

## Results of Directional Survey

|             |                     |           |                                      |
|-------------|---------------------|-----------|--------------------------------------|
| API number: | <b>30-025-41601</b> | DD        |                                      |
| OGRID:      |                     | Operator: | <b>APACHE CORP</b>                   |
|             |                     | Property: | <b>NORTHEAST DRINKARD UNIT # 536</b> |

|         |        |          |           |            |            |            |            |
|---------|--------|----------|-----------|------------|------------|------------|------------|
| surface | ULSTR: | <b>A</b> | <b>15</b> | <b>T</b>   | <b>21S</b> | <b>R</b>   | <b>37E</b> |
|         |        |          |           | <b>140</b> | <b>FNL</b> | <b>475</b> | <b>FEL</b> |

|        |        |        |     |     |     |     |     |
|--------|--------|--------|-----|-----|-----|-----|-----|
| BH Loc | ULSTR: | A      | 15  | T   | 21S | R   | 37E |
| 6963   | MD     | 6956.4 | TVD | 155 | FNL | 710 | FEL |

|             |           |               |            |            |            |            |            |
|-------------|-----------|---------------|------------|------------|------------|------------|------------|
| Top Perf/OH | ULSTR:    | <b>A</b>      | <b>15</b>  | <b>T</b>   | <b>21S</b> | <b>R</b>   | <b>37E</b> |
| <b>5576</b> | <b>MD</b> | <b>5570.9</b> | <b>TVD</b> | <b>141</b> | <b>FNL</b> | <b>649</b> | <b>FEL</b> |

|             |           |               |            |            |            |            |            |
|-------------|-----------|---------------|------------|------------|------------|------------|------------|
| Bot Perf/OH | ULSTR:    | <b>A</b>      | <b>15</b>  | <b>T</b>   | <b>21S</b> | <b>R</b>   | <b>37E</b> |
| <b>6666</b> | <b>MD</b> | <b>6659.6</b> | <b>TVD</b> | <b>151</b> | <b>FNL</b> | <b>700</b> | <b>FEL</b> |

|              | MD          | N/S    | E/W     | VD      |
|--------------|-------------|--------|---------|---------|
|              | 5495        | -0.78  | -169.82 | 5490.04 |
| TOP PERFS/OH | <b>5576</b> | -0.70  | -173.98 | 5570.93 |
|              | 5581        | -0.70  | -174.24 | 5575.92 |
|              | 6604        | -10.60 | -223.17 | 6597.66 |
| BOT PERFS/OH | <b>6666</b> | -11.36 | -225.31 | 6659.62 |
|              | 6690        | -11.66 | -226.14 | 6683.60 |

|              |             |        |         |         |
|--------------|-------------|--------|---------|---------|
| NEXT TO LAST | 6903        | -13.85 | -233.16 | 6896.48 |
| LAST READING | 6963        | -14.52 | -235.14 | 6956.44 |
| TD           | <b>6963</b> | -14.52 | -235.14 | 6956.44 |

|                  |     |    |     |    |
|------------------|-----|----|-----|----|
| Surface Location | 140 | FN | 475 | FE |
| Projected BHL    | 155 | FN | 710 | FE |
| Location of      |     |    |     |    |
| Top Perfs/OH     | 141 | FN | 649 | FE |
| Bottom Perfs/OH  | 151 | FN | 700 | FE |

### SUMMARY of Subsurface Locations

|                  |              |     |    |     |    |             |
|------------------|--------------|-----|----|-----|----|-------------|
| Surface Location | A-15-21S-37E | 140 | FN | 475 | FE | Vert. Depth |
| Top Perfs/OH     | A-15-21S-37E | 141 | FN | 649 | FE | 5570.93     |
| Bottom Perfs/OH  | A-15-21S-37E | 151 | FN | 700 | FE | 6659.62     |
| Projected TD     | A-15-21S-37E | 155 | FN | 710 | FE | 6956.44     |

MAY 12 2014

Apache Corporation (873)  
303 Veterans Airpark Lane, #3000  
Midland, TX 79705

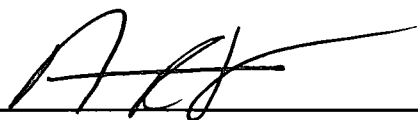
Northeast Drinkard Unit #536 30-025-41601 UL A 15-215-37E 140' FUL + 475' FEL  
Lea County, New Mexico

|      |       |      |      |       |       |
|------|-------|------|------|-------|-------|
| 250  | 2.50  | 0.90 | 1.58 | 3.94  | 3.94  |
| 500  | 2.50  | 0.70 | 1.23 | 3.06  | 7.00  |
| 750  | 2.50  | 0.40 | 0.70 | 1.75  | 8.75  |
| 1223 | 4.73  | 0.80 | 1.40 | 6.62  | 15.37 |
| 1000 | -2.23 | 0.60 | 1.05 | -2.34 | 13.03 |
| 1270 | 2.70  | 0.60 | 1.05 | 2.84  | 15.87 |

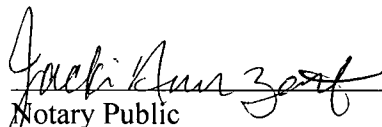
HOBBS OCD

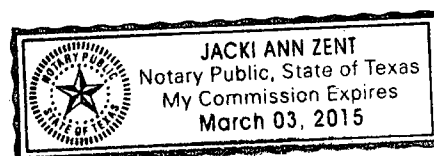
APR 18 2014

RECEIVED

  
Archie Brown - General Manager

The attached instrument was acknowledged before me on the 3<sup>rd</sup> day of March, 2014 by  
Archie Brown - General Manager, CapStar Drilling, Inc.

  
Notary Public



MAY 12 2014



## Apache Corporation (873)

Lea County, NM (NAD27 NME)

Northeast Drinkard Unit 30-025-41601

#536

WB1/Job #1410087

ULA Sec 15 T21S R37E

140' FNL & 475' FEL

Survey: Phoenix MWD Survey

## Phoenix Final Survey Report

24 February, 2014



MAY 12 2014



# Phoenix Technology Services

## Phoenix Final Survey Report



**Company:** Apache Corporation  
**Project:** Lea County, NM (NAD27 NME)  
**Site:** Northeast Drinkard Unit  
**Well:** #536  
**Wellbore:** WB1/Job #1410087  
**Design:** Surveys (Capstar 120)

**Local Co-ordinate Reference:** Well #536  
**TVD Reference:** KB @ 3454.00usft (Capstar 120)  
**MD Reference:** KB @ 3454.00usft (Capstar 120)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** GCR DB

**Project:** Lea County, NM (NAD27 NME)

**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:** Northeast Drinkard Unit

**Site Position:** Northing: 536,097.47 usft Latitude: 32° 28' 5.59737 N  
**From:** Map Easting: 866,927.15 usft Longitude: 103° 8' 37.06135 W  
**Position Uncertainty:** 0.00 usft Slot Radius: 13-3/16" Grid Convergence: 0.64 °

**Well:** #536

**Well Position:** +N-S 0.00 usft Northing: 542,452.10 usft Latitude: 32° 29' 8.46942 N  
 +E-W 0.00 usft Easting: 866,924.00 usft Longitude: 103° 8' 36.27098 W  
**Position Uncertainty:** 0.00 usft Wellhead Elevation: usft Ground Level: 3,443.00 usft

**Wellbore:** WB1/Job #1410087

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | BGGM2013   | 01/09/14    | 7.19            | 60.43         | 48,552              |

**Design:** Surveys (Capstar 120)

**Audit Notes:**

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

| Vertical Section: | Depth From (TVD) (usft) | +N-S (usft) | +E-W (usft) | Direction (°) |
|-------------------|-------------------------|-------------|-------------|---------------|
|                   | 0.00                    | 0.00        | 0.00        | 269.89        |

**Survey Program** Date: 02/24/14

| From (usft) | To (usft) | Survey (Wellbore)                     | Tool Name | Description                    |
|-------------|-----------|---------------------------------------|-----------|--------------------------------|
| 250.00      | 1,230.00  | Teledrift Surveys (WB1/Job #1410087)  | INC       | Inclinometer (Totco/Teledrift) |
| 1,316.00    | 6,963.00  | Phoenix MWD Survey (WB1/Job #1410087) | MWD       | MWD - Standard                 |

**Survey**

| MD (usft)                       | Inc (°) | Azi (azimuth) (°) | TVD (usft) | N/S (usft) | E/W (usft) | V. Sec (usft) | DLeg (°/100usft) |
|---------------------------------|---------|-------------------|------------|------------|------------|---------------|------------------|
| 0.00                            | 0.00    | 0.00              | 0.00       | 0.00       | 0.00       | 0.00          | 0.00             |
| 1,316.00                        | 0.20    | 96.30             | 1,316.00   | -0.25      | 2.28       | -2.28         | 0.02             |
| <b>First Phoenix MWD Survey</b> |         |                   |            |            |            |               |                  |
| 1,401.00                        | 0.30    | 115.20            | 1,401.00   | -0.36      | 2.63       | -2.63         | 0.15             |
| 1,486.00                        | 0.60    | 77.90             | 1,485.99   | -0.36      | 3.27       | -3.27         | 0.48             |
| 1,572.00                        | 0.60    | 76.30             | 1,571.99   | -0.16      | 4.15       | -4.15         | 0.02             |
| 1,657.00                        | 0.70    | 95.10             | 1,656.98   | -0.10      | 5.10       | -5.10         | 0.28             |
| 1,742.00                        | 1.00    | 106.20            | 1,741.97   | -0.36      | 6.33       | -6.32         | 0.40             |
| 1,827.00                        | 0.90    | 108.50            | 1,826.96   | -0.78      | 7.67       | -7.67         | 0.13             |
| 1,912.00                        | 1.10    | 97.30             | 1,911.95   | -1.09      | 9.11       | -9.11         | 0.33             |
| 1,997.00                        | 1.00    | 287.30            | 1,996.95   | -0.97      | 9.21       | -9.21         | 2.46             |



# Phoenix Technology Services

## Phoenix Final Survey Report



Company: Apache Corporation  
 Project: Lea County, NM (NAD27 NME)  
 Site: Northeast Drinkard Unit  
 Well: #536  
 Wellbore: WB1/Job #1410087  
 Design: Surveys (Capstar 120)

Local Co-ordinate Reference: Well #536  
 TVD Reference: KB @ 3454.00usft (Capstar 120)  
 MD Reference: KB @ 3454.00usft (Capstar 120)  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: GCR DB

| MD<br>(usft) | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | V. Sec<br>(usft) | DLeg<br>(°/100usft) |
|--------------|------------|----------------------|---------------|---------------|---------------|------------------|---------------------|
| 2,083.00     | 2.40       | 280.40               | 2,082.91      | -0.43         | 6.73          | -6.73            | 1.64                |
| 2,168.00     | 2.60       | 285.00               | 2,167.82      | 0.39          | 3.11          | -3.11            | 0.33                |
| 2,253.00     | 2.80       | 292.90               | 2,252.73      | 1.70          | -0.66         | 0.66             | 0.50                |
| 2,339.00     | 2.80       | 310.60               | 2,338.63      | 3.89          | -4.19         | 4.18             | 1.00                |
| 2,424.00     | 2.80       | 299.80               | 2,423.53      | 6.27          | -7.57         | 7.56             | 0.62                |
| 2,510.00     | 2.40       | 301.90               | 2,509.44      | 8.26          | -10.92        | 10.90            | 0.48                |
| 2,595.00     | 3.00       | 277.70               | 2,594.35      | 9.50          | -14.64        | 14.62            | 1.50                |
| 2,680.00     | 2.80       | 271.60               | 2,679.24      | 9.86          | -18.92        | 18.90            | 0.43                |
| 2,766.00     | 2.30       | 267.40               | 2,765.15      | 9.84          | -22.74        | 22.72            | 0.62                |
| 2,851.00     | 2.20       | 262.70               | 2,850.09      | 9.55          | -26.06        | 26.04            | 0.25                |
| 2,936.00     | 3.10       | 275.10               | 2,935.00      | 9.55          | -29.97        | 29.95            | 1.25                |
| 3,021.00     | 3.00       | 276.50               | 3,019.88      | 10.01         | -34.47        | 34.45            | 0.15                |
| 3,107.00     | 2.40       | 272.10               | 3,105.78      | 10.33         | -38.50        | 38.48            | 0.74                |
| 3,192.00     | 3.20       | 269.70               | 3,190.68      | 10.38         | -42.65        | 42.63            | 0.95                |
| 3,278.00     | 3.00       | 269.30               | 3,276.55      | 10.34         | -47.31        | 47.29            | 0.23                |
| 3,363.00     | 2.60       | 272.90               | 3,361.45      | 10.41         | -51.45        | 51.43            | 0.51                |
| 3,448.00     | 2.30       | 273.40               | 3,446.37      | 10.61         | -55.08        | 55.06            | 0.35                |
| 3,533.00     | 2.20       | 271.40               | 3,531.31      | 10.75         | -58.42        | 58.40            | 0.15                |
| 3,619.00     | 2.10       | 277.50               | 3,617.25      | 11.00         | -61.63        | 61.61            | 0.29                |
| 3,704.00     | 3.40       | 268.60               | 3,702.15      | 11.14         | -65.69        | 65.67            | 1.61                |
| 3,789.00     | 3.40       | 267.60               | 3,787.00      | 10.97         | -70.73        | 70.71            | 0.07                |
| 3,874.00     | 3.30       | 266.70               | 3,871.85      | 10.72         | -75.69        | 75.67            | 0.13                |
| 3,959.00     | 3.20       | 263.50               | 3,956.72      | 10.32         | -80.49        | 80.47            | 0.24                |
| 4,044.00     | 3.10       | 262.10               | 4,041.59      | 9.73          | -85.12        | 85.11            | 0.15                |
| 4,129.00     | 2.90       | 263.10               | 4,126.47      | 9.16          | -89.54        | 89.52            | 0.24                |
| 4,215.00     | 2.80       | 263.70               | 4,212.37      | 8.66          | -93.78        | 93.77            | 0.12                |
| 4,300.00     | 4.00       | 258.10               | 4,297.21      | 7.83          | -98.75        | 98.73            | 1.46                |
| 4,385.00     | 3.60       | 260.00               | 4,382.03      | 6.75          | -104.28       | 104.26           | 0.49                |
| 4,471.00     | 3.60       | 260.70               | 4,467.86      | 5.85          | -109.60       | 109.59           | 0.05                |
| 4,556.00     | 3.40       | 265.40               | 4,552.70      | 5.21          | -114.75       | 114.74           | 0.41                |
| 4,642.00     | 3.30       | 265.90               | 4,638.55      | 4.83          | -119.76       | 119.75           | 0.12                |
| 4,727.00     | 3.40       | 266.40               | 4,723.41      | 4.50          | -124.71       | 124.70           | 0.12                |
| 4,812.00     | 3.50       | 264.60               | 4,808.25      | 4.09          | -129.81       | 129.80           | 0.17                |
| 4,897.00     | 3.20       | 262.20               | 4,893.11      | 3.53          | -134.75       | 134.74           | 0.39                |
| 4,983.00     | 3.00       | 259.60               | 4,978.98      | 2.80          | -139.34       | 139.33           | 0.28                |
| 5,068.00     | 2.80       | 258.30               | 5,063.87      | 1.97          | -143.56       | 143.55           | 0.25                |
| 5,154.00     | 3.70       | 255.40               | 5,149.73      | 0.85          | -148.30       | 148.30           | 1.06                |
| 5,239.00     | 3.60       | 255.50               | 5,234.56      | -0.51         | -153.54       | 153.54           | 0.12                |
| 5,325.00     | 3.90       | 270.90               | 5,320.38      | -1.14         | -159.08       | 159.08           | 1.22                |
| 5,410.00     | 3.70       | 272.40               | 5,405.19      | -0.98         | -164.71       | 164.71           | 0.26                |
| 5,495.00     | 3.20       | 272.00               | 5,490.04      | -0.78         | -169.82       | 169.82           | 0.59                |
| 5,581.00     | 2.70       | 269.90               | 5,575.92      | -0.70         | -174.24       | 174.24           | 0.59                |
| 5,666.00     | 2.80       | 270.90               | 5,660.83      | -0.67         | -178.32       | 178.32           | 0.13                |
| 5,752.00     | 2.40       | 273.80               | 5,746.74      | -0.52         | -182.22       | 182.22           | 0.49                |
| 5,837.00     | 3.30       | 257.40               | 5,831.63      | -0.94         | -186.38       | 186.38           | 1.42                |

Company: Apache Corporation  
Project: Lea County, NM (NAD27 NME)  
Site: Northeast Drinkard Unit  
Well: #536  
Wellbore: WB1/Job #1410087  
Design: Surveys (Capstar 120)

Local Co-ordinate/Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:  
Database:

Well #536  
KB @ 3454.00usft (Capstar 120)  
KB @ 3454.00usft (Capstar 120)  
Grid  
Minimum Curvature  
GCR DB

**Survey**

| MD<br>(usft)            | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | V. Sec<br>(usft) | DLeg<br>(#/100usft) |
|-------------------------|------------|----------------------|---------------|---------------|---------------|------------------|---------------------|
| 5,923.00                | 3.60       | 257.90               | 5,917.48      | -2.04         | -191.44       | 191.44           | 0.35                |
| 6,008.00                | 3.40       | 254.10               | 6,002.32      | -3.29         | -196.47       | 196.48           | 0.36                |
| 6,093.00                | 3.20       | 255.00               | 6,087.18      | -4.80         | -201.19       | 201.19           | 0.24                |
| 6,178.00                | 2.90       | 257.20               | 6,172.06      | -5.69         | -205.57       | 205.58           | 0.38                |
| 6,264.00                | 2.60       | 257.00               | 6,257.96      | -6.61         | -209.60       | 209.61           | 0.35                |
| 6,349.00                | 2.50       | 255.10               | 6,342.87      | -7.52         | -213.27       | 213.28           | 0.15                |
| 6,434.00                | 2.40       | 255.10               | 6,427.80      | -8.45         | -216.78       | 216.79           | 0.12                |
| 6,519.00                | 2.30       | 250.20               | 6,512.72      | -9.49         | -220.10       | 220.12           | 0.26                |
| 6,604.00                | 2.10       | 250.00               | 6,597.66      | -10.60        | -223.17       | 223.19           | 0.24                |
| 6,690.00                | 2.10       | 250.60               | 6,683.60      | -11.66        | -226.14       | 226.16           | 0.03                |
| 6,775.00                | 1.90       | 251.80               | 6,768.55      | -12.62        | -228.94       | 228.97           | 0.24                |
| 6,860.00                | 2.00       | 255.60               | 6,853.50      | -13.43        | -231.72       | 231.75           | 0.19                |
| 6,903.00                | 2.00       | 251.40               | 6,896.48      | -13.85        | -233.16       | 233.18           | 0.34                |
| Last Phoenix MWD Survey |            |                      |               |               |               |                  |                     |
| 6,963.00                | 2.00       | 251.40               | 6,956.44      | -14.52        | -235.14       | 235.17           | 0.00                |
| Projection to Bit       |            |                      |               |               |               |                  |                     |

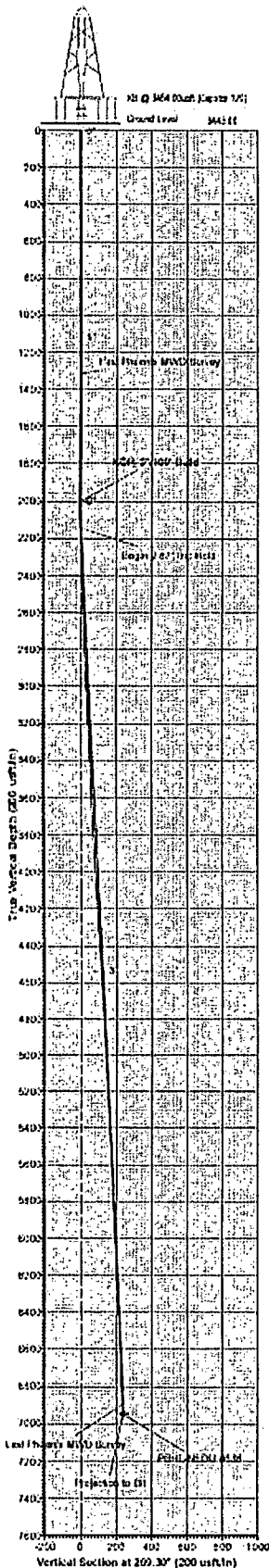
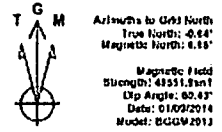
**Survey Annotations**

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                  |
|-----------------------------|-----------------------------|-------------------|-----------------|--------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                          |
| 1,316.00                    | 1,316.00                    | -0.25             | 2.28            | First Phoenix MWD Survey |
| 6,903.00                    | 6,896.48                    | -13.85            | -233.16         | Last Phoenix MWD Survey  |
| 6,963.00                    | 6,956.44                    | -14.52            | -235.14         | Projection to Bit        |

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



Project: Lea County, NM (NAD27 NME)  
 Site: Northeast Drinkard Unit  
 Well: #536  
 Wellbore: WB1/Job #1410087  
 Design: Plan #1 01-14-14  
 Rig: Capstar 120



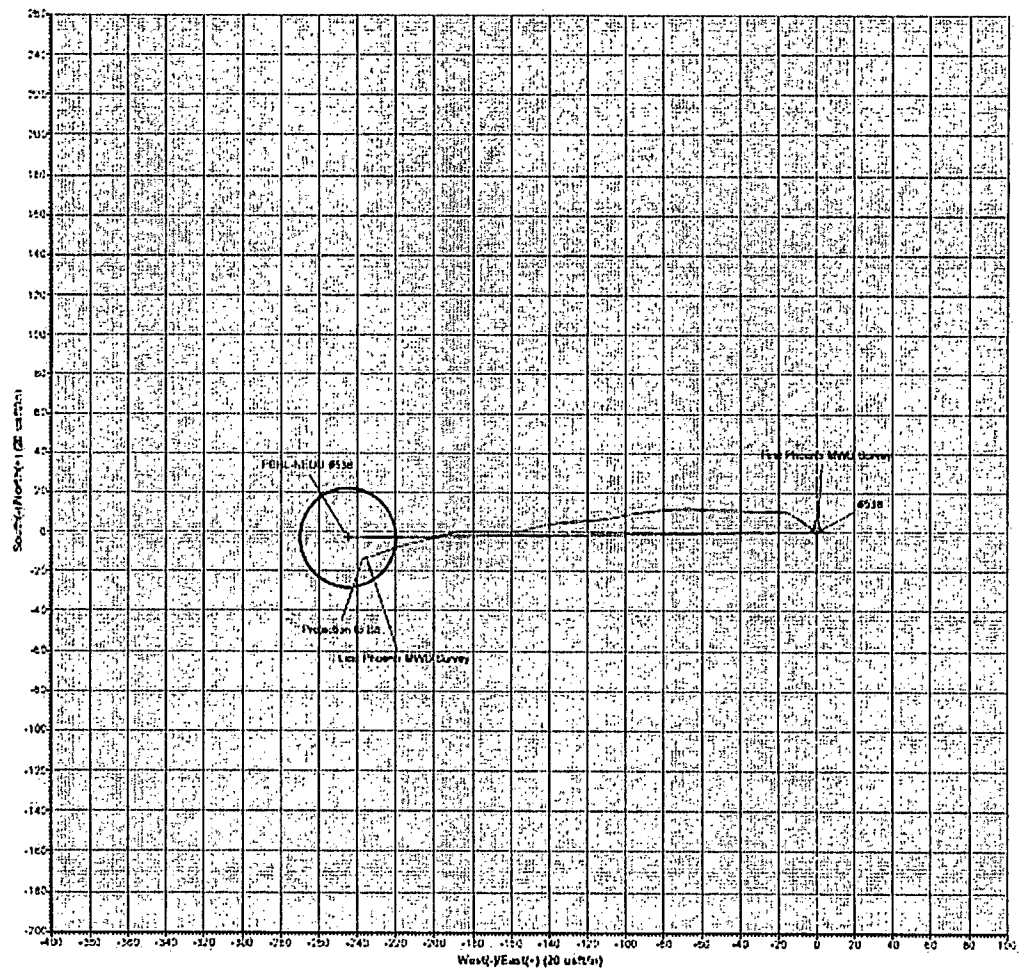
| WELL DETAILS |     |          |          |      |        |       |       |       |       |
|--------------|-----|----------|----------|------|--------|-------|-------|-------|-------|
| WGS          | UTM | North    | East     | Zone | Datum  | Units | Scale | Units | Scale |
| 4326         | 10C | 54252.11 | 62071.30 | 18N  | NAD 83 | Feet  | 1.0   | Feet  | 1.0   |

| SECTION DETAILS |         |      |      |      |     |          |          |      |       |
|-----------------|---------|------|------|------|-----|----------|----------|------|-------|
| Sec             | MD      | Inc  | Adj  | WGS  | UTM | North    | East     | Zone | Units |
| 1               | 0.00    | 1.00 | 0.00 | 4326 | 10C | 54252.11 | 62071.30 | 18N  | Feet  |
| 2               | 2000.00 | 1.00 | 0.00 | 4326 | 10C | 54252.11 | 62071.30 | 18N  | Feet  |
| 3               | 2143.11 | 1.00 | 0.00 | 4326 | 10C | 54252.11 | 62071.30 | 18N  | Feet  |
| 4               | 6556.11 | 1.00 | 0.00 | 4326 | 10C | 54252.11 | 62071.30 | 18N  | Feet  |

| DESIGN TARGET DETAILS |      |     |          |          |      |       |       |       |       |
|-----------------------|------|-----|----------|----------|------|-------|-------|-------|-------|
| Name                  | WGS  | UTM | North    | East     | Zone | Units | Scale | Units | Scale |
| 11414.14.14.14        | 4326 | 10C | 54252.11 | 62071.30 | 18N  | Feet  | 1.0   | Feet  | 1.0   |

Map System: US Data Plane 1977 (Elev. datum)  
 Datum: NAD 1977 (HARCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone Name: New Mexico East 3001  
 Local Origin: Well 536, Old North  
 Latitude: 32° 20' N 4542.71  
 Longitude: 107° 0' 39.71015 W  
 Grid East: 62071.30  
 Grid North: 54252.11  
 Scale Factor: 1.000  
 UTM Zone: 18N  
 UTM Datum: NAD 83  
 UTM Units: Feet  
 UTM Scale: 1.000  
 UTM Datum: NAD 83  
 UTM Units: Feet  
 UTM Scale: 1.000  
 To convert a Magnetic Direction to a Grid Direction, Add 0.54°  
 To convert a Magnetic Direction to a True Direction, Add 0.18°  
 To convert a True Direction to a Grid Direction, Subtract 0.36°

**LEGEND**  
 --- #536: Wellbore #1410087, Survey Capstar 1200 V0  
 --- Plan #1 01-14-14



**Kautz, Paul, EMNRD**

---

**From:** Kautz, Paul, EMNRD  
**Sent:** Friday, May 02, 2014 3:27 PM  
**To:** Fisher, Reesa (Reesa.Fisher@apachecorp.com)  
**Subject:** Northeast Drinkard Unit # 536

Reesa

Completion paper work (C-102) and the APD indicates that this well is a directionally drilled well. Before we can approve the completion paper work we need a copy of the directional drill survey.

Paul