

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RECEIVED

FORM APPROVED  
OMB NO. 1004-0137  
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

APR 16 2012

5. Lease Serial No.

NMM29342

6 If Indian, Allottee or Tribe Name

Farmington Field Office

Bureau of Land Management

7. Unit or CA/Agreement, Name and/or No.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

Energen Resources Corporation

3a. Address

2010 Afton Place, Farmington, NM 87401

3b. Phone No. (include area code)

505-325-6800

4. Location of Well (Footage, Sec, T, R., M., or Survey Description)

2611' FSL, 898' FWL Sec. 24, T32N, R05W N.M.P.M. (L) NW/SW

8. Well Name and No.

Carracas 25A #7H

9 API Well No.

30-039-30852

10 Field and Pool, or Exploratory Area

Basin Fruitland Coal

11. County or Parish, State

Rio Arriba NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

- ☒ Notice of Intent  
☐ Subsequent Report  
☐ Final Abandonment Notice

TYPE OF ACTION

- ☐ Acidize ☐ Deepen ☐ Production (Start/Resume) ☐ Water Shut-Off  
☐ Alter Casing ☐ Fracture Treat ☐ Reclamation ☐ Well Integrity  
☐ Casing Repair ☐ New Construction ☐ Recomplete ☐ Other  
☒ Change Plans ☐ Plug and Abandon ☐ Temporarily Abandon  
☐ Convert to Injection ☐ Plug Back ☐ Water Disposal

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

Energen Resources would like to make the following changes to the subject well. Please see attached.

RCVD APR 20 '12

OIL CONS. DIV.

DIST. 3

Hold C104

for Directional Survey  
and "As Drilled" plat

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

Hold C104  
for Directional Survey  
and "As Drilled" plat

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

14. I hereby certify that the foregoing is true and correct

Name (Printed/Typed)

Andrew Soto

Signature

Title

Drilling Engineer

Date

4/13/12

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Shen C. Valdez

WMOCD

PE

Date

4/17/12

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

FFD

4/12/2012



### OPERATIONS PLAN

WELL NAME.....Carracas 25A #7  
JOB TYPE.....Horizontal OPE FTC  
DEPT.....Drilling and Completions

### GENERAL INFORMATION

|                      |                               |
|----------------------|-------------------------------|
| Surface Location     | 2,611' FSL 898' FWL           |
| S-T-R                | (L) Sec. 24, T32N, R05W       |
| Bottom Hole Location | 100' FSL 400' FWL             |
| S-T-R                | (M) Sec. 25, T32N, R05W       |
| County, State        | Rio Arriba, New Mexico        |
| Elevations           | 7,368' GL                     |
| Total Depth          | 10,974 +/- (MD); 4,020' (TVD) |
| Formation Objective  | Basin Fruitland Coal          |

### FORMATION TOPS

|                  |                            |
|------------------|----------------------------|
| San Jose         | Surface                    |
| Nacimiento       | 2,260' (TVD), 2,260' (MD)  |
| Ojo Alamo Ss     | 3,385' (TVD), 3,632' (MD)  |
| Kirtland Sh      | 3,500' (TVD), 3,926' (MD)  |
| Fruitland Fm     | 3,845' (TVD), 4,832' (MD)  |
| Top Target Coal  | 4,003' (TVD), 5,578' (MD)  |
| Base Target Coal | 4,027' (TVD)               |
| Total Depth      | 4,020' (TVD), 10,974' (MD) |

### DRILLING

**Surface:** 12 1/4" wellbore will be drilled with a fresh water mud system (spud mud).

**Intermediate:** 8 3/4" wellbore will be drilled with a LSND mud system. Weighting materials will be drill cuttings and if needed barite. Mud density is expected to range from 8.4 ppg to 9.0 ppg.

**Production:** 6 1/4" wellbore will be drilled with a fresh water or brine water system depending on reservoir characteristics. Anticipated BHP can be as high as 1,100 psi.

**Projected KOP is 2,500' TVD with 6°/100' doglegs.**

#### **Blowout Control Specifications:**

A 3,000 psi minimum double ram or annulus BOP stack will be used following nipple up of casing head. A 2" nominal, 2,000 psi minimum choke manifold will also be used. An upper Kelly Cock valve handle and drill string valve should be available to fit each drill string and be available on the rig floor during drilling operations. **Pressure test BOP to 250 psi for 5 min and 2,000 psi for 10 min.**

#### **Logging Program:**

Open hole logs: None

Mudlogs: 3,185' TVD, 3,264' MD to TD

Surveys: Surface to KOP every 500' and a minimum of every 200' for directional.

4/12/2012

## CASING, TUBING & CASING EQUIPMENT



| String              | Start Depth      | End Depth         | Wellbore | Size   | Wt         | Grade                 |
|---------------------|------------------|-------------------|----------|--------|------------|-----------------------|
| Surface             | 0'               | 200'              | 12 1/4"  | 9 5/8" | 36 lb/ft   | J-55 ST&C             |
| Intermediate<br>TVD | 0'<br>0'         | 5,909'<br>4,020'  | 8 3/4"   | 7"     | 23 lb/ft   | J-55 LT&C             |
| Prod. Liner<br>TVD  | 5,800'<br>4,018' | 10,974'<br>4,020' | 6 1/4"   | 4 1/2" | 11.6 lb/ft | J-55 LT&C<br>Ultra FJ |
| Tubing              | 0'               | 5,400'            | none     | 2 3/8" | 4.7 lb/ft  | J-55                  |

**Surface Casing:** Texas Pattern Guide Shoe on bottom of first joint and an insert float valve on top of first joint. Casing centralization with a minimum of 3 standard bow spring centralizers to achieve optimal standoff.

**Intermediate Casing:** Self fill float shoe with self fill float collar on bottom and top of first joint. Casing centralization with double bow spring and centralizers to optimize standoff.

**Production Liner:** Bull nose guide shoe on bottom of first joint, H-Latch liner drop off tool on top of last joint.

## WELLHEAD

11" 3,000 x 9 5/8" weld/slip on casing head. 9 5/8" x 7" x 2 3/8" 3000 psi Flanged Wellhead.

## CEMENTING

**Surface Casing:** 107 sks Premium G with 2.0 % CaCl<sub>2</sub> and 1/8 #/sk Flocele (15.8 ppg, 1.17 ft<sup>3</sup>/sk 125 ft<sup>3</sup> of slurry, 70% excess to circulate to surface). WOC 12 hours. Pressure test surface casing to 600 psi for 30 min.

**Intermediate Casing:** Depending on wellbore conditions, cement may consist of 549 sks PRB II with 5#/sk Gilsonite & 1/4 #/sack Pol-E-Flake (12.3 ppg, 2.41 ft<sup>3</sup>/sk) and a tail of 100 sacks of PRB II with 5#/sk Gilsonite, 1/4 #/sack Pol-E-Flake (15.6 ppg, 1.18 ft<sup>3</sup>/sk). (1,503 ft<sup>3</sup> of slurry, 70% excess to circulate to surface). WOC 12 hours. Test casing to 1,200 psi for 30 min. 144 ft<sup>3</sup>

**Production Liner:** NO CEMENT, Open Hole Completion

**Set slips with full string weight**

If cement does not circulate, run temperature survey in 8 hrs. to determine TOC.

## OTHER INFORMATION

- 1) This well will be an open hole completion lined with an uncemented pre-drilled liner.
- 2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The intermediate string may need to be cemented in multiple stages with a slurry design deviated from that listed above.
- 3) If high reservoir pressures or water flows are encountered slurry design may need to be deviated to from those listed above to satisfy wellbore and formation conditions.
- 4) No abnormal temperatures or pressures are anticipated.
- 5) This gas is dedicated.

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240

State of New Mexico  
Energy, Minerals & Natural Resources Department

DISTRICT II  
1301 W. Grand Avenue, Artesia, N.M. 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                         |                                                 |                     |                                    |
|-------------------------|-------------------------------------------------|---------------------|------------------------------------|
| *API Number             |                                                 | *Pool Code<br>71629 | *Pool Name<br>BASIN FRUITLAND COAL |
| *Property Code<br>35034 | *Property Name<br>CARRACAS 25 A                 |                     | *Well Number<br>7                  |
| *GRID No.<br>162928     | *Operator Name<br>ENERGEN RESOURCES CORPORATION |                     | *Elevation<br>7368'                |

<sup>10</sup> Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County     |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| L             | 24      | 32N      | 5W    |         | 2611'         | SOUTH            | 898'          | WEST           | RIO ARRIBA |

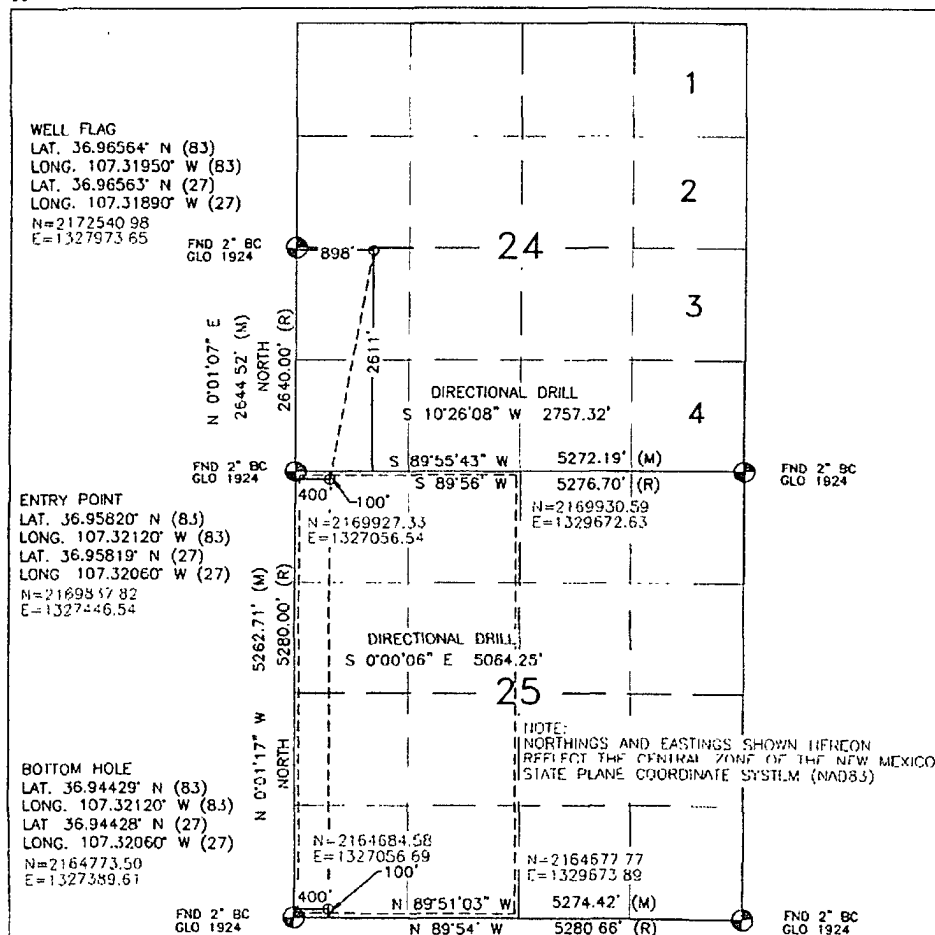
<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County     |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| M             | 25      | 32N      | 5W    |         | 100'          | SOUTH            | 400'          | WEST           | RIO ARRIBA |

|                               |                               |                                  |                         |
|-------------------------------|-------------------------------|----------------------------------|-------------------------|
| <sup>12</sup> Dedicated Acres | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code | <sup>15</sup> Order No. |
|                               |                               |                                  |                         |

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

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<sup>17</sup> OPERATOR CERTIFICATION

I hereby certify that the information contained 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 or a compulsory pooling order heretofore entered by the division.

Signature: *Andrew Soto* Date: 4-12-12

Printed Name: Andrew Soto

<sup>18</sup> SURVEYOR CERTIFICATION

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.

JUNE 8, 2009

Date of Survey

Signature and Seal of Professional Surveyor

DAVID RUSSELL

Certificate Number

10201



## **Energen Resources Corp**

**Rio Arriba County, NM**

**Sec 24 T32N R05W**

**Carracas 25A #7H**

**Wellbore #1**

**Plan: Design #2**

## **Standard Planning Report**

**04 April, 2012**



**A Schlumberger Company**

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

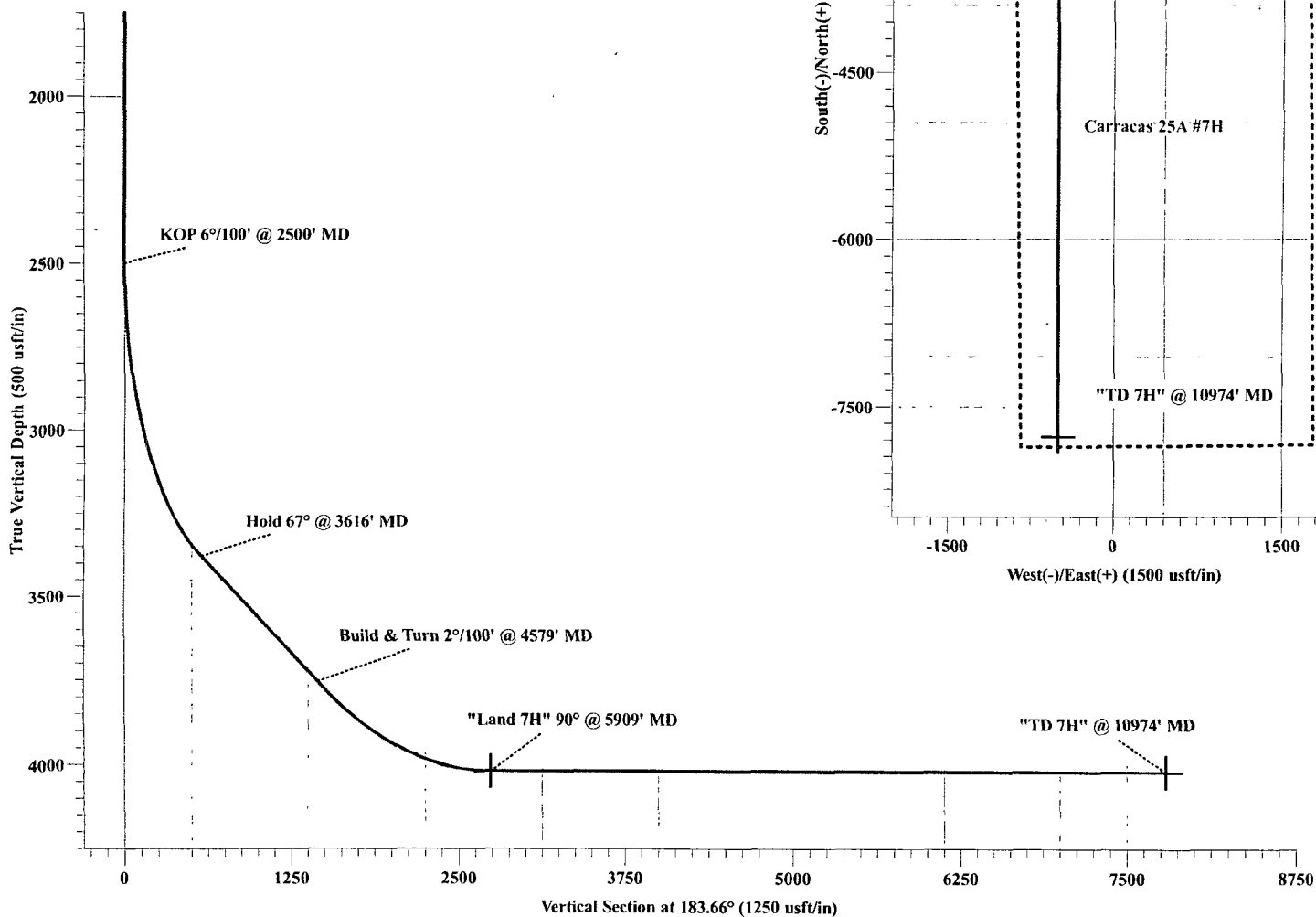
| Name    | TVD    | +N/-S   | +E/-W  | Northing   | Easting    | Shape |
|---------|--------|---------|--------|------------|------------|-------|
| Land 7H | 4020.0 | -2708.9 | -496.7 | 2169837.82 | 1327446.54 | Point |
| TD 7H   | 4020.0 | -7773.5 | -496.8 | 2164773.50 | 1327389.61 | Point |

### WELL DETAILS: Carracas 25A #7H

| Ground Level: 7368.0 |            |                  |                   |
|----------------------|------------|------------------|-------------------|
| Northing             | Easting    | Latitude         | Longitude         |
| 2172540.98           | 1327973.65 | 36° 57' 56.304 N | 107° 19' 10.200 W |

### SECTION DETAILS

| MD      | Inc   | Azi    | TVD    | +N/-S   | +E/-W  | Dleg | TFace  | VSec   | Target  |
|---------|-------|--------|--------|---------|--------|------|--------|--------|---------|
| 0.0     | 0.00  | 0.00   | 0.0    | 0.0     | 0.0    | 0.00 | 0.00   | 0.0    |         |
| 2500.0  | 0.00  | 0.00   | 2500.0 | 0.0     | 0.0    | 0.00 | 0.00   | 0.0    |         |
| 3616.6  | 66.99 | 193.74 | 3379.0 | -565.1  | -138.2 | 6.00 | 193.74 | 572.7  |         |
| 4579.5  | 66.99 | 193.74 | 3755.3 | -1426.1 | -348.7 | 0.00 | 0.00   | 1445.4 |         |
| 5909.6  | 90.00 | 180.00 | 4020.0 | -2708.9 | -496.7 | 2.00 | -32.03 | 2735.1 | Land 7H |
| 10974.3 | 90.00 | 180.00 | 4020.0 | -7773.5 | -496.8 | 0.00 | 0.00   | 7789.4 | TD 7H   |



Database: EDM 5000.1 Single User Db  
 Company: Energen Resources Corp  
 Project: Rio Arriba County, NM  
 Site: Sec 24 T32N R05W  
 Well: Carracas 25A #7H  
 Wellbore: Wellbore #1  
 Design: Design #2

Local Co-ordinate Reference: Well Carracas 25A #7H  
 TVD Reference: WELL @ 7388.0usft (Original Well Elev)  
 MD Reference: WELL @ 7388.0usft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

|             |                           |               |                |
|-------------|---------------------------|---------------|----------------|
| Project     | Rio Arriba County, NM     |               |                |
| Map System: | US State Plane 1983       | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983 |               |                |
| Map Zone:   | New Mexico Central Zone   |               |                |

|                       |                  |                   |                   |
|-----------------------|------------------|-------------------|-------------------|
| Site                  | Sec 24 T32N R05W |                   |                   |
| Site Position:        |                  | Northing:         | 2,172,540.98 usft |
| From:                 | Lat/Long         | Easting:          | 1,327,973.64 usft |
| Position Uncertainty: | 0.0 usft         | Slot Radius:      | 13-3/16"          |
|                       |                  | Latitude:         | 36° 57' 56.304 N  |
|                       |                  | Longitude:        | 107° 19' 10.200 W |
|                       |                  | Grid Convergence: | -0.64°            |

|                      |                  |                     |                             |
|----------------------|------------------|---------------------|-----------------------------|
| Well                 | Carracas 25A #7H |                     |                             |
| Well Position        | +N/-S            | 0.0 usft            | Northing: 2,172,540.98 usft |
|                      | +E/-W            | 0.0 usft            | Easting: 1,327,973.64 usft  |
| Position Uncertainty | 0.0 usft         | Wellhead Elevation: | Ground Level: 7,368.0 usft  |
|                      |                  | Latitude:           | 36° 57' 56.304 N            |
|                      |                  | Longitude:          | 107° 19' 10.200 W           |

|           |             |             |                |
|-----------|-------------|-------------|----------------|
| Wellbore  | Wellbore #1 |             |                |
| Magnetics | Model Name  | Sample Date | Declination    |
|           | IGRF2010    | 2012/04/04  | (°)            |
|           |             |             | 9.63           |
|           |             |             | Dip Angle      |
|           |             |             | (°)            |
|           |             |             | 63.72          |
|           |             |             | Field Strength |
|           |             |             | (nT)           |
|           |             |             | 50,835         |

|                   |                  |           |                   |
|-------------------|------------------|-----------|-------------------|
| Design            | Design #2        |           |                   |
| Audit Notes:      |                  |           |                   |
| Version:          | Phase:           | PROTOTYPE | Tie On Depth: 0.0 |
| Vertical Section: | Depth From (TVD) | +N/-S     | +E/-W             |
|                   | (usft)           | (usft)    | (usft)            |
|                   | 0.0              | 0.0       | 0.0               |
|                   |                  |           | Direction         |
|                   |                  |           | (°)               |
|                   |                  |           | 183.66            |

| Plan Sections         |                 |             |                       |              |              |                         |                        |                       |         |         |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|---------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target  |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |         |
| 2,500.0               | 0.00            | 0.00        | 2,500.0               | 0.0          | 0.0          | 0.00                    | 0.00                   | 0.00                  | 0.00    |         |
| 3,616.6               | 66.99           | 193.74      | 3,379.0               | -565.1       | -138.2       | 6.00                    | 6.00                   | 0.00                  | 193.74  |         |
| 4,579.5               | 66.99           | 193.74      | 3,755.3               | -1,426.1     | -348.7       | 0.00                    | 0.00                   | 0.00                  | 0.00    |         |
| 5,909.6               | 90.00           | 180.00      | 4,020.0               | -2,708.9     | -496.7       | 2.00                    | 1.73                   | -1.03                 | -32.03  | Land 7H |
| 10,974.3              | 90.00           | 180.00      | 4,020.0               | -7,773.5     | -496.8       | 0.00                    | 0.00                   | 0.00                  | 0.00    | TD 7H   |

Database: EDM 5000.1 Single User Db  
 Company: Energen Resources Corp  
 Project: Rio Arriba County, NM  
 Site: Sec 24 T32N R05W  
 Well: Carracas 25A #7H  
 Wellbore: Wellbore #1  
 Design: Design #2

Local Co-ordinate Reference: Well Carracas 25A #7H  
 TVD Reference: WELL @ 7388.0usft (Original Well Elev)  
 MD Reference: WELL @ 7388.0usft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

| Planned Survey              |                    |                |                             |                 |                 |                               |                               |                              |                             |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|
| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Vertical<br>Section<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) |
| 0.0                         | 0.00               | 0.00           | 0.0                         | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 100.0                       | 0.00               | 0.00           | 100.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 200.0                       | 0.00               | 0.00           | 200.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 300.0                       | 0.00               | 0.00           | 300.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 400.0                       | 0.00               | 0.00           | 400.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 500.0                       | 0.00               | 0.00           | 500.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 600.0                       | 0.00               | 0.00           | 600.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 700.0                       | 0.00               | 0.00           | 700.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 800.0                       | 0.00               | 0.00           | 800.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 900.0                       | 0.00               | 0.00           | 900.0                       | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,000.0                     | 0.00               | 0.00           | 1,000.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,100.0                     | 0.00               | 0.00           | 1,100.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,200.0                     | 0.00               | 0.00           | 1,200.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,300.0                     | 0.00               | 0.00           | 1,300.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,400.0                     | 0.00               | 0.00           | 1,400.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,500.0                     | 0.00               | 0.00           | 1,500.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,600.0                     | 0.00               | 0.00           | 1,600.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,700.0                     | 0.00               | 0.00           | 1,700.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,800.0                     | 0.00               | 0.00           | 1,800.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 1,900.0                     | 0.00               | 0.00           | 1,900.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,000.0                     | 0.00               | 0.00           | 2,000.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,100.0                     | 0.00               | 0.00           | 2,100.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,200.0                     | 0.00               | 0.00           | 2,200.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,300.0                     | 0.00               | 0.00           | 2,300.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,400.0                     | 0.00               | 0.00           | 2,400.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| 2,500.0                     | 0.00               | 0.00           | 2,500.0                     | 0.0             | 0.0             | 0.0                           | 0.00                          | 0.00                         | 0.00                        |
| KOP 6°/100' @ 2500' MD      |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 2,550.0                     | 3.00               | 193.74         | 2,550.0                     | -1.3            | -0.3            | 1.3                           | 6.00                          | 6.00                         | 0.00                        |
| 2,600.0                     | 6.00               | 193.74         | 2,599.8                     | -5.1            | -1.2            | 5.2                           | 6.00                          | 6.00                         | 0.00                        |
| 2,650.0                     | 9.00               | 193.74         | 2,649.4                     | -11.4           | -2.8            | 11.6                          | 6.00                          | 6.00                         | 0.00                        |
| 2,700.0                     | 12.00              | 193.74         | 2,698.5                     | -20.3           | -5.0            | 20.5                          | 6.00                          | 6.00                         | 0.00                        |
| 2,750.0                     | 15.00              | 193.74         | 2,747.2                     | -31.6           | -7.7            | 32.0                          | 6.00                          | 6.00                         | 0.00                        |
| 2,800.0                     | 18.00              | 193.74         | 2,795.1                     | -45.4           | -11.1           | 46.0                          | 6.00                          | 6.00                         | 0.00                        |
| 2,850.0                     | 21.00              | 193.74         | 2,842.2                     | -61.6           | -15.1           | 62.4                          | 6.00                          | 6.00                         | 0.00                        |
| 2,900.0                     | 24.00              | 193.74         | 2,888.4                     | -80.2           | -19.6           | 81.3                          | 6.00                          | 6.00                         | 0.00                        |
| 2,950.0                     | 27.00              | 193.74         | 2,933.5                     | -101.1          | -24.7           | 102.5                         | 6.00                          | 6.00                         | 0.00                        |
| 3,000.0                     | 30.00              | 193.74         | 2,977.5                     | -124.3          | -30.4           | 126.0                         | 6.00                          | 6.00                         | 0.00                        |
| 3,050.0                     | 33.00              | 193.74         | 3,020.1                     | -149.7          | -36.6           | 151.7                         | 6.00                          | 6.00                         | 0.00                        |
| 3,100.0                     | 36.00              | 193.74         | 3,061.3                     | -177.2          | -43.3           | 179.6                         | 6.00                          | 6.00                         | 0.00                        |
| 3,150.0                     | 39.00              | 193.74         | 3,101.0                     | -206.7          | -50.5           | 209.5                         | 6.00                          | 6.00                         | 0.00                        |
| 3,200.0                     | 42.00              | 193.74         | 3,139.0                     | -238.3          | -58.3           | 241.5                         | 6.00                          | 6.00                         | 0.00                        |
| 3,250.0                     | 45.00              | 193.74         | 3,175.2                     | -271.7          | -66.4           | 275.4                         | 6.00                          | 6.00                         | 0.00                        |
| 3,300.0                     | 48.00              | 193.74         | 3,209.7                     | -306.9          | -75.0           | 311.1                         | 6.00                          | 6.00                         | 0.00                        |
| 3,350.0                     | 51.00              | 193.74         | 3,242.1                     | -343.8          | -84.1           | 348.5                         | 6.00                          | 6.00                         | 0.00                        |
| 3,400.0                     | 54.00              | 193.74         | 3,272.6                     | -382.4          | -93.5           | 387.6                         | 6.00                          | 6.00                         | 0.00                        |
| 3,450.0                     | 57.00              | 193.74         | 3,300.9                     | -422.4          | -103.3          | 428.1                         | 6.00                          | 6.00                         | 0.00                        |
| 3,500.0                     | 60.00              | 193.74         | 3,327.0                     | -463.8          | -113.4          | 470.1                         | 6.00                          | 6.00                         | 0.00                        |
| 3,550.0                     | 63.00              | 193.74         | 3,350.8                     | -506.5          | -123.8          | 513.3                         | 6.00                          | 6.00                         | 0.00                        |
| 3,600.0                     | 66.00              | 193.74         | 3,372.4                     | -550.3          | -134.5          | 557.8                         | 6.00                          | 6.00                         | 0.00                        |
| 3,616.6                     | 66.99              | 193.74         | 3,379.0                     | -565.1          | -138.2          | 572.7                         | 6.00                          | 6.00                         | 0.00                        |
| Hold 67° @ 3616' MD         |                    |                |                             |                 |                 |                               |                               |                              |                             |
| 3,700.0                     | 66.99              | 193.74         | 3,411.6                     | -639.7          | -156.4          | 648.3                         | 0.00                          | 0.00                         | 0.00                        |
| 3,800.0                     | 66.99              | 193.74         | 3,450.7                     | -729.1          | -178.3          | 739.0                         | 0.00                          | 0.00                         | 0.00                        |
| 3,900.0                     | 66.99              | 193.74         | 3,489.7                     | -818.5          | -200.1          | 829.6                         | 0.00                          | 0.00                         | 0.00                        |

Database: EDM 5000.1 Single User Db  
 Company: Energen Resources Corp  
 Project: Rio Arriba County, NM  
 Site: Sec 24 T32N R05W  
 Well: Carracas 25A #7H  
 Wellbore: Wellbore #1  
 Design: Design #2

Local Co-ordinate Reference: Well Carracas 25A #7H  
 TVD Reference: WELL @ 7388.0usft (Original Well Elev)  
 MD Reference: WELL @ 7388.0usft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

**Planned Survey**

| Measured Depth (usft)                      | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,000.0                                    | 66.99           | 193.74      | 3,528.8               | -907.9       | -222.0       | 920.2                   | 0.00                    | 0.00                   | 0.00                  |
| 4,100.0                                    | 66.99           | 193.74      | 3,567.9               | -997.3       | -243.8       | 1,010.8                 | 0.00                    | 0.00                   | 0.00                  |
| 4,200.0                                    | 66.99           | 193.74      | 3,607.0               | -1,086.7     | -265.7       | 1,101.5                 | 0.00                    | 0.00                   | 0.00                  |
| 4,300.0                                    | 66.99           | 193.74      | 3,646.1               | -1,176.2     | -287.6       | 1,192.1                 | 0.00                    | 0.00                   | 0.00                  |
| 4,400.0                                    | 66.99           | 193.74      | 3,685.2               | -1,265.6     | -309.4       | 1,282.7                 | 0.00                    | 0.00                   | 0.00                  |
| 4,500.0                                    | 66.99           | 193.74      | 3,724.2               | -1,355.0     | -331.3       | 1,373.3                 | 0.00                    | 0.00                   | 0.00                  |
| 4,579.5                                    | 66.99           | 193.74      | 3,755.3               | -1,426.1     | -348.7       | 1,445.4                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Build &amp; Turn 2°/100' @ 4579' MD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,600.0                                    | 67.34           | 193.50      | 3,763.3               | -1,444.4     | -353.1       | 1,464.0                 | 2.00                    | 1.70                   | -1.15                 |
| 4,700.0                                    | 69.04           | 192.37      | 3,800.4               | -1,534.9     | -373.9       | 1,555.6                 | 2.00                    | 1.70                   | -1.13                 |
| 4,800.0                                    | 70.75           | 191.26      | 3,834.8               | -1,626.8     | -393.1       | 1,648.6                 | 2.00                    | 1.71                   | -1.11                 |
| 4,900.0                                    | 72.47           | 190.18      | 3,866.3               | -1,720.1     | -410.8       | 1,742.8                 | 2.00                    | 1.72                   | -1.08                 |
| 5,000.0                                    | 74.19           | 189.11      | 3,895.0               | -1,814.5     | -426.8       | 1,838.0                 | 2.00                    | 1.72                   | -1.06                 |
| 5,100.0                                    | 75.91           | 188.07      | 3,920.8               | -1,910.0     | -441.2       | 1,934.3                 | 2.00                    | 1.73                   | -1.05                 |
| 5,200.0                                    | 77.64           | 187.04      | 3,943.7               | -2,006.5     | -454.0       | 2,031.4                 | 2.00                    | 1.73                   | -1.03                 |
| 5,300.0                                    | 79.38           | 186.02      | 3,963.6               | -2,103.9     | -465.2       | 2,129.3                 | 2.00                    | 1.73                   | -1.02                 |
| 5,400.0                                    | 81.12           | 185.02      | 3,980.5               | -2,202.0     | -474.7       | 2,227.8                 | 2.00                    | 1.74                   | -1.01                 |
| 5,500.0                                    | 82.86           | 184.02      | 3,994.5               | -2,300.7     | -482.5       | 2,326.8                 | 2.00                    | 1.74                   | -1.00                 |
| 5,600.0                                    | 84.60           | 183.03      | 4,005.4               | -2,399.9     | -488.6       | 2,426.2                 | 2.00                    | 1.74                   | -0.99                 |
| 5,700.0                                    | 86.34           | 182.05      | 4,013.3               | -2,499.5     | -493.0       | 2,525.8                 | 2.00                    | 1.74                   | -0.98                 |
| 5,800.0                                    | 88.09           | 181.07      | 4,018.2               | -2,599.3     | -495.7       | 2,625.6                 | 2.00                    | 1.74                   | -0.98                 |
| 5,909.6                                    | 90.00           | 180.00      | 4,020.0               | -2,708.9     | -496.7       | 2,735.1                 | 2.00                    | 1.75                   | -0.98                 |
| <b>"Land 7H" 90° @ 5909' MD</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,000.0                                    | 90.00           | 180.00      | 4,020.0               | -2,799.3     | -496.7       | 2,825.3                 | 0.00                    | 0.00                   | 0.00                  |
| 6,100.0                                    | 90.00           | 180.00      | 4,020.0               | -2,899.3     | -496.7       | 2,925.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,200.0                                    | 90.00           | 180.00      | 4,020.0               | -2,999.3     | -496.7       | 3,024.9                 | 0.00                    | 0.00                   | 0.00                  |
| 6,300.0                                    | 90.00           | 180.00      | 4,020.0               | -3,099.3     | -496.7       | 3,124.7                 | 0.00                    | 0.00                   | 0.00                  |
| 6,400.0                                    | 90.00           | 180.00      | 4,020.0               | -3,199.3     | -496.7       | 3,224.5                 | 0.00                    | 0.00                   | 0.00                  |
| 6,500.0                                    | 90.00           | 180.00      | 4,020.0               | -3,299.3     | -496.7       | 3,324.2                 | 0.00                    | 0.00                   | 0.00                  |
| 6,600.0                                    | 90.00           | 180.00      | 4,020.0               | -3,399.3     | -496.7       | 3,424.0                 | 0.00                    | 0.00                   | 0.00                  |
| 6,700.0                                    | 90.00           | 180.00      | 4,020.0               | -3,499.3     | -496.7       | 3,523.8                 | 0.00                    | 0.00                   | 0.00                  |
| 6,800.0                                    | 90.00           | 180.00      | 4,020.0               | -3,599.3     | -496.7       | 3,623.6                 | 0.00                    | 0.00                   | 0.00                  |
| 6,900.0                                    | 90.00           | 180.00      | 4,020.0               | -3,699.3     | -496.7       | 3,723.4                 | 0.00                    | 0.00                   | 0.00                  |
| 7,000.0                                    | 90.00           | 180.00      | 4,020.0               | -3,799.3     | -496.7       | 3,823.2                 | 0.00                    | 0.00                   | 0.00                  |
| 7,100.0                                    | 90.00           | 180.00      | 4,020.0               | -3,899.3     | -496.7       | 3,923.0                 | 0.00                    | 0.00                   | 0.00                  |
| 7,200.0                                    | 90.00           | 180.00      | 4,020.0               | -3,999.3     | -496.7       | 4,022.8                 | 0.00                    | 0.00                   | 0.00                  |
| 7,300.0                                    | 90.00           | 180.00      | 4,020.0               | -4,099.3     | -496.7       | 4,122.6                 | 0.00                    | 0.00                   | 0.00                  |
| 7,400.0                                    | 90.00           | 180.00      | 4,020.0               | -4,199.3     | -496.7       | 4,222.4                 | 0.00                    | 0.00                   | 0.00                  |
| 7,500.0                                    | 90.00           | 180.00      | 4,020.0               | -4,299.3     | -496.7       | 4,322.2                 | 0.00                    | 0.00                   | 0.00                  |
| 7,600.0                                    | 90.00           | 180.00      | 4,020.0               | -4,399.3     | -496.8       | 4,422.0                 | 0.00                    | 0.00                   | 0.00                  |
| 7,700.0                                    | 90.00           | 180.00      | 4,020.0               | -4,499.3     | -496.8       | 4,521.8                 | 0.00                    | 0.00                   | 0.00                  |
| 7,800.0                                    | 90.00           | 180.00      | 4,020.0               | -4,599.3     | -496.8       | 4,621.6                 | 0.00                    | 0.00                   | 0.00                  |
| 7,900.0                                    | 90.00           | 180.00      | 4,020.0               | -4,699.3     | -496.8       | 4,721.4                 | 0.00                    | 0.00                   | 0.00                  |
| 8,000.0                                    | 90.00           | 180.00      | 4,020.0               | -4,799.3     | -496.8       | 4,821.2                 | 0.00                    | 0.00                   | 0.00                  |
| 8,100.0                                    | 90.00           | 180.00      | 4,020.0               | -4,899.3     | -496.8       | 4,921.0                 | 0.00                    | 0.00                   | 0.00                  |
| 8,200.0                                    | 90.00           | 180.00      | 4,020.0               | -4,999.3     | -496.8       | 5,020.8                 | 0.00                    | 0.00                   | 0.00                  |
| 8,300.0                                    | 90.00           | 180.00      | 4,020.0               | -5,099.3     | -496.8       | 5,120.6                 | 0.00                    | 0.00                   | 0.00                  |
| 8,400.0                                    | 90.00           | 180.00      | 4,020.0               | -5,199.3     | -496.8       | 5,220.4                 | 0.00                    | 0.00                   | 0.00                  |
| 8,500.0                                    | 90.00           | 180.00      | 4,020.0               | -5,299.3     | -496.8       | 5,320.2                 | 0.00                    | 0.00                   | 0.00                  |
| 8,600.0                                    | 90.00           | 180.00      | 4,020.0               | -5,399.3     | -496.8       | 5,420.0                 | 0.00                    | 0.00                   | 0.00                  |
| 8,700.0                                    | 90.00           | 180.00      | 4,020.0               | -5,499.3     | -496.8       | 5,519.8                 | 0.00                    | 0.00                   | 0.00                  |
| 8,800.0                                    | 90.00           | 180.00      | 4,020.0               | -5,599.3     | -496.8       | 5,619.6                 | 0.00                    | 0.00                   | 0.00                  |
| 8,900.0                                    | 90.00           | 180.00      | 4,020.0               | -5,699.3     | -496.8       | 5,719.4                 | 0.00                    | 0.00                   | 0.00                  |
| 9,000.0                                    | 90.00           | 180.00      | 4,020.0               | -5,799.3     | -496.8       | 5,819.2                 | 0.00                    | 0.00                   | 0.00                  |

Database: EDM 5000.1 Single User Db  
 Company: Energen Resources Corp  
 Project: Rio Arriba County, NM  
 Site: Sec 24 T32N R05W  
 Well: Carracas 25A #7H  
 Wellbore: Wellbore #1  
 Design: Design #2

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well Carracas 25A #7H  
 WELL @ 7388.0usft (Original Well Elev)  
 WELL @ 7388.0usft (Original Well Elev)  
 True  
 Minimum Curvature

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 9,100.0               | 90.00           | 180.00      | 4,020.0               | -5,899.3     | -496.8       | 5,919.0                 | 0.00                    | 0.00                   | 0.00                  |
| 9,200.0               | 90.00           | 180.00      | 4,020.0               | -5,999.3     | -496.8       | 6,018.8                 | 0.00                    | 0.00                   | 0.00                  |
| 9,300.0               | 90.00           | 180.00      | 4,020.0               | -6,099.3     | -496.8       | 6,118.5                 | 0.00                    | 0.00                   | 0.00                  |
| 9,400.0               | 90.00           | 180.00      | 4,020.0               | -6,199.3     | -496.8       | 6,218.3                 | 0.00                    | 0.00                   | 0.00                  |
| 9,500.0               | 90.00           | 180.00      | 4,020.0               | -6,299.3     | -496.8       | 6,318.1                 | 0.00                    | 0.00                   | 0.00                  |
| 9,600.0               | 90.00           | 180.00      | 4,020.0               | -6,399.3     | -496.8       | 6,417.9                 | 0.00                    | 0.00                   | 0.00                  |
| 9,700.0               | 90.00           | 180.00      | 4,020.0               | -6,499.3     | -496.8       | 6,517.7                 | 0.00                    | 0.00                   | 0.00                  |
| 9,800.0               | 90.00           | 180.00      | 4,020.0               | -6,599.3     | -496.8       | 6,617.5                 | 0.00                    | 0.00                   | 0.00                  |
| 9,900.0               | 90.00           | 180.00      | 4,020.0               | -6,699.3     | -496.8       | 6,717.3                 | 0.00                    | 0.00                   | 0.00                  |
| 10,000.0              | 90.00           | 180.00      | 4,020.0               | -6,799.3     | -496.8       | 6,817.1                 | 0.00                    | 0.00                   | 0.00                  |
| 10,100.0              | 90.00           | 180.00      | 4,020.0               | -6,899.3     | -496.8       | 6,916.9                 | 0.00                    | 0.00                   | 0.00                  |
| 10,200.0              | 90.00           | 180.00      | 4,020.0               | -6,999.3     | -496.8       | 7,016.7                 | 0.00                    | 0.00                   | 0.00                  |
| 10,300.0              | 90.00           | 180.00      | 4,020.0               | -7,099.3     | -496.8       | 7,116.5                 | 0.00                    | 0.00                   | 0.00                  |
| 10,400.0              | 90.00           | 180.00      | 4,020.0               | -7,199.3     | -496.8       | 7,216.3                 | 0.00                    | 0.00                   | 0.00                  |
| 10,500.0              | 90.00           | 180.00      | 4,020.0               | -7,299.3     | -496.8       | 7,316.1                 | 0.00                    | 0.00                   | 0.00                  |
| 10,600.0              | 90.00           | 180.00      | 4,020.0               | -7,399.3     | -496.8       | 7,415.9                 | 0.00                    | 0.00                   | 0.00                  |
| 10,700.0              | 90.00           | 180.00      | 4,020.0               | -7,499.3     | -496.8       | 7,515.7                 | 0.00                    | 0.00                   | 0.00                  |
| 10,800.0              | 90.00           | 180.00      | 4,020.0               | -7,599.3     | -496.8       | 7,615.5                 | 0.00                    | 0.00                   | 0.00                  |
| 10,900.0              | 90.00           | 180.00      | 4,020.0               | -7,699.3     | -496.8       | 7,715.3                 | 0.00                    | 0.00                   | 0.00                  |
| 10,974.3              | 90.00           | 180.00      | 4,020.0               | -7,773.5     | -496.8       | 7,789.4                 | 0.00                    | 0.00                   | 0.00                  |

"TD 7H" @ 10974' MD

**Design Targets**

| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude         | Longitude         |
|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|------------------|-------------------|
| - hit/miss target         |               |              |            |              |              |                 |                |                  |                   |
| - Shape                   |               |              |            |              |              |                 |                |                  |                   |
| TD 7H                     | 0.00          | 0.00         | 4,020.0    | -7,773.5     | -496.8       | 2,164,773.50    | 1,327,389.61   | 36° 56' 39.444 N | 107° 19' 16.320 W |
| - plan hits target center |               |              |            |              |              |                 |                |                  |                   |
| - Point                   |               |              |            |              |              |                 |                |                  |                   |
| Land 7H                   | 0.00          | 0.00         | 4,020.0    | -2,708.9     | -496.7       | 2,169,837.81    | 1,327,446.54   | 36° 57' 29.520 N | 107° 19' 16.320 W |
| - plan hits target center |               |              |            |              |              |                 |                |                  |                   |
| - Point                   |               |              |            |              |              |                 |                |                  |                   |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                         |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                 |
| 2,500.0               | 2,500.0               | 0.0               | 0.0          | KOP 6°/100' @ 2500' MD          |
| 3,616.6               | 3,379.0               | -565.1            | -138.2       | Hold 67° @ 3616' MD             |
| 4,579.5               | 3,755.3               | -1,426.1          | -348.7       | Build & Turn 2°/100' @ 4579' MD |
| 5,909.6               | 4,020.0               | -2,708.9          | -496.7       | "Land 7H" 90° @ 5909' MD        |
| 10,974.3              | 4,020.0               | -7,773.5          | -496.8       | "TD 7H" @ 10974' MD             |