervals specified by the MMS. Semi-annual tests will be the minimum.

Two types of leak detectors will be provided on the pipelines; they are:

1. A high-low pressure sensor. This device will sense the line pressure and, if the line pressure varies more than ten percent above or below the normal operating pressure, an alarm will sound, the platform will shut down, and the automatic valves will close. This type of leak detector is very effective in detecting large leaks or line ruptures.

2. An input-output metering system which provides a continuous comparison. This system is comprised of a meter on the platform and a meter at the shore site. Each meter continuously measures the number of barrels flowing at any given instant. This information is fed into a computer located on the platform. The computer is set to sound an alarm and shut down the platform if the barrels out deviates

from the barrels in. Normal settings would be to sound the alarm, etc., if the deviation reaches 5 barrels in any 15-minute period. Data transmission between the onshore site and the platform is by microwave. This system is particularly adaptable to detecting small leaks.

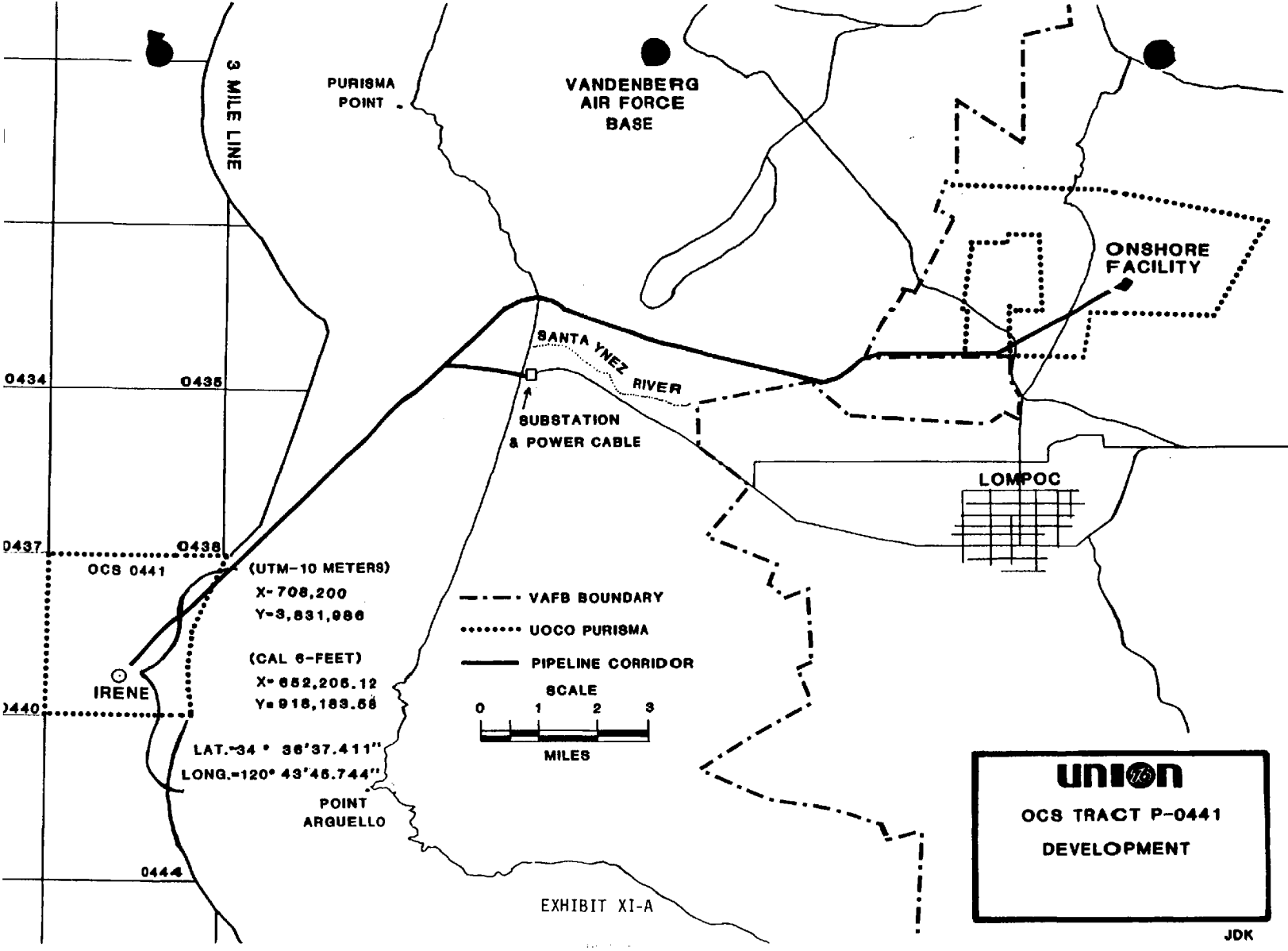

3 MILE LINE
PURISMA POINT
VANDENBERG AIR FORCE BASE
ONSHORE FACILITY
SANTA YNEZ RIVER
SUBSTATION & POWER CABLE
LOMPOC
0434
0435
0437
0438
OCS 0441
(UTM-10 METERS)
X-708,200
Y-3,831,986
(CAL 6-FEET)
X-652,205.12
Y-916,183.58
IRENE
0440
LAT.-34° 36'37.411"
LONG.-120° 43'45.744"
POINT ARGUELLO
0444
VAFB BOUNDARY
UOCO PURISMA
PIPELINE CORRIDOR
SCALE
0 1 2 3
MILES
union 76
OCS TRACT P-0441
DEVELOPMENT
JDK

EXHIBIT XI-A

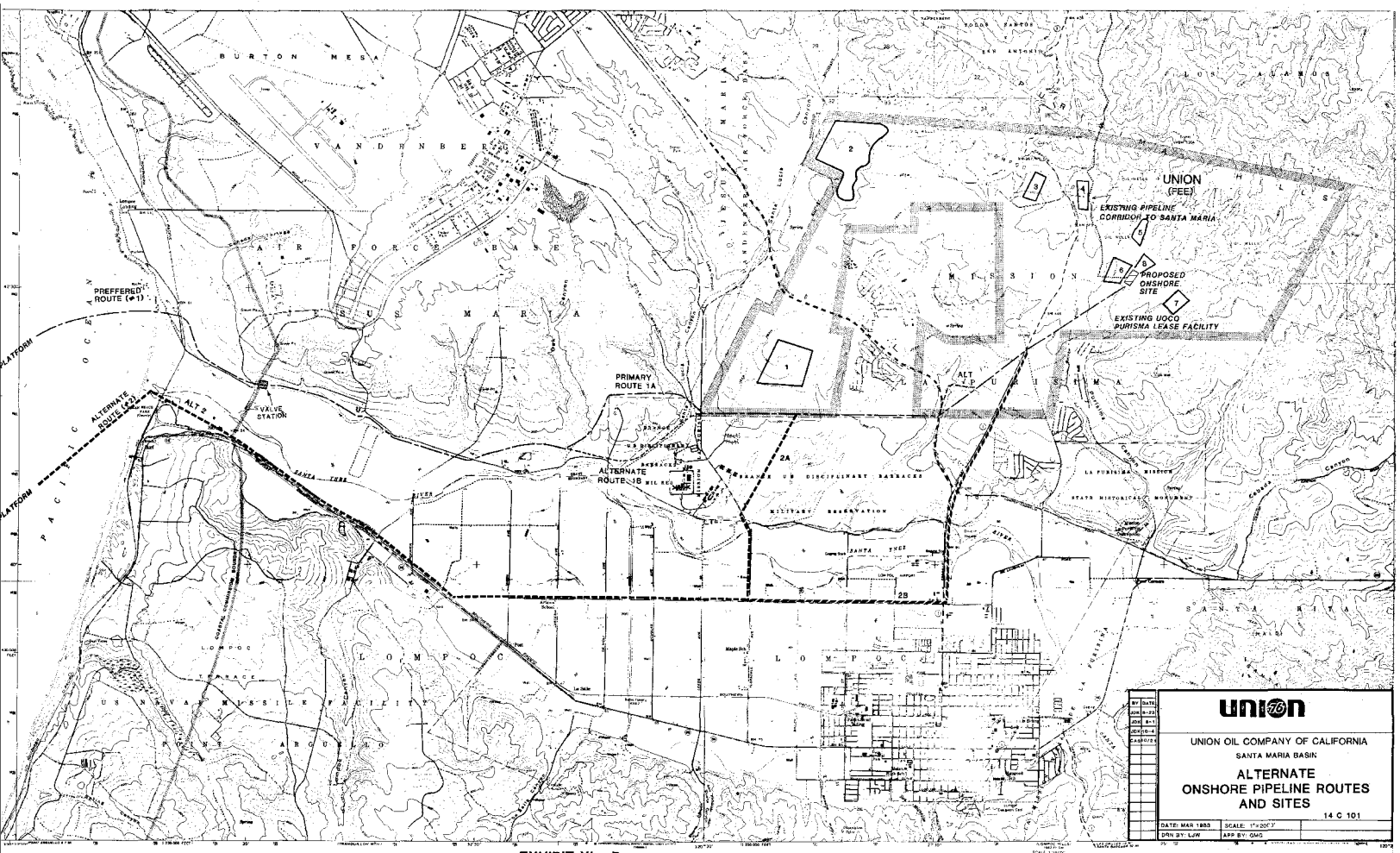


EXHIBIT XI - B

- PRIMARY ROUTE
- ALTERNATE (#1A)
- ALTERNATE (#1B)
- ALTERNATE (#2A)
- ALTERNATE (#2B)

SECTION XII

ONSHORE SITE

The onshore site will be located within the Lompoc oilfield on a parcel of land approximately thirteen acres in size. This thirteen acres is part of an area of approximately 99 acres all of which would be suitable for an onshore facility. The land is part of some 9,000+ contiguous acres which Union Oil Company owns north of the city of Lompoc. The onshore site is located some 10.8 miles inland in an area visible only from a small section of Rucker Road 5,000 feet away. Exhibit XII A is a plot plan of the onshore site.

The oil pipeline from the platform would be first connected to a pig receiver. From the pig receiver oil will flow through a plate to plate heat exchanger which exchanges heat with the dehydrated oil. The temperature will be raised from 50°F to 120°F. From the heat exchanger the gross fluid will enter a free water knockout-flow splitter where some gas will be drawn off and any free water will be drawn off. (Free water will probably not occur until the water content of the incoming stream exceeds 20%.) The oil-water mixture in the FWKO will flow through a tube and shell heat exchanger and into the heater. Each heater will be a 60' long x 12' diameter vessel equipped with 2-6 MMBTU/hr burners and baffles to aid in the

removal of water from the oil. The exhaust gases will pass through one side of the tube and shell heat exchanger where the temperature will be lowered from 800°F to 250°F. Low NO_x burners, which will achieve a minimum reduction of 60% of uncontrolled NO_x, will be utilized. Initially three heaters, each with a rated capacity of 12,000 barrels of fluid per day will be installed. Provisions will be made to install additional heaters as needed for handling additional production. Dehydrated oil will leave the heater at a temperature of approximately 200°F and pass through the plate-to-plate heat exchanger where the temperature will be lowered to 180°F and then to the shipping surge tank (100,000 bbl capacity). The oil will be pumped continuously through an automatic custody transfer meter into the existing pipeline system, or a new upgraded pipeline installed in the existing right-of-way.

Water from all the vessels will be connected to a water gathering system and hence to the water treating plant consisting of a wash tank, induced gas floatation cell, slop tank, clean water surge tank and the necessary pumps and piping. From the surge tank the clean water will be pumped back to the platform for disposal.

Gas from the pipeline, after passing through the pig receiver, will go directly to the Union Oil Company Battles gas plant via the existing gas gathering system. Measurement and sampling equipment will be installed to accurately account for the gas. All of the vessels at the onshore site will be connected to either a low pressure gathering system or a vapor recovery system. This gas will

be added to the platform gas before measurement. The Battles gas plant is an existing conventional lean oil absorption plant with facilities to remove H_2S and water from the gas. The plant is connected to a gas utility company which purchases the processed gas. This plant has capacity to handle up to 30 MMSCF/day of gas but is currently handling only 14 MMSCF/day. Thus a 16 MMSCF/day surplus capacity now exists in this existing plant.

The onshore site will be designed to the same standards as the platform facilities. (Section IX) Equipment will be installed to facilitate testing as required by MMS regulations.

Fuel gas to operate the onshore heaters will be taken from the gas line before it enters the Battles gathering system. Since the gas does contain a minor amount of H_2S it will be treated for H_2S removal before it is burned

A simplified flow diagram is included as Exhibit XII B.

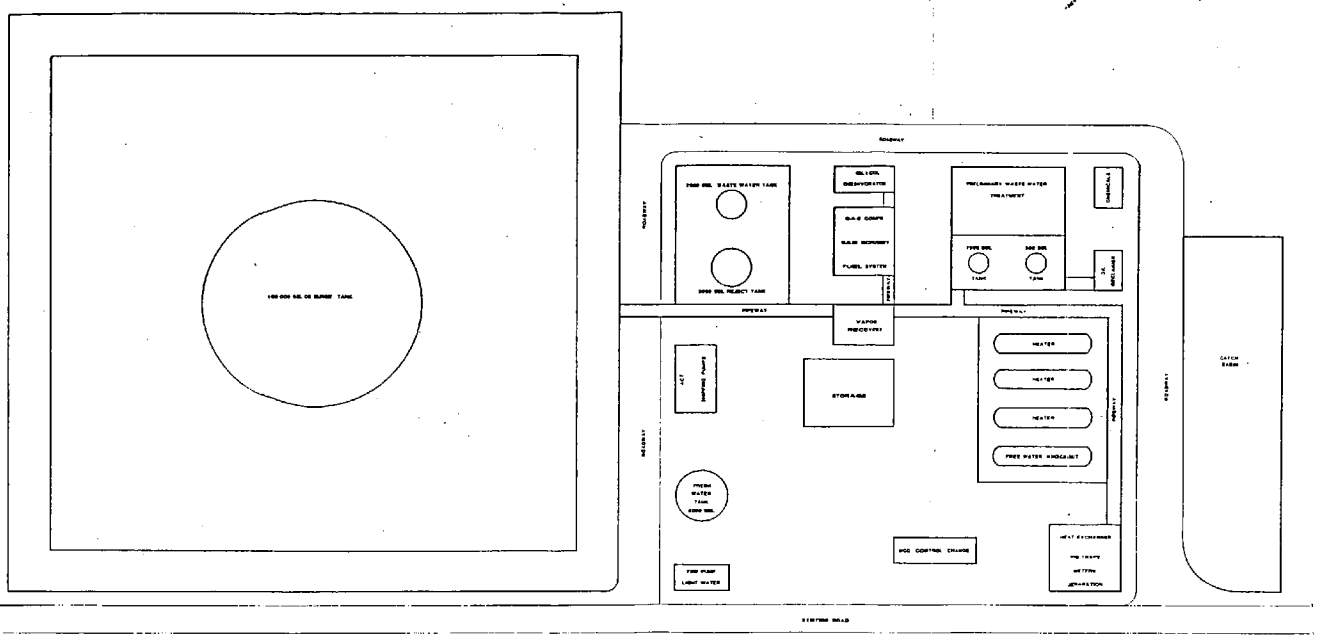


EXHIBIT XII-A

PROPOSED OFFSHORE FACILITY
OCS TRACT P-0441
LOMPOC AREA

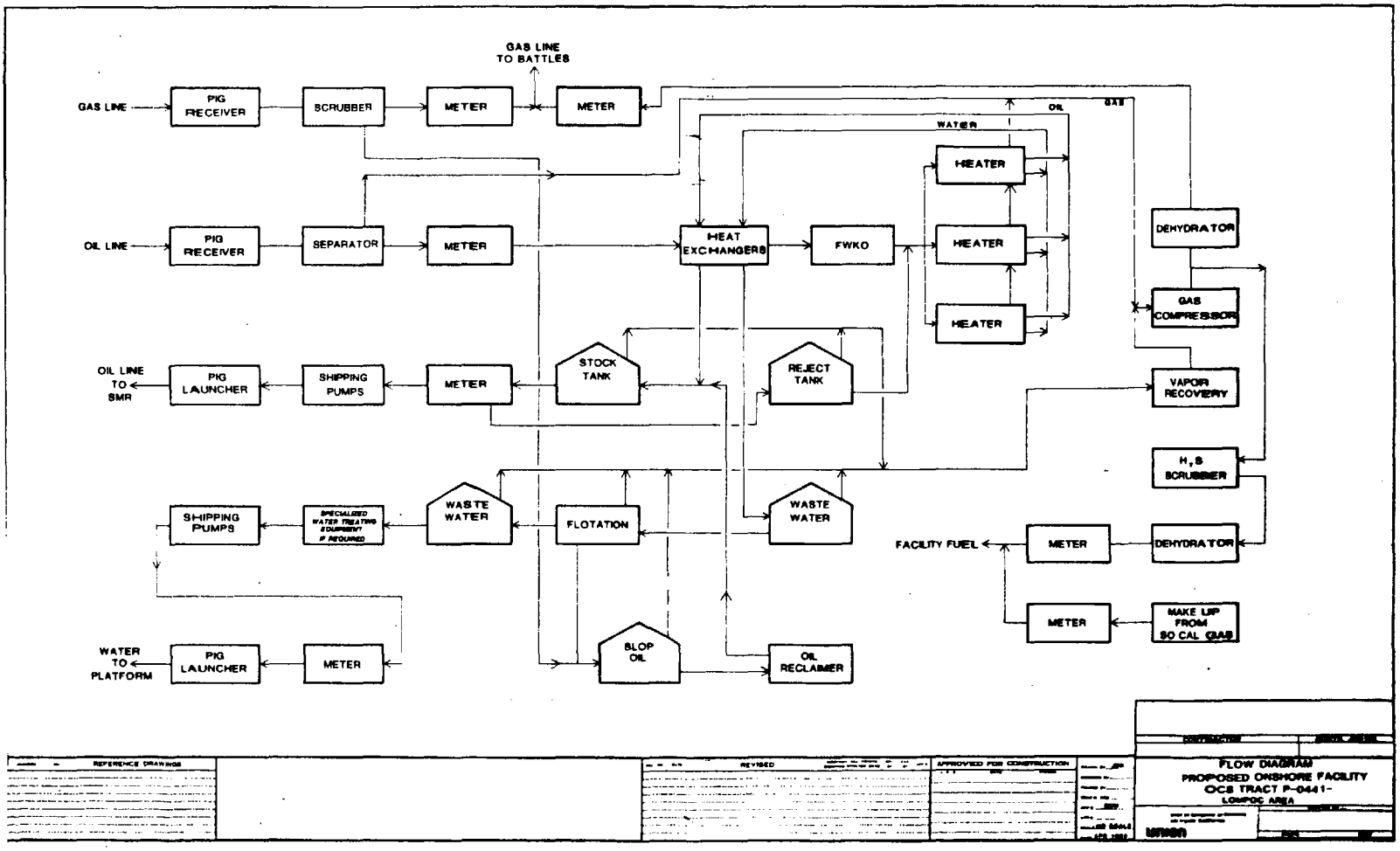


EXHIBIT XII-B

SECTION XIII

OIL SPILLS AND CLEANUP PLANS

Description of Oil Pollution Prevention Procedures

It is the policy of Union to take all proper and appropriate actions to avoid, contain, cleanup, and dispose of any oil and oily debris. The best state-of-the-art equipment will be used by Union and its contractors, and all activities will be conducted in a carefully planned and orderly fashion so as to prevent the discharge of pollutants.

Prevention of oil spills during development and production activities will be maximized through the full compliance by Union and its drilling contractor with the requirements of Pacific OCS Orders No. 2 and 7. Order No. 2 establishes casing and casing-cement requirements; blowout prevention equipment specifications; mud program, testing, and control requirements; and a mandatory program for the supervision and surveillance of activities and the training of personnel. Order No. 7 establishes requirements for liquid and solid waste disposal; personnel training and drills for pollution prevention; and pollution inspections and reports.

The primary system used to prevent oil pollution is composed of a

properly designed mud and casing program, and the diverter-blowout system, both of which are described in detail in Section V of this plan. While drilling each well, a pressure integrity test conforming to OCS Order No. 2, paragraph 3.6 will be performed prior to drilling out the cement plug at the conductor, surface, and intermediate casing shoes. All horizons which contain oil, gas, or fresh water will be fully protected by casing and/or cement as specified in OCS Order No. 2, paragraphs 3.1 through 3.5. Equipment which meets or exceeds the standards set OCS Order No. 2 will be used.

If an oil spill should occur, either from loss of well control or surface transfer operations, Union has a detailed Oil Spill Contingency Plan which would be followed. The Oil Spill Contingency Plan is designed to assist Union personnel and contractors in responding rapidly and effectively to oil spills that may result from development and production operations. It contains a list of the manpower, equipment, and materials maintained or available to Union for use in the event of a spill incident and describes the immediate action to be taken and the alert procedures to be followed in the event a spill occurs. The principal sections of the plan are described in the following discussions.

Personnel Involved in Implementation of the Contingency Plan

A description of the oil spill training program for Union personnel and the contract drilling crew is included in Section 800 of Union's

Oil Spill Contingency Plan. The Union Drilling Foreman, the Offshore and Onshore Cleanup Supervisors, the Offshore Coordinator, the Contract Drilling Foremen, and members of the Oil Spill Response Teams shall receive training in the operation, maintenance, and deployment of the containment/cleanup equipment applicable to their function. Instruction will be provided in the proper use of chemical collecting agents, dispersants, and solvents. Offshore training drills will be conducted prior to spudding the first well and thereafter at least annually. These drills will include full deployment of all offshore containment and cleanup equipment with the exception of chemical application. Sufficient advance notice will be given to allow participation of MMS drill witnesses. Drills will be recorded and the records shall be available to MMS personnel.

Regular training sessions will be held on the platform to review and update oil spill procedures and equipment. All members of the Major Oil Spill Response Team will normally participate in these meetings.

Personnel Involved in Activating Key Phases of the Contingency Plan: A detailed description of the Union personnel to be involved in implementation of the contingency plan is contained in Section 200 (Notification) and 300 (Oil Spill Response Organization) of Union's Oil Spill Contingency Plan. The individual who detects the spill will notify the Union Onsite Drilling Foreman who is responsible for immediately activating the Offshore Immediate Response Team (OIRT). This OIRT will immediately initiate the appropriate control actions.

For minor spills (less than 6.3 bbl) the Union Drilling Foreman will also notify the U.S. Coast Guard National Response Center and the Union Offshore Coordinator who will, in turn, notify Union's District Manager and the MMS. In the event of larger spills in OCS waters, the Union Onsite Drilling Foreman will notify the U.S. Coast Guard, the MMS, the Union Offshore Coordinator, and, if the spill threatens state waters, the California State Office of Emergency Services. For these larger spills, the Offshore Coordinator will activate, as necessary, Clean Seas and Union's Major Spill Response Team, and will notify the District Manager. The Oil Spill Contingency Plan should be consulted for details concerning these procedures.

Oil Spill Cooperatives: Union is an active member of Clean Seas, the regional oil spill cooperative responsible for containment and cleanup operations in the Santa Maria Basin offshore and vicinity. If an oil spill occurs which is beyond the means of onsite personnel and equipment, Union will request assistance from Clean Seas. A description of Clean Seas equipment and capabilities is provided in Section 502. Should a spill exceed the capabilities of CS, additional equipment may be obtained from other cooperatives such as Clean Coastal Waters, and Clean Bay.

Description of Cleanup Activities, Response Time, Capacity, and Location of Equipment

A detailed explanation of the equipment, techniques, methods,

capacity, and response times for containment and cleanup is found in Union's Oil Spill Contingency Plan and summarized below.

Cleanup Activities: Section 300 (Oil Spill Response Organization) of Union's Oil Spill Contingency Plan describes how Union is organized to respond to oil spill situations. Two related response teams--an Offshore Immediate Response Team (OIRT) and a Major Spill Response Team (MSRT)--are described. In Section 400 of the Plan, the Oil Spill Response Procedures and explained. This Section includes a description of immediate response actions (Sec. 402), containment techniques (Sec. 403), open water cleanup (Sec. 404), chemical treatment (Sec. 405) and shoreline cleanup (Sec. 406).

If an oil spill occurs, containment and cleanup equipment on the platform will be immediately deployed. A description of the spill equipment that will be aboard the platform presented in Section 500. This equipment is designed primarily to contain and cleanup small spills. It is inspected monthly and maintained in a state of readiness. The results of the inspection will be recorded and maintained onsite. Two boats, specifically designated for boom deployment, will be onboard the platform at all times.

After the contamination has been contained, the pollution will be mechanically removed by the skimmer. The skimmer will transfer the oil to the 1500 gallon storage device. Additional storage, if required, will be supplemented by portable tanks. If high seas prevent the successful deployment of the oil boom and skimmer

and contact with a sensitive section of shoreline is eminent, a dispersant (Corexit 9527) may be used. The use of a disperant will be restricted to cases where physical removal is either not practical or where no more pollution can be removed from the surface by physical means. The dispersant will be used only after permission is given by the Federal On-Scene Coordinator (OSC).

If an oil spill occurs which is beyond the means of onsite personnel and equipment, additional equipment will be obtained from supplies of containment and cleanup equipment at various locations along the Coast. Section 502 contains an inventory of CS equipment, including the Tide Mar VII, an oil storage barge. Clean Seas has two fully equipped Oil Spill Response Vessels (MR. CLEAN I and MR. CLEAN II) which are berthed at Santa Barbara and Avila Harbors and are on 24-hr. call. Should other equipment be required, Union also has access to oil spill cleanup equipment maintained by several other oil companies in the Santa Barbara Channel and Santa Maria Basin areas. Sections 502 and 503 also contain the major equipment inventory of each cooperative as well as a list of equipment on the MR. CLEAN I and II oil spill response vessels.

Response Time: The logistics and response times for the deployment of oil spill containment and cleanup equipment are described in Section 504 of Union's Contingency Plan. Response times will vary considerably depending on storage location, staging area, and location of the spill.

The equipment aboard the platform can be immediately deployed, using the onboard boom deployment boats. Response times for off-site equipment will vary considerably depending on storage location, staging area, and location of the spill. The "MR. CLEAN II", a new oil spill response vessel harbored at Port San Luis/Avila Harbor, will be equipped with the oil spill containment and cleanup equipment described in Section 502. The MR. CLEAN II vessel can be mobilized in about one hour of notification. The transit time of the vessel from Port San Luis/Avila Harbor to Union's lease would be about 2.5 to 3 hours. Once the vessel arrives on site, the boom would be deployed in approximately six minutes (0.10 hours) and recovery initiated within one hour. Thus the total response time for MR. CLEAN II in average seas, from notification to recovery, would be 4.5 to 5 hours in average seas.

Other relevant equipment storage locations are primarily those used by Clean Seas, but also include those of CCW, Clean Bay, and the U.S. Navy. Response times from the various storage locations to the primary staging areas at Avila Beach, Santa Maria, and Santa Barbara, via overland routes, are given in Figure 500-1 total response time from storage locations to staging area destination varies from 3-1/2 to 7 hours. Once the equipment reaches the staging area it will be transported by boat or helicopter to the spill site. The response times from the staging areas to various points within the Santa Maria Basin Offshore by boat and helicopter are shown in Figures 500-4 and 500-5 (taken from the Oil Spill

Contingency Plan). According to these figures, vessel response time from the staging areas to lease OSC P-0441 would be approximately 3.5 to 4 hours from Avila Beach and 5.5 to 6 hours from Santa Barbara. Helicopter response times from Santa Maria would be approximately 1.7 hours and 2.5 hours from Santa Barbara (from Oil Spill Contingency Plan; includes one hour mobilization time).

Description, Location, Capability of Equipment: Oil Spill Equipment is described in Section 500 of Union's Oil Spill Contingency Plan. Figure 13-1 shows the locations of oil spill recovery equipment along the entire California coast. Sections 500-2 and 500-3 list the Oil Spill containment and cleanup equipment and supplies available from Clean Seas and other oil spill cooperatives such as Clean Coastal Waters, and Clean Bay. The capabilities of the equipment and the sea states at which it can safely operate are also provided. If the State or National Oil Spill Contingency Plans are activated, spill equipment owned by the Navy may be requested.

500

OIL SPILL EQUIPMENT

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501 ONSITE EQUIPMENT

The oil spill containment and cleanup equipment listed in this section are representative of the type of equipment to be stored on the platform prior to the initiation of drilling activities. Final equipment selection will be based on state-of-the-art technology at the time of platform installation. The equipment capabilities will be limited to minor spills only (less than 10 barrels released instantaneously). For larger spills, the containment equipment will be deployed as a first response effort to try and control the spill until the local oil spill cooperative vessel(s) arrives at the spill site. Spill equipment stored on the platform will be deployed immediately following a spill.

The following is a preliminary list of spill equipment that will be

stored and maintained on the platform for immediate use by trained operating personnel:

- o 1 - 20 ft ± Boom Deployment Boat (75 HP)
- o 1 - 32 ft Oil Skimmer Deployment Boat (2-100 HP)
- o 1 - 1600 ft Expandi Boom
- o 1 - Walosep Oil Skimmer (Model W1) or equivalent
- o 5 - 500 gallon Floating Oil Storage Bags
- o 6 Boxes - Sorbent Boom
- o 4 Boxes - Sorbent Pads
- o 5 Drums - Dispersant (Corexit 9527)
- o 2 - Backpack Sprayers for Chemical Agent Application
- o Additional Spill Equipment as required by the MMS Manager

Proper deployment of spill containment and cleanup equipment is essential in providing a rapid and effective oil spill response. Therefore, general descriptions and deployment instructions for the types of major response equipment to be stored onboard the platform are given in the following discussion.

Whittaker Expandi Oil Boom

Description. The Expandi boom is a medium duty collapsible curtain boom which uses an air chamber for flotation. The chamber is self-filling and diamond shaped in its cross section. The boom is made from a plastic-coated nylon fabric and can be deployed from the back of the boom deployment or supply boat or edge of the platform. This boom is shown in Figure 500-1.

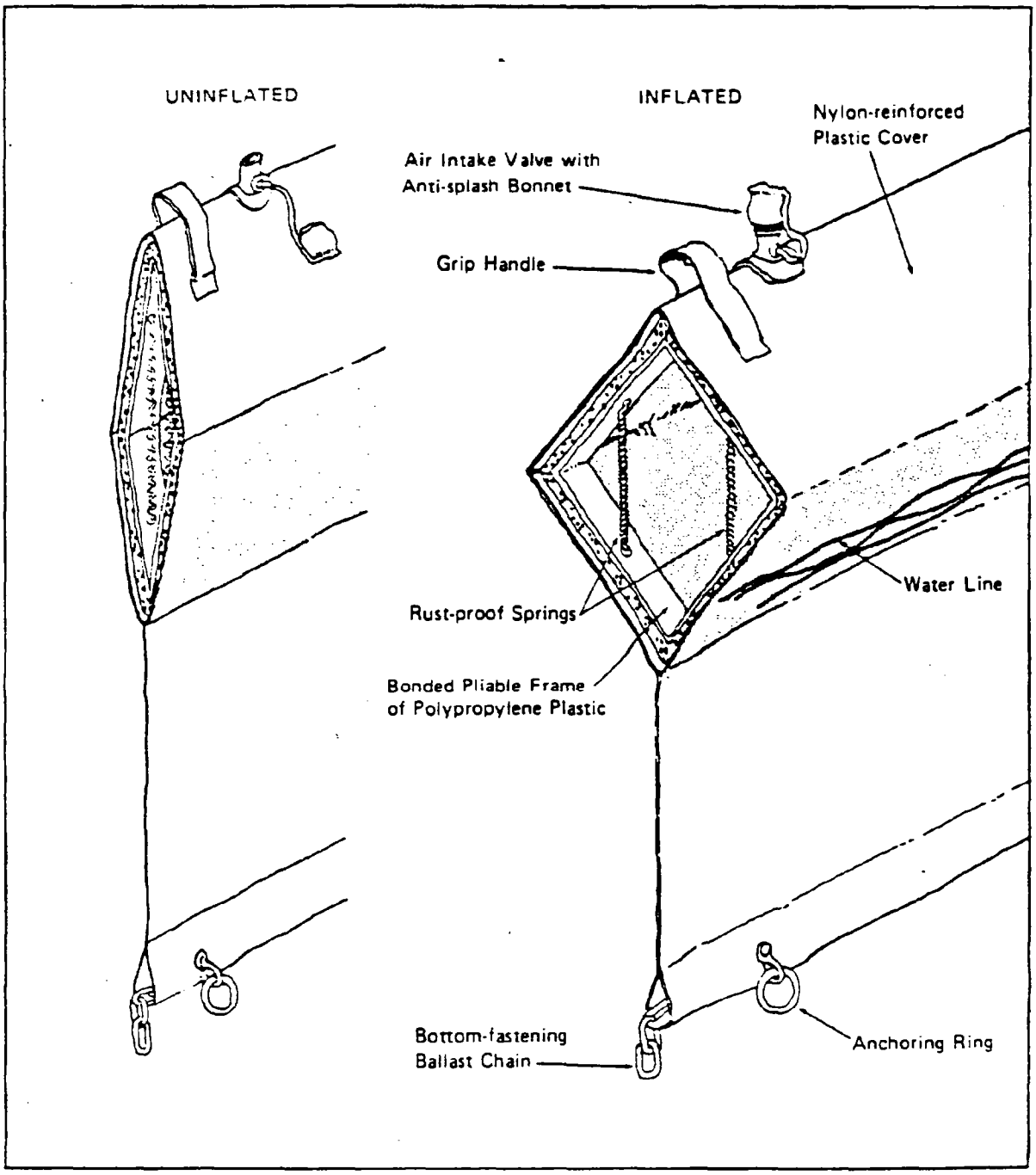

Figure 500-1. EXPANDI BOOM

Deployment Instructions. The boom pallet or package is located on the boat landing deck, the boom being deployed in the following manner:

- Either the boom deployment boat stored on the platform or an available crew boat is used to pull the boom off the platform using a tow line. This is the most critical time of deployment and the boom must be watched carefully to make sure it does not snag. If a snag occurs, the workboat should stop immediately and wait until the snag is cleared to proceed. During deployment, check to ensure the inlet valves are functioning and that the boom is inflating properly.
- Care must be taken to ensure the deployment drogue is attached to the trailing end of the boom prior to release of the boom from the platform. Care should also be taken so the drogue and its buoys are untangled prior to release overboard.
- The boom should be deployed in a straight line ahead of, and angled across in front of the advancing oil slick as shown in Section 400. The deployment boat should then turn 90 degrees toward the approaching slick, the boat traveling approximately 100 feet in the direction of the slick, and deploy the lead drogue to the boom end being towed. The boom will drift into a catenary of U-shape in front of the slick.
- After the boom is deployed, it can be tended or moved by pulling on either of the trip buoys, which have high-strength lines attached to the bottom edge of the drogue.

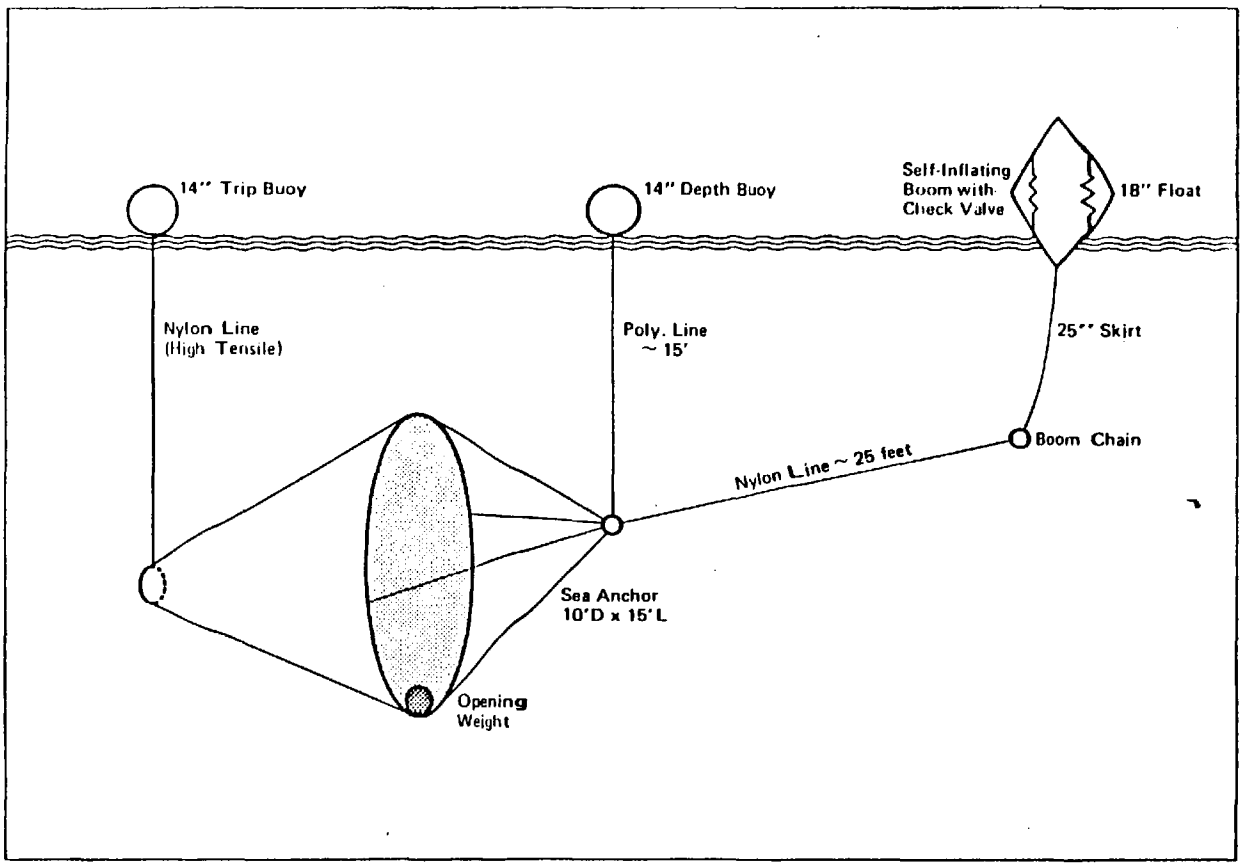

Figure 500-2. DROGUE ARRANGEMENT

Recovery. Care should be taken during recovery to avoid snags, excessive tension or stress which could damage the boom. If it is to be retrieved over an edge or sharp projection, a roller or pad should be used along the edge to protect the boom. A pad or layer of polyethylene laid over the deck will protect the boom and prevent contamination of the deck area.

Before storing the boom it should be thoroughly cleaned and dried. The boom is repacked by flattening the boom to exhaust the air as it is pulled on deck and flaking the boom segments in a row and then repeating the procedure, with each successive row being formed on top of the previous row.

Walosep Skimmer (Model W1)

Description. The Walosep Skimmer is an effective skimming devise that incorporates a combination of three (3) main principles in its design:

1) An overflow principle completed with an increased inflow of oil to the skimmer (weir system and axial pump).
2) Centripetal concentration of the floating oil by a slowly controlled rotation (rotor action).
3) Gravimetrical settling through an oiltrap which completes the separation (stator action).

The Walosep Skimmer can be used with all types of floating, pumpable oils and chemicals. The W1 is a light weight skimmer, about 154 lbs. and is easily handled by two men. The skimmer is driven

hydraulically through umbilical cords connected to the power pack located on the deployment boat.

Deployment Instructions. The Walosep Skimmer is to be hoisted by crane to the deployment boat which will transport the devise to the containment area. Prior to deploying the skimmer, all connections between the power pack, skimmer, oil/water separator (located on boat) and floating storage bag are to be checked.

Once deployed, activation of the power pack will result in oily water being delivered to the separator from the skimmer. After separation the oil will be discharged to the floating storage bag with the separated water being directed overboard. Additional storage bags will be located on the boat for use as needed.

(NOTE: This section will be modified to reflect exact procedures to be followed based on final design of deployment boat and skimmer selection.)

502 OIL SPILL COOPERATIVES

If an oil spill occurs beyond the means of on-site personnel and equipment, Union Oil Company will request assistance from Clean Seas (CS). Clean Seas is an oil spill cooperative of which Union is a member and whose operating area includes the Santa Maria Basin. The equipment owned by CS, storage locations, and the procedures required for obtaining this equipment are given below.

Should a spill also exceed the capabilities of CS, additional equipment may be acquired from other cooperatives such as Clean Coastal Waters, Clean Bay and the Port San Luis and Estero Bay Oil Spill Cooperative. The address and major equipment inventory of each cooperative is also given on the following pages.

CLEAN SEAS

Santa Barbara, CA

Bud Waage - Manager
(805) 965-6502

Skimmers	Location	Performance Specifications
1 Cyclonet 100 skimmer system mounted on CS spill response vessel (Mr. Clean I)	Santa Barbara Harbor or Avila Beach	Can operate in moderate to heavy sea states (Mr. Clean I)
CS weir skimmer barge (45' x 17' x 6') with 2000-gpm pump and 200-bbl onboard O/W separation system and 2-240' sections of oil boom	Santa Barbara Harbor	Can operate in moderate sea states
2 Mark II weir skimmers	Carpinteria Yard	Works in waves up to 2-3 ft and winds up to 14-16 knots
1 Komara Mini-skimmer	Carpinteria Yard	Works in waves up to 2 ft
3 Floating weir skimmers	Carpinteria Yard	Works in waves up to 2-3 ft
1 Acme 39T skimmer	Santa Barbara Gaviota	Works in light seas
5 Acme 51T skimmers	Carpinteria Yard Morro Bay Ventura Point Dume	Works in light to moderate seas
1 Mark II-9 Oil Mop	Carpinteria Yard	Protected harbor
1 050 Cyclonet Skimmer with Zodiac work boat	Carpinteria Yard	Works in waves up to 3 ft
Containment Booms		
2000' of a 4' freeboard and 8' draft heavy-duty bottom tension boom	Carpinteria Yard	Works in 6-8 ft waves, currents up to 1-1/4 knots and winds up to 25 knots

CLEAN SEAS (continued)

Containment Booms	Location	Performance Specifications
2 Vikoma Sea Packs each 1600' long	Carpinteria Yard Morro Bay	Works in waves up to 6 ft and winds
2000 ft Kepner 16" x 12" curtain boom	Carpinteria Yard Gaviota	Works in waves up to 2 ft
2000 ft Kepner 8" x 12" curtain boom	Carpinteria Yard Santa Barbara	Harbor boom
4180 ft of inflatable Goodyear 12" x 24" Sea Sentry boom	Carpinteria Yard	Open ocean conditions
5527 ft of 12" x 17" Expandi boom	Point Dume Morro Bay Ventura	Works in moderate sea states
9100 ft of 43" Expandi heavy-duty sea boom	Morro Bay Ventura Santa Barbara	Works in waves up to 5 ft and winds up to 20 knots

Vessels

Mr. Clean I 1 136' x 36' Dedicated Response Vessel fitted with Cyclonet 100 skimmers. Other equipment includes: 1 Vikoma Seapack 1500 ft of 43" Expandi Boom 2500 ft of 36" Goodyear Boom 1 Komara Skimmer 1 Dracone Storage Bag 1 Dispersant Spray Unit 1 15-ft Outboard Skiff 1 32-ft Boom Boat w/twin 175 hp Motors	Santa Barbara Harbor or Avila Beach	Open ocean conditions
Mr. Clean II 1 130' x 30' Dedicated Response Vessel equipped with the following: 2 ODI Center Section Skimming Barriers 4' x 65' 2 ODI 750 gpm Floating Pump Systems for above	Avila Beach	Open ocean conditions

CLEAN SEAS (continued)

Vessels	Location	Performance Specifications
Mr. Clean II cont. 1 Walosep W-3 Skimmer 2000 ft of 14"x24" Goodyear Boom 1 Vikoma Seapack 2000 ft of 4300 Expandi Boom 1 100-bbl Onboard Oil/Water Separation System 4 Kepner Storage Bags 1 32-ft Boom Boat w/twin 175 HP motors 1 Dispersant spray unit	Avila Beach	Open ocean conditions
1 19-ft Larson Skiff w/75 hp motor	Carpinteria Yard	Protected waters
3 14-ft Aluminum skiffs w/outboard motor	Carpinteria Ventura Avila Beach	Protected waters
1 21-ft Monark utility boat w/outboard motor	Carpinteria Yard	Calm to moderate seas
1 10-ft Avon rubber raft w/outboard motor	Carpinteria Yard	Protected waters
Dispersants and Application Equipment		
225 drums - Corexit 9572 dispersant	Carpinteria Yard	
2 Simplex Model 200 helicopter dispersant application systems	Carpinteria Yard	
1 Vessel mounted dispersant application system	Carpinteria Yard	
Oil Storage Equipment		
2 5000-gal. Kepner floating storage bags	Carpinteria Yard Gaviota	

CLEAN SEAS (continued)

Oil Storage Equipment	Location	Performance Specifications
6 1200-gal. Kepner floating storage bags	Ventura Carpinteria Yard Santa Barbara Point Dume Morro Bay	
1 6000-gal. Dracone floating storage bag	Carpinteria Yard	
Tide-Mar VII 7840 bbl tank barge	Ventura	
2 100-bbl oil/water recovery tanks	Carpinteria Yard	Use with CSI skimmer or elsewhere
4 100-bbl flat storage tanks	Carpinteria Yard	Use with all skimmer equipment
Other		
6 40' enclosed trailer vans with booms, sorbents, and small skimmers	Carpinteria Yard Morro Bay Santa Barbara Ventura Gaviota Point Dume	
1 25' mobile communication center with radio base station, portable radios, and auxiliary power	Carpinteria Yard	
2 100 bbl. tank trailers - loaded with dispersants	Carpinteria Yard	
1 - 36' flatbed trailer	Carpinteria Yard	

Equipment Release Procedures

In the event of a spill that requires CS assistance, the spiller will call the CS Manager:

Mr. C. W. (Bud) Waage
Manager
7127 Hollister Ave.
Goleta, California 93017
Office: (805) 965-6502 (24 hours)
Carpinteria Yard: (805) 684-4719
Home: [redacted]

Alternate: Jay Welsh
Foreman 643-8641-9957
Pager:
Home: [redacted]

If the CS Manager is not available, any one of the below listed members of the executive committee may act in his absence:

Chairman: W.B. Edman
Office: (214) 694-7245
Home: [redacted]

Vice Chairman: D.E. Cornett
Office: (213) 552-5776
Home: [redacted]

Secretary: Rod Martin
Office: (805) 257-6276
Home:

Representative: J.B. Hundley
Office: (805) 831-1600
Home: [redacted]

Representative: J.R. Kemp
Office: (805) 642-8154
Home: [redacted]

Representative: J.R. Philipps
Office: (805) 642-6781
Home: [redacted]

Representative: Bren Dehn
Office: (805) 656-7600
Home: [redacted]

The CS organizational response is structured to respond to different levels of oil spills and to different levels of assistance requested by a member company. CS has two mobilization levels; a primary response involving key staff members only, and a secondary response involving the mobilization of supervisors and operating personnel as needed for the spill situation.

Upon notification of a spill and request for assistance by a member company, nonmember company or government agency, the CS Manager will determine the level of activation necessary based on the type of assistance requested by the spiller.

In accordance with the spiller company's information, the CS Manager will authorize the release of equipment and trained personnel as required.

Staff Notification. The CS Manager will initiate the callout of the CS primary response staff. The CS Mobilization Coordinator will conduct the callout of the CS secondary response staff as requested by the CS Manager.

Primary Response Staff. The primary response staff and their alternates is composed of member company personnel who live and work close enough to Santa Barbara and Port San Luis that they can respond to a mobilization request within one hour.

CLEAN COASTAL WATERS

Long Beach, CA
Roy C. McClymonds - Manager
(213) 833-4426

Skimming Equipment	Location	Comments
1 - Marco Class II self propelled belt skimmer 40 ft long	Pacific Towboat & Salvage Pier D, Berth 35 Long Beach	Certified for harbor use but requires USCG Approval for open ocean use.
1 - OMI oil mop w/1000' of rope	Crowley Terminal Berth 213 Terminal Island	Primarily used in harbors or protected waters
1 - Seavac System slurp skimmer w/2" Homelite diaphragm pump	Crowley Terminal Berth 213 Terminal Island	Primarily calm water uses

Containment Booms	Location
3000' 20" Kepner stowed on dock for immediate deployment	Crowley Terminal Berth 213 Terminal Island
2000' 20" Kepner stowed on dock for immediate deployment	Pactow Pier D, Berth 35 Long Beach
5000' 14" Kepner stowed on dock for immediate deployment	Shell Oil Terminal Berth 169 Los Angeles
5000' 14" Wittaker Expandi Boom, stored on 2 trailers	Chevron Refinery El Segundo
6000' 14" Wittaker Expandi Boom, stored on 2 trailers	Aminoil-Huntington Beach Facility
3000' 14" Whittaker Expandi Boom, stored on 1 trailer	SC-PCO/CCW Storage Yard

Oil Storage	Location	Comments
2 - Kepner Sea Bags	Crowley Terminal Berth 213 Terminal Island	1200 gal. oil containers used with Seavac system

Vessels

1 - 45' Rotork (Clean Waters II) 2 - 200 Volvo 1/10 Engines	Crowley Terminal Berth 213 Terminal Island	Rapid-response vessel. Fully equipped with radar, oil mop, etc.

CLEAN BAY

Concord, CA
Jack Mortenson - Manager
(415) 685-2800

Skimmers	Location
2 Class I Marco skimmers; self-propelled	San Francisco Bay
2 Class III Marco skimmers; self-propelled	San Francisco Bay
2 Exxon floating weir skimmers	Concord CB Warehouse
1 OMI Oil Mop	Concord CB Warehouse
2 Oil Hawgs	Concord CB Warehouse
1 Skim Inc. Skimmer	Concord CB Warehouse

Containment Boom

4600 ft - 16" x 12" Kepner Sea Curtain	Concord CB Warehouse
500 ft - 24" PPC Aqua Fence	Concord CB Warehouse
1 1600' Vikoma Sea Pack	San Francisco Bay
About 1000 ft - 36" Sea Boom	IT Services, Inc.
1600 ft - 30" Expandi Boom	Concord CB Warehouse
6400 ft - 6" x 12" American Marine Service Boom	Concord CB Warehouse

CB (concluded)

Pumping Equipment	Location
2 Wilden M15B Diaphragm Pumps 150 gpm 100 psi	Concord Warehouse
2 8" Submersible turbine pumps, 1000 gpm	Concord Warehouse
1 40 hp diesel Engine	Concord Warehouse
1 Simplex Pumping Unit 150 gal. capacity, 1 gpm (for Helicopter application of surface collecting agents)	Concord Warehouse

Port San Luis and Estero Bay Oil Spill Cooperative
c/o Pacific Gas and Electric Company
Morro Bay Power Plant
(805) 544-3334

Skimmers	
1 Class I Marco Skimmers: Self -propelled	PG&E Power Plant
1 Acme portable floating weir skimmer	PG&E Power Plant
Containment Boom	PG&E Power Plant
1000 ft - 11" x 19" Whittaker Expandi Boom	
3100 ft - 12" x 16" Kepner Sea Curtain Boom	PG&E Power Plant
Communications Equipment	PG&E Power Plant
1 base station KMG-225 153.590 mc	
3 portable sets 153.590 mc	
4 portable sets KQ 4797 FI 456.550/ F2 451.550 MHZ	

503 OTHER EQUIPMENT SOURCES

Listed below are the equipment inventories of the primary oil spill cleanup contractors that may be contacted to provide additional spill response equipment or services as required by the circumstances of the spill.

- CROWLEY ENVIRONMENTAL SERVICES
  Berth 188
  Wilmington, California
  contact: Mr. Dubica
  (213) 549-9227

  Equipment
  1 Marco Class I Skimmer

  50' workboat equipped with:
  2000 ft - 8" x 12" Kepner Compacti boom
  1 Oela weir skimmer
  1 500-gal floating storage tank
  500 ft - 8" x 12" Kepner Compacti boom
  1 500-gal storage tank
  600 ft - 10" x 16" Kepner Sea Curtain boom
  2 16' skiffs with outboard motor
  1 14' skiff with outboard motor

- CROWLEY ENVIRONMENTAL SERVICES CORP.
  1453 Harbour Way South
  Richmond, California 94804
  (415) 546-2820

Equipment

4100' - Kepner Standard Boom, 8" Freeboard x 12" Draft
2000' - Kepner Compacti Boom, 8" Freeboard x 12" Draft
1200' - Kepner Standard Boom, 12" Freeboard x 16" Draft
1 - Marco Class I 28' Oil Recovery Vessel
1 - Mark II 4 VE Oil Mop - 200' Rope
1 - Mark I 4 E Oil Mop - 100' Rope
1 - Vac-U-Max w/Suction Hose
2 - Skim Skimmers w/Suction Hose
1 - M/V Spill Container, 60'
4 - 10' Workboats
4 - 12' Workboats
3 - 16' Workboats

o CROSBY AND OVERTON, INC.
1620 W. 16th St.
Long Beach, California 90813
(213) - 432-5447

Equipment

6800 ft - 6" x 12" curtain boom
22 Punts
4 Skiffs - Outboard (20 hp)
4 Work boats - Inboard (Los Angeles - Long Beach Harbor)
1 Oil Skimmer - 40' x 18'
8 100-bbl Vacuum trucks
9 35-bbl Vacuum trucks
3 535-Malsbary steam machines (2 nozzles)
4 320-Steam Machine (1 nozzle)
8 6000-psi/10-gpm Hydroblast Units
1 6000-psi/42-gpm Hydroblast Unit

- IT SERVICES
  North Lagoon Ave.
  Wilmington, California
  (213) 830-1720

  Equipment

  5000 ft - 6" Curtain boom
  5000 ft - 4" Curtain boom
  1 weir skimmer (self-propelled)
  2 Floating weir skimmers
  16 Punts
  3 Workboats
  2 Work barges
  2 Tugs
  13 Vacuum trucks
  2 Oil spill control trailers
  2 Truck-mounted spray units
  16 hydroblasters

- IT SERVICES
  886 Howe Road
  Martinez, California 94553
  (415) 228-5100 (24 hour)

  Equipment

  6500' - Hutchison Boom, 6" Freeboard x 12" Draft
  1 - Lockheed Skimmer, 42'
  1 - 14' Boston Whaler w/25 HP Motor
  1 - 18' Inboard Workboat
  6 - 8' - 12' Punts
  36, 55, 60, 80 110 bbl Vacuum trucks

120 bbl truck (dual compressor high vacuum unit)
Pressure Washer: Truck Mounted 1500 PSI-Hot or cold water
Hydroblast Machines: Trailer Mounted - above or below 500 PSI
Steam Cleaners: 10 GPM

- PEPPER INDUSTRIES
  2000 McKinley Ave.
  National City, California
  (714) 474-6578

  Equipment

  10,000 ft - Muletex oil boom
  6 Tank Barges
  2 Tug Boats
  3 Work Boats
  5 Punts
  8 Vacuum Trucks
  5 Steam Cleaners
  3 Hydroblasters

- CHEVRON U.S.A. INC.
  Estero Bay Marine Terminal
  (805) 772-2611

  Equipment

  1 Acme Portable Skimmer
  1 Vikoma Sea-Pack (1600 ft)
  3000 ft Kepner Boom
  3 Pumps
  10 Portable Radios
  1 Emergency Light Plant

- USCG STRIKE FORCE
  San Francisco
  LCdr J.L. O'Brien
  (415) 556-2655

  Equipment
  6 ADAPTS Lightering Systems
  1 VOPS Lightering System
  1 Lockheed Clean Sweep Model 4000 Disc Skimmer
  9 612 ft Coast Guard Skimming Barriers with Pump Float and Associated Prime Movers and Hoses
  1 300,000 gal. Dracone Floating Storage Tank
  4 40,000 gal. Dracone Floating Storage Bags
  1 10,000 gal. Dracone Floating Storage Bag

- U.S. NAVY*
  Stockton, California

  Equipment
  8 Marco Class V Skimmers (Modularized)**
  Piece A: 36' x 8' x 8'4", 15,000 lb. (Center Module)
  Piece B: 36' x 4' x 6'10", 5,000 lb. (2 Side Modules)
  Piece C: 4' x 3' x 7'6", 500 lb. (Pilot House Top)
  1 Oil Mop (36")
  7 Goodyear Boom Vans (1000' Boom in each van)
  Piece A: 20' x 8' x 8', 18,000 lb.

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*Equipment requests should be made through the U.S. Coast Guard's On-Scene Coordinator.

**Requires large support platform (vessel) with 20 ton capacity boom/crane for recovery under adverse weather conditions or for repair.

4 Mooring Legs - Ancillary Goodyear Boom Deployment Equipment (Moor Buoys, Danforth Anchor - 500 lb., Shackles, Anchor Chain and Line), 8'7" x 4'8", 7,600 lb.

2 Maxvac Booms (1000' Boom each)
Miscellaneous Offshore Boom (8000')

3 Monark 2408 (Modified V-Boom Towboats, 20' x 8' x 8'6", 8000 lb.

1 Dunlop Dracone Bladder Tank (135,000 gallon)
20' x 8', 13,000 lb.

504 RESPONSE TIME

The response times for the deployment of oil spill containment and cleanup equipment will vary considerably depending on storage location, staging area, and location of the spill. The equipment storage locations are primarily those used by Clean Seas, but also include Clean Bay, and the U.S. Navy. Response times from the various storage locations to the three primary staging areas (Santa Maria, Avila Beach, and Santa Barbara) via overland routes are given in Table 500-1.

Once the equipment reaches the staging area it will be transported by boat or helicopter to the spill depending on the urgency and weight of the equipment. The response times from the three staging areas to various points within the Santa Maria Basin by boat are shown in Figure 500-4. Response times by helicopter from Santa Maria to the Santa Maria Basin are given in Figure 500-5.

TABLE 500-1. OVERLAND RESPONSE TIMES

Equipment Location	Destination	Approx. Distance To Destination (Miles)	Travel Time To Destination At 50 MPH (Hrs)	Initial Mobilization Time (Hrs)	Total Response Time To Destination
Clean Seas (Morro Bay)	Santa Barbara	120	2.4	3	5.4 Hrs.
	Santa Maria	45	0.9	3	3.9 Hrs.
	Avila Beach	18	0.4	3	3.4 Hrs.
Clean Seas (Avila Beach)	Santa Barbara	95	1.9	3	4.9 Hrs.
	Santa Maria	27	0.54	3	3.54 Hrs.
	Avila Beach	N/A	N/A	N/A	N/A
Clean Seas (Santa Barbara)	Santa Barbara	N/A	N/A	N/A	N/A
	Santa Maria	74	1.5	3	4.5 Hrs.
	Avila Beach	102	2.0	3	5.0 Hrs.
Clean Seas (Carpinteria)	Santa Barbara	18	0.36	3	3.36 Hrs.
	Santa Maria	85	1.7	3	4.7 Hrs.
	Avila Beach	122	2.4	3	5.4 Hrs.
Clean Bay (Concord)	Santa Barbara	350	7.0	3	10.0 Hrs.
	Santa Maria	270	5.4	3	8.4 Hrs.
	Avila Beach	243	4.9	3	7.9 Hrs.
U.S. Navy (Stockton)	Santa Barbara	370	7.4	3	10.4 Hrs.
	Santa Maria	290	5.8	3	8.8 Hrs.
	Avila Beach	263	5.3	3	8.3 Hrs.

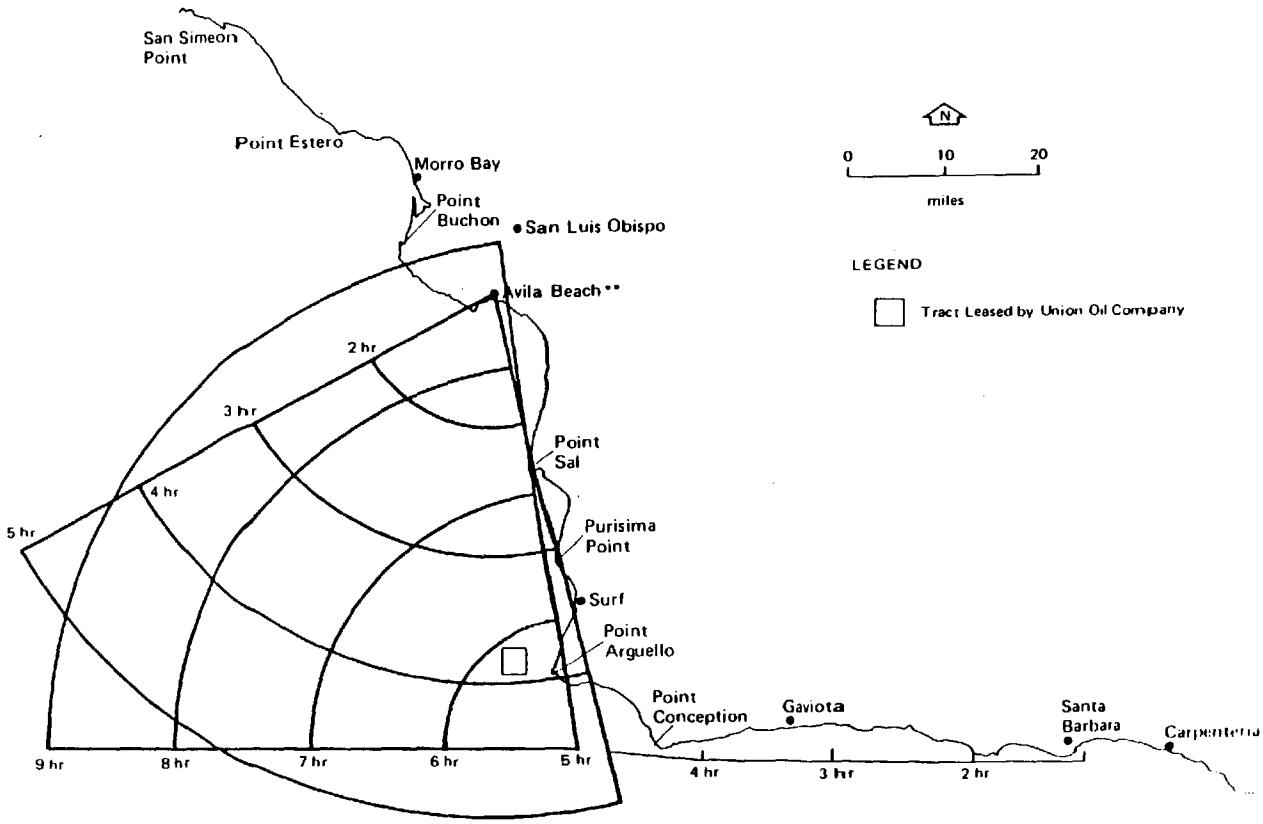


Figure 500-4. VESSEL RESPONSE TIMES FROM AVILA BEACH AND SANTA BARBARA (at 12 knots)*

*Includes a one hour initial mobilization time

**Add one hour to response time if originating from Morro Bay

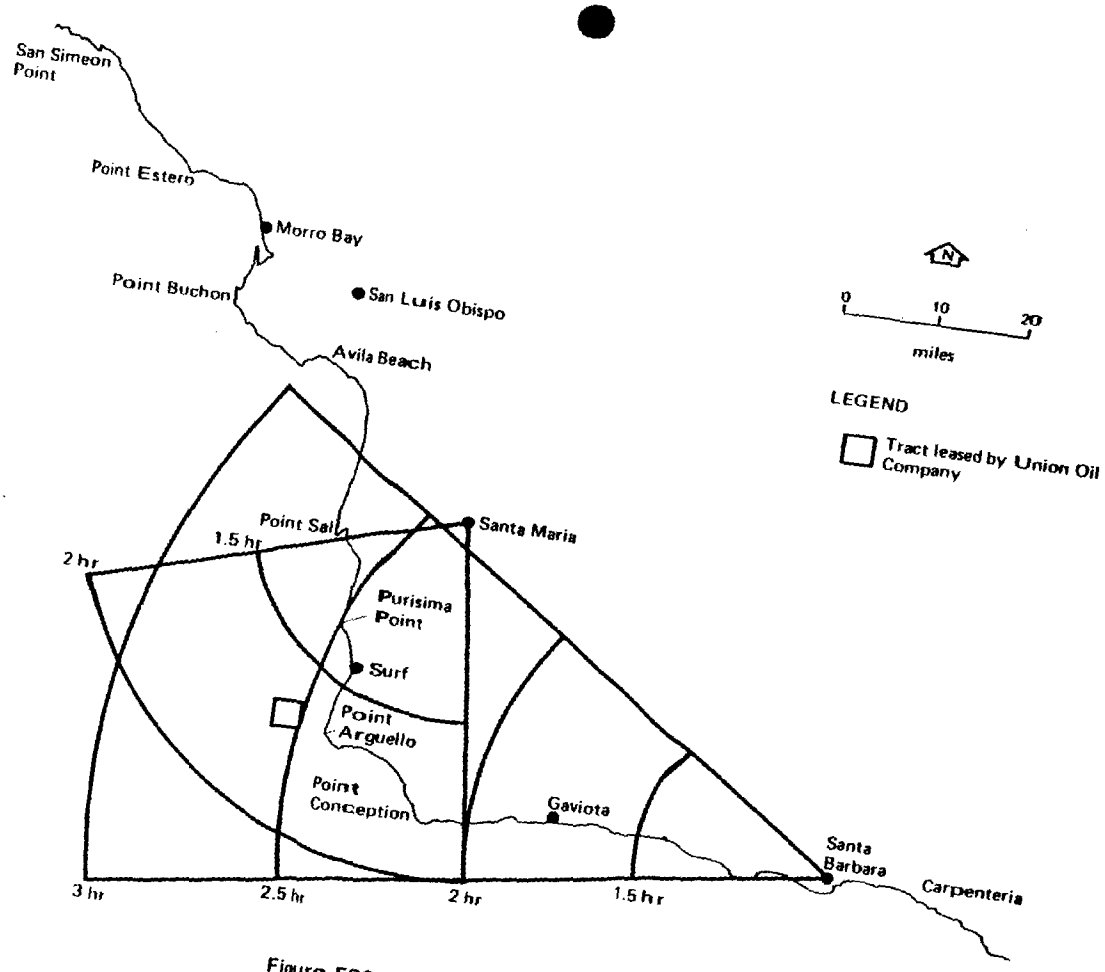
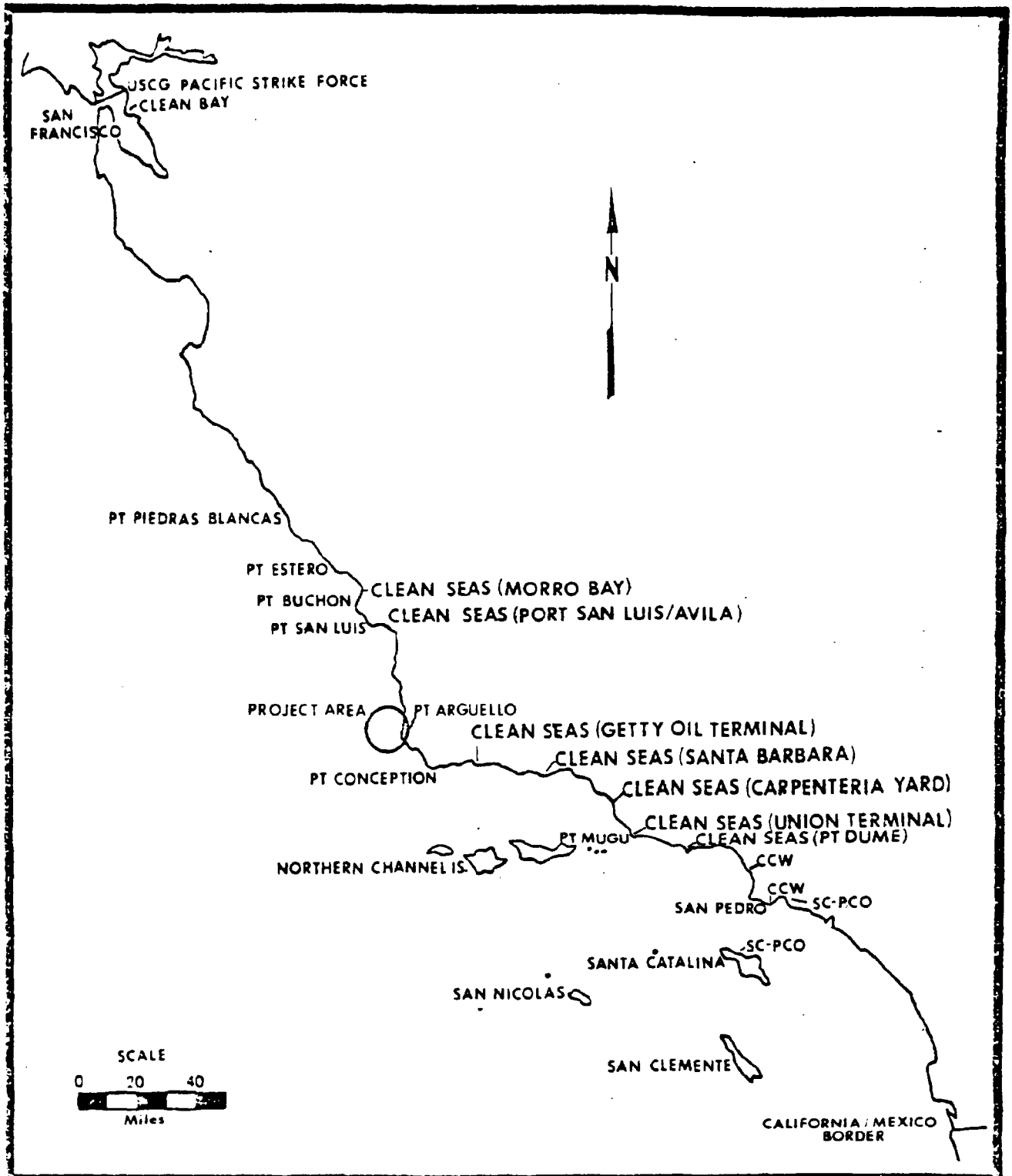


Figure 500-5. HELICOPTER RESPONSE TIMES FROM SANTA MARIA AND SANTA BARBARA (at 40 mph)*

*Includes a one hour mobilization time



OIL SPILL RECOVERY EQUIPMENT
(BLM, 1979)

Figure 13-1 .

SECTION XIV

CRITICAL AND SIMULTANEOUS OPERATIONS AND CURTAILMENT PLAN

The following plan is designed to cover Union Oil Company of California's operations on OCS P-0441. The intent of this plan is to minimize, as far as practicable, performing certain critical drilling and production operations during those times when wind and/or sea conditions would seriously impede containment and cleanup of any oil spilled on the water, or seriously interfere with communications of transportation to the platform of any material needed in an emergency. "Critical Operations" are defined as those operations where a significant spill potential exists.

List of Critical Drilling and Production Operations on Offshore Wells

A. Spudding in when in close proximity (within 20') of another pressurized well.

B. Pulling out of the hole if a production formation, capable of flowing oil or gas to the surface, is exposed.

C. Drilling in a known lost circulation zone if a formation capable of flowing oil or gas to the surface is exposed or will be exposed while lost circulation conditions exist.

D. Formation (drillstem) testing.

E. Running casing if a formation capable of flowing oil or gas to the surface is exposed.

F. Cutting and recovering casing if a formation capable of flowing oil or gas to the surface is exposed.

G. Conducting well logging or wireline operations.

H. Perforating for production.

I. Major maintenance or construction work involving welding or moving heavy equipment.

J. Preventive maintenance which would require the shutdown of critical equipment.

K. Routine testing of safety and anti-pollution control devices.

L. Scheduled Abandon Platform Drills.

M. Scheduled Fire Drills.

N. Any unnecessary activity which, in the judgement of the platform supervisor, could result in a loss of efficiency or reliability of any of the platform drilling, production, support, or safety systems.

SECTION XV

CIRCUMSTANCES UNDER WHICH CRITICAL DRILLING AND SIMULTANEOUS PRODUCTION OPERATIONS WILL BE CURTAILED

Critical drilling operations as defined above will not be commenced or conducted under the circumstances listed below:

NOTE: If a critical operation is in progress when one of these circumstances arises, the MMS, District Supervisor, will be notified and the continuation or cessation of the critical operation will require the approval of the District Supervisor and shall be based on a determination of whether immediate cessation of the operations might endanger the well or increase the risk of oil spillage.

A. When significant wave height or other sea conditions are such that transportation or containment and cleanup operations would be seriously hampered.

B. When winds exceed 40 knots.

C. When the bulk of Clean Seas, Inc. or commerical contractor containment and cleanup equipment is out of the area or is being fully utilized at a spill in the area.

D. When there are not enough boats in the area to deploy the necessary booms and skimmers.

E. When there is an insufficient supply of drilling fluid materials to control the well.

F. When the emergency containment and cleanup equipment is not at the approved location or is not maintained in good working order.

G. When fog is so dense that visibility on the structure is limited.

H. When the manpower required to safely conduct the critical operations is not available.

If an unusual storm that endangers the safety of the platform should occur, or if the platform is threatened by fire from a spill from another facility, all operations will be suspended and the wells shut-in in a safe and secure manner until the emergency is over.

WIND AND SEA CONDITIONS

While conducting any drilling or production operations on an offshore structure, weather forecasts will be obtained daily to aid in planning future operations and to determine when a critical operation should be avoided, suspended, or curtailed.

MODIFICATION OF PLAN

No changes or modification of this plan will be made without prior approval of the District Supervisor, Minerals Management Service.

SECTION XVI

ALTERNATES

To develop a Plan of Development and Production a number of alternate schemes were investigated and the preferred plan was finally designed to produce the most technical and economically feasible project. Of upmost importance in the plan is to create the least environmentally disrupting or damaging impact. Of prime importance were the following considerations:

A. Power cable from shore with power purchased from a public utility vs onsite power generation.

The conversion of natural gas or diesel oil into electrical power using turbine generators is relatively inefficient. Under normal operating conditions, the thermal efficiency is approximately 35% but can be increased to 70% if the waste heat can be utilized. On the proposed platform utilization of waste heat would be minimal since no onboard oil treating facilities are planned. Initially it would be necessary to operate the turbines using diesel oil until gas production is established in sufficient quantities to provide an alternate source of fuel. Transportation of the diesel oil would cause an increase in supply boat traffic, with a proportional increase in air emissions.

The power requirements for the platform will be greatly reduced when the drilling phase is completed. This would leave idle approximately 60% of the generating equipment and would not be cost effective.

Air pollutants from the turbine exhausts would be quite high compared to purchased power and space requirements for the equipment required would impose limitations on the effective use of the platform space.

The local public utility has a power line which terminates just south of Surf. To provide 10,000 KVA of power at this point it is only necessary for them to reconductor the line. Since the line is part of the electrical grid system and since there are no generating plants in the affected air basin emissions caused by this additional power usage will have no effect on the surrounding air quality.

The power cable will have a capacity of 20,000 KVA, in order to provide for additional platforms and development in the area should, the need arise. To expand the capacity, the power company would have to enlarge their existing sub-station in Lompoc.

The power cable will be installed from a metering station just south of Surf directly offshore until it reaches the

importance were the following considerations:

pipeline right-of-way and then follow the pipeline right-of-way to the platform. The platform will be equipped with extra risers so that the cable can be connected to other platforms. Experience has shown that because of the high weight per foot the cable rapidly buries itself. After some 14 years of operation and a total of over 25 miles of cable in various locations in the much traveled Santa Barbara Channel there have been no reported complaints from fishermen concerning the cable.

B. Onshore Treating vs Offshore Treating.

The preferred method of handling the production is to transport it via pipeline to a site located in Union's existing Lompoc oil field. At the onshore site the oil and gas will be dehydrated and the water will be cleaned. The gas will be transported in an existing gas gathering system to the existing Battles Plant for processing and sale. Oil will be transported via a new line laid in the existing R-O-W to Orcutt and through the existing pipelines to the Santa Maria Refinery. The Santa Maria Refinery can handle up to 20,000 barrels/day of OCS P-0441 oil. If additional oil production is developed, the Lompoc site is ideally located to allow disposition of oil by others to outlets they may develop in the future.

Eight sites on Union Oil Fee property were considered. Each site was investigated for minimizing impacts and conflicts, i.e.,

1. Avoid prime agricultural land.
2. Minimize visibility to public.
3. Minimize grading.
4. Avoid potential conflicts with archeological sites, flora and fauna.
5. Buffer zone with public to minimize noise.

The site should also have the following features:

1. Along or near an existing pipeline corridor.
2. Have water and power readily available.
3. Easy access to public roads.
4. Use of previously disturbed areas.
5. Provide room for expansion by Union or other firms.

Each of the eight sites were graded against the above criteria. The selected site ranks the highest in all categeries.

Union can process 20,000 barrels of oil in their Santa Maria Refinery. The preferred site at Lompoc is located in close proximity to the existing pipeline which delivers oil from the Lompoc field to the refinery. Dehydrated crude oil will be handled through existing pipeline systems,

modified to match initial production. As production increases, additional pipeline to supply Union's Santa Maria Refinery, or transport to available crude terminals, will be evaluated. Exhibit XVI-A shows the routing of the existing pipelines.

Exhibit XVI-B is a map showing the routing of the gas gathering system to the Battles gasoline plant.

In order to dehydrate the oil and gas produced from OCS P-0441 and to treat the produced water, it would be necessary to build an additional platform to install the treating equipment. One oil and one gas line would be required to transport the treated oil and gas to shore. The closest point on land to bring this oil and gas into our existing systems and thus to market is in our Lompoc oilfield near the site of our proposed onshore facility.

Other alternates which are discussed in the Environmental Report include the following:

C. Directional drilling from shore sites.

D. Subsea or subterranean drilling chambers.

E. Offshore treating and storage for tanker transport.

F. Clustered multi-well subsea completions.

G. Underwater platforms.

H. Floating or semi-submersible drilling and production vessel.

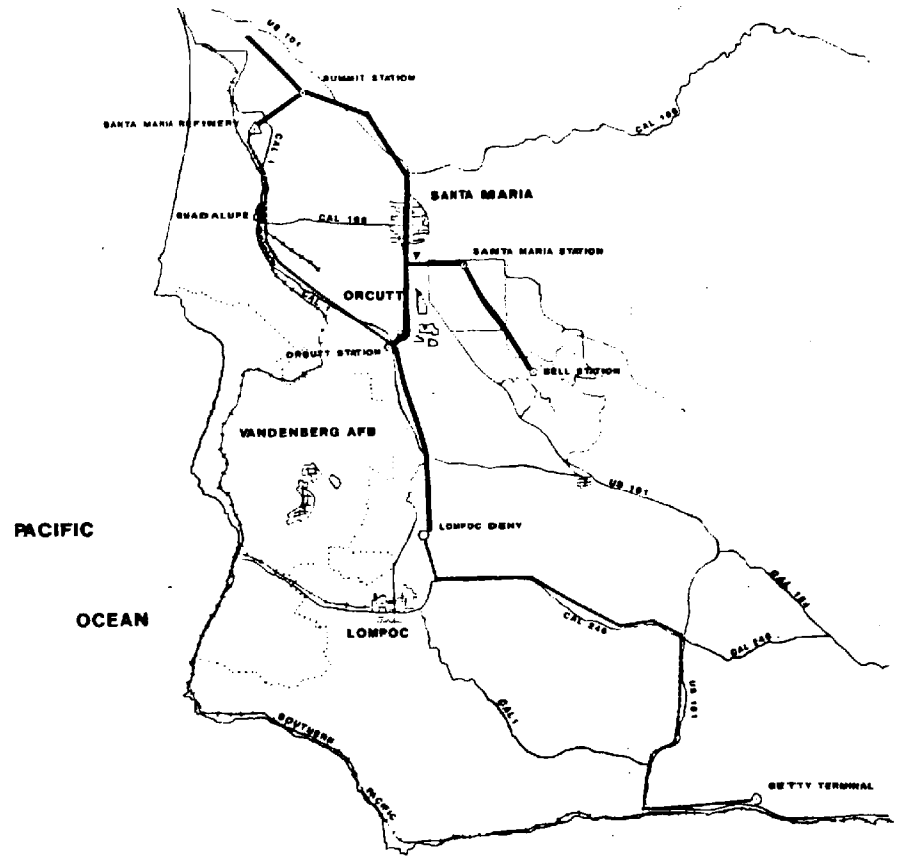


EXHIBIT XVI-A

SANTA MARIA DISTRICT

NORTHERN DIVISION PIPELINES

CONTRACTOR	CONTR. JOB NO.

NUMBER	BY	REFERENCE DRAWINGS

DEV. NO.	DATE	REVISED	BY	CHK BY	APP'D
		DESTROY ALL PRINTS BEARING EARLIER DATE			

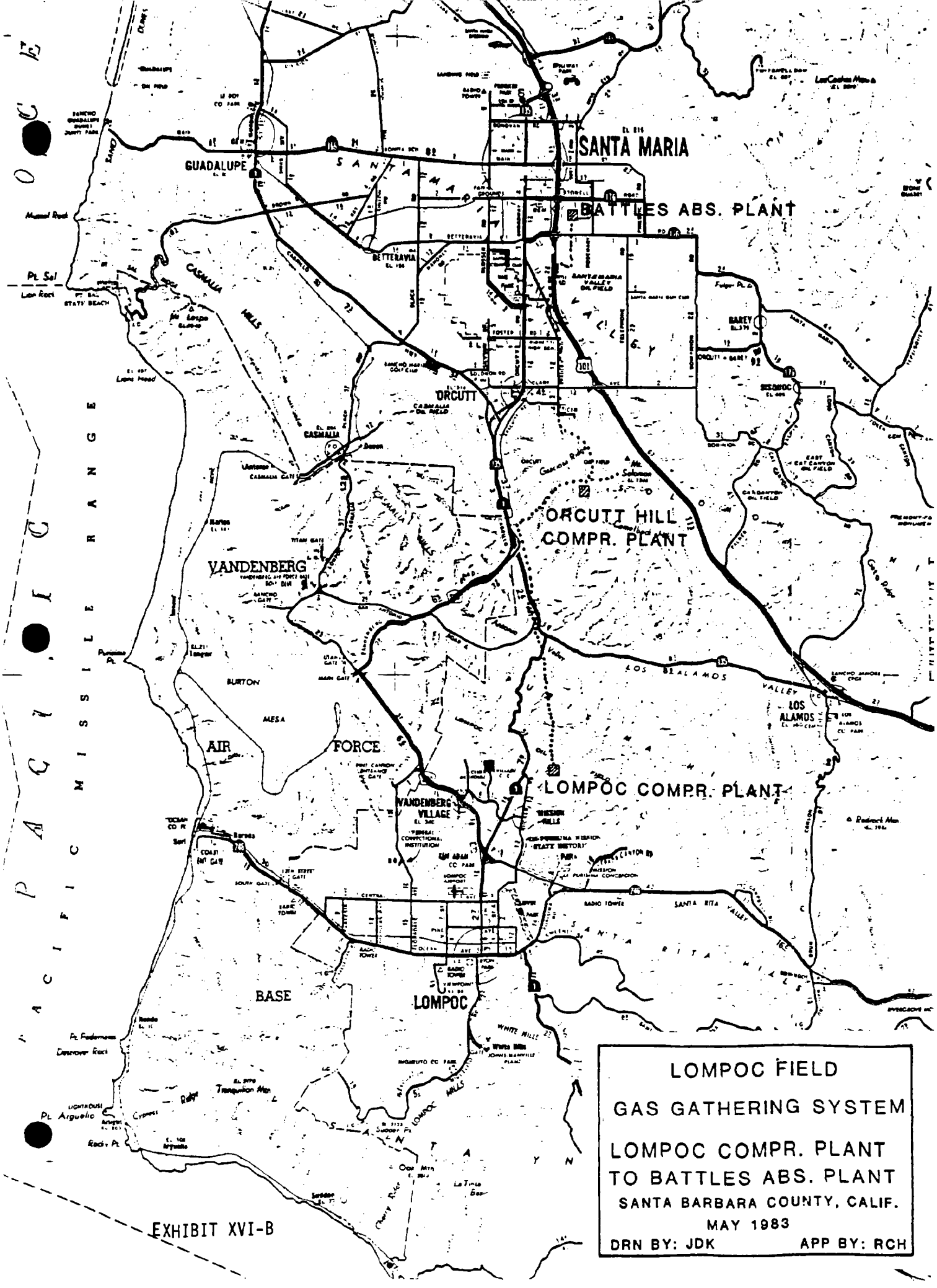
APPROVED FOR CONSTRUCTION		
A. F. E.	DATE	SIGNED

DRAWN BY
CHECKED BY
TRACED BY JO
TRACE D BY
APP'D
APP'D
SCALE 250,000
DATE 2/83

Union Oil Company of California
Los Angeles, California
union

Submitted with

PRELIMINARY


SANTA MARIA
GUADALUPE
BATTLES ABS. PLANT
BETTERAVIA
ORCUTT
CASMALIA
ORCUTT HILL
COMPR. PLANT
VANDENBERG
AIR
FORCE
BASE
VANDENBERG
VILLAGE
LOMPOC COMPR. PLANT
LOMPOC
LOS
ALAMOS
BARKE
SISQUOC
PACIFIC MISSILE RANGE
LOMPOC FIELD
GAS GATHERING SYSTEM
LOMPOC COMPR. PLANT
TO BATTLES ABS. PLANT
SANTA BARBARA COUNTY, CALIF.
MAY 1983
DRN BY: JDK
APP BY: RCH
EXHIBIT XVI-B

APPENDIX A

BATTLES PLANT

BATTLES PLANT

The Battles Plant is located east of Highway 101 between Betteravia Road and Battles Road. It receives and processes gas from all of the Santa Maria Area oil fields including Lompoc. The primary function of the plant is to remove hydrocarbon liquids and impurities from the incoming natural gas stream before the gas is returned to the oil field for fuel or sold to Pacific Lighting through its subsidiary, the Southern California Gas Company.

The plant has a rated capacity of 30,000,000 standard cubic feet per day (SCFD) but the current throughput is 13-15,000,000 SCFD. The plant can be divided into three sections; gas compression, purification and absorption. The incoming gas is received at two pressures and compressed to processing and sales pressures. Approximately half the gas arrives at 0 psig, the balance is at 200 psi. Processing takes place at 200 and 400 psi and sales is at 400 psi. The compressors have a total rated HP of 4750, approximately half are now standby units.

The second portion of the plant is the purification plant. This section removes the hydrogen sulfide from the gas stream so the gas will be acceptable for sales or fuel. This portion of the plant is divided into two stages. In the first stage, the gas is contacted with the Ferrox solution. The iron in the Ferrox solution reacts

with the hydrogen sulfide and removes the majority of it from the gas by converting it to elemental sulphur. The gas then passes through vessels which are packed with iron oxide impregnated wood chips which remove the remaining hydrogen sulfide.

The purification plant reduces the hydrogen sulfide content from as much as 3400 parts per million to less than 1 part per million. The Ferrox solution is regenerated and recycled. The impurities are ultimately reduced to a sulfur slurry which is used for agricultural soil conditioning or disposed of at an approved disposal site such as the Casmalia Dump.

The final part of the process is the lean oil absorption plant. In this portion of the plant, the gas is contacted with a low molecular weight oil. The oil absorbs the hydrocarbon liquids (propane, butane, and natural gasoline) from the gas. The oil is then heated to remove the hydrocarbon liquids from solution and recycled. The liquids go through a series of distillation steps to separate it into the various components. The propane produced is sold and transported by truck. The butane is sold and transported by rail car or truck and the natural gasoline is transported by pipeline. The residual natural gas, which is mostly methane is either returned to the oil fields to be used as fuel or sold to the gas company. Process heat is supplied by several natural gas fired boilers.

The portion of the gas which is used as fuel is 5,700,000 cubic feet

per day while 3,500,000 cubic feet per day is sold to the gas company. The difference, or shrinkage, is gas which is removed as liquids. The plant produces approximately 25,000 gallons of propane, 12,000 gallons of butane and 14,000 gallons of natural gasoline per day.

The Battles Plant is operating in compliance with permits issued by the Santa Barbara County Air Pollution Control District.

APPENDIX B

SUMMARY OF INDUSTRY GUIDELINES
NECESSARY FOR COMPLIANCE WITH
OCS ORDER NO. 5

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
SUBSURFACE SAFETY VALVE (GENERAL)	API Spec 14A, 3rd Ed. 11/78	API RP 14B, 1st Ed. 10/73		1. Purchase SSSV equipment in compliance with RP 14A and SPPE-1.
1. Subsurface controlled	API Spec 14A, 3rd Ed. 11/78	API RP 14B, 1st Ed. 10/73	API RP 14B, Subsection 2.9	2. Maintain records of location and history.
2. Surface Controlled	API Spec 14A, 3rd Ed. 11/78	API RP 14B, 1st Ed. 10/73	API RP 14B, Appendix E	3. Conduct inspections and tests as rec'd by RP 14B. 4. Installing, operating, and maintaining as rec'd by RP 14B. 5. Reporting equipment failures to the manufacturer, API and USCS.
PLATFORM PRODUCTION SAFETY SYSTEMS (GENERAL)		API RP 14C, 2nd Ed. 1/78 (except Section A9, "Pipelines")		
1. Wellhead surface safety valve	API Spec 14D, 2nd Ed. 11/77 (Supplement 1, 1978)		API Spec 14D; Section 4; Appendix C	1. Purchase WSSV's in compliance with Spec 14D and SPPE-1 2. Maintain records of location & history. 3. Conduct tests and inspections as rec'd by Spec 14D. 4. Install, operate, and maintain as rec'd by Spec 14D. 5. Report failures to the manufacturer, API and USGS.

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
PLATFORM PRODUCTION				
SAFETY SYSTEMS (GENERAL) Continued				
2. Flow diagram and SAFE chart		API RP 14C, Figure E1 API RP 14C, Subsection 4.3C		Organize according to RP 14C.
3. Pipelines				
A. Materials/ dimensions	ANSI B 31.4 ANSI B 31.8			Purchase or specify pipe in compliance with ANSI specifications.
B. Safety systems		API RP 14C		Design or specify safety systems as per RP 14C. Inspect as recommended.
gas	ANSI B 31.8			
C. Welding	API Std 1104, Sec 2 ASME Code, Sec IX	API RP 1111, Sec 5		Train or have welder certified in ASME and API standards.
welder qualification	API Std 1104, Sec 3 ASME Code, Sec IX	API RP 1107, Sec 3		
design/preparation	API Std 1104, Sec 4			
acceptability	API Std 1104, Sec 6	API RP 1107, Sec 6		
radiographic inspection	API Std 1104, Sec 8			
repairs/defects	API Std 1104, Sec 7	API RP 1107, Sec 7		
automatic welding	API Std 1104, Sec 9			
maintenance		API RP 1107, Sec 4		
inspection/testing	API Std 1104, Sec 5			

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
PLATFORM PRODUCTION SAFETY SYSTEMS (GENERAL) Continued				
D. Design				
pressure		API RP 14E API RP 1111, Sec 202	API RP 1111, Sec 6 API RP 1110	Design or specify piping as rec'd by RP 14E
temperature	ANSI B31.8 841.1	API RP 1111, Sec 200.3		Design or specify as rec'd by ANSI.
expansion/ flexibility	ANSI B31.4 419 ANSI B31.8 832 & 833			Design or specify as rec'd by ANSI.
supports	ANSI B31.4 421 ANSI B31.8 834 & 835			Design or specify as rec'd by ANSI.
auxiliary piping	ANSI B31.4 ANSI B31.8			Design or specify as rec'd by ANSI.
E. Corrosion Control		NACE RP-06-75 NACE RP-01-75 API RP 111, Sec 8		Design or specify as rec'd by NACE. Inspect as rec'd by NACE and API.
4. Area Classification Electrical lost		API RP 500B, 2nd Ed. 7/73		Design or specify according to RP 5003
5. Fire & Gas Detectors	National Electrical Code 1978 Ed. Artical 700	API RP 14G, 1st Ed. 9/76 Section 4, Appendix A, Section 3.2g	API RP 14G, Sec 7	1. Purchase detectors in compliance with NFC. 2. Install, operate, and maintain as per RP 14G.
6. Pressure Vessels (Coded)	ASME Boiler & Pressure Vessel Code	API RP 14C, Section A4		1. Purchase vessels in compliance with ASME Code. 2. Install, operate, and maintain as per RP 14C.

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
PLATFORM PRODUCTION SAFETY SYSTEMS (GENERAL) Continued				
A. Pressure Relief Valves	ASME Code, Sections I, IV, VIII			1. Purchase relief valves in compliance with ASME codes. 2. Install, operate, and maintain as per ASME.
B. Steam Generators	ASME Code, Sections I, IV	API RP 14C, Section A6		1. Purchase steam generators in compliance with ASME code. 2. Install operate, and maintain as per RP 14C.
7. Flow Lines		API RP 14C, Section A1 API RP 14E		Design or specify and install, operate, and maintain as per RP 14C and RP 14E.
8. Pressure Sensors		API RP 14C, Sections 2, 3, 4 OCS Order 5, Para. 5.1.2		1. Purchase sensors in compliance with RP 14C. Install, operate, and maintain as per RP 14C.
9. Emergency Shutdown System		API RP 14C, Section C1		Install, operate, and maintain as per RP 14C.
10. Engine Exhausts		API RP 14C, Subsect. 4.2C(4)		Install, operate, and maintain as per RP 14C.
11. Glycol Dehydration Units		API RP 14C, Section A6 API RP 14C, Subsect. A7.2b(1). A7.3a, A7.3c.		1. Purchase dehydration unit in compliance with RP 14C. 2. Install, operate, and maintain as per RP 14C.

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
PLATFORM PRODUCTION SAFETY SYSTEMS (GENERAL) Continued				
12. Gas Compressors				
A New		API RP 14C, Section A8		1. Purchase or modify gas compressors in compliance with RP 14C.
B. Existing		If enclosed by shelter, exclude from API RP 14C. Subsection A8.3b and A8.3d.		2. Install, operate, and maintain as per RP 14C.
C. Small (745 kw or less)		Exclude from API Rp 14C, Subsection A8.3d.		
13. Fire Fighting Systems		API RP 14G, 1st Ed. 9/78 Subsection 5.2.		1. Purchase system in compliance with RP 14G. 2. Install, operate, and maintain as per RP 14G.
14. Electrical Equipment				
A. Motors, lighting	National Electrical Code (1978)	API RP 500B API RP-14F, Sections 5.7		1. Specify and purchase electrical equip in compliance w/NEC and IEEE Stds.
B. Wiring	National Electrical Code (1978) IEEE Std 45-1977	API RP 14F, Section 4		2. Install, operate, and maintain as per RP 14F.
15. Erosion		OCS Order 5, Paragraph 5.1.11		

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
WELDING PROCEDURES	National Fire Protection Association No. 518, 1971	API RP 14E, Subsection 8.3 OCS Order 5, Paragraph 5.4		Conduct welding procedures in compliance with NFPA code and RP 14E.
SAFETY DEVICE TESTING (GENERAL)			API RP 14C, App D OCS Order 5. Paragraph 5.5	1. Inspect and test safety devices as rec'd by RP 14D. 2. Report failures to manufacturer, API and USGS.
1. Surface Safety Valves			API RP 14C, Sect D4, Table D2, Subsection L, Subsection H	
2. Flowline Safety Valves			API RP 14C, Sect D4, Table D2, Subsection D	
SAFETY DEVICE TRAINING		API RPT-2, 10/75		Train employees as rec'd by RPT-2.
FAILURE AND INVENTORY PIPELINE SYSTEM		ANSI/ASME SPPE-1-1977 Appendix III OCS Order 5, Paragraph 6		Maintain FIRS as specified by SPPE-1.
CRANE OPERATIONS	API Spec 2C, 2/72	API RP 2D, 10/72	API RP 2D, Sect 3	1. Purchase cranes in compliance with spec 2C. 2. Conduct inspections & tests as per RP 2D. 3. Install, operate, and maintain as per RP 2D.

*All SPPE shall conform to ANSI/ASME SPPE-1-1977 and SPPE-2-1977.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 5

SAFETY FEATURE	SPECIFICATION*	RECOMMENDED PRACTICE	TESTING	COMPLIANCE
EMPLOYEE ORIENTATION		API RP T-1, 1/74		Train and motivate employees as rec'd by RP T-1
EMPLOYEE SAFETY PROGRAM		API Bulletin T-5, 9/74		Train and motivate employees as rec'd by API Bulletin T-5.
EMPLOYEE TRAINING AND QUAIFICATION IN WELL CONTROL EQUIPMENT		API RPT-3, 1st Ed. 7/76		Train employees as rec'd by RPT-3.

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 7

	GUIDELINE	PERMIT COMPLIANCE
LIQUID DISPOSAL (GENERAL)	40 CFR 110 40 CFR 112.7 40 CFR 122.16 CWA - 301(b)(2)(F)	40 CFR 122.20 40 CFR 122.21 Liquids will be disposed of as recommended. Discharges will be monitored for oil content. Facilities will be inspected for lease and unusually large quantities of oil or oil-containing liquids. Accidents will be reported to Company supervisor.
1. Drilling Mud Components	40 CFR 112.7(e)(b-7) 40 CFR 435.12	
2. Hydrocarbon Handling Equipment	40 CFR 112.7(e)(2-7) 40 CFR 435.12	
3. Curbs, Cutters, Drains	40 CFR 112.7(e)(1) 40 CFR 122.45 40 CFR 435.12	
4. Discharges from Fixed Platforms	40 CFR 110 40 CFR 112.7(e) 40 CFR 435.12	
SOLID MATERIAL DISPOSAL (GENERAL)	40 CFR 122.16	40 CFR 122.20 40 CFR 122.21 Solids will be disposed of as recommended. All accidents will be reported to Company supervisor.
1. Well Solids	40 CFR 435.12	
2. Containers	OCS Order 7, Paragraph 1.2.2	
3. Equipment	OCS Order 7, Paragraph 1.2.3 In emergency, OCS #1, Paragraph 4	

SUMMARY OF INDUSTRY GUIDELINES NECESSARY FOR COMPLIANCE WITH
OUTER CONTINENTAL SHELF ORDER NO. 7

	GUIDELINE	PERMIT COMPLIANCE
PERSONNEL	API RP T-2 API RP T-3	Train personnel as recommended; periodically review and test personnel in safety procedures recommended.
POLLUTION INSPECTIONS		
1. Manned Facilities	OCS Order 7, Paragraph 2.2.1	Inspect facilities as recommended. Make necessary repairs.
2. Unattended Facilities	OCS Order 7, Paragraph 2.2.2	Inspect facilities as recommended. Make necessary repairs.
POLLUTION REPORTS	33 CFR 153.203 OCS Order 7, Paragraph 2.3	Report spills to USGS & EPA as directed
1. Spills	CWA Section 311 OCS Order 7, Paragraph 2.3.1	Report spills to USGS & EPA as directed
PCE AND CONTINGENCY PLANS		
1. Equipment and Materials	40 CFR 112, Section 112.7(c)	Maintain PCE as recommended by 40 CFR 112.
2. Oil Spill Contingency Plan	40 CFR 112 API Bulletin D16	Maintain SPCC Plan as directed. Provide copy of Plan to EPA as directed.
DRILLS	OCS Order 7, Paragraph 4 40 CFR 112.7(e)(10)	Hold pollution drills as recommended. Maintain records of drills. Submit time schedule of drill.
TRAINING	OCS Order 7, Paragraph 4.2 40 CFR 112.7(e)(10)	Train personnel as rec'd. Retain course completion certificates.
SPILL CONTROL AND REMOVAL	OCS Order 7, Paragraph 5 API Bulletin D16 40 CFR 112	Take immediate corrective action as rec'd.

APPENDIX C

CONTINGENCY PLAN FOR

HYDROGEN SULFIDE

AND

SULFUR DIOXIDE

CONTINGENCY PLAN FOR H_2S and SO_2

The following plan is prepared in the event formations are encountered that contain hydrogen sulfide while drilling wells on the platform. ALL personnel should be acquainted with this plan, whether they are regular workers on the drilling rigs, part-time workers, visitors, or short-term contractors.

This plan deals with hydrogen sulfide, since the only likely presence of sulfur dioxide would come from burning of gas with fractional concentrations of hydrogen sulfide. To avoid problems with SO_2, any intentional burning of formation gas will be done from the top of a flare extending ten feet above the highest working area occupied by personnel. In the event of an unintentional fire, there will be more important problems than sulfur dioxide to contend with, and all personnel will, for obvious reasons, work upwind of the fire source in an effort to contain and extinguish it.

GENERAL

H_2S is a poisonous gas. The degree of danger depends upon the concentrations in the air breathed. It should be remembered that changes in atmospheric conditions, wind, composition of a gas, etc., can quickly increase the concentration many times. Poor ventilation in enclosed spaces or buildings where gas may be leaking can cause

the accumulation of dangerous concentrations of H_2S. H_2S is colorless and 18% heavier than air and tends to accumulate close to the floor or ground in depressions, inside of firewalls, in manifold pits, in sumps, and above the roofs of floating roof tanks.

TOXIC EFFECTS OF H_2S

Concentration in PPM	Effect
0.1	Approximate odor threshold. Air pollution measurements require detection below this level.
10	Threshold Limit Value (TLV). Recommend maximum safe level for 8-hour exposure.
20	Current OSHA "ceiling" concentration. Respiratory irritation after long exposures. Possible eye irritation.
50	Current maximum allowable by OSHA up to 10 minutes per day if no other exposure exists. Respiratory protective equipment required at higher levels.

100	Coughing, loss of sense of smell, serious respiratory irritation if exposure is prolonged.
500	Unconsciousness within 2 minutes. Respiratory failure within 15 minutes.
1000	Immediately hazardous to life.

PHYSIOLOGICAL RESPONSE TO HYDROGEN SULFIDE

The serious and acute effects of hydrogen sulfide occur in the higher ranges of concentrations: 500 or more ppm. Breathing in this atmosphere results very quickly in unconsciousness and stoppage of respiration. If this occurs, artificial respiration will be required (in a fresh air area) within a very few minutes to preserve life. If respiration is restored promptly, no serious after-effects are expected from such an exposure. This points out the absolute necessity of having at least two people present where hydrogen sulfide is possible contaminant.

Effects from exposures to concentrations in the range of 50 to 450 ppm are irritation of mucous membranes, eyes, and the respiratory tract. Although hydrogen sulfide can be detected by smell in concentrations of less than 1 ppm, exposure to 100 ppm for two to fifteen minutes and much shorter exposures at higher concentrations will deaden the olfactory nerves to the extent that hydrogen sulfide cannot be smelled at any concentration.

These effects are sufficiently uncomfortable (coughing, eye burn, throat irritation) that personnel familiar with the physiological response, can recognize the symptons and remove themselves from the area of contamination. The maximum concentration in which an employee should work for a period of eight hours a day without respiratory protection is 20 ppm (OSHA Rules and Regulation Federal Register 10-18-72).

PERSONNEL SAFETY AND PROTECTION

All personnel shall undergo an eardrum examination before assignment to H_2S prone areas. Personnel with a perforated eardrum shall be prohibited from working in an H_2S environment.

The mud logger on duty will be monitoring hydrogen sulfide prior to and during the penetration of formations likely to contain hydrogen sulfide and shall alert the on site supervisor at the first signs of hydrogen sulfide showing up in the mud.

Personnel will introduce caustic or other acceptable additives to the mud to reduce the possibility of sulfide stress cracking. All appropriate personnel will be instructed in the safe handling of such chemicals. Any gas from the mud logger's monitor shall be vented a safe distance outdoors. In addition, there will be sensors with alarms on the rig floor, at the shale shakers, in the living

quarter areas, in the ventilation system supplying air to the lower decks, and near the floor in the lower deck areas where H_2S is most likely to collect so that people sleeping or at rest can be notified instantly of the attainment of concentrations of hazardous amounts of H_2S. The sensors will activate a visible and audible alarm when the concentration reaches 10 ppm in the ventilation system and living quarters and at all other positions except for an alarm setting of 20 ppm at the mud logger's monitor. Personnel shall proceed to a safe briefing area which is to be designated on the Station Bill. When the level of H_2S reaches 20 ppm in the mud stream, two personnel equipped with self-contained breathing equipment will introduce caustic or other acceptable additives to the mud system to reduce this concentration. If it appears this concentration will spread to working or living areas, all nonessential personnel will evacuate the facility. Radio communication shall be used to alert helicopter and water craft in the immediate vicinity of the condition, and agencies listed at the end of this appendix.

There will be twenty (20) self-contained, pressure-demand breathing apparatus available for members of the working crew and supervisors so that an unexpected contamination of dangerous quantities of hydrogen sulfide can be corrected and placed under control by the crew in complete safety. These units will be equipped with 30 minute cylinders. Twenty eight (28) spare cylinders and three (3) cascade refill system manifolds will also be provided aboard the platform.

There will also be forty (40) five-minute escape capsules available to equip outside contractors or other transients on the platform to protect themselves while leaving the premises. The escape capsules are not to be used for entering H_2S contaminated areas; they are supplied for escape purposes only.

Ropes, with safety harnesses to retrieve incapacitated personnel from contaminated areas, and a stokes litter or equivalent will be available for use on the platform.

A resuscitator with mask, oxygen bottle and spare oxygen bottle will be located in the drilling office.

A training program for all working personnel and supervisors will be conducted prior to penetration of the first zone of suspected hydrogen sulfide contamination. This program will assure that all workers will be familiar with the location and use of available equipment and understand the physiological effects of hydrogen sulfide. They will also be informed of the safety and alarm features on the platform and will be instructed in procedures that must be taken in the event of an emergency. This instruction will include the proper use of personnel safety equipment, the use of mechanical ventilation equipment, the location of briefing areas, identification of evacuation routes, and will also include the rapid instruction of outsiders (who could be present in an emergency) in the use of the escape capsules for their protection. All personnel

in the working crew will be trained in basic first aid. During training sessions and drills, emphasis will be placed upon rescue and first aid for H_2S victims. The working crew will be trained in the use of the first aid equipment on board.

There will also be two movable blowers on the rig floor of sufficient size to enable the crew to create its own breeze and up-wind-areas in the event of a H_2S release during a dead calm. There shall be sufficient caustic soda aboard for rapid feeding into the mud stream to react with and nullify the effects of hydrogen sulfide should the mud become contaminated. A supply of reactive chemicals will be available for treating the mud to prevent the possibility of H_2S reforming.

Four portable hydrogen sulfide detectors will be placed on board and distributed to areas where it may become necessary to determine the ambient concentrations of hydrogen sulfide at any time. These will be located at the following: 1 - rig floor, 1 - mud pumps, 1 - drilling office, 1 - production office. In the event of an alarm from any source, two men wearing self-contained breathing equipment will work as a team monitoring the hazardous areas with portable hydrogen sulfide detectors, and only when the monitoring equipment indicates safe levels of this gas may personnel remove breathing apparatus, or personnel without breathing apparatus, move into these areas once again.

FIRST AID

In case a man is overcome, summon the nearest help, put on self-contained breathing equipment, then immediately get the victim into the fresh air and proceed as follows:

A. Apply mouth-to-mouth artificial respiration, without interruption, until the resuscitator is available. Use the resuscitator until normal breathing is restored. Symptoms may pass off rapidly; however, keep the victim warm, even during artificial respiration.

B. Summon a doctor as soon as possible.

C. Summon transportation if required by doctor. When the patient has recovered and can by safely moved, he must be sent to the hospital and never allowed to stand until released by the doctor.

NOTE: The man in charge of the working crew shall be in full charge of safety precautions and shall direct operations necessary to the safety and health of all people on the platform.

PROCEDURE FOR OPERATING CONDITIONS

Moderate Danger (10-20 ppm H_2S)

Three briefing areas have been designated. They are located

EAST SIDE OF DRILLING DECK

WEST SIDE OF DRILLING DECK

HELIPORT

If there is a steady breeze, the upwind area shall be the safe briefing area at any time. If there is no wind blowing, the movable blowers will be available to establish an upwind briefing area where necessary.

Under normal conditions, each operating crew should undergo a hydrogen sulfide drill each week, in conjunction with other drills required in offshore operations. Drills should acquaint personnel with the problem of putting on a self-contained breathing apparatus or an escape capsule, the use of movable blowers and the best approaches to their briefing areas and abandon platform stations. Records of attendance will be maintained aboard the platform.

At a fixed time each day, one member of the crew will check the alarm systems to see that they are functioning.

Extreme Danger (over 20 ppm H_2S)

Operational danger signs (8' x 4') indicating "DANGER HYDROGEN SULFIDE H_2S will be displayed on each side of the platform, and a number of warning flags shall be hoisted in a manner visiable to any water craft or aircraft that may be in the area.

When the level reaches 20 ppm H_2S in the working or living areas, all nonessential personnel will be evacuated as soon as possible, and all working people will put self-contained breathing apparatus on and move to the upwind briefing area for instructions. Movable blowers will be started, if required to establish an ample area of safety upwind of the source. Two men with self-contained breathing apparatus on and functioning, will add caustic to the mud, and survey the various working areas with H_2S detectors and report to the Supervisor of conditions throughout the platform. The Supervisor will then make the decision whether to set the crew to immediate corrective action with self-contained breathing apparatus on and functioning, or to evacuate as soon as possible. If the Supervisor wishes to make this decision at the beginning of the H_2S alert, we can dispense with the two-man survey.

RESPONSIBILITIES OF PERSONNEL

The Supervisor in charge of drilling operations at any time will also supervise the action to be taken in an H_2S emergency. One

man in each crew shall be designated as the H_2S detector operator. He should be fully acquainted with its operation and be prepared to be the front-line man in putting on his self-contained breathing apparatus and testing the atmosphere at points directed by the Supervisor. One man shall also be designated in each crew to take over the Supervisor's position immediately, if the Supervisor should become incapacitated by hydrogen sulfide inhalation.

EVACUATION PLAN

The evacuation of personnel will follow the procedures set forth in the Coast Guard Station Bill.

AGENCY NOTIFICATION

The following agencies shall be immediately notified if hydrogen sulfide concentrations reach 10 ppm or above:

MINERALS MANAGEMENT SERVICE:

Mr. James W. Wright	Office 805-648-5131	Home	[redacted]
		Weekends	[redacted]
Mr. C. Dennis Rau	Office 805-648-5131	Home	[redacted]
Mr. R.O. Courtwright	Office 805-648-5131	Home	[redacted]
Mr. William Grant	Office 213-688-2050		

U.S. COAST GUARD: 805-487-9822

LISTING OF MEDICAL PERSONNNEL AND FACILITIES

HOSPITALS

Marian Hospital 1400 E. Church St. Santa Maria, CA	(805) 922-5811
Valley Community Hospital 505 East Plaza Santa Maria, CA	(805) 925-0935
Lompoc Hospital 508 East Hickory Lompoc, CA	(805) 735-3351
St. Francis Hospital 601 East Micheltorena Santa Barbara, CA	(805) 962-7661 or 966-1531

DOCTORS

Industrial Medical Group 3130 Skyway Dr., Suite 702 Santa Maria, CA	(805) 922-8282
Santa Barbara Medical Clinic 215 Pesetas Lane Santa Barbara, CA	(805) 964-6211
Dr. W.G. Smith (Orthopedic) 2324 Bath Street Santa Barbara, CA	(805) 965-8521
Dr. L.B. Burgess (Orthopedic) 2320 Bath Street Santa Barbara, CA	(805) 965-8525

AMBULANCE

Professional Ambulance Serv. 111 East Cook Santa Maria, CA	(805) 925-9555
St. Barbara Ambulance 113 West Mission Santa Barbara, CA	(805) 963-3373

FIRE DEPARTMENTS

Lompoc	(805) 736-4511 or 911
Santa Maria	(805) 925-8654 or 911
Santa Barbara City	(805) 965-5252

POLICE DEPARTMENTS

Santa Barbara Sheriff	(805) 967-5561 or 911
Lompoc Police	(805) 736-8550 or 911
Santa Maria Police	(805) 925-2631 or 911
Santa Barbara Police	(805) 965-5151
Highway Patrol	Zenith 1-2000

HARBOR MASTER

Santa Barbara	(805) 963-1737

U.S. COAST GUARD (805) 985-9822

HELICOPTERS

*Rotor-Aids	(805) 922-0384

*(Will depend on Contract Services)