IV

REVISIONS TO: DEVELOPMENT & PROD. PLAN
PLATFORM EDITH, OCS LEASE P-0296
CHEVRON U.S.A. INC.
REVISED OCTOBER 1, 1981

REVISIONS TO: DEVELOPMENT & PRODUCTION PLAN
PLATFORM EDITH, OCS LEASE P 0296

CHEVRON U.S.A. INC.
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SECTION I

INTRODUCTION

The decision to bring produced natural gas ashore, rather than reinject it, has resulted in smaller gas compression requirements on board the proposed Platform Edith. The smaller compression requirement, coupled with the decision to delay installation of the water injection facilities until drilling is complete has allowed a decrease in the platform size.

This supplement to the Development and Production Plan for proposed Platform Edith (D&PP) describes revisions in platform design to permit a smaller size. A 12-leg platform is now proposed instead of the original 16-leg platform. In addition, two slots have been deleted. The proposed platform will have 70 slots: 47 for producing wells, 18 for water injection wells and five spare conductors for exploration and/or service wells. These changes will not affect the environmental impact or recovery of the project and will benefit the interested parties by reducing project costs.

The supplement is not intended to stand alone. Rather, the enclosed sections are updated revisions of several sections existing in the original D&PP (dated December 1, 1980) and will be useful to the reader when read in conjunction with the D&PP.

A third document describing the newly proposed gas pipeline and its impact on the environment will be forthcoming in late 1981.

3.5 Development Plan

The proposed location of Platform Edith is very critical to maximize oil recoveries and at the same time avoid mechanical problems in drilling, completing and producing wells with high angle holes. After careful consideration, it was decided that the optimum platform location should be in the southeast portion of Lease OCS-P 0296. A platform at this location will maximize oil recoveries from the main oil accumulation in Block I. Also, most of the potential reserves in Block II could be developed from this location. Some of the important considerations in the development plan and location of Platform Edith were:

1. Maximize oil recoveries from Block I.

2. Further evaluate and possibly develop Block II.

3. Gravel flow pack completions in deviated holes.

4. Intermediate water sands will require cemented blank casing within the gravel flow pack intervals.

5. Maximum practical hole angle is 60°. Some curved conductors will be required to reach this deviation angle at shallow depths.

It is now planned that the proposed platform will have slots for a maximum of 70 wells. 65 of these wells will be drilled to Miocene sand reservoirs located in Block I. This plan calls for developing Block I with 47 producing wells on a 15-acre spacing pattern plus 18 water injection wells. The preliminary well locations are shown on Figures 2-4 and 2-5. The Lambert zone (6) coordinates of each proposed production and injection well, where they will intersect the midpoint of the producing zone, are listed on Table 3-4. These locations have not been given a well number because Chevron, as operator, does not know at this time the order in which these wells will be drilled.

Five (5) slots are available, under the present plan, to be used for evaluation and possible development wells in Block II. Depending on how the development of Block I progresses more or less additional slots to develop Block II may or may not become available.

The following is a summary of development plans for the Beta field on Lease OCS-P 0296.

Block I: This is a Palos Verdes fault footwall accumulation in the southeast portion of Lease OCS-P 0296. The objective sands are Miocene Delmontian First, Second and Third Zones (Figures 2-4, 2-5, & 2-6). The reservoir rock consists of thinly bedded sands. Intermediate water sands occur in some places and must, therefore, be excluded from the oil productive sands. This is the main accumulation so it will be developed first. If during development of the field, it is ascertained that additional First Zone reserves are present downdip from the proposed water injectors, an additional row of downdip oil producing wells will be required.

Block II: This is a Miocene Mohnian accumulation in the hanging wall of the Palos Verdes fault, West and adjacent to Block I. The reservoir is composed of sands with numerous thin shale interbeds. Some oil (20 B/D of 17.1° API) was recovered from these sands during a formation test in well OCS-P 0296 #7 (Figure 3-1). This accumulation can be developed from the proposed Platform Edith location if commercial production can be established through gravel flow pack completion.

Block III: This a northwesterly extension of the main Block I accumulation in the footwall of the Palos Verdes fault. This accumulation is not shown on any of the attached figures. Only two wells, the OCS-P-0269 #12 and #13, have been drilled into the accumulation. No tests of the oil saturated Miocene sands were made. Future development plans for this accumulation will depend on additional delineation drilling in the block and the results of the most northerly development in Block I.

A water injection program is proposed to enhance the recovery of the hydrocarbon accumulations. An evaluation of the anticipated reservoir performance, based on presently known reservoir parameters (Table 3-3), was made. It shows that by relying on normal reservoir depletion (i.e. the natural reservoir energy drive) only 10% of the original oil in place can be economically recovered. By introducing a water injection program, after drilling has been completed, up to 26% of the original oil in place can be economically recovered. A peripheral water flood will be initiated early in the development of Block I. Consideration to change the proposed injection well pattern (Figures 2-4 and 2-5) will be based on the performance of this injection program.

Pipeline quality oil will be shipped to shore from Platform Edith via a pipeline to Shell's production platform, Elly. At Elly, production from Lease OCS-P 0296 will be commingled with Shell's production in the pipeline to shore which is to be jointly owned with Shell. As shown on Figures 2-4 and 2-5, the First and Second zones will be developed together and the Third zone will be developed with separate wells.

SECTION IV

PLATFORM STRUCTURE AND SITE

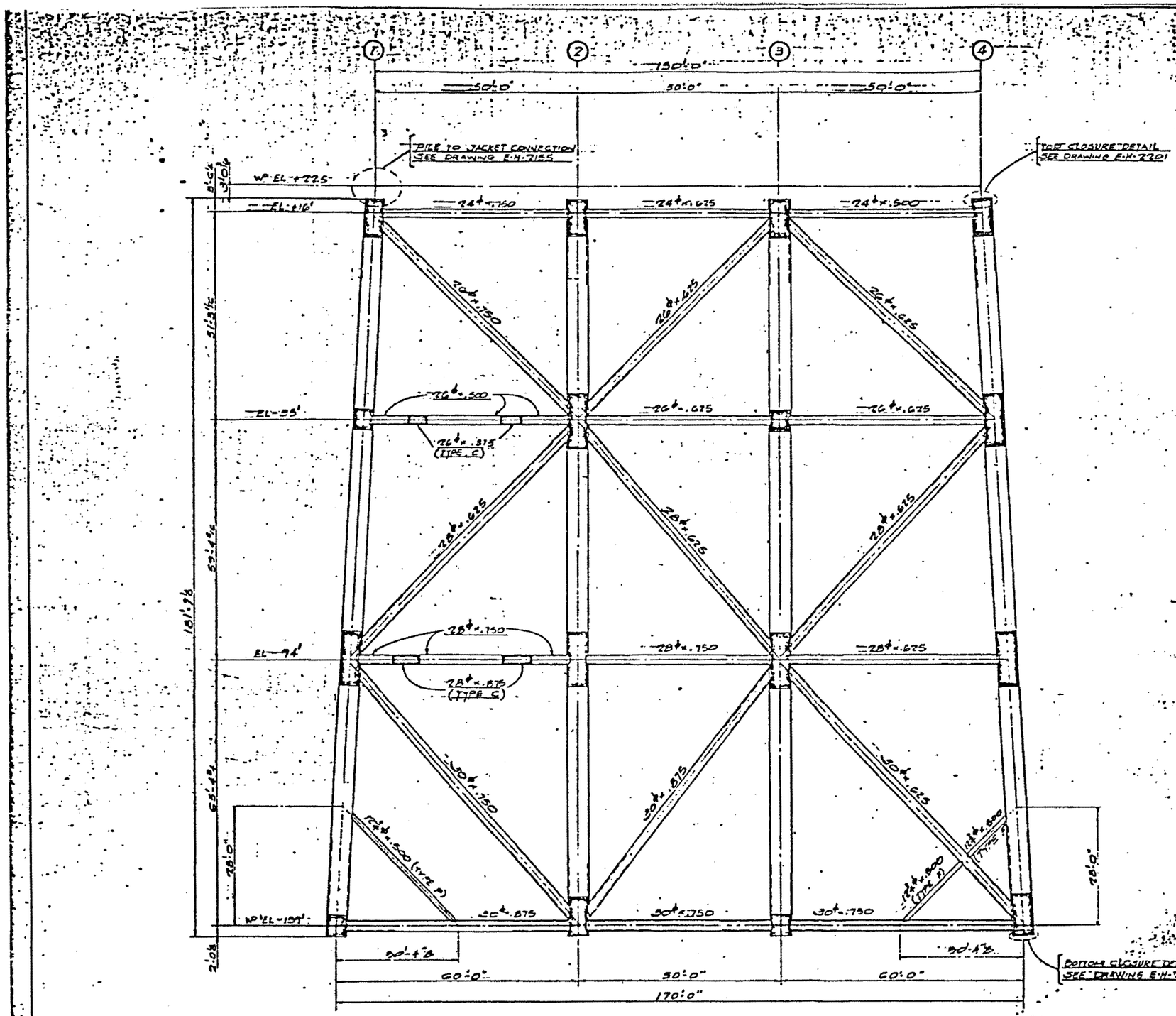
4.1 Introduction

This section discusses Chevron's platform to be installed on Lease OCS-P 0296 in San Pedro Bay. This platform, which will provide a foundation for the drilling of the development wells and for the offshore production facilities, is a conventional 12-leg template-type platform to be installed in 161 feet (49.1m) of water. It will be located about 10 miles (16.1 km) south of Long Beach on Lease OCS-P 0296.

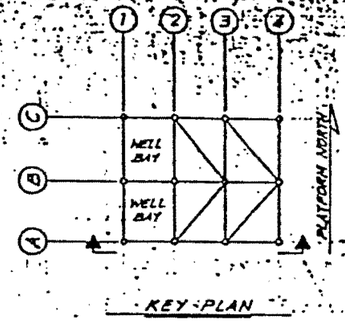
The structure will be designed in accordance with the latest edition of OCS Order No. 8 for the most severe loads that might occur during launch, installation, and operations, and to safely withstand the loads caused by severe storm waves or the level of earthquake ground shaking appropriate for the seismic region.

Elevation views of the platform jacket are given on Drawings No. E-H-2090 and No. E-H-2093. A plan view of the jacket is given on Drawing No. E-H-2097. Twelve main legs framed with diagonal and horizontal bracing comprise the basic structure. This bracing system provides a high level of redundancy and adds substantially to the stability of the platform under severe earthquake or wave loads. The structure will be secured to the ocean bottom with piles driven through the legs of the jacket attached by welding. Decks of the platform provide space and load carrying capacity for drilling equipment and production facilities with a capacity for 70 well conductors.

Complete details on site conditions, design criteria, platform analyses, fabrication and installation shall be provided as part of the Verification Documentation pursuant to OCS Order No. 8.



TRUE ELEVATION LINE (A)



KEY PLAN

GENERAL NOTES

1. MATERIAL DESIGNATION

FOR THE PURPOSE OF LOCATING AND IDENTIFYING VARIOUS GRADES OF STEEL THROUGHOUT THE JACKET AND CAP TRUSS, ALL TUBULAR SECTIONS AND OTHER FRAMING ARE CATEGORIZED ACCORDING TO THE FOLLOWING STEEL MATERIAL TYPES. REFER TO THE FABRICATION SPECIFICATION SP-5-574 FOR MATERIAL REQUIREMENTS WHICH INCLUDE CHEMICAL AND PHYSICAL PROPERTIES.

TYPE	MATERIAL
A	SPECIAL STRUCTURAL STEEL - ASTM A537, CLASS 1 (1¼" MAX.) OR APPROVED EQUAL
B	IMPROVED STRUCTURAL STEEL - ASTM A131 GRADE AH32 (50) (1" MAX.) OR APPROVED EQUAL
C	PRIMARY AND SECONDARY STRUCTURAL STEEL - ASTM A572, GRADE 50 (1 MAX) OR APPROVED EQUAL
D	PRIMARY AND SECONDARY STRUCTURAL STEEL PIPE API 5LX, GR B2 (1¼" MAX)
E	PRIMARY AND SECONDARY STRUCTURAL STEEL - ASTM A36 OR APPROVED EQUAL (3" MAX)
F	PRIMARY AND SECONDARY STRUCTURAL STEEL PIPE API 5L (1½" MAX.), GRADE B OR APPROVED EQUAL

2. JACKET FRAMING

FOR JACKET FRAMING DRAWINGS E-H-2090 THROUGH E-H-2190 ALL JOINT CANS SHALL BE TYPE A. ALL PIPE 1¼" AND LESS SHALL BE TYPE F UNLESS NOTED. ALL OTHER STEEL TYPE B UNLESS NOTED.

3. WELDING

A. ALL WELDING SHALL BE IN ACCORDANCE WITH THE FABRICATION SPECIFICATION AND THE TYPICAL WELDING DETAILS SHOWN ON DRAWINGS E-H-2190 AND E-H-2231

B. ALL WELDING TO BE FULL PENETRATION UNLESS NOTED

4. TYPICAL JOINT DETAILS

FOR JOINT DETAILS SEE DRAWINGS E-H-2195 AND E-H-2196. FOR JACKET FRAMING ECCENTRICITIES SEE DRAWING E-H-2190 - E-H-2192

5. VENDORS

VENDOR SUPPLIED ITEMS TO BE VERIFIED BY CONTRACTOR FOR DWGS E-H-2090 THRU DWG E-H-2231.

(2)

REFERENCE DRAWINGS

JACKET ELEVATION (1) | E-H-2093 | JACKET PLAN @ +94' | E-H-2097
E-H-2095 | " " " +55' | E-H-2098
" " " +10' | E-H-2099

REVISIONS

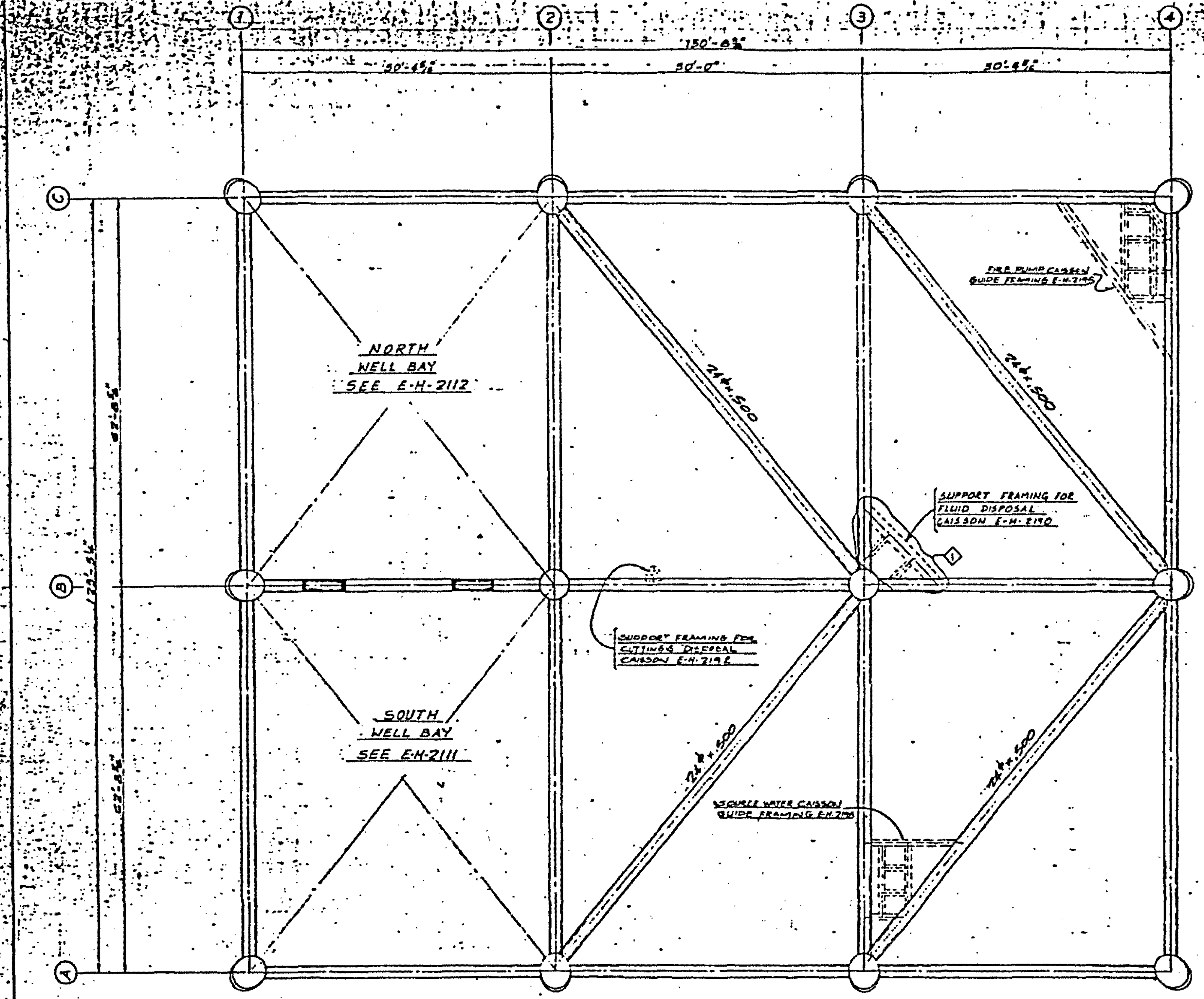
(2) ISSUED FOR BID

SCALE 3/32" = 1'-0"
DRAWN A.R.H. CHECKED D.A.S.

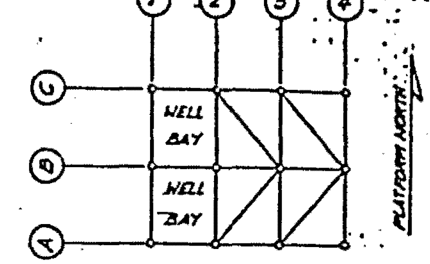
Chevron U.S.A. Inc.

JACKET ELEVATION (A)

DRILLING AND PRODUCTION PLATFORM "EDITH"



PLAN AT ELEV. +16'-0"



KEY PLAN

NOTE:
FOR WELDING AND MATERIAL DESIGNATIONS SEE DRAWING E-H-2090

REFERENCE DRAWINGS					
JACKET ELEVATION	B	E-H-2090	JACKET ELEVATION	C	E-H-2098
	C	E-H-2091	JACKET GEOMETRY PLAN - FRAMES		E-H-2132
	C	E-H-2092	WALKWAY SUPPORT FRAMING +16'		E-H-2189
	C	E-H-2093			
	C	E-H-2094			
	C	E-H-2095			

REVISIONS

3 ISSUED FOR FABRICATION

2 ISSUED FOR PERMIT APPROVAL ISSUED TO USGS.

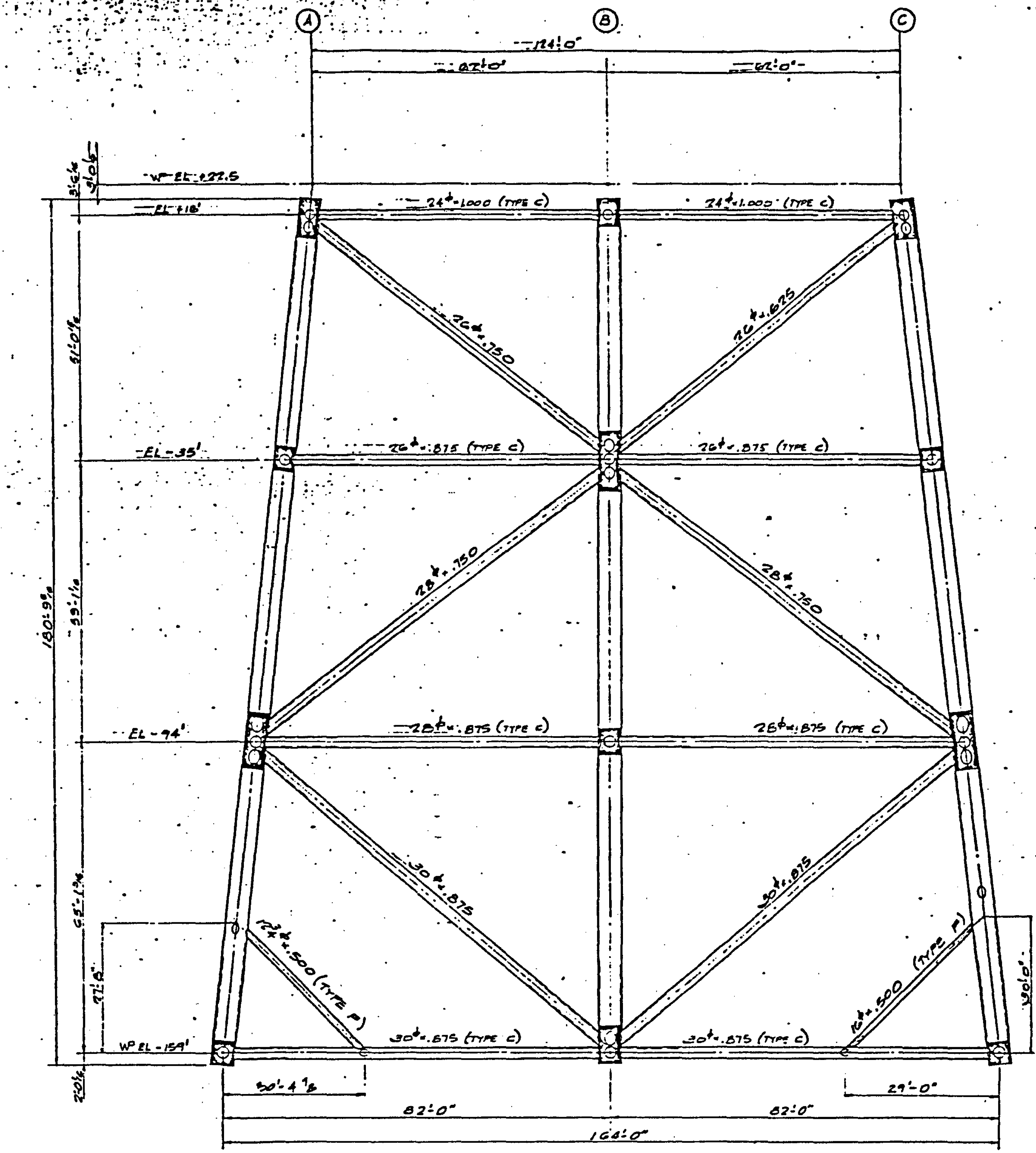
0 ISSUED FOR BID

1 RELOCATED DISPOSAL CAISSON

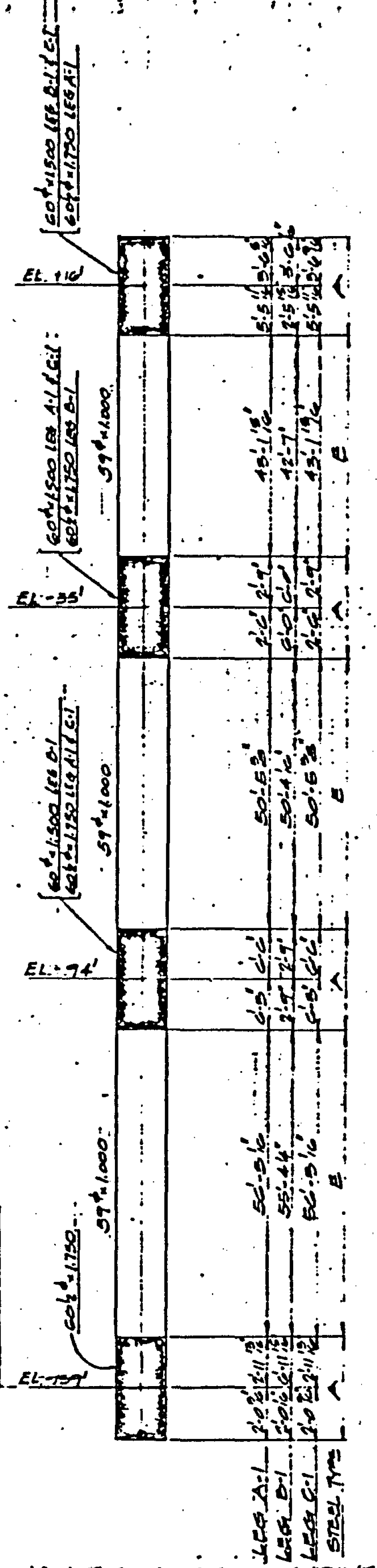
SCALE 1/8" = 1'-0"
DATE 6-29-81 DR. R.H. CK. A.R.A.
DR. APPR. D.B.G. ENG. J.R.H.
OPER. DEPT. APPROVED
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

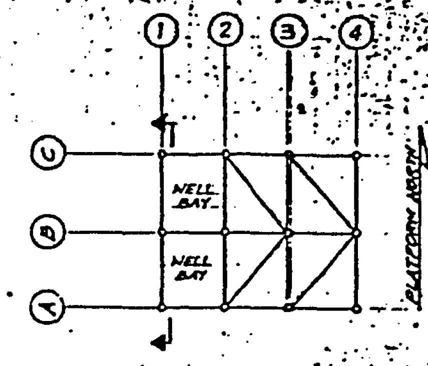
JACKET FRAMING PLAN
ELEVATION +16'-0"
DRILLING AND PRODUCTION PLATFORM EDITH
BETA UNIT, PARCEL P-0296 NO. 1G1



TRUE ELEVATION LINE (1)



LEG ASSEMBLY DIMENSIONS



KEY PLAN

NOTES:

FOR WELDING AND MATERIAL DESIGNATIONS SEE DWG E-H-2090

REFERENCE DRAWINGS			
JACKET ELEVATION (A)	E-H-2090	JACKET FRMG PLAN @ -159'	E-H-2100
(B)	E-H-2091	JACKET GEOMETRY FRAMES (1-A) (B) (4)	E-H-2131
(C)	E-H-2092		
JACKET FRMG PLAN @ +16	E-H-2097		

REVISIONS

(0) ISSUED FOR BID

(1) ISSUED FOR PERMIT APPROVAL

(2) ISSUED FOR CONSTRUCTION

SCALE 3/32" = 1'-0"
DR. P.H. CK. ARN
DR. APPR. ARN ENG. DBG

Chevron U.S.A. Inc.
Western Region, Production Department

JACKET ELEVATION (1)
DRILLING AND PRODUCTION PLATFORM EDITH
BETA UNIT, PARCEL P-0296 NO. 1&5

M E-H-2093-2

SECTION V

DRILLING FACILITIES

5.1 Introduction

Platform Edith will have slots for a maximum of 70 wells. Two electric drilling rigs and associated crews and services will be contracted to drill the 65 wells presently planned.

Preliminary drilling equipment layouts are shown on Fig. 5-1 at the end of this section. It is anticipated that the rigs will be land-type with alterations necessary for this offshore adaption. The drilling contractor will have some flexibility in final equipment layouts, but equipment must be compatible with deck designs.

Drilling operations, pollution prevention systems, and safety systems will be in accordance with United States Geological Survey Pacific Region OCS Orders No. 2 and No. 5, EPA NPDES permit conditions and API Standards.

5.2 Drilling Equipment

All drilling equipment and services will be handled on a contract basis. Major drilling equipment will include:

5.2.1 Rig Components

Two land-type cantilever masts, 142 feet (43m) high with 10,000-foot (3658m) drilling and 800,000 pound hook-load capacities, will be required. The masts will be designed in accordance with API Standard 4D for freestanding masts.

The drawworks will be electrically powered (rated at 1000 HP) and be completed with sandreel and rotary table drive.

The hook, traveling block, and crown block will be of 350 ton load rated capacity to match the mast.

The drill string will be 4-1/2" or 5" (11.4 cm or 12.7 cm), grade E drill pipe.

5.2.2 Substructures

A drilling substructure will be provided to support the mast, drawworks, and connecting stairways.

Each substructure will be supported on a skidbase, resting on elevated skidbeams. The skidbase will be equipped with a hydraulic jacking system to allow transition along the direction of the well rows. The substructure will also be equipped with hydraulic jacks to allow lateral skidding over the desired well.

Substructures will be capable of supporting the mast and setback loads. Mechanical restraint equipment will be provided to prevent substructure movement due to seismic activity once positioned over the desired location.

5.2.3 Drilling Mud System

A separate mud system will be provided for each drilling rig.

Each rig will be equipped with two mud pumps (1000 HP each), a mud mixing tank (300 bbl±), a circulating tank (300 bbl±), and three mud storage tanks (390 bbl each). A 10 bbl. trip tank and 40 bbl. pill tank will also be provided.

Return mud will be treated with two high speed shale shakers, mud cleaner, desilters, and degassers for each rig. The shale shaker units will be equipped with a cuttings washing system to clean cuttings before ocean disposal. Cuttings that cannot be adequately cleaned by washing will be diverted to a waste cuttings holding bin, to be hauled ashore for disposal in a Class I Disposal Site.

Mud volumes will be closely monitored using a pit volume totalizer system, an incremental flowrate indicator, and a precision fill-up measurement system. These warning systems will have visual and audible alarm signals at the driller's console. A common bulk material handling system will be provided with 3000 cu. ft. (85 cu. m.) storage capacity for clay and barite materials. Sacks of mud additives (chemicals, lost circulation material, etc.), needed on the platform will be stored there on pallets.

5.2.4 Cementing Unit

One diesel powered dual cementing unit and three 1000 cubic foot (28 cu. m.) bulk storage tanks will be provided for well cementing operations.

5.2.5 General Layout

The drilling mud system equipment, cementing unit and completion tank will be located on the drill deck (see Figure 5-1). Above the mud package will be the pipe rack. Outboard of the pipe rack, on each side of the platform, will be the platform cranes. Rig power control package and transformers will be located above the platform power package next to the quarters building.

The masts, substructures, drawworks, and associated equipment will be installed on the skidbase above the drill deck.

Contractors living quarters and offices will be located in a central quarters building.

5.3 Drilling Operations

5.3.1 Casing Program

Casing setting depths and cementing will be in accordance with the USGS Pacific Region OCS Order No. 2 and/or field rules. The casing program (Figure 5-2) is based upon evidence from core hole drilling at the proposed platform site which would justify a field rule precluding the necessity for installing the "structural casing". The 24" (61 cm) casing shown on the drawing meets the requirements for the "conductor casing".

Soil boring analyses indicate 24" (61 cm) conductor pipe will be set to -336 ft. (110m) (MLLW).

5.3.2 Well Completions

The reservoir consists of an assemblage of sands, shales and silts. The thicker shales divide the reservoir into seven zones. Because the sands are unconsolidated, sand control is required and will be achieved by gravel packing a slotted liner (or screen) inside cemented, jet perforated casing or in an underreamed open hole.

Several zones will be simultaneously opened into a common wellbore. Interzonal isolation will be needed in some cases to provide for the control of fluids either entering or leaving the wellbore and to allow for the optimum exploitation and conservation of the reserves.

The attached drawings (Figures 5-3, 5-4, 5-5) show, schematically, the mechanical configurations which will allow both gravel packing and interzonal isolation. It is not possible to select a single completion type at the present time. All of the completion types shown may be used.

5.3.3 Wellhead Equipment

Conventional wellhead and hanger assemblies capable of supporting trees for flowing or artificial lift wells will be used. Higher pressure trees for flowing wells are anticipated for initial production with retrofit for artificial lift at a later date.

5.3.4 Blowout Preventer Equipment

Blowout preventer systems will be used as required by OCS Order No. 2 and/or field rules. These systems will be hydraulically operated with control stations at the driller's console, near the quarters building, and at the BOP accumulators.

The low pressure system will consist of a 29-1/2" (75 cm) 500 psi annular-type blowout preventer with diverter system installed for drilling below the 24" (61 cm) drive pipe. After 13-3/8" (34 cm) surface casing is landed and cemented, the low pressure BOP stack will be removed. A 5000 psi 13-5/8" (34.6 cm) BOP stack will then be nippled up to the surface casing head with a riser. The BOP equipment will include an annular preventer, two pipe rams, and a blind ram. This equipment will be actuated by pressure provided by a hydraulic accumulator unit located near the quarters building. Control stations will be located both on the drill rig floor and in a remote location (such as near the drilling superintendent's office). In addition, the BOP can be actuated manually by controls located on the accumulator unit itself (see Figure 5-6). Each rig will have its own accumulator unit.

Below the BOP a drilling spool will be provided with side outlets for separate choke and kill lines. The kill line will have two valves located adjacent to the BOP; a master and a control valve. The choke line will be connected to a choke manifold and all equipment will be in accordance with "API Recommended Practice for Blowout-Prevention Equipment Systems".

5.3.5 Pollution Prevention

To prevent pollution due to drilling operations, all runoff from drilling equipment will go to the deck drainage system (see Section 6.3.15). Oil will be removed to levels specified in NPDES permit conditions before the runoff is discharged to the ocean. Collection of any runoff will be facilitated by the inclusion of 6" (15 cm) high kick boards extending around the perimeter of the platform on all decks.

To prevent pollution due to drill cuttings, a cleaning and handling system will be installed for each drilling rig below the shale shakers. Cuttings produced by drilling operations will be washed by this equipment prior to their disposal into the ocean through a cuttings caisson. Oil-soaked cuttings obtained when penetrating a hydrocarbon bearing zone will be conveyed to metal bins for storage until they can be taken to shore for disposal in a Class I disposal site.

5.3.6 Safety Features

The safety system includes the following:

5.3.6.1 Fire Supression

a. Electric and diesel fire water pumps.

b. 1-1/2" (3.8 cm) rubber hose on reels to provide coverage at any point on the platform with two hoses.

c. Fixed fog suppression system with automatic area controls capable of wetting critical surfaces with a water density of not less than .25 gpm (gallons per minute) per square foot.

d. Two 250 gpm monitors on the drilling deck to cover the BOP stacks and the upper well bay area.

e. Dry chemical and Halon fire extinguishers.

f. Standpipe connections on both boat landings for fireboat use.

5.3.6.2 Fire Detection and Alarm

a. Ultraviolet "fire eyes".
b. Smoke detectors.
c. Fusible plugs in the process and drilling areas.

5.3.6.3 H_2S and SO_2 Contingency Plan

The Oil Spill and Emergency Contingency Plan for Platform Edith contains a detailed emergency plan to be followed when dangerous levels of H_2S are present. See Appendix 8 of the Chevron Oil Spill and Emergency Contingency Plan for Platform Edith.

5.3.6.4 Critical Operations and Curtailment Plan

In compliance with OCS Order No. 2, a Critical Operations and Curtailment Plan for Platform Edith has been submitted as part of the Oil Spill and Emergency Contingency Plan for Platform Edith (Appendix 7). This plan describes the critical operations that are likely to be conducted and what circumstances or conditions the critical operations are to be curtailed.

5.3.6.5 Deck Drainage/Sump System

Platform Edith will be divided into two drainage systems for separate handling. Drainage from the upper decks, from drip pans in the rig substructure and from rig floor will gravitate to a waste tank located on the lower deck. Drainage from the lower deck areas will drain to a sump tank below the lower deck, from which the liquids will be pumped into the waste tank. Oily waste water from the waste tank will be sent to the production train for treating. Washed cuttings will be discharged from a cuttings disposal caisson.

5.3.6.6 Safety and Escape Equipment

The escape system provided on Platform Edith will include life jackets and two survival capsules, each accommodating 50 persons. From time of arrival of helicopter to Platform Edith, injured personnel can be delivered to Long Beach Pier in approximately ten minutes. From the Long Beach Pier, the Long Beach Memorial Hospital emergency services will transport the injured personnel to the above mentioned hospital in less than five minutes.

5.3.6.7 Safety Control Systems

Safety, anti-pollution and control systems will be installed on all piping headers, machinery, and vessels pursuant to OCS Order No. 5. The system will be a combination of electric and pneumatic controls. All automatic control valves will be designed to be fail-safe. Control devices will include the following:

1. High-low pressure alarm and shutdown sensors.

2. High-low liquid level alarm and shutdown sensors.

3. High-low temperature alarm and shutdown sensors.

All of the above items will be designed and installed to facilitate testing. The devices will be tested for accurate operation on a schedule to be approved by the U.S.G.S.

All of the above safety devices will be interconnected through a central control panel. When a malfunction occurs, an alarm will be sounded; and if the condition is serious and not expeditiously corrected, the platform will shut down. Shutdowns will be accomplished by automatically closing the surface controlled safety valves and the surface controlled subsurface safety valves. Produced fluid will continue to move off the platform through the pipeline until the equipment is automatically shut down by either low levels or low pressure. If the malfunction is pipeline related, liquids would not be pumped off the platform, but instead the vessels would automatically shut in and contain the production.

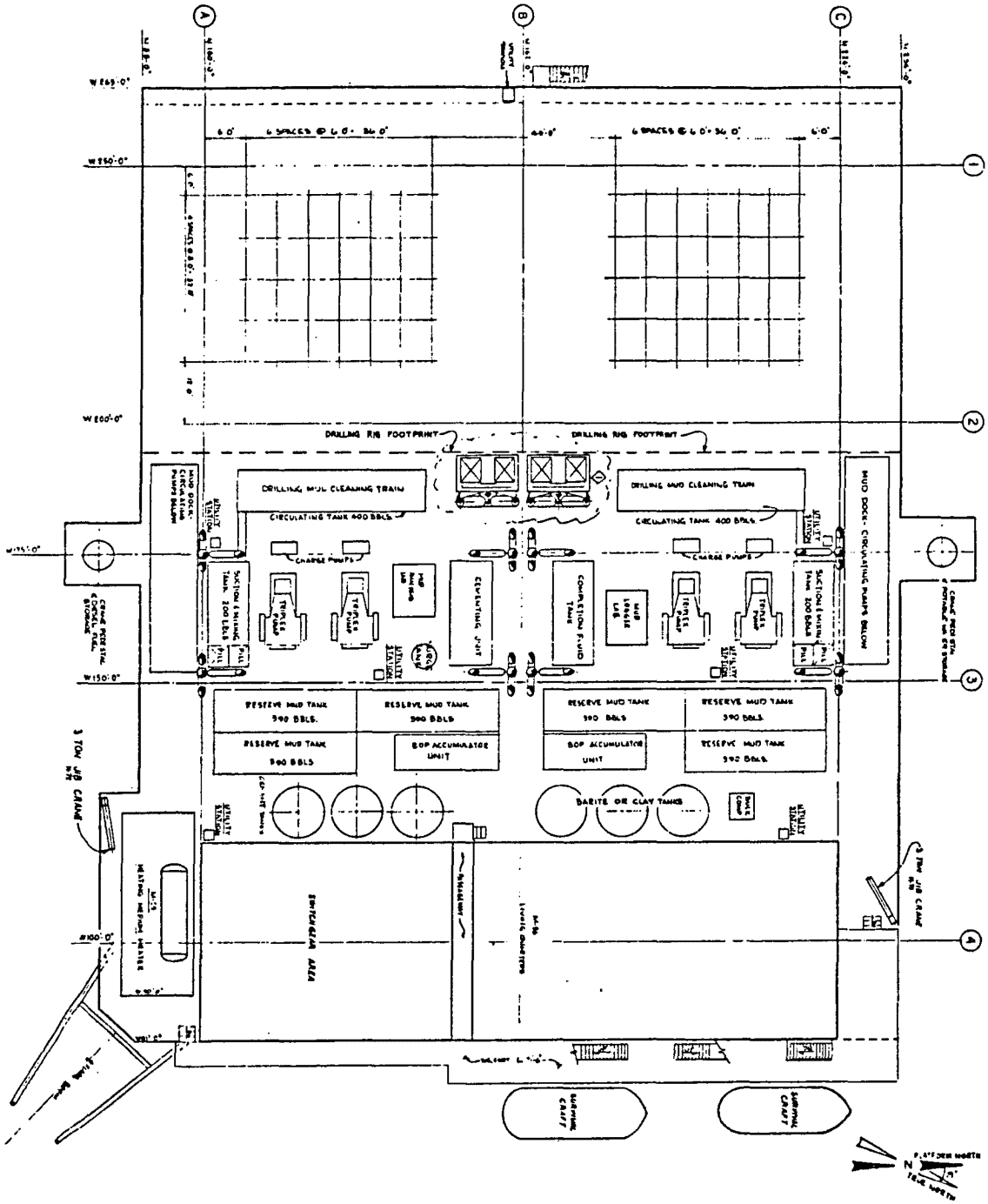
5.3.7 Crew and Supply Transport

Drilling crews will work regular 12-hour shifts, and will be quartered on the platform. Day shifts are expected to contain 25 persons and night shifts 25 persons. Supply boats will transport supplies as required.

Weather should have little effect on crew and supply boat operations, but emergency facilities and supplies will be provided to allow at least one week of normal operations if supplies delivery is interrupted.

5.3.8 Compliance With OCS Order #5

A summary of industry guidelines necessary for compliance with OCS Order No. 5 (Production Safety Systems) is included as Appendix 2 (Ref. 15).



NOTE:

1. DRY MUD STORAGE SPACE ON PIPE RACKS.

REV												

Chevron

DR DFH CH. _____
DR APP. _____
ENGR. _____

OPR'G. DEPT. _____ APPROVED

ENG'R. DEPT. _____

PLATFORM "EDITH"
DRILLING DECK EQUIPMENT LAYOUT
DRILLING LEVEL
BETA UNIT, SAN PEDRO BAY

SCALE NONE DATE 9/24/81

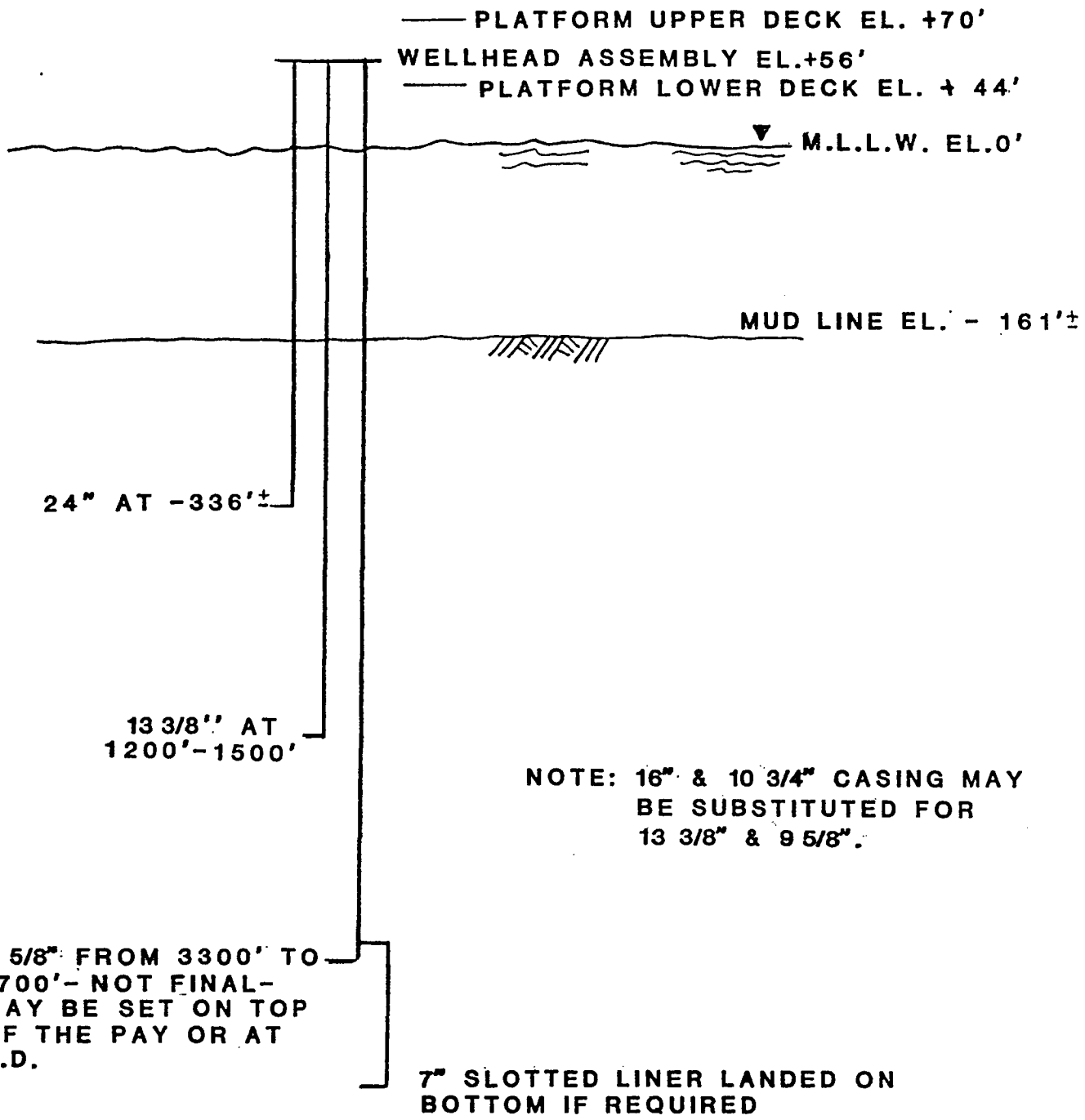
W.O. _____
S.O. _____

FIGURE 5-1

Printed In U.S.A.

AH-2330

GO-580-AB (4-71)



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Chevron

DR DFL CH. ____
DR APP. ____
ENGR. ____

OPR'G. DEPT. | APPROVED

ENG'R. DEPT.

PLATFORM "EDITH"
CASING PROGRAM SKETCH
BETA UNIT

SCALE NONE DATE 9/24/81

W.O. ____
S.O. ____

FIGURE 5-2

Printed in U.S.A.

AH-2331

GO-580-AB (4-71)

SECTION VI

PLATFORM FACILITIES

6.1 Introduction

This section describes all production equipment and related facilities to be installed on the platform and is divided into the following four parts: (1) Production Process Facilities; (2) Utility System; (3) Support Facilities; and (4) Measures to Minimize Environmental Impact.

The platform will contain complete production facilities for the treatment of the produced oil, gas, and water. Treated oil will be of marketable quality, needing no additional onshore treatment. Equipment, controls, monitors, safety devices, etc., will be installed in accordance with applicable O.C.S. Orders and industry standards.

All initial production will be from Miocene Sands in the Beta field trend. Drill stem production tests made in this area indicate that the sands consist of three permeable layers with varying hydrocarbon properties (G.O.R. and gravity). All tests indicated the presence of sulfur; levels were less than 2.8 percent in the oil. The API gravity averaged 17.4°.

Drawing Nos. E-H-1351 thru 1354 flow diagrams, show how the flow stream will be separated and treated. Produced gas will be collected at various system pressures, compressed and used for fuel in the process heater. The remainder will be sent to shore by pipeline. Produced water and deck drainage will be treated and cleaned in compliance with NPDES permit conditions, then disposed into the ocean. (NOTE: Produced water will be discharged until there is a sufficient amount to meet water injection requirements. When there is sufficient produced water, it will be treated and injected into the formation, anticipated beginning 1993.

Utility systems and support facilities will be provided to allow the platform to be as self-reliant as possible. Provisions for power supply, potable water production, emergency back-up power and safety systems, etc., have been made to allow operations to continue safely even though platform resupply may be interrupted for several days.

6.2 Production Process Facilities

6.2.1 Design Criteria

1. Reservoir Data: Reservoir data utilized in the design of platform facilities have been obtained from several tests made on thirteen evaluation wells on Lease OCS-P 0296 and are as follows:

   a. Maximum bottom hole pressure - 1,825 psig.

   b. Bottom hole temperature - 155°F.

   c. Flowing wellhead pressure (initial development) -500 psi.

d. Maximum shut-in tubing pressure - 1,824 psig.

e. Flowing wellhead temperature - 90°F (avg.).

f. Gravity (avg.) @ 60°F - 17.4° API.

g. BS&W content - 1% with trace of sand.

h. Maximum well flowing rate - 375 B.O.P.D.

i. Sulfur in oil - 2.8%.

j. H_2S content (gas) - 1100 ppm (max).

A Production Forecast Curve is attached showing Total Oil, Gas and Water vs. Time (Drwg. No. B-H-1320).

2. Production Treating Requirements - Crude Oil: Production is to be treated to provide a marketable crude with a BS&W content of 1% or less and a vapor pressure not to exceed 11 psia. The maximum anticipated shipping pressure for the crude oil leaving the platform is 1350 psig.

3. Production Treating Requirements - Gas: All gas will be dehydrated on the platform and excess gas not used for fuel will be shipped ashore.

4. Production Treating Requirements - Waste Water: Produced and other waste waters are to be cleaned and discharged into the ocean. Cleaning facilities will provide water that meets the E.P.A. NPDES permit conditions for discharge into O.C.S. waters of the Pacific.

6.2.2 General Layout

As shown on Drawing No. E-H-1400, process equipment has been located to minimize the length of interconnecting piping and to segregate this equipment from personnel occupied areas. The fire wall and doors on the well deck effectively divide the well deck into hazardous (wellhead area) and non-hazardous (process) areas. No hydrocarbon processes are located adjacent to personnel areas.

6.2.3 Wellhead and Flow Manifolds

Seventy well conductors will be provided: forty-seven producing wells are presently planned, with eighteen injection wells and five spares reserved for future reservoir evaluation. The wells will be arranged in five rows, with short flowlines connecting each tree to a wall-mounted manifold system.

The manifold system will allow production to be switched between pool and test separators. Lines for casing gas recovery, water

injection, hydraulic and pneumatic control, etc., will also be provided. All wells will be equipped with downhole hydraulically controlled subsurface safety valves in accordance with OCS Order No. 5.

6.2.4 Artificial Lift

It is anticipated that artificial lift will eventually be required for all wells. It may be necessary for producing some weaker wells immediately upon completion. Therefore, initial provisions for submersible electric pumps will be provided.

6.2.5 Oil and Gas Separation

Oil and gas separation is to take place at an operating pressure of approximately 60 psi. Prior to separation, production will be heated from approximately 90°F to 150°F (32°C to 65°C) to accelerate the breakout of produced water.

The pool and test separators will have instruments for measuring oil, water, and gas. The well clean-up separator will be used primarily for new wells contaminated with drilling fluids.

6.2.6 Oil Cleaning

Two electrostatic treaters, operating at approximatley 40 psi, will be provided for oil cleaning. Prior to cleaning, the emulsified oil will be heated from approximately 140°F (60°C) to 200°F (93°C). These treaters are intended to operate in parallel normally.

6.2.7 Oil Shipping

Clean oil from the treaters will be pumped from a clean oil surge tank, through a LACT meter, and finally via 6" subsea pipeline to Shell's Platform Elly. There it will commingle with Shell's oil and flow to shore in Shell's existing 16" subsea pipeline.

6.2.8 Gas Processing

All vapors and low pressure (15 psia) gas streams will be boosted to pipeline pressure, joining the casing gas and separator gas streams. A maximum of 900 MCFD of the produced gas will be utilized as fuel for the process heater. The balance will be compressed and transported to shore via pipeline.

6.2.9 Gas Compression

Motor driven screw-type compressors will be used for gas compression. The machines are equipped with automatically

controlled intake valves to handle variations in gas production rates.

6.2.10 Condensate Handling

Condensate collected from the gas scrubbers will be injected into the oil stream prior to LACT metering.

6.2.11 Relief and Vent Systems

All high pressure balanced relief valves on vessels and gas compressors, as well as stack regulators on the gas collection systems, will be manifolded together to a high pressure stack scrubber and flare. Low pressure relief valves from the vapor recovery system, tanks, compressor spacer block vents, etc., will be manifolded together to a vapor stack scrubber and flare.

Both the high pressure and vapor stack flares will be incorporated into a single flare boom. Liquids collected in the stack scrubbers will be drained into a waste oil tank and pumped back through the electrostatic treaters.

6.2.12 Produced Water Treatment and Disposal

Produced water resulting from the oil treating process on the platform will be discharged to the ocean through a disposal caisson. This water is discharged primarily from the two production separators with a smaller volume discharged from the two crude oil dehydrators. To meet the requirements of 40 CFR 435, Effluent Limitations for Offshore, Subcategory of the Oil and Gas Extraction Point Source category, the water will be treated by passing it through a corrugated plate interceptor followed by a flotation cell to remove suspended oil from the water. The anticipated oil content of the discharge water is less than 50 ppm. Oil and solids resulting from this treating process will be pumped to a waste tank. For further detail see the Environmental Report for Proposed Platform Edith.

This method of produced water disposal will continue until the volume reaches a level that will support a water injection program (about 30,000 barrels/day). At that time sea water injection will cease and the injection of produced water into the formation will begin.

6.2.13 Sea Water Treatment and Injection

Soon after the completion of drilling, a waterflood program will be initiated using sea water as the injection fluid. Approximately 30,000 bbls/day of sea water will be supplied by three electric source water pumps and will be filtered, deaerated, and chemically treated prior to injection at 2500 psig. This sea water injection will continue until the daily volume of produced

water from the production separators is adequate to replace the sea water as the injection fluid.

6.3 Utility Systems

The platform design will include the following utilities:

6.3.1 Power

Power will be supplied to the platform via 34.5 KV submarine power cable from Chevron-owned facilities in Huntington Beach (see Figure 6-1). This power cable will consist of three 1/0 AWG stranded copper conductors cabled together and enclosed in a watertight polyethylene jacket armored with a single layer of #4 BWG polyethylene coated galvanized steel wires. The outside diameter of the cable will be approximately 4" (10 cm).

A substation with associated high voltage switchgear and transformers to take power from Southern California Edison's power grid will be located on Chevron-owned facilities in the Huntington Beach area.

All other switchgear, transformers, and distribution systems necessary to provide power for drilling rigs, process motors and utility systems will be located on the platform. All electrical wiring and equipment on the platform will conform to National Electrical Code requirements, per API RP 53, First Edition, February 1976, reissued February 1978.

6.3.2 Emergency Power Generation

Emergency power generation will be supplied by a diesel powered 400 KW generator. This unit will provide electric power under emergency conditions for critical services such as B.O.P. accumulators, lights, air pressuring systems, sump pumps, etc.

6.3.3 Diesel Fuel

Diesel fuel will be utilized for the process heater until fuel gas becomes available from producing wells. Other diesel fuel usage will include the intermittent use of the cementing pumps, cranes, and emergency generator.

Permanent diesel storage will be provided in one crane pedestal (300 bbls.). Transfer pumps, filters, distribution piping, and day tanks at each engine will be included. Connections at the boatlanding level will be provided for the transfer of the diesel fuel from work boats to the pedestal storage tank.

6.3.4 Fuel Gas

The primary use of fuel gas on the platform is for process heater fuel. Once the initial wells have gone on production, the heater will be switched from diesel to produced fuel gas consumption. Other potential uses for fuel gas on the platform include the flotation unit, and vapor recovery system.

6.3.5 Desalinator

A desalinating unit will utilize reverse osmosis to produce freshwater from seawater for the potable and freshwater systems. Capacity of the unit will be based on estimated freshwater requirements.

6.3.6 Potable Water System

Freshwater produced in the desalinator unit will continually resupply the 300 bbl. potable water storage tank. This water will be utilized in the personnel quarters and the washroom on the upper drilling deck.

6.3.7 Freshwater System

Fresh water will be transported by work boat from shore as required.

6.3.8 Heating System

Heat for the process systems will be provided by a dual-fired oilfield heater. A secondary heat medium will be circulated through the heater to transfer heat to various exchangers located in the process area. The heater itself will be placed in a non-hazardous classified area to promote safety.

6.3.9 Utility Air

A utility air system will be provided to distribute a supply of 140 psi air throughout the platform for such uses as air tools and hoists, air starting, flotation unit, etc.

6.3.10 Instrument Air

An instrument air system will be provided to compress, dry, store and distribute an adequate supply of 100 psi instrument air throughout the platform process area.

6.3.11 Saltwater System

A saltwater system will be provided for fire suppression, washdown, cuttings cleaning, water injection, and the desalinator.

Supply pumps will be three 550 GPM electric-powered pumps and one 2500 GPM diesel-powered pump with a 170 psi discharge pressure. The diesel-powered pump will be used for fire suppression and thus, only in emergency situations.

6.3.12 Sewage Treatment

A packaged sewage treatment unit will be incorporated to process the sewage from the personnel building and drilling crew washrooms. The effluent from this unit will comply with U.S. Coast Guard requirements found in 33 CFR 159.53(b) and will be discharged to the ocean through the disposal caisson.

6.3.13 Hypochlorite Generator

The platform will include a hypochlorite generator for supplying chlorine to the saltwater intake system and sewage unit as required.

6.3.14 Lighting

Platform lighting will meet or exceed the Illuminating Engineering Society Recommended Levels of Illumination. Indoor lighting will consist of fluorescent fixtures and outdoor lighting will consist of high pressure sodium vapor fixtures. Critical lighting circuits will be connected to a battery backup system to provide emergency lighting in the event of a power failure.

6.3.15 Deck Drainage

All drainage from the upper decks will go to a waste tank where any solids entrained will drop out and any oil will float to the surface. Water from this tank, together with any oil, will then flow into a corrugated plate separator where oil will be separated and returned to a hydrocarbon sump tank. This oil is then pumped into the oil treating process facility or into a holding tank at the operator's option. Clean water from the corrugated plate interceptor is discharged to the ocean through a disposal caisson.

All drainage from the production deck will flow to a deck drain sump tank and then will be pumped to the waste tank mentioned above.

All drains expected to contain large concentrations of oil will be piped directly to the hydrocarbon sump tank mentioned above.

All decks will be solid steel plate and have a 6" (15 cm) high curb around the perimeter to prevent any run-off overflow into the ocean.

6.4 Support Facilities

6.4.1 Hydraulic Control System

A hydraulic presure system will be provided for downhole and surface safety control valves. The system will include pneumatic-powered pumps, reservoir tanks, filters and a distribution system.

6.4.2 Control and Monitoring Systems

All platform operations will be monitored and controlled from the central control room. All control functions and monitoring will be by a programmable controller system. Platform control systems will include:

a. Automatic control of process heater and heat transfer system.

b. Automatic control of process equipment and conditions.

c. Automatic monitoring of process and production equipment (supervisory control) with annunciator panels indicating equipment status and alarms. Alarms will be recorded by hard copy printout.

d. Emergency alarms transmitted to shore.

e. Leak detection system for the crude pipeline. (See Section 7.)

f. Semi-automatic well gauging system with operator input of well numbers and gauge times. Resulting totals will be recorded by hard copy printout.

g. LACT metering of oil for shipment to shore.

h. Metering of produced gas and fuel gas used in the process heater.

i. Gas detection systems with automatic emergency shutdown and fire suppression systems.

j. Fire detection systems with automatic emergency shutdown and fire suppression systems. Fire detection equipment will include ultraviolet type detectors and fusible plugs in the emergency shutdown systems.

6.4.3 Personnel Quarters

Personnel quarters are to be sized for normal drilling and production activities. Facilities include sleeping

accommodations for 78 persons with restroom facilities, locker room, wash room, galley, and recreation/training room. The quarters building will be designed to minimize transmission of vibration and noise.

6.4.4 Fire Suppression

The platform design provides a fire suppression system including:

a. A saltwater pumping system.

b. 1-1/2" (3.8 cm) rubber hoses on reels to provide coverage at any point on the platform with two hoses.

c. Fixed fog suppression system with automatic area controls capable of wetting critical surfaces with a water density of not less than 0.25 GPM/ft^2.

d. Two 250 GPM monitors on the drilling deck to cover the BOP stacks and the upper well bay area.

e. Dry chemical and Halon fire extinguishers.

f. Standpipe connections on both boat landings for fire boat use.

6.4.5 Safety Equipment

The platform will be equipped with two escape capsules (50 persons each), life jackets and escape ropes for emergency egress. First-aid and other required safety equipment will also be provided.

6.4.6 Corrosion Control

Corrosion is to be controlled by using corrosion-resistant coatings on the top-side structures and equipment, an underwater sacrificial anode system, and internal coating for selected vessels and tanks.

6.4.7 Aids to Navigation

Aids to navigation will consist of four quick-flashing, Coast Guard approved, five-mile white lights (one light at each corner of the platform), and a Coast Guard approved 2-mile fog horn. All aids to navigation will meet Coast Guard regulation 33 CFR 67.20.

6.5 Measures to Minimize Environmental Impact

The two areas in which the proposed project may affect the environment are air pollution and oil spills. The policy to be followed to reduce environmental impact in each area is as follows:

6.5.1 Oil Spills

All platform facilities will be designed to prevent the occurrence of an oil spill as a result of routine operations. In the unlikely event that a spill occurs, the platform will be equipped with a spill containment boom and boom deployment boat that can be utilized to minimize the impact of such an occurrence.

For a very detailed discussion of such a possibility as well as the proposed actions in case of occurrence, please refer to the Environmental Report for Proposed Platform Edith and the Oil Spill and Emergency Contingency Plan for Platform Edith.

6.5.2 Air Pollution

The economically feasible subsea power cable was chosen, in part, as an air quality impact mitigation measure. In addition, an economizer will be installed with the heater unit. This economizer uses hot combustion gases to preheat the process fluid. Utilization of the economizer will result in approximately an 8% increase in heater efficiency. This economizer will recover heat equivalent to burning 70 MSCFD. Use of the economizer and submarine cable (instead of turbines) result in an essentially clean operation. No impact on the near onshore air quality is anticipated from this project. For more in depth discussion of air quality impacts of the proposed project, refer to Section 2.16 and 4.2 of the Environmental Report for proposed Platform Edith.

IDENTIFICATION LETTERS INSTRUMENTATION
(USED INSIDE INSTRUMENT BALLOONS)

AAH	ANALYZER ALARM SWITCH HIGH
AE	ANALYZER ELEMENT
AIT	ANALYZER INDICATOR TRANSMITTER
AR	ANALYZER RECORDER
ASH	ANALYZER SAFETY SWITCH HIGH
AIS	ANALYZER INDICATING SAFETY SWITCH
BE	BURNER ELEMENT
BS	BURNER SAFETY SWITCH
CC	CORROSION COUPON
FA	FLAME ARRESTOR (BURNER INTAKE)
FAH	FLOW ALARM SWITCH HIGH
FAL	FLOW ALARM SWITCH LOW
FC	FLOW CONTROLLER
FE	FLOW ELEMENT
FFIC	FLOW RATIO INDICATING CONTROLLER
FG	SIGHT GLASS FLOW INDICATOR
FI	FLOW INDICATOR
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FO	RESTRICTION ORIFICE
FQT	FLOW TOTALIZING TRANSMITTER
FQI	FLOW TOTALIZING INDICATOR
FQR	FLOW TOTALIZING RECORDER (TICKET PRINTER)
FR	FLOW RECORDER
FRC	FLOW RECORDING CONTROLLER
FS	FLOW SAFETY SWITCH
FSH	FLOW SAFETY SWITCH HIGH
FSL	FLOW SAFETY SWITCH LOW
FSV	FLOW SAFETY VALVE
FT	FLOW TRANSMITTER
FCV	FLOW CONTROL VALVE
FX	STRAIGHTENING VANES
FY	FLOW SOLENOID OR RELAY
FZ	ORIFICE FITTING
HCV	HAND CONTROL VALVE
HIC	HAND INDICATING CONTROLLER
HS	HAND SWITCH
HSS	HAND SELECTOR SWITCH
HV	HAND VALVE
KV	TIME SEQUENCE VALVE
KY	TIME SEQUENCE SOLENOID OR RELAY
LAH	LEVEL ALARM SWITCH HIGH
LAHI	LEVEL ALARM SWITCH HIGH (INTERFACE)
LAL	LEVEL ALARM SWITCH LOW
LALI	LEVEL ALARM SWITCH LOW (INTERFACE)
LC	LEVEL CONTROLLER
LCI	LEVEL CONTROL (INTERFACE)
LG	LEVEL GAUGE
LGI	LEVEL GAUGE (INTERFACE)
LI	LEVEL INDICATOR
LIC	LEVEL INDICATING CONTROLLER
LIS	LEVEL INDICATING SWITCH
LS	LEVEL SAFETY SWITCH
LSH	LEVEL SAFETY SWITCH HIGH
LSHL	LEVEL SAFETY SWITCH HIGH LOW
LSL	LEVEL SAFETY SWITCH LOW
LT	LEVEL TRANSMITTER (1)
LTI	LEVEL TRANSMITTER (INTERFACE)
LCV	LEVEL CONTROL VALVE
LCVI	LEVEL CONTROL VALVE (INTERFACE)
LY	LEVEL SOLENOID VALVE OR RELAY
LYI	LEVEL SOLENOID VALVE OR RELAY (INTERFACE)
NOT	NET OIL TOTALIZER
PAH	PRESSURE ALARM SWITCH HIGH
PAHL	PRESSURE ALARM SWITCH HIGH-LOW
PAL	PRESSURE ALARM SWITCH LOW
PC	PRESSURE CONTROLLER
PDA	PRESSURE DIFFERENTIAL ALARM SWITCH
PDAH	PRESSURE DIFFERENTIAL ALARM SWITCH HIGH
PDAL	PRESSURE DIFFERENTIAL ALARM SWITCH LOW
PDI	PRESSURE DIFFERENTIAL INDICATOR
PDIS	PRESSURE DIFFERENTIAL INDICATING SAFETY SWITCH
PDSH	PRESSURE DIFFERENTIAL INDICATING SAFETY SWITCH HIGH
PDSL	PRESSURE DIFFERENTIAL SAFETY SWITCH-LOW
PI	PRESSURE INDICATOR
PIC	PRESSURE INDICATING CONTROLLER
PR	PRESSURE RECORDER
PRC	PRESSURE RECORDING CONTROLLER
PS	PRESSURE SAFETY SWITCH
PSE	RUPTURE DISC
PSH	PRESSURE SAFETY SWITCH HIGH
PSL	PRESSURE SAFETY SWITCH LOW
PSHL	PRESS SAFE WITH HI-LO
PSV	PRESSURE SAFETY VALVE
PT	PRESSURE TRANSMITTER
PCV	PRESSURE CONTROL VALVE
PY	PRESSURE SOLENOID VALVE OR RELAY
SA	STACK FLAME ARRESTOR
SAH	SPEED ALARM HIGH
SDV	SHUTDOWN VALVE
SDY	SHUTDOWN SOLENOID OR RELAY
SSH	SPEED SAFETY SWITCH HIGH
SI	SAFETY SPEED INDICATOR
SSV	SURFACE SAFETY VALVE
SSSV	SURFACE CONTROLLED SUBSURFACE SAFETY VALVE
SV	SOLENOID VALVE
TAH	TEMPERATURE ALARM SWITCH HIGH
TAL	TEMPERATURE ALARM SWITCH LOW
TC	TEMPERATURE CONTROLLER
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TIC	TEMPERATURE INDICATING CONTROLLER
TR	TEMPERATURE RECORDER
TSH	TEMPERATURE SAFETY SWITCH HIGH
TSL	TEMPERATURE SAFETY SWITCH LOW
TT	TEMPERATURE TRANSMITTER
TCV	TEMPERATURE CONTROL VALVE
TY	TEMPERATURE SOLENOID VALVE OR RELAY
TW	THERMOWELL
UY	NET OIL COMPUTER
XE	UNCLASSIFIED ELEMENT
XFA	FLAME ARRESTOR
XS	UNCLASSIFIED SWITCH
XPS	PIG SIGNAL
XV	UNCLASSIFIED CONTROL VALVE
XY	UNCLASSIFIED SOLENOID VALVE OR RELAY
ZS	POSITION SWITCH

RELAY FUNCTION DESIGNATIONS
(ADJACENT TO INSTRUMENT BALLOON)

[/] (3)	CHARACTERIZE
[Σ]	ADD OR TOTALIZE (ADD AND SUBTRACT)
[√]	SQUARE ROOT
[<]	LOW SIGNAL SELECT
[>]	HIGH SIGNAL SELECT
[I/I]	CURRENT REPEATER
[I/A]	CURRENT TO AIR TRANSDUCER
[R/I]	RESISTANCE TO CURRENT CONVERTER
[E/E]	VOLTAGE TO ELECTROMAGNETIC (MICROWAVE OR RADIO)

FLOWSHEET SYMBOLS

GATE VALVE
PLUG VALVE
BALL VALVE
BALL VALVE (BLOCK & BLEED)
GLOBE VALVE OR NEEDLE VALVE
VALVE NORMALLY CLOSED
LOCKABLE VALVE—LOCK OPEN
LOCKABLE VALVE—LOCK CLOSED
BLOCK AND BLEED VALVE
FLOW SAFETY VALVE (CHECK)
BUTTERFLY VALVE
THREE-WAY VALVE
ANGLE VALVE
RELIEF VALVE (SPRING OPER.)
RELIEF VALVE (PILOT OPER.)
PRESSURE AND VACUUM RELIEF (VAC — PRESS)
PRESSURE RELIEF
VACUUM RELIEF
TEST OR BLEED
PNEUMATIC CONTROL VALVE—FAIL OPEN
PNEUMATIC CONTROL VALVE—FAIL CLOSED
PNEUMATIC CONTROL VALVE WITH HAND OPERATOR (OR)
PRESSURE REGULATOR (SELF—CONTAINED)
PILOT VALVE THREE-WAY OR DIVERTED VALVE
MOTOR-OPERATED VALVE
PISTON-OPERATED VALVE
SOLENOID VALVE THREE-WAY
SOLENOID VALVE WITH MANUAL RESET
MANUAL VALVE THREE-WAY
MANUAL VALVE THREE-WAY SPRING RETURN
CHOKE
POSITIVE DISPLACEMENT METER (FQI)
ORIFICE PLATE IN QUICK CHANGE FITTING
STD. ORIFICE PLATE FLANGES OR RESTRICTION ORIFICE
ROTAMETER (FI)
STRAIGHTENING VANES
SPECTACLE BLIND
PADDLE BLIND
SAMPLER (S)
FILTER (F)
INSULATING FLANGES
EJECTOR OR FLOW TUBE
CONE-TYPE STRAINER

INTEGRAL ORIFICE (FT)
Y-TYPE STRAINER
T-TYPE STRAINER
DUPLEX STRAINER
MANUAL ELECTRIC PUSH BUTTON
STATIC MIXER
BUCKET-TYPE STRAINER
SIGHT GLASS FLOW INDICATOR (FG)
LUBRICATOR (L)
AUTOMATIC DUMP TRAP (T)
OPEN ORIFICE NOZZLE
CLOSED ORIFICE NOZZLE
FUSIBLE DETECTOR HEAD—FIXED TEMPERATURE
FIRE WATER ALARM VALVE (UV)
FIRE PROTECTION CONTROL VALVE (UV)
HOSE REEL
MONITOR NOZZLE
HEAT EXCHANGER (PROCESS)
HEAT EXCHANGER (MECHANICAL)
VENT W/FLAME ARRESTOR
VENT W/BUG SCREEN
OPEN DRAIN
HOSE CONNECTION
FLEXIBLE HOSE
FLEXIBLE JOINT
FIELD MOUNTED INSTRUMENT
REMOTE PANEL-MOUNTED INSTRUMENT (FRONT)
LOCAL PANEL-MOUNTED INSTRUMENT (FRONT)
REMOTE PANEL-MOUNTED INSTRUMENT (REAR)
LOCAL PANEL-MOUNTED INSTRUMENT (REAR)
SPECIAL ITEM (SP)
LINE IDENTIFICATION NUMBERS
LINE NUMBER CHANGE
INSTRUMENT SIGNAL AIR LINE
INSTRUMENT ELECTRICAL LEAD
INSTRUMENT CAPILLARY TUBING
HYDRAULIC LINE
HEAT TRACED W/INSULATION
INSULATION WITH THICKNESS
DIGITAL INPUT (DI)
DIGITAL OUTPUT (DO)
ANALOG INPUT (AI)
ANALOG OUTPUT (AO)

PUMPS

CENTRIFUGAL
RECIPROCATING
POSITIVE DISPLACEMENT
TURBINE-DRIVEN
MOTOR-DRIVEN
MOTOR-DRIVEN
TURBINE-DRIVEN
IN-LINE
ROTARY (SCREW-TYPE)
ROTARY (VANE-TYPE)
VERTICAL CAN
CENTRIFUGAL (PROCESS)
SUBMERSIBLE
SCREW CONVEYOR
ROTARY COMPRESSOR
CENTRIFUGAL COMPRESSOR TURBINE/EXPANDER
RECIPROCATING COMPRESSOR
HAND-OPERATED
VERTICAL TURBINE
CHEMICAL INJECTION PUMPS
PROGRESSIVE CAVITY

FLOWSHEET LETTERS

BS&W	BASIC SEDIMENT AND WATER
LC	LOCK CLOSED
LO	LOCK OPEN
ESD	EMERGENCY SHUTDOWN (CLOSES SSSV)
FC	FAIL CLOSED
FO	FAIL OPEN
HOA	HAND-OFF-AUTO STATION
IAS	INSTRUMENT AIR SUPPLY
MCC	MOTOR CONTROL CENTER
PP	PERSONNEL PROTECTION
SAS	SERVICE AIR SUPPLY
(F)	VENDOR FURNISHED
SC	SAMPLE CONNECTION
SD	SHUTDOWN (CLOSES SSV)
NC	NORMALLY CLOSED (1)

NOTES

(1) DIMENSION SHOWN BY LEVEL BALLOON INDICATES INSTRUMENT RANGE

(2) DIMENSION SHOWN BY LEVEL GAUGE BALLOON INDICATES VISIBLE RANGE.

(3) SECONDARY INSTRUMENT VALVES. THAT IS. BLOCK. BLEED. DRAIN OR TEST. ARE OMITTED ON FLOW DIAGRAMS- SHOWN ON INSTRUMENT INSTALLATION DETAILS.

REFERENCE DRAWINGS

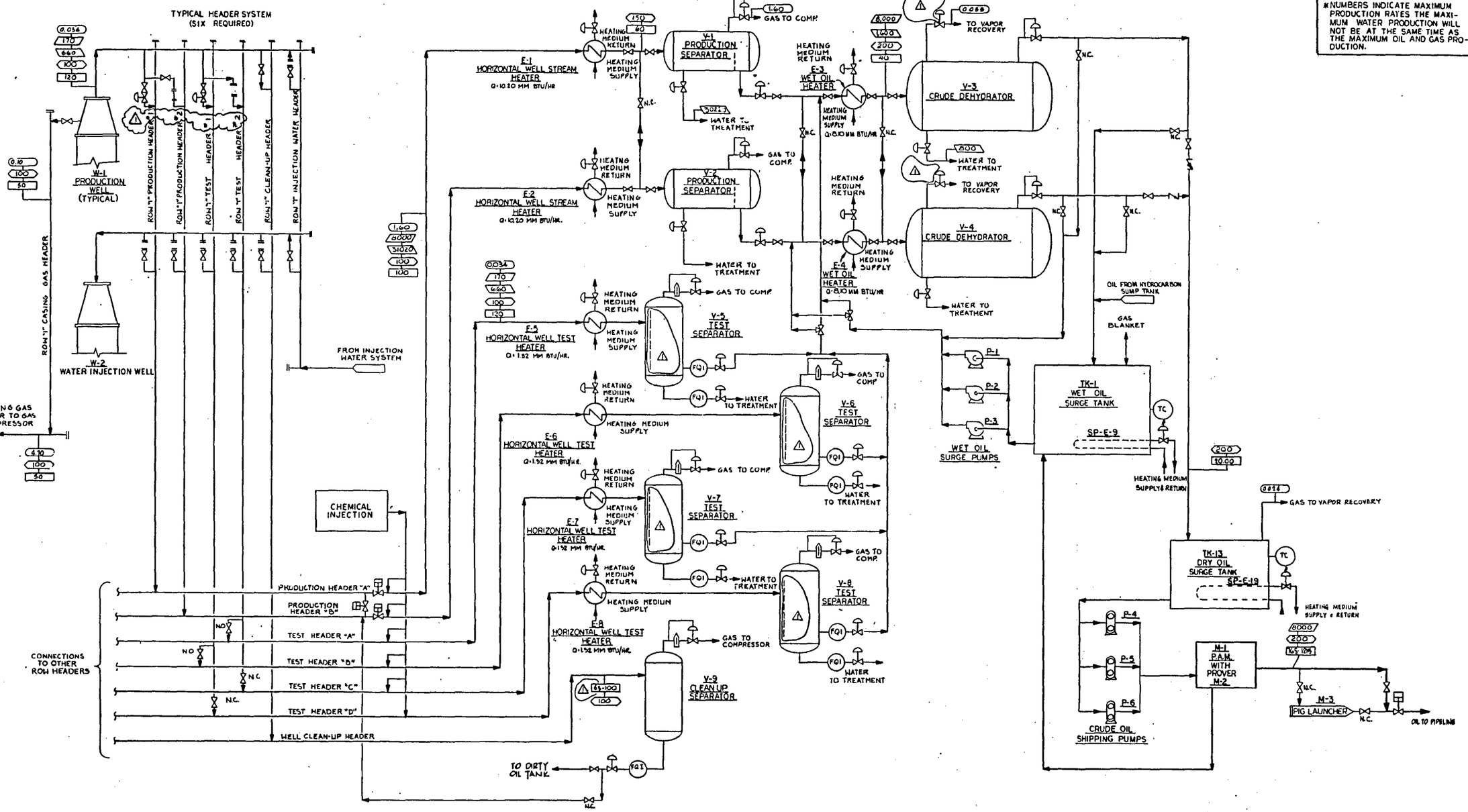
REVISIONS
⚠ ISSUED FOR CONSTRUCTION
⚠ ISSUED FOR BID USE ONLY

SCALE NONE
DATE 1-12-81
DR. APPR.
OPER. DEPT.
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

FLOW DIAGRAM LEGEND
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296 W.D. 151

A | W.O. | S.O. | E-H-1350-1



LEGEND

- * MMSCFD
- * BOPD
- * BWPD
- °F
- PSIA

*NUMBERS INDICATE MAXIMUM PRODUCTION RATES THE MAXIMUM WATER PRODUCTION WILL NOT BE AT THE SAME TIME AS THE MAXIMUM OIL AND GAS PRODUCTION.

REFERENCE DRAWINGS

REVISIONS

⚠ ISSUED FOR CONSTRUCTION

⚠ ISSUED FOR BID USE ONLY

SCALE NONE

DATE 2/16/82

DR. APPR.

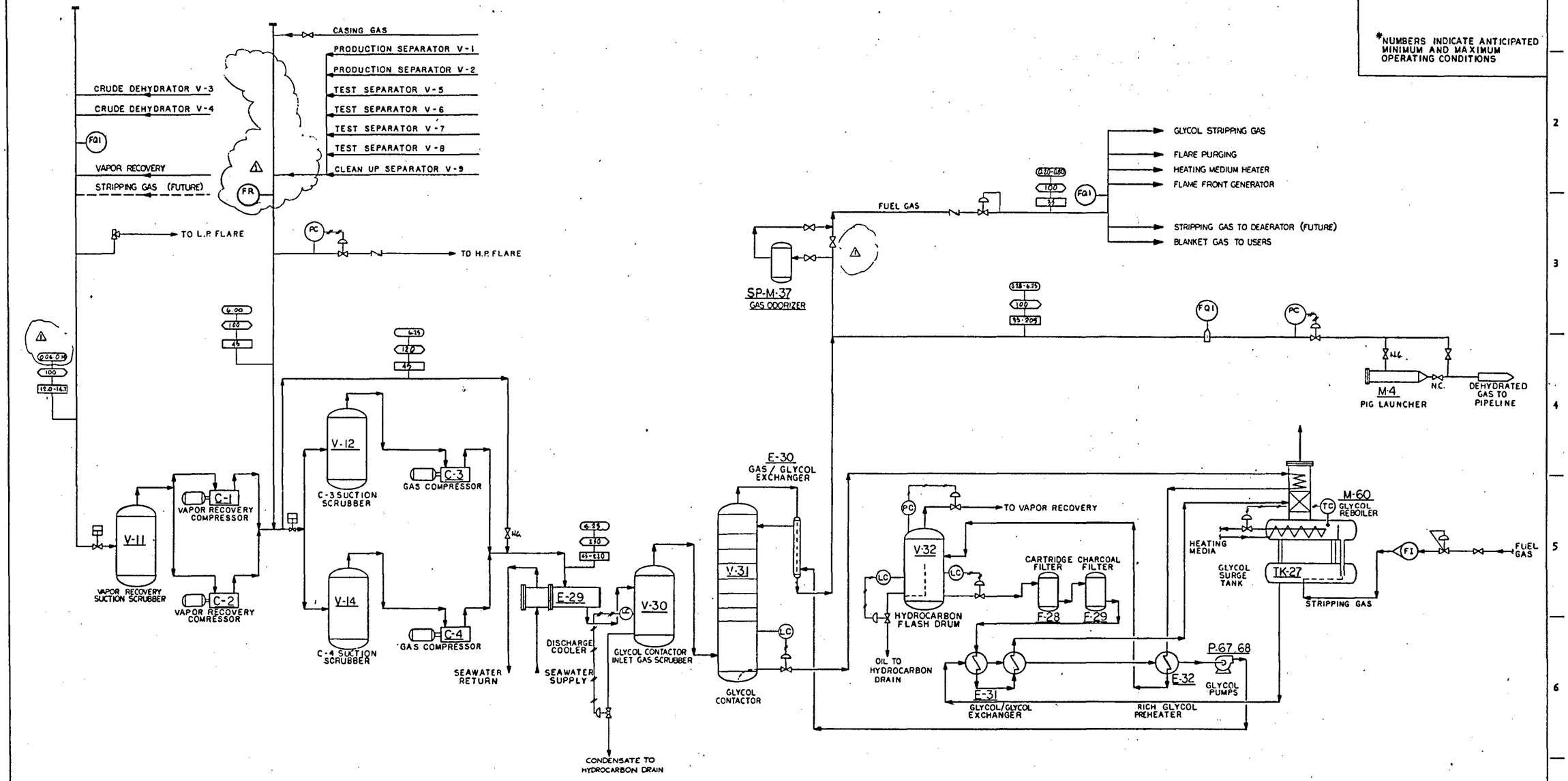
OPER. DEPT.

ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

PROCESS FLOW DIAGRAM
OIL PRODUCTION SYSTEM
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296, W.D. 161'

A | W.O. | S.O. | E-H-1351-1



REFERENCE DRAWINGS

REVISIONS

⚠ ISSUED FOR CONSTRUCTION

⚠ ISSUED FOR BID USE ONLY

SCALE NONE

DATE 4-16-81 DR. MAS. CHK.

DR. APPR. ENG. APPR.

OPER. DEPT. APPROVED

ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

PROCESS FLOW DIAGRAM
VAPOR/GAS COMPRESSION & DEHYDRATION SYSTEM
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT PARCEL P-0296 W.D. 161'

A W.O. E-H-1352-1
S.O.

PRODUCED WATER FROM PROCESS EQUIPMENT

31,000 / 140 / 19

NC

TK-3 PRODUCED WATER CPI

OIL BUCKET

OVER FLOW

31,000 / 140

CHEMICAL INJECTION

TK-4 FLOTATION CELL

TO VAPOR RECOVERY SYSTEM

TO VAPOR RECOVERY SYSTEM

TK-6 PRODUCED WATER SURGE TANK

31,000 / 140

TO DISPOSAL PILE

LS NC

Y

Z

FROM DISPOSAL PILE

FROM CLEANUP SEPARATOR

FROM DEHYDRATORS

TO VAPOR RECOVERY SYSTEM

MANHAY

TK-2 DIRTY OIL TANK

NC

VAPOR RETURN LINE FROM BOAT LANDING

JET CONN. S.W.

NC

HOSE CONNECTIONS AT BOAT LANDING

NC SW HOSE CONN.

P-7

P-8

CPI SOLIDS PUMPS

TO V27 HYDROCARBON SUMP TANK

TG00

P-13 JET WATER PUMP

TYPICAL SACK DRAINS

PIPE RACK AREA

DRILLING DECK

P-11

P-12

PRODUCED WATER BOOSTER PUMPS (FUTURE)

18,000 / 140

FROM DECK DRAIN SUMP TANK

FROM SAND FILTERS BACKWASH (FUTURE)

VENT TO SAFE ATMOS.

CONTAMINATED CUTTINGS

SP-M-7 SCREW CONVEYOR

WATER TO WASTE TANK

WATER TO DISPOSAL PILE

SP-M-8 SWECO SEPARATOR

SOLIDS TO BIN

SP-M-10 SOLIDS BIN (TYPICAL)

(OPEN TO CRANE ACCESS 10,000 LBS.)

TK-9 WASTE WATER CPI

OIL BUCKET

SCREEN

WEIR

TK-8 WASTE TANK

SLOPE

FUTURE TO WATER INJECTION SYSTEM

LC

NC

OIL TO HYDROCARBON SUMP TANK

CLEAN OUT CONN.

HOSE CONNECTION AT BOAT LANDINGS

N.C.

N.C.

P14

P15

WASTE PUMPS

LEGEND

* BWPD

°F

PSIA

* MAXIMUM ANTICIPATED FLOW RATES

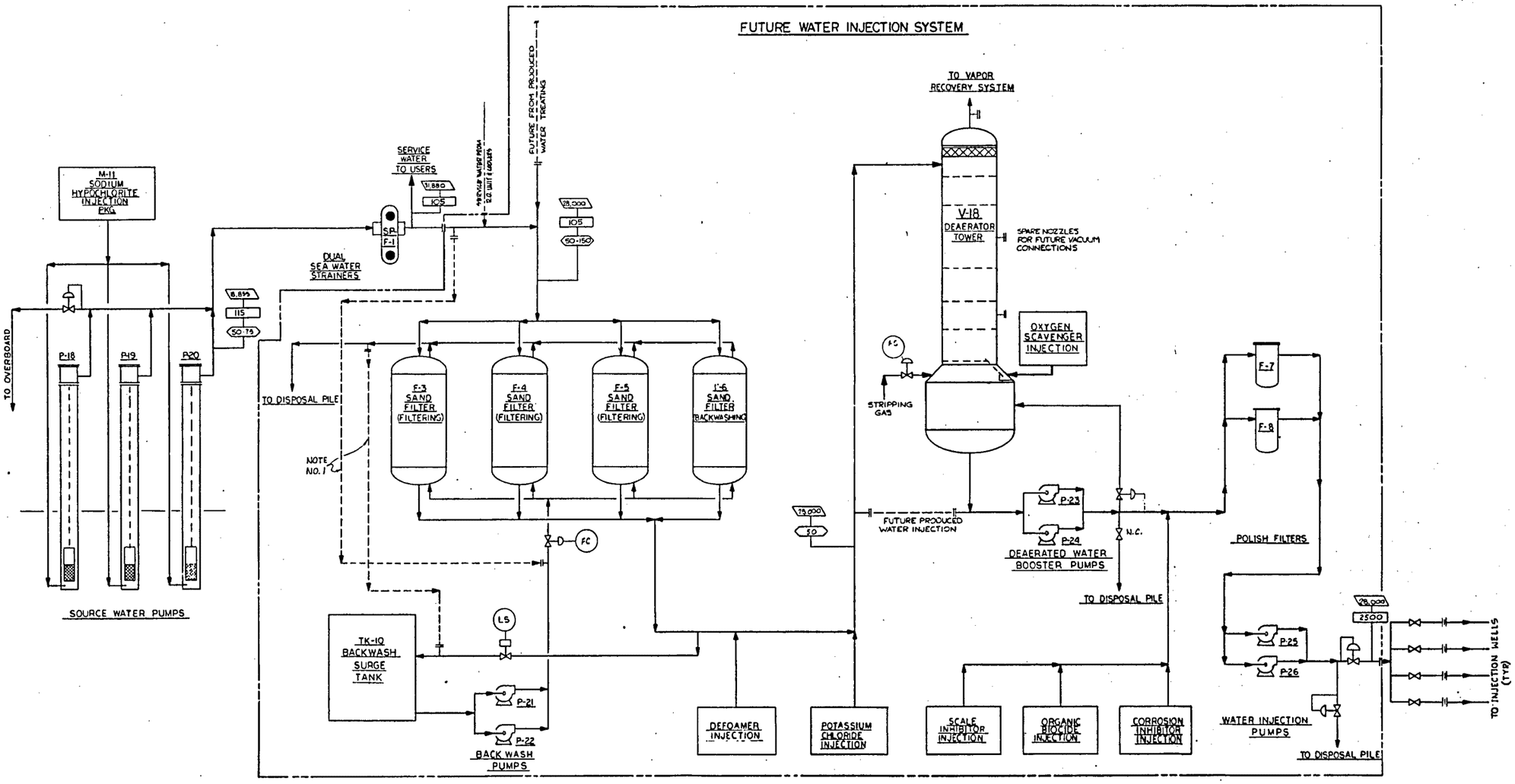
REFERENCE DRAWINGS

REVISIONS

SCALE NONE

PROCESS FLOW DIAGRAM

FUTURE WATER INJECTION SYSTEM



NOTES:

1. FUTURE CONN. FOR BACKWASH DURING PRODUCED WATER INJECTION.

LEGEND

- * BWPD
- °F
- PSIA
- * DESIGN FLOW RATES

REFERENCE DRAWINGS

REVISION

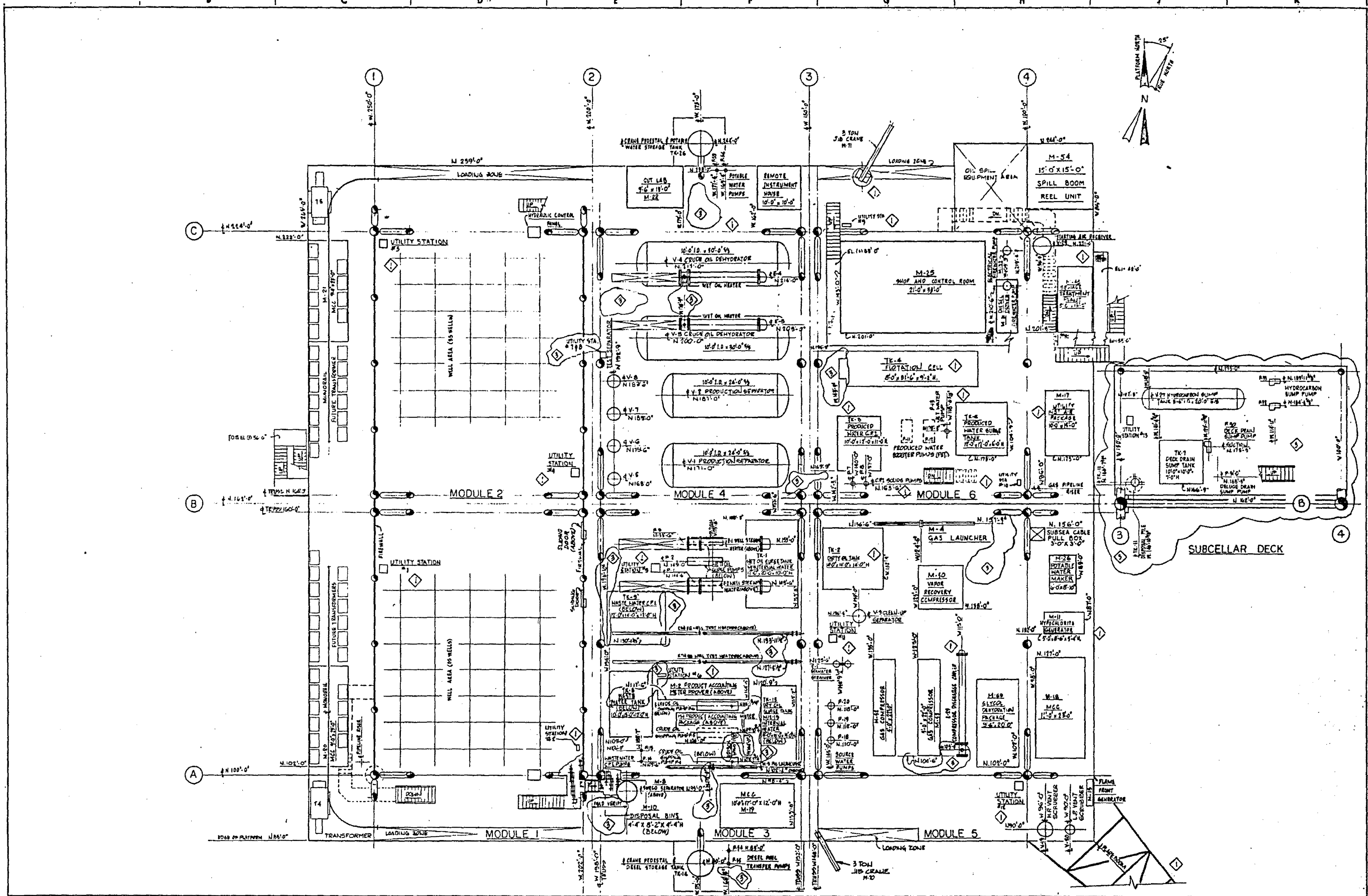
- ⚠ ISSUED FOR CONSTRUCTION
- ⚠ ISSUED FOR BID USE ONLY

SCALE NONE
DATE 2-26-80 DR. D.T. CHECK
DR. APPR. ENG. APPR.
OPER. DEPT. APPROVED
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

PROCESS FLOW DIAGRAM
INJECTION WATER SYSTEM
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296, W.D. 161

A | W.O. | B.O. | E-H-1354-1



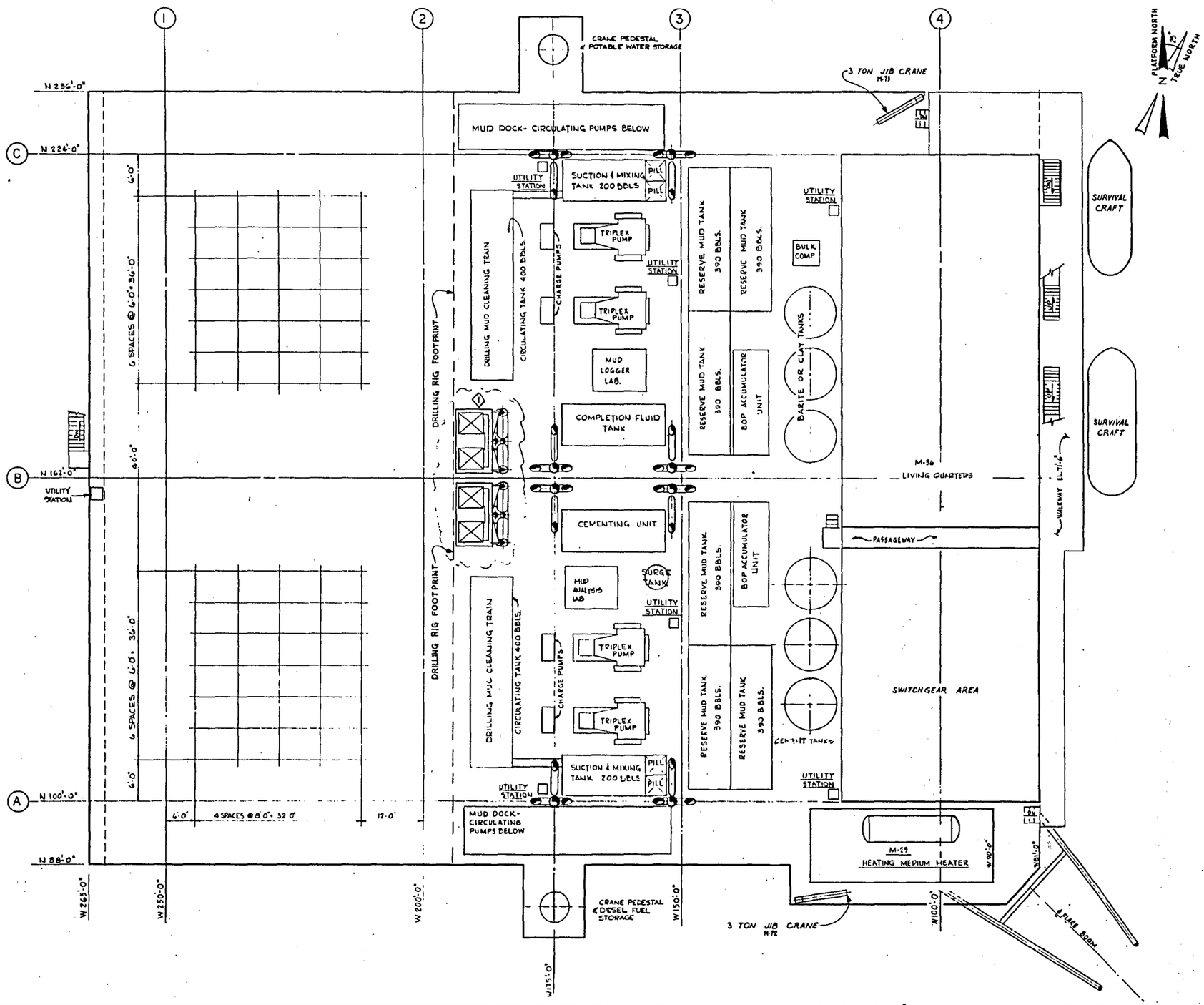
REFERENCE DRAWINGS	REVISIONS
	◇0 ISSUED FOR CONSTRUCTION
	◇1 REVISED AS NOTED
	◇2 ISSUED FOR PERMIT APPROVAL ALSO ISSUED TO U.S.G.S.
	△ ISSUED FOR BID USE ONLY

SCALE 1/8" = 1'-0"

Chevron U.S.A. Inc.
Western Region, Production Department

EQUIPMENT LOCATION PLAN
PRODUCTION DECK
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296 WO 161

A E-H-1400-3



REFERENCE DRAWINGS

REVISIONS

1 ISSUED FOR CONSTRUCTION

1 ISSUED FOR PERMIT APPROVAL AND ISSUED TO U.S.G.S.

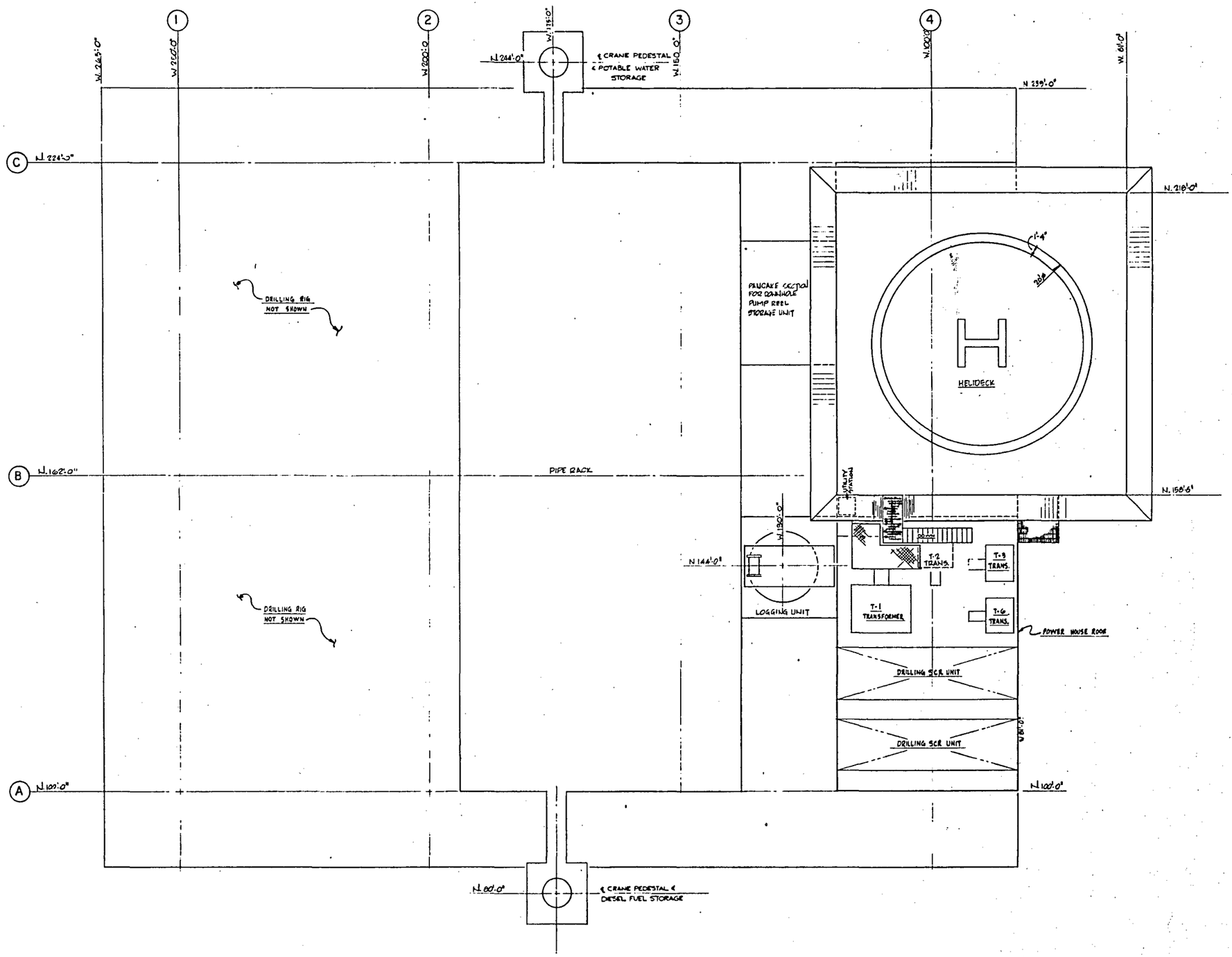
2 ISSUED FOR BID USE ONLY

SCALE 1/8"=1'0"
DATE 3-26-81 DR. E.D. CK.
DR. APPR. ENGR.
OPER. DEPT. APPROVED
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

EQUIPMENT LOCATION PLAN
DRILLING DECK
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P0296, W.D. 161

A W.O. S.O. E-H-1401-2



REFERENCE DRAWINGS	REVISIONS						
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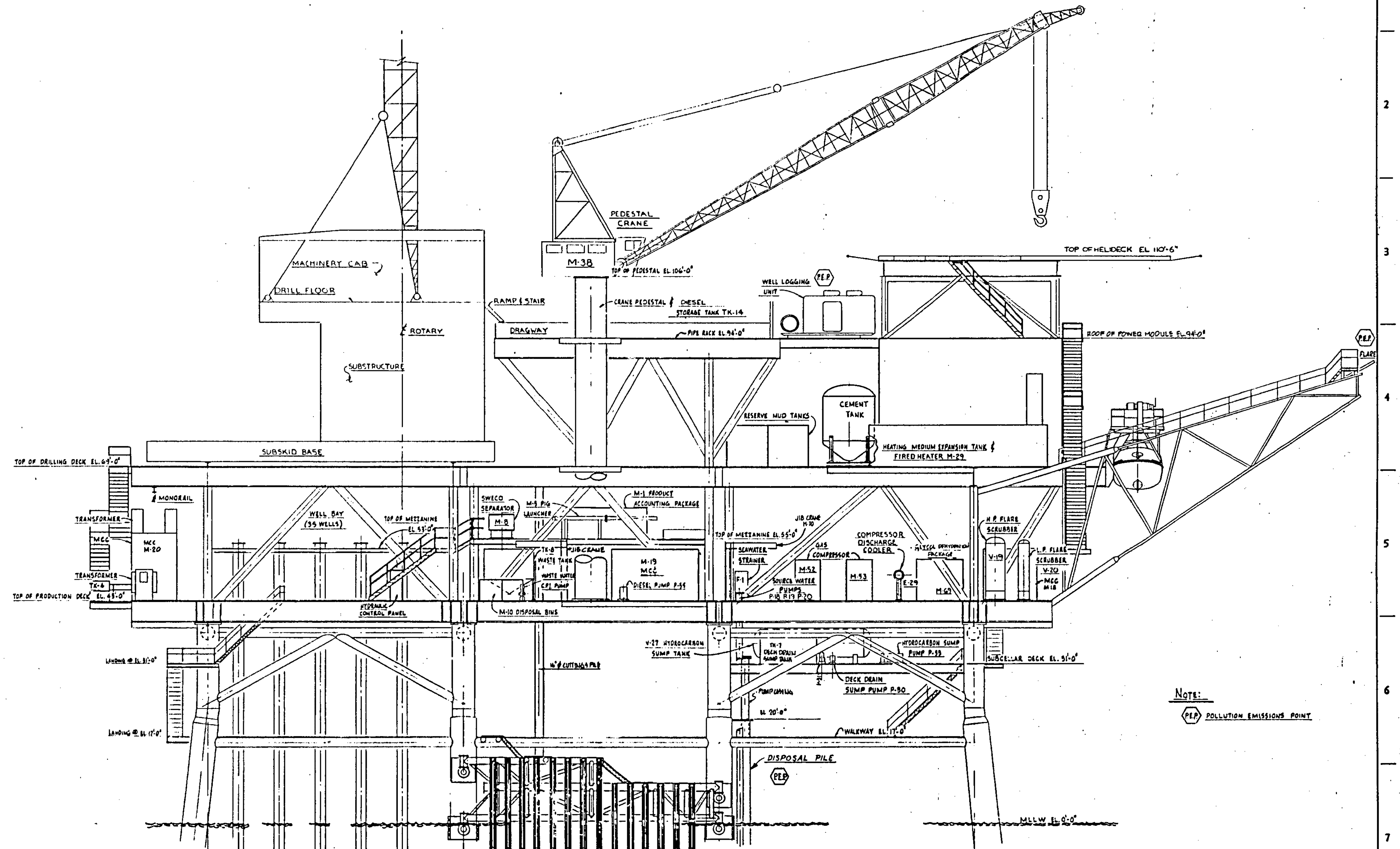
					0 ISSUED FOR BID USE ONLY	10-31	HL BH

SCALE 1/8" = 1'-0"
DATE 4/11/61 DR. BH CH. HL
DR. APPR. 7205 ENG. BH
OPER. DEPT. APPROVED
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

EQUIPMENT LOCATION PLAN
PIPE RACK AND ABOVE
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296 WD 161'

A | W.O. | S.O. | E-H-1402-2



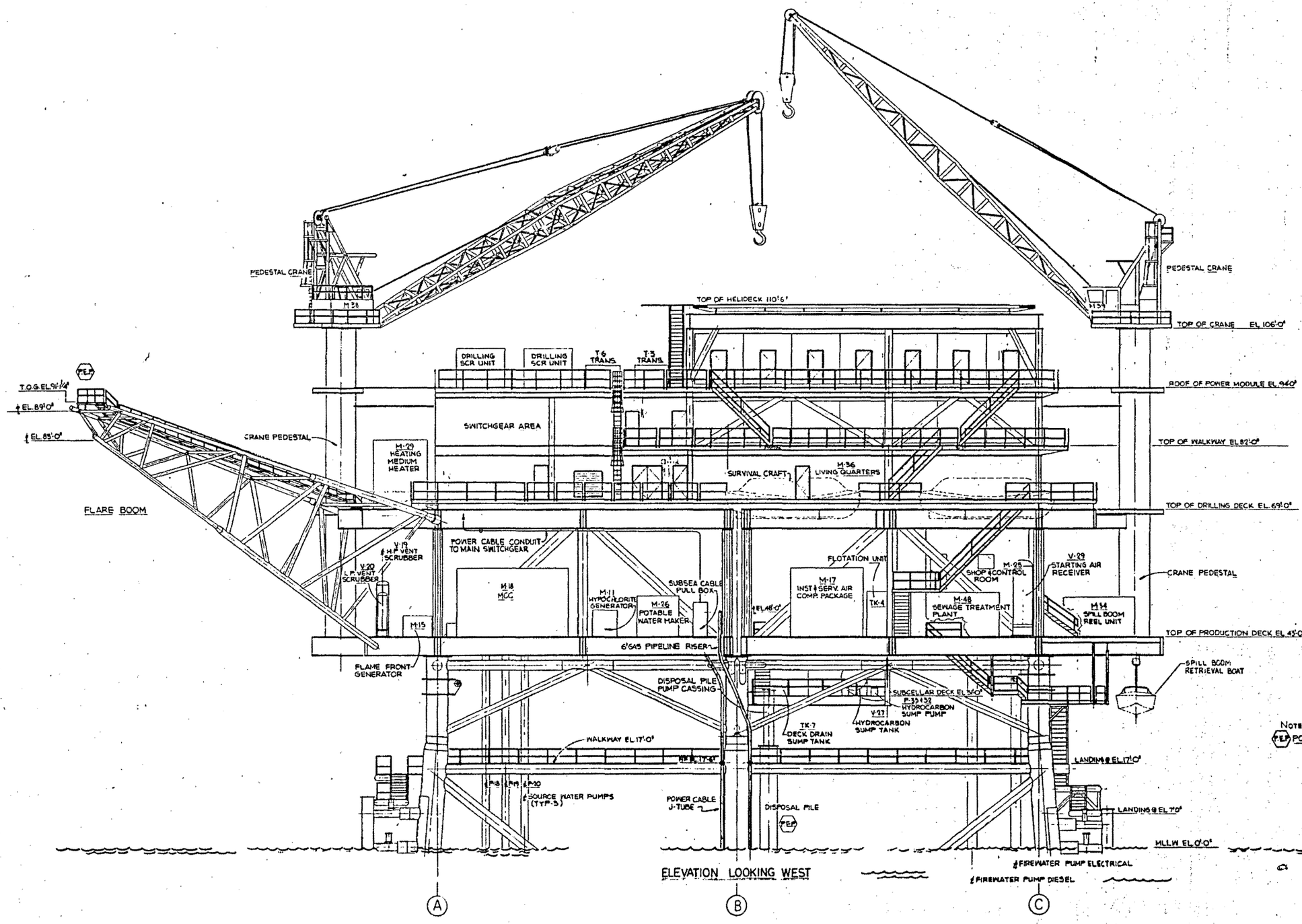
ELEVATION LOOKING NORTH

REFERENCE DRAWINGS	REVISIONS			
	2 ISSUED FOR CONSTRUCTION	1 ISSUED FOR PERMIT APPROVAL AND ISSUED TO U.S.G.S.	0 ISSUED FOR BID USE ONLY	SCALE 1/8" = 1'-0"

Chevron U.S.A. Inc.
Western Region, Production Department

EQUIPMENT LOCATION
SOUTH ELEVATION
DRILLING AND PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296 W.O. 161'

A W.O. S.O. E-H-1403-2



ELEVATION LOOKING WEST

Note:
(PEP) POLLUTION EMISSION POINT

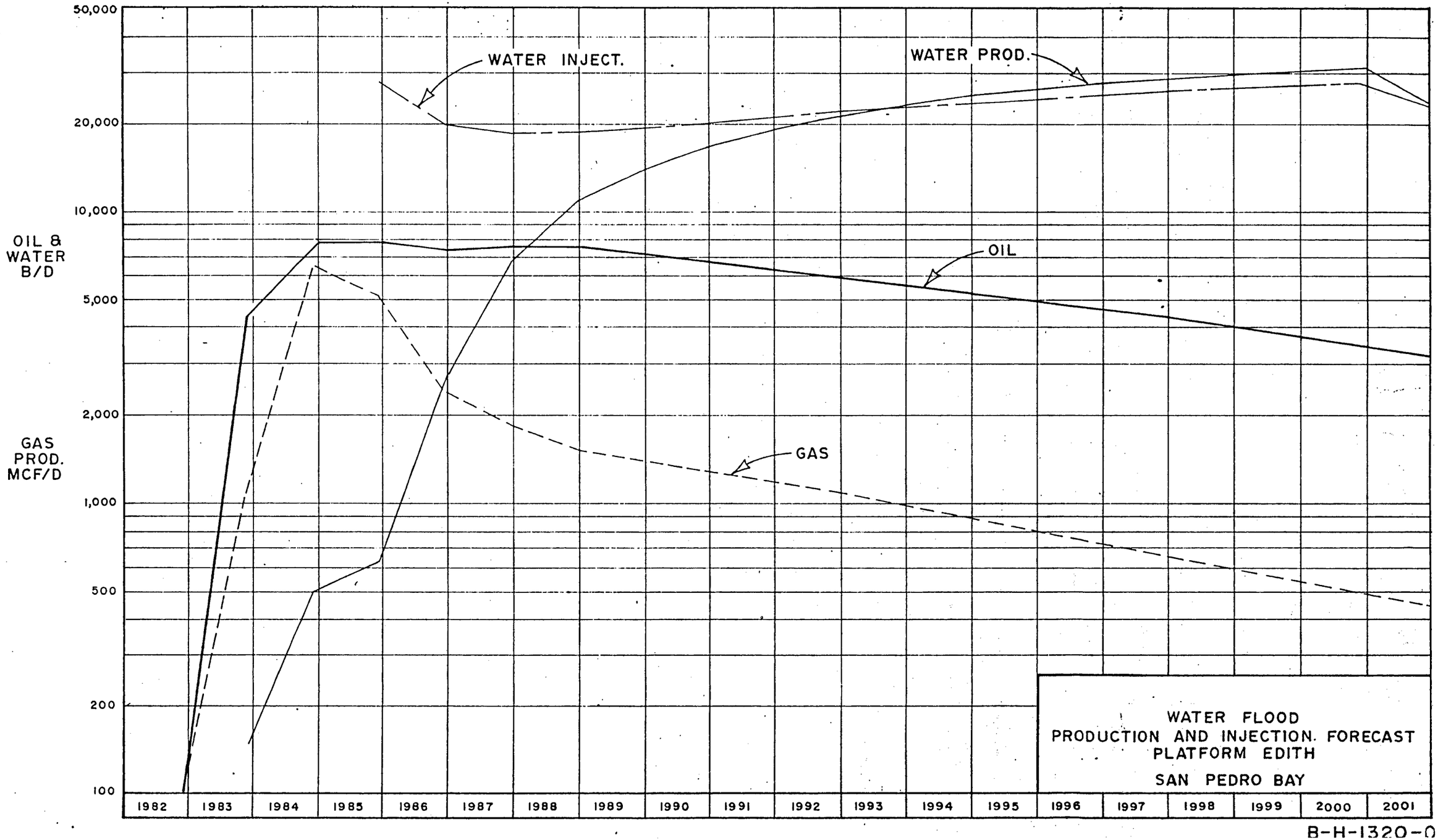
REFERENCE DRAWINGS	REVISIONS			
	1	ISSUED FOR CONSTRUCTION	JAK	7/5
	0	ISSUED FOR PERMIT APPROVAL AND ISSUED TO U.S.G.S.	JAK	6/1

SCALE 1/8"=1'-0"
DATE 7-25-81 DR. [illegible]
DR. APPR. [illegible] ENG. [illegible]
OPER. DEPT. APPROVED
ENG. DEPT.

Chevron U.S.A. Inc.
Western Region, Production Department

EQUIPMENT LOCATION
EAST ELEVATION
DRILLING NO. PRODUCTION PLATFORM "EDITH"
BETA UNIT, PARCEL P-0296 W.O. 161

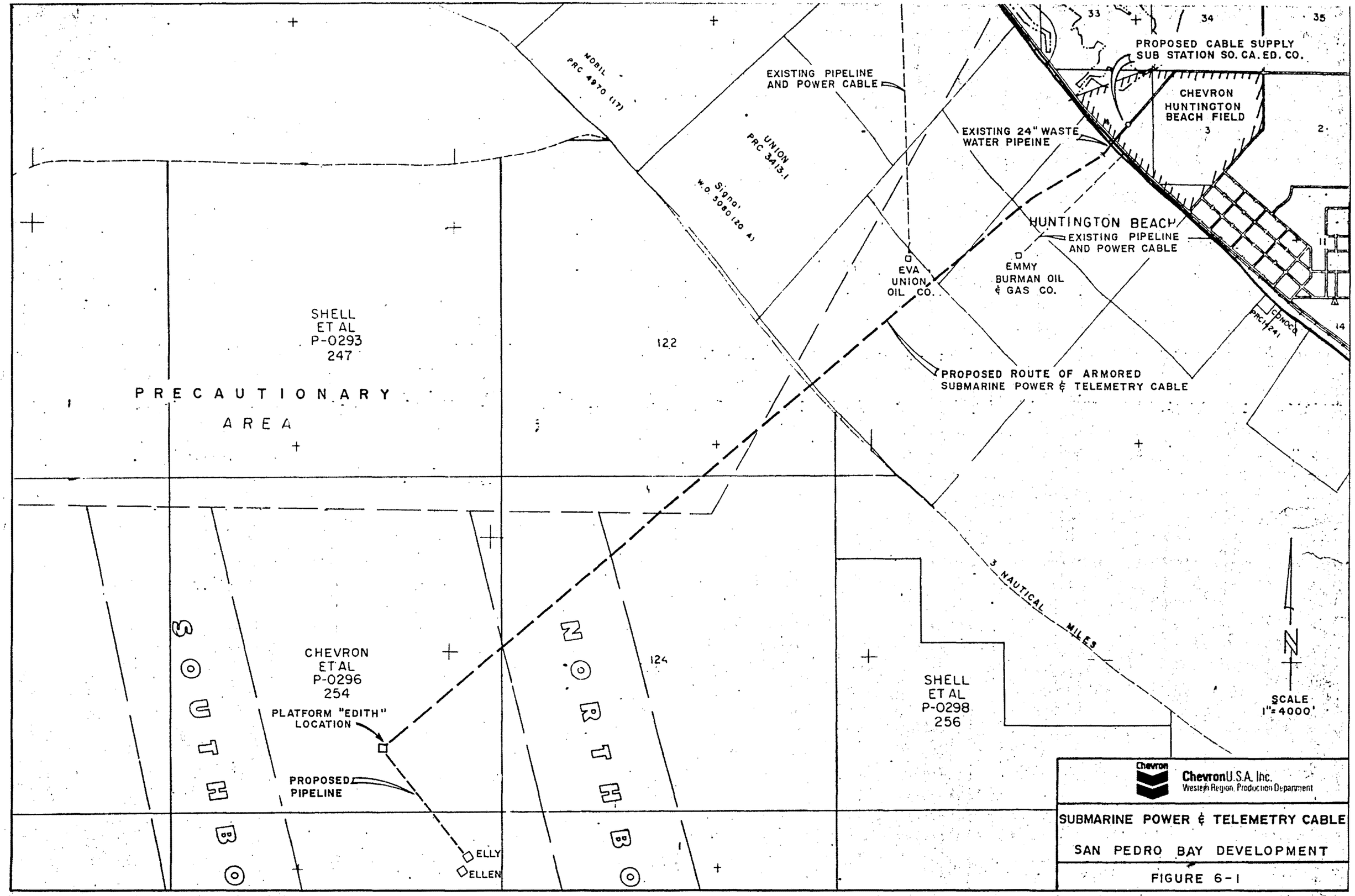
A | W.O. | S.O. | E-H-1409-1



WATER FLOOD
PRODUCTION AND INJECTION. FORECAST
PLATFORM EDITH

SAN PEDRO BAY

B-H-1320-0



Chevron U.S.A. Inc.
Western Region, Production Department

SUBMARINE POWER & TELEMETRY CABLE

SAN PEDRO BAY DEVELOPMENT

FIGURE 6-1

SECTION VII

SUBSEA OIL PIPELINE

7.1 Introduction

A subsea pipeline to transport the clean crude from the dehydration facilities on the platform is planned for installation during late-1982. The pipeline will be installed between Platform Edith and Shell's Platform Elly located on Lease OCS-P 0300. The crude will be commingled with other Beta production for transport through Shell's 16" (41 cm) line to an existing metering station at Long Beach. At this point, oil will be routed by existing pipeline facilities to Chevron's El Segundo Refinery.

The maximum water depth of 260-ft. (79m) encountered by the pipeline is at Shell's Platform Elly. Figure 7-1 is a general area map showing the pipeline route.