

Schlumberger Drilling and Measurements  
Drilling Group  
Geo Market Area: South West Texas Basin  
7220 W L-H 20  
Midland, Texas 79706  
Phone : (432) 742-5400 (Main)  
Fax : (432) 742-5606 (Shared)

---

**Schlumberger**

February 15, 2017

OXY USA INCORPORATED

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

APR 19 2017

Re:

CLIENT: OXY USA INCORPORATED  
WELL: Cedar Canyon 29 Federal 3H  
FIELD: Pierce Crossing Bone Spring

RIG: H&P639  
COUNTY: Eddy  
API NO: 30-015-42993  
JOB NO: 16MLD2225

29, 24S, 29E, Eddy NM  
-32.19008 -103.99827

RECEIVED

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements, a division of Schlumberger Technology Corporation (P-5 No. 754900).  
Other information required by your office is as follows.

| <u>Name &amp; Title of<br/>Surveyor</u> | <u>Drainhole Number</u>                        | <u>Surveyed Depths</u>      | <u>Dates Performed</u>                    | <u>Type of Survey</u>  |
|-----------------------------------------|------------------------------------------------|-----------------------------|-------------------------------------------|------------------------|
| Kalu Uga<br>FS                          | Cedar Canyon 29<br>Federal 3H<br>Original Hole | 459.00 Ft to<br>13303.00 Ft | December 24, 2016 to<br>February 14, 2017 | TelePacer<br>SlimPulse |

If any other information is required, please contact the undersigned at the above letterhead and phone number.  
Sincerely,

Cody Nelms  
Field Service Manager

# Schlumberger

**Reservoir Development**  
Schlumberger Drilling and Measurements  
9200 West Reno Avenue  
Oklahoma City, Oklahoma 73127 USA  
Phone: (405) 789-1515  
Fax: (405) 789-1519

**Well Reference:**

29, 24S, 29E, Eddy NM  
-32.19008 -103.99827

I, Kalu Uga certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of December 24, 2016 through February 14, 2017, conduct or supervise the taking of the TelePacer & SlimPulse surveys from a depth of 459.00 feet to a depth of 13303.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of OXY USA INCORPORATED for the Cedar Canyon 29 Federal 3H Well (Original Hole) API No. 30-015-42993 in New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

By  
Kalu Uga  
FS



Subscribed and Sworn to before me this 20 day of February (month) 2017 (yr)

My Commission expires:

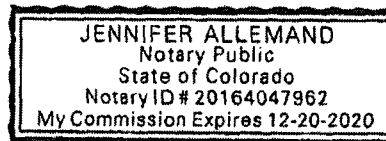
12-20-2020



Notary Public

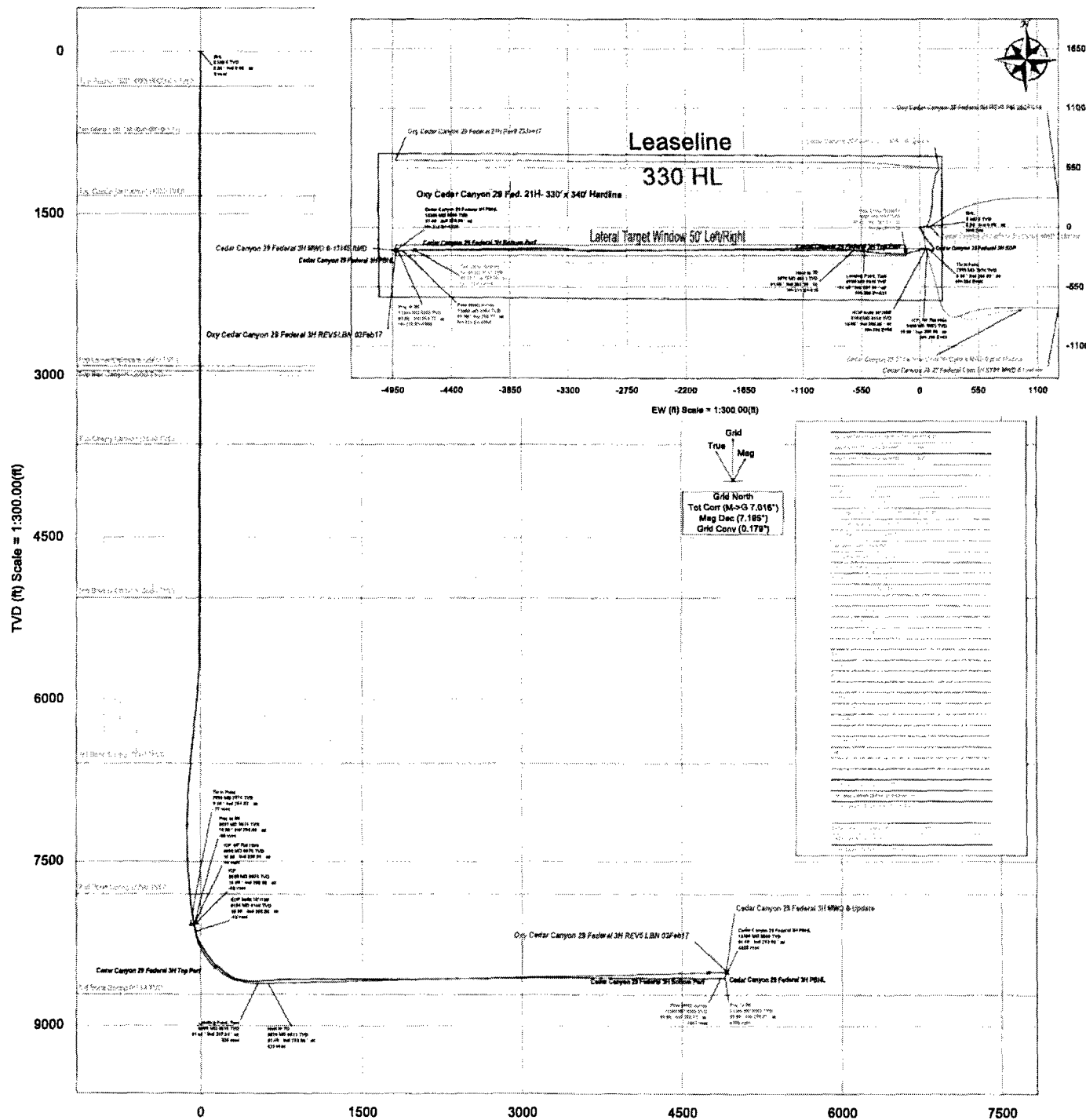
(signature)

Adams, Colorado  
(County State)



## Critical Points

| Comments                        | Survey Alt<br>(ft) | Elevation<br>(deg) | Azimuth<br>(deg) | TVD (ft) | Sub-Sec<br>TVD | VS (ft) | HS (ft) | HW (ft)  | Latitude (deg) | Longitude (deg) | Easting<br>(ftUS) | Northing<br>(ftUS) | Dt S<br>(700ft) | Tool Face<br>(deg) |
|---------------------------------|--------------------|--------------------|------------------|----------|----------------|---------|---------|----------|----------------|-----------------|-------------------|--------------------|-----------------|--------------------|
| Tie in Point                    | 7995 00            | 9 60               | 284 03           | 7973 52  | 4998 52        | -77 01  | -203 78 | 85 87    | N 32 11 22 284 | W 103 59 52 767 | 603740 28         | 432830 47          | 2 90            | -61 75             |
| Proj to Bit                     | 8097 00            | 10 00              | 280 00           | 8074 03  | 5099 03        | -60 21  | -200 18 | 68 90    | N 32 11 22 320 | W 103 59 52 964 | 603723 30         | 432834 07          | 0 78            | 0 00               |
| ICP, 65' Rat Hole               | 8097 99            | 10 00              | 280 00           | 8075 00  | 5100 00        | -60 04  | -200 15 | 68 73    | N 32 11 22 321 | W 103 59 52 966 | 603723 14         | 432834 10          | 0 00            | 0 00               |
| ICP                             | 8097 99            | 10 00              | 280 00           | 8075 00  | 5100 00        | -60 04  | -200 15 | 68 73    | N 32 11 22 321 | W 103 59 52 966 | 603723 14         | 432834 10          | 0 00            | 0 00               |
| KOP build 10"/100'              | 8163 56            | 10 00              | 280 00           | 8139 57  | 5164 57        | -48 93  | -198 17 | 57 52    | N 32 11 22 341 | W 103 59 53 097 | 603711 92         | 432836 07          | 0 00            | -13 05             |
| Landing Point, Turn             | 8980 10            | 91 40              | 267 09           | 8615 00  | 5640 00        | 529 88  | -208 37 | -521 39  | N 32 11 22 258 | W 103 59 59 833 | 603133 06         | 432825 88          | 10.00           | 89 97              |
| Hold to TD                      | 9076 42            | 91 40              | 269 98           | 8612 64  | 5637 64        | 626 15  | -210 83 | -617 65  | N 32 11 22 236 | W 104 0 0 953   | 603036 81         | 432823 42          | 0 00            | 0 00               |
| Cedar Canyon 29 Federal 3H PBHL | 13380 41           | 91 40              | 269 98           | 8507 50  | 5532 50        | 4924 92 | -212 18 | -4920 35 | N 32 11 22 352 | W 104 0 51 019  | 598734 46         | 432822 07          | 3 00            | 0 00               |



Vertical Section (ft) Azim = 267.531° Scale = 1:300.00(ft) Origin = 0N/-S, 0E/-W



## Cedar Canyon 29 Federal 3H MWD 0-13345 ftMD Survey Geodetic Report

(Def Survey)

|                                      |                                                              |                                             |                              |
|--------------------------------------|--------------------------------------------------------------|---------------------------------------------|------------------------------|
| <b>Report Date:</b>                  | February 15, 2017 - 08:20 AM                                 | <b>Survey / DLS Computation:</b>            | Minimum Curvature / Lubinski |
| <b>Client:</b>                       | OXY                                                          | <b>Vertical Section Azimuth:</b>            | 267.531 ° (Grid North)       |
| <b>Field:</b>                        | NM Eddy County (NAD 27)                                      | <b>Vertical Section Origin:</b>             | 0.000 ft, 0.000 ft           |
| <b>Structure / Slot:</b>             | Oxy Cedar Canyon 29 Federal 3H / Oxy Cedar Canyon 29 Fed. 3H | <b>TVD Reference Datum:</b>                 | RKB                          |
| <b>Well:</b>                         | Oxy Cedar Canyon 29 Federal 3H                               | <b>TVD Reference Elevation:</b>             | 2975.000 ft above MSL        |
| <b>Borehole:</b>                     | Original Borehole                                            | <b>Seabed / Ground Elevation:</b>           | 2948.500 ft above MSL        |
| <b>UWI / API#:</b>                   | Unknown / Unknown                                            | <b>Magnetic Declination:</b>                | 7.193 °                      |
| <b>Survey Name:</b>                  | Cedar Canyon 29 Federal 3H MWD 0-13345 ftMD                  | <b>Total Gravity Field Strength:</b>        | 998.4640mgm (9.80665 Based)  |
| <b>Survey Date:</b>                  | February 07, 2017                                            | <b>Gravity Model:</b>                       | GARM                         |
| <b>Tort / AHD / DDI / ERD Ratio:</b> | 181.623 ° / 5321.449 ft / 6.176 / 0.619                      | <b>Total Magnetic Field Strength:</b>       | 48154.509 nT                 |
| <b>Coordinate Reference System:</b>  | NAD27 New Mexico State Plane, Eastern Zone, US Feet          | <b>Magnetic Dip Angle:</b>                  | 60.032 °                     |
| <b>Location Lat / Long:</b>          | N 32° 11' 24.30343", W 103° 59' 53.75863"                    | <b>Declination Date:</b>                    | February 07, 2017            |
| <b>Location Grid N/E Y/X:</b>        | N 433034 230 ftUS E 603654 410 ftUS                          | <b>Magnetic Declination Model:</b>          | HDGM 2016                    |
| <b>CRS Grid Convergence Angle:</b>   | 0.1785 °                                                     | <b>North Reference:</b>                     | Grid North                   |
| <b>Grid Scale Factor:</b>            | 0.9999214                                                    | <b>Grid Convergence Used:</b>               | 0.1785 °                     |
| <b>Version / Patch:</b>              | 2.10.254.0                                                   | <b>Total Corr Mag North-&gt;Grid North:</b> | 7.0150 °                     |
|                                      |                                                              | <b>Local Coord Referenced To:</b>           | Structure Reference Point    |

| Comments | MD<br>(ft) | Incl<br>(°) | Azlm Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ")      | Longitude<br>(E/W ° ' ") |
|----------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|------------------------------|--------------------------|
| SHL      | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | N/A              | 433034.23          | 603654.41         | N 32 11 24.30 W 103 59 53.76 |                          |
| RKB      | 26.50      | 0.00        | 0.00             | 26.50       | 0.00         | 0.00       | 0.00       | 0.00             | 433034.23          | 603654.41         | N 32 11 24.30 W 103 59 53.76 |                          |
|          | 459.00     | 1.19        | 66.40            | 458.97      | -4.19        | 1.80       | 4.12       | 0.28             | 433036.03          | 603658.53         | N 32 11 24.32 W 103 59 53.71 |                          |
|          | 607.00     | 1.14        | 65.53            | 606.94      | -6.99        | 3.02       | 6.86       | 0.04             | 433037.25          | 603681.27         | N 32 11 24.33 W 103 59 53.68 |                          |
|          | 697.00     | 0.84        | 60.44            | 696.92      | -8.41        | 3.72       | 8.25       | 0.35             | 433037.95          | 603682.66         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 789.00     | 0.11        | 15.00            | 787.92      | -9.03        | 4.13       | 8.88       | 0.84             | 433039.36          | 603663.26         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 878.00     | 0.09        | 39.74            | 877.92      | -9.10        | 4.27       | 8.92       | 0.05             | 433038.50          | 603663.33         | N 32 11 24.35 W 103 59 53.65 |                          |
|          | 968.00     | 0.09        | 181.62           | 967.92      | -9.14        | 4.25       | 8.97       | 0.19             | 433038.48          | 603663.38         | N 32 11 24.35 W 103 59 53.65 |                          |
|          | 1058.00    | 0.09        | 38.80            | 1057.92     | -9.18        | 4.24       | 9.01       | 0.19             | 433038.47          | 603663.42         | N 32 11 24.35 W 103 59 53.65 |                          |
|          | 1152.00    | 0.15        | 287.79           | 1151.92     | -9.12        | 4.33       | 8.94       | 0.21             | 433038.56          | 603663.35         | N 32 11 24.35 W 103 59 53.65 |                          |
|          | 1247.00    | 0.20        | 165.34           | 1246.92     | -9.03        | 4.21       | 8.86       | 0.32             | 433038.44          | 603663.27         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1341.00    | 0.09        | 194.64           | 1340.92     | -9.05        | 3.98       | 8.88       | 0.14             | 433038.21          | 603663.29         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1436.00    | 0.13        | 184.82           | 1435.92     | -9.01        | 3.80       | 8.86       | 0.05             | 433038.03          | 603663.27         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1530.00    | 0.11        | 199.49           | 1529.92     | -8.96        | 3.61       | 8.82       | 0.04             | 433037.84          | 603663.23         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1625.00    | 0.11        | 289.76           | 1624.92     | -8.85        | 3.56       | 8.70       | 0.16             | 433037.79          | 603663.11         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1719.00    | 0.11        | 150.72           | 1718.92     | -8.80        | 3.51       | 8.66       | 0.22             | 433037.74          | 603663.07         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1814.00    | 0.09        | 135.74           | 1813.92     | -8.89        | 3.37       | 8.76       | 0.03             | 433037.60          | 603663.17         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 1906.00    | 0.11        | 114.51           | 1907.92     | -9.02        | 3.28       | 8.89       | 0.04             | 433037.51          | 603663.30         | N 32 11 24.34 W 103 59 53.66 |                          |
|          | 2003.00    | 0.13        | 147.66           | 2002.92     | -9.16        | 3.16       | 9.03       | 0.07             | 433037.38          | 603663.44         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2097.00    | 0.11        | 201.99           | 2096.92     | -9.17        | 2.98       | 9.05       | 0.12             | 433037.21          | 603663.46         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2191.00    | 0.15        | 145.94           | 2190.92     | -9.20        | 2.80       | 9.09       | 0.14             | 433037.03          | 603663.50         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2286.00    | 0.09        | 263.60           | 2285.92     | -9.19        | 2.68       | 9.08       | 0.22             | 433036.91          | 603663.49         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2380.00    | 0.07        | 318.26           | 2379.92     | -9.08        | 2.72       | 8.97       | 0.08             | 433036.95          | 603663.38         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2474.00    | 0.07        | 342.15           | 2473.92     | -9.03        | 2.82       | 8.92       | 0.03             | 433037.05          | 603663.33         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 2568.00    | 0.13        | 243.57           | 2567.92     | -8.92        | 2.82       | 8.80       | 0.17             | 433037.05          | 603663.21         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 2663.00    | 0.13        | 193.77           | 2662.92     | -8.79        | 2.67       | 8.68       | 0.12             | 433036.90          | 603663.09         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 2757.00    | 0.11        | 253.85           | 2756.92     | -8.67        | 2.54       | 8.57       | 0.13             | 433036.77          | 603662.98         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 2852.00    | 0.11        | 219.03           | 2851.92     | -8.52        | 2.45       | 8.43       | 0.07             | 433036.68          | 603662.83         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 2946.00    | 0.11        | 131.12           | 2945.92     | -8.53        | 2.32       | 8.44       | 0.16             | 433036.55          | 603662.85         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3040.00    | 0.13        | 86.22            | 3039.92     | -8.70        | 2.26       | 8.61       | 0.10             | 433036.49          | 603663.02         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3135.00    | 0.09        | 358.57           | 3134.92     | -8.81        | 2.35       | 8.72       | 0.16             | 433036.58          | 603663.13         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3229.00    | 0.13        | 340.21           | 3228.92     | -8.78        | 2.52       | 8.68       | 0.06             | 433036.75          | 603663.09         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3324.00    | 0.11        | 104.30           | 3323.92     | -8.83        | 2.60       | 8.73       | 0.22             | 433036.83          | 603663.14         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3418.00    | 0.13        | 5.31             | 3417.92     | -8.93        | 2.68       | 8.83       | 0.19             | 433036.91          | 603663.24         | N 32 11 24.33 W 103 59 53.66 |                          |
|          | 3513.00    | 0.13        | 67.25            | 3512.92     | -9.05        | 2.83       | 8.94       | 0.14             | 433037.06          | 603663.35         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 3607.00    | 0.11        | 170.35           | 3606.92     | -9.16        | 2.78       | 9.05       | 0.20             | 433037.01          | 603663.46         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 3702.00    | 0.11        | 83.17            | 3701.92     | -9.26        | 2.71       | 9.16       | 0.16             | 433036.93          | 603663.57         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 3796.00    | 0.13        | 264.31           | 3795.92     | -9.25        | 2.71       | 9.14       | 0.26             | 433036.94          | 603663.55         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 3891.00    | 0.11        | 273.48           | 3890.92     | -9.05        | 2.70       | 8.94       | 0.03             | 433036.93          | 603663.35         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 3985.00    | 0.11        | 34.84            | 3984.92     | -9.01        | 2.78       | 8.90       | 0.20             | 433037.01          | 603663.31         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4079.00    | 0.11        | 29.19            | 4078.92     | -9.12        | 2.93       | 9.00       | 0.01             | 433037.16          | 603663.41         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4173.00    | 0.09        | 317.80           | 4172.92     | -9.12        | 3.07       | 8.99       | 0.13             | 433037.30          | 603663.40         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4267.00    | 0.13        | 128.47           | 4266.92     | -9.15        | 3.05       | 9.03       | 0.23             | 433037.28          | 603663.44         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4362.00    | 0.11        | 240.78           | 4361.92     | -9.15        | 2.94       | 9.03       | 0.21             | 433037.17          | 603663.44         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4456.00    | 0.11        | 154.31           | 4455.92     | -9.10        | 2.82       | 8.99       | 0.16             | 433037.05          | 603663.40         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4644.00    | 0.11        | 159.79           | 4643.92     | -9.23        | 2.49       | 9.13       | 0.01             | 433036.72          | 603663.54         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 4832.00    | 0.13        | 220.82           | 4831.92     | -9.14        | 2.15       | 9.06       | 0.07             | 433036.38          | 603663.46         | N 32 11 24.32 W 103 59 53.65 |                          |
|          | 4926.00    | 0.11        | 37.08            | 4925.91     | -9.12        | 2.15       | 9.04       | 0.26             | 433036.36          | 603663.45         | N 32 11 24.32 W 103 59 53.65 |                          |
|          | 5021.00    | 0.11        | 3.40             | 5020.91     | -9.19        | 2.31       | 9.10       | 0.07             | 433036.54          | 603663.51         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 5115.00    | 0.09        | 154.75           | 5114.91     | -9.23        | 2.33       | 9.14       | 0.21             | 433036.56          | 603663.55         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 5209.00    | 0.11        | 291.78           | 5208.91     | -9.18        | 2.30       | 9.09       | 0.20             | 433036.53          | 603663.49         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 5303.00    | 0.11        | 157.81           | 5302.91     | -9.12        | 2.25       | 9.04       | 0.22             | 433036.48          | 603663.44         | N 32 11 24.33 W 103 59 53.65 |                          |
|          | 5491.00    | 2.33        | 169.18           | 5490.86     | -9.74        | -1.67      | 9.82       | 1.18             | 433032.56          | 603664.23         | N 32 11 24.29 W 103 59 53.64 |                          |
|          | 5585.00    | 5.10        | 167.47           | 5584.65     | -10.75       | -7.63      | 11.09      | 2.95             | 433026.60          | 603665.50         | N 32 11 24.23 W 103 59 53.63 |                          |
|          | 5679.00    | 7.47        | 163.80           | 5678.08     | -12.93       | -17.58     | 13.70      | 2.56             | 433016.68          | 603668.11         | N 32 11 24.13 W 103 59 53.60 |                          |
|          | 5773.00    | 8.90        | 158.57           | 5771.12     | -16.74       | -30.21     | 18.06      | 1.71             | 433004.02          | 603672.47         | N 32 11 24.00 W 103 59 53.55 |                          |
|          | 5861.00    | 11.01       | 150.39           | 5859.29     | -29.66       | -59.36     | 32.25      | 1.35             | 432974.87          | 603686.85         | N 32 11 23.72 W 103 59 53.39 |                          |
|          | 6055.00    | 11.32       | 147.48           | 6048.51     | -38.37       | -74.95     | 41.64      | 0.68             | 432959.29          | 603696.05         | N 32 11 23.56 W 103 59 53.28 |                          |
|          | 6149.00    | 11.89       | 145.58           | 6140.59     | -48.12       | -90.71     | 52.07      | 0.73             | 432943.52          | 603706.48         | N 32 11 23.40 W 103 59 53.16 |                          |
|          | 6243.00    | 11.12       | 144.94           | 6232.70     | -58.12       | -106.12    | 62.75      | 0.83             | 432928.12          | 603717.16         | N 32 11 23.25 W 103 59 53.03 |                          |
|          | 6337.00    | 10.31       | 142.41           | 6325.06     | -67.85       | -120.21    | 73.09      | 1.00             | 432914.03          | 603727.50         | N 32 11 23.11 W 103 59 52.91 |                          |
|          | 6431.00    | 9.10        | 139.55           | 6417.72     | -77.28       | -132.53    | 83.05      | 1.39             | 432901.71          | 603737.45         | N 32 11 22.99 W 103 59 52.80 |                          |
|          | 6525.00    | 8.17        | 139.33           | 6510.65     | -85.97       | -143.25    | 92.22      | 0.99             | 432890.99          | 603746.63         | N 32 11 22.88 W 103 59 52.69 |                          |
|          | 6620.00    | 8.00        | 137.02           | 6604.71     | -94.44       | -153.21    | 101.13     | 0.39             | 432881.03          | 603755.53         | N 32 11 22.78 W 103 59 52.59 |                          |
|          | 6714.00    | 7.56        | 135.79           | 6697.84     | -102.80      | -162.43    | 109.90     | 0.50             | 432871.82          | 603764.30         | N 32 11 22.69 W 103 59 52.49 |                          |
|          | 6808.00    | 6.24        | 132.22           | 6791.16     | -110.55      | -170.29    | 118.00     | 1.48             | 432863.95          | 603772.40         | N 32 11 22.61 W 103 59 52.39 |                          |
|          | 6902.00    | 4.81        | 137.72           | 6884.72     | -118.71      | -176.64    | 124.43     | 1.62             | 432857.60          | 603778.83         | N 32 11 22.55 W 103 59 52.32 |                          |
|          | 6996.00    | 4.48        | 155.61           | 6978.42     | -120.60      | -182.90    | 128.80     | 1.57             | 432851.34          | 603783.00         | N 32 11 22.49 W 103 59 52.27 |                          |
|          | 7090.00    | 4.37        | 157.34           | 7072.14     | -123.21      | -189.55    | 131.49     | 0.18             | 432844.70          | 603785.69         | N 32 11 22.42 W 103 59 52.24 |                          |
|          | 7184.00    | 4.37        | 162.91           | 7165.86     | -125.35      | -196.28    | 133.93     | 0.45             | 432837.97          | 603788.33         | N 32 11 22.36 W 103 59 52.21 |                          |
|          | 7278.00    | 4.48        | 175.02           | 7259.58     | -126.41      | -203.36    | 135.30     | 1.00             | 432830.89          | 603789.70         | N 32 11 22.29 W 103 59 52.19 |                          |

| Comments         | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(ft/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' '')     | Longitude<br>(E/W ° ' '') |
|------------------|------------|-------------|------------------|-------------|--------------|------------|------------|-------------------|--------------------|-------------------|------------------------------|---------------------------|
|                  | 7372.00    | 3.76        | 190.06           | 7353.34     | -125.90      | -210.05    | 135.08     | 1.37              | 432824.20          | 603789.48         | N 32 11 22.22 W 103 59 52.19 |                           |
|                  | 7466.00    | 3.03        | 224.74           | 7447.19     | -123.41      | -214.85    | 132.79     | 2.28              | 432819.40          | 603787.19         | N 32 11 22.17 W 103 59 52.22 |                           |
|                  | 7560.00    | 3.67        | 253.63           | 7541.03     | -118.67      | -217.46    | 128.15     | 1.90              | 432816.78          | 603782.55         | N 32 11 22.15 W 103 59 52.28 |                           |
|                  | 7654.00    | 4.59        | 279.20           | 7634.80     | -112.08      | -217.71    | 121.55     | 2.16              | 432816.54          | 603775.95         | N 32 11 22.15 W 103 59 52.35 |                           |
|                  | 7748.00    | 5.87        | 300.48           | 7728.41     | -104.34      | -214.67    | 113.70     | 2.45              | 432819.58          | 603768.10         | N 32 11 22.18 W 103 59 52.44 |                           |
|                  | 7842.00    | 6.09        | 300.18           | 7821.90     | -96.11       | -209.72    | 105.25     | 0.84              | 432824.52          | 603759.65         | N 32 11 22.22 W 103 59 52.54 |                           |
|                  | 7936.00    | 7.91        | 282.31           | 7915.21     | -85.66       | -205.84    | 94.81      | 3.00              | 432828.41          | 603749.02         | N 32 11 22.26 W 103 59 52.67 |                           |
|                  | 7995.00    | 9.60        | 284.03           | 7973.52     | -77.02       | -203.78    | 85.87      | 2.80              | 432830.47          | 603740.28         | N 32 11 22.28 W 103 59 52.77 |                           |
|                  | 8099.00    | 10.11       | 283.42           | 8075.98     | -59.92       | -199.56    | 68.58      | 0.50              | 432834.69          | 603722.99         | N 32 11 22.33 W 103 59 52.97 |                           |
|                  | 8193.00    | 16.03       | 280.69           | 8167.15     | -37.49       | -200.00    | 46.15      | 10.12             | 432834.25          | 603700.56         | N 32 11 22.32 W 103 59 53.23 |                           |
|                  | 8287.00    | 28.50       | 253.78           | 8253.41     | -1.16        | -208.84    | 10.15      | 11.49             | 432825.60          | 603684.56         | N 32 11 22.24 W 103 59 53.85 |                           |
|                  | 8380.00    | 34.93       | 258.80           | 8332.48     | 46.77        | -220.03    | -37.33     | 7.47              | 432814.22          | 603617.09         | N 32 11 22.13 W 103 59 54.20 |                           |
|                  | 8473.00    | 40.73       | 254.70           | 8405.93     | 102.73       | -233.22    | -92.77     | 6.79              | 432801.03          | 603561.65         | N 32 11 22.00 W 103 59 54.65 |                           |
|                  | 8566.00    | 52.73       | 265.24           | 8469.65     | 169.63       | -244.35    | -159.25    | 15.28             | 432789.90          | 603495.17         | N 32 11 21.89 W 103 59 55.62 |                           |
|                  | 8660.00    | 54.67       | 273.00           | 8525.35     | 245.25       | -245.45    | -234.80    | 6.96              | 432788.80          | 603419.53         | N 32 11 21.88 W 103 59 56.50 |                           |
|                  | 8757.00    | 69.51       | 273.27           | 8570.63     | 330.32       | -240.76    | -320.25    | 15.30             | 432793.49          | 603334.19         | N 32 11 21.93 W 103 59 57.49 |                           |
|                  | 8851.00    | 84.87       | 274.97           | 8591.41     | 421.10       | -234.15    | -411.39    | 18.43             | 432800.10          | 603243.05         | N 32 11 22.00 W 103 59 58.56 |                           |
|                  | 8944.00    | 91.65       | 276.44           | 8594.23     | 513.05       | -224.92    | -503.83    | 7.48              | 432809.33          | 603150.62         | N 32 11 22.09 W 103 59 59.63 |                           |
|                  | 9040.00    | 94.10       | 275.84           | 8589.42     | 607.84       | -214.66    | -599.15    | 2.63              | 432819.59          | 603055.31         | N 32 11 22.20 W 104 0 0.74   |                           |
|                  | 9134.00    | 93.92       | 275.89           | 8582.84     | 700.62       | -205.08    | -692.43    | 0.20              | 432829.17          | 602962.04         | N 32 11 22.30 W 104 0 1.82   |                           |
|                  | 9225.00    | 93.93       | 275.78           | 8578.61     | 790.46       | -195.85    | -782.75    | 0.12              | 432838.40          | 602871.73         | N 32 11 22.39 W 104 0 2.87   |                           |
|                  | 9320.00    | 89.38       | 269.74           | 8573.87     | 884.95       | -191.29    | -877.53    | 7.96              | 432842.96          | 602776.95         | N 32 11 22.44 W 104 0 3.98   |                           |
|                  | 9414.00    | 90.21       | 268.95           | 8574.21     | 978.90       | -192.36    | -971.52    | 1.22              | 432841.88          | 602682.97         | N 32 11 22.43 W 104 0 5.07   |                           |
|                  | 9601.00    | 89.93       | 269.17           | 8573.98     | 1165.84      | -195.43    | -1158.49   | 0.19              | 432838.82          | 602496.01         | N 32 11 22.41 W 104 0 7.25   |                           |
|                  | 9695.00    | 90.00       | 269.08           | 8574.03     | 1259.80      | -196.86    | -1252.48   | 0.12              | 432837.38          | 602402.03         | N 32 11 22.39 W 104 0 8.34   |                           |
|                  | 9789.00    | 89.90       | 269.14           | 8574.12     | 1353.77      | -198.32    | -1346.47   | 0.12              | 432835.92          | 602308.05         | N 32 11 22.38 W 104 0 9.43   |                           |
|                  | 9882.00    | 90.07       | 269.18           | 8574.14     | 1446.73      | -199.69    | -1439.46   | 0.19              | 432834.56          | 602215.06         | N 32 11 22.37 W 104 0 10.52  |                           |
|                  | 9976.00    | 90.21       | 269.17           | 8573.91     | 1540.69      | -201.04    | -1533.45   | 0.15              | 432833.21          | 602121.08         | N 32 11 22.36 W 104 0 11.61  |                           |
|                  | 10069.00   | 90.00       | 269.20           | 8573.74     | 1633.65      | -202.36    | -1626.44   | 0.23              | 432831.88          | 602028.10         | N 32 11 22.35 W 104 0 12.69  |                           |
|                  | 10163.00   | 90.00       | 269.08           | 8573.74     | 1727.61      | -203.77    | -1720.43   | 0.13              | 432830.47          | 601934.12         | N 32 11 22.34 W 104 0 13.78  |                           |
|                  | 10257.00   | 90.21       | 269.09           | 8573.57     | 1821.58      | -205.28    | -1814.42   | 0.22              | 432828.37          | 601840.14         | N 32 11 22.33 W 104 0 14.88  |                           |
|                  | 10350.00   | 90.55       | 269.19           | 8572.95     | 1914.54      | -206.87    | -1907.41   | 0.38              | 432827.58          | 601747.16         | N 32 11 22.32 W 104 0 15.96  |                           |
|                  | 10444.00   | 90.62       | 269.13           | 8571.99     | 2008.50      | -208.05    | -2001.39   | 0.10              | 432826.20          | 601653.18         | N 32 11 22.31 W 104 0 17.05  |                           |
|                  | 10539.00   | 90.65       | 269.02           | 8570.94     | 2103.46      | -209.58    | -2098.37   | 0.12              | 432824.66          | 601558.21         | N 32 11 22.29 W 104 0 18.16  |                           |
|                  | 10633.00   | 90.41       | 269.18           | 8570.07     | 2197.42      | -211.06    | -2190.36   | 0.31              | 432823.19          | 601464.23         | N 32 11 22.28 W 104 0 19.25  |                           |
|                  | 10727.00   | 90.55       | 269.31           | 8569.28     | 2291.37      | -212.30    | -2284.35   | 0.20              | 432821.95          | 601370.25         | N 32 11 22.27 W 104 0 20.35  |                           |
|                  | 10821.00   | 90.45       | 269.15           | 8568.46     | 2385.33      | -213.56    | -2378.33   | 0.20              | 432820.69          | 601276.27         | N 32 11 22.26 W 104 0 21.44  |                           |
|                  | 10915.00   | 90.52       | 269.26           | 8567.67     | 2479.28      | -214.87    | -2472.32   | 0.14              | 432819.38          | 601182.29         | N 32 11 22.25 W 104 0 22.53  |                           |
|                  | 11008.00   | 90.93       | 269.28           | 8566.49     | 2572.23      | -216.05    | -2565.31   | 0.44              | 432818.20          | 601089.31         | N 32 11 22.24 W 104 0 23.62  |                           |
|                  | 11101.00   | 90.55       | 269.44           | 8565.29     | 2665.18      | -217.09    | -2658.29   | 0.44              | 432817.18          | 600996.33         | N 32 11 22.24 W 104 0 24.70  |                           |
|                  | 11195.00   | 90.55       | 269.32           | 8564.39     | 2759.12      | -218.11    | -2752.28   | 0.13              | 432816.14          | 600902.35         | N 32 11 22.23 W 104 0 25.79  |                           |
|                  | 11288.00   | 90.79       | 270.06           | 8563.30     | 2852.05      | -218.61    | -2845.27   | 0.84              | 432815.64          | 600809.36         | N 32 11 22.23 W 104 0 26.87  |                           |
|                  | 11382.00   | 90.72       | 269.61           | 8562.06     | 2945.97      | -218.88    | -2939.27   | 0.48              | 432815.37          | 600715.38         | N 32 11 22.23 W 104 0 27.97  |                           |
|                  | 11476.00   | 90.72       | 268.93           | 8560.88     | 3039.92      | -220.08    | -3033.25   | 0.72              | 432814.17          | 600621.40         | N 32 11 22.22 W 104 0 29.06  |                           |
|                  | 11570.00   | 89.93       | 271.82           | 8560.35     | 3133.70      | -219.46    | -3127.24   | 3.19              | 432814.79          | 600527.43         | N 32 11 22.23 W 104 0 30.16  |                           |
|                  | 11663.00   | 91.48       | 278.77           | 8559.20     | 3225.87      | -210.89    | -3219.77   | 7.68              | 432823.36          | 600434.90         | N 32 11 22.31 W 104 0 31.23  |                           |
|                  | 11758.00   | 90.82       | 276.83           | 8557.29     | 3319.32      | -198.00    | -3313.87   | 2.16              | 432836.25          | 600340.81         | N 32 11 22.44 W 104 0 32.33  |                           |
|                  | 11851.00   | 89.52       | 269.50           | 8557.02     | 3411.81      | -192.87    | -3406.66   | 8.00              | 432841.38          | 600248.02         | N 32 11 22.50 W 104 0 33.41  |                           |
|                  | 11944.00   | 89.59       | 268.90           | 8557.74     | 3504.77      | -194.16    | -3499.65   | 0.65              | 432840.08          | 600155.04         | N 32 11 22.49 W 104 0 34.49  |                           |
|                  | 12133.00   | 89.07       | 269.29           | 8559.95     | 3693.68      | -197.15    | -3688.61   | 0.34              | 432837.10          | 599966.09         | N 32 11 22.46 W 104 0 36.69  |                           |
|                  | 12227.00   | 89.52       | 269.16           | 8561.11     | 3787.63      | -198.42    | -3782.90   | 0.50              | 432835.82          | 599872.12         | N 32 11 22.45 W 104 0 37.78  |                           |
|                  | 12321.00   | 89.17       | 268.88           | 8562.18     | 3881.59      | -200.03    | -3876.58   | 0.48              | 432834.22          | 599778.15         | N 32 11 22.44 W 104 0 38.87  |                           |
|                  | 12414.00   | 88.83       | 268.61           | 8563.80     | 3974.56      | -202.07    | -3969.54   | 0.47              | 432832.18          | 599685.19         | N 32 11 22.42 W 104 0 39.96  |                           |
|                  | 12508.00   | 89.28       | 269.06           | 8565.35     | 4068.52      | -203.98    | -4063.51   | 0.68              | 432830.27          | 599591.23         | N 32 11 22.41 W 104 0 41.05  |                           |
|                  | 12602.00   | 90.10       | 269.48           | 8565.86     | 4162.48      | -205.17    | -4157.50   | 0.98              | 432829.07          | 599497.25         | N 32 11 22.40 W 104 0 42.14  |                           |
|                  | 12695.00   | 90.41       | 269.43           | 8565.45     | 4255.42      | -206.06    | -4250.49   | 0.34              | 432828.19          | 599404.26         | N 32 11 22.39 W 104 0 43.22  |                           |
|                  | 12789.00   | 90.14       | 269.62           | 8565.00     | 4349.36      | -206.84    | -4344.49   | 0.35              | 432827.41          | 599310.27         | N 32 11 22.39 W 104 0 44.32  |                           |
|                  | 12884.00   | 90.58       | 269.36           | 8564.40     | 4444.31      | -207.68    | -4439.48   | 0.54              | 432826.56          | 599215.29         | N 32 11 22.38 W 104 0 45.42  |                           |
|                  | 13070.00   | 90.07       | 269.18           | 8563.35     | 4539.22      | -210.05    | -4534.46   | 0.29              | 432824.19          | 599029.32         | N 32 11 22.36 W 104 0 46.59  |                           |
|                  | 13164.00   | 90.17       | 269.11           | 8563.15     | 4634.18      | -211.46    | -4629.45   | 0.13              | 432822.79          | 598935.34         | N 32 11 22.35 W 104 0 47.68  |                           |
| Final MWD survey | 13303.00   | 89.90       | 268.77           | 8563.06     | 4729.14      | -214.03    | -4724.43   | 0.31              | 432820.22          | 598796.37         | N 32 11 22.33 W 104 0 50.30  |                           |
| Proj. to Bit     | 13345.00   | 89.90       | 268.77           | 8563.14     | 4824.13      | -214.93    | -4819.42   | 0.00              | 432819.32          | 598754.39         | N 32 11 22.32 W 104 0 50.79  |                           |

Survey Type: Def Survey

Survey Error Model: ISCSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

| Description | Part | MD From<br>(ft) | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size | Casing Diameter<br>(in) | Survey Tool Type                | Borehole / Survey                                                     |
|-------------|------|-----------------|---------------|------------------|-----------|-------------------------|---------------------------------|-----------------------------------------------------------------------|
|             | 1    | 0.000           | 26.500        | Act Sins         | 30.000    | 30.000                  | NAL_MWD_PLUS_0.5_DEG-Depth Only | Original Borehole / Cedar Canyon<br>29 Federal 3H MWD 0-13345<br>ftMD |
|             | 1    | 26.500          | 459.000       | 1/96 425         | 30.000    | 30.000                  | NAL_MWD_PLUS_0.5_DEG            | Original Borehole / Cedar Canyon<br>29 Federal 3H MWD 0-13345         |
|             | 1    | 459.000         | 13345.000     | Act Sins         | 30.000    | 30.000                  | NAL_MWD_PLUS_0.5_DEG            | Original Borehole / Cedar Canyon<br>29 Federal 3H MWD 0-13345         |