

# Oxy Red Tank 30-31 State 14H Gyro + MWD 0'-19687ft MD Survey Geodetic Report (Def Survey)



30-025-44193

Report Date: November 28, 2018 - 02:38 PM  
 Client: OXY  
 Field: NM Lea County (NAD 83)  
 Structure / Slot: Oxy Red Tank 30-31 State 14H / Oxy Red Tank 30-31 State 14H  
 Well: Oxy Red Tank 30-31 State 14H  
 Borehole: Original Borehole  
 UWI / API#: Unknown / Unknown  
 Survey Name: Oxy Red Tank 30-31 State 14H Gyro + MWD 0'-19687ft MD  
 Survey Date: November 02, 2018  
 Tort / AHD / DDI / ERD Ratio: 225.521' / 10768.131 ft / 6.703 / 1.137  
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet  
 Location Lat / Long: N 32° 22' 10.30747", W 103° 36' 19.27731"  
 Location Grid N/E Y/X: N 498931.080 RUS, E 766095.000 RUS  
 CRS Grid Convergence Angle: 0.3898 °  
 Grid Scale Factor: 0.99996695  
 Version / Patch: 2.10.753.0

Survey / DLS Computation: Minimum Curvature / Lubinski  
 Vertical Section Azimuth: 180.840 ° (Grid North)  
 Vertical Section Origin: 0.000 ft, 0.000 ft  
 TVD Reference Elevation: RKB  
 Seabed / Ground Elevation: 3689.000 ft above MSL  
 Magnetic Declination: 6.714 °  
 Total Gravity Field Strength: 998.4522mgn (9.80665 Based)  
 Gravity Model: GARM  
 Total Magnetic Field Strength: 48145.400 nT  
 Magnetic Dip Angle: 60.141 °  
 Declination Date: November 02, 2018  
 Magnetic Declination Model: IFR  
 North Reference: Grid North  
 Grid Convergence Used: 0.3898 °  
 Total Corr Mag North→Grid North: 6.3242 °  
 Local Coord Referenced To: Well Head

| Comments  | MD<br>(ft) | Incl<br>(°) | Azim 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 ° ' ") |
|-----------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| WRP       | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | N/A              | 498931.08          | 766095.00         | N 32 22 10.31           | W 103 36 19.28           |
| RKB       | 26.50      | 0.00        | 0.00             | 26.50       | 0.00         | 0.00       | 0.00       | 0.00             | 498931.08          | 766095.00         | N 32 22 10.31           | W 103 36 19.28           |
|           | 68.55      | 0.45        | 336.80           | 68.55       | -0.15        | 0.15       | -0.07      | 1.07             | 498931.23          | 766094.93         | N 32 22 10.31           | W 103 36 19.28           |
|           | 151.38     | 0.61        | 352.35           | 151.38      | -0.88        | 0.89       | -0.25      | 0.26             | 498931.97          | 766094.75         | N 32 22 10.32           | W 103 36 19.28           |
|           | 237.32     | 0.84        | 328.89           | 237.31      | -1.87        | 1.88       | -0.64      | 0.43             | 498932.96          | 766094.36         | N 32 22 10.33           | W 103 36 19.28           |
|           | 327.01     | 0.71        | 326.47           | 326.99      | -2.89        | 2.91       | -1.28      | 0.15             | 498933.89          | 766093.72         | N 32 22 10.34           | W 103 36 19.29           |
|           | 421.48     | 0.49        | 320.72           | 421.46      | -3.68        | 3.71       | -1.86      | 0.24             | 498934.79          | 766093.14         | N 32 22 10.34           | W 103 36 19.30           |
|           | 516.00     | 0.47        | 295.27           | 515.97      | -4.15        | 4.19       | -2.47      | 0.22             | 498935.27          | 766092.53         | N 32 22 10.35           | W 103 36 19.31           |
|           | 610.58     | 0.29        | 274.75           | 610.55      | -4.33        | 4.37       | -3.06      | 0.24             | 498935.45          | 766091.94         | N 32 22 10.35           | W 103 36 19.31           |
|           | 705.16     | 0.41        | 212.75           | 705.13      | -4.05        | 4.11       | -3.48      | 0.40             | 498935.19          | 766091.52         | N 32 22 10.35           | W 103 36 19.32           |
|           | 799.75     | 0.18        | 215.07           | 799.72      | -3.64        | 3.70       | -3.75      | 0.24             | 498934.78          | 766091.25         | N 32 22 10.34           | W 103 36 19.32           |
|           | 894.33     | 0.20        | 212.98           | 894.30      | -3.38        | 3.44       | -3.93      | 0.02             | 498934.52          | 766091.08         | N 32 22 10.34           | W 103 36 19.32           |
|           | 988.81     | 0.11        | 194.36           | 988.78      | -3.15        | 3.21       | -4.04      | 0.11             | 498934.29          | 766090.96         | N 32 22 10.34           | W 103 36 19.32           |
| Last Gyro | 1064.33    | 0.28        | 272.19           | 1064.30     | -3.09        | 3.15       | -4.25      | 0.38             | 498934.23          | 766090.75         | N 32 22 10.34           | W 103 36 19.32           |
|           | 1229.00    | 0.08        | 124.17           | 1228.97     | -3.03        | 3.10       | -4.57      | 0.22             | 498934.18          | 766090.43         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1320.00    | 0.10        | 78.61            | 1319.97     | -3.02        | 3.08       | -4.44      | 0.08             | 498934.16          | 766090.56         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1415.00    | 0.13        | 352.48           | 1414.97     | -3.14        | 3.21       | -4.37      | 0.17             | 498934.29          | 766090.63         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1509.00    | 0.14        | 279.96           | 1508.97     | -3.26        | 3.33       | -4.50      | 0.17             | 498934.41          | 766090.50         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1604.00    | 0.07        | 176.54           | 1603.97     | -3.23        | 3.29       | -4.61      | 0.18             | 498934.37          | 766090.39         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1699.00    | 0.10        | 306.30           | 1698.97     | -3.22        | 3.28       | -4.67      | 0.16             | 498934.36          | 766090.33         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1888.00    | 0.10        | 163.19           | 1887.97     | -3.15        | 3.22       | -4.76      | 0.10             | 498934.30          | 766090.24         | N 32 22 10.34           | W 103 36 19.33           |
|           | 1983.00    | 0.07        | 356.56           | 1982.97     | -3.13        | 3.20       | -4.74      | 0.18             | 498934.28          | 766090.26         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2078.00    | 0.10        | 91.12            | 2077.97     | -3.19        | 3.26       | -4.66      | 0.13             | 498934.34          | 766090.34         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2172.00    | 0.14        | 81.55            | 2171.96     | -3.19        | 3.25       | -4.46      | 0.04             | 498934.33          | 766090.54         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2267.00    | 0.14        | 112.35           | 2266.96     | -3.14        | 3.21       | -4.24      | 0.05             | 498934.29          | 766090.76         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2362.00    | 0.07        | 345.42           | 2361.96     | -3.16        | 3.22       | -4.14      | 0.20             | 498934.30          | 766090.86         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2457.00    | 0.07        | 30.32            | 2456.96     | -3.26        | 3.33       | -4.13      | 0.06             | 498934.41          | 766090.87         | N 32 22 10.34           | W 103 36 19.33           |
|           | 2552.00    | 0.08        | 182.91           | 2551.96     | -3.25        | 3.31       | -4.10      | 0.15             | 498934.39          | 766090.90         | N 32 22 10.34           | W 103 36 19.32           |
|           | 2646.00    | 0.13        | 70.11            | 2645.96     | -3.22        | 3.28       | -4.01      | 0.19             | 498934.36          | 766090.99         | N 32 22 10.34           | W 103 36 19.32           |
|           | 2741.00    | 0.12        | 62.43            | 2740.96     | -3.31        | 3.36       | -3.82      | 0.02             | 498934.44          | 766091.18         | N 32 22 10.34           | W 103 36 19.32           |
|           | 2836.00    | 0.13        | 142.61           | 2835.96     | -3.27        | 3.32       | -3.66      | 0.17             | 498934.40          | 766091.34         | N 32 22 10.34           | W 103 36 19.32           |
|           | 2931.00    | 0.20        | 96.96            | 2930.96     | -3.17        | 3.22       | -3.43      | 0.15             | 498934.30          | 766091.57         | N 32 22 10.34           | W 103 36 19.32           |
|           | 3025.00    | 0.19        | 117.30           | 3024.96     | -3.08        | 3.13       | -3.13      | 0.07             | 498934.21          | 766091.87         | N 32 22 10.34           | W 103 36 19.31           |
|           | 3120.00    | 0.20        | 77.13            | 3119.96     | -3.05        | 3.09       | -2.83      | 0.14             | 498934.17          | 766092.17         | N 32 22 10.34           | W 103 36 19.31           |
|           | 3215.00    | 0.06        | 130.59           | 3214.96     | -3.06        | 3.10       | -2.63      | 0.18             | 498934.17          | 766092.37         | N 32 22 10.34           | W 103 36 19.31           |
|           | 3309.00    | 0.06        | 113.95           | 3308.96     | -3.01        | 3.04       | -2.55      | 0.02             | 498934.12          | 766092.45         | N 32 22 10.34           | W 103 36 19.31           |
|           | 3404.00    | 0.10        | 125.41           | 3403.96     | -2.94        | 2.97       | -2.44      | 0.05             | 498934.05          | 766092.57         | N 32 22 10.34           | W 103 36 19.31           |
|           | 3499.00    | 0.07        | 121.06           | 3498.96     | -2.86        | 2.90       | -2.32      | 0.03             | 498933.98          | 766092.68         | N 32 22 10.34           | W 103 36 19.30           |
|           | 3593.00    | 0.18        | 87.82            | 3592.96     | -2.84        | 2.87       | -2.12      | 0.14             | 498933.95          | 766092.88         | N 32 22 10.34           | W 103 36 19.30           |
|           | 3688.00    | 0.15        | 145.68           | 3687.96     | -2.75        | 2.78       | -1.90      | 0.17             | 498933.86          | 766093.10         | N 32 22 10.34           | W 103 36 19.30           |
|           | 3783.00    | 0.10        | 78.25            | 3782.96     | -2.68        | 2.69       | -1.75      | 0.15             | 498933.77          | 766093.25         | N 32 22 10.33           | W 103 36 19.30           |
|           | 3877.00    | 0.07        | 252.82           | 3876.96     | -2.66        | 2.69       | -1.73      | 0.18             | 498933.77          | 766093.27         | N 32 22 10.33           | W 103 36 19.30           |
|           | 3972.00    | 0.27        | 91.97            | 3971.96     | -2.64        | 2.66       | -1.56      | 0.35             | 498933.74          | 766093.44         | N 32 22 10.33           | W 103 36 19.30           |
|           | 4067.00    | 0.15        | 80.71            | 4066.96     | -2.66        | 2.68       | -1.21      | 0.13             | 498933.76          | 766093.79         | N 32 22 10.33           | W 103 36 19.29           |
|           | 4162.00    | 0.16        | 131.90           | 4161.96     | -2.59        | 2.61       | -0.99      | 0.14             | 498933.69          | 766094.01         | N 32 22 10.33           | W 103 36 19.29           |
|           | 4256.00    | 0.24        | 72.29            | 4255.96     | -2.57        | 2.58       | -0.70      | 0.22             | 498933.66          | 766094.30         | N 32 22 10.33           | W 103 36 19.29           |
|           | 4351.00    | 0.15        | 122.59           | 4350.96     | -2.57        | 2.57       | -0.41      | 0.19             | 498933.65          | 766094.59         | N 32 22 10.33           | W 103 36 19.28           |
|           | 4446.00    | 0.19        | 119.12           | 4445.96     | -2.43        | 2.43       | -0.17      | 0.04             | 498933.51          | 766094.83         | N 32 22 10.33           | W 103 36 19.28           |
|           | 4634.00    | 0.10        | 158.32           | 4633.96     | -2.13        | 2.13       | 0.17       | 0.07             | 498933.21          | 766095.17         | N 32 22 10.33           | W 103 36 19.28           |
|           | 4824.00    | 0.07        | 254.58           | 4823.96     | -1.94        | 1.94       | 0.12       | 0.07             | 498933.02          | 766095.12         | N 32 22 10.33           | W 103 36 19.28           |
|           | 4919.00    | 0.10        | 262.22           | 4918.96     | -1.91        | 1.92       | -0.02      | 0.03             | 498933.00          | 766094.98         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5014.00    | 0.02        | 84.71            | 5013.96     | -1.90        | 1.91       | -0.09      | 0.13             | 498932.99          | 766094.91         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5108.00    | 0.12        | 346.68           | 5107.96     | -2.00        | 2.00       | -0.09      | 0.13             | 498933.08          | 766094.91         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5203.00    | 0.14        | 205.23           | 5202.96     | -1.99        | 1.99       | -0.17      | 0.26             | 498933.07          | 766094.83         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5298.00    | 0.14        | 335.81           | 5297.96     | -1.99        | 2.00       | -0.26      | 0.27             | 498933.08          | 766094.74         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5393.00    | 0.10        | 75.36            | 5392.96     | -2.12        | 2.12       | -0.23      | 0.19             | 498933.20          | 766094.77         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5487.00    | 0.07        | 1.04             | 5486.96     | -2.20        | 2.20       | -0.15      | 0.11             | 498933.28          | 766094.85         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5582.00    | 0.10        | 298.20           | 5581.96     | -2.29        | 2.30       | -0.22      | 0.10             | 498933.38          | 766094.78         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5676.00    | 0.10        | 16.11            | 5675.96     | -2.41        | 2.42       | -0.27      | 0.13             | 498933.50          | 766094.73         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5771.00    | 0.08        | 358.33           | 5770.96     | -2.56        | 2.56       | -0.25      | 0.04             | 498933.64          | 766094.75         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5866.00    | 0.13        | 301.70           | 5865.96     | -2.68        | 2.68       | -0.35      | 0.11             | 498933.76          | 766094.65         | N 32 22 10.33           | W 103 36 19.28           |
|           | 5961.00    | 0.07        | 168.22           | 5960.96     | -2.68        | 2.68       | -0.43      | 0.20             | 498933.76          | 766094.57         | N 32 22 10.33           | W 103 36 19.28           |
|           | 6056.00    | 0.06        | 247.84           | 6055.96     | -2.60        | 2.61       | -0.46      | 0.09             | 498933.69          | 766094.54         | N 32 22 10.33           | W 103 36 19.28           |
|           | 6245.00    | 0.06        | 11.05            | 6244.96     | -2.66        | 2.67       | -0.53      | 0.06             | 498933.75          | 766094.47         | N 32 22 10.33           | W 103 36 19.28           |
|           | 6340.00    | 0.07        | 162.13           | 6339.96     | -2.65        | 2.66       | -0.50      | 0.13             | 498933.74          | 766094.50         | N 32 22 10.33           | W 103 36 19.28           |
|           | 6435.00    | 0.14        | 25.22            | 6434.96     | -2.70        | 2.71       | -0.44      | 0.21             | 498933.79          | 766094.56         | N 32 22 10.33           | W 103 36 19.28           |
|           | 6676.00    | 0.07        | 317.98           | 6675.96     | -3.08        | 3.09       | -0.41      | 0.05             | 498934.17          | 766094.59         | N 32 22 10.34           | W 103 36 19.28           |
|           | 6803.00    | 0.01        | 94.27            | 6802.96     | -3.14        | 3.14       | -0.45      | 0.06             | 498934.22          | 766094.55         | N 32 22 10.34           | W 103 36 19.28           |
|           | 6897.00    | 0.64        | 306.36           | 6896.95     | -3.44        | 3.45       | -0.87      | 0.69             | 498934.53          | 766094.13         | N 32 22 10.34           | W 103 36 19.29           |
|           | 6992.00    | 4.15        | 322.44           | 6991.88     | -6.44        | 6.49       | -3.39      | 3.73             | 498937.57          | 766091.81         | N 32 22 10.37           | W 103 36 19.32           |
|           | 7181.00    | 9.57        | 321.40           | 7179.43     | -23.95       | 24.21      | -17.37     | 2.87             | 498955.29          | 766077.63         | N 32 22 10.55           | W 103 36 19.48           |
|           | 7276.00    | 9.99        | 322.10           | 7273.05     | -36.48       | 36.88      | -27.36     | 0.46             | 498967.96          | 766067.64         | N 32 22 10.67           | W 103 36 19.59           |
|           | 7465.00    | 9.76        | 321.54           | 7459.25     | -61.66       | 62.36      | -47.39     | 0.13             | 4989989            |                   |                         |                          |

| Comments                  | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | N8<br>(ft) | EW<br>(ft) | DLS<br>(ft/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ° °) | Longitude<br>(E/W ° ° °) |
|---------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|-------------------|--------------------|-------------------|-------------------------|--------------------------|
|                           | 8894.00    | 10.11       | 272.25           | 8677.84     | -141.80      | 144.35     | -173.13    | 2.97              | 498975.43          | 765921.87         | N 32 22 11.75           | W 103 36 21.28           |
|                           | 8789.00    | 10.30       | 258.77           | 8771.36     | -140.23      | 143.03     | -189.80    | 2.52              | 499074.10          | 765905.21         | N 32 22 11.74           | W 103 36 21.48           |
|                           | 8907.00    | 9.35        | 237.93           | 8887.66     | -132.81      | 135.88     | -208.27    | 3.10              | 499066.96          | 765886.73         | N 32 22 11.87           | W 103 36 21.69           |
| KOP Actual                | 8930.00    | 8.85        | 231.01           | 8910.37     | -130.87      | 133.78     | -211.23    | 5.23              | 499064.85          | 765883.77         | N 32 22 11.85           | W 103 36 21.73           |
|                           | 9025.00    | 14.61       | 183.78           | 9003.54     | -113.97      | 117.17     | -217.72    | 11.30             | 499048.25          | 765877.29         | N 32 22 11.48           | W 103 36 21.81           |
| 100' FNL Cross            | 9084.33    | 20.59       | 174.96           | 9060.08     | -98.10       | 99.30      | -217.30    | 11.00             | 499030.38          | 765877.71         | N 32 22 11.30           | W 103 36 21.80           |
|                           | 9120.00    | 24.31       | 171.72           | 9093.04     | -82.81       | 85.78      | -215.69    | 11.00             | 499016.86          | 765879.32         | N 32 22 11.17           | W 103 36 21.79           |
|                           | 9215.00    | 34.69       | 171.91           | 9175.81     | -38.47       | 39.54      | -209.05    | 10.93             | 498970.62          | 765885.96         | N 32 22 10.71           | W 103 36 21.71           |
|                           | 9309.00    | 45.81       | 175.27           | 9247.38     | -23.57       | 23.57      | -202.50    | 11.84             | 498910.48          | 765892.51         | N 32 22 10.12           | W 103 36 21.64           |
| Lower Avalon Intersection | 9379.35    | 53.44       | 178.62           | 9293.00     | 76.91        | -73.99     | -199.74    | 11.70             | 498857.09          | 765895.27         | N 32 22 9.59            | W 103 36 21.61           |
|                           | 9404.00    | 56.20       | 179.63           | 9307.20     | 97.05        | -94.13     | -199.43    | 11.70             | 498836.95          | 765895.57         | N 32 22 9.39            | W 103 36 21.61           |
|                           | 9499.00    | 67.60       | 182.75           | 9351.88     | 180.69       | -177.76    | -201.29    | 12.34             | 498753.32          | 765893.72         | N 32 22 8.56            | W 103 36 21.64           |
|                           | 9593.00    | 70.82       | 183.68           | 9385.25     | 268.48       | -265.49    | -206.23    | 3.55              | 498665.60          | 765888.78         | N 32 22 7.69            | W 103 36 21.70           |
|                           | 9688.00    | 70.21       | 181.04           | 9416.94     | 358.00       | -354.96    | -209.92    | 2.70              | 498576.13          | 765885.09         | N 32 22 6.81            | W 103 36 21.75           |
|                           | 9783.00    | 72.69       | 176.39           | 9447.17     | 447.97       | -444.97    | -207.87    | 5.32              | 498486.13          | 765887.13         | N 32 22 5.92            | W 103 36 21.74           |
|                           | 9877.00    | 85.95       | 178.05           | 9484.55     | 539.83       | -536.93    | -201.79    | 14.11             | 498394.17          | 765893.22         | N 32 22 5.01            | W 103 36 21.67           |
|                           | 9945.00    | 88.29       | 175.68           | 9467.97     | 607.49       | -604.68    | -198.88    | 3.49              | 498326.44          | 765898.12         | N 32 22 4.34            | W 103 36 21.62           |
|                           | 10100.00   | 89.45       | 175.62           | 9471.03     | 761.81       | -759.18    | -185.10    | 0.75              | 498171.92          | 765909.91         | N 32 22 2.81            | W 103 36 21.50           |
|                           | 10195.00   | 89.45       | 175.30           | 9471.94     | 856.39       | -853.88    | -177.58    | 0.34              | 498077.23          | 765917.42         | N 32 22 1.87            | W 103 36 21.42           |
| Exit Target Box           | 10249.00   | 89.69       | 175.45           | 9472.35     | 910.14       | -907.70    | -173.23    | 0.52              | 498023.78          | 765923.41         | N 32 22 1.34            | W 103 36 21.37           |
|                           | 10290.00   | 89.87       | 175.56           | 9472.50     | 950.97       | -948.58    | -170.01    | 0.52              | 497982.54          | 765924.99         | N 32 22 0.93            | W 103 36 21.33           |
|                           | 10384.00   | 90.73       | 176.57           | 9472.01     | 1044.64      | -1042.35   | -163.56    | 1.41              | 497888.77          | 765931.44         | N 32 22 0.00            | W 103 36 21.27           |
|                           | 10479.00   | 91.21       | 177.45           | 9470.40     | 1139.41      | -1137.21   | -158.81    | 1.06              | 497793.91          | 765936.40         | N 32 21 59.07           | W 103 36 21.22           |
|                           | 10574.00   | 91.79       | 178.55           | 9467.92     | 1234.26      | -1232.11   | -155.29    | 1.31              | 497699.01          | 765939.71         | N 32 21 58.13           | W 103 36 21.19           |
|                           | 10669.00   | 92.31       | 181.80           | 9464.52     | 1329.18      | -1327.04   | -155.58    | 3.46              | 497604.09          | 765939.42         | N 32 21 57.19           | W 103 36 21.20           |
|                           | 10763.00   | 92.48       | 183.37           | 9460.59     | 1423.05      | -1420.88   | -159.82    | 1.68              | 497510.27          | 765935.19         | N 32 21 56.28           | W 103 36 21.25           |
|                           | 10858.00   | 91.93       | 184.23           | 9456.93     | 1517.85      | -1515.58   | -166.11    | 1.07              | 497415.55          | 765928.90         | N 32 21 55.32           | W 103 36 21.33           |
| Enter Target Box          | 10888.00   | 91.60       | 184.33           | 9456.01     | 1547.78      | -1545.48   | -168.35    | 1.14              | 497385.65          | 765926.66         | N 32 21 55.03           | W 103 36 21.36           |
|                           | 10953.00   | 90.90       | 184.55           | 9454.59     | 1612.64      | -1610.27   | -173.38    | 1.14              | 497320.87          | 765921.63         | N 32 21 54.39           | W 103 36 21.43           |
|                           | 11047.00   | 90.42       | 184.40           | 9453.50     | 1706.44      | -1703.98   | -180.71    | 0.53              | 497227.16          | 765914.29         | N 32 21 53.46           | W 103 36 21.52           |
|                           | 11237.00   | 89.70       | 181.60           | 9453.31     | 1896.29      | -1893.70   | -190.66    | 1.52              | 497037.45          | 765904.35         | N 32 21 51.58           | W 103 36 21.65           |
|                           | 11331.00   | 89.77       | 180.34           | 9453.74     | 1990.29      | -1987.68   | -192.25    | 1.34              | 496943.47          | 765902.78         | N 32 21 50.65           | W 103 36 21.68           |
|                           | 11426.00   | 90.04       | 183.06           | 9453.90     | 2085.27      | -2082.83   | -195.06    | 2.88              | 496848.52          | 765899.94         | N 32 21 49.71           | W 103 36 21.72           |
|                           | 11520.00   | 89.94       | 182.82           | 9453.91     | 2179.20      | -2176.51   | -199.89    | 0.28              | 496754.65          | 765895.12         | N 32 21 48.79           | W 103 36 21.78           |
|                           | 11615.00   | 89.94       | 183.20           | 9454.01     | 2274.13      | -2271.37   | -204.87    | 0.40              | 496659.79          | 765890.13         | N 32 21 47.85           | W 103 36 21.85           |
|                           | 11710.00   | 89.93       | 180.97           | 9454.37     | 2369.10      | -2366.30   | -208.33    | 2.37              | 496564.86          | 765886.68         | N 32 21 46.91           | W 103 36 21.89           |
|                           | 11804.00   | 89.49       | 178.42           | 9455.09     | 2463.08      | -2460.29   | -207.83    | 2.72              | 496470.87          | 765887.18         | N 32 21 45.98           | W 103 36 21.90           |
|                           | 11899.00   | 89.42       | 178.28           | 9456.00     | 2557.98      | -2555.25   | -205.09    | 0.16              | 496375.92          | 765889.91         | N 32 21 45.04           | W 103 36 21.87           |
|                           | 11994.00   | 89.39       | 177.91           | 9456.98     | 2652.87      | -2650.19   | -201.94    | 0.39              | 496280.98          | 765893.07         | N 32 21 44.10           | W 103 36 21.84           |
|                           | 12089.00   | 89.66       | 177.56           | 9457.77     | 2747.72      | -2745.11   | -198.18    | 0.47              | 496186.06          | 765896.82         | N 32 21 43.16           | W 103 36 21.81           |
|                           | 12184.00   | 90.00       | 178.68           | 9458.05     | 2842.61      | -2840.06   | -195.07    | 1.23              | 496091.12          | 765899.94         | N 32 21 42.22           | W 103 36 21.78           |
|                           | 12264.00   | 89.83       | 179.86           | 9458.17     | 2922.58      | -2920.05   | -194.05    | 1.49              | 496011.13          | 765900.96         | N 32 21 41.43           | W 103 36 21.77           |
|                           | 12359.00   | 90.42       | 178.57           | 9457.96     | 3017.54      | -3015.04   | -192.75    | 1.49              | 495916.15          | 765902.26         | N 32 21 40.49           | W 103 36 21.76           |
|                           | 12453.00   | 90.35       | 177.96           | 9457.33     | 3111.44      | -3108.98   | -189.90    | 0.65              | 495822.19          | 765905.11         | N 32 21 39.56           | W 103 36 21.74           |
|                           | 12548.00   | 90.31       | 178.00           | 9456.78     | 3206.32      | -3203.93   | -186.55    | 0.57              | 495727.26          | 765908.46         | N 32 21 38.62           | W 103 36 21.71           |
|                           | 12641.00   | 89.66       | 180.31           | 9456.82     | 3359.25      | -3356.91   | -184.29    | 1.06              | 495574.29          | 765910.71         | N 32 21 37.10           | W 103 36 21.69           |
|                           | 12737.00   | 89.73       | 180.52           | 9457.02     | 3395.25      | -3392.91   | -184.56    | 0.61              | 495538.29          | 765910.45         | N 32 21 36.75           | W 103 36 21.70           |
|                           | 12832.00   | 89.87       | 180.08           | 9457.35     | 3490.24      | -3487.90   | -185.05    | 0.49              | 495443.30          | 765909.95         | N 32 21 35.81           | W 103 36 21.71           |
|                           | 13021.00   | 89.83       | 180.10           | 9457.84     | 3679.22      | -3676.90   | -185.35    | 0.02              | 495254.31          | 765909.66         | N 32 21 33.94           | W 103 36 21.73           |
|                           | 13116.00   | 89.66       | 180.83           | 9458.27     | 3774.22      | -3771.90   | -186.12    | 0.79              | 495159.31          | 765908.89         | N 32 21 33.00           | W 103 36 21.75           |
|                           | 13210.00   | 89.76       | 180.96           | 9458.74     | 3868.22      | -3865.88   | -187.59    | 0.17              | 495065.33          | 765907.42         | N 32 21 32.07           | W 103 36 21.77           |
|                           | 13399.00   | 89.59       | 180.18           | 9459.81     | 4057.21      | -4054.87   | -189.47    | 0.42              | 494976.35          | 765905.54         | N 32 21 30.20           | W 103 36 21.81           |
|                           | 13589.00   | 89.80       | 180.47           | 9460.83     | 4247.20      | -4244.88   | -190.55    | 0.19              | 494886.36          | 765904.46         | N 32 21 28.32           | W 103 36 21.84           |
|                           | 13697.00   | 89.83       | 180.43           | 9461.17     | 4355.20      | -4352.88   | -191.39    | 0.05              | 494797.37          | 765903.61         | N 32 21 27.25           | W 103 36 21.85           |
|                           | 13873.00   | 89.49       | 180.17           | 9462.22     | 4531.19      | -4528.85   | -192.32    | 0.24              | 494702.38          | 765902.69         | N 32 21 25.51           | W 103 36 21.88           |
|                           | 13967.00   | 90.21       | 180.62           | 9462.46     | 4625.18      | -4622.85   | -192.96    | 0.90              | 494608.39          | 765902.04         | N 32 21 24.58           | W 103 36 21.89           |
|                           | 14062.00   | 91.34       | 180.68           | 9461.18     | 4720.17      | -4717.84   | -194.04    | 1.19              | 494513.41          | 765900.96         | N 32 21 23.64           | W 103 36 21.91           |
|                           | 14174.00   | 91.17       | 180.47           | 9458.73     | 4832.14      | -4829.80   | -195.17    | 0.24              | 494410.45          | 765899.84         | N 32 21 22.53           | W 103 36 21.94           |
|                           | 14251.00   | 90.52       | 180.16           | 9457.59     | 4909.13      | -4906.79   | -195.59    | 0.94              | 494302.48          | 765899.42         | N 32 21 21.77           | W 103 36 21.95           |
|                           | 14346.00   | 89.73       | 181.14           | 9457.38     | 5004.13      | -5001.78   | -196.87    | 1.33              | 494192.47          | 765898.34         | N 32 21 20.83           | W 103 36 21.97           |
|                           | 14440.00   | 89.97       | 179.92           | 9457.63     | 5098.13      | -5095.78   | -197.54    | 1.32              | 494083.48          | 765897.47         | N 32 21 19.90           | W 103 36 21.98           |
|                           | 14535.00   | 90.21       | 180.19           | 9457.48     | 5193.12      | -5190.78   | -197.63    | 0.38              | 493970.48          | 765897.38         | N 32 21 18.96           | W 103 36 21.99           |
|                           | 14629.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 14723.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 14817.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 14911.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15005.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15099.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15193.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15287.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15381.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15475.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15569.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15663.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15757.00   | 90.18       | 179.87           | 9457.16     | 5287.11      | -5284.78   | -197.68    | 0.34              | 493864.49          | 765897.33         | N 32 21 18.03           | W 103 36 22.00           |
|                           | 15851.00   | 90.18       | 179.             |             |              |            |            |                   |                    |                   |                         |                          |

| Comments       | MD<br>(ft) | Incl<br>(°) | Azim 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 ° ' '') |
|----------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|--------------------------|---------------------------|
|                | 19347.00   | 90.13       | 179.47           | 9408.35     | 10000.92     | -10000.00  | -136.05    | 0.16             | 488931.43          | 765958.96         | N 32 20 31.37            | W 103 36 21.66            |
|                | 19441.00   | 90.47       | 179.70           | 9407.86     | 10094.90     | -10094.00  | -135.37    | 0.44             | 488837.44          | 765959.64         | N 32 20 30.44            | W 103 36 21.66            |
|                | 19536.00   | 89.99       | 179.53           | 9407.48     | 10189.87     | -10188.99  | -134.73    | 0.54             | 488742.44          | 765960.27         | N 32 20 29.50            | W 103 36 21.66            |
| 100' FSL Cross | 19607.50   | 89.94       | 179.73           | 9407.53     | 10261.36     | -10260.49  | -134.27    | 0.29             | 488670.95          | 765960.73         | N 32 20 28.79            | W 103 36 21.66            |
|                | 19631.00   | 89.92       | 179.80           | 9407.56     | 10284.85     | -10283.99  | -134.17    | 0.29             | 488647.45          | 765960.83         | N 32 20 28.56            | W 103 36 21.66            |
| Final MWD      | 19647.00   | 90.06       | 179.79           | 9407.56     | 10300.85     | -10299.99  | -134.12    | 0.88             | 488631.45          | 765960.89         | N 32 20 28.40            | W 103 36 21.66            |
| Proj to Bit    | 19687.00   | 90.06       | 179.79           | 9407.52     | 10340.84     | -10339.99  | -133.97    | 0.00             | 488591.45          | 765961.03         | N 32 20 28.01            | W 103 36 21.66            |

Survey Type: Def Survey

Survey Error Model: ISCWSA 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<br>(in) | Casing Diameter<br>(in) | Survey Tool Type         | Borehole / Survey                                                            |
|-------------|------|-----------------|---------------|------------------|-------------------|-------------------------|--------------------------|------------------------------------------------------------------------------|
|             | 1    | 0.000           | 26.500        | 1/98.425         | 30.000            | 30.000                  | NAL_NSG+MSHOT-Depth Only | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-19687ft MD |
|             | 1    | 26.500          | 26.500        | Act Stns         | 30.000            | 30.000                  | NAL_NSG+MSHOT-Depth Only | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-19687ft MD |
|             | 1    | 26.500          | 1064.330      | Act Stns         | 30.000            | 30.000                  | NAL_NSG+MSHOT            | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-           |
|             | 1    | 1064.330        | 11994.000     | Act Stns         | 30.000            | 30.000                  | NAL_MWD_IFR1+MS          | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-           |
|             | 1    | 11994.000       | 12184.000     | Act Stns         | 30.000            | 30.000                  | NAL_MWD_PLUS_0.5_DEG     | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-           |
|             | 1    | 12184.000       | 19687.000     | Act Stns         | 30.000            | 30.000                  | NAL_MWD_IFR1+MS          | Original Borehole / Oxy Red Tank<br>30-31 State 14H Gyro + MWD 0'-           |

...Oxy Red Tank 30-31 State 14H\Original Borehole\Oxy Red Tank 30-31 State 14H Gyro + MWD 0'-19687ft MD