

## Results of Directional Survey

|             |                     |           |                               |
|-------------|---------------------|-----------|-------------------------------|
| API number: | <b>30-025-40902</b> |           |                               |
| OGRID:      |                     | Operator: | <b>CONOCOPHILLIPS COMPANY</b> |
|             |                     | Property: | <b>BUCK 20 FEDERAL</b> # 6H   |

|         |        |          |           |               |                 |
|---------|--------|----------|-----------|---------------|-----------------|
| surface | ULSTR: | <b>C</b> | <b>20</b> | <b>T 26S</b>  | <b>R 32E</b>    |
|         |        |          |           | <b>55 FNL</b> | <b>2659 FEL</b> |

|              |           |               |            |                 |                 |
|--------------|-----------|---------------|------------|-----------------|-----------------|
| BH Loc       | ULSTR:    | <b>O</b>      | <b>20</b>  | <b>T 26S</b>    | <b>R 32E</b>    |
| <b>13470</b> | <b>MD</b> | <b>8835.5</b> | <b>TVD</b> | <b>284 FSL</b>  | <b>2285 FEL</b> |
|              |           |               |            | <b>4996 FNL</b> |                 |

|             |           |               |            |                |                 |
|-------------|-----------|---------------|------------|----------------|-----------------|
| Top Perf/OH | ULSTR:    | <b>C</b>      | <b>20</b>  | <b>T 26S</b>   | <b>R 32E</b>    |
| <b>9178</b> | <b>MD</b> | <b>8807.3</b> | <b>TVD</b> | <b>706 FNL</b> | <b>2279 FEL</b> |

|              |           |               |            |                 |                 |
|--------------|-----------|---------------|------------|-----------------|-----------------|
| Bot Perf/OH  | ULSTR:    | <b>O</b>      | <b>20</b>  | <b>T 26S</b>    | <b>R 32E</b>    |
| <b>13411</b> | <b>MD</b> | <b>8835.3</b> | <b>TVD</b> | <b>343 FSL</b>  | <b>2285 FEL</b> |
|              |           |               |            | <b>4937 FNL</b> |                 |

|              | MD           | N/S      | E/W    | VD      |
|--------------|--------------|----------|--------|---------|
|              | 9096         | -569.20  | 377.00 | 8802    |
| TOP PERFS/OH | <b>9178</b>  | -650.91  | 379.60 | 8807.31 |
|              | 9181         | -653.90  | 379.70 | 8807.50 |
|              | 13399        | -4869.60 | 374.40 | 8835.20 |
| BOT PERFS/OH | <b>13411</b> | -4881.60 | 374.30 | 8835.25 |
|              | 13470        | -4940.60 | 373.80 | 8835.50 |

|              |              |          |        |         |
|--------------|--------------|----------|--------|---------|
| NEXT TO LAST | 13399        | -4869.60 | 374.40 | 8835.20 |
| LAST READING | 13470        | -4940.60 | 373.80 | 8835.50 |
| TD           | <b>13470</b> | -4940.60 | 373.80 | 8835.50 |

|                  |      |    |      |    |
|------------------|------|----|------|----|
| Surface Location | 55   | FN | 2659 | FE |
| Projected BHL    | 4996 | FN | 2285 | FE |
| Location of      |      |    |      |    |
| Top Perfs/OH     | 706  | FN | 2279 | FE |
| Bottom Perfs/OH  | 4937 | FN | 2285 | FE |

### SUMMARY of Subsurface Locations

|                  |              |      |    |      |    |             |
|------------------|--------------|------|----|------|----|-------------|
| Surface Location | C-20-26S-32E | 55   | FN | 2659 | FE | Vert. Depth |
|                  |              |      |    |      |    |             |
| Top Perfs/OH     | C-20-26S-32E | 706  | FN | 2279 | FE | 8807.31     |
| Bottom Perfs/OH  | O-20-26S-32E | 4937 | FN | 2285 | FE | 8835.25     |
|                  |              |      |    |      |    |             |
| Projected TD     | O-20-26S-32E | 4996 | FN | 2285 | FE | 8835.50     |

DEC 02 2013

**A Gyrodata Directional Survey**

**Field Copy Only, not definitive**

**for**

**CONOCO PHILLIPS**

**Lease: BUCK FEDERAL 20 Well: #6H, 4 1/2" DRILLPIPE**

**Location: PRECISION DRILLING #827, LEA COUNTY, NEW MEXICO**

Job Number: MD0213GBM188

Run Date: 16 Feb 2013

Surveyor: Jason Solomon

Calculation Method: MINIMUM CURVATURE

Survey surface coordinates obtained from: Well Plan/Plot

Survey Latitude: 32.035372 deg. N Longitude: 103.697156 deg. W

Azimuth Correction:

Gyro: -0.34000 deg to Grid North

Depth Reference: Rotary Table

Rotary Table Elevation: 16.00

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

A Gyrodata Directional Survey

CONOCO PHILLIPS

Lease: BUCK FEDERAL 20 Well: #6H, 4 1/2" DRILLPIPE

Location: PRECISION DRILLING #827, LEA COUNTY, NEW MEXICO

Job Number: MD0213GBM188

| MEASURED<br>DEPTH<br>feet | INCL<br>deg. | AZIMUTH<br>deg. | DOGLEG<br>SEVERITY<br>deg./<br>100 ft. | VERTICAL<br>DEPTH<br>feet | CLOSURE<br>DIST. AZIMUTH<br>feet deg. | HORIZONTAL<br>COORDINATES<br>feet |
|---------------------------|--------------|-----------------|----------------------------------------|---------------------------|---------------------------------------|-----------------------------------|
| 0.00                      | 0.00         | 0.00            | 0.00                                   | 0.00                      | 0.0 0.0                               | 0.00 N 0.00 E                     |

0 TO 1011 FT RATE GYROSCOPIC BATTERY MULTISHOT RUN INSIDE 4 1/2" DRILLPIPE

ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO PRECISION DRILLING #827 RKB 16 FT

|         |      |        |      |         |            |                |
|---------|------|--------|------|---------|------------|----------------|
| 200.00  | 0.48 | 263.02 | 0.24 | 200.00  | 0.8 263.0  | 0.10 S 0.83 W  |
| 400.00  | 0.83 | 266.71 | 0.18 | 399.98  | 3.1 264.7  | 0.28 S 3.09 W  |
| 600.00  | 1.18 | 282.33 | 0.22 | 599.95  | 6.5 270.6  | 0.07 N 6.55 W  |
| 800.00  | 2.00 | 297.15 | 0.46 | 799.88  | 11.9 280.2 | 2.11 N 11.68 W |
| 1000.00 | 3.65 | 317.63 | 0.95 | 999.63  | 20.9 293.8 | 8.41 N 19.08 W |
| 1011.00 | 3.76 | 318.46 | 1.09 | 1010.61 | 21.5 294.6 | 8.94 N 19.56 W |

Final Station Closure: Distance: 21.50 ft Az: 294.57 deg.



## **Conoco Phillips**

Lea County, New Mexico  
Sec 20, T26S, 32E  
Buck Federal 20 #6H

Wellbore #1

Survey: MWD

## **DDC Survey Report**

06 March, 2013

HOBBS OCD

NOV 13 2013

RECEIVED





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## Survey Certification Sheet

ConocoPhillips Company  
Company

GC-13138  
Job Number

3/6/13  
Date

Sec 20,T26S,R32E  
Lease

Buck Federal 20 #6H  
Well Name

Lea, NM  
County & State

API: 30-025-40902

Surveyed from a depth of: 1011 feet to 13470 feet MD

Type of Survey: MWD

Directional Supervisor/Surveyor: Kevin Whittington

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by **The Directional Drilling Company (DDC)**. This report represents a true and correct Directional survey of this well based on the original data obtained at the well site. Wellbore Coordinates are calculated using minimum curvature.

Digitally signed by Larry Wright  
DN: cn=Larry Wright, o=The  
Directional Drilling Company,  
ou=GM of Guidance Services,  
email=larryw@directionaldrilling.  
com, c=US  
Date: 2013.03.08 13:10:09 -0600

Larry Wright  
MWD General Manager



# DDC Survey Report



|           |                        |                              |                                    |
|-----------|------------------------|------------------------------|------------------------------------|
| Company:  | Conoco Phillips        | Local Co-ordinate Reference: | Well Buck Federal 20 #6H           |
| Project:  | Lea County, New Mexico | TVD Reference:               | WELL @ 3187.0usft (Precision #827) |
| Site:     | Sec 20, T26S, 32E      | MD Reference:                | WELL @ 3187.0usft (Precision #827) |
| Well:     | Buck Federal 20 #6H    | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | Wellbore #1            | Database:                    | EDM 5000.1 Single User Db          |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Lea County, New Mexico               |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |                   |                   |                   |
|-----------------------|-------------------|-------------------|-------------------|
| Site                  | Sec 20, T26S, 32E |                   |                   |
| Site Position:        |                   | Northing:         | 376,829.70 usft   |
| From:                 | Map               | Easting:          | 698,257.30 usft   |
| Position Uncertainty: | 0.0 usft          | Slot Radius:      | 13-3/16 "         |
|                       |                   | Latitude:         | 32° 2' 3.859 N    |
|                       |                   | Longitude:        | 103° 41' 36.778 W |
|                       |                   | Grid Convergence: | 0.34 °            |

|                      |                     |                     |                   |
|----------------------|---------------------|---------------------|-------------------|
| Well                 | Buck Federal 20 #6H |                     |                   |
| Well Position        | +N/-S               | 0.0 usft            | Northing:         |
|                      | +E/-W               | 0.0 usft            | Easting:          |
| Position Uncertainty | 0.0 usft            | Wellhead Elevation: | usft              |
|                      |                     | Latitude:           | 32° 2' 6.894 N    |
|                      |                     | Longitude:          | 103° 41' 48.068 W |
|                      |                     | Ground Level:       | 3,171.0 usft      |

|           |             |             |                     |
|-----------|-------------|-------------|---------------------|
| Wellbore  | Wellbore #1 |             |                     |
| Magnetics | Model Name  | Sample Date | Declination (°)     |
|           | BGGM2012    | 02/14/2013  | 7.53                |
|           |             |             | Dip Angle (°)       |
|           |             |             | 59.90               |
|           |             |             | Field Strength (nT) |
|           |             |             | 48349               |

|                   |                            |                 |                 |
|-------------------|----------------------------|-----------------|-----------------|
| Design            | Wellbore #1                |                 |                 |
| Audit Notes:      |                            |                 |                 |
| Version:          | 1.0                        | Phase:          | ACTUAL          |
|                   |                            | Tie On Depth:   | 0.0             |
| Vertical Section: | Depth From (TVD)<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) |
|                   | 0.0                        | 0.0             | 0.0             |
|                   |                            |                 | Direction (°)   |
|                   |                            |                 | 175.73          |

|                |               |                    |                |
|----------------|---------------|--------------------|----------------|
| Survey Program | Date 3/6/2013 |                    |                |
| From (usft)    | To (usft)     | Survey (Wellbore)  | Tool Name      |
| 200.0          | 1,011.0       | GYRO (Wellbore #1) | Good_gyro      |
| 1,132.0        | 13,470.0      | MWD (Wellbore #1)  | MWD default    |
|                |               |                    | Description    |
|                |               |                    | Good Gyro      |
|                |               |                    | MWD - Standard |

|                               |                 |             |                       |              |              |                         |                         |                        |                       |
|-------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Survey                        |                 |             |                       |              |              |                         |                         |                        |                       |
| Measured Depth (usft)         | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 1,011.0                       | 3.80            | 318.50      | 1,010.6               | 9.0          | -19.7        | -10.4                   | 0.00                    | 0.00                   | 0.00                  |
| TIE IN @ 1011' MD / 1011' TVD |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,011.1                       | 3.80            | 318.50      | 1,010.7               | 9.0          | -19.7        | -10.5                   | 0.00                    | 0.00                   | 0.00                  |
| 1,132.0                       | 4.50            | 342.80      | 1,131.3               | 16.5         | -23.7        | -18.3                   | 1.55                    | 0.58                   | 20.10                 |
| 1,222.0                       | 4.80            | 18.40       | 1,221.0               | 23.5         | -23.6        | -25.2                   | 3.17                    | 0.33                   | 39.56                 |
| 1,311.0                       | 4.00            | 50.40       | 1,309.8               | 29.0         | -20.0        | -30.4                   | 2.86                    | -0.90                  | 35.96                 |
| 1,401.0                       | 5.10            | 83.80       | 1,399.5               | 31.4         | -13.6        | -32.4                   | 3.13                    | 1.22                   | 37.11                 |
| 1,490.0                       | 7.40            | 101.20      | 1,488.0               | 30.8         | -4.0         | -31.0                   | 3.32                    | 2.58                   | 19.55                 |
| 1,580.0                       | 7.70            | 104.60      | 1,577.2               | 28.1         | 7.5          | -27.5                   | 0.60                    | 0.33                   | 3.78                  |
| 1,669.0                       | 7.60            | 103.00      | 1,665.4               | 25.3         | 19.0         | -23.8                   | 0.26                    | -0.11                  | -1.80                 |



DDC  
Survey Report



|           |                        |                              |                                    |
|-----------|------------------------|------------------------------|------------------------------------|
| Company:  | Conoco Phillips        | Local Co-ordinate Reference: | Well Buck Federal 20 #6H           |
| Project:  | Lea County, New Mexico | TVD Reference:               | WELL @ 3187.0usft (Precision #827) |
| Site:     | Sec 20, T26S, 32E      | MD Reference:                | WELL @ 3187.0usft (Precision #827) |
| Well:     | Buck Federal 20 #6H    | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | Wellbore #1            | Database:                    | EDM 5000.1 Single User Db          |

Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Bulld Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 1,758.0               | 8.40            | 99.70       | 1,753.5               | 22.9         | 31.1         | -20.5                   | 1.04                    | 0.90                   | -3.71                 |
| 1,848.0               | 8.40            | 98.90       | 1,842.6               | 20.7         | 44.1         | -17.4                   | 0.13                    | 0.00                   | -0.89                 |
| 1,937.0               | 8.00            | 100.30      | 1,930.7               | 18.6         | 56.6         | -14.4                   | 0.50                    | -0.45                  | 1.57                  |
| 2,027.0               | 7.40            | 99.70       | 2,019.8               | 16.5         | 68.5         | -11.4                   | 0.67                    | -0.67                  | -0.67                 |
| 2,116.0               | 8.10            | 103.20      | 2,108.0               | 14.1         | 80.2         | -8.1                    | 0.95                    | 0.79                   | 3.93                  |
| 2,205.0               | 8.30            | 104.90      | 2,196.1               | 11.0         | 92.6         | -4.1                    | 0.35                    | 0.22                   | 1.91                  |
| 2,295.0               | 7.70            | 103.50      | 2,285.2               | 8.0          | 104.7        | -0.2                    | 0.70                    | -0.67                  | -1.56                 |
| 2,384.0               | 7.50            | 105.30      | 2,373.5               | 5.0          | 116.1        | 3.6                     | 0.35                    | -0.22                  | 2.02                  |
| 2,474.0               | 8.50            | 98.20       | 2,462.6               | 2.5          | 128.3        | 7.0                     | 1.56                    | 1.11                   | -7.89                 |
| 2,563.0               | 8.70            | 96.00       | 2,550.6               | 0.9          | 141.5        | 9.6                     | 0.43                    | 0.22                   | -2.47                 |
| 2,652.0               | 8.30            | 97.90       | 2,638.6               | -0.7         | 154.6        | 12.2                    | 0.55                    | -0.45                  | 2.13                  |
| 2,742.0               | 8.00            | 99.10       | 2,727.7               | -2.6         | 167.2        | 15.0                    | 0.38                    | -0.33                  | 1.33                  |
| 2,831.0               | 7.60            | 100.90      | 2,815.9               | -4.7         | 179.1        | 18.0                    | 0.53                    | -0.45                  | 2.02                  |
| 2,921.0               | 6.90            | 98.20       | 2,905.2               | -6.6         | 190.3        | 20.7                    | 0.86                    | -0.78                  | -3.00                 |
| 3,010.0               | 7.70            | 97.20       | 2,993.4               | -8.1         | 201.5        | 23.0                    | 0.91                    | 0.90                   | -1.12                 |
| 3,100.0               | 8.00            | 97.70       | 3,082.6               | -9.7         | 213.7        | 25.5                    | 0.34                    | 0.33                   | 0.56                  |
| 3,189.0               | 7.30            | 96.80       | 3,170.8               | -11.2        | 225.5        | 27.9                    | 0.80                    | -0.79                  | -1.01                 |
| 3,278.0               | 8.10            | 94.90       | 3,259.0               | -12.4        | 237.3        | 30.0                    | 0.94                    | 0.90                   | -2.13                 |
| 3,368.0               | 8.10            | 92.60       | 3,348.1               | -13.2        | 250.0        | 31.8                    | 0.36                    | 0.00                   | -2.56                 |
| 3,457.0               | 7.80            | 96.50       | 3,436.2               | -14.2        | 262.2        | 33.6                    | 0.69                    | -0.34                  | 4.38                  |
| 3,547.0               | 8.60            | 98.80       | 3,525.3               | -15.9        | 275.0        | 36.3                    | 0.96                    | 0.89                   | 2.56                  |
| 3,636.0               | 8.20            | 96.00       | 3,613.4               | -17.6        | 287.8        | 38.9                    | 0.64                    | -0.45                  | -3.15                 |
| 3,725.0               | 7.60            | 98.40       | 3,701.5               | -19.1        | 300.0        | 41.4                    | 0.77                    | -0.67                  | 2.70                  |
| 3,815.0               | 7.80            | 98.80       | 3,790.7               | -20.9        | 311.9        | 44.1                    | 0.23                    | 0.22                   | 0.44                  |
| 3,904.0               | 7.30            | 96.70       | 3,878.9               | -22.5        | 323.5        | 46.5                    | 0.64                    | -0.56                  | -2.36                 |
| 3,994.0               | 6.60            | 98.60       | 3,968.3               | -23.9        | 334.3        | 48.7                    | 0.82                    | -0.78                  | 2.11                  |
| 4,083.0               | 5.50            | 101.10      | 4,056.8               | -25.5        | 343.5        | 51.0                    | 1.27                    | -1.24                  | 2.81                  |
| 4,173.0               | 4.50            | 98.80       | 4,146.4               | -26.9        | 351.2        | 52.9                    | 1.13                    | -1.11                  | -2.56                 |
| 4,262.0               | 2.90            | 103.90      | 4,235.2               | -27.9        | 356.9        | 54.4                    | 1.83                    | -1.80                  | 5.73                  |
| 4,351.0               | 1.20            | 118.60      | 4,324.2               | -28.9        | 359.9        | 55.6                    | 1.98                    | -1.91                  | 16.52                 |
| 4,441.0               | 0.50            | 110.20      | 4,414.2               | -29.5        | 361.1        | 56.3                    | 0.79                    | -0.78                  | -9.33                 |
| 4,530.0               | 0.60            | 93.30       | 4,556.2               | -29.8        | 362.4        | 56.7                    | 0.13                    | 0.07                   | -11.90                |
| 4,620.0               | 0.70            | 98.40       | 4,646.2               | -29.9        | 363.4        | 56.9                    | 0.13                    | 0.11                   | 5.67                  |
| 4,710.0               | 0.60            | 103.00      | 4,735.2               | -30.1        | 364.4        | 57.1                    | 0.13                    | -0.11                  | 5.17                  |
| 4,800.0               | 0.50            | 117.90      | 4,825.2               | -30.4        | 365.2        | 57.5                    | 0.19                    | -0.11                  | 16.56                 |
| 4,890.0               | 0.60            | 129.20      | 4,914.2               | -30.8        | 365.9        | 58.0                    | 0.17                    | 0.11                   | 12.70                 |
| 5,000.0               | 0.70            | 126.20      | 5,003.1               | -31.4        | 366.7        | 58.7                    | 0.12                    | 0.11                   | -3.37                 |
| 5,100.0               | 0.40            | 135.50      | 5,093.1               | -32.0        | 367.4        | 59.3                    | 0.35                    | -0.33                  | 10.33                 |
| 5,200.0               | 0.60            | 147.60      | 5,183.1               | -32.6        | 367.9        | 59.9                    | 0.25                    | 0.22                   | 13.44                 |
| 5,290.0               | 0.40            | 173.50      | 5,272.1               | -33.3        | 368.1        | 60.6                    | 0.33                    | -0.22                  | 29.10                 |
| 5,380.0               | 0.80            | 278.40      | 5,362.1               | -33.5        | 367.6        | 60.8                    | 1.09                    | 0.44                   | 116.56                |
| 5,470.0               | 0.80            | 278.40      | 5,451.1               | -33.4        | 366.3        | 60.5                    | 0.00                    | 0.00                   | 0.00                  |
| 5,560.0               | 0.30            | 164.50      | 5,540.1               | -33.5        | 365.8        | 60.6                    | 1.08                    | -0.56                  | -127.98               |

|           |                        |                              |                                    |
|-----------|------------------------|------------------------------|------------------------------------|
| Company:  | Conoco Phillips        | Local Co-ordinate Reference: | Well Buck Federal 20 #6H           |
| Project:  | Lea County, New Mexico | TVD Reference:               | WELL @ 3187.0usft (Precision #827) |
| Site:     | Sec 20, T26S, 32E      | MD Reference:                | WELL @ 3187.0usft (Precision #827) |
| Well:     | Buck Federal 20 #6H    | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | Wellbore #1            | Database:                    | EDM 5000.1 Single User Db          |

| Survey                                   |                 |             |                       |              |              |                         |                         |                        |                       |
|------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)                    | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 5,657.0                                  | 0.50            | 173.50      | 5,630.1               | -34.1        | 365.9        | 61.3                    | 0.23                    | 0.22                   | 10.00                 |
| 5,746.0                                  | 0.50            | 172.80      | 5,719.1               | -34.9        | 366.0        | 62.0                    | 0.01                    | 0.00                   | -0.79                 |
| 5,836.0                                  | 0.30            | 167.50      | 5,809.1               | -35.5        | 366.1        | 62.7                    | 0.23                    | -0.22                  | -5.89                 |
| 5,925.0                                  | 0.30            | 162.80      | 5,898.1               | -36.0        | 366.2        | 63.1                    | 0.03                    | 0.00                   | -5.28                 |
| 6,015.0                                  | 0.20            | 205.50      | 5,988.1               | -36.3        | 366.2        | 63.5                    | 0.23                    | -0.11                  | 47.44                 |
| 6,104.0                                  | 0.30            | 50.80       | 6,077.1               | -36.3        | 366.3        | 63.5                    | 0.55                    | 0.11                   | -173.82               |
| 6,193.0                                  | 0.30            | 86.30       | 6,166.1               | -36.1        | 366.7        | 63.4                    | 0.21                    | 0.00                   | 39.89                 |
| 6,283.0                                  | 0.30            | 116.30      | 6,256.1               | -36.2        | 367.2        | 63.5                    | 0.17                    | 0.00                   | 33.33                 |
| 6,372.0                                  | 0.40            | 160.30      | 6,345.1               | -36.6        | 367.5        | 63.9                    | 0.31                    | 0.11                   | 49.44                 |
| 6,462.0                                  | 0.60            | 166.30      | 6,435.1               | -37.4        | 367.7        | 64.7                    | 0.23                    | 0.22                   | 6.67                  |
| 6,551.0                                  | 0.80            | 168.60      | 6,524.1               | -38.4        | 367.9        | 65.7                    | 0.23                    | 0.22                   | 2.58                  |
| 6,640.0                                  | 1.20            | 185.10      | 6,613.1               | -40.0        | 368.0        | 67.3                    | 0.55                    | 0.45                   | 18.54                 |
| 6,730.0                                  | 1.10            | 207.80      | 6,703.1               | -41.7        | 367.5        | 68.9                    | 0.51                    | -0.11                  | 25.22                 |
| 6,819.0                                  | 0.60            | 243.40      | 6,792.1               | -42.7        | 366.7        | 69.8                    | 0.79                    | -0.56                  | 40.00                 |
| 6,909.0                                  | 0.60            | 277.40      | 6,882.1               | -42.8        | 365.8        | 69.9                    | 0.39                    | 0.00                   | 37.78                 |
| 6,998.0                                  | 0.30            | 320.40      | 6,971.0               | -42.6        | 365.2        | 69.6                    | 0.49                    | -0.34                  | 48.31                 |
| 7,088.0                                  | 0.30            | 292.10      | 7,061.0               | -42.3        | 364.8        | 69.3                    | 0.16                    | 0.00                   | -31.44                |
| 7,177.0                                  | 0.90            | 13.00       | 7,150.0               | -41.5        | 364.7        | 68.6                    | 1.01                    | 0.67                   | 90.90                 |
| 7,267.0                                  | 1.10            | 23.40       | 7,240.0               | -40.0        | 365.2        | 67.1                    | 0.30                    | 0.22                   | 11.56                 |
| 7,356.0                                  | 1.10            | 31.60       | 7,329.0               | -38.5        | 366.0        | 65.7                    | 0.18                    | 0.00                   | 9.21                  |
| 7,446.0                                  | 0.80            | 28.80       | 7,419.0               | -37.2        | 366.8        | 64.5                    | 0.34                    | -0.33                  | -3.11                 |
| 7,535.0                                  | 0.40            | 29.20       | 7,508.0               | -36.4        | 367.2        | 63.7                    | 0.45                    | -0.45                  | 0.45                  |
| 7,624.0                                  | 0.20            | 26.90       | 7,597.0               | -36.0        | 367.5        | 63.3                    | 0.23                    | -0.22                  | -2.58                 |
| 7,714.0                                  | 0.30            | 123.40      | 7,687.0               | -36.0        | 367.7        | 63.3                    | 0.42                    | 0.11                   | 107.22                |
| 7,803.0                                  | 0.30            | 140.60      | 7,776.0               | -36.3        | 368.1        | 63.6                    | 0.10                    | 0.00                   | 19.33                 |
| 7,893.0                                  | 0.50            | 160.30      | 7,866.0               | -36.9        | 368.4        | 64.2                    | 0.27                    | 0.22                   | 21.89                 |
| 7,982.0                                  | 0.50            | 145.00      | 7,955.0               | -37.6        | 368.7        | 64.9                    | 0.15                    | 0.00                   | -17.19                |
| 8,072.0                                  | 0.50            | 155.20      | 8,045.0               | -38.2        | 369.1        | 65.6                    | 0.10                    | 0.00                   | 11.33                 |
| 8,161.0                                  | 0.60            | 167.50      | 8,134.0               | -39.0        | 369.4        | 66.4                    | 0.17                    | 0.11                   | 13.82                 |
| 8,202.0                                  | 0.70            | 191.10      | 8,175.0               | -39.5        | 369.4        | 66.9                    | 0.69                    | 0.24                   | 57.56                 |
| 8,247.0                                  | 3.00            | 178.80      | 8,220.0               | -40.9        | 369.3        | 68.3                    | 5.16                    | 5.11                   | -27.33                |
| 8,291.0                                  | 9.00            | 173.80      | 8,263.7               | -45.5        | 369.7        | 72.9                    | 13.68                   | 13.64                  | -11.36                |
| 8,336.0                                  | 11.70           | 178.90      | 8,308.0               | -53.6        | 370.2        | 81.0                    | 6.33                    | 6.00                   | 11.33                 |
| 8,381.0                                  | 16.50           | 175.90      | 8,351.6               | -64.5        | 370.7        | 91.9                    | 10.79                   | 10.67                  | -6.67                 |
| 8,426.0                                  | 21.00           | 171.60      | 8,394.2               | -78.9        | 372.4        | 106.4                   | 10.45                   | 10.00                  | -9.56                 |
| 8,470.0                                  | 24.30           | 169.40      | 8,434.8               | -95.6        | 375.2        | 123.3                   | 7.74                    | 7.50                   | -5.00                 |
| 8,515.0                                  | 28.60           | 170.30      | 8,475.1               | -115.3       | 378.7        | 143.2                   | 9.60                    | 9.56                   | 2.00                  |
| 8,560.0                                  | 32.40           | 170.30      | 8,513.8               | -137.8       | 382.6        | 165.9                   | 8.44                    | 8.44                   | 0.00                  |
| 8,605.0                                  | 35.90           | 171.40      | 8,551.1               | -162.8       | 386.6        | 191.1                   | 7.90                    | 7.78                   | 2.44                  |
| 8,649.0                                  | 39.80           | 174.20      | 8,585.8               | -189.5       | 389.9        | 218.0                   | 9.68                    | 8.86                   | 6.36                  |
| 8,694.0                                  | 44.80           | 176.80      | 8,619.1               | -219.7       | 392.3        | 248.3                   | 11.77                   | 11.11                  | 5.78                  |
| 8,739.0                                  | 50.00           | 178.90      | 8,649.5               | -252.8       | 393.5        | 281.4                   | 12.05                   | 11.56                  | 4.67                  |
| CROSSED HARD LINE @ 8783' MD / 8677' TVD |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,783.0                                  | 53.30           | 178.10      | 8,676.8               | -287.3       | 394.4        | 315.9                   | 7.63                    | 7.50                   | -1.82                 |

|           |                        |                              |                                    |
|-----------|------------------------|------------------------------|------------------------------------|
| Company:  | Conoco Phillips        | Local Co-ordinate Reference: | Well Buck Federal 20 #6H           |
| Project:  | Lea County, New Mexico | TVD Reference:               | WELL @ 3187.0usft (Precision #827) |
| Site:     | Sec 20, T26S, 32E      | MD Reference:                | WELL @ 3187.0usft (Precision #827) |
| Well:     | Buck Federal 20 #6H    | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | Wellbore #1            | Database:                    | EDM 5000.1 Single User Db          |

Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Buid Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|-----------------------|-----------------------|
| 8,828.0               | 56.10           | 182.40      | 8,702.8               | -324.0       | 394.2        | 352.5                   | 9.97                    | 6.22                  | 9.56                  |
| 8,873.0               | 58.00           | 184.40      | 8,727.3               | -361.7       | 392.0        | 389.9                   | 5.63                    | 4.22                  | 4.44                  |
| 8,917.0               | 62.70           | 185.30      | 8,749.1               | -399.8       | 388.7        | 427.6                   | 10.83                   | 10.68                 | 2.05                  |
| 8,962.0               | 67.40           | 186.50      | 8,768.1               | -440.4       | 384.5        | 467.8                   | 10.72                   | 10.44                 | 2.67                  |
| 9,007.0               | 72.30           | 185.40      | 8,783.6               | -482.4       | 380.1        | 509.3                   | 11.13                   | 10.89                 | -2.44                 |
| 9,052.0               | 78.10           | 182.10      | 8,795.0               | -525.7       | 377.3        | 552.4                   | 14.71                   | 12.89                 | -7.33                 |
| 9,096.0               | 83.80           | 178.80      | 8,802.0               | -569.2       | 377.0        | 595.7                   | 14.92                   | 12.95                 | -7.50                 |
| 9,181.0               | 88.80           | 177.50      | 8,807.5               | -653.9       | 379.7        | 680.4                   | 6.08                    | 5.88                  | -1.53                 |
| 9,226.0               | 88.10           | 176.60      | 8,808.7               | -698.8       | 382.0        | 725.4                   | 2.53                    | -1.56                 | -2.00                 |
| 9,317.0               | 91.70           | 180.70      | 8,808.8               | -789.8       | 384.2        | 816.2                   | 6.00                    | 3.96                  | 4.51                  |
| 9,408.0               | 92.70           | 181.00      | 8,805.3               | -880.7       | 382.8        | 906.8                   | 1.15                    | 1.10                  | 0.33                  |
| 9,498.0               | 92.00           | 181.60      | 8,801.6               | -970.6       | 380.8        | 996.3                   | 1.02                    | -0.78                 | 0.67                  |
| 9,589.0               | 89.90           | 181.40      | 8,800.1               | -1,061.6     | 378.4        | 1,086.8                 | 2.32                    | -2.31                 | -0.22                 |
| 9,680.0               | 88.80           | 181.60      | 8,801.2               | -1,152.5     | 376.0        | 1,177.3                 | 1.23                    | -1.21                 | 0.22                  |
| 9,771.0               | 88.70           | 180.70      | 8,803.2               | -1,243.5     | 374.2        | 1,267.9                 | 0.99                    | -0.11                 | -0.99                 |
| 9,861.0               | 88.10           | 179.50      | 8,805.7               | -1,333.4     | 374.0        | 1,357.6                 | 1.49                    | -0.67                 | -1.33                 |
| 9,952.0               | 88.80           | 181.90      | 8,808.1               | -1,424.4     | 372.9        | 1,448.2                 | 2.75                    | 0.77                  | 2.64                  |
| 10,043.0              | 89.30           | 183.70      | 8,809.6               | -1,515.3     | 368.5        | 1,538.5                 | 2.05                    | 0.55                  | 1.98                  |
| 10,133.0              | 89.10           | 183.10      | 8,810.9               | -1,605.1     | 363.2        | 1,627.7                 | 0.70                    | -0.22                 | -0.67                 |
| 10,224.0              | 88.90           | 181.90      | 8,812.5               | -1,696.0     | 359.2        | 1,718.0                 | 1.34                    | -0.22                 | -1.32                 |
| 10,315.0              | 89.60           | 178.90      | 8,813.7               | -1,787.0     | 358.6        | 1,808.7                 | 3.38                    | 0.77                  | -3.30                 |
| 10,405.0              | 90.00           | 179.10      | 8,814.0               | -1,877.0     | 360.1        | 1,898.6                 | 0.50                    | 0.44                  | 0.22                  |
| 10,496.0              | 90.50           | 178.40      | 8,813.6               | -1,967.9     | 362.1        | 1,989.4                 | 0.95                    | 0.55                  | -0.77                 |
| 10,587.0              | 90.80           | 179.30      | 8,812.6               | -2,058.9     | 363.9        | 2,080.3                 | 1.04                    | 0.33                  | 0.99                  |
| 10,677.0              | 89.20           | 179.50      | 8,812.6               | -2,148.9     | 364.9        | 2,170.1                 | 1.79                    | -1.78                 | 0.22                  |
| 10,768.0              | 89.80           | 179.80      | 8,813.4               | -2,239.9     | 365.4        | 2,260.9                 | 0.74                    | 0.66                  | 0.33                  |
| 10,859.0              | 90.00           | 183.10      | 8,813.5               | -2,330.9     | 363.1        | 2,351.4                 | 3.63                    | 0.22                  | 3.63                  |
| 10,949.0              | 88.80           | 183.70      | 8,814.5               | -2,420.7     | 357.8        | 2,440.6                 | 1.49                    | -1.33                 | 0.67                  |
| 11,040.0              | 87.10           | 181.20      | 8,817.7               | -2,511.5     | 353.9        | 2,530.9                 | 3.32                    | -1.87                 | -2.75                 |
| 11,131.0              | 88.40           | 177.50      | 8,821.3               | -2,602.4     | 354.9        | 2,621.7                 | 4.31                    | 1.43                  | -4.07                 |
| 11,222.0              | 88.70           | 177.50      | 8,823.6               | -2,693.3     | 358.9        | 2,712.6                 | 0.33                    | 0.33                  | 0.00                  |
| 11,312.0              | 89.70           | 177.40      | 8,824.8               | -2,783.2     | 362.9        | 2,802.5                 | 1.12                    | 1.11                  | -0.11                 |
| 11,403.0              | 91.40           | 179.30      | 8,824.0               | -2,874.2     | 365.5        | 2,893.4                 | 2.80                    | 1.87                  | 2.09                  |
| 11,494.0              | 90.80           | 180.30      | 8,822.2               | -2,965.2     | 365.8        | 2,984.2                 | 1.28                    | -0.66                 | 1.10                  |
| 11,584.0              | 87.80           | 178.90      | 8,823.3               | -3,055.1     | 366.5        | 3,074.0                 | 3.68                    | -3.33                 | -1.56                 |
| 11,675.0              | 88.20           | 178.80      | 8,826.5               | -3,146.1     | 368.3        | 3,164.8                 | 0.45                    | 0.44                  | -0.11                 |
| 11,766.0              | 90.00           | 178.90      | 8,827.9               | -3,237.0     | 370.1        | 3,255.6                 | 1.98                    | 1.98                  | 0.11                  |
| 11,857.0              | 92.20           | 179.10      | 8,826.2               | -3,328.0     | 371.7        | 3,346.4                 | 2.43                    | 2.42                  | 0.22                  |
| 11,947.0              | 89.40           | 178.20      | 8,824.9               | -3,418.0     | 373.8        | 3,436.3                 | 3.27                    | -3.11                 | -1.00                 |
| 12,038.0              | 89.20           | 177.70      | 8,826.0               | -3,508.9     | 377.1        | 3,527.2                 | 0.59                    | -0.22                 | -0.55                 |
| 12,129.0              | 90.30           | 177.90      | 8,826.4               | -3,599.8     | 380.6        | 3,618.2                 | 1.23                    | 1.21                  | 0.22                  |
| 12,220.0              | 90.20           | 180.00      | 8,826.0               | -3,690.8     | 382.2        | 3,709.0                 | 2.31                    | -0.11                 | 2.31                  |
| 12,310.0              | 88.70           | 180.20      | 8,826.9               | -3,780.8     | 382.1        | 3,798.7                 | 1.68                    | -1.67                 | 0.22                  |

|           |                        |                              |                                    |
|-----------|------------------------|------------------------------|------------------------------------|
| Company:  | Conoco Phillips        | Local Co-ordinate Reference: | Well Buck Federal 20 #6H           |
| Project:  | Lea County, New Mexico | TVD Reference:               | WELL @ 3187.0usft (Precision #827) |
| Site:     | Sec 20, T26S, 32E      | MD Reference:                | WELL @ 3187.0usft (Precision #827) |
| Well:     | Buck Federal 20 #6H    | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | Wellbore #1            | Database:                    | EDM 5000.1 Single User Db          |

#### Survey

| Measured Depth (usft)      | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Buidl Rate (°/100usft) | Turn Rate (°/100usft) |
|----------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 12,401.0                   | 88.90           | 181.40      | 8,828.8               | -3,871.8     | 380.8        | 3,889.4                 | 1.34                    | 0.22                   | 1.32                  |
| 12,492.0                   | 90.00           | 181.40      | 8,829.7               | -3,962.7     | 378.6        | 3,979.9                 | 1.21                    | 1.21                   | 0.00                  |
| 12,583.0                   | 90.60           | 181.00      | 8,829.2               | -4,053.7     | 376.7        | 4,070.5                 | 0.79                    | 0.66                   | -0.44                 |
| 12,673.0                   | 88.60           | 178.60      | 8,829.8               | -4,143.7     | 377.0        | 4,160.3                 | 3.47                    | -2.22                  | -2.67                 |
| 12,764.0                   | 89.40           | 180.00      | 8,831.4               | -4,234.7     | 378.1        | 4,251.1                 | 1.77                    | 0.88                   | 1.54                  |
| 12,854.0                   | 89.60           | 180.00      | 8,832.2               | -4,324.7     | 378.1        | 4,340.8                 | 0.22                    | 0.22                   | 0.00                  |
| 12,945.0                   | 90.70           | 181.00      | 8,832.0               | -4,415.7     | 377.3        | 4,431.5                 | 1.63                    | 1.21                   | 1.10                  |
| 13,036.0                   | 90.20           | 179.80      | 8,831.3               | -4,506.7     | 376.7        | 4,522.2                 | 1.43                    | -0.55                  | -1.32                 |
| 13,126.0                   | 88.90           | 180.50      | 8,832.0               | -4,596.6     | 376.5        | 4,611.9                 | 1.64                    | -1.44                  | 0.78                  |
| 13,217.0                   | 89.50           | 180.50      | 8,833.2               | -4,687.6     | 375.7        | 4,702.6                 | 0.66                    | 0.66                   | 0.00                  |
| 13,308.0                   | 89.10           | 180.30      | 8,834.3               | -4,778.6     | 375.0        | 4,793.3                 | 0.49                    | -0.44                  | -0.22                 |
| 13,399.0                   | 89.80           | 180.50      | 8,835.2               | -4,869.6     | 374.4        | 4,884.0                 | 0.80                    | 0.77                   | 0.22                  |
| TD @ 13470' MD / 8836' TVD |                 |             |                       |              |              |                         |                         |                        |                       |
| 13,470.0                   | 89.80           | 180.50      | 8,835.5               | -4,940.6     | 373.8        | 4,954.7                 | 0.00                    | 0.00                   | 0.00                  |

#### Survey Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                  |
|-----------------------|-----------------------|-------------------|--------------|------------------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                          |
| 1,011.1               | 1,010.7               | 9.0               | -19.7        | TIE IN @ 1011' MD / 1011' TVD            |
| 8,783.0               | 8,676.8               | -287.3            | 394.4        | CROSSED HARD LINE @ 8783' MD / 8677' TVD |
| 13,470.0              | 8,835.5               | -4,940.6          | 373.8        | TD @ 13470' MD / 8836' TVD               |

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