

NMOCC COPY

SUBMIT IN TRIPLICATE\*

(Other Instru  
reverse)Form approved.  
Budget Bureau No. 42 R1425.UNITED STATES  
DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

RECEIVED

NM 16633

DEC 14 1977

## APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK

DRILL ☒DEEPEN ☐PLUG BACK ☐

b. TYPE OF WELL

OIL  
WELL ☐GAS  
WELL ☒OTHER ☐SINGLE  
ZONE ☒MULTIPLE  
ZONE ☐

2. NAME OF OPERATOR

PETROLEUM DEVELOPMENT CORPORATION

3. ADDRESS OF OPERATOR

9720 B Candelaria NE, Albuquerque, New Mexico 87112

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*)

At surface

660' from the west line, 1980' from the north line; Sec. 34, T12S,  
At proposed prod. zone R30E.

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

16 miles SW from Caprock, NM

15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST  
PROPERTY OR LEASE LINE, FT.  
(Also to nearest drilg. unit line, if any)

660'

16. NO. OF ACRES IN LEASE

640

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.

none

19. PROPOSED DEPTH

10,000

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3925 G.L.

22. APPROX. DATE WORK WILL START\*

Jan. 3, 1978

## PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
28"	20"	conductor	40'	5 yds. concrete
17-1/2"	13-3/8"	48#	500'	700 c.f.
11"	8-5/8"	32# & 24#	2800'	1500 c.f.
7-7/8"	4-1/2"	11.6#	10,000'	475 sx.

Set 13-3/8" casing at approximately 500'; circulate cement to surface; WOC 8 hrs. Test BOP and surface casing to 500# for 30 min. before drilling out. Drill 11" hole to approximately 2800'; set and cement 8-5/8" intermed. casing, bringing top of cement at least back to base of surface casing. WOC 12 hrs. Test 8-5/8" casing and BOP to 1000#. Drill 7-7/8" hole to 10,000', testing all significant shows of oil or gas. Set 4-1/2" casing at approximately 10,000'. See attached mud program. Complete by jet perforating indicated pay intervals and acidizing or fracturing, as need is indicated.

A 1500 Series BOP and Hydrill with remote controls will be used. A rotating drilling head, PVT and flow sensors will be used for drilling Wolfcamp and below.

See attached supplemental multi-point drilling plan; mud program, Exhibit "E".

See attached preventer layout, Exhibit "D".

(Gas reserves from this lease are not dedicated).

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

TITLE Vice President

DATE 11/23/77

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

DEC 13 1977

APPROVED BY

TITLE

ACTING DISTRICT ENGINEER

DATE

DEC 13 1977

CONDITIONS OF APPROVAL, IF ANY:

THIS APPROVAL IS RESCINDED IF OPERATIONS  
ARE NOT COMMENCED WITHIN 3 MONTHS.  
EXPIRES MAR 13 1978

\*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.

Petroleum Development Corp.		Lease		Estelle Federal		Well No. 1	
Section	34	Township	12 South	Range	30 East	County	
E					Chaves		
Location of Well							
1980	feet from the	North	line and	660	feet from the	West	line
Producing Formation	Undesignated Gas				Dedicated Acreage:		
3925	Mississippi				320 Acres		

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

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U.S. GEOLOGICAL SURVEY  
ARTESIA, NEW MEXICO

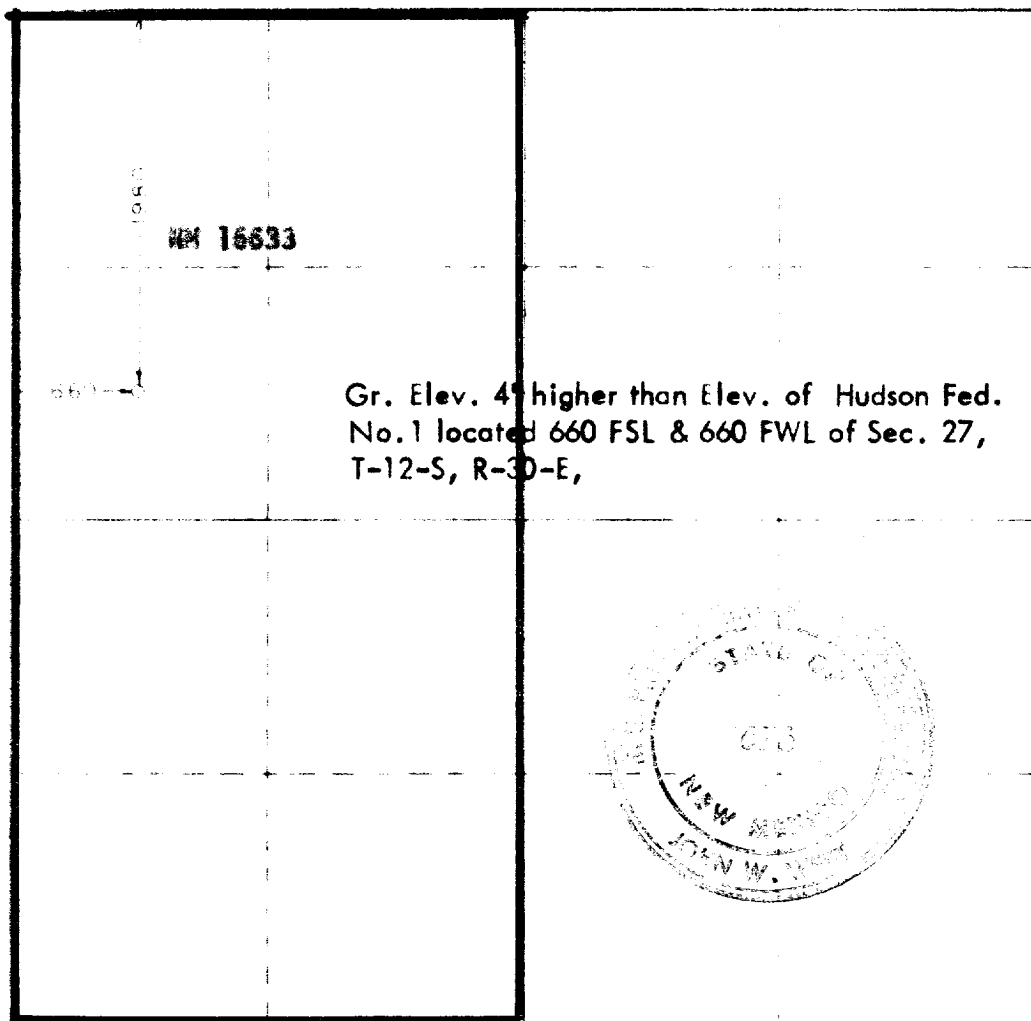
If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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?

Yes ☐ No ☐ If answer is "yes," type of consolidation \_\_\_\_\_

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

Allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, force-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.

*Charles W. Sanders*

Name  
**Charles W. Sanders**

Position  
**Vice President**

Company  
**Petroleum Development Corp.**

Date  
**November 23, 1977**

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.

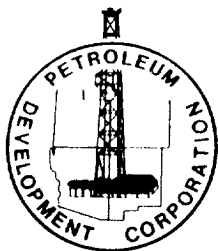
Date Surveyed  
**November 7, 1977**

Registered Professional Engineer and Land Surveyor

*John W. Watson*

676

660 190 1320 1650 1980 2310 2640 2000 1600 1200 800 0



# PETROLEUM DEVELOPMENT CORPORATION

9720-B CANDELARIA, NE  
ALBUQUERQUE, NEW MEXICO 87112  
TELEPHONE (505) 293-4044

## MULTI-POINT DRILLING PLAN

Petroleum Development Corporation  
Estelle Federal #1  
660' FWL & 1980' FNL, Sec. 34, T12S, R30E  
Chaves County, New Mexico  
Lease: NM 16633  
(640 acres)

This supplemental plan is submitted with the Application to Drill the above-described well in compliance with NTL-6 of the United States Department of the Interior.

1. The surface is composed of a fine-grained sand, quaternary in age.

2. Estimated top of primary geologic markers are:

Rustler	673	(+3270)
Salt	778	(+3165)
Queen	2133	(+1810)
San Andres	2726	(+1217)
Wolfcamp	7508	(-3536)
Pennsylvanian	8308	(-4365)
Mississippian	9768	(-5825)
Total Depth	9888	(-5945)

Estimated KB Elevation: 3943

3. The estimated depths at which anticipated water, oil or gas bearing formations are to be encountered, are:

0-300	poss. fresh water	Surface sands
8300-9600	poss. gas	Pennsylvanian sands
9780	gas	Mississippian lime

4. Proposed casing program: See Form 9-331C.

5. Pressure control equipment: See schematic, Exhibit "D". Before drilling the Wolfcamp formation, the BOP and related control equipment shall be pressure-tested to rated working pressures by an independent service company. The district office shall be notified in time to witness the tests. Pipe rams and the annular-type preventer shall be actuated at least once each 24 hours and the blind rams each time the drill pipe is out of the hole. Accumulators shall maintain a pressure capacity reserve at all times to provide for repeated operation of hydraulic preventers. Blowout prevention drills shall be conducted as necessary to insure that each drilling crew is properly trained to carry out emergency duties.

6. Mud program: See Exhibit "E".

7. Auxiliary equipment to be used:

- (1) Kelly cock.
- (2) Bit float.

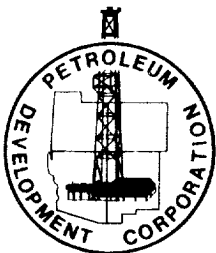
7. Auxiliary equipment to be used: (continued)

- (3) Pit volume totalizer system before reaching Wolfcamp.
- (4) Flow line flow sensor before reaching Wolfcamp.
- (5) Mud gas separator before reaching Wolfcamp.
- (6) Rotating head before reaching Wolfcamp.
- (7) Full-opening drill string safety valve on floor at all times before reaching Wolfcamp (valve in "open" position).

8. Testing, coring and logging program:

- (1) All significant shows of oil or gas will be drill-stem tested. Testing procedure will involve use of dual packers, jars and safety joint. Duration of test, shut-in times, etc. will be determined by company engineer in charge.
- (2) No coring is anticipated.
- (3) The following logs will be run:
  - a. CNL - density log with gamma ray.
  - b. Dual laterolog with microlaterolog.

- 9. No abnormal pressures are expected. No abnormal temperatures or free hydrogen sulfide gases are known to exist in the area.
- 10. Anticipated spud date is January 3, 1978. Drilling operations will require approximately 45 days; completion operations will require additional two weeks.



# PETROLEUM DEVELOPMENT CORPORATION

9720-B CANDELARIA, NE  
ALBUQUERQUE, NEW MEXICO 87112  
TELEPHONE (505) 293-4044

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U.S. GEOLOGICAL SURVEY  
ARTESIA, NEW MEXICO

## MULTI-POINT SURFACE USE AND OPERATIONS PLAN

Petroleum Development Corporation  
Estelle Federal #1  
660' FWL & 1980' FNL, Sec. 34, T12S, R30E  
Chaves County, New Mexico  
Lease: NM 16633  
(640 acres)

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 portion of the Vest Camp Quadrangle showing the location of the proposed well, as staked. NM 172 runs north-south, 7.6 miles east of the location of this well. The paved road connects with Maljamar to the south and Caprock to the north. An existing lease road services the recently-completed Hudson-Federal #1, one-half mile to the north.
- B. Exhibit "B" is a plat showing all existing roads and wells within a one-mile radius of the wellsite and the planned access.
- C. The existing lease road is currently in use and serviceable. Periodic grading will maintain the caliche topping. See Exhibits "A" and "B".

### 2. PLANNED ACCESS ROADS:

- A. Length and width: The access road, from the existing lease road, will be 12' wide and 1300' long. See Exhibit "C".
- B. Surfacing material: eight inches of caliche; watered, compacted and graded.
- C. Maximum grade: two percent.
- D. Turnouts: two equally-spaced passing turnouts will be used.
- E. Drainage design: new road will have a drop of six inches from center line on each side.
- F. Culverts: none necessary.
- G. Cuts and fills: none required; only general leveling of sand rolls.
- H. Gates, cattleguards: None required.

3. LOCATION OF EXISTING WELLS:

- A. Location of existing wells within a one-mile radius are shown on Exhibit "B".

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

- A. An existing tank battery is located at the Hudson Federal #1 well located approximately one-half mile to the north. The battery consists of two storage tanks, a low pressure separator and high pressure separator. The battery with flow lines is completely contained on the original drilling pad. The flow lines are not buried. These facilities are circled in red on Exhibit "B".
- B. If the well is productive, the tank battery and flow lines will be located on the well pad and no additional surface disturbance will occur. The battery will be similar to those described in "A" above.

5. LOCATION AND TYPE OF WATER SUPPLY:

- A. Water will be purchased and trucked to the wellsite over the existing and proposed roads shown on Exhibits "A" and "B".

6. SOURCE OF CONSTRUCTION MATERIALS:

- A. Caliche for surfacing the road and well pad will be obtained from existing pits on BLM land in Section 28, 1 mile to the northwest.

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.
- 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 "D".
- F. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

8. ANCILLARY FACILITIES:

- A. None required.

9. WELLSITE LAYOUT:

- A. Exhibit "D" 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 wellsite will be required. No significant cuts and fills will be necessary.
- C. 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 wellsite in an aesthetically pleasing condition as possible.
- B. Any unguarded pits containing fluids will be fenced until they are filled.
- C. After abandonment of the well, any special rehabilitation and/or revegetation requirements of the surface management agency will be complied with and accomplished as expeditiously as possible. All pits will be filled and leveled within 90 days after abandonment.

11. OTHER INFORMATION:

- A. Topography: Land surface is undulating to gently rolling and dunny. From an elevation of 3925' at the wellsite, the land surface slopes gently toward the west at about 40 feet per mile.
- B. Soil: Soil is a deep fine sand and underlain by caliche.
- C. Flora and Fauna: The vegetative cover is generally sparse and consists of mesquite, yucca, shinny oak, sandsage and perennial native range grasses. Wildlife in the area is that typical of semi-arid desert land and includes coyotes, rabbits, rodents, reptiles, dove, quail and an occasional antelope.
- D. Ponds and Streams: There are no rivers, streams, lakes or ponds in the area.

11. OTHER INFORMATION (continued):

- E. Residences and Other Structures: There are no nearby structures of any kind, except the production facilities mentioned in 4. A.
- F. Archeological, Historical and Cultural Sites: None observed in the area.
- G. Land Use: Grazing and hunting in season.
- H. Surface Ownership: Wellsite and all roads are on Federal Surface with exception of entrance from NM 172 which is on Fee Land (Larry Williams Ranch).

12. OPERATOR'S REPRESENTATIVES:

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

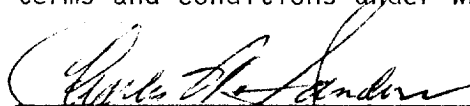
Charles W. Sanders  
3204 Candlelight Drive, NE  
Albuquerque, New Mexico 87111  
Office Phone: (505) 293-4044  
Home Phone: (505) 294-7538

J. C. Johnson  
3705 General Chenault, NE  
Albuquerque, New Mexico 87111  
Office Phone: (505) 293-4044  
Home Office: (505) 299-6029

13. CERTIFICATION:

I hereby certify that I, or persons under my 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 Petroleum Development Corporation and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved.

November 23, 1977

  
Charles W. Sanders  
Vice President



1/4 SW  
RANCH

400

55' 40"

630,000 FEET

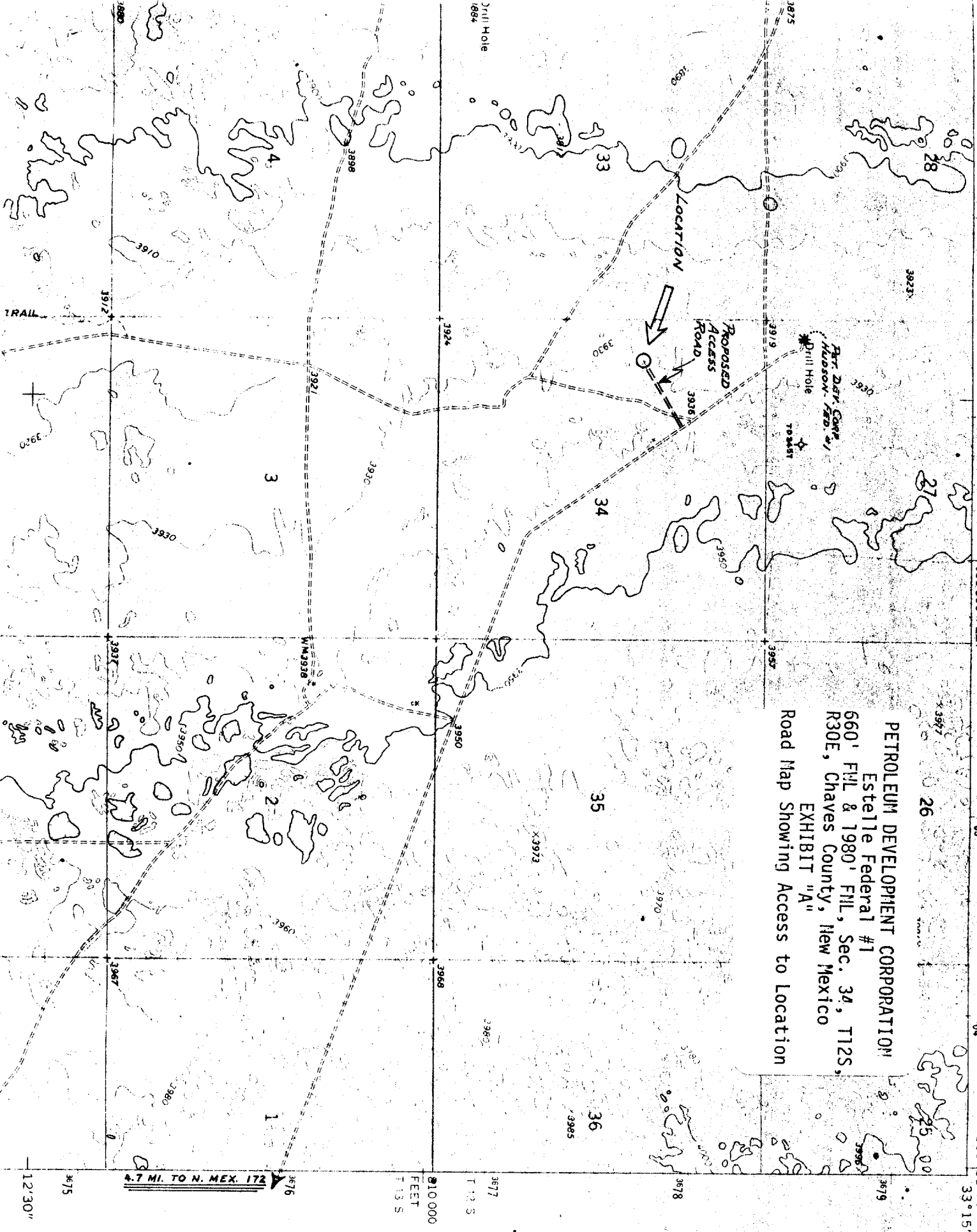
603

604

103° 52' 30"  
33° 15'

7.5 MINUTE SERIES (TOPOGRAPHIC)

PETROLEUM DEVELOPMENT CORPORATION  
Estelle Federal #1  
660' FWL & 1980' FNL, Sec. 34, T12S,  
R30E, Chaves County, New Mexico  
EXHIBIT "A"  
Road Map Showing Access to Location



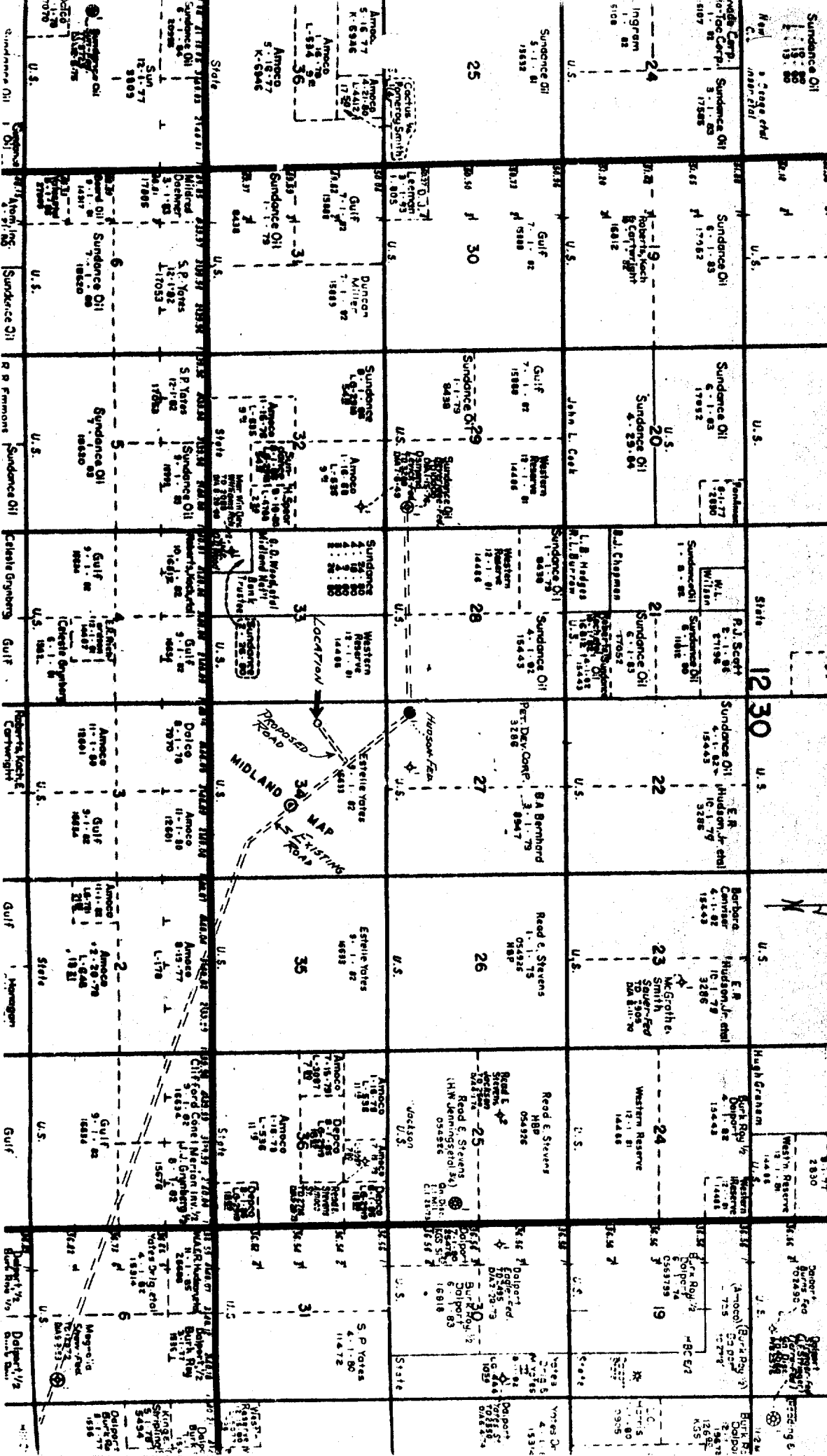
4.7 MI. TO N. MEX. 172

1:12,500  
FEET

12' 30"

PETROLEUM DEVELOPMENT CORPORATION  
 Estelle Federal #1  
 660' FWL & 1980' FNL, 34 - 12 - 30  
 Chaves County, New Mexico  
 EXHIBIT "B"  
 Plat Showing Roads, Location, Wells  
 Access

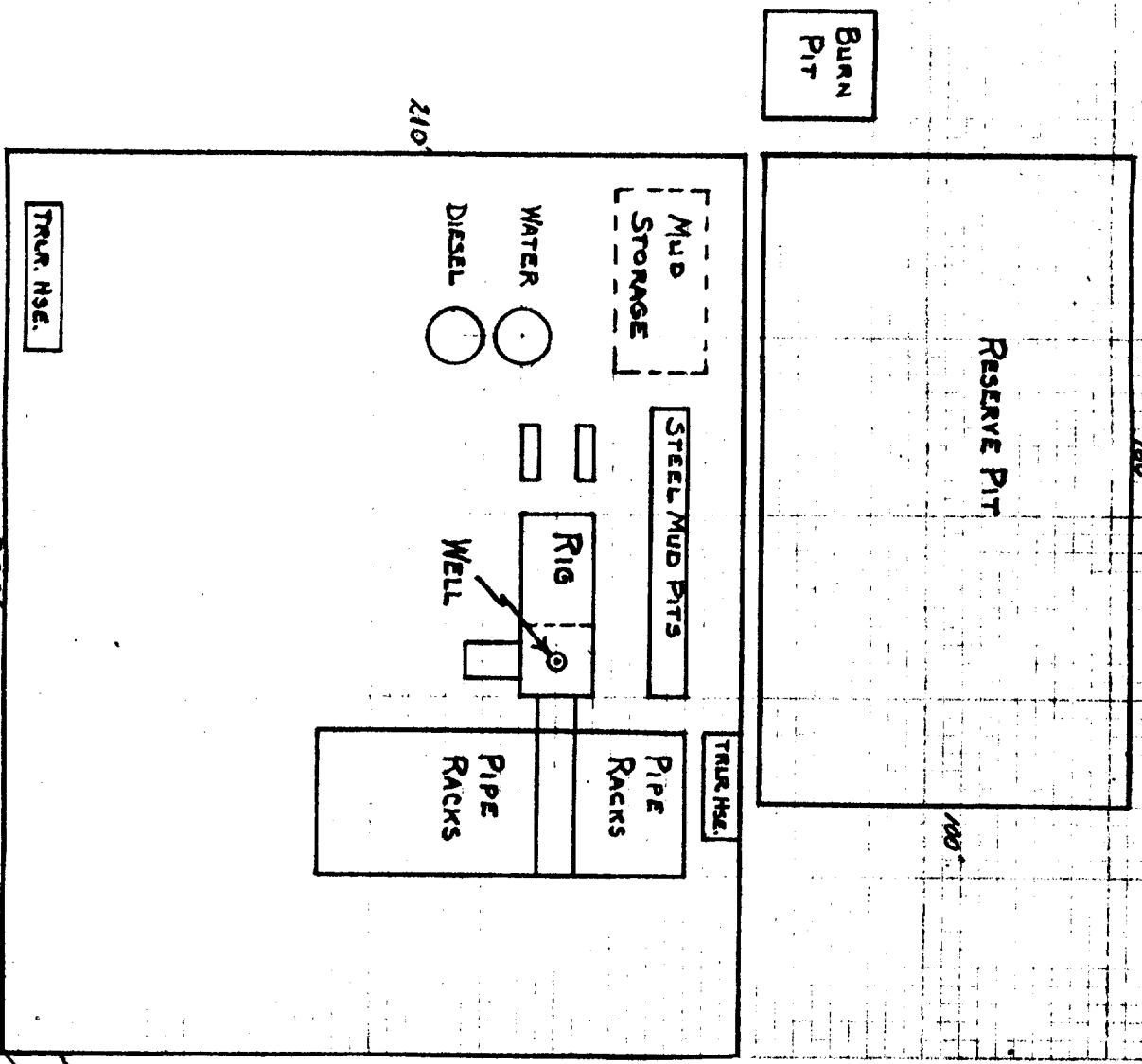
Scale: 1" = 4000'



Petroleum Development Corporation  
Estelle Federal #1  
660' FNL & 1980' FNL, Sec. 34, T12S,  
Chaves, County, New Mexico

EXHIBIT "C"

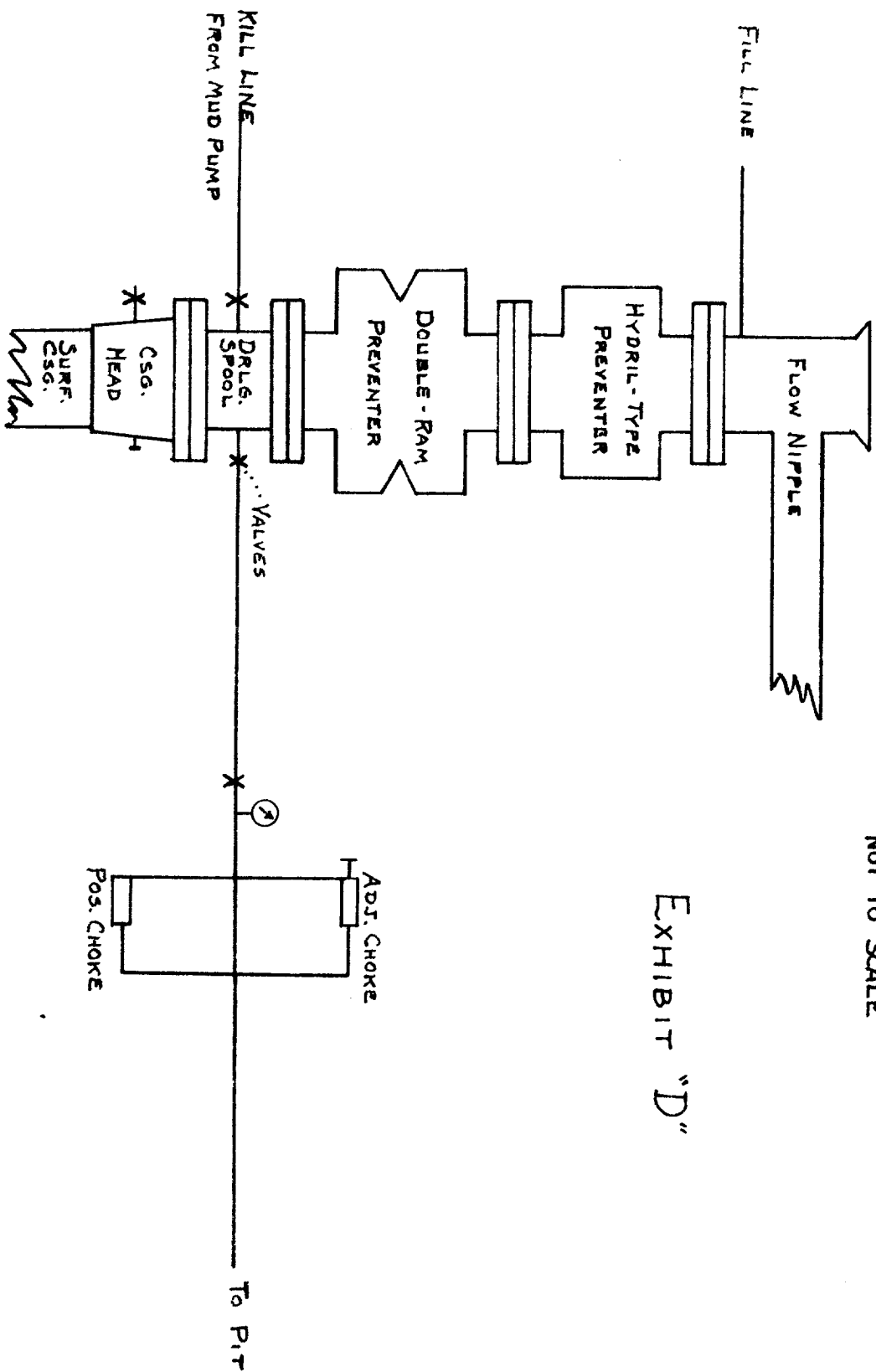
Proposed Location of Drilling Facility  
& Access Road



**EXHIBIT "C"**

SCALE: 1" = 50'

PETROLEUM DEVELOPMENT CORP.  
Estelje Federal #1  
660' FWL & 1980' FNL, 34-12-30  
Chaves County, New Mexico



B.O.P. & CHOKE MANIFOLD SCHEMATIC  
SERIES 1500  
TO MEET SPECS. OF API BUL. D-13

NOT TO SCALE

EXHIBIT "E"

PETROLEUM DEVELOPMENT CORPORATION  
Estelle Federal #1  
660' FWL & 1980 FNL, Sec. 34, T12S, R30E  
Chaves County, New Mexico  
Lease: NM 16633  
(640 acres)

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MUD PROGRAM

- 0-500 Gel and lime spud mud. No problems anticipated.
- 500-2800 Drill out below surface casing with the "spud mud" used in the surface hole, converting to a native mud as drilling progresses.
- Natural salt will increase weight to 10-10.4 #/gal. Maintain a 33-35 sec. viscosity, staying in steel pits. Below 800' add about 3 sacks of paper per tour to help control filter-cake buildup. Add 3 to 4% oil to system below 1200'.
- For any unanticipated hole trouble, or testing, fluid loss should be reduced to 15 cc or less, and viscosity should be increased to 34-37 sec. Before logging the intermediate hole, flush hole with a viscous sweep.
- 2800-6150 Fresh water with Caustic for pH control. Flush the hole with a viscous sweep prior to any DST. The probable occurrence of salt stringers in the San Andres will preclude keeping weight low and, in the lower portions of the hole after mudding up, mud weight will approach 10 #/gal. Circulate reserve pit for this interval.
- 6150-8200 Mud up in steel pits for control of Abo shale section with a low solids salt gel, oil-type mud having the following characteristics:
- |              |              |
|--------------|--------------|
| Weight:      | 8.9-10 #/gal |
| Viscosity:   | 38-40 sec.   |
| Water loss:  | No control   |
| Oil Content: | 5% to 7%     |
- (Note: About 80 bbls. oil needed at 6150, add 10-15 bbls. every other day).
- 8200-9800 Take water loss control (10 cc or less) for drilling the Pennsylvanian sands section. Otherwise, the fluid will be the same as for drilling the Abo shale section. This fluid should be sufficient to drill, test and log to a depth of 9800'.