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## MWD Survey Certification

Eddy County, NM

Client: EOG Resources

Well Name: Kirk Federal Com #1H

Intrepid Job No: ID2157

API No: 30-015-45660

Start Depth: 385' MD

End Depth: 9,200' MD

Start Date: 3/29/2019

End Date: 4/4/2019

I, Timothy Spann, certify that; I am employed by Intrepid Directional Drilling Specialists. On 3/29/2019 through 4/4/2019, we conducted or supervised the taking of the MWD surveys from a measured depth of 385 feet to a measured depth of 9,200 feet. The data is true, correct, and complete and within the limitation of the tool as set forth by Intrepid Directional Drilling Specialists. I am authorized and qualified to make this report and these surveys were conducted at the request of EOG Resources for the well Kirk Federal Com #1H, API no: 30-015-45660 in Eddy County, NM. I have reviewed this report and find that it conforms to the principals and procedures as set forth by Intrepid Directional Drilling Specialists.

*Tim Spann*

Tim Spann

MWD Coordinator

Intrepid Directional Drilling Specialists



## **EOG Resources - Midland**

**Eddy County, NM (NAD 83 NME)  
(Kirk) Sec12\_T-17-S\_R-30-E  
Kirk Federal Com #1H**

**OWB**

**Design: AWB**

## **Standard Survey Report**

**05 April, 2019**



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | EOG Resources - Midland     | Local Co-ordinate Reference: | Well Kirk Federal Com #1H      |
| Project:  | Eddy County NM (NAD 83 NME) | TVD Reference:               | KB @ 3761.5usft (Trinidad 436) |
| Site:     | (Kirk) Sec12_T-17-S_R-30-E  | MD Reference:                | KB @ 3761.5usft (Trinidad 436) |
| Well:     | Kirk Federal Com #1H        | North Reference:             | Grid                           |
| Wellbore: | OWB                         | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | AWB                         | Database:                    | EDM 10_13                      |

|             |                             |               |                |
|-------------|-----------------------------|---------------|----------------|
| Project:    | Eddy County NM (NAD 83 NME) |               |                |
| Map System: | US State Plane 1983         | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983   |               |                |
| Map Zone:   | New Mexico Eastern Zone     |               |                |

|                       |                            |                   |                   |
|-----------------------|----------------------------|-------------------|-------------------|
| Site:                 | (Kirk) Sec12_T-17-S_R-30-E |                   |                   |
| Site Position:        |                            | Northing:         | 673,435.00 usft   |
| From:                 | Map                        | Easting:          | 664,546.00 usft   |
| Position Uncertainty: | 0.0 usft                   | Slot Radius:      | 13-3/16 "         |
|                       |                            | Latitude:         | 32° 51' 2.353 N   |
|                       |                            | Longitude:        | 103° 55' 55.648 W |
|                       |                            | Grid Convergence: | 0.22 °            |

|                      |                      |          |                     |                 |               |                   |
|----------------------|----------------------|----------|---------------------|-----------------|---------------|-------------------|
| Well                 | Kirk Federal Com #1H |          |                     |                 |               |                   |
| Well Position        | +N/-S                | 0.0 usft | Northing:           | 673,405.00 usft | Latitude:     | 32° 51' 2.056 N   |
|                      | +E/-W                | 0.0 usft | Easting:            | 664,546.00 usft | Longitude:    | 103° 55' 55.649 W |
| Position Uncertainty |                      | 0.0 usft | Wellhead Elevation: | usft            | Ground Level: | 3,745.0 usft      |

|           |     |  |  |
|-----------|-----|--|--|
| Wellbore: | OWB |  |  |
|-----------|-----|--|--|

| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|-----------|------------|-------------|--------------------|------------------|------------------------|
|           | IGRF2015   | 03/25/19    | 6.98               | 60.55            | 48,085.31487716        |

|         |     |  |  |
|---------|-----|--|--|
| Design: | AWB |  |  |
|---------|-----|--|--|

|              |     |               |        |
|--------------|-----|---------------|--------|
| Audit Notes: |     |               |        |
| Version:     | 1.0 | Phase:        | ACTUAL |
|              |     | Tie On Depth: | 0.0    |

| Vertical Section: | Depth From (TVD)<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Direction<br>(°) |
|-------------------|----------------------------|-----------------|-----------------|------------------|
|                   | 0.0                        | 0.0             | 0.0             | 90.36            |

| Survey Program | Date         | 04/05/19           |           |                |
|----------------|--------------|--------------------|-----------|----------------|
| From<br>(usft) | To<br>(usft) | Survey (Wellbore)  | Tool Name | Description    |
| 109.5          | 426.5        | Invictus MWD (OWB) | MWD       | MWD - Standard |
| 473.0          | 9,158.0      | Intrepid MWD (OWB) | MWD       | MWD - Standard |

| Survey | Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
|--------|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
|        | 0.0                         | 0.00               | 0.00           | 0.0                         | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
|        | 109.5                       | 0.50               | 336.81         | 109.5                       | 0.4             | -0.2            | -0.2                          | 0.46                          | 0.46                         | 0.00                        |
|        | 151.5                       | 0.70               | 124.81         | 151.5                       | 0.5             | 0.0             | -0.1                          | 2.75                          | 0.48                         | 352.38                      |
|        | 154.5                       | 0.20               | 233.81         | 154.5                       | 0.4             | 0.0             | 0.0                           | 26.27                         | -16.67                       | 3,633.33                    |
|        | 186.5                       | 0.50               | 261.81         | 186.5                       | 0.4             | -0.2            | -0.2                          | 1.05                          | 0.94                         | 87.50                       |
|        | 216.9                       | 0.50               | 213.81         | 216.9                       | 0.3             | -0.4            | -0.4                          | 1.34                          | 0.00                         | -157.89                     |
|        | 248.9                       | 0.40               | 216.81         | 248.9                       | 0.1             | -0.6            | -0.6                          | 0.32                          | -0.31                        | 9.38                        |
|        | 280.2                       | 0.40               | 140.81         | 280.2                       | -0.1            | -0.6            | -0.6                          | 1.57                          | 0.00                         | -242.81                     |
|        | 310.8                       | 0.70               | 163.81         | 310.8                       | -0.4            | -0.4            | -0.4                          | 1.20                          | 0.98                         | 75.16                       |
|        | 342.4                       | 0.40               | 161.81         | 342.4                       | -0.7            | -0.4            | -0.4                          | 0.95                          | -0.95                        | -6.33                       |

|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | EOG Resources - Midland     | Local Co-ordinate Reference: | Well Kirk Federal Com #1H      |
| Project:  | Eddy County NM (NAD 83 NME) | TVD Reference:               | KB @ 3761.5usft (Trinidad 436) |
| Site:     | (Kirk) Sec12 T-17-S-R-30-E  | MD Reference:                | KB @ 3761.5usft (Trinidad 436) |
| Well:     | Kirk Federal Com #1H        | North Reference:             | Grid                           |
| Wellbore: | OWB                         | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | AWB                         | Database:                    | EDM 10-13                      |

| Survey                |                 |             |                       |              |              |                         |                         |                        |                       |  |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 396.5                 | 0.60            | 190.81      | 396.5                 | -1.1         | -0.4         | -0.3                    | 0.59                    | 0.37                   | 53.60                 |  |
| 426.5                 | 0.80            | 216.81      | 426.5                 | -1.4         | -0.5         | -0.5                    | 1.23                    | 0.67                   | 86.67                 |  |
| TIE ON                |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 473.0                 | 0.62            | 325.45      | 473.0                 | -1.5         | -0.8         | -0.8                    | 2.49                    | -0.39                  | 233.63                |  |
| 661.0                 | 1.93            | 331.16      | 660.9                 | 2.1          | -3.0         | -3.0                    | 0.70                    | 0.70                   | 3.04                  |  |
| 849.0                 | 1.93            | 160.39      | 848.9                 | 1.9          | -3.4         | -3.4                    | 2.05                    | 0.00                   | -90.84                |  |
| 1,039.0               | 2.07            | 141.85      | 1,038.8               | -3.8         | -0.2         | -0.2                    | 0.35                    | 0.07                   | -9.76                 |  |
| 1,227.0               | 1.80            | 123.57      | 1,226.7               | -8.1         | 4.3          | 4.4                     | 0.36                    | -0.14                  | -9.72                 |  |
| 1,416.0               | 1.67            | 130.95      | 1,415.6               | -11.6        | 8.9          | 9.0                     | 0.14                    | -0.07                  | 3.90                  |  |
| 1,605.0               | 1.14            | 118.73      | 1,604.5               | -14.3        | 12.6         | 12.7                    | 0.32                    | -0.28                  | -6.47                 |  |
| 1,795.0               | 0.13            | 153.89      | 1,794.5               | -15.4        | 14.4         | 14.5                    | 0.55                    | -0.53                  | 18.51                 |  |
| 1,983.0               | 0.09            | 26.71       | 1,982.5               | -15.4        | 14.5         | 14.6                    | 0.11                    | -0.02                  | -67.65                |  |
| 2,172.0               | 0.13            | 359.03      | 2,171.5               | -15.1        | 14.6         | 14.7                    | 0.03                    | 0.02                   | -14.65                |  |
| 2,361.0               | 0.18            | 104.93      | 2,360.5               | -14.9        | 14.9         | 15.0                    | 0.13                    | 0.03                   | 56.03                 |  |
| 2,550.0               | 0.75            | 171.29      | 2,549.5               | -16.2        | 15.4         | 15.5                    | 0.37                    | 0.30                   | 35.11                 |  |
| 2,738.0               | 0.40            | 226.40      | 2,737.5               | -17.9        | 15.1         | 15.2                    | 0.33                    | -0.19                  | 29.31                 |  |
| 2,927.0               | 0.48            | 230.44      | 2,926.5               | -18.9        | 14.0         | 14.1                    | 0.05                    | 0.04                   | 2.14                  |  |
| 3,115.0               | 0.92            | 183.86      | 3,114.5               | -20.9        | 13.3         | 13.4                    | 0.36                    | 0.23                   | -24.78                |  |
| 3,304.0               | 0.31            | 214.45      | 3,303.5               | -22.8        | 12.9         | 13.0                    | 0.36                    | -0.32                  | 16.19                 |  |
| 3,455.0               | 1.05            | 197.75      | 3,454.5               | -24.5        | 12.2         | 12.4                    | 0.50                    | 0.49                   | -11.06                |  |
| 3,583.0               | 0.48            | 196.25      | 3,582.5               | -26.1        | 11.7         | 11.9                    | 0.45                    | -0.45                  | -1.17                 |  |
| 3,771.0               | 0.48            | 216.91      | 3,770.4               | -27.5        | 11.0         | 11.2                    | 0.09                    | 0.00                   | 10.99                 |  |
| 3,960.0               | 0.48            | 206.01      | 3,959.4               | -28.8        | 10.2         | 10.4                    | 0.05                    | 0.00                   | -5.77                 |  |
| 4,148.0               | 0.53            | 214.09      | 4,147.4               | -30.3        | 9.4          | 9.6                     | 0.05                    | 0.03                   | 4.30                  |  |
| 4,210.0               | 1.76            | 90.61       | 4,209.4               | -30.5        | 10.2         | 10.3                    | 3.39                    | 1.98                   | -199.16               |  |
| 4,273.0               | 6.95            | 89.64       | 4,272.2               | -30.5        | 14.9         | 15.1                    | 8.24                    | 8.24                   | -1.54                 |  |
| 4,336.0               | 12.35           | 84.81       | 4,334.3               | -29.9        | 25.5         | 25.7                    | 8.66                    | 8.57                   | -7.67                 |  |
| 4,399.0               | 18.29           | 91.14       | 4,395.0               | -29.4        | 42.1         | 42.3                    | 9.78                    | 9.43                   | 10.05                 |  |
| 4,461.0               | 25.01           | 97.81       | 4,452.6               | -31.4        | 64.8         | 65.0                    | 11.53                   | 10.84                  | 10.76                 |  |
| 4,524.0               | 30.77           | 96.50       | 4,508.3               | -35.1        | 94.0         | 94.3                    | 9.19                    | 9.14                   | -2.08                 |  |
| 4,587.0               | 35.52           | 93.68       | 4,561.0               | -38.1        | 128.3        | 128.6                   | 7.93                    | 7.54                   | -4.48                 |  |
| 4,650.0               | 40.79           | 92.63       | 4,610.6               | -40.2        | 167.2        | 167.4                   | 8.43                    | 8.37                   | -1.67                 |  |
| 4,713.0               | 46.95           | 90.78       | 4,656.0               | -41.4        | 210.8        | 211.1                   | 9.99                    | 9.78                   | -2.94                 |  |
| 4,775.0               | 51.65           | 89.03       | 4,696.4               | -41.3        | 257.8        | 258.1                   | 7.88                    | 7.58                   | -2.82                 |  |
| 4,838.0               | 56.26           | 89.64       | 4,733.4               | -40.8        | 308.7        | 309.0                   | 7.36                    | 7.32                   | 0.97                  |  |
| 4,901.0               | 60.00           | 91.66       | 4,766.7               | -41.4        | 362.2        | 362.5                   | 6.53                    | 5.94                   | 3.21                  |  |
| 4,964.0               | 60.75           | 92.10       | 4,797.8               | -43.2        | 416.9        | 417.2                   | 1.34                    | 1.19                   | 0.70                  |  |
| 5,027.0               | 65.98           | 92.54       | 4,826.1               | -45.5        | 473.2        | 473.5                   | 8.33                    | 8.30                   | 0.70                  |  |
| 5,090.0               | 72.31           | 90.96       | 4,848.5               | -47.2        | 532.0        | 532.3                   | 10.32                   | 10.05                  | -2.51                 |  |
| 5,153.0               | 80.00           | 88.76       | 4,863.6               | -47.1        | 593.1        | 593.4                   | 12.67                   | 12.21                  | -3.49                 |  |
| 5,216.0               | 88.22           | 87.53       | 4,870.0               | -45.0        | 655.7        | 656.0                   | 13.19                   | 13.05                  | -1.95                 |  |
| 5,247.0               | 91.30           | 87.71       | 4,870.2               | -43.8        | 686.7        | 686.9                   | 9.95                    | 9.94                   | 0.58                  |  |
| 5,279.0               | 92.22           | 87.88       | 4,869.2               | -42.5        | 718.6        | 718.9                   | 2.92                    | 2.88                   | 0.53                  |  |

|           |                              |                              |                                |
|-----------|------------------------------|------------------------------|--------------------------------|
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| Site:     | (Kirk) Sec12 T-17 S-R-30-E   | MD Reference:                | KB @ 3761.5usft (Trinidad 436) |
| Well:     | Kirk Federal Com #1H         | North Reference:             | Grid                           |
| Wellbore: | OWB                          | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | AWB                          | Database:                    | EDM 10_13                      |

| Survey                               |                 |             |                       |              |              |                         |                         |                        |                       |  |
|--------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|--|
| Measured Depth (usft)                | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |  |
| 5,341.0                              | 93.01           | 88.15       | 4,866.3               | -40.4        | 780.5        | 780.8                   | 1.35                    | 1.27                   | 0.44                  |  |
| 5,404.0                              | 93.63           | 88.41       | 4,862.7               | -38.5        | 843.4        | 843.6                   | 1.07                    | 0.98                   | 0.41                  |  |
| 5,408.8                              | 93.41           | 88.37       | 4,862.4               | -38.4        | 848.2        | 848.4                   | 4.76                    | -4.68                  | -0.84                 |  |
| FTP @ 5408.8' MD, 100' FWL, 529' FSL |                 |             |                       |              |              |                         |                         |                        |                       |  |
| 5,467.0                              | 90.68           | 87.88       | 4,860.3               | -36.4        | 906.3        | 906.5                   | 4.76                    | -4.68                  | -0.84                 |  |
| 5,530.0                              | 90.02           | 87.53       | 4,859.9               | -33.9        | 969.3        | 969.5                   | 1.19                    | -1.05                  | -0.56                 |  |
| 5,592.0                              | 90.29           | 87.88       | 4,859.8               | -31.4        | 1,031.2      | 1,031.4                 | 0.71                    | 0.44                   | 0.56                  |  |
| 5,655.0                              | 89.93           | 89.47       | 4,859.7               | -30.0        | 1,094.2      | 1,094.4                 | 2.59                    | -0.57                  | 2.52                  |  |
| 5,718.0                              | 89.27           | 89.55       | 4,860.1               | -29.4        | 1,157.2      | 1,157.3                 | 1.06                    | -1.05                  | 0.13                  |  |
| 5,781.0                              | 88.18           | 89.38       | 4,861.5               | -28.9        | 1,220.2      | 1,220.3                 | 1.75                    | -1.73                  | -0.27                 |  |
| 5,844.0                              | 88.79           | 89.38       | 4,863.2               | -28.2        | 1,283.1      | 1,283.3                 | 0.97                    | 0.97                   | 0.00                  |  |
| 5,907.0                              | 89.49           | 89.82       | 4,864.1               | -27.7        | 1,346.1      | 1,346.3                 | 1.31                    | 1.11                   | 0.70                  |  |
| 5,970.0                              | 89.80           | 90.17       | 4,864.5               | -27.7        | 1,409.1      | 1,409.3                 | 0.74                    | 0.49                   | 0.56                  |  |
| 6,033.0                              | 88.09           | 89.99       | 4,865.7               | -27.8        | 1,472.1      | 1,472.3                 | 2.73                    | -2.71                  | -0.29                 |  |
| 6,095.0                              | 88.88           | 90.08       | 4,867.3               | -27.9        | 1,534.1      | 1,534.2                 | 1.28                    | 1.27                   | 0.15                  |  |
| 6,158.0                              | 89.54           | 90.08       | 4,868.2               | -27.9        | 1,597.1      | 1,597.2                 | 1.05                    | 1.05                   | 0.00                  |  |
| 6,221.0                              | 90.24           | 90.43       | 4,868.3               | -28.2        | 1,660.1      | 1,660.2                 | 1.24                    | 1.11                   | 0.56                  |  |
| 6,283.0                              | 89.27           | 91.66       | 4,868.5               | -29.4        | 1,722.1      | 1,722.2                 | 2.53                    | -1.56                  | 1.98                  |  |
| 6,346.0                              | 90.33           | 92.10       | 4,868.8               | -31.4        | 1,785.0      | 1,785.2                 | 1.82                    | 1.68                   | 0.70                  |  |
| 6,409.0                              | 90.68           | 92.45       | 4,868.2               | -33.9        | 1,848.0      | 1,848.2                 | 0.79                    | 0.56                   | 0.56                  |  |
| 6,472.0                              | 89.23           | 91.75       | 4,868.3               | -36.2        | 1,910.9      | 1,911.1                 | 2.56                    | -2.30                  | -1.11                 |  |
| 6,535.0                              | 89.54           | 91.49       | 4,868.9               | -38.0        | 1,973.9      | 1,974.1                 | 0.64                    | 0.49                   | -0.41                 |  |
| 6,598.0                              | 88.04           | 90.34       | 4,870.3               | -39.0        | 2,036.9      | 2,037.1                 | 3.00                    | -2.38                  | -1.83                 |  |
| 6,661.0                              | 88.97           | 90.61       | 4,871.9               | -39.5        | 2,099.9      | 2,100.1                 | 1.54                    | 1.48                   | 0.43                  |  |
| 6,723.0                              | 89.85           | 90.87       | 4,872.6               | -40.3        | 2,161.9      | 2,162.1                 | 1.48                    | 1.42                   | 0.42                  |  |
| 6,786.0                              | 90.81           | 90.87       | 4,872.2               | -41.3        | 2,224.8      | 2,225.1                 | 1.52                    | 1.52                   | 0.00                  |  |
| 6,849.0                              | 90.02           | 88.85       | 4,871.7               | -41.1        | 2,287.8      | 2,288.1                 | 3.44                    | -1.25                  | -3.21                 |  |
| 6,912.0                              | 89.80           | 87.36       | 4,871.8               | -39.1        | 2,350.8      | 2,351.0                 | 2.39                    | -0.35                  | -2.37                 |  |
| 6,974.0                              | 90.59           | 87.18       | 4,871.6               | -36.1        | 2,412.7      | 2,412.9                 | 1.31                    | 1.27                   | -0.29                 |  |
| 7,037.0                              | 89.23           | 86.83       | 4,871.7               | -32.8        | 2,475.6      | 2,475.8                 | 2.23                    | -2.16                  | -0.56                 |  |
| 7,100.0                              | 89.93           | 86.92       | 4,872.2               | -29.4        | 2,538.5      | 2,538.7                 | 1.12                    | 1.11                   | 0.14                  |  |
| 7,163.0                              | 90.59           | 87.27       | 4,871.9               | -26.2        | 2,601.5      | 2,601.6                 | 1.19                    | 1.05                   | 0.56                  |  |
| 7,225.0                              | 88.57           | 87.36       | 4,872.3               | -23.3        | 2,663.4      | 2,663.5                 | 3.26                    | -3.26                  | 0.15                  |  |
| 7,287.0                              | 89.36           | 87.44       | 4,873.5               | -20.5        | 2,725.3      | 2,725.4                 | 1.28                    | 1.27                   | 0.13                  |  |
| 7,350.0                              | 90.07           | 87.53       | 4,873.8               | -17.7        | 2,788.3      | 2,788.3                 | 1.14                    | 1.13                   | 0.14                  |  |
| 7,413.0                              | 90.73           | 87.97       | 4,873.3               | -15.2        | 2,851.2      | 2,851.2                 | 1.26                    | 1.05                   | 0.70                  |  |
| 7,476.0                              | 89.41           | 89.03       | 4,873.3               | -13.6        | 2,914.2      | 2,914.2                 | 2.69                    | -2.10                  | 1.68                  |  |
| 7,539.0                              | 89.98           | 89.38       | 4,873.6               | -12.7        | 2,977.2      | 2,977.2                 | 1.06                    | 0.90                   | 0.56                  |  |
| 7,602.0                              | 88.44           | 89.90       | 4,874.5               | -12.3        | 3,040.2      | 3,040.2                 | 2.58                    | -2.44                  | 0.83                  |  |
| 7,665.0                              | 88.84           | 89.64       | 4,876.0               | -12.1        | 3,103.1      | 3,103.2                 | 0.76                    | 0.63                   | -0.41                 |  |
| 7,728.0                              | 89.58           | 89.47       | 4,876.8               | -11.6        | 3,166.1      | 3,166.1                 | 1.21                    | 1.17                   | -0.27                 |  |
| 7,791.0                              | 90.15           | 89.73       | 4,877.0               | -11.1        | 3,229.1      | 3,229.1                 | 0.99                    | 0.90                   | 0.41                  |  |
| 7,853.0                              | 89.41           | 90.96       | 4,877.2               | -11.5        | 3,291.1      | 3,291.1                 | 2.32                    | -1.19                  | 1.98                  |  |
| 7,916.0                              | 90.33           | 91.22       | 4,877.4               | -12.7        | 3,354.1      | 3,354.1                 | 1.52                    | 1.46                   | 0.41                  |  |

|                  |                              |                                     |                                |
|------------------|------------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | EOG Resources - Midland      | <b>Local Co-ordinate Reference:</b> | Well Kirk Federal Com #1H      |
| <b>Project:</b>  | Eddy County, NM (NAD 83 NME) | <b>TVD Reference:</b>               | KB @ 3761.5usft (Trinidad 436) |
| <b>Site:</b>     | (Kirk) Sec12, T-17-S, R-30-E | <b>MD Reference:</b>                | KB @ 3761.5usft (Trinidad 436) |
| <b>Well:</b>     | Kirk Federal Com #1H         | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OWB                          | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | AWB                          | <b>Database:</b>                    | EDM 10.13                      |

| Survey                               |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
|--------------------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|--|
| Measured<br>Depth<br>(usft)          | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |  |
| 7,980.0                              | 90.90              | 91.14          | 4,876.7                     | -14.0           | 3,418.1         | 3,418.1                       | 0.90                          | 0.89                         | -0.13                       |  |
| 8,043.0                              | 91.21              | 91.40          | 4,875.5                     | -15.4           | 3,481.1         | 3,481.1                       | 0.64                          | 0.49                         | 0.41                        |  |
| 8,106.0                              | 89.10              | 91.22          | 4,875.3                     | -16.9           | 3,544.1         | 3,544.1                       | 3.36                          | -3.35                        | -0.29                       |  |
| 8,169.0                              | 87.87              | 91.14          | 4,877.0                     | -18.2           | 3,607.0         | 3,607.1                       | 1.96                          | -1.95                        | -0.13                       |  |
| 8,232.0                              | 88.57              | 91.14          | 4,879.0                     | -19.4           | 3,670.0         | 3,670.0                       | 1.11                          | 1.11                         | 0.00                        |  |
| 8,295.0                              | 88.75              | 90.96          | 4,880.4                     | -20.6           | 3,732.9         | 3,733.0                       | 0.40                          | 0.29                         | -0.29                       |  |
| 8,358.0                              | 87.56              | 91.05          | 4,882.5                     | -21.7           | 3,795.9         | 3,796.0                       | 1.89                          | -1.89                        | 0.14                        |  |
| 8,421.0                              | 88.48              | 91.05          | 4,884.6                     | -22.8           | 3,858.9         | 3,858.9                       | 1.46                          | 1.46                         | 0.00                        |  |
| 8,484.0                              | 89.19              | 90.96          | 4,885.9                     | -23.9           | 3,921.8         | 3,921.9                       | 1.14                          | 1.13                         | -0.14                       |  |
| 8,547.0                              | 86.95              | 89.73          | 4,888.0                     | -24.3           | 3,984.8         | 3,984.9                       | 4.06                          | -3.56                        | -1.95                       |  |
| 8,610.0                              | 87.74              | 89.47          | 4,891.0                     | -23.9           | 4,047.7         | 4,047.8                       | 1.32                          | 1.25                         | -0.41                       |  |
| 8,673.0                              | 88.88              | 89.82          | 4,892.8                     | -23.5           | 4,110.7         | 4,110.8                       | 1.89                          | 1.81                         | 0.56                        |  |
| 8,736.0                              | 89.58              | 90.08          | 4,893.7                     | -23.4           | 4,173.7         | 4,173.7                       | 1.19                          | 1.11                         | 0.41                        |  |
| 8,799.0                              | 87.78              | 89.73          | 4,895.1                     | -23.3           | 4,236.7         | 4,236.7                       | 2.91                          | -2.86                        | -0.56                       |  |
| 8,861.0                              | 88.70              | 89.55          | 4,897.0                     | -22.9           | 4,298.6         | 4,298.7                       | 1.51                          | 1.48                         | -0.29                       |  |
| 8,924.0                              | 89.41              | 89.64          | 4,898.1                     | -22.5           | 4,361.6         | 4,361.7                       | 1.14                          | 1.13                         | 0.14                        |  |
| 8,987.0                              | 87.69              | 89.82          | 4,899.7                     | -22.2           | 4,424.6         | 4,424.7                       | 2.75                          | -2.73                        | 0.29                        |  |
| 9,049.0                              | 88.44              | 89.73          | 4,901.8                     | -21.9           | 4,486.6         | 4,486.6                       | 1.22                          | 1.21                         | -0.15                       |  |
| 9,097.0                              | 89.27              | 89.82          | 4,902.7                     | -21.8           | 4,534.6         | 4,534.6                       | 1.74                          | 1.73                         | 0.19                        |  |
| LAST SVY                             |                    |                |                             |                 |                 |                               |                               |                              |                             |  |
| 9,158.0                              | 89.27              | 89.82          | 4,903.5                     | -21.6           | 4,595.5         | 4,595.6                       | 0.00                          | 0.00                         | 0.00                        |  |
| PTD @ 9158.0' MD, 112' FEL, 536' FSL |                    |                |                             |                 |                 |                               |                               |                              |                             |  |

| Design Targets                                                                                      |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
|-----------------------------------------------------------------------------------------------------|-----------------|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|-----------------|-------------------|
| Target Name                                                                                         | hit/miss/target | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude        | Longitude         |
| VS TARGET (Kirk FC                                                                                  |                 | 0.03             | 269.95          | 4,871.0       | -30.6           | 2,499.9         | 673,374.35         | 667,045.86        | 32° 51' 1.658 N | 103° 55' 26.346 W |
| - actual wellpath misses target center by 1.3usft at 7061.3usft MD (4872.0 TVD, -31.5 N, 2499.9 E)  |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
| - Rectangle (sides W60.0 H1,900.0 D20.0)                                                            |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
| UMP (Kirk FC #1H) v:                                                                                |                 | 0.00             | 0.00            | 4,872.0       | -32.0           | 848.0           | 673,373.00         | 665,394.00        | 32° 51' 1.707 N | 103° 55' 45.710 W |
| - actual wellpath misses target center by 11.5usft at 5408.2usft MD (4862.4 TVD, -38.4 N, 847.6 E)  |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
| - Point                                                                                             |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
| PBHL (Kirk FC #1H) v                                                                                |                 | -0.94            | 269.96          | 4,905.0       | -29.0           | 4,607.0         | 673,376.00         | 669,153.00        | 32° 51' 1.593 N | 103° 55' 1.644 W  |
| - actual wellpath misses target center by 13.7usft at 9158.0usft MD (4903.5 TVD, -21.6 N, 4595.5 E) |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |
| - Rectangle (sides W60.0 H2,107.1 D20.0)                                                            |                 |                  |                 |               |                 |                 |                    |                   |                 |                   |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | EOG Resources - Midland     | <b>Local Co-ordinate Reference:</b> | Well-Kirk Federal Com #1H      |
| <b>Project:</b>  | Eddy County NM (NAD 83 NME) | <b>TVD Reference:</b>               | KB @ 3761.5usft (Trinidad 436) |
| <b>Site:</b>     | (Kirk) Sec12 T-17-S R-30-E  | <b>MD Reference:</b>                | KB @ 3761.5usft (Trinidad 436) |
| <b>Well:</b>     | Kirk Federal Com #1H        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OWB                         | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | AWB                         | <b>Database:</b>                    | EDM 10.13                      |

| Design Annotations          |                             |                   |                 |                                      |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------------------|
| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                              |
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                                      |
| 426.5                       | 426.5                       | -1.4              | -0.5            | TIE ON                               |
| 5,408.8                     | 4,862.4                     | -38.4             | 848.2           | FTP @ 5408.8' MD, 100' FWL, 529' FSL |
| 9,097.0                     | 4,902.7                     | -21.8             | 4,534.6         | LAST SVY                             |
| 9,158.0                     | 4,903.5                     | -21.6             | 4,595.5         | PTD @ 9158.0' MD, 112' FEL, 536' FSL |

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



