United States Department of the Interior

GEOLOGICAL SURVEY
P. O. Drawer U
Artesia, New Mexico 88210

November 30, 1979

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

Gentlemen:

DELTA DRILLING COMPANY Amoco Federal No. 3 1980 FNL 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 6,500 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.

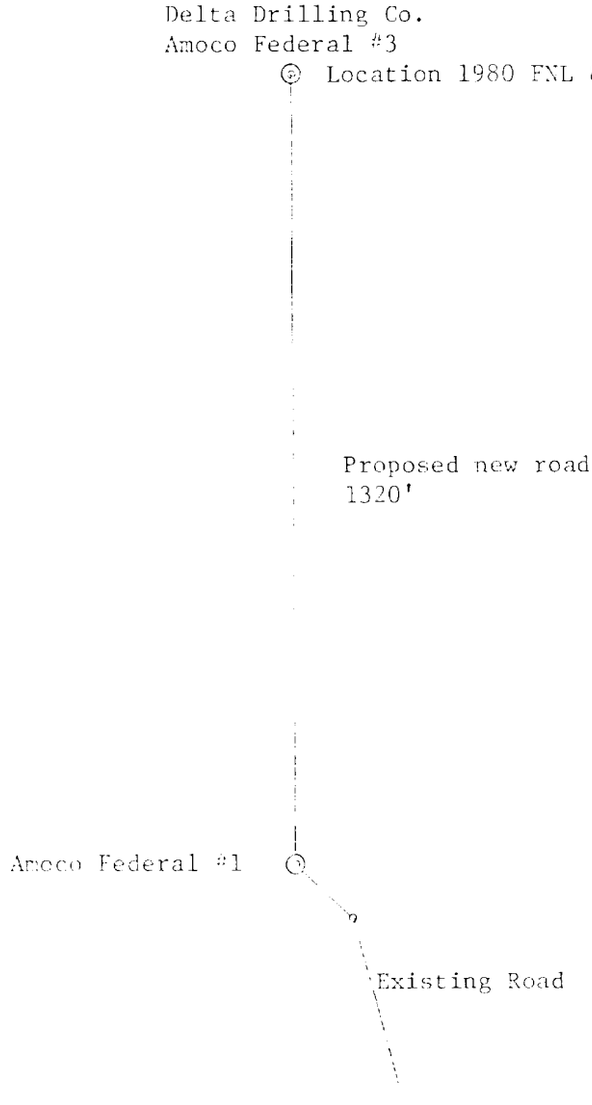
6. Please have anyone contacting the Survey in regard to this well to identify the well with all of the information required above for the well sign.

Sincerely yours,

GEORGE H. STEWART

George H. Stewart
Acting District Engineer

11 12



DELTA DRILLING COMPANY

Location of lease road to Amoco Federal No. 3
Locatedin Section 11, Township 23 South, Range 28 East, N.M.P.M., Eddy County, New Mexico.

APPLICATION FOR DRILLING

Delta Drilling Company
Amoco Federal #3
990'FEL & 1980'FNL
Section 11, T-23S, R-28E
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 Recent Sediments.

2. The estimated tops of geologic markers are as follows:

Lamar	2625'
Br. Canyon	2670'
Ch. Canyon	3615'
Bone Springs	6261'

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 6261-6500'.

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 - FLUID
DLL w/ Micro SFL
CNL/FDC
BHC Sonic

9. Anticipated Starting Date: As soon as possible.

MULTI-POINT SURFACE USE AND OPERATIONS PLAN

Delta Drilling Company
Amoco Federal #3
1980' FNL & 990' FEL
Section 11, T-23S, R-28E
Eddy County, New Mexico

This plan is submitted with From 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 3-1/2 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, 1-1/4 miles 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 0.6 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; existing road built as access to location known as Amoco Federal #1.

   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 Federal #1 is presently drilling on this lease. It is located approximately 1/4 mile to the south.

   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 caliche required for construction of the drilling pad and the new access road will be obtained from an existing pit privately owned by Mississippi Chemical located in Section ~~18~~ 17, T-23S, R-29E.

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 is 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.

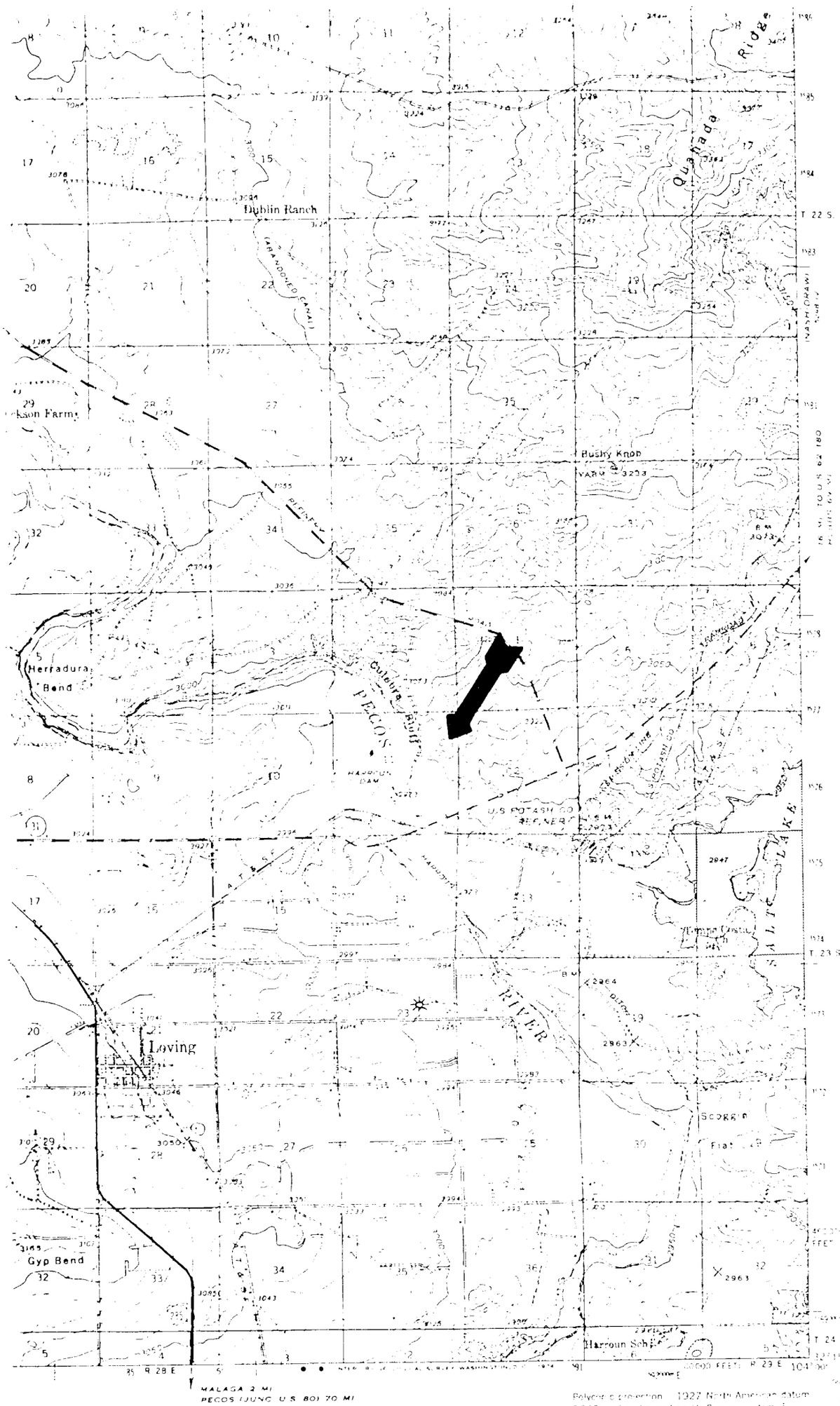
A. The field representatives responsible for assuring compliance with the approved surface use plan are:

Drilling Department	Production Department
Ken Heathman 915/332-7371	Jim Brusenhan 915/682-4161 915/694-3554
Joe Williams 915/332-7371	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



Polyconic projection. 1927 North American datum
5000 yard grid based on U. S. zone system
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

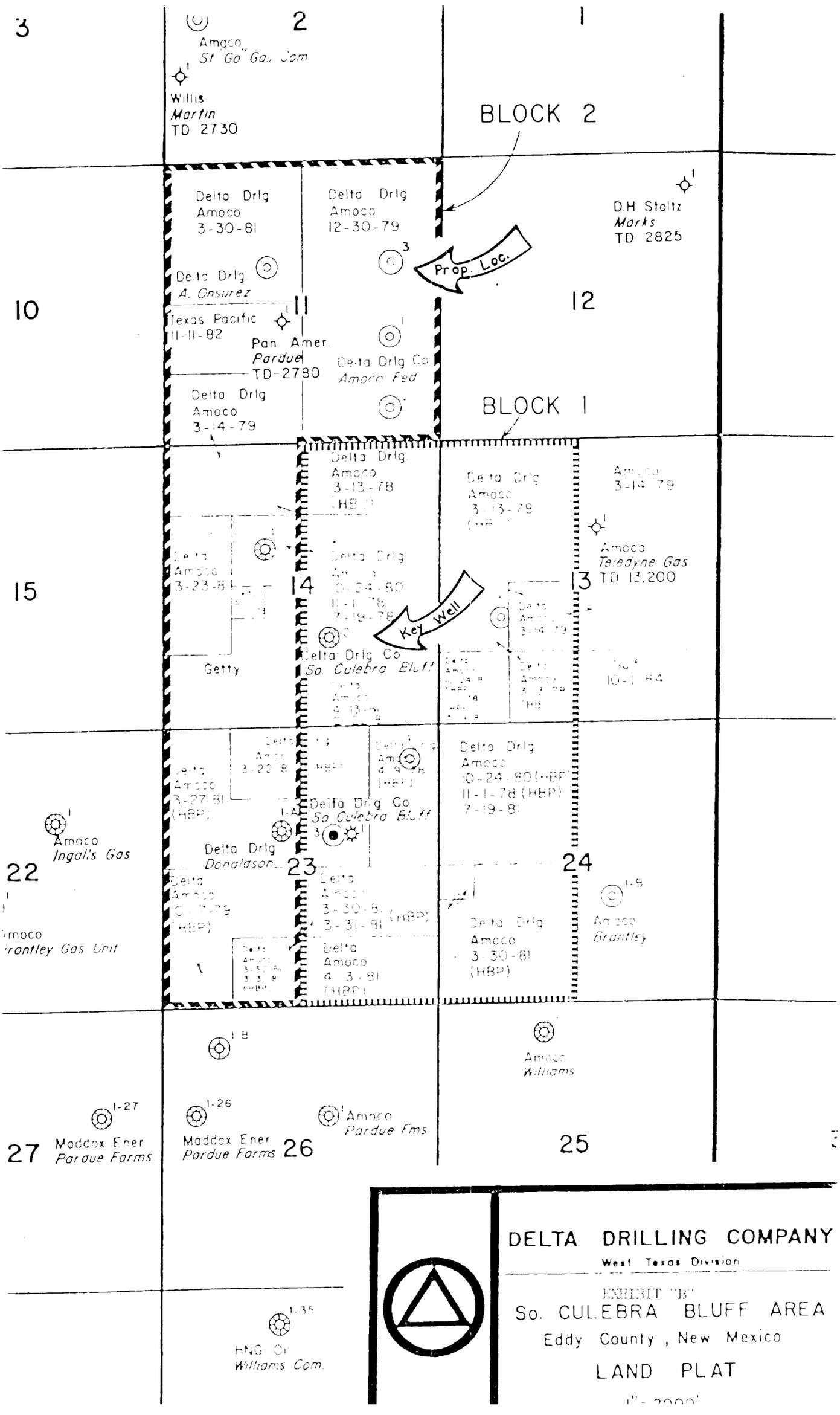
1939

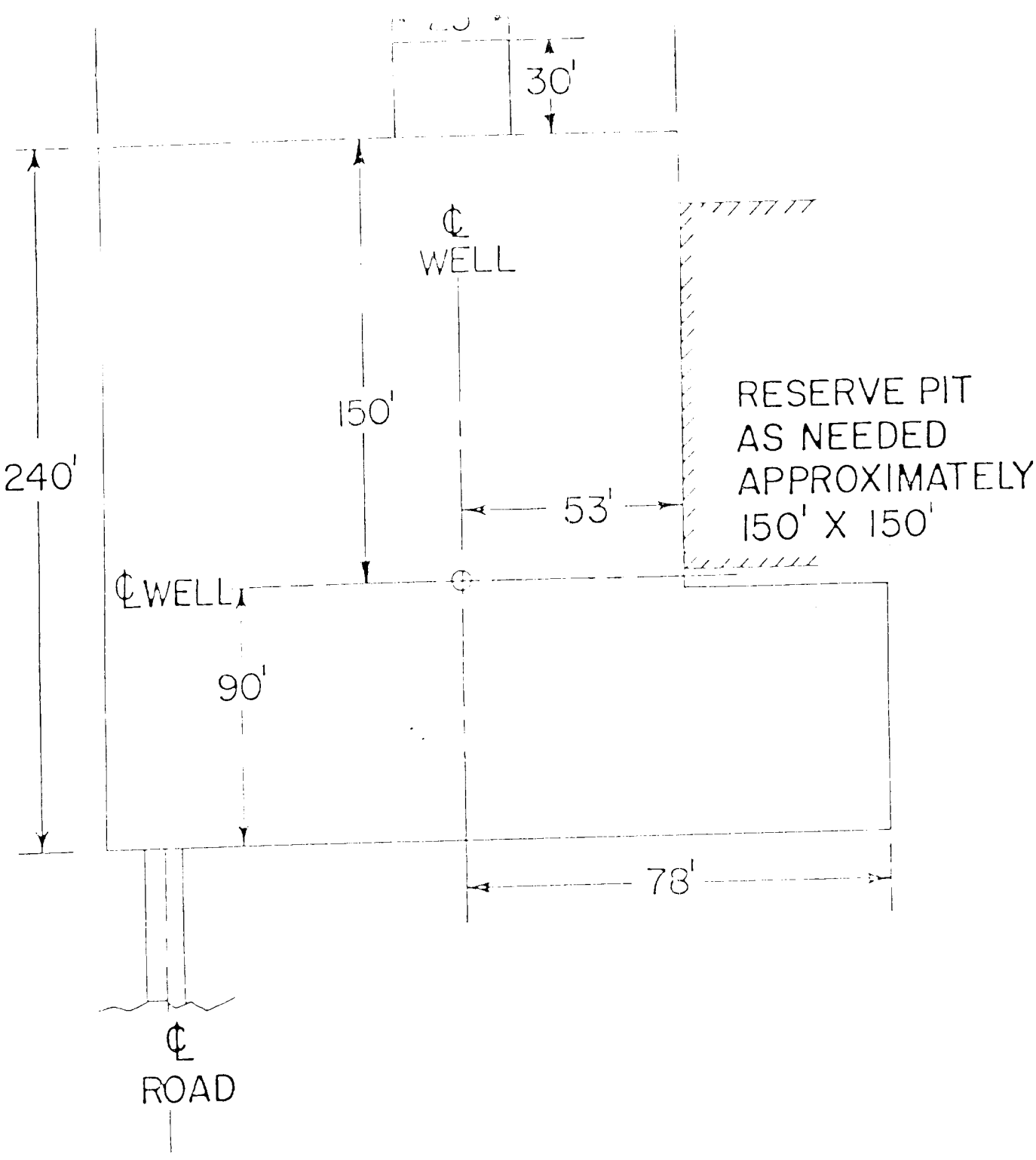
PHOTOREVISED 1973

AMS 5148 II SERIES V881

80225 OR RESTON, VIRGINIA 22092
IS AVAILABLE ON REQUEST

EXHIBIT "A"

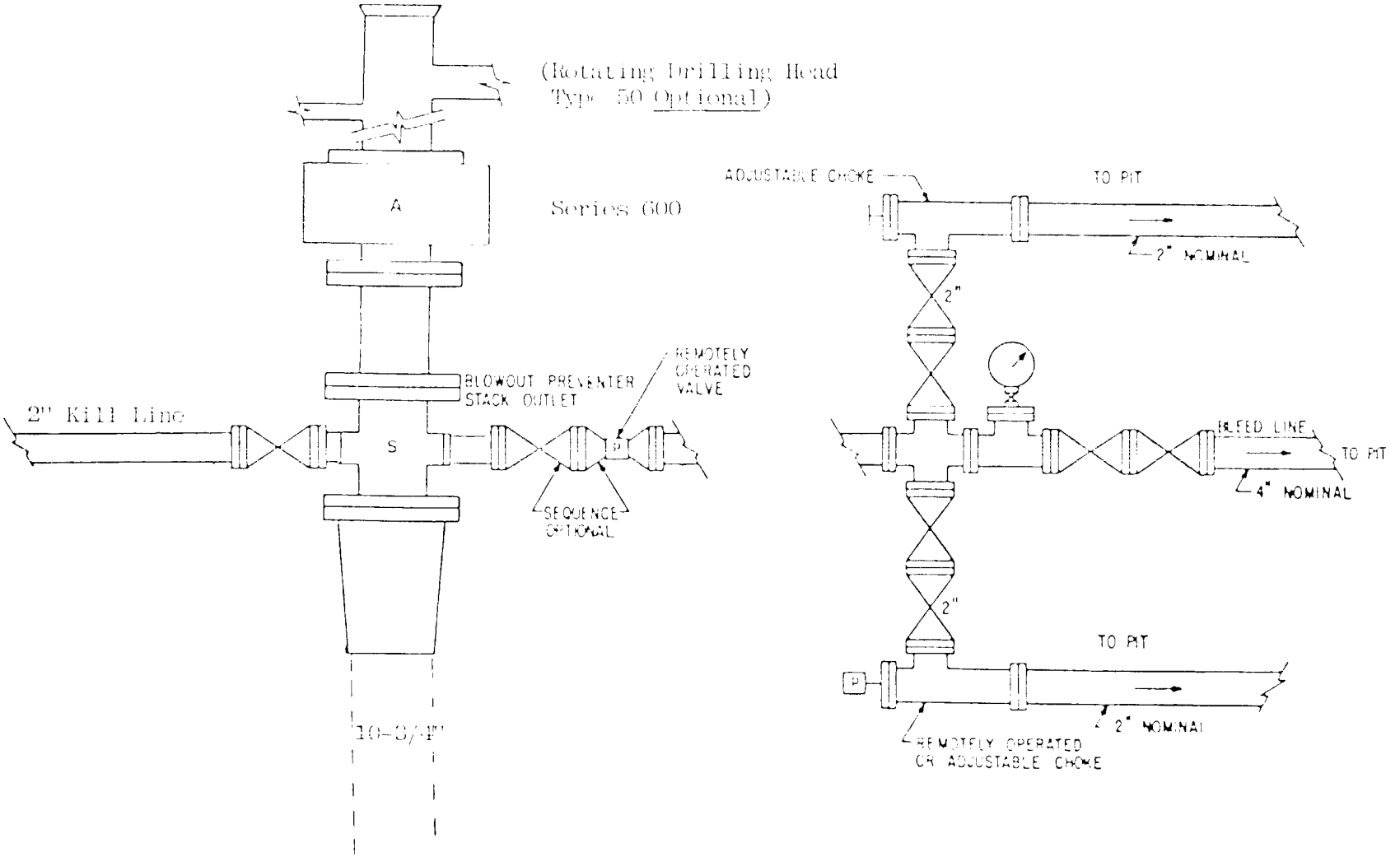

3
2
1
Amoco
St Go" Gas Com
Willis
Martin
TD 2730
BLOCK 2
Delta Drlg
Amoco
3-30-81
Delta Drlg
Amoco
12-30-79
D H Stoltz
Marks
TD 2825
Prop. Loc.
Delta Drlg
A. Onsurez
10
11
12
Texas Pacific
11-11-82
Pan Amer.
Pardue
TD-2780
Delta Drlg Co
Amoco Fed
Delta Drlg
Amoco
3-14-79
BLOCK 1
Delta Drlg
Amoco
3-13-78
(HBP)
Delta Drlg
Amoco
3-13-78
(HBP)
Amoco
3-14-79
Amoco
Teledyne Gas
TD 13,200
15
14
13
Key Well
Delta Drlg Co
So. Culebra Bluff
Getty
Delta Drlg
Amoco
3-27-81
(HBP)
Delta Drlg Co
So Culebra Bluff
Delta Drlg
Amoco
10-24-80 (HBP)
11-1-78 (HBP)
7-19-81
Amoco
Ingall's Gas
22
Delta Drlg
Donalson
23
24
Delta Drlg
Amoco
3-30-81
3-31-81 (HBP)
Delta Drlg
Amoco
3-30-81
(HBP)
Amoco
Brantley
Amoco
Brantley Gas Unit
Amoco
Williams
Maddox Ener
Pardue Farms
Maddox Ener
Pardue Farms
26
Amoco
Pardue Fms
27
25
HNG Oil
Williams Com.
DELTA DRILLING COMPANY
West Texas Division
EXHIBIT "B"
So. CULEBRA BLUFF AREA
Eddy County, New Mexico
LAND PLAT
1"=2000'



LOCATION DIMENSIONS
RIGS 81 & 86

EXHIBIT D

First Nipple up on 10-3/4"



Second Nipple up on 7"

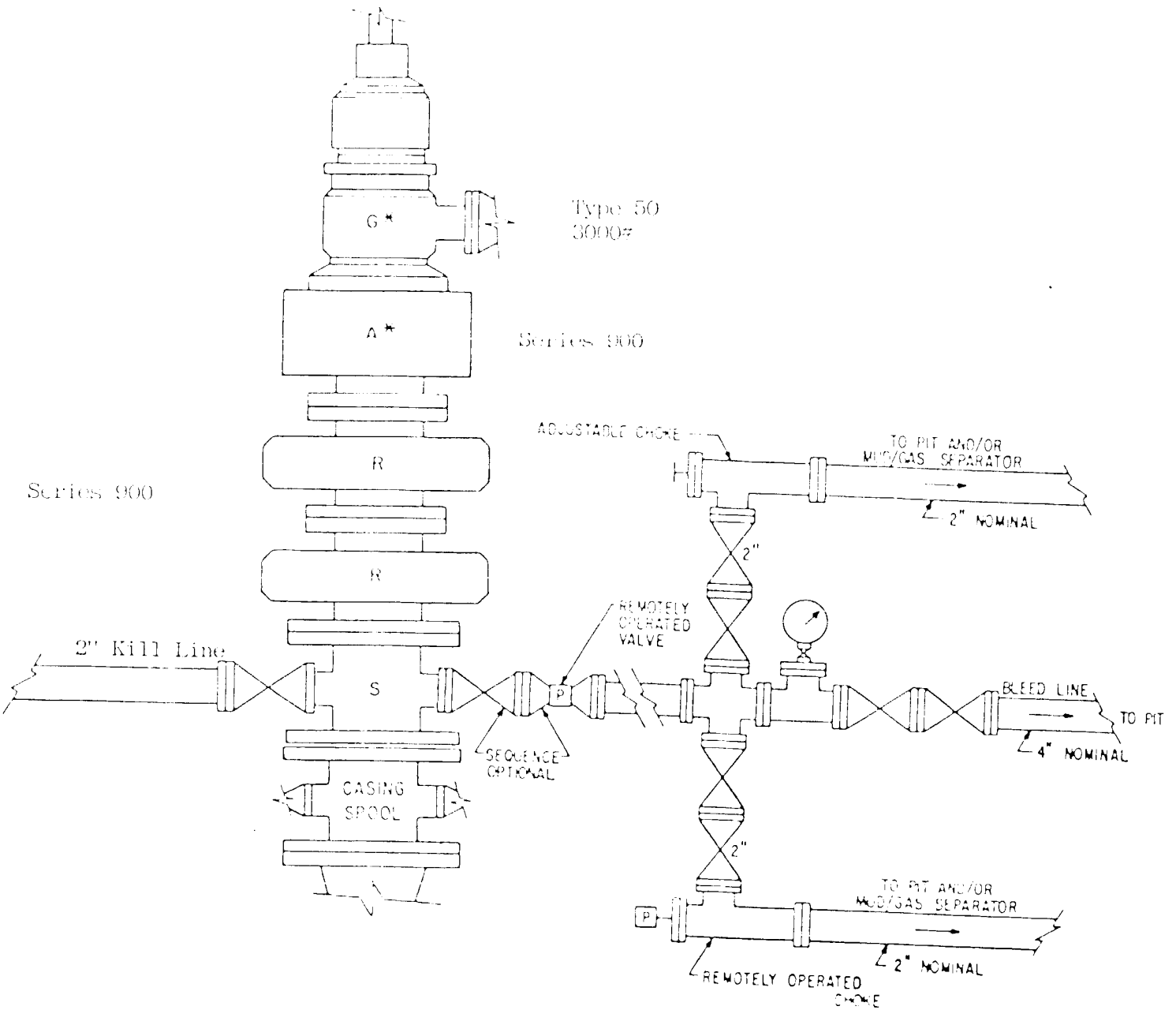


EXHIBIT F

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+'. Run and cement 450' of 10-3/4" K-55 casing with 550 sxs 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 6310+' with 10# saturated brine. Run and set 6310' of 7" K-55 casing. Cement with 1600 sxs HLC containing 3/4% of CFR-2 1/4# Flocele and 6# salt. Tail in with 300 sxs Class "H" with 3/4% CFR-2 and 5# KCL. 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 6500' on air or air/mist. Projected TD will be 6500'. 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 viscostiy. 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.

475-6310'

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 6310'.

6310-6500'

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 6500'. 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 1⅛" 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, 6¾" X 7½", 500 HP driven by D-379TA Caterpillar engine

DRILL STRING
- 9000'—4" O.D., 14 #/ft., Gr. E, 4½" F.H. tool joints
- 17—Drill collars, 6" O.D. by 30', with 4½" XH connections

PREVENTERS (H_2S 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 17½", T1750
- Crown-O-Matic

AMOCO #3 SURFACE CASING

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

SEGMENT NO.	GRADE	JOINT	WEIGHT	TOP FT	BOTTOM FT	LENGTH FT	COST $
1	K55	I	40.5	0.	450.	450.	6085.

TOTAL CASING COST = $ 6085.

SEGMENT NO.	MFG.	CUM. WEIGHT LB	DRIFT INCHES	I.D. INCHES	COLLAPSE FACTOR	BURST FACTOR	TENSION FACTOR
1	SMITH	18225.	9.89	10.05	4.570	15.850	54.591

MAXIMUM BIT SIZE CONSIDERING DRIFT = 9.89

CASING SIZE, In.	10.75	CASING JOINT LENGTH, FT.	40.
MINIMUM SEGMENT LENGTH,FT.	40.	COLLAPSE DESIGN FACTOR	1.000
CASING DEPTH, FT.	450.	BURST DESIGN FACTOR	1.000
MUD WEIGHT, LB/GAL.(BIT)	14.30	TENSION DESIGN FACTOR	1.600
MUD WEIGHT, LB/GAL.(CSG)	9.00	FORMATION PRESSURE, PSI	200.

DATE : 10-25-79
TIME : 08:58:07

[illegible]
[illegible]

C A S I N G   D E S I G N   M O D E L

SEGMENT NO.	GRADE	JOINT	WEIGHT	TOP FT	BOTTOM FT	LENGTH FT	COST $
1	K55	[illegible]	26.0	5360.	6310.	950.	[illegible]
2	K55	[illegible]	23.0	3360.	5360.	2000.	[illegible]
3	K55	[illegible]	20.0	30.	3360.	3330.	[illegible]
4	K55	[illegible]	26.0	0.	30.	30.	[illegible]

TOTAL CASING COST = $ [illegible]

SEGMENT NO.	MFG.	CUM. WEIGHT LB	DRIFT, INCHES	I.D. INCHES	COLLAPSE FACTOR	BURST FACTOR	TENSION FACTOR
1	SMITH	24700.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	SMITH	[illegible]	6.24	[illegible]	[illegible]	[illegible]	[illegible]
3	SMITH	[illegible]	[illegible]	6.46	1.134	[illegible]	[illegible]
4	SMITH	[illegible]	6.15	6.33	[illegible]	[illegible]	[illegible]

MAXIMUM BIT SIZE CONSIDERING DRIFT = [illegible]

CASING SIZE, IN.	7.00	CASING JOINT LENGTH, FT.	30.
MINIMUM SEGMENT LENGTH, FT.	[illegible]	COLLAPSE DESIGN FACTOR	1.000
CASING DEPTH, FT.	6310.	BURST DESIGN FACTOR	1.000
MUD WEIGHT, LB/GAL (EXT)	[illegible]	TENSION DESIGN FACTOR	[illegible]
MUD WEIGHT, LB/GAL (INT)	[illegible]	FORMATION PRESSURE, PSI	[illegible]

DATE : 11/05/[illegible]
TIME : [illegible]

990' FEL & 2080' FNL
Sec 11, T-23S, R-28E
Eddy County, New Mexico