United States Department of the Interior

GEOLOGICAL SURVEY

Conservation Division
P. O. Box 26124
Albuquerque, New Mexico 87125

APR 23 1979

Union Oil Company of California
P. O. Box 671
Midland, Texas 79702

Gentlemen:

Your Application for Permit to Drill well No. 1 Maduro Unit Federal in the NW¼SE¼ sec. 29, T. 19 S., R. 33 E., Lea County, New Mexico, lease NM 14794, to a depth of 13,700 feet to test the Morrow formation in the Oil Potash area is hereby approved, as amended by stipulations attached to the application.

One copy of the application is returned herewith. Please notify the District Engineer, Geological Survey, Hobbs, New Mexico, in sufficient time for a representative to witness all cementing operations.

Sincerely yours,

(ORIG. SGD.) GENE F. DANIEL

Acting Area Oil and Gas Supervisor

Enclosure

cc: Conservation Manager, Denver
Area Mining Supervisor, Albuquerque (2)
NMOCD, Hobbs (2) (w/2 copies Notice) ✓
Roswell Area Office (2)
Hobbs District Office

RECEIVED

Form 9-331 C
(May 1963)

COPY TO O. C. C.

SUBMIT IN TRIPLICATE*
(Other instructio
reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNI D STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM 14794

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Maduro Unit Federal

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Wildcat (N/D)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 29, T-19-S, R-33-E

12. COUNTY OR PARISH: Lea

13. STATE: New Mexico

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER — SINGLE ZONE [X] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Union Oil Company of California

3. ADDRESS OF OPERATOR: P.O. Box 671 Midland, Texas 79702

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1,980' FSL and 1,980' FEL
At proposed prod. zone:

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 16 miles Southeast of Maljamar, New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 660' to lease line; 660' to drilling unit line

16. NO. OF ACRES IN LEASE: 400 ac

17. NO. OF ACRES ASSIGNED TO THIS WELL: 320

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.:

19. PROPOSED DEPTH: 13,700'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3,583.6' GL

22. APPROX. DATE WORK WILL START*: Upon approval

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"OD	48	1270'	Circulated
12-1/4"	9-5/8"OD	40	5,300'	3,000 sx. Circulated
7-7/8"	5-1/2"OD	17	13,700'	750 sx,

3,000# WP Hydraulic BOP to 5,300'
5,000# WP Hydraulic BOP from 5,300' to TD

RECEIVED
MAR 21 1979
U. S. GEOLOGICAL SURVEY
HOBBS, NEW MEXICO

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED J.R. Hughes TITLE District Drilling Supt. DATE 3/20/79

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

NEW MEXICO OIL CONSERVATION COMMISSION
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section

Operator		Lease	Well No.
Union Oil Co. of California		Medjuro Federal Unit	1

Unit Letter	Section	Township	Range	County
J	29	19 South	33 East	Lea

Actual Footage Location of Well: 1980 feet from the South line and 1980 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage
3583.6	Morrow	Wildcat	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

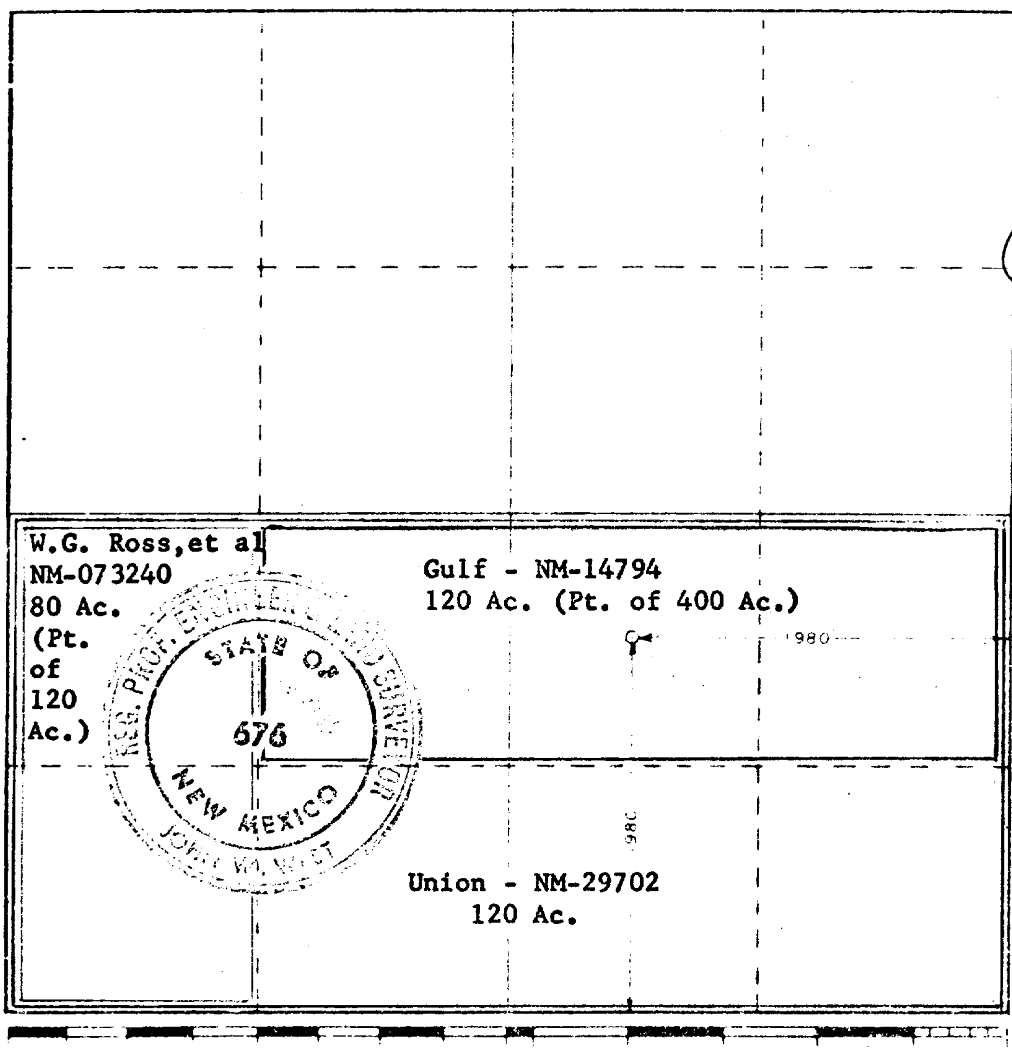
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

[X] Yes [ ] No If answer is "yes," type of consolidation Unitization

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Dilg Supt
Union Oil Cal
3-30-79

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed
March 8, 1979

Registered Professional Engineer and/or Land Surveyor

Certificate No. John W West 676
Ronald J. Eidson 3239

MULTI-P.NT SURFACE USE AND OPERATIONS .AN

UNION OIL COMPANY OF CALIFORNIA

MADURO FEDERAL UNIT WELL NO. 1

1980' FSL & 1980' FEL, Section 29, T-19-S, R-33-E

Lea County, New Mexico

This plan is submitted with the Application for Permit to drill the above described well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of necessary surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operation so that a complete appraisal can be made of the environmental effects associated with the operation.

1. EXISTING ROADS:

   A. Exhibit "A" is a copy of a Lea County road map showing the location of the proposed well as taked 36.5 miles west of Hobbs, New Mexico, north toward Maljamar 10.5 miles on highway 176 & 31 to Lusk gasoline plant. Turn right (east) for 5 miles, then south southeash 3.1 miles on existing lease road, 2/10 miles on new road to proposed location.

   B. Exhibit "B" is a map showing all existing roads within a 1½ mile radius of the well site and the planned access road.

   C. All existing oil field caliche roads and private ranch roads will be repaired as necessary. Repairs will consist of replacing the eroded caliche surface with a new caliche surface 6 inches deep and 12 feet wide, watered and compacted.

2. PLANNED ACCESS ROADS:

   A. Length and Width: The new road required will be 12 feet wide and approximately 800 feet long.

   B. Surfacing Material: Six inches of caliche, watered, compacted and graded.

   C. Maximum Grade: 3 Percent.

   D. Turnouts: None.

   E. Drainage Design: New road will have a drop of 3-4 inches from center line on each side.

2. PLANNED ACCESS ROADS - Cont'd

F. Culverts: None required.

G. Cuts and Fills: None required.

H. Cattleguards: None required.

3. LOCATION OF EXISTING WELLS:

A. Existing wells within a 1½ mile radius are shown on Exhibit "B".

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

A. Location of the proposed tank battery and flow line from well No. 1 are shown on Exhibit "D". There are no water disposal lines or injection lines.

B. If the well is productive, the tank battery and flow line will be located on the well pad and no additional surface disturbance will occur.

5. LOCATION AND TYPE OF WATER SUPPLY:

A. We propose to use a water well in Section 18 located on the existing lease road approximately 3 miles of temporarily water line, would be layed parallel to road. If water well is not available at spud date, water will be purchased and trucked to location over existing and proposed roads shown on Exhibit "A" & "B".

6. SOURCE OF CONSTRUCTION MATERIALS:

A. Caliche for surfacing the road and well pad will be obtained from an existing pit located in west half of Section 29 and will be trucked to wellsite over existing roads as shown on Exhibit "B".

7. METHODS OF HANDLING WASTE DISPOSAL:

A. Drill cuttings will be disposed of in the drilling pits.

B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.

C. Water produced during tests will be disposed of in the drilling pits. Oil produced during tests will be stored in test tanks until sold.

7. METHODS OF HAND 'G WASTE DISPOSAL - Cont'd

D. Current laws and regulations pertaining to the disposal of human waste will be complied with.

E. Trash, waste paper, garbage and junk will be buried in a separate trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind. Location of trash pit is shown on Exhibit "C".

F. All trash and debris will be buried or removed from the well site within 30 days after finishing drilling and/or completion operations.

8. ANCILLARY FACILITIES:

A. None required.

9. WELLSITE LAYOUT:

A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pit, trash pit and location of major rig components.

B. Only minor leveling of the well site will be required. No significant cuts and fills will be necessary.

C. Part of the reserve pit will be plastic lined.

D. The pad and pit area has been staked and flagged.

10. PLANS FOR RESTORATION OF THE SURFACE:

A. After completion of drilling and/or completion operations all equipment and other material not needed for operations will be removed. Pits will be filled and location cleaned of all trash and junk to leave the well site in an aesthetically pleasing condition as possible.

B. Any unguarded pits containing fluids will be fenced until they are filled.

C. After abandonment, any special rehabilitation and/or revegetation requirements of the surface management agency will be complied with and accomplished as expeditiously as possible. All pits should be filled and leveled within 90 days after abandonment.

11. OTHER INFORMATION:

A. Topography: Land surface is gently rolling.

B. Soil: Deep fine sand underlain by caliche.

11. OTHER INFORMATION - Cont'd

C. Flora and Fauna: The vegetative cover is generally sparse and consists of mesquite, yucca, sand sage and perenial native range grasses. Wildlife in the area is that typical of semi-arid desert land and includes coyotes, rabbits, rodents, reptiles, doves, quails and occasional antelopes.

D. Ponds and Streams: There are no rivers, streams, fresh water lakes or ponds in area. There is a Laguna in Section 33, 1 mile southeast of proposed location.

E. Residence and Other Structures: There is a occupied dwelling 3¼ miles east of proposed well site.

F. Archeological, Historical and Cultural Sites: None observed in the area.

G. Land Use: Grazing and hunting in season.

H. Surface Ownership: Federal.

12. OPERATOR'S REPRESENTATIVE:

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

Bobby L. Searcy
506 N.W. 13th Place
Andrews, TX 79714
Home Phone: 915-523-5889
Office Phone: 915-682-9731

Guy Harrod
1201 W. Ave. "N"
Lovington, NM 88260
Home Phone: 505-396-3174
Office Phone: 915-682-9731

13. CERTIFICATION:

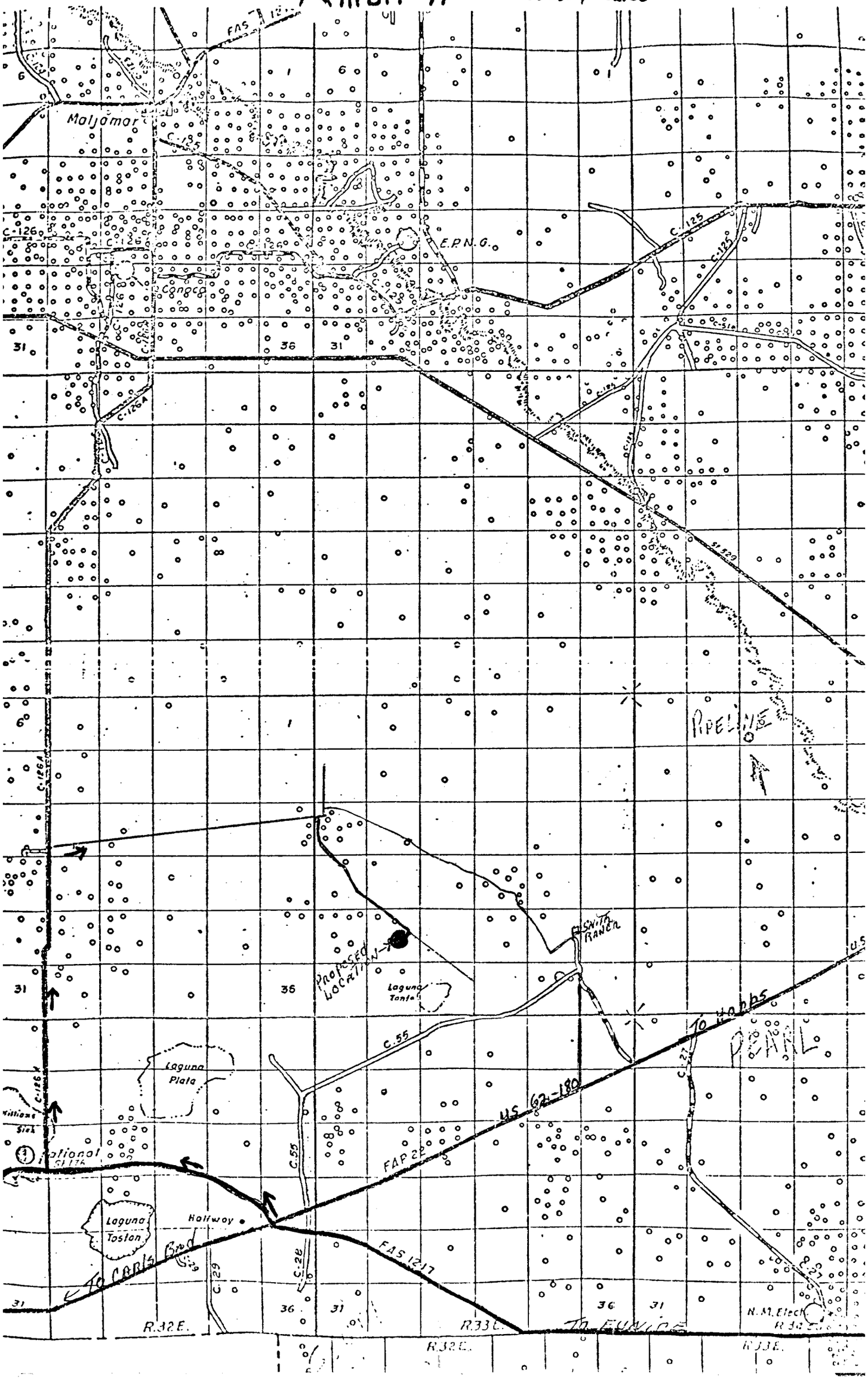
I hereby certify that I, or persons under by direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Union Oil Company of California and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved.

3-20-79
Date

Name and Title Drlg Supt.

Exhibit "A"

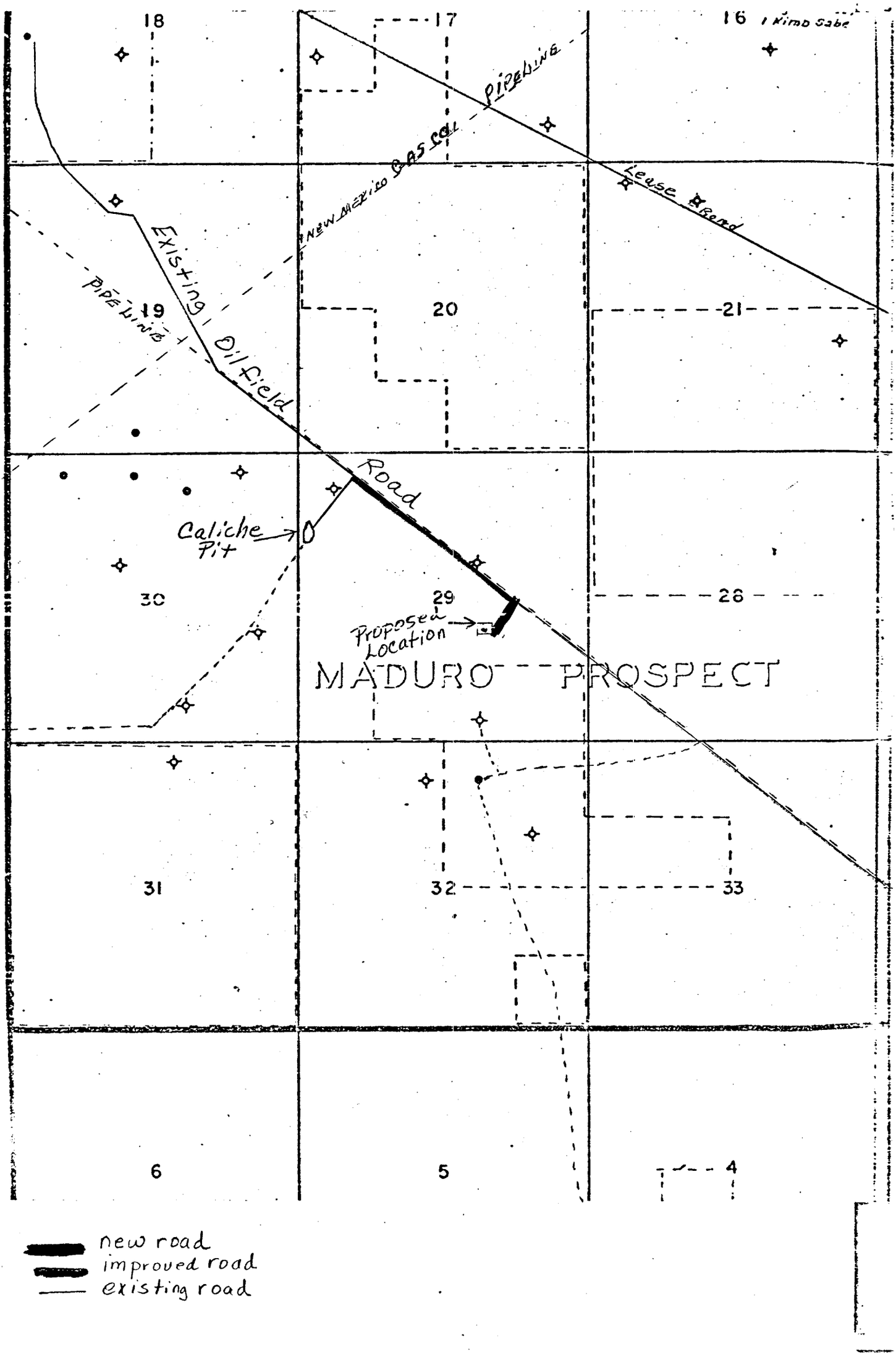
T-17-S, R-33-E, Lea County, New Mexico



Union Oil Company of California

Exhibit "B"

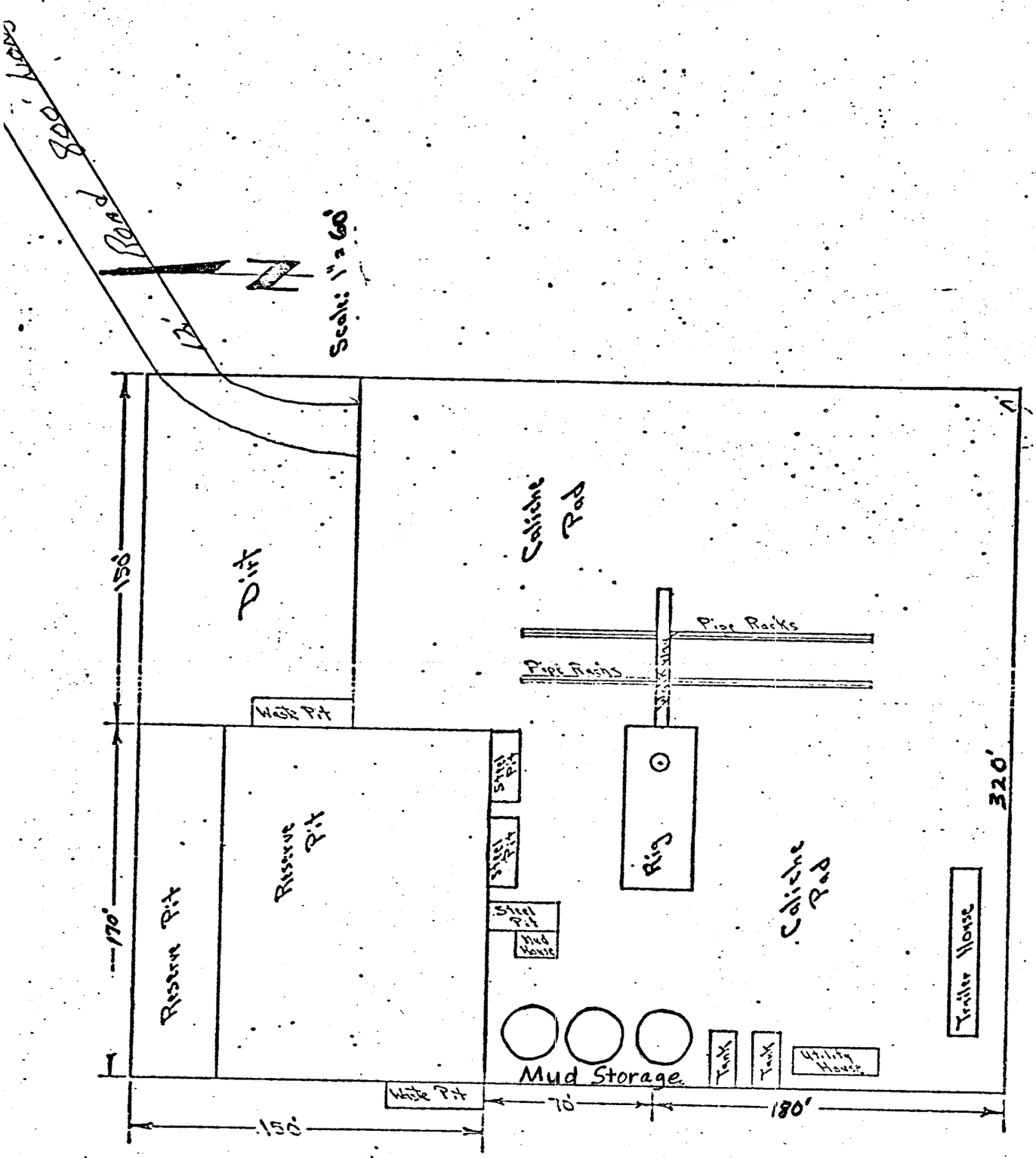
Maduro Federal Unit No. 1
1980' F_ & 1980' FEL, Section 29, T-19-S, R-33-E, Lea County, New Mexico



Madura Federal Unit No.

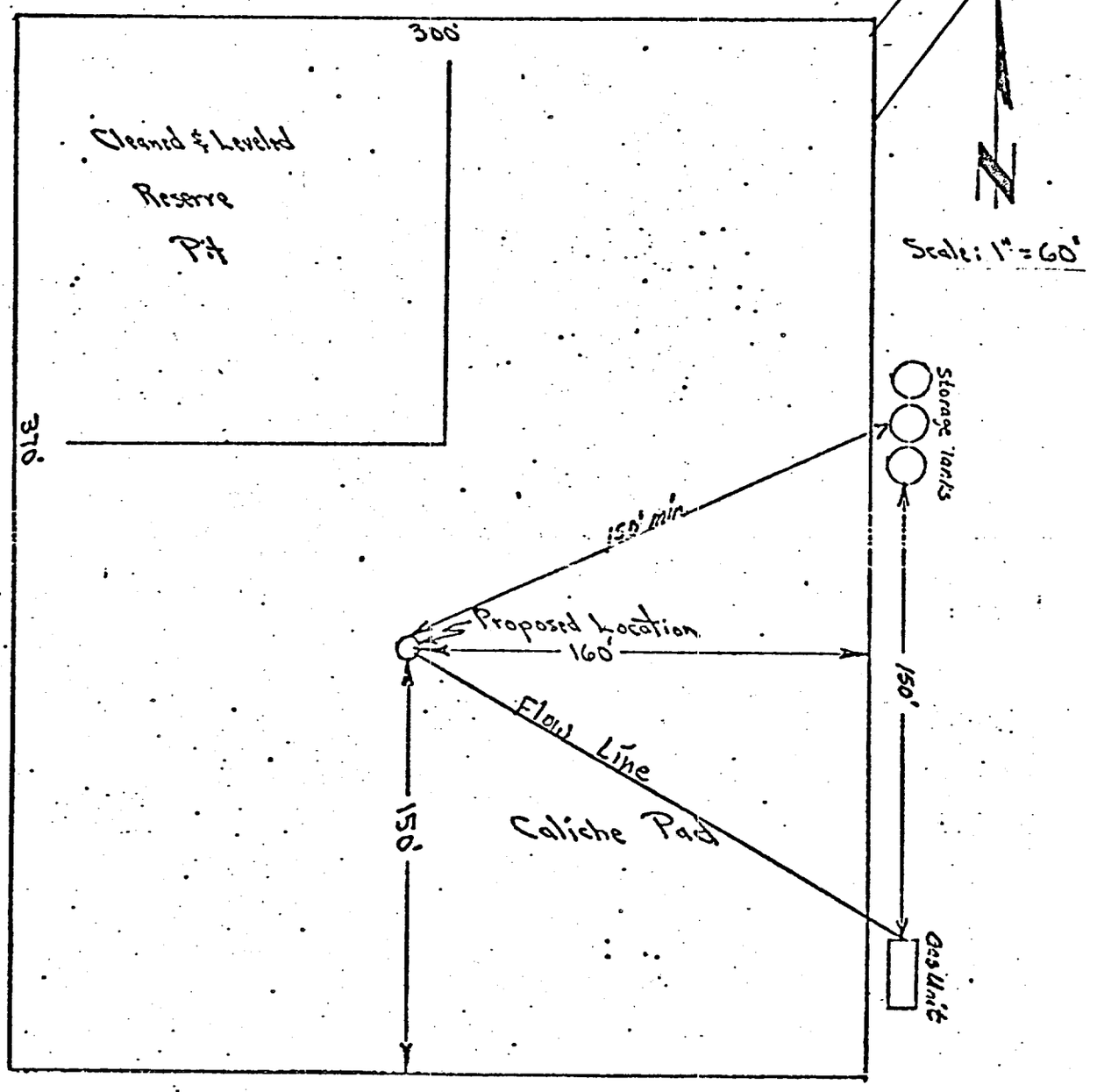
1980' FSL + 1980' FEL, Section 29, T-19-S, R-33-E,
Lea County, N M

EXHIBIT "C"



Maduro Federal Unit No. 1
1980' FSL + 1980' FEL, Section 29, T-19-S R-33-E,
Lea County, NM

EXHIBIT "D"



UNION OIL COMPANY OF CALIFORNIA

DISTRICT OFFICE - MIDLAND, TEXAS

DRILLING PROGRAM

Field: Wildcat

Location: 1980' FSL & 1980' FEL, Section 29, T-19-S, R-33-E, Lea County, New Mexico

Well Name: MADURO FEDERAL UNIT WELL NO. 1

Estimated Total Depth: 13,700'

Drilling Data: 10 foot time tabulated 2500' - TD or as directed

Samples: 10 foot - 2800' to TD or as otherwise directed

Estimated Formation Tops:

Yates	3000'	Strawn	12040'
Seven Rivers	3185'	Morrow	12880'
Bone Springs	7780'	Lower Morrow	13370'
Wolfcamp	10700'	Mississippian	13900'

Logs: BHC Sonic - 5300' to TD Gamma Ray to surface
Dual Laterolog 5300' to TD and FDC-CNL logs 5300' to TD

DSTs: (1) Bone Springs; (1) Wolfcamp; (1) Strawn; (2) Morrow

Cores: None

Deviation: Rate of change not to exceed 1°/100'

Casing & Mud Program:

Depth	Size Hole	Casing	Cement	W.O.C.	Mud Wt.	Vis.	W.L.
0'-~~500~~ 1270'	17-1/2"	13-3/8"	CIR~~450~~ sxs	18 hrs	As needed to spud		
500'-3600'	12-1/4"	-	-	-	10 ppg brine		
3600'-5300'	12-1/4"	9-5/8"	**3000 sxs	18 hrs	9.5-35	7% oil	
5300'-10000'	7-7/8"	-	-	-	Brine wtr		
10000'-TD	7-7/8"	5-1/2"	***750 sxs	6 hrs	10.10.2	36	<10

Rig to be released after nippling up 5-1/2" casing.

*Class "C" w/4% gel & 2% $CaCl_2$. Circ cmt. **1000 sxs lite wate w/5# gilsonite & ¼# flocele. Followed w/200 sxs Class "C" neat. Open DV tool, circ excess cmt to pit. Circ 6 hrs. Check for water flow & pres build up. Cmt 2nd stage thru DV tool @ 3600' w/1600 sxs lite wate cmt, 15# salt & ¼# flocele, followed by 100 sxs Class "C" neat. Calc cmt to surface csg. ***450 sxs lite wate .6% Halad 22 ¼# flocele, followed by 300 sxs Class "C" neat cmt .8% Halad 22 .4% CFR-2 5% KCL. (Calculated top of cmt @ 10,000').

NOTE: Changes in the above program will be at the direction of a qualified Union Oil Company of California representative and should be clearly indicated on the program posted at the rig.

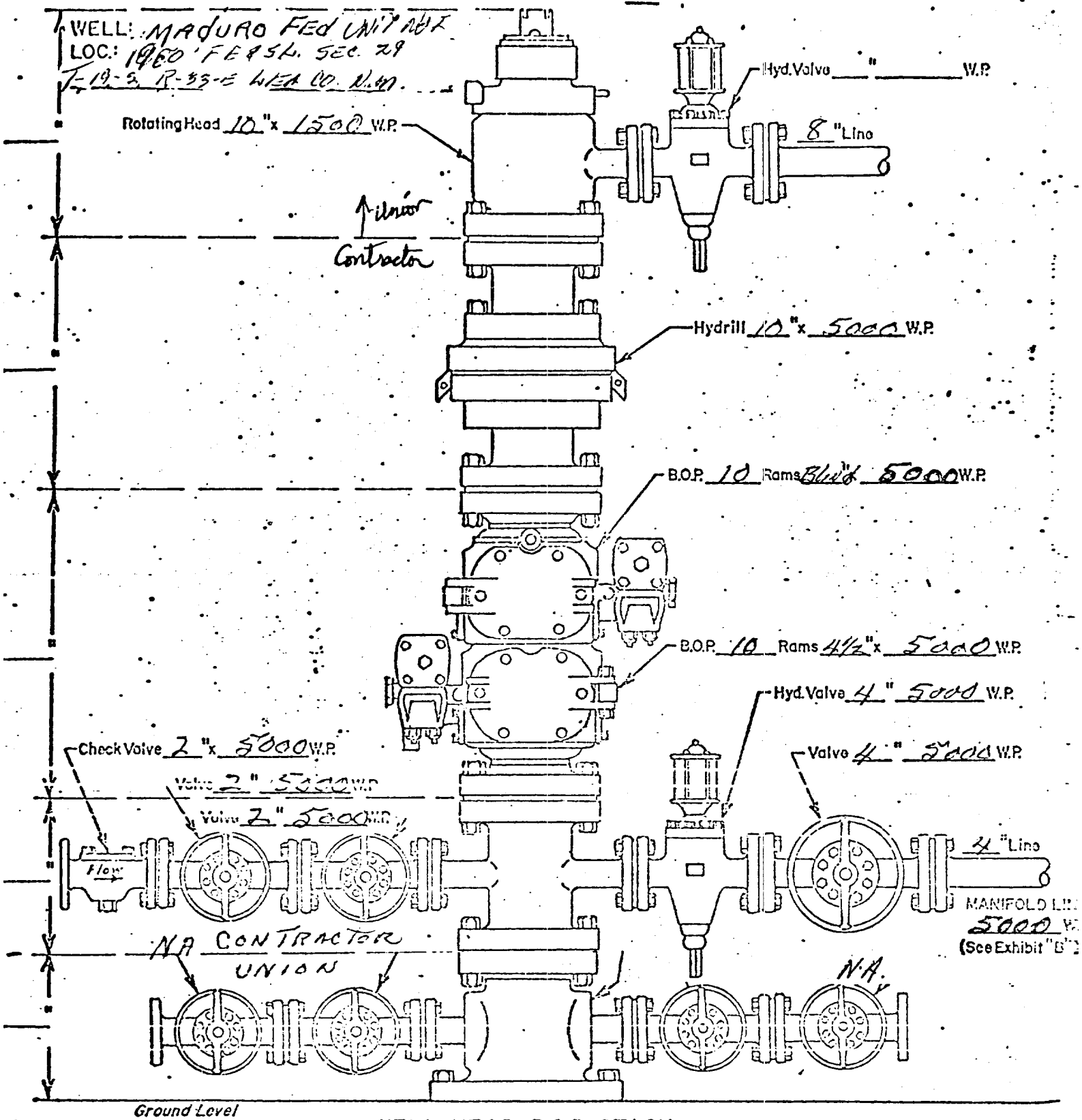
J. R. Hughes
District Drilling Superintendent

JRH:JLW:lb
2-16-79

LHP

UNION OIL COMPANY OF CALIFORNIA

EXHIBIT A



WELL HEAD B.O.P. STACK

5,000 W.P.

Drill 7⅞" hole

Form OR-15C
5/72

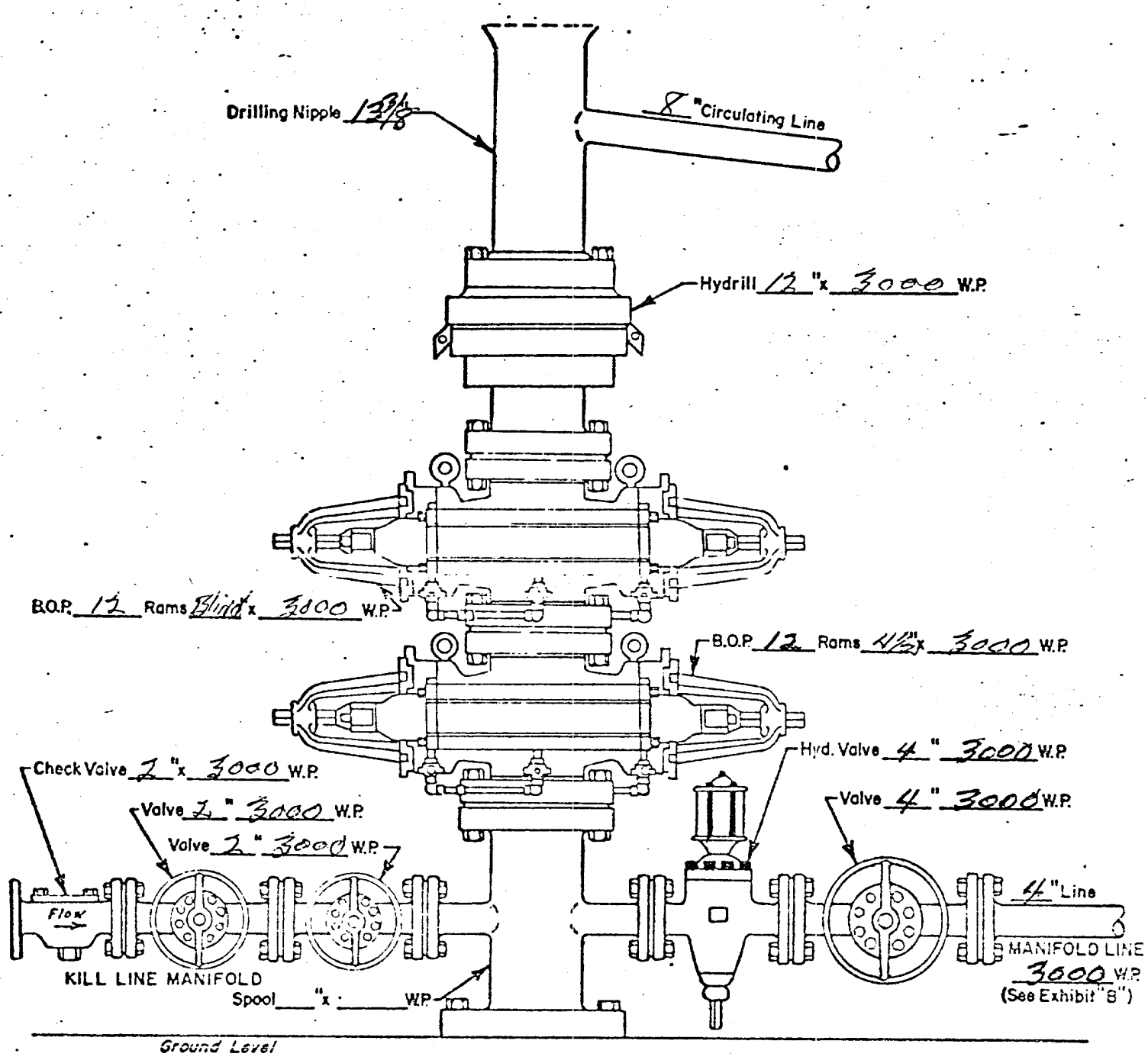
UNION OIL COMPANY OF CALIFORNIA

EXHIBIT A-___

WELL NAME: MADURO FED UNIT NO 1

LOCATION: 1980' FS & FEL SEC. 29

T-19-S, R-33-E LEA CO. N. MEX.



WELL HEAD B.O.P.

3000 # W.P.

☐ Manuel

☒ Hydraulic

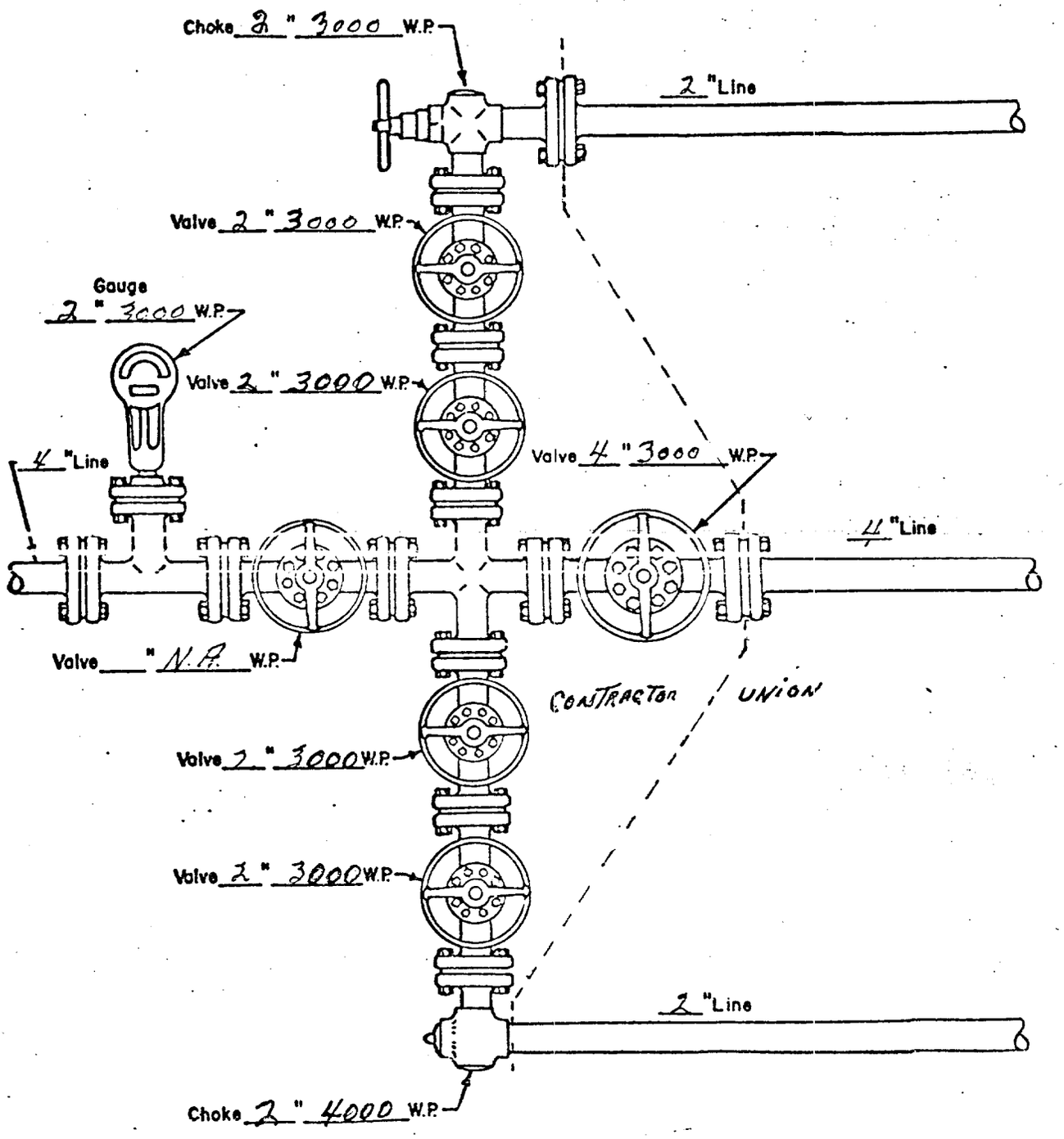
Form CR-23B
5/72

UNION OIL COMPANY OF CALIFORNIA

EXHIBIT B-___

WELL NAME: Madero Federal Unit No. 1

LOCATION: 1980' FSL & FEL, Section 29,
T-19-S, R-23-E, Lea County, New Mexico



MANIFOLD
3000 #W.P.

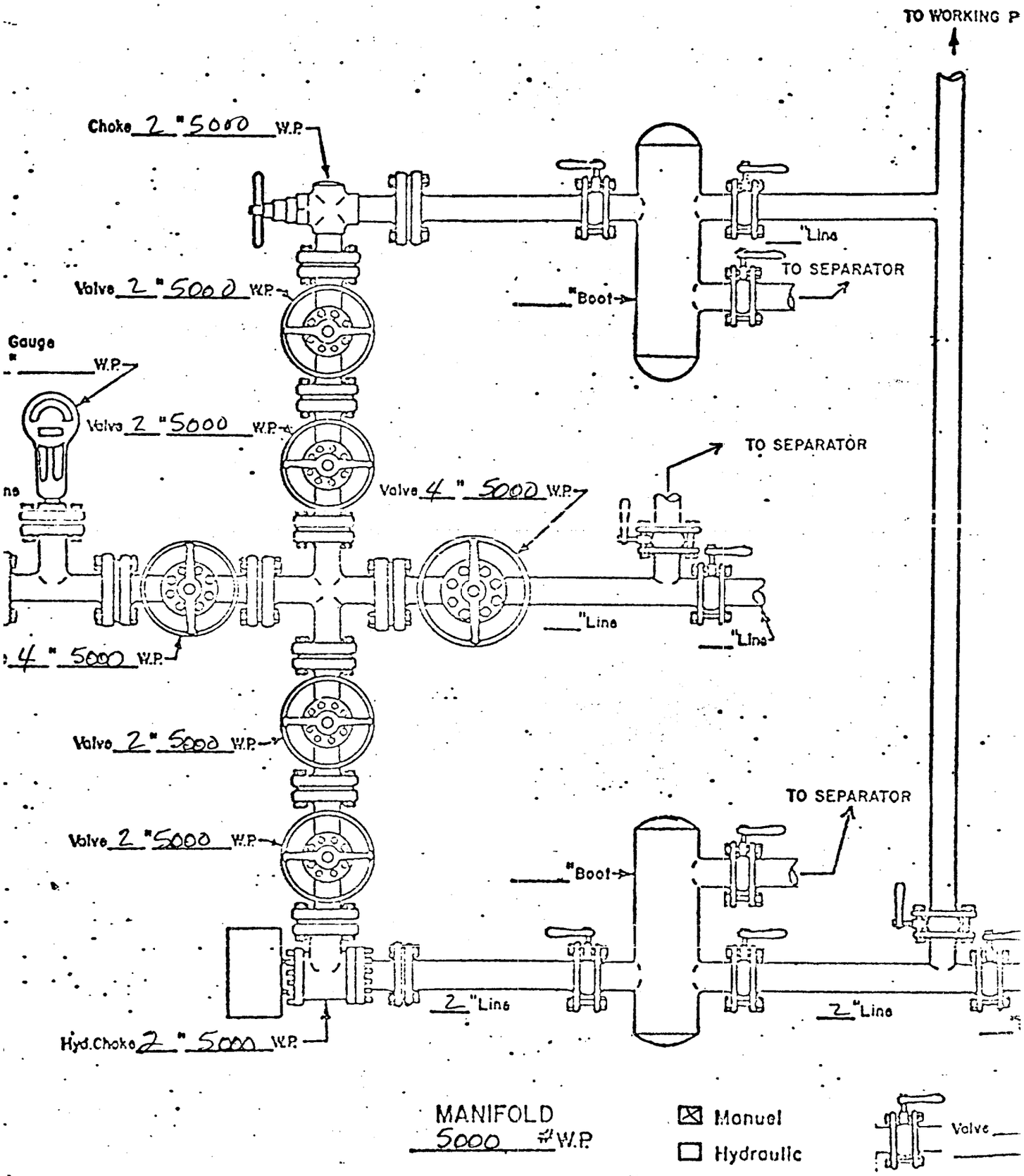
☒ Manuel
☐ Hydraulic

UNION OIL COMPANY OF CALIFORNIA

EXHIBIT B-___

WELL NAME: Madura Federal Unit No. 1

LOCATION: 1980' FSL & FEL, Section 29, T-19-S, R-33-E, Lea County, New Mexico



MANIFOLD
5000 #W.P

☒ Manuel
☐ Hydraulic

Valve ___

FORM CR-13
1/72

CASING AND TUBING DESIGN

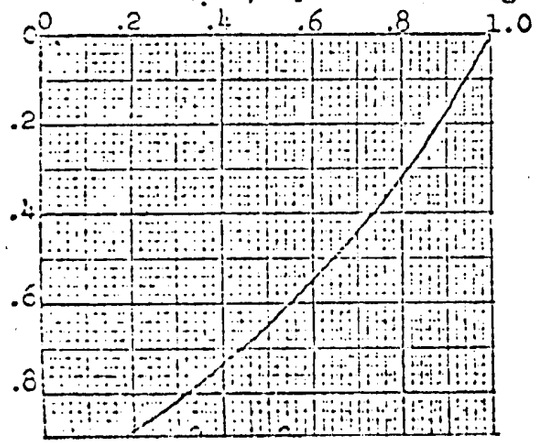
L Madura Fed Unit #1 FIELD Wildcat

SING STRING Surface COUNTY Lea STATE New Mexico DATE 2-16-79 DESIGN BY JKH

SING SIZE 13 3/8" HOLE SIZE 17 1/2" MUD WT. I 9.5 #/g. HYD GR. I .494 psi/ft. MUD WT. II 10 #/g. HYD. GR. II .52 psi/ft. M.S.P. Divert psi.

INTERVAL Bottom	Top	LENGTH	DESCRIPTION Wt.	Grade	Thread	WEIGHT W/ BF W/O BF lbs	TENSION -top of section lbs	MINIMUM STRENGTH TENSION 1000 lbs	TDF	COLLAPSE PRESS. @ bottom psi	COLLAPSE RESIST. tension psi	CDF	BURST PRESSURE psi	INTERNAL MINIMUM YIELD psi	BDF	PRICE PER FT.	COST
500'	0	500'	48#	H40	STC	24000	24000	322	1.46	247	770	3.11	0	1730			

Y=Tensile Load/Pipe Yield Strength



Formulae:

Collapse resistance in tension =
X (Collapse pressure rating)

Burst Pressure =
MSP + Depth (Hyd. Gr. II — .5)

BF (Bouyancy Factor) =
1.00 — (0.0153 X Mud Wt. I)

Calculations:

Total Cost _____

FORM CR-13
1/72

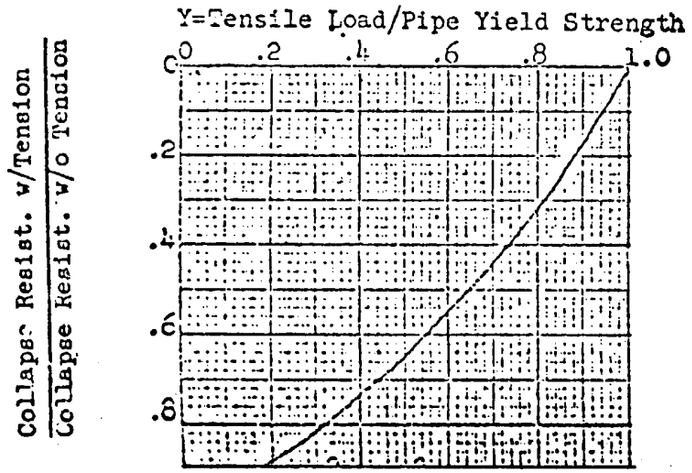
CASING AND TUBING DESIGN

WELL Madero Fed Unit #1 FIELD Wildcat

CASING STRING Production COUNTY Lea STATE New Mexico DATE 2-6-79 DESIGN BY JLW

CASING SIZE 5½" HOLE SIZE 7⅞" MUD WT. I 10.2 #/g. HYD GR. I .53 psi/ft. MUD WT. II 10.0#/g. HYD. GR. II .519 psi/ft. M.S.P. 7,000 psi.

INTERVAL Bottom	Top	LENGTH	DESCRIPTION Wt.	Grade	Thread	WEIGHT W/ BF W/O BF lbs	TENSION -top of section lbs	MINIMUM STRENGTH TENSION 1000 lbs	TDF	COLLAPSE PRESS. @ bottom psi	COLLAPSE RESIST. tension psi	CDF	BURST PRESSURE psi	INTERNAL MINIMUM YIELD psi	BDF	PRICE PER FT.	COST
12,700	10,400	3300'	17#	S-95	8RT	56,100	56100	392	7	7247	8360	1.15	7000	9190	1.29		
10,400	3200	7200'	17#	N-80	8RT	122,400	178500	348	1.94	5501	5846	1.06	7000	7740	1.43		
3200	0	3200'	17#	S-95	Butt.	54400	232,900	471	2.02	1692	6821	4.03	7000	9190	5.53		



Formulae:

Collapse resistance in tension =
X (Collapse pressure rating)

Burst Pressure =
MSP + Depth (Hyd. Gr. II —.5)

BF (Bouyancy Factor) =
1.00 — (0.0153 X Mud Wt. I)

Calculations:

Total Cost ____

FORM CR-13
1/72

CASING AND TUBING DESIGN

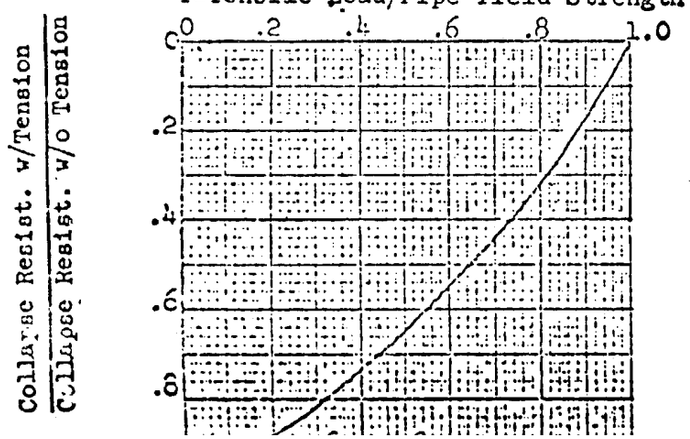
WELL Madero Fed Unit I FIELD Wildcat

CASING STRING Intermediate COUNTY Lea STATE New Mexico DATE 1-30-79 DESIGN BY JLG

CASING SIZE 9 5/8 HOLE SIZE 12¼" MUD WT. I 10.2 #/g. HYD GR. I .529 psi/ft. MUD WT. II 10.2 #/g. HYD. GR. II .529 psi/ft. M.S.P. 3000 psi.

INTERVAL Bottom	Top	LENGTH	DESCRIPTION Wt.	Grade	Thread	WEIGHT W/ BF W/O BF lbs	TENSION -top of section lbs	MINIMUM STRENGTH TENSION 1000 lbs	TDF	COLLAPSE PRESS. @ bottom psi	COLLAPSE RESIST. tension psi	CDF	BURST PRESSURE psi	INTERNAL MINIMUM YIELD psi	BDF	PRICE PER FT.	COST
5300	4200	1100'	40#	N-80	LT&C	44,000	44000	737	16.9	2803	3090	1.10	3125	5750	1.84		
4200	0	4300'	40	K-55	LT&C	168,000	212000	561	2.64	2225	2510	1.12	3100	3950	1.27		

Y=Tensile Load/Pipe Yield Strength



Formulae:

Collapse resistance in tension =
X (Collapse pressure rating)

Burst Pressure =
MSP + Depth (Hyd. Gr. II —.5)

BF (Bouyancy Factor) =
1.00 — (0.0153 X Mud Wt. I)

Calculations:

Total Cost ____