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## ***DIRECTIONAL SURVEY REPORT***

**MACK ENERGY**

***GOOSE STATE COM #1H***

***LEA COUNTY, NEW MEXICO***

**PREPARED BY: FRANCISCO SINISTERRA**

Pathfinder Energy Services, Inc.  
6213 W. Interstate 20 • Midland, TX • 79706  
(432) 681-6000

Pathfinder

6213 W. Interstate 20  
Midland, Texas, 79706  
Tel. 432.687.1647  
Fax 432.687.1544



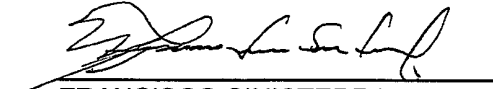
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:  
A) KIRK DAVIS
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 11-17-10 TO 01-02-10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MACK ENERGY  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG: SILVER OAK 2

9. SURVEY CERTIFIED FROM: 3931 TO 13154 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE  
DISPLACED AT 4672.82 FEET ON A BEARING OF 89.70 DEGREES FROM THE  
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 13354 FEET,  
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

  
FRANCISCO SINISTERRA  
M/LWD SERVICE COORDINATOR

# PathFinder Energy Services, Inc.

## BHL Report

Page 01/01  
Tie-in Date: 12/01/2010  
Date Completed: 01/02/2011

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MACK ENERGY CORPORATION

GOOSE STATE COM #1H

LEA COUNTY, NM

Rig:SILVER OAK #2

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers:RAFAEL DONARUMMA

STEVE BIBB

ALEX CASTILLO

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:33.2.15.2016 N LON:103.45.53.5830 W

GRID Reference:NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 674204.3000 Y: 741647.4000

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.50° EAST TO GRID

Vertical Section Plane: 89.70

Survey Vert. Reference: 19.00' Kelly Bushing To Ground

Altitude:4362.00' Ground To MSL

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|                       |                |             |
|-----------------------|----------------|-------------|
| Measured Depth        | 13354.00       | (feet)      |
| Inclination           | 88.15          | (deg)       |
| Azimuth               | 89.79          | (deg)       |
| True Vertical Depth   | 8994.84        | (feet)      |
| Vertical Section      | 4672.82        | (feet)      |
| Survey X cord         | 678877.05      | (feet)      |
| Survey Y cord         | 741672.25      | (feet)      |
| Survey Lat            | 33.03755391 N  | (deg)       |
| Survey Lon            | 103.74963666 W | (deg)       |
| Rectangular Corr. N/S | 24.85 N        | (feet)      |
| Rectangular Corr. E/W | 4672.75 E      | (feet)      |
| Closure Distance      | 4672.82        | (feet)      |
| Direction of Closure  | 89.70          | (deg)       |
| Dogleg Severity       | 0.00           | (deg/100ft) |

## PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION

GOOSE STATE COM #1H

LEA COUNTY, NM

Rig: SILVER OAK #2

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: RAFAEL DONARUMMA

STEVE BIBB

ALEX CASTILLO

BRYANT BLAKEMORE

KIRK DAVIS

Survey Horiz. Reference: WELLHEAD

Ref Coordinates: LAT: 33.2.15.2016 N LON: 103.45.53.5830 W

GRID Reference: NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 674204.3000 Y: 741647.4000

North Aligned To: GRID NORTH

Total Magnetic Correction: 7.50° EAST TO GRID

Vertical Section Plane: 89.70

Survey Vert. Reference: 19.00' Kelly Bushing To Ground

Altitude: 4362.00' Ground To MSL

Survey Calculations by RX5 V6.03B using Minimum Curvature

| Measured<br>Depth<br>(ft)                | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) (ft) |         | Closure<br>Dist Dir<br>(ft) (deg) |        | DLS<br>(dg/100ft) |
|------------------------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|---------|-----------------------------------|--------|-------------------|
| THE FOLLOWING ARE TELEDRIFT MWD SURVEYS. |               |                        |             |                          |                             |                                           |         |                                   |        |                   |
| 285.00                                   | 0.70          | 170.00                 | 284.99      | 0.00                     | 0.30                        | 1.72 S                                    | 0.30 E  | 1.74@                             | 169.94 | 0.00              |
| 438.00                                   | 1.00          | 181.00                 | 437.98      | 153.00                   | 0.42                        | 3.97 S                                    | 0.44 E  | 4.00@                             | 173.63 | 0.22              |
| 587.00                                   | 0.60          | 208.00                 | 586.96      | 149.00                   | 0.02                        | 5.96 S                                    | 0.05 E  | 5.96@                             | 179.48 | 0.36              |
| 735.00                                   | 0.30          | 215.00                 | 734.96      | 148.00                   | -0.57                       | 6.96 S                                    | 0.53 W  | 6.98@                             | 184.37 | 0.21              |
| 881.00                                   | 0.50          | 220.00                 | 880.96      | 146.00                   | -1.20                       | 7.76 S                                    | 1.16 W  | 7.85@                             | 188.50 | 0.14              |
| 1031.00                                  | 1.20          | 243.00                 | 1030.94     | 150.00                   | -3.03                       | 8.98 S                                    | 2.98 W  | 9.46@                             | 198.37 | 0.51              |
| 1191.00                                  | 0.70          | 228.00                 | 1190.92     | 160.00                   | -5.25                       | 10.39 S                                   | 5.20 W  | 11.62@                            | 206.58 | 0.35              |
| 1350.00                                  | 1.30          | 238.00                 | 1349.89     | 159.00                   | -7.51                       | 12.00 S                                   | 7.45 W  | 14.12@                            | 211.84 | 0.39              |
| 1404.00                                  | 1.20          | 245.00                 | 1403.88     | 54.00                    | -8.55                       | 12.56 S                                   | 8.48 W  | 15.16@                            | 214.03 | 0.34              |
| 1552.00                                  | 1.40          | 252.00                 | 1551.84     | 148.00                   | -11.68                      | 13.77 S                                   | 11.61 W | 18.01@                            | 220.12 | 0.17              |
| 1644.00                                  | 1.70          | 232.00                 | 1643.81     | 92.00                    | -13.83                      | 14.96 S                                   | 13.75 W | 20.32@                            | 222.59 | 0.67              |
| 1711.00                                  | 1.80          | 237.00                 | 1710.78     | 67.00                    | -15.50                      | 16.15 S                                   | 15.42 W | 22.32@                            | 223.68 | 0.27              |
| 1807.00                                  | 2.00          | 240.00                 | 1806.72     | 96.00                    | -18.23                      | 17.81 S                                   | 18.13 W | 25.41@                            | 225.52 | 0.23              |
| 1869.00                                  | 2.10          | 266.00                 | 1868.68     | 62.00                    | -20.30                      | 18.43 S                                   | 20.20 W | 27.34@                            | 227.63 | 1.49              |
| 1967.00                                  | 2.10          | 242.00                 | 1966.62     | 98.00                    | -23.68                      | 19.39 S                                   | 23.58 W | 30.53@                            | 230.56 | 0.89              |
| 2028.00                                  | 1.80          | 255.00                 | 2027.59     | 61.00                    | -25.60                      | 20.17 S                                   | 25.49 W | 32.50@                            | 231.65 | 0.87              |
| 2128.00                                  | 1.80          | 290.00                 | 2127.54     | 100.00                   | -28.59                      | 20.04 S                                   | 28.48 W | 34.82@                            | 234.88 | 1.08              |
| 2191.00                                  | 1.60          | 297.00                 | 2190.51     | 63.00                    | -30.30                      | 19.30 S                                   | 30.20 W | 35.84@                            | 237.42 | 0.46              |
| 2286.00                                  | 1.10          | 284.00                 | 2285.48     | 95.00                    | -32.36                      | 18.48 S                                   | 32.26 W | 37.18@                            | 240.20 | 0.61              |
| 2350.00                                  | 1.30          | 260.00                 | 2349.47     | 64.00                    | -33.67                      | 18.45 S                                   | 33.58 W | 38.31@                            | 241.21 | 0.84              |
| 2506.00                                  | 2.00          | 267.00                 | 2505.41     | 156.00                   | -38.13                      | 18.90 S                                   | 38.04 W | 42.47@                            | 243.57 | 0.47              |
| 2665.00                                  | 2.30          | 294.00                 | 2664.30     | 159.00                   | -43.81                      | 17.75 S                                   | 43.72 W | 47.19@                            | 247.90 | 0.66              |
| 2758.00                                  | 2.40          | 300.00                 | 2757.22     | 93.00                    | -47.20                      | 16.02 S                                   | 47.11 W | 49.76@                            | 251.22 | 0.28              |
| 2822.00                                  | 2.00          | 286.00                 | 2821.17     | 64.00                    | -49.43                      | 15.04 S                                   | 49.35 W | 51.59@                            | 253.05 | 1.04              |
| 2984.00                                  | 1.60          | 307.00                 | 2983.09     | 162.00                   | -53.94                      | 12.90 S                                   | 53.87 W | 55.39@                            | 256.53 | 0.47              |

# PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG:SILVER OAK #2

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| Measured<br>Depth<br>(ft)                 | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) (ft) |         | Closure<br>Dist Dir<br>(ft) (deg) |        | DLS<br>(dg/100ft) |
|-------------------------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|---------|-----------------------------------|--------|-------------------|
| 3144.00                                   | 2.10          | 324.00                 | 3143.01     | 160.00                   | -57.43                      | 9.18 S                                    | 57.38 W | 58.11@                            | 260.91 | 0.46              |
| 3184.00                                   | 2.20          | 323.00                 | 3182.98     | 40.00                    | -58.31                      | 7.98 S                                    | 58.27 W | 58.81@                            | 262.20 | 0.27              |
| 3236.00                                   | 2.00          | 357.00                 | 3234.95     | 52.00                    | -58.95                      | 6.27 S                                    | 58.92 W | 59.25@                            | 263.92 | 2.39              |
| 3298.00                                   | 2.40          | 320.00                 | 3296.91     | 62.00                    | -59.83                      | 4.20 S                                    | 59.81 W | 59.96@                            | 265.98 | 2.33              |
| 3393.00                                   | 2.30          | 0.00                   | 3391.83     | 95.00                    | -61.09                      | 0.77 S                                    | 61.09 W | 61.09@                            | 269.28 | 1.69              |
| 3462.00                                   | 2.50          | 332.00                 | 3460.78     | 69.00                    | -61.78                      | 1.94 N                                    | 61.80 W | 61.83@                            | 271.80 | 1.71              |
| 3621.00                                   | 2.20          | 13.00                  | 3619.65     | 159.00                   | -62.69                      | 7.98 N                                    | 62.74 W | 63.24@                            | 277.25 | 1.05              |
| 3777.00                                   | 3.50          | 12.00                  | 3775.46     | 156.00                   | -60.99                      | 15.56 N                                   | 61.07 W | 63.02@                            | 284.29 | 0.83              |
| ** TIED INTO TELEDRIFT SURVEY @ 3878' MD. |               |                        |             |                          |                             |                                           |         |                                   |        |                   |
| 3878.00                                   | 4.00          | 11.00                  | 3876.24     | 101.00                   | -59.64                      | 22.03 N                                   | 59.76 W | 63.69@                            | 290.24 | 0.50              |
| THE FOLLOWING ARE PATHFINDER MWD SURVEYS. |               |                        |             |                          |                             |                                           |         |                                   |        |                   |
| 3931.00                                   | 3.17          | 0.46                   | 3929.14     | 53.00                    | -59.26                      | 25.31 N                                   | 59.40 W | 64.56@                            | 293.08 | 1.99              |
| 4026.00                                   | 2.46          | 354.35                 | 4024.02     | 95.00                    | -59.42                      | 29.97 N                                   | 59.58 W | 66.69@                            | 296.70 | 0.81              |
| 4090.00                                   | 1.85          | 347.77                 | 4087.98     | 64.00                    | -59.76                      | 32.34 N                                   | 59.93 W | 68.10@                            | 298.35 | 1.03              |
| 4185.00                                   | 1.49          | 340.61                 | 4182.94     | 95.00                    | -60.48                      | 35.01 N                                   | 60.66 W | 70.04@                            | 299.99 | 0.44              |
| 4281.00                                   | 1.32          | 357.63                 | 4278.91     | 96.00                    | -60.93                      | 37.29 N                                   | 61.12 W | 71.60@                            | 301.38 | 0.47              |
| 4376.00                                   | 0.88          | 64.53                  | 4373.89     | 95.00                    | -60.31                      | 38.69 N                                   | 60.51 W | 71.83@                            | 302.60 | 1.33              |
| 4471.00                                   | 0.88          | 50.79                  | 4468.88     | 95.00                    | -59.08                      | 39.47 N                                   | 59.29 W | 71.22@                            | 303.65 | 0.22              |
| 4566.00                                   | 0.70          | 82.14                  | 4563.87     | 95.00                    | -57.94                      | 40.01 N                                   | 58.15 W | 70.58@                            | 304.53 | 0.49              |
| 4662.00                                   | 0.79          | 115.17                 | 4669.86     | 96.00                    | -56.76                      | 39.81 N                                   | 56.97 W | 69.50@                            | 304.95 | 0.45              |
| 4789.00                                   | 0.97          | 122.03                 | 4786.85     | 127.00                   | -55.06                      | 38.87 N                                   | 55.26 W | 67.56@                            | 305.12 | 0.16              |
| 4948.00                                   | 1.14          | 123.51                 | 4945.82     | 159.00                   | -52.61                      | 37.28 N                                   | 52.80 W | 64.64@                            | 305.22 | 0.11              |
| 5106.00                                   | 1.14          | 128.04                 | 5103.79     | 158.00                   | -50.07                      | 35.44 N                                   | 50.26 W | 61.50@                            | 305.19 | 0.06              |
| 5265.00                                   | 1.14          | 133.83                 | 5262.76     | 159.00                   | -47.69                      | 33.37 N                                   | 47.87 W | 58.35@                            | 304.88 | 0.07              |
| 5423.00                                   | 1.06          | 139.87                 | 5420.73     | 158.00                   | -45.63                      | 31.17 N                                   | 45.79 W | 55.39@                            | 304.24 | 0.09              |
| 5550.00                                   | 0.97          | 132.50                 | 5547.71     | 127.00                   | -44.09                      | 29.54 N                                   | 44.24 W | 53.20@                            | 303.73 | 0.12              |
| 5709.00                                   | 0.88          | 119.97                 | 5706.69     | 159.00                   | -42.05                      | 28.02 N                                   | 42.19 W | 50.65@                            | 303.59 | 0.14              |
| 5868.00                                   | 0.62          | 103.88                 | 5865.68     | 159.00                   | -40.16                      | 27.21 N                                   | 40.30 W | 48.62@                            | 304.02 | 0.21              |

# PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG:SILVER OAK #2

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| Measured<br>Depth<br>(ft) | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) (ft) |         | Closure<br>Dist Dir<br>(ft) (deg) |        | DLS<br>(dg/100ft) |
|---------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|---------|-----------------------------------|--------|-------------------|
| 6026.00                   | 0.44          | 100.25                 | 6023.67     | 158.00                   | -38.73                      | 26.89 N                                   | 38.87 W | 47.27@                            | 304.68 | 0.12              |
| 6185.00                   | 0.35          | 92.01                  | 6182.67     | 159.00                   | -37.65                      | 26.77 N                                   | 37.79 W | 46.31@                            | 305.31 | 0.07              |
| 6343.00                   | 0.44          | 85.24                  | 6340.66     | 158.00                   | -36.56                      | 26.80 N                                   | 36.70 W | 45.45@                            | 306.14 | 0.06              |
| 6502.00                   | 1.06          | 101.74                 | 6499.65     | 159.00                   | -34.51                      | 26.55 N                                   | 34.65 W | 43.66@                            | 307.46 | 0.41              |
| 6660.00                   | 0.97          | 99.91                  | 6657.62     | 158.00                   | -31.77                      | 26.03 N                                   | 31.90 W | 41.17@                            | 309.21 | 0.06              |
| 6819.00                   | 0.88          | 86.13                  | 6816.60     | 159.00                   | -29.22                      | 25.88 N                                   | 29.36 W | 39.14@                            | 311.39 | 0.15              |
| 6978.00                   | 1.06          | 104.73                 | 6975.58     | 159.00                   | -26.58                      | 25.59 N                                   | 26.72 W | 36.99@                            | 313.76 | 0.23              |
| 7137.00                   | 0.97          | 103.56                 | 7134.56     | 159.00                   | -23.86                      | 24.90 N                                   | 23.99 W | 34.57@                            | 316.06 | 0.06              |
| 7277.00                   | 0.70          | 103.76                 | 7274.54     | 140.00                   | -21.88                      | 24.41 N                                   | 22.01 W | 32.87@                            | 317.97 | 0.19              |
| 7436.00                   | 0.70          | 102.71                 | 7433.53     | 159.00                   | -19.99                      | 23.97 N                                   | 20.11 W | 31.29@                            | 320.00 | 0.01              |
| 7595.00                   | 0.70          | 105.78                 | 7592.52     | 159.00                   | -18.11                      | 23.49 N                                   | 18.23 W | 29.74@                            | 322.18 | 0.02              |
| 7722.00                   | 0.62          | 102.33                 | 7719.51     | 127.00                   | -16.69                      | 23.13 N                                   | 16.81 W | 28.60@                            | 323.99 | 0.07              |
| 7880.00                   | 0.70          | 106.17                 | 7877.50     | 158.00                   | -14.93                      | 22.68 N                                   | 15.05 W | 27.22@                            | 326.43 | 0.06              |
| 8039.00                   | 0.70          | 99.80                  | 8036.49     | 159.00                   | -13.05                      | 22.25 N                                   | 13.16 W | 25.85@                            | 329.39 | 0.05              |
| 8198.00                   | 1.06          | 134.95                 | 8195.47     | 159.00                   | -11.05                      | 21.04 N                                   | 11.16 W | 23.82@                            | 332.05 | 0.40              |
| 8224.00                   | 1.14          | 140.12                 | 8221.46     | 26.00                    | -10.72                      | 20.67 N                                   | 10.83 W | 23.34@                            | 332.36 | 0.49              |
| 8255.00                   | 0.97          | 152.05                 | 8252.46     | 31.00                    | -10.40                      | 20.21 N                                   | 10.51 W | 22.78@                            | 332.52 | 0.89              |
| 8287.00                   | 1.32          | 139.61                 | 8284.45     | 32.00                    | -10.04                      | 19.69 N                                   | 10.14 W | 22.15@                            | 332.74 | 1.34              |
| 8319.00                   | 3.17          | 127.99                 | 8316.43     | 32.00                    | -9.11                       | 18.86 N                                   | 9.21 W  | 20.99@                            | 333.98 | 5.92              |
| 8351.00                   | 5.80          | 124.15                 | 8348.33     | 32.00                    | -7.08                       | 17.41 N                                   | 7.17 W  | 18.83@                            | 337.61 | 8.27              |
| 8382.00                   | 8.88          | 119.34                 | 8379.07     | 31.00                    | -3.71                       | 15.36 N                                   | 3.79 W  | 15.82@                            | 346.14 | 10.12             |
| 8414.00                   | 12.13         | 117.02                 | 8410.53     | 32.00                    | 1.43                        | 12.62 N                                   | 1.36 E  | 12.69@                            | 6.16   | 10.24             |
| 8446.00                   | 15.48         | 113.71                 | 8441.60     | 32.00                    | 8.32                        | 9.37 N                                    | 8.27 E  | 12.50@                            | 41.42  | 10.75             |
| 8478.00                   | 19.08         | 112.58                 | 8472.15     | 32.00                    | 17.04                       | 5.65 N                                    | 17.01 E | 17.92@                            | 71.64  | 11.30             |
| 8509.00                   | 22.42         | 112.93                 | 8501.14     | 31.00                    | 27.14                       | 1.40 N                                    | 27.14 E | 27.17@                            | 87.06  | 10.78             |
| 8541.00                   | 25.32         | 112.10                 | 8530.40     | 32.00                    | 39.08                       | 3.56 S                                    | 39.10 E | 39.26@                            | 95.20  | 9.12              |
| 8573.00                   | 27.87         | 109.81                 | 8559.01     | 32.00                    | 52.43                       | 8.67 S                                    | 52.48 E | 53.19@                            | 99.38  | 8.59              |
| 8605.00                   | 30.69         | 107.35                 | 8586.92     | 32.00                    | 67.24                       | 13.64 S                                   | 67.31 E | 68.68@                            | 101.45 | 9.58              |

# PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG:SILVER OAK #2

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| Measured<br>Depth<br>(ft) | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) |          | Closure<br>Dist Dir<br>(ft) (deg) |        | DLS<br>(dg/100ft) |
|---------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|--------------------------------------|----------|-----------------------------------|--------|-------------------|
| 8636.00                   | 33.50         | 103.39                 | 8613.18     | 31.00                    | 83.10                       | 17.98 S                              | 83.19 E  | 85.11@                            | 102.20 | 11.32             |
| 8668.00                   | 35.44         | 99.89                  | 8639.56     | 32.00                    | 100.81                      | 21.62 S                              | 100.93 E | 103.22@                           | 102.09 | 8.66              |
| 8699.00                   | 36.93         | 95.38                  | 8664.59     | 31.00                    | 118.93                      | 24.04 S                              | 119.06 E | 121.46@                           | 101.41 | 9.84              |
| 8731.00                   | 38.69         | 92.52                  | 8689.87     | 32.00                    | 138.49                      | 25.38 S                              | 138.62 E | 140.93@                           | 100.37 | 7.76              |
| 8823.00                   | 41.86         | 90.56                  | 8760.06     | 92.00                    | 197.92                      | 26.94 S                              | 198.06 E | 199.89@                           | 97.75  | 3.71              |
| 8854.00                   | 44.76         | 90.71                  | 8782.61     | 31.00                    | 219.18                      | 27.18 S                              | 219.32 E | 221.00@                           | 97.06  | 9.36              |
| 8886.00                   | 47.84         | 91.47                  | 8804.72     | 32.00                    | 242.30                      | 27.62 S                              | 242.45 E | 244.02@                           | 96.50  | 9.78              |
| 8917.00                   | 50.65         | 91.27                  | 8824.95     | 31.00                    | 265.77                      | 28.18 S                              | 265.93 E | 267.41@                           | 96.05  | 9.08              |
| 8949.00                   | 54.69         | 90.83                  | 8844.35     | 32.00                    | 291.21                      | 28.65 S                              | 291.36 E | 292.77@                           | 95.62  | 12.67             |
| 8981.00                   | 58.12         | 89.34                  | 8862.06     | 32.00                    | 317.86                      | 28.68 S                              | 318.01 E | 319.30@                           | 95.15  | 11.40             |
| 9013.00                   | 61.38         | 87.33                  | 8878.18     | 32.00                    | 345.48                      | 27.87 S                              | 345.64 E | 346.76@                           | 94.61  | 11.54             |
| 9045.00                   | 64.98         | 84.88                  | 8892.61     | 32.00                    | 373.98                      | 25.92 S                              | 374.12 E | 375.02@                           | 93.96  | 13.16             |
| 9077.00                   | 69.56         | 83.97                  | 8904.98     | 32.00                    | 403.36                      | 23.05 S                              | 403.49 E | 404.14@                           | 93.27  | 14.55             |
| 9109.00                   | 73.86         | 84.15                  | 8915.02     | 32.00                    | 433.59                      | 19.91 S                              | 433.70 E | 434.15@                           | 92.63  | 13.45             |
| 9140.00                   | 78.79         | 85.48                  | 8922.34     | 31.00                    | 463.59                      | 17.19 S                              | 463.69 E | 464.01@                           | 92.12  | 16.44             |
| 9172.00                   | 82.22         | 86.96                  | 8927.62     | 32.00                    | 495.09                      | 15.11 S                              | 495.17 E | 495.40@                           | 91.75  | 11.65             |
| 9204.00                   | 85.65         | 87.46                  | 8931.00     | 32.00                    | 526.87                      | 13.56 S                              | 526.95 E | 527.13@                           | 91.47  | 10.83             |
| 9227.00                   | 86.59         | 86.35                  | 8932.56     | 23.00                    | 549.79                      | 12.32 S                              | 549.87 E | 550.00@                           | 91.28  | 6.31              |
| 9259.00                   | 87.31         | 87.13                  | 8934.26     | 32.00                    | 581.70                      | 10.51 S                              | 581.77 E | 581.86@                           | 91.03  | 3.31              |
| 9291.00                   | 89.44         | 87.66                  | 8935.17     | 32.00                    | 613.66                      | 9.05 S                               | 613.72 E | 613.79@                           | 90.85  | 6.86              |
| 9323.00                   | 90.11         | 87.29                  | 8935.29     | 32.00                    | 645.64                      | 7.64 S                               | 645.69 E | 645.73@                           | 90.68  | 2.39              |
| 9355.00                   | 90.62         | 87.64                  | 8935.09     | 32.00                    | 677.61                      | 6.23 S                               | 677.66 E | 677.69@                           | 90.53  | 1.93              |
| 9387.00                   | 90.45         | 87.65                  | 8934.79     | 32.00                    | 709.59                      | 4.91 S                               | 709.63 E | 709.64@                           | 90.40  | 0.53              |
| 9419.00                   | 90.28         | 87.79                  | 8934.59     | 32.00                    | 741.57                      | 3.64 S                               | 741.60 E | 741.61@                           | 90.28  | 0.69              |
| 9451.00                   | 90.67         | 87.92                  | 8934.32     | 32.00                    | 773.56                      | 2.44 S                               | 773.58 E | 773.58@                           | 90.18  | 1.29              |
| 9483.00                   | 91.23         | 87.86                  | 8933.79     | 32.00                    | 805.53                      | 1.26 S                               | 805.55 E | 805.55@                           | 90.09  | 1.76              |
| 9515.00                   | 91.46         | 87.81                  | 8933.04     | 32.00                    | 837.51                      | 0.06 S                               | 837.52 E | 837.52@                           | 90.00  | 0.74              |
| 9547.00                   | 91.46         | 87.56                  | 8932.22     | 32.00                    | 869.48                      | 1.24 N                               | 869.48 E | 869.48@                           | 89.92  | 0.78              |

# PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG:SILVER OAK #2

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| Measured<br>Depth<br>(ft) | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) |           | Closure<br>Dist Dir<br>(ft) (deg) |       | DLS<br>(dg/100ft) |
|---------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|--------------------------------------|-----------|-----------------------------------|-------|-------------------|
| 9579.00                   | 91.34         | 88.02                  | 8931.44     | 32.00                    | 901.45                      | 2.47 N                               | 901.45 E  | 901.45@                           | 89.84 | 1.48              |
| 9611.00                   | 91.85         | 88.25                  | 8930.55     | 32.00                    | 933.43                      | 3.51 N                               | 933.42 E  | 933.43@                           | 89.78 | 1.75              |
| 9642.00                   | 92.46         | 88.59                  | 8929.39     | 31.00                    | 964.40                      | 4.37 N                               | 964.39 E  | 964.40@                           | 89.74 | 2.25              |
| 9674.00                   | 92.69         | 89.46                  | 8927.95     | 32.00                    | 996.36                      | 4.91 N                               | 996.35 E  | 996.36@                           | 89.72 | 2.81              |
| 9706.00                   | 91.29         | 88.79                  | 8926.84     | 32.00                    | 1028.34                     | 5.40 N                               | 1028.33 E | 1028.34@                          | 89.70 | 4.85              |
| 9739.00                   | 91.18         | 87.97                  | 8926.13     | 33.00                    | 1061.32                     | 6.33 N                               | 1061.31 E | 1061.32@                          | 89.66 | 2.51              |
| 9771.00                   | 91.57         | 89.21                  | 8925.36     | 32.00                    | 1093.31                     | 7.12 N                               | 1093.29 E | 1093.31@                          | 89.63 | 4.06              |
| 9803.00                   | 89.72         | 89.06                  | 8925.00     | 32.00                    | 1125.30                     | 7.60 N                               | 1125.28 E | 1125.30@                          | 89.61 | 5.80              |
| 9835.00                   | 88.32         | 89.21                  | 8925.55     | 32.00                    | 1157.30                     | 8.08 N                               | 1157.27 E | 1157.30@                          | 89.60 | 4.40              |
| 9929.00                   | 88.49         | 90.24                  | 8928.16     | 94.00                    | 1251.26                     | 8.53 N                               | 1251.23 E | 1251.26@                          | 89.61 | 1.11              |
| 10025.00                  | 89.89         | 91.11                  | 8929.52     | 96.00                    | 1347.23                     | 7.40 N                               | 1347.21 E | 1347.23@                          | 89.69 | 1.72              |
| 10121.00                  | 90.56         | 92.72                  | 8929.14     | 96.00                    | 1443.16                     | 4.20 N                               | 1443.15 E | 1443.16@                          | 89.83 | 1.82              |
| 10217.00                  | 91.01         | 93.22                  | 8927.83     | 96.00                    | 1538.99                     | 0.78 S                               | 1539.01 E | 1539.01@                          | 90.03 | 0.70              |
| 10313.00                  | 91.17         | 92.43                  | 8926.00     | 96.00                    | 1634.83                     | 5.51 S                               | 1634.88 E | 1634.89@                          | 90.19 | 0.84              |
| 10409.00                  | 90.84         | 92.58                  | 8924.32     | 96.00                    | 1730.70                     | 9.70 S                               | 1730.77 E | 1730.80@                          | 90.32 | 0.38              |
| 10505.00                  | 89.72         | 93.65                  | 8923.85     | 96.00                    | 1826.52                     | 14.92 S                              | 1826.63 E | 1826.69@                          | 90.47 | 1.61              |
| 10601.00                  | 87.65         | 92.81                  | 8926.05     | 96.00                    | 1922.31                     | 20.33 S                              | 1922.44 E | 1922.55@                          | 90.61 | 2.33              |
| 10697.00                  | 89.61         | 92.10                  | 8928.35     | 96.00                    | 2018.17                     | 24.44 S                              | 2018.32 E | 2018.47@                          | 90.69 | 2.17              |
| 10792.00                  | 89.27         | 91.52                  | 8929.27     | 95.00                    | 2113.10                     | 27.44 S                              | 2113.27 E | 2113.45@                          | 90.74 | 0.71              |
| 10889.00                  | 90.11         | 91.41                  | 8929.80     | 97.00                    | 2210.05                     | 29.92 S                              | 2210.24 E | 2210.44@                          | 90.78 | 0.87              |
| 10985.00                  | 89.50         | 90.27                  | 8930.13     | 96.00                    | 2306.03                     | 31.33 S                              | 2306.22 E | 2306.44@                          | 90.78 | 1.35              |
| 11081.00                  | 88.43         | 90.41                  | 8931.86     | 96.00                    | 2402.00                     | 31.90 S                              | 2402.20 E | 2402.42@                          | 90.76 | 1.12              |
| 11177.00                  | 87.15         | 89.72                  | 8935.56     | 96.00                    | 2497.93                     | 32.00 S                              | 2498.13 E | 2498.33@                          | 90.73 | 1.51              |
| 11273.00                  | 87.26         | 89.38                  | 8940.24     | 96.00                    | 2593.81                     | 31.25 S                              | 2594.01 E | 2594.20@                          | 90.69 | 0.37              |
| 11369.00                  | 87.93         | 89.58                  | 8944.27     | 96.00                    | 2689.73                     | 30.38 S                              | 2689.92 E | 2690.10@                          | 90.65 | 0.73              |
| 11465.00                  | 88.04         | 90.18                  | 8947.65     | 96.00                    | 2785.67                     | 30.18 S                              | 2785.86 E | 2786.03@                          | 90.62 | 0.64              |
| 11561.00                  | 87.70         | 89.97                  | 8951.22     | 96.00                    | 2881.60                     | 30.31 S                              | 2881.80 E | 2881.96@                          | 90.60 | 0.42              |
| 11657.00                  | 88.82         | 89.82                  | 8954.13     | 96.00                    | 2977.55                     | 30.13 S                              | 2977.75 E | 2977.90@                          | 90.58 | 1.18              |

# PathFinder Energy Services, Inc.

## Survey Report

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NM  
RIG:SILVER OAK #2

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| Measured<br>Depth<br>(ft)                   | Incl<br>(deg) | Drift<br>Dir.<br>(deg) | TVD<br>(ft) | Course<br>Length<br>(ft) | Vertical<br>Section<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) (ft) |           | Closure<br>Dist Dir<br>(ft) (deg) |       | DLS<br>(dg/100ft) |
|---------------------------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|-----------|-----------------------------------|-------|-------------------|
| 11754.00                                    | 88.77         | 90.06                  | 8956.17     | 97.00                    | 3074.53                     | 30.03 S                                   | 3074.73 E | 3074.88@                          | 90.56 | 0.25              |
| 11785.00                                    | 88.32         | 90.17                  | 8956.96     | 31.00                    | 3105.52                     | 30.09 S                                   | 3105.72 E | 3105.86@                          | 90.56 | 1.49              |
| 11848.00                                    | 87.76         | 90.12                  | 8959.11     | 63.00                    | 3168.48                     | 30.25 S                                   | 3168.68 E | 3168.83@                          | 90.55 | 0.89              |
| 11944.00                                    | 88.15         | 88.59                  | 8962.54     | 96.00                    | 3264.41                     | 29.17 S                                   | 3264.61 E | 3264.74@                          | 90.51 | 1.64              |
| 12041.00                                    | 87.87         | 87.69                  | 8965.91     | 97.00                    | 3361.32                     | 26.02 S                                   | 3361.50 E | 3361.60@                          | 90.44 | 0.97              |
| 12136.00                                    | 89.55         | 86.40                  | 8968.04     | 95.00                    | 3456.19                     | 21.13 S                                   | 3456.35 E | 3456.41@                          | 90.35 | 2.23              |
| 12232.00                                    | 89.33         | 86.59                  | 8968.98     | 96.00                    | 3552.03                     | 15.26 S                                   | 3552.16 E | 3552.19@                          | 90.25 | 0.30              |
| 12327.00                                    | 89.61         | 86.59                  | 8969.86     | 95.00                    | 3646.89                     | 9.61 S                                    | 3646.99 E | 3647.00@                          | 90.15 | 0.30              |
| 12423.00                                    | 90.11         | 86.09                  | 8970.10     | 96.00                    | 3742.72                     | 3.48 S                                    | 3742.79 E | 3742.79@                          | 90.05 | 0.74              |
| 12517.00                                    | 88.43         | 86.79                  | 8971.29     | 94.00                    | 3836.56                     | 2.36 N                                    | 3836.60 E | 3836.60@                          | 89.96 | 1.94              |
| 12612.00                                    | 88.04         | 86.22                  | 8974.22     | 95.00                    | 3931.37                     | 8.15 N                                    | 3931.38 E | 3931.38@                          | 89.88 | 0.73              |
| 12708.00                                    | 89.22         | 86.90                  | 8976.52     | 96.00                    | 4027.19                     | 13.90 N                                   | 4027.17 E | 4027.20@                          | 89.80 | 1.42              |
| 12804.00                                    | 88.04         | 88.33                  | 8978.81     | 96.00                    | 4123.10                     | 17.90 N                                   | 4123.06 E | 4123.10@                          | 89.75 | 1.93              |
| 12900.00                                    | 88.15         | 88.60                  | 8982.00     | 96.00                    | 4219.02                     | 20.47 N                                   | 4218.97 E | 4219.02@                          | 89.72 | 0.30              |
| 12995.00                                    | 88.54         | 89.03                  | 8984.75     | 95.00                    | 4313.97                     | 22.43 N                                   | 4313.91 E | 4313.97@                          | 89.70 | 0.61              |
| 13091.00                                    | 88.99         | 89.45                  | 8986.81     | 96.00                    | 4409.94                     | 23.70 N                                   | 4409.88 E | 4409.94@                          | 89.69 | 0.64              |
| 13154.00                                    | 88.15         | 89.79                  | 8988.39     | 63.00                    | 4472.92                     | 24.12 N                                   | 4472.86 E | 4472.92@                          | 89.69 | 1.44              |
| STRAIGHT LINE PROJECTION TO BIT @ 13354'MD. |               |                        |             |                          |                             |                                           |           |                                   |       |                   |
| 13354.00                                    | 88.15         | 89.79                  | 8994.84     | 200.00                   | 4672.82                     | 24.85 N                                   | 4672.75 E | 4672.82@                          | 89.70 | 0.00              |

\*\* The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.



A Schlumberger Company

## TIE-IN SURVEY INFORMATION SHEET

### CLIENT INFORMATION

|                           |                            |            |     |
|---------------------------|----------------------------|------------|-----|
| CLIENT:                   | MACK ENERGY                |            |     |
| LEASE / WELL No.:         | GOOSE STATE COM            | #1H        |     |
| WELL LOCATION:            | LEA COUNTY, NEW MEXICO     |            |     |
| COUNTY / STATE / COUNTRY: | LEA                        | NEW MEXICO | USA |
| RIG:                      | SILVER OAK #2              |            |     |
| API WELL No:              | 30-025-39924               |            |     |
| JOB No:                   | 700000847 WT-WT            |            |     |
| P.O. / AFE No.            |                            |            |     |
| DIRECTIONAL COMPANY:      | PATHFINDER ENERGY SERVICES |            |     |

### WELL SITE INFORMATION

|                                  |                                                                                                        |                 |                   |
|----------------------------------|--------------------------------------------------------------------------------------------------------|-----------------|-------------------|
| TOTAL MAGNETIC CORRECTION (TMC): |                                                                                                        |                 |                   |
| On Wall Plat:                    | 7.5                                                                                                    | LWD Calculated: | 7.497727          |
|                                  |                                                                                                        | Agreed Upon:    | 7.5               |
| X =                              | 674204.300000                                                                                          | Feet            | Y = 741647.400000 |
|                                  |                                                                                                        |                 | Feet              |
| SITE LATITUDE:                   | 33.037556 N                                                                                            | SITE LONGITUDE: | 103.764884 W      |
| GRID SYSTEM:                     | TRUE <input type="checkbox"/> UTM <input checked="" type="checkbox"/> LAMBERT <input type="checkbox"/> | ZONE:           | new mexico east   |
| PROPOSED DRIFT DIRECTION:        | 89.7                                                                                                   |                 |                   |
| KELLY BUSHING ELEVATION:         | 17.5                                                                                                   |                 |                   |
| ALTITUDE:                        | 4362                                                                                                   | Feet            | WATER DEPTH: n/a  |
|                                  |                                                                                                        |                 | Feet              |

### TIE-IN SURVEY

|                                    |                                                                                                                            |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| MEASURED DEPTH:                    | 3878                                                                                                                       |
| DRIFT ANGLE:                       | 4                                                                                                                          |
| DRIFT DIRECTION:                   | 11                                                                                                                         |
| TRUE VERTICAL DEPTH:               | 3876.24                                                                                                                    |
| VERTICAL SECTION:                  | -59.64                                                                                                                     |
| RECTANGULAR COORDINATE ( N / S ) : | 22.03                                                                                                                      |
| RECTANGULAR COORDINATE ( E / W ) : | -59.76                                                                                                                     |
| CLOSURE DISTANCE / DIRECTION:      |                                                                                                                            |
| SURVEY CALCULATION METHOD:         | AA <input type="checkbox"/> MC <input checked="" type="checkbox"/> RC <input type="checkbox"/> BT <input type="checkbox"/> |
| SOURCE OF TIE-IN DATA ( COMPANY ): | Teledrift Surveys                                                                                                          |
| COPY OF TIE-IN SURVEY REPORT       | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO                                                        |

### WELL PLAN

|                |      |              |      |
|----------------|------|--------------|------|
| KICKOFF DEPTH: | 3920 | TOTAL DEPTH: | 9200 |
| KICKOFF ANGLE: | 0    | MAX ANGLE:   | 0    |

PES Engineers: BRYANT BLAKEMORE  
ALEX CASTILLO

\*\*Signature of both field engineers required if applicable

Directional Driller: WESLEY TEETER

DATE: 17-Nov-2010



A Schlumberger Company

## PathFinder Energy Services, Inc. Magnetic & Grid Calculations

MACK ENERGY CORPORATION  
GOOSE STATE COM #1H  
LEA COUNTY, NEW MEXICO  
Rig:SILVER OAK #2

Fri Nov 12 09:43:32 2010

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### Coordinates

Latitude: 33.037556 N (33 deg. 2 min. 15.2016 sec.)  
Longitude: 103.764884 W (-103 deg. 45 min. 53.5830 sec.)  
Elevation: 4379.50 feet.  
Calculation Date: Nov/12/2010

---

### Magnetic Calculations

Model: IGRF2010  
Dip Angle: 60.9195 degrees  
Total Magnetic Field: 0.49137 gauss  
Magnetic Declination: 7.809329 degrees  
Horizontal Intensity: 0.238826 gauss  
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.809329 Degs

---

### Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east  
Ellipsoid: Clarke 1866  
X: 674204.3000 feet  
Y: 741647.4000 feet  
True to Grid: (convergence) -0.309919 degrees  
Magnetic to Grid: 7.499410 degrees  
To Convert a Magnetic Dir. to a GRID dir. Add 7.499410 Degs.

# PathFinder Energy Services, Inc.

## Magnetic & Grid Calculations

MACK ENERGY  
GOOSE STATE COM #1H  
LEA COUNTY, NEW MEXICO  
Rig:SILVER OAK #2

Wed Nov 17 02:41:22 2010

---

### Coordinates

Latitude: 33.037556 N ( 33 deg. 2 min. 15.2016 sec.)  
Longitude: 103.764884 W (-103 deg. 45 min. 53.5830 sec.)  
Elevation: 4379.50 feet.  
Calculation Date: Nov/17/2010

---

### Magnetic Calculations

Model: IGRF2010  
Dip Angle: 60.9191 degrees  
Total Magnetic Field: 0.49136 gauss  
Magnetic Declination: 7.807647 degrees  
Horizontal Intensity: 0.238822 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.807647 Degr

---

### Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east  
Ellipsoid: Clarke 1866  
X: 674204.3000 feet  
Y: 741647.4000 feet  
True to Grid: (convergence) -0.309919 degrees  
Magnetic to Grid: 7.497727 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.497727 Degr.