

NORTH VACUUM ABO #136

NORTH VACUUM ABO #136

A. 1.

Lease Name: North Vacuum Abo Unit
Well #: 136
Ut/Sec./T/R: Surface - D 26-17S-34E
Bottom Hole Location (BHL) - N 23-17S-34E
Location: Surf. - 660' FNL, 860' FWL
BHL - 443' FNL, 758' FEL

2. Casing string: 8 5/8", 20 & 24lb/ft, J-55 set @ 1725'
300 sxs Class A Cmt.
12 1/4" hole size
Circulated to surface

5 1/2", 15.5 & 17lb/ft, J-55 & N-80 set @ 8700'
2900 sxs TILW + 200 sxs Incor
7 7/8" hole size
Top of cement @ 2675' (temp survey)
3. Tubing: 2 7/8" N80 EOT @ 8355'
4. Packer: 5 1/2" Otis Model 'TB' (Permanent) @ 8440'

B.1. Injection formation: Abo
Pool Name: North Vacuum Abo Unit

2. Injection interval: 8402'-9376' OHZ
3. Well was drilled as oil well and converted to WIW 8/21/86
4. Vertical perms: 8525-8680 O/A CIBP set @ 8411' & 8415'
5. Drinkard is 1000' above Abo
Wolfcamp is 800' below Abo

Well: NVAU #136H
Location: SECT. 26 -T17s-R34e
Date Drilled: 4/21/70
TD: 8.700 / 9376'
PBTD: 8.665' / 9376'
Horizontal lateral: Date Drilled:
TVD:
MD:
VS:
Azimuth:

Current status: Abo Horizontal WIW

Completion history: See attached

Well Construction: See attached

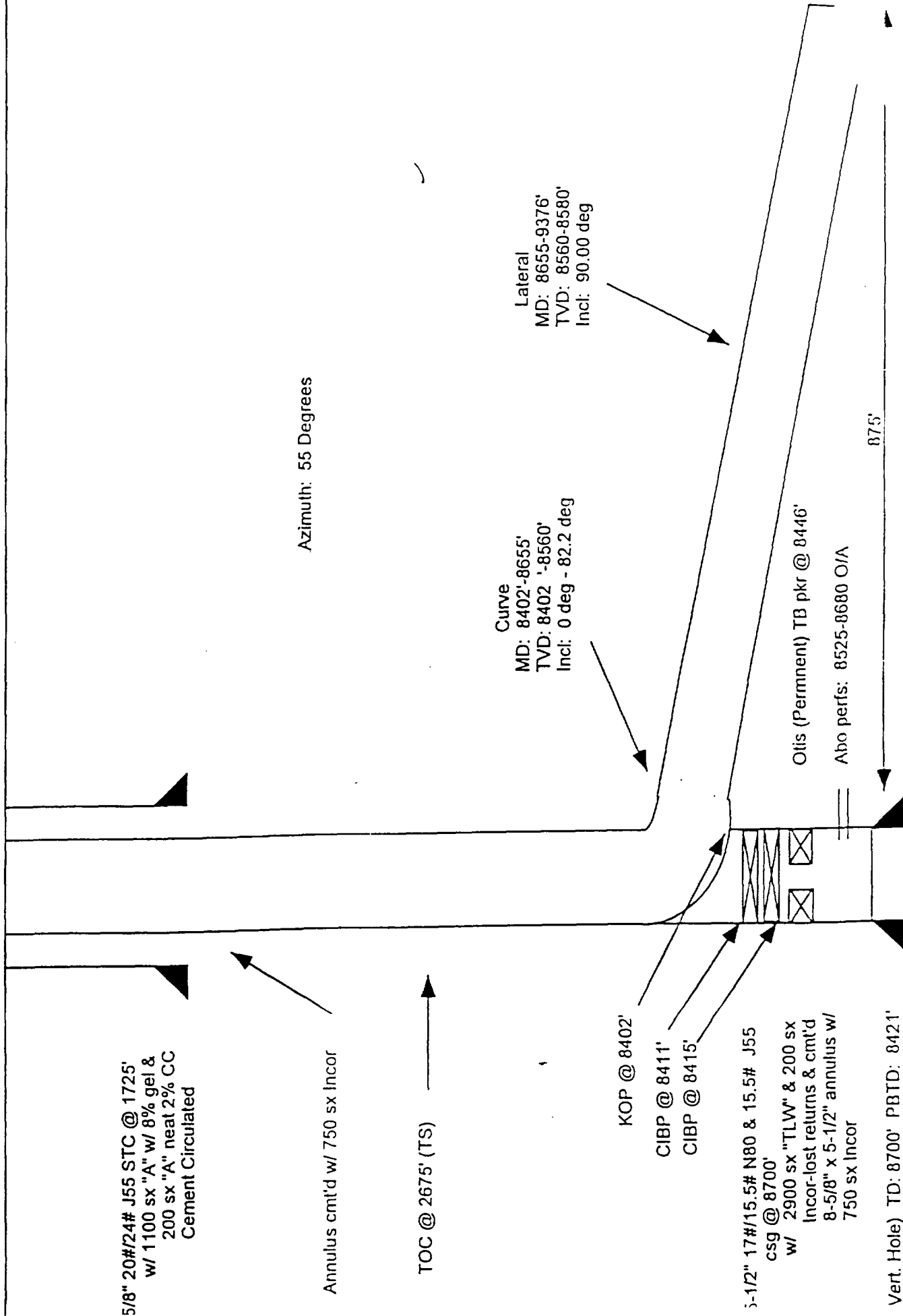
50' FNL
50' FWL
-26
17S
34E
B: 4048'
IL: 4033'

NVAU 136'
Vacuum Fil...
Lea County, New Mexico

YPO: 10/20/97

Spud: 04/20/70

Current Configuration



5/8" 20#/24# J55 STC @ 1725'
w/ 1100 sx "A" w/ 8% gel &
200 sx "A" neat 2% CC
Cement Circulated

Azimuth: 55 Degrees

Annulus cmt'd w/ 750 sx Incor

TOC @ 2675' (TS)

Curve
MD: 8402'-8655'
TVD: 8402'-8560'
Incl: 0 deg - 82.2 deg

Lateral
MD: 8655'-9376'
TVD: 8560'-8580'
Incl: 90.00 deg

KOP @ 8402'

CIBP @ 8411'

CIBP @ 8415'

5-1/2" 17#/15.5# N80 & 15.5# J55
csg @ 8700'

w/ 2900 sx "TLW" & 200 sx
Incor-lost returns & cmt'd
8-5/8" x 5-1/2" annulus w/
750 sx Incor

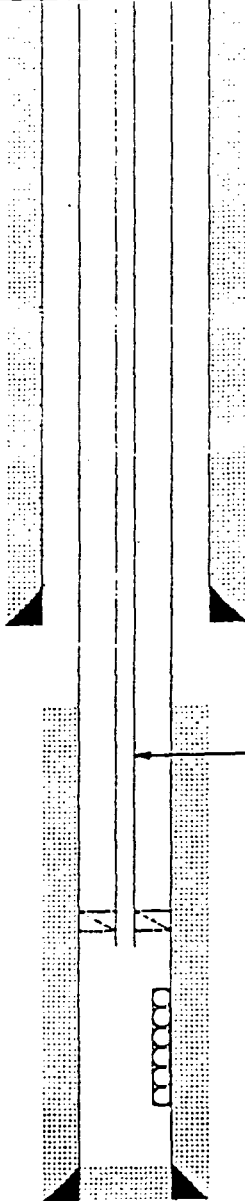
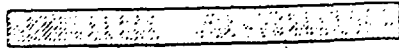
Vert. Hole) TD: 8700' PBTD: 8421'

Otis (Permanent) TB pkr @ 8446'

Abo perfs: 8525-8680 O/A

875'

G.L. 4034
 K.B. 4048
 Zero 14' AGL



Squeezed 8-5/8" X 5-1/2" annulus with 750 sxs. Incon Neat

8-5/8", 20 & 24 lb/ft, J-55 casing set at 1725'
 Cemented with 1300 sxs. Class 'A'
 Cement circulated to surface
 12-1/4" hole

Top of Cement at 2675' (Temp Survey)

270 jts. of 2-3/8" 4.7 lb/ft J-55 tubing with J Latch type Anchor Seal Assembly

5-1/2" Ots Model TB' Permanent Packer set @ 8440'

Abo Perfs:

85-45', 49', 51', 57', 62', 73', 78', 81', 89', 93' with 2 JSPF (22 holes)
 85-25', 29', 30', 37', 38', 50', 52', 58', 61', 63', 64', 77', 79', 80', 86', 94', 86-02',
 5', 7', 19', 31'-33', 40', 41', 53', 78'-80' with 2 JSPF (58 holes)

5-1/2", 15.5 & 17 lb/ft, J-55 & N-80 casing set at 8700'
 Cemented with 2900 sxs. TILW + 200 sxs. Incon
 7-7/8" hole

PBTD 8665
 TD 8700'

Mobil Exploration & Producing U.S., Inc.
 Current Completion

| | | | | | |
|---------------------------------------|-----|-----------------------|------|--------------|----------------|
| LEASE | | North Vacuum Abo Unit | | WELL NO | 136 |
| COUNTY | Lea | STATE | N.M. | WELL # | 30-025-2346200 |
| LEGAL LOCATION | | | | | |
| 650' FNL & 860' FWL Sect 26 T17S R34E | | | | | |
| DRAWN BY | | | | DATE | |
| C.M. Jones | | | | 4 April 1995 | |

North Vacuum Abo Unit #136
Well History

- 04/21/70 Well Spudded
- 05/21/70 Perforate in the Abo formation at 8545', 49', 51', 57', 62', 73', 78', 81', 89', 93', and 95' with 2 JSPF (22 holes).
- 05/23/70 Acidized Abo perms (8545'-8595') with 5,000 gallons 15% HCl + 25 RCNBS. TTP: 4600 psig - 5250 psig. AIR: 5.0 BPM. ISIP: 2750 psig. 14 min SIP: 600 psig. IP: 257 BOPD & 0 BWPD
- 08/30/85 Acidized Abo perms (8545'-8595') with 5,000 gallons 15% HCl with 250 gallons Mu-Sol A using 33 RCNBS. TTP: 1850 psig - 3400 psig. AIR: 5.0 BPM @ 2990 psig. ISIP: 1300 psig. 2 min SIP: vacuum.
Before: 71 BOPD & 9 BWPD
After: 67 BOPD & 8 BWPD
- 08/16/86 Perforate in the Abo formation at 8525', 29', 30', 37', 38', 50', 52', 58', 61', 63', 64', 77', 79', 80', 86', 94', 8602', 05', 07', 19', 31'-33', 40', 41', 53', and 78'-80' with 2 JSPF (53 holes).
- 08/19/86 Acidized Abo perms (8525'-8680') with 4,000 gallons 15% HCl with 200 gallons mutual solvent and 90 (7/8") RCNBS. TTP: 1200 psig - 3850 psig. AIR: 5 BPM @ 3600 psig. ISIP: 2100 psig. 5 min SIP: 1200 psig. 12 min SIP: vacuum.
- 08/21/86 Well converted to VMW.
- 11/2/97 *SPUD HORIZONTAL LATERAL*
KICKOFF @ 8402'
- 11/23/97 *TD horizontal lateral*
MD: 9376' TVD: 8580' VS = 875'
AZ = 54° INCL = 90°
- 12/5/97 *Acidize*
Jet wash lateral w/ 5800 gal - 20% HCl

Mobil Exploration

*Vacuum Field (PA/WC)
Lea County
Sec. 26-T17S-R34E
NV ABO # 136 - MWD Sidetrack*

SURVEY REPORT
19 January, 1998
CONFIDENTIAL

sperry-sun
DRILLING SERVICES
A DRESSER COMPANY

Survey Ref: svy2345

Sperry-Sun Drilling Services



Survey Report for NV ABO # 136

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------------|-------|---------|---------------------------|-------------------|------------------|-----------------------------|-----------------------------|
| 0.00 | 0.000 | 0.000 | 0.00 | 0.00 N | 0.00 E | 0.00 | |
| 200.00 | 0.380 | 258.600 | 200.00 | 0.13 S | 0.65 W | -0.61 | 0.190 |
| 400.00 | 0.340 | 269.570 | 399.99 | 0.27 S | 1.89 W | -1.70 | 0.040 |
| 600.00 | 0.440 | 227.180 | 599.99 | 0.79 S | 3.05 W | -2.95 | 0.149 |
| 800.00 | 0.480 | 215.730 | 799.98 | 2.00 S | 4.10 W | -4.51 | 0.050 |
| 1000.00 | 0.770 | 205.430 | 999.97 | 3.89 S | 5.17 W | -6.46 | 0.155 |
| 1200.00 | 0.750 | 194.540 | 1199.95 | 6.37 S | 6.07 W | -8.63 | 0.073 |
| 1400.00 | 1.230 | 207.260 | 1399.92 | 9.54 S | 7.39 W | -11.53 | 0.263 |
| 1600.00 | 1.870 | 207.270 | 1599.85 | 14.35 S | 9.87 W | -16.31 | 0.320 |
| 1800.00 | 1.550 | 202.330 | 1799.76 | 19.76 S | 12.39 W | -21.48 | 0.176 |
| 2000.00 | 1.470 | 203.830 | 1999.69 | 24.60 S | 14.45 W | -25.95 | 0.045 |
| 2200.00 | 1.250 | 198.670 | 2199.63 | 29.02 S | 16.19 W | -29.90 | 0.126 |
| 2400.00 | 0.820 | 222.910 | 2399.60 | 32.13 S | 17.86 W | -33.06 | 0.302 |
| 2600.00 | 0.450 | 248.620 | 2599.59 | 33.47 S | 19.57 W | -35.22 | 0.229 |
| 2800.00 | 0.020 | 283.530 | 2799.59 | 33.75 S | 20.33 W | -36.01 | 0.217 |
| 3000.00 | 0.080 | 356.880 | 2999.59 | 33.60 S | 20.37 W | -35.96 | 0.038 |
| 3200.00 | 0.200 | 313.850 | 3199.59 | 33.22 S | 20.63 W | -35.95 | 0.076 |
| 3400.00 | 0.220 | 294.150 | 3399.59 | 32.82 S | 21.24 W | -36.22 | 0.037 |
| 3600.00 | 0.160 | 226.140 | 3599.59 | 32.85 S | 21.79 W | -36.69 | 0.109 |
| 3800.00 | 0.280 | 118.320 | 3799.58 | 33.28 S | 21.56 W | -36.75 | 0.181 |
| 4000.00 | 0.450 | 117.500 | 3999.58 | 33.87 S | 20.43 W | -36.17 | 0.085 |
| 4200.00 | 0.410 | 111.650 | 4199.57 | 34.50 S | 19.07 W | -35.41 | 0.030 |
| 4400.00 | 0.380 | 108.990 | 4399.57 | 34.98 S | 17.78 W | -34.63 | 0.018 |
| 4600.00 | 0.890 | 115.260 | 4599.56 | 35.86 S | 15.75 W | -33.47 | 0.257 |
| 4800.00 | 1.180 | 115.450 | 4799.52 | 37.41 S | 12.48 W | -31.68 | 0.145 |
| 5000.00 | 0.910 | 112.860 | 4999.49 | 38.91 S | 9.16 W | -29.82 | 0.137 |
| 5200.00 | 0.820 | 127.630 | 5199.47 | 40.40 S | 6.56 W | -28.55 | 0.120 |
| 5400.00 | 0.620 | 160.340 | 5399.45 | 42.29 S | 5.06 W | -28.41 | 0.224 |
| 5600.00 | 0.440 | 160.060 | 5599.44 | 44.03 S | 4.44 W | -28.89 | 0.090 |
| 5800.00 | 0.660 | 158.030 | 5799.44 | 45.82 S | 3.75 W | -29.35 | 0.110 |
| 6000.00 | 0.450 | 163.090 | 5999.43 | 47.64 S | 3.09 W | -29.86 | 0.108 |
| 6200.00 | 0.610 | 149.490 | 6199.42 | 49.31 S | 2.32 W | -30.18 | 0.101 |
| 6400.00 | 0.710 | 147.970 | 6399.40 | 51.28 S | 1.12 W | -30.33 | 0.051 |
| 6600.00 | 1.040 | 146.350 | 6599.38 | 53.84 S | 0.54 E | -30.44 | 0.165 |
| 6800.00 | 0.750 | 133.500 | 6799.36 | 56.25 S | 2.50 E | -30.22 | 0.175 |
| 7000.00 | 0.870 | 139.980 | 6999.34 | 58.32 S | 4.42 E | -29.83 | 0.075 |
| 7200.00 | 0.800 | 126.510 | 7199.31 | 60.31 S | 6.52 E | -29.25 | 0.104 |
| 7400.00 | 1.040 | 100.750 | 7399.29 | 61.48 S | 9.43 E | -27.54 | 0.236 |
| 7600.00 | 0.880 | 104.910 | 7599.26 | 62.21 S | 12.70 E | -25.28 | 0.087 |
| 7800.00 | 0.870 | 108.920 | 7799.24 | 63.10 S | 15.62 E | -23.40 | 0.031 |

Continued...

Sperry-Sun Drilling Services



Survey Report for NV ABO # 136

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 8000.00 | 0.750 | 121.540 | 7999.22 | 64.28 S | 18.17 E | -21.99 | 0.107 |
| 8200.00 | 1.610 | 124.610 | 8199.17 | 66.56 S | 21.60 E | -20.49 | 0.431 |
| 8390.00 | 1.880 | 124.080 | 8389.09 | 69.82 S | 26.37 E | -18.44 | 0.142 |

MWD Sidetrack

| | | | | | | | |
|---------|--------|---------|---------|----------|----------|--------|--------|
| 8395.00 | 1.880 | 124.080 | 8394.08 | 69.91 S | 26.51 E | -18.38 | 0.000 |
| 8402.00 | 5.700 | 55.000 | 8401.07 | 69.78 S | 26.89 E | -18.00 | 76.079 |
| 8410.00 | 9.000 | 58.050 | 8409.00 | 69.22 S | 27.75 E | -16.97 | 41.523 |
| 8420.00 | 13.500 | 59.870 | 8418.81 | 68.22 S | 29.42 E | -15.03 | 45.134 |
| 8430.00 | 17.800 | 60.880 | 8428.43 | 66.89 S | 31.77 E | -12.34 | 43.085 |
| 8440.00 | 22.400 | 61.520 | 8437.82 | 65.23 S | 34.78 E | -8.93 | 46.052 |
| 8450.00 | 25.500 | 61.960 | 8446.96 | 63.31 S | 38.35 E | -4.90 | 31.051 |
| 8460.00 | 27.600 | 62.290 | 8455.91 | 61.22 S | 42.31 E | -0.46 | 21.052 |
| 8470.00 | 30.300 | 62.550 | 8464.66 | 58.98 S | 46.60 E | 4.34 | 27.029 |
| 8480.00 | 34.100 | 62.750 | 8473.12 | 56.54 S | 51.33 E | 9.62 | 38.015 |
| 8490.00 | 38.100 | 62.930 | 8481.19 | 53.85 S | 56.57 E | 15.45 | 40.014 |
| 8500.00 | 40.700 | 63.070 | 8488.92 | 50.97 S | 62.22 E | 21.74 | 26.015 |
| 8510.00 | 43.900 | 63.200 | 8496.32 | 47.93 S | 68.23 E | 28.40 | 32.012 |
| 8520.00 | 46.500 | 63.600 | 8503.36 | 44.53 S | 74.45 E | 35.45 | 36.441 |
| 8530.00 | 48.400 | 65.300 | 8510.13 | 40.56 S | 80.66 E | 42.81 | 36.931 |
| 8540.00 | 50.500 | 51.200 | 8516.63 | 36.01 S | 86.74 E | 50.40 | 37.563 |
| 8550.00 | 53.900 | 50.300 | 8522.76 | 31.01 S | 92.86 E | 58.27 | 34.735 |
| 8560.00 | 57.600 | 50.900 | 8528.38 | 25.77 S | 99.24 E | 66.51 | 37.331 |
| 8570.00 | 61.300 | 52.400 | 8533.47 | 20.43 S | 106.00 E | 75.11 | 39.189 |
| 8580.00 | 63.500 | 52.400 | 8538.10 | 15.02 S | 113.02 E | 83.96 | 22.000 |
| 8590.00 | 65.900 | 50.500 | 8542.37 | 9.39 S | 120.09 E | 92.98 | 29.513 |
| 8600.00 | 67.500 | 52.800 | 8546.33 | 3.69 S | 127.29 E | 102.15 | 26.499 |
| 8610.00 | 69.600 | 51.300 | 8549.99 | 2.03 N | 134.63 E | 111.45 | 25.217 |
| 8620.00 | 71.400 | 52.900 | 8553.32 | 7.82 N | 142.07 E | 120.86 | 23.483 |
| 8630.00 | 74.600 | 54.900 | 8556.25 | 13.46 N | 149.79 E | 130.42 | 37.278 |
| 8640.00 | 78.500 | 55.200 | 8558.57 | 19.03 N | 157.76 E | 140.14 | 39.109 |
| 8650.00 | 82.200 | 55.900 | 8560.25 | 24.60 N | 165.89 E | 150.00 | 37.638 |
| 8680.00 | 85.900 | 53.500 | 8563.36 | 41.84 N | 190.24 E | 179.83 | 14.677 |
| 8710.00 | 86.700 | 52.000 | 8565.29 | 59.96 N | 214.06 E | 209.74 | 5.657 |
| 8740.00 | 87.300 | 53.000 | 8566.86 | 78.20 N | 237.83 E | 239.67 | 3.883 |
| 8771.00 | 87.900 | 54.300 | 8568.16 | 96.56 N | 262.78 E | 270.64 | 4.615 |
| 8802.00 | 90.600 | 53.900 | 8568.57 | 114.73 N | 287.88 E | 301.63 | 8.805 |
| 8833.00 | 90.000 | 55.200 | 8568.41 | 132.71 N | 313.14 E | 332.63 | 4.619 |
| 8864.00 | 91.200 | 57.300 | 8568.08 | 149.93 N | 338.91 E | 363.61 | 7.802 |
| 8896.00 | 89.200 | 57.800 | 8567.97 | 167.10 N | 365.91 E | 395.58 | 6.442 |

Continued...

Sperry-Sun Drilling Services

Survey Report for NV ABO # 136



Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|--------|--------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 8927.00 | 90.100 | 57.400 | 8568.16 | 183.71 N | 392.08 E | 426.55 | 3.177 |
| 8957.00 | 88.700 | 57.300 | 8568.47 | 199.89 N | 417.34 E | 456.52 | 4.679 |
| 8988.00 | 89.600 | 57.600 | 8568.93 | 216.57 N | 443.47 E | 487.49 | 3.060 |
| 9019.00 | 90.000 | 57.400 | 8569.04 | 233.23 N | 469.61 E | 518.46 | 1.443 |
| 9050.00 | 90.100 | 56.400 | 8569.01 | 250.16 N | 495.58 E | 549.44 | 3.242 |
| 9081.00 | 87.700 | 53.900 | 8569.61 | 267.86 N | 521.01 E | 580.43 | 11.178 |
| 9112.00 | 87.800 | 53.700 | 8570.83 | 286.16 N | 546.01 E | 611.40 | 0.721 |
| 9143.00 | 87.000 | 53.700 | 8572.23 | 304.49 N | 570.97 E | 642.36 | 2.581 |
| 9174.00 | 86.200 | 52.700 | 8574.07 | 323.03 N | 595.75 E | 673.29 | 4.127 |
| 9205.00 | 85.500 | 52.900 | 8576.32 | 341.72 N | 620.37 E | 704.18 | 2.348 |
| 9236.00 | 86.800 | 52.700 | 8578.40 | 360.42 N | 645.01 E | 735.09 | 4.243 |
| 9265.00 | 88.900 | 53.600 | 8579.48 | 377.80 N | 668.20 E | 764.05 | 7.877 |
| 9295.00 | 89.900 | 54.800 | 8579.80 | 395.35 N | 692.53 E | 794.05 | 5.207 |
| 9326.00 | 89.500 | 53.900 | 8579.96 | 413.41 N | 717.72 E | 825.05 | 3.177 |
| 9341.00 | 89.400 | 54.000 | 8580.10 | 422.24 N | 729.85 E | 840.04 | 0.943 |
| 9376.00 | 90.000 | 54.000 | 8580.29 | 442.81 N | 758.16 E | 875.04 | 1.714 |

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North. Vertical depths are relative to RKB. Northings and Eastings are relative to Wellhead.

The Dogleg Severity is in Degrees per 100ft.

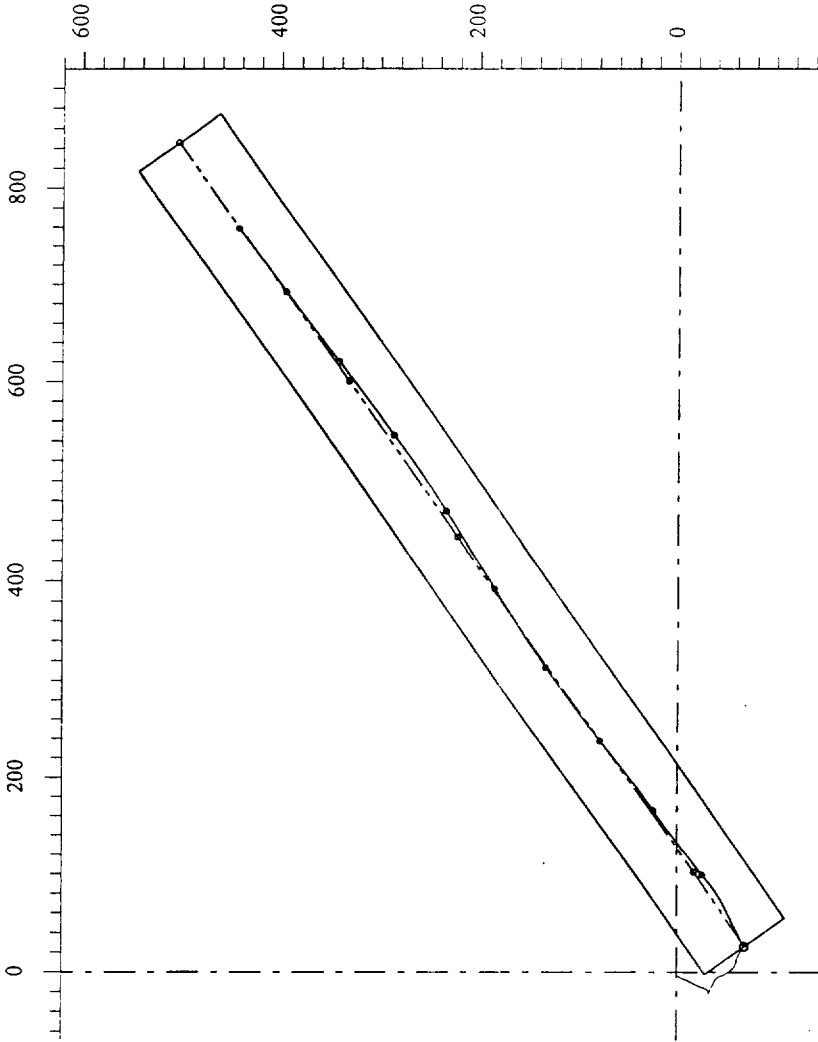
Vertical Section is from Wellhead and calculated along an Azimuth of 55.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 9376.00ft., The Bottom Hole Displacement is 878.00ft., in the Direction of 59.712° (True).

Customer: Mobil Exploration
State: New Mexico
Field: Vacuum Field (PA/WC)
Project: Lea County
Structure: Sec. 26-T17S-R34E

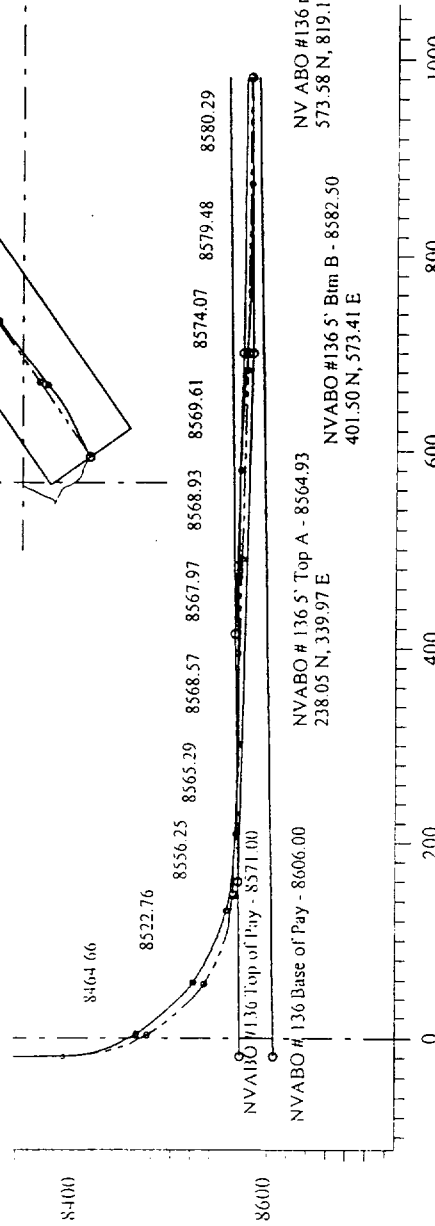
Eastings

Scale: 1 inch = 200ft



Vertical Depth

Scale: 1 inch = 200ft



Scale: 1 inch = 200ft

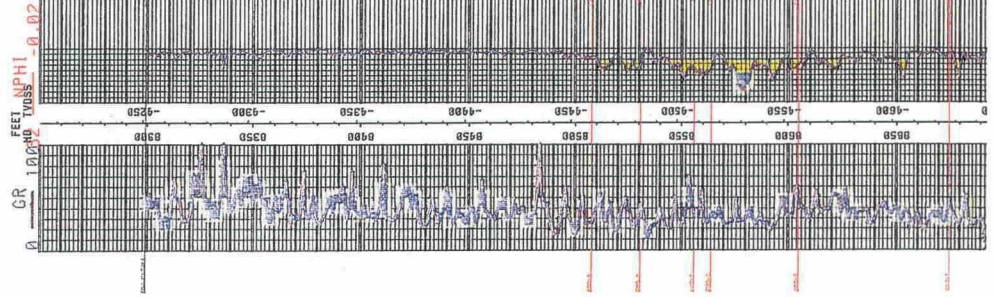
Section Azimuth: 55.000 (True North)

Vertical Section



P.O. Box 633
Midland, TX 79702

NORTH VACUUM ABO UNIT #136
Horizontal Injection Well
Wellpath Diagram



End of Lateral
8580.3 TVD
875 VS
9376 MD

NORTH VACUUM ABO #156

NORTH VACUUM ABO # 156

A. 1.

Lease Name: North Vacuum Abo Unit
Well #: 156
Ut/Sec./T/R: Surface - J 23-17S-34E
Bottom Hole Location (BHL) - I 23-17S-34E
Location: Surf. - 1893' FSL, 1800' FEL
BHL - 656' FSL, 696' FEL

2. Casing string: 8 5/8", 23lb/ft, Foster set @ 1630'
1000 sxs Class H Cmt.
12 1/4" hole size
Circulated to surface

5 1/2", 15.5 & 17lb/ft, N-80 set @ 8750'
2900 sxs TILW + 200 sxs Class C cmt.
7 7/8" hole size
Top of cement @ 2610' (temp survey)
3. Tubing: 2 7/8" L-80 EOT @ 8278'
4. Packer: 5 1/2" Otis Model 'TB' (Permanent) @ 8401'

B.1. Injection formation: Abo

Pool Name: North Vacuum Abo Unit

2. Injection interval: 8752'-9423' OHZ
3. Well was drilled as oil well and converted to WTW 6/22/86
4. Vertical perfs: 8472-8650 O/A CIBP set @ 8364' & 8370'
5. Drinkard is 1000' above Abo
Wolfcamp is 800' below Abo

Well: NVAU #156H
Location: SECT. 23 - T17s-R34e
Date Drilled: 4/4/71
TD: 8,750' / 9:45
PBD: 8,725' / 9:45
Horizontal lateral: Date Drilled:
TVD:
MD:
VS:
Azimuth:

Current status: Abo Horizontal WIW

Completion history: See attached

Well Construction: See attached

893' FSL
800' FEL
-23
17S
34E

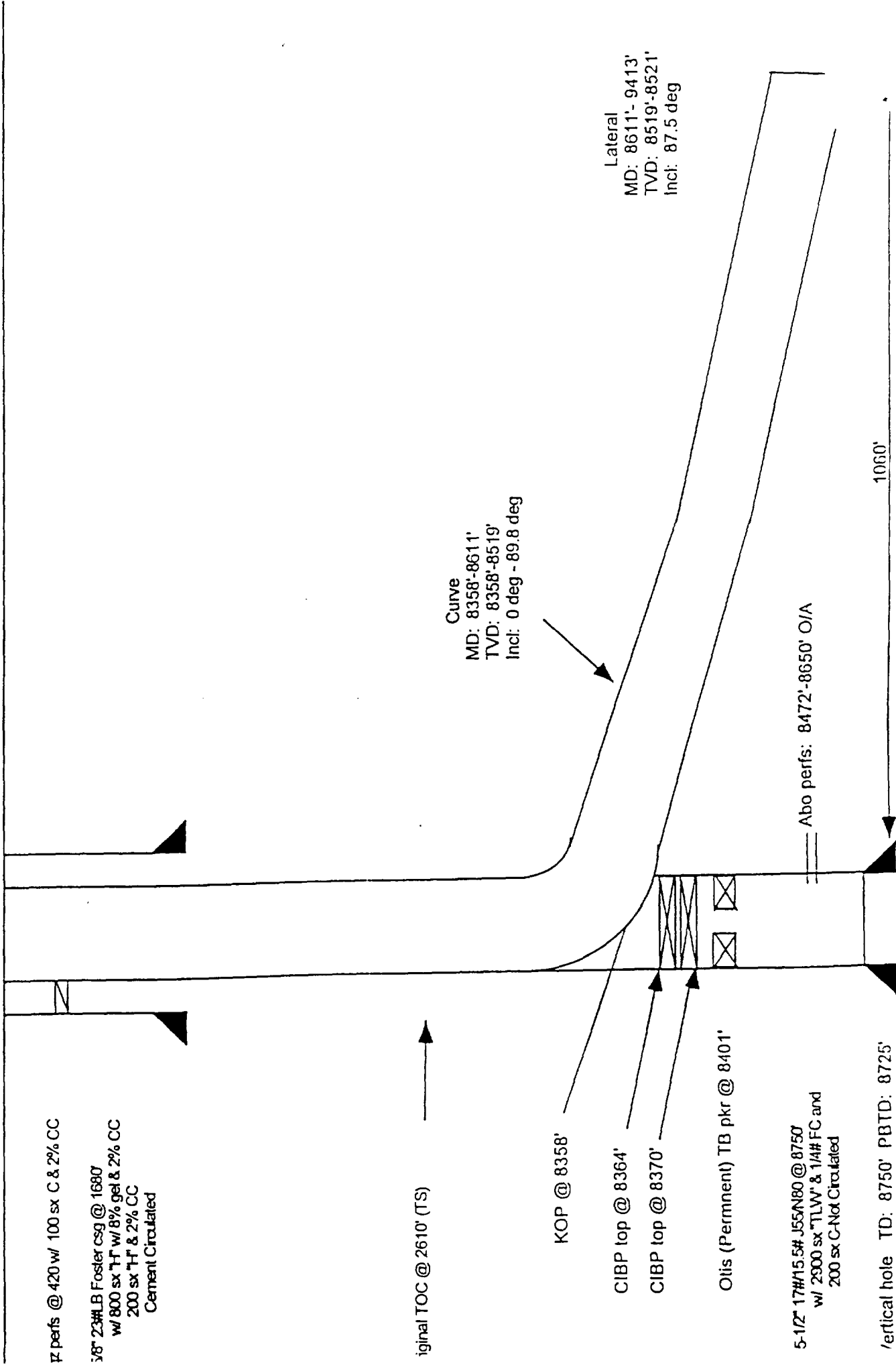
NVAU 156
Vacuum Field
Lea County, New Mexico

yp: 08/12/97

IB: 4037.5'
IL: 4025.0'

Current Configuration

Spud: 04/03/71



7" perfs @ 420' w/ 100 sx C & 2% CC

5/8" 23# LB Foster csg @ 1690'
w/ 800 sx 1" w/ 8% gel & 2% CC
200 sx 1" & 2% CC
Cement Circulated

Original TOC @ 2610' (TS)

KOP @ 8358'

CIBP top @ 8364'

CIBP top @ 8370'

Olis (Permanent) TB pkr @ 8401'

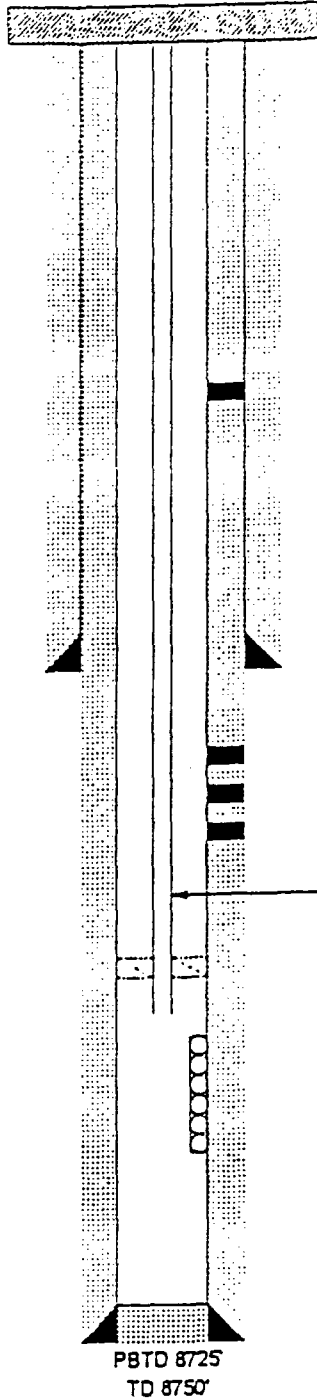
5-1/2" 17# 15.5# J55N80 @ 8750'
w/ 2900 sx 1" TLW" & 1/4" FC and
200 sx C-Not Circulated

Abo perfs: 8472'-8650' O/A

Vertical hole TD: 8750' PBTD: 8725'

1060'

G.L. 4025'
 K.B. 4038'
 Zero 13' AGL



Perforate casing with 3 holes @ 420'. Squeezed with 1100 sxs.

8-5/8" casing set @ 1630'
 Cemented with 1000 sxs. Class 'H'
 Cement circulated to surface
 12-1/4" hole

Perforate casing with 2 holes @ 1775'. Squeezed with 300 sxs.

Perforate casing with 2 holes @ 2240'. Squeezed with 2500 sxs.

Perforate casing with 2 holes @ 2603'. Squeezed with 800 sxs. + 1300 sxs.

271 jts. of 2-7/8", 7.90 lb/ft, N-80 Atlas-Bradford IJ-3SS tubing

5-1/2" Otis 'TB' permanent packer @ 8401'

Abo Perforations:

8487, 88', 95', 98', 99', 8500', 01', 02', 07', 09', 22', 24', 25', 27',
 35', 44', 48' with 1 JSPF (17 holes)

8472, 76', 80', 87', 88', 95', 98', 99', 8500'-02, 08', 25', 34', 36',
 47', 57', 77-80', 92', 8604'-06', 28'-30', 46', 50' with 2 JSPF (60 holes)

5-1/2", 17 & 15.5 lb/ft, N-80 & J-55 casing set @ 8750'

Cemented with 2900 sxs. TILW + 200 sxs. Class 'C'

TOC @ 2610' (Temp survey)

7-7/8" hole

Mobil Exploration & Producing U.S., Inc.
 Current Completion

| | | | |
|---|-------------|-------------------------|--|
| LEASE North Vacuum Abo Unit | | WELL NO 156 | |
| COUNTY Lea | STATE NM | API # 30-025-2369600 | |
| LEGAL LOCATION 1893' FSL & 1800' FEL Sect 23 T-17-S R-34-E | | | |
| DRAWN BY C.M. Jones | | DATE 06 April 1995 | |

North Vacuum Abo Unit #156
Well History

- 04/04/71 Well spudded as Bridges State #156
- 05/01/71 Perforate in the Abo formation at 8487', 88', 95', 98', 99', 8500', 01', 02', 07', 09', 22', 24', 26', 27', 35', 44', and 48' with 1 JSPF (17 holes). Acidized Abo perfs (8487'-8548') with 10,000 gallons 15% HCl containing 5#/1000 gallons friction reducer and 17 RCNBS. TTP: 4400 psig - 5000 psig. AIR: 5.4 BPM. ISIP: 3100 psig. 10 min SIP: 700 psig.
IP: 283 BOPD & 1 BWPD
- 12/06/77 Acidized Abo perfs (8487'-8548') with 10,000 gallons 15% HCl containing 1% retarder and 3 gallons/ 1000 gallons of acid friction reducer using 25 RCNBS. Flushed with 93 bbls 2% KCl water. TTP: 0 psig - 2650 psig. AIR: 4.3 BPM. Some ball action, but did not ball out.
Before: 85 BOPD & 0 BWPD
After: 124 BOPD & 13 BWPD
- 03/15/80 Perforate 5-1/2" casing with 2 holes @ 2603'.
- 03/16/80 Squeezed 800 sxs class 'C' thru perfs @ 2603'.
- 03/22/80 Re-squeezed 1500 sxs class 'C' thru perfs @ 2603'. Temp survey shows TOC behind 5-1/2" casing to be 2255'.
- 03/25/80 Perforated 5-1/2" casing @ 2240' with 2 holes
- 03/26/80 Squeezed 2500 sxs class 'C' thru perfs @ 2240'. Temp survey shows TOC behind 5-1/2" casing to be 1785'.
- 03/28/80 Re-squeezed perfs @ 2240' with 2000 gallons of Flocheck and 178 sxs Thickset.
- 03/31/80 Re-squeezed perfs @ 2240' with 300 sxs class 'C' thickset.
- 04/01/80 Perforate 5-1/2" casing @ 1775' with 2 holes.
- 04/02/80 Squeezed perfs @ 1775' with 300 sxs class 'C'. Cement circulated.
- 04/07/80 Re-squeeze perfs @ 1775' with 300 sxs Thix-set.
- 04/09/80 Perforate 5-1/2" casing @ 420' with 3 holes. Squeezed holes @ 420' with 100 sxs class 'C'.
- 04/12/80 Re-squeeze holes @ 420' with 85 sxs Calseal.
- 12/18/81 Acidized Abo perfs (8487'-8548') with 2,000 gallons HCl down casing @ 4.0 BPM.
Flush with 20 bbls lease oil.
Before: 121 BOPD & 3 BWPD
After: 115 BOPD & 15 BWPD
- 05/14/86 Perforate in the Abo formation at 8472', 76', 80', 87', 88', 95', 8498'-8502', 08', 25', 34', 36', 47', 57', 8577'-80', 92', 8604'-06', 8628'-30', 46', and 50' with 2 JSPF (60 holes).

- 05/15/86 Acidized Abo perms(8472'-8650') with 5,000 gallons 15% HCl (first 1000 gallons with 110 gallons Mu-Sol A) and 125 (1.3 SG) RCNBS. TTP: 0 psig. AIR: 3.0 BPM. No ball action.
- 06/22/86 Well converted to WMW.
IJ: 306 BWPDP @ 1700 psig TP
- 11/14/97 SPUD horizontal lateral
kickoff @ 8358'
- 11/30/97 TD HORIZONTAL LATERAL
MD= 9413' TVD= 8521' VS= 1060'
AZ= 126° INCL= 87.5°
- 12/15/97 Acid Frac
10,000 gal nitrogen foamed 20% HCl - 55 to 60 quality

Mobil Exploration

*Vacuum Field (PA/WC)
Lea County
Sec. 26-T17S-R34E
NV ABO # 156 - MWD Survey*

CONFIDENTIAL
SURVEY REPORT
19 January, 1998

sperry-sun
DRILLING SERVICES
A DRESSER COMPANY

Survey Ref: svy2367

Sperry-Sun Drilling Services



Survey Report for NV ABO # 156

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 0.00 | 0.000 | 0.000 | 0.00 | 0.00 N | 0.00 E | 0.00 | |
| 100.00 | 0.360 | 2.460 | 100.00 | 0.31 N | 0.01 E | -0.20 | 0.360 |
| 200.00 | 0.170 | 345.410 | 200.00 | 0.77 N | 0.01 W | -0.53 | 0.204 |
| 300.00 | 0.360 | 11.880 | 300.00 | 1.22 N | 0.02 E | -0.81 | 0.221 |
| 400.00 | 0.340 | 4.710 | 400.00 | 1.83 N | 0.11 E | -1.16 | 0.048 |
| 500.00 | 0.550 | 9.040 | 499.99 | 2.60 N | 0.21 E | -1.60 | 0.213 |
| 600.00 | 0.310 | 359.210 | 599.99 | 3.34 N | 0.28 E | -2.05 | 0.250 |
| 700.00 | 0.220 | 64.280 | 699.99 | 3.69 N | 0.45 E | -2.17 | 0.295 |
| 800.00 | 0.220 | 35.260 | 799.99 | 3.93 N | 0.73 E | -2.12 | 0.110 |
| 900.00 | 0.300 | 124.010 | 899.99 | 3.94 N | 1.06 E | -1.88 | 0.368 |
| 1000.00 | 0.580 | 182.280 | 999.98 | 3.29 N | 1.26 E | -1.30 | 0.493 |
| 1100.00 | 1.070 | 196.710 | 1099.97 | 1.89 N | 0.97 E | -0.57 | 0.528 |
| 1200.00 | 1.090 | 199.510 | 1199.96 | 0.10 N | 0.38 E | 0.21 | 0.056 |
| 1300.00 | 1.180 | 203.230 | 1299.94 | 1.74 S | 0.34 W | 0.92 | 0.116 |
| 1400.00 | 0.780 | 212.070 | 1399.92 | 3.26 S | 1.11 W | 1.39 | 0.426 |
| 1500.00 | 0.820 | 219.890 | 1499.91 | 4.39 S | 1.93 W | 1.54 | 0.116 |
| 1600.00 | 0.810 | 226.630 | 1599.90 | 5.43 S | 2.90 W | 1.52 | 0.096 |
| 1700.00 | 0.630 | 219.790 | 1699.89 | 6.33 S | 3.77 W | 1.50 | 0.199 |
| 1800.00 | 0.800 | 217.090 | 1799.89 | 7.31 S | 4.54 W | 1.59 | 0.173 |
| 1900.00 | 0.570 | 213.230 | 1899.88 | 8.29 S | 5.24 W | 1.74 | 0.234 |
| 2000.00 | 0.740 | 221.290 | 1999.87 | 9.19 S | 5.93 W | 1.83 | 0.193 |
| 2100.00 | 0.700 | 209.770 | 2099.86 | 10.20 S | 6.66 W | 1.98 | 0.150 |
| 2200.00 | 0.450 | 200.320 | 2199.86 | 11.10 S | 7.10 W | 2.26 | 0.267 |
| 2300.00 | 0.190 | 231.750 | 2299.86 | 11.57 S | 7.37 W | 2.38 | 0.304 |
| 2400.00 | 0.250 | 220.710 | 2399.86 | 11.84 S | 7.64 W | 2.36 | 0.073 |
| 2500.00 | 0.240 | 217.700 | 2499.86 | 12.17 S | 7.91 W | 2.39 | 0.016 |
| 2600.00 | 0.440 | 75.170 | 2599.86 | 12.24 S | 7.67 W | 2.61 | 0.647 |
| 2700.00 | 0.480 | 71.430 | 2699.85 | 12.01 S | 6.90 W | 3.02 | 0.050 |
| 2800.00 | 0.400 | 60.240 | 2799.85 | 11.70 S | 6.20 W | 3.33 | 0.117 |
| 2900.00 | 0.400 | 59.000 | 2899.85 | 11.35 S | 5.60 W | 3.54 | 0.009 |
| 3000.00 | 0.270 | 85.750 | 2999.85 | 11.15 S | 5.07 W | 3.80 | 0.200 |
| 3100.00 | 0.240 | 60.930 | 3099.84 | 11.03 S | 4.65 W | 4.03 | 0.113 |
| 3200.00 | 0.170 | 324.400 | 3199.84 | 10.81 S | 4.55 W | 3.95 | 0.309 |
| 3300.00 | 0.230 | 357.250 | 3299.84 | 10.49 S | 4.65 W | 3.66 | 0.127 |
| 3400.00 | 0.210 | 282.350 | 3399.84 | 10.25 S | 4.84 W | 3.36 | 0.268 |
| 3500.00 | 0.230 | 295.050 | 3499.84 | 10.12 S | 5.20 W | 3.01 | 0.053 |
| 3600.00 | 0.390 | 309.410 | 3599.84 | 9.82 S | 5.64 W | 2.48 | 0.177 |
| 3700.00 | 0.550 | 293.100 | 3699.84 | 9.42 S | 6.35 W | 1.68 | 0.207 |
| 3800.00 | 0.530 | 300.770 | 3799.83 | 8.99 S | 7.18 W | 0.78 | 0.075 |
| 3900.00 | 0.670 | 291.360 | 3899.83 | 8.54 S | 8.13 W | -0.22 | 0.171 |

Continued...

Sperry-Sun Drilling Services



Survey Report for NV ABO # 156

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (%/100ft) |
|---------------------------|-------|---------|---------------------------|-------------------|------------------|-----------------------------|-----------------------------|
| 4000.00 | 0.550 | 301.430 | 3999.82 | 8.08 S | 9.08 W | -1.24 | 0.160 |
| 4100.00 | 0.350 | 310.090 | 4099.82 | 7.63 S | 9.72 W | -2.01 | 0.211 |
| 4200.00 | 0.530 | 298.640 | 4199.82 | 7.21 S | 10.36 W | -2.77 | 0.199 |
| 4300.00 | 0.320 | 286.610 | 4299.81 | 6.91 S | 11.04 W | -3.47 | 0.227 |
| 4400.00 | 0.390 | 283.440 | 4399.81 | 6.75 S | 11.64 W | -4.02 | 0.073 |
| 4500.00 | 0.390 | 303.910 | 4499.81 | 6.48 S | 12.25 W | -4.65 | 0.139 |
| 4600.00 | 0.530 | 288.000 | 4599.81 | 6.15 S | 12.97 W | -5.41 | 0.188 |
| 4700.00 | 0.370 | 307.350 | 4699.80 | 5.81 S | 13.67 W | -6.15 | 0.219 |
| 4800.00 | 0.510 | 313.760 | 4799.80 | 5.31 S | 14.25 W | -6.92 | 0.148 |
| 4900.00 | 0.600 | 331.380 | 4899.79 | 4.54 S | 14.82 W | -7.86 | 0.192 |
| 5000.00 | 0.900 | 292.140 | 4999.79 | 3.79 S | 15.80 W | -9.09 | 0.578 |
| 5100.00 | 1.160 | 284.260 | 5099.77 | 3.24 S | 17.50 W | -10.72 | 0.295 |
| 5200.00 | 1.350 | 299.370 | 5199.75 | 2.41 S | 19.51 W | -12.75 | 0.380 |
| 5300.00 | 1.370 | 313.230 | 5299.72 | 1.02 S | 21.41 W | -15.10 | 0.329 |
| 5400.00 | 1.490 | 315.570 | 5399.69 | 0.73 N | 23.19 W | -17.59 | 0.133 |
| 5500.00 | 1.480 | 306.170 | 5499.65 | 2.42 N | 25.14 W | -20.17 | 0.244 |
| 5600.00 | 1.290 | 301.740 | 5599.62 | 3.77 N | 27.14 W | -22.56 | 0.218 |
| 5700.00 | 1.070 | 294.380 | 5699.60 | 4.75 N | 28.95 W | -24.56 | 0.267 |
| 5800.00 | 0.940 | 305.960 | 5799.59 | 5.62 N | 30.47 W | -26.26 | 0.241 |
| 5900.00 | 0.910 | 295.640 | 5899.58 | 6.71 N | 31.85 W | -27.83 | 0.169 |
| 6000.00 | 0.920 | 291.270 | 5999.56 | 7.08 N | 33.31 W | -29.34 | 0.070 |
| 6100.00 | 0.680 | 288.590 | 6099.55 | 7.56 N | 34.62 W | -30.63 | 0.243 |
| 6200.00 | 0.380 | 306.340 | 6199.55 | 7.95 N | 35.45 W | -31.50 | 0.339 |
| 6300.00 | 0.060 | 39.980 | 6299.55 | 8.18 N | 35.68 W | -31.84 | 0.388 |
| 6400.00 | 0.360 | 216.410 | 6399.55 | 7.97 N | 35.84 W | -31.81 | 0.420 |
| 6500.00 | 0.210 | 201.290 | 6499.55 | 7.55 N | 36.09 W | -31.71 | 0.167 |
| 6600.00 | 0.480 | 193.500 | 6599.54 | 6.97 N | 36.25 W | -31.44 | 0.273 |
| 6700.00 | 0.480 | 176.760 | 6699.54 | 6.14 N | 36.33 W | -30.93 | 0.140 |
| 6800.00 | 0.710 | 171.490 | 6799.54 | 5.11 N | 36.21 W | -30.15 | 0.236 |
| 6900.00 | 0.950 | 152.790 | 6899.52 | 3.76 N | 35.74 W | -28.89 | 0.359 |
| 7000.00 | 1.140 | 152.580 | 6999.51 | 2.14 N | 34.90 W | -27.18 | 0.190 |
| 7100.00 | 0.800 | 146.800 | 7099.49 | 0.67 N | 34.06 W | -25.57 | 0.353 |
| 7200.00 | 0.800 | 149.990 | 7199.48 | 0.51 S | 33.33 W | -24.23 | 0.045 |
| 7300.00 | 0.900 | 134.150 | 7299.47 | 1.67 S | 32.42 W | -22.78 | 0.254 |
| 7400.00 | 0.910 | 144.530 | 7399.46 | 2.86 S | 31.40 W | -21.21 | 0.164 |
| 7500.00 | 0.910 | 137.360 | 7499.45 | 4.09 S | 30.40 W | -19.65 | 0.114 |
| 7600.00 | 1.020 | 138.080 | 7599.43 | 5.34 S | 29.26 W | -17.97 | 0.111 |
| 7700.00 | 0.810 | 141.340 | 7699.42 | 6.55 S | 28.23 W | -16.39 | 0.216 |
| 7800.00 | 0.640 | 160.090 | 7799.41 | 7.63 S | 27.60 W | -15.19 | 0.290 |
| 7900.00 | 0.820 | 148.120 | 7899.40 | 8.76 S | 27.03 W | -14.01 | 0.235 |
| 8000.00 | 0.670 | 146.370 | 7999.40 | 9.86 S | 26.33 W | -12.75 | 0.152 |
| 8100.00 | 0.640 | 136.360 | 8099.39 | 10.75 S | 25.62 W | -11.63 | 0.118 |
| 8200.00 | 0.860 | 164.380 | 8199.38 | 11.87 S | 25.03 W | -10.43 | 0.421 |
| 8300.00 | 0.920 | 145.370 | 8299.37 | 13.26 S | 24.37 W | -9.01 | 0.300 |
| 8347.00 | 0.920 | 145.370 | 8346.36 | 13.88 S | 23.94 W | -8.28 | 0.000 |

Continued...

Sperry-Sun Drilling Services



Survey Report for NV ABO # 156

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|--------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| <i>MWD Survey</i> | | | | | | | |
| 8353.00 | 2.800 | 135.740 | 8352.36 | 14.02 S | 23.81 W | -8.08 | 31.653 |
| 8365.00 | 4.900 | 135.160 | 8364.33 | 14.60 S | 23.25 W | -7.28 | 17.503 |
| 8375.00 | 8.200 | 136.390 | 8374.27 | 15.42 S | 22.45 W | -6.14 | 33.028 |
| 8385.00 | 11.600 | 136.920 | 8384.12 | 16.67 S | 21.27 W | -4.43 | 34.012 |
| 8395.00 | 15.200 | 137.230 | 8393.84 | 18.36 S | 19.70 W | -2.12 | 36.007 |
| 8405.00 | 18.700 | 137.500 | 8403.41 | 20.51 S | 17.72 W | 0.79 | 35.009 |
| 8415.00 | 23.600 | 138.500 | 8412.73 | 23.19 S | 15.31 W | 4.38 | 49.131 |
| 8425.00 | 27.300 | 135.500 | 8421.76 | 26.33 S | 12.38 W | 8.66 | 39.171 |
| 8435.00 | 30.500 | 133.700 | 8430.51 | 29.72 S | 8.93 W | 13.49 | 33.158 |
| 8445.00 | 33.400 | 136.900 | 8439.00 | 33.48 S | 5.22 W | 18.77 | 33.573 |
| 8455.00 | 36.500 | 139.500 | 8447.19 | 37.75 S | 1.40 W | 24.47 | 34.386 |
| 8465.00 | 39.700 | 138.400 | 8455.06 | 42.41 S | 2.65 E | 30.60 | 32.711 |
| 8475.00 | 43.200 | 136.300 | 8462.56 | 47.27 S | 7.14 E | 37.20 | 37.656 |
| 8485.00 | 47.000 | 133.700 | 8469.61 | 52.27 S | 12.15 E | 44.27 | 42.222 |
| 8495.00 | 50.900 | 132.700 | 8476.38 | 57.40 S | 17.67 E | 51.81 | 40.822 |
| 8505.00 | 54.200 | 128.500 | 8482.26 | 62.53 S | 23.73 E | 59.74 | 43.647 |
| 8515.00 | 55.600 | 126.300 | 8488.01 | 67.50 S | 30.23 E | 67.89 | 22.802 |
| 8525.00 | 56.100 | 130.500 | 8493.63 | 72.64 S | 36.74 E | 76.14 | 35.113 |
| 8535.00 | 59.100 | 132.200 | 8498.98 | 78.22 S | 43.04 E | 84.58 | 33.255 |
| 8545.00 | 63.100 | 133.500 | 8503.82 | 84.17 S | 49.46 E | 93.33 | 41.586 |
| 8555.00 | 67.100 | 134.300 | 8508.03 | 90.46 S | 55.99 E | 102.40 | 40.652 |
| 8565.00 | 71.300 | 134.300 | 8511.58 | 96.99 S | 62.68 E | 111.74 | 42.000 |
| 8575.00 | 75.400 | 134.100 | 8514.44 | 103.66 S | 69.55 E | 121.31 | 41.045 |
| 8585.00 | 79.400 | 133.500 | 8516.62 | 110.42 S | 76.59 E | 131.07 | 40.426 |
| 8609.00 | 86.600 | 131.300 | 8519.54 | 126.47 S | 94.17 E | 154.87 | 31.347 |
| 8640.00 | 89.400 | 127.000 | 8520.63 | 146.02 S | 118.19 E | 185.79 | 16.544 |
| 8671.00 | 91.500 | 126.900 | 8520.38 | 164.65 S | 142.96 E | 216.64 | 6.782 |
| 8702.00 | 91.000 | 127.000 | 8519.71 | 183.28 S | 167.73 E | 247.49 | 1.645 |
| 8733.00 | 90.700 | 127.600 | 8519.25 | 202.07 S | 192.39 E | 278.36 | 2.164 |
| 8765.00 | 92.100 | 131.400 | 8518.47 | 222.41 S | 217.07 E | 310.30 | 12.652 |
| 8796.00 | 91.000 | 135.100 | 8517.63 | 243.64 S | 239.63 E | 341.28 | 12.447 |
| 8827.00 | 89.900 | 137.900 | 8517.38 | 266.12 S | 260.97 E | 372.20 | 9.704 |
| 8857.00 | 90.300 | 139.400 | 8517.33 | 288.64 S | 280.79 E | 402.02 | 5.175 |
| 8888.00 | 88.800 | 139.500 | 8517.57 | 312.20 S | 300.94 E | 432.79 | 4.849 |
| 8919.00 | 87.500 | 138.500 | 8518.58 | 335.58 S | 321.27 E | 463.58 | 5.290 |
| 8949.00 | 86.700 | 137.100 | 8520.09 | 357.77 S | 341.39 E | 493.41 | 5.370 |
| 8979.00 | 86.600 | 135.700 | 8521.85 | 379.46 S | 362.05 E | 523.29 | 4.671 |
| 9010.00 | 87.900 | 134.600 | 8523.33 | 401.41 S | 383.88 E | 554.22 | 5.491 |
| 9041.00 | 89.100 | 132.800 | 8524.14 | 422.82 S | 406.29 E | 585.20 | 6.977 |
| 9072.00 | 92.000 | 132.800 | 8523.85 | 443.88 S | 429.03 E | 616.19 | 9.355 |

Continued...

Sperry-Sun Drilling Services



Survey Report for NV ABO # 156

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 26-T17S-R34E

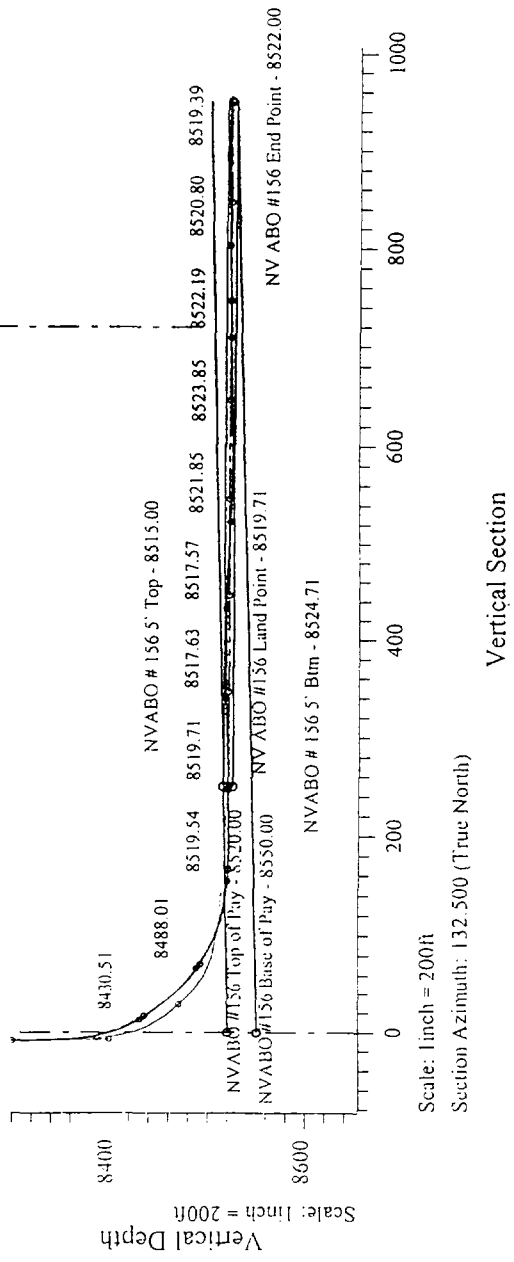
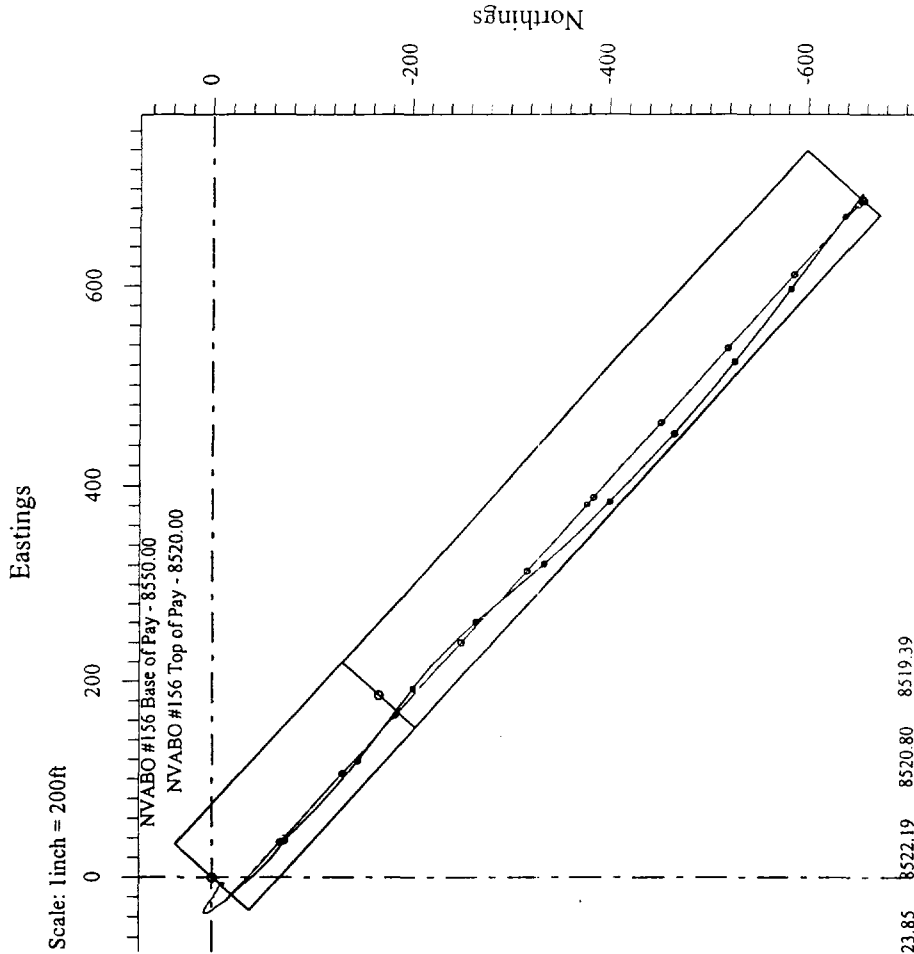
| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|--------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 9103.00 | 92.100 | 132.300 | 8522.74 | 464.83 S | 451.85 E | 647.17 | 1.644 |
| 9135.00 | 89.400 | 130.600 | 8522.32 | 486.01 S | 475.83 E | 679.16 | 9.970 |
| 9165.00 | 91.100 | 130.200 | 8522.19 | 505.45 S | 498.68 E | 709.14 | 5.821 |
| 9197.00 | 90.300 | 129.200 | 8521.80 | 525.89 S | 523.29 E | 741.10 | 4.002 |
| 9228.00 | 91.300 | 128.300 | 8521.36 | 545.29 S | 547.47 E | 772.03 | 4.340 |
| 9259.00 | 90.800 | 127.200 | 8520.80 | 564.27 S | 571.97 E | 802.92 | 3.897 |
| 9290.00 | 91.600 | 126.900 | 8520.15 | 582.94 S | 596.71 E | 833.77 | 2.756 |
| 9321.00 | 90.900 | 126.700 | 8519.47 | 601.51 S | 621.53 E | 864.61 | 2.348 |
| 9352.00 | 89.400 | 126.300 | 8519.39 | 619.94 S | 646.45 E | 895.44 | 5.008 |
| 9383.00 | 87.500 | 126.000 | 8520.23 | 638.22 S | 671.47 E | 926.23 | 6.205 |
| 9413.00 | 87.500 | 126.000 | 8521.54 | 655.84 S | 695.71 E | 956.01 | 0.000 |

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North. Vertical depths are relative to RKB. Northings and Eastings are relative to Wellhead.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Wellhead and calculated along an Azimuth of 132.500° (True)

Based upon Minimum Curvature type calculations, at a Measured Depth of 9413.00ft.
The Bottom Hole Displacement is 956.11ft. in the Direction of 133.310° (True).

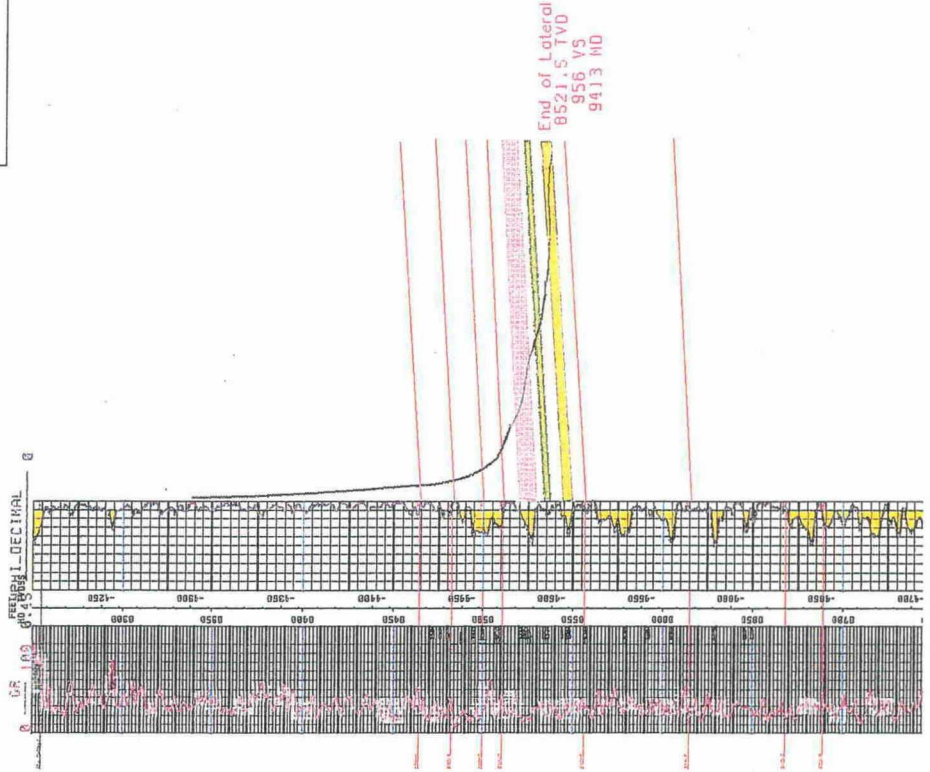
Customer: Mobil Exploration
State: New Mexico
Field: Vacuum Field (PA/WC)
Project: Lea County
Structure: Sec. 26-T17S-R34E





P.O. Box 633
Midland, TX 79702

NORTH VACUUM ABO UNIT #156
Horizontal Injection Well
Wellpath Diagram



NORTH VACUUM ABO #213

NORTH VACUUM ABO UNIT #213

A. 1.

Lease Name: North Vacuum Abo Unit
Well #: 213
Ut/Sec./T/R: Surface - N 23-17S-34E
Bottom Hole Location (BHL) - B 26-17S-34E
Location: Surf. - 460' FSL, 800' FEL
BHL - 688' FSL, 800' FEL

2. Casing string: 8 5/8", 28 lb/ft, set @ 3035'
1200 sxs TILW + 200 sxs Class C Cmt.
11" hole size
Circulated to surface

5 1/2", 15.5 & 17lb/ft, J-55 & N-80 set @ 8700'
2100 sxs TILW + 200 sxs Class C
7 7/8" hole size
Circulated cement
3. Tubing: 2 7/8" L-80 EOT @ 8209'
4. Packer: Baker model "NB" packer @ 8329'

B.1. Injection formation: Abo
Pool Name: North Vacuum Abo Unit

2. Injection interval: 8752'-9423' OHZ
3. Well was drilled as oil well and converted to WIW 07/24/73
4. Vertical perfs: 8515-8565 O/A CIBP set @ 8300'
5. Drinkard is 1000' above Abo
Wolfcamp is 800' below Abo

Well: NVAU #213H
Location: SECT 23 - T17S-R34e
Date Drilled: 12/20/71
TD: 8,800' / 9,425'
PBTD: 8,752' / 9,375'
Horizontal lateral: Date Drilled:
TVD:
MD:
VS:
Azimuth:

Current status: Abo Horizontal WIW

Completion history: See attached

Well Construction: See attached

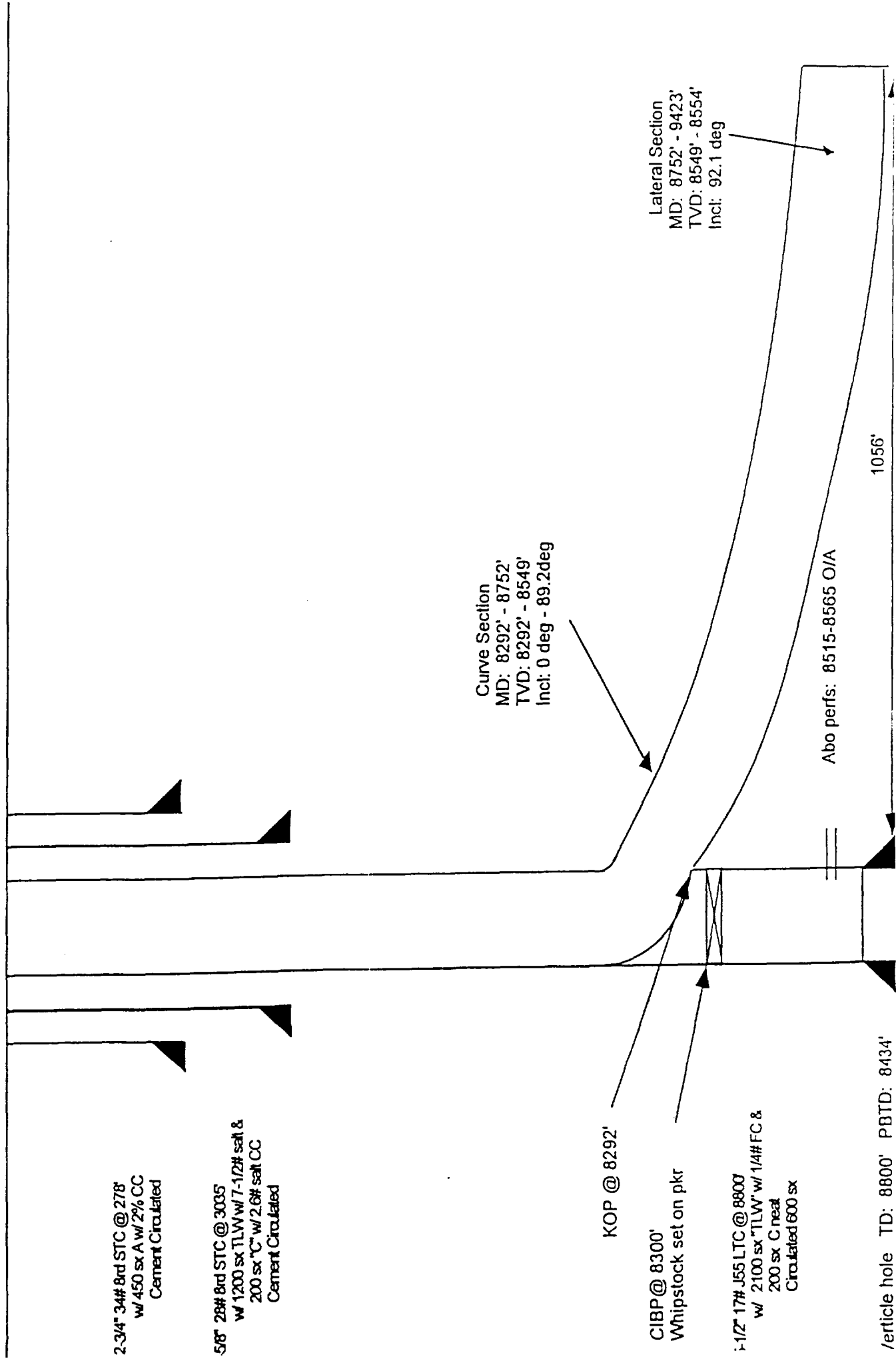
60' FSL
980' FWL
1-23
17S
134E
(B: 4044'
BL: 4028'

NVAU 212
Vacuum Field
Lea County, New Mexico

YPO: 11/14/97

Current Configuration

Spud: 12/19/71



Article hole TD: 8800' PBTD: 8434'

1056'

Abo perms: 8515-8565 O/A

Lateral Section
MD: 8752' - 9423'
TVD: 8549' - 8554'
Incl: 92.1 deg

Curve Section
MD: 8292' - 8752'
TVD: 8292' - 8549'
Incl: 0 deg - 89.2 deg

KOP @ 8292'

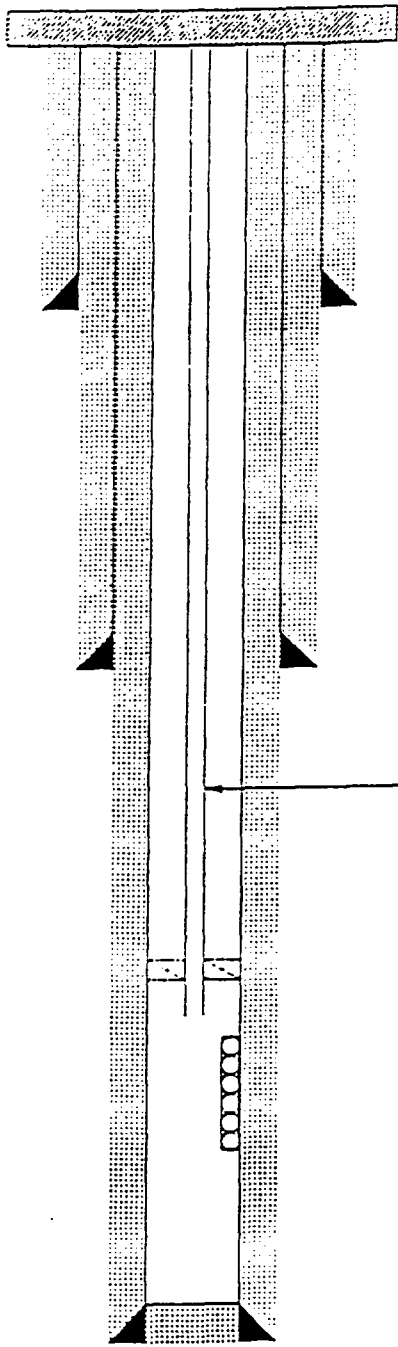
CIBP @ 8300'
Whipstock set on pkr

1-1/2" 17# J55 LTC @ 8800'
w/ 2100 sx "TLW" w/ 1/4# FC &
200 sx C neat
Circulated 600 sx

2-3/4" 34# 8rd STC @ 278'
w/ 450 sx A w/ 2% CC
Cement Circulated

5/8" 28# 8rd STC @ 3035'
w/ 1200 sx TLW w/ 7-1/2# salt &
200 sx "C" w/ 2.6# salt CC
Cement Circulated

G.L. 4028
 K.B. 4044
 Zero 16' AGL



12-3/4", 34 lb/ft casing set @ 278'
 Cemented with 450 sxs. Class 'A'
 Cement circulated to surface
 17-1/2" hole

8-5/8", 28 lb/ft casing set @ 3035'
 Cemented with 1200 sxs. TILW + 200 sxs. Class 'C'
 Cement circulated to surface
 11" hole

266 fts. of 2-3/8" N-80 Butress tubing

Baker Model 'NB' packer @ 8329'. Model 'F' SN (1.81" ID) @ 8341'. EOT @ 8248'.

Abo Perforations:

8509, 15'-16', 19', 24', 29'-30', 34', 42', 44', 49', 54', 59', 62', 64' with 2 JSPF (30 holes)
 8514, 17', 23', 25', 31', 35', 50', 53', 55', 60'-61', 63', 65' with 1 JSPF (13 holes). Total
 43 holes. Squeezed with 200 sxs. cement (2/20/75).

Abo Reperfs:

8515-18', 23', 29'-31', 34'-35', 43'-45', 49', 53'-55', 59'-65' with 1 JSPF (24 holes)

5-1/2" 15.5 & 17 lb/ft casing set @ 8800'
 Cemented with 2100 sxs. TILW + 200 sxs. Class 'C'
 Cement circulated
 7-7/8" hole

PBD 8752
 TD 8800'

Mobil Exploration & Producing U.S., Inc.
 Current Completion

| | | | | | |
|--|-----|-----------------------|----|---------------|----------------|
| LEASE | | North Vacuum Abo Unit | | WELL NO | 213 |
| COUNTRY | Lea | STATE | NM | APP# | 30-025-2398200 |
| LEGAL LOCATION | | | | | |
| 460' FSL & 1980' FWL Sect 23 T-17-S R-34-E | | | | | |
| DRAWN BY | | | | DATE | |
| C.M. Jones | | | | 06 April 1995 | |

North Vacuum Abo Unit #213
Well History

- 12/20/71 Well spudded as State 'KK' #1
- 01/14/72 Perforate in the Abo formation at 8509', 15', 16', 19', 24', 29', 30', 34', 42', 44', 49', 54', 59', 62', and 64' with 2 JSPF (30 holes).
- 01/15/72 Acidized Abo perms (8509'-8564') with 10,000 gallons 15% HCl containing 5#/1000 gallons friction reducer using 30 RCNBS. TTP: 5000 psig- 5300 psig. AIR: 5.5 BPM. ISIP: 3400 psig. 10 min SIP: 1700 psig. IP: 100 BOPD & 0 BWPD
- 05/25/73 Perforated in the Abo formation at 8514', 17', 23', 25', 31', 35', 50', 53', 55', 60', 61', 63', and 65' with 1 JSPF (13 holes).
- 05/26/73 Treated Abo perms (8509'-8569') with 800 gallons Xylene +200 gallons 15% HCl + 2 gallons Adafoam. TTP: 0 psig - 1050 psig. AIR: 3.8 BPM. ISIP: Vac.
- 05/27/73 Acidized Abo perms (8509'-8565') with 5,000 gallons 15% HCl. Flushed and overflushed with 15,000 gallons fresh water with 2 gallons Adafoam/1000 gallons, used 65 RCNBS. TTP: 500 psig - 3500 psig. AIR: 4.3 BPM. ISIP: 2200 psig. Vac. 7 min.
- 07/24/73 Well converted to WW
IJ: 400 BWPD @ 200 psig TP
- 02/20/75 Squeezed Abo perms (8500'-8569') with 100 sxs class 'H' to eliminate channeling of injection water behind casing to lower intervals. Max. pressure: 3300 psig. PI perms 2BPM @ 4300 psig. Resqueeze perms with 100 sxs class 'H'. Max pressure: 5000 psig.
- 02/22/75 Perforated in the Abo formation at 8515'-18', 23', 29'-31', 34'-35', 43'-45', 49', 53'-55', and 59'-65' with 1 JSPF (24 holes).
- 02/25/75 Acidized Abo perms (8515'-8565') with 3,000 gallons 15% HCl + 20 RCNBS. BDTP: 6000 psig. TTP: 5500 psig - 5800 psig. AIR: 4.8 BPM. ISIP: 3800 psig. 15 min SIP: 330 psig.
Before:
After: 190 BWPD @ 3675 psig TP
- 09/13/83 Acidized Abo perms (8515'-8565') with 5000 gallons 15% HCl. Flushed acid with 40 bbls fresh water. TTP: 4700 psig - 5400 psig. AIR: 1.6 BPM. ISIP: 5300 psig. 5 min SIP: 5100 psig. 10 min SIP: 5000 psig. 15 min SIP: 5000 psig. Flowed back 120 bbls of water. Returned to injection.
Before: 127 BWPD @ 4400 psig TP
After: 170 BWPD @ 4200 psig TP
- 11/24/97 SP4D horizontal lateral
Kickoff @ 8292'
- 12/7/97 TD horizontal lateral
MD = 9423' TVD = 8554' VS = 1056'
AZ = 137.4° INCL = 92.1°

Mobil Exploration

***Vacuum Field (PA/WC)
Lea County
Sec. 23-T17S-R34E
NV ABO #213 - MWD Survey***

CONFIDENTIAL
SURVEY REPORT
19 January, 1998

sperry-sun
DRILLING SERVICES
A DRESSER COMPANY

Survey Ref: svy2392

Sperry-Sun Drilling Services



Survey Report for NV ABO #213

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 23-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| <i>Org. Hole</i> | | | | | | | |
| 0.00 | 0.000 | 0.000 | 0.00 | 0.00 N | 0.00 E | 0.00 | |
| 200.00 | 0.010 | 345.000 | 200.00 | 0.02 N | 0.00 E | -0.01 | 0.005 |
| 400.00 | 0.070 | 349.880 | 400.00 | 0.15 N | 0.03 W | -0.13 | 0.030 |
| 600.00 | 0.070 | 13.550 | 600.00 | 0.39 N | 0.02 W | -0.28 | 0.014 |
| 800.00 | 0.050 | 276.300 | 800.00 | 0.52 N | 0.08 W | -0.41 | 0.046 |
| 1000.00 | 0.090 | 243.010 | 1000.00 | 0.46 N | 0.31 W | -0.54 | 0.028 |
| 1200.00 | 0.230 | 209.700 | 1200.00 | 0.04 N | 0.65 W | -0.50 | 0.081 |
| 1400.00 | 0.300 | 201.500 | 1400.00 | 0.80 S | 1.04 W | -0.23 | 0.040 |
| 1600.00 | 0.310 | 252.180 | 1599.99 | 1.45 S | 1.74 W | -0.31 | 0.131 |
| 1800.00 | 0.690 | 246.390 | 1799.99 | 2.10 S | 3.36 W | -1.06 | 0.191 |
| 2000.00 | 0.340 | 228.550 | 1999.98 | 2.97 S | 4.91 W | -1.61 | 0.190 |
| 2200.00 | 0.430 | 24.920 | 2199.98 | 3.30 S | 4.61 W | -1.17 | 0.366 |
| 2400.00 | 0.470 | 79.540 | 2399.97 | 2.97 S | 3.08 W | -0.27 | 0.056 |
| 2600.00 | 0.760 | 65.760 | 2599.96 | 2.17 S | 1.10 W | 0.66 | 0.148 |
| 2800.00 | 0.760 | 73.640 | 2799.94 | 1.25 S | 1.39 E | 1.87 | 0.052 |
| 3000.00 | 0.450 | 64.260 | 2999.93 | 0.53 S | 3.37 E | 2.84 | 0.162 |
| 3200.00 | 0.450 | 65.530 | 3199.92 | 0.13 N | 4.79 E | 3.44 | 0.005 |
| 3400.00 | 0.460 | 79.620 | 3399.92 | 0.60 N | 6.29 E | 4.23 | 0.056 |
| 3600.00 | 0.600 | 74.770 | 3599.91 | 1.02 N | 8.09 E | 5.28 | 0.073 |
| 3800.00 | 0.710 | 71.440 | 3799.90 | 1.69 N | 10.28 E | 6.44 | 0.058 |
| 4000.00 | 0.980 | 70.820 | 3999.87 | 2.65 N | 13.07 E | 7.85 | 0.135 |
| 4200.00 | 1.210 | 73.990 | 4199.84 | 3.79 N | 16.71 E | 9.76 | 0.119 |
| 4400.00 | 1.460 | 84.820 | 4399.78 | 4.60 N | 21.28 E | 12.58 | 0.177 |
| 4600.00 | 1.450 | 82.640 | 4599.72 | 5.16 N | 26.33 E | 15.93 | 0.028 |
| 4800.00 | 1.380 | 66.680 | 4799.66 | 6.44 N | 31.05 E | 18.54 | 0.199 |
| 5000.00 | 1.340 | 68.250 | 4999.60 | 8.26 N | 35.43 E | 20.55 | 0.027 |
| 5200.00 | 0.960 | 53.680 | 5199.56 | 10.11 N | 38.96 E | 21.89 | 0.238 |
| 5400.00 | 0.360 | 30.850 | 5399.55 | 11.65 N | 40.63 E | 22.09 | 0.322 |
| 5600.00 | 0.360 | 33.780 | 5599.54 | 12.71 N | 41.30 E | 21.86 | 0.009 |
| 5800.00 | 0.410 | 57.340 | 5799.54 | 13.62 N | 42.25 E | 21.95 | 0.082 |
| 6000.00 | 0.380 | 89.940 | 5999.53 | 14.00 N | 43.52 E | 22.62 | 0.112 |
| 6200.00 | 0.620 | 122.350 | 6199.53 | 13.42 N | 45.09 E | 24.18 | 0.181 |
| 6400.00 | 0.520 | 107.810 | 6399.52 | 12.57 N | 46.87 E | 26.07 | 0.088 |
| 6600.00 | 0.590 | 109.430 | 6599.51 | 11.95 N | 48.71 E | 27.84 | 0.036 |
| 6800.00 | 0.590 | 138.430 | 6799.50 | 10.84 N | 50.36 E | 29.81 | 0.148 |
| 7000.00 | 0.890 | 136.130 | 6999.48 | 8.94 N | 52.12 E | 32.38 | 0.151 |
| 7200.00 | 1.360 | 147.420 | 7199.44 | 5.83 N | 54.48 E | 36.23 | 0.259 |
| 7400.00 | 1.460 | 140.880 | 7399.38 | 1.85 N | 57.36 E | 41.04 | 0.095 |
| 7600.00 | 1.380 | 136.060 | 7599.32 | 1.86 S | 60.64 E | 45.97 | 0.072 |
| 7800.00 | 1.470 | 129.090 | 7799.26 | 5.21 S | 64.30 E | 50.93 | 0.098 |

Continued...

Sperry-Sun Drilling Services



Survey Report for NV ABO #213

Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 23-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|-------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 8000.00 | 1.320 | 168.490 | 7999.20 | 9.09 S | 66.75 E | 55.36 | 0.475 |
| 8200.00 | 1.500 | 168.120 | 8199.14 | 13.91 S | 67.75 E | 59.35 | 0.090 |
| 8272.00 | 1.400 | 162.560 | 8271.12 | 15.67 S | 68.21 E | 60.88 | 0.240 |
| 8300.00 | 1.400 | 162.560 | 8299.11 | 16.32 S | 68.41 E | 61.47 | 0.000 |

MWD Survey

| | | | | | | | |
|---------|--------|---------|---------|----------|----------|--------|--------|
| 8310.00 | 7.200 | 132.500 | 8309.08 | 16.86 S | 68.91 E | 62.20 | 60.290 |
| 8320.00 | 8.700 | 132.500 | 8318.98 | 17.80 S | 69.93 E | 63.58 | 15.000 |
| 8330.00 | 10.200 | 132.500 | 8328.85 | 18.91 S | 71.14 E | 65.23 | 15.000 |
| 8340.00 | 11.900 | 132.500 | 8338.66 | 20.20 S | 72.56 E | 67.14 | 17.000 |
| 8350.00 | 13.400 | 132.500 | 8348.42 | 21.68 S | 74.17 E | 69.33 | 15.000 |
| 8360.00 | 14.500 | 143.910 | 8358.13 | 23.48 S | 75.76 E | 71.72 | 29.565 |
| 8370.00 | 16.000 | 143.700 | 8367.77 | 25.60 S | 77.32 E | 74.30 | 15.010 |
| 8380.00 | 18.900 | 143.300 | 8377.31 | 28.01 S | 79.10 E | 77.24 | 29.025 |
| 8390.00 | 22.500 | 141.300 | 8386.66 | 30.80 S | 81.27 E | 80.72 | 36.683 |
| 8400.00 | 26.000 | 138.300 | 8395.78 | 33.93 S | 83.92 E | 84.80 | 37.095 |
| 8410.00 | 28.900 | 133.700 | 8404.66 | 37.24 S | 87.13 E | 89.39 | 35.907 |
| 8420.00 | 32.000 | 129.700 | 8413.28 | 40.60 S | 90.91 E | 94.46 | 37.025 |
| 8430.00 | 35.600 | 127.700 | 8421.58 | 44.07 S | 95.26 E | 100.01 | 37.676 |
| 8440.00 | 39.000 | 129.200 | 8429.54 | 47.84 S | 100.00 E | 106.05 | 35.192 |
| 8450.00 | 42.400 | 132.000 | 8437.12 | 52.09 S | 104.95 E | 112.57 | 38.586 |
| 8460.00 | 44.500 | 134.600 | 8444.38 | 56.81 S | 109.95 E | 119.44 | 27.578 |
| 8470.00 | 47.200 | 133.300 | 8451.34 | 61.79 S | 115.11 E | 126.61 | 28.565 |
| 8480.00 | 48.900 | 132.400 | 8458.03 | 66.84 S | 120.57 E | 134.05 | 18.270 |
| 8490.00 | 50.600 | 132.100 | 8464.49 | 71.97 S | 126.22 E | 141.68 | 17.153 |
| 8500.00 | 52.400 | 132.100 | 8470.71 | 77.22 S | 132.02 E | 149.51 | 18.000 |
| 8510.00 | 54.200 | 131.800 | 8476.69 | 82.58 S | 137.99 E | 157.52 | 18.160 |
| 8520.00 | 55.900 | 131.900 | 8482.42 | 88.05 S | 144.09 E | 165.72 | 17.020 |
| 8530.00 | 58.000 | 131.600 | 8487.87 | 93.63 S | 150.34 E | 174.10 | 21.150 |
| 8540.00 | 59.600 | 131.200 | 8493.05 | 99.29 S | 156.76 E | 182.65 | 16.362 |
| 8550.00 | 61.600 | 131.100 | 8497.96 | 105.02 S | 163.32 E | 191.36 | 20.019 |
| 8560.00 | 63.400 | 131.400 | 8502.58 | 110.87 S | 169.99 E | 200.23 | 18.196 |
| 8570.00 | 63.800 | 132.300 | 8507.03 | 116.84 S | 176.66 E | 209.19 | 8.999 |
| 8580.00 | 64.300 | 132.800 | 8511.40 | 122.92 S | 183.29 E | 218.18 | 6.724 |
| 8590.00 | 65.700 | 132.500 | 8515.63 | 129.06 S | 189.95 E | 227.24 | 14.262 |
| 8600.00 | 67.000 | 131.700 | 8519.64 | 135.20 S | 196.75 E | 236.40 | 14.923 |
| 8610.00 | 68.800 | 133.000 | 8523.40 | 141.45 S | 203.59 E | 245.67 | 21.658 |
| 8620.00 | 70.300 | 133.200 | 8526.89 | 147.85 S | 210.44 E | 255.03 | 15.117 |
| 8630.00 | 71.800 | 132.200 | 8530.14 | 154.26 S | 217.39 E | 264.49 | 17.733 |
| 8640.00 | 73.400 | 132.400 | 8533.13 | 160.68 S | 224.44 E | 274.03 | 16.113 |
| 8650.00 | 74.900 | 132.200 | 8535.86 | 167.16 S | 231.56 E | 283.65 | 15.123 |

Continued...

Sperry-Sun Drilling Services

Survey Report for NV ABO #213



Mobil Exploration
Vacuum Field (PA/WC)

Lea County
Sec. 23-T17S-R34E

| Measured Depth (ft) | Incl. | Azim. | Vertical Depth (ft) | Northings (ft) | Eastings (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) |
|---------------------|--------|---------|---------------------|----------------|---------------|-----------------------|-----------------------|
| 8660.00 | 75.800 | 132.700 | 8538.39 | 173.69 S | 238.70 E | 293.33 | 10.218 |
| 8670.00 | 77.400 | 132.200 | 8540.71 | 180.25 S | 245.87 E | 303.06 | 16.723 |
| 8680.00 | 78.600 | 132.400 | 8542.79 | 186.84 S | 253.11 E | 312.84 | 12.158 |
| 8690.00 | 80.400 | 132.400 | 8544.61 | 193.47 S | 260.37 E | 322.67 | 18.000 |
| 8700.00 | 82.000 | 132.200 | 8546.14 | 200.12 S | 267.68 E | 332.55 | 16.122 |
| 8710.00 | 83.500 | 132.200 | 8547.40 | 206.78 S | 275.03 E | 342.47 | 15.000 |
| 8720.00 | 85.100 | 132.000 | 8548.40 | 213.45 S | 282.41 E | 352.42 | 16.123 |
| 8752.00 | 89.200 | 132.600 | 8549.99 | 234.96 S | 306.04 E | 384.37 | 12.949 |
| 8773.00 | 90.100 | 132.500 | 8550.12 | 249.16 S | 321.51 E | 405.37 | 4.312 |
| 8805.00 | 88.400 | 132.000 | 8550.53 | 270.67 S | 345.20 E | 437.37 | 5.537 |
| 8836.00 | 87.300 | 131.300 | 8551.70 | 291.26 S | 368.34 E | 468.34 | 4.205 |
| 8867.00 | 86.500 | 130.700 | 8553.37 | 311.56 S | 391.71 E | 499.29 | 3.224 |
| 8899.00 | 88.200 | 132.200 | 8554.85 | 332.72 S | 415.66 E | 531.24 | 7.081 |
| 8929.00 | 89.300 | 132.700 | 8555.51 | 352.97 S | 437.79 E | 561.24 | 4.028 |
| 8961.00 | 88.400 | 132.500 | 8556.15 | 374.62 S | 461.34 E | 593.23 | 2.881 |
| 8992.00 | 88.600 | 130.200 | 8556.96 | 395.09 S | 484.61 E | 624.21 | 7.445 |
| 9022.00 | 89.600 | 129.400 | 8557.43 | 414.29 S | 507.65 E | 654.17 | 4.269 |
| 9053.00 | 90.600 | 129.100 | 8557.38 | 433.91 S | 531.66 E | 685.12 | 3.368 |
| 9085.00 | 91.100 | 128.700 | 8556.90 | 454.00 S | 556.56 E | 717.06 | 2.001 |
| 9116.00 | 90.700 | 129.800 | 8556.42 | 473.61 S | 580.56 E | 748.00 | 3.775 |
| 9146.00 | 91.800 | 130.500 | 8555.76 | 492.95 S | 603.49 E | 777.97 | 4.346 |
| 9177.00 | 90.700 | 131.000 | 8555.09 | 513.18 S | 626.96 E | 808.95 | 3.898 |
| 9208.00 | 91.600 | 132.700 | 8554.46 | 533.86 S | 650.05 E | 839.94 | 6.204 |
| 9239.00 | 91.800 | 134.500 | 8553.54 | 555.23 S | 672.49 E | 870.92 | 5.840 |
| 9270.00 | 90.600 | 135.200 | 8552.90 | 577.08 S | 694.46 E | 901.88 | 4.481 |
| 9301.00 | 89.100 | 135.900 | 8552.98 | 599.21 S | 716.17 E | 932.84 | 5.340 |
| 9332.00 | 88.900 | 135.900 | 8553.52 | 621.47 S | 737.74 E | 963.78 | 0.645 |
| 9393.00 | 92.100 | 137.400 | 8552.99 | 665.82 S | 779.60 E | 1024.61 | 5.793 |
| 9423.00 | 92.100 | 137.400 | 8551.89 | 687.89 S | 799.90 E | 1054.48 | 0.000 |

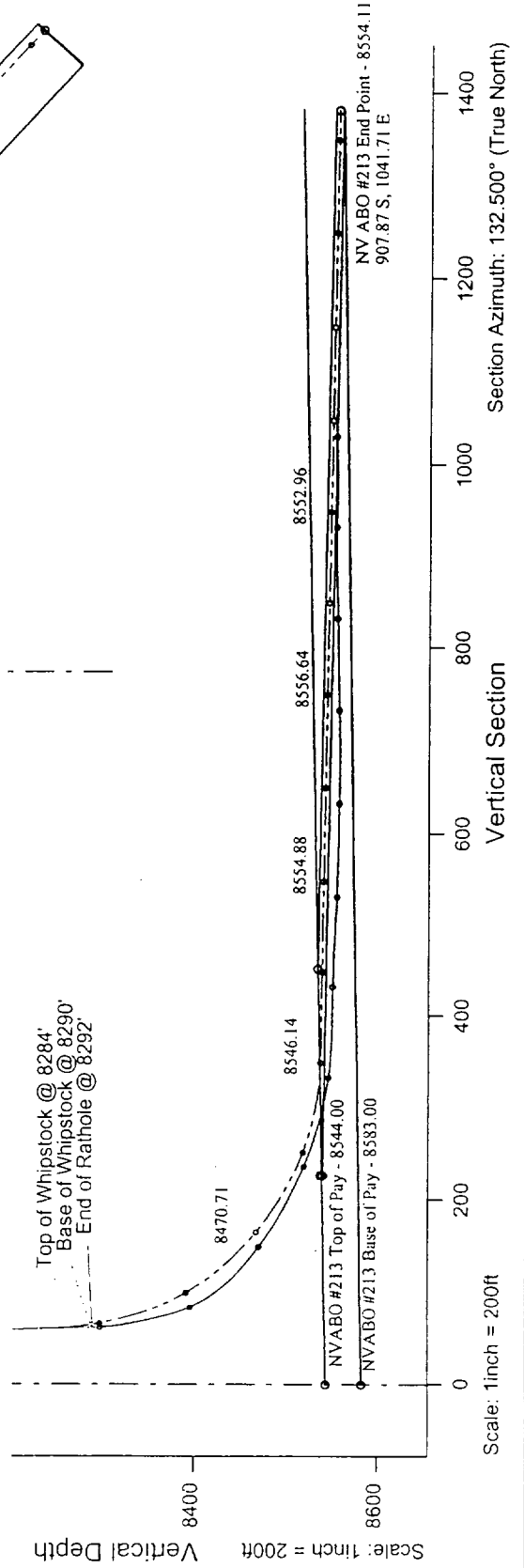
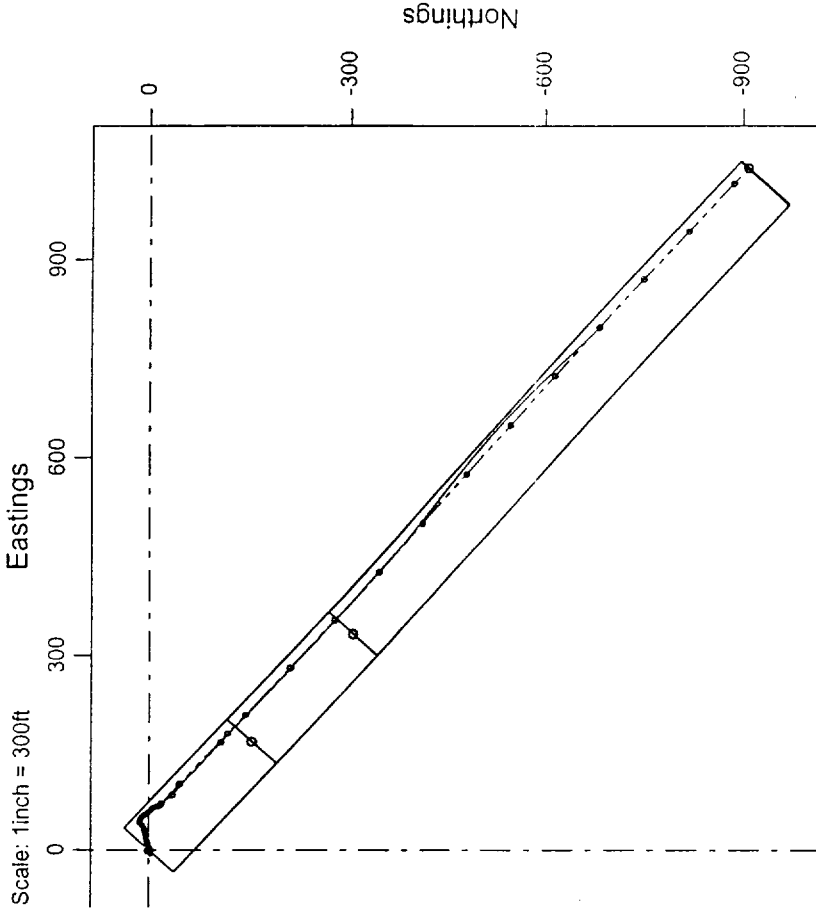
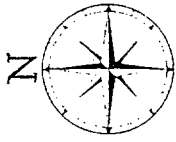
All data is in feet unless otherwise stated. Directions and coordinates are relative to True North. Vertical depths are relative to RKB. Northings and Eastings are relative to Wellhead.

The Dogleg Severity is in Degrees per 100ft.

Vertical Section is from Wellhead and calculated along an Azimuth of 132.500° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 9423.00ft., The Bottom Hole Displacement is 1055.00ft., in the Direction of 130.695° (True).

Vacuum Field (PAWC)
Lea County
Sec. 23-T17S-R34E
NV ABO #213





P.O. Box 633
Midland, TX 79702

NORTH VACUUM ABO UNIT #213
Horizontal Injection Well
Wellpath Diagram

