

## Results of Directional Survey

|             |                     |           |                                  |
|-------------|---------------------|-----------|----------------------------------|
| API number: | <b>30-025-40795</b> |           |                                  |
| OGRID:      |                     | Operator: | <b>COG OPERATING LLC</b>         |
|             |                     | Property: | <b>LIGHTNING P-38 STATE</b> # 6H |

|         |        |          |           |             |            |            |            |
|---------|--------|----------|-----------|-------------|------------|------------|------------|
| surface | ULSTR: | <b>P</b> | <b>01</b> | <b>T</b>    | <b>21S</b> | <b>R</b>   | <b>33E</b> |
|         |        |          |           | <b>3174</b> | <b>FSL</b> | <b>543</b> | <b>FEL</b> |

|              |           |                |            |             |            |             |            |
|--------------|-----------|----------------|------------|-------------|------------|-------------|------------|
| BH Loc       | ULSTR:    | <b>M</b>       | <b>01</b>  | <b>T</b>    | <b>21S</b> | <b>R</b>    | <b>33E</b> |
| <b>15662</b> | <b>MD</b> | <b>11468.3</b> | <b>TVD</b> | <b>3280</b> | <b>FSL</b> | <b>406</b>  | <b>FWL</b> |
|              |           |                |            |             |            | <b>4874</b> | <b>FEL</b> |

|              |           |                |            |             |            |            |            |
|--------------|-----------|----------------|------------|-------------|------------|------------|------------|
| Top Perf/OH  | ULSTR:    | <b>P</b>       | <b>01</b>  | <b>T</b>    | <b>21S</b> | <b>R</b>   | <b>33E</b> |
| <b>11683</b> | <b>MD</b> | <b>11507.1</b> | <b>TVD</b> | <b>3194</b> | <b>FSL</b> | <b>901</b> | <b>FEL</b> |

|              |           |                |            |             |            |             |            |
|--------------|-----------|----------------|------------|-------------|------------|-------------|------------|
| Bot Perf/OH  | ULSTR:    | <b>M</b>       | <b>01</b>  | <b>T</b>    | <b>21S</b> | <b>R</b>    | <b>33E</b> |
| <b>15565</b> | <b>MD</b> | <b>11471.4</b> | <b>TVD</b> | <b>3278</b> | <b>FSL</b> | <b>503</b>  | <b>FWL</b> |
|              |           |                |            |             |            | <b>4777</b> | <b>FEL</b> |

|              |              |        |          |          |
|--------------|--------------|--------|----------|----------|
|              | MD           | N/S    | E/W      | VD       |
|              | 11653        | 21.60  | -329.00  | 11499.5  |
| TOP PERFS/OH | <b>11683</b> | 20.10  | -358.00  | 11507.10 |
|              | 11683        | 20.10  | -358.00  | 11507.10 |
|              | 15530        | 102.50 | -4199.30 | 11472.50 |
| BOT PERFS/OH | <b>15565</b> | 103.56 | -4234.24 | 11471.39 |
|              | 15593        | 104.40 | -4262.20 | 11470.50 |

|              |              |        |          |          |
|--------------|--------------|--------|----------|----------|
| NEXT TO LAST | 15593        | 104.40 | -4262.20 | 11470.50 |
| LAST READING | 15662        | 106.30 | -4331.20 | 11468.30 |
| TD           | <b>15662</b> | 106.30 | -4331.20 | 11468.30 |

|                  |      |    |      |    |
|------------------|------|----|------|----|
| Surface Location | 3174 | FS | 543  | FE |
| Projected BHL    | 3280 | FS | 4874 | FE |
| Location of      |      |    |      |    |
| Top Perfs/OH     | 3194 | FS | 901  | FE |
| Bottom Perfs/OH  | 3278 | FS | 4777 | FE |

### SUMMARY of Subsurface Locations

|                  |              |      |    |      |    |             |
|------------------|--------------|------|----|------|----|-------------|
| Surface Location | P-01-21S-33E | 3174 | FS | 543  | FE | Vert. Depth |
|                  |              |      |    |      |    |             |
| Top Perfs/OH     | P-01-21S-33E | 3194 | FS | 901  | FE | 11507.10    |
| Bottom Perfs/OH  | M-01-21S-33E | 3278 | FS | 4777 | FE | 11471.39    |
|                  |              |      |    |      |    |             |
| Projected TD     | M-01-21S-33E | 3280 | FS | 4874 | FE | 11468.30    |

APR 21 2014

**McVAY DRILLING COMPANY**

P.O. Box 2450  
Hobbs, New Mexico 88241  
(575) 397-3311  
FAX: 39-DRILL

Well Name and Num: Lightning P-38 State #6H  
Location: Sec 1, T21S, R33E  
Operator: COG  
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

| <u>Degrees @</u> | <u>Depth</u> | <u>Degrees @</u> | <u>Depth</u> | <u>Degrees @</u> | <u>Depth</u> |
|------------------|--------------|------------------|--------------|------------------|--------------|
| 0.20             | 256          | 0.42             | 6106         | 91.20            | 13453        |
| 0.60             | 698          | 0.10             | 6550         | 91.10            | 13924        |
| 0.60             | 1078         | 0.06             | 6800         | 88.80            | 14486        |
| 0.20             | 1400         | 1.82             | 7182         | 92.30            | 14961        |
| 0.24             | 1748         | 1.20             | 7550         | 91.70            | 15530        |
| 0.30             | 2038         | 0.80             | 7874         |                  |              |
| 0.01             | 2538         | 0.50             | 8388         |                  |              |
| 0.03             | 2952         | 0.90             | 9119         |                  |              |
| 0.08             | 3393         | 0.50             | 9486         |                  |              |
| 0.20             | 3834         | 1.60             | 9912         |                  |              |
| 0.10             | 4089         | 0.90             | 10368        |                  |              |
| 3.00             | 4545         | 1.30             | 10773        |                  |              |
| 3.70             | 4704         | 21.16            | 11184        |                  |              |
| 2.20             | 5019         | 47.60            | 11469        |                  |              |
| 3.90             | 5272         | 76.50            | 11683        |                  |              |
| 1.90             | 5390         | 91.50            | 12505        |                  |              |
| 0.40             | 5819         | 89.80            | 12980        |                  |              |

HOBBS OCD

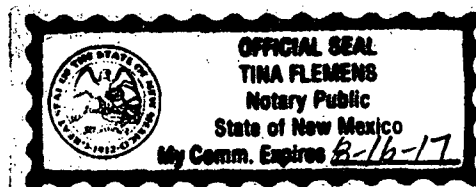
APR 03 2014

RECEIVED

By: Hector Crown

Subscribed and sworn to before me this 22nd day of January, 2014

Tina Flemens  
Notary Public, Lea County, New Mexico





PO Box 261021  
Corpus Christi, Texas 78426  
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

A GYRO TECHNOLOGIES INC. COMPANY

February 6, 2014

Concho Resources, Inc.  
One Concho Center  
600 W. Illinois Avenue  
Midland, Texas 79701

HOBBS OCD

APR 03 2014

RECEIVED

Attn: Kanicia Castillo

RE: **Lighting P-38 State No. 006H**

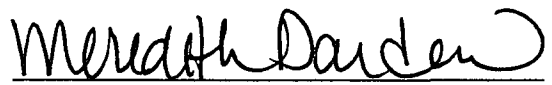
Please find enclosed a copy of the survey from 0.00' to 10900.00' ran on the above referenced well.

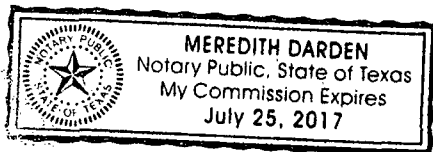
Sincerely,

  
Keith Havelka  
Operations

STATE OF TEXAS     §  
                                  §  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 6<sup>th</sup> day of February,  
A.D., 2014, by Keith Havelka.

  
Meredith Darden  
Notary Public, State of Texas



Company: COG Operating, LLC (Concho)  
Lease/Well: Lightning P-38 State/No. 006H



Rig Name: McVay 7  
State/County: New Mexico/Lea  
Latitude: 32.51, Longitude: -103.52  
GRID North is 0.44 Degrees East of True North  
VS-Azi: 0.00 Degrees



Depth Reference : RKB = 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ... p-38 state 6h\_gyro survey.ut

Minimum Curvature Method

Report Date/Time: 2/6/2014 / 15:21

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Gene Heiss

Lightning P-38 State No. 006H / API 30-025-40795

HOBBS OCD

APR 03 2014

RECEIVED

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 0.00                    | 0.00                 | 0.00                      | 0.00      | 0.00        | 0.00        | 0.00                      | 0.00                      | 0.00                        | ****                          |
| 100.00                  | 0.26                 | 210.99                    | 100.00    | -0.19       | -0.11       | -0.19                     | 0.22                      | 210.99                      | 0.26                          |
| 200.00                  | 0.24                 | 165.48                    | 200.00    | -0.59       | -0.18       | -0.59                     | 0.61                      | 196.74                      | 0.19                          |
| 300.00                  | 0.09                 | 183.89                    | 300.00    | -0.87       | -0.13       | -0.87                     | 0.88                      | 188.41                      | 0.16                          |
| 400.00                  | 0.06                 | 151.92                    | 400.00    | -1.00       | -0.11       | -1.00                     | 1.01                      | 186.25                      | 0.05                          |
| 500.00                  | 0.47                 | 125.89                    | 500.00    | -1.29       | 0.25        | -1.29                     | 1.32                      | 169.03                      | 0.42                          |
| 600.00                  | 0.36                 | 109.55                    | 599.99    | -1.64       | 0.88        | -1.64                     | 1.86                      | 151.79                      | 0.17                          |
| 700.00                  | 0.50                 | 86.45                     | 699.99    | -1.72       | 1.60        | -1.72                     | 2.35                      | 136.93                      | 0.22                          |
| 800.00                  | 0.67                 | 47.54                     | 799.99    | -1.30       | 2.46        | -1.30                     | 2.78                      | 117.77                      | 0.42                          |
| 900.00                  | 0.64                 | 36.29                     | 899.98    | -0.45       | 3.22        | -0.45                     | 3.25                      | 98.02                       | 0.13                          |
| 1000.00                 | 0.25                 | 27.06                     | 999.98    | 0.19        | 3.65        | 0.19                      | 3.66                      | 87.03                       | 0.40                          |
| 1100.00                 | 0.22                 | 13.85                     | 1099.98   | 0.57        | 3.80        | 0.57                      | 3.84                      | 81.47                       | 0.06                          |
| 1200.00                 | 0.41                 | 9.32                      | 1199.97   | 1.11        | 3.90        | 1.11                      | 4.05                      | 74.12                       | 0.19                          |
| 1300.00                 | 0.04                 | 351.73                    | 1299.97   | 1.50        | 3.95        | 1.50                      | 4.23                      | 69.21                       | 0.37                          |
| 1400.00                 | 0.35                 | 331.68                    | 1399.97   | 1.80        | 3.80        | 1.80                      | 4.21                      | 64.63                       | 0.31                          |
| 1500.00                 | 0.14                 | 297.55                    | 1499.97   | 2.12        | 3.55        | 2.12                      | 4.14                      | 59.13                       | 0.24                          |
| 1600.00                 | 0.40                 | 304.50                    | 1599.97   | 2.38        | 3.16        | 2.38                      | 3.96                      | 53.06                       | 0.26                          |
| 1700.00                 | 0.37                 | 318.81                    | 1699.97   | 2.82        | 2.66        | 2.82                      | 3.88                      | 43.33                       | 0.10                          |
| 1800.00                 | 0.17                 | 331.07                    | 1799.97   | 3.20        | 2.37        | 3.20                      | 3.98                      | 36.56                       | 0.21                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 1900.00                 | 0.14                 | 359.78                    | 1899.97   | 3.46        | 2.30        | 3.46                      | 4.15                      | 33.62                       | 0.08                          |
| 2000.00                 | 0.44                 | 337.99                    | 1999.97   | 3.94        | 2.15        | 3.94                      | 4.49                      | 28.67                       | 0.31                          |
| 2100.00                 | 0.15                 | 328.98                    | 2099.96   | 4.41        | 1.94        | 4.41                      | 4.82                      | 23.75                       | 0.29                          |
| 2200.00                 | 0.36                 | 254.27                    | 2199.96   | 4.44        | 1.57        | 4.44                      | 4.71                      | 19.49                       | 0.35                          |
| 2300.00                 | 0.12                 | 205.12                    | 2299.96   | 4.26        | 1.23        | 4.26                      | 4.43                      | 16.08                       | 0.29                          |
| 2400.00                 | 0.23                 | 136.66                    | 2399.96   | 4.02        | 1.32        | 4.02                      | 4.23                      | 18.22                       | 0.22                          |
| 2500.00                 | 0.03                 | 125.87                    | 2499.96   | 3.86        | 1.48        | 3.86                      | 4.13                      | 21.04                       | 0.20                          |
| 2600.00                 | 0.14                 | 119.24                    | 2599.96   | 3.78        | 1.62        | 3.78                      | 4.11                      | 23.14                       | 0.11                          |
| 2700.00                 | 0.13                 | 130.90                    | 2699.96   | 3.64        | 1.81        | 3.64                      | 4.07                      | 26.45                       | 0.03                          |
| 2800.00                 | 0.16                 | 127.46                    | 2799.96   | 3.48        | 2.01        | 3.48                      | 4.02                      | 30.04                       | 0.03                          |
| 2900.00                 | 0.16                 | 119.08                    | 2899.96   | 3.33        | 2.25        | 3.33                      | 4.01                      | 34.03                       | 0.02                          |
| 3000.00                 | 0.43                 | 94.54                     | 2999.96   | 3.23        | 2.74        | 3.23                      | 4.24                      | 40.34                       | 0.30                          |
| 3100.00                 | 0.53                 | 57.37                     | 3099.96   | 3.45        | 3.51        | 3.45                      | 4.92                      | 45.50                       | 0.32                          |
| 3200.00                 | 0.64                 | 35.61                     | 3199.95   | 4.16        | 4.23        | 4.16                      | 5.93                      | 45.50                       | 0.24                          |
| 3300.00                 | 0.69                 | 9.67                      | 3299.94   | 5.20        | 4.65        | 5.20                      | 6.98                      | 41.82                       | 0.30                          |
| 3400.00                 | 0.75                 | 337.47                    | 3399.94   | 6.40        | 4.50        | 6.40                      | 7.83                      | 35.13                       | 0.40                          |
| 3500.00                 | 0.31                 | 354.34                    | 3499.93   | 7.28        | 4.22        | 7.28                      | 8.42                      | 30.13                       | 0.46                          |
| 3600.00                 | 0.18                 | 350.58                    | 3599.93   | 7.71        | 4.17        | 7.71                      | 8.77                      | 28.42                       | 0.13                          |
| 3700.00                 | 0.18                 | 343.81                    | 3699.93   | 8.02        | 4.10        | 8.02                      | 9.01                      | 27.09                       | 0.02                          |
| 3800.00                 | 0.10                 | 24.22                     | 3799.93   | 8.24        | 4.09        | 8.24                      | 9.20                      | 26.40                       | 0.12                          |
| 3900.00                 | 0.33                 | 39.99                     | 3899.93   | 8.54        | 4.31        | 8.54                      | 9.57                      | 26.79                       | 0.24                          |
| 4000.00                 | 0.62                 | 37.64                     | 3999.93   | 9.19        | 4.83        | 9.19                      | 10.38                     | 27.71                       | 0.29                          |
| 4100.00                 | 0.20                 | 36.45                     | 4099.92   | 9.76        | 5.26        | 9.76                      | 11.08                     | 28.33                       | 0.42                          |
| 4200.00                 | 0.19                 | 56.73                     | 4199.92   | 9.98        | 5.50        | 9.98                      | 11.40                     | 28.84                       | 0.07                          |
| 4300.00                 | 0.14                 | 72.42                     | 4299.92   | 10.11       | 5.75        | 10.11                     | 11.63                     | 29.63                       | 0.07                          |
| 4400.00                 | 1.03                 | 92.38                     | 4399.92   | 10.11       | 6.77        | 10.11                     | 12.17                     | 33.79                       | 0.90                          |
| 4500.00                 | 1.86                 | 107.89                    | 4499.88   | 9.57        | 9.21        | 9.57                      | 13.28                     | 43.88                       | 0.91                          |
| 4600.00                 | 2.76                 | 104.04                    | 4599.80   | 8.49        | 13.09       | 8.49                      | 15.60                     | 57.02                       | 0.91                          |
| 4700.00                 | 2.94                 | 98.90                     | 4699.68   | 7.51        | 17.95       | 7.51                      | 19.46                     | 67.29                       | 0.31                          |
| 4800.00                 | 2.44                 | 71.42                     | 4799.57   | 7.79        | 22.50       | 7.79                      | 23.81                     | 70.89                       | 1.37                          |
| 4900.00                 | 1.86                 | 68.32                     | 4899.50   | 9.07        | 26.02       | 9.07                      | 27.56                     | 70.78                       | 0.59                          |
| 5000.00                 | 2.21                 | 56.50                     | 4999.44   | 10.74       | 29.14       | 10.74                     | 31.05                     | 69.77                       | 0.55                          |
| 5100.00                 | 2.76                 | 47.06                     | 5099.35   | 13.44       | 32.51       | 13.44                     | 35.18                     | 67.54                       | 0.68                          |
| 5200.00                 | 3.42                 | 34.23                     | 5199.20   | 17.55       | 35.95       | 17.55                     | 40.00                     | 63.98                       | 0.95                          |
| 5300.00                 | 3.20                 | 30.81                     | 5299.03   | 22.41       | 39.06       | 22.41                     | 45.03                     | 60.15                       | 0.29                          |
| 5400.00                 | 2.00                 | 29.37                     | 5398.93   | 26.33       | 41.35       | 26.33                     | 49.02                     | 57.51                       | 1.21                          |
| 5500.00                 | 1.36                 | 30.87                     | 5498.88   | 28.87       | 42.81       | 28.87                     | 51.64                     | 56.00                       | 0.64                          |
| 5600.00                 | 1.16                 | 35.24                     | 5598.86   | 30.72       | 44.01       | 30.72                     | 53.67                     | 55.08                       | 0.22                          |
| 5700.00                 | 0.77                 | 50.81                     | 5698.85   | 31.97       | 45.11       | 31.97                     | 55.29                     | 54.67                       | 0.47                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 5800.00                 | 0.72                 | 32.04                     | 5798.84   | 32.93       | 45.96       | 32.93                     | 56.54                     | 54.38                       | 0.25                          |
| 5900.00                 | 0.51                 | 34.07                     | 5898.83   | 33.83       | 46.54       | 33.83                     | 57.54                     | 53.99                       | 0.21                          |
| 6000.00                 | 0.28                 | 58.61                     | 5998.83   | 34.32       | 47.00       | 34.32                     | 58.20                     | 53.86                       | 0.28                          |
| 6100.00                 | 0.44                 | 33.27                     | 6098.83   | 34.77       | 47.42       | 34.77                     | 58.80                     | 53.75                       | 0.22                          |
| 6200.00                 | 0.23                 | 24.21                     | 6198.83   | 35.27       | 47.71       | 35.27                     | 59.34                     | 53.53                       | 0.21                          |
| 6300.00                 | 0.31                 | 24.91                     | 6298.83   | 35.71       | 47.91       | 35.71                     | 59.76                     | 53.30                       | 0.08                          |
| 6400.00                 | 0.08                 | 98.74                     | 6398.82   | 35.95       | 48.10       | 35.95                     | 60.05                     | 53.23                       | 0.30                          |
| 6500.00                 | 0.16                 | 25.08                     | 6498.82   | 36.06       | 48.24       | 36.06                     | 60.23                     | 53.22                       | 0.16                          |
| 6600.00                 | 0.13                 | 123.90                    | 6598.82   | 36.13       | 48.39       | 36.13                     | 60.39                     | 53.25                       | 0.22                          |
| 6700.00                 | 0.38                 | 178.14                    | 6698.82   | 35.73       | 48.49       | 35.73                     | 60.23                     | 53.61                       | 0.33                          |
| 6800.00                 | 0.44                 | 164.73                    | 6798.82   | 35.03       | 48.60       | 35.03                     | 59.91                     | 54.22                       | 0.11                          |
| 6900.00                 | 0.47                 | 168.47                    | 6898.82   | 34.26       | 48.78       | 34.26                     | 59.61                     | 54.92                       | 0.04                          |
| 7000.00                 | 0.56                 | 204.65                    | 6998.81   | 33.42       | 48.66       | 33.42                     | 59.03                     | 55.52                       | 0.33                          |
| 7100.00                 | 1.05                 | 176.90                    | 7098.80   | 32.06       | 48.50       | 32.06                     | 58.14                     | 56.54                       | 0.61                          |
| 7200.00                 | 1.34                 | 185.99                    | 7198.78   | 29.98       | 48.43       | 29.98                     | 56.96                     | 58.24                       | 0.35                          |
| 7300.00                 | 1.19                 | 188.23                    | 7298.76   | 27.79       | 48.16       | 27.79                     | 55.60                     | 60.01                       | 0.16                          |
| 7400.00                 | 1.23                 | 177.73                    | 7398.74   | 25.69       | 48.06       | 25.69                     | 54.49                     | 61.87                       | 0.22                          |
| 7500.00                 | 1.40                 | 176.45                    | 7498.71   | 23.41       | 48.17       | 23.41                     | 53.56                     | 64.09                       | 0.17                          |
| 7600.00                 | 1.26                 | 186.72                    | 7598.68   | 21.10       | 48.12       | 21.10                     | 52.54                     | 66.33                       | 0.27                          |
| 7700.00                 | 1.12                 | 193.96                    | 7698.66   | 19.06       | 47.76       | 19.06                     | 51.42                     | 68.24                       | 0.21                          |
| 7800.00                 | 0.99                 | 186.66                    | 7798.64   | 17.26       | 47.42       | 17.26                     | 50.47                     | 70.00                       | 0.19                          |
| 7900.00                 | 0.92                 | 179.53                    | 7898.63   | 15.60       | 47.33       | 15.60                     | 49.83                     | 71.76                       | 0.14                          |
| 8000.00                 | 0.74                 | 193.19                    | 7998.62   | 14.17       | 47.19       | 14.17                     | 49.27                     | 73.28                       | 0.27                          |
| 8100.00                 | 0.73                 | 178.28                    | 8098.61   | 12.90       | 47.06       | 12.90                     | 48.80                     | 74.67                       | 0.19                          |
| 8200.00                 | 0.68                 | 204.52                    | 8198.60   | 11.72       | 46.83       | 11.72                     | 48.28                     | 75.95                       | 0.32                          |
| 8300.00                 | 0.61                 | 194.21                    | 8298.60   | 10.67       | 46.45       | 10.67                     | 47.66                     | 77.07                       | 0.14                          |
| 8400.00                 | 0.71                 | 188.91                    | 8398.59   | 9.54        | 46.23       | 9.54                      | 47.20                     | 78.34                       | 0.13                          |
| 8500.00                 | 1.02                 | 200.29                    | 8498.58   | 8.09        | 45.82       | 8.09                      | 46.53                     | 79.99                       | 0.35                          |
| 8600.00                 | 0.89                 | 206.51                    | 8598.57   | 6.57        | 45.17       | 6.57                      | 45.65                     | 81.73                       | 0.17                          |
| 8700.00                 | 0.57                 | 206.87                    | 8698.56   | 5.43        | 44.60       | 5.43                      | 44.93                     | 83.06                       | 0.32                          |
| 8800.00                 | 0.84                 | 212.08                    | 8798.55   | 4.36        | 43.99       | 4.36                      | 44.20                     | 84.33                       | 0.28                          |
| 8900.00                 | 0.73                 | 238.81                    | 8898.54   | 3.41        | 43.05       | 3.41                      | 43.18                     | 85.47                       | 0.38                          |
| 9000.00                 | 0.71                 | 227.65                    | 8998.53   | 2.66        | 42.04       | 2.66                      | 42.12                     | 86.38                       | 0.14                          |
| 9100.00                 | 0.78                 | 262.58                    | 9098.53   | 2.16        | 40.91       | 2.16                      | 40.97                     | 86.98                       | 0.45                          |
| 9200.00                 | 0.75                 | 260.82                    | 9198.52   | 1.96        | 39.59       | 1.96                      | 39.64                     | 87.16                       | 0.03                          |
| 9300.00                 | 0.17                 | 102.49                    | 9298.51   | 1.83        | 39.08       | 1.83                      | 39.12                     | 87.32                       | 0.91                          |
| 9400.00                 | 0.33                 | 18.96                     | 9398.51   | 2.07        | 39.32       | 2.07                      | 39.37                     | 86.99                       | 0.35                          |
| 9500.00                 | 0.44                 | 332.67                    | 9498.51   | 2.68        | 39.23       | 2.68                      | 39.32                     | 86.09                       | 0.32                          |
| 9600.00                 | 0.33                 | 299.85                    | 9598.51   | 3.17        | 38.80       | 3.17                      | 38.93                     | 85.33                       | 0.24                          |

| Measured<br>Depth<br>FT | Incl<br>Angle<br>Deg | Drift<br>Direction<br>Deg | TVD<br>FT | +N/-S<br>FT | +E/-W<br>FT | Vertical<br>Section<br>FT | Closure<br>Distance<br>FT | Closure<br>Direction<br>Deg | Dogleg<br>Severity<br>Deg/100 |
|-------------------------|----------------------|---------------------------|-----------|-------------|-------------|---------------------------|---------------------------|-----------------------------|-------------------------------|
| 9700.00                 | 1.30                 | 280.26                    | 9698.50   | 3.52        | 37.44       | 3.52                      | 37.61                     | 84.63                       | 0.99                          |
| 9800.00                 | 1.50                 | 270.48                    | 9798.47   | 3.73        | 35.02       | 3.73                      | 35.21                     | 83.92                       | 0.32                          |
| 9900.00                 | 1.54                 | 275.11                    | 9898.43   | 3.86        | 32.36       | 3.86                      | 32.59                     | 83.20                       | 0.13                          |
| 10000.00                | 1.56                 | 253.50                    | 9998.40   | 3.59        | 29.72       | 3.59                      | 29.93                     | 83.11                       | 0.58                          |
| 10100.00                | 1.46                 | 246.15                    | 10098.36  | 2.69        | 27.25       | 2.69                      | 27.38                     | 84.36                       | 0.22                          |
| 10200.00                | 1.21                 | 283.65                    | 10198.34  | 2.42        | 25.06       | 2.42                      | 25.18                     | 84.47                       | 0.89                          |
| 10300.00                | 0.83                 | 337.81                    | 10298.32  | 3.34        | 23.77       | 3.34                      | 24.00                     | 82.00                       | 0.98                          |
| 10400.00                | 1.60                 | 6.77                      | 10398.30  | 5.40        | 23.66       | 5.40                      | 24.27                     | 77.15                       | 0.96                          |
| 10500.00                | 1.36                 | 33.54                     | 10498.27  | 7.77        | 24.48       | 7.77                      | 25.68                     | 72.39                       | 0.72                          |
| 10600.00                | 1.38                 | 61.29                     | 10598.24  | 9.33        | 26.18       | 9.33                      | 27.80                     | 70.38                       | 0.66                          |
| 10700.00                | 1.10                 | 98.52                     | 10698.22  | 9.77        | 28.19       | 9.77                      | 29.84                     | 70.89                       | 0.83                          |
| 10800.00                | 1.13                 | 107.04                    | 10798.20  | 9.34        | 30.09       | 9.34                      | 31.50                     | 72.76                       | 0.17                          |
| 10900.00                | 1.33                 | 120.23                    | 10898.18  | 8.47        | 32.03       | 8.47                      | 33.13                     | 75.19                       | 0.35                          |

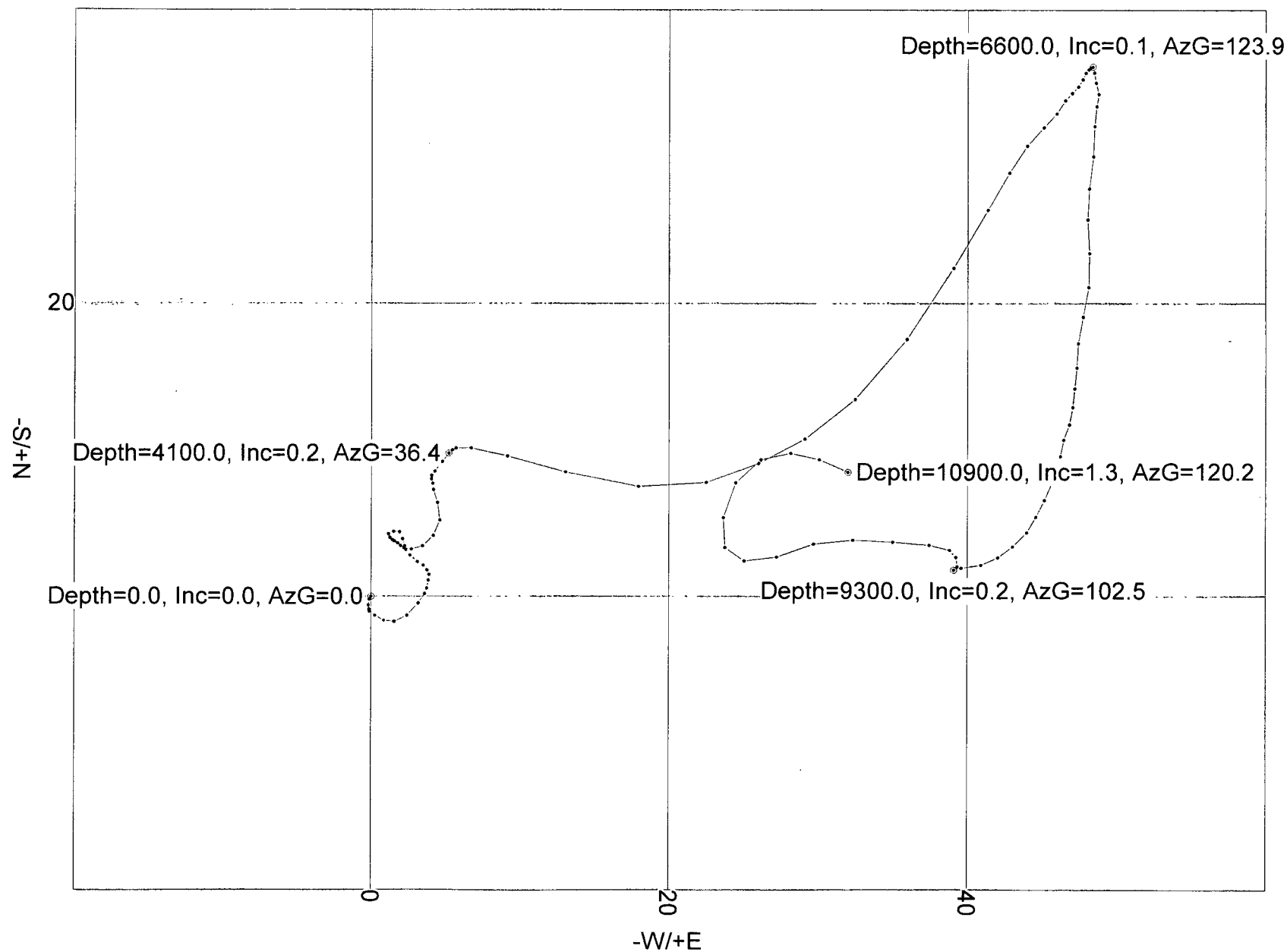


Vaughn Energy Services  
Midland, Texas  
432-563-5444  
Surveyor: Gene Heiss  
Lightning P-38 State No. 006H / API 30-025-40795

HOBBS OCD

APR 03 2014

RECEIVED



VES Survey Date: 01/14/2014



**COG Operating LLC**

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

**Lightning P-38 State**

**#6H**

**OH**

**HOBBS OCD**

**APR 03 2014**

**RECEIVED**

**Survey: MWD #1**

## **Standard Survey Report**

**20 January, 2014**



# Wellplanning Survey Report

|                  |                            |                                     |                                        |
|------------------|----------------------------|-------------------------------------|----------------------------------------|
| <b>Company:</b>  | COG Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well #6H                               |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | WELL @ 3769.0usft (Original Well Elev) |
| <b>Site:</b>     | Lightning P-38 State       | <b>MD Reference:</b>                | WELL @ 3769.0usft (Original Well Elev) |
| <b>Well:</b>     | #6H                        | <b>North Reference:</b>             | Grid                                   |
| <b>Wellbore:</b> | OH                         | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Design:</b>   | OH                         | <b>Database:</b>                    | EDM 5000.1 Single User Db              |

|                    |                                      |                      |                |
|--------------------|--------------------------------------|----------------------|----------------|
| <b>Project</b>     | Lea County, NM (NAD27 NME)           |                      |                |
| <b>Map System:</b> | US State Plane 1927 (Exact solution) | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | NAD 1927 (NADCON CONUS)              |                      |                |
| <b>Map Zone:</b>   | New Mexico East 3001                 |                      |                |

|                       |     |                      |            |              |            |                   |        |
|-----------------------|-----|----------------------|------------|--------------|------------|-------------------|--------|
| Site                  |     | Lightning P-38 State |            |              |            |                   |        |
| Site Position:        |     | Northing:            | 549,909.80 | usft         | Latitude:  | 32° 30' 33.031 N  |        |
| From:                 | Map | Easting:             | 751,093.70 | usft         | Longitude: | 103° 31' 7.746 W  |        |
| Position Uncertainty: |     | 0.0                  | usft       | Slot Radius: | 13-3/16 "  | Grid Convergence: | 0.44 ° |

|                      |       |          |                     |                 |               |                  |
|----------------------|-------|----------|---------------------|-----------------|---------------|------------------|
| Well                 | #6H   |          |                     |                 |               |                  |
| Well Position        | +N/-S | 0.0 usft | Northing:           | 549,909.80 usft | Latitude:     | 32° 30' 33.031 N |
|                      | +E/-W | 0.0 usft | Easting:            | 751,093.70 usft | Longitude:    | 103° 31' 7.746 W |
| Position Uncertainty |       | 0.0 usft | Wellhead Elevation: | usft            | Ground Level: | 3,751.0 usft     |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | OH                |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 12/5/2013          | 7.28                   | 60.40                | 48,544                     |

|                          |                                |                     |                     |                      |     |
|--------------------------|--------------------------------|---------------------|---------------------|----------------------|-----|
| <b>Design</b>            | OH                             |                     |                     |                      |     |
| <b>Audit Notes:</b>      |                                |                     |                     |                      |     |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>       | ACTUAL              | <b>Tie On Depth:</b> | 0.0 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Direction (°)</b> |     |
|                          | 0.0                            | 0.0                 | 0.0                 | 271.23               |     |

|                       |                       |                          |                  |                    |
|-----------------------|-----------------------|--------------------------|------------------|--------------------|
| <b>Survey Program</b> | <b>Date</b> 1/20/2014 |                          |                  |                    |
| <b>From (usft)</b>    | <b>To (usft)</b>      | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
| 100.0                 | 10,900.0              | GYRO (OH)                | MWD              | MWD - Standard     |
| 10,928.0              | 15,662.0              | MWD #1 (OH)              | MWD              | MWD - Standard     |

|                              |                        |                    |                              |                     |                     |                                |                                |                               |                              |  |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|--------------------------------|--------------------------------|-------------------------------|------------------------------|--|
| <b>Survey</b>                |                        |                    |                              |                     |                     |                                |                                |                               |                              |  |
| <b>Measured Depth (usft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (usft)</b> | <b>+N/-S (usft)</b> | <b>+E/-W (usft)</b> | <b>Vertical Section (usft)</b> | <b>Dogleg Rate (°/100usft)</b> | <b>Build Rate (°/100usft)</b> | <b>Turn Rate (°/100usft)</b> |  |
| 10,900.0                     | 1.33                   | 120.23             | 10,898.2                     | 8.4                 | 32.0                | -31.9                          | 0.00                           | 0.00                          | 0.00                         |  |
| 10,928.0                     | 0.60                   | 120.00             | 10,926.2                     | 8.2                 | 32.4                | -32.3                          | 2.61                           | -2.61                         | -0.82                        |  |
| 10,960.0                     | 0.60                   | 261.70             | 10,958.2                     | 8.1                 | 32.4                | -32.2                          | 3.54                           | 0.00                          | 442.81                       |  |
| 10,992.0                     | 3.40                   | 264.60             | 10,990.1                     | 8.0                 | 31.3                | -31.1                          | 8.75                           | 8.75                          | 9.06                         |  |
| 11,024.0                     | 6.40                   | 270.50             | 11,022.0                     | 7.9                 | 28.6                | -28.4                          | 9.49                           | 9.38                          | 18.44                        |  |
| 11,056.0                     | 9.70                   | 272.80             | 11,053.7                     | 8.0                 | 24.1                | -23.9                          | 10.36                          | 10.31                         | 7.19                         |  |
| 11,088.0                     | 13.00                  | 273.60             | 11,085.1                     | 8.4                 | 17.8                | -17.6                          | 10.32                          | 10.31                         | 2.50                         |  |
| 11,120.0                     | 16.30                  | 273.40             | 11,116.0                     | 8.9                 | 9.7                 | -9.6                           | 10.31                          | 10.31                         | -0.63                        |  |
| 11,152.0                     | 18.90                  | 272.20             | 11,146.5                     | 9.4                 | 0.1                 | 0.1                            | 8.20                           | 8.13                          | -3.75                        |  |
| 11,184.0                     | 21.60                  | 271.70             | 11,176.6                     | 9.7                 | -11.0               | 11.2                           | 8.45                           | 8.44                          | -1.56                        |  |



# Wellplanning Survey Report

|                  |                            |                                     |                                        |
|------------------|----------------------------|-------------------------------------|----------------------------------------|
| <b>Company:</b>  | COG Operating LLC          | <b>Local Co-ordinate Reference:</b> | Well #6H                               |
| <b>Project:</b>  | Lea County, NM (NAD27 NME) | <b>TVD Reference:</b>               | WELL @ 3769.0usft (Original Well Elev) |
| <b>Site:</b>     | Lightning P-38 State       | <b>MD Reference:</b>                | WELL @ 3769.0usft (Original Well Elev) |
| <b>Well:</b>     | #6H                        | <b>North Reference:</b>             | Grid                                   |
| <b>Wellbore:</b> | OH                         | <b>Survey Calculation Method:</b>   | Minimum Curvature                      |
| <b>Design:</b>   | OH                         | <b>Database:</b>                    | 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 11,215.0              | 24.70           | 272.00      | 11,205.1              | 10.1         | -23.2        | 23.4                    | 10.01                   | 10.00                  | 0.97                  |
| 11,247.0              | 28.00           | 272.40      | 11,233.7              | 10.7         | -37.4        | 37.6                    | 10.33                   | 10.31                  | 1.25                  |
| 11,279.0              | 30.50           | 273.50      | 11,261.6              | 11.5         | -53.0        | 53.2                    | 7.99                    | 7.81                   | 3.44                  |
| 11,311.0              | 32.70           | 274.70      | 11,288.9              | 12.7         | -69.7        | 69.9                    | 7.15                    | 6.88                   | 3.75                  |
| 11,343.0              | 36.00           | 274.60      | 11,315.3              | 14.2         | -87.7        | 88.0                    | 10.31                   | 10.31                  | -0.31                 |
| 11,374.0              | 39.00           | 274.10      | 11,339.9              | 15.6         | -106.5       | 106.8                   | 9.73                    | 9.68                   | -1.61                 |
| 11,406.0              | 41.90           | 274.00      | 11,364.3              | 17.1         | -127.2       | 127.5                   | 9.06                    | 9.06                   | -0.31                 |
| 11,437.0              | 45.00           | 273.70      | 11,386.8              | 18.5         | -148.5       | 148.8                   | 10.02                   | 10.00                  | -0.97                 |
| 11,469.0              | 47.60           | 273.90      | 11,408.9              | 20.0         | -171.6       | 171.9                   | 8.14                    | 8.13                   | 0.63                  |
| 11,500.0              | 50.10           | 274.40      | 11,429.3              | 21.7         | -194.8       | 195.3                   | 8.16                    | 8.06                   | 1.61                  |
| 11,532.0              | 53.70           | 273.70      | 11,449.0              | 23.5         | -219.9       | 220.4                   | 11.38                   | 11.25                  | -2.19                 |
| 11,563.0              | 59.70           | 270.60      | 11,466.0              | 24.4         | -245.8       | 246.3                   | 21.08                   | 19.35                  | -10.00                |
| 11,590.0              | 65.60           | 268.50      | 11,478.4              | 24.2         | -269.8       | 270.3                   | 22.92                   | 21.85                  | -7.78                 |
| 11,621.0              | 70.80           | 267.00      | 11,489.9              | 23.1         | -298.5       | 299.0                   | 17.36                   | 16.77                  | -4.84                 |
| 11,653.0              | 74.30           | 267.30      | 11,499.5              | 21.6         | -329.0       | 329.4                   | 10.97                   | 10.94                  | 0.94                  |
| 11,683.0              | 76.50           | 267.00      | 11,507.1              | 20.1         | -358.0       | 358.4                   | 7.40                    | 7.33                   | -1.00                 |
| 11,715.0              | 79.20           | 266.90      | 11,513.8              | 18.5         | -389.3       | 389.6                   | 8.44                    | 8.44                   | -0.31                 |
| 11,746.0              | 81.80           | 267.30      | 11,518.9              | 16.9         | -419.8       | 420.1                   | 8.48                    | 8.39                   | 1.29                  |
| 11,778.0              | 83.70           | 267.70      | 11,523.0              | 15.5         | -451.5       | 451.7                   | 6.07                    | 5.94                   | 1.25                  |
| 11,810.0              | 85.60           | 268.20      | 11,526.0              | 14.4         | -483.3       | 483.5                   | 6.14                    | 5.94                   | 1.56                  |
| 11,841.0              | 86.90           | 268.30      | 11,528.0              | 13.5         | -514.3       | 514.4                   | 4.21                    | 4.19                   | 0.32                  |
| 11,936.0              | 87.80           | 267.00      | 11,532.4              | 9.6          | -609.1       | 609.1                   | 1.66                    | 0.95                   | -1.37                 |
| 12,032.0              | 89.60           | 266.80      | 11,534.6              | 4.4          | -704.9       | 704.8                   | 1.89                    | 1.88                   | -0.21                 |
| 12,125.0              | 91.00           | 269.50      | 11,534.1              | 1.4          | -797.8       | 797.7                   | 3.27                    | 1.51                   | 2.90                  |
| 12,220.0              | 92.10           | 273.00      | 11,531.5              | 3.4          | -892.8       | 892.6                   | 3.86                    | 1.16                   | 3.68                  |
| 12,315.0              | 92.30           | 273.00      | 11,527.8              | 8.4          | -987.6       | 987.5                   | 0.21                    | 0.21                   | 0.00                  |
| 12,410.0              | 92.30           | 272.80      | 11,524.0              | 13.2         | -1,082.4     | 1,082.4                 | 0.21                    | 0.00                   | -0.21                 |
| 12,505.0              | 91.50           | 273.30      | 11,520.9              | 18.3         | -1,177.2     | 1,177.3                 | 0.99                    | -0.84                  | 0.53                  |
| 12,600.0              | 91.60           | 273.60      | 11,518.3              | 24.0         | -1,272.0     | 1,272.2                 | 0.33                    | 0.11                   | 0.32                  |
| 12,694.0              | 91.70           | 273.20      | 11,515.6              | 29.6         | -1,365.8     | 1,366.1                 | 0.44                    | 0.11                   | -0.43                 |
| 12,789.0              | 91.10           | 273.70      | 11,513.3              | 35.3         | -1,460.6     | 1,461.0                 | 0.82                    | -0.63                  | 0.53                  |
| 12,884.0              | 90.60           | 273.90      | 11,511.9              | 41.6         | -1,555.4     | 1,555.9                 | 0.57                    | -0.53                  | 0.21                  |
| 12,980.0              | 89.80           | 274.60      | 11,511.5              | 48.7         | -1,651.1     | 1,651.8                 | 1.11                    | -0.83                  | 0.73                  |
| 13,075.0              | 90.50           | 272.40      | 11,511.3              | 54.5         | -1,745.9     | 1,746.7                 | 2.43                    | 0.74                   | -2.32                 |
| 13,170.0              | 90.10           | 269.50      | 11,510.8              | 56.0         | -1,840.9     | 1,841.7                 | 3.08                    | -0.42                  | -3.05                 |
| 13,264.0              | 91.20           | 270.10      | 11,509.7              | 55.7         | -1,934.9     | 1,935.6                 | 1.33                    | 1.17                   | 0.64                  |
| 13,359.0              | 91.10           | 270.30      | 11,507.8              | 56.1         | -2,029.9     | 2,030.6                 | 0.24                    | -0.11                  | 0.21                  |
| 13,453.0              | 91.20           | 270.30      | 11,505.9              | 56.5         | -2,123.8     | 2,124.6                 | 0.11                    | 0.11                   | 0.00                  |
| 13,546.0              | 91.20           | 270.30      | 11,504.0              | 57.0         | -2,216.8     | 2,217.5                 | 0.00                    | 0.00                   | 0.00                  |
| 13,641.0              | 91.30           | 270.10      | 11,501.9              | 57.4         | -2,311.8     | 2,312.5                 | 0.24                    | 0.11                   | -0.21                 |
| 13,734.0              | 91.50           | 270.20      | 11,499.6              | 57.6         | -2,404.8     | 2,405.4                 | 0.24                    | 0.22                   | 0.11                  |
| 13,828.0              | 91.40           | 270.50      | 11,497.3              | 58.2         | -2,498.7     | 2,499.4                 | 0.34                    | -0.11                  | 0.32                  |
| 13,924.0              | 91.10           | 270.60      | 11,495.2              | 59.1         | -2,594.7     | 2,595.4                 | 0.33                    | -0.31                  | 0.10                  |



# Wellplanning Survey Report

|           |                            |                              |                                        |
|-----------|----------------------------|------------------------------|----------------------------------------|
| Company:  | COG Operating LLC          | Local Co-ordinate Reference: | Well #6H                               |
| Project:  | Lea County, NM (NAD27 NME) | TVD Reference:               | WELL @ 3769.0usft (Original Well Elev) |
| Site:     | Lightning P-38 State       | MD Reference:                | WELL @ 3769.0usft (Original Well Elev) |
| Well:     | #6H                        | North Reference:             | Grid                                   |
| Wellbore: | OH                         | Survey Calculation Method:   | Minimum Curvature                      |
| Design:   | OH                         | 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) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 14,016.0              | 91.00           | 270.20      | 11,493.5              | 59.7         | -2,686.7     | 2,687.3                 | 0.45                    | -0.11                  | -0.43                 |
| 14,110.0              | 90.60           | 270.70      | 11,492.2              | 60.5         | -2,780.7     | 2,781.3                 | 0.68                    | -0.43                  | 0.53                  |
| 14,204.0              | 90.00           | 270.50      | 11,491.7              | 61.5         | -2,874.7     | 2,875.3                 | 0.67                    | -0.64                  | -0.21                 |
| 14,299.0              | 89.80           | 270.30      | 11,491.8              | 62.1         | -2,969.7     | 2,970.3                 | 0.30                    | -0.21                  | -0.21                 |
| 14,393.0              | 89.20           | 270.30      | 11,492.7              | 62.6         | -3,063.7     | 3,064.3                 | 0.64                    | -0.64                  | 0.00                  |
| 14,486.0              | 88.80           | 270.30      | 11,494.3              | 63.1         | -3,156.6     | 3,157.3                 | 0.43                    | -0.43                  | 0.00                  |
| 14,581.0              | 88.60           | 271.50      | 11,496.4              | 64.6         | -3,251.6     | 3,252.2                 | 1.28                    | -0.21                  | 1.26                  |
| 14,676.0              | 90.20           | 271.60      | 11,497.4              | 67.2         | -3,346.6     | 3,347.2                 | 1.69                    | 1.68                   | 0.11                  |
| 14,771.0              | 90.50           | 271.00      | 11,496.9              | 69.3         | -3,441.5     | 3,442.2                 | 0.71                    | 0.32                   | -0.63                 |
| 14,866.0              | 90.20           | 271.70      | 11,496.3              | 71.6         | -3,536.5     | 3,537.2                 | 0.80                    | -0.32                  | 0.74                  |
| 14,961.0              | 92.30           | 273.30      | 11,494.2              | 75.7         | -3,631.4     | 3,632.2                 | 2.78                    | 2.21                   | 1.68                  |
| 15,056.0              | 92.60           | 273.40      | 11,490.1              | 81.3         | -3,726.1     | 3,727.0                 | 0.33                    | 0.32                   | 0.11                  |
| 15,151.0              | 92.50           | 273.30      | 11,485.9              | 86.8         | -3,820.9     | 3,821.9                 | 0.15                    | -0.11                  | -0.11                 |
| 15,246.0              | 92.10           | 272.30      | 11,482.1              | 91.4         | -3,915.7     | 3,916.7                 | 1.13                    | -0.42                  | -1.05                 |
| 15,342.0              | 91.90           | 272.60      | 11,478.8              | 95.5         | -4,011.5     | 4,012.7                 | 0.38                    | -0.21                  | 0.31                  |
| 15,435.0              | 92.00           | 272.00      | 11,475.6              | 99.3         | -4,104.4     | 4,105.6                 | 0.65                    | 0.11                   | -0.65                 |
| 15,530.0              | 91.70           | 271.90      | 11,472.5              | 102.5        | -4,199.3     | 4,200.5                 | 0.33                    | -0.32                  | -0.11                 |
| 15,593.0              | 91.90           | 271.60      | 11,470.5              | 104.4        | -4,262.2     | 4,263.5                 | 0.57                    | 0.32                   | -0.48                 |
| 15,662.0              | 91.90           | 271.60      | 11,468.3              | 106.3        | -4,331.2     | 4,332.5                 | 0.00                    | 0.00                   | 0.00                  |

PBHL(LP38#6H)

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



# NEXUS

## DIRECTIONAL SOLUTIONS, L.P.



Azimuths to Grid North  
True North: -0.44°  
Magnetic North: 6.84°

Magnetic Field  
Strength: 48543.5nT  
Dip Angle: 60.40°

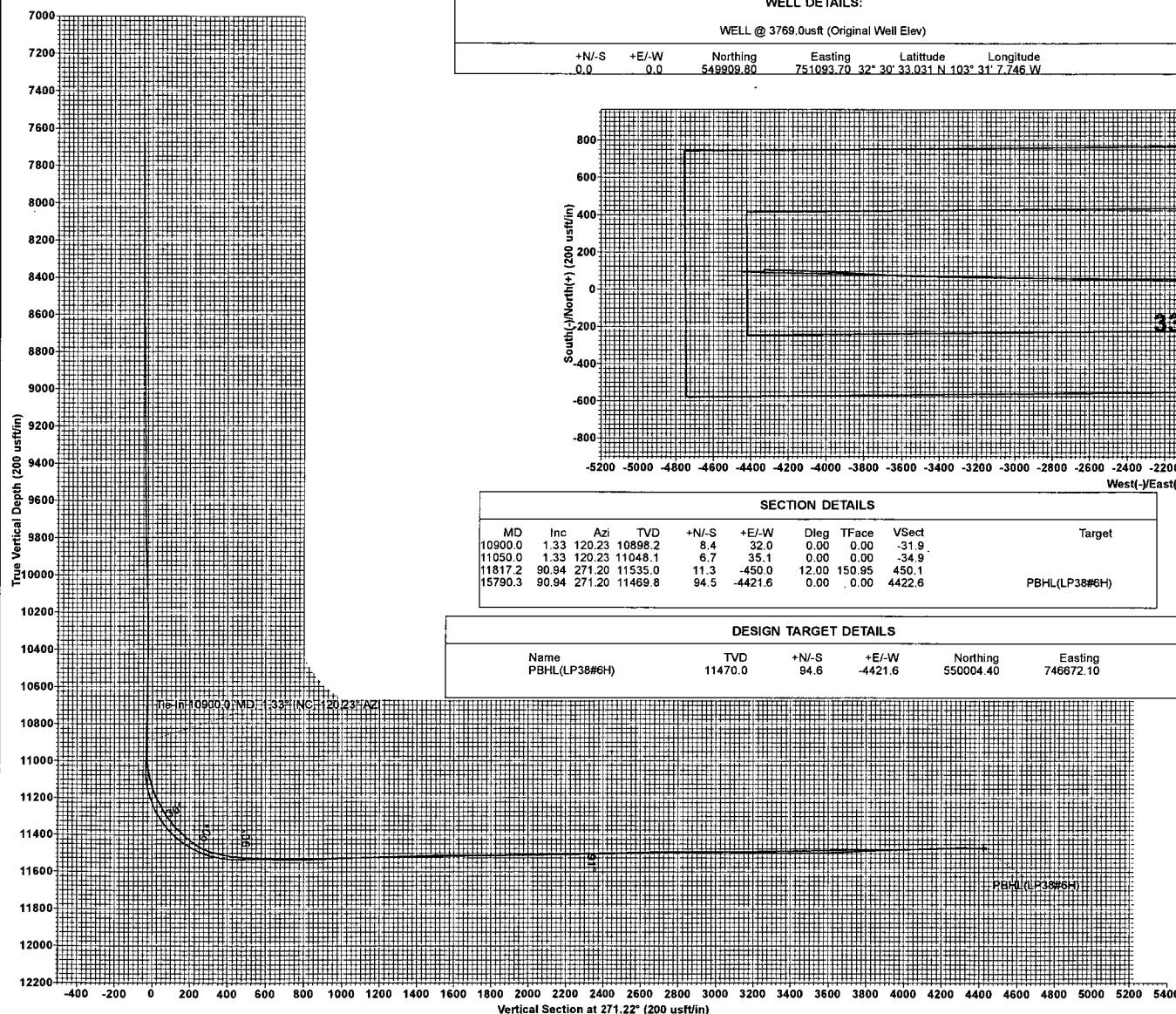
To convert a Magnetic Direction to a Grid Direction, Add 6.84°  
To convert a True Direction to a Grid Direction, Subtract 0.44°  
Date: 12/5/2013  
Model: IGRF2010

Lightning P-38 State #6H  
Lea County, NM (NAD27 NME)  
Northing: (Y) 549909.80  
Easting: (X) 751093.70  
Plan #2

### WELL DETAILS:

WELL @ 3769.0usft (Original Well Elev)

| +N/-S | +E/-W | Northing  | Easting   | Latitude         | Longitude        |
|-------|-------|-----------|-----------|------------------|------------------|
| 0.0   | 0.0   | 549909.80 | 751093.70 | 32° 30' 33.031 N | 103° 31' 7.746 W |



### SECTION DETAILS

| MD      | Inc   | Azi    | TVD     | +N/-S | +E/-W   | Dleg  | TFace  | Vsect  | Target        |
|---------|-------|--------|---------|-------|---------|-------|--------|--------|---------------|
| 10900.0 | 1.33  | 120.23 | 10898.2 | 8.4   | 32.0    | 0.00  | 0.00   | -31.9  |               |
| 11050.0 | 1.33  | 120.23 | 11048.1 | 6.7   | 35.1    | 0.00  | 0.00   | -34.9  |               |
| 11817.2 | 90.94 | 271.20 | 11535.0 | 11.3  | -450.0  | 12.00 | 150.95 | 450.1  |               |
| 15790.3 | 90.94 | 271.20 | 11469.8 | 94.5  | -4421.6 | 0.00  | 0.00   | 4422.6 | PBHL(LP38#6H) |

### DESIGN TARGET DETAILS

| Name          | TVD     | +N/-S | +E/-W   | Northing  | Easting   |
|---------------|---------|-------|---------|-----------|-----------|
| PBHL(LP38#6H) | 11470.0 | 94.6  | -4421.6 | 550004.40 | 746672.10 |

HOBBS OCD

APR 03 2014

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Matt Shipp  
11:57, January 20 2014  
Nexus Directional Solutions  
3925 CR 1285  
Odessa TX 79765

### LEGEND

— #6H, OH, MWD #1  
+ Plan #2

Map System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone Name: New Mexico East 3001

Local Origin: Well #6H, Grid North

Latitude: 32° 30' 33.031 N  
Longitude: 103° 31' 7.746 W

Grid East: 751093.70  
Grid North: 549909.80  
Scale Factor: 1.000

Geomagnetic Model: IGRF2010  
Sample Date: 05-Dec-13  
Magnetic Declination: 7.28°  
Dip Angle from Horizontal: 60.40°  
Magnetic Field Strength: 48544

To convert a Magnetic Direction to a Grid Direction, Add 6.84°  
To convert a Magnetic Direction to a True Direction, Add 7.28° East  
To convert a True Direction to a Grid Direction, Subtract 0.44°