



An Operating Unit of Smith International, Inc.

## ***DIRECTIONAL SURVEY REPORT***

**MARBOB ENERGY CORPORATION**

***CTA STATE COM # 2***

**EDDY COUNTY, NEW MEXICO**

**PREPARED BY: FRANCISCO SINISTERRA**

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

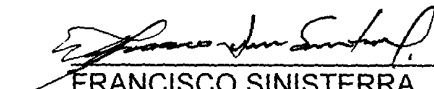
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:  
A) Jay Fulton
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 7/16/09 to 7/24/09
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MARBOB ENERGY CORPORATION  
CTA STATE COM # 2  
EDDY COUNTY, NM  
RIG: PATRIOT # 6

9. SURVEY CERTIFIED FROM: 6348 TO 10607 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 1.56 FEET ON A BEARING OF 93.36 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 10667 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

  
FRANCISCO SINISTERRA  
MWD COORDINATOR

# PathFinder Energy Services, Inc.

## BHL Report

Page 01/01  
Tie-in Date: 07/16/2009  
Date Completed: 07/24/2009

MARBOB ENERGY  
CTA STATE COM #2  
EDDY COUNTY, NEW MEXICO  
Rig: PATRIOT 6  
PathFinder Office Supervisor: FRANCISCO SINISTERRA  
PathFinder Field Engineers: JAY FULTON

Survey Horiz. Reference: WELLHEAD  
Ref Coordinates: LAT: 32.41.45.0000 N LON: 103.59.13.0000 W  
GRID Reference: NAD27 new mexico east Transverse Mercator  
Ref GRID Coord: X: 606560.1814 Y: 617029.1866  
North Aligned To: GRID NORTH  
Total Magnetic Correction: 7.84° EAST TO GRID  
Vertical Section Plane: 0.00  
Survey Vert. Reference: 18.50' Rotary Table To Ground  
Altitude: 3405.00' Ground To MSL

|                       |                |             |
|-----------------------|----------------|-------------|
| Measured Depth        | 10667.00       | (feet)      |
| Inclination           | 1.14           | (deg)       |
| Azimuth               | 98.72          | (deg)       |
| True Vertical Depth   | 10666.13       | (feet)      |
| Vertical Section      | -0.09          | (feet)      |
| Survey X cord         | 606561.72      | (feet)      |
| Survey Y cord         | 617029.08      | (feet)      |
| Survey Lat            | 32.69583301 N  | (deg)       |
| Survey Lon            | 103.98693945 W | (deg)       |
| Rectangular Corr. N/S | 0.09 S         | (feet)      |
| Rectangular Corr. E/W | 1.55 E         | (feet)      |
| Closure Distance      | 1.56           | (feet)      |
| Direction of Closure  | 93.36          | (deg)       |
| Dogleg Severity       | 0.00           | (deg/100ft) |

## PathFinder Energy Services, Inc.

## Survey Report

MARBOB ENERGY  
 CTA STATE COM #2  
 EDDY COUNTY, NEW MEXICO  
 Rig: PATRIOT 6  
 PathFinder Office Supervisor: FRANCISCO SINISTERRA  
 PathFinder Field Engineers: JAY FULTON

Survey Horiz. Reference: WELLHEAD  
 Ref Coordinates: LAT: 32.41.45.0000 N LON: 103.59.13.0000 W  
 Reference: NAD27 new mexico east Transverse Mercator  
 Ref GRID Coord: X: 606560.1814 Y: 617029.1866  
 North Aligned To: GRID NORTH  
 Total Magnetic Correction: 7.84° EAST TO GRID  
 Vertical Section Plane: 0.00  
 Survey Vert. Reference: 18.50' Rotary Table To Ground  
 Altitude: 3405.00' Ground To MSL

Survey Calculations by RX4 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) |  |
|-------------------------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|---------|-----------------------------------|-------------------|--|
| TIE-IN @ 6248' MD ASSUMING VERTICAL.      |               |                        |             |                          |                             |                                           |         |                                   |                   |  |
| 6248.00                                   | 0.00          | 0.00                   | 6248.00     | 0.00                     | 0.00                        | 0.00                                      | 0.00    | 0.00@ 0.00                        | 0.00              |  |
| THE FOLLOWING ARE PATHFINDER MWD SURVEYS. |               |                        |             |                          |                             |                                           |         |                                   |                   |  |
| 6348.00                                   | 2.81          | 286.72                 | 6347.96     | 100.00                   | 0.71                        | 0.71 N                                    | 2.35 W  | 2.45@ 286.72                      | 2.81              |  |
| 6411.00                                   | 2.20          | 281.44                 | 6410.90     | 63.00                    | 1.39                        | 1.39 N                                    | 5.01 W  | 5.20@ 285.49                      | 1.03              |  |
| 6475.00                                   | 1.23          | 275.20                 | 6474.87     | 64.00                    | 1.70                        | 1.70 N                                    | 6.90 W  | 7.11@ 283.80                      | 1.54              |  |
| 6570.00                                   | 1.49          | 279.51                 | 6569.84     | 95.00                    | 1.99                        | 1.99 N                                    | 9.13 W  | 9.35@ 282.30                      | 0.29              |  |
| 6666.00                                   | 1.85          | 277.93                 | 6665.80     | 96.00                    | 2.41                        | 2.41 N                                    | 11.90 W | 12.14@ 281.46                     | 0.38              |  |
| 6729.00                                   | 0.62          | 323.98                 | 6728.79     | 63.00                    | 2.83                        | 2.83 N                                    | 13.11 W | 13.41@ 282.17                     | 2.36              |  |
| 6825.00                                   | 0.62          | 316.60                 | 6824.78     | 96.00                    | 3.63                        | 3.63 N                                    | 13.77 W | 14.24@ 284.75                     | 0.08              |  |
| 6920.00                                   | 0.88          | 22.43                  | 6919.78     | 95.00                    | 4.67                        | 4.67 N                                    | 13.84 W | 14.61@ 288.65                     | 0.89              |  |
| 7015.00                                   | 0.97          | 45.37                  | 7014.76     | 95.00                    | 5.91                        | 5.91 N                                    | 12.99 W | 14.28@ 294.47                     | 0.40              |  |
| 7111.00                                   | 1.49          | 60.75                  | 7110.74     | 96.00                    | 7.09                        | 7.09 N                                    | 11.33 W | 13.36@ 302.06                     | 0.64              |  |
| 7206.00                                   | 1.67          | 66.29                  | 7205.70     | 95.00                    | 8.25                        | 8.25 N                                    | 8.98 W  | 12.20@ 312.58                     | 0.25              |  |
| 7301.00                                   | 1.67          | 54.42                  | 7300.66     | 95.00                    | 9.62                        | 9.62 N                                    | 6.59 W  | 11.66@ 325.58                     | 0.36              |  |
| 7397.00                                   | 1.67          | 49.06                  | 7396.62     | 96.00                    | 11.35                       | 11.35 N                                   | 4.39 W  | 12.17@ 338.83                     | 0.16              |  |
| 7492.00                                   | 1.85          | 59.87                  | 7491.58     | 95.00                    | 13.02                       | 13.02 N                                   | 2.02 W  | 13.18@ 351.17                     | 0.40              |  |
| 7588.00                                   | 1.14          | 44.75                  | 7587.55     | 96.00                    | 14.48                       | 14.48 N                                   | 0.01 W  | 14.48@ 359.96                     | 0.84              |  |
| 7683.00                                   | 0.53          | 63.83                  | 7682.54     | 95.00                    | 15.34                       | 15.34 N                                   | 1.05 E  | 15.38@ 3.92                       | 0.70              |  |
| 7779.00                                   | 0.09          | 120.69                 | 7778.53     | 96.00                    | 15.50                       | 15.50 N                                   | 1.51 E  | 15.57@ 5.58                       | 0.51              |  |
| 7874.00                                   | 0.62          | 307.81                 | 7873.53     | 95.00                    | 15.78                       | 15.78 N                                   | 1.17 E  | 15.82@ 4.25                       | 0.75              |  |
| 8001.00                                   | 0.79          | 271.78                 | 8000.52     | 127.00                   | 16.23                       | 16.23 N                                   | 0.25 W  | 16.23@ 359.13                     | 0.37              |  |
| 8128.00                                   | 0.70          | 196.37                 | 8127.52     | 127.00                   | 15.51                       | 15.51 N                                   | 1.34 W  | 15.57@ 355.06                     | 0.72              |  |
| 8287.00                                   | 0.70          | 210.34                 | 8286.50     | 159.00                   | 13.74                       | 13.74 N                                   | 2.10 W  | 13.90@ 351.29                     | 0.11              |  |
| 8447.00                                   | 1.23          | 156.73                 | 8446.48     | 160.00                   | 11.32                       | 11.32 N                                   | 1.92 W  | 11.48@ 350.37                     | 0.62              |  |
| 8542.00                                   | 1.49          | 191.88                 | 8541.46     | 95.00                    | 9.17                        | 9.17 N                                    | 1.77 W  | 9.34@ 349.07                      | 0.90              |  |
| 8574.00                                   | 1.41          | 191.00                 | 8573.45     | 32.00                    | 8.38                        | 8.38 N                                    | 1.93 W  | 8.60@ 347.02                      | 0.26              |  |

# PathFinder Energy Services, Inc.

## Survey Report

MARBOB ENERGY  
CTA STATE COM #2  
EDDY COUNTY, NEW MEXICO  
RIG:PATRIOT 6

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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) |
|----------------------------------------------|---------------|------------------------|-------------|--------------------------|-----------------------------|-------------------------------------------|--------|-----------------------------------|--------|-------------------|
| 8669.00                                      | 1.06          | 181.34                 | 8668.43     | 95.00                    | 6.35                        | 6.35 N                                    | 2.18 W | 6.72@                             | 341.10 | 0.43              |
| 8828.00                                      | 1.41          | 192.59                 | 8827.39     | 159.00                   | 2.97                        | 2.97 N                                    | 2.64 W | 3.97@                             | 318.44 | 0.27              |
| 8891.00                                      | 0.97          | 188.37                 | 8890.38     | 63.00                    | 1.69                        | 1.69 N                                    | 2.88 W | 3.34@                             | 300.38 | 0.71              |
| 8987.00                                      | 0.79          | 169.21                 | 8986.36     | 96.00                    | 0.24                        | 0.24 N                                    | 2.88 W | 2.89@                             | 274.68 | 0.36              |
| 9145.00                                      | 0.79          | 139.94                 | 9144.35     | 158.00                   | -1.67                       | 1.67 S                                    | 1.97 W | 2.58@                             | 229.78 | 0.25              |
| 9304.00                                      | 1.14          | 127.02                 | 9303.33     | 159.00                   | -3.46                       | 3.46 S                                    | 0.00 W | 3.46@                             | 180.06 | 0.26              |
| 9400.00                                      | 1.58          | 121.57                 | 9399.30     | 96.00                    | -4.73                       | 4.73 S                                    | 1.89 E | 5.09@                             | 158.25 | 0.48              |
| 9463.00                                      | 0.26          | 175.36                 | 9462.29     | 63.00                    | -5.32                       | 5.32 S                                    | 2.64 E | 5.94@                             | 153.65 | 2.29              |
| 9622.00                                      | 1.06          | 224.75                 | 9621.28     | 159.00                   | -6.73                       | 6.73 S                                    | 1.63 E | 6.92@                             | 166.37 | 0.57              |
| 9717.00                                      | 0.88          | 275.11                 | 9716.27     | 95.00                    | -7.29                       | 7.29 S                                    | 0.29 E | 7.29@                             | 177.75 | 0.89              |
| 9876.00                                      | 1.41          | 285.40                 | 9875.24     | 159.00                   | -6.66                       | 6.66 S                                    | 2.82 W | 7.23@                             | 202.92 | 0.36              |
| 9940.00                                      | 0.70          | 358.61                 | 9939.23     | 64.00                    | -6.06                       | 6.06 S                                    | 3.58 W | 7.04@                             | 210.61 | 2.16              |
| 10099.00                                     | 0.35          | 17.42                  | 10098.22    | 159.00                   | -4.63                       | 4.63 S                                    | 3.46 W | 5.78@                             | 216.82 | 0.24              |
| 10257.00                                     | 0.88          | 344.02                 | 10256.21    | 158.00                   | -3.00                       | 3.00 S                                    | 3.65 W | 4.73@                             | 230.62 | 0.39              |
| 10385.00                                     | 1.49          | 20.14                  | 10384.18    | 128.00                   | -0.49                       | 0.49 S                                    | 3.35 W | 3.39@                             | 261.67 | 0.73              |
| 10448.00                                     | 0.97          | 88.44                  | 10447.17    | 63.00                    | 0.29                        | 0.29 N                                    | 2.53 W | 2.55@                             | 276.59 | 2.30              |
| 10607.00                                     | 1.14          | 98.72                  | 10606.15    | 159.00                   | 0.09                        | 0.09 N                                    | 0.37 E | 0.38@                             | 76.52  | 0.16              |
| STRAIGHT LINE PROJECTION TO BIT @ 10667' MD. |               |                        |             |                          |                             |                                           |        |                                   |        |                   |
| 10667.00                                     | 1.14          | 98.72                  | 10666.13    | 60.00                    | -0.09                       | 0.09 S                                    | 1.55 E | 1.56@                             | 93.36  | 0.00              |

# PathFinder Energy Services, Inc.

## Magnetic & Grid Calculations

MARBOB ENERGY  
CTA STATE COM #2  
EDDY COUNTY, NEW MEXICO  
Rig: PATRIOT 6

Thu Jul 16 09:31:46 2009

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### Coordinates

Latitude: 32.695833 N ( 32 deg. 41 min. 45.0000 sec.)  
Longitude: 103.986944 W (-103 deg. 59 min. 13.0000 sec.)  
Elevation: 3405.00 feet.  
Calculation Date: Jul/16/2009

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### Magnetic Calculations

Model: IGRF2005  
Dip Angle: 60.6155 degrees  
Total Magnetic Field: 0.49075 gauss  
Magnetic Declination: 8.030371 degrees  
Horizontal Intensity: 0.240796 gauss  
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.030371 Degr.

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### Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east  
Ellipsoid: Clarke 1866  
X: 606560.1814 feet  
Y: 617029.1866 feet  
True to Grid: (convergence) -0.187114 degrees  
Magnetic to Grid: 7.843257 degrees  
To Convert a Magnetic Dir. to a GRID dir. Add 7.843257 Degr.

# PathFinder Energy Services, Inc.

## Magnetic & Grid Calculations

Field Copy

MARBOB ENERGY  
CTA STATE COM #2  
EDDY COUNTY  
Rig: PATRIOT 6

Fri Jul 17 01:45:56 2009

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### Coordinates

Latitude: 32.695833 N ( 32 deg. 41 min. 45.0000 sec.)  
Longitude: 103.986944 W (-103 deg. 59 min. 13.0000 sec.)  
Elevation: 3423.50 feet.  
Calculation Date: Jul/16/2009

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### Magnetic Calculations

Model: IGRF2005  
Dip Angle: 60.6155 degrees  
Total Magnetic Field: 0.49075 gauss  
Magnetic Declination: 8.030362 degrees  
Horizontal Intensity: 0.240795 gauss  
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.030362 Degr.

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### Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east  
Ellipsoid: Clarke 1866  
X: 606560.1814 feet  
Y: 617029.1866 feet  
True to Grid: (convergence) -0.187114 degrees  
Magnetic to Grid: 7.843248 degrees  
To Convert a Magnetic Dir. to a GRID dir. Add 7.843248 Degr.

### TIE-IN SURVEY INFORMATION SHEET

#### CLIENT INFORMATION

|                           |                            |    |     |
|---------------------------|----------------------------|----|-----|
| CLIENT:                   | MARBOB ENERGY              |    |     |
| LEASE / WELL No.:         | CTA STATE COM              | #2 |     |
| WELL LOCATION:            | EDDY COUNTY                |    |     |
| COUNTY / STATE / COUNTRY: | EDDY                       | NM | USA |
| RIG:                      | PATRIOT #6                 |    |     |
| API WELL No:              | 30-015-37119               |    |     |
| JOB No:                   | 101008718 WT-WT            |    |     |
| P.O. / AFE No.            |                            |    |     |
| DIRECTIONAL COMPANY:      | PATHFINDER ENERGY SERVICES |    |     |

#### WELL SITE INFORMATION

|                           |                                                                                                        |                   |                 |
|---------------------------|--------------------------------------------------------------------------------------------------------|-------------------|-----------------|
| MAGNETIC DECLINATION:     |                                                                                                        |                   |                 |
| On Wall Plat:             | LWD Calculated:                                                                                        | 7.8433            | Agreed Upon:    |
| X = 606560.181400         | Feet                                                                                                   | Y = 617029.186600 | Feet            |
| SITE LATITUDE:            | 32.695833                                                                                              | SITE LONGITUDE:   | 103.986944      |
| GRID SYSTEM:              | TRUE <input type="checkbox"/> UTM <input checked="" type="checkbox"/> LAMBERT <input type="checkbox"/> | ZONE:             | New Mexico East |
| PROPOSED DRIFT DIRECTION: | 0                                                                                                      |                   |                 |
| KELLY BUSHING ELEVATION:  | 18.5                                                                                                   |                   |                 |
| ALTITUDE:                 | 3405                                                                                                   | Feet              | WATER DEPTH:    |
|                           |                                                                                                        |                   | Feet            |

#### TIE-IN SURVEY

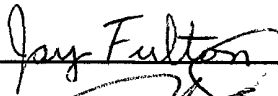
|                                    |                                                          |                             |                                                         |
|------------------------------------|----------------------------------------------------------|-----------------------------|---------------------------------------------------------|
| MEASURED DEPTH:                    | 6248                                                     |                             |                                                         |
| DRIFT ANGLE:                       | 0                                                        |                             |                                                         |
| DRIFT DIRECTION:                   | 0                                                        |                             |                                                         |
| TRUE VERTICAL DEPTH:               | 0                                                        |                             |                                                         |
| VERTICAL SECTION:                  | 0                                                        |                             |                                                         |
| RECTANGULAR COORDINATE ( N / S ):  | 0                                                        |                             |                                                         |
| RECTANGULAR COORDINATE ( E / W ):  | 0                                                        |                             |                                                         |
| CLOSURE DISTANCE / DIRECTION:      | 0                                                        | 0                           |                                                         |
| SURVEY CALCULATION METHOD:         | AA <input type="checkbox"/>                              | MC <input type="checkbox"/> | RC <input type="checkbox"/> BT <input type="checkbox"/> |
| SOURCE OF TIE-IN DATA ( COMPANY ): |                                                          |                             |                                                         |
| COPY OF TIE-IN SURVEY REPORT       | <input type="checkbox"/> YES <input type="checkbox"/> NO |                             |                                                         |

#### WELL PLAN

|                |   |              |           |
|----------------|---|--------------|-----------|
| KICKOFF DEPTH: | 0 | TOTAL DEPTH: | 12,300 ft |
| KICKOFF ANGLE: | 0 | MAX ANGLE:   | 3         |

PES Engineers:

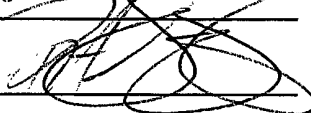
JAY FULTON



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

Directional Driller:

P. A. GONZALEZ



DATE: 16-Jul-2009