

## Results of Directional Survey

|             |                     |           |                                 |
|-------------|---------------------|-----------|---------------------------------|
| API number: | <b>30-025-40537</b> |           |                                 |
| OGRID:      |                     | Operator: | <b>EOG RESOURCES INC</b>        |
|             |                     | Property: | <b>VACA 24 FEDERAL COM</b> # 6H |

|         |        |          |           |           |            |             |            |
|---------|--------|----------|-----------|-----------|------------|-------------|------------|
| surface | ULSTR: | <b>P</b> | <b>24</b> | <b>T</b>  | <b>25S</b> | <b>R</b>    | <b>33E</b> |
|         |        |          |           | <b>50</b> | <b>FSL</b> | <b>1310</b> | <b>FEL</b> |

|              |           |               |            |             |            |             |            |
|--------------|-----------|---------------|------------|-------------|------------|-------------|------------|
| BH Loc       | ULSTR:    | <b>I</b>      | <b>13</b>  | <b>T</b>    | <b>25S</b> | <b>R</b>    | <b>33E</b> |
| <b>16707</b> | <b>MD</b> | <b>9456.4</b> | <b>TVD</b> | <b>2305</b> | <b>FSL</b> | <b>1375</b> | <b>FEL</b> |
|              |           |               |            | <b>7585</b> | <b>FSL</b> |             |            |

|             |           |               |            |            |            |             |            |
|-------------|-----------|---------------|------------|------------|------------|-------------|------------|
| Top Perf/OH | ULSTR:    | <b>P</b>      | <b>24</b>  | <b>T</b>   | <b>25S</b> | <b>R</b>    | <b>33E</b> |
| <b>9506</b> | <b>MD</b> | <b>9366.9</b> | <b>TVD</b> | <b>398</b> | <b>FSL</b> | <b>1313</b> | <b>FEL</b> |

|              |           |               |            |             |            |             |            |
|--------------|-----------|---------------|------------|-------------|------------|-------------|------------|
| Bot Perf/OH  | ULSTR:    | <b>I</b>      | <b>13</b>  | <b>T</b>    | <b>25S</b> | <b>R</b>    | <b>33E</b> |
| <b>16666</b> | <b>MD</b> | <b>9455.5</b> | <b>TVD</b> | <b>2264</b> | <b>FSL</b> | <b>1375</b> | <b>FEL</b> |
|              |           |               |            | <b>7544</b> | <b>FSL</b> |             |            |

|              |              |         |        |         |
|--------------|--------------|---------|--------|---------|
|              | MD           | N/S     | E/W    | VD      |
|              | 9493         | 336.57  | -2.71  | 9361.16 |
| TOP PERFS/OH | <b>9506</b>  | 348.24  | -3.25  | 9366.87 |
|              | 9525         | 365.29  | -4.03  | 9375.21 |
|              | 16645        | 7473.43 | -65.36 | 9455.02 |
| BOT PERFS/OH | <b>16666</b> | 7494.43 | -65.31 | 9455.48 |
|              | 16707        | 7535.42 | -65.22 | 9456.37 |

|              |              |         |        |         |
|--------------|--------------|---------|--------|---------|
| NEXT TO LAST | 16645        | 7473.43 | -65.36 | 9455.02 |
| LAST READING | 16707        | 7535.42 | -65.22 | 9456.37 |
| TD           | <b>16707</b> | 7535.42 | -65.22 | 9456.37 |

|                  |      |    |      |    |
|------------------|------|----|------|----|
| Surface Location | 50   | FS | 1310 | FE |
| Projected BHL    | 7585 | FS | 1375 | FE |
| Location of      |      |    |      |    |
| Top Perfs/OH     | 398  | FS | 1313 | FE |
| Bottom Perfs/OH  | 7544 | FS | 1375 | FE |

### SUMMARY of Subsurface Locations

|                  |              |      |    |      |    |             |
|------------------|--------------|------|----|------|----|-------------|
| Surface Location | P-24-25S-33E | 50   | FS | 1310 | FE | Vert. Depth |
| Top Perfs/OH     | P-24-25S-33E | 398  | FS | 1313 | FE | 9366.87     |
| Bottom Perfs/OH  | I-13-25S-33E | 7544 | FS | 1375 | FE | 9455.48     |
| Projected TD     | I-13-25S-33E | 7585 | FS | 1375 | FE | 9456.37     |

APR 14 2014

# **EOG RESOURCES, INC.**

**LEA COUNTY, NEW MEXICO**

**VACA "24" FED. COM**

**6H; SEC24 / TWN25S / RGE33E**

**6H; SEC24 / TWN25S / RGE33E**

**HOBBS OCD**

**FEB 10 2014**

**Design: 6H ALT - 900600863 Survey**

**RECEIVED**

## **Standard Survey Report**

**21 August, 2013**

**APR 14 2014**

# Halliburton Company

## Survey Report

**Company:** EOG RESOURCES, INC.  
**Project:** LEA COUNTY, NEW MEXICO  
**Site:** VACA "24" FED. COM  
**Well:** 6H; SEC24 / TWN25S / RGE33E  
**Wellbore:** 6H; SEC24 / TWN25S / RGE33E  
**Design:** 6H ALT - 900600863 Survey

**Local Co-ordinate Reference:** Well 6H; SEC24 / TWN25S / RGE33E  
**TVD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**MD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.21 Single User Db

**Project:** LEA COUNTY, NEW MEXICO

**Map System:** US State Plane 1927 (Exact solution)  
**Geo Datum:** NAD 1927 (NADCON CONUS)  
**Map Zone:** New Mexico East 3001

**System Datum:** Mean Sea Level

**Site:** VACA "24" FED. COM

**Site Position:** **Map** **Northing:** 404,242.50 ft **Latitude:** 32° 6' 31.5908 N  
**From:** **Easting:** 751,436.70 ft **Longitude:** 103° 31' 16.6263 W  
**Position Uncertainty:** 0.00 ft **Slot Radius:** 13-3/16" **Grid Convergence:** 0.432 °

**Well:** 6H; SEC24 / TWN25S / RGE33E

**Well Position** **+N/-S** 0.00 ft **Northing:** 404,242.50 ft **Latitude:** 32° 6' 31.5908 N  
**+E/-W** 0.00 ft **Easting:** 751,436.70 ft **Longitude:** 103° 31' 16.6263 W  
**Position Uncertainty** 0.00 ft **Wellhead Elevation:** ft **Ground Level:** 3,329.40 ft

**Wellbore:** 6H; SEC24 / TWN25S / RGE33E

| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|-----------|------------|-------------|--------------------|------------------|------------------------|
|           | BGGM2013   | 7/26/2013   | 7.396              | 60.024           | 48,332                 |

**Design:** 6H ALT - 900600863 Survey

**Audit Notes:**

**Version:** 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00

| Vertical Section: | Depth From (TVD)<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Direction<br>(°) |
|-------------------|--------------------------|---------------|---------------|------------------|
|                   | 0.00                     | 0.00          | 0.00          | 359.590          |

**Survey Program** **Date:** 8/21/2013

| From<br>(ft) | To<br>(ft) | Survey (Wellbore)                         | Tool Name         | Description                                        |
|--------------|------------|-------------------------------------------|-------------------|----------------------------------------------------|
| 175.00       | 1,126.00   | ProDrift (0) 175'-1126' (6H; SEC24 / TWN2 | INC & AZ ProDrift | Fixed:v2:Inclinometer (Totco/Teledrift/Anderdrift) |
| 1,226.00     | 16,707.00  | MWD (1242'-xxx') (6H; SEC24 / TWN25S      | SPERRY MWD        | SPERRY-SUN MWD, MAGNETIC                           |

**Survey**

| Measured<br>Depth<br>(ft)                                            | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Vertical<br>Section<br>(ft) | Dogleg<br>Rate<br>(°/100ft) | Build<br>Rate<br>(°/100ft) | Turn<br>Rate<br>(°/100ft) |
|----------------------------------------------------------------------|--------------------|----------------|---------------------------|---------------|---------------|-----------------------------|-----------------------------|----------------------------|---------------------------|
| 0.00                                                                 | 0.000              | 0.000          | 0.00                      | 0.00          | 0.00          | 0.00                        | 0.00                        | 0.00                       | 0.00                      |
| 175.00                                                               | 0.500              | 134.400        | 175.00                    | -0.53         | 0.55          | -0.54                       | 0.29                        | 0.29                       | 0.00                      |
| 358.00                                                               | 0.800              | 135.400        | 357.99                    | -2.00         | 2.01          | -2.02                       | 0.16                        | 0.16                       | 0.55                      |
| 426.00                                                               | 0.600              | 147.000        | 425.98                    | -2.64         | 2.54          | -2.66                       | 0.36                        | -0.29                      | 17.06                     |
| 573.00                                                               | 0.600              | 143.400        | 572.97                    | -3.90         | 3.42          | -3.93                       | 0.03                        | 0.00                       | -2.45                     |
| 758.00                                                               | 0.300              | 113.000        | 757.97                    | -4.87         | 4.44          | -4.90                       | 0.20                        | -0.16                      | -16.43                    |
| 942.00                                                               | 0.600              | 147.400        | 941.96                    | -5.87         | 5.40          | -5.91                       | 0.21                        | 0.16                       | 18.70                     |
| 1,126.00                                                             | 0.900              | 116.400        | 1,125.95                  | -7.32         | 7.22          | -7.37                       | 0.27                        | 0.16                       | -16.85                    |
| <b>LAST MWD SURVEY @ 1126.00 MD, 1125.95 TVD, 0.90 INC, -7.32 VS</b> |                    |                |                           |               |               |                             |                             |                            |                           |
| 1,242.00                                                             | 0.770              | 136.450        | 1,241.93                  | -8.29         | 8.57          | -8.35                       | 0.27                        | -0.11                      | 17.28                     |
| 1,334.00                                                             | 0.740              | 326.500        | 1,333.93                  | -8.25         | 8.67          | -8.31                       | 1.63                        | -0.03                      | -184.73                   |
| 1,427.00                                                             | 1.200              | 330.800        | 1,426.92                  | -6.90         | 7.86          | -6.95                       | 0.50                        | 0.49                       | 4.62                      |

## Halliburton Company

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 Wellbore: 6H; SEC24 / TWN25S / RGE33E  
 Design: 6H ALT - 900600863 Survey

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 MD Reference: WELL @ 3356.40ft (PATTERSON #452)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: EDM 2003.21 Single User Db

## Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 1,522.00            | 1.390           | 330.260     | 1,521.89            | -5.03      | 6.81       | -5.07                 | 0.20                  | 0.20                 | -0.57               |
| 1,617.00            | 1.200           | 329.500     | 1,616.87            | -3.17      | 5.73       | -3.21                 | 0.20                  | -0.20                | -0.80               |
| 1,713.00            | 1.420           | 332.880     | 1,712.84            | -1.24      | 4.68       | -1.28                 | 0.24                  | 0.23                 | 3.52                |
| 1,808.00            | 1.490           | 335.680     | 1,807.81            | 0.93       | 3.63       | 0.90                  | 0.11                  | 0.07                 | 2.95                |
| 1,904.00            | 1.140           | 329.350     | 1,903.79            | 2.89       | 2.63       | 2.87                  | 0.39                  | -0.36                | -6.59               |
| 1,999.00            | 1.430           | 331.020     | 1,998.76            | 4.74       | 1.57       | 4.73                  | 0.31                  | 0.31                 | 1.76                |
| 2,095.00            | 0.960           | 309.030     | 2,094.74            | 6.29       | 0.37       | 6.29                  | 0.68                  | -0.49                | -22.91              |
| 2,190.00            | 0.810           | 290.610     | 2,189.73            | 7.03       | -0.88      | 7.04                  | 0.34                  | -0.16                | -19.39              |
| 2,285.00            | 0.810           | 301.690     | 2,284.72            | 7.62       | -2.08      | 7.63                  | 0.16                  | 0.00                 | 11.66               |
| 2,381.00            | 0.280           | 232.390     | 2,380.72            | 7.83       | -2.84      | 7.85                  | 0.79                  | -0.55                | -72.19              |
| 2,475.00            | 0.620           | 194.280     | 2,474.72            | 7.20       | -3.15      | 7.22                  | 0.46                  | 0.36                 | -40.54              |
| 2,570.00            | 0.370           | 223.710     | 2,569.71            | 6.48       | -3.49      | 6.50                  | 0.37                  | -0.26                | 30.98               |
| 2,664.00            | 0.370           | 206.800     | 2,663.71            | 5.99       | -3.83      | 6.02                  | 0.12                  | 0.00                 | -17.99              |
| 2,762.00            | 0.400           | 207.310     | 2,761.71            | 5.40       | -4.13      | 5.43                  | 0.03                  | 0.03                 | 0.52                |
| 2,858.00            | 0.090           | 130.050     | 2,857.71            | 5.06       | -4.23      | 5.09                  | 0.41                  | -0.32                | -80.48              |
| 2,953.00            | 0.500           | 164.770     | 2,952.71            | 4.61       | -4.06      | 4.64                  | 0.45                  | 0.43                 | 36.55               |
| 3,048.00            | 0.230           | 154.910     | 3,047.70            | 4.04       | -3.87      | 4.06                  | 0.29                  | -0.28                | -10.38              |
| 3,144.00            | 0.510           | 104.100     | 3,143.70            | 3.76       | -3.38      | 3.78                  | 0.42                  | 0.29                 | -52.93              |
| 3,239.00            | 1.030           | 98.690      | 3,238.69            | 3.53       | -2.12      | 3.54                  | 0.55                  | 0.55                 | -5.69               |
| 3,335.00            | 1.220           | 135.350     | 3,334.68            | 2.67       | -0.55      | 2.67                  | 0.76                  | 0.20                 | 38.19               |
| 3,430.00            | 1.450           | 143.180     | 3,429.65            | 0.99       | 0.88       | 0.98                  | 0.31                  | 0.24                 | 8.24                |
| 3,525.00            | 0.610           | 131.280     | 3,524.63            | -0.31      | 1.98       | -0.32                 | 0.91                  | -0.88                | -12.53              |
| 3,621.00            | 0.140           | 227.120     | 3,620.63            | -0.73      | 2.28       | -0.74                 | 0.67                  | -0.49                | 99.83               |
| 3,716.00            | 0.430           | 166.190     | 3,715.63            | -1.15      | 2.28       | -1.17                 | 0.40                  | 0.31                 | -64.14              |
| 3,811.00            | 0.460           | 127.920     | 3,810.63            | -1.73      | 2.66       | -1.75                 | 0.31                  | 0.03                 | -40.28              |
| 3,907.00            | 0.870           | 93.400      | 3,906.62            | -2.01      | 3.70       | -2.04                 | 0.58                  | 0.43                 | -35.96              |
| 4,002.00            | 0.950           | 32.620      | 4,001.61            | -1.39      | 4.84       | -1.43                 | 0.97                  | 0.08                 | -63.98              |
| 4,097.00            | 0.980           | 6.970       | 4,096.60            | 0.08       | 5.36       | 0.04                  | 0.45                  | 0.03                 | -27.00              |
| 4,192.00            | 0.520           | 309.450     | 4,191.59            | 1.16       | 5.13       | 1.12                  | 0.87                  | -0.48                | -60.55              |
| 4,288.00            | 0.500           | 278.580     | 4,287.59            | 1.50       | 4.38       | 1.47                  | 0.28                  | -0.02                | -32.16              |
| 4,383.00            | 0.580           | 344.120     | 4,382.58            | 2.02       | 3.84       | 1.99                  | 0.62                  | 0.08                 | 68.99               |
| 4,479.00            | 0.450           | 199.280     | 4,478.58            | 2.13       | 3.58       | 2.11                  | 1.02                  | -0.14                | -150.87             |
| 4,574.00            | 0.970           | 172.960     | 4,573.58            | 0.98       | 3.55       | 0.96                  | 0.63                  | 0.55                 | -27.71              |
| 4,670.00            | 0.860           | 161.650     | 4,669.56            | -0.51      | 3.88       | -0.53                 | 0.22                  | -0.11                | -11.78              |
| 4,765.00            | 0.930           | 182.430     | 4,764.55            | -1.95      | 4.07       | -1.98                 | 0.35                  | 0.07                 | 21.87               |
| 4,861.00            | 0.360           | 199.470     | 4,860.55            | -3.02      | 3.94       | -3.04                 | 0.62                  | -0.59                | 17.75               |
| 4,956.00            | 0.280           | 205.400     | 4,955.54            | -3.51      | 3.74       | -3.53                 | 0.09                  | -0.08                | 6.24                |
| 5,031.00            | 0.560           | 163.910     | 5,030.54            | -4.03      | 3.76       | -4.05                 | 0.53                  | 0.37                 | -55.32              |
| 5,140.00            | 1.010           | 189.040     | 5,139.53            | -5.49      | 3.76       | -5.51                 | 0.51                  | 0.41                 | 23.06               |
| 5,235.00            | 0.220           | 299.230     | 5,234.53            | -6.22      | 3.47       | -6.25                 | 1.16                  | -0.83                | 115.99              |
| 5,331.00            | 0.880           | 8.150       | 5,330.52            | -5.40      | 3.41       | -5.43                 | 0.86                  | 0.69                 | 71.79               |
| 5,426.00            | 0.370           | 356.280     | 5,425.52            | -4.38      | 3.50       | -4.40                 | 0.55                  | -0.54                | -12.49              |
| 5,522.00            | 0.740           | 17.070      | 5,521.51            | -3.47      | 3.66       | -3.50                 | 0.43                  | 0.39                 | 21.66               |
| 5,617.00            | 0.440           | 16.180      | 5,616.51            | -2.54      | 3.94       | -2.57                 | 0.32                  | -0.32                | -0.94               |
| 5,713.00            | 0.520           | 357.170     | 5,712.50            | -1.75      | 4.02       | -1.78                 | 0.18                  | 0.08                 | -19.80              |
| 5,808.00            | 1.170           | 347.610     | 5,807.49            | -0.37      | 3.79       | -0.40                 | 0.70                  | 0.68                 | -10.06              |
| 5,904.00            | 1.010           | 273.690     | 5,903.48            | 0.64       | 2.74       | 0.62                  | 1.37                  | -0.17                | -77.00              |
| 5,999.00            | 1.070           | 266.780     | 5,998.46            | 0.65       | 1.02       | 0.64                  | 0.15                  | 0.06                 | -7.27               |
| 6,094.00            | 1.200           | 209.900     | 6,093.45            | -0.27      | -0.37      | -0.26                 | 1.14                  | 0.14                 | -59.87              |
| 6,190.00            | 1.020           | 182.910     | 6,189.43            | -1.99      | -0.91      | -1.98                 | 0.57                  | -0.19                | -28.11              |
| 6,285.00            | 1.300           | 191.800     | 6,284.41            | -3.39      | -1.17      | -3.88                 | 0.35                  | 0.29                 | 9.36                |
| 6,380.00            | 0.620           | 137.050     | 6,379.40            | -5.32      | -1.04      | -5.31                 | 1.13                  | -0.72                | -57.63              |
| 6,476.00            | 0.930           | 141.270     | 6,475.39            | -6.31      | -0.20      | -6.31                 | 0.33                  | 0.32                 | 4.40                |
| 6,571.00            | 0.880           | 14.150      | 6,570.39            | -6.20      | 0.46       | -6.21                 | 1.71                  | -0.05                | -133.81             |

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### Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 6,667.00            | 1.150           | 8.350       | 6,666.37            | -4.54      | 0.78       | -4.54                 | 0.30                  | 0.28                 | -6.04               |
| 6,762.00            | 0.710           | 315.080     | 6,761.36            | -3.18      | 0.50       | -3.18                 | 0.97                  | -0.46                | -56.07              |
| 6,857.00            | 0.760           | 278.390     | 6,856.35            | -2.67      | -0.54      | -2.66                 | 0.49                  | 0.05                 | -38.62              |
| 6,953.00            | 0.480           | 224.040     | 6,952.35            | -2.86      | -1.45      | -2.85                 | 0.64                  | -0.29                | -56.61              |
| 7,048.00            | 0.400           | 155.860     | 7,047.34            | -3.45      | -1.59      | -3.44                 | 0.52                  | -0.08                | -71.77              |
| 7,144.00            | 0.730           | 203.950     | 7,143.34            | -4.32      | -1.70      | -4.30                 | 0.57                  | 0.34                 | 50.09               |
| 7,239.00            | 0.340           | 208.390     | 7,238.34            | -5.12      | -2.08      | -5.10                 | 0.41                  | -0.41                | 4.67                |
| 7,334.00            | 0.560           | 217.210     | 7,333.33            | -5.74      | -2.49      | -5.72                 | 0.24                  | 0.23                 | 9.28                |
| 7,430.00            | 0.800           | 122.190     | 7,429.33            | -6.47      | -2.21      | -6.45                 | 1.06                  | 0.25                 | -98.98              |
| 7,525.00            | 1.180           | 119.460     | 7,524.31            | -7.30      | -0.80      | -7.29                 | 0.40                  | 0.40                 | -2.87               |
| 7,621.00            | 0.930           | 90.540      | 7,620.30            | -7.79      | 0.84       | -7.80                 | 0.60                  | -0.26                | -30.12              |
| 7,716.00            | 0.990           | 88.650      | 7,715.28            | -7.78      | 2.43       | -7.80                 | 0.07                  | 0.06                 | -1.99               |
| 7,812.00            | 0.290           | 71.780      | 7,811.28            | -7.69      | 3.49       | -7.71                 | 0.75                  | -0.73                | -17.57              |
| 7,907.00            | 0.650           | 10.800      | 7,906.28            | -7.08      | 3.82       | -7.11                 | 0.60                  | 0.38                 | -64.19              |
| 8,003.00            | 0.750           | 341.490     | 8,002.27            | -5.95      | 3.73       | -5.98                 | 0.38                  | 0.10                 | -30.53              |
| 8,098.00            | 0.610           | 331.010     | 8,097.26            | -4.92      | 3.28       | -4.94                 | 0.20                  | -0.15                | -11.03              |
| 8,193.00            | 0.430           | 20.370      | 8,192.26            | -4.14      | 3.16       | -4.17                 | 0.49                  | -0.19                | 51.96               |
| 8,289.00            | 0.190           | 255.510     | 8,288.26            | -3.34      | 3.13       | -3.87                 | 0.58                  | -0.25                | -130.06             |
| 8,384.00            | 0.890           | 256.080     | 8,383.25            | -4.06      | 2.26       | -4.08                 | 0.74                  | 0.74                 | 0.60                |
| 8,480.00            | 0.420           | 236.960     | 8,479.25            | -4.43      | 1.25       | -4.44                 | 0.53                  | -0.49                | -19.92              |
| 8,575.00            | 0.570           | 236.400     | 8,574.24            | -4.88      | 0.56       | -4.89                 | 0.16                  | 0.16                 | -0.59               |
| 8,665.00            | 0.370           | 328.640     | 8,664.24            | -4.88      | 0.04       | -4.88                 | 0.77                  | -0.22                | 102.49              |
| 8,761.00            | 0.110           | 236.130     | 8,760.24            | -4.67      | -0.20      | -4.67                 | 0.41                  | -0.27                | -96.36              |
| 8,824.00            | 0.780           | 317.070     | 8,823.24            | -4.39      | -0.54      | -4.39                 | 1.22                  | 1.06                 | 128.48              |
| 8,856.00            | 2.330           | 355.060     | 8,855.23            | -3.58      | -0.75      | -3.58                 | 5.57                  | 4.84                 | 118.72              |
| 8,888.00            | 5.860           | 359.280     | 8,887.14            | -1.30      | -0.82      | -1.29                 | 11.06                 | 11.03                | 13.19               |
| 8,920.00            | 10.090          | 0.210       | 8,918.82            | 3.14       | -0.83      | 3.14                  | 13.22                 | 13.22                | 2.91                |
| 8,952.00            | 13.710          | 1.500       | 8,950.13            | 9.73       | -0.73      | 9.74                  | 11.34                 | 11.31                | 4.03                |
| 8,984.00            | 16.670          | 2.630       | 8,981.01            | 18.11      | -0.42      | 18.11                 | 9.30                  | 9.25                 | 3.53                |
| 9,015.00            | 19.290          | 3.150       | 9,010.49            | 27.67      | 0.07       | 27.67                 | 8.47                  | 8.45                 | 1.68                |
| 9,047.00            | 21.930          | 2.800       | 9,040.44            | 38.92      | 0.65       | 38.91                 | 8.26                  | 8.25                 | -1.09               |
| 9,079.00            | 25.660          | 2.550       | 9,069.72            | 51.81      | 1.25       | 51.80                 | 11.66                 | 11.66                | -0.78               |
| 9,111.00            | 29.510          | 2.760       | 9,098.07            | 66.61      | 1.94       | 66.59                 | 12.04                 | 12.03                | 0.66                |
| 9,143.00            | 32.880          | 2.620       | 9,125.44            | 83.16      | 2.72       | 83.14                 | 10.53                 | 10.53                | -0.44               |
| 9,175.00            | 35.120          | 1.340       | 9,151.97            | 101.05     | 3.33       | 101.02                | 7.35                  | 7.00                 | -4.00               |
| 9,207.00            | 37.910          | 0.250       | 9,177.69            | 120.08     | 3.59       | 120.05                | 8.95                  | 8.72                 | -3.41               |
| 9,238.00            | 40.100          | 359.310     | 9,201.77            | 139.59     | 3.51       | 139.56                | 7.32                  | 7.06                 | -3.03               |
| 9,270.00            | 42.760          | 358.850     | 9,225.76            | 160.76     | 3.17       | 160.73                | 8.37                  | 8.31                 | -1.44               |
| 9,302.00            | 45.920          | 358.500     | 9,248.65            | 183.12     | 2.65       | 183.09                | 9.90                  | 9.87                 | -1.09               |
| 9,334.00            | 48.530          | 358.540     | 9,270.38            | 206.60     | 2.04       | 206.58                | 8.16                  | 8.16                 | 0.12                |
| 9,366.00            | 50.880          | 358.630     | 9,291.07            | 230.99     | 1.44       | 230.98                | 7.35                  | 7.34                 | 0.28                |
| 9,397.00            | 53.700          | 358.420     | 9,310.03            | 255.51     | 0.81       | 255.50                | 9.11                  | 9.10                 | -0.68               |
| 9,429.00            | 56.120          | 357.440     | 9,328.43            | 281.67     | -0.14      | 281.67                | 7.97                  | 7.56                 | -3.06               |
| 9,461.00            | 59.230          | 357.270     | 9,345.54            | 308.68     | -1.39      | 308.68                | 9.73                  | 9.72                 | -0.53               |
| 9,493.00            | 62.310          | 357.310     | 9,361.16            | 336.57     | -2.71      | 336.58                | 9.63                  | 9.62                 | 0.12                |
| 9,525.00            | 65.590          | 357.440     | 9,375.21            | 365.29     | -4.03      | 365.31                | 10.26                 | 10.25                | 0.41                |
| 9,557.00            | 68.940          | 357.900     | 9,387.58            | 394.77     | -5.22      | 394.80                | 10.55                 | 10.47                | 1.44                |
| 9,588.00            | 73.090          | 358.270     | 9,397.66            | 424.06     | -6.20      | 424.10                | 13.43                 | 13.39                | 1.19                |
| 9,620.00            | 76.720          | 358.820     | 9,405.99            | 454.94     | -6.99      | 454.98                | 11.46                 | 11.34                | 1.72                |
| 9,652.00            | 80.140          | 359.230     | 9,412.41            | 486.28     | -7.52      | 486.33                | 10.76                 | 10.69                | 1.28                |
| 9,752.00            | 88.580          | 0.720       | 9,422.23            | 585.71     | -7.55      | 585.75                | 8.57                  | 8.44                 | 1.49                |
| 9,837.00            | 88.640          | 0.830       | 9,424.29            | 670.67     | -6.40      | 670.70                | 0.15                  | 0.07                 | 0.13                |
| 9,933.00            | 89.380          | 359.350     | 9,425.95            | 766.66     | -6.25      | 766.68                | 1.72                  | 0.77                 | -1.54               |
| 10,028.00           | 90.250          | 359.190     | 9,426.25            | 861.55     | -7.46      | 861.68                | 0.93                  | 0.92                 | -0.17               |

# Halliburton Company

## Survey Report

**Company:** EOG RESOURCES, INC.  
**Project:** LEA COUNTY, NEW MEXICO  
**Site:** VACA "24" FED. COM  
**Well:** 6H; SEC24 / TWN25S / RGE33E  
**Wellbore:** 6H; SEC24 / TWN25S / RGE33E  
**Design:** 6H ALT - 900600863 Survey

**Local Co-ordinate Reference:** Well 6H; SEC24 / TWN25S / RGE33E  
**TVD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**MD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.21 Single User Db

### Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 10,123.00           | 90.000          | 0.420       | 9,426.05            | 956.65     | -7.79      | 956.68                | 1.32                  | -0.26                | 1.29                |
| 10,219.00           | 90.680          | 359.260     | 9,425.48            | 1,052.64   | -8.05      | 1,052.67              | 1.40                  | 0.71                 | -1.21               |
| 10,314.00           | 91.540          | 359.210     | 9,423.64            | 1,147.61   | -9.32      | 1,147.65              | 0.91                  | 0.91                 | -0.05               |
| 10,410.00           | 89.260          | 357.060     | 9,422.97            | 1,243.55   | -12.45     | 1,243.61              | 3.26                  | -2.37                | -2.24               |
| 10,505.00           | 90.310          | 356.760     | 9,423.32            | 1,338.41   | -17.57     | 1,338.50              | 1.15                  | 1.11                 | -0.32               |
| 10,600.00           | 91.230          | 356.930     | 9,422.05            | 1,433.25   | -22.79     | 1,433.38              | 0.98                  | 0.97                 | 0.18                |
| 10,696.00           | 92.600          | 359.730     | 9,418.84            | 1,529.15   | -25.59     | 1,529.29              | 3.25                  | 1.43                 | 2.92                |
| 10,791.00           | 92.660          | 359.500     | 9,414.48            | 1,624.05   | -26.23     | 1,624.19              | 0.25                  | 0.06                 | -0.24               |
| 10,887.00           | 91.600          | 359.720     | 9,410.91            | 1,719.98   | -26.88     | 1,720.12              | 1.13                  | -1.10                | 0.23                |
| 10,982.00           | 90.620          | 356.140     | 9,409.07            | 1,814.88   | -30.31     | 1,815.05              | 3.91                  | -1.03                | -3.77               |
| 11,078.00           | 90.430          | 357.780     | 9,408.19            | 1,910.74   | -35.40     | 1,910.94              | 1.72                  | -0.20                | 1.71                |
| 11,173.00           | 93.270          | 1.210       | 9,405.12            | 2,005.66   | -36.24     | 2,005.87              | 4.69                  | 2.99                 | 3.61                |
| 11,269.00           | 90.370          | 0.850       | 9,402.07            | 2,101.59   | -34.52     | 2,101.78              | 3.04                  | -3.02                | -0.37               |
| 11,364.00           | 90.490          | 0.390       | 9,401.36            | 2,196.58   | -33.49     | 2,196.76              | 0.50                  | 0.13                 | -0.48               |
| 11,460.00           | 89.010          | 358.610     | 9,401.78            | 2,292.57   | -34.33     | 2,292.75              | 2.41                  | -1.54                | -1.85               |
| 11,555.00           | 90.000          | 2.200       | 9,402.60            | 2,387.54   | -33.66     | 2,387.72              | 3.92                  | 1.04                 | 3.78                |
| 11,651.00           | 88.830          | 2.670       | 9,403.58            | 2,483.45   | -29.58     | 2,483.60              | 1.31                  | -1.22                | 0.49                |
| 11,746.00           | 90.190          | 5.580       | 9,404.39            | 2,578.19   | -22.75     | 2,578.28              | 3.38                  | 1.43                 | 3.06                |
| 11,841.00           | 90.250          | 3.980       | 9,404.03            | 2,672.85   | -14.83     | 2,672.89              | 1.69                  | 0.06                 | -1.68               |
| 11,937.00           | 90.250          | 2.750       | 9,403.61            | 2,768.69   | -9.19      | 2,768.68              | 1.28                  | 0.00                 | -1.28               |
| 12,032.00           | 89.940          | 1.170       | 9,403.45            | 2,863.63   | -5.95      | 2,863.60              | 1.69                  | -0.33                | -1.66               |
| 12,128.00           | 89.070          | 0.420       | 9,404.28            | 2,959.81   | -4.61      | 2,959.57              | 1.20                  | -0.91                | -0.78               |
| 12,223.00           | 88.270          | 0.660       | 9,406.49            | 3,054.58   | -3.72      | 3,054.53              | 0.88                  | -0.84                | 0.25                |
| 12,319.00           | 87.900          | 359.930     | 9,409.70            | 3,150.53   | -3.22      | 3,150.47              | 0.85                  | -0.39                | -0.76               |
| 12,414.00           | 91.110          | 3.940       | 9,410.52            | 3,245.44   | -0.02      | 3,245.35              | 5.41                  | 3.38                 | 4.22                |
| 12,510.00           | 89.880          | 3.110       | 9,409.69            | 3,341.25   | 5.89       | 3,341.12              | 1.55                  | -1.28                | -0.86               |
| 12,605.00           | 89.570          | 2.130       | 9,410.14            | 3,436.15   | 10.23      | 3,435.99              | 1.08                  | -0.33                | -1.03               |
| 12,701.00           | 89.820          | 0.870       | 9,410.65            | 3,532.11   | 12.74      | 3,531.93              | 1.34                  | 0.26                 | -1.31               |
| 12,796.00           | 89.070          | 1.320       | 9,411.57            | 3,627.09   | 14.56      | 3,626.89              | 0.92                  | -0.79                | 0.47                |
| 12,891.00           | 87.590          | 358.520     | 9,414.34            | 3,722.04   | 14.42      | 3,721.84              | 3.33                  | -1.56                | -2.95               |
| 12,987.00           | 89.570          | 357.360     | 9,416.72            | 3,817.94   | 10.97      | 3,817.76              | 2.39                  | 2.06                 | -1.21               |
| 13,082.00           | 89.690          | 357.050     | 9,417.34            | 3,912.82   | 6.34       | 3,912.68              | 0.35                  | 0.13                 | -0.33               |
| 13,178.00           | 90.000          | 358.820     | 9,417.60            | 4,008.76   | 2.88       | 4,008.63              | 1.87                  | 0.32                 | 1.84                |
| 13,273.00           | 89.440          | 357.480     | 9,418.06            | 4,103.70   | -0.18      | 4,103.60              | 1.53                  | -0.59                | -1.41               |
| 13,369.00           | 87.900          | 356.280     | 9,420.29            | 4,199.53   | -5.41      | 4,199.46              | 2.03                  | -1.60                | -1.25               |
| 13,464.00           | 88.210          | 356.900     | 9,423.51            | 4,294.31   | -11.05     | 4,294.28              | 0.73                  | 0.33                 | 0.65                |
| 13,559.00           | 90.310          | 358.260     | 9,424.74            | 4,389.21   | -15.06     | 4,389.20              | 2.63                  | 2.21                 | 1.43                |
| 13,655.00           | 88.210          | 357.480     | 9,425.98            | 4,485.13   | -18.63     | 4,485.14              | 2.33                  | -2.19                | -0.81               |
| 13,750.00           | 88.640          | 1.490       | 9,428.59            | 4,580.07   | -19.49     | 4,580.09              | 4.24                  | 0.45                 | 4.22                |
| 13,845.00           | 87.030          | 2.370       | 9,432.18            | 4,674.94   | -16.29     | 4,674.94              | 1.93                  | -1.69                | 0.93                |
| 13,941.00           | 86.350          | 358.820     | 9,437.72            | 4,770.76   | -15.29     | 4,770.75              | 3.76                  | -0.71                | -3.70               |
| 14,036.00           | 87.650          | 359.950     | 9,442.70            | 4,865.62   | -16.31     | 4,865.61              | 1.81                  | 1.37                 | 1.19                |
| 14,131.00           | 89.010          | 359.410     | 9,445.47            | 4,960.58   | -16.84     | 4,960.57              | 1.54                  | 1.43                 | -0.57               |
| 14,227.00           | 88.270          | 358.120     | 9,447.74            | 5,056.52   | -18.91     | 5,056.53              | 1.55                  | -0.77                | -1.34               |
| 14,322.00           | 90.250          | 358.700     | 9,448.97            | 5,151.47   | -21.54     | 5,151.50              | 2.17                  | 2.08                 | 0.61                |
| 14,418.00           | 90.120          | 358.130     | 9,448.66            | 5,247.44   | -24.20     | 5,247.48              | 0.61                  | -0.14                | -0.59               |
| 14,514.00           | 90.560          | 357.160     | 9,448.09            | 5,343.35   | -28.14     | 5,343.42              | 1.11                  | 0.46                 | -1.01               |
| 14,609.00           | 90.370          | 356.810     | 9,447.32            | 5,438.22   | -33.14     | 5,438.32              | 0.42                  | -0.20                | -0.37               |
| 14,704.00           | 90.370          | 358.170     | 9,446.71            | 5,533.12   | -37.30     | 5,533.25              | 1.43                  | 0.00                 | 1.43                |
| 14,800.00           | 90.060          | 358.480     | 9,446.35            | 5,629.08   | -40.11     | 5,629.22              | 0.46                  | -0.32                | 0.32                |
| 14,895.00           | 90.310          | 358.720     | 9,446.04            | 5,724.05   | -42.43     | 5,724.21              | 0.36                  | 0.26                 | 0.25                |
| 14,990.00           | 90.600          | 358.540     | 9,445.12            | 5,819.02   | -44.70     | 5,819.19              | 0.55                  | 0.52                 | -0.19               |
| 15,086.00           | 90.250          | 358.390     | 9,444.24            | 5,914.98   | -47.27     | 5,915.17              | 0.59                  | -0.57                | -0.16               |
| 15,181.00           | 89.440          | 359.290     | 9,444.50            | 6,009.96   | -49.19     | 6,010.16              | 1.27                  | -0.85                | 0.95                |

# Halliburton Company

## Survey Report

**Company:** EOG RESOURCES, INC.  
**Project:** LEA COUNTY, NEW MEXICO  
**Site:** VACA "24" FED. COM  
**Well:** 6H; SEC24 / TWN25S / RGE33E  
**Wellbore:** 6H; SEC24 / TWN25S / RGE33E  
**Design:** 6H ALT - 900600863 Survey

**Local Co-ordinate Reference:** Well 6H; SEC24 / TWN25S / RGE33E  
**TVD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**MD Reference:** WELL @ 3356.40ft (PATTERSON #452)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.21 Single User Db

### Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 15,277.00           | 89.510          | 358.590     | 9,445.38            | 6,105.94   | -50.97     | 6,106.15              | 0.73                  | 0.07                 | -0.73               |
| 15,372.00           | 90.370          | 359.490     | 9,445.48            | 6,200.92   | -52.56     | 6,201.14              | 1.31                  | 0.91                 | 0.95                |
| 15,468.00           | 89.690          | 359.420     | 9,445.43            | 6,296.92   | -53.47     | 6,297.14              | 0.71                  | -0.71                | -0.07               |
| 15,563.00           | 89.750          | 358.410     | 9,445.89            | 6,391.90   | -55.27     | 6,392.13              | 1.07                  | 0.06                 | -1.06               |
| 15,658.00           | 89.690          | 357.470     | 9,446.35            | 6,486.83   | -58.69     | 6,487.09              | 0.99                  | -0.06                | -0.99               |
| 15,754.00           | 89.380          | 357.690     | 9,447.13            | 6,582.75   | -62.74     | 6,583.03              | 0.40                  | -0.32                | 0.23                |
| 15,849.00           | 89.570          | 358.490     | 9,448.00            | 6,677.69   | -65.91     | 6,677.99              | 0.87                  | 0.20                 | 0.84                |
| 15,945.00           | 89.630          | 357.890     | 9,448.67            | 6,773.64   | -68.94     | 6,773.96              | 0.63                  | 0.06                 | -0.62               |
| 16,040.00           | 90.000          | 358.810     | 9,448.98            | 6,868.60   | -71.68     | 6,868.93              | 1.04                  | 0.39                 | 0.97                |
| 16,136.00           | 90.250          | 359.420     | 9,448.77            | 6,964.58   | -73.16     | 6,964.93              | 0.69                  | 0.26                 | 0.64                |
| 16,231.00           | 89.750          | 0.350       | 9,448.77            | 7,059.58   | -73.35     | 7,059.93              | 1.11                  | -0.53                | 0.98                |
| 16,327.00           | 89.810          | 0.830       | 9,449.14            | 7,155.58   | -72.36     | 7,155.91              | 0.50                  | 0.06                 | 0.50                |
| 16,422.00           | 88.890          | 1.640       | 9,450.22            | 7,250.55   | -70.31     | 7,250.86              | 1.29                  | -0.97                | 0.85                |
| 16,517.00           | 88.580          | 1.550       | 9,452.31            | 7,345.49   | -67.67     | 7,345.78              | 0.34                  | -0.33                | -0.09               |
| 16,613.00           | 88.950          | 0.870       | 9,454.38            | 7,441.44   | -65.64     | 7,441.72              | 0.81                  | 0.39                 | -0.71               |
| 16,645.00           | 88.760          | 0.130       | 9,455.02            | 7,473.43   | -65.36     | 7,473.71              | 2.39                  | -0.59                | -2.31               |
| 16,707.00           | 88.760          | 0.130       | 9,456.37            | 7,535.42   | -65.22     | 7,535.69              | 0.00                  | 0.00                 | 0.00                |

Projection to TD

### Design Targets

| Target Name                                                                                                   | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude         | Longitude          |
|---------------------------------------------------------------------------------------------------------------|---------------|--------------|----------|------------|------------|---------------|--------------|------------------|--------------------|
| - hit/miss target                                                                                             | 0.00          | 0.00         | 9,458.00 | 7,538.70   | -53.80     | 411,781.20    | 751,382.90   | 32° 7' 46.1945 N | 103° 31' 16.5913 W |
| - Shape                                                                                                       |               |              |          |            |            |               |              |                  |                    |
| PBHL/TD - actual wellpath misses target center by 12.00ft at 16707.00ft MD (9456.37 TVD, 7535.42 N, -65.22 E) |               |              |          |            |            |               |              |                  |                    |
| - Point                                                                                                       |               |              |          |            |            |               |              |                  |                    |

### Design Annotations

| Measured Depth (ft)                                                            | Vertical Depth (ft) | Local Coordinates | Comment |
|--------------------------------------------------------------------------------|---------------------|-------------------|---------|
| 1,126.00                                                                       | 1,125.95            | -7.32             | 7.22    |
| 16,707.00                                                                      | 9,456.37            | 7,535.42          | -65.22  |
| LAST MWD SURVEY @ 1126.00 MD, 1125.95 TVD, 0.90 INC, -7.32 V. Projection to TD |                     |                   |         |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

# CURRENT WELL SKETCH

| DEPTH<br>(ft) | MARKERS<br>(KB)          | LITHOLOGY                                                                          | OGRID:<br>API: 30-025-50537<br>AFE: 104816<br>SPUD: 7/27/13 @ 20:15 hrs<br>FRR: 8/24/13 @ 20:00 hrs<br>RIG: Patterson #452                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Vaca 24 Fed Com #6H<br>Red Hills Field<br>Lea County, New Mexico | SURF: 50' FSL & 1310' FEL<br>LOC: Sec. 24<br>SURVEY: T-25-S, R-33-E<br>GL: 3329.4'<br>KB: 3354.4'<br>ZERO: 27.0' AGL | HOLE SIZE | MW (ppg) | MUD   | BHST (FF) | LOT (ppg) | EVALUATION |  |  |  |
|---------------|--------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------|----------|-------|-----------|-----------|------------|--|--|--|
| 2,000'        | Rustler - 1055'          |  | <p><b>20" Conductor @ 120'</b></p> <p><b>Surface Casing @ 1,188'</b><br/>13-3/8" 54.5# J-55 BTC<br/>Cement w/ 500 sx Class C + 2.0% CaCl<sub>2</sub> + 0.005 pps Static Free + 0.25 pps Celloflake + 0.005 gps FP-6L + 4.0% Bentonite (13.5 ppg, 1.73 yd), followed by 325 sx Class C + 1.0% CaCl<sub>2</sub> + 0.005 gps FP-6L + 0.005 gps Static Free (14.8 ppg, 1.34 yd). Bump plug and circ 120 sx to surface</p> <p>TOC @ 4,560'</p> <p><b>Intermediate Casing @ 5,086'</b><br/>9-5/8", 40#, J-55, LT&amp;C (0' - 3,950')<br/>9-5/8", 40#, HCK-55, LT&amp;C (3,950' - 5,086')<br/>Cement w/ 900 sx Class C + 2.0% SMS + 10.0% Salt + 1.0% R-3 + 0.25 pps Celloflake + 0.005 pps Static Free + 0.005 gps FP-6L (12.7 ppg, 2.21 yd), followed by 200 sx Class C + 0.60% FL-62 + 0.35% CD-32 + 2.0% Salt + 0.10% R-3 + 0.005 pps Static Free + 0.005 gps FP-6L (14.8 ppg, 1.34 yd). Bump plug w/ 1827 psi and circ 81 sx to surface</p> <p><b>Perforations MD.</b> 16666; 16631; 16596; 16561; 16526; 16506; 16486; 16466; 16446; 16426; 16406; 16386; 16366; 16346; 16326; 16310; 16286; 16266; 16246; 16226; 16206; 16186; 16166; 16146; 16126; 16106; 16086; 16066; 16042; 16026; 16006; 15986; 15966; 15946; 15926; 15906; 15884; 15866; 15842; 15826; 15806; 15786; 15766; 15746; 15726; 15706; 15686; 15666; 15646; 15626; 15606; 15586; 15566; 15546; 15526; 15502; 15486; 15466; 15446; 15426; 15406; 15386; 15366; 15346; 15326; 15306; 15286; 15266; 15240; 15226; 15206; 15186; 15166; 15146; 15126; 15106; 15090; 15066; 15046; 15026; 15006; 14986; 14966; 14946; 14926; 14906; 14886; 14866; 14846; 14826; 14806; 14786; 14766; 14746; 14726; 14666; 14646; 14626; 14606; 14586; 14566; 14546; 14526; 14502; 14486; 14466; 14446; 14426; 14406; 14386; 14366; 14346; 14326; 14306; 14286; 14266; 14246; 14226; 14206; 14186; 14164; 14146; 14126; 14106; 14086; 14066; 14048; 14026; 14006; 13986; 13966; 13946; 13926; 13906; 13886; 13866; 13846; 13826; 13806; 13786; 13766; 13746; 13726; 13706; 13686; 13666; 13646; 13626; 13606; 13586; 13566; 13546; 13526; 13506; 13484; 13466; 13440; 13426; 13406; 13386; 13366; 13346; 13326; 13306; 13286; 13266; 13246; 13226; 13206; 13186; 13166; 13146; 13126; 13106; 13080; 13066; 13046; 13026; 13004; 12986; 12966; 12946; 12926; 12902; 12886; 12866; 12846; 12826; 12806; 12782; 12766; 12746; 12720; 12706; 12686; 12666; 12646; 12626; 12606; 12586; 12570; 12540; 12526; 12506; 12486; 12466; 12446; 12426; 12406; 12384; 12366; 12340; 12326; 12306; 12286; 12266; 12246; 12226; 12206; 12186; 12162; 12146; 12126; 12106; 12086; 12066; 12046; 12026; 12000; 11984; 11966; 11950; 11926; 11906; 11886; 11866; 11846; 11820; 11806; 11786; 11770; 11746; 11726; 11706; 11686; 11666; 11640; 11626; 11606; 11584; 11566; 11546; 11526; 11502; 11486; 11460; 11446; 11426; 11406; 11386; 11366; 11346; 11326; 11306; 11280; 11266; 11246; 11226; 11206; 11186; 11166; 11146; 11126; 11100; 11086; 11064; 11046; 11028; 11006; 10986; 10966; 10946; 10916; 10904; 10886; 10866; 10846; 10826; 10806; 10786; 10768; 10740; 10726; 10706; 10686; 10666; 10646; 10626; 10606; 10586; 10560; 10542; 10526; 10508; 10486; 10466; 10446; 10426; 10406; 10380; 10366; 10346; 10326; 10306; 10284; 10266; 10246; 10226; 10202; 10186; 10166; 10146; 10126; 10106; 10086; 10066; 10046; 10020; 10006; 9986; 9966; 9948; 9926; 9906; 9886; 9866; 9840; 9826; 9806; 9786; 9770; 9746; 9726; 9706; 9686; 9658; 9642; 9626; 9606; 9584; 9566; 9546; 9526; 9506</p> |                                                                  |                                                                                                                      | 17-1/2"   | 8.6      | FW    | 86        | N/A       |            |  |  |  |
| 3,000'        | T/ Salado - 1435'        |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      | 12-1/4"   | 10.0     | Brine |           |           |            |  |  |  |
| 5,000'        | B / Salado - 4920'       |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       |           |           |            |  |  |  |
| 6,000'        | Lamar - 5168'            |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       |           |           |            |  |  |  |
|               | Bell Canyon - 5198'      |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       |           |           |            |  |  |  |
|               | Cherry Canyon - 6210'    |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      | 10.2      |          |       |           |           | NA         |  |  |  |
| 7,000'        |                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       |           |           |            |  |  |  |
|               | Brushy Canyon - 7790'    |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       | 117       |           |            |  |  |  |
| 8,000'        |                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      | 8.4       |          |       |           |           | N/A        |  |  |  |
| 9,000'        | Bone Spring Lime - 9290' |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      | 8-3/4"    |          | WBM   |           |           |            |  |  |  |
| 10,000'       |                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           |          |       |           |           |            |  |  |  |
|               |                          |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                                                                      |           | 9.3      |       |           |           |            |  |  |  |

**KOP @ -8,957'**

**Production Casing @ 16,702' MD, 9.456" TVD**  
5-1/2" 20# HCP-110 NSCC (MJ @ 8807)  
Cement w/ 350 sx Class C + 15 pps BA-90 + 0.005 pps Static Free + 1.0% EC-1 + 0.005 gps FP-6L + 3.0% SMS + 1.0% BA-10A + 4.0% MPA-5 (10.8 ppg, 3.71 yd), followed by 400 sx Class H + 0.005 pps Static Free + 5.0% Salt + 1.0% EC-1 + 0.75% CD-32 + 5 pps LCM-1 + 0.2% FL-52 + 0.15% ASA-301 + 0.005 gps FP-6L + 6.0% Bentonite + 1.6% SMS (11.9 ppg, 2.35 yd), followed by 1900 sx Class H + 0.005 pps Static Free + 2.0% CaCl<sub>2</sub> + 0.05% R-3 + 1.0% EC-1 + 0.7% CD-32 + 0.65% FL-53 + 0.005% FP-6L + 2.0% Bentonite + 0.4% SMS (14.2 ppg, 1.29 yd). Bump plug w/ 1087 psi and over-displace w/ 4 bbls. Did not circ cement to surface

140

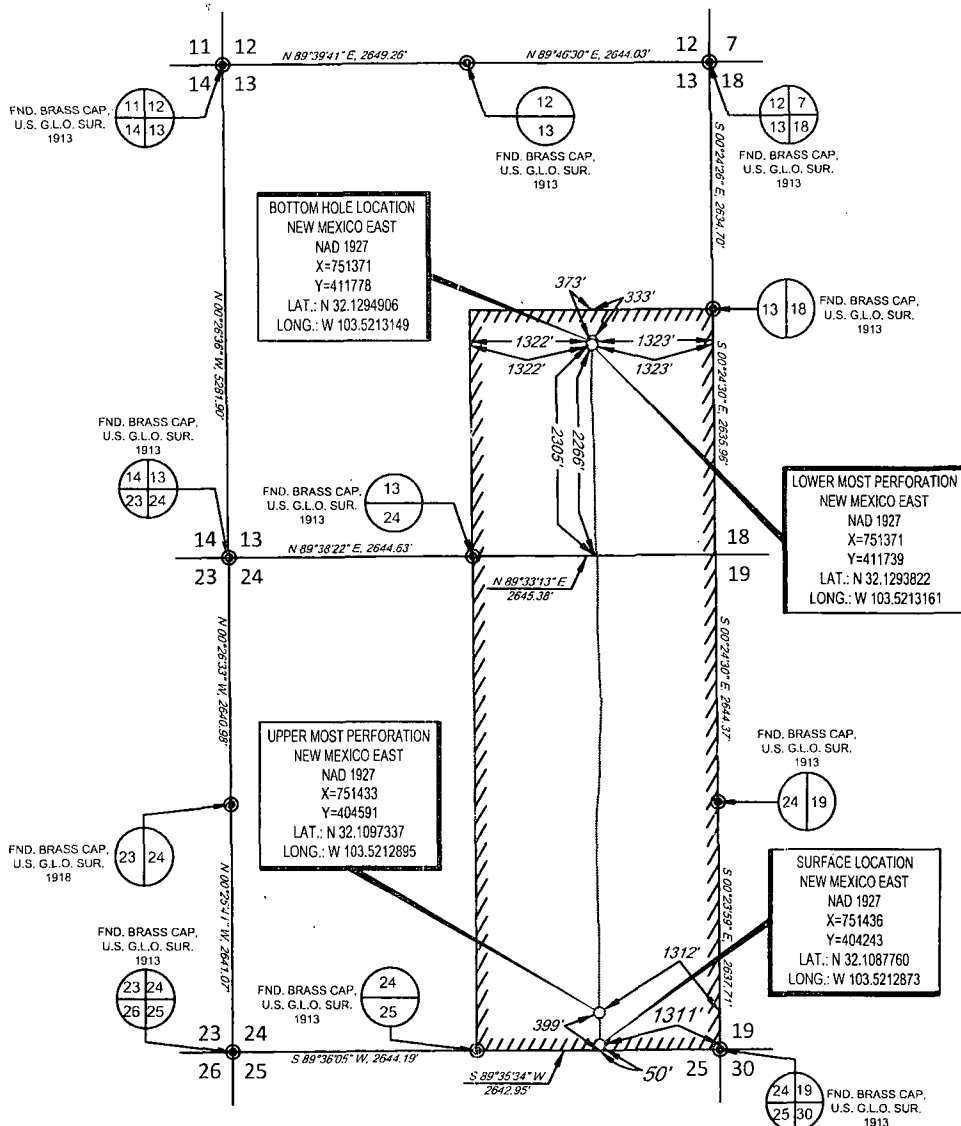
## Directions to Location:

Beginning in Jal, NM at the intersection of State Hwy 18 and State Hwy 128, go west on State Hwy 128 for 15 miles. Turn south, left, on County Road #2, Battle Axe road 11.2 miles. Turn right through cattle guard on lease road 1.5 miles. Road will "Y" and stay left 0.2 miles and location will be on right 200'.

Comp Eng: D. Owusu  
Date: 11/5/2013

SCALE: 1" = 2000'  
0' 1000' 2000'

SECTION 24, TOWNSHIP 25 SOUTH, RANGE 33 EAST, N.M.P.M.  
LEA COUNTY, NEW MEXICO

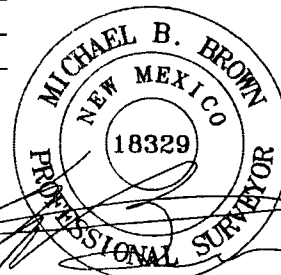


LEASE NAME & WELL NO.: VACA 24 FED COM #6H  
SECTION 24 TWP 25-S RGE 33-E SURVEY N.M.P.M.  
COUNTY LEA STATE NM ELEVATION 3330'  
DESCRIPTION 50' FSL & 1311' FEL



**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY

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Michael Blake Brown, P.S. No. 18329  
NOVEMBER 14, 2013

**eoog resources, inc.**

| VACA 24<br>FED COM #6H<br>AS-COMPLETED | REVISION: |      |
|----------------------------------------|-----------|------|
|                                        | INT       | DATE |
| DATE: 11/14/13                         |           |      |
| FILE: AD_VACA24FEDCOM_6H               |           |      |
| DRAWN BY: S.V.                         |           |      |
| SHEET: 1 OF 1                          |           |      |

NOTES:

1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET, NORTH AMERICAN DATUM 19 27.
3. THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.