

## Results of Directional Survey

|             |                     |           |                                 |
|-------------|---------------------|-----------|---------------------------------|
| API number: | <b>30-025-40690</b> |           |                                 |
| OGRID:      |                     | Operator: | <b>CIMAREX ENERGY CO.</b>       |
|             |                     | Property: | <b>DOUBLE X 25 FEDERAL</b> # 4H |

|         |        |          |           |                |                 |
|---------|--------|----------|-----------|----------------|-----------------|
| surface | ULSTR: | <b>C</b> | <b>25</b> | <b>T 24S</b>   | <b>R 32E</b>    |
|         |        |          |           | <b>330 FNL</b> | <b>2055 FWL</b> |

|                 |        |                |            |                 |                 |
|-----------------|--------|----------------|------------|-----------------|-----------------|
| BH Loc          | ULSTR: | <b>N</b>       | <b>25</b>  | <b>T 24S</b>    | <b>R 32E</b>    |
| <b>15147 MD</b> |        | <b>10832.0</b> | <b>TVD</b> | <b>334 FSL</b>  | <b>2327 FWL</b> |
|                 |        |                |            | <b>4946 FNL</b> |                 |

|                 |        |                |            |                |                 |
|-----------------|--------|----------------|------------|----------------|-----------------|
| Top Perf/OH     | ULSTR: | <b>C</b>       | <b>25</b>  | <b>T 24S</b>   | <b>R 32E</b>    |
| <b>10900 MD</b> |        | <b>10751.9</b> | <b>TVD</b> | <b>712 FNL</b> | <b>2092 FWL</b> |

|                 |        |                |            |                 |                 |
|-----------------|--------|----------------|------------|-----------------|-----------------|
| Bot Perf/OH     | ULSTR: | <b>N</b>       | <b>25</b>  | <b>T 24S</b>    | <b>R 32E</b>    |
| <b>15125 MD</b> |        | <b>10831.5</b> | <b>TVD</b> | <b>356 FSL</b>  | <b>2326 FWL</b> |
|                 |        |                |            | <b>4924 FNL</b> |                 |

|              |              |          |        |          |
|--------------|--------------|----------|--------|----------|
|              | MD           | N/S      | E/W    | VD       |
|              | 10897        | -379.64  | 36.79  | 10750.83 |
| TOP PERFS/OH | <b>10900</b> | -382.44  | 36.87  | 10751.89 |
|              | 10928        | -408.61  | 37.64  | 10761.80 |
|              | 15093        | -4561.63 | 270.01 | 10830.79 |
| BOT PERFS/OH | <b>15125</b> | -4593.59 | 271.36 | 10831.48 |
|              | 15147        | -4615.57 | 272.28 | 10831.96 |

|              |              |          |        |          |
|--------------|--------------|----------|--------|----------|
| NEXT TO LAST | 15093        | -4561.63 | 270.01 | 10830.79 |
| LAST READING | 15147        | -4615.57 | 272.28 | 10831.96 |
| TD           | <b>15147</b> | -4615.57 | 272.28 | 10831.96 |

|                  |      |    |      |    |
|------------------|------|----|------|----|
| Surface Location | 330  | FN | 2055 | FW |
| Projected BHL    | 4946 | FN | 2327 | FW |
| Location of      |      |    |      |    |
| Top Perfs/OH     | 712  | FN | 2092 | FW |
| Bottom Perfs/OH  | 4924 | FN | 2326 | FW |

### SUMMARY of Subsurface Locations

|                  |              |      |    |      |    |             |
|------------------|--------------|------|----|------|----|-------------|
| Surface Location | C-25-24S-32E | 330  | FN | 2055 | FW | Vert. Depth |
|                  |              |      |    |      |    |             |
| Top Perfs/OH     | C-25-24S-32E | 712  | FN | 2092 | FW | 10751.89    |
| Bottom Perfs/OH  | N-25-24S-32E | 4924 | FN | 2326 | FW | 10831.48    |
|                  |              |      |    |      |    |             |
| Projected TD     | N-25-24S-32E | 4946 | FN | 2327 | FW | 10831.96    |



Cimarex

**PATHFINDER**  
A Schlumberger Company

|                     |                                                     |                                             |                                                                 |                                                                                                    |                                                                                                                                                |
|---------------------|-----------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| WELL                | Double X 25 Federal #4H                             | FIELD                                       | NM Lea County                                                   | STRUCTURE                                                                                          | Cactus 104                                                                                                                                     |
| Magnetic Parameters | Model: BQGM 2012<br>Dip: 60.081°<br>Mag Dec: 7.561° | Date: September 04, 2012<br>FS<br>48449.347 | Surface Location<br>Lat: N 31 11 42.077<br>Lon: W 103 37 48.763 | NAD83 New Mexico State Plane, Eastern Zone, US Feet<br>Grid Cons: 0.375°<br>Scale Fact: 0.99996327 | Miscellaneous<br>Slot: Double X 25 Federal #4H<br>Plan: ST01 Rev2 DSW 4 Sep-12<br>TVD Ref: RKN 35918 above MSL<br>Rev Date: September 04, 2012 |

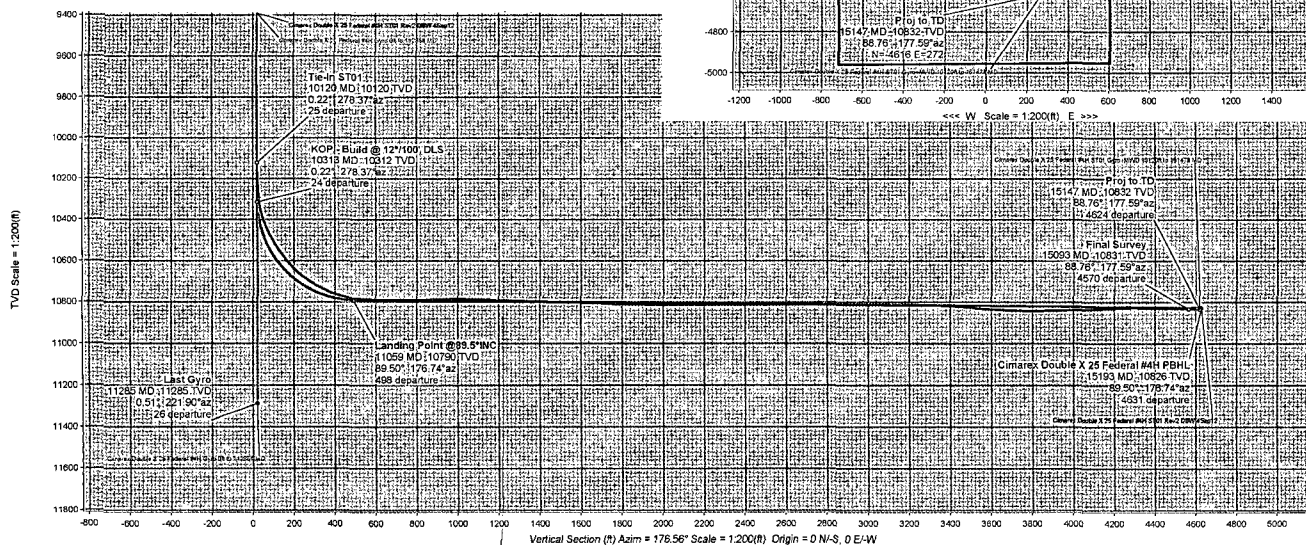
SUR: C-25-24s-32e, 330/N & 2055/W  
BHL: N-25-24s-32e, 4946/N & 2327/W  
API # 30-025-40690



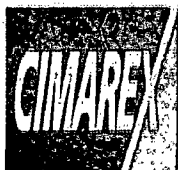
Grid North  
Tot Corr (M->G 7.1860°)  
Mag Dec (7.561°)  
Grid Conv (0.375°)

Legend

Vertical Section X 25 Federal #4H  
Vertical Section X 25 Federal #4H  
Vertical Section X 25 Federal #4H  
Vertical Section X 25 Federal #4H  
Vertical Section X 25 Federal #4H



Drawn By: R. Schreiner  
Data Created: September 10, 2012 10:01:36 AM  
Checked By:  
Checked Date:  
Approved By:  
Approved Date:



# Cimarex Double X 25 Federal #4H ST01 Gyro+MWD 10120ft to 15147ft MD

(Def Survey)

Report Date: September 17, 2012 - 09:08 AM  
 Client: Cimarex  
 Field: NM Lea County (NAD 83)  
 Structure / Slot: Cactus 104 / Cimarex Double X 25 Federal #4H  
 Well: Cimarex Double X 25 Federal #4H  
 Borehole: ST01  
 UWI / API#: Unknown / Unknown  
 Survey Name: Cimarex Double X 25 Federal #4H ST01 Gyro+MWD 10120ft to 15147ft MD  
 Survey Date: September 04, 2012  
 Tort / AHD / DDI / ERD Ratio: 157.435 ° / 4672.288 ft / 6.012 / 0.431  
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet  
 Location Lat / Long: N 32° 11' 42.07747", W 103° 37' 48.76314"  
 Location Grid N/E Y/X: N 435394.300 ftUS, E 758836.500 ftUS  
 CRS Grid Convergence Angle: 0.3746 °  
 Grid Scale Factor: 0.99996327

Survey / DLS Computation: Minimum Curvature / Lubinski  
 Vertical Section Azimuth: 176.557 ° (Grid North)  
 Vertical Section Origin: 0.000 ft; 0.000 ft  
 TVD Reference Datum: RKB  
 TVD Reference Elevation: 3593.000 ft above MSL  
 Seabed / Ground Elevation: 3572.000 ft above MSL  
 Magnetic Declination: 7.561 °  
 Total Gravity Field Strength: 999.1456 mgn (9.8 based)  
 Total Magnetic Field Strength: 48460.326 nT  
 Magnetic Dip Angle: 60.081 °  
 Declination Date: September 04, 2012  
 Magnetic Declination Model: BGGM 2012  
 North Reference: Grid North  
 Grid Convergence Used: 0.3746 °  
 Total Corr Mag North->Grid North: 7.1860 °

Local Coord Referenced To: Structure Reference Point

| Comments       | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|----------------|------------|-------------|------------------|-------------|--------------|------------|------------|-----------------|---------------------------|------------------|-----------|
| SHL Double X25 | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | 0.00            | 0.00                      | N/A              | 56.26M    |
|                | 144.90     | 0.80        | 56.26            | 144.90      | -0.51        | 0.56       | 0.84       | 1.01            | 56.26                     | 0.55             | 54.1M     |
|                | 235.70     | 0.80        | 54.10            | 235.69      | -1.17        | 1.29       | 1.88       | 2.28            | 55.66                     | 0.03             | 87.68M    |
|                | 421.30     | 0.65        | 87.68            | 421.27      | -1.85        | 2.09       | 3.98       | 4.50            | 62.34                     | 0.24             | 149.59M   |
|                | 601.70     | 0.85        | 149.59           | 601.66      | -0.63        | 0.98       | 5.68       | 5.77            | 80.26                     | 0.44             | 184.84M   |
|                | 785.80     | 0.67        | 184.84           | 785.74      | 1.65         | -1.27      | 6.28       | 6.41            | 101.47                    | 0.27             | 198.21M   |
|                | 977.00     | 1.03        | 198.21           | 976.92      | 4.35         | -4.02      | 5.65       | 6.94            | 125.43                    | 0.21             | 184.33M   |
|                | 1168.30    | 0.93        | 184.33           | 1168.20     | 7.49         | -7.20      | 5.00       | 8.77            | 145.24                    | 0.13             | 172.76M   |
|                | 1358.80    | 0.33        | 172.76           | 1358.68     | 9.57         | -9.29      | 4.95       | 10.52           | 151.95                    | 0.32             | 196.79M   |
|                | 1549.50    | 0.38        | 196.79           | 1549.38     | 10.71        | -10.44     | 4.84       | 11.50           | 155.14                    | 0.08             | 142.58M   |
|                | 1740.90    | 0.30        | 142.58           | 1740.78     | 11.72        | -11.44     | 4.96       | 12.47           | 156.58                    | 0.17             | 111.15M   |
|                | 1931.60    | 0.47        | 111.15           | 1931.47     | 12.46        | -12.12     | 5.99       | 13.52           | 153.70                    | 0.14             | 100.26M   |
|                | 2122.60    | 0.43        | 100.26           | 2122.47     | 12.96        | -12.53     | 7.43       | 14.57           | 149.35                    | 0.05             | 44.34M    |
|                | 2313.60    | 0.29        | 44.34            | 2313.46     | 12.80        | -12.32     | 8.47       | 14.95           | 145.48                    | 0.19             | 13.59M    |
|                | 2505.40    | 0.35        | 13.59            | 2505.26     | 11.92        | -11.40     | 8.95       | 14.49           | 141.87                    | 0.09             | 359.77M   |
|                | 2697.10    | 0.15        | 359.77           | 2696.96     | 11.10        | -10.58     | 9.08       | 13.94           | 139.35                    | 0.11             | 205.58M   |
|                | 2888.50    | 0.21        | 205.58           | 2888.36     | 11.16        | -10.64     | 8.93       | 13.89           | 140.00                    | 0.18             | 149.48M   |
|                | 3078.70    | 0.32        | 149.48           | 3078.56     | 11.94        | -11.42     | 9.05       | 14.57           | 141.60                    | 0.14             | 97.99M    |

| Comments    | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|-------------|------------|-------------|------------------|-------------|--------------|------------|------------|-----------------|---------------------------|------------------|-----------|
|             | 3269.80    | 0.26        | 97.99            | 3269.65     | 12.50        | -11.94     | 9.75       | 15.41           | 140.76                    | 0.13             | 92.74M    |
|             | 3458.60    | 0.15        | 92.74            | 3458.45     | 12.61        | -12.01     | 10.42      | 15.90           | 139.05                    | 0.06             | 80.41M    |
|             | 3649.10    | 0.40        | 80.41            | 3648.95     | 12.57        | -11.91     | 11.33      | 16.43           | 136.44                    | 0.13             | 11.1M     |
|             | 3840.20    | 0.37        | 11.10            | 3840.05     | 11.90        | -11.19     | 12.10      | 16.48           | 132.76                    | 0.23             | 228.81M   |
|             | 4031.60    | 0.13        | 228.81           | 4031.45     | 11.43        | -10.73     | 12.06      | 16.14           | 131.66                    | 0.25             | 63.68M    |
|             | 4223.60    | 1.29        | 63.68            | 4223.43     | 10.73        | -9.91      | 13.83      | 17.02           | 125.63                    | 0.74             | 71.76M    |
|             | 4414.50    | 1.00        | 71.76            | 4414.29     | 9.47         | -8.44      | 17.34      | 19.28           | 115.95                    | 0.17             | 83.59M    |
|             | 4606.20    | 1.87        | 83.59            | 4605.93     | 8.88         | -7.57      | 22.04      | 23.30           | 108.95                    | 0.48             | 86.87M    |
|             | 4797.20    | 0.84        | 86.87            | 4796.88     | 8.72         | -7.14      | 26.53      | 27.48           | 105.07                    | 0.54             | 127.43M   |
|             | 4986.60    | 0.16        | 127.43           | 4986.27     | 8.90         | -7.23      | 28.13      | 29.04           | 104.41                    | 0.38             | 128.2M    |
|             | 5178.40    | 0.24        | 128.20           | 5178.07     | 9.35         | -7.64      | 28.66      | 29.66           | 104.93                    | 0.04             | 192.13M   |
|             | 5367.80    | 0.24        | 192.13           | 5367.46     | 9.99         | -8.27      | 28.88      | 30.05           | 105.98                    | 0.13             | 181.64M   |
|             | 5558.80    | 0.32        | 181.64           | 5558.46     | 10.91        | -9.20      | 28.79      | 30.22           | 107.72                    | 0.05             | 124.28M   |
|             | 5750.40    | 0.22        | 124.28           | 5750.06     | 11.67        | -9.94      | 29.07      | 30.73           | 108.87                    | 0.14             | 74.29M    |
|             | 5942.00    | 0.13        | 74.29            | 5941.66     | 11.85        | -10.09     | 29.59      | 31.26           | 108.82                    | 0.09             | 210.67M   |
|             | 6132.50    | 0.05        | 210.67           | 6132.16     | 11.87        | -10.10     | 29.75      | 31.42           | 108.75                    | 0.09             | 172.97M   |
|             | 6323.60    | 0.15        | 172.97           | 6323.26     | 12.19        | -10.42     | 29.74      | 31.51           | 109.31                    | 0.06             | 112.83M   |
|             | 6514.50    | 0.06        | 112.83           | 6514.16     | 12.48        | -10.71     | 29.86      | 31.72           | 109.72                    | 0.07             | 224.63M   |
|             | 6706.10    | 0.05        | 224.63           | 6705.76     | 12.58        | -10.80     | 29.90      | 31.79           | 109.87                    | 0.05             | 214.51M   |
|             | 6897.20    | 0.81        | 214.51           | 6896.85     | 13.70        | -11.98     | 29.07      | 31.44           | 112.39                    | 0.40             | 170.63M   |
|             | 7088.50    | 0.83        | 170.63           | 7088.13     | 16.15        | -14.46     | 28.53      | 31.99           | 116.87                    | 0.32             | 260.88M   |
|             | 7280.30    | 0.09        | 260.88           | 7279.93     | 17.54        | -15.85     | 28.61      | 32.71           | 118.99                    | 0.44             | 195.18M   |
|             | 7470.10    | 0.17        | 195.18           | 7469.73     | 17.82        | -16.15     | 28.39      | 32.66           | 119.63                    | 0.08             | 87.98M    |
|             | 7659.40    | 0.21        | 87.98            | 7659.03     | 18.10        | -16.41     | 28.66      | 33.03           | 119.79                    | 0.16             | 210.76M   |
|             | 7848.80    | 0.20        | 210.76           | 7848.43     | 18.38        | -16.68     | 28.84      | 33.32           | 120.04                    | 0.19             | 225.53M   |
|             | 8038.10    | 0.20        | 225.53           | 8037.73     | 18.87        | -17.19     | 28.44      | 33.23           | 121.16                    | 0.03             | 237.55M   |
|             | 8227.50    | 0.31        | 237.55           | 8227.12     | 19.34        | -17.70     | 27.77      | 32.93           | 122.52                    | 0.06             | 194.58M   |
|             | 8417.10    | 0.26        | 194.58           | 8416.72     | 19.99        | -18.39     | 27.23      | 32.86           | 124.04                    | 0.11             | 193.18M   |
|             | 8605.70    | 0.21        | 193.18           | 8605.32     | 20.73        | -19.14     | 27.04      | 33.13           | 125.30                    | 0.03             | 209.06M   |
|             | 8795.00    | 0.14        | 209.06           | 8794.62     | 21.26        | -19.68     | 26.85      | 33.29           | 126.25                    | 0.04             | 234.26M   |
|             | 8984.20    | 0.11        | 234.26           | 8983.82     | 21.55        | -19.99     | 26.59      | 33.27           | 126.94                    | 0.03             | 179.99M   |
|             | 9173.60    | 0.17        | 179.99           | 9173.22     | 21.93        | -20.38     | 26.44      | 33.38           | 127.62                    | 0.07             | 266.38M   |
|             | 9362.80    | 0.21        | 266.38           | 9362.42     | 22.21        | -20.68     | 26.10      | 33.30           | 128.40                    | 0.14             | 248.86M   |
|             | 9552.00    | 0.91        | 248.86           | 9551.61     | 22.67        | -21.24     | 24.35      | 32.31           | 131.11                    | 0.38             | 247.59M   |
|             | 9741.60    | 0.87        | 247.59           | 9741.18     | 23.59        | -22.34     | 21.61      | 31.08           | 135.94                    | 0.02             | 242.97M   |
|             | 9930.90    | 0.43        | 242.97           | 9930.47     | 24.35        | -23.21     | 19.65      | 30.41           | 139.74                    | 0.23             | 278.37M   |
| Tie-In ST01 | 10120.30   | 0.22        | 278.37           | 10119.87    | 24.56        | -23.48     | 18.66      | 29.99           | 141.52                    | 0.15             | 179.41M   |
|             | 10315.00   | 6.63        | 179.41           | 10314.14    | 35.72        | -34.67     | 18.40      | 39.26           | 152.04                    | 3.42             | 178.15M   |
|             | 10362.00   | 12.95       | 178.15           | 10360.43    | 43.70        | -42.66     | 18.60      | 46.54           | 156.44                    | 13.45            | 3.82R     |
|             | 10393.00   | 17.38       | 179.14           | 10390.34    | 51.80        | -50.76     | 18.78      | 54.13           | 159.69                    | 14.31            | 5.04R     |
|             | 10425.00   | 21.45       | 180.12           | 10420.52    | 62.42        | -61.40     | 18.84      | 64.23           | 162.94                    | 12.76            | 5.69R     |
|             | 10456.00   | 24.92       | 180.94           | 10449.01    | 74.59        | -73.60     | 18.72      | 75.95           | 165.73                    | 11.24            | 7.33L     |
|             | 10488.00   | 28.15       | 180.06           | 10477.63    | 88.85        | -87.89     | 18.61      | 89.84           | 168.05                    | 10.17            | 25.45L    |
|             | 10518.00   | 30.47       | 177.90           | 10503.79    | 103.52       | -102.57    | 18.88      | 104.30          | 169.57                    | 8.50             | 30.54L    |

| Comments         | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|------------------|------------|-------------|------------------|-------------|--------------|------------|------------|-----------------|---------------------------|------------------|-----------|
|                  | 10550.00   | 32.76       | 175.43           | 10531.04    | 120.29       | -119.32    | 19.86      | 120.96          | 170.55                    | 8.22             | 42.3L     |
|                  | 10581.00   | 35.25       | 171.60           | 10556.74    | 137.60       | -136.53    | 21.84      | 138.27          | 170.91                    | 10.59            | 17.69R    |
|                  | 10613.00   | 37.96       | 173.00           | 10582.43    | 156.62       | -155.44    | 24.39      | 157.34          | 171.08                    | 8.86             | 46.74R    |
|                  | 10644.00   | 40.03       | 176.34           | 10606.52    | 176.11       | -174.85    | 26.19      | 176.80          | 171.48                    | 9.51             | 18.38R    |
|                  | 10676.00   | 44.39       | 178.40           | 10630.22    | 197.60       | -196.32    | 27.16      | 198.19          | 172.12                    | 14.29            | 14.12L    |
|                  | 10707.00   | 48.32       | 177.08           | 10651.61    | 220.02       | -218.73    | 28.05      | 220.53          | 172.69                    | 13.05            | 0.92L     |
|                  | 10739.00   | 52.79       | 176.99           | 10671.94    | 244.73       | -243.41    | 29.33      | 245.17          | 173.13                    | 13.97            | 1.82R     |
|                  | 10771.00   | 55.92       | 177.11           | 10690.58    | 270.73       | -269.37    | 30.67      | 271.11          | 173.51                    | 9.79             | 12.28L    |
|                  | 10802.00   | 58.67       | 176.41           | 10707.33    | 296.81       | -295.41    | 32.14      | 297.16          | 173.79                    | 9.07             | 1.96L     |
|                  | 10834.00   | 61.23       | 176.31           | 10723.35    | 324.51       | -323.05    | 33.90      | 324.83          | 174.01                    | 8.00             | 13.13R    |
|                  | 10865.00   | 63.85       | 176.99           | 10737.65    | 352.01       | -350.51    | 35.51      | 352.31          | 174.22                    | 8.67             | 13.54R    |
|                  | 10897.00   | 67.50       | 177.94           | 10750.83    | 381.16       | -379.64    | 36.79      | 381.42          | 174.46                    | 11.72            | 11.85R    |
|                  | 10928.00   | 71.02       | 178.72           | 10761.80    | 410.13       | -408.61    | 37.64      | 410.34          | 174.74                    | 11.60            | 5.92R     |
| Survey 10-Sep-12 | 10960.00   | 75.51       | 179.20           | 10771.02    | 440.74       | -439.24    | 38.19      | 440.90          | 175.03                    | 14.10            | 4.12L     |
|                  | 10981.00   | 78.37       | 178.99           | 10775.76    | 461.18       | -459.70    | 38.51      | 461.31          | 175.21                    | 13.65            | 1.61R     |
|                  | 11017.00   | 83.32       | 179.13           | 10781.49    | 496.68       | -495.22    | 39.10      | 496.76          | 175.49                    | 13.76            | 31.74L    |
|                  | 11048.00   | 85.32       | 177.89           | 10784.56    | 527.50       | -526.06    | 39.90      | 527.57          | 175.66                    | 7.58             | 3.68R     |
|                  | 11080.00   | 85.94       | 177.93           | 10786.99    | 559.40       | -557.94    | 41.06      | 559.45          | 175.79                    | 1.94             | 8.67L     |
|                  | 11111.00   | 87.25       | 177.73           | 10788.83    | 590.34       | -588.86    | 42.23      | 590.38          | 175.90                    | 4.27             | 32.24L    |
|                  | 11206.00   | 89.90       | 176.06           | 10791.20    | 685.29       | -683.68    | 47.38      | 685.32          | 176.04                    | 3.30             | 27.33R    |
|                  | 11301.00   | 90.79       | 176.52           | 10790.62    | 780.29       | -778.48    | 53.53      | 780.32          | 176.07                    | 1.05             | 0.56L     |
|                  | 11396.00   | 91.82       | 176.51           | 10788.46    | 875.26       | -873.28    | 59.30      | 875.29          | 176.12                    | 1.08             | 149.09L   |
|                  | 11490.00   | 90.45       | 175.69           | 10786.60    | 969.24       | -967.04    | 65.69      | 969.27          | 176.11                    | 1.70             | 162.57R   |
| Survey 12-Sep-12 | 11585.00   | 89.24       | 176.07           | 10786.86    | 1064.23      | -1061.79   | 72.52      | 1064.27         | 176.09                    | 1.34             | 148.64R   |
|                  | 11680.00   | 87.83       | 176.93           | 10789.29    | 1159.20      | -1156.58   | 78.31      | 1159.23         | 176.13                    | 1.74             | 39.39R    |
|                  | 11774.00   | 88.11       | 177.16           | 10792.61    | 1253.13      | -1250.40   | 83.16      | 1253.16         | 176.20                    | 0.39             | 50.52R    |
|                  | 11869.00   | 88.25       | 177.33           | 10795.63    | 1348.08      | -1345.24   | 87.72      | 1348.10         | 176.27                    | 0.23             | 110.24R   |
|                  | 11964.00   | 88.11       | 177.71           | 10798.65    | 1443.02      | -1440.10   | 91.83      | 1443.03         | 176.35                    | 0.43             | 2.17L     |
|                  | 12058.00   | 88.90       | 177.68           | 10801.10    | 1536.97      | -1533.99   | 95.61      | 1536.97         | 176.43                    | 0.84             | 105.08L   |
|                  | 12153.00   | 88.62       | 176.64           | 10803.16    | 1631.94      | -1628.85   | 100.31     | 1631.94         | 176.48                    | 1.13             | 142.99L   |
|                  | 12248.00   | 87.56       | 175.84           | 10806.32    | 1726.88      | -1723.59   | 106.54     | 1726.88         | 176.46                    | 1.40             | 43.68L    |
|                  | 12343.00   | 88.45       | 174.99           | 10809.63    | 1821.80      | -1818.23   | 114.13     | 1821.81         | 176.41                    | 1.30             | 4.97R     |
|                  | 12437.00   | 89.14       | 175.05           | 10811.61    | 1915.75      | -1911.85   | 122.29     | 1915.76         | 176.34                    | 0.74             | 48.37L    |
| Survey 13-Sep-12 | 12532.00   | 89.86       | 174.24           | 10812.44    | 2010.69      | -2006.44   | 131.15     | 2010.72         | 176.26                    | 1.14             | 106.34L   |
|                  | 12627.00   | 89.69       | 173.66           | 10812.81    | 2105.59      | -2100.91   | 141.17     | 2105.64         | 176.16                    | 0.64             | 68.58R    |
|                  | 12722.00   | 90.00       | 174.45           | 10813.07    | 2200.50      | -2195.39   | 151.01     | 2200.58         | 176.07                    | 0.89             | 57.14R    |
|                  | 12818.00   | 90.31       | 174.93           | 10812.81    | 2296.45      | -2290.98   | 159.89     | 2296.55         | 176.01                    | 0.60             | 91.57R    |
|                  | 12914.00   | 90.28       | 176.02           | 10812.31    | 2392.43      | -2386.68   | 167.46     | 2392.55         | 175.99                    | 1.14             | 81.47L    |
|                  | 13009.00   | 90.34       | 175.62           | 10811.80    | 2487.42      | -2481.42   | 174.39     | 2487.54         | 175.98                    | 0.43             | 93.93R    |
|                  | 13104.00   | 90.21       | 177.51           | 10811.34    | 2582.41      | -2576.25   | 180.08     | 2582.53         | 176.00                    | 1.99             | 68.96R    |
|                  | 13199.00   | 90.41       | 178.03           | 10810.83    | 2677.39      | -2671.17   | 183.78     | 2677.49         | 176.06                    | 0.59             | 169.99R   |
|                  | 13294.00   | 90.07       | 178.09           | 10810.43    | 2772.36      | -2766.12   | 186.99     | 2772.43         | 176.13                    | 0.36             | 98.84R    |
|                  | 13388.00   | 89.93       | 178.99           | 10810.43    | 2866.30      | -2860.09   | 189.39     | 2866.35         | 176.21                    | 0.97             | 124.63L   |
|                  | 13483.00   | 89.35       | 178.15           | 10811.03    | 2961.24      | -2955.05   | 191.76     | 2961.27         | 176.29                    | 1.07             | 12.53R    |

| Comments         | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Closure<br>(ft) | Closure<br>Azimuth<br>(°) | DLS<br>(°/100ft) | TF<br>(°) |
|------------------|------------|-------------|------------------|-------------|--------------|------------|------------|-----------------|---------------------------|------------------|-----------|
|                  | 13577.00   | 90.07       | 178.31           | 10811.50    | 3055.19      | -3049.01   | 194.66     | 3055.22         | 176.35                    | 0.78             | 39.43R    |
|                  | 13672.00   | 90.52       | 178.68           | 10811.01    | 3150.14      | -3143.97   | 197.16     | 3150.15         | 176.41                    | 0.61             | 146.56L   |
|                  | 13767.00   | 88.90       | 177.61           | 10811.50    | 3245.10      | -3238.92   | 200.23     | 3245.10         | 176.46                    | 2.04             | 138.47L   |
|                  | 13862.00   | 87.49       | 176.36           | 10814.49    | 3340.04      | -3333.73   | 205.22     | 3340.05         | 176.48                    | 1.98             | 157.42L   |
| Survey 14-Sep-12 | 13956.00   | 85.50       | 175.53           | 10820.23    | 3433.86      | -3427.32   | 211.86     | 3433.86         | 176.46                    | 2.29             | 80.86R    |
|                  | 14051.00   | 85.70       | 176.77           | 10827.52    | 3528.57      | -3521.82   | 218.22     | 3528.58         | 176.45                    | 1.32             | 83.01L    |
|                  | 14146.00   | 85.87       | 175.39           | 10834.51    | 3623.31      | -3616.34   | 224.69     | 3623.32         | 176.44                    | 1.46             | 2.12R     |
|                  | 14241.00   | 87.49       | 175.45           | 10840.01    | 3718.13      | -3710.88   | 232.27     | 3718.14         | 176.42                    | 1.71             | 13.3R     |
|                  | 14336.00   | 90.41       | 176.14           | 10841.75    | 3813.09      | -3805.59   | 239.23     | 3813.11         | 176.40                    | 3.16             | 17.95R    |
|                  | 14430.00   | 91.86       | 176.61           | 10839.89    | 3907.07      | -3899.39   | 245.17     | 3907.09         | 176.40                    | 1.62             | 49.61R    |
|                  | 14525.00   | 92.20       | 177.01           | 10836.52    | 4002.01      | -3994.18   | 250.46     | 4002.02         | 176.41                    | 0.55             | 162.48R   |
|                  | 14620.00   | 91.82       | 177.13           | 10833.19    | 4096.95      | -4089.00   | 255.31     | 4096.96         | 176.43                    | 0.42             | 57.39R    |
|                  | 14714.00   | 92.51       | 178.21           | 10829.64    | 4190.86      | -4182.85   | 259.13     | 4190.87         | 176.46                    | 1.36             | 164.88R   |
|                  | 14809.00   | 90.14       | 178.85           | 10827.44    | 4285.77      | -4277.78   | 261.56     | 4285.77         | 176.50                    | 2.58             | 153.44L   |
| Survey 15-Sep-12 | 14904.00   | 89.28       | 178.42           | 10827.92    | 4380.71      | -4372.76   | 263.83     | 4380.71         | 176.55                    | 1.01             | 103.24L   |
|                  | 14998.00   | 89.24       | 178.25           | 10829.14    | 4474.65      | -4466.71   | 266.56     | 4474.65         | 176.58                    | 0.19             | 126.04L   |
| Final Survey     | 15093.00   | 88.76       | 177.59           | 10830.79    | 4569.61      | -4561.63   | 270.01     | 4569.61         | 176.61                    | 0.86             | HS        |
| Proj to TD       | 15147.00   | 88.76       | 177.59           | 10831.96    | 4623.59      | -4615.57   | 272.28     | 4623.59         | 176.62                    | 0.00             |           |

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma  
Survey Program:

| Description | MD From<br>(ft) | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size<br>(in) | Casing Diameter<br>(in) | Survey Tool Type | Borehole / Survey                                                                     |
|-------------|-----------------|---------------|------------------|-------------------|-------------------------|------------------|---------------------------------------------------------------------------------------|
|             | 0.000           | 21.000        |                  | Act Stns          | 30.000                  | 30.000           | SLB_NSG+MSHOT-Depth Only                                                              |
|             | 21.000          | 10120.300     |                  | Act Stns          | 30.000                  | 30.000           | SLB_NSG+MSHOT                                                                         |
|             | 10120.300       | 15093.000     |                  | Act Stns          | 30.000                  | 30.000           | SLB_MWD-STD                                                                           |
|             | 15093.000       | 15147.000     |                  | Act Stns          | 30.000                  | 30.000           | SLB_BLIND+TREND                                                                       |
|             |                 |               |                  |                   |                         |                  | Original Borehole / Cimarex                                                           |
|             |                 |               |                  |                   |                         |                  | Double X 25 Federal #4H Gyro 0ft to 11285ft MD                                        |
|             |                 |               |                  |                   |                         |                  | Original Borehole / Cimarex                                                           |
|             |                 |               |                  |                   |                         |                  | Double X 25 Federal #4H Gyro 0ft ST01 / Cimarex Double X 25 Federal #4H ST01 Gyro+MWD |
|             |                 |               |                  |                   |                         |                  | ST01 / Cimarex Double X 25 Federal #4H ST01 Gyro+MWD                                  |
|             |                 |               |                  |                   |                         |                  | ST01 / Cimarex Double X 25 Federal #4H ST01 Gyro+MWD                                  |