



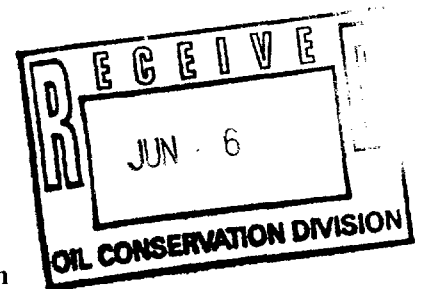
Guides NW of Lindrieth

June 2, 1995

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, New Mexico 87504

Attention: Messrs. Michael E. Stogner
David R. Catanach

RE: **Application for the June 29, 1995 examiner hearing concerning a project to drill a horizontal lateral section into the Gallup formation**
C. W. Roberts No. 4, Surf Loc: 660' FSL, 660' FWL, Unit M
Sec. 17-T25N-R3W, West Lindrieth Gallup-Dakota Oil Pool
Rio Arriba County, New Mexico



Gentlemen:

Texaco Exploration and Production Inc. seeks approval to drill a short radius horizontal re-entry into the Gallup formation. We are requesting that this project be added to the June 29, 1995 examiner hearing docket. We intend to drain the Gallup portion of the subject pool in two adjacent 160 acre spacing units with the proposed re-entry. Therefore, we are also requesting an assignment of allowable based on a non-standard or double proration unit.

We plan to mill out a section of casing, sidetrack, drill and complete a single 2500' short radius horizontal section into the Gallup formation. Attachment IV-A and IV-B, respectively are wellbore diagrams for the current and proposed completions. The wellbore diagram of the proposed completion shows the vertical orientation of the re-entry. The horizontal leg will be in a eastward direction (see attachment III). We expect to recover additional Gallup reserves in the adjacent undeveloped W. Lindrieth Gallup Dakota 160 acre spacing unit (SE quarter of section 17, T25N-R3W). These reserves would normally be recovered by an additional vertical well. Both spacing units are included in the Texaco Exploration and Producing Inc. operated C. W. Roberts lease (ownership is common).

Also attached are copies of signed certified mail return receipt cards (or signed waivers) from the operators of offset spacing units who have received written notification of our application for this horizontal re-entry project.

Your attention to this matter is greatly appreciated. If you have any questions concerning this matter please contact me at 505-325-4397, ext. 15.

Sincerely,

Rached Hindi

Rached Hindi
Senior Engineer
MRR/s
Attachments
cc: NMOCD-Aztec

LIST OF ATTACHMENTS

- I. DRILLING PROCEDURE
- II. BASE MAP
- III. N.M.O.C.D. WELL LOCATION AND ACREAGE DEDICATION PLAT - FORM C-102
- IV. A. WELLBORE DIAGRAM - EXISTING CONDITION
B. WELLBORE DIAGRAM - PROPOSED CONDITION
- V. OFFSET OPERATOR PLAT
- VI. OFFSET OPERATOR ADDRESS LIST
- VII. ELECTRIC LOG OF HORIZONTAL INTERVAL

Attachment I

C. W. ROBERTS #4 HORIZONTAL SINGLE LATERAL REENTRY

The subject well is a producing well. It is to be reentered and a single horizontal lateral is to be drilled in the Gallup formation. The existing perforations in the Pictured Cliff and Mesa Verde formations will be squeeze cemented and a 40' section is to be milled in the casing. A short radius horizontal lateral will be drilled in the west direction approximately 2500' long. The well will be acidized using coiled tubing, if necessary, and then production tested.

WELL PREPARATION:

- 1) MIRUSU. Nipple up 3M BOPE.
- 2) Kill well with produced water.
- 3) TOH and lay down production tubing.
- 4) TIH with 4-3/4" bit on 2-7/8" work string and clean out to PBTD. TOH.

SQUEEZE EXISTING PERFORATIONS:

- 5) TIH with cement retainer on tubing and set above Pictured Cliff perfs (3680'-3700') at 3650'.
- 6) Space out tubing in neutral position and test tubing to 3000 psi. Rig up squeeze manifold. Establish rate into perforations (2 BPM), note pump in pressure. Pressure up annulus to 1000 psi, monitor casing during job.
- 7) Cement squeeze with 150 sx Class "G" with 0.2% D156 and 0.2% D65 to obtain a fluid loss of 200-300 cc/30 min. (determine by lab testing) followed by 100 sx Class "G" neat, mixed at 15.8 ppg. Minimum pump time 150 minutes at 175°F.
 - a) Spot cement to end of tubing.
 - b) Sting into retainer.
 - c) When cement reaches perforations, slow rate to 1/2 BPM
 - d) Maximum squeeze pressure 3000 psi.
 - e) Displace cement to retainer.
- 8) Pull out of retainer, reverse out cement and check for flow. Pull tubing to 2000' and shut-in for 24 hours. TOH with tubing.

C. W. Roberts No. 4
Horizontal Reentry
Rio Arriba County, New Mexico
Drilling & Completion Procedure

- 9) Trip in hole with 4-3/4" bit, drill collars and tubing and drill out retainer and cement to 3700'. Circulate hole clean. Shut in backside and test casing to 500 psi.
- 10) Drill out cement retainers (3879' & 4480') and cement plugs (4000' & 4580') and test to 500 psi. Drill out CIBP at 5325'. Repeat steps 5 - 9 for squeezing Mesa Verde perms at 5352'-73 and 5555'-65'. Drill out cement retainer at 6875' and cement to 6940'

MILL 5 1/2" CASING:

- 11) Circulate hole with mud for milling. TOH with tubing and bit.

MUD: Starch
Volume: (6800' * .0238 bbl/ft = 162 bbls + 200 bbls for pit = 362 bbls)
Weight: 8.5 - 8.7
Funnel Visc.: 75-80
- 12) If casing collar log is not available in Area, Run GR-CCL to determine position of collars. (Window may be moved +/- 10 to avoid milling a casing collar).
- 13) TIH with mill for 5 1/2" casing on 2 7/8" workstring. Mill 40' section of casing from +/- 6890' - 6930'. While milling, run paper sweeps in the mud to ensure the hole is clean. Place ditch magnets in return lines to catch metal cuttings. Any time a trip is made, make sure the hole is clean and the blades are retracted.
- 14) TOH with mill.

SPOT KICK OFF PLUG:

- 15) TIH with diverter tool and +/- 400' 2 3/8" (2 1/16" if available) on 2 7/8" work string to PBTD 6940' Circulate Starch mud out of hole. Pull up hole so diverter tool is across milled section and wash section. TIH to PBTD.
- 16) Spot 50 sx Class "G" mixed at 17.5 PPG from 6700' to +/- 6940' (200' above window). Batch mix cement. Pull out of cement plug slow to approximately 4000'. **Do not reverse circulate** . Shut in for 24 hours minimum. TOH with tubing.

C. W. Roberts No. 4
Horizontal Reentry
Rio Arriba County, New Mexico
Drilling & Completion Procedure

- 17) TIH with 4 3/4" bit and dress off cement to the KOP at 6900'. TOH with 4 3/4" bit. Cement must drill 1.5-2 min/ft with 10 pts and 50 RPM to insure the plug is hard enough for kickoff.
- 18) Circulate hole clean.

DRILL CURVE SECTION (WEST DIRECTION):

- 19) Displace hole with starch mud. TOH with bit.
- MUD: Starch
Volume: (6800' * .0238 bbl/ft + 200 bbls for pit + 2500' * .0219 bbl/ft)
(162 bbls + 200 bbls + 55 bbls = 417 bbls)
Weight: 8.7
Funel Visc.: 35-40
- 20) Pick up kick-off motor and test on surface. TIH with kick-off BHA s follows:
- 4 3/4" bit.
Kick-off motor (with 2.5-3.0° bent sub)
Float/ orientation sub.
1 jt 2 7/8" flexible monel collars.
Enough P-110 tubing to reach from KOP to end of planned horizontal wellbore.
Drill collars
2 7/8", Grade G, AOH DP. to surface.
- 21) TIH to **KOP (6900')**. Run GYRO and Orient motor to west direction. Break circulation and establish off bottom pressure at operating flow rates. **Planned build rate is 57°/100' with a radius of 100'.**
- 22) Slowly lower motor to bottom, adjusting toolface as necessary to compensate for reactive torque. Drill approximately 20' of build section with kick-off motor. TOH with kick-off motor and lay down. Pick up build motor (3 restricted articulations to maintain build rates below 70°/100') and TIH. Continue drilling curve while maintaining proper toolface orientation. Drill curve section to **target depth of 7000' TVD** for start of horizontal.

C. W. Roberts No. 4
Horizontal Reentry
Rio Arriba County, New Mexico
Drilling & Completion Procedure

- 23) Circulate hole clean. TOH with curve motor.

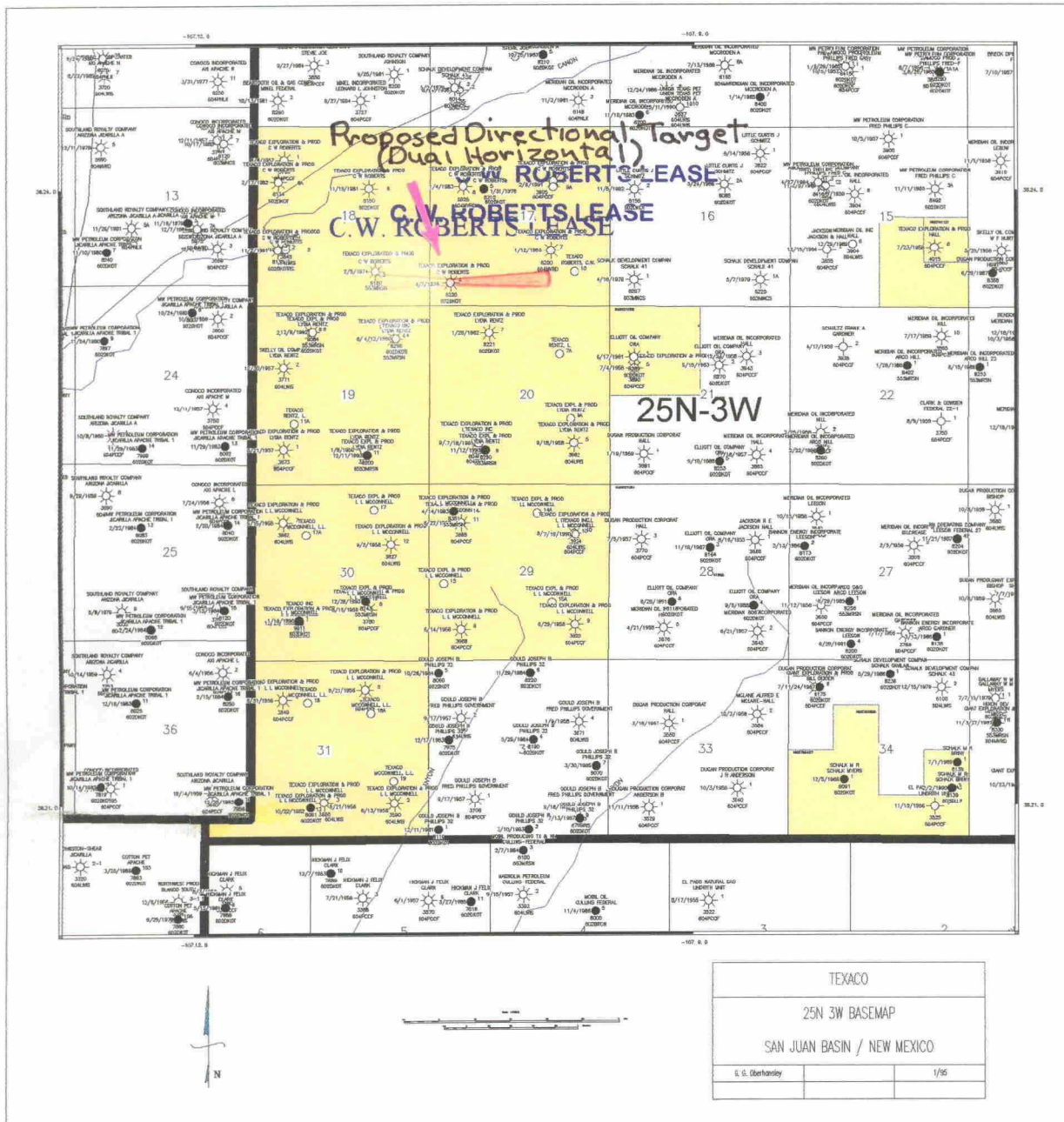
DRILL HORIZONTAL LATERAL (WEST DIRECTION):

- 24) TIH with lateral motor BHA. (Same as step 22 but motor has lower build rate.)
- 25) Drill the **horizontal lateral (2500')** adjusting tool face as needed to the target. **The end of the horizontal target depth is 7030' TVD.** There is a window around the target line which the well path is to stay within. (see attached well plan for well path and hardlines). While drilling the lateral section, run sweeps of 5 bbls. water, 3 bbls prehydrated gel (90+ viscosity), and 1 gallon polymer.
- 26) At TD circulate hole clean with mud. TOH. Release directional equipment.

COMPLETION:

- 27) TIH with muleshoe, 6 jts P-110 tbg and 5-1/2" casing on 2 7/8" tubing. Space out so P-110 tubing is across curve section and packer is in the casing. Set the packer.
- 28) Rig up coiled tubing unit. TIH with "PERFCLEAN" jetting sub on 1 1/2" coiled tubing to TD. Circulate mud out of hole
- 29) Wash 1st lateral open hole with 25,000 gallons 15% NEFE. Rate 2 BPM. POH with coiled tubing while acidizing so entire open hole is stimulated.
- 30) Displace acid to the end of the tubing. SI for 15 min.
- 31) Flow well until dead. TOH with coiled tubing.
- 32) TOH with workstring. TIH with production equipment and test well as needed.

Attachment II



C.W. Roberts #4

Horizontal Gallup Re-entry



C.W. ROBERTS No. 4

Current Completion

LOCATION:

660' FSL & 660' FWL
SW/SW, Sec. 17, T25N, R3W
Rio Arriba County

SPUD DATE: 6-15-58

COMPL DATE: 7-23-58

ELEVATION: 7152' KB
7142' GR

2-3/8" TBG @ 3696'

PICTURED CLIFF PERFS (10/89):

3680'-3700'
20', 4 JSP

Acid w/ 500 Gal. 15% HCl
Frac w/ 40,000# 20/40 Sand & 43,000 Gal. KCl Water
BDP 1330#, AVG IR 6 BPM @ 800#

TOC @ 4970' (Temp. Survey)

MESAVERDE PERFS (10/89):

5352'-73', 5555'-65'
1 SPF, Total 29 shots

Frac w/ 75,000# 20/40 Sand & 77,000 Gal. KCl Water
BDP 3400#, AVG IR 40 BPM @ 3900#

GALLUP PERFS:

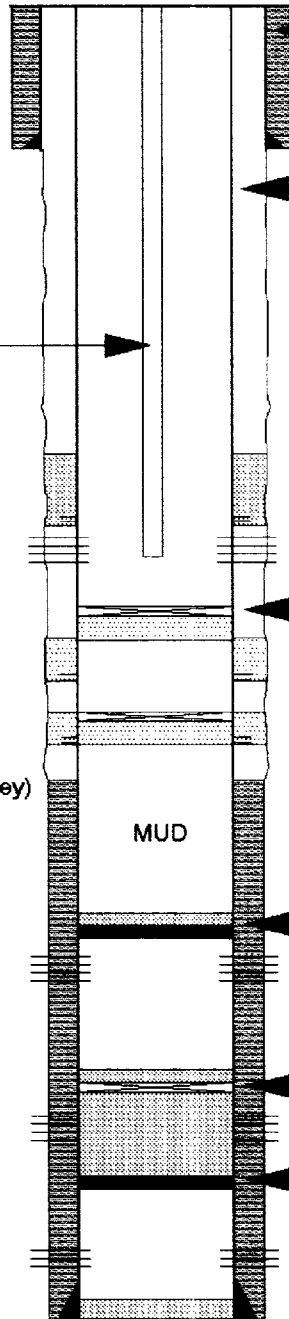
6960'-7250'

100', 1 SPF, Total 200 shots
Frac w/ 120,000# 40-60 Sand & 63,000 Gal. Lse Oil
3500 Gal. Acid, MAX TP 4500#, AVG IR 20 BPM

DAKOTA PERFS:

8024'-8057'
33', 4 SPF, Total 132 shots

Frac w/ 20,000# 40-60 Sand & 25,000 Gal. Lse Oil
BDP 2700#, MAX TP 3500# SD 2200#, IR 23.3 BPM



13-3/8", 48#, H40 CSG
Set @ 323'
w/ 350 SXS CMT.
Circ. CMT

5-1/2", 17# CSG.*
Set @ 8201' In 8-3/4" Hole
w/ 375 SXS CMT &
375 CU.FT. Strata Crete

*5-1/2" CSG SET @:
N-80 @ 156'(156') - Top
J-55 @ 7792'(7636') - Mid.
N-80 @ 8188'(396') - Bottom

Pumped 275 SXS CMT into
SQZ Holes @ 3595'-3600'

Pumped 75 SXS CMT into
Retainer @ 3879'

Pumped 250 SXS CMT into
SQZ Hole @ 4000'

Pumped 75 SXS CMT into
(100' plug inside & out-100% excess)
SQZ Hole @ 4580' to Retainer @ 4480'

MUD

10 SXS CMT on top of
CIBP @ 5325' (10/89)

5 SXS on top of
CMT RETAINER @ 6875'
pumped 50 SXS CMT

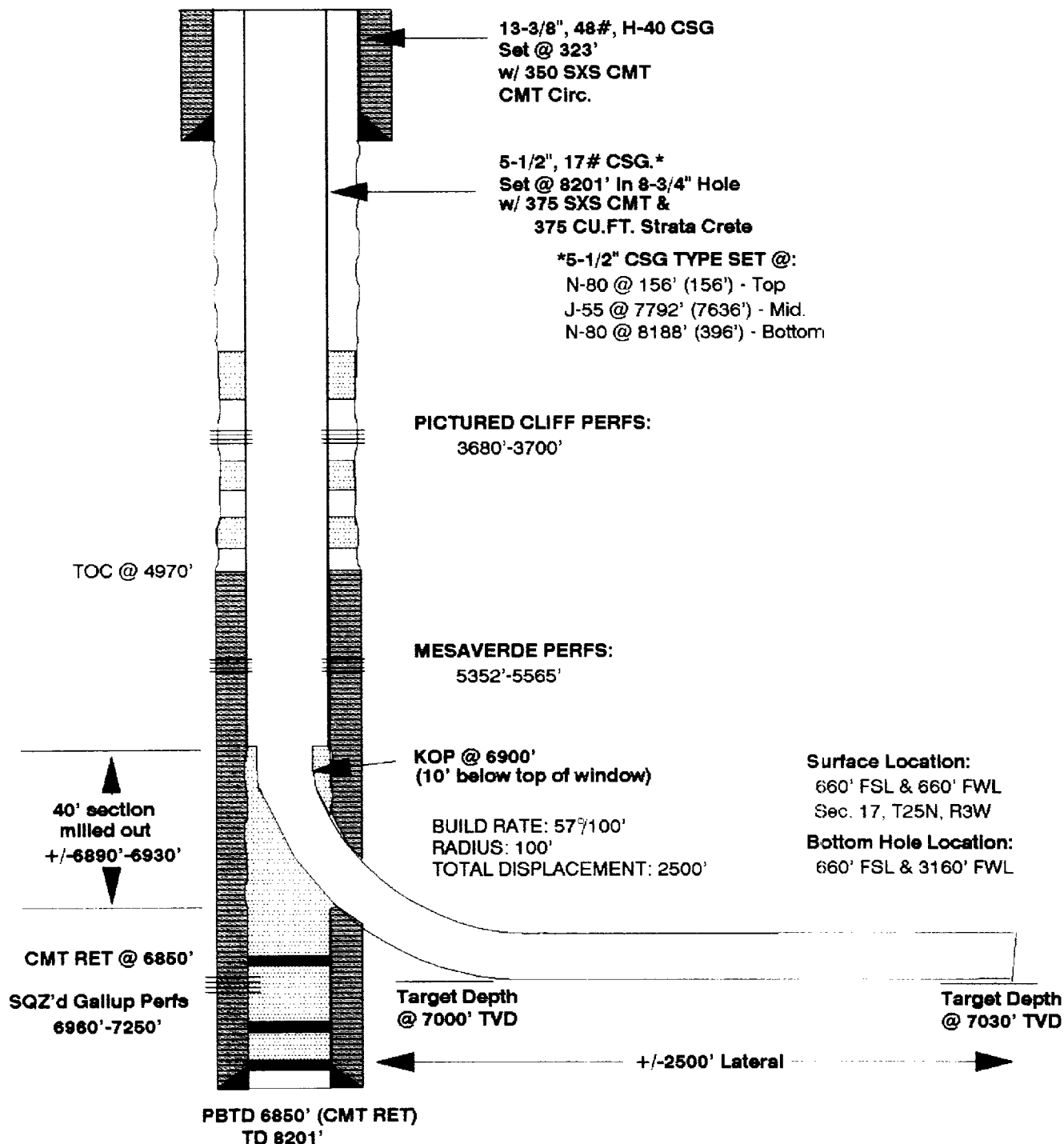
Model "K" Retainer @ 7400'

PBTD - 3879'
TD - 8220'



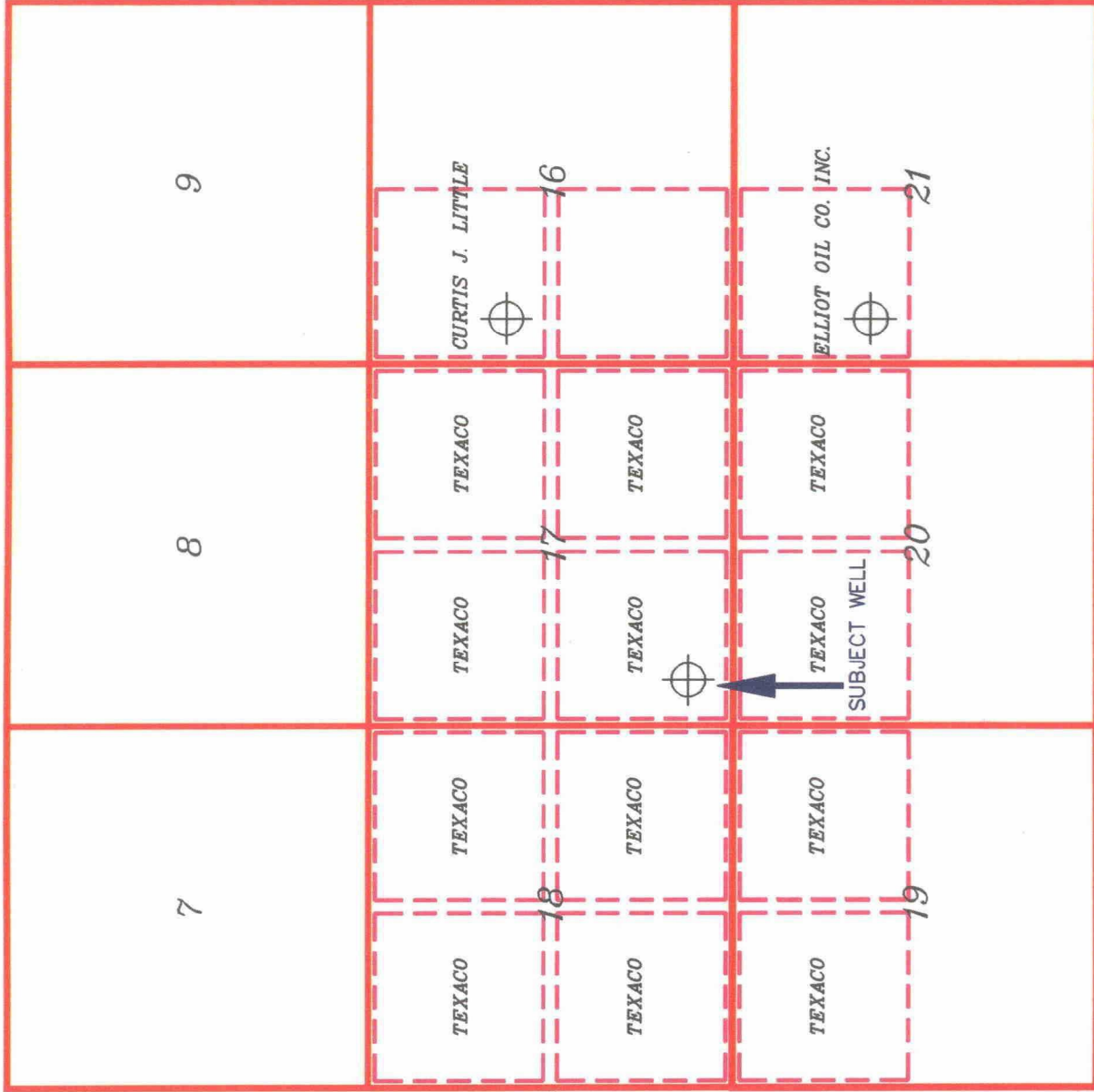
C.W. ROBERTS No. 4

PROPOSED SIDETRACK COMPLETION

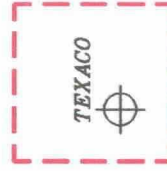



T 25 N / R 03 W

Attachment I



WEST LINDRITH GALLUP/DAKOTA
160 AC. SPACING UNIT





FARMINGTON OPERATING UNIT
DENVER DIVISION
DENVER, COLORADO

AREA: C. W. ROBERTS LEASE
RIO ARRIAGA COUNTY, NEW MEXICO
DESCRIPTION: OFFSET OPERATORS
WEST LINDRITH GALLUP/DAKOTA POOL
TEXACO E & P, INC. - C.W. ROBERTS # 4

DATE: 5/3/95
BY: [signature]
SCALE: 1" = 160'

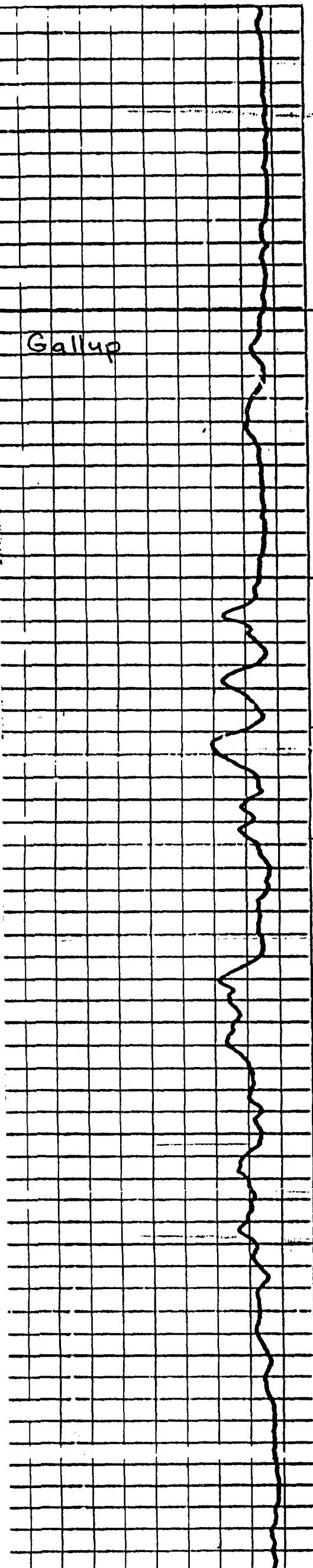
REVISION:
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

Attachment VI

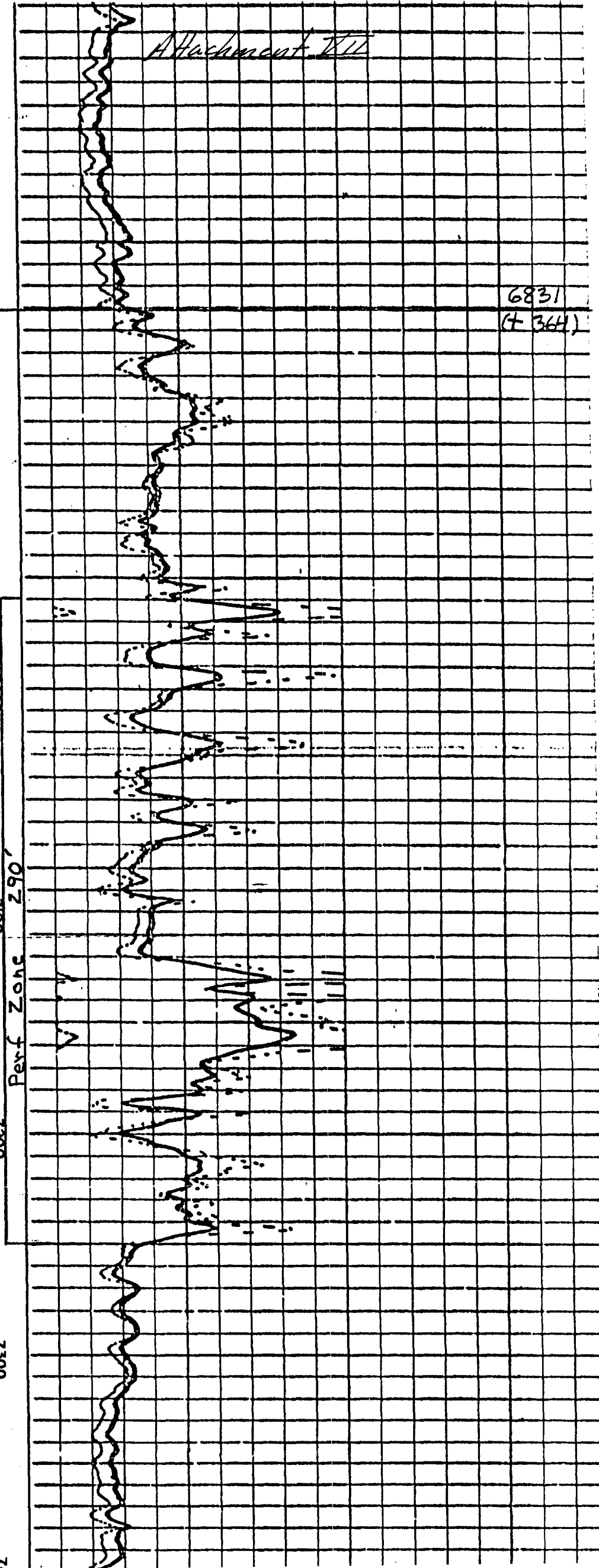
OFFSET OPERATORS
C.W. ROBERTS #4
WEST LINDRITH GALLUP/DAKOTA

Elliott Oil Co.
P.O. Box 1355
Roswell, NM 88202

Little, Curtis J., Oil & Gas
Box 1258
2346 E. 20th St.
Farmington, NM 87499



700 6800 5900 7000 7100 7200 7300



Attachment VIII

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

LITTLE, CURTIS J., OIL & GAS
P.O. BOX 1258
2346 E. 20TH ST.
FARMINGTON, NM 87499

4a. Article Number

2 175 054 504

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5-30

5. Signature (Addressee)

Chere Anderson

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

ELLIOTT OIL CO.
PO BOX 1355
ROSWELL, NM 88202

4a. Article Number

2 175 054 503

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5-30-95

5. Signature (Addressee)

Chere Anderson

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

November 19, 1973

Skelly Oil Company
1088 Lincoln Tower Building
1860 Lincoln Street
Denver, Colorado 80203

Attention: Mr. Leland Franz

Administrative Order NSL-626

Gentlemen:

Reference is made to your application for approval of a gas well location for your C. W. Roberts Well No. 4 located 660 feet from the South line and 660 feet from the West line of Section 17, Township 25 North, Range 3 West, NMPM, Mesaverde Pool, Rio Arriba County, New Mexico.

By authority granted me under the provisions of Rule 104 F of the Commission Rules and Regulations, the above-described unorthodox location is hereby approved.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/JEK/dr

cc: Oil Conservation Commission - Aztec
Oil & Gas Engineering Committee - Hobbs

Attachment VIII

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

LITTLE, CURTIS J., OIL & GAS
P.O. BOX 1258
2346 E. 20TH ST.
FARMINGTON, NM 87499

4a. Article Number

2 175 054 504

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5-30

5. Signature (Addressee)

Chere Anderson

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

ELLIOTT OIL CO.
PO BOX 1355
ROSWELL, NM 88202

4a. Article Number

2 175 054 503

4b. Service Type

- ☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5-30-95

5. Signature (Addressee)

Elliot none

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1993-352-714

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.