

WOOD COPY  
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY(Other instructions on  
reverse side)

30-015-23061

## 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

Delta Drilling Company

## 3. ADDRESS OF OPERATOR

P. O. Box 3467, Midland, Texas 79702

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

At surface

660 FSL &amp; 990 FEL

At proposed prod. zone

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

4 miles Northeast Loving

## 10. DISTANCE FROM PROPOSED\*

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

660

## 16. NO. OF ACRES IN LEASE

1040.32

## 17. NO. OF ACRES ASSIGNED

TO THIS WELL  
80

## 18. DISTANCE FROM PROPOSED LOCATION\*

TO NEAREST WELL, DRILLING, COMPLETED,  
OR APPLIED FOR, ON THIS LEASE, FT.

1350'

## 19. PROPOSED DEPTH

6400

## 20. ROTARY OR CABLE TOOLS

Rotary

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

2987.6

## 22. APPROX. DATE WORK WILL START\*

11-1-79

## 23.

## PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
14-3/4	10-3/4	40.5	450	550
9-1/2	7	20, 23, 26	6290	1800
6	Open Hole		6400	

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OCT 29 1979  
U.S. GEOLOGICAL SURVEY  
ARTESIA, 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

TITLE Division Production Manager

DATE

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

11-7-79

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

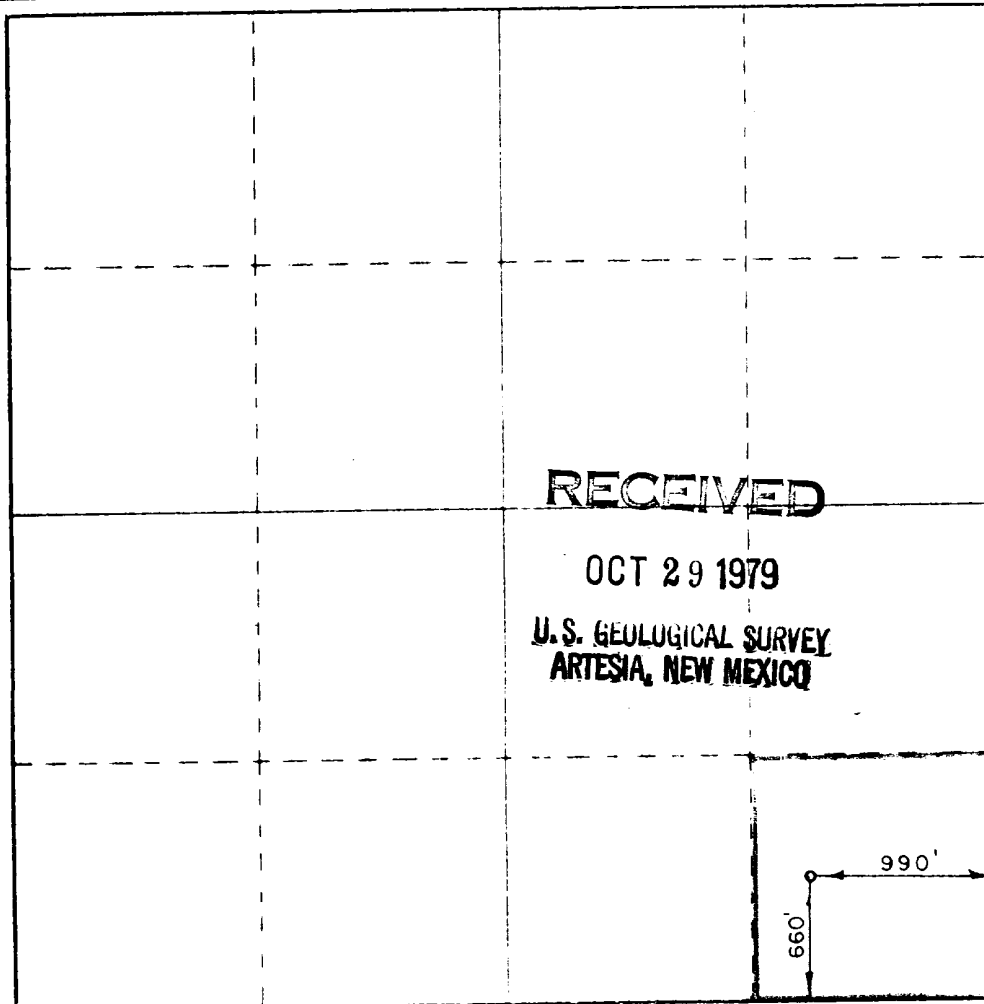
Operator <b>Delta Drilling Company</b>			Lease <b>Amoco Federal</b>		Well No. <b>2-11</b>
Unit Letter <b>P</b>	Section <b>11</b>	Township <b>23 South</b>	Range <b>28 East</b>	County <b>Eddy County</b>	
Actual Footage Location of Well: <b>660</b> feet from the <b>South</b> line and <b>990</b> feet from the <b>East</b> line					
Ground Level Elev. <b>2987.6</b>	Producing Formation <b>Bone Springs</b>		Foot <b>100</b>	Dedicated Acreage <b>40</b> — <b>80</b> Acres	

- Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and notify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, outline 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.) \_\_\_\_\_

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

*Ron Brown*

Name  
**Ron Brown**  
Position  
**Field Project Mgr.**  
Company  
**Delta Drilling Co.**  
Date  
**10-26-79**

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 to the best of my knowledge

Operator No. **19**  
Date Surveyed **3239**  
Registered Professional Surveyor  
**RONALD J. EIDSON**

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

0 330 660 990 1320 1650 1980 2310 2640 2970 3300 3630 3960 4290 4620 4950 5280 5610 5940 6270 6600



-N.M.O.G.D. 0017

# United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer U  
Artesia, New Mexico 88210

RECEIVED

NOV 9 1979

O. C. C.  
ARTESIA, OFFICE

November 7, 1979

Delta Drilling Company  
P. O. Box 3467  
Midland, Texas 79702

Gentlemen:

DELTA DRILLING COMPANY	
Amoco Federal No. 2	
660 FSL 990 FEL	Sec. 11 T.23S R.28E
Eddy County	Lease No. NM 32636
Above Data Required on Well Sign	

Your APPLICATION FOR PERMIT TO DRILL the above-described well to a depth of 6,400 feet to test the Bone Springs formation is hereby approved subject to compliance with the OIL AND GAS OPERATING REGULATIONS (30 CFR 221) and the following conditions:

1. Drilling operations authorized are subject to compliance with the GENERAL REQUIREMENTS FOR OIL AND GAS OPERATIONS ON FEDERAL LEASES, dated July 1, 1978.
2. Prior to commencing construction of road, pad, or other associated developments, operator will provide the dirt contractor with a copy of the SURFACE USE PLAN and this approval including the GENERAL REQUIREMENTS.
3. Submit a Daily Report of Operations from spud date until the Well Completion Report (form 9-330) is filed. The progress report should be not less than 8" x 5" in size and each page should identify the well.
4. All permanent above-ground structures and equipment shall be painted in accordance with the attached Painting Requirements. The color used should simulate Sandstone Brown (Federal Standard No. 595A, color 20318 or 30318).
5. Cement behind the 10-3/4" casing must be circulated.
6. Notify Survey in sufficient time to witness the cementing of 7" casing.
7. Please have anyone contacting the Survey in regard to this well to identify the well with all of the information required above for the well sign.

Sincerely yours,

(Orig. Sgd.) GEORGE H. STEWART

George H. Stewart  
Acting District Engineer



## APPLICATION FOR DRILLING

Delta Drilling Company  
Amoco Federal # 2  
990' FEL & 660' FSL  
Section 11, T 23S, R28E  
Eddy County, New Mexico

In conjunction with Form 9-331C, Application for Permit to Drill subject well, Delta Drilling Company submits the following nine items of pertinent information in accordance with USGS requirements:

1. The geologic surface formation is Permian.
2. The estimated tops of geologic markers are as follows:

Lamar	2605'	Br. Canyon	2640'
Bone Springs	6231'	Ch. Canyon	3590'
3. The estimated depths at which anticipated water, oil, or gas formations are expected to be encountered:

Water	-	No fresh water anticipated below 250' as per conversation with Mr. Oral Nichols with Carlsbad Irrigation District on 3/19/79.
Oil or Gas	-	Bone Springs 6231-6400'
4. Proposed Casing Program: See Form 9-331C
5. Pressure Control Equipment: See attachments to Form 9-331C and Exhibit E
6. Mud Program: See Exhibit G
7. Auxiliary Equipment: See Exhibit H
8. Testing, Logging, and Coring Programs:

Drill Stem Tests	-	None anticipated
Logging	-	Electric Logging Program - <u>FLUID</u> DLL w/ Micro SFL CNL/FDC BHC Sonic
9. Anticipated Starting Date: As soon as possible.

Delta Drilling Company  
Amoco Federal #2  
660' FSL and 990' FEL  
Section 11, T-23S, R-28E  
Eddy County, New Mexico

**RECEIVED****OCT 29 1979****U.S. GEOLOGICAL SURVEY  
ARTESIA, NEW MEXICO**

This plan is submitted with Form 9-331C, Application for Permit to Drill, covering the above described well. The purpose of this 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 operations, so that a complete appraisal can be made of the environmental effects associated with the operation.

1. EXISTING ROADS. Exhibit "A" is a portion of a 15-minute series topographic map from the U.S.G.S. showing the existing roads. This map is on a 1" to 1 mile scale. Location is approximately 3-1/4 miles NE of Loving, New Mexico.

Exhibit "B" is a portion of a map showing the wellsite in relation to the other wells in the unit. Nearest producing well is the South Culebra Bluff Unit #2, 4650' to the south. Scale of map is 1" = 2000'.

**DIRECTIONS:**

Proceed east on State Highway 31 to Pecos River Bridge (3-1/2 miles from 285-31 junction), proceed east 0.8 miles from bridge, turn north on caliche lease road, and proceed 0.2 miles west to wellsite.

2. PLANNED ACCESS ROAD.

- A. The proposed access will be approximately 0.2 miles in length from the existing roads suitable for use without alteration, which is Highway 31.
- B. The new road will be 12-14 feet in width (driving surface), except at the point of origin, adjacent to the existing road, at which point enough additional width will be provided to allow heavy trucks and equipment to turn.
- C. The new road will be covered with the necessary depth of caliche. The surface will be crowned, with drainage on both sides.
- D. The center line of the new road has been flagged and its route is clearly visible.

3. LOCATION OF EXISTING WELLS.

See Exhibit "B".

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES.

- A. There is no producing well on this lease at the present time. One well known as the Amoco 1-11 is presently drilling on this lease. It is located approximately 1/4 mile to the north.
- B. In the event that the well is productive, the necessary production facilities will be installed on the drilling pad. If the well is productive of oil, a gas or diesel self-contained unit will be used to provide the necessary power. No power will be required if the well is productive of gas.

5. LOCATION AND TYPE OF WATER SUPPLY.

- A. It is planned to drill the proposed well with a brine mud system. The water will be obtained from commercial sources and will be hauled to the location by truck over the existing and proposed roads shown in Exhibit "A".

6. SOURCES OF CONSTRUCTION MATERIALS.

- A. Any cliche required for construction of the drilling pad and the new access road will be obtained from an existing pit on privately owned surface located off of this lease.

7. METHODS OF HANDLING WASTE DISPOSAL.

- A. Drill cutting will be disposed of in the reserve pits.
- B. Drilling fluids will be allowed to evaporate in the reserve pits until the pits are dry.
- C. Water produced during operations will be collected in tanks until hauled to an approved disposal system or a separate disposal application will be submitted to the U.S.G.S. for appropriate approval.
- D. Oil produced during operations will be stored in tanks until sold.
- E. Current laws and regulations pertaining to the disposal of human waste will be complied with.
- F. 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.
- G. 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 dimensions of the well pad and reserve pits, and the location of major rig components.
- B. The ground surface at the drilling location is slightly sloping toward the west. Cutting will be required to level the pad area, which will be covered with at least six inches of compacted caliche.
- C. The reserve pits will be plastic lined.
- D. The pad has been staked and flagged.

10. PLANS FOR RESTORATION OF THE SURFACE.

- A. After finishing drilling and/or completion operations, all equipment and other material not needed for further operations will be removed. The location will be cleared of all trash and junk, to leave the wellsite in as aesthetically pleasing a condition as possible.

- B. Unguarded pits, if any, containing fluids will be fenced until they have been filled.
- C. If the proposed well is non-productive, all rehabilitation and/or vegetation requirements of the Bureau of Land Management and the United States Geological Survey will be complied with and will be accomplished as expeditiously as possible. All pits will be filled and leveled within 120 days after abandonment.

11. TOPOGRAPHY.

- A. The wellsite and access route are located in a relatively level area.
- B. The top soil at the wellsite is sandy.
- C. The vegetation cover at the wellsite is moderately sparse, with prairie grasses, some yucca, and miscellaneous weeds.
- D. No wildlife was observed, but it is likely that rabbits, lizards, insects, and rodents traverse the area. The area is suitable for cattle grazing.
- E. There is a river within the lease proper. The Harroun Dam is located approximately 2000' west of the drilling site. No pollution hazard to any fresh water is anticipated.
- F. The wellsite is located on privately owned surface, with Federal mineral ownership.
- G. There is no evidence of any archaeological, historical, or cultural sites at this location.

12. OPERATOR'S REPRESENTATIVES.

- A. The field representatives responsible for assuring compliance with the approved surface use plan are:

Drilling Department

Ken Heathman  
915/332-7371

Joe Williams  
915/332-7371

Production Department

Jim Brusenhan  
915/682-4161  
915/694-3554

Ron Lechwar  
915/682-4161  
915/694-0640

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 Delta Drilling Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

DELTA DRILLING COMPANY  
FEDERAL AMOCO No. 1

0+00 LOCATION 1980 FSL & 990 FEL

1+42 P.I. 31°01' RT

4+41 P.I. 19°03' LT

5+70 P.I. 33°05' LT

10+42 P.I. 25°49' LT

13+75 P.I. 10°57' RT

16+46 P.I. 52°00' RT

19+40 EDGE OF PAVE  
STATE HIGHWAY NO. 51

Amoco Federal #2

1050'

11 12  
14 13



I HEREBY CERTIFY THAT THIS PLAT WAS  
MADE FROM NOTES TAKEN IN THE FIELD IN  
A BONA FIDE SURVEY MADE UNDER MY SUPER-  
VISION, AND THAT THE SAME IS TRUE AND  
CORRECT TO THE BEST OF MY KNOWLEDGE  
AND BELIEF.

JOHN W. WEST, NM PE & LS NO 676  
TEXAS RPS NO 1138

RONALD J. EIDSON, NM LS NO 3239  
TEXAS RPS NO 1883

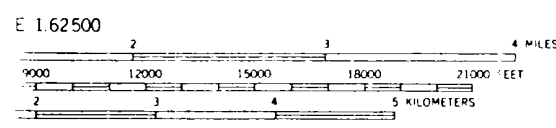
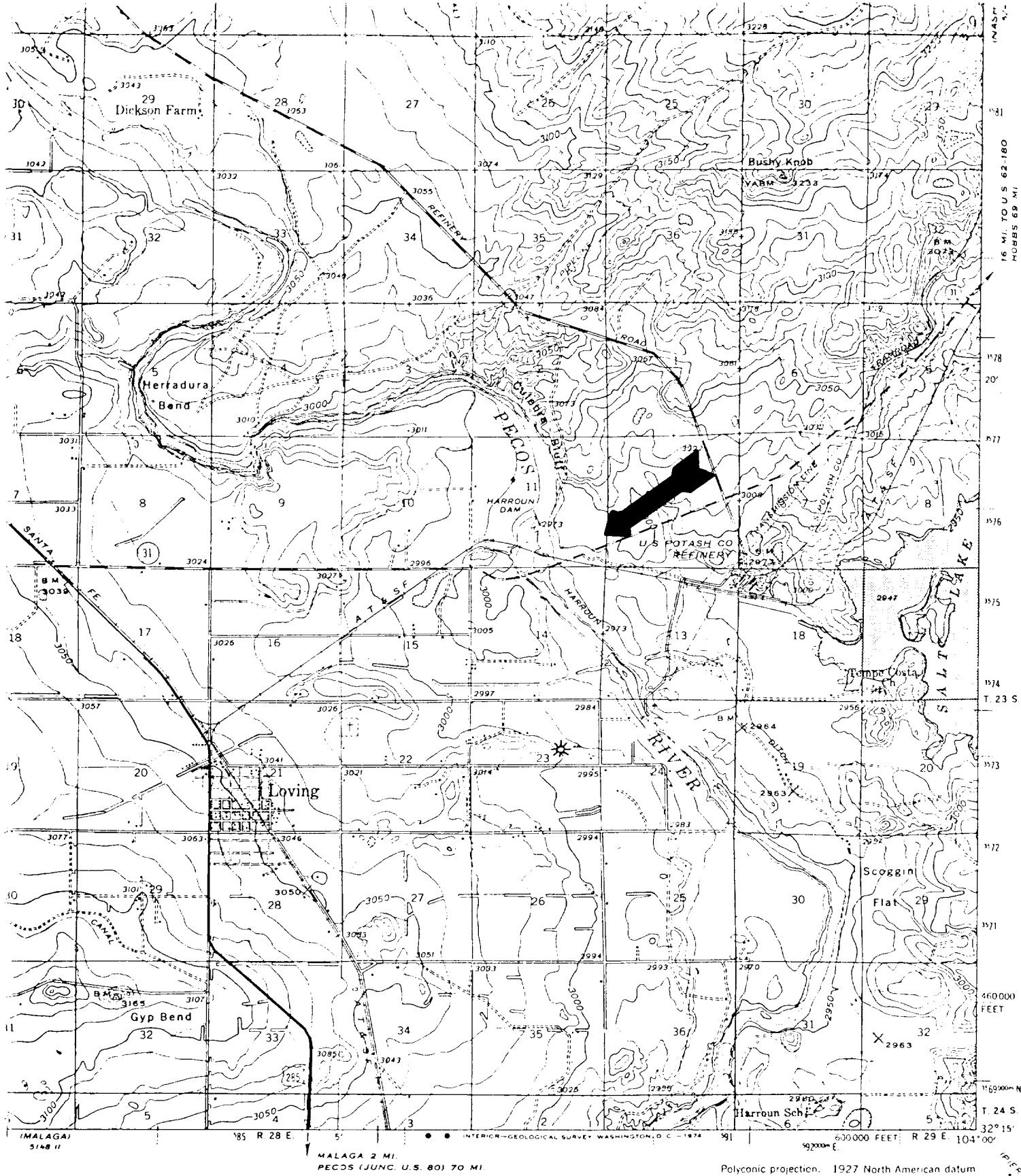
## DELTA DRILLING COMPANY

Location of lease road to Federal Amoco No. 1  
Located in Section 11, Township 23 South, Range  
23 East, N.M.P.M., Eddy County, New Mexico.

JOHN W. WEST ENGINEERING COMPANY  
CONSULTING ENGINEERS H. HBS. NEW MEXICO

Scale 1"=300'	Drawn by Presley
Date: April 25, 1979	Sheet of Sheets





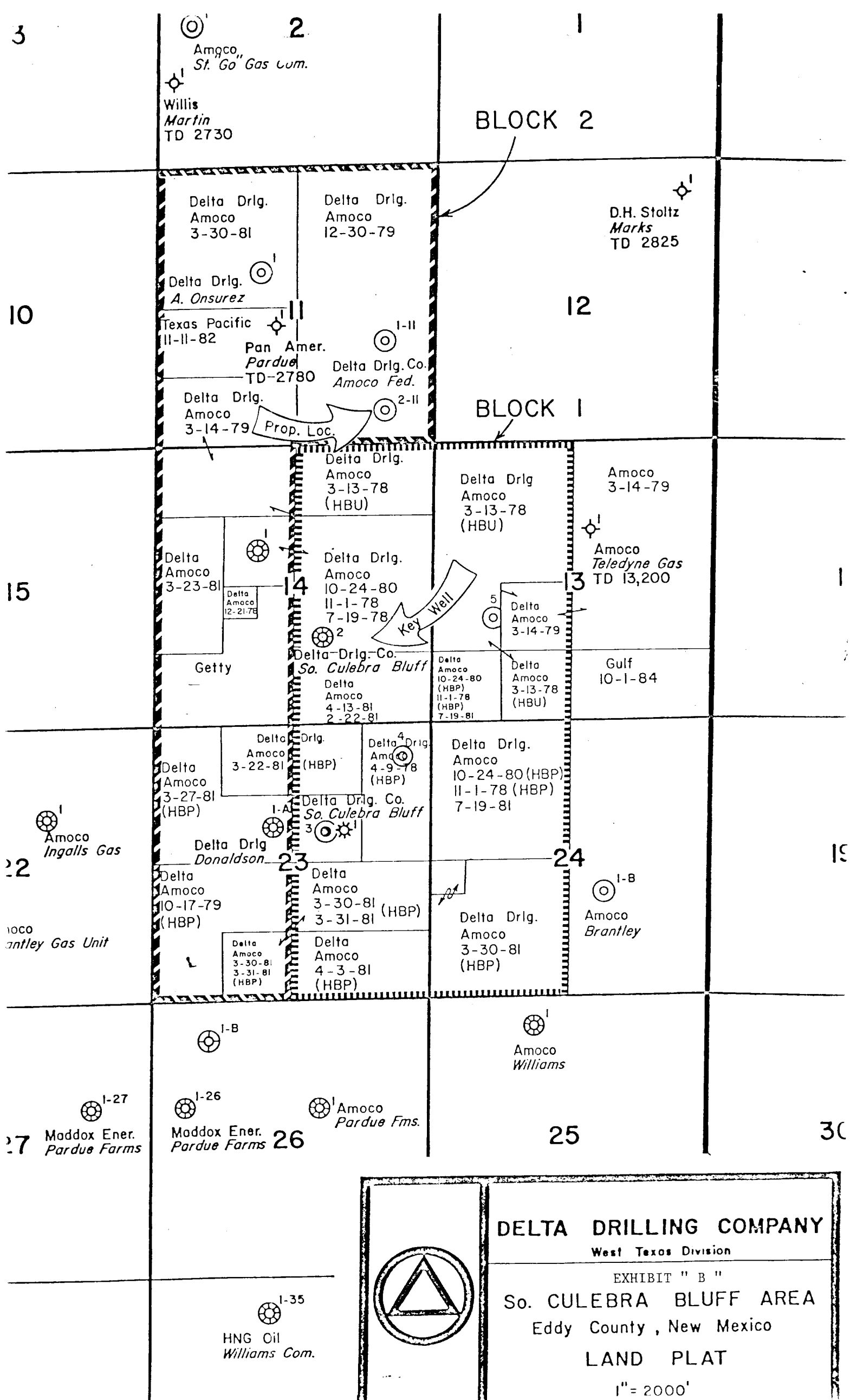
Interval 10 feet  
 mean sea level  
 VER. COLORADO 80225 OR RESTON, VIRGINIA 22092  
 APS AND SYMBOLS IS AVAILABLE ON REQUEST



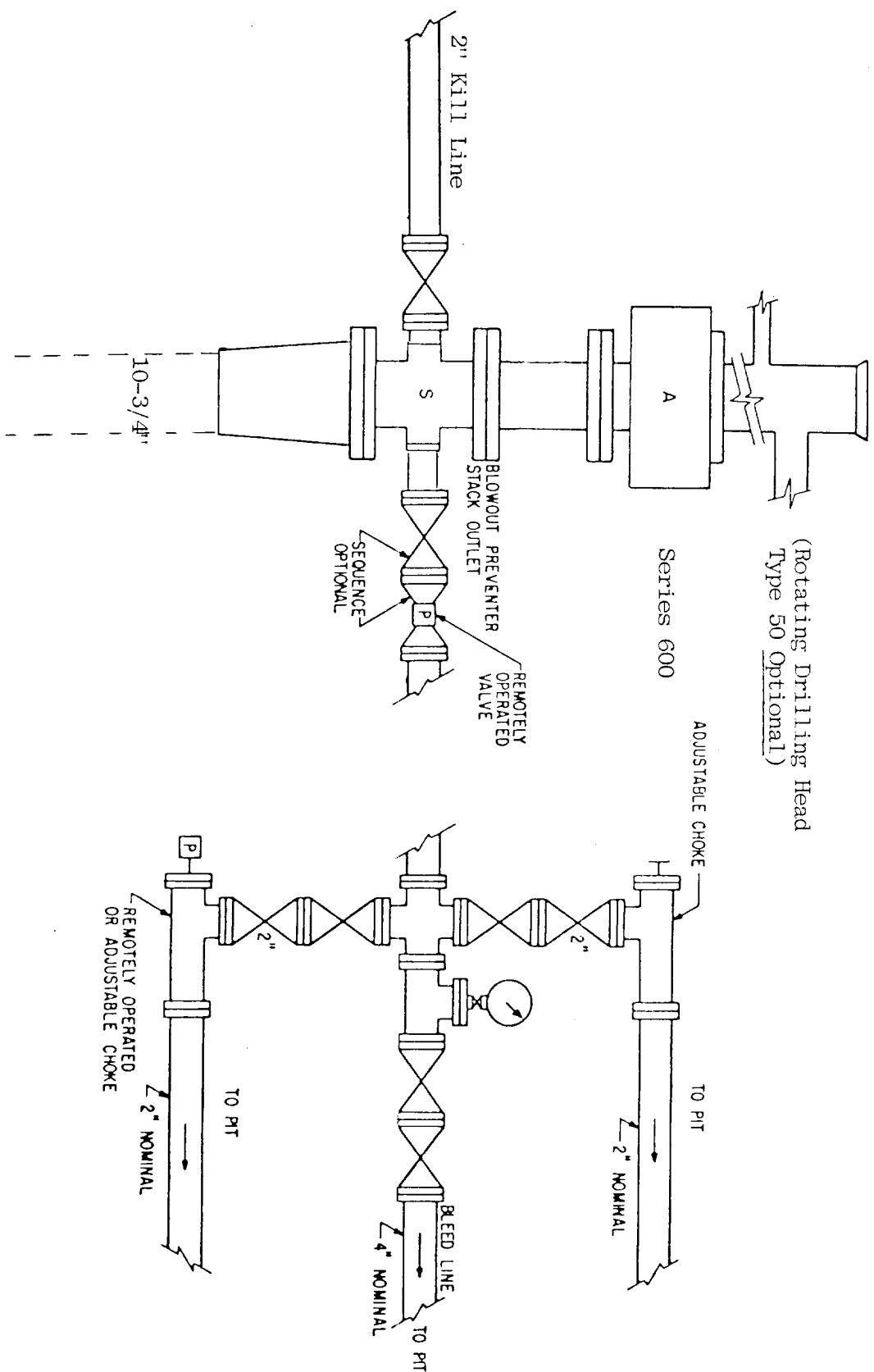
Exhibit A

Polyconic projection. 1927 North American datum  
 5000 yard grid based on U. S. zone system, E  
 10000 foot grid based on New Mexico (East)  
 rectangular coordinate system  
 1000-meter Universal Transverse Mercator grid ticks,  
 zone 13, shown in blue

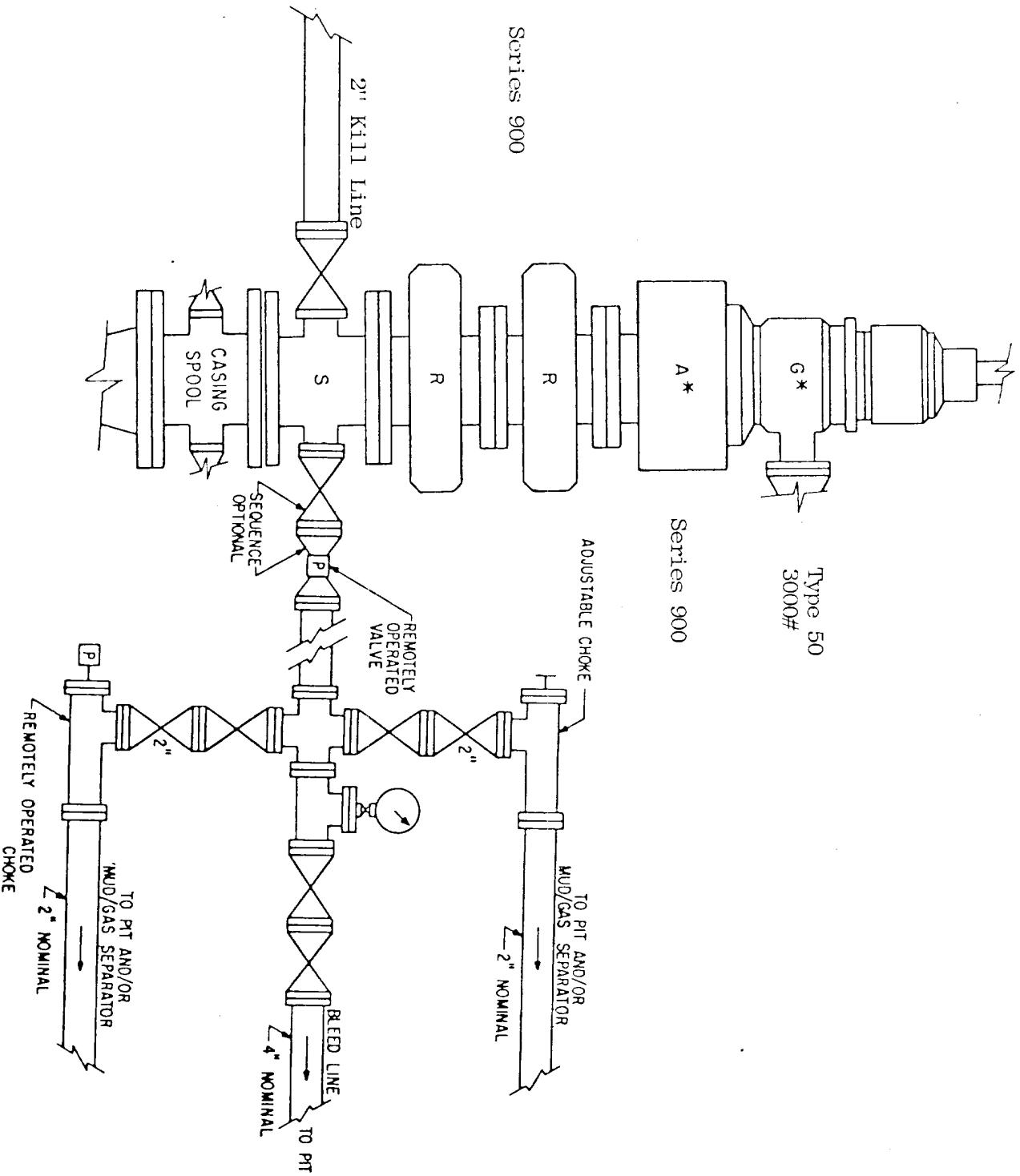
CARLSBAD, N. MEX.  
 N3215-W10400/15  
 1939  
 PHOTOREVISED 1971  
 AMS 5148 I-SERIES V781



First Nipple up on 10-3/4"



Second Nipple up on 7"



## EXHIBIT F

Set 40' of 20" conductor with Redi-mix cement.

Spud 14-3/4" hole with fresh water gel/lime with paper for seepage. Drill to 475<sup>±</sup>'. Run and cement 450' of 10-3/4" K-55 casing with 550 sx of Class "C" with 2% CaCl. Mix at 14.8# yield 1.32 calculated annular fill plus 200%. WOC 8 hrs, nipple up, test pipe to 600 psi, test BOP's, drill out shoe with 9-1/2" bit.

Drill 9-1/2" hole to the top of the Bone Springs lime at 6290<sup>±</sup>' with 10# saturated brine. Run and set 6290' of 7" K-55 casing. Cement with 1500 sx HLC containing 3/4% of CFR-2 1/4# Flocele and 6# salt. Tail in with 300 sx Class "H" with 5/10% CFR-2 and 5# salt. Circulate cement to surface. WOC 8 hrs, nipple up BOP stack. Test stack to 3000 psi. Test pipe to 1500 psi for 30 minutes before drilling out.

Drill out with 6-1/8" bit and drill 3' of formation. Circulate hole clean with brine. Unload hole with air compressors and continue drilling to 6400' on air or air/mist. Projected TD will be 6400'. No liner is anticipated being run.

## EXHIBIT G

### DETAILED MUD PLAN

40-475'

Spud with a viscous fresh water gel mud thickened with lime for a 40-50 sec/1000cc viscosity. Add paper and LCM for seepage.

In case of total loss of returns, dry drilling to casing point and spotting 50 bbls of the above mud prior to running casing will probably be the most economical approach

475-6290'

Drill 9-1/2" hole with saturated brine using Zinc Chromate for drill pipe protection. Use hole sweeps as needed and run a hole sweep prior to logging and running 7" casing at 6290'.

6290-6400'

Drill out casing shoe and 3' of formation with existing brine. Unload hole with air compressors and use air or air/mist to continue drilling to 6400'. Log well on air if conditions permit. If fluid is required in this section of hole, it is anticipated that a 4% KCl treated brine of approximately 9.2# weight will be used.

**DRAWWORKS**

Spencer Port-A-Rig 7000, trailer mounted  
Grooved for 1 1/8" drill line  
Parkersburg 15" double rotor Hydromatic Brake

**DERRICK**

Spencer T1 Tubular Telescoping  
97'8" clear height  
250,000 lb. certified capacity

**SUBSTRUCTURE**

Spencer Model 7000  
14'2" high consisting of: 8'2" high basic structure  
6'0" high pony structure (if required)

**POWER SOURCE**

2—Caterpillar 3306 TA (diesel) with twin disc torque converters  
Horsepower—480

**PUMPS**

1—Emsco F-500 triplex, 6 3/4" X 7 1/2", 500 HP driven by  
D-379TA Caterpillar engine

**DRILL STRING**

9000'—4" O.D., 14 #/ft., Gr. E, 4 1/2" F.H. tool joints  
17—Drill collars, 6" O.D. by 30', with 4 1/2" XH connections

**PREVENTERS (H<sub>2</sub>S Trim)**

1—Shaffer 10", 5000 double gate  
1—Hydril 10", 5000 type GK  
1—Closing unit, 80 gal., 5 station, air operated twin pumps  
1—Choke manifold, gate valve type

**OTHER EQUIPMENT**

Crown block—Spencer 5-28" sheaves  
Traveling block-hook—McKissick 4-30", 150 ton capacity  
Light plants—2, Caterpillar, 3304, 90 K.W., 120/208 volts A.C.  
Swivel—Emsco LB-200  
Mud tanks—One, 5'5" X 7' X 27'5", one, 5'5" X 7' X 30', 325 bbl.  
capacity  
Lights—Snelson, vapor proof  
Shale shaker—Bryant  
Rotary table—Emsco 17 1/2", T1750  
Crown-O-Matic

# AMOCO #2 SURFACE CASING

## C A S I N G   D E S I G N   A D D I T

SEGMENT NO.	GRADE	JOINT	WEIGHT	TOP FT	BOTTOM FT	LENGTH FT	COST \$
1	K55	S	40.5	0.	450.	450.	6095.

TOTAL CASING COST = \$ 6095.

SEGMENT NO.	MPG.	CUM. WEIGHT LB	DRIFT, INCHES	I.D. INCHES	COLLAPSE FACTOR	BURST FACTOR	TENSION FACTOR
1	SMITH	18225.	9.39	10.05	4.570	15.650	24.691

MAXIMUM BIT SIZE CONSIDERING DRIFT = 9.39

CASING SIZE, IN.	10.75	CASING JOINT LENGTH, FT.	30.
MINIMUM SEGMENT LENGTH, FT.	40.	COLLAPSE DESIGN FACTOR	1.000
CASING DEPTH, FT.	450.	BURST DESIGN FACTOR	1.000
MUD WEIGHT, LB/GAL. (EX)	14.80	TENSION DESIGN FACTOR	1.600
MUD WEIGHT, LB/GAL. (IN)	9.00	FORMATION PRESSURE, PSI	200.

DATE : 10/25/79  
TIME : 03:58CDT



AMCOLD P&S 48  
7" CASINGS

# C A S I N G   D E S I G N   M O D I F

SEGMENT NO.	GRADE	JOINT	WEIGHT	TOP FT	BOTTOM FT	LENGTH FT	COST \$
1	K55	3	26.0	5360.	6400.	1040.	2034.
2	K55	3	23.0	3360.	5360.	2000.	15589.
3	K55	3	20.0	80.	3360.	3280.	22593.
4	K55	3	26.0	0.	80.	80.	695.

TOTAL CASING COST = \$ 47911.

SEGMENT NO.	MFG.	CUM. WEIGHT LB	DRIFT, INCHES	I. D. INCHES	COLLAPSE FACTOR	BURST FACTOR	TENSION FACTOR
1	SMITH	27040.	6.15	6.28	1.300	1.660	13.462
2	SMITH	73040.	6.24	6.37	1.129	1.772	4.231
3	SMITH	138640.	6.33	6.46	1.128	2.632	1.332
4	SMITH	140720.	6.15	6.28	33.955	49.300	2.537

MAXIMUM BIT SIZE CONSIDERING DRIFT = 6.15

CASING SIZE, IN.	7.00	CASING JOINT LENGTH, FT.	30.
MINIMUM SEGMENT LENGTH, FT.	40.	COLLAPSE DESIGN FACTOR	1.000
CASING DEPTH, FT.	6400.	BURST DESIGN FACTOR	1.000
MUD WEIGHT, LB/GAL. (EN)	10.00	TENSION DESIGN FACTOR	1.600
MUD WEIGHT, LB/GAL. (IN)	10.00	FORMATION PRESSURE, PSI	3000.

DATE : 10/25/79  
TIME : 14:34:07