

EXPLORING WHAT'S POSSIBLE

## Apache Corporation

Eddy County, NM (NAD27 NME)

Hawk Federal Com

#3H

OH

Plan #1 06-11-15

*Changed well name to  
Cedar Lake Federal CA 303H*

*30-015-43559*

NM OIL CONSERVATION

ARTESIA DISTRICT

JAN 09 2018

## Anticollision Report

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11 June, 2015

**Please provide signature  
page for directional survey**



## Anticollision Report



|                           |                             |                                     |                                |
|---------------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>           | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #3H                       |
| <b>Project:</b>           | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3963.00usft (Capstar 114) |
| <b>Reference Site:</b>    | Hawk Federal Com            | <b>MD Reference:</b>                | KB @ 3963.00usft (Capstar 114) |
| <b>Site Error:</b>        | 0.00 usft                   | <b>North Reference:</b>             | Grid                           |
| <b>Reference Well:</b>    | #3H                         | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Well Error:</b>        | 0.00 usft                   | <b>Output errors are at</b>         | 2.00 sigma                     |
| <b>Reference Wellbore</b> | OH                          | <b>Database:</b>                    | Compass 5000 GCR               |
| <b>Reference Design:</b>  | Plan #1 06-11-15            | <b>Offset TVD Reference:</b>        | Offset Datum                   |

|                              |                                                                     |                |                     |
|------------------------------|---------------------------------------------------------------------|----------------|---------------------|
| Reference                    | Plan #1 06-11-15                                                    |                |                     |
| Filter type:                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |                |                     |
| Interpolation Method:        | Stations                                                            | Error Model:   | ISCWSA              |
| Depth Range:                 | Unlimited                                                           | Scan Method:   | Closest Approach 3D |
| Results Limited by:          | Maximum center-center distance of 9,999.98 usft                     | Error Surface: | Elliptical Conic    |
| Warning Levels Evaluated at: | 2.00 Sigma                                                          | Casing Method: | Not applied         |

| Survey Tool Program |              | Date                  | 6/11/2015    |              |  |
|---------------------|--------------|-----------------------|--------------|--------------|--|
| From<br>(usft)      | To<br>(usft) | Survey (Wellbore)     | Tool Name    | Description  |  |
| 0.00                | 10,533.62    | Plan #1 06-11-15 (OH) | PHX+MWD+HDGM | PHX+MWD+HDGM |  |

## Summary

| Site Name                       | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning             |
|---------------------------------|---------------------------------|------------------------------|---------------------------------|----------------------------------|-------------------|---------------------|
| Offset Well - Wellbore - Design |                                 |                              |                                 |                                  |                   |                     |
| Hawk Federal Com                |                                 |                              |                                 |                                  |                   |                     |
| #1H - OH - Plan #1 06-11-15     | 4,872.03                        | 4,874.98                     | 64.98                           | 30.46                            | 1.883             | CC, ES, SF          |
| #2H - OH - Plan #1 06-11-15     | 4,746.99                        | 4,745.99                     | 43.18                           | 9.55                             | 1.284             | Level 3, CC, ES, SF |
| #4H - OH - Plan #1 06-11-15     | 5,224.23                        | 5,225.20                     | 24.97                           | -12.07                           | 0.674             | Level 1, CC         |
| #4H - OH - Plan #1 06-11-15     | 5,225.00                        | 5,225.94                     | 24.97                           | -12.07                           | 0.674             | Level 1, ES, SF     |
| #5H - OH - Plan #1 06-11-15     | 5,313.05                        | 5,311.11                     | 64.98                           | 27.31                            | 1.725             | CC, ES              |
| #5H - OH - Plan #1 06-11-15     | 5,325.00                        | 5,322.34                     | 65.10                           | 27.36                            | 1.725             | SF                  |
| #6H - OH - Plan #1 06-11-15     | 5,341.54                        | 5,338.73                     | 89.94                           | 52.08                            | 2.375             | CC, ES              |
| #6H - OH - Plan #1 06-11-15     | 5,350.00                        | 5,346.51                     | 90.00                           | 52.09                            | 2.374             | SF                  |

| Offset Design Hawk Federal Com - #1H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |                                     |                        |                         | Offset Site Error: 0.00 usft |                           |                   |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|-------------------------------------|------------------------|-------------------------|------------------------------|---------------------------|-------------------|
| Survey Program: O-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |                                     |                        |                         | Offset Well Error: 0.00 usft |                           |                   |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |                                     |                        |                         | Warning                      |                           |                   |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Offset Wellbore Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) |                              | Minimum Separation (usft) | Separation Factor |
| 0.00                                                         | 0.00                  | 0.00                  | 0.00                  | 0.00             | 0.00          | 157.53                | -64.80                              | 26.80                               | 70.12                  |                         |                              |                           |                   |
| 100.00                                                       | 100.00                | 100.00                | 100.00                | 0.16             | 0.16          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 69.80                   | 0.32                         | 219.795                   |                   |
| 200.00                                                       | 200.00                | 200.00                | 200.00                | 0.52             | 0.52          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 69.09                   | 1.04                         | 67.688                    |                   |
| 300.00                                                       | 300.00                | 300.00                | 300.00                | 0.88             | 0.88          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 68.37                   | 1.75                         | 40.004                    |                   |
| 400.00                                                       | 400.00                | 400.00                | 400.00                | 1.23             | 1.23          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 67.65                   | 2.47                         | 28.392                    |                   |
| 500.00                                                       | 500.00                | 500.00                | 500.00                | 1.59             | 1.59          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 66.94                   | 3.19                         | 22.004                    |                   |
| 600.00                                                       | 600.00                | 600.00                | 600.00                | 1.95             | 1.95          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 66.22                   | 3.90                         | 17.963                    |                   |
| 700.00                                                       | 700.00                | 700.00                | 700.00                | 2.31             | 2.31          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 65.50                   | 4.62                         | 15.176                    |                   |
| 800.00                                                       | 800.00                | 800.00                | 800.00                | 2.67             | 2.67          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 64.79                   | 5.34                         | 13.138                    |                   |
| 900.00                                                       | 900.00                | 900.00                | 900.00                | 3.03             | 3.03          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 64.07                   | 6.05                         | 11.582                    |                   |
| 1,000.00                                                     | 1,000.00              | 1,000.00              | 1,000.00              | 3.39             | 3.39          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 63.35                   | 6.77                         | 10.356                    |                   |
| 1,100.00                                                     | 1,100.00              | 1,100.00              | 1,100.00              | 3.74             | 3.74          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 62.63                   | 7.49                         | 9.364                     |                   |
| 1,200.00                                                     | 1,200.00              | 1,200.00              | 1,200.00              | 4.10             | 4.10          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 61.92                   | 8.21                         | 8.546                     |                   |
| 1,300.00                                                     | 1,300.00              | 1,300.00              | 1,300.00              | 4.46             | 4.46          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 61.20                   | 8.92                         | 7.859                     |                   |
| 1,400.00                                                     | 1,400.00              | 1,400.00              | 1,400.00              | 4.82             | 4.82          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 60.48                   | 9.64                         | 7.275                     |                   |
| 1,500.00                                                     | 1,500.00              | 1,500.00              | 1,500.00              | 5.18             | 5.18          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 59.77                   | 10.36                        | 6.771                     |                   |
| 1,600.00                                                     | 1,600.00              | 1,600.00              | 1,600.00              | 5.54             | 5.54          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 59.05                   | 11.07                        | 6.333                     |                   |
| 1,700.00                                                     | 1,700.00              | 1,700.00              | 1,700.00              | 5.90             | 5.90          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 58.33                   | 11.79                        | 5.948                     |                   |
| 1,800.00                                                     | 1,800.00              | 1,800.00              | 1,800.00              | 6.25             | 6.25          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 57.62                   | 12.51                        | 5.607                     |                   |
| 1,900.00                                                     | 1,900.00              | 1,900.00              | 1,900.00              | 6.61             | 6.61          | 157.53                | -64.80                              | 26.80                               | 70.12                  | 56.90                   | 13.22                        | 5.303                     |                   |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



|                           |                             |                                     |                                |
|---------------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>           | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #3H                       |
| <b>Project:</b>           | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3963.00usft (Capstar 114) |
| <b>Reference Site:</b>    | Hawk Federal Com            | <b>MD Reference:</b>                | KB @ 3963.00usft (Capstar 114) |
| <b>Site Error:</b>        | 0.00 usft                   | <b>North Reference:</b>             | Grid                           |
| <b>Reference Well:</b>    | #3H                         | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Well Error:</b>        | 0.00 usft                   | <b>Output errors are at</b>         | 2.00 sigma                     |
| <b>Reference Wellbore</b> | OH                          | <b>Database:</b>                    | Compass 5000 GCR               |
| <b>Reference Design:</b>  | Plan #1 06-11-15            | <b>Offset TVD Reference:</b>        | Offset Datum                   |

## Offset Design Hawk Federal Com - #1H - OH - Plan #1 06-11-15

Survey Program: 0-PHX+MWD+HDGM

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

| Reference             |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |                     |                        |                         |                           |                   |  | Warning |
|-----------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|---------------------|------------------------|-------------------------|---------------------------|-------------------|--|---------|
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |  |         |
| 2,000.00              | 2,000.00              | 2,000.00              | 2,000.00              | 6.97             | 6.97          | 157.53                | -64.80                              | 26.80               | 70.12                  | 56.18                   | 13.94                     | 5.030             |  |         |
| 2,100.00              | 2,100.00              | 2,100.00              | 2,100.00              | 7.33             | 7.33          | 157.53                | -64.80                              | 26.80               | 70.12                  | 55.47                   | 14.66                     | 4.784             |  |         |
| 2,200.00              | 2,200.00              | 2,200.00              | 2,200.00              | 7.69             | 7.69          | 157.53                | -64.80                              | 26.80               | 70.12                  | 54.75                   | 15.37                     | 4.561             |  |         |
| 2,300.00              | 2,300.00              | 2,300.00              | 2,300.00              | 8.05             | 8.05          | 157.53                | -64.80                              | 26.80               | 70.12                  | 54.03                   | 16.09                     | 4.358             |  |         |
| 2,400.00              | 2,400.00              | 2,400.00              | 2,400.00              | 8.40             | 8.40          | 157.53                | -64.80                              | 26.80               | 70.12                  | 53.31                   | 16.81                     | 4.172             |  |         |
| 2,500.00              | 2,500.00              | 2,500.00              | 2,500.00              | 8.76             | 8.76          | 157.53                | -64.80                              | 26.80               | 70.12                  | 52.60                   | 17.53                     | 4.001             |  |         |
| 2,600.00              | 2,600.00              | 2,600.00              | 2,600.00              | 9.12             | 9.12          | 157.53                | -64.80                              | 26.80               | 70.12                  | 51.88                   | 18.24                     | 3.844             |  |         |
| 2,700.00              | 2,700.00              | 2,700.00              | 2,700.00              | 9.48             | 9.48          | 157.53                | -64.80                              | 26.80               | 70.12                  | 51.16                   | 18.96                     | 3.699             |  |         |
| 2,800.00              | 2,800.00              | 2,800.00              | 2,800.00              | 9.84             | 9.84          | 157.53                | -64.80                              | 26.80               | 70.12                  | 50.45                   | 19.68                     | 3.564             |  |         |
| 2,900.00              | 2,900.00              | 2,900.00              | 2,900.00              | 10.20            | 10.20         | 157.53                | -64.80                              | 26.80               | 70.12                  | 49.73                   | 20.39                     | 3.439             |  |         |
| 3,000.00              | 3,000.00              | 3,000.00              | 3,000.00              | 10.56            | 10.56         | 157.53                | -64.80                              | 26.80               | 70.12                  | 49.01                   | 21.11                     | 3.322             |  |         |
| 3,100.00              | 3,100.00              | 3,100.00              | 3,100.00              | 10.91            | 10.91         | 157.53                | -64.80                              | 26.80               | 70.12                  | 48.30                   | 21.83                     | 3.213             |  |         |
| 3,200.00              | 3,200.00              | 3,200.00              | 3,200.00              | 11.27            | 11.27         | 157.53                | -64.80                              | 26.80               | 70.12                  | 47.58                   | 22.54                     | 3.110             |  |         |
| 3,300.00              | 3,300.00              | 3,300.00              | 3,300.00              | 11.63            | 11.63         | 157.53                | -64.80                              | 26.80               | 70.12                  | 46.86                   | 23.26                     | 3.015             |  |         |
| 3,400.00              | 3,400.00              | 3,400.00              | 3,400.00              | 11.99            | 11.99         | 157.53                | -64.80                              | 26.80               | 70.12                  | 46.15                   | 23.98                     | 2.924             |  |         |
| 3,500.00              | 3,500.00              | 3,500.00              | 3,500.00              | 12.35            | 12.35         | 157.53                | -64.80                              | 26.80               | 70.12                  | 45.43                   | 24.70                     | 2.840             |  |         |
| 3,600.00              | 3,600.00              | 3,600.00              | 3,600.00              | 12.71            | 12.71         | 157.53                | -64.80                              | 26.80               | 70.12                  | 44.71                   | 25.41                     | 2.759             |  |         |
| 3,700.00              | 3,700.00              | 3,700.00              | 3,700.00              | 13.06            | 13.06         | 157.53                | -64.80                              | 26.80               | 70.12                  | 43.99                   | 26.13                     | 2.684             |  |         |
| 3,800.00              | 3,800.00              | 3,800.00              | 3,800.00              | 13.42            | 13.42         | 157.53                | -64.80                              | 26.80               | 70.12                  | 43.28                   | 26.85                     | 2.612             |  |         |
| 3,900.00              | 3,900.00              | 3,900.00              | 3,900.00              | 13.78            | 13.78         | 157.53                | -64.80                              | 26.80               | 70.12                  | 42.56                   | 27.56                     | 2.544             |  |         |
| 4,000.00              | 4,000.00              | 4,000.00              | 4,000.00              | 14.14            | 14.14         | 157.53                | -64.80                              | 26.80               | 70.12                  | 41.84                   | 28.28                     | 2.480             |  |         |
| 4,100.00              | 4,100.00              | 4,100.00              | 4,100.00              | 14.50            | 14.50         | 157.53                | -64.80                              | 26.80               | 70.12                  | 41.13                   | 29.00                     | 2.418             |  |         |
| 4,200.00              | 4,200.00              | 4,200.00              | 4,200.00              | 14.86            | 14.86         | 157.53                | -64.80                              | 26.80               | 70.12                  | 40.41                   | 29.71                     | 2.360             |  |         |
| 4,300.00              | 4,300.00              | 4,300.00              | 4,300.00              | 15.22            | 15.22         | 157.53                | -64.80                              | 26.80               | 70.12                  | 39.69                   | 30.43                     | 2.304             |  |         |
| 4,400.00              | 4,400.00              | 4,400.00              | 4,400.00              | 15.57            | 15.57         | 157.53                | -64.80                              | 26.80               | 70.12                  | 38.98                   | 31.15                     | 2.251             |  |         |
| 4,500.00              | 4,500.00              | 4,500.00              | 4,500.00              | 15.93            | 15.93         | 157.53                | -64.80                              | 26.80               | 70.12                  | 38.26                   | 31.86                     | 2.201             |  |         |
| 4,600.00              | 4,600.00              | 4,600.00              | 4,600.00              | 16.29            | 16.29         | 157.53                | -64.80                              | 26.80               | 70.12                  | 37.54                   | 32.58                     | 2.152             |  |         |
| 4,700.00              | 4,700.00              | 4,700.00              | 4,700.00              | 16.65            | 16.65         | 157.53                | -64.80                              | 26.80               | 70.12                  | 36.82                   | 33.30                     | 2.106             |  |         |
| 4,800.00              | 4,800.00              | 4,803.91              | 4,803.41              | 17.01            | 17.01         | 163.96                | -64.85                              | 18.65               | 67.57                  | 33.55                   | 34.02                     | 1.986             |  |         |
| 4,872.03              | 4,872.03              | 4,874.98              | 4,872.04              | 17.27            | 17.25         | 179.62                | -64.97                              | 0.44                | 64.98                  | 30.46                   | 34.51                     | 1.883 CC, ES, SF  |  |         |
| 4,900.00              | 4,900.00              | 4,900.88              | 4,896.26              | 17.37            | 17.34         | -172.37               | -65.03                              | -8.71               | 65.72                  | 31.03                   | 34.70                     | 1.894             |  |         |
| 5,000.00              | 5,000.00              | 4,984.18              | 4,970.23              | 17.72            | 17.66         | -144.38               | -65.28                              | -46.78              | 85.65                  | 50.32                   | 35.33                     | 2.424             |  |         |
| 5,100.00              | 5,100.00              | 5,052.56              | 5,025.27              | 18.08            | 17.97         | -126.91               | -65.55                              | -87.26              | 132.27                 | 96.29                   | 35.98                     | 3.676             |  |         |
| 5,153.62              | 5,153.62              | 5,083.57              | 5,048.20              | 18.28            | 18.14         | -121.28               | -65.69                              | -108.13             | 164.68                 | 128.34                  | 36.34                     | 4.532             |  |         |
| 5,175.00              | 5,174.99              | 5,095.19              | 5,056.44              | 18.35            | 18.21         | -28.14                | -65.74                              | -116.33             | 178.32                 | 142.04                  | 36.28                     | 4.916             |  |         |
| 5,200.00              | 5,199.93              | 5,108.73              | 5,065.78              | 18.44            | 18.30         | -25.42                | -65.81                              | -126.13             | 194.08                 | 157.79                  | 36.29                     | 5.348             |  |         |
| 5,225.00              | 5,224.73              | 5,125.00              | 5,076.64              | 18.52            | 18.41         | -22.89                | -65.89                              | -138.24             | 209.61                 | 173.38                  | 36.23                     | 5.786             |  |         |
| 5,250.00              | 5,249.35              | 5,135.67              | 5,083.52              | 18.61            | 18.49         | -21.19                | -65.94                              | -146.39             | 224.77                 | 188.71                  | 36.06                     | 6.234             |  |         |
| 5,275.00              | 5,273.70              | 5,150.00              | 5,092.49              | 18.69            | 18.60         | -19.48                | -66.01                              | -157.57             | 239.60                 | 203.80                  | 35.80                     | 6.693             |  |         |
| 5,300.00              | 5,297.72              | 5,162.43              | 5,099.99              | 18.78            | 18.71         | -18.12                | -66.08                              | -167.48             | 254.03                 | 218.58                  | 35.44                     | 7.167             |  |         |
| 5,325.00              | 5,321.34              | 5,175.00              | 5,107.31              | 18.87            | 18.81         | -16.93                | -66.15                              | -177.70             | 268.04                 | 233.05                  | 34.99                     | 7.660             |  |         |
| 5,350.00              | 5,344.51              | 5,189.06              | 5,115.18              | 18.95            | 18.95         | -15.83                | -66.22                              | -189.35             | 281.61                 | 247.15                  | 34.45                     | 8.174             |  |         |
| 5,375.00              | 5,367.15              | 5,200.00              | 5,121.06              | 19.04            | 19.05         | -14.97                | -66.28                              | -198.57             | 294.72                 | 260.91                  | 33.81                     | 8.716             |  |         |
| 5,400.00              | 5,389.21              | 5,215.57              | 5,129.07              | 19.14            | 19.22         | -14.08                | -66.37                              | -211.93             | 307.33                 | 274.24                  | 33.09                     | 9.287             |  |         |
| 5,425.00              | 5,410.62              | 5,225.00              | 5,133.70              | 19.24            | 19.32         | -13.45                | -66.43                              | -220.14             | 319.50                 | 287.22                  | 32.27                     | 9.899             |  |         |
| 5,450.00              | 5,431.33              | 5,241.99              | 5,141.64              | 19.34            | 19.52         | -12.73                | -66.52                              | -235.16             | 331.08                 | 299.69                  | 31.39                     | 10.549            |  |         |
| 5,475.00              | 5,451.28              | 5,255.17              | 5,147.42              | 19.45            | 19.69         | -12.16                | -66.60                              | -247.00             | 342.17                 | 311.76                  | 30.41                     | 11.252            |  |         |
| 5,500.00              | 5,470.41              | 5,268.33              | 5,152.87              | 19.58            | 19.86         | -11.66                | -66.68                              | -258.98             | 352.74                 | 323.38                  | 29.36                     | 12.015            |  |         |
| 5,525.00              | 5,488.67              | 5,281.47              | 5,157.98              | 19.71            | 20.04         | -11.21                | -66.76                              | -271.09             | 362.76                 | 334.52                  | 28.23                     | 12.848            |  |         |
| 5,550.00              | 5,506.01              | 5,300.00              | 5,164.61              | 19.86            | 20.31         | -10.75                | -66.88                              | -288.39             | 372.29                 | 345.24                  | 27.05                     | 13.761            |  |         |
| 5,575.00              | 5,522.39              | 5,307.71              | 5,167.18              | 20.03            | 20.43         | -10.46                | -66.92                              | -295.66             | 381.13                 | 355.34                  | 25.79                     | 14.777            |  |         |
| 5,600.00              | 5,537.76              | 5,325.00              | 5,172.49              | 20.22            | 20.70         | -10.11                | -67.03                              | -312.11             | 389.51                 | 365.01                  | 24.50                     | 15.901            |  |         |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #1H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |                                     |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|-------------------------------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |                                     |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |                                     |                        |                         |                           |                   |                    | Warning   |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Offset Wellbore Centre +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 5,625.00                                                     | 5,552.07              | 5,333.91              | 5,175.00              | 20.43            | 20.86         | -9.87                 | -67.09                              | -320.66                             | 397.23                 | 374.10                  | 23.13                     | 17.171            |                    |           |
| 5,650.00                                                     | 5,565.29              | 5,350.00              | 5,179.12              | 20.67            | 21.13         | -9.60                 | -67.19                              | -336.21                             | 404.43                 | 382.68                  | 21.75                     | 18.593            |                    |           |
| 5,675.00                                                     | 5,577.39              | 5,360.06              | 5,181.42              | 20.94            | 21.32         | -9.40                 | -67.25                              | -346.00                             | 411.00                 | 390.67                  | 20.33                     | 20.220            |                    |           |
| 5,700.00                                                     | 5,588.32              | 5,375.00              | 5,184.47              | 21.23            | 21.59         | -9.20                 | -67.35                              | -360.63                             | 417.01                 | 398.11                  | 18.90                     | 22.063            |                    |           |
| 5,725.00                                                     | 5,598.06              | 5,386.18              | 5,186.45              | 21.55            | 21.81         | -9.04                 | -67.42                              | -371.63                             | 422.40                 | 404.93                  | 17.47                     | 24.183            |                    |           |
| 5,750.00                                                     | 5,606.58              | 5,400.00              | 5,188.54              | 21.91            | 22.08         | -8.89                 | -67.51                              | -385.29                             | 427.19                 | 411.13                  | 16.06                     | 26.595            |                    |           |
| 5,775.00                                                     | 5,613.87              | 5,412.27              | 5,190.06              | 22.30            | 22.33         | -8.77                 | -67.59                              | -397.47                             | 431.38                 | 416.67                  | 14.70                     | 29.339            |                    |           |
| 5,800.00                                                     | 5,619.89              | 5,425.00              | 5,191.31              | 22.71            | 22.59         | -8.67                 | -67.68                              | -410.13                             | 434.95                 | 421.53                  | 13.43                     | 32.388            |                    |           |
| 5,825.00                                                     | 5,624.63              | 5,438.34              | 5,192.26              | 23.16            | 22.87         | -8.58                 | -67.76                              | -423.44                             | 437.92                 | 425.63                  | 12.29                     | 35.636            |                    |           |
| 5,850.00                                                     | 5,628.08              | 5,450.00              | 5,192.78              | 23.63            | 23.12         | -8.52                 | -67.84                              | -435.09                             | 440.27                 | 428.94                  | 11.33                     | 38.874            |                    |           |
| 5,875.00                                                     | 5,630.23              | 5,464.41              | 5,193.03              | 24.13            | 23.44         | -8.47                 | -67.94                              | -449.49                             | 442.00                 | 431.36                  | 10.63                     | 41.571            |                    |           |
| 5,900.00                                                     | 5,631.07              | 5,482.67              | 5,192.85              | 24.64            | 23.86         | -8.43                 | -68.06                              | -467.75                             | 443.04                 | 432.76                  | 10.28                     | 43.077            |                    |           |
| 5,912.40                                                     | 5,631.00              | 5,495.07              | 5,192.69              | 24.91            | 24.14         | -8.43                 | -68.14                              | -480.15                             | 443.13                 | 432.86                  | 10.27                     | 43.134            |                    |           |
| 6,000.00                                                     | 5,629.39              | 5,582.67              | 5,191.56              | 26.92            | 26.32         | -8.44                 | -68.71                              | -567.74                             | 442.66                 | 431.12                  | 11.54                     | 38.362            |                    |           |
| 6,100.00                                                     | 5,627.55              | 5,682.67              | 5,190.27              | 29.47            | 29.02         | -8.45                 | -69.37                              | -667.73                             | 442.12                 | 429.03                  | 13.09                     | 33.784            |                    |           |
| 6,200.00                                                     | 5,625.71              | 5,782.67              | 5,188.98              | 32.23            | 31.91         | -8.46                 | -70.03                              | -767.72                             | 441.57                 | 426.86                  | 14.71                     | 30.009            |                    |           |
| 6,300.00                                                     | 5,623.88              | 5,882.66              | 5,187.69              | 35.16            | 34.94         | -8.47                 | -70.69                              | -867.70                             | 441.03                 | 424.63                  | 16.40                     | 26.892            |                    |           |
| 6,400.00                                                     | 5,622.04              | 5,982.66              | 5,186.40              | 38.21            | 38.08         | -8.48                 | -71.35                              | -967.69                             | 440.49                 | 422.36                  | 18.13                     | 24.300            |                    |           |
| 6,500.00                                                     | 5,620.20              | 6,082.66              | 5,185.11              | 41.36            | 41.30         | -8.49                 | -72.01                              | -1,067.68                           | 439.94                 | 420.06                  | 19.88                     | 22.124            |                    |           |
| 6,600.00                                                     | 5,618.36              | 6,182.66              | 5,183.82              | 44.59            | 44.59         | -8.50                 | -72.66                              | -1,167.67                           | 439.40                 | 417.73                  | 21.67                     | 20.279            |                    |           |
| 6,700.00                                                     | 5,616.52              | 6,282.66              | 5,182.53              | 47.87            | 47.94         | -8.51                 | -73.32                              | -1,267.66                           | 438.85                 | 415.39                  | 23.47                     | 18.700            |                    |           |
| 6,800.00                                                     | 5,614.68              | 6,382.66              | 5,181.24              | 51.21            | 51.32         | -8.52                 | -73.98                              | -1,367.64                           | 438.31                 | 413.03                  | 25.29                     | 17.335            |                    |           |
| 6,900.00                                                     | 5,612.84              | 6,482.65              | 5,179.95              | 54.58            | 54.74         | -8.53                 | -74.64                              | -1,467.63                           | 437.77                 | 410.65                  | 27.11                     | 16.145            |                    |           |
| 7,000.00                                                     | 5,611.00              | 6,582.65              | 5,178.66              | 57.99            | 58.19         | -8.54                 | -75.30                              | -1,567.62                           | 437.22                 | 408.27                  | 28.95                     | 15.101            |                    |           |
| 7,100.00                                                     | 5,609.16              | 6,682.65              | 5,177.37              | 61.43            | 61.66         | -8.55                 | -75.96                              | -1,667.61                           | 436.68                 | 405.88                  | 30.80                     | 14.177            |                    |           |
| 7,200.00                                                     | 5,607.32              | 6,782.65              | 5,176.08              | 64.89            | 65.15         | -8.56                 | -76.61                              | -1,767.60                           | 436.14                 | 403.48                  | 32.66                     | 13.355            |                    |           |
| 7,300.00                                                     | 5,605.48              | 6,882.65              | 5,174.79              | 68.37            | 68.66         | -8.57                 | -77.27                              | -1,867.58                           | 435.59                 | 401.08                  | 34.52                     | 12.619            |                    |           |
| 7,400.00                                                     | 5,603.64              | 6,982.65              | 5,173.50              | 71.87            | 72.18         | -8.59                 | -77.93                              | -1,967.57                           | 435.05                 | 398.66                  | 36.39                     | 11.956            |                    |           |
| 7,500.00                                                     | 5,601.80              | 7,082.65              | 5,172.21              | 75.38            | 75.72         | -8.60                 | -78.59                              | -2,067.56                           | 434.51                 | 396.25                  | 38.26                     | 11.356            |                    |           |
| 7,600.00                                                     | 5,599.96              | 7,182.64              | 5,170.92              | 78.91            | 79.26         | -8.61                 | -79.25                              | -2,167.55                           | 433.97                 | 393.83                  | 40.14                     | 10.811            |                    |           |
| 7,700.00                                                     | 5,598.13              | 7,282.64              | 5,169.63              | 82.44            | 82.81         | -8.62                 | -79.91                              | -2,267.54                           | 433.42                 | 391.40                  | 42.02                     | 10.314            |                    |           |
| 7,800.00                                                     | 5,596.29              | 7,382.64              | 5,168.34              | 85.99            | 86.38         | -8.63                 | -80.56                              | -2,367.52                           | 432.88                 | 388.97                  | 43.91                     | 9.859             |                    |           |
| 7,900.00                                                     | 5,594.45              | 7,482.64              | 5,167.05              | 89.54            | 89.95         | -8.64                 | -81.22                              | -2,467.51                           | 432.34                 | 386.54                  | 45.80                     | 9.440             |                    |           |
| 8,000.00                                                     | 5,592.61              | 7,582.64              | 5,165.76              | 93.10            | 93.52         | -8.65                 | -81.88                              | -2,567.50                           | 431.79                 | 384.10                  | 47.69                     | 9.054             |                    |           |
| 8,100.00                                                     | 5,590.77              | 7,682.64              | 5,164.47              | 96.67            | 97.10         | -8.66                 | -82.54                              | -2,667.49                           | 431.25                 | 381.66                  | 49.59                     | 8.697             |                    |           |
| 8,200.00                                                     | 5,588.93              | 7,782.63              | 5,163.18              | 100.24           | 100.69        | -8.67                 | -83.20                              | -2,767.48                           | 430.71                 | 379.22                  | 51.49                     | 8.365             |                    |           |
| 8,300.00                                                     | 5,587.09              | 7,882.63              | 5,161.89              | 103.82           | 104.28        | -8.68                 | -83.86                              | -2,867.46                           | 430.16                 | 376.77                  | 53.39                     | 8.057             |                    |           |
| 8,400.00                                                     | 5,585.25              | 7,982.63              | 5,160.60              | 107.41           | 107.88        | -8.69                 | -84.51                              | -2,967.45                           | 429.62                 | 374.32                  | 55.30                     | 7.769             |                    |           |
| 8,500.00                                                     | 5,583.41              | 8,082.63              | 5,159.31              | 110.99           | 111.47        | -8.70                 | -85.17                              | -3,067.44                           | 429.08                 | 371.87                  | 57.20                     | 7.501             |                    |           |
| 8,600.00                                                     | 5,581.57              | 8,182.63              | 5,158.02              | 114.59           | 115.08        | -8.71                 | -85.83                              | -3,167.43                           | 428.53                 | 369.42                  | 59.11                     | 7.249             |                    |           |
| 8,700.00                                                     | 5,579.73              | 8,282.63              | 5,156.73              | 118.18           | 118.68        | -8.73                 | -86.49                              | -3,267.42                           | 427.99                 | 366.96                  | 61.03                     | 7.013             |                    |           |
| 8,800.00                                                     | 5,577.89              | 8,382.63              | 5,155.44              | 121.78           | 122.29        | -8.74                 | -87.15                              | -3,367.40                           | 427.45                 | 364.50                  | 62.94                     | 6.791             |                    |           |
| 8,900.00                                                     | 5,576.05              | 8,482.62              | 5,154.15              | 125.38           | 125.90        | -8.75                 | -87.81                              | -3,467.39                           | 426.90                 | 362.04                  | 64.86                     | 6.582             |                    |           |
| 9,000.00                                                     | 5,574.22              | 8,582.62              | 5,152.86              | 128.99           | 129.51        | -8.76                 | -88.46                              | -3,567.38                           | 426.36                 | 359.58                  | 66.78                     | 6.385             |                    |           |
| 9,100.00                                                     | 5,572.38              | 8,682.62              | 5,151.57              | 132.60           | 133.13        | -8.77                 | -89.12                              | -3,667.37                           | 425.82                 | 357.12                  | 68.70                     | 6.198             |                    |           |
| 9,200.00                                                     | 5,570.54              | 8,782.62              | 5,150.28              | 136.21           | 136.74        | -8.78                 | -89.78                              | -3,767.36                           | 425.28                 | 354.65                  | 70.63                     | 6.021             |                    |           |
| 9,300.00                                                     | 5,568.70              | 8,882.62              | 5,148.99              | 139.82           | 140.36        | -8.79                 | -90.44                              | -3,867.34                           | 424.73                 | 352.18                  | 72.55                     | 5.854             |                    |           |
| 9,400.00                                                     | 5,566.86              | 8,982.62              | 5,147.70              | 143.43           | 143.98        | -8.80                 | -91.10                              | -3,967.33                           | 424.19                 | 349.71                  | 74.48                     | 5.695             |                    |           |
| 9,500.00                                                     | 5,565.02              | 9,082.62              | 5,146.41              | 147.05           | 147.60        | -8.81                 | -91.76                              | -4,067.32                           | 423.65                 | 347.23                  | 76.41                     | 5.544             |                    |           |
| 9,600.00                                                     | 5,563.18              | 9,182.61              | 5,145.12              | 150.66           | 151.23        | -8.83                 | -92.41                              | -4,167.31                           | 423.10                 | 344.76                  | 78.35                     | 5.400             |                    |           |
| 9,700.00                                                     | 5,561.34              | 9,282.61              | 5,143.83              | 154.28           | 154.85        | -8.84                 | -93.07                              | -4,267.30                           | 422.56                 | 342.28                  | 80.28                     | 5.263             |                    |           |
| 9,800.00                                                     | 5,559.50              | 9,382.61              | 5,142.54              | 157.90           | 158.48        | -8.85                 | -93.73                              | -4,367.28                           | 422.02                 | 339.80                  | 82.22                     | 5.133             |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



|                           |                             |                                     |                                |
|---------------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>           | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #3H                       |
| <b>Project:</b>           | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3963.00usft (Capstar 114) |
| <b>Reference Site:</b>    | Hawk Federal Com            | <b>MD Reference:</b>                | KB @ 3963.00usft (Capstar 114) |
| <b>Site Error:</b>        | 0.00 usft                   | <b>North Reference:</b>             | Grid                           |
| <b>Reference Well:</b>    | #3H                         | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Well Error:</b>        | 0.00 usft                   | <b>Output errors are at</b>         | 2.00 sigma                     |
| <b>Reference Wellbore</b> | OH                          | <b>Database:</b>                    | Compass 5000 GCR               |
| <b>Reference Design:</b>  | Plan #1 06-11-15            | <b>Offset TVD Reference:</b>        | Offset Datum                   |

| Offset Design Hawk Federal Com - #1H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                                           |                                           |                              |                               |                                 |                      |         | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-------------------------------------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: O-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                             |                                           |                                           |                              |                               |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                  |                                           | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | Offset Wellbore Centre<br>+E/-W<br>(usft) |                              |                               |                                 |                      |         |                    |           |
| 9,900.00                                                     | 5,557.66                    | 9,482.61                    | 5,141.25                    | 161.53              | 162.10           | -8.86                       | -94.39                                    | -4,467.27                                 | 421.47                       | 337.32                        | 84.16                           | 5.008                |         |                    |           |
| 10,000.00                                                    | 5,555.82                    | 9,582.61                    | 5,139.96                    | 165.15              | 165.73           | -8.87                       | -95.05                                    | -4,567.26                                 | 420.93                       | 334.83                        | 86.10                           | 4.889                |         |                    |           |
| 10,100.00                                                    | 5,553.98                    | 9,682.61                    | 5,138.67                    | 168.77              | 169.36           | -8.88                       | -95.71                                    | -4,667.25                                 | 420.39                       | 332.35                        | 88.04                           | 4.775                |         |                    |           |
| 10,200.00                                                    | 5,552.14                    | 9,782.60                    | 5,137.38                    | 172.40              | 172.99           | -8.89                       | -96.36                                    | -4,767.24                                 | 419.85                       | 329.86                        | 89.99                           | 4.666                |         |                    |           |
| 10,300.00                                                    | 5,550.30                    | 9,882.60                    | 5,136.09                    | 176.03              | 176.62           | -8.90                       | -97.02                                    | -4,867.22                                 | 419.30                       | 327.37                        | 91.93                           | 4.561                |         |                    |           |
| 10,400.00                                                    | 5,548.47                    | 9,982.60                    | 5,134.80                    | 179.65              | 180.25           | -8.92                       | -97.68                                    | -4,967.21                                 | 418.76                       | 324.88                        | 93.88                           | 4.460                |         |                    |           |
| 10,500.00                                                    | 5,546.63                    | 10,082.60                   | 5,133.51                    | 183.28              | 183.88           | -8.93                       | -98.34                                    | -5,067.20                                 | 418.22                       | 322.38                        | 95.83                           | 4.364                |         |                    |           |
| 10,534.05                                                    | 5,546.00                    | 10,116.65                   | 5,133.07                    | 183.97              | 184.85           | -8.93                       | -98.56                                    | -5,101.25                                 | 418.03                       | 321.77                        | 96.27                           | 4.343                |         |                    |           |

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #2H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                                          |                |                                 |                      |         |                           | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------------------|----------------|---------------------------------|----------------------|---------|---------------------------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                             |                                          |                |                                 |                      |         |                           | Offset Well Error: | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                 |                | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                           |                    |           |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N-S<br>(usft) | +E-W<br>(usft) |                                 |                      |         |                           |                    |           |
| 0.00                                                         | 0.00                        | 0.00                        | 0.00                        | 0.00                | 0.00             | 157.53                      | -39.90                                   | 16.50          | 43.19                           |                      |         |                           |                    |           |
| 100.00                                                       | 100.00                      | 99.00                       | 99.00                       | 0.16                | 0.16             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 42.86                | 0.32    | 136.014                   |                    |           |
| 200.00                                                       | 200.00                      | 199.00                      | 199.00                      | 0.52                | 0.51             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 42.14                | 1.03    | 41.822                    |                    |           |
| 300.00                                                       | 300.00                      | 299.00                      | 299.00                      | 0.88                | 0.87             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 41.43                | 1.75    | 24.682                    |                    |           |
| 400.00                                                       | 400.00                      | 399.00                      | 399.00                      | 1.23                | 1.23             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 40.71                | 2.47    | 17.507                    |                    |           |
| 500.00                                                       | 500.00                      | 499.00                      | 499.00                      | 1.59                | 1.59             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 39.99                | 3.18    | 13.564                    |                    |           |
| 600.00                                                       | 600.00                      | 599.00                      | 599.00                      | 1.95                | 1.95             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 39.28                | 3.90    | 11.071                    |                    |           |
| 700.00                                                       | 700.00                      | 699.00                      | 699.00                      | 2.31                | 2.31             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 38.56                | 4.62    | 9.352                     |                    |           |
| 800.00                                                       | 800.00                      | 799.00                      | 799.00                      | 2.67                | 2.67             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 37.84                | 5.33    | 8.095                     |                    |           |
| 900.00                                                       | 900.00                      | 899.00                      | 899.00                      | 3.03                | 3.02             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 37.13                | 6.05    | 7.136                     |                    |           |
| 1,000.00                                                     | 1,000.00                    | 999.00                      | 999.00                      | 3.39                | 3.38             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 36.41                | 6.77    | 6.380                     |                    |           |
| 1,100.00                                                     | 1,100.00                    | 1,099.00                    | 1,099.00                    | 3.74                | 3.74             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 35.69                | 7.48    | 5.769                     |                    |           |
| 1,200.00                                                     | 1,200.00                    | 1,199.00                    | 1,199.00                    | 4.10                | 4.10             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 34.98                | 8.20    | 5.264                     |                    |           |
| 1,300.00                                                     | 1,300.00                    | 1,299.00                    | 1,299.00                    | 4.46                | 4.46             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 34.26                | 8.92    | 4.841                     |                    |           |
| 1,400.00                                                     | 1,400.00                    | 1,399.00                    | 1,399.00                    | 4.82                | 4.82             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 33.54                | 9.64    | 4.481                     |                    |           |
| 1,500.00                                                     | 1,500.00                    | 1,499.00                    | 1,499.00                    | 5.18                | 5.17             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 32.82                | 10.35   | 4.171                     |                    |           |
| 1,600.00                                                     | 1,600.00                    | 1,599.00                    | 1,599.00                    | 5.54                | 5.53             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 32.11                | 11.07   | 3.901                     |                    |           |
| 1,700.00                                                     | 1,700.00                    | 1,699.00                    | 1,699.00                    | 5.90                | 5.89             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 31.39                | 11.79   | 3.663                     |                    |           |
| 1,800.00                                                     | 1,800.00                    | 1,799.00                    | 1,799.00                    | 6.25                | 6.25             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 30.67                | 12.50   | 3.453                     |                    |           |
| 1,900.00                                                     | 1,900.00                    | 1,899.00                    | 1,899.00                    | 6.61                | 6.61             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 29.96                | 13.22   | 3.266                     |                    |           |
| 2,000.00                                                     | 2,000.00                    | 1,999.00                    | 1,999.00                    | 6.97                | 6.97             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 29.24                | 13.94   | 3.098                     |                    |           |
| 2,100.00                                                     | 2,100.00                    | 2,099.00                    | 2,099.00                    | 7.33                | 7.33             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 28.52                | 14.65   | 2.946                     |                    |           |
| 2,200.00                                                     | 2,200.00                    | 2,199.00                    | 2,199.00                    | 7.69                | 7.68             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 27.81                | 15.37   | 2.809                     |                    |           |
| 2,300.00                                                     | 2,300.00                    | 2,299.00                    | 2,299.00                    | 8.05                | 8.04             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 27.09                | 16.09   | 2.684                     |                    |           |
| 2,400.00                                                     | 2,400.00                    | 2,399.00                    | 2,399.00                    | 8.40                | 8.40             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 26.37                | 16.81   | 2.569                     |                    |           |
| 2,500.00                                                     | 2,500.00                    | 2,499.00                    | 2,499.00                    | 8.76                | 8.76             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 25.65                | 17.52   | 2.464                     |                    |           |
| 2,600.00                                                     | 2,600.00                    | 2,599.00                    | 2,599.00                    | 9.12                | 9.12             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 24.94                | 18.24   | 2.367                     |                    |           |
| 2,700.00                                                     | 2,700.00                    | 2,699.00                    | 2,699.00                    | 9.48                | 9.48             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 24.22                | 18.96   | 2.278                     |                    |           |
| 2,800.00                                                     | 2,800.00                    | 2,799.00                    | 2,799.00                    | 9.84                | 9.83             | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 23.50                | 19.67   | 2.195                     |                    |           |
| 2,900.00                                                     | 2,900.00                    | 2,899.00                    | 2,899.00                    | 10.20               | 10.19            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 22.79                | 20.39   | 2.118                     |                    |           |
| 3,000.00                                                     | 3,000.00                    | 2,999.00                    | 2,999.00                    | 10.56               | 10.55            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 22.07                | 21.11   | 2.046                     |                    |           |
| 3,100.00                                                     | 3,100.00                    | 3,099.00                    | 3,099.00                    | 10.91               | 10.91            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 21.35                | 21.82   | 1.978                     |                    |           |
| 3,200.00                                                     | 3,200.00                    | 3,199.00                    | 3,199.00                    | 11.27               | 11.27            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 20.64                | 22.54   | 1.916                     |                    |           |
| 3,300.00                                                     | 3,300.00                    | 3,299.00                    | 3,299.00                    | 11.63               | 11.63            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 19.92                | 23.26   | 1.856                     |                    |           |
| 3,400.00                                                     | 3,400.00                    | 3,399.00                    | 3,399.00                    | 11.99               | 11.99            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 19.20                | 23.97   | 1.801                     |                    |           |
| 3,500.00                                                     | 3,500.00                    | 3,499.00                    | 3,499.00                    | 12.35               | 12.34            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 18.49                | 24.69   | 1.749                     |                    |           |
| 3,600.00                                                     | 3,600.00                    | 3,599.00                    | 3,599.00                    | 12.71               | 12.70            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 17.77                | 25.41   | 1.699                     |                    |           |
| 3,700.00                                                     | 3,700.00                    | 3,699.00                    | 3,699.00                    | 13.06               | 13.06            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 17.05                | 26.13   | 1.653                     |                    |           |
| 3,800.00                                                     | 3,800.00                    | 3,799.00                    | 3,799.00                    | 13.42               | 13.42            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 16.33                | 26.84   | 1.609                     |                    |           |
| 3,900.00                                                     | 3,900.00                    | 3,899.00                    | 3,899.00                    | 13.78               | 13.78            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 15.62                | 27.56   | 1.567                     |                    |           |
| 4,000.00                                                     | 4,000.00                    | 3,999.00                    | 3,999.00                    | 14.14               | 14.14            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 14.90                | 28.28   | 1.527                     |                    |           |
| 4,100.00                                                     | 4,100.00                    | 4,099.00                    | 4,099.00                    | 14.50               | 14.49            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 14.18                | 28.99   | 1.489 Level 3             |                    |           |
| 4,200.00                                                     | 4,200.00                    | 4,199.00                    | 4,199.00                    | 14.86               | 14.85            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 13.47                | 29.71   | 1.453 Level 3             |                    |           |
| 4,300.00                                                     | 4,300.00                    | 4,299.00                    | 4,299.00                    | 15.22               | 15.21            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 12.75                | 30.43   | 1.419 Level 3             |                    |           |
| 4,400.00                                                     | 4,400.00                    | 4,399.00                    | 4,399.00                    | 15.57               | 15.57            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 12.03                | 31.14   | 1.386 Level 3             |                    |           |
| 4,500.00                                                     | 4,500.00                    | 4,499.00                    | 4,499.00                    | 15.93               | 15.93            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 11.32                | 31.86   | 1.355 Level 3             |                    |           |
| 4,600.00                                                     | 4,600.00                    | 4,599.00                    | 4,599.00                    | 16.29               | 16.29            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 10.60                | 32.58   | 1.325 Level 3             |                    |           |
| 4,700.00                                                     | 4,700.00                    | 4,699.00                    | 4,699.00                    | 16.65               | 16.65            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 9.88                 | 33.29   | 1.297 Level 3             |                    |           |
| 4,746.99                                                     | 4,746.99                    | 4,745.99                    | 4,745.99                    | 16.82               | 16.81            | 157.53                      | -39.90                                   | 16.50          | 43.18                           | 9.55                 | 33.63   | 1.284 Level 3, CC, ES, SF |                    |           |
| 4,800.00                                                     | 4,800.00                    | 4,797.66                    | 4,797.63                    | 17.01               | 16.99            | 155.78                      | -39.89                                   | 17.94          | 43.76                           | 9.76                 | 34.00   | 1.287 Level 3             |                    |           |
| 4,900.00                                                     | 4,900.00                    | 4,891.10                    | 4,889.48                    | 17.37               | 17.31            | 139.28                      | -39.77                                   | 34.23          | 53.33                           | 18.65                | 34.68   | 1.538                     |                    |           |
| 5,000.00                                                     | 5,000.00                    | 4,975.00                    | 4,967.86                    | 17.72               | 17.61            | 121.78                      | -39.56                                   | 63.85          | 81.31                           | 45.98                | 35.33   | 2.301                     |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #2H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                        |                 |                              |                               |                                 | Offset Site Error:   | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|-----------|
| Survey Program: O-PHX+MWD+HDCM                               |                             |                             |                             |                     |                  |                             |                        |                 |                              |                               |                                 | Offset Well Error:   | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Offset Wellbore Centre |                 | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning   |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | +N/-S<br>(usft)        | +E/-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |           |
| 5,100.00                                                     | 5,100.00                    | 5,050.00                    | 5,032.60                    | 18.08               | 17.91            | 111.14                      | -39.28                 | 101.57          | 127.55                       | 91.58                         | 35.98                           | 3.545                |           |
| 5,153.62                                                     | 5,153.62                    | 5,081.02                    | 5,057.50                    | 18.28               | 18.05            | 108.06                      | -39.15                 | 120.06          | 158.10                       | 121.79                        | 36.31                           | 4.354                |           |
| 5,175.00                                                     | 5,174.99                    | 5,093.21                    | 5,066.94                    | 18.35               | 18.11            | -162.02                     | -39.09                 | 127.76          | 171.56                       | 135.32                        | 36.24                           | 4.734                |           |
| 5,200.00                                                     | 5,199.93                    | 5,106.18                    | 5,076.78                    | 18.44               | 18.18            | -162.38                     | -39.03                 | 136.22          | 188.72                       | 152.50                        | 36.23                           | 5.209                |           |
| 5,225.00                                                     | 5,224.73                    | 5,117.79                    | 5,085.38                    | 18.52               | 18.24            | -162.52                     | -38.97                 | 144.01          | 207.27                       | 171.15                        | 36.12                           | 5.738                |           |
| 5,250.00                                                     | 5,249.35                    | 5,125.00                    | 5,090.63                    | 18.61               | 18.28            | -162.09                     | -38.94                 | 148.96          | 227.06                       | 191.14                        | 35.92                           | 6.322                |           |
| 5,275.00                                                     | 5,273.70                    | 5,137.02                    | 5,099.21                    | 18.69               | 18.35            | -162.06                     | -38.88                 | 157.37          | 247.86                       | 212.23                        | 35.63                           | 6.956                |           |
| 5,300.00                                                     | 5,297.72                    | 5,144.74                    | 5,104.60                    | 18.78               | 18.40            | -161.36                     | -38.84                 | 162.89          | 269.61                       | 234.34                        | 35.28                           | 7.645                |           |
| 5,325.00                                                     | 5,321.34                    | 5,150.00                    | 5,108.23                    | 18.87               | 18.43            | -160.03                     | -38.81                 | 166.71          | 292.14                       | 257.30                        | 34.84                           | 8.386                |           |
| 5,350.00                                                     | 5,344.51                    | 5,156.70                    | 5,112.79                    | 18.95               | 18.48            | -158.50                     | -38.77                 | 171.61          | 315.31                       | 280.94                        | 34.36                           | 9.176                |           |
| 5,375.00                                                     | 5,367.15                    | 5,161.08                    | 5,115.73                    | 19.04               | 18.51            | -155.91                     | -38.75                 | 174.86          | 339.02                       | 305.11                        | 33.91                           | 9.998                |           |
| 5,400.00                                                     | 5,389.21                    | 5,164.49                    | 5,118.01                    | 19.14               | 18.53            | -151.93                     | -38.73                 | 177.41          | 363.15                       | 329.58                        | 33.57                           | 10.818               |           |
| 5,425.00                                                     | 5,410.62                    | 5,167.01                    | 5,119.67                    | 19.24               | 18.55            | -145.51                     | -38.72                 | 179.29          | 387.60                       | 354.02                        | 33.58                           | 11.543               |           |
| 5,450.00                                                     | 5,431.33                    | 5,168.68                    | 5,120.77                    | 19.34               | 18.56            | -134.39                     | -38.71                 | 180.56          | 412.29                       | 377.85                        | 34.44                           | 11.972               |           |
| 5,475.00                                                     | 5,451.28                    | 5,175.00                    | 5,124.88                    | 19.45               | 18.60            | -120.28                     | -38.67                 | 185.35          | 437.18                       | 401.13                        | 36.04                           | 12.129               |           |
| 5,500.00                                                     | 5,470.41                    | 5,175.00                    | 5,124.88                    | 19.58               | 18.60            | -89.79                      | -38.67                 | 185.35          | 462.07                       | 423.89                        | 38.18                           | 12.103               |           |
| 5,525.00                                                     | 5,488.67                    | 5,175.00                    | 5,124.88                    | 19.71               | 18.60            | -58.04                      | -38.67                 | 185.35          | 486.97                       | 451.49                        | 35.48                           | 13.726               |           |
| 5,550.00                                                     | 5,506.01                    | 5,168.23                    | 5,120.47                    | 19.86               | 18.56            | -34.71                      | -38.71                 | 180.21          | 511.72                       | 481.38                        | 30.34                           | 16.866               |           |
| 5,575.00                                                     | 5,522.39                    | 5,166.59                    | 5,119.39                    | 20.03               | 18.55            | -24.81                      | -38.72                 | 178.98          | 536.41                       | 509.12                        | 27.29                           | 19.655               |           |
| 5,600.00                                                     | 5,537.76                    | 5,164.43                    | 5,117.97                    | 20.22               | 18.53            | -18.89                      | -38.73                 | 177.36          | 560.91                       | 535.97                        | 24.94                           | 22.491               |           |
| 5,625.00                                                     | 5,552.07                    | 5,161.80                    | 5,116.22                    | 20.43               | 18.51            | -15.06                      | -38.75                 | 175.40          | 585.17                       | 562.25                        | 22.92                           | 25.529               |           |
| 5,650.00                                                     | 5,565.29                    | 5,158.73                    | 5,114.16                    | 20.67               | 18.49            | -12.42                      | -38.76                 | 173.12          | 609.14                       | 588.08                        | 21.06                           | 28.919               |           |
| 5,675.00                                                     | 5,577.39                    | 5,150.00                    | 5,108.23                    | 20.94               | 18.43            | -10.27                      | -38.81                 | 166.71          | 632.83                       | 613.59                        | 19.24                           | 32.890               |           |
| 5,700.00                                                     | 5,588.32                    | 5,150.00                    | 5,108.23                    | 21.23               | 18.43            | -9.02                       | -38.81                 | 166.71          | 656.05                       | 638.51                        | 17.54                           | 37.404               |           |
| 5,725.00                                                     | 5,598.06                    | 5,150.00                    | 5,108.23                    | 21.55               | 18.43            | -8.01                       | -38.81                 | 166.71          | 678.90                       | 663.05                        | 15.85                           | 42.821               |           |
| 5,750.00                                                     | 5,606.58                    | 5,150.00                    | 5,108.23                    | 21.91               | 18.43            | -7.20                       | -38.81                 | 166.71          | 701.38                       | 687.18                        | 14.19                           | 49.414               |           |
| 5,775.00                                                     | 5,613.87                    | 5,137.88                    | 5,099.81                    | 22.30               | 18.36            | -6.34                       | -38.87                 | 157.99          | 723.19                       | 710.64                        | 12.55                           | 57.645               |           |
| 5,800.00                                                     | 5,619.89                    | 5,132.79                    | 5,096.22                    | 22.71               | 18.33            | -5.75                       | -38.90                 | 154.39          | 744.58                       | 733.58                        | 11.00                           | 67.712               |           |
| 5,825.00                                                     | 5,624.63                    | 5,125.00                    | 5,090.63                    | 23.16               | 18.28            | -5.23                       | -38.94                 | 148.96          | 765.42                       | 755.86                        | 9.57                            | 80.012               |           |
| 5,850.00                                                     | 5,628.08                    | 5,125.00                    | 5,090.63                    | 23.63               | 18.28            | -4.87                       | -38.94                 | 148.96          | 785.69                       | 777.34                        | 8.35                            | 94.108               |           |
| 5,875.00                                                     | 5,630.23                    | 5,116.10                    | 5,084.14                    | 24.13               | 18.23            | -4.49                       | -38.98                 | 142.87          | 805.32                       | 797.89                        | 7.44                            | 108.267              |           |
| 5,900.00                                                     | 5,631.07                    | 5,110.11                    | 5,079.71                    | 24.64               | 18.20            | -4.18                       | -39.01                 | 138.84          | 824.35                       | 817.36                        | 6.99                            | 117.952              |           |
| 5,912.40                                                     | 5,631.00                    | 5,100.00                    | 5,072.12                    | 24.91               | 18.14            | -4.01                       | -39.06                 | 132.16          | 833.62                       | 826.67                        | 6.96                            | 119.832              |           |
| 6,000.00                                                     | 5,629.39                    | 5,086.47                    | 5,061.75                    | 26.92               | 18.08            | -3.94                       | -39.12                 | 123.48          | 899.20                       | 891.70                        | 7.50                            | 119.880              |           |
| 6,100.00                                                     | 5,627.55                    | 5,065.28                    | 5,045.01                    | 29.47               | 17.98            | -3.84                       | -39.22                 | 110.48          | 976.98                       | 968.82                        | 8.16                            | 119.705              |           |
| 6,200.00                                                     | 5,625.71                    | 5,050.00                    | 5,032.60                    | 32.23               | 17.91            | -3.76                       | -39.28                 | 101.57          | 1,057.36                     | 1,048.50                      | 8.86                            | 119.301              |           |
| 6,300.00                                                     | 5,623.88                    | 5,025.00                    | 5,011.69                    | 35.16               | 17.80            | -3.64                       | -39.38                 | 87.87           | 1,139.92                     | 1,130.34                      | 9.58                            | 119.020              |           |
| 6,400.00                                                     | 5,622.04                    | 5,013.78                    | 5,002.08                    | 38.21               | 17.76            | -3.58                       | -39.42                 | 82.09           | 1,224.32                     | 1,214.00                      | 10.32                           | 118.625              |           |
| 6,500.00                                                     | 5,620.20                    | 5,000.00                    | 4,990.09                    | 41.36               | 17.71            | -3.52                       | -39.47                 | 75.29           | 1,310.36                     | 1,299.29                      | 11.07                           | 118.340              |           |
| 6,600.00                                                     | 5,618.36                    | 4,987.20                    | 4,978.78                    | 44.59               | 17.66            | -3.46                       | -39.52                 | 69.28           | 1,397.79                     | 1,385.95                      | 11.83                           | 118.126              |           |
| 6,700.00                                                     | 5,616.52                    | 4,975.00                    | 4,967.86                    | 47.87               | 17.61            | -3.40                       | -39.56                 | 63.85           | 1,486.41                     | 1,473.81                      | 12.60                           | 117.973              |           |
| 6,800.00                                                     | 5,614.68                    | 4,965.17                    | 4,958.97                    | 51.21               | 17.58            | -3.36                       | -39.59                 | 59.67           | 1,576.08                     | 1,562.71                      | 13.37                           | 117.863              |           |
| 6,900.00                                                     | 5,612.84                    | 4,950.00                    | 4,945.07                    | 54.58               | 17.52            | -3.29                       | -39.63                 | 53.59           | 1,666.71                     | 1,652.57                      | 14.14                           | 117.850              |           |
| 7,000.00                                                     | 5,611.00                    | 4,950.00                    | 4,945.07                    | 57.99               | 17.52            | -3.29                       | -39.63                 | 53.59           | 1,758.07                     | 1,743.14                      | 14.93                           | 117.743              |           |
| 7,100.00                                                     | 5,609.16                    | 4,938.56                    | 4,934.46                    | 61.43               | 17.48            | -3.24                       | -39.66                 | 49.29           | 1,850.16                     | 1,834.45                      | 15.71                           | 117.778              |           |
| 7,200.00                                                     | 5,607.32                    | 4,925.00                    | 4,921.77                    | 64.89               | 17.43            | -3.19                       | -39.70                 | 44.54           | 1,942.93                     | 1,926.44                      | 16.49                           | 117.854              |           |
| 7,300.00                                                     | 5,605.48                    | 4,925.00                    | 4,921.77                    | 68.37               | 17.43            | -3.19                       | -39.70                 | 44.54           | 2,036.17                     | 2,018.89                      | 17.28                           | 117.835              |           |
| 7,400.00                                                     | 5,603.64                    | 4,925.00                    | 4,921.77                    | 71.87               | 17.43            | -3.19                       | -39.70                 | 44.54           | 2,130.02                     | 2,111.94                      | 18.08                           | 117.842              |           |
| 7,500.00                                                     | 5,601.80                    | 4,911.58                    | 4,909.08                    | 75.38               | 17.39            | -3.13                       | -39.73                 | 40.19           | 2,224.18                     | 2,205.32                      | 18.85                           | 117.971              |           |
| 7,600.00                                                     | 5,599.96                    | 4,900.00                    | 4,898.03                    | 78.91               | 17.35            | -3.09                       | -39.75                 | 36.72           | 2,318.85                     | 2,299.22                      | 19.63                           | 118.103              |           |
| 7,700.00                                                     | 5,598.13                    | 4,900.00                    | 4,898.03                    | 82.44               | 17.35            | -3.09                       | -39.75                 | 36.72           | 2,413.80                     | 2,393.37                      | 20.43                           | 118.140              |           |
| 7,800.00                                                     | 5,596.29                    | 4,900.00                    | 4,898.03                    | 85.99               | 17.35            | -3.09                       | -39.75                 | 36.72           | 2,509.14                     | 2,487.91                      | 21.23                           | 118.189              |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



|                           |                             |                                     |                                |
|---------------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>           | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #3H                       |
| <b>Project:</b>           | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3963.00usft (Capstar 114) |
| <b>Reference Site:</b>    | Hawk Federal Com            | <b>MD Reference:</b>                | KB @ 3963.00usft (Capstar 114) |
| <b>Site Error:</b>        | 0.00 usft                   | <b>North Reference:</b>             | Grid                           |
| <b>Reference Well:</b>    | #3H                         | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Well Error:</b>        | 0.00 usft                   | <b>Output errors are at</b>         | 2.00 sigma                     |
| <b>Reference Wellbore</b> | OH                          | <b>Database:</b>                    | Compass 5000 GCR               |
| <b>Reference Design:</b>  | Plan #1 06-11-15            | <b>Offset TVD Reference:</b>        | Offset Datum                   |

| Offset Design Hawk Federal Com - #2H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                        |                |                              |                               |                                 |                      |         | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------|----------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                             |                        |                |                              |                               |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Offset Wellbore Centre |                | Distance                     |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | +N-S<br>(usft)         | +E-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |         |                    |           |
| 7,900.00                                                     | 5,594.45                    | 4,900.00                    | 4,898.03                    | 89.54               | 17.35            | -3.09                       | -39.75                 | 36.72          | 2,604.83                     | 2,582.80                      | 22.03                           | 118.246              |         |                    |           |
| 8,000.00                                                     | 5,592.61                    | 4,886.90                    | 4,885.43                    | 93.10               | 17.30            | -3.04                       | -39.78                 | 33.12          | 2,700.62                     | 2,677.81                      | 22.81                           | 118.413              |         |                    |           |
| 8,100.00                                                     | 5,590.77                    | 4,875.00                    | 4,873.91                    | 96.67               | 17.26            | -2.99                       | -39.80                 | 30.15          | 2,796.82                     | 2,773.23                      | 23.59                           | 118.576              |         |                    |           |
| 8,200.00                                                     | 5,588.93                    | 4,875.00                    | 4,873.91                    | 100.24              | 17.26            | -2.99                       | -39.80                 | 30.15          | 2,893.12                     | 2,868.74                      | 24.39                           | 118.638              |         |                    |           |
| 8,300.00                                                     | 5,587.09                    | 4,875.00                    | 4,873.91                    | 103.82              | 17.26            | -2.99                       | -39.80                 | 30.15          | 2,989.67                     | 2,964.48                      | 25.19                           | 118.704              |         |                    |           |
| 8,400.00                                                     | 5,585.25                    | 4,875.00                    | 4,873.91                    | 107.41              | 17.26            | -2.99                       | -39.80                 | 30.15          | 3,086.43                     | 3,060.44                      | 25.99                           | 118.772              |         |                    |           |
| 8,500.00                                                     | 5,583.41                    | 4,875.00                    | 4,873.91                    | 110.99              | 17.26            | -2.99                       | -39.80                 | 30.15          | 3,183.39                     | 3,156.61                      | 26.79                           | 118.842              |         |                    |           |
| 8,600.00                                                     | 5,581.57                    | 4,875.00                    | 4,873.91                    | 114.59              | 17.26            | -2.99                       | -39.80                 | 30.15          | 3,280.54                     | 3,252.95                      | 27.59                           | 118.913              |         |                    |           |
| 8,700.00                                                     | 5,579.73                    | 4,862.68                    | 4,861.90                    | 118.18              | 17.22            | -2.95                       | -39.82                 | 27.38          | 3,377.67                     | 3,349.31                      | 28.36                           | 119.083              |         |                    |           |
| 8,800.00                                                     | 5,577.89                    | 4,850.00                    | 4,849.48                    | 121.78              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,475.16                     | 3,446.02                      | 29.14                           | 119.259              |         |                    |           |
| 8,900.00                                                     | 5,576.05                    | 4,850.00                    | 4,849.48                    | 125.38              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,572.61                     | 3,542.67                      | 29.94                           | 119.325              |         |                    |           |
| 9,000.00                                                     | 5,574.22                    | 4,850.00                    | 4,849.48                    | 128.99              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,670.20                     | 3,639.46                      | 30.74                           | 119.391              |         |                    |           |
| 9,100.00                                                     | 5,572.38                    | 4,850.00                    | 4,849.48                    | 132.60              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,767.91                     | 3,736.37                      | 31.54                           | 119.458              |         |                    |           |
| 9,200.00                                                     | 5,570.54                    | 4,850.00                    | 4,849.48                    | 136.21              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,865.74                     | 3,833.40                      | 32.34                           | 119.523              |         |                    |           |
| 9,300.00                                                     | 5,568.70                    | 4,850.00                    | 4,849.48                    | 139.82              | 17.17            | -2.90                       | -39.84                 | 24.85          | 3,963.68                     | 3,930.54                      | 33.14                           | 119.589              |         |                    |           |
| 9,400.00                                                     | 5,566.86                    | 4,850.00                    | 4,849.48                    | 143.43              | 17.17            | -2.90                       | -39.84                 | 24.85          | 4,061.72                     | 4,027.77                      | 33.95                           | 119.653              |         |                    |           |
| 9,500.00                                                     | 5,565.02                    | 4,850.00                    | 4,849.48                    | 147.05              | 17.17            | -2.90                       | -39.84                 | 24.85          | 4,159.85                     | 4,125.10                      | 34.75                           | 119.717              |         |                    |           |
| 9,600.00                                                     | 5,563.18                    | 4,850.00                    | 4,849.48                    | 150.66              | 17.17            | -2.90                       | -39.84                 | 24.85          | 4,258.07                     | 4,222.52                      | 35.55                           | 119.780              |         |                    |           |
| 9,700.00                                                     | 5,561.34                    | 4,850.00                    | 4,849.48                    | 154.28              | 17.17            | -2.90                       | -39.84                 | 24.85          | 4,356.37                     | 4,320.02                      | 36.35                           | 119.842              |         |                    |           |
| 9,800.00                                                     | 5,559.50                    | 4,838.15                    | 4,837.81                    | 157.90              | 17.13            | -2.86                       | -39.85                 | 22.79          | 4,454.58                     | 4,417.46                      | 37.12                           | 119.996              |         |                    |           |
| 9,900.00                                                     | 5,557.66                    | 4,836.44                    | 4,836.13                    | 161.53              | 17.13            | -2.85                       | -39.86                 | 22.52          | 4,552.98                     | 4,515.06                      | 37.92                           | 120.068              |         |                    |           |
| 10,000.00                                                    | 5,555.82                    | 4,825.00                    | 4,824.80                    | 165.15              | 17.09            | -2.81                       | -39.87                 | 20.84          | 4,651.55                     | 4,612.85                      | 38.69                           | 120.218              |         |                    |           |
| 10,100.00                                                    | 5,553.98                    | 4,825.00                    | 4,824.80                    | 168.77              | 17.09            | -2.81                       | -39.87                 | 20.84          | 4,750.03                     | 4,710.54                      | 39.49                           | 120.273              |         |                    |           |
| 10,200.00                                                    | 5,552.14                    | 4,825.00                    | 4,824.80                    | 172.40              | 17.09            | -2.81                       | -39.87                 | 20.84          | 4,848.58                     | 4,808.28                      | 40.30                           | 120.327              |         |                    |           |
| 10,300.00                                                    | 5,550.30                    | 4,825.00                    | 4,824.80                    | 176.03              | 17.09            | -2.81                       | -39.87                 | 20.84          | 4,947.18                     | 4,906.09                      | 41.10                           | 120.380              |         |                    |           |
| 10,400.00                                                    | 5,548.47                    | 4,825.00                    | 4,824.80                    | 179.65              | 17.09            | -2.81                       | -39.87                 | 20.84          | 5,045.84                     | 5,003.94                      | 41.90                           | 120.432              |         |                    |           |
| 10,500.00                                                    | 5,546.63                    | 4,825.00                    | 4,824.80                    | 183.28              | 17.09            | -2.81                       | -39.87                 | 20.84          | 5,144.55                     | 5,101.85                      | 42.70                           | 120.484              |         |                    |           |
| 10,534.05                                                    | 5,546.00                    | 4,825.00                    | 4,824.80                    | 183.97              | 17.09            | -2.81                       | -39.87                 | 20.84          | 5,178.17                     | 5,135.34                      | 42.84                           | 120.882              |         |                    |           |

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #4H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|
| Survey Program: 0-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               | Distance              |                                     |              |                        |                         |                           |                   |                    |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning            |
| 0.00                                                         | 0.00                  | 1.00                  | 1.00                  | 0.00             | 0.00          | -22.47                | 24.90                               | -10.30       | 26.95                  |                         |                           |                   |                    |
| 100.00                                                       | 100.00                | 101.00                | 101.00                | 0.16             | 0.16          | -22.47                | 24.90                               | -10.30       | 26.95                  | 26.62                   | 0.32                      | 83.522            |                    |
| 200.00                                                       | 200.00                | 201.00                | 201.00                | 0.52             | 0.52          | -22.47                | 24.90                               | -10.30       | 26.95                  | 25.91                   | 1.04                      | 25.921            |                    |
| 300.00                                                       | 300.00                | 301.00                | 301.00                | 0.88             | 0.88          | -22.47                | 24.90                               | -10.30       | 26.95                  | 25.19                   | 1.76                      | 15.341            |                    |
| 400.00                                                       | 400.00                | 401.00                | 401.00                | 1.23             | 1.24          | -22.47                | 24.90                               | -10.30       | 26.95                  | 24.47                   | 2.47                      | 10.894            |                    |
| 500.00                                                       | 500.00                | 501.00                | 501.00                | 1.59             | 1.60          | -22.47                | 24.90                               | -10.30       | 26.95                  | 23.76                   | 3.19                      | 8.446             |                    |
| 600.00                                                       | 600.00                | 601.00                | 601.00                | 1.95             | 1.96          | -22.47                | 24.90                               | -10.30       | 26.95                  | 23.04                   | 3.91                      | 6.896             |                    |
| 700.00                                                       | 700.00                | 701.00                | 701.00                | 2.31             | 2.31          | -22.47                | 24.90                               | -10.30       | 26.95                  | 22.32                   | 4.62                      | 5.827             |                    |
| 800.00                                                       | 800.00                | 801.00                | 801.00                | 2.67             | 2.67          | -22.47                | 24.90                               | -10.30       | 26.95                  | 21.61                   | 5.34                      | 5.045             |                    |
| 900.00                                                       | 900.00                | 901.00                | 901.00                | 3.03             | 3.03          | -22.47                | 24.90                               | -10.30       | 26.95                  | 20.89                   | 6.06                      | 4.448             |                    |
| 1,000.00                                                     | 1,000.00              | 1,001.00              | 1,001.00              | 3.39             | 3.39          | -22.47                | 24.90                               | -10.30       | 26.95                  | 20.17                   | 6.78                      | 3.977             |                    |
| 1,100.00                                                     | 1,100.00              | 1,101.00              | 1,101.00              | 3.74             | 3.75          | -22.47                | 24.90                               | -10.30       | 26.95                  | 19.45                   | 7.49                      | 3.597             |                    |
| 1,200.00                                                     | 1,200.00              | 1,201.00              | 1,201.00              | 4.10             | 4.11          | -22.47                | 24.90                               | -10.30       | 26.95                  | 18.74                   | 8.21                      | 3.283             |                    |
| 1,300.00                                                     | 1,300.00              | 1,301.00              | 1,301.00              | 4.46             | 4.46          | -22.47                | 24.90                               | -10.30       | 26.95                  | 18.02                   | 8.93                      | 3.019             |                    |
| 1,400.00                                                     | 1,400.00              | 1,401.00              | 1,401.00              | 4.82             | 4.82          | -22.47                | 24.90                               | -10.30       | 26.95                  | 17.30                   | 9.64                      | 2.794             |                    |
| 1,500.00                                                     | 1,500.00              | 1,501.00              | 1,501.00              | 5.18             | 5.18          | -22.47                | 24.90                               | -10.30       | 26.95                  | 16.59                   | 10.36                     | 2.601             |                    |
| 1,600.00                                                     | 1,600.00              | 1,601.00              | 1,601.00              | 5.54             | 5.54          | -22.47                | 24.90                               | -10.30       | 26.95                  | 15.87                   | 11.08                     | 2.433             |                    |
| 1,700.00                                                     | 1,700.00              | 1,701.00              | 1,701.00              | 5.90             | 5.90          | -22.47                | 24.90                               | -10.30       | 26.95                  | 15.15                   | 11.79                     | 2.285             |                    |
| 1,800.00                                                     | 1,800.00              | 1,801.00              | 1,801.00              | 6.25             | 6.26          | -22.47                | 24.90                               | -10.30       | 26.95                  | 14.44                   | 12.51                     | 2.154             |                    |
| 1,900.00                                                     | 1,900.00              | 1,901.00              | 1,901.00              | 6.61             | 6.62          | -22.47                | 24.90                               | -10.30       | 26.95                  | 13.72                   | 13.23                     | 2.037             |                    |
| 2,000.00                                                     | 2,000.00              | 2,001.00              | 2,001.00              | 6.97             | 6.97          | -22.47                | 24.90                               | -10.30       | 26.95                  | 13.00                   | 13.94                     | 1.932             |                    |
| 2,100.00                                                     | 2,100.00              | 2,101.00              | 2,101.00              | 7.33             | 7.33          | -22.47                | 24.90                               | -10.30       | 26.95                  | 12.28                   | 14.66                     | 1.838             |                    |
| 2,200.00                                                     | 2,200.00              | 2,201.00              | 2,201.00              | 7.69             | 7.69          | -22.47                | 24.90                               | -10.30       | 26.95                  | 11.57                   | 15.38                     | 1.752             |                    |
| 2,300.00                                                     | 2,300.00              | 2,301.00              | 2,301.00              | 8.05             | 8.05          | -22.47                | 24.90                               | -10.30       | 26.95                  | 10.85                   | 16.10                     | 1.674             |                    |
| 2,400.00                                                     | 2,400.00              | 2,401.00              | 2,401.00              | 8.40             | 8.41          | -22.47                | 24.90                               | -10.30       | 26.95                  | 10.13                   | 16.81                     | 1.603             |                    |
| 2,500.00                                                     | 2,500.00              | 2,501.00              | 2,501.00              | 8.76             | 8.77          | -22.47                | 24.90                               | -10.30       | 26.95                  | 9.42                    | 17.53                     | 1.537             |                    |
| 2,600.00                                                     | 2,600.00              | 2,601.00              | 2,601.00              | 9.12             | 9.12          | -22.47                | 24.90                               | -10.30       | 26.95                  | 8.70                    | 18.25                     | 1.477 Level 3     |                    |
| 2,700.00                                                     | 2,700.00              | 2,701.00              | 2,701.00              | 9.48             | 9.48          | -22.47                | 24.90                               | -10.30       | 26.95                  | 7.98                    | 18.96                     | 1.421 Level 3     |                    |
| 2,800.00                                                     | 2,800.00              | 2,801.00              | 2,801.00              | 9.84             | 9.84          | -22.47                | 24.90                               | -10.30       | 26.95                  | 7.27                    | 19.68                     | 1.369 Level 3     |                    |
| 2,900.00                                                     | 2,900.00              | 2,901.00              | 2,901.00              | 10.20            | 10.20         | -22.47                | 24.90                               | -10.30       | 26.95                  | 6.55                    | 20.40                     | 1.321 Level 3     |                    |
| 3,000.00                                                     | 3,000.00              | 3,001.00              | 3,001.00              | 10.56            | 10.56         | -22.47                | 24.90                               | -10.30       | 26.95                  | 5.83                    | 21.11                     | 1.276 Level 3     |                    |
| 3,100.00                                                     | 3,100.00              | 3,101.00              | 3,101.00              | 10.91            | 10.92         | -22.47                | 24.90                               | -10.30       | 26.95                  | 5.12                    | 21.83                     | 1.234 Level 2     |                    |
| 3,200.00                                                     | 3,200.00              | 3,201.00              | 3,201.00              | 11.27            | 11.28         | -22.47                | 24.90                               | -10.30       | 26.95                  | 4.40                    | 22.55                     | 1.195 Level 2     |                    |
| 3,300.00                                                     | 3,300.00              | 3,301.00              | 3,301.00              | 11.63            | 11.63         | -22.47                | 24.90                               | -10.30       | 26.95                  | 3.68                    | 23.26                     | 1.158 Level 2     |                    |
| 3,400.00                                                     | 3,400.00              | 3,401.00              | 3,401.00              | 11.99            | 11.99         | -22.47                | 24.90                               | -10.30       | 26.95                  | 2.96                    | 23.98                     | 1.124 Level 2     |                    |
| 3,500.00                                                     | 3,500.00              | 3,501.00              | 3,501.00              | 12.35            | 12.35         | -22.47                | 24.90                               | -10.30       | 26.95                  | 2.25                    | 24.70                     | 1.091 Level 2     |                    |
| 3,600.00                                                     | 3,600.00              | 3,601.00              | 3,601.00              | 12.71            | 12.71         | -22.47                | 24.90                               | -10.30       | 26.95                  | 1.53                    | 25.42                     | 1.060 Level 2     |                    |
| 3,700.00                                                     | 3,700.00              | 3,701.00              | 3,701.00              | 13.06            | 13.07         | -22.47                | 24.90                               | -10.30       | 26.95                  | 0.81                    | 26.13                     | 1.031 Level 2     |                    |
| 3,800.00                                                     | 3,800.00              | 3,801.00              | 3,801.00              | 13.42            | 13.43         | -22.47                | 24.90                               | -10.30       | 26.95                  | 0.10                    | 26.85                     | 1.004 Level 2     |                    |
| 3,900.00                                                     | 3,900.00              | 3,901.00              | 3,901.00              | 13.78            | 13.79         | -22.47                | 24.90                               | -10.30       | 26.95                  | -0.62                   | 27.57                     | 0.978 Level 1     |                    |
| 4,000.00                                                     | 4,000.00              | 4,001.00              | 4,001.00              | 14.14            | 14.14         | -22.47                | 24.90                               | -10.30       | 26.95                  | -1.34                   | 28.28                     | 0.953 Level 1     |                    |
| 4,100.00                                                     | 4,100.00              | 4,101.00              | 4,101.00              | 14.50            | 14.50         | -22.47                | 24.90                               | -10.30       | 26.95                  | -2.05                   | 29.00                     | 0.929 Level 1     |                    |
| 4,200.00                                                     | 4,200.00              | 4,201.00              | 4,201.00              | 14.86            | 14.86         | -22.47                | 24.90                               | -10.30       | 26.95                  | -2.77                   | 29.72                     | 0.907 Level 1     |                    |
| 4,300.00                                                     | 4,300.00              | 4,301.00              | 4,301.00              | 15.22            | 15.22         | -22.47                | 24.90                               | -10.30       | 26.95                  | -3.49                   | 30.43                     | 0.885 Level 1     |                    |
| 4,400.00                                                     | 4,400.00              | 4,401.00              | 4,401.00              | 15.57            | 15.58         | -22.47                | 24.90                               | -10.30       | 26.95                  | -4.20                   | 31.15                     | 0.865 Level 1     |                    |
| 4,500.00                                                     | 4,500.00              | 4,501.00              | 4,501.00              | 15.93            | 15.94         | -22.47                | 24.90                               | -10.30       | 26.95                  | -4.92                   | 31.87                     | 0.846 Level 1     |                    |
| 4,600.00                                                     | 4,600.00              | 4,601.00              | 4,601.00              | 16.29            | 16.29         | -22.47                | 24.90                               | -10.30       | 26.95                  | -5.64                   | 32.59                     | 0.827 Level 1     |                    |
| 4,700.00                                                     | 4,700.00              | 4,701.00              | 4,701.00              | 16.65            | 16.65         | -22.47                | 24.90                               | -10.30       | 26.95                  | -6.36                   | 33.30                     | 0.809 Level 1     |                    |
| 4,800.00                                                     | 4,800.00              | 4,801.00              | 4,801.00              | 17.01            | 17.01         | -22.47                | 24.90                               | -10.30       | 26.95                  | -7.07                   | 34.02                     | 0.792 Level 1     |                    |
| 4,900.00                                                     | 4,900.00              | 4,901.00              | 4,901.00              | 17.37            | 17.37         | -22.47                | 24.90                               | -10.30       | 26.95                  | -7.79                   | 34.74                     | 0.776 Level 1     |                    |
| 5,000.00                                                     | 5,000.00              | 5,001.00              | 5,001.00              | 17.72            | 17.73         | -22.47                | 24.90                               | -10.30       | 26.95                  | -8.51                   | 35.45                     | 0.760 Level 1     |                    |
| 5,100.00                                                     | 5,100.00              | 5,101.00              | 5,101.00              | 18.08            | 18.09         | -22.47                | 24.90                               | -10.30       | 26.95                  | -9.22                   | 36.17                     | 0.745 Level 1     |                    |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

## Offset Design Hawk Federal Com - #4H - OH - Plan #1 06-11-15

Survey Program: Q-PHX+MWD+HDGM

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

| Reference             |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   | Offset Well Error |
|-----------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|-------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning           |
| 5,153.62              | 5,153.62              | 5,154.62              | 5,154.62              | 18.28            | 18.28         | -22.47                | 24.90                               | -10.30       | 26.95                  | -9.61                   | 36.55                     | 0.737             | Level 1           |
| 5,175.00              | 5,174.99              | 5,176.38              | 5,176.38              | 18.35            | 18.36         | 69.73                 | 24.90                               | -9.89        | 26.63                  | -10.07                  | 36.70                     | 0.726             | Level 1           |
| 5,200.00              | 5,199.93              | 5,201.54              | 5,201.47              | 18.44            | 18.44         | 77.15                 | 24.92                               | -8.19        | 25.63                  | -11.23                  | 36.87                     | 0.695             | Level 1           |
| 5,224.23              | 5,223.97              | 5,225.20              | 5,224.97              | 18.52            | 18.52         | 89.98                 | 24.94                               | -5.38        | 24.97                  | -12.07                  | 37.04                     | 0.674             | Level 1, CC       |
| 5,225.00              | 5,224.73              | 5,225.94              | 5,225.70              | 18.52            | 18.52         | 90.47                 | 24.94                               | -5.28        | 24.97                  | -12.07                  | 37.05                     | 0.674             | Level 1, ES, SF   |
| 5,250.00              | 5,249.35              | 5,249.25              | 5,248.67              | 18.61            | 18.60         | 107.77                | 24.97                               | -1.34        | 26.44                  | -10.70                  | 37.14                     | 0.712             | Level 1           |
| 5,275.00              | 5,273.70              | 5,271.17              | 5,270.07              | 18.69            | 18.68         | 124.42                | 25.00                               | 3.37         | 31.65                  | -5.35                   | 37.00                     | 0.855             | Level 1           |
| 5,300.00              | 5,297.72              | 5,291.49              | 5,289.70              | 18.78            | 18.75         | 137.10                | 25.04                               | 8.62         | 40.86                  | 4.24                    | 36.62                     | 1.116             | Level 2           |
| 5,325.00              | 5,321.34              | 5,310.07              | 5,307.44              | 18.87            | 18.81         | 145.72                | 25.08                               | 14.14        | 53.36                  | 17.28                   | 36.09                     | 1.479             | Level 3           |
| 5,350.00              | 5,344.51              | 5,326.85              | 5,323.27              | 18.95            | 18.87         | 151.40                | 25.12                               | 19.72        | 68.44                  | 32.98                   | 35.46                     | 1.930             |                   |
| 5,375.00              | 5,367.15              | 5,341.81              | 5,337.20              | 19.04            | 18.93         | 155.13                | 25.16                               | 25.16        | 85.55                  | 50.79                   | 34.76                     | 2.461             |                   |
| 5,400.00              | 5,389.21              | 5,354.99              | 5,349.33              | 19.14            | 18.97         | 157.52                | 25.20                               | 30.31        | 104.31                 | 70.32                   | 33.98                     | 3.069             |                   |
| 5,425.00              | 5,410.62              | 5,366.45              | 5,369.76              | 19.24            | 19.01         | 158.98                | 25.23                               | 35.06        | 124.42                 | 91.27                   | 33.15                     | 3.754             |                   |
| 5,450.00              | 5,431.33              | 5,375.00              | 5,367.47              | 19.34            | 19.04         | 159.37                | 25.26                               | 38.77        | 145.66                 | 113.37                  | 32.29                     | 4.511             |                   |
| 5,475.00              | 5,451.28              | 5,384.58              | 5,376.02              | 19.45            | 19.08         | 159.73                | 25.29                               | 43.09        | 167.82                 | 136.46                  | 31.36                     | 5.352             |                   |
| 5,500.00              | 5,470.41              | 5,391.46              | 5,382.10              | 19.58            | 19.11         | 159.09                | 25.31                               | 46.29        | 190.75                 | 160.27                  | 30.47                     | 6.260             |                   |
| 5,525.00              | 5,488.67              | 5,400.00              | 5,389.60              | 19.71            | 19.14         | 158.54                | 25.34                               | 50.39        | 214.31                 | 184.76                  | 29.55                     | 7.253             |                   |
| 5,550.00              | 5,506.01              | 5,400.00              | 5,389.60              | 19.86            | 19.14         | 154.42                | 25.34                               | 50.39        | 238.30                 | 209.06                  | 29.24                     | 8.150             |                   |
| 5,575.00              | 5,522.39              | 5,404.60              | 5,393.60              | 20.03            | 19.16         | 150.36                | 25.36                               | 52.66        | 262.68                 | 233.50                  | 29.19                     | 9.001             |                   |
| 5,600.00              | 5,537.76              | 5,406.82              | 5,395.53              | 20.22            | 19.16         | 141.95                | 25.37                               | 53.76        | 287.33                 | 256.74                  | 30.59                     | 9.393             |                   |
| 5,625.00              | 5,552.07              | 5,408.12              | 5,396.65              | 20.43            | 19.17         | 125.23                | 25.37                               | 54.41        | 312.15                 | 277.38                  | 34.77                     | 8.978             |                   |
| 5,650.00              | 5,565.29              | 5,408.57              | 5,397.04              | 20.67            | 19.17         | 92.69                 | 25.37                               | 54.64        | 337.06                 | 297.25                  | 39.81                     | 8.467             |                   |
| 5,675.00              | 5,577.39              | 5,408.25              | 5,396.76              | 20.94            | 19.17         | 55.18                 | 25.37                               | 54.48        | 361.99                 | 327.30                  | 34.68                     | 10.437            |                   |
| 5,700.00              | 5,588.32              | 5,407.22              | 5,395.87              | 21.23            | 19.17         | 33.40                 | 25.37                               | 53.96        | 386.86                 | 360.29                  | 26.57                     | 14.558            |                   |
| 5,725.00              | 5,598.06              | 5,400.00              | 5,389.60              | 21.55            | 19.14         | 20.82                 | 25.34                               | 50.39        | 411.69                 | 391.05                  | 20.64                     | 19.944            |                   |
| 5,750.00              | 5,606.58              | 5,400.00              | 5,389.60              | 21.91            | 19.14         | 15.94                 | 25.34                               | 50.39        | 436.24                 | 418.60                  | 17.64                     | 24.732            |                   |
| 5,775.00              | 5,613.87              | 5,400.00              | 5,389.60              | 22.30            | 19.14         | 12.76                 | 25.34                               | 50.39        | 460.58                 | 445.35                  | 15.23                     | 30.239            |                   |
| 5,800.00              | 5,619.89              | 5,400.00              | 5,389.60              | 22.71            | 19.14         | 10.55                 | 25.34                               | 50.39        | 484.69                 | 471.50                  | 13.19                     | 36.755            |                   |
| 5,825.00              | 5,624.63              | 5,393.49              | 5,383.90              | 23.16            | 19.11         | 8.60                  | 25.32                               | 47.25        | 508.46                 | 497.16                  | 11.30                     | 45.013            |                   |
| 5,850.00              | 5,628.08              | 5,389.35              | 5,380.24              | 23.63            | 19.10         | 7.32                  | 25.30                               | 45.30        | 531.88                 | 522.09                  | 9.79                      | 54.310            |                   |
| 5,875.00              | 5,630.23              | 5,384.83              | 5,376.24              | 24.13            | 19.08         | 6.34                  | 25.29                               | 43.20        | 554.92                 | 546.26                  | 8.66                      | 64.093            |                   |
| 5,900.00              | 5,631.07              | 5,375.00              | 5,367.47              | 24.64            | 19.04         | 5.48                  | 25.26                               | 38.77        | 577.57                 | 569.62                  | 7.95                      | 72.622            |                   |
| 5,912.40              | 5,631.00              | 5,375.00              | 5,367.47              | 24.91            | 19.04         | 5.21                  | 25.26                               | 38.77        | 588.58                 | 580.73                  | 7.84                      | 75.027            |                   |
| 6,000.00              | 5,629.39              | 5,360.52              | 5,354.38              | 26.92            | 18.99         | 4.98                  | 25.21                               | 32.57        | 666.88                 | 658.56                  | 8.32                      | 80.145            |                   |
| 6,100.00              | 5,627.55              | 5,350.00              | 5,344.76              | 29.47            | 18.95         | 4.82                  | 25.18                               | 28.32        | 757.89                 | 748.93                  | 8.95                      | 84.640            |                   |
| 6,200.00              | 5,625.71              | 5,325.00              | 5,321.53              | 32.23            | 18.87         | 4.47                  | 25.11                               | 19.08        | 850.10                 | 840.55                  | 9.55                      | 89.011            |                   |
| 6,300.00              | 5,623.88              | 5,325.00              | 5,321.53              | 35.16            | 18.87         | 4.47                  | 25.11                               | 19.08        | 943.47                 | 933.17                  | 10.30                     | 91.608            |                   |
| 6,400.00              | 5,622.04              | 5,300.00              | 5,297.86              | 38.21            | 18.78         | 4.16                  | 25.06                               | 11.06        | 1,037.58               | 1,026.63                | 10.95                     | 94.798            |                   |
| 6,500.00              | 5,620.20              | 5,300.00              | 5,297.86              | 41.36            | 18.78         | 4.16                  | 25.06                               | 11.06        | 1,132.40               | 1,120.69                | 11.72                     | 96.632            |                   |
| 6,600.00              | 5,618.36              | 5,287.85              | 5,286.21              | 44.59            | 18.74         | 4.03                  | 25.03                               | 7.62         | 1,227.84               | 1,215.39                | 12.45                     | 98.656            |                   |
| 6,700.00              | 5,616.52              | 5,275.00              | 5,273.79              | 47.87            | 18.69         | 3.89                  | 25.01                               | 4.30         | 1,323.82               | 1,310.64                | 13.18                     | 100.464           |                   |
| 6,800.00              | 5,614.68              | 5,275.00              | 5,273.79              | 51.21            | 18.69         | 3.89                  | 25.01                               | 4.30         | 1,420.15               | 1,406.18                | 13.97                     | 101.670           |                   |
| 6,900.00              | 5,612.84              | 5,275.00              | 5,273.79              | 54.58            | 18.69         | 3.89                  | 25.01                               | 4.30         | 1,516.96               | 1,502.19                | 14.76                     | 102.749           |                   |
| 7,000.00              | 5,611.00              | 5,261.44              | 5,260.60              | 57.99            | 18.65         | 3.76                  | 24.98                               | 1.16         | 1,613.90               | 1,598.40                | 15.50                     | 104.120           |                   |
| 7,100.00              | 5,609.16              | 5,250.00              | 5,249.41              | 61.43            | 18.61         | 3.65                  | 24.97                               | -1.20        | 1,711.25               | 1,695.00                | 16.25                     | 105.309           |                   |
| 7,200.00              | 5,607.32              | 5,250.00              | 5,249.41              | 64.89            | 18.61         | 3.65                  | 24.97                               | -1.20        | 1,808.74               | 1,791.69                | 17.05                     | 106.084           |                   |
| 7,300.00              | 5,605.48              | 5,250.00              | 5,249.41              | 68.37            | 18.61         | 3.65                  | 24.97                               | -1.20        | 1,906.48               | 1,888.63                | 17.85                     | 106.793           |                   |
| 7,400.00              | 5,603.64              | 5,250.00              | 5,249.41              | 71.87            | 18.61         | 3.65                  | 24.97                               | -1.20        | 2,004.45               | 1,985.79                | 18.66                     | 107.443           |                   |
| 7,500.00              | 5,601.80              | 5,239.62              | 5,239.21              | 75.38            | 18.57         | 3.56                  | 24.95                               | -3.11        | 2,102.46               | 2,083.05                | 19.41                     | 108.311           |                   |
| 7,600.00              | 5,599.96              | 5,236.22              | 5,235.85              | 78.91            | 18.56         | 3.53                  | 24.95                               | -3.68        | 2,200.68               | 2,180.48                | 20.20                     | 108.944           |                   |
| 7,700.00              | 5,598.13              | 5,225.00              | 5,224.77              | 82.44            | 18.52         | 3.43                  | 24.94                               | -5.41        | 2,299.11               | 2,278.16                | 20.95                     | 109.724           |                   |
| 7,800.00              | 5,596.29              | 5,225.00              | 5,224.77              | 85.99            | 18.52         | 3.43                  | 24.94                               | -5.41        | 2,397.53               | 2,375.77                | 21.76                     | 110.189           |                   |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #4H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                                          |                |                              |                               |                                 | Offset Site Error:   | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|------------------------------------------|----------------|------------------------------|-------------------------------|---------------------------------|----------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                             |                                          |                |                              |                               |                                 | Offset Well Error:   | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                 |                |                              |                               | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning   |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N-S<br>(usft) | +E-W<br>(usft) | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) |                                 |                      |           |
| 7,900.00                                                     | 5,594.45                    | 5,225.00                    | 5,224.77                    | 89.54               | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,496.06                     | 2,473.50                      | 22.56                           | 110.622              |           |
| 8,000.00                                                     | 5,592.61                    | 5,225.00                    | 5,224.77                    | 93.10               | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,594.71                     | 2,571.34                      | 23.37                           | 111.027              |           |
| 8,100.00                                                     | 5,590.77                    | 5,225.00                    | 5,224.77                    | 96.67               | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,693.46                     | 2,669.29                      | 24.18                           | 111.406              |           |
| 8,200.00                                                     | 5,588.93                    | 5,225.00                    | 5,224.77                    | 100.24              | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,792.30                     | 2,767.32                      | 24.98                           | 111.762              |           |
| 8,300.00                                                     | 5,587.09                    | 5,225.00                    | 5,224.77                    | 103.82              | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,891.22                     | 2,865.43                      | 25.79                           | 112.096              |           |
| 8,400.00                                                     | 5,585.25                    | 5,225.00                    | 5,224.77                    | 107.41              | 18.52            | 3.43                        | 24.94                                    | -5.41          | 2,990.21                     | 2,963.61                      | 26.60                           | 112.411              |           |
| 8,500.00                                                     | 5,583.41                    | 5,214.04                    | 5,213.90                    | 110.99              | 18.48            | 3.35                        | 24.93                                    | -6.85          | 3,089.12                     | 3,061.77                      | 27.35                           | 112.951              |           |
| 8,600.00                                                     | 5,581.57                    | 5,212.24                    | 5,212.11                    | 114.59              | 18.48            | 3.33                        | 24.92                                    | -7.07          | 3,188.18                     | 3,160.04                      | 28.15                           | 113.269              |           |
| 8,700.00                                                     | 5,579.73                    | 5,200.00                    | 5,199.94                    | 118.18              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,287.43                     | 3,258.54                      | 28.89                           | 113.791              |           |
| 8,800.00                                                     | 5,577.89                    | 5,200.00                    | 5,199.94                    | 121.78              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,386.55                     | 3,356.85                      | 29.70                           | 114.038              |           |
| 8,900.00                                                     | 5,576.05                    | 5,200.00                    | 5,199.94                    | 125.38              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,485.72                     | 3,455.22                      | 30.50                           | 114.273              |           |
| 9,000.00                                                     | 5,574.22                    | 5,200.00                    | 5,199.94                    | 128.99              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,584.94                     | 3,553.63                      | 31.31                           | 114.496              |           |
| 9,100.00                                                     | 5,572.38                    | 5,200.00                    | 5,199.94                    | 132.60              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,684.20                     | 3,652.08                      | 32.12                           | 114.709              |           |
| 9,200.00                                                     | 5,570.54                    | 5,200.00                    | 5,199.94                    | 136.21              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,783.50                     | 3,750.57                      | 32.93                           | 114.911              |           |
| 9,300.00                                                     | 5,568.70                    | 5,200.00                    | 5,199.94                    | 139.82              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,882.83                     | 3,849.10                      | 33.73                           | 115.104              |           |
| 9,400.00                                                     | 5,566.86                    | 5,200.00                    | 5,199.94                    | 143.43              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 3,982.20                     | 3,947.66                      | 34.54                           | 115.289              |           |
| 9,500.00                                                     | 5,565.02                    | 5,200.00                    | 5,199.94                    | 147.05              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,081.60                     | 4,046.25                      | 35.35                           | 115.466              |           |
| 9,600.00                                                     | 5,563.18                    | 5,200.00                    | 5,199.94                    | 150.66              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,181.02                     | 4,144.87                      | 36.16                           | 115.635              |           |
| 9,700.00                                                     | 5,561.34                    | 5,200.00                    | 5,199.94                    | 154.28              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,280.48                     | 4,243.51                      | 36.97                           | 115.796              |           |
| 9,800.00                                                     | 5,559.50                    | 5,200.00                    | 5,199.94                    | 157.90              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,379.96                     | 4,342.18                      | 37.77                           | 115.952              |           |
| 9,900.00                                                     | 5,557.66                    | 5,200.00                    | 5,199.94                    | 161.53              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,479.46                     | 4,440.88                      | 38.58                           | 116.101              |           |
| 10,000.00                                                    | 5,555.82                    | 5,200.00                    | 5,199.94                    | 165.15              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,578.98                     | 4,539.59                      | 39.39                           | 116.244              |           |
| 10,100.00                                                    | 5,553.98                    | 5,200.00                    | 5,199.94                    | 168.77              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,678.53                     | 4,638.33                      | 40.20                           | 116.381              |           |
| 10,200.00                                                    | 5,552.14                    | 5,200.00                    | 5,199.94                    | 172.40              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,778.09                     | 4,737.08                      | 41.01                           | 116.514              |           |
| 10,300.00                                                    | 5,550.30                    | 5,200.00                    | 5,199.94                    | 176.03              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,877.67                     | 4,835.85                      | 41.82                           | 116.641              |           |
| 10,400.00                                                    | 5,548.47                    | 5,200.00                    | 5,199.94                    | 179.65              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 4,977.27                     | 4,934.64                      | 42.63                           | 116.764              |           |
| 10,500.00                                                    | 5,546.63                    | 5,200.00                    | 5,199.94                    | 183.28              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 5,076.88                     | 5,033.45                      | 43.44                           | 116.882              |           |
| 10,534.05                                                    | 5,546.00                    | 5,200.00                    | 5,199.94                    | 183.97              | 18.44            | 3.24                        | 24.91                                    | -8.33          | 5,110.80                     | 5,067.23                      | 43.57                           | 117.288              |           |

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #5H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   | Warning            |           |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 0.00                                                         | 0.00                  | 1.00                  | 1.00                  | 0.00             | 0.00          | -22.47                | 64.80                               | -26.80       | 70.12                  |                         |                           |                   |                    |           |
| 100.00                                                       | 100.00                | 101.00                | 101.00                | 0.16             | 0.16          | -22.47                | 64.80                               | -26.80       | 70.12                  | 69.80                   | 0.32                      | 217.353           |                    |           |
| 200.00                                                       | 200.00                | 201.00                | 201.00                | 0.52             | 0.52          | -22.47                | 64.80                               | -26.80       | 70.12                  | 69.08                   | 1.04                      | 67.454            |                    |           |
| 300.00                                                       | 300.00                | 301.00                | 301.00                | 0.88             | 0.88          | -22.47                | 64.80                               | -26.80       | 70.12                  | 68.37                   | 1.76                      | 39.922            |                    |           |
| 400.00                                                       | 400.00                | 401.00                | 401.00                | 1.23             | 1.24          | -22.47                | 64.80                               | -26.80       | 70.12                  | 67.65                   | 2.47                      | 28.350            |                    |           |
| 500.00                                                       | 500.00                | 501.00                | 501.00                | 1.59             | 1.60          | -22.47                | 64.80                               | -26.80       | 70.12                  | 66.93                   | 3.19                      | 21.979            |                    |           |
| 600.00                                                       | 600.00                | 601.00                | 601.00                | 1.95             | 1.96          | -22.47                | 64.80                               | -26.80       | 70.12                  | 66.22                   | 3.91                      | 17.947            |                    |           |
| 700.00                                                       | 700.00                | 701.00                | 701.00                | 2.31             | 2.31          | -22.47                | 64.80                               | -26.80       | 70.12                  | 65.50                   | 4.62                      | 15.164            |                    |           |
| 800.00                                                       | 800.00                | 801.00                | 801.00                | 2.67             | 2.67          | -22.47                | 64.80                               | -26.80       | 70.12                  | 64.78                   | 5.34                      | 13.129            |                    |           |
| 900.00                                                       | 900.00                | 901.00                | 901.00                | 3.03             | 3.03          | -22.47                | 64.80                               | -26.80       | 70.12                  | 64.07                   | 6.06                      | 11.575            |                    |           |
| 1,000.00                                                     | 1,000.00              | 1,001.00              | 1,001.00              | 3.39             | 3.39          | -22.47                | 64.80                               | -26.80       | 70.12                  | 63.35                   | 6.78                      | 10.350            |                    |           |
| 1,100.00                                                     | 1,100.00              | 1,101.00              | 1,101.00              | 3.74             | 3.75          | -22.47                | 64.80                               | -26.80       | 70.12                  | 62.63                   | 7.49                      | 9.360             |                    |           |
| 1,200.00                                                     | 1,200.00              | 1,201.00              | 1,201.00              | 4.10             | 4.11          | -22.47                | 64.80                               | -26.80       | 70.12                  | 61.91                   | 8.21                      | 8.542             |                    |           |
| 1,300.00                                                     | 1,300.00              | 1,301.00              | 1,301.00              | 4.46             | 4.46          | -22.47                | 64.80                               | -26.80       | 70.12                  | 61.20                   | 8.93                      | 7.856             |                    |           |
| 1,400.00                                                     | 1,400.00              | 1,401.00              | 1,401.00              | 4.82             | 4.82          | -22.47                | 64.80                               | -26.80       | 70.12                  | 60.48                   | 9.64                      | 7.272             |                    |           |
| 1,500.00                                                     | 1,500.00              | 1,501.00              | 1,501.00              | 5.18             | 5.18          | -22.47                | 64.80                               | -26.80       | 70.12                  | 59.76                   | 10.36                     | 6.769             |                    |           |
| 1,600.00                                                     | 1,500.00              | 1,601.00              | 1,601.00              | 5.54             | 5.54          | -22.47                | 64.80                               | -26.80       | 70.12                  | 59.05                   | 11.08                     | 6.331             |                    |           |
| 1,700.00                                                     | 1,700.00              | 1,701.00              | 1,701.00              | 5.90             | 5.90          | -22.47                | 64.80                               | -26.80       | 70.12                  | 58.33                   | 11.79                     | 5.946             |                    |           |
| 1,800.00                                                     | 1,800.00              | 1,801.00              | 1,801.00              | 6.25             | 6.26          | -22.47                | 64.80                               | -26.80       | 70.12                  | 57.61                   | 12.51                     | 5.605             |                    |           |
| 1,900.00                                                     | 1,900.00              | 1,901.00              | 1,901.00              | 6.61             | 6.62          | -22.47                | 64.80                               | -26.80       | 70.12                  | 56.90                   | 13.23                     | 5.301             |                    |           |
| 2,000.00                                                     | 2,000.00              | 2,001.00              | 2,001.00              | 6.97             | 6.97          | -22.47                | 64.80                               | -26.80       | 70.12                  | 56.18                   | 13.94                     | 5.029             |                    |           |
| 2,100.00                                                     | 2,100.00              | 2,101.00              | 2,101.00              | 7.33             | 7.33          | -22.47                | 64.80                               | -26.80       | 70.12                  | 55.46                   | 14.66                     | 4.783             |                    |           |
| 2,200.00                                                     | 2,200.00              | 2,201.00              | 2,201.00              | 7.69             | 7.69          | -22.47                | 64.80                               | -26.80       | 70.12                  | 54.74                   | 15.38                     | 4.560             |                    |           |
| 2,300.00                                                     | 2,300.00              | 2,301.00              | 2,301.00              | 8.05             | 8.05          | -22.47                | 64.80                               | -26.80       | 70.12                  | 54.03                   | 16.10                     | 4.357             |                    |           |
| 2,400.00                                                     | 2,400.00              | 2,401.00              | 2,401.00              | 8.40             | 8.41          | -22.47                | 64.80                               | -26.80       | 70.12                  | 53.31                   | 16.81                     | 4.171             |                    |           |
| 2,500.00                                                     | 2,500.00              | 2,501.00              | 2,501.00              | 8.76             | 8.77          | -22.47                | 64.80                               | -26.80       | 70.12                  | 52.59                   | 17.53                     | 4.000             |                    |           |
| 2,600.00                                                     | 2,600.00              | 2,601.00              | 2,601.00              | 9.12             | 9.12          | -22.47                | 64.80                               | -26.80       | 70.12                  | 51.88                   | 18.25                     | 3.843             |                    |           |
| 2,700.00                                                     | 2,700.00              | 2,701.00              | 2,701.00              | 9.48             | 9.48          | -22.47                | 64.80                               | -26.80       | 70.12                  | 51.16                   | 18.96                     | 3.698             |                    |           |
| 2,800.00                                                     | 2,800.00              | 2,801.00              | 2,801.00              | 9.84             | 9.84          | -22.47                | 64.80                               | -26.80       | 70.12                  | 50.44                   | 19.68                     | 3.563             |                    |           |
| 2,900.00                                                     | 2,900.00              | 2,901.00              | 2,901.00              | 10.20            | 10.20         | -22.47                | 64.80                               | -26.80       | 70.12                  | 49.73                   | 20.40                     | 3.438             |                    |           |
| 3,000.00                                                     | 3,000.00              | 3,001.00              | 3,001.00              | 10.56            | 10.56         | -22.47                | 64.80                               | -26.80       | 70.12                  | 49.01                   | 21.11                     | 3.321             |                    |           |
| 3,100.00                                                     | 3,100.00              | 3,101.00              | 3,101.00              | 10.91            | 10.92         | -22.47                | 64.80                               | -26.80       | 70.12                  | 48.29                   | 21.83                     | 3.212             |                    |           |
| 3,200.00                                                     | 3,200.00              | 3,201.00              | 3,201.00              | 11.27            | 11.28         | -22.47                | 64.80                               | -26.80       | 70.12                  | 47.58                   | 22.55                     | 3.110             |                    |           |
| 3,300.00                                                     | 3,300.00              | 3,301.00              | 3,301.00              | 11.63            | 11.63         | -22.47                | 64.80                               | -26.80       | 70.12                  | 46.86                   | 23.26                     | 3.014             |                    |           |
| 3,400.00                                                     | 3,400.00              | 3,401.00              | 3,401.00              | 11.99            | 11.99         | -22.47                | 64.80                               | -26.80       | 70.12                  | 46.14                   | 23.98                     | 2.924             |                    |           |
| 3,500.00                                                     | 3,500.00              | 3,501.00              | 3,501.00              | 12.35            | 12.35         | -22.47                | 64.80                               | -26.80       | 70.12                  | 45.42                   | 24.70                     | 2.839             |                    |           |
| 3,600.00                                                     | 3,600.00              | 3,601.00              | 3,601.00              | 12.71            | 12.71         | -22.47                | 64.80                               | -26.80       | 70.12                  | 44.71                   | 25.42                     | 2.759             |                    |           |
| 3,700.00                                                     | 3,700.00              | 3,701.00              | 3,701.00              | 13.06            | 13.07         | -22.47                | 64.80                               | -26.80       | 70.12                  | 43.99                   | 26.13                     | 2.683             |                    |           |
| 3,800.00                                                     | 3,800.00              | 3,801.00              | 3,801.00              | 13.42            | 13.43         | -22.47                | 64.80                               | -26.80       | 70.12                  | 43.27                   | 26.85                     | 2.612             |                    |           |
| 3,900.00                                                     | 3,900.00              | 3,901.00              | 3,901.00              | 13.78            | 13.79         | -22.47                | 64.80                               | -26.80       | 70.12                  | 42.56                   | 27.57                     | 2.544             |                    |           |
| 4,000.00                                                     | 4,000.00              | 4,001.00              | 4,001.00              | 14.14            | 14.14         | -22.47                | 64.80                               | -26.80       | 70.12                  | 41.84                   | 28.28                     | 2.479             |                    |           |
| 4,100.00                                                     | 4,100.00              | 4,101.00              | 4,101.00              | 14.50            | 14.50         | -22.47                | 64.80                               | -26.80       | 70.12                  | 41.12                   | 29.00                     | 2.418             |                    |           |
| 4,200.00                                                     | 4,200.00              | 4,201.00              | 4,201.00              | 14.86            | 14.86         | -22.47                | 64.80                               | -26.80       | 70.12                  | 40.41                   | 29.72                     | 2.360             |                    |           |
| 4,300.00                                                     | 4,300.00              | 4,301.00              | 4,301.00              | 15.22            | 15.22         | -22.47                | 64.80                               | -26.80       | 70.12                  | 39.69                   | 30.43                     | 2.304             |                    |           |
| 4,400.00                                                     | 4,400.00              | 4,401.00              | 4,401.00              | 15.57            | 15.58         | -22.47                | 64.80                               | -26.80       | 70.12                  | 38.97                   | 31.15                     | 2.251             |                    |           |
| 4,500.00                                                     | 4,500.00              | 4,501.00              | 4,501.00              | 15.93            | 15.94         | -22.47                | 64.80                               | -26.80       | 70.12                  | 38.26                   | 31.87                     | 2.200             |                    |           |
| 4,600.00                                                     | 4,600.00              | 4,601.00              | 4,601.00              | 16.29            | 16.29         | -22.47                | 64.80                               | -26.80       | 70.12                  | 37.54                   | 32.59                     | 2.152             |                    |           |
| 4,700.00                                                     | 4,700.00              | 4,701.00              | 4,701.00              | 16.65            | 16.65         | -22.47                | 64.80                               | -26.80       | 70.12                  | 36.82                   | 33.30                     | 2.106             |                    |           |
| 4,800.00                                                     | 4,800.00              | 4,801.00              | 4,801.00              | 17.01            | 17.01         | -22.47                | 64.80                               | -26.80       | 70.12                  | 36.10                   | 34.02                     | 2.061             |                    |           |
| 4,900.00                                                     | 4,900.00              | 4,901.00              | 4,901.00              | 17.37            | 17.37         | -22.47                | 64.80                               | -26.80       | 70.12                  | 35.39                   | 34.74                     | 2.019             |                    |           |
| 5,000.00                                                     | 5,000.00              | 5,001.00              | 5,001.00              | 17.72            | 17.73         | -22.47                | 64.80                               | -26.80       | 70.12                  | 34.67                   | 35.45                     | 1.978             |                    |           |
| 5,100.00                                                     | 5,100.00              | 5,101.00              | 5,101.00              | 18.08            | 18.09         | -22.47                | 64.80                               | -26.80       | 70.12                  | 33.95                   | 36.17                     | 1.939             |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #5H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           |                   | Offset Well Error: | 0.00 usft |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   |                    | Warning   |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |                    |           |
| 5,153.62                                                     | 5,153.62              | 5,154.62              | 5,154.62              | 18.28            | 18.28         | -22.47                | 64.80                               | -26.80       | 70.12                  | 33.57                   | 36.55                     | 1.918             |                    |           |
| 5,175.00                                                     | 5,174.99              | 5,175.99              | 5,175.99              | 18.35            | 18.36         | 68.29                 | 64.80                               | -26.80       | 69.94                  | 33.24                   | 36.70                     | 1.906             |                    |           |
| 5,200.00                                                     | 5,199.93              | 5,200.93              | 5,200.93              | 18.44            | 18.44         | 69.72                 | 64.80                               | -26.80       | 69.31                  | 32.45                   | 36.86                     | 1.880             |                    |           |
| 5,225.00                                                     | 5,224.73              | 5,225.73              | 5,225.73              | 18.52            | 18.53         | 72.24                 | 64.80                               | -26.80       | 68.30                  | 31.28                   | 37.02                     | 1.845             |                    |           |
| 5,250.00                                                     | 5,249.35              | 5,250.35              | 5,250.35              | 18.61            | 18.62         | 75.89                 | 64.80                               | -26.80       | 67.08                  | 29.90                   | 37.18                     | 1.804             |                    |           |
| 5,275.00                                                     | 5,273.70              | 5,274.70              | 5,274.70              | 18.69            | 18.71         | 80.67                 | 64.80                               | -26.80       | 65.90                  | 28.53                   | 37.37                     | 1.764             |                    |           |
| 5,300.00                                                     | 5,297.72              | 5,298.72              | 5,298.72              | 18.78            | 18.80         | 86.55                 | 64.80                               | -26.80       | 65.11                  | 27.54                   | 37.57                     | 1.733             |                    |           |
| 5,313.05                                                     | 5,310.11              | 5,311.11              | 5,311.11              | 18.82            | 18.84         | 90.00                 | 64.80                               | -26.80       | 64.98                  | 27.31                   | 37.66                     | 1.725 CC, ES      |                    |           |
| 5,325.00                                                     | 5,321.34              | 5,322.34              | 5,322.34              | 18.87            | 18.88         | 93.35                 | 64.80                               | -26.80       | 65.10                  | 27.36                   | 37.74                     | 1.725 SF          |                    |           |
| 5,350.00                                                     | 5,344.51              | 5,345.51              | 5,345.51              | 18.95            | 18.96         | 100.74                | 64.80                               | -26.80       | 66.35                  | 28.54                   | 37.81                     | 1.755             |                    |           |
| 5,375.00                                                     | 5,367.15              | 5,368.15              | 5,368.15              | 19.04            | 19.04         | 108.31                | 64.80                               | -26.80       | 69.28                  | 31.56                   | 37.72                     | 1.837             |                    |           |
| 5,400.00                                                     | 5,389.21              | 5,390.21              | 5,390.21              | 19.14            | 19.12         | 115.60                | 64.80                               | -26.80       | 74.18                  | 38.78                   | 37.40                     | 1.984             |                    |           |
| 5,425.00                                                     | 5,410.62              | 5,411.62              | 5,411.62              | 19.24            | 19.20         | 122.28                | 64.80                               | -26.80       | 81.20                  | 44.35                   | 36.85                     | 2.204             |                    |           |
| 5,450.00                                                     | 5,431.33              | 5,432.33              | 5,432.33              | 19.34            | 19.27         | 128.13                | 64.80                               | -26.80       | 90.29                  | 54.20                   | 36.10                     | 2.502             |                    |           |
| 5,475.00                                                     | 5,451.28              | 5,452.28              | 5,452.28              | 19.45            | 19.35         | 133.10                | 64.80                               | -26.80       | 101.34                 | 66.15                   | 35.18                     | 2.880             |                    |           |
| 5,500.00                                                     | 5,470.41              | 5,471.41              | 5,471.41              | 19.58            | 19.41         | 137.22                | 64.80                               | -26.80       | 114.15                 | 79.99                   | 34.16                     | 3.341             |                    |           |
| 5,525.00                                                     | 5,488.67              | 5,489.67              | 5,489.67              | 19.71            | 19.48         | 140.57                | 64.80                               | -26.80       | 128.55                 | 95.48                   | 33.07                     | 3.887             |                    |           |
| 5,550.00                                                     | 5,506.01              | 5,507.01              | 5,507.01              | 19.86            | 19.54         | 143.24                | 64.80                               | -26.80       | 144.37                 | 112.43                  | 31.94                     | 4.519             |                    |           |
| 5,575.00                                                     | 5,522.39              | 5,523.39              | 5,523.39              | 20.03            | 19.60         | 145.31                | 64.80                               | -26.80       | 161.46                 | 130.65                  | 30.81                     | 5.240             |                    |           |
| 5,600.00                                                     | 5,537.76              | 5,538.76              | 5,538.76              | 20.22            | 19.66         | 146.85                | 64.80                               | -26.80       | 179.68                 | 149.98                  | 29.70                     | 6.049             |                    |           |
| 5,625.00                                                     | 5,552.07              | 5,553.07              | 5,553.07              | 20.43            | 19.71         | 147.90                | 64.80                               | -26.80       | 198.93                 | 170.27                  | 28.66                     | 6.942             |                    |           |
| 5,650.00                                                     | 5,565.29              | 5,566.29              | 5,566.29              | 20.67            | 19.75         | 148.49                | 64.80                               | -26.80       | 219.09                 | 191.37                  | 27.72                     | 7.905             |                    |           |
| 5,675.00                                                     | 5,577.39              | 5,578.39              | 5,578.39              | 20.94            | 19.80         | 148.61                | 64.80                               | -26.80       | 240.07                 | 213.13                  | 26.94                     | 8.913             |                    |           |
| 5,700.00                                                     | 5,588.32              | 5,589.32              | 5,589.32              | 21.23            | 19.84         | 148.23                | 64.80                               | -26.80       | 261.78                 | 235.39                  | 26.39                     | 9.918             |                    |           |
| 5,725.00                                                     | 5,598.06              | 5,599.06              | 5,599.06              | 21.55            | 19.87         | 147.27                | 64.80                               | -26.80       | 284.14                 | 257.95                  | 26.19                     | 10.848            |                    |           |
| 5,750.00                                                     | 5,606.58              | 5,607.58              | 5,607.58              | 21.91            | 19.90         | 145.60                | 64.80                               | -26.80       | 307.06                 | 280.59                  | 26.47                     | 11.601            |                    |           |
| 5,775.00                                                     | 5,613.87              | 5,614.87              | 5,614.87              | 22.30            | 19.93         | 143.00                | 64.80                               | -26.80       | 330.47                 | 303.08                  | 27.39                     | 12.064            |                    |           |
| 5,800.00                                                     | 5,619.89              | 5,620.89              | 5,620.89              | 22.71            | 19.95         | 139.09                | 64.80                               | -26.80       | 354.29                 | 325.10                  | 29.19                     | 12.136            |                    |           |
| 5,825.00                                                     | 5,624.63              | 5,625.63              | 5,625.63              | 23.16            | 19.97         | 133.25                | 64.80                               | -26.80       | 378.45                 | 346.34                  | 32.11                     | 11.787            |                    |           |
| 5,850.00                                                     | 5,628.08              | 5,629.08              | 5,629.08              | 23.63            | 19.98         | 124.44                | 64.80                               | -26.80       | 402.86                 | 366.59                  | 36.27                     | 11.107            |                    |           |
| 5,875.00                                                     | 5,630.23              | 5,631.23              | 5,631.23              | 24.13            | 19.99         | 111.28                | 64.80                               | -26.80       | 427.46                 | 386.27                  | 41.18                     | 10.380            |                    |           |
| 5,900.00                                                     | 5,631.07              | 5,632.07              | 5,632.07              | 24.64            | 19.99         | 92.99                 | 64.80                               | -26.80       | 452.17                 | 407.59                  | 44.57                     | 10.145            |                    |           |
| 5,912.40                                                     | 5,631.00              | 5,632.00              | 5,632.00              | 24.91            | 19.99         | 82.58                 | 64.80                               | -26.80       | 464.44                 | 419.91                  | 44.54                     | 10.428            |                    |           |
| 6,000.00                                                     | 5,629.39              | 5,630.39              | 5,630.39              | 26.92            | 19.98         | 81.19                 | 64.80                               | -26.80       | 551.30                 | 504.93                  | 46.37                     | 11.889            |                    |           |
| 6,100.00                                                     | 5,627.55              | 5,628.55              | 5,628.55              | 29.47            | 19.98         | 79.61                 | 64.80                               | -26.80       | 650.69                 | 602.02                  | 48.67                     | 13.370            |                    |           |
| 6,200.00                                                     | 5,625.71              | 5,626.71              | 5,626.71              | 32.23            | 19.98         | 74.44                 | 59.78                               | -788.74      | 670.63                 | 657.13                  | 13.50                     | 49.670            |                    |           |
| 6,300.00                                                     | 5,623.88              | 5,624.88              | 5,624.88              | 35.16            | 19.98         | 74.44                 | 59.12                               | -888.71      | 670.30                 | 655.32                  | 14.98                     | 44.756            |                    |           |
| 6,400.00                                                     | 5,622.04              | 5,623.04              | 5,623.04              | 38.21            | 19.98         | 74.43                 | 58.46                               | -988.68      | 669.96                 | 653.46                  | 16.50                     | 40.610            |                    |           |
| 6,500.00                                                     | 5,620.20              | 5,621.20              | 5,621.20              | 41.36            | 19.98         | 74.43                 | 57.80                               | -1,088.66    | 669.62                 | 651.57                  | 18.05                     | 37.092            |                    |           |
| 6,600.00                                                     | 5,618.36              | 5,619.36              | 5,619.36              | 44.59            | 19.98         | 74.43                 | 57.14                               | -1,188.63    | 669.29                 | 649.65                  | 19.64                     | 34.086            |                    |           |
| 6,700.00                                                     | 5,616.52              | 5,617.52              | 5,617.52              | 47.87            | 19.98         | 74.43                 | 56.48                               | -1,288.60    | 668.95                 | 647.71                  | 21.24                     | 31.498            |                    |           |
| 6,800.00                                                     | 5,614.68              | 5,615.68              | 5,615.68              | 51.21            | 19.98         | 74.42                 | 55.82                               | -1,388.58    | 668.62                 | 645.76                  | 22.86                     | 29.252            |                    |           |
| 6,900.00                                                     | 5,612.84              | 5,613.84              | 5,613.84              | 54.58            | 19.98         | 74.42                 | 55.16                               | -1,488.55    | 668.28                 | 643.79                  | 24.49                     | 27.288            |                    |           |
| 7,000.00                                                     | 5,611.00              | 5,612.00              | 5,612.00              | 57.99            | 19.98         | 74.42                 | 54.50                               | -1,588.53    | 667.95                 | 641.81                  | 26.13                     | 25.559            |                    |           |
| 7,100.00                                                     | 5,609.16              | 5,610.16              | 5,610.16              | 61.43            | 19.98         | 74.41                 | 53.84                               | -1,688.50    | 667.61                 | 639.82                  | 27.79                     | 24.027            |                    |           |
| 7,200.00                                                     | 5,607.32              | 5,608.32              | 5,608.32              | 64.89            | 19.98         | 74.41                 | 53.18                               | -1,788.47    | 667.27                 | 637.83                  | 29.45                     | 22.661            |                    |           |
| 7,300.00                                                     | 5,605.48              | 5,606.48              | 5,606.48              | 68.37            | 19.98         | 74.41                 | 52.52                               | -1,888.45    | 666.94                 | 635.83                  | 31.11                     | 21.437            |                    |           |
| 7,400.00                                                     | 5,603.64              | 5,604.64              | 5,604.64              | 71.87            | 19.98         | 74.41                 | 51.87                               | -1,988.42    | 666.60                 | 633.82                  | 32.78                     | 20.334            |                    |           |
| 7,500.00                                                     | 5,601.80              | 5,602.80              | 5,602.80              | 75.38            | 19.98         | 74.40                 | 51.21                               | -2,088.39    | 666.27                 | 631.81                  | 34.46                     | 19.335            |                    |           |
| 7,600.00                                                     | 5,599.96              | 5,600.96              | 5,600.96              | 78.91            | 19.98         | 74.40                 | 50.55                               | -2,188.37    | 665.93                 | 629.79                  | 36.14                     | 18.427            |                    |           |
| 7,700.00                                                     | 5,598.13              | 5,599.13              | 5,599.13              | 82.44            | 19.98         | 74.40                 | 49.89                               | -2,288.34    | 665.59                 | 627.77                  | 37.82                     | 17.597            |                    |           |
| 7,800.00                                                     | 5,596.29              | 5,597.29              | 5,597.29              | 85.99            | 19.98         | 74.39                 | 49.23                               | -2,388.31    | 665.26                 | 625.75                  | 39.51                     | 16.838            |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

## Offset Design Hawk Federal Com - #5H - OH - Plan #1 06-11-15

Survey Program: 0-PHX+MWD+HDGM

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

| Reference             |                       | Offset                |                       | Semi Major Axis  |               |                       | Distance                            |              |                        |                         |                           |                   | Warning |
|-----------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|-------------------|---------|
| Measured Depth (usft) | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor |         |
| 7,900.00              | 5,594.45              | 8,557.19              | 6,257.03              | 89.54            | 89.69         | 174.39                | 48.57                               | -2,488.29    | 664.92                 | 623.72                  | 41.20                     | 16.139            |         |
| 8,000.00              | 5,592.61              | 8,657.19              | 6,254.85              | 93.10            | 93.23         | 174.39                | 47.91                               | -2,588.26    | 664.59                 | 621.69                  | 42.89                     | 15.494            |         |
| 8,100.00              | 5,590.77              | 8,757.19              | 6,252.67              | 96.67            | 96.77         | 174.39                | 47.25                               | -2,688.23    | 664.25                 | 619.66                  | 44.59                     | 14.898            |         |
| 8,200.00              | 5,588.93              | 8,857.19              | 6,250.50              | 100.24           | 100.33        | 174.38                | 46.59                               | -2,788.21    | 663.91                 | 617.63                  | 46.28                     | 14.344            |         |
| 8,300.00              | 5,587.09              | 8,957.19              | 6,248.32              | 103.82           | 103.89        | 174.38                | 45.93                               | -2,888.18    | 663.58                 | 615.60                  | 47.98                     | 13.830            |         |
| 8,400.00              | 5,585.25              | 9,057.19              | 6,246.14              | 107.41           | 107.45        | 174.38                | 45.27                               | -2,988.16    | 663.24                 | 613.56                  | 49.68                     | 13.350            |         |
| 8,500.00              | 5,583.41              | 9,157.19              | 6,243.97              | 110.99           | 111.03        | 174.37                | 44.61                               | -3,088.13    | 662.91                 | 611.52                  | 51.38                     | 12.901            |         |
| 8,600.00              | 5,581.57              | 9,257.19              | 6,241.79              | 114.59           | 114.60        | 174.37                | 43.96                               | -3,188.10    | 662.57                 | 609.48                  | 53.09                     | 12.481            |         |
| 8,700.00              | 5,579.73              | 9,357.19              | 6,239.61              | 118.18           | 118.18        | 174.37                | 43.30                               | -3,288.08    | 662.23                 | 607.44                  | 54.79                     | 12.086            |         |
| 8,800.00              | 5,577.89              | 9,457.19              | 6,237.44              | 121.78           | 121.77        | 174.36                | 42.64                               | -3,388.05    | 661.90                 | 605.40                  | 56.50                     | 11.716            |         |
| 8,900.00              | 5,576.05              | 9,557.19              | 6,235.26              | 125.38           | 125.36        | 174.36                | 41.98                               | -3,488.02    | 661.56                 | 603.36                  | 58.20                     | 11.366            |         |
| 9,000.00              | 5,574.22              | 9,657.19              | 6,233.08              | 128.99           | 128.95        | 174.36                | 41.32                               | -3,588.00    | 661.23                 | 601.31                  | 59.91                     | 11.037            |         |
| 9,100.00              | 5,572.38              | 9,757.19              | 6,230.91              | 132.60           | 132.55        | 174.36                | 40.66                               | -3,687.97    | 660.89                 | 599.27                  | 61.62                     | 10.725            |         |
| 9,200.00              | 5,570.54              | 9,857.19              | 6,228.73              | 136.21           | 136.15        | 174.35                | 40.00                               | -3,787.94    | 660.55                 | 597.22                  | 63.33                     | 10.430            |         |
| 9,300.00              | 5,568.70              | 9,957.19              | 6,226.55              | 139.82           | 139.75        | 174.35                | 39.34                               | -3,887.92    | 660.22                 | 595.18                  | 65.04                     | 10.151            |         |
| 9,400.00              | 5,566.86              | 10,057.19             | 6,224.38              | 143.43           | 143.35        | 174.35                | 38.68                               | -3,987.89    | 659.88                 | 593.13                  | 66.75                     | 9.885             |         |
| 9,500.00              | 5,565.02              | 10,157.19             | 6,222.20              | 147.05           | 146.96        | 174.34                | 38.02                               | -4,087.86    | 659.55                 | 591.08                  | 68.47                     | 9.633             |         |
| 9,600.00              | 5,563.18              | 10,257.19             | 6,220.02              | 150.66           | 150.57        | 174.34                | 37.36                               | -4,187.84    | 659.21                 | 589.03                  | 70.18                     | 9.393             |         |
| 9,700.00              | 5,561.34              | 10,357.18             | 6,217.85              | 154.28           | 154.18        | 174.34                | 36.70                               | -4,287.81    | 658.87                 | 586.98                  | 71.89                     | 9.165             |         |
| 9,800.00              | 5,559.50              | 10,457.18             | 6,215.67              | 157.90           | 157.79        | 174.34                | 36.04                               | -4,387.79    | 658.54                 | 584.93                  | 73.61                     | 8.946             |         |
| 9,900.00              | 5,557.66              | 10,557.18             | 6,213.49              | 161.53           | 161.40        | 174.33                | 35.39                               | -4,487.76    | 658.20                 | 582.88                  | 75.32                     | 8.738             |         |
| 10,000.00             | 5,555.82              | 10,657.18             | 6,211.32              | 165.15           | 165.02        | 174.33                | 34.73                               | -4,587.73    | 657.87                 | 580.83                  | 77.04                     | 8.539             |         |
| 10,100.00             | 5,553.98              | 10,757.18             | 6,209.14              | 168.77           | 168.64        | 174.33                | 34.07                               | -4,687.71    | 657.53                 | 578.77                  | 78.76                     | 8.349             |         |
| 10,200.00             | 5,552.14              | 10,857.18             | 6,206.96              | 172.40           | 172.25        | 174.32                | 33.41                               | -4,787.68    | 657.19                 | 576.72                  | 80.48                     | 8.166             |         |
| 10,300.00             | 5,550.30              | 10,957.18             | 6,204.78              | 176.03           | 175.87        | 174.32                | 32.75                               | -4,887.65    | 656.86                 | 574.67                  | 82.19                     | 7.992             |         |
| 10,400.00             | 5,548.47              | 11,057.18             | 6,202.61              | 179.65           | 179.50        | 174.32                | 32.09                               | -4,987.63    | 656.52                 | 572.61                  | 83.91                     | 7.824             |         |
| 10,500.00             | 5,546.63              | 11,157.18             | 6,200.43              | 183.28           | 183.12        | 174.31                | 31.43                               | -5,087.60    | 656.19                 | 570.56                  | 85.63                     | 7.663             |         |
| 10,522.35             | 5,546.22              | 11,177.32             | 6,199.99              | 183.73           | 183.84        | 174.31                | 31.30                               | -5,107.74    | 656.12                 | 570.21                  | 85.90                     | 7.638             |         |
| 10,534.05             | 5,546.00              | 11,177.32             | 6,199.99              | 183.97           | 183.84        | 174.31                | 31.30                               | -5,107.74    | 656.22                 | 570.26                  | 85.96                     | 7.634             |         |

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #6H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                            |                                          |                |                                 |                      |         | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|----------------------------|------------------------------------------|----------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: O-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                            |                                          |                |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Tooface<br>(") | Distance                                 |                | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                            | Offset Wellbore Centre<br>+N-S<br>(usft) | +E-W<br>(usft) |                                 |                      |         |                    |           |
| 0.00                                                         | 0.00                        | 2.00                        | 2.00                        | 0.00                | 0.00             | -22.47                     | 89.70                                    | -37.10         | 97.07                           |                      |         |                    |           |
| 100.00                                                       | 100.00                      | 102.00                      | 102.00                      | 0.16                | 0.17             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 96.74                | 0.33    | 297.568            |           |
| 200.00                                                       | 200.00                      | 202.00                      | 202.00                      | 0.52                | 0.53             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 96.03                | 1.04    | 93.054             |           |
| 300.00                                                       | 300.00                      | 302.00                      | 302.00                      | 0.88                | 0.88             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 95.31                | 1.76    | 55.150             |           |
| 400.00                                                       | 400.00                      | 402.00                      | 402.00                      | 1.23                | 1.24             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 94.59                | 2.48    | 39.188             |           |
| 500.00                                                       | 500.00                      | 502.00                      | 502.00                      | 1.59                | 1.60             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 93.88                | 3.19    | 30.391             |           |
| 600.00                                                       | 600.00                      | 602.00                      | 602.00                      | 1.95                | 1.96             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 93.16                | 3.91    | 24.820             |           |
| 700.00                                                       | 700.00                      | 702.00                      | 702.00                      | 2.31                | 2.32             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 92.44                | 4.63    | 20.975             |           |
| 800.00                                                       | 800.00                      | 802.00                      | 802.00                      | 2.67                | 2.68             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 91.72                | 5.34    | 18.161             |           |
| 900.00                                                       | 900.00                      | 902.00                      | 902.00                      | 3.03                | 3.03             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 91.01                | 6.06    | 16.013             |           |
| 1,000.00                                                     | 1,000.00                    | 1,002.00                    | 1,002.00                    | 3.39                | 3.39             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 90.29                | 6.78    | 14.320             |           |
| 1,100.00                                                     | 1,100.00                    | 1,102.00                    | 1,102.00                    | 3.74                | 3.75             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 89.57                | 7.50    | 12.950             |           |
| 1,200.00                                                     | 1,200.00                    | 1,202.00                    | 1,202.00                    | 4.10                | 4.11             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 88.86                | 8.21    | 11.820             |           |
| 1,300.00                                                     | 1,300.00                    | 1,302.00                    | 1,302.00                    | 4.46                | 4.47             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 88.14                | 8.93    | 10.871             |           |
| 1,400.00                                                     | 1,400.00                    | 1,402.00                    | 1,402.00                    | 4.82                | 4.83             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 87.42                | 9.65    | 10.063             |           |
| 1,500.00                                                     | 1,500.00                    | 1,502.00                    | 1,502.00                    | 5.18                | 5.19             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 86.71                | 10.36   | 9.367              |           |
| 1,600.00                                                     | 1,600.00                    | 1,602.00                    | 1,602.00                    | 5.54                | 5.54             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 85.99                | 11.08   | 8.761              |           |
| 1,700.00                                                     | 1,700.00                    | 1,702.00                    | 1,702.00                    | 5.90                | 5.90             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 85.27                | 11.80   | 8.228              |           |
| 1,800.00                                                     | 1,800.00                    | 1,802.00                    | 1,802.00                    | 6.25                | 6.26             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 84.56                | 12.51   | 7.757              |           |
| 1,900.00                                                     | 1,900.00                    | 1,902.00                    | 1,902.00                    | 6.61                | 6.62             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 83.84                | 13.23   | 7.336              |           |
| 2,000.00                                                     | 2,000.00                    | 2,002.00                    | 2,002.00                    | 6.97                | 6.98             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 83.12                | 13.95   | 6.959              |           |
| 2,100.00                                                     | 2,100.00                    | 2,102.00                    | 2,102.00                    | 7.33                | 7.34             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 82.40                | 14.67   | 6.619              |           |
| 2,200.00                                                     | 2,200.00                    | 2,202.00                    | 2,202.00                    | 7.69                | 7.69             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 81.69                | 15.38   | 6.311              |           |
| 2,300.00                                                     | 2,300.00                    | 2,302.00                    | 2,302.00                    | 8.05                | 8.05             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 80.97                | 16.10   | 6.030              |           |
| 2,400.00                                                     | 2,400.00                    | 2,402.00                    | 2,402.00                    | 8.40                | 8.41             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 80.25                | 16.82   | 5.772              |           |
| 2,500.00                                                     | 2,500.00                    | 2,502.00                    | 2,502.00                    | 8.76                | 8.77             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 79.54                | 17.53   | 5.536              |           |
| 2,600.00                                                     | 2,600.00                    | 2,602.00                    | 2,602.00                    | 9.12                | 9.13             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 78.82                | 18.25   | 5.319              |           |
| 2,700.00                                                     | 2,700.00                    | 2,702.00                    | 2,702.00                    | 9.48                | 9.49             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 78.10                | 18.97   | 5.118              |           |
| 2,800.00                                                     | 2,800.00                    | 2,802.00                    | 2,802.00                    | 9.84                | 9.85             | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 77.39                | 19.68   | 4.931              |           |
| 2,900.00                                                     | 2,900.00                    | 2,902.00                    | 2,902.00                    | 10.20               | 10.20            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 76.67                | 20.40   | 4.758              |           |
| 3,000.00                                                     | 3,000.00                    | 3,002.00                    | 3,002.00                    | 10.56               | 10.56            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 75.95                | 21.12   | 4.597              |           |
| 3,100.00                                                     | 3,100.00                    | 3,102.00                    | 3,102.00                    | 10.91               | 10.92            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 75.24                | 21.83   | 4.446              |           |
| 3,200.00                                                     | 3,200.00                    | 3,202.00                    | 3,202.00                    | 11.27               | 11.28            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 74.52                | 22.55   | 4.304              |           |
| 3,300.00                                                     | 3,300.00                    | 3,302.00                    | 3,302.00                    | 11.63               | 11.64            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 73.80                | 23.27   | 4.172              |           |
| 3,400.00                                                     | 3,400.00                    | 3,402.00                    | 3,402.00                    | 11.99               | 12.00            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 73.08                | 23.99   | 4.047              |           |
| 3,500.00                                                     | 3,500.00                    | 3,502.00                    | 3,502.00                    | 12.35               | 12.35            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 72.37                | 24.70   | 3.930              |           |
| 3,600.00                                                     | 3,600.00                    | 3,602.00                    | 3,602.00                    | 12.71               | 12.71            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 71.65                | 25.42   | 3.819              |           |
| 3,700.00                                                     | 3,700.00                    | 3,702.00                    | 3,702.00                    | 13.06               | 13.07            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 70.93                | 26.14   | 3.714              |           |
| 3,800.00                                                     | 3,800.00                    | 3,802.00                    | 3,802.00                    | 13.42               | 13.43            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 70.22                | 26.85   | 3.615              |           |
| 3,900.00                                                     | 3,900.00                    | 3,902.00                    | 3,902.00                    | 13.78               | 13.79            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 69.50                | 27.57   | 3.521              |           |
| 4,000.00                                                     | 4,000.00                    | 4,002.00                    | 4,002.00                    | 14.14               | 14.15            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 68.78                | 28.29   | 3.432              |           |
| 4,100.00                                                     | 4,100.00                    | 4,102.00                    | 4,102.00                    | 14.50               | 14.51            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 68.07                | 29.00   | 3.347              |           |
| 4,200.00                                                     | 4,200.00                    | 4,202.00                    | 4,202.00                    | 14.86               | 14.86            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 67.35                | 29.72   | 3.266              |           |
| 4,300.00                                                     | 4,300.00                    | 4,302.00                    | 4,302.00                    | 15.22               | 15.22            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 66.63                | 30.44   | 3.189              |           |
| 4,400.00                                                     | 4,400.00                    | 4,402.00                    | 4,402.00                    | 15.57               | 15.58            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 65.91                | 31.15   | 3.116              |           |
| 4,500.00                                                     | 4,500.00                    | 4,502.00                    | 4,502.00                    | 15.93               | 15.94            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 65.20                | 31.87   | 3.046              |           |
| 4,600.00                                                     | 4,600.00                    | 4,602.00                    | 4,602.00                    | 16.29               | 16.30            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 64.48                | 32.59   | 2.979              |           |
| 4,700.00                                                     | 4,700.00                    | 4,702.00                    | 4,702.00                    | 16.65               | 16.66            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 63.76                | 33.31   | 2.915              |           |
| 4,800.00                                                     | 4,800.00                    | 4,802.00                    | 4,802.00                    | 17.01               | 17.01            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 63.05                | 34.02   | 2.853              |           |
| 4,900.00                                                     | 4,900.00                    | 4,902.00                    | 4,902.00                    | 17.37               | 17.37            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 62.33                | 34.74   | 2.794              |           |
| 5,000.00                                                     | 5,000.00                    | 5,002.00                    | 5,002.00                    | 17.72               | 17.73            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 61.61                | 35.46   | 2.738              |           |
| 5,100.00                                                     | 5,100.00                    | 5,102.00                    | 5,102.00                    | 18.08               | 18.09            | -22.47                     | 89.70                                    | -37.10         | 97.07                           | 60.90                | 36.17   | 2.683              |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #6H - OH - Plan #1 06-11-15 |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      |         | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------|------------------|-----------------------------|-------------------------------------------|-----------------|------------------------------|-------------------------------|---------------------------------|----------------------|---------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                             |                             |                             |                     |                  |                             |                                           |                 |                              |                               |                                 |                      |         | Offset Well Error: | 0.00 usft |
| Reference                                                    |                             | Offset                      |                             | Semi Major Axis     |                  | Highside<br>Toolface<br>(°) | Distance                                  |                 | Between<br>Centres<br>(usft) | Between<br>Ellipses<br>(usft) | Minimum<br>Separation<br>(usft) | Separation<br>Factor | Warning |                    |           |
| Measured<br>Depth<br>(usft)                                  | Vertical<br>Depth<br>(usft) | Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Reference<br>(usft) | Offset<br>(usft) |                             | Offset Wellbore Centre<br>+N/-S<br>(usft) | +E/-W<br>(usft) |                              |                               |                                 |                      |         |                    |           |
| 5,153.62                                                     | 5,153.62                    | 5,155.62                    | 5,155.62                    | 18.28               | 18.28            | -22.47                      | 89.70                                     | -37.10          | 97.07                        | 60.51                         | 36.56                           | 2.655                |         |                    |           |
| 5,175.00                                                     | 5,174.99                    | 5,176.99                    | 5,176.99                    | 18.35               | 18.36            | 68.19                       | 89.70                                     | -37.10          | 96.89                        | 60.19                         | 36.70                           | 2.640                |         |                    |           |
| 5,200.00                                                     | 5,199.93                    | 5,201.93                    | 5,201.93                    | 18.44               | 18.45            | 69.24                       | 89.70                                     | -37.10          | 96.25                        | 59.38                         | 36.86                           | 2.611                |         |                    |           |
| 5,225.00                                                     | 5,224.73                    | 5,226.73                    | 5,226.73                    | 18.52               | 18.54            | 71.08                       | 89.70                                     | -37.10          | 95.19                        | 58.18                         | 37.02                           | 2.572                |         |                    |           |
| 5,250.00                                                     | 5,249.35                    | 5,251.35                    | 5,251.35                    | 18.61               | 18.63            | 73.72                       | 89.70                                     | -37.10          | 93.85                        | 56.68                         | 37.17                           | 2.525                |         |                    |           |
| 5,275.00                                                     | 5,273.70                    | 5,275.70                    | 5,275.70                    | 18.69               | 18.71            | 77.17                       | 89.70                                     | -37.10          | 92.40                        | 55.05                         | 37.35                           | 2.474                |         |                    |           |
| 5,300.00                                                     | 5,297.72                    | 5,299.72                    | 5,299.72                    | 18.78               | 18.80            | 81.41                       | 89.70                                     | -37.10          | 91.06                        | 53.52                         | 37.54                           | 2.426                |         |                    |           |
| 5,325.00                                                     | 5,321.34                    | 5,323.34                    | 5,323.34                    | 18.87               | 18.88            | 86.38                       | 89.70                                     | -37.10          | 90.15                        | 52.41                         | 37.74                           | 2.389                |         |                    |           |
| 5,341.54                                                     | 5,336.73                    | 5,338.73                    | 5,338.73                    | 18.92               | 18.94            | 90.00                       | 89.70                                     | -37.10          | 89.94                        | 52.08                         | 37.86                           | 2.375 CC, ES         |         |                    |           |
| 5,350.00                                                     | 5,344.51                    | 5,346.51                    | 5,346.51                    | 18.95               | 18.97            | 91.93                       | 89.70                                     | -37.10          | 90.00                        | 52.09                         | 37.92                           | 2.374 SF             |         |                    |           |
| 5,375.00                                                     | 5,367.15                    | 5,369.15                    | 5,369.15                    | 19.04               | 19.05            | 97.87                       | 89.70                                     | -37.10          | 91.01                        | 52.99                         | 38.02                           | 2.394                |         |                    |           |
| 5,400.00                                                     | 5,389.21                    | 5,391.21                    | 5,391.21                    | 19.14               | 19.13            | 103.94                      | 89.70                                     | -37.10          | 93.53                        | 55.53                         | 38.00                           | 2.461                |         |                    |           |
| 5,425.00                                                     | 5,410.62                    | 5,412.62                    | 5,412.62                    | 19.24               | 19.20            | 109.87                      | 89.70                                     | -37.10          | 97.86                        | 60.06                         | 37.81                           | 2.589                |         |                    |           |
| 5,450.00                                                     | 5,431.33                    | 5,433.33                    | 5,433.33                    | 19.34               | 19.28            | 115.43                      | 89.70                                     | -37.10          | 104.18                       | 66.76                         | 37.42                           | 2.784                |         |                    |           |
| 5,475.00                                                     | 5,451.28                    | 5,453.28                    | 5,453.28                    | 19.45               | 19.35            | 120.45                      | 89.70                                     | -37.10          | 112.53                       | 75.68                         | 36.86                           | 3.053                |         |                    |           |
| 5,500.00                                                     | 5,470.41                    | 5,472.41                    | 5,472.41                    | 19.58               | 19.42            | 124.85                      | 89.70                                     | -37.10          | 122.88                       | 86.73                         | 36.14                           | 3.400                |         |                    |           |
| 5,525.00                                                     | 5,488.67                    | 5,490.67                    | 5,490.67                    | 19.71               | 19.48            | 128.60                      | 89.70                                     | -37.10          | 135.09                       | 99.76                         | 35.32                           | 3.825                |         |                    |           |
| 5,550.00                                                     | 5,506.01                    | 5,508.01                    | 5,508.01                    | 19.86               | 19.55            | 131.71                      | 89.70                                     | -37.10          | 149.00                       | 114.56                        | 34.43                           | 4.327                |         |                    |           |
| 5,575.00                                                     | 5,522.39                    | 5,524.39                    | 5,524.39                    | 20.03               | 19.60            | 134.19                      | 89.70                                     | -37.10          | 164.45                       | 130.92                        | 33.53                           | 4.905                |         |                    |           |
| 5,600.00                                                     | 5,537.76                    | 5,539.76                    | 5,539.76                    | 20.22               | 19.66            | 136.10                      | 89.70                                     | -37.10          | 181.28                       | 148.63                        | 32.65                           | 5.553                |         |                    |           |
| 5,625.00                                                     | 5,552.07                    | 5,554.07                    | 5,554.07                    | 20.43               | 19.71            | 137.46                      | 89.70                                     | -37.10          | 199.33                       | 167.49                        | 31.84                           | 6.261                |         |                    |           |
| 5,650.00                                                     | 5,565.29                    | 5,567.29                    | 5,567.29                    | 20.67               | 19.76            | 138.27                      | 89.70                                     | -37.10          | 218.47                       | 187.32                        | 31.15                           | 7.013                |         |                    |           |
| 5,675.00                                                     | 5,577.39                    | 5,579.39                    | 5,579.39                    | 20.94               | 19.80            | 138.54                      | 89.70                                     | -37.10          | 238.58                       | 207.93                        | 30.65                           | 7.784                |         |                    |           |
| 5,700.00                                                     | 5,588.32                    | 5,590.32                    | 5,590.32                    | 21.23               | 19.84            | 138.23                      | 89.70                                     | -37.10          | 259.54                       | 229.13                        | 30.40                           | 8.536                |         |                    |           |
| 5,725.00                                                     | 5,598.06                    | 5,600.06                    | 5,600.06                    | 21.55               | 19.88            | 137.27                      | 89.70                                     | -37.10          | 281.24                       | 250.74                        | 30.50                           | 9.220                |         |                    |           |
| 5,750.00                                                     | 5,606.58                    | 5,608.58                    | 5,608.58                    | 21.91               | 19.91            | 135.55                      | 89.70                                     | -37.10          | 303.60                       | 272.56                        | 31.04                           | 9.780                |         |                    |           |
| 5,775.00                                                     | 5,613.87                    | 5,615.87                    | 5,615.87                    | 22.30               | 19.93            | 132.89                      | 89.70                                     | -37.10          | 326.52                       | 294.38                        | 32.14                           | 10.159               |         |                    |           |
| 5,800.00                                                     | 5,619.89                    | 5,621.89                    | 5,621.89                    | 22.71               | 19.95            | 128.99                      | 89.70                                     | -37.10          | 349.91                       | 316.01                        | 33.90                           | 10.323               |         |                    |           |
| 5,825.00                                                     | 5,624.63                    | 5,626.63                    | 5,626.63                    | 23.16               | 19.97            | 123.46                      | 89.70                                     | -37.10          | 373.68                       | 337.31                        | 36.37                           | 10.275               |         |                    |           |
| 5,850.00                                                     | 5,628.08                    | 5,630.08                    | 5,630.08                    | 23.63               | 19.98            | 115.77                      | 89.70                                     | -37.10          | 397.75                       | 358.32                        | 39.43                           | 10.086               |         |                    |           |
| 5,875.00                                                     | 5,630.23                    | 5,632.23                    | 5,632.23                    | 24.13               | 19.99            | 105.36                      | 89.70                                     | -37.10          | 422.05                       | 379.47                        | 42.58                           | 9.912                |         |                    |           |
| 5,900.00                                                     | 5,631.07                    | 5,633.07                    | 5,633.07                    | 24.64               | 19.99            | 92.11                       | 89.70                                     | -37.10          | 446.49                       | 401.88                        | 44.61                           | 10.010               |         |                    |           |
| 5,912.40                                                     | 5,631.00                    | 5,633.00                    | 5,633.00                    | 24.91               | 19.99            | 84.75                       | 89.70                                     | -37.10          | 458.64                       | 413.92                        | 44.72                           | 10.256               |         |                    |           |
| 6,000.00                                                     | 5,629.39                    | 5,631.39                    | 5,631.39                    | 26.92               | 19.99            | 83.73                       | 89.70                                     | -37.10          | 544.80                       | 498.16                        | 46.64                           | 11.682               |         |                    |           |
| 6,100.00                                                     | 5,627.55                    | 5,629.55                    | 5,629.55                    | 29.47               | 19.98            | 82.57                       | 89.70                                     | -37.10          | 643.62                       | 594.57                        | 49.05                           | 13.121               |         |                    |           |
| 6,200.00                                                     | 5,625.71                    | 5,627.71                    | 5,627.71                    | 32.23               | 19.97            | 81.43                       | 89.70                                     | -37.10          | 742.75                       | 691.10                        | 51.65                           | 14.381               |         |                    |           |
| 6,300.00                                                     | 5,623.88                    | 5,625.88                    | 5,625.88                    | 35.16               | 19.97            | 80.28                       | 89.70                                     | -37.10          | 842.09                       | 787.72                        | 54.37                           | 15.488               |         |                    |           |
| 6,400.00                                                     | 5,622.04                    | 5,624.04                    | 5,624.04                    | 38.21               | 19.96            | 79.15                       | 89.70                                     | -37.10          | 941.56                       | 884.38                        | 57.18                           | 16.467               |         |                    |           |
| 6,500.00                                                     | 5,620.20                    | 5,622.20                    | 5,622.20                    | 41.36               | 19.96            | 78.02                       | 89.70                                     | -37.10          | 1,041.13                     | 981.09                        | 60.04                           | 17.341               |         |                    |           |
| 6,600.00                                                     | 5,618.36                    | 5,620.36                    | 5,620.36                    | 44.59               | 19.95            | 76.91                       | 89.70                                     | -37.10          | 1,140.77                     | 1,077.84                      | 62.93                           | 18.128               |         |                    |           |
| 6,700.00                                                     | 5,616.52                    | 5,618.52                    | 5,618.52                    | 47.87               | 19.94            | 75.80                       | 89.70                                     | -37.10          | 1,240.47                     | 1,174.64                      | 65.83                           | 18.843               |         |                    |           |
| 6,800.00                                                     | 5,614.68                    | 5,616.68                    | 5,616.68                    | 51.21               | 19.94            | 74.71                       | 89.70                                     | -37.10          | 1,340.21                     | 1,271.48                      | 68.73                           | 19.499               |         |                    |           |
| 6,900.00                                                     | 5,612.84                    | 5,614.84                    | 5,614.84                    | 54.58               | 19.93            | 73.62                       | 89.70                                     | -37.10          | 1,439.98                     | 1,368.36                      | 71.62                           | 20.106               |         |                    |           |
| 7,000.00                                                     | 5,611.00                    | 5,613.00                    | 5,613.00                    | 57.99               | 19.92            | 72.55                       | 89.70                                     | -37.10          | 1,539.78                     | 1,465.30                      | 74.49                           | 20.672               |         |                    |           |
| 7,100.00                                                     | 5,609.16                    | 5,611.16                    | 5,611.16                    | 61.43               | 19.92            | 71.49                       | 89.70                                     | -37.10          | 1,639.61                     | 1,562.28                      | 77.32                           | 21.205               |         |                    |           |
| 7,200.00                                                     | 5,607.32                    | 5,609.32                    | 5,609.32                    | 64.89               | 19.91            | 70.44                       | 89.70                                     | -37.10          | 1,739.45                     | 1,659.32                      | 80.12                           | 21.709               |         |                    |           |
| 7,300.00                                                     | 5,605.48                    | 5,607.48                    | 5,607.48                    | 68.37               | 19.90            | 69.41                       | 89.70                                     | -37.10          | 1,839.30                     | 1,756.42                      | 82.89                           | 22.191               |         |                    |           |
| 7,400.00                                                     | 5,603.64                    | 5,605.64                    | 5,605.64                    | 71.87               | 19.90            | 68.39                       | 89.70                                     | -37.10          | 1,939.17                     | 1,853.57                      | 85.60                           | 22.653               |         |                    |           |
| 7,500.00                                                     | 5,601.80                    | 5,603.80                    | 5,603.80                    | 75.38               | 19.89            | 67.39                       | 89.70                                     | -37.10          | 2,039.05                     | 1,950.78                      | 88.28                           | 23.099               |         |                    |           |
| 7,600.00                                                     | 5,599.96                    | 5,601.96                    | 5,601.96                    | 78.91               | 19.88            | 66.39                       | 89.70                                     | -37.10          | 2,138.94                     | 2,048.05                      | 90.90                           | 23.531               |         |                    |           |
| 7,700.00                                                     | 5,598.13                    | 5,600.13                    | 5,600.13                    | 82.44               | 19.88            | 65.42                       | 89.70                                     | -37.10          | 2,238.84                     | 2,145.37                      | 93.47                           | 23.953               |         |                    |           |
| 7,800.00                                                     | 5,596.29                    | 5,598.29                    | 5,598.29                    | 85.99               | 19.87            | 64.46                       | 89.70                                     | -37.10          | 2,338.75                     | 2,242.76                      | 95.99                           | 24.366               |         |                    |           |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Anticollision Report



**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
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**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

| Offset Design Hawk Federal Com - #6H - OH - Plan #1 06-11-15 |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           | Offset Site Error: | 0.00 usft |
|--------------------------------------------------------------|-----------------------|-----------------------|-----------------------|------------------|---------------|-----------------------|-------------------------------------|--------------|------------------------|-------------------------|---------------------------|--------------------|-----------|
| Survey Program: 0-PHX+MWD+HDGM                               |                       |                       |                       |                  |               |                       |                                     |              |                        |                         |                           | Offset Well Error: | 0.00 usft |
| Reference                                                    |                       | Offset                |                       | Semi Major Axis  |               | Distance              |                                     |              |                        |                         |                           |                    |           |
| Measured Depth (usft)                                        | Vertical Depth (usft) | Measured Depth (usft) | Vertical Depth (usft) | Reference (usft) | Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | +E/-W (usft) | Between Centres (usft) | Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor  | Warning   |
| 7,900.00                                                     | 5,594.45              | 5,596.45              | 5,596.45              | 89.54            | 19.86         | 63.51                 | 89.70                               | -37.10       | 2,438.66               | 2,340.21                | 98.45                     | 24.771             |           |
| 8,000.00                                                     | 5,592.61              | 5,594.61              | 5,594.61              | 93.10            | 19.86         | 62.58                 | 89.70                               | -37.10       | 2,538.58               | 2,437.72                | 100.86                    | 25.170             |           |
| 8,100.00                                                     | 5,590.77              | 5,592.77              | 5,592.77              | 96.67            | 19.85         | 61.66                 | 89.70                               | -37.10       | 2,638.50               | 2,535.29                | 103.21                    | 25.564             |           |
| 8,200.00                                                     | 5,588.93              | 5,590.93              | 5,590.93              | 100.24           | 19.84         | 60.76                 | 89.70                               | -37.10       | 2,738.43               | 2,632.92                | 105.51                    | 25.954             |           |
| 8,300.00                                                     | 5,587.09              | 5,589.09              | 5,589.09              | 103.82           | 19.84         | 59.88                 | 89.70                               | -37.10       | 2,838.36               | 2,730.60                | 107.75                    | 26.341             |           |
| 8,400.00                                                     | 5,585.25              | 5,587.25              | 5,587.25              | 107.41           | 19.83         | 59.01                 | 89.70                               | -37.10       | 2,938.29               | 2,828.35                | 109.94                    | 26.726             |           |
| 8,500.00                                                     | 5,583.41              | 5,585.41              | 5,585.41              | 110.99           | 19.82         | 58.16                 | 89.70                               | -37.10       | 3,038.23               | 2,926.15                | 112.08                    | 27.108             |           |
| 8,600.00                                                     | 5,581.57              | 5,583.57              | 5,583.57              | 114.59           | 19.82         | 57.32                 | 89.70                               | -37.10       | 3,138.17               | 3,024.01                | 114.16                    | 27.490             |           |
| 8,700.00                                                     | 5,579.73              | 5,581.73              | 5,581.73              | 118.18           | 19.81         | 56.50                 | 89.70                               | -37.10       | 3,238.11               | 3,121.93                | 116.18                    | 27.871             |           |
| 8,800.00                                                     | 5,577.89              | 5,579.89              | 5,579.89              | 121.78           | 19.80         | 55.69                 | 89.70                               | -37.10       | 3,338.06               | 3,219.90                | 118.16                    | 28.251             |           |
| 8,900.00                                                     | 5,576.05              | 5,578.05              | 5,578.05              | 125.38           | 19.80         | 54.90                 | 89.70                               | -37.10       | 3,438.01               | 3,317.93                | 120.08                    | 28.631             |           |
| 9,000.00                                                     | 5,574.22              | 5,576.22              | 5,576.22              | 128.99           | 19.79         | 54.12                 | 89.70                               | -37.10       | 3,537.96               | 3,416.01                | 121.95                    | 29.011             |           |
| 9,100.00                                                     | 5,572.38              | 5,574.38              | 5,574.38              | 132.60           | 19.78         | 53.36                 | 89.70                               | -37.10       | 3,637.91               | 3,514.14                | 123.77                    | 29.392             |           |
| 9,200.00                                                     | 5,570.54              | 5,572.54              | 5,572.54              | 136.21           | 19.78         | 52.62                 | 89.70                               | -37.10       | 3,737.86               | 3,612.32                | 125.55                    | 29.772             |           |
| 9,300.00                                                     | 5,568.70              | 5,570.70              | 5,570.70              | 139.82           | 19.77         | 51.88                 | 89.70                               | -37.10       | 3,837.82               | 3,710.54                | 127.27                    | 30.154             |           |
| 9,400.00                                                     | 5,566.86              | 5,568.86              | 5,568.86              | 143.43           | 19.76         | 51.16                 | 89.70                               | -37.10       | 3,937.77               | 3,808.82                | 128.95                    | 30.536             |           |
| 9,500.00                                                     | 5,565.02              | 5,567.02              | 5,567.02              | 147.05           | 19.76         | 50.46                 | 89.70                               | -37.10       | 4,037.73               | 3,907.14                | 130.59                    | 30.919             |           |
| 9,600.00                                                     | 5,563.18              | 5,565.18              | 5,565.18              | 150.66           | 19.75         | 49.77                 | 89.70                               | -37.10       | 4,137.69               | 4,005.51                | 132.18                    | 31.303             |           |
| 9,700.00                                                     | 5,561.34              | 5,563.34              | 5,563.34              | 154.28           | 19.74         | 49.10                 | 89.70                               | -37.10       | 4,237.65               | 4,103.92                | 133.73                    | 31.688             |           |
| 9,800.00                                                     | 5,559.50              | 5,561.50              | 5,561.50              | 157.90           | 19.74         | 48.43                 | 89.70                               | -37.10       | 4,337.61               | 4,202.38                | 135.24                    | 32.074             |           |
| 9,900.00                                                     | 5,557.66              | 5,559.66              | 5,559.66              | 161.53           | 19.73         | 47.78                 | 89.70                               | -37.10       | 4,437.57               | 4,300.87                | 136.70                    | 32.461             |           |
| 10,000.00                                                    | 5,555.82              | 5,557.82              | 5,557.82              | 165.15           | 19.72         | 47.15                 | 89.70                               | -37.10       | 4,537.54               | 4,399.41                | 138.13                    | 32.849             |           |
| 10,100.00                                                    | 5,553.98              | 5,555.98              | 5,555.98              | 168.77           | 19.72         | 46.52                 | 89.70                               | -37.10       | 4,637.50               | 4,497.98                | 139.52                    | 33.238             |           |
| 10,200.00                                                    | 5,552.14              | 5,554.14              | 5,554.14              | 172.40           | 19.71         | 45.91                 | 89.70                               | -37.10       | 4,737.47               | 4,596.59                | 140.88                    | 33.628             |           |
| 10,300.00                                                    | 5,550.30              | 5,552.30              | 5,552.30              | 176.03           | 19.70         | 45.32                 | 89.70                               | -37.10       | 4,837.43               | 4,695.23                | 142.20                    | 34.019             |           |
| 10,400.00                                                    | 5,548.47              | 5,550.47              | 5,550.47              | 179.65           | 19.70         | 44.73                 | 89.70                               | -37.10       | 4,937.40               | 4,793.91                | 143.48                    | 34.411             |           |
| 10,500.00                                                    | 5,546.63              | 5,548.63              | 5,548.63              | 183.28           | 19.69         | 44.16                 | 89.70                               | -37.10       | 5,037.36               | 4,892.63                | 144.74                    | 34.804             |           |
| 10,534.05                                                    | 5,546.00              | 5,548.00              | 5,548.00              | 183.97           | 19.69         | 43.96                 | 89.70                               | -37.10       | 5,071.40               | 4,926.64                | 144.76                    | 35.032             |           |

## Anticollision Report



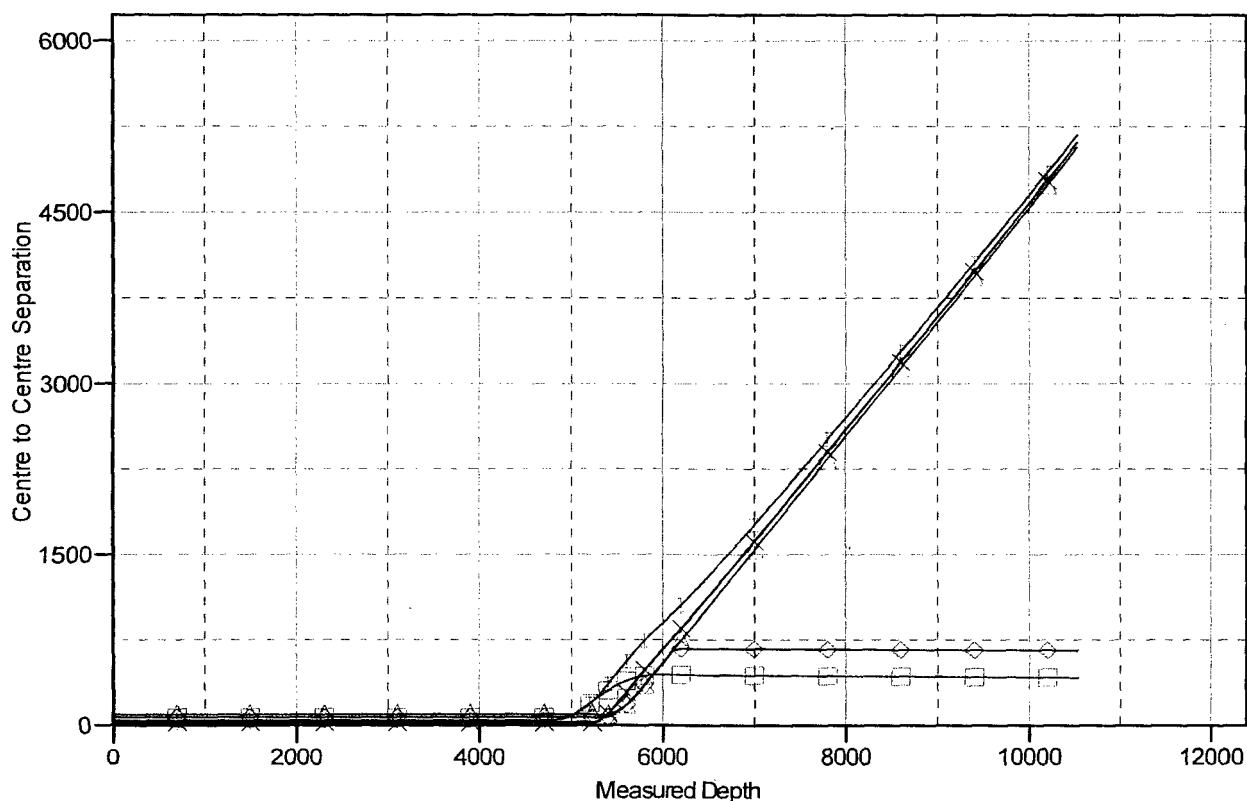
**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at:** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to KB @ 3963.00usft (Capstar 114)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #3H  
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
 Grid Convergence at Surface is: 0.25°

## Ladder Plot



## LEGEND

#1H, OH, Plan #1 06-11-15 V0    #5H, OH, Plan #1 06-11-15 V0    #4H, OH, Plan #1 06-11-15 V0  
 #6H, OH, Plan #1 06-11-15 V0    #2H, OH, Plan #1 06-11-15 V0

**Company:** Apache Corporation  
**Project:** Eddy County, NM (NAD27 NME)  
**Reference Site:** Hawk Federal Com  
**Site Error:** 0.00 usft  
**Reference Well:** #3H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1 06-11-15

**Local Co-ordinate Reference:** Well #3H  
**TVD Reference:** KB @ 3963.00usft (Capstar 114)  
**MD Reference:** KB @ 3963.00usft (Capstar 114)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** Compass 5000 GCR  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to KB @ 3963.00usft (Capstar 114)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 104° 19' 60.00000 W

Coordinates are relative to: #3H  
 Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
 Grid Convergence at Surface is: 0.25°

