

## Results of Directional Survey

|             |              |                        |
|-------------|--------------|------------------------|
| API number: | 30-025-41507 | DD                     |
| OGRID:      | Operator:    | CONOCOPHILLIPS COMPANY |
|             | Property:    | RUBY FEDERAL # 37      |

|         |        |   |    |         |          |
|---------|--------|---|----|---------|----------|
| surface | ULSTR: | B | 17 | T 17S   | R 32E    |
|         |        |   |    | 550 FNL | 1690 FEL |

|         |        |        |     |         |          |
|---------|--------|--------|-----|---------|----------|
| BH Loc  | ULSTR: | B      | 17  | T 17S   | R 32E    |
| 7035 MD |        | 7014.7 | TVD | 997 FNL | 1658 FEL |

|             |        |        |     |         |          |
|-------------|--------|--------|-----|---------|----------|
| Top Perf/OH | ULSTR: | B      | 17  | T 17S   | R 32E    |
| 5528 MD     |        | 5513.0 | TVD | 878 FNL | 1660 FEL |

|             |        |        |     |         |          |
|-------------|--------|--------|-----|---------|----------|
| Bot Perf/OH | ULSTR: | B      | 17  | T 17S   | R 32E    |
| 6602 MD     |        | 6582.5 | TVD | 974 FNL | 1651 FEL |

|              |      |         |       |         |
|--------------|------|---------|-------|---------|
|              | MD   | N/S     | E/W   | VD      |
|              | 5471 | -323.12 | 29.92 | 5456.15 |
| TOP PERFS/OH | 5528 | -327.87 | 30.25 | 5512.95 |
|              | 5661 | -338.94 | 31.02 | 5645.48 |
|              | 6423 | -406.17 | 39.53 | 6404.42 |
| BOT PERFS/OH | 6602 | -424.40 | 38.94 | 6582.49 |
|              | 6613 | -425.52 | 38.90 | 6593.43 |

|              |      |         |       |         |
|--------------|------|---------|-------|---------|
| NEXT TO LAST | 6990 | -445.64 | 32.69 | 6969.75 |
| LAST READING | 7035 | -447.25 | 31.87 | 7014.72 |
| TD           | 7035 | -447.25 | 31.87 | 7014.72 |

|                  |         |         |
|------------------|---------|---------|
| Surface Location | 550 FNL | 1690 FE |
| Projected BHL    | 997 FNL | 1658 FE |
| Location of      |         |         |
| Top Perfs/OH     | 878 FNL | 1660 FE |
| Bottom Perfs/OH  | 974 FNL | 1651 FE |

### SUMMARY of Subsurface Locations

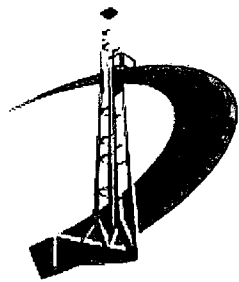
|                  |              |         |         |             |
|------------------|--------------|---------|---------|-------------|
| Surface Location | B-17-17S-32E | 550 FNL | 1690 FE | Vert. Depth |
| Top Perfs/OH     | B-17-17S-32E | 878 FNL | 1660 FE | 5512.95     |
| Bottom Perfs/OH  | B-17-17S-32E | 974 FNL | 1651 FE | 6582.49     |
| Projected TD     | B-17-17S-32E | 997 FNL | 1658 FE | 7014.72     |

APR 29 2014

HOBBS OCD

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**PRO**DIRECTIONAL

P.O. Box 750, Conroe, TX 77305 Phone: 936-441-7266

**ConocoPhillips**

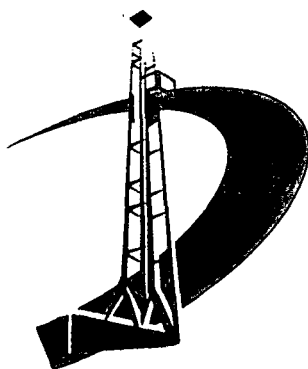
Ruby Federal No. 37  
Lea County, NM

December 30, 2013

Job Number LNM 5107813

***Survey Completion Report***

**COPY**



# PRODIRECTIONAL

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P.O. Box 750, Conroe, TX 77305 Phone: 936-441-7266 Fax: 936-441-7268

*December 30, 2013*

## ConocoPhillips

Ruby Federal No. 37  
Lea County, NM

This is to certify surveys from 905' MD to a depth of 7,035' MD are true and correct MWD surveys. These surveys were taken from 12/25/2013 through 12/29/2013.

Sincerely,

John Jordan

Well Planning



## **ConocoPhillips**

**Lea County, New Mexico**

**Ruby Federal**

**No. 37**

**OH**

**Survey: ProDirectional**

## **Survey Report**

**30 December, 2013**





Professional Directional  
Survey Report (NM)



**Company:** Conoco Phillips  
**Project:** Lea County, N.M.  
**Site:** Ruby Federal  
**Well:** No. 37  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well No. 37  
**TVD Reference:** WELL @ 4050.00usft (Original Well Elev)  
**MD Reference:** WELL @ 4050.00usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Well\_Planner1

**Project** Lea County, N.M.

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

**System Datum:** Mean Sea Level

**Site** Ruby Federal

|                              |                     |                 |                          |                   |
|------------------------------|---------------------|-----------------|--------------------------|-------------------|
| <b>Site Position:</b>        | <b>Northing:</b>    | 665,418.70 usft | <b>Latitude:</b>         | 32° 49' 41.553 N  |
| <b>From:</b> Map             | <b>Easting:</b>     | 662,182.70 usft | <b>Longitude:</b>        | 103° 48' 19.284 W |
| <b>Position Uncertainty:</b> | <b>Slot Radius:</b> | 13-3/16 "       | <b>Grid Convergence:</b> | 0.29 °            |

**Well** No. 37

|                             |              |           |                            |                 |                      |                  |
|-----------------------------|--------------|-----------|----------------------------|-----------------|----------------------|------------------|
| <b>Well Position</b>        | <b>+N/-S</b> | 0.00 usft | <b>Northing:</b>           | 669,843.22 usft | <b>Latitude:</b>     | 32° 50' 25.020 N |
|                             | <b>+E/-W</b> | 0.00 usft | <b>Easting:</b>            | 668,399.46 usft | <b>Longitude:</b>    | 103° 47' 6.160 W |
| <b>Position Uncertainty</b> |              | 0.00 usft | <b>Wellhead Elevation:</b> | usft            | <b>Ground Level:</b> | 4,037.00 usft    |

**Wellbore** OH

| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination<br/>(°)</b> | <b>Dip Angle<br/>(°)</b> | <b>Field Strength<br/>(nT)</b> |
|------------------|-------------------|--------------------|----------------------------|--------------------------|--------------------------------|
|                  | IGRF2010          | 12/30/2013         | 7.42                       | 60.66                    | 48,704                         |

**Design** OH

**Audit Notes:**

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

| <b>Vertical Section:</b> | <b>Depth From (TVD)<br/>(usft)</b> | <b>+N/-S<br/>(usft)</b> | <b>+E/-W<br/>(usft)</b> | <b>Direction<br/>(°)</b> |
|--------------------------|------------------------------------|-------------------------|-------------------------|--------------------------|
|                          | 0.00                               | 0.00                    | 0.00                    | 176.25                   |

**Survey Program** **Date** 12/30/2013

| <b>From<br/>(usft)</b> | <b>To<br/>(usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
|------------------------|----------------------|--------------------------|------------------|--------------------|
| 905.00                 | 7,035.00             | Survey #1 (OH)           | MWD              | MWD - Standard     |



# Professional Directional Survey Report (NM)



Company: Conoco Phillips  
Project: Lea County, N.M.  
Site: Ruby Federal  
Well: No. 37  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well No. 37  
TVD Reference: WELL @ 4050.00usft (Original Well Elev)  
MD Reference: WELL @ 4050.00usft (Original Well Elev)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: Well\_Planner1

| Survey             |            |                      |               |               |               |                     |                        |                            |                    |                   |  |
|--------------------|------------|----------------------|---------------|---------------|---------------|---------------------|------------------------|----------------------------|--------------------|-------------------|--|
| MD<br>(usft)       | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>(°/100usft) | Closure Azimuth<br>(°) | Closure Distance<br>(usft) | Northing<br>(usft) | Easting<br>(usft) |  |
| 0.00               | 0.00       | 0.00                 | 0.00          | 0.00          | 0.00          | 0.00                | 0.00                   | 0.00                       | 669,843.22         | 668,399.46        |  |
| 905.00             | 0.60       | 124.10               | 904.98        | -2.66         | 3.92          | 0.07                | 124.10                 | 4.74                       | 669,840.56         | 668,403.38        |  |
| ProDirectional MWD |            |                      |               |               |               |                     |                        |                            |                    |                   |  |
| 1,334.00           | 0.50       | 103.70               | 1,333.96      | -4.36         | 7.60          | 0.05                | 119.83                 | 8.76                       | 669,838.86         | 668,407.06        |  |
| 1,810.00           | 1.60       | 111.10               | 1,809.88      | -7.24         | 15.82         | 0.23                | 114.60                 | 17.40                      | 669,835.98         | 668,415.28        |  |
| 1,906.00           | 1.70       | 108.70               | 1,905.84      | -8.18         | 18.42         | 0.13                | 113.95                 | 20.16                      | 669,835.04         | 668,417.88        |  |
| 1,969.00           | 2.30       | 138.20               | 1,968.80      | -9.42         | 20.15         | 1.86                | 115.07                 | 22.24                      | 669,833.80         | 668,419.61        |  |
| 2,033.00           | 3.10       | 153.30               | 2,032.73      | -11.93        | 21.78         | 1.66                | 118.71                 | 24.83                      | 669,831.29         | 668,421.24        |  |
| 2,096.00           | 4.40       | 165.10               | 2,095.59      | -15.79        | 23.17         | 2.39                | 124.27                 | 28.03                      | 669,827.43         | 668,422.63        |  |
| 2,223.00           | 5.00       | 179.00               | 2,222.17      | -26.03        | 24.52         | 1.01                | 136.71                 | 35.76                      | 669,817.19         | 668,423.98        |  |
| 2,318.00           | 4.80       | 183.00               | 2,316.82      | -34.14        | 24.38         | 0.42                | 144.46                 | 41.95                      | 669,809.08         | 668,423.84        |  |
| 2,413.00           | 4.00       | 182.20               | 2,411.54      | -41.42        | 24.05         | 0.84                | 149.86                 | 47.89                      | 669,801.80         | 668,423.51        |  |
| 2,508.00           | 3.90       | 183.20               | 2,506.32      | -47.95        | 23.74         | 0.13                | 153.66                 | 53.51                      | 669,795.27         | 668,423.20        |  |
| 2,603.00           | 3.10       | 184.60               | 2,601.14      | -53.74        | 23.35         | 0.85                | 156.51                 | 58.59                      | 669,789.48         | 668,422.81        |  |
| 2,666.00           | 3.80       | 180.00               | 2,664.02      | -57.52        | 23.22         | 1.19                | 158.02                 | 62.03                      | 669,785.70         | 668,422.68        |  |
| 2,761.00           | 4.00       | 176.50               | 2,758.80      | -63.98        | 23.42         | 0.33                | 159.90                 | 68.13                      | 669,779.24         | 668,422.88        |  |
| 2,857.00           | 5.30       | 175.20               | 2,854.49      | -71.74        | 23.99         | 1.36                | 161.51                 | 75.65                      | 669,771.48         | 668,423.45        |  |
| 2,951.00           | 4.30       | 177.90               | 2,948.16      | -79.59        | 24.49         | 1.09                | 162.90                 | 83.27                      | 669,763.63         | 668,423.95        |  |
| 3,046.00           | 5.20       | 174.60               | 3,042.83      | -87.43        | 25.02         | 0.99                | 164.03                 | 90.94                      | 669,755.79         | 668,424.48        |  |
| 3,142.00           | 4.60       | 178.60               | 3,138.48      | -95.61        | 25.52         | 0.72                | 165.05                 | 98.96                      | 669,747.61         | 668,424.98        |  |
| 3,236.00           | 4.00       | 182.20               | 3,232.21      | -102.66       | 25.49         | 0.70                | 166.05                 | 105.78                     | 669,740.56         | 668,424.95        |  |
| 3,331.00           | 5.50       | 174.70               | 3,326.89      | -110.50       | 25.78         | 1.71                | 166.87                 | 113.47                     | 669,732.72         | 668,425.24        |  |
| 3,427.00           | 5.10       | 172.30               | 3,422.47      | -119.31       | 26.78         | 0.48                | 167.35                 | 122.28                     | 669,723.91         | 668,426.24        |  |
| 3,522.00           | 4.70       | 171.50               | 3,517.13      | -127.35       | 27.92         | 0.43                | 167.63                 | 130.37                     | 669,715.87         | 668,427.38        |  |
| 3,617.00           | 6.40       | 175.60               | 3,611.68      | -136.48       | 28.90         | 1.84                | 168.04                 | 139.50                     | 669,706.74         | 668,428.36        |  |
| 3,711.00           | 6.60       | 177.60               | 3,705.07      | -147.10       | 29.53         | 0.32                | 168.65                 | 150.03                     | 669,696.12         | 668,428.99        |  |
| 3,806.00           | 6.30       | 177.40               | 3,799.47      | -157.76       | 30.00         | 0.32                | 169.23                 | 160.58                     | 669,685.46         | 668,429.46        |  |



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Wellbore: OH  
Design: OH

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MD Reference: WELL @ 4050.00usft (Original Well Elev)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: Well\_Planner1

| Survey          |            |                      |  |               |               |               |                     |                        |  |                            |                    |                   |
|-----------------|------------|----------------------|--|---------------|---------------|---------------|---------------------|------------------------|--|----------------------------|--------------------|-------------------|
| MD<br>(usft)    | Inc<br>(°) | Azi (azimuth)<br>(°) |  | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | DLeg<br>(°/100usft) | Closure Azimuth<br>(°) |  | Closure Distance<br>(usft) | Northing<br>(usft) | Easting<br>(usft) |
| 3,901.00        | 5.70       | 174.40               |  | 3,893.95      | -167.66       | 30.69         | 0.71                | 169.63                 |  | 170.45                     | 669,675.56         | 668,430.15        |
| 3,996.00        | 5.80       | 176.80               |  | 3,988.47      | -177.15       | 31.42         | 0.27                | 169.94                 |  | 179.91                     | 669,666.07         | 668,430.88        |
| 4,142.00        | 5.60       | 178.10               |  | 4,133.75      | -191.63       | 32.07         | 0.16                | 170.50                 |  | 194.30                     | 669,651.59         | 668,431.53        |
| 4,333.00        | 5.80       | 177.90               |  | 4,323.81      | -210.59       | 32.73         | 0.11                | 171.17                 |  | 213.12                     | 669,632.63         | 668,432.19        |
| 4,523.00        | 5.80       | 174.90               |  | 4,512.84      | -229.75       | 33.94         | 0.16                | 171.60                 |  | 232.24                     | 669,613.47         | 668,433.40        |
| 4,712.00        | 5.90       | 173.10               |  | 4,700.85      | -248.90       | 35.95         | 0.11                | 171.78                 |  | 251.49                     | 669,594.32         | 668,435.41        |
| 4,902.00        | 6.00       | 187.20               |  | 4,889.84      | -268.45       | 35.88         | 0.77                | 172.39                 |  | 270.84                     | 669,574.77         | 668,435.34        |
| 5,092.00        | 6.20       | 188.30               |  | 5,078.76      | -288.46       | 33.16         | 0.12                | 173.44                 |  | 290.35                     | 669,554.76         | 668,432.62        |
| 5,281.00        | 5.00       | 183.60               |  | 5,266.86      | -306.78       | 31.17         | 0.68                | 174.20                 |  | 308.35                     | 669,536.44         | 668,430.63        |
| 5,471.00        | 4.90       | 185.10               |  | 5,456.15      | -323.12       | 29.92         | 0.09                | 174.71                 |  | 324.50                     | 669,520.10         | 668,429.38        |
| 5,661.00        | 4.80       | 166.80               |  | 5,645.48      | -338.94       | 31.02         | 0.81                | 174.77                 |  | 340.36                     | 669,504.28         | 668,430.48        |
| 5,852.00        | 4.70       | 168.80               |  | 5,835.82      | -354.40       | 34.36         | 0.10                | 174.46                 |  | 356.06                     | 669,488.82         | 668,433.82        |
| 6,042.00        | 4.80       | 168.40               |  | 6,025.17      | -369.82       | 37.47         | 0.06                | 174.21                 |  | 371.72                     | 669,473.40         | 668,436.93        |
| 6,232.00        | 5.70       | 178.20               |  | 6,214.38      | -387.04       | 39.37         | 0.67                | 174.19                 |  | 389.04                     | 669,456.18         | 668,438.83        |
| 6,423.00        | 5.80       | 180.80               |  | 6,404.42      | -406.17       | 39.53         | 0.15                | 174.44                 |  | 408.09                     | 669,437.05         | 668,438.99        |
| 6,613.00        | 5.90       | 182.90               |  | 6,593.43      | -425.52       | 38.90         | 0.12                | 174.78                 |  | 427.30                     | 669,417.70         | 668,438.36        |
| 6,708.00        | 3.90       | 189.10               |  | 6,688.08      | -433.59       | 38.15         | 2.17                | 174.97                 |  | 435.27                     | 669,409.63         | 668,437.61        |
| 6,803.00        | 2.60       | 210.40               |  | 6,782.92      | -438.64       | 36.54         | 1.85                | 175.24                 |  | 440.16                     | 669,404.58         | 668,436.00        |
| 6,990.00        | 2.30       | 207.00               |  | 6,969.75      | -445.64       | 32.69         | 0.18                | 175.80                 |  | 446.84                     | 669,397.58         | 668,432.15        |
| 7,035.00        | 2.30       | 207.00               |  | 7,014.72      | -447.25       | 31.87         | 0.00                | 175.92                 |  | 448.39                     | 669,395.97         | 668,431.33        |
| PTB @ 7,035' MD |            |                      |  |               |               |               |                     |                        |  |                            |                    |                   |



Professional Directional  
Survey Report (NM)



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Well: No. 37  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well No. 37  
TVD Reference: WELL @ 4050.00usft (Original Well Elev)  
MD Reference: WELL @ 4050.00usft (Original Well Elev)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: Well\_Planner1

Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment            |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                    |
| 905.00                      | 904.98                      | -2.66             | 3.92            | ProDirectional MWD |
| 7,035.00                    | 7,014.72                    | -447.25           | 31.87           | PTB @ 7,035' MD    |