

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM 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.

RECEIVED  
OCT 18 2010

SUBMIT IN TRIPLICATE - Other instructions on page 2  
Farmington Field Office  
Bureau of Land Management

## 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)

SHL: (M) Sec.29-T32N-R05W ; 725'FSL, 800'FWL

BHL: (C) Sec.29-T32N-R05W ; 760'FNL, 1880'FWL

## 5. Lease Serial No.

NM-4461

## 6. If Indian, Allottee or Tribe Name

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

Elk Horn

## 8. Well Name and No.

Elk Horn 100

## 9. API Well No.

30-039-27337

## 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 recomplete 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 recompletion 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 recomplete the Elk Horn #100 by drilling a horizontal lateral off of the existing vertical wellbore as indicated on the revised attached C-102 and directional wellplan. A whipstock will be set at 3116'+/- (TVD) and a window milled in the existing 7" casing from 3101'-3109'+/- (TVD). The lateral will be drilled to 7206'MD, 3382'TVD. A 4.5" 11.6 ppf, J-55, LT&C pre drilled liner will be ran and set from 3101'-7206'MD.

RCVD OCT 26 '10

## CONDITIONS OF APPROVAL

Adhere to previously issued stipulations.

OIL CONS. DIV.

DIST. 3

Hold C104 for change in STATUS to 100 or 101'S"  
STATUS change must be APPROVED Before this work begins

14. I hereby certify that the foregoing is true and correct  
Name (Printed/Typed)

Stephen Byers

Title Drilling Engineer

Signature

*Stephen Byers*

Date 10/13/2010

## THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

*Wayne Townsend*

Title

*Pet. Eng.*

Date

*10/25/10*

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

*FFO*

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes 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.

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised July 16, 2010  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

|                                         |                                                             |                                                |
|-----------------------------------------|-------------------------------------------------------------|------------------------------------------------|
| <sup>1</sup> API Number<br>30-039-27337 | <sup>2</sup> Pool Code<br>71629                             | <sup>3</sup> Pool Name<br>Basin Fruitland Coal |
| <sup>4</sup> Property Code<br>32567     | <sup>5</sup> Property Name<br>Elkhorn                       | <sup>6</sup> Well Number<br>100                |
| <sup>7</sup> OGRID No.<br>162928        | <sup>8</sup> Operator Name<br>Energen Resources Corporation | <sup>9</sup> Elevation<br>6682'                |

<sup>10</sup> Surface Location

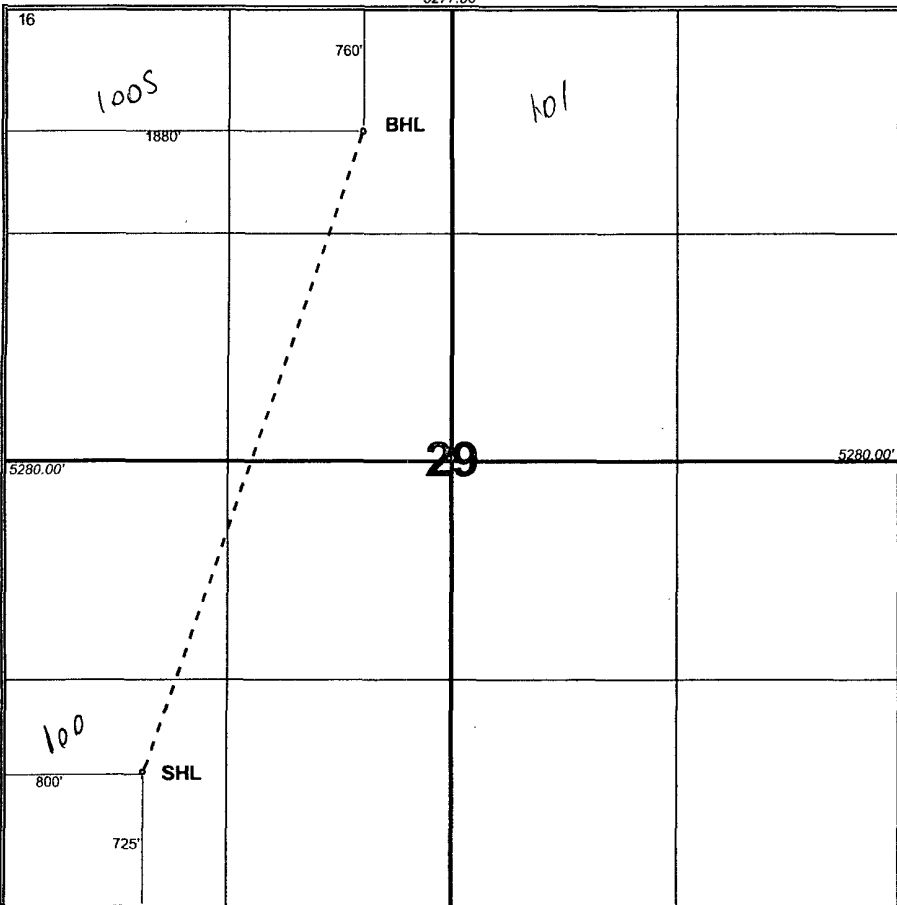
| UL or lot no. | Section | Township | Range | Lot 1 dn | Feet from the | North/South line | Feet from the | East/West line | County     |
|---------------|---------|----------|-------|----------|---------------|------------------|---------------|----------------|------------|
| M             | 29      | 32N      | 5W    |          | 725'          | South            | 800'          | West           | Rio Arriba |

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

| UL or lot no. | Section | Township | Range | Lot 1 dn | Feet from the | North/South line | Feet from the | East/West line | County     |
|---------------|---------|----------|-------|----------|---------------|------------------|---------------|----------------|------------|
| C             | 29      | 32N      | 5W    |          | 760'          | North            | 1880'         | West           | Rio Arriba |

|                                          |                               |                                  |                         |
|------------------------------------------|-------------------------------|----------------------------------|-------------------------|
| <sup>12</sup> Dedicated Acres<br>320 W/2 | <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.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><sup>17</sup> <b>OPERATOR CERTIFICATION</b></p> <p>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 of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><u>Stephen Byers</u> 10/08/2010<br/>Signature Date</p> <p>Stephen Byers<br/>Printed Name</p> <p><u>sbuers@energen.com</u><br/>E-mail Address</p> |
|                                                                                     | <p><sup>18</sup> <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>November 5, 2002<br/>Date of Survey</p> <p>Signature and Seal of Professional Surveyor:</p> <p>James C. Edwards<br/>Certificate Number 15269</p>                                                                                                                                                                                                                                                                                           |



## **Energen Resources Corp.**

**SJBR Sec.29-T32N-R05W**

**Eul Canyon**

**Elk Horn #100 ST**

**Re-Entry Sidetrack OPE FTC**

**Plan: Sidetrack Plan #1**

## **DIRECTIONAL PLAN**

**12 October, 2010**

Prepared By: Stephen Byers



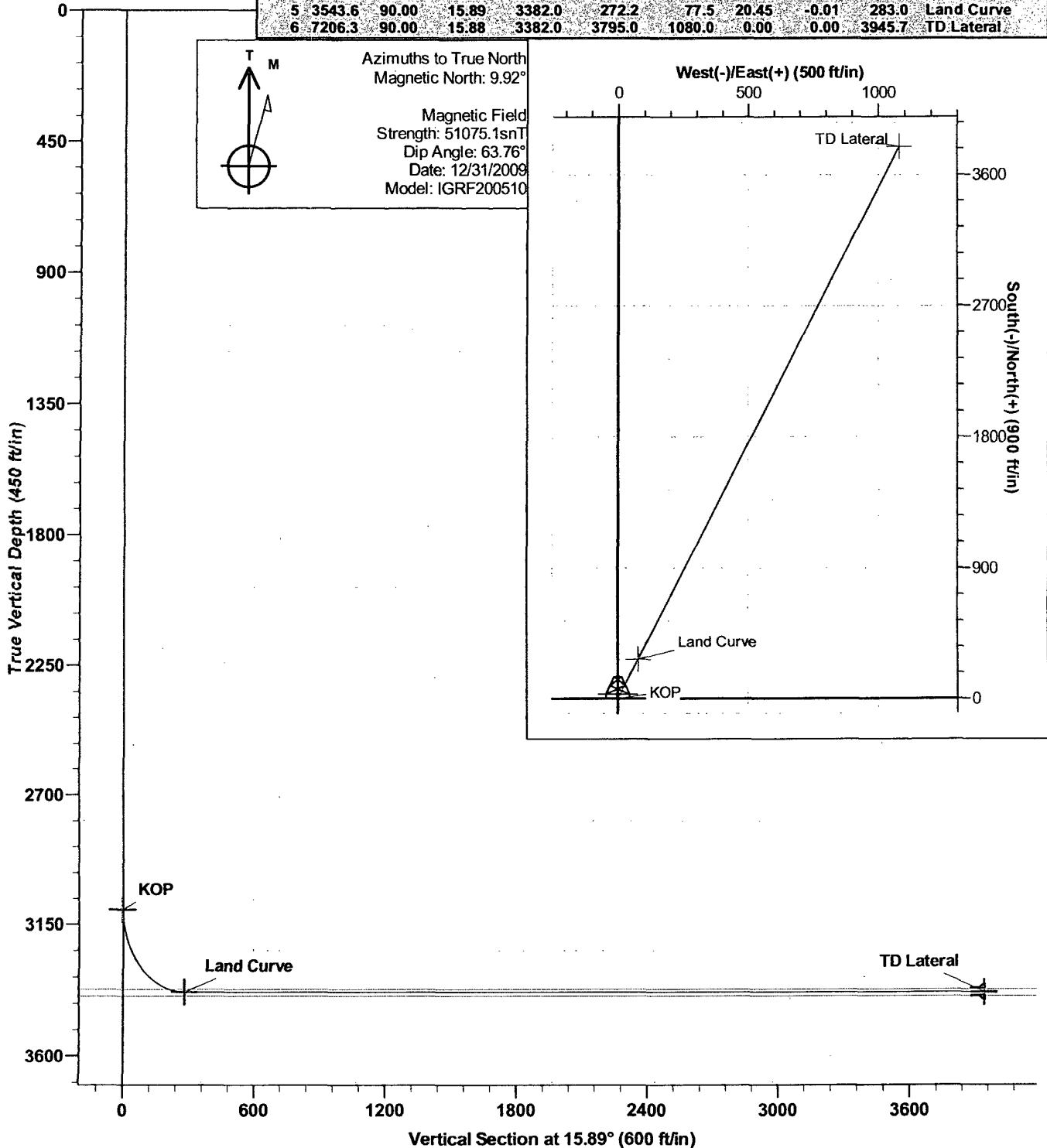
Project: SJBR Sec.29-T32N-R05W  
 Site: Eul Canyon  
 Well: Elk Horn #100 ST  
 Wellbore: Re-Entry Sidetrack OPE FTC

PROJECT DETAILS:

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Central Zone

SECTION DETAILS

| Sec | MD     | Inc   | Azi   | TVD    | +N/-S  | +E/-W  | DLeg  | TFace | VSec   | Target     |
|-----|--------|-------|-------|--------|--------|--------|-------|-------|--------|------------|
| 1   | 0.0    | 0.00  | 0.00  | 0.0    | 0.0    | 0.0    | 0.00  | 0.00  | 0.0    |            |
| 2   | 3101.0 | 0.00  | 0.00  | 3101.0 | 0.0    | 0.0    | 0.00  | 0.00  | 0.0    | KOP        |
| 3   | 3374.0 | 56.24 | 15.89 | 3332.3 | 118.9  | 33.8   | 20.60 | 15.89 | 123.6  |            |
| 4   | 3378.6 | 56.24 | 15.89 | 3334.8 | 122.5  | 34.9   | 0.00  | 0.00  | 127.3  |            |
| 5   | 3543.6 | 90.00 | 15.89 | 3382.0 | 272.2  | 77.5   | 20.45 | -0.01 | 283.0  | Land Curve |
| 6   | 7206.3 | 90.00 | 15.88 | 3382.0 | 3795.0 | 1080.0 | 0.00  | 0.00  | 3945.7 | TD Lateral |



# Energen

## DIRECTIONAL PLAN

**Company:** Energen Resources  
**Project:** SJBR Sec.29-T32N-R05W  
**Site:** Eul Canyon  
**Well:** Elk Horn #100 ST  
**Wellbore:** Re-Entry Sidetrack OPE FTC  
**Design:** Sidetrack Plan #1

**Local Co-ordinate Reference:** Well Elk Horn #100 ST  
**TVD Reference:** KB @ 6697.0ft (KB)  
**MD Reference:** KB @ 6697.0ft (KB)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | SJBR Sec.29-T32N-R05W     |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | New Mexico Central Zone   |                      |                |

|                              |            |                          |                   |
|------------------------------|------------|--------------------------|-------------------|
| <b>Site</b>                  | Eul Canyon |                          |                   |
| <b>Site Position:</b>        |            | <b>Northing:</b>         | 2,165,718.76 ft   |
| <b>From:</b>                 | Lat/Long   | <b>Easting:</b>          | 1,306,813.29 ft   |
| <b>Position Uncertainty:</b> | 0.0 ft     | <b>Slot Radius:</b>      | "                 |
|                              |            | <b>Latitude:</b>         | 36° 56' 46.428 N  |
|                              |            | <b>Longitude:</b>        | 107° 23' 29.904 W |
|                              |            | <b>Grid Convergence:</b> | -0.69 °           |

|                             |                  |                            |                                  |
|-----------------------------|------------------|----------------------------|----------------------------------|
| <b>Well</b>                 | Elk Horn #100 ST |                            |                                  |
| <b>Well Position</b>        | +N/-S            | 0.0 ft                     | <b>Northing:</b> 2,165,718.76 ft |
|                             | +E/-W            | 0.0 ft                     | <b>Easting:</b> 1,306,813.29 ft  |
| <b>Position Uncertainty</b> | 0.0 ft           | <b>Wellhead Elevation:</b> | 6,682.0 ft                       |
|                             |                  | <b>Latitude:</b>           | 36° 56' 46.428 N                 |
|                             |                  | <b>Longitude:</b>          | 107° 23' 29.904 W                |
|                             |                  | <b>Ground Level:</b>       | 6,682.0 ft                       |

|                  |                            |                    |                            |                          |                                |
|------------------|----------------------------|--------------------|----------------------------|--------------------------|--------------------------------|
| <b>Wellbore</b>  | Re-Entry Sidetrack OPE FTC |                    |                            |                          |                                |
| <b>Magnetics</b> | <b>Model Name</b>          | <b>Sample Date</b> | <b>Declination<br/>(°)</b> | <b>Dip Angle<br/>(°)</b> | <b>Field Strength<br/>(nT)</b> |
|                  | IGRF200510                 | 12/31/2009         | 9.92                       | 63.76                    | 51,075                         |

|                          |                                  |                       |                       |                          |     |
|--------------------------|----------------------------------|-----------------------|-----------------------|--------------------------|-----|
| <b>Design</b>            | Sidetrack Plan #1                |                       |                       |                          |     |
| <b>Audit Notes:</b>      |                                  |                       |                       |                          |     |
| <b>Version:</b>          |                                  | <b>Phase:</b>         | PROTOTYPE             | <b>Tie On Depth:</b>     | 0.0 |
| <b>Vertical Section:</b> | <b>Depth From (TVD)<br/>(ft)</b> | <b>+N/-S<br/>(ft)</b> | <b>+E/-W<br/>(ft)</b> | <b>Direction<br/>(°)</b> |     |
|                          | 0.0                              | 0.0                   | 0.0                   | 15.89                    |     |

|                            |                    |                                          |                  |                    |  |
|----------------------------|--------------------|------------------------------------------|------------------|--------------------|--|
| <b>Survey Tool Program</b> | Date 10/12/2010    |                                          |                  |                    |  |
| <b>From<br/>(ft)</b>       | <b>To<br/>(ft)</b> | <b>Survey (Wellbore)</b>                 | <b>Tool Name</b> | <b>Description</b> |  |
| 0.0                        | 7,206.3            | Sidetrack Plan #1 (Re-Entry Sidetrack OP | MWD              | MWD - Standard     |  |

|                       |                     |                    |                    |                            |                     |                     |                        |
|-----------------------|---------------------|--------------------|--------------------|----------------------------|---------------------|---------------------|------------------------|
| <b>Planned Survey</b> |                     |                    |                    |                            |                     |                     |                        |
| <b>MD<br/>(ft)</b>    | <b>TVD<br/>(ft)</b> | <b>Inc<br/>(°)</b> | <b>Azi<br/>(°)</b> | <b>Build<br/>(°/100ft)</b> | <b>N/S<br/>(ft)</b> | <b>E/W<br/>(ft)</b> | <b>V. Sec<br/>(ft)</b> |
| 0.0                   | 0.0                 | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 100.0                 | 100.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 200.0                 | 200.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 300.0                 | 300.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 400.0                 | 400.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 500.0                 | 500.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 600.0                 | 600.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 700.0                 | 700.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 800.0                 | 800.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 900.0                 | 900.0               | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 1,000.0               | 1,000.0             | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |
| 1,100.0               | 1,100.0             | 0.00               | 0.00               | 0.00                       | 0.0                 | 0.0                 | 0.0                    |

# Energen

## DIRECTIONAL PLAN

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**Site:** Eul Canyon  
**Well:** Elk Horn #100 ST  
**Wellbore:** Re-Entry Sidetrack OPE FTC  
**Design:** Sidetrack Plan #1

**Local Co-ordinate Reference:** Well Elk Horn #100 ST  
**TVD Reference:** KB @ 6697.0ft (KB)  
**MD Reference:** KB @ 6697.0ft (KB)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

### Planned Survey

| MD<br>(ft)             | TVD<br>(ft) | Inc<br>(°) | Azi<br>(°) | Build<br>(°/100ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) |
|------------------------|-------------|------------|------------|--------------------|-------------|-------------|----------------|
| 1,200.0                | 1,200.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,300.0                | 1,300.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,400.0                | 1,400.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,500.0                | 1,500.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,600.0                | 1,600.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,700.0                | 1,700.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,800.0                | 1,800.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 1,900.0                | 1,900.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,000.0                | 2,000.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,100.0                | 2,100.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,200.0                | 2,200.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,300.0                | 2,300.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,400.0                | 2,400.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,500.0                | 2,500.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,600.0                | 2,600.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,700.0                | 2,700.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,800.0                | 2,800.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 2,900.0                | 2,900.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 3,000.0                | 3,000.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| 3,101.0                | 3,101.0     | 0.00       | 0.00       | 0.00               | 0.0         | 0.0         | 0.0            |
| <b>KOP</b>             |             |            |            |                    |             |             |                |
| 3,125.0                | 3,125.0     | 4.94       | 15.89      | 20.60              | 1.0         | 0.3         | 1.0            |
| 3,150.0                | 3,149.7     | 10.09      | 15.89      | 20.60              | 4.1         | 1.2         | 4.3            |
| 3,175.0                | 3,174.1     | 15.24      | 15.89      | 20.60              | 9.4         | 2.7         | 9.8            |
| 3,200.0                | 3,197.9     | 20.39      | 15.89      | 20.60              | 16.8        | 4.8         | 17.4           |
| 3,225.0                | 3,220.9     | 25.54      | 15.89      | 20.60              | 26.1        | 7.4         | 27.2           |
| 3,250.0                | 3,243.0     | 30.69      | 15.89      | 20.60              | 37.5        | 10.7        | 39.0           |
| 3,275.0                | 3,263.9     | 35.84      | 15.89      | 20.60              | 50.7        | 14.4        | 52.7           |
| 3,300.0                | 3,283.5     | 40.99      | 15.89      | 20.60              | 65.6        | 18.7        | 68.2           |
| 3,325.0                | 3,301.6     | 46.14      | 15.89      | 20.60              | 82.2        | 23.4        | 85.4           |
| 3,350.0                | 3,318.1     | 51.29      | 15.89      | 20.60              | 100.2       | 28.5        | 104.2          |
| 3,374.0                | 3,332.3     | 56.24      | 15.89      | 20.60              | 118.9       | 33.8        | 123.6          |
| 3,378.6                | 3,334.8     | 56.24      | 15.89      | 0.00               | 122.5       | 34.9        | 127.3          |
| 3,400.0                | 3,346.0     | 60.63      | 15.89      | 20.45              | 140.0       | 39.9        | 145.6          |
| 3,425.0                | 3,357.3     | 65.74      | 15.89      | 20.45              | 161.5       | 46.0        | 167.9          |
| 3,450.0                | 3,366.5     | 70.85      | 15.89      | 20.45              | 183.8       | 52.3        | 191.1          |
| 3,468.5                | 3,372.0     | 74.65      | 15.89      | 20.45              | 200.9       | 57.2        | 208.8          |
| <b>Top Target Coal</b> |             |            |            |                    |             |             |                |
| 3,475.0                | 3,373.6     | 75.97      | 15.89      | 20.45              | 206.9       | 58.9        | 215.1          |
| 3,500.0                | 3,378.6     | 81.08      | 15.89      | 20.45              | 230.4       | 65.6        | 239.6          |
| 3,525.0                | 3,381.4     | 86.19      | 15.89      | 20.45              | 254.3       | 72.4        | 264.4          |
| 3,543.6                | 3,382.0     | 90.00      | 15.89      | 20.45              | 272.2       | 77.5        | 283.0          |
| <b>Land Curve</b>      |             |            |            |                    |             |             |                |
| 3,600.0                | 3,382.0     | 90.00      | 15.89      | 0.00               | 326.4       | 92.9        | 339.4          |
| 3,700.0                | 3,382.0     | 90.00      | 15.89      | 0.00               | 422.6       | 120.3       | 439.4          |

# Energen

## DIRECTIONAL PLAN

**Company:** Energen Resources  
**Project:** SJBR Sec.29-T32N-R05W  
**Site:** Eul Canyon  
**Well:** Elk Horn #100 ST  
**Wellbore:** Re-Entry Sidetrack OPE FTC  
**Design:** Sidetrack Plan #1

**Local Co-ordinate Reference:** Well Elk Horn #100 ST  
**TVD Reference:** KB @ 6697.0ft (KB)  
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**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

### Planned Survey

| MD<br>(ft) | TVD<br>(ft) | Inc<br>(°) | Azi<br>(°) | Build<br>(°/100ft) | N/S<br>(ft) | E/W<br>(ft) | V. Sec<br>(ft) |
|------------|-------------|------------|------------|--------------------|-------------|-------------|----------------|
| 3,800.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 518.8       | 147.7       | 539.4          |
| 3,900.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 615.0       | 175.1       | 639.4          |
| 4,000.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 711.1       | 202.5       | 739.4          |
| 4,100.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 807.3       | 229.8       | 839.4          |
| 4,200.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 903.5       | 257.2       | 939.4          |
| 4,300.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 999.7       | 284.6       | 1,039.4        |
| 4,400.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,095.9     | 312.0       | 1,139.4        |
| 4,500.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,192.0     | 339.4       | 1,239.4        |
| 4,600.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,288.2     | 366.7       | 1,339.4        |
| 4,700.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,384.4     | 394.1       | 1,439.4        |
| 4,800.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,480.6     | 421.5       | 1,539.4        |
| 4,900.0    | 3,382.0     | 90.00      | 15.89      | 0.00               | 1,576.8     | 448.9       | 1,639.4        |
| 5,000.0    | 3,381.9     | 90.00      | 15.89      | 0.00               | 1,672.9     | 476.2       | 1,739.4        |
| 5,100.0    | 3,381.9     | 90.00      | 15.89      | 0.00               | 1,769.1     | 503.6       | 1,839.4        |
| 5,200.0    | 3,381.9     | 90.00      | 15.89      | 0.00               | 1,865.3     | 531.0       | 1,939.4        |
| 5,300.0    | 3,381.9     | 90.00      | 15.89      | 0.00               | 1,961.5     | 558.4       | 2,039.4        |
| 5,400.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,057.7     | 585.8       | 2,139.4        |
| 5,500.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,153.8     | 613.1       | 2,239.4        |
| 5,600.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,250.0     | 640.5       | 2,339.4        |
| 5,700.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,346.2     | 667.9       | 2,439.4        |
| 5,800.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,442.4     | 695.3       | 2,539.4        |
| 5,900.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,538.5     | 722.7       | 2,639.4        |
| 6,000.0    | 3,381.9     | 90.01      | 15.89      | 0.00               | 2,634.7     | 750.0       | 2,739.4        |
| 6,100.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 2,730.9     | 777.4       | 2,839.4        |
| 6,200.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 2,827.1     | 804.8       | 2,939.4        |
| 6,300.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 2,923.3     | 832.2       | 3,039.4        |
| 6,400.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 3,019.4     | 859.6       | 3,139.4        |
| 6,500.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 3,115.6     | 886.9       | 3,239.4        |
| 6,600.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 3,211.8     | 914.3       | 3,339.4        |
| 6,700.0    | 3,381.8     | 90.01      | 15.89      | 0.00               | 3,308.0     | 941.7       | 3,439.4        |
| 6,800.0    | 3,381.7     | 90.01      | 15.89      | 0.00               | 3,404.2     | 969.1       | 3,539.4        |
| 6,900.0    | 3,381.7     | 90.01      | 15.89      | 0.00               | 3,500.3     | 996.4       | 3,639.4        |
| 7,000.0    | 3,381.7     | 90.01      | 15.89      | 0.00               | 3,596.5     | 1,023.8     | 3,739.4        |
| 7,100.0    | 3,381.7     | 90.01      | 15.89      | 0.00               | 3,692.7     | 1,051.2     | 3,839.4        |
| 7,206.3    | 3,382.0     | 90.00      | 15.88      | -0.01              | 3,795.0     | 1,080.0     | 3,945.7        |

TD Lateral

# Energen

## DIRECTIONAL PLAN

**Company:** Energen Resources  
**Project:** SJBR Sec.29-T32N-R05W  
**Site:** Eul Canyon  
**Well:** Elk Horn #100 ST  
**Wellbore:** Re-Entry Sidetrack OPE FTC  
**Design:** Sidetrack Plan #1

**Local Co-ordinate Reference:** Well Elk Horn #100 ST  
**TVD Reference:** KB @ 6697.0ft (KB)  
**MD Reference:** KB @ 6697.0ft (KB)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** EDM 2003.16 Single User Db

| Targets                                     |                  |                 |             |               |               |                  |                 |                  |                   |
|---------------------------------------------|------------------|-----------------|-------------|---------------|---------------|------------------|-----------------|------------------|-------------------|
| Target Name<br>- hit/miss target<br>- Shape | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Northing<br>(ft) | Easting<br>(ft) | Latitude         | Longitude         |
| Land Curve<br>- plan hits target<br>- Point | 0.00             | 0.00            | 3,382.0     | 272.2         | 77.5          | 2,165,990.01     | 1,306,894.05    | 36° 56' 49.119 N | 107° 23' 28.949 W |
| KOP<br>- plan hits target<br>- Point        | 0.00             | 0.00            | 3,101.0     | 0.0           | 0.0           | 2,165,718.76     | 1,306,813.29    | 36° 56' 46.428 N | 107° 23' 29.904 W |
| TD Lateral<br>- plan hits target<br>- Point | 0.00             | 0.00            | 3,382.0     | 3,795.0       | 1,080.0       | 2,169,500.55     | 1,307,938.67    | 36° 57' 23.950 N | 107° 23' 16.598 W |

| Casing Points          |                        |       |                        |                      |
|------------------------|------------------------|-------|------------------------|----------------------|
| Measured Depth<br>(ft) | Vertical Depth<br>(ft) | Name  | Casing Diameter<br>(") | Hole Diameter<br>(") |
| 7,206.0                | 3,381.7                | Liner | 4-1/2                  | 6-1/4                |

| Formations             |                        |                  |           |                      |
|------------------------|------------------------|------------------|-----------|----------------------|
| Measured Depth<br>(ft) | Vertical Depth<br>(ft) | Name             | Lithology | Dip Direction<br>(°) |
| 3,468.5                | 3,372.0                | Top Target Coal  |           | 0.00                 |
|                        | 3,396.0                | Base Target Coal |           | 0.00                 |

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