

State of New Mexico  
**ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT**  
Santa Fe, New Mexico 87505



**OIL CONSERVATION DIVISION**



January 18, 1995

ARCO Permian  
c/o Campbell, Carr, Berge & Sheridan, P. A.  
P. O. Box 2208  
Santa Fe, New Mexico 87504-2208  
Attn: William F. Carr

*Administrative Order DD-105(H)*  
Horizontal Drainhole

Dear Mr. Carr:

Under the provisions of the Special Rules and Regulations for the Empire-Abo Pressure Maintenance Project, as promulgated by Division Order No. R-4549, as amended, ARCO Permian made application to the New Mexico Oil Conservation Division on December 27, 1994 for a high angle/short radius horizontal drainhole to be drilled in the Empire-Abo Pressure Maintenance Project, Empire-Abo Unit Area, Empire-Abo Pool, Eddy County, New Mexico.

Now on this 17th day of January, 1995, the Division Director finds that:

- (1) The application has been duly filed under the provisions of Rules 14 B., 14 C., and 14 D. of said Order No. R-4549, as amended, for administrative authorization to drill a high angle/short radius horizontal drainhole within the wellbore of its existing Empire Abo Unit "K" Well No. 17 (API No. 30-015-00703), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico.
- (2) The applicant proposes to kick-off from the existing vertical wellbore at a depth of approximately 6,005 feet with a short radius curve and drill horizontally within the Abo formation in an easterly direction a lateral distance of 1,000 feet.
- (3) Said well and projected drainhole will be no closer than 330 feet to the outer boundary of the Empire-Abo Unit Area, as required by said Rule 14.B; therefore, correlative rights of other off-set operators should be adequately protected from any adverse effects caused by the drilling of the subject drainhole.
- (4) The Division having reviewed the subject application, supplemented by OCD records in Santa Fe, all requirements prescribed in said Rules 14. B, C, and D have been met.

**VILLAGRA BUILDING - 408 Galisteo**

Forestry and Resources Conservation Division  
P.O. Box 1948 87504-1948  
827-5830

Park and Recreation Division  
P.O. Box 1147 87504-1147  
827-7465

**2040 South Pacheco**

Office of the Secretary  
827-5950

Administrative Services  
827-5925

Energy Conservation & Management  
827-5900

Mining and Minerals  
827-5970

Oil Conservation  
827-7131

(5) The subject application should be approved and the well should be governed by the provisions contained within this order and all other provisions of the Special Rules and Regulations for the Empire-Abo Pressure Maintenance Project, as promulgated by Division Order No. R-4549, as amended.

**IT IS THEREFORE ORDERED THAT:**

(1) ARCO Permian is hereby authorized to recomplete its existing Empire Abo Unit "K" Well No. 17 (API No. 30-015-00703), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, by kick-off from the vertical wellbore at a depth of approximately 6,005 feet in an easterly direction with a high angle radius curve, build to an angle of 90 degrees and continue drilling a horizontal drainhole in the Abo formation a lateral distance of 1,000 feet.

**PROVIDED HOWEVER THAT:** Prior to directional drilling operations, the ARCO Permian shall determine the subsurface location of the kick-off point in said well; and,

**PROVIDED HOWEVER THAT:** Subsequent to the above-described directional drilling, a survey shall be made of the wellbore from total depth to kick-off point. The operator shall forward a copy of the survey report directionally to the Santa Fe Office and to the Artesia District Office of the Division.

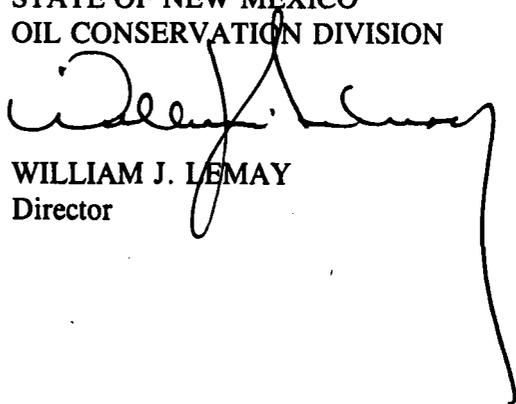
(2) The operator shall notify the Division's Artesia District Office of the date and time said survey is to be commenced.

(3) Form C-105 shall be filed in accordance with Division Rule 1105 and the operator shall indicate thereon true vertical depth (TVD) in addition to measured depths (MVD).

(4) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
WILLIAM J. LEMAY  
Director

S E A L

cc: Oil Conservation Division - Artesia  
U.S. BLM - Carlsbad  
File Case No: 11193

Received 12-27-94  
Release 1-17-95

NSL-ARCO.17

January 17, 1995

ARCO Permian  
c/o Campbell, Carr, Berge & Sheridan, P. A.  
P. O. Box 2208  
Santa Fe, New Mexico 87504-2208  
Attn: William F. Carr

105  
Administrative Order DD-\*\*\*<sup>(H)</sup>  
Horizontal Drainhole

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Now on this 17th day of January, 1995, the Division Director finds that:

(1) The application has been duly filed under the provisions of Rules 14 B., 14 C., and 14 D. of said Order No. R-4549, as amended, for administrative authorization to drill a high angle/short radius horizontal drainhole within the wellbore of its existing Empire Abo Unit "K" Well No. 17 (API No. 30-015-00703), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico.

(2) The applicant proposes to kick-off from the existing vertical wellbore at a depth of approximately 6,005 feet with a short radius curve and drill horizontally within the Abo formation in an easterly direction a lateral distance of 1,000 feet.

(3) Said well and projected drainhole will be no closer than 330 feet to the outer boundary of the Empire-Abo Unit Area, as required by said Rule 14.B; therefore, correlative rights of other off-set operators should be adequately protected from any adverse effects caused by the drilling of the subject drainhole.

(4) The Division having reviewed the subject application, supplemented by OCD records in Santa Fe, all requirements prescribed in said Rules 14. B, C, and D have been met.

(5) The subject application should be approved and the well should be governed by the provisions contained within this order and all other provisions of the Special Rules and Regulations for the Empire-Abo Pressure Maintenance Project, as promulgated by Division Order No. R-4549, as amended.

IT IS THEREFORE ORDERED THAT:

(1) ARCO Permian is hereby authorized to recomplete its existing Empire Abo Unit "K" Well No. 17 (API No. 30-015-00703), located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, by kick-off from the vertical wellbore at a depth of approximately 6,005 feet in an easterly direction with a high angle radius curve, build to an angle of 90 degrees and continue drilling a horizontal drainhole in the Abo formation a lateral distance of 1,000 feet.

PROVIDED HOWEVER THAT: Prior to directional drilling operations, the ARCO Permian shall determine the subsurface location of the kick-off point in said well; and,

PROVIDED HOWEVER THAT: Subsequent to the above-described directional drilling, a survey shall be made of the wellbore from total depth to kick-off point. The operator shall forward a copy of the survey report directionally to the Santa Fe Office and to the Artesia District Office of the Division.

(2) The operator shall notify the Division's Artesia District Office of the date and time said survey is to be commenced.

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DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY  
Director

*Administrative Order DD-\*\*\*(H)*  
*January \*\*\* , 1995*  
*Page No. 3*

S E A L

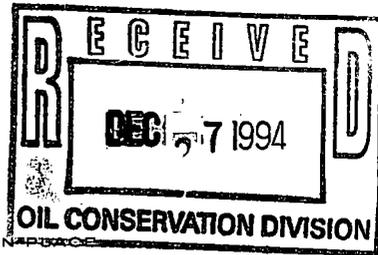
cc: Oil Conservation Division - Artesia  
U.S. BLM - Carlsbad  
File Case No: 11193

CAMPBELL, CARR, BERGE  
& SHERIDAN, P.A.  
LAWYERS

MICHAEL B. CAMPBELL  
WILLIAM F. CARR  
BRADFORD C. BERGE  
MARK F. SHERIDAN

MICHAEL H. FELDEWERT  
TANYA M. TRUJILLO  
NANCY A. RATH

JACK M. CAMPBELL  
OF COUNSEL



JEFFERSON PLACE  
SUITE 1 - 110 NORTH GUADALUPE  
POST OFFICE BOX 2208  
SANTA FE, NEW MEXICO 87504-2208  
TELEPHONE: (505) 988-4421  
TELECOPIER: (505) 983-6043

December 27, 1994

HAND-DELIVERED

William J. LeMay, Director  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505

DP-ARCO.17

Re: Application of ARCO Permian, a Unit of Atlantic Richfield, for Administrative Approval of Horizontal Drainhole (formerly the Pan American Malco Refinery F No. 1), Empire Abo Unit Area, Eddy County, New Mexico

Dear Mr. LeMay:

ARCO Permian, a Unit of Atlantic Richfield ("ARCO"), pursuant to the provisions of Rule 6(b) of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project promulgated by Order No. R-4549, as amended, hereby makes application for a horizontal drainhole for its Empire Abo K-17 Well located 1980 feet from the South line and 660 feet from the West line of Section 1, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico. This well is necessary to complete an efficient production pattern in the ARCO Empire-Abo Unit Area.

ARCO proposes to reenter the subject well, kick-off at a depth of approximately 6005 feet, use a short radius tool, and drill in a southerly direction until 1,000 feet of horizontal drainhole is drilled in the Abo formation.

In accordance with the provisions of Rule 6(b) of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project, attached hereto are the following:

1. Plats identifying the lands committed to the unit agreement and those lands not committed to said agreement showing the location of the proposed well, all wells within the unit area, and the two offset operators, and

William J. LeMay, Director  
December 27, 1994  
Page 2

2. Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or openhole interval, kick-off point, and proposed trajectory of the drainhole section.

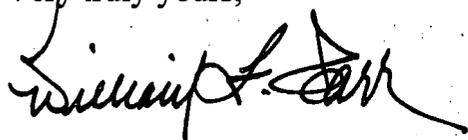
This well will be located more than 330 feet from the outer boundary of the unit and the boundary of any tract not committed to the unit.

All offset operators to the proposed horizontal drainhole have been furnished a complete copy of the application by certified mail, return receipt requested; have been advised that this application was filed on this date; and have been advised that if no objection to this application is received by the Division Director within twenty (20) days of this date, this application may be approved.

This application is being filed in triplicate with the Division's Santa Fe office and one copy has been mailed to the Oil Conservation Division District II office in Artesia.

Your consideration of this application is appreciated.

Very truly yours,



WILLIAM F. CARR  
Attorney for ARCO Permian, a Unit of Atlantic Richfield

WFC:mlh  
Enclosures

cc: Oil Conservation Division  
District II  
Post Office Drawer DD  
Artesia, New Mexico 88210

Gary Smallwood  
ARCO Permian, a Unit of Atlantic Richfield  
Post Office Box 1610  
Midland, TX 79702

# EMPIRE ABO POOL

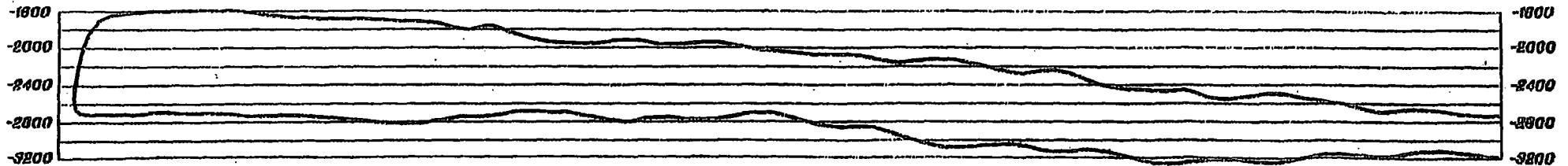
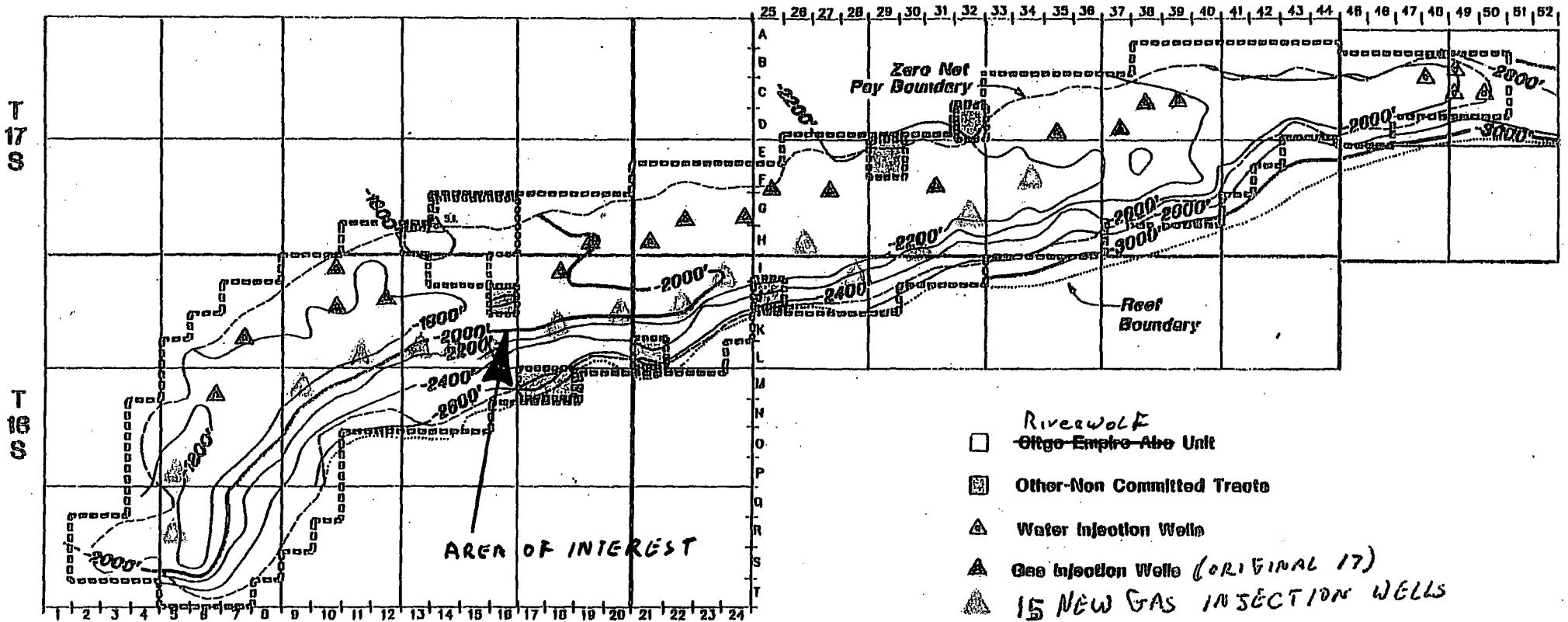
## Eddy County, New Mexico

### Top Of Reef

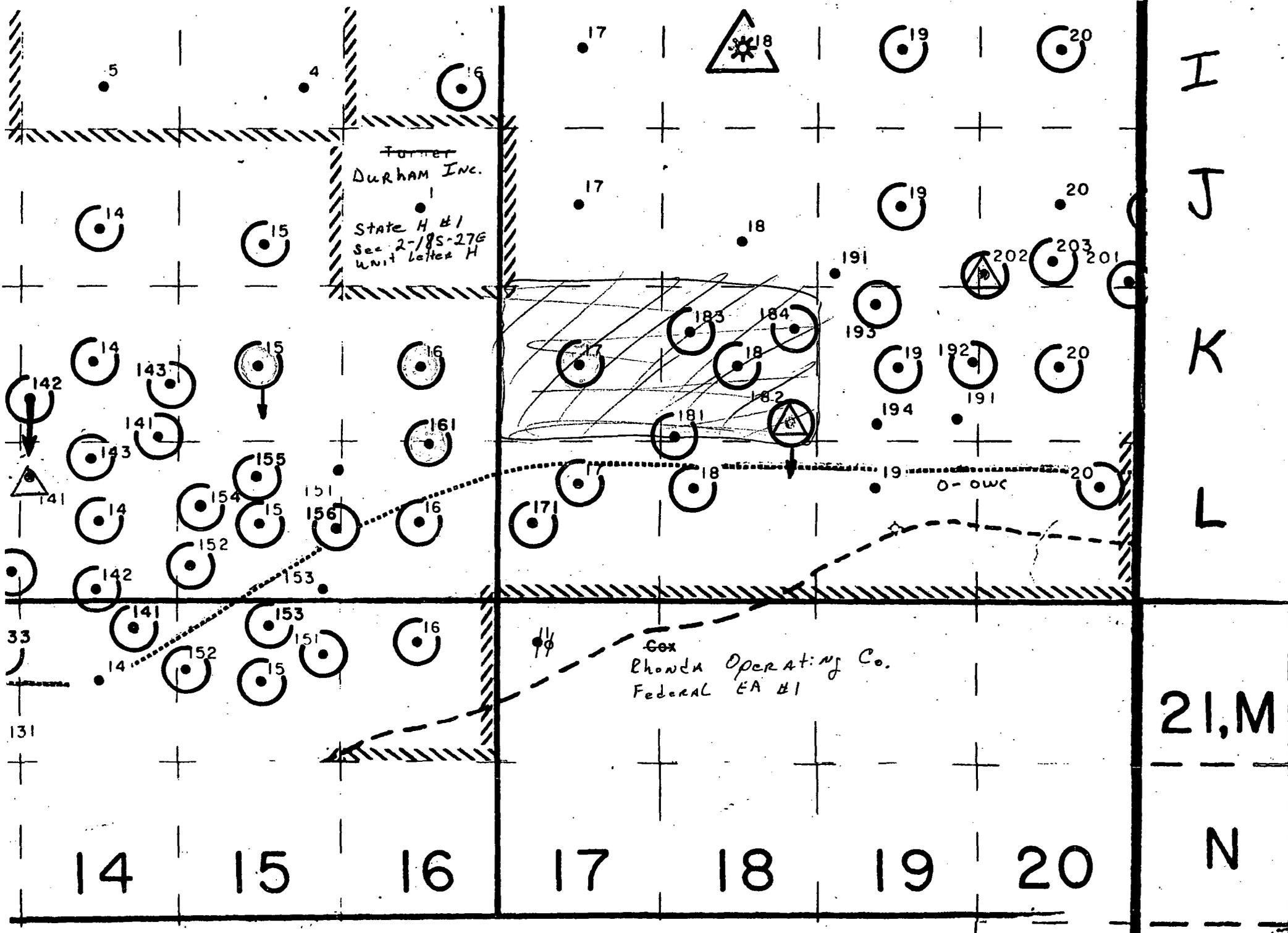
R 27 E

R 28 E

R 29 E



West-East Front Elevation



Former  
 Durham Inc.  
 State H #1  
 Sec 2-185-276  
 Unit letter H

Cox  
 Rhonda Operating Co.  
 Federal EA #1

I  
 J  
 K  
 L

21, M

N

14 15 16 17 18 19 20

**EMPIRE ABO K-17**

Present Status

Drilled 1959

12' KB

Formerly Pan American Malco Refinery F #1  
Elevation 3581 RKB  
1980' FSL, 660' FWL  
Sec 1, T-18-S, R-27-E  
Eddy Co., NM

12-1/4" hole 0-1000'  
11" hole 1000'-1470'

8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

7-7/8" hole

190 jts 2-3/8" 4.7# EUE  
Guiberson L-30 SA 5984' (w/ auto btm)  
3jts 2-3/8" 4.7# EUE tailpipe, btm @ 6077'

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx; TOC circ to surf  
TD @ 6137', PBTD 6101'

Abo Perfs 6040-6080', 2 spf

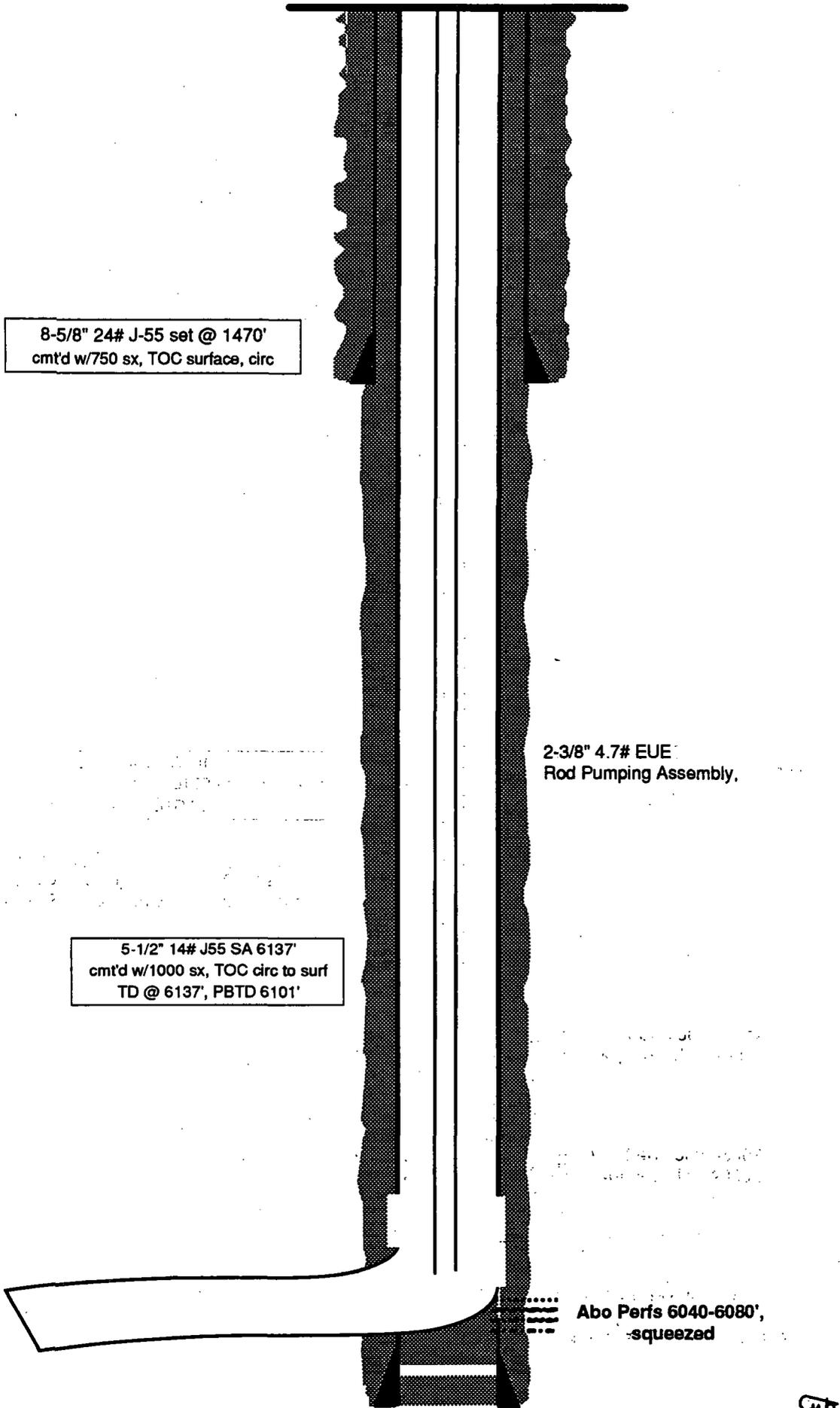
PBTD 6101'  
TD 6137'

cut

**EMPIRE ABO K-17**

**Proposed Status**

Drilled 1959



8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

2-3/8" 4.7# EUE  
Rod Pumping Assembly,

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx, TOC circ to surf  
TD @ 6137', PBTD 6101'

Abo Perfs 6040-6080',  
squeezed

10

# ARCO

Structure : EMPIRE ABO UNIT K-17

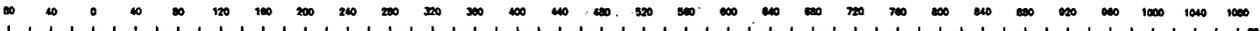
Field : EDDY COUNTY, NM. Location : EDDY COUNTY, NM.

## WELL PROFILE DATA

Point	MD	Ino	Dp	TVD	North	East	Deg/100
Tie in	0	0.00	90.00	0	0	0	0.00
KOP	6005	0.00	90.00	6005	0	0	0.00
End of Hole	6078	90.00	90.00	6050	0	45	127.32
Target	7031	90.00	90.00	6050	0	1000	0.00

Scale 1 : 40.00

East -->



KOP @ 6005' TVD/MD

1000' OF VS AT 90 DEG. AZIMUTH

S/L @ 1980' FSL, 660' FWL, SEC. 1, T18S, R27E  
EDDY COUNTY, NEW MEXICO

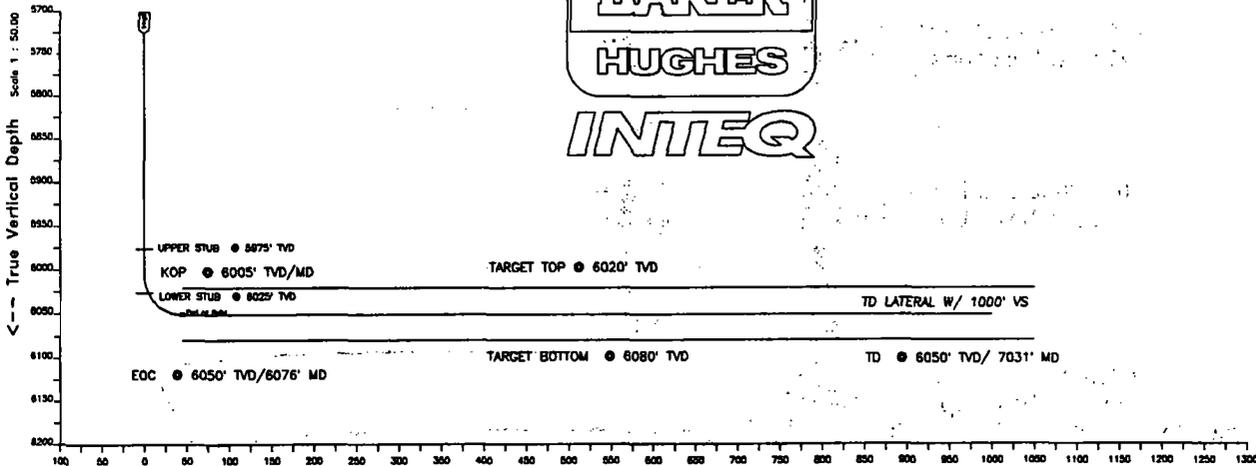
BHL N 0°, E 1000' FROM SURFACE LOCATION  
TD BHL @ 6050' TVD/ 7031' MD

TRUE



MAGNETIC DECLINATION  
8 DEGREES EAST

127 DEG./100' BUR



Scale 1 : 50.00

Vertical Section on 90.00 azimuth with reference 0.00 N, 0.00 E from structure

ARCO  
 EMPIRE ABO UNIT K-17, slot #1  
 EDDY COUNTY, NM., EDDY COUNTY, NM.

PROPOSAL LISTING Page 1  
 Your ref : EAUK17  
 Last revised : 12-Dec-94

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S	Dogleg Deg/100Ft	Vert Sect
0.00	0.00	90.00	0.00	0.00 N 0.00 E	0.00	0.00
500.00	0.00	90.00	500.00	0.00 N 0.00 E	0.00	0.00
1000.00	0.00	90.00	1000.00	0.00 N 0.00 E	0.00	0.00
1500.00	0.00	90.00	1500.00	0.00 N 0.00 E	0.00	0.00
2000.00	0.00	90.00	2000.00	0.00 N 0.00 E	0.00	0.00
2500.00	0.00	90.00	2500.00	0.00 N 0.00 E	0.00	0.00
3000.00	0.00	90.00	3000.00	0.00 N 0.00 E	0.00	0.00
3500.00	0.00	90.00	3500.00	0.00 N 0.00 E	0.00	0.00
4000.00	0.00	90.00	4000.00	0.00 N 0.00 E	0.00	0.00
4500.00	0.00	90.00	4500.00	0.00 N 0.00 E	0.00	0.00
5000.00	0.00	90.00	5000.00	0.00 N 0.00 E	0.00	0.00
5500.00	0.00	90.00	5500.00	0.00 N 0.00 E	0.00	0.00
6000.00	0.00	90.00	6000.00	0.00 N 0.00 E	0.00	0.00
6005.00	0.00	90.00	6005.00	0.00 N 0.00 E	0.00	0.00
6075.68	90.00	90.00	6050.00	0.00 N 45.00 E	127.32	45.00
6500.00	90.00	90.00	6050.00	0.00 N 469.31 E	0.00	469.31
7000.00	90.00	90.00	6050.00	0.00 N 969.31 E	0.00	969.31
7030.68	90.00	90.00	6050.00	0.00 N 1000.00 E	0.00	1000.00

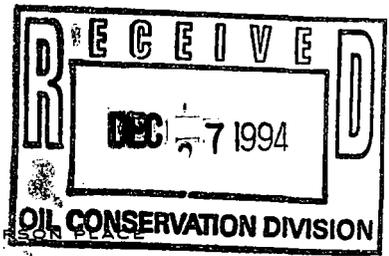
All data is in feet unless otherwise stated  
 Coordinates from structure and TVD from wellhead.  
 Vertical section is from wellhead on azimuth 90.00 degrees.  
 Declination is 0.00 degrees, Convergence is 0.00 degrees.  
 Calculation uses the minimum curvature method.  
 Presented by Baker Hughes INTEQ

CAMPBELL, CARR, BERGE  
& SHERIDAN, P.A.  
LAWYERS

MICHAEL B. CAMPBELL  
WILLIAM F. CARR  
BRADFORD C. BERGE  
MARK F. SHERIDAN

MICHAEL H. FELDEWERT  
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OF COUNSEL



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POST OFFICE BOX 2208  
SANTA FE, NEW MEXICO 87504-2208  
TELEPHONE: (505) 988-4421  
TELECOPIER: (505) 983-6043

December 27, 1994

HAND-DELIVERED

William J. LeMay, Director  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505

Re: Application of ARCO Permian, a Unit of Atlantic Richfield, for  
Administrative Approval of Horizontal Drainhole (formerly the Pan American  
Malco Refinery F No. 1), Empire Abo Unit Area, Eddy County, New Mexico

Dear Mr. LeMay:

ARCO Permian, a Unit of Atlantic Richfield ("ARCO"), pursuant to the provisions of Rule 6(b) of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project promulgated by Order No. R-4549, as amended, hereby makes application for a horizontal drainhole for its Empire Abo K-17 Well located 1980 feet from the South line and 660 feet from the West line of Section 1, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico. This well is necessary to complete an efficient production pattern in the ARCO Empire-Abo Unit Area.

ARCO proposes to reenter the subject well, kick-off at a depth of approximately 6005 feet, use a short radius tool, and drill in a southerly direction until 1,000 feet of horizontal drainhole is drilled in the Abo formation.

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William J. LeMay, Director

December 27, 1994

Page 2

2. Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or openhole interval, kick-off point, and proposed trajectory of the drainhole section.

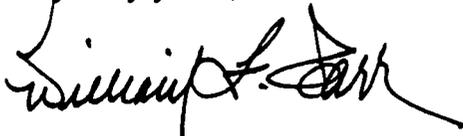
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Your consideration of this application is appreciated.

Very truly yours,



WILLIAM F. CARR

Attorney for ARCO Permian, a Unit of Atlantic Richfield

WFC:mlh

Enclosures

cc: Oil Conservation Division  
District II  
Post Office Drawer DD  
Artesia, New Mexico 88210

Gary Smallwood  
ARCO Permian, a Unit of Atlantic Richfield  
Post Office Box 1610  
Midland, TX 79702

# EMPIRE ABO POOL

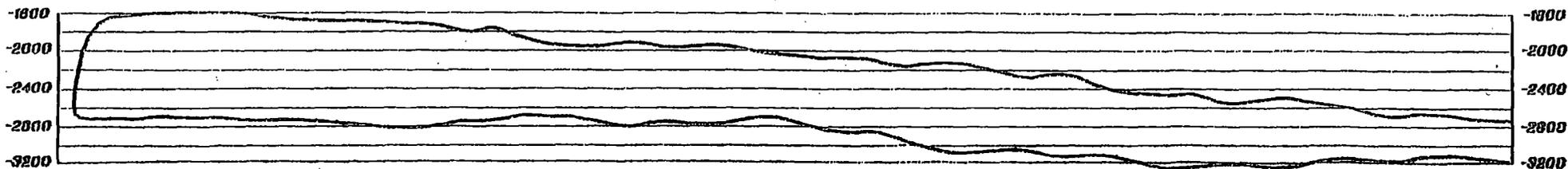
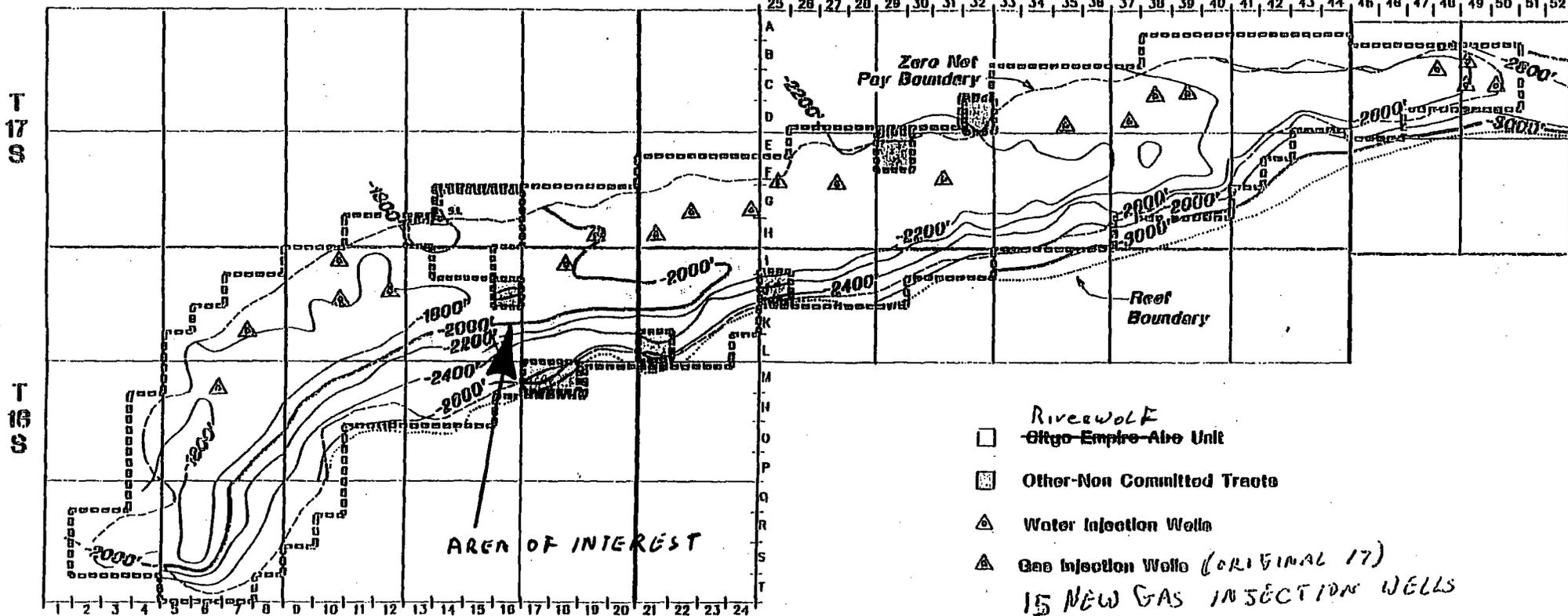
## Eddy County, New Mexico

### Top Of Reef

R 27 E

R 28 E

R 29 E



West-East Front Elevation



**EMPIRE ABO K-17**

**Present Status**

Drilled 1959

12' KB

**Formerly Pan American Malco Refinery F #1**

**Elevation 3581 RKB**

**1980' FSL, 660' FWL**

**Sec 1, T-18-S, R-27-E**

**Eddy Co., NM**

12-1/4" hole 0-1000'  
11" hole 1000'-1470'

8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

7-7/8" hole

190 jts 2-3/8" 4.7# EUE  
Guiberson L-30 SA 5984' (w/ auto btm)  
3jts 2-3/8" 4.7# EUE tailpipe, btm @ 6077'

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx, TOC circ to surf  
TD @ 6137', PBTD 6101'

Abo Perfs 6040-6080', 2 spf

PBTD 6101'  
TD 6137'

*cut*

**EMPIRE ABO K-17**

**Proposed Status**

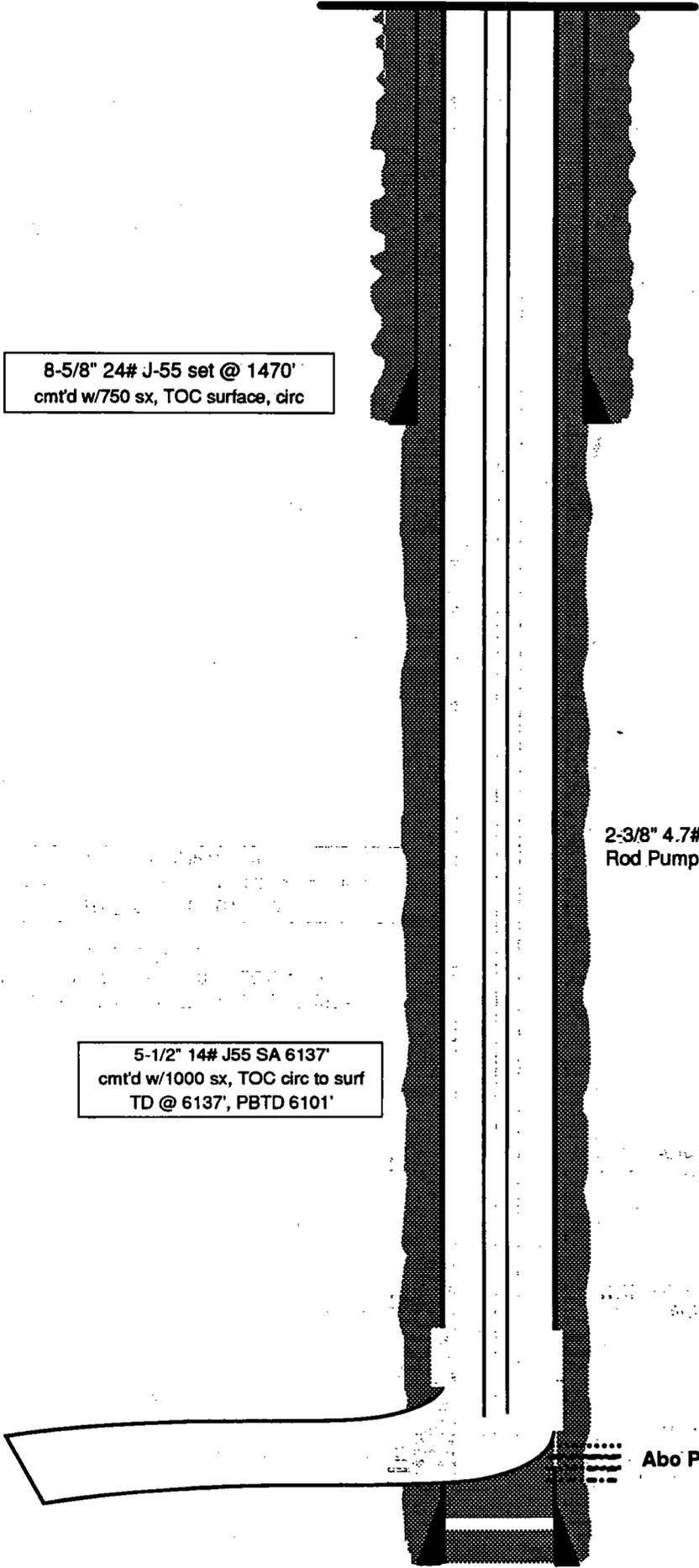
Drilled 1959

8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx, TOC circ to surf  
TD @ 6137', PBTD 6101'

2-3/8" 4.7# EUE  
Rod Pumping Assembly,

Abo Perfs 6040-6080',  
squeezed



**W**

# ARCO

Structure : EMPIRE ABO UNIT K-17

Field : EDDY COUNTY, NM.

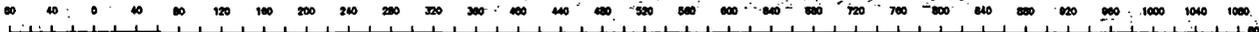
Location : EDDY COUNTY, NM.

----- WELL PROFILE DATA -----

Point	MD	Inc	Dp	TVD	North	East	Dep/100
Surface	0	0.00	90.00	0	0	0	0.00
KOP	6005	0.00	90.00	6005	0	0	0.00
End of Build	6076	90.00	90.00	6050	0	45	127.32
Target	7031	90.00	90.00	6080	0	1000	0.00

Scale 1 : 40.00

East -->



KOP @ 6005' TVD/MD

1000' OF VS AT 90 DEG. AZIMUTH

S/L @ 1980' FSL, 660' FWL, SEC. 1, T18S, R27E  
EDDY COUNTY, NEW MEXICO

BHL N 0', E 1000' FROM SURFACE LOCATION  
TD BHL @ 6050' TVD/ 7031' MD

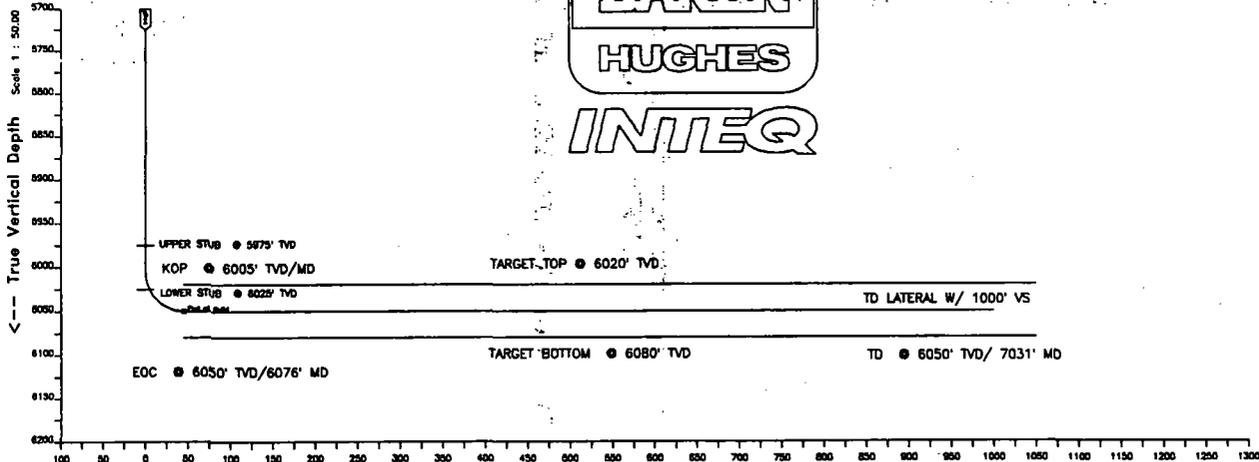
TRUE



MAGNETIC DECLINATION  
8 DEGREES EAST



127 DEG./100' BUR



Scale 1 : 50.00

Vertical Section on 90.00 azimuth with reference 0.00 N, 0.00 E from structure

ARCO PROPOSAL LISTING Page 1

EMPIRE ABO UNIT K-17, slot #1 Your ref : EAUK17

EDDY COUNTY, NM., EDDY COUNTY, NM. Last revised : 12-Dec-94

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES	Dogleg Deg/100Ft	Vert Sect
0.00	0.00	90.00	0.00	0.00 N 0.00 E	0.00	0.00
500.00	0.00	90.00	500.00	0.00 N 0.00 E	0.00	0.00
1000.00	0.00	90.00	1000.00	0.00 N 0.00 E	0.00	0.00
1500.00	0.00	90.00	1500.00	0.00 N 0.00 E	0.00	0.00
2000.00	0.00	90.00	2000.00	0.00 N 0.00 E	0.00	0.00
2500.00	0.00	90.00	2500.00	0.00 N 0.00 E	0.00	0.00
3000.00	0.00	90.00	3000.00	0.00 N 0.00 E	0.00	0.00
3500.00	0.00	90.00	3500.00	0.00 N 0.00 E	0.00	0.00
4000.00	0.00	90.00	4000.00	0.00 N 0.00 E	0.00	0.00
4500.00	0.00	90.00	4500.00	0.00 N 0.00 E	0.00	0.00
5000.00	0.00	90.00	5000.00	0.00 N 0.00 E	0.00	0.00
5500.00	0.00	90.00	5500.00	0.00 N 0.00 E	0.00	0.00
6000.00	0.00	90.00	6000.00	0.00 N 0.00 E	0.00	0.00
6005.00	0.00	90.00	6005.00	0.00 N 0.00 E	0.00	0.00
6075.68	90.00	90.00	6050.00	0.00 N 45.00 E	127.32	45.00
6500.00	90.00	90.00	6050.00	0.00 N 469.31 E	0.00	469.31
7000.00	90.00	90.00	6050.00	0.00 N 969.31 E	0.00	969.31
7030.68	90.00	90.00	6050.00	0.00 N 1000.00 E	0.00	1000.00

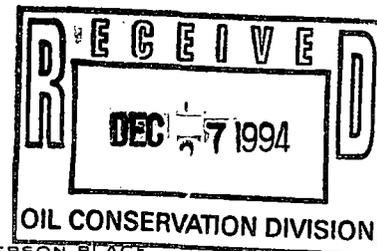
All data is in feet unless otherwise stated  
 Coordinates from structure and TVD from wellhead.  
 Vertical section is from wellhead on azimuth 90.00 degrees.  
 Declination is 0.00 degrees, Convergence is 0.00 degrees.  
 Calculation uses the minimum curvature method.  
 Presented by Baker Hughes INTEQ

CAMPBELL, CARR, BERGE  
& SHERIDAN, P.A.  
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TELECOPIER: (505) 983-6043

December 27, 1994

HAND-DELIVERED

William J. LeMay, Director  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505

Re: Application of ARCO Permian, a Unit of Atlantic Richfield, for  
Administrative Approval of Horizontal Drainhole (formerly the Pan American  
Malco Refinery F No. 1), Empire Abo Unit Area, Eddy County, New Mexico

Dear Mr. LeMay:

ARCO Permian, a Unit of Atlantic Richfield ("ARCO"), pursuant to the provisions of Rule 6(b) of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project promulgated by Order No. R-4549, as amended, hereby makes application for a horizontal drainhole for its Empire Abo K-17 Well located 1980 feet from the South line and 660 feet from the West line of Section 1, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico. This well is necessary to complete an efficient production pattern in the ARCO Empire-Abo Unit Area.

ARCO proposes to reenter the subject well, kick-off at a depth of approximately 6005 feet, use a short radius tool, and drill in a southerly direction until 1,000 feet of horizontal drainhole is drilled in the Abo formation.

In accordance with the provisions of Rule 6(b) of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project, attached hereto are the following:

1. Plats identifying the lands committed to the unit agreement and those lands not committed to said agreement showing the location of the proposed well, all wells within the unit area, and the two offset operators, and

William J. LeMay, Director

December 27, 1994

Page 2

2. Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or openhole interval, kick-off point, and proposed trajectory of the drainhole section.

This well will be located more than 330 feet from the outer boundary of the unit and the boundary of any tract not committed to the unit.

All offset operators to the proposed horizontal drainhole have been furnished a complete copy of the application by certified mail, return receipt requested; have been advised that this application was filed on this date; and have been advised that if no objection to this application is received by the Division Director within twenty (20) days of this date, this application may be approved.

This application is being filed in triplicate with the Division's Santa Fe office and one copy has been mailed to the Oil Conservation Division District II office in Artesia.

Your consideration of this application is appreciated.

Very truly yours,



WILLIAM F. CARR

Attorney for ARCO Permian, a Unit of Atlantic Richfield

WFC:mlh

Enclosures

cc: Oil Conservation Division  
District II  
Post Office Drawer DD  
Artesia, New Mexico 88210

Gary Smallwood  
ARCO Permian, a Unit of Atlantic Richfield  
Post Office Box 1610  
Midland, TX 79702

# EMPIRE ABO POOL

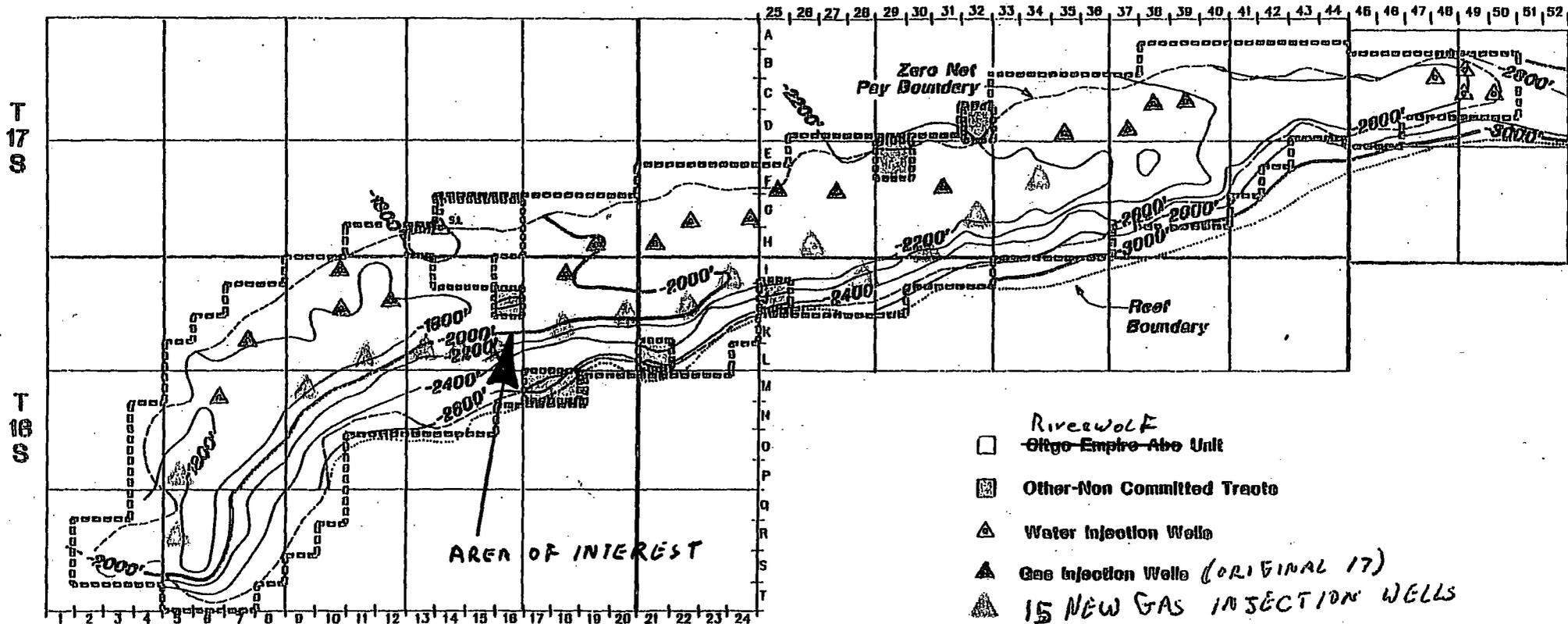
## Eddy County, New Mexico

### Top Of Reef

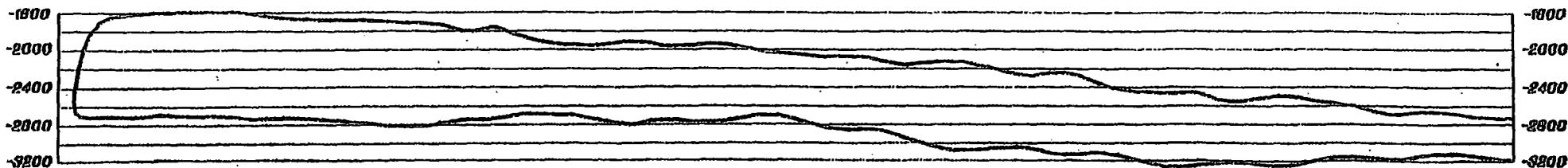
R 27 E

R 28 E

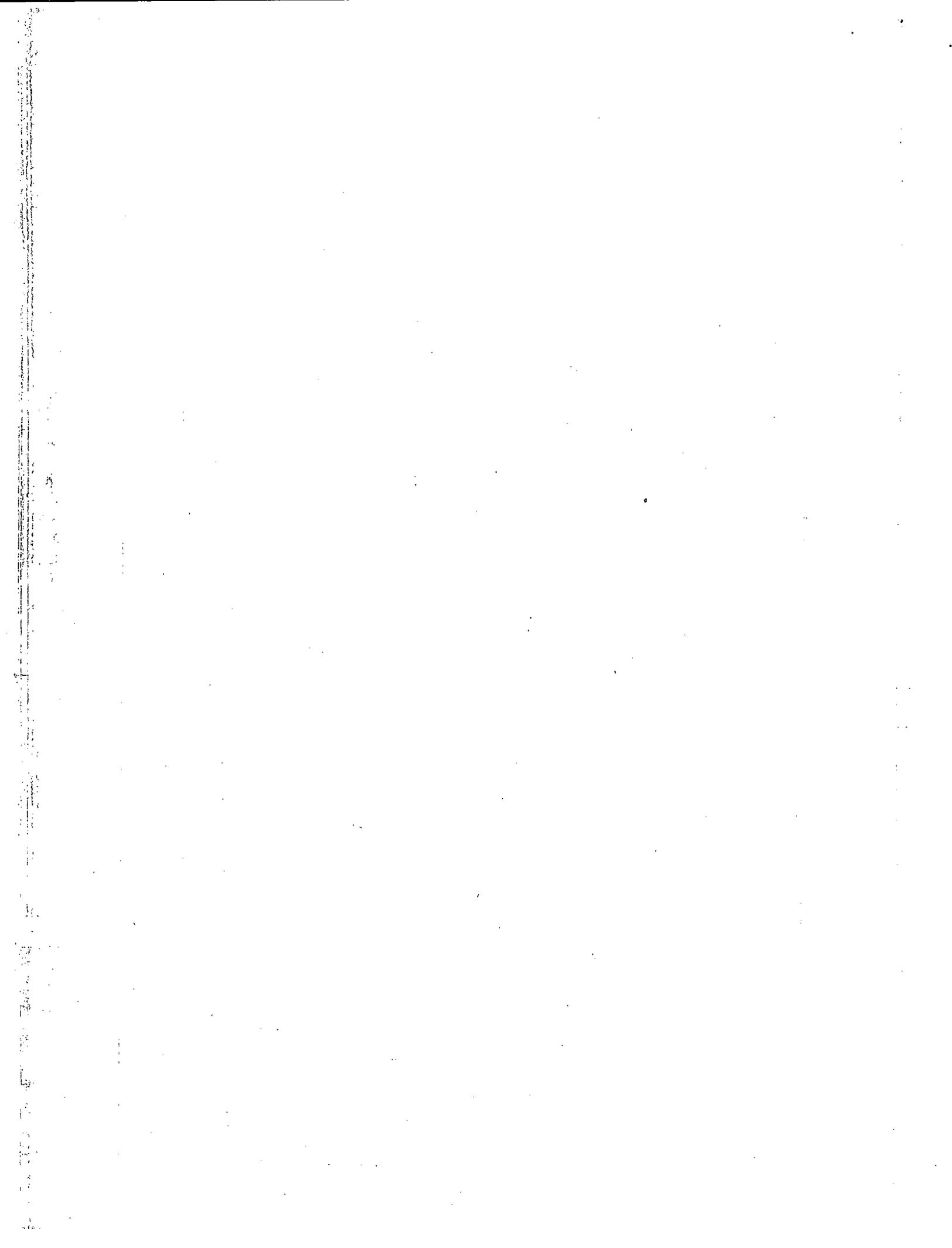
R 29 E

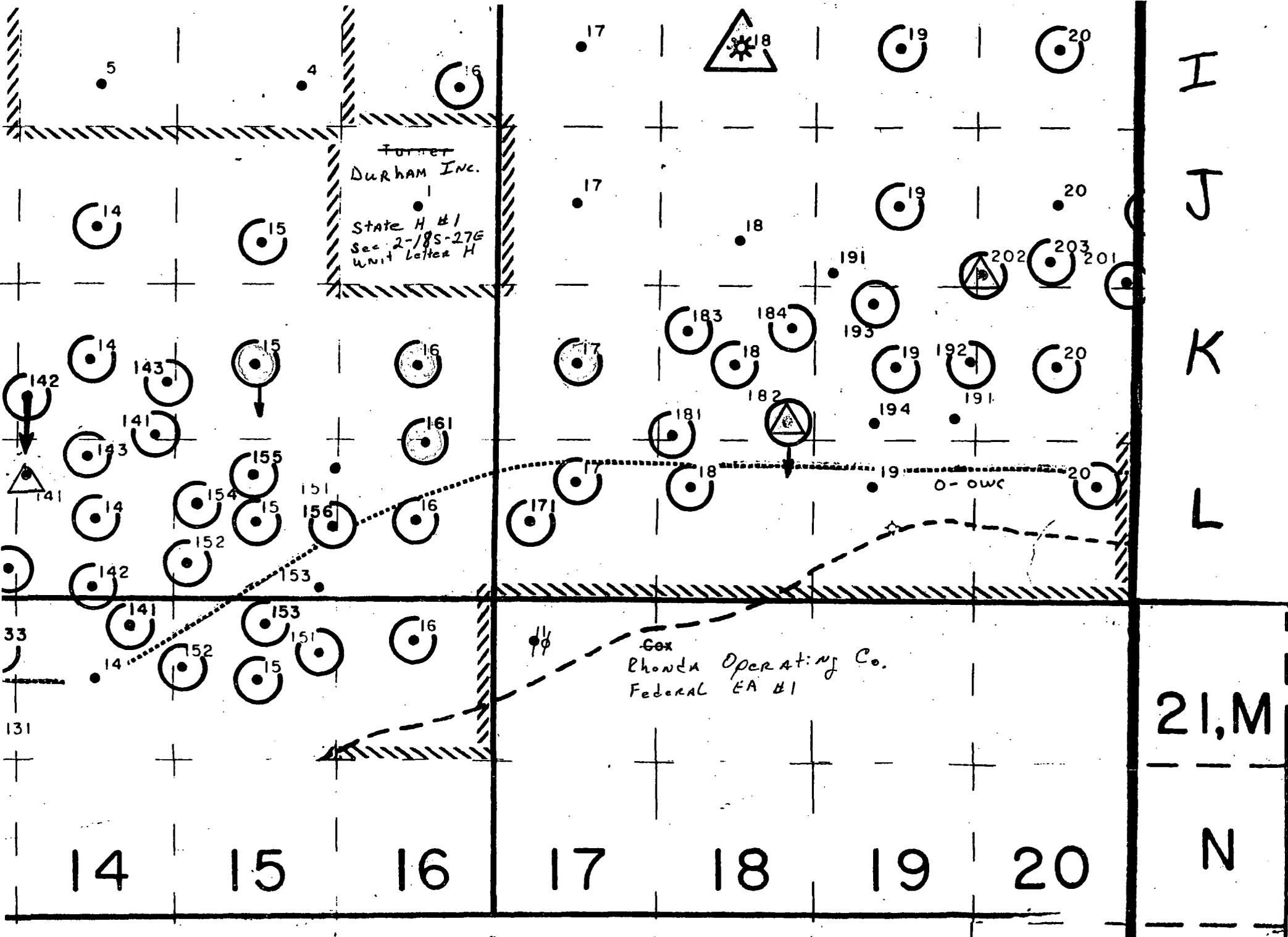


- Riverwolf
- ▨ Otgo-Empire-Abo Unit
- Other-Non Committed Tracts
- △ Water Injection Wells
- ▲ Gas Injection Wells (ORIGINAL 17)
- ▲ 15 NEW GAS INJECTION WELLS



West-East Front Elevation





**EMPIRE ABO K-17**

Present Status

Drilled 1959

12' KB

Formerly Pan American Malco Refinery F #1

Elevation 3581 RKB

1980' FSL, 660' FWL

Sec 1, T-18-S, R-27-E

Eddy Co., NM

12-1/4" hole 0-1000'  
11" hole 1000'-1470'

8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

7-7/8" hole

190 jts 2-3/8" 4.7# EUE  
Guiberson L-30 SA 5984' (w/ auto btm)  
3jts 2-3/8" 4.7# EUE tailpipe, btm @ 6077'

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx, TOC circ to surf  
TD @ 6137', PBTD 6101'

Abo Perfs 6040-6080', 2 spf

PBTD 6101'  
TD 6137'

*cut*

**EMPIRE ABO K-17**

**Proposed Status**

**Drilled 1959**

8-5/8" 24# J-55 set @ 1470'  
cmt'd w/750 sx, TOC surface, circ

2-3/8" 4.7# EUE  
Rod Pumping Assembly

5-1/2" 14# J55 SA 6137'  
cmt'd w/1000 sx, TOC circ to surf  
TD @ 6137', PBTD 6101'

Abo Perfs 6040-6080',  
squeezed

cut

# ARCO

Structure : EMPIRE ABO UNIT K-17

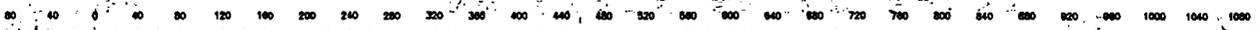
Field : EDDY COUNTY, NM. Location : EDDY COUNTY, NM.

## WELL PROFILE DATA

Point	MD	Inc	Dr	TVD	North	East	Deg/100
Top of Well	0	0.00	90.00	0	0	0	0.00
KOP	6005	0.00	90.00	6005	0	0	0.00
End of Build	6076	90.00	90.00	6050	0	43	127.32
Target	7031	90.00	90.00	6050	0	1000	0.00

Scale 1 : 40.00

East -->



KOP @ 6005' TVD/MD

1000' OF VS AT 90 DEG. AZIMUTH

S/L @ 1980' FSL, 680' FWL, SEC. 1, T18S, R27E  
EDDY COUNTY, NEW MEXICO

BHL N 0', E 1000' FROM SURFACE LOCATION  
TD BHL @ 6050' TVD/ 7031' MD

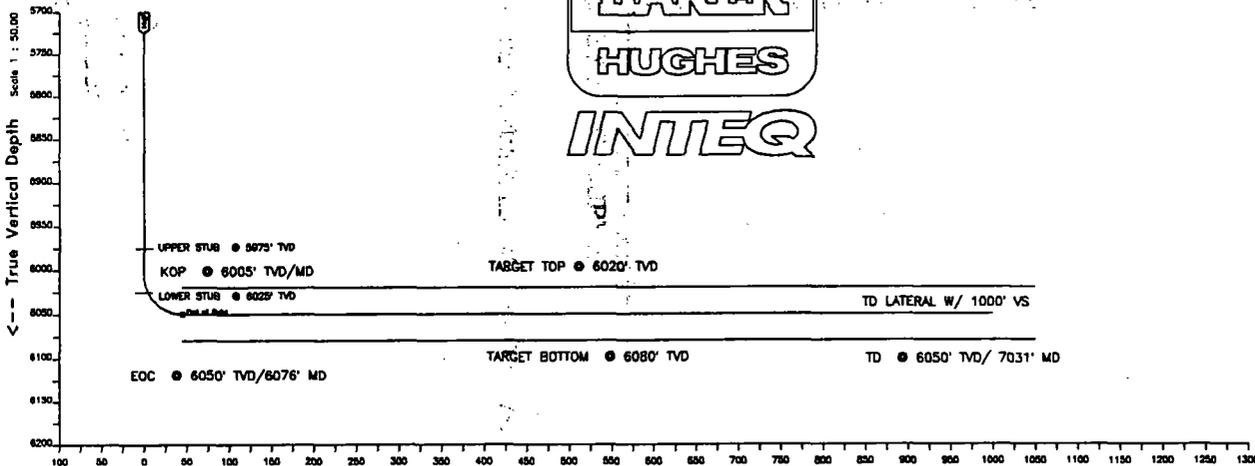
TRUE



MAGNETIC DECLINATION  
8 DEGREES EAST



127 DEG./100' BUR



Scale 1 : 50.00

Vertical Section on 90.00 azimuth with reference 0.00 N, 0.00 E from structure

ARCO  
 EMPIRE ABO UNIT K-17, slot #1  
 EDDY COUNTY, NM., EDDY COUNTY, NM.

PROPOSAL LISTING Page 1  
 Your ref : EAUK17  
 Last revised : 12-Dec-94

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES	Dogleg Deg/100Ft	Vert Sect
0.00	0.00	90.00	0.00	0.00 N 0.00 E	0.00	0.00
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1500.00	0.00	90.00	1500.00	0.00 N 0.00 E	0.00	0.00
2000.00	0.00	90.00	2000.00	0.00 N 0.00 E	0.00	0.00
2500.00	0.00	90.00	2500.00	0.00 N 0.00 E	0.00	0.00
3000.00	0.00	90.00	3000.00	0.00 N 0.00 E	0.00	0.00
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5500.00	0.00	90.00	5500.00	0.00 N 0.00 E	0.00	0.00
6000.00	0.00	90.00	6000.00	0.00 N 0.00 E	0.00	0.00
6005.00	0.00	90.00	6005.00	0.00 N 0.00 E	0.00	0.00
6075.68	90.00	90.00	6050.00	0.00 N 45.00 E	127.32	45.00
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 Calculation uses the minimum curvature method.  
 Presented by Baker Hughes INTEQ

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 6742  
Order No. R-4549-E

APPLICATION OF ARCO OIL AND GAS  
COMPANY FOR AN ADMINISTRATIVE  
PROCEDURE, EDDY COUNTY, NEW MEXICO.

*See Also Order Nos.*

*R-4549  
R-4549-A  
R-4549-B  
R-4549-C  
R-4549-D  
R-4549-F*

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 28, 1979, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 28th day of January, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, ARCO Oil and Gas Company, is the operator of the Empire Abo Pressure Maintenance Project, Empire-Abo Pool, Eddy County, New Mexico, which project was authorized by Division Order No. R-4549, and is governed by operating rules included in said order as amended by Orders Nos. R-4549-A through R-4549-D.
- (3) That the applicant seeks the amendment of Rule 14 of the Special Rules and Regulations for said project adopted by Order No. R-4549, as amended, to additionally provide for an administrative procedure for authorizing the drilling, for production or injection purposes, of "horizontal drainholes" within such project.
- (4) That the drilling of said horizontal drainholes within the boundaries of said project should result in the recovery of oil and gas therefrom which might not otherwise

be produced thereby preventing waste.

(5) That correlative rights will not be violated provided that no perforated or openhole portion of any horizontal drainhole shall be closer than 330 feet to the outer boundary of the Empire Abo Unit or any tract not committed to said unit nor, in the case of a well to be used for injection, closer than 1650 feet to such boundary or tract.

(6) That the application for administrative procedure should be approved by amending said Rule 14 to read in its entirety as shown on Exhibit "A" attached to this order.

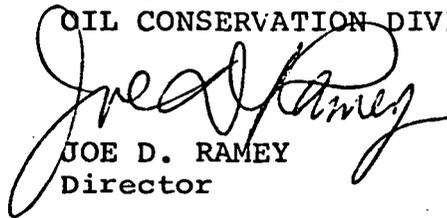
IT IS THEREFORE ORDERED:

(1) That Rule 14 of the Special Rules and Regulations for the Empire Abo Pressure Maintenance Project is hereby amended to read in its entirety as shown on Exhibit "A" to this order.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
JOE D. RAMEY  
Director

S E A L

fd/

EXHIBIT "A"  
ORDER NO. R-4549-E

RULE 14 A. The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and un-orthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 14 B. The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

(3) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

RULE 14 C. The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 14 D. Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.