N. M. Oil Cons. Division
ARTESIA, (See other instructions on reverse side)

Form 3160-3
(July 1992)

FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM 11-26-96

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK: DRILL ☒ DEEPEN ☐

b. TYPE OF WELL: OIL WELL ☒ GAS WELL ☐ OTHER — SINGLE ZONE ☒ MULTIPLE ZONE ☐

2. NAME OF OPERATOR: Pogo Producing Company 17891 DEC 23 '96

3. ADDRESS AND TELEPHONE NO.: P.O.Box 10340, Midland, Texas 79702

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 330' FNL & 730' FWL of Section 24
At proposed prod. zone: Same Unit D

5. LEASE DESIGNATION AND SERIAL NO.: NM-81586

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME, WELL NO.: 20109 #1 Riverbend "24-D" Federal

9. API WELL NO.: 30-015-29321

10. FIELD AND POOL, OR WILDCAT: Pierce Crossing (Bone Springs) 96473 EAST

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 24, T-24S, R-29E

12. COUNTY OR PARISH: Eddy Co. 13. STATE: N.M.

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 5 miles east southeast of Malaga, N.M.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
330'	1040	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
1890'	8250'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3063' Ground Level

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

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48# H-40	500'	600 sx (circ) WITNESS
11"	8-5/8"	24,32 J-55	2950'	1200 sx (circ)
7-7/8"	5-1/2"	15.5,17# J55,N80	8250'	900 sx (1900')

CARLSBAD CONTROLLED WATER BASIN

The operator proposes to drill to a depth sufficient to test the Delaware and Bone Springs for oil. Specific programs are outlined in the following attachments:

DRILLING PROGRAM
SURFACE USE AND OPERATING PLAN
EXHIBIT A - ROAD MAP
EXHIBIT B - EXISTING WELL MAP
EXHIBIT C - LOCATION AND ACREAGE DEDICATION PLAT
EXHIBIT C-1 TOPO MAP
EXHIBIT D - DRILLING AND RIG LAYOUT
EXHIBIT E - 3M BOP EQUIPMENT

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

RECEIVED
96 NOV 25 AM 9:12
070 FARMINGTON, NM

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, 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 Jerry W. C. Pierce TITLE Agent DATE 11/23/96

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY (ORIG. SGD.) TONY L. FERGUSON TITLE ADM, MINERALS DATE 12-18-96

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the

DISTRICT I
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
P.O. Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-102
Revised February 10, 1994
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-29321	96473	Pierce Crossing (Bone Spring), EAST

Property Code	Property Name	Well Number
	RIVERBEND 24-D FEDERAL	1

OGRID No.	Operator Name	Elevation
017891	POGO PRODUCING COMPANY	3063

Surface Location

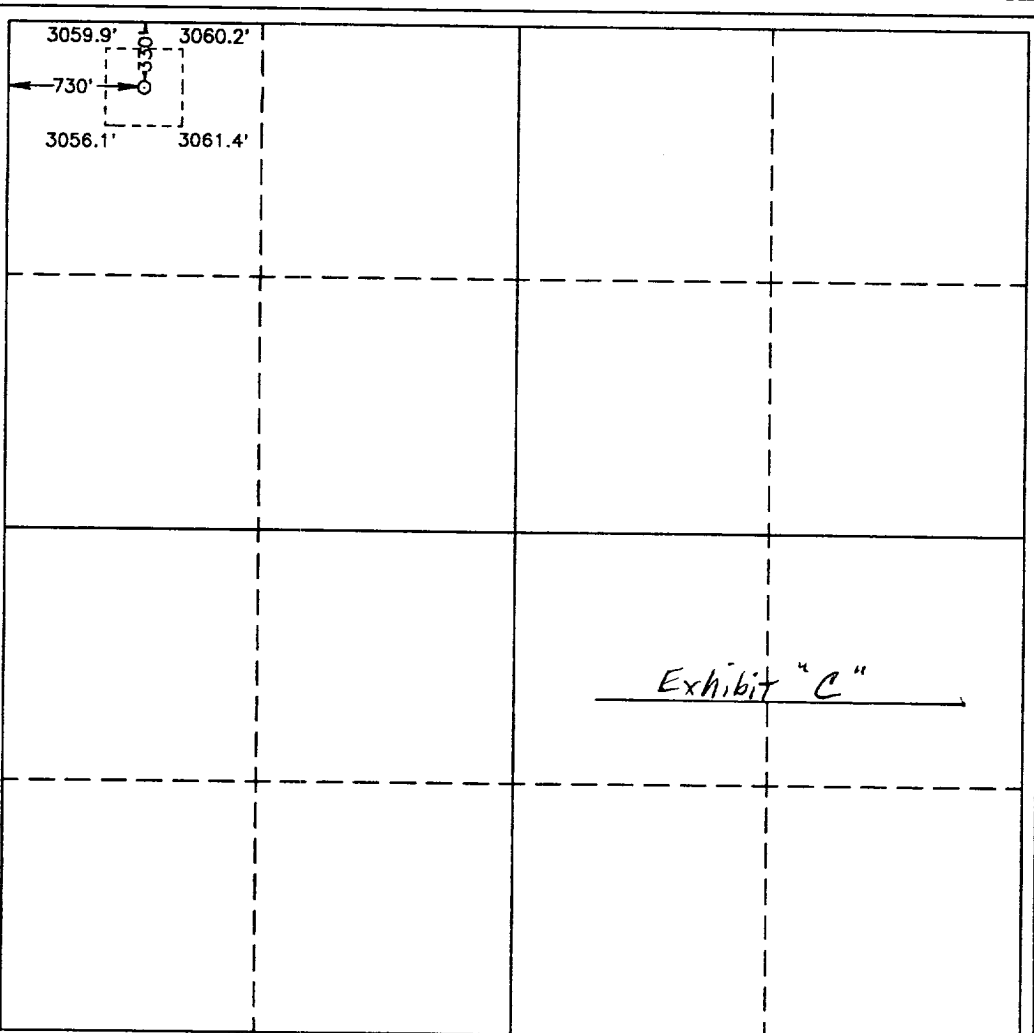
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	24	24 S	29 E		330	NORTH	730	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

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

James M.C. Ritchie Jr.
Signature

James M.C. Ritchie Jr.
Printed Name

AGENT
Title

11/23/96
Date

SURVEYOR CERTIFICATION

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 supervison, and that the same is true and correct to the best of my belief.

OCTOBER 16, 1996

Date Surveyed JLP

Signature & Seal of Professional Surveyor

Ronald J. Eidson 10-21-96

NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR RONALD J. EIDSON

W.O. Num. 96-11-1335

Certificate No. JOHN W. WEST, 676
RONALD J. EIDSON, 3239
GARY G. EIDSON, 12641

DRILLING PROGRAM

Attached to Form 3160-3

Pogo Producing Company

Riverbend "24-D" Federal No. 1
330' FNL & 730' FWL
Unit Letter D, NW/NW
Section 24, T24S, R29E
Eddy County, New Mexico

1. **Geologic Name of Surface Formation:** Permian

2. **Estimated Tops of Important Geologic Markers and**
3. **Estimated Depths of Fresh Water, Oil, and Gas:**

Formation	Depth	Fluid Content
Permian	Surface	Fresh water at +250'
Rustler Anhydrite	500'	-----
Top of Salt	900'	-----
Base of Salt	2800'	-----
Lamar Lime	3250'	-----
Delaware Sands	3400'	-----
Bone Spring	7800'	Oil
Total Depth	8250'	

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 500' into the Rustler anhydrite and circulating cement to surface. Potash will be protected by setting 8-5/8" intermediate casing at 2950' and circulating cement to surface. 5-1/2" production casing will be set at TD, and cement will be brought back to at least 2000', thus ensuring that all zones are adequately isolated. The pore pressure gradient is normal (+8.4 ppg) down through the Bone Springs. No abnormal pressures are anticipated.

4. **Casing and Cementing Program**

Hole Size	Casing From	To	Casing OD	Weight, Grade, Coupling, Cond,
17-1/2"	0'	500'	13-3/8"	48 # H-40 STC
11"	0'	2,950'	8-5/8"	24,32# J-55 LTC
7-7/8"	0	8,250'	5-1/2"	15.5,17# J55 & N-80 LTC

All used casing will be drifted and hydrostatically tested to at least 90% of new pipe rating.

Minimum Design Factors: Collapse 1.125, Burst 1.1, Tension 1.7

13-3/8"surface casing set at 500'
The surface casing will be set into the Rustler anhydrite to protect all fresh water formations.
Centralize the bottom 3 joints and every 4th joint to surface.
Cement to surface with 400 sx of Class C with 4% gel, 2% CaCl2 (13.5 ppg, 1.74 ft3/sx) followed by 200 sx Class C with 2% CaCl2 (14.8 ppg, 1.32 ft3/sx).

8-5/8" intermediate casing set at 2950'
The intermediate casing will be set within 100' of the top of the Delaware to isolate all salt stringers.
Centralize the bottom 3 joints.
Cement to surface with 700 sx of 35/65 Pozmix Class H with 6% gel, 5% salt, 1/4# FC (12.8 ppg, 1.94 ft3/sx) followed by 500 sx Class C with 1% CaCl2 (15.6 ppg, 1.19 ft3/sx).

5-1/2" production casing set at TD'
Centralize every joint from TD to bottom of the intermediate casing.
Top of cement to be at 1900'.
A 2-stage cement job will be required with a DV tool at +6000'.
Stage 1: 550sx 50/50 Pozmix Class H with 2% gel, 5% salt, 1/4# FC (14.2 ppg, 1.34 ft3/sx).
Stage 2: 250 sx 50/50 Pozmix Class H with 2% gel, 5% salt, 1/4# FC (14.2 ppg, 1.34 ft3/sx) followed by 100 sx Class H (15.6 ppg, 1.19 ft3/sx).

5. **Minimum Specifications for Pressure Control:**

11" hole

The following BOP equipment will be nippled up on the 13-3/8" casing and used continuously until TD is reached for the 11" hole.

The blowout preventer equipment (BOP) shown in Exhibit E will consist of a 3000 psi WP double ram type preventer and a 3M annular (bag type) preventer with rotating head. Both BOP's will be hydraulically operated. At the drilling contractor's option, 5M BOP's may be substituted. H2S trim will not be required.

Before drilling out from under the 13-3/8" casing, all BOP's and accessory equipment will be tested to 1000 psi with the rig pump. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

BLM method to calculate minimum BOP requirements:
(.052)(10 ppg)(2950') - (0.22 psi/ft)(2950') = 885 psi
Minimum BOP requirements: 2M BOP stack and manifold system

7-7/8" hole

The following BOP equipment will be nippled up on the 8-5/8" casing and used continuously until TD is reached for the 7-7/8" hole.

The blowout preventer equipment (BOP) shown in Exhibit E will consist of a 3000 psi WP double ram type preventer and a 3M annular (bag type) preventer with rotating head. Both BOP's will be hydraulically operated. At the drilling contractor's option, 5M BOP's may be substituted. H2S trim will not be required.

Before drilling out from under the 8-5/8" intermediate casing, all BOP's and accessory equipment will be tested to 1000 psi with the rig pump. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

BLM method to calculate minimum BOP requirements:
(.052)(8.4 ppg)(8250') - (0.22 psi/ft)(8250') = 1754 psi
Minimum BOP requirements: 2M BOP stack and manifold system

6. **Proposed Mud System:**

The well will be drilled to TD with a combination of fresh water and 10# brine. The applicable depths and properties of this system are as follows:

Depth	Type	Weight (ppg)	Viscosity (sec)	Water Loss (cc)
0-500'	Fresh water	8.4	28	NC
500-2950'	Brine	10.0	29	NC
2950-TD	Fresh	8.5	28-32	16

Sufficient mud materials to maintain mud properties and meet minimum lost circulation requirements will be kept at the wellsite at all times.

7. **Auxiliary Well Control and Monitoring Equipment:**

a) A kelly cock will be kept in the string at all times.

b) A full opening drill pipe stabbing valve (TIW/inside BOP) with proper drill pipe connections will be on the rig floor at all times.

c) An electronic pit volume totalizer system will not be used. The drilling fluids system will be visually monitored at all times.

d) A mudlogging unit will be continuously monitoring drilling penetration rate and hydrocarbon shows from 2950' to TD.(Optional)

8. **Logging, Testing, and Coring Program:**

a) Drillstem tests will be run on the basis of drilling shows.

b) The electric logging program will consist of:
1) 7-7/8" hole - Gamma ray, dual induction log, compensated neutron and litho-density logs.

c) No conventional cores are planned. Selected intervals may be sidewall cored based upon shows and openhole logs.

d) Further testing procedures will be determined after the 5-1/2" production casing has been cemented at TD.

9. **Abnormal Conditions, Pressures, Temperatures, and Potential Hazards:**

No abnormal pressures, temperatures, or other potential hazard are anticipated.

No hydrogen sulfide or other hazardous gases or fluids have been encountered, reported, or are known to exist at this depth in this area. No major lost circulation zones have been reported in offsetting wells.

The maximum anticipated bottom hole pressure is approximately 3572 psi. (8250' x .433 psi/ft = 3572 psi.)
The maximum anticipated bottom hole temperature is 127 deg F.

10. **Anticipated Starting Date and Duration of Operations:**

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is December 20, 1996. Once commenced, the drilling operation should be complete in 15 days. If the well is productive, an additional 30 days will be required for completion, testing, and installation of permanent facilities.

SURFACE USE AND OPERATING PLAN

Attached to Form 3160-3

Pogo Producing Company

Riverbend "24-D" Federal No. 1
330' FNL & 730' FWL
Unit Letter D, NW/NW
Section 24, T24S, R29E
Eddy County, New Mexico

Located:	5 miles east southeast of Loving, New Mexico
Federal Lease Number:	NM-81586
Lease Issued:	N/A
Acres in Lease:	1040 acres
Record Lessee:	Pogo Producing Company
Surface Ownership:	U.S.A.
Grazing Permittee:	Raymond McDonald P.O. Box 66 Loving, New Mexico 88265
Pool:	Wildcat (Bone Springs)
Pool Rules:	The 40 acre oil well spacing rules apply to this location, being 330' to the nearest side boundary or 1/4-1/4 section line, nor closer than 330' to the nearest well capable of producing from the same formation.
Exhibits:	A. Road Map B. Existing Wells Map C. Well Location and Acreage Dedication Plat C-1. Topo Map D. Drilling Rig Layout Diagram E. BOP Equipment

1. **Existing Roads:**

a) The well site and elevation plat for the proposed well is shown in Exhibit C. It was staked by John West Engineering, Hobbs, N.M.

b) All roads to the location are shown on Exhibit B. The existing roads are illustrated in black and are adequate for travel during drilling and production operations. Upgrading of the road prior to drilling will be done where necessary as determined during the onsite inspection.

c) Directions to Location: Go east of Malaga approximately 1 mile. Turn south and go approximately 3/4 mile to where road veers to the southeast. Follow road approximately 2.2 miles to where road splits. Take right split east southeast approximately 2.2 miles to Pierce Canyon Crossing. Cross river and follow road to the east approximately two miles to caliche road going north. Turn north and go three quarters of a mile to the proposed access road to location on the right. Turn right and go 800' to the north northeast to the proposed location.

d) Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

2. **Proposed Access Road:**

Exhibit B shows the new access road to be constructed and is illustrated in green. The proposed access road as shown in Exhibit B has been centerline flagged by John West Engineering, Hobbs, N.M. The road will be constructed as follows:

a) Length and Width: The access road will be 800' long and 15' wide.

b) Surfacing Material: Caliche material will be used to surface the proposed road. It will be watered, compacted, and graded. Caliche will be obtained from either the reserve pit or a borrow pit on the proposed location as described in Item 6 of the Surface Use and Operating Plan.

c) Maximum Grade: 1% grade expected.

d) Turnouts: No turnouts are planned.

e) Drainage Design: The new road will be crowned at the center to direct drainage to ditches on both sides of the roadway with turnout ditches to be constructed as required. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns. BLM may specify any additions or changes during the onsite inspections.

f) Culverts: None required.

g) Cuts and Fills: No levelling will be necessary on access road to this location.

h) Gates and Cattle Guards: There will be no gates or cattleguards needed at this location.

3. **Location of Existing Wells:**

Exhibit No. B shows all existing wells within a one-mile radius of this well.

4. **Location of Existing and/or Proposed Facilities:**

a) Pogo Producing Company does not operate a production facility on the Riverbend "24-D" Federal lease.

b) If the well is productive, contemplated facilities will be as follows:

A battery will be constructed on the well pad of well No. 1

c) An electric power line will be constructed as shown on Exhibit B.

5. **Location and Type of Water Supply:**

The well will be drilled with a combination of brine and fresh water mud system as outlined in the drilling program.

The water necessary for drilling operations will be purchased and trucked to the wellsite, or will be moved to the wellsite by way of a temporary pipeline laid on the ground alongside existing and proposed roads.

6. **Source of Construction Materials:**

Caliche needed for the road and well pad will be taken from the proposed reserve pit. An alternate plan will be to obtain caliche from a borrow pit located within the 400' x 400' archaeologically cleared tract at the proposed well site. If sufficient quality or quantity of caliche is not available, it will be transported to the proposed road and well site from an existing BLM approved caliche pit. The BLM will be notified and consulted if caliche must be obtained off location.

7. **Method of Handling Waste Disposal:**

a) Drill cuttings will be disposed into the reserve pit.

b) Drilling fluids will be contained in the reserve pit. The reserve pit will be an earthen pit, approximately 150' x 150' x 6' deep and fenced on three sides prior to drilling. The fourth side will be fenced immediately following rig removal. The reserve pit will be lined with plastic (5-7 mil thickness) to minimize loss of drilling fluids.

c) Water produced from the well during completion may be disposed into the reserve pit or a steel tank (depending upon rates).

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

e) Oil produced during testing will be stored in steel test tanks until sold.

f) Trash, waste paper, garbage, and junk will be placed in a trash bin located on the drill site pad. It will be transported to an approved landfill for disposal within 30 days after completion of drilling and/or completion of operations. All waste material will be contained to prevent scattering by the wind.

g) A portable chemical toilet will be provided on the location for human waste during the drilling and completion operations.

8. **Ancillary Facilities:**

No other facilities will be built as a result of the operations on this well.

9. **Well Site Layout:**

a) Exhibit D shows the relative location and dimensions of the well pad, mud pits, reserve pit, location of the major rig components, and location of parking areas.

b) Cut and fill requirements will be minor, but clearing and leveling of the well site will be necessary. Top soil, if available, will be stockpiled per BLM specifications as determined at the on-site inspection.

c) The reserve pit will be lined with a high quality plastic sheeting (5-7 mil thickness).

d) The pad and pit area are staked and flagged.

10. **Plans for Reclamation of the Surface:**

a) After completion of drilling and/or completion of operations, all equipment and other material not needed for operations will be removed. The pit area will be allowed to dry before reclamation. If the borrow pit is constructed, the cuttings in the reserve pit will be deep buried in the borrow pit, and the reserve pit and borrow pit will be broken out, filled, and leveled. The location will be cleaned of all trash and junk to leave the well site in an as aesthetically pleasing condition as possible.

b) Three sides of the reserve pit will be fenced prior to and during drilling operations. The borrow pit will be fenced on all four sides after the location is built. At the time the rig is removed, the reserve pit will be fenced on the fourth side to prevent livestock or wildlife from being entrapped in the pits. The fencing will remain in place until the pits are cleaned up and leveled.

c) After abandonment, all equipment, trash, and junk will be removed and the well site will be cleaned.

d) Topsoil removed from the drill site will be used to recontour the pit area to the original natural level. The disturbed area will be revegetated by reseeding during the proper growing season with a seed mixture of native grasses as recommended by the BLM.

11. **Other Information:**

a) Topography: The land surface in the area is undulating with small sand dunes. In the immediate area of the well site, the land slope is to the southwest.

b) Soil: Top soil at the well site is loamy sand.

c) Flora and Fauna: The vegetation cover is moderate. It includes range grasses, weeds, scrub oak bushes, and mesquite bushes. Wildlife in the area is that typical of a semi-arid desert land and includes coyotes, rabbits, rodents, reptiles, hawks, dove, quail, and other small birds.

d) Ponds and Streams: The Pecos River is approximately 6400' to the southwest of this location.

e) Residences and Other Structures: There are no occupied dwellings or other structures within a mile of the proposed well site.

f) Archaeological, Historical, or other Cultural Sites: None are known of in the area. An Archaeological survey has been conducted.

g) Land Use: Grazing, oil and gas production, and wildlife habitat.

h) Surface Ownership: U.S.A.

12. **Operator's Representative:**

Richard L. Wright
Division Operations Supervisor
Pogo Producing Company
P.O. Box 10340
Midland, Texas 79702
(915) 682-6822

13. **Certification:**

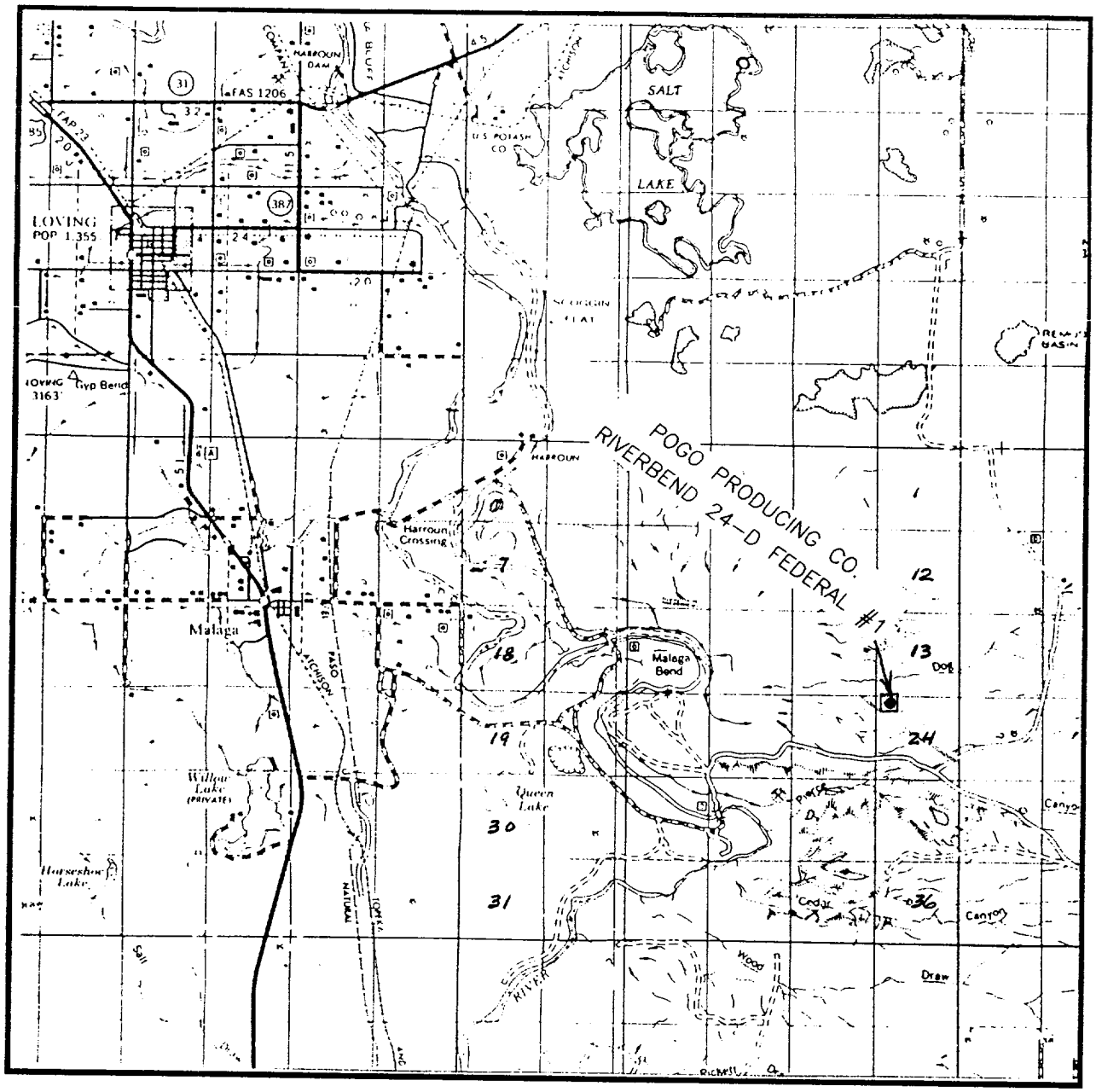
I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by Pogo Producing Company and its contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U. S. C. 1001 for the filing of false statement.

11/23/96
Date

James M.C. Ritchie, Jr.
Agent

Enclosures

VICINITY MAP



SEC. 24 TWP. 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 330' FNL & 730' FWL

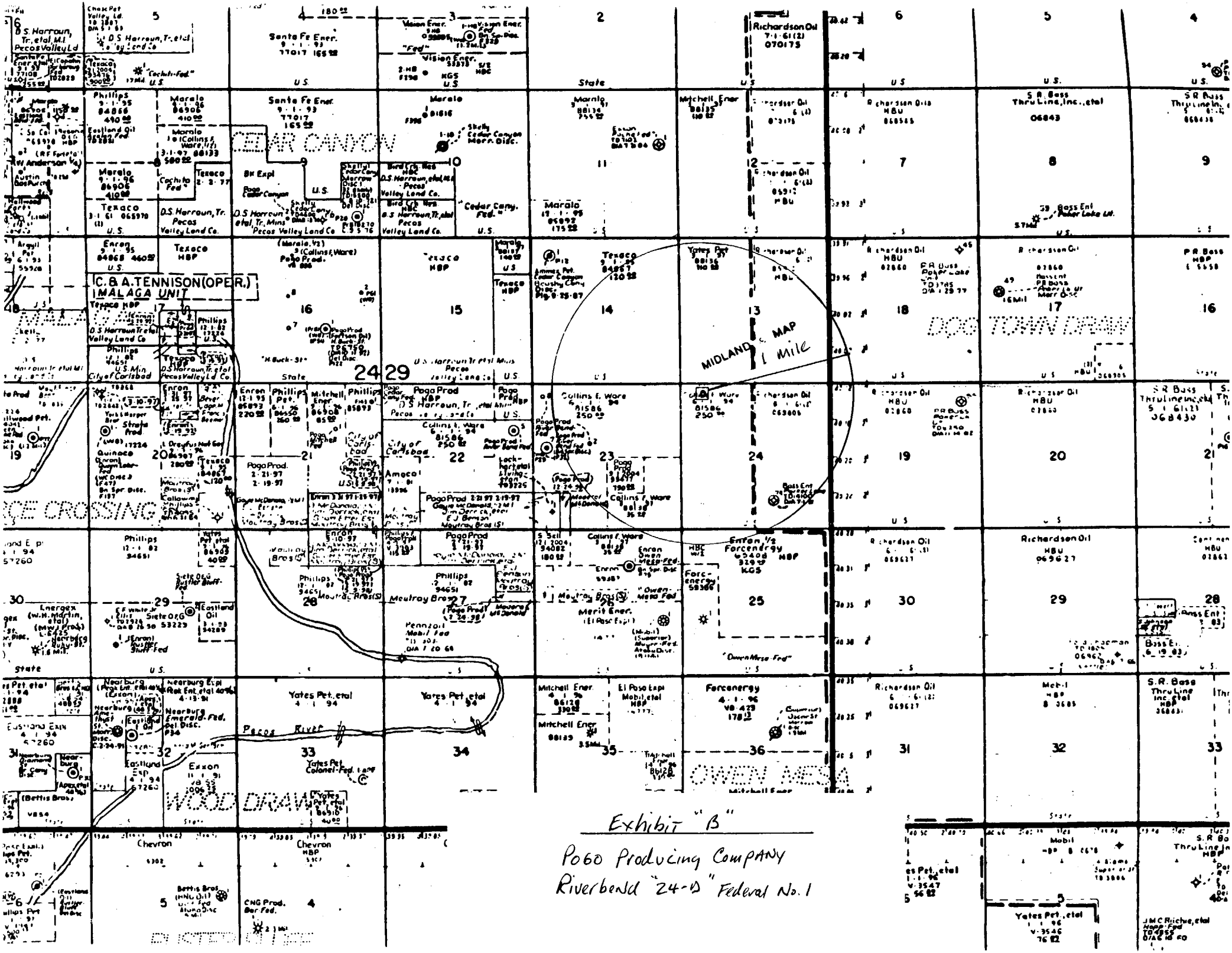
ELEVATION 3063'

OPERATOR POGO PRODUCING CO.

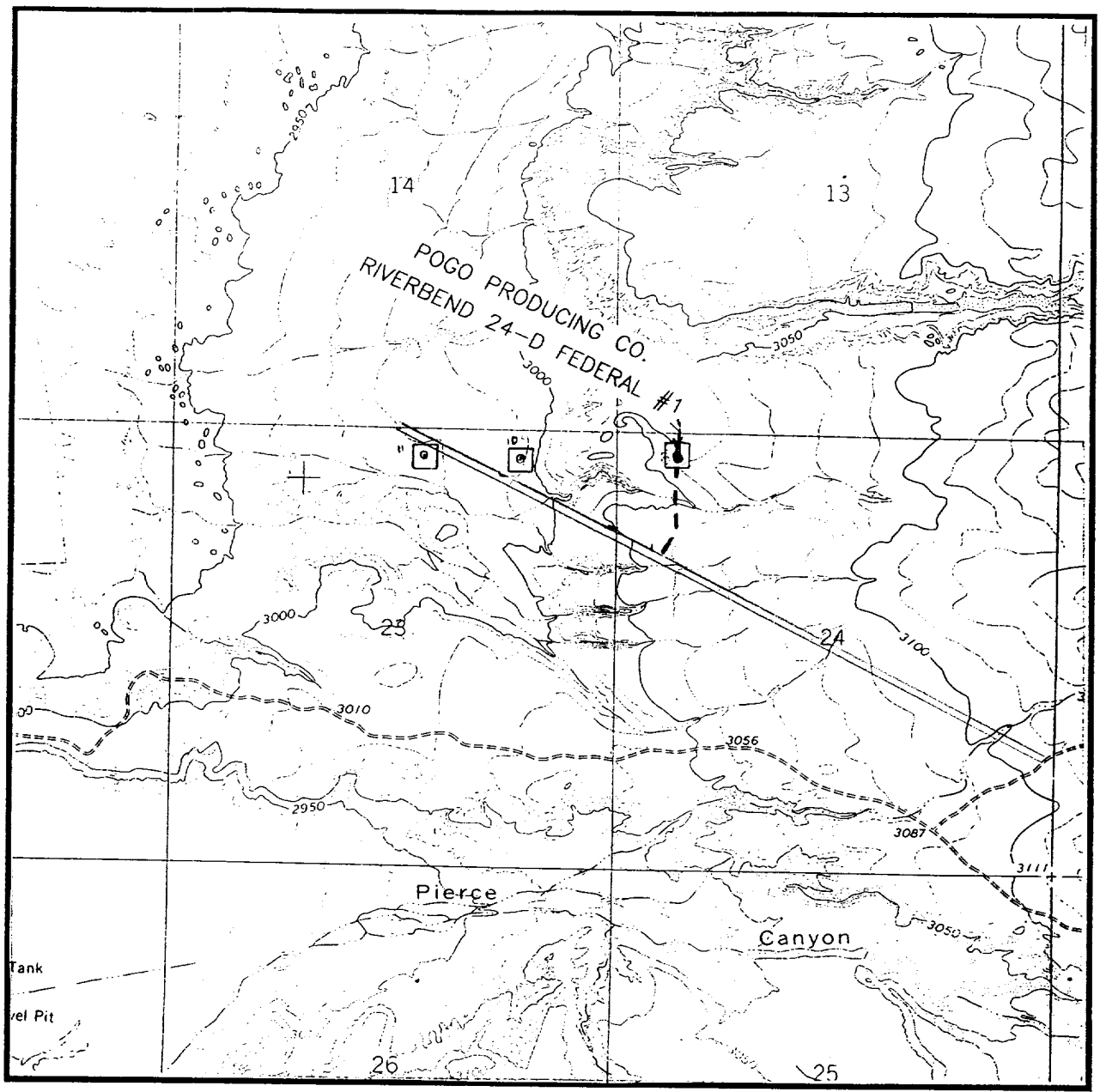
LEASE RIVERBEND 24-D FEDERAL

Exhibit "A"

JOHN WEST ENGINEERING
HOBBS, NEW MEXICO
(505) 393-3117


C. & A. TENNISON (OPER.)
IMALAGA UNIT
BEAR CANYON
MIDLAND MAP
1 Mile
Pecos River
Exhibit "B"
Pogo Producing Company
Riverbend "24-D" Federal No. 1

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL – 10'

EXISTING ROAD

PROPOSED ROAD

SEC. 24 TWP. 24-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 330' FNL & 730' FWL

ELEVATION 3063'

OPERATOR POGO PRODUCING CO.

LEASE RIVERBEND 24-D FEDERAL

U.S.G.S. TOPOGRAPHIC MAP

PIERCE CANYON, N.M.

Exhibit "C-1"

JOHN WEST ENGINEERING

HOBBS, NEW MEXICO

(505) 393-3117

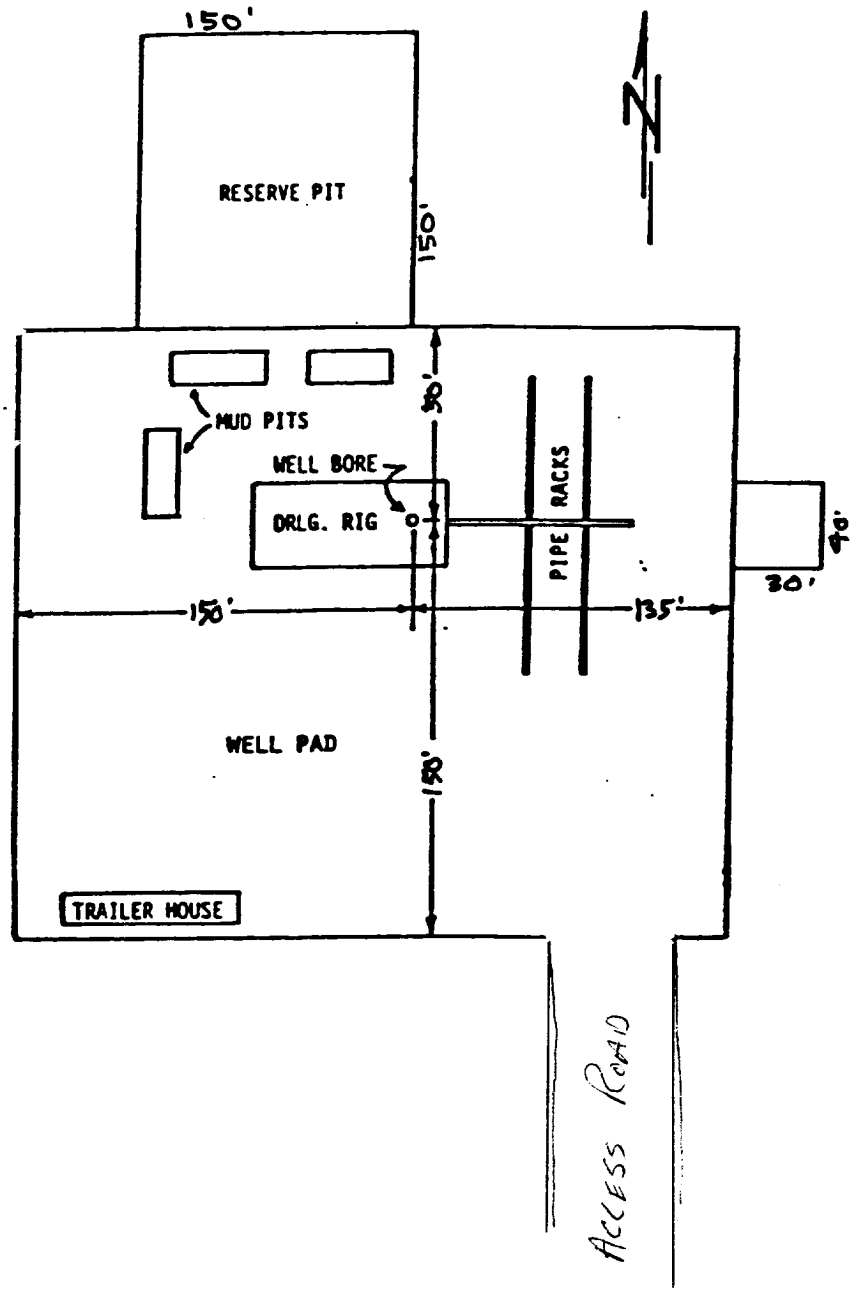


EXHIBIT "D"

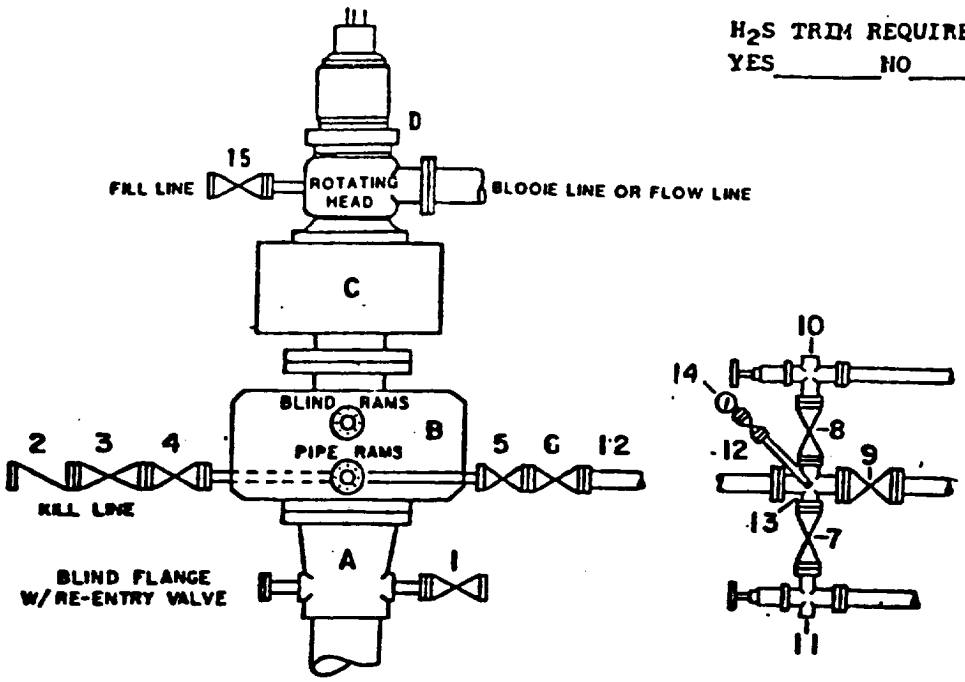
Pogo Producing Company
Riverbend 24S Fed #1

DRILLING RIG LAYOUT
SCALE: None

DRILLING CONTROL

CONDITION III-B 3000 PSI WP

H_2S TRIM REQUIRED
YES_____ NO_____



DRILLING CONTROL

MATERIAL LIST - CONDITION III - B

A	Wellhead
B	3000# W.P. Dual ram type preventer, hydraulic operated with 1" steel, 3000# W.P. control lines (where sub-structure height is adequate, 2 - 3000# W.P. single ram preventers may be utilized with 3000# W.P. drilling spool with 2" minimum flanged outlet for kill line and 3" minimum flanged outlet for choke line. The drilling spool is to be installed below the single ram type preventers).
C	3000# W.P. Annular Preventer with 1" steel, 3000# W.P. control lines.
D	Rotating Head with fill up outlet and extended Blooie line.
1,3,4, 7,8,	2" minimum 3000# W.P. flanged full opening steel gate valve, or Halliburton Lo Torc Plug valve.
2	2" minimum 3000# W.P. back pressure valve.
5,6,9	3" minimum 3000# W.P. flanged full opening steel gate valve, or Halliburton Lo Torc Plug valve.
12	3" minimum Schedule 80, Grade B, seamless line pipe.
13	2" minimum x 3" minimum 3000# W.P. flanged cross.
10,11	2" minimum 3000# W.P. adjustable choke bodies.
14	Cameron Mud Gauge or equivalent (location optional in Choke line).
15	2" minimum 3000# W.P. flanged or threaded full opening steel gate valve, or Halliburton Lo Torc Plug valve.

SCALE	DATE	EST. NO	DRG NO
DRAWN BY			
CHECKED BY			
APPROVED BY			

EXHIBIT E