Form 9-331 C
(May 1963)

NMOCC COPY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

30-015-22358

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

RECEIVED
NOV 22 1977
ARTESIA, OFFICE

5. LEASE DESIGNATION AND SERIAL NO.: NM 9531C

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

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

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

8. FARM OR LEASE NAME: Mahun-Federal

2. NAME OF OPERATOR: PETROLEUM DEVELOPMENT CORPORATION

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: 9720-B Candelaria, NE, Albuquerque, New Mexico 87112

10. FIELD AND POOL, OR WILDCAT: Undesignated Morrow

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 2250' from the south line, 786' from the east line, Section 27, T21S, R22E
At proposed prod. zone: Same

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 27, T21S, R22E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 25 miles south of Hope, New Mexico

12. COUNTY OR PARISH: Eddy

13. STATE: New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	786'	16. NO. OF ACRES IN LEASE: 320	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: 9600	20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 4259 G.L.

22. APPROX. DATE WORK WILL START*: Nov. 12, 1977

23. 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
17½"	13-3/8"	48#	200'	300 c.f.
12¼"	8-5/8"	24#	2000'	1700 c.f.
7-7/8"	5½"	17#	9600'	250 sx

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ARTESIA, NEW MEXICO

Set 13-3/8" casing at approximately 200', circulate cement to surface. WOC 8 hrs. Test BOP and surface casing to 500# for 30 min. before drilling out. Drill 12¼" hole to approximately 2000'; set and cement 8-5/8" intermed. casing. WOC 12 hrs. Test 8-5/8" casing and BOP to 3000#. 8-5/8" casing will be cemented to surface.
Drill 7-7/8" hole to 9600', testing all significant shows of oil or gas. Set 5-1/2" casing at approximately 9600'. See attached mud program.
Complete by jet perforating indicated pay intervals and acidizing or fracturing, as needed is indicated.
A 1500-series BOP and Hydril with remote controls will be used. A rotating drilling head PVT and flow sensors will be used for drilling Wolfcamp and below.
See attached preventer layout, Exhibit "D".
See attached supplemental multi-point drilling plan; mud program, Exhibit "E".

Gas rules not declared

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: Charles W. Sanders — TITLE: Vice President — DATE: 10/21/77

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE: NOV 17 1977

APPROVED BY: Lee D. Lara — TITLE: ACTING DISTRICT ENGINEER — DATE: NOV 17 1977

CONDITIONS OF APPROVAL, IF ANY:

DECLARED WATER BASIN

*See Instructions On Reverse Side

THIS APPROVAL IS RESCINDED IF OPERATIONS ARE NOT COMMENCED WITHIN 3 MONTHS.
EXPIRES FEB 17 1978

NOTIFY USGS IN SUFFICIENT TIME TO WITNESS CEMENTING THE 8 5/8" CASING

CEMENT BEHIND THE 13 3/8" & 8 5/8" CASING MUST BE CIRCULATED

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.
Petroleum Developement Corp.	Mahun Federal	1

Unit Letter	Section	Township	Range	County
I	27	21 South	22 East	Eddy

Actual Footage Location of Well:
786 feet from the East line and 2250 feet from the South line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4259.2	Morrow	Undesignated Morrow	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?

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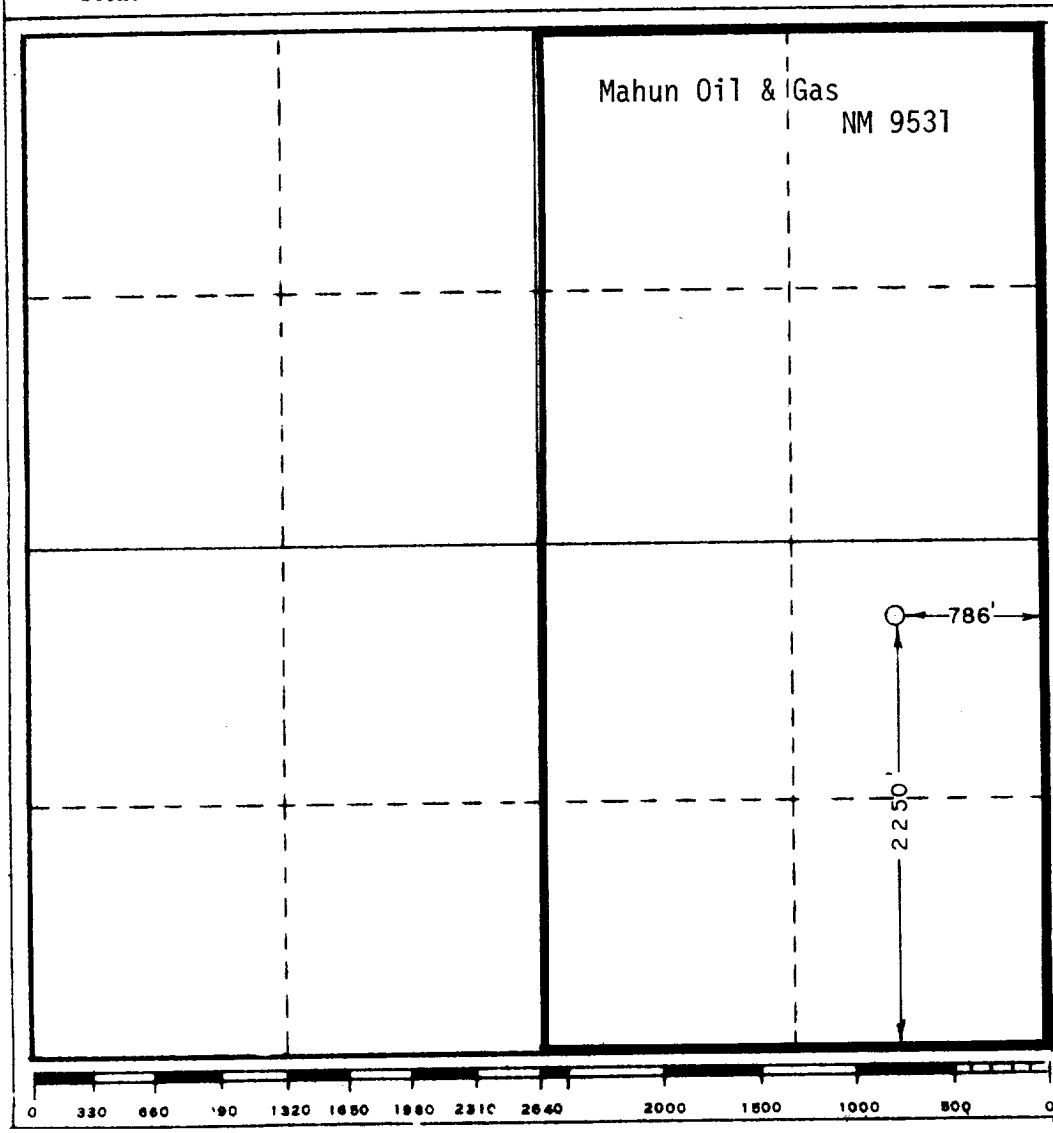
ARTESIA, NEW MEXICO

☐ 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.) _____

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.

Name: Charles W. Sanders
Position: Vice President
Company: Petroleum Development Corp.
Date: October 21, 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: October 17, 1977
Registered Professional Engineer and/or Land Surveyor
John W. West
Certificate No. 676

PETROLEUM DEVELOPMENT CORP.
Mahun Federal #1
2250' FSL, 786' FEL, Section 27,
T21S, R22E, Eddy County, New Mexico

B.O.P. & Choke Manifold Schematic
Series 1500
To meet Specs. of API Bul. D-13

NOT TO SCALE

EXHIBIT "D"

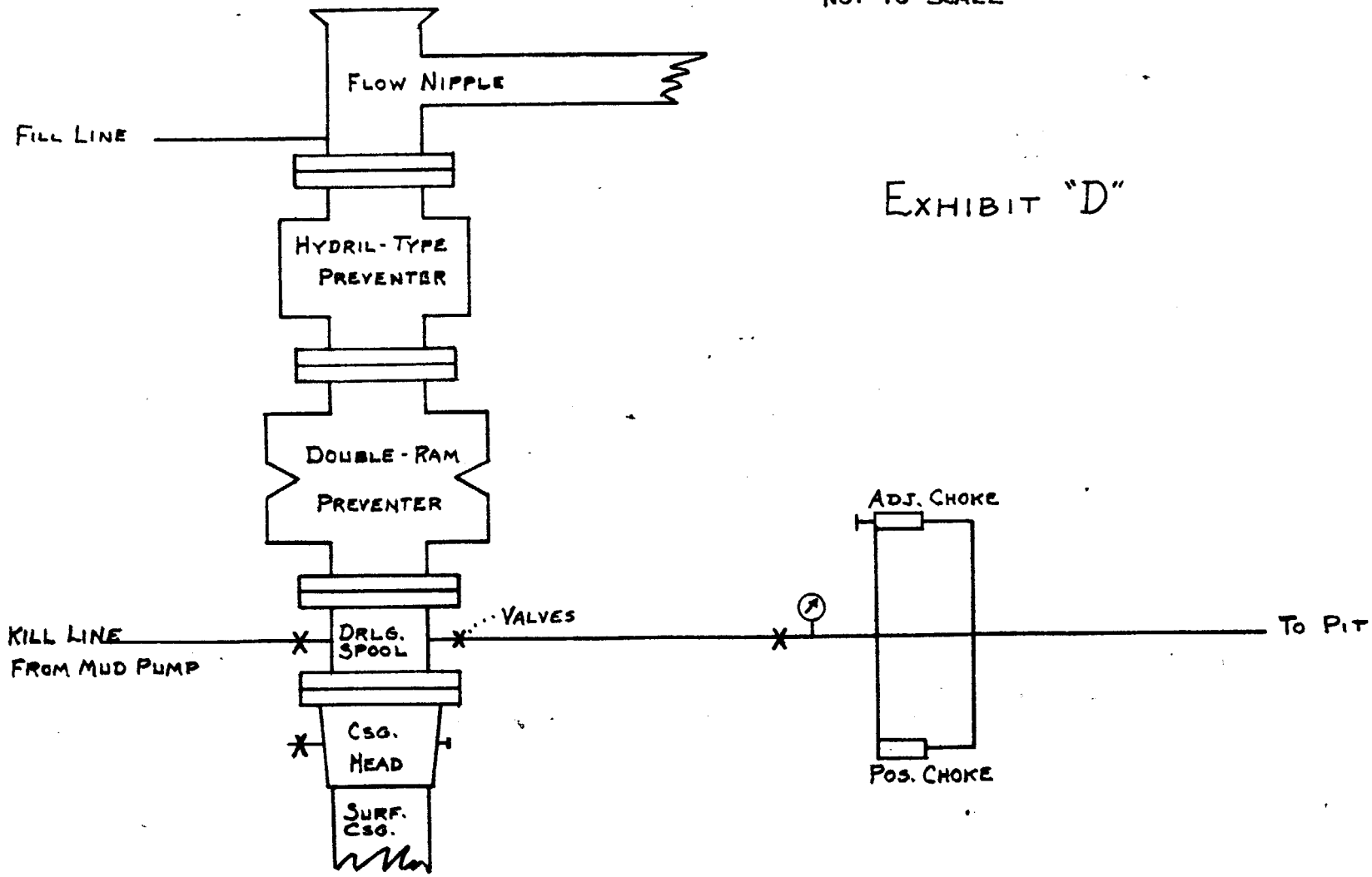


EXHIBIT "E"

PETROLEUM DEVELOPMENT CORPORATION
Mahun Federal #1
2250' FSL & 786' FEL, Sec. 27, T21S, R22E,
Eddy County, New Mexico

MUD PROGRAM

0-200' Fresh water gel and lime spud mud, 40-50 sec. viscosity, lost circulation material, if needed.

200-2000' Fresh water with paper to control seepage. Prior to running intermediate casing, mix and pump a 300-bbl. sweep of LCM with cottonseed hulls (40 sec. visc.). An unconsolidatedsand sometimes occurs near the base of the San Andres (1800-2000'). If this occurs while dry-drilling, gel should be mixed to maintain 33 sec. viscosity to prevent drill pipe sticking.

2000-5000' Fresh water

5000-7000' Fresh water with 2% to 3% KCL.

7000-9000' Maintain 2% to 3% KCL, 33 sec. visc., 15-20 cc water loss, weight about 8.8#/gal.

9000-TD Reduce water loss to below 10 cc, maintain visc. as needed to clean hole and control shale, weight about 9.0-9.2#/gal.

Note: Shale problems below 5000' can be moderate to severe in the area. It may be necessary to convert to a cut-brine mud for additional weight to control this problem.

PETROLEUM DEVELOPMENT CORPORATION

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

MULTI-POINT DRILLING PLAN

Petroleum Development Corporation

Mahun Federal #1
2250' FSL and 786' FEL, Sec. 27, T21S, R22E
Eddy County, New Mexico
Lease: NM 9531C

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 limestone rocks and finely broken limestone, Grayburg in age.

2. Estimated top of primary geologic markers are:

San Andres	78	(+4200)
Glorieta	1698	(+2580)
Bone Spring	2750	(+1528)
Wolfcamp	4978	(- 700)
Cisco	7135	(-2857)
Canyon	7650	(-3372)
Strawn	7815	(-3537)
Atoka	8490	(-4212)
Morrow Lime	8838	(-4560)
Chester	9449	(-5171)

Estimated KB Elevation: 4278

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

0-78'	water	Grayburg
78-1698'	water	San Andres
8300'	gas	Strawn
9100'	gas	Morrow

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.
   (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 gama ray.
      b. Dual laterolog.
      c. Microlaterolog, selected intervals.

9. No abnormal pressures are expected, judging from a study of all nearby wells; however, abnormal pressures can occur in the Wolfcamp and below in the general area. Special safety equipment and gas handling equipment will be used while drilling below the top of the Wolfcamp formation (see #5, #7 and Exhibit "E".)

10. Anticipated spud date is November 12, 1977. Drilling operations will require approximately 40 days; completion operations will require an additional two to three weeks.

EXHIBIT "A"
Petroleum Development Corporation
Mahun Federal #1
2250' FSL, 786' FEL, Section 27,
T21S, R22E, Eddy County, NM