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## **EOG Resources - Midland**

Lea County, NM (NAD 83 NME)

Mamba 30 State Com

#501H

OH

Design: OH

## **Final PVA**

07 September, 2018



# Final PVA

|                                                                                                                                                                                             |                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Company:</b> EOG Resources - Midland<br><b>Project:</b> Lea County, NM (NAD 83 NME)<br><b>Site:</b> Mamba 30 State Com<br><b>Well:</b> #501H<br><b>Wellbore:</b> OH<br><b>Design:</b> OH | <b>Local Co-ordinate Reference:</b> Well #501H<br><b>TVD Reference:</b> KB = 25' @ 3578.0usft<br><b>MD Reference:</b> KB = 25' @ 3578.0usft<br><b>North Reference:</b> Grid<br><b>Survey Calculation Method:</b> Minimum Curvature<br><b>Database:</b> EDM 5000.14 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                   |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Project</b> Lea County, NM (NAD 83 NME)                                                                                        |                                     |
| <b>Map System:</b> US State Plane 1983<br><b>Geo Datum:</b> North American Datum 1983<br><b>Map Zone:</b> New Mexico Eastern Zone | <b>System Datum:</b> Mean Sea Level |

|                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site</b> Mamba 30 State Com                                                                                                                                                                                                                |
| <b>Site Position:</b> Northing: 430,807.00 usft Latitude: 32° 10' 56.143 N<br><b>From:</b> Map Easting: 767,053.00 usft Longitude: 103° 36' 13.509 W<br><b>Position Uncertainty:</b> 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.39 " |

|                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Well</b> #501H                                                                                                                                                                                                                                          |
| <b>Well Position</b> +N-S 0.0 usft Northing: 434,971.00 usft Latitude: 32° 11' 37.365 N<br>+E-W 0.0 usft Easting: 766,784.00 usft Longitude: 103° 36' 16.310 W<br><b>Position Uncertainty</b> 0.0 usft Wellhead Elevation: usft Ground Level: 3,551.0 usft |

| <b>Wellbore</b> OH                                                                                                                                                                                                                                                                              |            |             |                 |                 |                     |                     |  |          |           |      |       |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-----------------|-----------------|---------------------|---------------------|--|----------|-----------|------|-------|-----------------|
| <table border="1"> <tr> <th>Magnetics</th> <th>Model Name</th> <th>Sample Date</th> <th>Declination (°)</th> <th>Dip Angle (°)</th> <th>Field Strength (nT)</th> </tr> <tr> <td></td> <td>IGRF2015</td> <td>9/25/2017</td> <td>6.94</td> <td>60.03</td> <td>47,887.57139782</td> </tr> </table> | Magnetics  | Model Name  | Sample Date     | Declination (°) | Dip Angle (°)       | Field Strength (nT) |  | IGRF2015 | 9/25/2017 | 6.94 | 60.03 | 47,887.57139782 |
| Magnetics                                                                                                                                                                                                                                                                                       | Model Name | Sample Date | Declination (°) | Dip Angle (°)   | Field Strength (nT) |                     |  |          |           |      |       |                 |
|                                                                                                                                                                                                                                                                                                 | IGRF2015   | 9/25/2017   | 6.94            | 60.03           | 47,887.57139782     |                     |  |          |           |      |       |                 |

| <b>Design</b> OH                                                                                                                                                                                                                    |                         |             |               |               |     |     |     |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|---------------|---------------|-----|-----|-----|--------|
| <b>Audit Notes:</b><br><b>Version:</b> 1.0 <b>Phase:</b> ACTUAL <b>Tie On Depth:</b> 0.0                                                                                                                                            |                         |             |               |               |     |     |     |        |
| <b>Vertical Section:</b> <table border="1"> <tr> <th>Depth From (TVD) (usft)</th> <th>+N-S (usft)</th> <th>+E-W (usft)</th> <th>Direction (°)</th> </tr> <tr> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>180.33</td> </tr> </table> | Depth From (TVD) (usft) | +N-S (usft) | +E-W (usft)   | Direction (°) | 0.0 | 0.0 | 0.0 | 180.33 |
| Depth From (TVD) (usft)                                                                                                                                                                                                             | +N-S (usft)             | +E-W (usft) | Direction (°) |               |     |     |     |        |
| 0.0                                                                                                                                                                                                                                 | 0.0                     | 0.0         | 180.33        |               |     |     |     |        |



# Final PVA

|           |                             |                              |                       |
|-----------|-----------------------------|------------------------------|-----------------------|
| Company:  | EOG Resources - Midland     | Local Co-ordinate Reference: | Well #501H            |
| Project:  | Lea County, NM (NAD 83 NME) | TVD Reference:               | KB = 25' @ 3576.0usft |
| Site:     | Mamba 30 State Com          | MD Reference:                | KB = 25' @ 3576.0usft |
| Well:     | #501H                       | North Reference:             | Grid                  |
| Wellbore: | OH                          | Survey Calculation Method:   | Minimum Curvature     |
| Design:   | OH                          | Database:                    | EDM 5000.14           |

| Survey Program | Date      | 9/7/2018                             |           |                     |  |
|----------------|-----------|--------------------------------------|-----------|---------------------|--|
| From (usft)    | To (usft) | Survey (Wellbore)                    | Tool Name | Description         |  |
| 195.0          | 4,956.0   | Gordon MWD Cartel 18 22' KB +3' (OH) | MWD       | OWSG MWD - Standard |  |
| 5,044.0        | 16,044.0  | Total MWD #1 (OH)                    | MWD       | OWSG MWD - Standard |  |

| MD (usft) | Inc (") | Azi (grid_north_azim) | TVD (usft) | N/S (usft) | E/W (usft) | DLeg (°/100usft) | Build (°/100usft) | Turn (°/100usft) | High to Plan (usft) | Right to Plan (usft) |
|-----------|---------|-----------------------|------------|------------|------------|------------------|-------------------|------------------|---------------------|----------------------|
| 0.0       | 0.00    | 0.00                  | 0.0        | 0.0        | 0.0        | 0.00             | 0.00              | 0.00             | 0.0                 | 0.0                  |
| 195.0     | 0.03    | 64.17                 | 195.0      | 0.0        | 0.0        | 0.02             | 0.02              | 0.00             | 0.0                 | 0.0                  |
| 369.0     | 0.48    | 241.13                | 369.0      | -0.3       | -0.6       | 0.29             | 0.26              | 101.70           | 0.0                 | 0.0                  |
| 544.0     | 0.80    | 246.90                | 544.0      | -1.1       | -2.3       | 0.19             | 0.18              | 3.30             | 0.0                 | 0.0                  |
| 718.0     | 0.48    | 283.21                | 718.0      | -1.5       | -4.1       | 0.29             | -0.18             | 20.87            | 0.0                 | 0.0                  |
| 893.0     | 0.86    | 277.56                | 893.0      | -1.1       | -6.2       | 0.22             | 0.22              | -3.23            | 0.0                 | 0.0                  |
| 1,067.0   | 1.67    | 247.25                | 1,066.9    | -1.9       | -9.8       | 0.59             | 0.47              | -17.42           | 0.0                 | 0.0                  |
| 1,118.0   | 1.48    | 257.01                | 1,117.9    | -2.4       | -11.1      | 0.64             | -0.37             | 19.14            | 0.0                 | 0.0                  |
| 1,206.0   | 1.78    | 247.54                | 1,205.9    | -3.1       | -13.5      | 0.46             | 0.34              | -10.76           | 0.0                 | 0.0                  |
| 1,380.0   | 3.93    | 355.28                | 1,379.7    | 1.8        | -16.5      | 2.75             | 1.24              | 61.92            | 0.0                 | 0.0                  |
| 1,555.0   | 5.34    | 3.82                  | 1,554.1    | 15.9       | -16.4      | 0.89             | 0.81              | 4.88             | 0.0                 | 0.0                  |
| 1,729.0   | 6.22    | 8.04                  | 1,727.3    | 33.3       | -14.6      | 0.56             | 0.51              | 2.43             | 0.0                 | 0.0                  |
| 1,904.0   | 6.07    | 9.65                  | 1,901.3    | 51.8       | -11.7      | 0.13             | -0.09             | 0.92             | 0.0                 | 0.0                  |
| 2,078.0   | 6.05    | 357.76                | 2,074.3    | 70.0       | -10.5      | 0.72             | -0.01             | -6.83            | 0.0                 | 0.0                  |
| 2,253.0   | 6.27    | 357.35                | 2,248.3    | 88.8       | -11.3      | 0.13             | 0.13              | -0.23            | 0.0                 | 0.0                  |
| 2,427.0   | 5.59    | 353.80                | 2,421.3    | 106.7      | -12.7      | 0.44             | -0.39             | -2.04            | 0.0                 | 0.0                  |
| 2,601.0   | 7.79    | 2.00                  | 2,594.2    | 126.9      | -13.2      | 1.38             | 1.26              | 4.71             | 0.0                 | 0.0                  |
| 2,776.0   | 6.97    | 0.71                  | 2,767.7    | 149.4      | -12.6      | 0.48             | -0.47             | -0.74            | 0.0                 | 0.0                  |
| 2,950.0   | 6.12    | 355.34                | 2,940.6    | 169.2      | -13.2      | 0.60             | -0.49             | -3.09            | 0.0                 | 0.0                  |
| 3,125.0   | 6.03    | 354.33                | 3,114.6    | 187.6      | -14.9      | 0.08             | -0.05             | -0.58            | 0.0                 | 0.0                  |
| 3,299.0   | 5.29    | 0.10                  | 3,287.7    | 204.8      | -15.8      | 0.54             | -0.43             | 3.32             | 0.0                 | 0.0                  |



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| Project:  | Lea County, NM (NAD 83 NME) | TVD Reference:               | KB = 25' @ 3576.0usft |
| Site:     | Mamba 30 State Corn         | MD Reference:                | KB = 25' @ 3576.0usft |
| Well:     | #501H                       | North Reference:             | Grid                  |
| Wellbore: | OH                          | Survey Calculation Method:   | Minimum Curvature     |
| Design:   | OH                          | Database:                    | EDM 5000.14           |

| Survey                           |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
|----------------------------------|------------|--------------------------|---------------|---------------|---------------|---------------------|----------------------|---------------------|------------------------|-------------------------|--|
| MD<br>(usft)                     | Inc<br>(") | Azi<br>(grid_north_azim) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>("/100usft) | Build<br>("/100usft) | Turn<br>("/100usft) | High to Plan<br>(usft) | Right to Plan<br>(usft) |  |
| 3,474.0                          | 7.10       | 3.46                     | 3,461.7       | 223.6         | -15.1         | 1.05                | 1.03                 | 1.92                | 0.0                    | 0.0                     |  |
| 3,648.0                          | 7.46       | 1.81                     | 3,634.3       | 245.6         | -14.1         | 0.24                | 0.21                 | -0.95               | 0.0                    | 0.0                     |  |
| 3,823.0                          | 7.36       | 2.09                     | 3,807.8       | 268.2         | -13.4         | 0.06                | -0.06                | 0.16                | 0.0                    | 0.0                     |  |
| 3,997.0                          | 6.04       | 359.37                   | 3,980.6       | 288.5         | -13.1         | 0.78                | -0.76                | -1.56               | 0.0                    | 0.0                     |  |
| 4,171.0                          | 6.42       | 353.46                   | 4,153.6       | 307.3         | -14.3         | 0.43                | 0.22                 | -3.40               | 0.0                    | 0.0                     |  |
| 4,346.0                          | 5.78       | 355.09                   | 4,327.6       | 325.8         | -16.1         | 0.38                | -0.37                | 0.93                | 0.0                    | 0.0                     |  |
| 4,520.0                          | 5.56       | 0.62                     | 4,500.8       | 343.0         | -16.8         | 0.34                | -0.13                | 3.18                | 0.0                    | 0.0                     |  |
| 4,695.0                          | 4.65       | 359.09                   | 4,675.1       | 358.5         | -16.8         | 0.53                | -0.52                | -0.87               | 0.0                    | 0.0                     |  |
| 4,869.0                          | 6.22       | 359.68                   | 4,848.3       | 375.0         | -17.0         | 0.90                | 0.90                 | 0.34                | 0.0                    | 0.0                     |  |
| 4,956.0                          | 8.68       | 353.16                   | 4,934.6       | 386.3         | -17.8         | 2.99                | 2.83                 | -7.49               | 0.0                    | 0.0                     |  |
| 5,044.0                          | 8.90       | 354.40                   | 5,021.5       | 399.6         | -19.2         | 0.33                | 0.25                 | 1.41                | -0.2                   | -0.1                    |  |
| 5,234.0                          | 8.00       | 351.40                   | 5,209.5       | 427.3         | -22.7         | 0.53                | -0.47                | -1.58               | 1.5                    | -0.1                    |  |
| 5,423.0                          | 9.90       | 359.70                   | 5,396.2       | 456.6         | -24.7         | 1.21                | 1.01                 | 4.39                | 1.6                    | -1.9                    |  |
| 5,612.0                          | 9.90       | 355.00                   | 5,582.4       | 489.0         | -26.2         | 0.43                | 0.00                 | -2.49               | -1.2                   | -4.2                    |  |
| 5,801.0                          | 9.80       | 352.60                   | 5,768.6       | 521.1         | -29.7         | 0.22                | -0.05                | -1.27               | -3.9                   | -4.7                    |  |
| 5,990.0                          | 8.90       | 349.10                   | 5,955.1       | 551.5         | -34.5         | 0.56                | -0.48                | -1.85               | -4.8                   | -3.9                    |  |
| 6,179.0                          | 8.50       | 346.50                   | 6,141.9       | 579.4         | -40.6         | 0.30                | -0.21                | -1.38               | -3.8                   | -1.5                    |  |
| 6,368.0                          | 9.90       | 352.60                   | 6,328.5       | 609.1         | -45.9         | 0.90                | 0.74                 | 3.23                | -4.5                   | 0.6                     |  |
| 6,558.0                          | 9.80       | 351.90                   | 6,515.7       | 641.3         | -50.3         | 0.08                | -0.05                | -0.37               | -7.4                   | 0.9                     |  |
| 6,747.0                          | 8.90       | 347.50                   | 6,702.1       | 671.5         | -55.7         | 0.61                | -0.48                | -2.33               | -8.7                   | 1.9                     |  |
| 6,936.0                          | 7.90       | 344.10                   | 6,889.1       | 698.3         | -62.4         | 0.59                | -0.53                | -1.80               | -7.1                   | 5.0                     |  |
| 7,124.0                          | 6.90       | 345.90                   | 7,075.5       | 721.6         | -68.7         | 0.55                | -0.53                | 0.96                | -2.1                   | 9.2                     |  |
| 7,313.0                          | 6.10       | 341.00                   | 7,263.3       | 742.1         | -74.8         | 0.51                | -0.42                | -2.59               | -3.4                   | 12.5                    |  |
| 7,502.0                          | 2.70       | 321.20                   | 7,451.8       | 755.1         | -80.8         | 1.94                | -1.80                | -10.48              | -13.8                  | 11.8                    |  |
| 7,541.8                          | 2.18       | 315.75                   | 7,491.5       | 756.4         | -81.9         | 1.43                | -1.31                | -13.70              | -16.4                  | 10.5                    |  |
| Brushy Top(Mamba 30 State #501H) |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
| 7,691.0                          | 1.00       | 241.80                   | 7,640.7       | 757.8         | -85.1         | 1.43                | -0.79                | -49.56              | -16.7                  | -15.6                   |  |



# Final PVA

|                  |                             |                                     |                       |
|------------------|-----------------------------|-------------------------------------|-----------------------|
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| <b>Project:</b>  | Lea County, NM (NAD 83 NME) | <b>TVD Reference:</b>               | KB = 25' @ 3576.0usft |
| <b>Site:</b>     | Mamba 30 State Com          | <b>MD Reference:</b>                | KB = 25' @ 3576.0usft |
| <b>Well:</b>     | #501H                       | <b>North Reference:</b>             | Grid                  |
| <b>Wellbore:</b> | OH                          | <b>Survey Calculation Method:</b>   | Minimum Curvature     |
| <b>Design:</b>   | OH                          | <b>Database:</b>                    | EDM 5000.14           |

| Survey                                                                |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
|-----------------------------------------------------------------------|------------|--------------------------|---------------|---------------|---------------|---------------------|----------------------|---------------------|------------------------|-------------------------|--|
| MD<br>(usft)                                                          | Inc<br>(") | Azi<br>(grid_north_azim) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>("/100usft) | Build<br>("/100usft) | Turn<br>("/100usft) | High to Plan<br>(usft) | Right to Plan<br>(usft) |  |
| 7,880.0                                                               | 1.20       | 150.50                   | 7,829.6       | 755.3         | -85.6         | 0.84                | 0.11                 | -48.31              | 14.0                   | -18.0                   |  |
| 8,068.0                                                               | 1.50       | 144.10                   | 8,017.6       | 751.6         | -83.1         | 0.18                | 0.16                 | -3.40               | 11.5                   | -16.6                   |  |
| 8,257.0                                                               | 1.30       | 148.10                   | 8,206.5       | 747.8         | -80.6         | 0.12                | -0.11                | 2.12                | 5.7                    | -17.1                   |  |
| 8,446.0                                                               | 0.50       | 104.70                   | 8,395.5       | 745.7         | -78.6         | 0.53                | -0.42                | -22.96              | 13.5                   | -10.0                   |  |
| 8,636.0                                                               | 0.50       | 105.30                   | 8,585.5       | 745.3         | -77.0         | 0.00                | 0.00                 | 0.32                | 11.8                   | -10.1                   |  |
| 8,825.0                                                               | 0.30       | 257.00                   | 8,774.5       | 745.0         | -76.7         | 0.41                | -0.11                | 80.26               | -14.9                  | 3.7                     |  |
| 9,013.0                                                               | 0.80       | 237.40                   | 8,962.5       | 744.2         | -78.3         | 0.28                | 0.27                 | -10.43              | -17.1                  | -1.6                    |  |
| 9,202.0                                                               | 0.20       | 325.60                   | 9,151.5       | 743.7         | -79.6         | 0.43                | -0.32                | 46.67               | -2.6                   | 18.4                    |  |
| 9,391.0                                                               | 0.80       | 92.30                    | 9,340.5       | 743.9         | -78.5         | 0.49                | 0.32                 | 67.04               | 15.1                   | -8.7                    |  |
| 9,580.0                                                               | 0.30       | 300.50                   | 9,529.5       | 744.1         | -77.6         | 0.57                | -0.26                | -80.32              | -8.6                   | 14.2                    |  |
| 9,769.0                                                               | 0.90       | 269.30                   | 9,718.5       | 744.4         | -79.5         | 0.35                | 0.32                 | -16.51              | -16.6                  | 7.4                     |  |
| 9,958.0                                                               | 0.50       | 199.60                   | 9,907.5       | 743.6         | -81.2         | 0.46                | -0.21                | -36.88              | -14.0                  | -14.4                   |  |
| 10,147.0                                                              | 0.80       | 50.10                    | 10,096.5      | 743.7         | -80.5         | 0.66                | 0.16                 | -79.10              | 18.8                   | 4.8                     |  |
| 10,336.0                                                              | 0.70       | 26.90                    | 10,285.4      | 745.5         | -79.0         | 0.17                | -0.05                | -12.28              | 13.0                   | 11.3                    |  |
| 10,629.0                                                              | 2.90       | 158.60                   | 10,578.3      | 740.2         | -75.5         | 1.16                | 0.75                 | 44.95               | -6.4                   | -15.9                   |  |
| 10,724.0                                                              | 13.20      | 170.30                   | 10,672.3      | 727.3         | -72.7         | 10.92               | 10.84                | 12.32               | -17.0                  | -12.8                   |  |
| 10,771.0                                                              | 19.00      | 170.60                   | 10,717.4      | 714.4         | -70.6         | 12.34               | 12.34                | 0.64                | -21.6                  | -11.3                   |  |
| 10,808.2                                                              | 22.84      | 177.50                   | 10,752.1      | 701.2         | -69.3         | 12.25               | 10.32                | 18.55               | -26.5                  | -7.6                    |  |
| HL Crossing, MD:10808.2, TVD:10752.1, N/S:701.2, E/W:-69.3, INC:22.84 |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
| 10,819.0                                                              | 24.00      | 179.10                   | 10,762.1      | 696.9         | -69.2         | 12.25               | 10.74                | 14.82               | -27.8                  | -8.8                    |  |
| 10,866.0                                                              | 28.20      | 181.60                   | 10,804.3      | 676.3         | -69.3         | 9.24                | 8.94                 | 5.32                | -32.5                  | -5.9                    |  |
| 10,913.0                                                              | 31.60      | 179.00                   | 10,845.0      | 652.8         | -69.4         | 7.74                | 7.23                 | -5.53               | -35.7                  | -7.5                    |  |
| 10,960.0                                                              | 34.20      | 175.90                   | 10,884.5      | 627.3         | -68.3         | 6.59                | 5.53                 | -6.60               | -37.3                  | -8.2                    |  |
| 11,007.0                                                              | 38.50      | 174.90                   | 10,922.3      | 599.6         | -66.0         | 9.24                | 9.15                 | -2.13               | -37.8                  | -8.6                    |  |
| 11,102.0                                                              | 51.70      | 176.40                   | 10,989.2      | 532.6         | -61.0         | 13.94               | 13.89                | 1.58                | -41.2                  | -1.2                    |  |
| FTP (Mamba 30 State #501H)                                            |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
| 11,149.0                                                              | 58.80      | 177.60                   | 11,016.0      | 494.1         | -59.0         | 15.25               | 15.11                | 2.55                | -44.8                  | 1.2                     |  |



Final PVA

|                  |                             |                                     |                       |
|------------------|-----------------------------|-------------------------------------|-----------------------|
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| <b>Site:</b>     | Mamba 30 State Com          | <b>MD Reference:</b>                | KB = 25' @ 3576.0usft |
| <b>Well:</b>     | #501H                       | <b>North Reference:</b>             | Grid                  |
| <b>Wellbore:</b> | OH                          | <b>Survey Calculation Method:</b>   | Minimum Curvature     |
| <b>Design:</b>   | OH                          | <b>Database:</b>                    | EDM 5000.14           |

| Survey       |            |                          |               |               |               |                     |                      |                     |                        |                         |
|--------------|------------|--------------------------|---------------|---------------|---------------|---------------------|----------------------|---------------------|------------------------|-------------------------|
| MD<br>(usft) | Inc<br>(") | Azi<br>(grid_north_azim) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>("/100usft) | Build<br>("/100usft) | Turn<br>("/100usft) | High to Plan<br>(usft) | Right to Plan<br>(usft) |
| 11,196.0     | 62.20      | 179.20                   | 11,039.1      | 453.2         | -57.9         | 7.82                | 7.23                 | 3.40                | -48.5                  | 2.7                     |
| 11,243.0     | 64.30      | 180.20                   | 11,060.3      | 411.2         | -57.7         | 4.86                | 4.47                 | 2.13                | -50.3                  | 3.1                     |
| 11,290.0     | 65.80      | 180.20                   | 11,080.1      | 368.6         | -57.8         | 3.19                | 3.19                 | 0.00                | -49.3                  | 2.5                     |
| 11,337.0     | 70.80      | 180.50                   | 11,097.5      | 325.0         | -58.1         | 10.65               | 10.64                | 0.64                | -46.8                  | 2.0                     |
| 11,385.0     | 70.80      | 180.50                   | 11,113.3      | 279.6         | -58.5         | 0.00                | 0.00                 | 0.00                | -42.1                  | 1.2                     |
| 11,432.0     | 72.80      | 180.80                   | 11,127.9      | 235.0         | -59.0         | 4.30                | 4.26                 | 0.64                | -34.1                  | 0.3                     |
| 11,480.0     | 75.30      | 180.80                   | 11,141.1      | 188.9         | -59.6         | 5.21                | 5.21                 | 0.00                | -23.7                  | -0.8                    |
| 11,527.0     | 80.60      | 178.80                   | 11,150.9      | 142.9         | -59.5         | 12.02               | 11.28                | -4.26               | -13.9                  | -1.0                    |
| 11,574.0     | 85.90      | 178.60                   | 11,156.5      | 96.3          | -58.4         | 11.28               | 11.28                | -0.43               | -8.2                   | -0.3                    |
| 11,606.0     | 88.00      | 179.70                   | 11,158.2      | 64.3          | -57.9         | 7.41                | 6.56                 | 3.44                | -6.4                   | 0.0                     |
| 11,672.0     | 89.20      | 179.60                   | 11,159.8      | -1.7          | -57.5         | 1.82                | 1.82                 | -0.15               | -4.5                   | -0.1                    |
| 11,766.0     | 89.10      | 179.70                   | 11,161.2      | -95.6         | -57.0         | 0.15                | -0.11                | 0.11                | -2.8                   | -0.2                    |
| 11,860.0     | 88.90      | 179.40                   | 11,162.8      | -189.6        | -56.2         | 0.38                | -0.21                | -0.32               | -0.8                   | -0.2                    |
| 11,955.0     | 90.10      | 179.50                   | 11,163.6      | -284.6        | -55.3         | 1.27                | 1.26                 | 0.11                | 0.4                    | 0.0                     |
| 12,049.0     | 91.50      | 179.60                   | 11,162.3      | -378.6        | -54.6         | 1.49                | 1.49                 | 0.11                | -0.6                   | 0.1                     |
| 12,143.0     | 90.70      | 179.30                   | 11,160.5      | -472.6        | -53.7         | 0.91                | -0.85                | -0.32               | -2.0                   | 0.3                     |
| 12,237.0     | 92.30      | 179.80                   | 11,158.1      | -566.5        | -52.9         | 1.78                | 1.70                 | 0.53                | -4.1                   | 0.3                     |
| 12,332.0     | 91.90      | 179.40                   | 11,154.6      | -661.5        | -52.3         | 0.60                | -0.42                | -0.42               | -7.2                   | 0.3                     |
| 12,426.0     | 91.90      | 179.20                   | 11,151.5      | -755.4        | -51.1         | 0.21                | 0.00                 | -0.21               | -10.0                  | 0.7                     |
| 12,520.0     | 91.80      | 179.00                   | 11,148.4      | -849.4        | -49.6         | 0.24                | -0.11                | -0.21               | -12.7                  | 1.5                     |
| 12,614.0     | 89.90      | 180.00                   | 11,147.0      | -943.3        | -48.8         | 2.28                | -2.02                | 1.06                | -13.7                  | 1.6                     |
| 12,708.0     | 89.90      | 180.00                   | 11,147.2      | -1,037.3      | -48.8         | 0.00                | 0.00                 | 0.00                | -13.2                  | 0.9                     |
| 12,803.0     | 89.60      | 179.30                   | 11,147.6      | -1,132.3      | -48.2         | 0.80                | -0.32                | -0.74               | -12.5                  | 0.8                     |
| 12,897.0     | 88.60      | 179.30                   | 11,149.1      | -1,226.3      | -47.1         | 1.06                | -1.06                | 0.00                | -10.6                  | 1.3                     |
| 12,992.0     | 90.40      | 179.60                   | 11,149.9      | -1,321.3      | -46.2         | 1.92                | 1.89                 | 0.32                | -9.5                   | 1.5                     |
| 13,086.0     | 89.40      | 179.60                   | 11,150.1      | -1,415.3      | -45.5         | 1.06                | -1.06                | 0.00                | -8.9                   | 1.4                     |
| 13,180.0     | 90.60      | 179.40                   | 11,150.1      | -1,509.3      | -44.7         | 1.29                | 1.28                 | -0.21               | -8.6                   | 1.6                     |



Final PVA

|           |                             |                              |                       |
|-----------|-----------------------------|------------------------------|-----------------------|
| Company:  | EOG Resources - Midland     | Local Co-ordinate Reference: | Well #501H            |
| Project:  | Lea County, NM (NAD 83 NME) | TVD Reference:               | KB = 25' @ 3576.0usft |
| Site:     | Mamba 30 State Com          | MD Reference:                | KB = 25' @ 3576.0usft |
| Well:     | #501H                       | North Reference:             | Grid                  |
| Wellbore: | OH                          | Survey Calculation Method:   | Minimum Curvature     |
| Design:   | OH                          | Database:                    | EDM 5000.14           |

| Survey       |            |                          |               |               |               |                     |                      |                     |                        |                         |      |
|--------------|------------|--------------------------|---------------|---------------|---------------|---------------------|----------------------|---------------------|------------------------|-------------------------|------|
| MD<br>(usft) | Inc<br>(°) | Azi<br>(grid_north_azim) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>(°/100usft) | Build<br>(°/100usft) | Turn<br>(°/100usft) | High to Plan<br>(usft) | Right to Plan<br>(usft) |      |
| 13,274.0     | 90.60      | 180.10                   | 11,149.1      | -1,603.3      | -44.3         | 0.74                | 0.00                 | 0.74                | -9.2                   |                         | 1.3  |
| 13,369.0     | 90.50      | 180.00                   | 11,148.2      | -1,698.3      | -44.4         | 0.15                | -0.11                | -0.11               | -9.8                   |                         | 0.5  |
| 13,464.0     | 89.80      | 179.60                   | 11,147.9      | -1,793.3      | -44.0         | 0.85                | -0.74                | -0.42               | -9.7                   |                         | 0.1  |
| 13,558.0     | 89.40      | 179.30                   | 11,148.6      | -1,887.3      | -43.1         | 0.53                | -0.43                | -0.32               | -8.7                   |                         | 0.3  |
| 13,653.0     | 88.60      | 179.00                   | 11,150.3      | -1,982.2      | -41.7         | 0.80                | -0.84                | -0.32               | -6.7                   |                         | 1.0  |
| 13,748.0     | 89.30      | 179.80                   | 11,152.0      | -2,077.2      | -40.7         | 1.12                | 0.74                 | 0.84                | -4.6                   |                         | 1.3  |
| 13,842.0     | 89.60      | 179.50                   | 11,152.9      | -2,171.2      | -40.2         | 0.45                | 0.32                 | -0.32               | -3.3                   |                         | 1.2  |
| 13,936.0     | 90.00      | 179.60                   | 11,153.2      | -2,265.2      | -39.4         | 0.44                | 0.43                 | 0.11                | -2.6                   |                         | 1.2  |
| 14,029.0     | 90.60      | 179.10                   | 11,152.7      | -2,358.2      | -38.4         | 0.84                | 0.65                 | -0.54               | -2.8                   |                         | 1.6  |
| 14,124.0     | 89.70      | 179.30                   | 11,152.5      | -2,453.2      | -37.0         | 0.97                | -0.95                | 0.21                | -2.7                   |                         | 2.2  |
| 14,218.0     | 89.60      | 179.90                   | 11,153.1      | -2,547.2      | -36.4         | 0.65                | -0.11                | 0.64                | -1.7                   |                         | 2.2  |
| 14,313.0     | 91.80      | 180.30                   | 11,151.9      | -2,642.2      | -36.6         | 2.35                | 2.32                 | 0.42                | -2.6                   |                         | 1.3  |
| 14,407.0     | 92.50      | 180.20                   | 11,148.4      | -2,736.1      | -37.0         | 0.75                | 0.74                 | -0.11               | -5.7                   |                         | 0.2  |
| 14,502.0     | 90.60      | 179.40                   | 11,145.8      | -2,831.1      | -36.6         | 2.17                | -2.00                | -0.84               | -7.9                   |                         | -0.2 |
| 14,596.0     | 90.00      | 179.70                   | 11,145.3      | -2,925.1      | -35.9         | 0.71                | -0.64                | 0.32                | -8.1                   |                         | -0.1 |
| 14,691.0     | 88.50      | 179.90                   | 11,146.6      | -3,020.1      | -35.6         | 1.59                | -1.58                | 0.21                | -6.5                   |                         | -0.5 |
| 14,785.0     | 88.00      | 179.30                   | 11,149.4      | -3,114.0      | -34.9         | 0.83                | -0.53                | -0.64               | -3.3                   |                         | -0.5 |
| 14,879.0     | 88.10      | 179.30                   | 11,152.6      | -3,207.9      | -33.8         | 0.11                | 0.11                 | 0.00                | 0.3                    |                         | -0.1 |
| 14,973.0     | 89.10      | 179.40                   | 11,154.9      | -3,301.9      | -32.7         | 1.07                | 1.06                 | 0.11                | 2.9                    |                         | 0.3  |
| 15,068.0     | 90.30      | 180.00                   | 11,155.4      | -3,394.9      | -32.2         | 1.44                | 1.29                 | 0.65                | 3.8                    |                         | 0.1  |
| 15,160.0     | 90.10      | 179.70                   | 11,155.1      | -3,488.9      | -32.0         | 0.38                | -0.21                | -0.32               | 3.8                    |                         | -0.4 |
| 15,255.0     | 89.70      | 179.10                   | 11,155.3      | -3,583.9      | -31.0         | 0.76                | -0.42                | -0.63               | 4.3                    |                         | -0.1 |
| 15,349.0     | 90.20      | 179.80                   | 11,155.3      | -3,677.9      | -30.1         | 0.92                | 0.53                 | 0.74                | 4.7                    |                         | 0.1  |
| 15,443.0     | 90.10      | 179.60                   | 11,155.1      | -3,771.9      | -29.6         | 0.24                | -0.11                | -0.21               | 4.8                    |                         | -0.1 |
| 15,537.0     | 89.30      | 179.00                   | 11,155.6      | -3,865.9      | -28.4         | 1.06                | -0.85                | -0.64               | 5.7                    |                         | 0.4  |
| 15,631.0     | 90.80      | 178.60                   | 11,155.5      | -3,959.9      | -26.5         | 1.65                | 1.60                 | -0.43               | 5.9                    |                         | 1.7  |
| 15,725.0     | 89.70      | 178.20                   | 11,155.1      | -4,053.8      | -23.8         | 1.25                | -1.17                | -0.43               | 5.9                    |                         | 3.6  |



# Final PVA

|                  |                             |                                     |                       |
|------------------|-----------------------------|-------------------------------------|-----------------------|
| <b>Company:</b>  | EOG Resources - Midland     | <b>Local Co-ordinate Reference:</b> | Well #501H            |
| <b>Project:</b>  | Lea County, NM (NAD 83 NME) | <b>TVD Reference:</b>               | KB = 25' @ 3576.0usft |
| <b>Site:</b>     | Mamba 30 State Com          | <b>MD Reference:</b>                | KB = 25' @ 3576.0usft |
| <b>Well:</b>     | #501H                       | <b>North Reference:</b>             | Grid                  |
| <b>Wellbore:</b> | OH                          | <b>Survey Calculation Method:</b>   | Minimum Curvature     |
| <b>Design:</b>   | OH                          | <b>Database:</b>                    | EDM 5000.14           |

| Survey                                                              |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
|---------------------------------------------------------------------|------------|--------------------------|---------------|---------------|---------------|---------------------|----------------------|---------------------|------------------------|-------------------------|--|
| MD<br>(usft)                                                        | Inc<br>(°) | Azi<br>(grid_north_azim) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>(°/100usft) | Build<br>(°/100usft) | Turn<br>(°/100usft) | High to Plan<br>(usft) | Right to Plan<br>(usft) |  |
| 15,819.0                                                            | 89.50      | 177.90                   | 11,155.7      | -4,147.8      | -20.6         | 0.38                | -0.21                | -0.32               | 6.9                    | 6.1                     |  |
| 15,914.0                                                            | 90.40      | 177.50                   | 11,155.8      | -4,242.7      | -16.8         | 1.04                | 0.95                 | -0.42               | 7.3                    | 9.2                     |  |
| 15,993.0                                                            | 90.30      | 177.50                   | 11,155.3      | -4,321.6      | -13.4         | 0.13                | -0.13                | 0.00                | 7.1                    | 12.1                    |  |
| Final MWD Survey (MD=15993.0')                                      |            |                          |               |               |               |                     |                      |                     |                        |                         |  |
| 16,044.0                                                            | 90.30      | 177.50                   | 11,155.1      | -4,372.6      | -11.1         | 0.00                | 0.00                 | 0.00                | 7.1                    | 13.9                    |  |
| Final Projection to Bit (MD=16044.0') - PBHL (Mamba 30 State #501H) |            |                          |               |               |               |                     |                      |                     |                        |                         |  |

| Design Annotations          |                             |                   |                |                                                                           |
|-----------------------------|-----------------------------|-------------------|----------------|---------------------------------------------------------------------------|
| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                | Comment                                                                   |
|                             |                             | +N-S<br>(usft)    | +E-W<br>(usft) |                                                                           |
| 10,808.2                    | 10,752.1                    | 701.2             | -69.3          | HL Crossing, MD:10808.2', TVD:10752.1', N/S:701.2', E/W:-69.3', INC:22.84 |
| 15,993.0                    | 11,155.3                    | -4,321.6          | -13.4          | Final MWD Survey (MD=15993.0')                                            |
| 16,044.0                    | 11,155.1                    | -4,372.6          | -11.1          | Final Projection to Bit (MD=16044.0')                                     |

|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|



Lea County, NM (NAD 83 NME)

Mamba 30 State Com #501H

Plan #2

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: New Mexico Eastern Zone  
System Datum: Mean Sea Level

WELL DETAILS: #501H

KB = 25' @ 3578.0usft 3551.0  
Northing 434971.00 Easting 766784.00 32° 11' 37.365 N 103° 36' 18.310 W

#### SECTION DETAILS

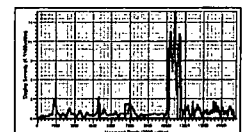
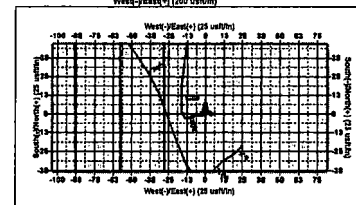
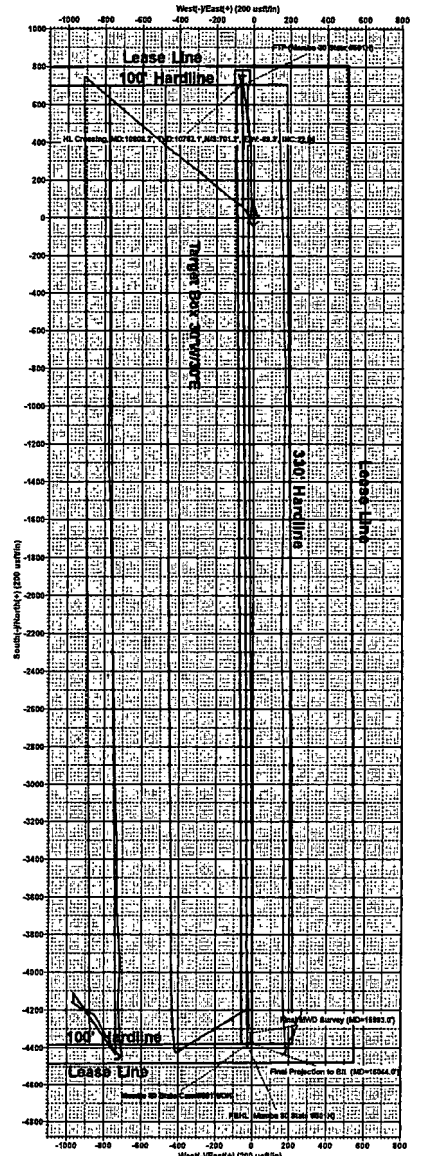
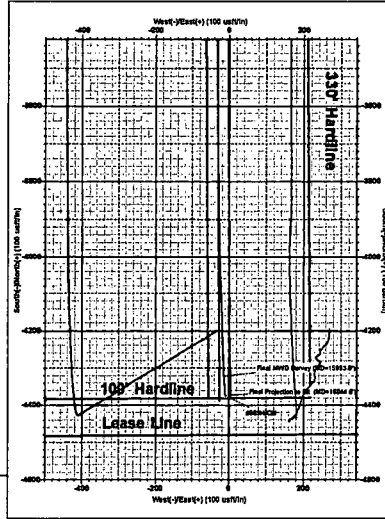
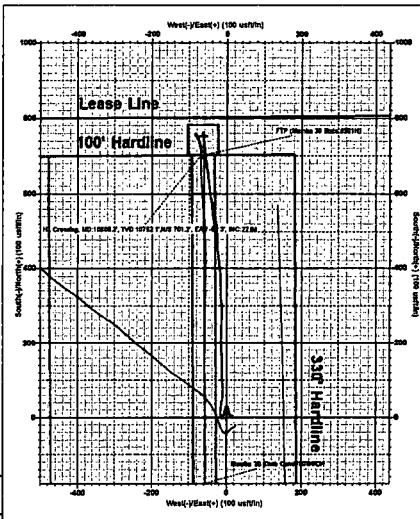
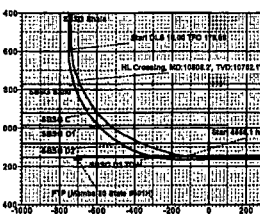
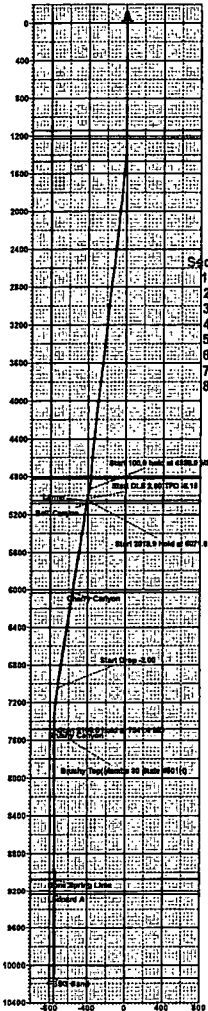
| MD | Inc     | Azi   | TVD    | +N/-S   | +E/-W   | Dleg  | Tface | Vsect  | Target                           |
|----|---------|-------|--------|---------|---------|-------|-------|--------|----------------------------------|
| 1  | 4956.0  | 8.68  | 353.16 | 4934.6  | 386.3   | -17.8 | 0.00  | -386.1 | Target                           |
| 2  | 5056.0  | 8.68  | 353.16 | 5033.4  | 401.2   | -19.6 | 0.00  | -401.1 |                                  |
| 3  | 5071.8  | 8.99  | 352.94 | 5049.0  | 403.6   | -19.9 | 2.00  | -403.5 |                                  |
| 4  | 7091.7  | 8.99  | 352.94 | 7044.1  | 717.0   | -58.7 | 0.00  | -716.7 |                                  |
| 5  | 7541.4  | 0.00  | 0.00   | 7542.0  | 752.0   | -63.0 | 2.00  | -751.6 | Brushy Top(Mamba 30 State #501H) |
| 6  | 10641.4 | 0.00  | 0.00   | 10592.0 | 752.0   | -63.0 | 0.00  | -751.6 |                                  |
| 7  | 11543.6 | 90.21 | 179.58 | 11165.0 | 176.9   | -58.7 | 10.00 | -176.6 |                                  |
| 8  | 16101.7 | 90.21 | 179.58 | 11148.0 | -4381.0 | -25.0 | 0.00  | 4381.1 | PBHL (Mamba 30 State #501H)      |

#### CASING DETAILS

No casing data is available

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

| Name                             | TVD     | +N/-S   | +E/-W | Northing  | Easting   |
|----------------------------------|---------|---------|-------|-----------|-----------|
| Brushy Top(Mamba 30 State #501H) | 7492.0  | 752.0   | -63.0 | 435723.00 | 768721.00 |
| PBHL (Mamba 30 State #501H)      | 11148.0 | -4381.0 | -25.0 | 430590.00 | 768759.00 |
| FTP (Mamba 30 State #501H)       | 11165.0 | 702.0   | -63.0 | 435573.00 | 768721.00 |



Lea County, NM (NAD 83 NME)  
Mamba 30 State Com #501H  
Plan #2  
E.O. 12812-2  
1/1/2001