

New Mexico Oil Conservation Division, District I  
1625 N. French Drive  
Hobbs, NM 88240

RECEIVED

Form 3160-3  
(April 2004)

JUL 27 2010

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No 1004-0137  
Expires March 31, 2007

5 Lease Serial No  
NMNM-87263

6 If Indian, Allottee or Tribe Name

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of work- ☒ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No.

1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8, Lease Name and Well No.  
Mickey Federal Com #1 H

2. Name of Operator  
Mack Energy Corporation

9. API Well No.

3a. Address  
P.O. Box 960 Artesia, NM 88211-0960

3b PhoneNo. (include area code)  
(575)748-1288

10 Field and Pool or Exploratory

4 Location of Well (Report location clearly and in accordance with any State requirements\*)

At surface 1830 FNL & 460 FEL

At proposed prod zone 965 FNL & 460 FEL 965 FNL & 330 FWL

11 Sec., T R M or Blk. and Survey or Area

Sec. 27 T15S R30E

14 Distance in miles and direction from nearest town or post office\*  
10 miles north/northeast of Loco Hills, NM

12 County or Parish  
Chaves

13 State  
NM

15 Distance from proposed\*  
location to nearest  
property or lease line, ft.  
(Also to nearest drilg unit line, if any) 330

16. No. of acres in lease  
1280

17. Spacing Unit dedicated to this well  
160

18. Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft. 1320

19 Proposed Depth  
MD 13,598'  
TVD 9,616'

20. BLM/BIA Bond No on file  
NMB000286

21 Elevations (Show whether DF, KDB, RT, GL, etc.)  
4090' GR

22 Approximate date work will start\*  
6/12/2010

23. Estimated duration  
35 days

24. Attachments

ROSWELL CONTROLLED WATER BASIN

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office)

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above),
5. Operator certification
6. Such other site specific information and/or plans as may be required by the authorized officer

25. Signature  
*Jerry W. Sherrell*

Name (Printed/Typed)  
Jerry W. Sherrell

Date  
5/12/10

Title  
Production Clerk

Approved by (Signature)  
*ISI Angel Mayes*

Name (Printed/Typed)  
*Angel Mayes*

Date  
07-22-2010

Title  
Assistant Field Manager,  
Lands And Minerals

Office  
ROSWELL FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

APPROVED FOR 2 YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\*(Instructions on page 2)

AUG 05 2010

DECLARED WATER BASIN  
COMMENT BEHIND THE 98"  
CASING MUST BE CIRCULATED  
WITNESS

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS ATTACHED

**RECEIVED****DISTRICT I**

1625 N. FRENCH DR., HOBBS, NM 88240

## State of New Mexico

Energy, Minerals and Natural Resources Department

**JUL 27 2010****DISTRICT II**

1301 W. GRAND AVENUE, ARTESIA, NM 88210

**HOBBS****CONSERVATION DIVISION**1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505**DISTRICT III**

1000 Rio Brazos Rd., Aztec, NM 87410

**DISTRICT IV**

1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

Form C-102

Revised October 12, 2005.

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

**WELL LOCATION AND ACREAGE DEDICATION PLAT**☐ AMENDED REPORT

|                                   |                                                 |                                                                 |
|-----------------------------------|-------------------------------------------------|-----------------------------------------------------------------|
| API Number<br><b>30-005-29143</b> | Pool Code<br><b>11200</b>                       | Pool Name<br><b>Cedar Point<br/>Wolfcamp Permian Upper Penn</b> |
| Property Code<br><b>38268</b>     | Property Name<br><b>MICKEY FEDERAL COM</b>      |                                                                 |
| OGRID No.<br><b>013837</b>        | Operator Name<br><b>MACK ENERGY CORPORATION</b> |                                                                 |
|                                   |                                                 | Well Number<br><b>1H</b>                                        |
|                                   |                                                 | Elevation<br><b>4081'</b>                                       |

**Surface Location**

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| H             | 27      | 15-S     | 30-E  |         | 1830          | NORTH            | 460           | EAST           | CHAVES |

**Bottom Hole Location If Different From Surface**

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| A             | 27      | 15-S     | 30-E  |         | 965           | NORTH            | 460           | EAST           | CHAVES |
| D             | 27      | 15-S     | 30-E  |         | 965           | NORTH            | 330           | WEST           | CHAVES |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|-----------------|-----------------|--------------------|-----------|
| <b>160</b>      |                 |                    |           |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

|                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>GEODETIC COORDINATES<br/>NAD 27 NME<br/>SURFACE LOCATION<br/>Y=723779.6 N<br/>X=631252.4 E</p> <p>LAT.=32.989005° N<br/>LONG.=103.905275° W</p> <p>BOTTOM HOLE #1 LOCATION<br/>Y=724644.3 N<br/>X=631249.1 E</p> <p>BOTTOM HOLE #2 LOCATION<br/>Y=724646.7 N<br/>X=626769.0 E</p> <p>DETAIL<br/>4081.0' 4086.6'<br/>600' 600'<br/>4076.6' 4083.6'</p> | <p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Jerry W. Sherrell</i> 5-14-2010<br/>Signature Date</p> <p><b>Jerry Sherrell</b><br/>Printed Name</p> <p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p><b>GARY G. EIDSON</b><br/>JANUARY 25, 2010<br/>Date Surveyed</p> <p>Signature &amp; Seal of Professional Surveyor<br/><i>Gary Eidson</i> 12641<br/>12641</p> <p>Certificate No. <b>GARY EIDSON</b> 12641<br/><b>RONALD J. EIDSON</b> 3239</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Attached to Form 3160-3  
Mack Energy Corporation  
Mickey Federal Com #1 H  
SL 1830 FNL & 460 FEL, Unit H, Sec. 27 T15S R30E  
BHL 965 FNL & 460 FEL, Unit A, Sec. 27 T15S R30E  
BHL 965 FNL & 330 FWL, Unit D, Sec. 27 T15S R30E  
Chaves County, NM

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## DRILLING PROGRAM

### 1. Geologic Name of Surface Formation

Quaternary

### 2. Estimated Tops of Important Geologic Markers:

|            |       |        |       |
|------------|-------|--------|-------|
| Yates      | 1550' | Tubb   | 5825' |
| Queen      | 2350' | Abo    | 6630' |
| San Andres | 3025' | WC     | 7800' |
| Glorieta   | 4640' | Strawn | 9825' |

### 3. Estimated Depths of Anticipated Fresh Water, Oil and Gas:

|            |       |             |
|------------|-------|-------------|
| Water Sand | 150'  | Fresh Water |
| San Andres | 3025' | Oil/Gas     |
| Abo        | 6630' | Oil/Gas     |
| WC         | 7800' | Oil/Gas     |

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 9 5/8" casing to 600' and circulating cement back to surface will protect the surface fresh water sand. Salt Section will be protected by setting 7" casing to 9200' and circulating cement back to surface. A 4 1/2" liner will be set from approximately 7850 to TD using Peak packer and completion system.

### 4. Casing Program:

| Hole Size | Interval     | OD Casing | Wt, Grade, Jt, cond, collapse/burst/tension |
|-----------|--------------|-----------|---------------------------------------------|
| 14 3/4"   | 0-600'       | 9 5/8"    | 36#, J-55, ST&C, New, 6.888/6.786/7.040     |
| 8 3/4"    | 0-4000'      | 7"        | 26#, HCP-110, LT&C, New, 1.614/39.459/33.16 |
| 8 3/4"    | 4000-9,200'  | 7"        | 26#, HCP-110, BT&C, New 1.614/39.459/33.16  |
| 6 1/8"    | 8750-13,598' | 4 1/2"    | 11.6# HCP-110, BT&C, New, 1.274/3.563/3.56  |

### 5. Cement Program:

9 5/8" Surface Casing: Class C, 625sx yield 1.34  
7" Production Casing: Class C, 1040sx, yield 2.15.

### 6. Minimum Specifications for Pressure Control:

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (3000 psi WP) minimum preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on bottom. **The BOP will be nipped up on the 9 5/8" surface casing and tested to 1000 psi using the rig pump.** The BOP will then be nipped up on the 7" intermediate casing and tested by a 3<sup>rd</sup> party to 2000 psi and used continuously until TD is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve and choke lines and choke manifold (Exhibit #11) with a minimum 3000 psi WP rating.

**7. Types and Characteristics of the Proposed Mud System:**

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

| DEPTH     | TYPE        | WEIGHT | VISCOSITY | WATERLOSS |
|-----------|-------------|--------|-----------|-----------|
| 0-450'    | Fresh Water | 8.5    | 28        | N.C.      |
| 450-3050' | Brine       | 10     | 30        | N.C.      |
| 3050'-TD  | Cut Brine   | 9.1    | 29        | N.C.      |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

**8. Auxiliary Well Control and Monitoring Equipment:**

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

**9. Logging, Testing and Coring Program:**

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log from T.D. to 8 5/8 casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined at TD.

**10. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:**

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 2250 psig. Low levels of Hydrogen sulfide have been monitors in producing wells in the area, so H2S may be present while drilling of the well; a plan is attached to the Drilling program. No major loss of circulation zones has been reported in offsetting wells.

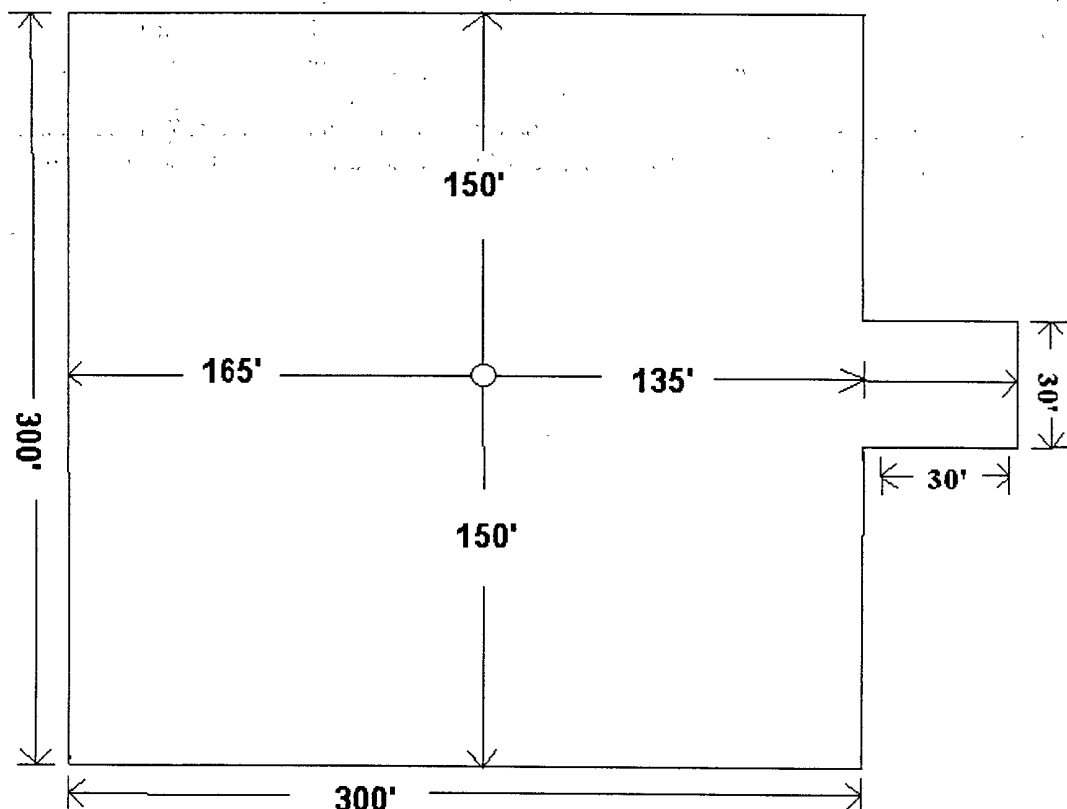
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**11. Anticipated Starting Date and Duration of Operations:**

Road and location work will not begin until approval has been received from the BLM. The anticipated spud date is June 12, 2010. Once commenced, the drilling operation should be finished in approximately 35 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

**1. Well Site Layout:**

- A. The drill pad layout, with elevations staked by John West Engineering, is shown in Exhibit #6. Dimensions of the pad are shown. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.
- B. Diagram below shows the proposed orientation of the location. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.



*Exhibit #6*

Attached to Form 3160-3  
Mack Energy Corporation  
Mickey Federal Com #1  
SL 1830 FNL & 460 FEL, Unit H, Sec. 27 T15S R30E  
BHL 965 FNL & 460 FEL, Unit A, Sec. 27 T15S R30E  
BHL 965 FNL & 330 FWL, Unit D, Sec. 27 T15S R30E  
Chaves County, NM

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**Attachment to Exhibit #9**  
**NOTES REGARDING THE BLOWOUT PREVENTERS**  
**Mickey Federal Com #1**  
**Chaves County, New Mexico**

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

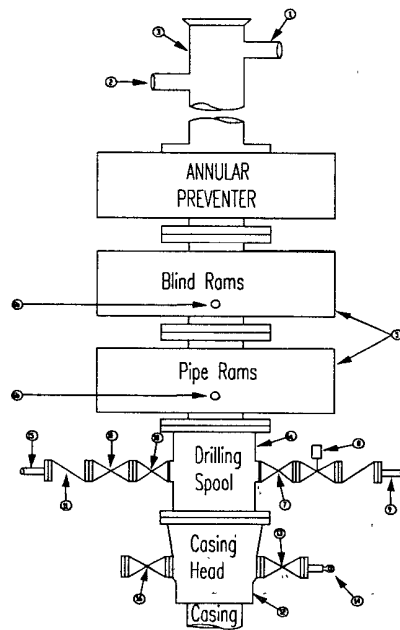
**Mack Energy Corporation**  
**Minimum Blowout Preventer Requirements**  
 3000 psi Working Pressure  
 3 MWP  
 EXHIBIT #10

**Stack Requirements**

| NO. | Items                                                                            | Min. I.D. | Min. Nominal |
|-----|----------------------------------------------------------------------------------|-----------|--------------|
| 1   | Flowline                                                                         |           | 2"           |
| 2   | Fill up line                                                                     |           | 2"           |
| 3   | Drilling nipple                                                                  |           |              |
| 4   | Annular preventer                                                                |           |              |
| 5   | Two single or one dual hydraulically operated rams                               |           |              |
| 6a  | Drilling spool with 2" min. kill line and 3" min choke line outlets              |           | 2" Choke     |
| 6b  | 2" min. kill line and 3" min. choke line outlets in ram. (Alternate to 6a above) |           |              |
| 7   | Valve Gate Plug                                                                  | 3 1/8     |              |
| 8   | Gate valve-power operated                                                        | 3 1/8     |              |
| 9   | Line to choke manifold                                                           |           | 3"           |
| 10  | Valve Gate Plug                                                                  | 2 1/16    |              |
| 11  | Check valve                                                                      | 2 1/16    |              |
| 12  | Casing head                                                                      |           |              |
| 13  | Valve Gate Plug                                                                  | 1 13/16   |              |
| 14  | Pressure gauge with needle valve                                                 |           |              |
| 15  | Kill line to rig mud pump manifold                                               |           | 2"           |

**OPTIONAL**

|    |               |         |  |
|----|---------------|---------|--|
| 16 | Flanged Valve | 1 13/16 |  |
|----|---------------|---------|--|



**CONTRACTOR'S OPTION TO FURNISH:**

1. All equipment and connections above bradenhead or casinghead. Working pressure of preventers to be 2000 psi minimum.
2. Automatic accumulator (80 gallons, minimum) capable of closing BOP in 30 seconds or less and, holding them closed against full rated working pressure.
3. BOP controls, to be located near drillers' position.
4. Kelly equipped with Kelly cock.
5. Inside blowout preventer or its equivalent on derrick floor at all times with proper threads to fit pipe being used.
6. Kelly saver-sub equipped with rubber casing protector at all times.
7. Plug type blowout preventer tester.
8. Extra set pipe rams to fit drill pipe in use on location at all times.
9. Type RX ring gaskets in place of Type R.

**MEC TO FURNISH:**

1. Bradenhead or casing head and side valves.
2. Wear bushing. If required

10.

ME

**GENERAL NOTES:**

1. Deviations from this drawing may be made only with the express permission of MEC's Drilling Manager.
2. All connections, valves, fittings, piping, etc., subject to well or pump pressure must be flanged (suitable clamp connections acceptable) and have minimum working pressure equal to rated working pressure of preventers up through choke valves must be full opening and suitable for high pressure mud service.
3. Controls to be of standard design and each marked, showing opening and closing position
4. Chokes will be positioned so as not to hamper or delay changing of choke beans.

**Replaceable parts for**

adjustable choke, or bean sizes, retainers, and choke wrenches to be conveniently located for immediate use.

5. All valves to be equipped with hand-wheels or handles ready for immediate use.
6. Choke lines must be suitably anchored.
7. Handwheels and extensions to be connected and ready for use.
8. Valves adjacent to drilling spool to be kept open. Use outside valves except for emergency
9. All seamless steel control piping (2000 psi working pressure) to have flexible joints to avoid stress. Hoses will be permitted.
10. Casinghead connections shall not be used except in case of emergency.
11. Does not use kill line for routine fill up operations.

# Mack Energy Corporation

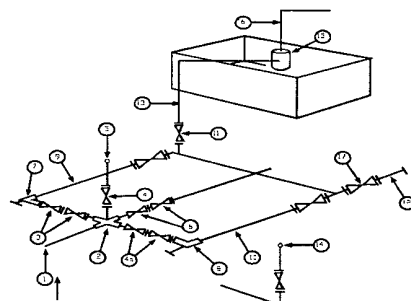
Exhibit #11

## MINIMUM CHOKE MANIFOLD

3,000, 5,000, and 10,000 PSI Working Pressure

3M will be used

3 MWP - 5 MWP - 10 MWP



Mud Pit

Reserve Pit

\* Location of separator optional

Below Substructure

### Minimum requirements

| No. |                                                  | 3,000 MWP |         |        | 5,000 MWP |         |        | 10,000 MWP |         |        |
|-----|--------------------------------------------------|-----------|---------|--------|-----------|---------|--------|------------|---------|--------|
|     |                                                  | I.D.      | Nominal | Rating | I.D.      | Nominal | Rating | I.D.       | Nominal | Rating |
| 1   | Line from drilling Spool                         |           | 3"      | 3,000  |           | 3"      | 5,000  |            | 3"      | 10,000 |
| 2   | Cross 3" x 3" x 3" x 2"                          |           |         | 3,000  |           |         | 5,000  |            |         |        |
| 2   | Cross 3" x 3" x 3" x 2"                          |           |         |        |           |         |        |            |         | 10,000 |
| 3   | Valve Gate Plug                                  | 3 1/8     |         | 3,000  | 3 1/8     |         | 5,000  | 3 1/8      |         | 10,000 |
| 4   | Valve Gate Plug                                  | 1 13/16   |         | 3,000  | 1 13/16   |         | 5,000  | 1 13/16    |         | 10,000 |
| 4a  | Valves (1)                                       | 2 1/16    |         | 3,000  | 2 1/16    |         | 5,000  | 2 1/16     |         | 10,000 |
| 5   | Pressure Gauge                                   |           |         | 3,000  |           |         | 5,000  |            |         | 10,000 |
| 6   | Valve Gate Plug                                  | 3 1/8     |         | 3,000  | 3 1/8     |         | 5,000  | 3 1/8      |         | 10,000 |
| 7   | Adjustable Choke (3)                             | 2"        |         | 3,000  | 2"        |         | 5,000  | 2"         |         | 10,000 |
| 8   | Adjustable Choke                                 | 1"        |         | 3,000  | 1"        |         | 5,000  | 2"         |         | 10,000 |
| 9   | Line                                             |           | 3"      | 3,000  |           | 3"      | 5,000  |            | 3"      | 10,000 |
| 10  | Line                                             |           | 2"      | 3,000  |           | 2"      | 5,000  |            | 2"      | 10,000 |
| 11  | Valve Gate Plug                                  | 3 1/8     |         | 3,000  | 3 1/8     |         | 5,000  | 3 1/8      |         | 10,000 |
| 12  | Line                                             |           | 3"      | 1,000  |           | 3"      | 1,000  |            | 3"      | 2,000  |
| 13  | Line                                             |           | 3"      | 1,000  |           | 3"      | 1,000  |            | 3"      | 2,000  |
| 14  | Remote reading compound Standpipe pressure quage |           |         | 3,000  |           |         | 5,000  |            |         | 10,000 |
| 15  | Gas Separator                                    |           | 2' x 5' |        |           | 2' x 5' |        |            | 2' x 5' |        |
| 16  | Line                                             |           | 4"      | 1,000  |           | 4"      | 1,000  |            | 4"      | 2,000  |
| 17  | Valve Gate Plug                                  | 3 1/8     |         | 3,000  | 3 1/8     |         | 5,000  | 3 1/8      |         | 10,000 |

(1) Only one required in Class 3M

(2) Gate valves only shall be used for Class 10 M

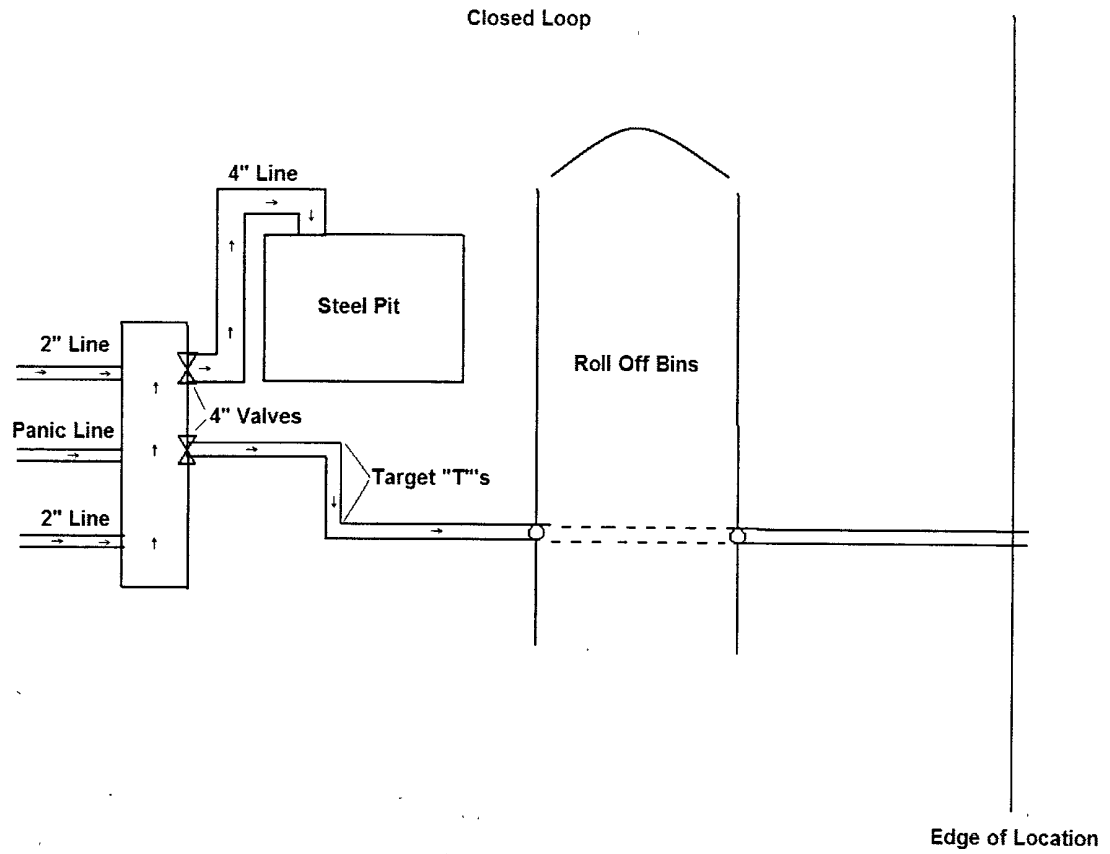
(3) Remote operated hydraulic choke required on 5,000 psi and 10,000 psi for drilling.

### EQUIPMENT SPECIFICATIONS AND INSTALLATION INSTRUCTION

- All connections in choke manifold shall be welded, studded, flanged or Cameron clamp of comparable rating.
- All flanges shall be API 6B or 6BX and ring gaskets shall be API RX or BX. Use only BX for 10 MWP.
- All lines shall be securely anchored.
- Chokes shall be equipped with tungsten carbide seats and needles, and replacements shall be available.
- alternate with automatic chokes, a choke manifold pressure gauge shall be located on the rig floor in conjunction with the standpipe pressure gauge.
- Line from drilling spool to choke manifold should be as straight as possible. Lines downstream from chokes shall make turns by large bends or 90 degree bends using bull plugged tees

# Mack Energy Corporation

MANIFOLD SCHEMATIC





**RECEIVED**

JUL 27 2010

HOBSOCD

## **Mack Energy**

Chaves County

Mickey Federal Com

#1

S-WELL

Plan: Plan #1-S-WELL

## **Pathfinder X & Y Planning Report**

10 May, 2010

# **PATHFINDER**



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19" KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19" KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | S-WELL             | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1-S-WELL     | <b>Database:</b>                    | Midland Database                     |

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

|                              |                    |                          |                   |
|------------------------------|--------------------|--------------------------|-------------------|
| <b>Site:</b>                 | Mickey Federal Com |                          |                   |
| <b>Site Position:</b>        |                    | <b>Northing:</b>         | 723,779.600 ft    |
| <b>From:</b>                 | Map                | <b>Easting:</b>          | 631,252.400 ft    |
| <b>Position Uncertainty:</b> | 0.00 ft            | <b>Slot Radius:</b>      | "                 |
|                              |                    | <b>Latitude:</b>         | 32° 59' 20.418 N  |
|                              |                    | <b>Longitude:</b>        | 103° 54' 18.989 W |
|                              |                    | <b>Grid Convergence:</b> | 0.23 °            |

|                      |       |         |                     |                |               |                   |
|----------------------|-------|---------|---------------------|----------------|---------------|-------------------|
| Well                 |       | #1      |                     |                |               |                   |
| Well Position        | +N/-S | 0.00 ft | Northing:           | 723,779.600 ft | Latitude:     | 32° 59' 20.418 N  |
|                      | +E/-W | 0.00 ft | Easting:            | 631,252.400 ft | Longitude:    | 103° 54' 18.989 W |
| Position Uncertainty |       | 0.00 ft | Wellhead Elevation: | ft             | Ground Level: | 4,081.00 ft       |

|           |            |             |                    |                  |                        |
|-----------|------------|-------------|--------------------|------------------|------------------------|
| Wellbore  |            | S-WELL      |                    |                  |                        |
| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|           | IGRF200510 | 05/30/2010  | 7.91               | 60.88            | 49,170                 |

|                        |                  |       |               |           |
|------------------------|------------------|-------|---------------|-----------|
| Design: Plan #1-S-WELL |                  |       |               |           |
| Audit Notes:           |                  |       |               |           |
| Version:               | Phase:           | PLAN  | Tie On Depth: | 0.00      |
| Vertical Section:      | Depth From (TVD) | +N/-S | +E/-W         | Direction |
|                        | (ft)             | (ft)  | (ft)          | (°)       |
|                        | 0.00             | 0.00  | 0.00          | 359.78    |

|                            |           |                          |                  |                    |
|----------------------------|-----------|--------------------------|------------------|--------------------|
| <b>Survey Tool Program</b> | Date      | 05/10/2010               |                  |                    |
| <b>From</b>                | <b>To</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |
| (ft)                       | (ft)      |                          |                  |                    |
| 0.00                       | 9,615.98  | Plan #1-S-WELL (S-WELL)  | MWD              | MWD - Standard     |



# Pathfinder Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | S-WELL             | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan.#1-S-WELL     | <b>Database:</b>                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLag<br>(%/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 0.00           | 0.00       | 0.00       | 0.00        | -4,100.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 100.00         | 0.00       | 0.00       | 100.00      | -4,000.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 200.00         | 0.00       | 0.00       | 200.00      | -3,900.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 300.00         | 0.00       | 0.00       | 300.00      | -3,800.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 400.00         | 0.00       | 0.00       | 400.00      | -3,700.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 500.00         | 0.00       | 0.00       | 500.00      | -3,600.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 600.00         | 0.00       | 0.00       | 600.00      | -3,500.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 700.00         | 0.00       | 0.00       | 700.00      | -3,400.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 800.00         | 0.00       | 0.00       | 800.00      | -3,300.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 900.00         | 0.00       | 0.00       | 900.00      | -3,200.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,000.00       | 0.00       | 0.00       | 1,000.00    | -3,100.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,100.00       | 0.00       | 0.00       | 1,100.00    | -3,000.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,200.00       | 0.00       | 0.00       | 1,200.00    | -2,900.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,300.00       | 0.00       | 0.00       | 1,300.00    | -2,800.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,400.00       | 0.00       | 0.00       | 1,400.00    | -2,700.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,500.00       | 0.00       | 0.00       | 1,500.00    | -2,600.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,600.00       | 0.00       | 0.00       | 1,600.00    | -2,500.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,700.00       | 0.00       | 0.00       | 1,700.00    | -2,400.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,800.00       | 0.00       | 0.00       | 1,800.00    | -2,300.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 1,900.00       | 0.00       | 0.00       | 1,900.00    | -2,200.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,000.00       | 0.00       | 0.00       | 2,000.00    | -2,100.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,100.00       | 0.00       | 0.00       | 2,100.00    | -2,000.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,200.00       | 0.00       | 0.00       | 2,200.00    | -1,900.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,300.00       | 0.00       | 0.00       | 2,300.00    | -1,800.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,400.00       | 0.00       | 0.00       | 2,400.00    | -1,700.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,500.00       | 0.00       | 0.00       | 2,500.00    | -1,600.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,600.00       | 0.00       | 0.00       | 2,600.00    | -1,500.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | S-WELL             | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1-S-WELL     | <b>Database:</b>                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |               |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|---------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V:Sec<br>(ft) | DLeg<br>(%/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 2,700.00       | 0.00       | 0.00       | 2,700.00    | -1,400.00     | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,800.00       | 0.00       | 0.00       | 2,800.00    | -1,300.00     | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,900.00       | 0.00       | 0.00       | 2,900.00    | -1,200.00     | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,000.00       | 0.00       | 0.00       | 3,000.00    | -1,100.00     | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,100.00       | 0.00       | 0.00       | 3,100.00    | -1,000.00     | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,200.00       | 0.00       | 0.00       | 3,200.00    | -900.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,300.00       | 0.00       | 0.00       | 3,300.00    | -800.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,400.00       | 0.00       | 0.00       | 3,400.00    | -700.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,500.00       | 0.00       | 0.00       | 3,500.00    | -600.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,600.00       | 0.00       | 0.00       | 3,600.00    | -500.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,700.00       | 0.00       | 0.00       | 3,700.00    | -400.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,800.00       | 0.00       | 0.00       | 3,800.00    | -300.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,900.00       | 0.00       | 0.00       | 3,900.00    | -200.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 4,000.00       | 0.00       | 0.00       | 4,000.00    | -100.00       | 0.00        | 0.00        | 0.00          | 0.00              | 723,779.60       | 631,252.40      |  |
| 4,100.00       | 2.00       | 359.78     | 4,099.98    | -0.02         | 1.75        | -0.01       | 1.75          | 2.00              | 723,781.35       | 631,252.39      |  |
| 4,200.00       | 4.00       | 359.78     | 4,199.84    | 99.84         | 6.98        | -0.03       | 6.98          | 2.00              | 723,786.58       | 631,252.37      |  |
| 4,300.00       | 6.00       | 359.78     | 4,299.45    | 199.45        | 15.69       | -0.06       | 15.69         | 2.00              | 723,795.29       | 631,252.34      |  |
| 4,400.00       | 8.00       | 359.78     | 4,398.70    | 298.70        | 27.88       | -0.11       | 27.88         | 2.00              | 723,807.48       | 631,252.29      |  |
| 4,500.00       | 10.00      | 359.78     | 4,497.47    | 397.47        | 43.52       | -0.17       | 43.52         | 2.00              | 723,823.12       | 631,252.23      |  |
| 4,600.00       | 12.00      | 359.78     | 4,595.62    | 495.62        | 62.60       | -0.24       | 62.60         | 2.00              | 723,842.20       | 631,252.16      |  |
| 4,700.00       | 14.00      | 359.78     | 4,693.06    | 593.06        | 85.10       | -0.32       | 85.10         | 2.00              | 723,864.70       | 631,252.08      |  |
| 4,800.00       | 16.00      | 359.78     | 4,789.64    | 689.64        | 110.98      | -0.42       | 110.98        | 2.00              | 723,890.58       | 631,251.98      |  |
| 4,843.93       | 16.88      | 359.78     | 4,831.78    | 731.78        | 123.41      | -0.47       | 123.41        | 2.00              | 723,903.01       | 631,251.93      |  |
| 4,900.00       | 16.88      | 359.78     | 4,885.43    | 785.43        | 139.69      | -0.53       | 139.69        | 0.00              | 723,919.29       | 631,251.87      |  |
| 5,000.00       | 16.88      | 359.78     | 4,981.12    | 881.12        | 168.72      | -0.64       | 168.72        | 0.00              | 723,948.32       | 631,251.76      |  |
| 5,100.00       | 16.88      | 359.78     | 5,076.82    | 976.82        | 197.76      | -0.75       | 197.76        | 0.00              | 723,977.36       | 631,251.65      |  |
| 5,200.00       | 16.88      | 359.78     | 5,172.51    | 1,072.51      | 226.79      | -0.87       | 226.79        | 0.00              | 724,006.39       | 631,251.53      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1                              |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | S-WELL             | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1-S-WELL     | Database:                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V- Sec<br>(ft) | DLeg<br>(°/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 5,300.00       | 16.88      | 359.78     | 5,268.20    | 1,168.20      | 255.82      | -0.98       | 255.83         | 0.00              | 724,035.42       | 631,251.42      |  |
| 5,400.00       | 16.88      | 359.78     | 5,363.89    | 1,263.89      | 284.86      | -1.09       | 284.86         | 0.00              | 724,064.46       | 631,251.31      |  |
| 5,500.00       | 16.88      | 359.78     | 5,459.58    | 1,359.58      | 313.89      | -1.20       | 313.90         | 0.00              | 724,093.49       | 631,251.20      |  |
| 5,600.00       | 16.88      | 359.78     | 5,555.28    | 1,455.28      | 342.93      | -1.31       | 342.93         | 0.00              | 724,122.53       | 631,251.09      |  |
| 5,700.00       | 16.88      | 359.78     | 5,650.97    | 1,550.97      | 371.96      | -1.42       | 371.96         | 0.00              | 724,151.56       | 631,250.98      |  |
| 5,800.00       | 16.88      | 359.78     | 5,746.66    | 1,646.66      | 401.00      | -1.53       | 401.00         | 0.00              | 724,180.60       | 631,250.87      |  |
| 5,900.00       | 16.88      | 359.78     | 5,842.35    | 1,742.35      | 430.03      | -1.64       | 430.03         | 0.00              | 724,209.63       | 631,250.76      |  |
| 6,000.00       | 16.88      | 359.78     | 5,938.05    | 1,838.05      | 459.06      | -1.75       | 459.07         | 0.00              | 724,238.66       | 631,250.65      |  |
| 6,100.00       | 16.88      | 359.78     | 6,033.74    | 1,933.74      | 488.10      | -1.86       | 488.10         | 0.00              | 724,267.70       | 631,250.54      |  |
| 6,200.00       | 16.88      | 359.78     | 6,129.43    | 2,029.43      | 517.13      | -1.97       | 517.14         | 0.00              | 724,296.73       | 631,250.43      |  |
| 6,300.00       | 16.88      | 359.78     | 6,225.12    | 2,125.12      | 546.17      | -2.08       | 546.17         | 0.00              | 724,325.77       | 631,250.32      |  |
| 6,400.00       | 16.88      | 359.78     | 6,320.81    | 2,220.81      | 575.20      | -2.20       | 575.21         | 0.00              | 724,354.80       | 631,250.20      |  |
| 6,500.00       | 16.88      | 359.78     | 6,416.51    | 2,316.51      | 604.24      | -2.31       | 604.24         | 0.00              | 724,383.84       | 631,250.09      |  |
| 6,600.00       | 16.88      | 359.78     | 6,512.20    | 2,412.20      | 633.27      | -2.42       | 633.27         | 0.00              | 724,412.87       | 631,249.98      |  |
| 6,700.00       | 16.88      | 359.78     | 6,607.89    | 2,507.89      | 662.30      | -2.53       | 662.31         | 0.00              | 724,441.90       | 631,249.87      |  |
| 6,800.00       | 16.88      | 359.78     | 6,703.58    | 2,603.58      | 691.34      | -2.64       | 691.34         | 0.00              | 724,470.94       | 631,249.76      |  |
| 6,900.00       | 16.88      | 359.78     | 6,799.28    | 2,699.28      | 720.37      | -2.75       | 720.38         | 0.00              | 724,499.97       | 631,249.65      |  |
| 6,972.05       | 16.88      | 359.78     | 6,868.22    | 2,768.22      | 741.29      | -2.83       | 741.30         | 0.00              | 724,520.89       | 631,249.57      |  |
| 7,000.00       | 16.32      | 359.78     | 6,895.01    | 2,795.01      | 749.28      | -2.86       | 749.28         | 2.00              | 724,528.88       | 631,249.54      |  |
| 7,100.00       | 14.32      | 359.78     | 6,991.45    | 2,891.45      | 775.69      | -2.96       | 775.70         | 2.00              | 724,555.29       | 631,249.44      |  |
| 7,200.00       | 12.32      | 359.78     | 7,088.75    | 2,988.75      | 798.73      | -3.05       | 798.74         | 2.00              | 724,578.33       | 631,249.35      |  |
| 7,300.00       | 10.32      | 359.78     | 7,186.80    | 3,086.80      | 818.36      | -3.12       | 818.36         | 2.00              | 724,597.96       | 631,249.28      |  |
| 7,400.00       | 8.32       | 359.78     | 7,285.48    | 3,185.48      | 834.55      | -3.18       | 834.56         | 2.00              | 724,614.15       | 631,249.22      |  |
| 7,500.00       | 6.32       | 359.78     | 7,384.66    | 3,284.66      | 847.29      | -3.23       | 847.30         | 2.00              | 724,626.89       | 631,249.17      |  |
| 7,600.00       | 4.32       | 359.78     | 7,484.22    | 3,384.22      | 856.56      | -3.27       | 856.57         | 2.00              | 724,636.16       | 631,249.13      |  |
| 7,700.00       | 2.32       | 359.78     | 7,584.05    | 3,484.05      | 862.35      | -3.29       | 862.36         | 2.00              | 724,641.95       | 631,249.11      |  |
| 7,800.00       | 0.32       | 359.78     | 7,684.02    | 3,584.02      | 864.66      | -3.30       | 864.66         | 2.00              | 724,644.26       | 631,249.10      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | S-WELL             | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1-S-WELL     | <b>Database:</b>                    | Midland Database                     |

| Planned Survey           |            |            |             |               |             |             |                |                   |                  |                 |  |
|--------------------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)               | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(%/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 7,815.98                 | 0.00       | 0.00       | 7,700.00    | 3,600.00      | 864.70      | -3.30       | 864.71         | 2.00              | 724,644.30       | 631,249.10      |  |
| Vert PT: Swell(Mickey#1) |            |            |             |               |             |             |                |                   |                  |                 |  |
| 7,900.00                 | 0.00       | 0.00       | 7,784.02    | 3,684.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,000.00                 | 0.00       | 0.00       | 7,884.02    | 3,784.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,100.00                 | 0.00       | 0.00       | 7,984.02    | 3,884.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,200.00                 | 0.00       | 0.00       | 8,084.02    | 3,984.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,300.00                 | 0.00       | 0.00       | 8,184.02    | 4,084.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,400.00                 | 0.00       | 0.00       | 8,284.02    | 4,184.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,500.00                 | 0.00       | 0.00       | 8,384.02    | 4,284.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,600.00                 | 0.00       | 0.00       | 8,484.02    | 4,384.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,700.00                 | 0.00       | 0.00       | 8,584.02    | 4,484.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,800.00                 | 0.00       | 0.00       | 8,684.02    | 4,584.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,900.00                 | 0.00       | 0.00       | 8,784.02    | 4,684.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,000.00                 | 0.00       | 0.00       | 8,884.02    | 4,784.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,100.00                 | 0.00       | 0.00       | 8,984.02    | 4,884.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,200.00                 | 0.00       | 0.00       | 9,084.02    | 4,984.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,300.00                 | 0.00       | 0.00       | 9,184.02    | 5,084.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,400.00                 | 0.00       | 0.00       | 9,284.02    | 5,184.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,500.00                 | 0.00       | 0.00       | 9,384.02    | 5,284.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,600.00                 | 0.00       | 0.00       | 9,484.02    | 5,384.02      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |
| 9,615.98                 | 0.00       | 0.00       | 9,500.00    | 5,400.00      | 864.70      | -3.30       | 864.71         | 0.00              | 724,644.30       | 631,249.10      |  |



Pathfinder  
Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1:                             |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | S-WELL             | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1-S-WELL     | Database:                    | Midland Database                     |

| Targets                                                                                   |           |          |          |        |           |             |             |                  |                   |
|-------------------------------------------------------------------------------------------|-----------|----------|----------|--------|-----------|-------------|-------------|------------------|-------------------|
| Target Name                                                                               | Dip Angle | Dip Dir. | TVD      | +N/-S  | +E/-W     | Northing    | Easting     | Latitude         | Longitude         |
| - hit/miss target                                                                         | (°)       | (°)      | (ft)     | (ft)   | (ft)      | (ft)        | (ft)        |                  |                   |
| - Shape                                                                                   |           |          |          |        |           |             |             |                  |                   |
| Vert PT - Swell(Mickey)                                                                   | 0.00      | 0.00     | 7,700.00 | 864.70 | -3.30     | 724,644.300 | 631,249.100 | 32° 59' 28.974 N | 103° 54' 18.986 W |
| - plan hits target center                                                                 |           |          |          |        |           |             |             |                  |                   |
| - Point                                                                                   |           |          |          |        |           |             |             |                  |                   |
| PBHL(Mickey #1)                                                                           | 0.00      | 0.00     | 6,500.00 | 867.10 | -4,483.40 | 724,646.700 | 626,769.000 | 32° 59' 29.175 N | 103° 55' 11.586 W |
| - plan misses target center by 4486.68ft at 6661.18ft MD (6570.75 TVD, 651.03 N, -2.48 E) |           |          |          |        |           |             |             |                  |                   |
| - Point                                                                                   |           |          |          |        |           |             |             |                  |                   |

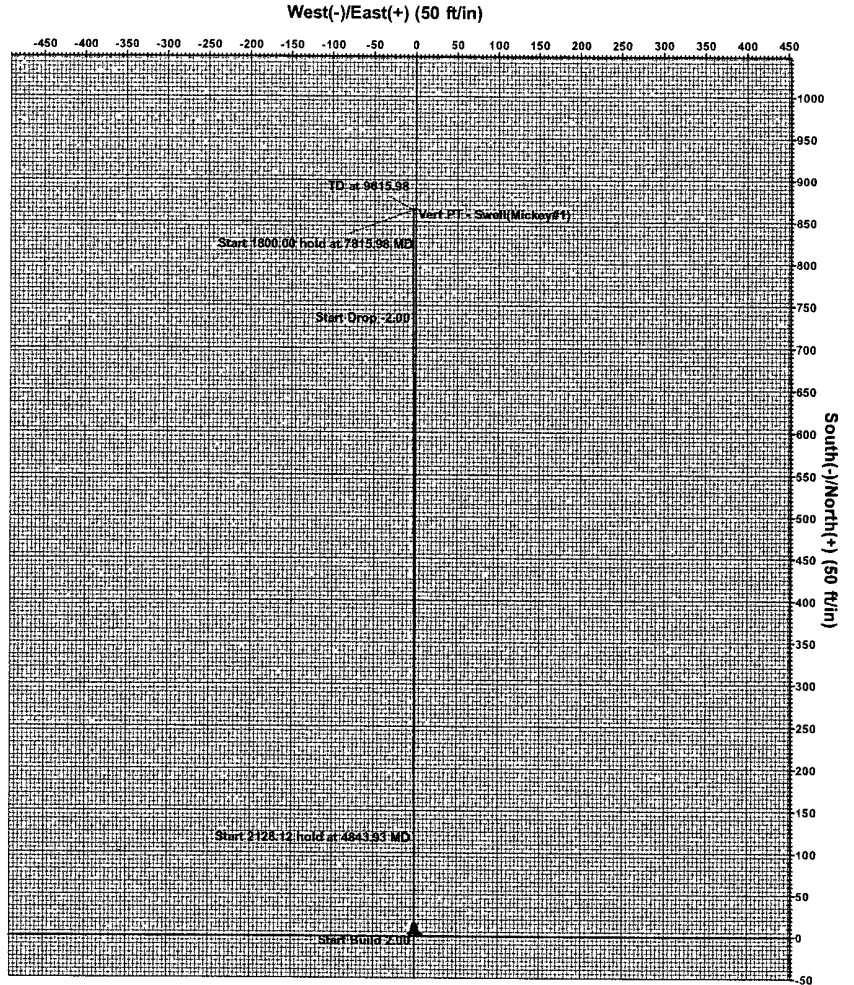
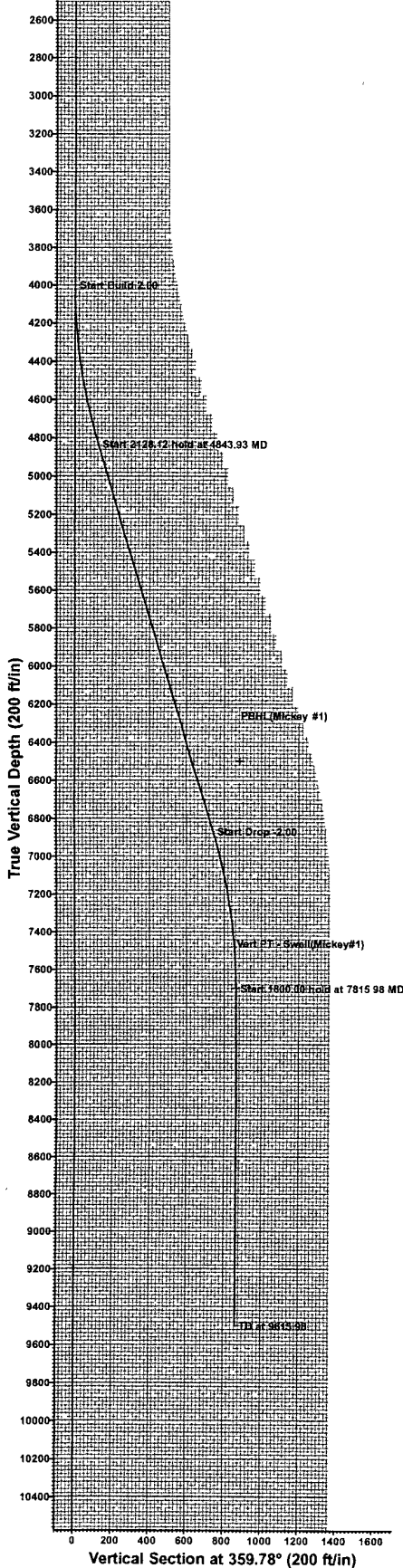
|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|



Azimuths to Grid North  
True North: -0.23°  
Magnetic North: 7.68°

Magnetic Field  
Strength: 49170.1nT  
Dip Angle: 60.88°  
Date: 05/30/2010  
Model: IGRF200510

# PATHFINDER



| Sec | MD      | Inc   | Azi    | TVD     | +N/-S  | +E/-W | DLeg | TFace  | VSec   | Target                     |
|-----|---------|-------|--------|---------|--------|-------|------|--------|--------|----------------------------|
| 1   | 0.00    | 0.00  | 0.00   | 0.00    | 0.00   | 0.00  | 0.00 | 0.00   | 0.00   |                            |
| 2   | 4000.00 | 0.00  | 0.00   | 4000.00 | 0.00   | 0.00  | 0.00 | 0.00   | 0.00   |                            |
| 3   | 4843.93 | 16.88 | 359.78 | 4831.78 | 123.41 | -0.47 | 2.00 | 359.78 | 123.41 |                            |
| 4   | 6972.05 | 16.88 | 359.78 | 6868.22 | 741.29 | -2.83 | 0.00 | 0.00   | 741.30 |                            |
| 5   | 7815.98 | 0.00  | 0.00   | 7700.00 | 864.70 | -3.30 | 2.00 | 180.00 | 864.71 | Vert PT - Swell(Mickey #1) |
| 6   | 9615.98 | 0.00  | 0.00   | 9500.00 | 864.70 | -3.30 | 0.00 | 0.00   | 864.71 |                            |

| WELLBORE TARGET DETAILS (MAP CO-ORDINATES) |         |        |          |            |            |       |
|--------------------------------------------|---------|--------|----------|------------|------------|-------|
| Name                                       | TVD     | +N/-S  | +E/-W    | Northing   | Easting    | Shape |
| PBHL(Mickey #1)                            | 6500.00 | 867.10 | -4483.40 | 724648.700 | 626789.000 | Point |
| Vert PT - Swell(Mickey #1)                 | 7700.00 | 864.70 | -3.30    | 724644.300 | 631249.100 | Point |

| WELL DETAILS: #1                                    |       |            |            |                  |                   |      |
|-----------------------------------------------------|-------|------------|------------|------------------|-------------------|------|
| Ground Elevation: 4081.00                           |       |            |            |                  |                   |      |
| RKB Elevation: WELL @ 4100.00ft (19' KB Correction) |       |            |            |                  |                   |      |
| Rig Name: 19' KB Correction                         |       |            |            |                  |                   |      |
| +N/-S                                               | +E/-W | Northing   | Easting    | Latitude         | Longitude         | Slot |
| 0.00                                                | 0.00  | 723779.600 | 631252.400 | 32° 59' 20.418 N | 103° 54' 18.989 W |      |

PROJECT DETAILS: Chaves County  
Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: New Mexico East 3001  
System Datum: Mean Sea Level  
Local North: Grid

Project: Chaves County  
Site: Mickey Federal Com  
Well: #1  
Wellbore: S-WELL  
Plan: Plan #1-S-WELL (#1/S-WELL)

| Plan Plan #1-S-WELL (#1/S-WELL) |                         |
|---------------------------------|-------------------------|
| Created By: Nate Bingham        | Date: 8-23, May 10 2010 |
| Checked: _____                  | Date: _____             |



# **Mack Energy**

**Chaves County**

**Mickey Federal Com**

**#1**

**Lateral**

**Plan: Plan #1**

## **Pathfinder X & Y Planning Report**

**10 May, 2010**

# **PATHFINDER**



Pathfinder  
Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1                              |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | Lateral            | Survey/Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1            | Database:                    | Midland Database                     |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     |                                      | Chaves County |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|                       |  |                    |  |                |  |                |  |                   |  |                   |  |
|-----------------------|--|--------------------|--|----------------|--|----------------|--|-------------------|--|-------------------|--|
| Site                  |  | Mickey Federal Com |  |                |  |                |  |                   |  |                   |  |
| Site Position:        |  | Northing:          |  | 723,779.600 ft |  | Latitude:      |  | 32° 59' 20.418 N  |  |                   |  |
| From:                 |  | Map                |  | Easting:       |  | 631,252.400 ft |  | Longitude:        |  | 103° 54' 18.989 W |  |
| Position Uncertainty: |  | 0.00 ft            |  | Slot Radius:   |  | "              |  | Grid Convergence: |  | 0.23 °            |  |

| Well                 |         | #1                  |           |                |             |                   |
|----------------------|---------|---------------------|-----------|----------------|-------------|-------------------|
| Well Position        | +N/-S   | 0.00 ft             | Northing: | 723,779.600 ft | Latitude:   | 32° 59' 20.418 N  |
|                      | +E/-W   | 0.00 ft             | Easting:  | 631,252.400 ft | Longitude:  | 103° 54' 18.989 W |
| Position Uncertainty | 0.00 ft | Wellhead Elevation: | ft        | Ground Level:  | 4,081.00 ft |                   |

|           |            |             |                    |                  |                        |
|-----------|------------|-------------|--------------------|------------------|------------------------|
| Wellbore  | Lateral    |             |                    |                  |                        |
| Magnetics | Model Name | Sample Date | Declination<br>(°) | Dip Angle<br>(°) | Field Strength<br>(nT) |
|           | IGRF200510 | 05/30/2010  | 7.91               | 60.88            | 49.170                 |

|                   |                          |               |               |                  |
|-------------------|--------------------------|---------------|---------------|------------------|
| Design            |                          | Plan #1       |               |                  |
| Audit Notes:      |                          |               |               |                  |
| Version:          | Phase:                   | PROTOTYPE     | Tie On Depth: | 8,861.00         |
| Vertical Section: | Depth From (TVD)<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Direction<br>(°) |
|                   | 0.00                     | 0.00          | 0.00          | 280.95           |



# Pathfinder

## Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1                              |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | Lateral            | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1            | Database:                    | Midland Database                     |

|                     |           |                         |           |                |
|---------------------|-----------|-------------------------|-----------|----------------|
| Survey Tool Program |           | Date 05/10/2010         |           |                |
| From (ft)           | To (ft)   | Survey (Wellbore)       | Tool Name | Description    |
| 0.00                | 8,861.00  | Plan #1-S-WELL (S-WELL) | MWD       | MWD - Standard |
| 8,861.00            | 13,597.21 | Plan #1 (Lateral)       | MWD       | MWD - Standard |

| Planned Survey |         |         |          |            |          |          |             |                |               |              |  |
|----------------|---------|---------|----------|------------|----------|----------|-------------|----------------|---------------|--------------|--|
| MD (ft)        | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |  |
| 0.00           | 0.00    | 0.00    | 0.00     | -4,100.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 100.00         | 0.00    | 0.00    | 100.00   | -4,000.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 200.00         | 0.00    | 0.00    | 200.00   | -3,900.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 300.00         | 0.00    | 0.00    | 300.00   | -3,800.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 400.00         | 0.00    | 0.00    | 400.00   | -3,700.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 500.00         | 0.00    | 0.00    | 500.00   | -3,600.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 600.00         | 0.00    | 0.00    | 600.00   | -3,500.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 700.00         | 0.00    | 0.00    | 700.00   | -3,400.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 800.00         | 0.00    | 0.00    | 800.00   | -3,300.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 900.00         | 0.00    | 0.00    | 900.00   | -3,200.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,000.00       | 0.00    | 0.00    | 1,000.00 | -3,100.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,100.00       | 0.00    | 0.00    | 1,100.00 | -3,000.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,200.00       | 0.00    | 0.00    | 1,200.00 | -2,900.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,300.00       | 0.00    | 0.00    | 1,300.00 | -2,800.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,400.00       | 0.00    | 0.00    | 1,400.00 | -2,700.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,500.00       | 0.00    | 0.00    | 1,500.00 | -2,600.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,600.00       | 0.00    | 0.00    | 1,600.00 | -2,500.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,700.00       | 0.00    | 0.00    | 1,700.00 | -2,400.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,800.00       | 0.00    | 0.00    | 1,800.00 | -2,300.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 1,900.00       | 0.00    | 0.00    | 1,900.00 | -2,200.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |
| 2,000.00       | 0.00    | 0.00    | 2,000.00 | -2,100.00  | 0.00     | 0.00     | 0.00        | 0.00           | 723,779.60    | 631,252.40   |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | Lateral            | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1            | <b>Database:</b>                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(%/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 2,100.00       | 0.00       | 0.00       | 2,100.00    | -2,000.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,200.00       | 0.00       | 0.00       | 2,200.00    | -1,900.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,300.00       | 0.00       | 0.00       | 2,300.00    | -1,800.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,400.00       | 0.00       | 0.00       | 2,400.00    | -1,700.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,500.00       | 0.00       | 0.00       | 2,500.00    | -1,600.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,600.00       | 0.00       | 0.00       | 2,600.00    | -1,500.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,700.00       | 0.00       | 0.00       | 2,700.00    | -1,400.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,800.00       | 0.00       | 0.00       | 2,800.00    | -1,300.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 2,900.00       | 0.00       | 0.00       | 2,900.00    | -1,200.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,000.00       | 0.00       | 0.00       | 3,000.00    | -1,100.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,100.00       | 0.00       | 0.00       | 3,100.00    | -1,000.00     | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,200.00       | 0.00       | 0.00       | 3,200.00    | -900.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,300.00       | 0.00       | 0.00       | 3,300.00    | -800.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,400.00       | 0.00       | 0.00       | 3,400.00    | -700.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,500.00       | 0.00       | 0.00       | 3,500.00    | -600.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,600.00       | 0.00       | 0.00       | 3,600.00    | -500.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,700.00       | 0.00       | 0.00       | 3,700.00    | -400.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,800.00       | 0.00       | 0.00       | 3,800.00    | -300.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 3,900.00       | 0.00       | 0.00       | 3,900.00    | -200.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 4,000.00       | 0.00       | 0.00       | 4,000.00    | -100.00       | 0.00        | 0.00        | 0.00           | 0.00              | 723,779.60       | 631,252.40      |  |
| 4,100.00       | 2.00       | 359.78     | 4,099.98    | -0.02         | 1.75        | -0.01       | 0.34           | 2.00              | 723,781.35       | 631,252.39      |  |
| 4,200.00       | 4.00       | 359.78     | 4,199.84    | 99.84         | 6.98        | -0.03       | 1.35           | 2.00              | 723,786.58       | 631,252.37      |  |
| 4,300.00       | 6.00       | 359.78     | 4,299.45    | 199.45        | 15.69       | -0.06       | 3.04           | 2.00              | 723,795.29       | 631,252.34      |  |
| 4,400.00       | 8.00       | 359.78     | 4,398.70    | 298.70        | 27.88       | -0.11       | 5.40           | 2.00              | 723,807.48       | 631,252.29      |  |
| 4,500.00       | 10.00      | 359.78     | 4,497.47    | 397.47        | 43.52       | -0.17       | 8.43           | 2.00              | 723,823.12       | 631,252.23      |  |
| 4,600.00       | 12.00      | 359.78     | 4,595.62    | 495.62        | 62.60       | -0.24       | 12.12          | 2.00              | 723,842.20       | 631,252.16      |  |
| 4,700.00       | 14.00      | 359.78     | 4,693.06    | 593.06        | 85.10       | -0.32       | 16.48          | 2.00              | 723,864.70       | 631,252.08      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | Lateral            | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1            | <b>Database:</b>                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(°/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 4,800.00       | 16.00      | 359.78     | 4,789.64    | 689.64        | 110.98      | -0.42       | 21.49          | 2.00              | 723,890.58       | 631,251.98      |  |
| 4,843.93       | 16.88      | 359.78     | 4,831.78    | 731.78        | 123.41      | -0.47       | 23.90          | 2.00              | 723,903.01       | 631,251.93      |  |
| 4,900.00       | 16.88      | 359.78     | 4,885.43    | 785.43        | 139.69      | -0.53       | 27.05          | 0.00              | 723,919.29       | 631,251.87      |  |
| 5,000.00       | 16.88      | 359.78     | 4,981.12    | 881.12        | 168.72      | -0.64       | 32.67          | 0.00              | 723,948.32       | 631,251.76      |  |
| 5,100.00       | 16.88      | 359.78     | 5,076.82    | 976.82        | 197.76      | -0.75       | 38.29          | 0.00              | 723,977.36       | 631,251.65      |  |
| 5,200.00       | 16.88      | 359.78     | 5,172.51    | 1,072.51      | 226.79      | -0.87       | 43.91          | 0.00              | 724,006.39       | 631,251.53      |  |
| 5,300.00       | 16.88      | 359.78     | 5,268.20    | 1,168.20      | 255.82      | -0.98       | 49.54          | 0.00              | 724,035.42       | 631,251.42      |  |
| 5,400.00       | 16.88      | 359.78     | 5,363.89    | 1,263.89      | 284.86      | -1.09       | 55.16          | 0.00              | 724,064.46       | 631,251.31      |  |
| 5,500.00       | 16.88      | 359.78     | 5,459.58    | 1,359.58      | 313.89      | -1.20       | 60.78          | 0.00              | 724,093.49       | 631,251.20      |  |
| 5,600.00       | 16.88      | 359.78     | 5,555.28    | 1,455.28      | 342.93      | -1.31       | 66.40          | 0.00              | 724,122.53       | 631,251.09      |  |
| 5,700.00       | 16.88      | 359.78     | 5,650.97    | 1,550.97      | 371.96      | -1.42       | 72.02          | 0.00              | 724,151.56       | 631,250.98      |  |
| 5,800.00       | 16.88      | 359.78     | 5,746.66    | 1,646.66      | 401.00      | -1.53       | 77.65          | 0.00              | 724,180.60       | 631,250.87      |  |
| 5,900.00       | 16.88      | 359.78     | 5,842.35    | 1,742.35      | 430.03      | -1.64       | 83.27          | 0.00              | 724,209.63       | 631,250.76      |  |
| 6,000.00       | 16.88      | 359.78     | 5,938.05    | 1,838.05      | 459.06      | -1.75       | 88.89          | 0.00              | 724,238.66       | 631,250.65      |  |
| 6,100.00       | 16.88      | 359.78     | 6,033.74    | 1,933.74      | 488.10      | -1.86       | 94.51          | 0.00              | 724,267.70       | 631,250.54      |  |
| 6,200.00       | 16.88      | 359.78     | 6,129.43    | 2,029.43      | 517.13      | -1.97       | 100.13         | 0.00              | 724,296.73       | 631,250.43      |  |
| 6,300.00       | 16.88      | 359.78     | 6,225.12    | 2,125.12      | 546.17      | -2.08       | 105.75         | 0.00              | 724,325.77       | 631,250.32      |  |
| 6,400.00       | 16.88      | 359.78     | 6,320.81    | 2,220.81      | 575.20      | -2.20       | 111.38         | 0.00              | 724,354.80       | 631,250.20      |  |
| 6,500.00       | 16.88      | 359.78     | 6,416.51    | 2,316.51      | 604.24      | -2.31       | 117.00         | 0.00              | 724,383.84       | 631,250.09      |  |
| 6,600.00       | 16.88      | 359.78     | 6,512.20    | 2,412.20      | 633.27      | -2.42       | 122.62         | 0.00              | 724,412.87       | 631,249.98      |  |
| 6,700.00       | 16.88      | 359.78     | 6,607.89    | 2,507.89      | 662.30      | -2.53       | 128.24         | 0.00              | 724,441.90       | 631,249.87      |  |
| 6,800.00       | 16.88      | 359.78     | 6,703.58    | 2,603.58      | 691.34      | -2.64       | 133.86         | 0.00              | 724,470.94       | 631,249.76      |  |
| 6,900.00       | 16.88      | 359.78     | 6,799.28    | 2,699.28      | 720.37      | -2.75       | 139.49         | 0.00              | 724,499.97       | 631,249.65      |  |
| 6,972.05       | 16.88      | 359.78     | 6,868.22    | 2,768.22      | 741.29      | -2.83       | 143.54         | 0.00              | 724,520.89       | 631,249.57      |  |
| 7,000.00       | 16.32      | 359.78     | 6,895.01    | 2,795.01      | 749.28      | -2.86       | 145.08         | 2.00              | 724,528.88       | 631,249.54      |  |
| 7,100.00       | 14.32      | 359.78     | 6,991.45    | 2,891.45      | 775.69      | -2.96       | 150.20         | 2.00              | 724,555.29       | 631,249.44      |  |
| 7,200.00       | 12.32      | 359.78     | 7,088.75    | 2,988.75      | 798.73      | -3.05       | 154.66         | 2.00              | 724,578.33       | 631,249.35      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | Lateral            | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1            | <b>Database:</b>                    | Midland Database                     |

| Planned Survey |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)     | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(°/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 7,300.00       | 10.32      | 359.78     | 7,186.80    | 3,086.80      | 818.36      | -3.12       | 158.46         | 2.00              | 724,597.96       | 631,249.28      |  |
| 7,400.00       | 8.32       | 359.78     | 7,285.48    | 3,185.48      | 834.55      | -3.18       | 161.59         | 2.00              | 724,614.15       | 631,249.22      |  |
| 7,500.00       | 6.32       | 359.78     | 7,384.66    | 3,284.66      | 847.29      | -3.23       | 164.06         | 2.00              | 724,626.89       | 631,249.17      |  |
| 7,600.00       | 4.32       | 359.78     | 7,484.22    | 3,384.22      | 856.56      | -3.27       | 165.86         | 2.00              | 724,636.16       | 631,249.13      |  |
| 7,700.00       | 2.32       | 359.78     | 7,584.05    | 3,484.05      | 862.35      | -3.29       | 166.98         | 2.00              | 724,641.95       | 631,249.11      |  |
| 7,800.00       | 0.32       | 359.78     | 7,684.02    | 3,584.02      | 864.66      | -3.30       | 167.42         | 2.00              | 724,644.26       | 631,249.10      |  |
| 7,815.98       | 0.00       | 0.00       | 7,700.00    | 3,600.00      | 864.70      | -3.30       | 167.43         | 2.00              | 724,644.30       | 631,249.10      |  |
| 7,900.00       | 0.00       | 0.00       | 7,784.02    | 3,684.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,000.00       | 0.00       | 0.00       | 7,884.02    | 3,784.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,100.00       | 0.00       | 0.00       | 7,984.02    | 3,884.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,200.00       | 0.00       | 0.00       | 8,084.02    | 3,984.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,300.00       | 0.00       | 0.00       | 8,184.02    | 4,084.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,400.00       | 0.00       | 0.00       | 8,284.02    | 4,184.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,500.00       | 0.00       | 0.00       | 8,384.02    | 4,284.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,600.00       | 0.00       | 0.00       | 8,484.02    | 4,384.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,700.00       | 0.00       | 0.00       | 8,584.02    | 4,484.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,800.00       | 0.00       | 0.00       | 8,684.02    | 4,584.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,861.00       | 0.00       | 0.00       | 8,745.02    | 4,645.02      | 864.70      | -3.30       | 167.43         | 0.00              | 724,644.30       | 631,249.10      |  |
| 8,875.00       | 1.82       | 270.03     | 8,759.02    | 4,659.02      | 864.70      | -3.52       | 167.65         | 12.99             | 724,644.30       | 631,248.88      |  |
| 8,900.00       | 5.07       | 270.03     | 8,783.97    | 4,683.97      | 864.70      | -5.02       | 169.12         | 12.99             | 724,644.30       | 631,247.38      |  |
| 8,925.00       | 8.31       | 270.03     | 8,808.79    | 4,708.79      | 864.70      | -7.93       | 171.98         | 12.99             | 724,644.30       | 631,244.47      |  |
| 8,950.00       | 11.56      | 270.03     | 8,833.42    | 4,733.42      | 864.70      | -12.25      | 176.22         | 12.99             | 724,644.30       | 631,240.15      |  |
| 8,975.00       | 14.81      | 270.03     | 8,857.75    | 4,757.75      | 864.71      | -17.95      | 181.82         | 12.99             | 724,644.31       | 631,234.45      |  |
| 9,000.00       | 18.06      | 270.03     | 8,881.73    | 4,781.73      | 864.71      | -25.02      | 188.76         | 12.99             | 724,644.31       | 631,227.38      |  |
| 9,025.00       | 21.30      | 270.03     | 8,905.27    | 4,805.27      | 864.72      | -33.44      | 197.03         | 12.99             | 724,644.32       | 631,218.96      |  |
| 9,050.00       | 24.55      | 270.03     | 8,928.29    | 4,828.29      | 864.72      | -43.18      | 206.59         | 12.99             | 724,644.32       | 631,209.22      |  |
| 9,075.00       | 27.80      | 270.03     | 8,950.72    | 4,850.72      | 864.73      | -54.20      | 217.41         | 12.99             | 724,644.33       | 631,198.20      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1                              |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | Lateral            | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1            | Database:                    | Midland Database                     |

### Planned Survey

| MD<br>(ft) | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V-Sec<br>(ft) | DLeg<br>(°/100ft) | Northing<br>(ft) | Easting<br>(ft) |
|------------|------------|------------|-------------|---------------|-------------|-------------|---------------|-------------------|------------------|-----------------|
| 9,100.00   | 31.04      | 270.03     | 8,972.49    | 4,872.49      | 864.73      | -66.48      | 229.47        | 12.99             | 724,644.33       | 631,185.92      |
| 9,125.00   | 34.29      | 270.03     | 8,993.54    | 4,893.54      | 864.74      | -79.97      | 242.72        | 12.99             | 724,644.34       | 631,172.43      |
| 9,150.00   | 37.54      | 270.03     | 9,013.78    | 4,913.78      | 864.75      | -94.64      | 257.12        | 12.99             | 724,644.35       | 631,157.76      |
| 9,175.00   | 40.79      | 270.03     | 9,033.16    | 4,933.16      | 864.76      | -110.42     | 272.62        | 12.99             | 724,644.36       | 631,141.98      |
| 9,200.00   | 44.03      | 270.03     | 9,051.62    | 4,951.62      | 864.76      | -127.28     | 289.17        | 12.99             | 724,644.36       | 631,125.12      |
| 9,225.00   | 47.28      | 270.03     | 9,069.09    | 4,969.09      | 864.77      | -145.16     | 306.72        | 12.99             | 724,644.37       | 631,107.24      |
| 9,250.00   | 50.53      | 270.03     | 9,085.52    | 4,985.52      | 864.78      | -164.00     | 325.22        | 12.99             | 724,644.38       | 631,088.40      |
| 9,275.00   | 53.78      | 270.03     | 9,100.86    | 5,000.86      | 864.79      | -183.74     | 344.60        | 12.99             | 724,644.39       | 631,068.66      |
| 9,300.00   | 57.02      | 270.03     | 9,115.05    | 5,015.05      | 864.81      | -204.31     | 364.81        | 12.99             | 724,644.41       | 631,048.09      |
| 9,325.00   | 60.27      | 270.03     | 9,128.06    | 5,028.06      | 864.82      | -225.66     | 385.77        | 12.99             | 724,644.42       | 631,026.74      |
| 9,350.00   | 63.52      | 270.03     | 9,139.83    | 5,039.83      | 864.83      | -247.71     | 407.42        | 12.99             | 724,644.43       | 631,004.69      |
| 9,375.00   | 66.77      | 270.03     | 9,150.34    | 5,050.34      | 864.84      | -270.39     | 429.69        | 12.99             | 724,644.44       | 630,982.01      |
| 9,400.00   | 70.01      | 270.03     | 9,159.55    | 5,059.55      | 864.85      | -293.63     | 452.51        | 12.99             | 724,644.45       | 630,958.77      |
| 9,425.00   | 73.26      | 270.03     | 9,167.42    | 5,067.42      | 864.86      | -317.35     | 475.80        | 12.99             | 724,644.46       | 630,935.05      |
| 9,450.00   | 76.51      | 270.03     | 9,173.94    | 5,073.94      | 864.88      | -341.48     | 499.50        | 12.99             | 724,644.48       | 630,910.92      |
| 9,475.00   | 79.76      | 270.03     | 9,179.08    | 5,079.08      | 864.89      | -365.95     | 523.52        | 12.99             | 724,644.49       | 630,886.45      |
| 9,500.00   | 83.00      | 270.03     | 9,182.83    | 5,082.83      | 864.90      | -390.66     | 547.78        | 12.99             | 724,644.50       | 630,861.74      |
| 9,525.00   | 86.25      | 270.03     | 9,185.17    | 5,085.17      | 864.92      | -415.55     | 572.22        | 12.99             | 724,644.52       | 630,836.85      |
| 9,550.00   | 89.50      | 270.03     | 9,186.09    | 5,086.09      | 864.93      | -440.53     | 596.75        | 12.99             | 724,644.53       | 630,811.87      |
| 9,563.80   | 91.29      | 270.03     | 9,186.00    | 5,086.00      | 864.94      | -454.32     | 610.30        | 12.99             | 724,644.54       | 630,798.08      |
| 9,563.93   | 91.29      | 270.03     | 9,186.00    | 5,086.00      | 864.94      | -454.45     | 610.42        | 0.00              | 724,644.54       | 630,797.95      |
| 9,600.00   | 91.29      | 270.03     | 9,185.19    | 5,085.19      | 864.96      | -490.52     | 645.83        | 0.00              | 724,644.56       | 630,761.88      |
| 9,700.00   | 91.29      | 270.03     | 9,182.93    | 5,082.93      | 865.01      | -590.49     | 744.00        | 0.00              | 724,644.61       | 630,661.91      |
| 9,800.00   | 91.29      | 270.03     | 9,180.68    | 5,080.68      | 865.06      | -690.46     | 842.16        | 0.00              | 724,644.66       | 630,561.94      |
| 9,900.00   | 91.29      | 270.03     | 9,178.43    | 5,078.43      | 865.11      | -790.44     | 940.33        | 0.00              | 724,644.71       | 630,461.96      |
| 9,961.58   | 91.29      | 270.03     | 9,177.00    | 5,077.00      | 865.15      | -852.00     | 1,000.78      | 0.00              | 724,644.75       | 630,400.40      |

TGT1(Mick#1):1000'VS



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | <b>Well #1</b>                       |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | Lateral            | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1            | <b>Database:</b>                    | Midland Database                     |

| Planned Survey              |            |            |             |               |             |             |                |                   |                  |                 |  |
|-----------------------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)                  | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(°/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 9,970.34                    | 91.47      | 270.03     | 9,176.79    | 5,076.79      | 865.15      | -860.76     | 1,009.38       | 2.00              | 724,644.75       | 630,391.64      |  |
| 10,000.00                   | 91.47      | 270.03     | 9,176.03    | 5,076.03      | 865.17      | -890.41     | 1,038.49       | 0.00              | 724,644.77       | 630,361.99      |  |
| 10,100.00                   | 91.47      | 270.03     | 9,173.47    | 5,073.47      | 865.22      | -990.38     | 1,136.65       | 0.00              | 724,644.82       | 630,262.02      |  |
| 10,200.00                   | 91.47      | 270.03     | 9,170.92    | 5,070.92      | 865.28      | -1,090.35   | 1,234.81       | 0.00              | 724,644.88       | 630,162.05      |  |
| 10,300.00                   | 91.47      | 270.03     | 9,168.36    | 5,068.36      | 865.33      | -1,190.31   | 1,332.97       | 0.00              | 724,644.93       | 630,062.09      |  |
| 10,400.00                   | 91.47      | 270.03     | 9,165.80    | 5,065.80      | 865.39      | -1,290.28   | 1,431.13       | 0.00              | 724,644.99       | 629,962.12      |  |
| 10,500.00                   | 91.47      | 270.03     | 9,163.25    | 5,063.25      | 865.44      | -1,390.25   | 1,529.29       | 0.00              | 724,645.04       | 629,862.15      |  |
| 10,600.00                   | 91.47      | 270.03     | 9,160.69    | 5,060.69      | 865.50      | -1,490.21   | 1,627.45       | 0.00              | 724,645.10       | 629,762.19      |  |
| 10,700.00                   | 91.47      | 270.03     | 9,158.13    | 5,058.13      | 865.55      | -1,590.18   | 1,725.60       | 0.00              | 724,645.15       | 629,662.22      |  |
| 10,800.00                   | 91.47      | 270.03     | 9,155.57    | 5,055.57      | 865.60      | -1,690.15   | 1,823.76       | 0.00              | 724,645.20       | 629,562.25      |  |
| 10,900.00                   | 91.47      | 270.03     | 9,153.02    | 5,053.02      | 865.66      | -1,790.12   | 1,921.92       | 0.00              | 724,645.26       | 629,462.28      |  |
| 10,978.91                   | 91.47      | 270.03     | 9,151.00    | 5,051.00      | 865.70      | -1,869.00   | 1,999.38       | 0.00              | 724,645.30       | 629,383.40      |  |
| <b>TGT2(Mick#1) 2000'VS</b> |            |            |             |               |             |             |                |                   |                  |                 |  |
| 11,000.00                   | 91.89      | 270.03     | 9,150.38    | 5,050.38      | 865.71      | -1,890.08   | 2,020.08       | 2.00              | 724,645.31       | 629,362.32      |  |
| 11,024.56                   | 92.38      | 270.03     | 9,149.47    | 5,049.47      | 865.72      | -1,914.63   | 2,044.18       | 2.00              | 724,645.32       | 629,337.77      |  |
| 11,100.00                   | 92.38      | 270.03     | 9,146.34    | 5,046.34      | 865.76      | -1,990.00   | 2,118.19       | 0.00              | 724,645.36       | 629,262.40      |  |
| 11,200.00                   | 92.38      | 270.03     | 9,142.19    | 5,042.19      | 865.82      | -2,089.91   | 2,216.29       | 0.00              | 724,645.42       | 629,162.49      |  |
| 11,300.00                   | 92.38      | 270.03     | 9,138.04    | 5,038.04      | 865.87      | -2,189.83   | 2,314.40       | 0.00              | 724,645.47       | 629,062.57      |  |
| 11,400.00                   | 92.38      | 270.03     | 9,133.89    | 5,033.89      | 865.92      | -2,289.74   | 2,412.51       | 0.00              | 724,645.52       | 628,962.66      |  |
| 11,500.00                   | 92.38      | 270.03     | 9,129.74    | 5,029.74      | 865.98      | -2,389.65   | 2,510.61       | 0.00              | 724,645.58       | 628,862.75      |  |
| 11,600.00                   | 92.38      | 270.03     | 9,125.59    | 5,025.59      | 866.03      | -2,489.57   | 2,608.72       | 0.00              | 724,645.63       | 628,762.83      |  |
| 11,700.00                   | 92.38      | 270.03     | 9,121.44    | 5,021.44      | 866.08      | -2,589.48   | 2,706.83       | 0.00              | 724,645.68       | 628,662.92      |  |
| 11,800.00                   | 92.38      | 270.03     | 9,117.29    | 5,017.29      | 866.13      | -2,689.40   | 2,804.93       | 0.00              | 724,645.73       | 628,563.00      |  |
| 11,900.00                   | 92.38      | 270.03     | 9,113.14    | 5,013.14      | 866.19      | -2,789.31   | 2,903.04       | 0.00              | 724,645.79       | 628,463.09      |  |
| 11,999.78                   | 92.38      | 270.03     | 9,109.00    | 5,009.00      | 866.24      | -2,889.00   | 3,000.92       | 0.00              | 724,645.84       | 628,363.40      |  |
| <b>TGT3(Mick#1) 3000'VS</b> |            |            |             |               |             |             |                |                   |                  |                 |  |
| 12,068.66                   | 93.76      | 270.03     | 9,105.31    | 5,005.31      | 866.28      | -2,957.78   | 3,068.46       | 2.00              | 724,645.88       | 628,294.62      |  |



# Pathfinder

## Pathfinder X & Y Planning Report



|                  |                    |                                     |                                      |
|------------------|--------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Mack Energy        | <b>Local Co-ordinate Reference:</b> | Well #1                              |
| <b>Project:</b>  | Chaves County      | <b>TVD Reference:</b>               | WELL @ 4100.00ft (19' KB Correction) |
| <b>Site:</b>     | Mickey Federal Com | <b>MD Reference:</b>                | WELL @ 4100.00ft (19' KB Correction) |
| <b>Well:</b>     | #1                 | <b>North Reference:</b>             | Grid                                 |
| <b>Wellbore:</b> | Lateral            | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Plan #1            | <b>Database:</b>                    | Midland Database                     |

| Planned Survey       |            |            |             |               |             |             |                |                   |                  |                 |  |
|----------------------|------------|------------|-------------|---------------|-------------|-------------|----------------|-------------------|------------------|-----------------|--|
| MD<br>(ft)           | Inc<br>(°) | Azi<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) | DLeg<br>(%/100ft) | Northing<br>(ft) | Easting<br>(ft) |  |
| 12,100.00            | 93.76      | 270.03     | 9,103.26    | 5,003.26      | 866.29      | -2,989.06   | 3,099.17       | 0.00              | 724,645.89       | 628,263.34      |  |
| 12,200.00            | 93.76      | 270.03     | 9,096.71    | 4,996.71      | 866.35      | -3,088.84   | 3,197.15       | 0.00              | 724,645.95       | 628,163.56      |  |
| 12,300.00            | 93.76      | 270.03     | 9,090.16    | 4,990.16      | 866.40      | -3,188.63   | 3,295.13       | 0.00              | 724,646.00       | 628,063.77      |  |
| 12,400.00            | 93.76      | 270.03     | 9,083.61    | 4,983.61      | 866.46      | -3,288.41   | 3,393.11       | 0.00              | 724,646.06       | 627,963.99      |  |
| 12,500.00            | 93.76      | 270.03     | 9,077.06    | 4,977.06      | 866.51      | -3,388.20   | 3,491.09       | 0.00              | 724,646.11       | 627,864.20      |  |
| 12,600.00            | 93.76      | 270.03     | 9,070.51    | 4,970.51      | 866.56      | -3,487.98   | 3,589.07       | 0.00              | 724,646.16       | 627,764.42      |  |
| 12,700.00            | 93.76      | 270.03     | 9,063.96    | 4,963.96      | 866.62      | -3,587.77   | 3,687.05       | 0.00              | 724,646.22       | 627,664.63      |  |
| 12,800.00            | 93.76      | 270.03     | 9,057.41    | 4,957.41      | 866.67      | -3,687.55   | 3,785.03       | 0.00              | 724,646.27       | 627,564.85      |  |
| 12,900.00            | 93.76      | 270.03     | 9,050.86    | 4,950.86      | 866.73      | -3,787.34   | 3,883.01       | 0.00              | 724,646.33       | 627,465.06      |  |
| 13,000.00            | 93.76      | 270.03     | 9,044.30    | 4,944.30      | 866.78      | -3,887.12   | 3,980.99       | 0.00              | 724,646.38       | 627,365.28      |  |
| 13,019.92            | 93.76      | 270.03     | 9,043.00    | 4,943.00      | 866.79      | -3,907.00   | 4,000.51       | 0.00              | 724,646.39       | 627,345.40      |  |
| TGT4(Mick#1) 4000 VS |            |            |             |               |             |             |                |                   |                  |                 |  |
| 13,049.60            | 93.16      | 270.03     | 9,041.21    | 4,941.21      | 866.81      | -3,936.63   | 4,029.60       | 2.00              | 724,646.41       | 627,315.77      |  |
| 13,100.00            | 93.16      | 270.03     | 9,038.43    | 4,938.43      | 866.83      | -3,986.95   | 4,079.01       | 0.00              | 724,646.43       | 627,265.45      |  |
| 13,200.00            | 93.16      | 270.03     | 9,032.91    | 4,932.91      | 866.89      | -4,086.80   | 4,177.05       | 0.00              | 724,646.49       | 627,165.60      |  |
| 13,300.00            | 93.16      | 270.03     | 9,027.40    | 4,927.40      | 866.94      | -4,186.64   | 4,275.09       | 0.00              | 724,646.54       | 627,065.76      |  |
| 13,400.00            | 93.16      | 270.03     | 9,021.88    | 4,921.88      | 866.99      | -4,286.49   | 4,373.13       | 0.00              | 724,646.59       | 626,965.91      |  |
| 13,500.00            | 93.16      | 270.03     | 9,016.36    | 4,916.36      | 867.05      | -4,386.34   | 4,471.18       | 0.00              | 724,646.65       | 626,866.06      |  |
| 13,597.21            | 93.16      | 270.03     | 9,011.00    | 4,911.00      | 867.10      | -4,483.40   | 4,566.48       | 0.00              | 724,646.70       | 626,769.00      |  |
| PBHL(Mickey #1)      |            |            |             |               |             |             |                |                   |                  |                 |  |



# Pathfinder

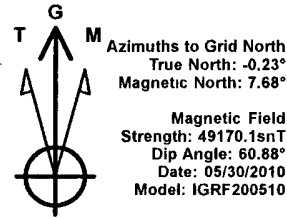
## Pathfinder X & Y Planning Report



|           |                    |                              |                                      |
|-----------|--------------------|------------------------------|--------------------------------------|
| Company:  | Mack Energy        | Local Co-ordinate Reference: | Well #1                              |
| Project:  | Chaves County      | TVD Reference:               | WELL @ 4100.00ft (19' KB Correction) |
| Site:     | Mickey Federal Com | MD Reference:                | WELL @ 4100.00ft (19' KB Correction) |
| Well:     | #1                 | North Reference:             | Grid                                 |
| Wellbore: | Lateral            | Survey Calculation Method:   | Minimum Curvature                    |
| Design:   | Plan #1            | Database:                    | Midland Database                     |

| Targets                   |           |          |          |        |           |             |             |                  |                   |  |
|---------------------------|-----------|----------|----------|--------|-----------|-------------|-------------|------------------|-------------------|--|
| Target Name               |           |          |          |        |           |             |             |                  |                   |  |
| - hit/miss target         | Dip Angle | Dip Dir. | TVD      | +N/-S  | +E/-W     | Northing    | Easting     | Latitude         | Longitude         |  |
| - Shape                   | (°)       | (°)      | (ft)     | (ft)   | (ft)      | (ft)        | (ft)        |                  |                   |  |
| TGT4(Mick#1) 4000'V       | 0.00      | 0.00     | 9,043.00 | 866.79 | -3,907.00 | 724,646.390 | 627,345.400 | 32° 59' 29.150 N | 103° 55' 4.819 W  |  |
| - plan hits target center |           |          |          |        |           |             |             |                  |                   |  |
| - Point                   |           |          |          |        |           |             |             |                  |                   |  |
| TGT2(Mick#1) 2000'V       | 0.00      | 0.00     | 9,151.00 | 865.70 | -1,869.00 | 724,645.300 | 629,383.400 | 32° 59' 29.059 N | 103° 54' 40.891 W |  |
| - plan hits target center |           |          |          |        |           |             |             |                  |                   |  |
| - Point                   |           |          |          |        |           |             |             |                  |                   |  |
| TGT1(Mick#1) 1000'V       | 0.00      | 0.00     | 9,177.00 | 865.15 | -852.00   | 724,644.750 | 630,400.400 | 32° 59' 29.013 N | 103° 54' 28.951 W |  |
| - plan hits target center |           |          |          |        |           |             |             |                  |                   |  |
| - Point                   |           |          |          |        |           |             |             |                  |                   |  |
| PBHL(Mickey #1)           | 0.00      | 0.00     | 9,011.00 | 867.10 | -4,483.40 | 724,646.700 | 626,769.000 | 32° 59' 29.175 N | 103° 55' 11.586 W |  |
| - plan hits target center |           |          |          |        |           |             |             |                  |                   |  |
| - Point                   |           |          |          |        |           |             |             |                  |                   |  |
| TGT3(Mick#1) 3000'V       | 0.00      | 0.00     | 9,109.00 | 866.24 | -2,889.00 | 724,645.840 | 628,363.400 | 32° 59' 29.104 N | 103° 54' 52.867 W |  |
| - plan hits target center |           |          |          |        |           |             |             |                  |                   |  |
| - Point                   |           |          |          |        |           |             |             |                  |                   |  |

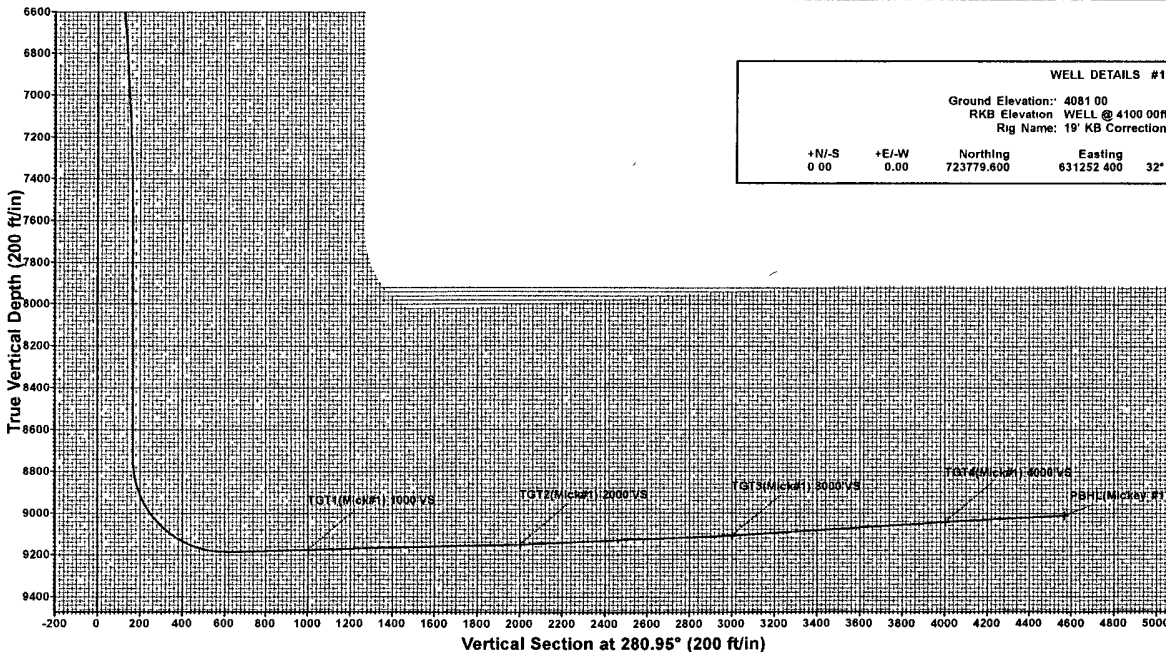
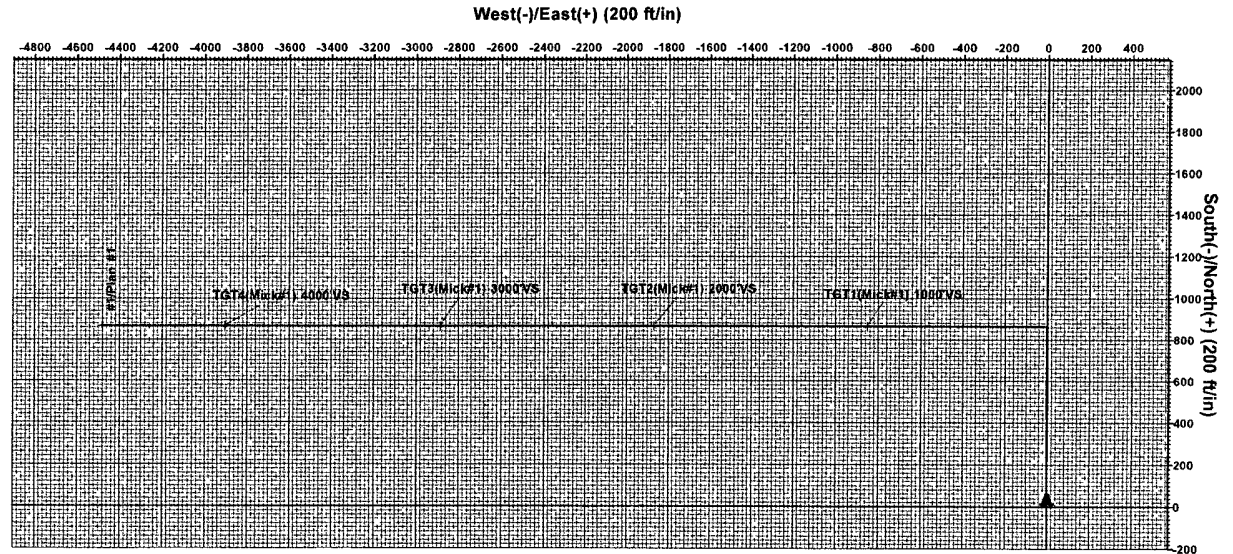
|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|



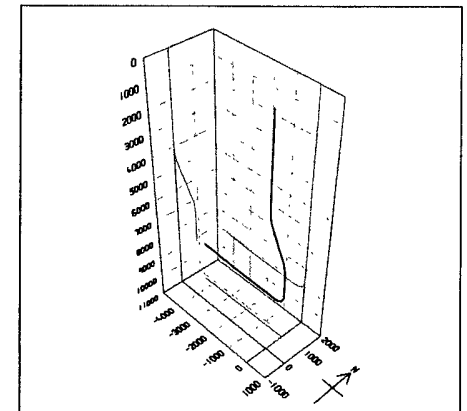
# PATHFINDER

| WELLBORE TARGET DETAILS |         |        |          |       |  |
|-------------------------|---------|--------|----------|-------|--|
| Name                    | TVD     | +N/-S  | +E/-W    | Shape |  |
| PBHL(Mickey #1)         | 9011.00 | 867.10 | -4483.40 | Point |  |
| TGT4(Mick#1) 4000'VS    | 9043.00 | 866.79 | -3907.00 | Point |  |
| TGT3(Mick#1) 3000'VS    | 9109.00 | 866.24 | -2889.00 | Point |  |
| TGT2(Mick#1) 2000'VS    | 9151.00 | 865.70 | -1869.00 | Point |  |
| TGT1(Mick#1) 1000'VS    | 9177.00 | 865.15 | -852.00  | Point |  |

| SECTION DETAILS |          |       |        |         |        |          |       |         |         |                      |  |
|-----------------|----------|-------|--------|---------|--------|----------|-------|---------|---------|----------------------|--|
| Sec             | MD       | Inc   | Azi    | TVD     | +N/-S  | +E/-W    | DLeg  | TFace   | VSec    | Target               |  |
| 1               | 8861.00  | 0.00  | 0.00   | 8745.02 | 864.70 | -3.30    | 0.00  | 0.00    | 187.43  |                      |  |
| 2               | 9563.80  | 91.29 | 270.03 | 9186.00 | 864.94 | -454.32  | 12.99 | 270.03  | 610.30  |                      |  |
| 3               | 9644.30  | 91.30 | 270.03 | 9184.18 | 864.98 | -534.80  | 0.01  | 7.14    | 689.32  |                      |  |
| 4               | 9961.58  | 91.30 | 270.03 | 9177.00 | 865.15 | -852.00  | 0.00  | 0.00    | 1000.78 | TGT1(Mick#1) 1000'VS |  |
| 5               | 9969.98  | 91.47 | 270.03 | 9176.80 | 865.15 | -860.40  | 2.00  | 0.03    | 1009.02 |                      |  |
| 6               | 10978.91 | 91.47 | 270.03 | 9151.00 | 865.70 | -1869.00 | 0.00  | 0.00    | 1999.38 | TGT2(Mick#1) 2000'VS |  |
| 7               | 11024.57 | 92.38 | 270.03 | 9149.47 | 865.72 | -1914.63 | 2.00  | -0.04   | 2044.19 |                      |  |
| 8               | 11999.78 | 92.38 | 270.03 | 9109.00 | 866.24 | -2889.00 | 0.00  | 0.00    | 3000.92 | TGT3(Mick#1) 3000'VS |  |
| 9               | 12068.66 | 93.76 | 270.03 | 9105.31 | 866.28 | -2957.78 | 2.00  | 0.03    | 3068.46 |                      |  |
| 10              | 13019.92 | 93.76 | 270.03 | 9043.00 | 866.79 | -3907.00 | 0.00  | 0.00    | 4000.51 | TGT4(Mick#1) 4000'VS |  |
| 11              | 13049.60 | 93.16 | 270.03 | 9041.21 | 866.81 | -3936.63 | 2.00  | -179.98 | 4029.60 |                      |  |
| 12              | 13597.21 | 93.16 | 270.03 | 9011.00 | 867.10 | -4483.40 | 0.00  | 0.00    | 4566.48 | PBHL(Mickey #1)      |  |



| WELL DETAILS #1                                    |       |            |            |                  |                   |      |
|----------------------------------------------------|-------|------------|------------|------------------|-------------------|------|
| Ground Elevation: 4081.00                          |       |            |            |                  |                   |      |
| RKB Elevation WELL @ 4100.00ft (19' KB Correction) |       |            |            |                  |                   |      |
| Rig Name: 19' KB Correction                        |       |            |            |                  |                   |      |
| +N/-S                                              | +E/-W | Northing   | Easting    | Latitude         | Longitude         | Slot |
| 0.00                                               | 0.00  | 723779.600 | 631252.400 | 32° 59' 20.418 N | 103° 54' 18.989 W |      |



PROJECT DETAILS: Chaves County  
 Geodetic System: US State Plane 1927 (Exact solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: New Mexico East 3001  
 System Datum: Mean Sea Level  
 Local North: Grid

| Plan Plan #1 (#1/Lateral) |                         |
|---------------------------|-------------------------|
| Created By: Nate Bingham  | Date: 8/43, May 10 2010 |
| Checked: _____            | Date: _____             |