

## District I

1625 N. French Dr., Hobbs, NM 88240

## District II

811 South First, Artesia, NM 88210

## District III

1000 Rio Brazos Rd., Aztec, NM 87410

## District IV

2040 South Pacheco, Santa Fe, NM 87505

## Energy, Minerals and Natural Resources

Revised March 25, 1999

## OIL CONSERVATION DIVISION

2040 South Pacheco

Santa Fe, NM 87505

WELL API NO. 30-015-33722

5. Indicate Type of Lease

STATE ☒ FEE ☐

State Oil &amp; Gas Lease No.

## WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:

OIL WELL ☒ GAS WELL ☐ DRY ☐ OTHER ☐ Directional ☐ Horizontal ☐

b. Type of Completion:

NEW ☒ WORK ☐ PLUG ☐ DIFF. ☐  
WELL OVER ☐ DEEPEN ☐ BACK RESVR. ☐ OTHER ☐

2. Name of Operator

Southwestern Energy Production Company

3. Address of Operator

2350 N. Sam Houston Parkway East, Suite 300 - Houston, TX 77032

4. Well Location

Unit Letter **P** Feet From The **324** Line and **640** Feet From The **E** LineSection **2** Township **25S** Range **29E** NMPM **Eddy** County

10. Date Spudded

3-10-2005

11. Date T.D. Reached

4-7-2005

12. Date Compl. (Ready to Prod.)

5-1-2005

13. Elevations (DF&amp; RKB, RT, GR, etc.)

3084' GR

14. Elev. Casinghead

22'

15. Total Depth

9370'

16. Plug Back T.D.

9370'

17. If Multiple Compl. How Many

Zones?

18. Intervals

Drilled By

Rotary Tools

0-9370'

Cable Tools

19. Producing Interval(s), of this completion - Top, Bottom, Name

5616' - 9370'

20. Was Directional Survey Made

Yes

21. Type Electric and Other Logs Run

Mud Log, GR Log

21. Was Well Cored

No

## 23. CASING RECORD (Report all strings set in well)

| CASING SIZE | WEIGHT LB./FT. | DEPTH SET | HOLE SIZE | CEMENTING RECORD | AMOUNT PULLED |
|-------------|----------------|-----------|-----------|------------------|---------------|
| 16"         | Conductor      | 40'       |           |                  |               |
| 9-5/8"      | 36#            | 850'      | 12-1/4"   | 1150 sx          |               |
| 7"          | 23#            | 5616'     | 8-3/4"    | 362 sx           |               |
|             |                |           |           |                  |               |
|             |                |           |           |                  |               |

## 24. LINER RECORD

| SIZE | TOP | BOTTOM | SACKS CEMENT | SCREEN | SIZE   | DEPTH SET | PACKER SET |
|------|-----|--------|--------------|--------|--------|-----------|------------|
|      |     |        |              |        | 2-7/8" | 4902'     | N/A        |
|      |     |        |              |        |        |           |            |

## 25. TUBING RECORD

## 27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL AMOUNT AND KIND MATERIAL USED

N/A

N/A

## 28. PRODUCTION

|                                   |                       |                                                                                |                           |                 |                   |                                         |                        |
|-----------------------------------|-----------------------|--------------------------------------------------------------------------------|---------------------------|-----------------|-------------------|-----------------------------------------|------------------------|
| Date First Production<br>5-3-2005 |                       | Production Method (Flowing, gas lift, pumping - Size and type pump)<br>Pumping |                           |                 |                   | Well Status (Prod. or Shut-in)<br>Prod. |                        |
| Date of Test<br>5-5-2005          | Hours Tested<br>24    | Choke Size<br>OPEN                                                             | Prod'n For<br>Test Period | Oil - Bbl<br>35 | Gas - MCF<br>30   | Water - Bbl.<br>3                       | Gas - Oil Ratio<br>857 |
| Flow Tubing<br>Press. 40          | Casing Pressure<br>35 | Calculated 24-<br>Hour Rate                                                    | Oil - Bbl.<br>35          | Gas - MCF<br>30 | Water - Bbl.<br>3 | Oil Gravity - API - (Corr.)<br>38       |                        |

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

Vented

Test Witnessed By  
Bruce Drummond

30. List Attachments

Mud Log, GR Log, Directional, Survey

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature  Printed Name **Jill Hegemier** Title **Production Analyst** Date **6-2-2005**

# INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or reopened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 25 through 29 shall be reported for each zone. The form is to be filed in triplicate except on state land, where six copies are required. See Rule 1105.

## INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

### Southeastern New Mexico

Anhy \_\_\_\_\_ T. Canyon \_\_\_\_\_  
 Salt \_\_\_\_\_ T. Strawn \_\_\_\_\_  
 Salt \_\_\_\_\_ T. Atoka \_\_\_\_\_  
 Yates \_\_\_\_\_ T. Miss \_\_\_\_\_  
 7 Rivers \_\_\_\_\_ T. Devonian \_\_\_\_\_ 3220' \_\_\_\_\_  
 Queen \_\_\_\_\_ T. Silurian \_\_\_\_\_  
 Grayburg \_\_\_\_\_ T. Montoya \_\_\_\_\_  
 San Andres \_\_\_\_\_ T. Simpson \_\_\_\_\_  
 Glorieta \_\_\_\_\_ T. McKee \_\_\_\_\_  
 Paddock \_\_\_\_\_ T. Ellenburger \_\_\_\_\_  
 Blinberry \_\_\_\_\_ T. Gr. Wash \_\_\_\_\_  
 Tubb \_\_\_\_\_ T. Delaware Sand \_\_\_\_\_  
 Drinkard \_\_\_\_\_ T. Bone Springs \_\_\_\_\_  
 Abo \_\_\_\_\_ T. Bell Canyon \_\_\_\_\_  
 Wolfcamp \_\_\_\_\_ T. Cherry Canyon \_\_\_\_\_  
 Penn \_\_\_\_\_ T. Cherry Canyon 6 \_\_\_\_\_  
 Cisco (Bough C) \_\_\_\_\_ T. Lower Cherry Canyon \_\_\_\_\_

### Northwestern New Mexico

T. Ojo Alamo \_\_\_\_\_ T. Penn. "B" \_\_\_\_\_  
 T. Kirtland-Fruitland \_\_\_\_\_ T. Penn. "C" \_\_\_\_\_  
 T. Pictured Cliffs \_\_\_\_\_ T. Penn. "D" \_\_\_\_\_  
 T. Cliff House \_\_\_\_\_ T. Leadville \_\_\_\_\_  
 T. Menefee \_\_\_\_\_ T. Madison \_\_\_\_\_  
 T. Point Lookout \_\_\_\_\_ T. Elbert \_\_\_\_\_  
 T. Mancos \_\_\_\_\_ T. McCracken \_\_\_\_\_  
 T. Gallup \_\_\_\_\_ T. Ignacio Otzte \_\_\_\_\_  
 Base Greenhorn \_\_\_\_\_ T. Granite \_\_\_\_\_  
 T. Dakota \_\_\_\_\_ T. Cherry Canyon 4 \_\_\_\_\_  
 T. Morrison \_\_\_\_\_ T. Cherry Canyon 5 \_\_\_\_\_  
 T. Todilto \_\_\_\_\_ T. Cherry Canyon 6 \_\_\_\_\_  
 T. Entrada \_\_\_\_\_ T. Cherry Canyon 6 \_\_\_\_\_  
 T. Wingate \_\_\_\_\_ T. \_\_\_\_\_  
 T. Chinle \_\_\_\_\_ T. \_\_\_\_\_  
 T. Permian \_\_\_\_\_ T. \_\_\_\_\_  
 T. Penn "A" \_\_\_\_\_ Did not start mud log until '

### OIL OR GAS SANDS OR ZONES

No. 1, from ...5616' .....to.....9370' .....  
 No. 2, from .....to.....  
 No. 3, from .....to.....

No. 3, from .....to.....  
 No. 4, .....

### IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from .....to.....feet.....  
 No. 2, from .....to.....feet.....  
 No. 3, from .....to.....feet.....

### LITHOLOGY RECORD (Attach additional sheet if necessary)

| From                             | To    | Thickness<br>In Feet | Lithology                       | From | To | Thickness<br>In Feet | Lithology |
|----------------------------------|-------|----------------------|---------------------------------|------|----|----------------------|-----------|
| 000'                             | 3020' | 1020'                | Salt & Anhydrite                |      |    |                      |           |
| 020'                             | 3220' | 200'                 | Sand, Limestone, Salt Anhydrite |      |    |                      |           |
| 020'                             | 3400' | 180'                 | Salt, Shale, Sand, Limestone    |      |    |                      |           |
| 000'                             | 3460' | 60'                  | Sand, Limestone                 |      |    |                      |           |
| 060'                             | 3940' | 480'                 | Sand, Shale                     |      |    |                      |           |
| 040'                             | 3960' | 20'                  | Sand                            |      |    |                      |           |
| 060'                             | 4015' | 55'                  | Sand, Shale                     |      |    |                      |           |
| 015'                             | 4120' | 105'                 | Shale, Sand, Limestone          |      |    |                      |           |
| 020'                             | 4150' | 30'                  | Sand                            |      |    |                      |           |
| 050'                             | 4325' | 175'                 | Sand, Limestone                 |      |    |                      |           |
| 025'                             | 4360' | 35'                  | Sand, Shale                     |      |    |                      |           |
| 060'                             | 4580' | 220'                 | Sand, Shale, Anhydrite          |      |    |                      |           |
| 080'                             | 4620' | 40'                  | Shale, Limestone, Sand          |      |    |                      |           |
| 020'                             | 4660' | 40'                  | Sand, Shale                     |      |    |                      |           |
| 060'                             | 4840' | 180'                 | Sand, Anhydrite, Shale          |      |    |                      |           |
| 040'                             | 6010' | 1170'                | Sand, Shale                     |      |    |                      |           |
| 010'                             | 6085' | 75'                  | Shale                           |      |    |                      |           |
| 085'                             | 7385' | 1300'                | Sand, Shale                     |      |    |                      |           |
| 085'                             | 7725' | 340'                 | Shale                           |      |    |                      |           |
| 025'                             | 9370' | 1645'                | Sand, Shale                     |      |    |                      |           |
| <b>NOTE: Measures Depth (MD)</b> |       |                      |                                 |      |    |                      |           |

# PathFinder

## Survey Report

Company: Southwestern Energy & Product  
 Field: Karlsbad Corral  
 Site: Karlsbad Corral 2 #3-H  
 Well: Karlsbad Corral 2 #3H  
 Wellpath: Original Hole

Date: 3/22/2005 Time: 13:44:00 Page: 1  
 Co-ordinate(NE) Reference: Well: Karlsbad Corral 2 #3H, Grid North  
 Vertical (TVD) Reference: SITE 22.5  
 Section (VS) Reference: Well (0.00N,0.00E,359.75Azi)  
 Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Karlsbad Corral

Map System: US State Plane Coordinate System 1927  
 Geo Datum: NAD27 (Clarke 1866)  
 Sys Datum: Mean Sea Level

Map Zone: New Mexico, Eastern Zone  
 Coordinate System: Well Centre  
 Geomagnetic Model: igrf2005

Site: Karlsbad Corral 2 #3-H

Eddy County, New Mexico

Site Position: Northing: ft Latitude:  
 From: Lease Line Easting: ft Longitude:  
 Position Uncertainty: 0.00 ft North Reference: Grid  
 Ground Level: 3084.00 ft Grid Convergence: 0.20 deg

Well: Karlsbad Corral 2 #3H

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 419491.10 ft Latitude: 32 9 9.762 N  
 +E/-W 0.00 ft Easting: 619193.90 ft Longitude: 103 56 53.491 W  
 Position Uncertainty: 0.00 ft

Wellpath: Original Hole

Current Datum: SITE  
 Magnetic Data: 3/7/2005  
 Field Strength: 49194 nT  
 Vertical Section: Depth From (TVD)  
 ft

Height 22.50 ft

Drilled From: Surface  
 Tie-on Depth: 0.00 ft  
 Above System Datum: Mean Sea Level  
 Declination: 8.48 deg  
 Mag Dip Angle: 60.20 deg  
 +N/-S  
 ft  
 +E/-W  
 ft  
 Direction  
 deg

0.00

0.00

0.00

359.75

Survey: Gyro Survey

Start Date: 3/14/2005

Company: Scientific Drilling  
 Tool:

Engineer: Oscar Gomez  
 Tied-to: From Surface

Survey: Gyro Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 0.00     | 0.00        | 359.80      | 0.00      | 0.00        | 0.00        | 0.00     | 0.00             | 0.00               | 0.00              |              |
| 100.00   | 0.31        | 102.36      | 100.00    | -0.06       | 0.26        | -0.06    | 0.31             | 0.31               | 0.00              |              |
| 200.00   | 0.38        | 53.42       | 200.00    | 0.08        | 0.79        | 0.08     | 0.29             | 0.07               | -48.94            |              |
| 300.00   | 0.37        | 335.89      | 300.00    | 0.57        | 0.93        | 0.57     | 0.47             | -0.01              | -77.53            |              |
| 400.00   | 0.30        | 31.86       | 399.99    | 1.09        | 0.94        | 1.09     | 0.32             | -0.07              | 55.97             |              |
| 500.00   | 0.60        | 32.28       | 499.99    | 1.76        | 1.35        | 1.75     | 0.30             | 0.30               | 0.42              |              |
| 600.00   | 0.67        | 25.84       | 599.99    | 2.73        | 1.89        | 2.72     | 0.10             | 0.07               | -6.44             |              |
| 700.00   | 0.83        | 25.17       | 699.98    | 3.91        | 2.45        | 3.90     | 0.16             | 0.16               | -0.67             |              |
| 780.00   | 0.39        | 94.87       | 779.97    | 4.41        | 2.97        | 4.40     | 0.98             | -0.55              | 87.12             |              |

# Pathfinder

## Survey Report

Page 1  
Job No: J-WT-0503-0038 WTWT  
Date: 3/22/2005  
Time: 1:54 pm  
Wellpath ID: kc23h\_sv  
Date Created: 3/12/2005  
Last Revision: 3/22/2005

Calculated using the Minimum Curvature Method  
Computed using PDS VER2.2.6  
Vertical Section Plane: 359.75 deg.

Survey Reference: WELLHEAD  
Vertical Section Reference: WELLHEAD  
Closure Reference: WELLHEAD  
TVD Reference: WELLHEAD

Southwestern Energy  
Karlsbad Corral "2" #3-H  
Grey Wolf #76  
Eddy Co NM  
Sec. 2 - T25S - R29E Eddy Co. NM  
kc23h\_svy

| Measured<br>Depth<br>(ft)    | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | T O T A L<br>Rectangular Offsets<br>(ft) |        | Closure<br>Dist.<br>(ft) | Dir.<br>(deg.) | DLS<br>(dg/100ft) |
|------------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|------------------------------------------|--------|--------------------------|----------------|-------------------|
| Tie-In to SDI Gyro           |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 780.00                       | 0.39           | 94.87                   | 779.97      | 4.40                        | 0.00                     | 4.41 N                                   | 2.97 E | 5.32@                    | 33.96          | 0.00              |
| Begin PathFinder MWD Surveys |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 950.00                       | 0.35           | 298.14                  | 949.97      | 4.59                        | 170.00                   | 4.61 N                                   | 3.09 E | 5.55@                    | 33.85          | 0.43              |
| 1009.00                      | 0.70           | 134.49                  | 1008.97     | 4.42                        | 59.00                    | 4.44 N                                   | 3.19 E | 5.46@                    | 35.68          | 1.76              |
| 1062.00                      | 0.88           | 143.02                  | 1061.96     | 3.87                        | 53.00                    | 3.89 N                                   | 3.66 E | 5.34@                    | 43.30          | 0.40              |
| 1126.00                      | 1.32           | 178.52                  | 1125.95     | 2.74                        | 64.00                    | 2.76 N                                   | 3.98 E | 4.84@                    | 55.27          | 1.24              |
| 1190.00                      | 1.32           | 187.93                  | 1189.93     | 1.27                        | 64.00                    | 1.29 N                                   | 3.89 E | 4.10@                    | 71.68          | 0.34              |
| 1254.00                      | 1.06           | 217.11                  | 1253.92     | 0.07                        | 64.00                    | 0.09 N                                   | 3.44 E | 3.44@                    | 88.54          | 1.02              |
| 1318.00                      | 0.97           | 211.48                  | 1317.91     | -0.86                       | 64.00                    | 0.85 S                                   | 2.80 E | 2.92@                    | 106.85         | 0.21              |
| 1381.00                      | 1.06           | 215.79                  | 1380.90     | -1.78                       | 63.00                    | 1.77 S                                   | 2.18 E | 2.81@                    | 129.19         | 0.19              |
| 1445.00                      | 0.18           | 222.12                  | 1444.90     | -2.34                       | 64.00                    | 2.33 S                                   | 1.76 E | 2.92@                    | 142.88         | 1.38              |
| 1508.00                      | 0.35           | 342.88                  | 1507.90     | -2.23                       | 63.00                    | 2.22 S                                   | 1.64 E | 2.76@                    | 143.53         | 0.74              |
| 1572.00                      | 0.70           | 338.03                  | 1571.89     | -1.68                       | 64.00                    | 1.67 S                                   | 1.44 E | 2.20@                    | 139.29         | 0.55              |
| Bad Azimuth Mag Interference |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 1636.00                      | 0.79           | 5.45                    | 1635.89     | -0.87                       | 64.00                    | 0.87 S                                   | 1.33 E | 1.55@                    | 123.08         | 0.57              |
| 1668.00                      | 0.97           | 27.95                   | 1667.88     | -0.41                       | 32.00                    | 0.41 S                                   | 1.48 E | 1.53@                    | 105.43         | 1.21              |
| 1700.00                      | 0.88           | 22.07                   | 1699.88     | 0.05                        | 32.00                    | 0.06 N                                   | 1.70 E | 1.70@                    | 88.03          | 0.41              |
| 1732.00                      | 0.79           | 32.09                   | 1731.88     | 0.46                        | 32.00                    | 0.47 N                                   | 1.91 E | 1.97@                    | 76.07          | 0.53              |
| Bad Azimuth Mag Interference |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 1795.00                      | 0.44           | 49.05                   | 1794.87     | 0.99                        | 63.00                    | 1.00 N                                   | 2.32 E | 2.53@                    | 66.70          | 0.62              |
| Bad Azimuth Mag Interference |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 1859.00                      | 0.09           | 113.03                  | 1858.87     | 1.13                        | 64.00                    | 1.14 N                                   | 2.55 E | 2.80@                    | 65.92          | 0.64              |
| Bad Azimuth Mag Interference |                |                         |             |                             |                          |                                          |        |                          |                |                   |
| 1923.00                      | 0.35           | 217.80                  | 1922.87     | 0.96                        | 64.00                    | 0.97 N                                   | 2.48 E | 2.66@                    | 68.70          | 0.60              |
| 1987.00                      | 0.44           | 228.17                  | 1986.87     | 0.64                        | 64.00                    | 0.65 N                                   | 2.18 E | 2.27@                    | 73.41          | 0.18              |
| 2051.00                      | 0.26           | 206.02                  | 2050.87     | 0.35                        | 64.00                    | 0.35 N                                   | 1.93 E | 1.96@                    | 79.60          | 0.35              |
| 2114.00                      | 0.44           | 146.96                  | 2113.87     | 0.01                        | 63.00                    | 0.02 N                                   | 2.00 E | 2.00@                    | 89.34          | 0.60              |
| 2178.00                      | 0.35           | 144.15                  | 2177.87     | -0.35                       | 64.00                    | 0.34 S                                   | 2.25 E | 2.27@                    | 98.64          | 0.14              |
| 2242.00                      | 0.97           | 211.21                  | 2241.86     | -0.97                       | 64.00                    | 0.96 S                                   | 2.08 E | 2.25@                    | 114.83         | 1.40              |
| 2306.00                      | 0.62           | 233.44                  | 2305.86     | -1.64                       | 64.00                    | 1.63 S                                   | 1.52 E | 2.23@                    | 136.99         | 0.72              |
| 2370.00                      | 0.44           | 177.98                  | 2369.85     | -2.09                       | 64.00                    | 2.08 S                                   | 1.25 E | 2.43@                    | 148.98         | 0.81              |
| 2434.00                      | 0.62           | 172.80                  | 2433.85     | -2.68                       | 64.00                    | 2.67 S                                   | 1.31 E | 2.95@                    | 153.98         | 0.29              |

# Pathfinder Survey Report

Page 2  
Date: 3/22/2005  
Wellpath ID: kc23h\_sv

| Measured<br>Depth<br>(ft) | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | T O T A L<br>Rectangular Offsets<br>(ft) |         | Closure<br>Dist. Dir.<br>(ft) (deg.) | DLS<br>(dg/100ft) |
|---------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|------------------------------------------|---------|--------------------------------------|-------------------|
| 2497.00                   | 1.14           | 113.65                  | 2496.84     | -3.27                       | 63.00                    | 3.26 S                                   | 1.92 E  | 3.79@149.50                          | 1.55              |
| 2561.00                   | 1.32           | 106.18                  | 2560.83     | -3.74                       | 64.00                    | 3.72 S                                   | 3.21 E  | 4.92@139.21                          | 0.38              |
| 2625.00                   | 1.23           | 107.14                  | 2624.81     | -4.15                       | 64.00                    | 4.13 S                                   | 4.58 E  | 6.17@132.07                          | 0.14              |
| 2688.00                   | 0.35           | 66.19                   | 2687.81     | -4.28                       | 63.00                    | 4.25 S                                   | 5.40 E  | 6.87@128.23                          | 1.58              |
| 2752.00                   | 0.53           | 82.62                   | 2751.81     | -4.16                       | 64.00                    | 4.14 S                                   | 5.87 E  | 7.18@125.16                          | 0.34              |
| 2816.00                   | 1.41           | 104.33                  | 2815.80     | -4.32                       | 64.00                    | 4.29 S                                   | 6.93 E  | 8.15@121.78                          | 1.47              |
| 2880.00                   | 1.06           | 102.22                  | 2879.78     | -4.65                       | 64.00                    | 4.61 S                                   | 8.27 E  | 9.47@119.16                          | 0.55              |
| 2944.00                   | 0.53           | 131.31                  | 2943.78     | -4.97                       | 64.00                    | 4.93 S                                   | 9.07 E  | 10.33@118.54                         | 1.02              |
| 3008.00                   | 1.06           | 128.68                  | 3007.77     | -5.54                       | 64.00                    | 5.50 S                                   | 9.76 E  | 11.20@119.41                         | 0.83              |
| 3072.00                   | 0.18           | 170.16                  | 3071.76     | -6.01                       | 64.00                    | 5.97 S                                   | 10.24 E | 11.85@120.25                         | 1.46              |
| 3135.00                   | 0.26           | 254.54                  | 3134.76     | -6.15                       | 63.00                    | 6.10 S                                   | 10.11 E | 11.81@121.11                         | 0.48              |
| 3199.00                   | 0.35           | 200.57                  | 3198.76     | -6.37                       | 64.00                    | 6.33 S                                   | 9.91 E  | 11.75@122.56                         | 0.45              |
| 3263.00                   | 0.26           | 190.46                  | 3262.76     | -6.69                       | 64.00                    | 6.65 S                                   | 9.81 E  | 11.85@124.14                         | 0.16              |
| 3327.00                   | 0.35           | 175.52                  | 3326.76     | -7.03                       | 64.00                    | 6.99 S                                   | 9.80 E  | 12.04@125.50                         | 0.19              |
| 3391.00                   | 0.70           | 310.87                  | 3390.76     | -6.97                       | 64.00                    | 6.93 S                                   | 9.52 E  | 11.77@126.05                         | 1.53              |
| 3455.00                   | 0.88           | 310.61                  | 3454.75     | -6.39                       | 64.00                    | 6.35 S                                   | 8.85 E  | 10.89@125.67                         | 0.28              |
| 3519.00                   | 0.97           | 320.81                  | 3518.75     | -5.65                       | 64.00                    | 5.61 S                                   | 8.13 E  | 9.88@124.61                          | 0.29              |
| 3583.00                   | 0.53           | 349.55                  | 3582.74     | -4.94                       | 64.00                    | 4.90 S                                   | 7.74 E  | 9.16@122.35                          | 0.88              |
| 3647.00                   | 0.44           | 330.30                  | 3646.74     | -4.43                       | 64.00                    | 4.40 S                                   | 7.56 E  | 8.75@120.18                          | 0.29              |
| 3710.00                   | 0.53           | 319.49                  | 3709.74     | -4.00                       | 63.00                    | 3.97 S                                   | 7.25 E  | 8.27@118.67                          | 0.20              |
| 3774.00                   | 0.44           | 333.11                  | 3773.73     | -3.55                       | 64.00                    | 3.52 S                                   | 6.95 E  | 7.79@116.87                          | 0.23              |
| 3839.00                   | 0.53           | 314.30                  | 3838.73     | -3.12                       | 65.00                    | 3.09 S                                   | 6.62 E  | 7.31@115.01                          | 0.28              |
| 3903.00                   | 0.53           | 313.25                  | 3902.73     | -2.71                       | 64.00                    | 2.68 S                                   | 6.20 E  | 6.75@113.39                          | 0.02              |
| 3967.00                   | 0.62           | 325.64                  | 3966.73     | -2.22                       | 64.00                    | 2.19 S                                   | 5.78 E  | 6.19@110.75                          | 0.24              |
| 4031.00                   | 0.70           | 315.18                  | 4030.72     | -1.65                       | 64.00                    | 1.63 S                                   | 5.31 E  | 5.56@107.03                          | 0.23              |
| 4095.00                   | 0.53           | 309.82                  | 4094.72     | -1.18                       | 64.00                    | 1.16 S                                   | 4.81 E  | 4.95@103.57                          | 0.28              |
| 4159.00                   | 0.70           | 302.17                  | 4158.71     | -0.78                       | 64.00                    | 0.76 S                                   | 4.25 E  | 4.32@100.18                          | 0.29              |
| 4223.00                   | 0.62           | 308.94                  | 4222.71     | -0.35                       | 64.00                    | 0.34 S                                   | 3.65 E  | 3.67@ 95.28                          | 0.17              |
| 4287.00                   | 0.79           | 316.59                  | 4286.71     | 0.19                        | 64.00                    | 0.20 N                                   | 3.08 E  | 3.09@ 86.27                          | 0.30              |
| 4351.00                   | 0.70           | 309.72                  | 4350.70     | 0.76                        | 64.00                    | 0.77 N                                   | 2.48 E  | 2.59@ 72.70                          | 0.20              |
| 4415.00                   | 0.70           | 304.20                  | 4414.69     | 1.23                        | 64.00                    | 1.24 N                                   | 1.85 E  | 2.23@ 56.18                          | 0.11              |
| 4479.00                   | 0.79           | 304.20                  | 4478.69     | 1.70                        | 64.00                    | 1.71 N                                   | 1.16 E  | 2.07@ 34.26                          | 0.14              |
| 4542.00                   | 0.79           | 308.33                  | 4541.68     | 2.22                        | 63.00                    | 2.22 N                                   | 0.46 E  | 2.27@ 11.78                          | 0.09              |
| 4607.00                   | 0.70           | 311.31                  | 4606.68     | 2.76                        | 65.00                    | 2.76 N                                   | 0.19W   | 2.77@356.14                          | 0.15              |
| 4669.00                   | 0.79           | 307.27                  | 4668.67     | 3.27                        | 62.00                    | 3.27 N                                   | 0.81W   | 3.37@346.07                          | 0.17              |
| 4733.00                   | 0.62           | 301.91                  | 4732.67     | 3.73                        | 64.00                    | 3.72 N                                   | 1.46W   | 4.00@338.63                          | 0.28              |
| 4797.00                   | 0.70           | 298.75                  | 4796.66     | 4.10                        | 64.00                    | 4.09 N                                   | 2.09W   | 4.60@332.91                          | 0.14              |
| Final SHC MWD Survey      |                |                         |             |                             |                          |                                          |         |                                      |                   |
| 4860.00                   | 1.49           | 335.13                  | 4859.65     | 5.03                        | 63.00                    | 5.02 N                                   | 2.77W   | 5.74@331.07                          | 1.61              |

# Pathfinder

## Survey Report

Page 1  
Job No: J-WT-0503-0038 WTWT  
Date: 4/12/2005  
Time: 1:52 pm  
Wellpath ID: kc23h\_hz  
Date Created: 3/12/2005  
Last Revision: 4/8/2005

Calculated using the Minimum Curvature Method  
Computed using PDS VER2.2.6  
Vertical Section Plane: 359.75 deg.

Survey Reference: WELLHEAD  
Vertical Section Reference: WELLHEAD  
Closure Reference: WELLHEAD  
TVD Reference: WELLHEAD

Southwestern Energy  
Karlsbad Corral "2" #3-H  
Grey Wolf #76  
Eddy Co NM  
Sec. 2 - T25S - R29E Eddy Co. NM  
kc23h\_svy

| Measured<br>Depth<br>(ft)         | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | T O T A L<br>Rectangular Offsets<br>(ft) (ft) |         | Closure<br>Dist. Dir.<br>(ft) (deg.) | DLS<br>(dg/100ft) |
|-----------------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|-----------------------------------------------|---------|--------------------------------------|-------------------|
| Tie In To Scientific Gyro Surveys |                |                         |             |                             |                          |                                               |         |                                      |                   |
| 4850.00                           | 0.80           | 317.53                  | 4849.62     | -3.97                       | 0.00                     | 4.01 S                                        | 9.09W   | 9.94@246.20                          | 0.00              |
| PathFinder MWD Survey             |                |                         |             |                             |                          |                                               |         |                                      |                   |
| 4872.00                           | 1.85           | 340.23                  | 4871.61     | -3.52                       | 22.00                    | 3.56 S                                        | 9.31W   | 9.97@249.07                          | 5.25              |
| 4904.00                           | 3.43           | 348.05                  | 4903.58     | -2.10                       | 32.00                    | 2.14 S                                        | 9.69W   | 9.92@257.54                          | 5.05              |
| 4936.00                           | 8.53           | 355.00                  | 4935.40     | 1.21                        | 32.00                    | 1.16 N                                        | 10.09W  | 10.16@276.57                         | 16.07             |
| 4968.00                           | 12.84          | 357.63                  | 4966.83     | 7.13                        | 32.00                    | 7.08 N                                        | 10.45W  | 12.62@304.14                         | 13.55             |
| 4997.00                           | 16.71          | 359.39                  | 4994.87     | 14.52                       | 29.00                    | 14.47 N                                       | 10.62W  | 17.95@323.72                         | 13.43             |
| 5029.00                           | 19.96          | 359.92                  | 5025.24     | 24.59                       | 32.00                    | 24.54 N                                       | 10.68W  | 26.76@336.48                         | 10.17             |
| 5060.00                           | 22.77          | 359.92                  | 5054.11     | 35.88                       | 31.00                    | 35.83 N                                       | 10.70W  | 37.39@343.38                         | 9.06              |
| 5093.00                           | 25.76          | 359.21                  | 5084.19     | 49.44                       | 33.00                    | 49.39 N                                       | 10.80W  | 50.56@347.66                         | 9.10              |
| 5124.00                           | 29.11          | 359.65                  | 5111.70     | 63.72                       | 31.00                    | 63.67 N                                       | 10.94W  | 64.60@350.25                         | 10.83             |
| 5156.00                           | 32.18          | 0.27                    | 5139.23     | 80.03                       | 32.00                    | 79.98 N                                       | 10.95W  | 80.73@352.20                         | 9.64              |
| 5188.00                           | 35.09          | 0.45                    | 5165.87     | 97.75                       | 32.00                    | 97.70 N                                       | 10.84W  | 98.30@353.67                         | 9.10              |
| 5220.00                           | 38.08          | 0.62                    | 5191.56     | 116.82                      | 32.00                    | 116.77 N                                      | 10.66W  | 117.26@354.78                        | 9.35              |
| 5252.00                           | 41.15          | 1.15                    | 5216.21     | 137.21                      | 32.00                    | 137.17 N                                      | 10.34W  | 137.56@355.69                        | 9.65              |
| 5284.00                           | 44.14          | 1.68                    | 5239.74     | 158.88                      | 32.00                    | 158.84 N                                      | 9.80W   | 159.14@356.47                        | 9.41              |
| 5316.00                           | 47.31          | 1.76                    | 5262.08     | 181.78                      | 32.00                    | 181.74 N                                      | 9.11W   | 181.97@357.13                        | 9.91              |
| 5348.00                           | 51.27          | 1.85                    | 5282.95     | 206.01                      | 32.00                    | 205.98 N                                      | 8.35W   | 206.15@357.68                        | 12.38             |
| 5380.00                           | 55.57          | 2.38                    | 5302.01     | 231.68                      | 32.00                    | 231.65 N                                      | 7.40W   | 231.77@358.17                        | 13.50             |
| 5412.00                           | 59.00          | 2.73                    | 5319.30     | 258.57                      | 32.00                    | 258.54 N                                      | 6.20W   | 258.62@358.63                        | 10.76             |
| 5444.00                           | 61.73          | 2.99                    | 5335.13     | 286.34                      | 32.00                    | 286.32 N                                      | 4.81W   | 286.36@359.04                        | 8.56              |
| 5476.00                           | 64.63          | 3.35                    | 5349.56     | 314.84                      | 32.00                    | 314.83 N                                      | 3.23W   | 314.85@359.41                        | 9.12              |
| 5508.00                           | 69.56          | 3.08                    | 5362.01     | 344.26                      | 32.00                    | 344.25 N                                      | 1.58W   | 344.26@359.74                        | 15.43             |
| 5540.00                           | 73.25          | 3.35                    | 5372.22     | 374.53                      | 32.00                    | 374.53 N                                      | 0.12 E  | 374.53@ 0.02                         | 11.56             |
| 5572.00                           | 75.89          | 3.35                    | 5380.73     | 405.31                      | 32.00                    | 405.32 N                                      | 1.93 E  | 405.33@ 0.27                         | 8.25              |
| 5598.00                           | 78.08          | 2.29                    | 5386.58     | 430.60                      | 26.00                    | 430.62 N                                      | 3.17 E  | 430.63@ 0.42                         | 9.31              |
| 5629.00                           | 78.96          | 3.26                    | 5392.75     | 460.94                      | 31.00                    | 460.96 N                                      | 4.64 E  | 460.96@ 0.58                         | 4.18              |
| 5660.00                           | 81.07          | 3.17                    | 5398.13     | 491.41                      | 31.00                    | 491.44 N                                      | 6.36 E  | 491.45@ 0.74                         | 6.81              |
| 5690.00                           | 83.76          | 3.26                    | 5402.09     | 521.09                      | 30.00                    | 521.13 N                                      | 8.02 E  | 521.15@ 0.88                         | 8.97              |
| 5721.00                           | 86.09          | 2.12                    | 5404.83     | 551.93                      | 31.00                    | 551.97 N                                      | 9.47 E  | 552.06@ 0.98                         | 8.36              |
| 5752.00                           | 88.11          | 1.67                    | 5406.40     | 582.86                      | 31.00                    | 582.92 N                                      | 10.50 E | 583.01@ 1.03                         | 6.68              |

# Pathfinder Survey Report

Page 2  
Date: 4/12/2005  
Wellpath ID: kc23h\_hz

| Measured<br>Depth<br>(ft) | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | T O T A L<br>Rectangular Offsets<br>(ft) |         | Closure<br>Dist.<br>(ft) | Dir.<br>(deg.) | DLS<br>(dg/100ft) |
|---------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|------------------------------------------|---------|--------------------------|----------------|-------------------|
| 5783.00                   | 90.66          | 1.67                    | 5406.73     | 613.84                      | 31.00                    | 613.90 N                                 | 11.40 E | 614.00@                  | 1.06           | 8.23              |
| 5814.00                   | 91.71          | 1.76                    | 5406.09     | 644.82                      | 31.00                    | 644.88 N                                 | 12.33 E | 645.00@                  | 1.09           | 3.40              |
| 5845.00                   | 91.63          | 1.59                    | 5405.19     | 675.79                      | 31.00                    | 675.85 N                                 | 13.23 E | 675.98@                  | 1.12           | 0.61              |
| 5875.00                   | 92.33          | 359.83                  | 5404.15     | 705.76                      | 30.00                    | 705.83 N                                 | 13.60 E | 705.96@                  | 1.10           | 6.31              |
| 5906.00                   | 93.12          | 0.18                    | 5402.68     | 736.73                      | 31.00                    | 736.79 N                                 | 13.61 E | 736.92@                  | 1.06           | 2.79              |
| 5937.00                   | 93.03          | 359.74                  | 5401.01     | 767.68                      | 31.00                    | 767.75 N                                 | 13.58 E | 767.87@                  | 1.01           | 1.45              |
| 5968.00                   | 93.83          | 0.27                    | 5399.16     | 798.63                      | 31.00                    | 798.69 N                                 | 13.59 E | 798.81@                  | 0.97           | 3.09              |
| 5998.00                   | 94.09          | 0.36                    | 5397.09     | 828.55                      | 30.00                    | 828.62 N                                 | 13.75 E | 828.74@                  | 0.95           | 0.92              |
| 6030.00                   | 92.42          | 358.86                  | 5395.27     | 860.50                      | 32.00                    | 860.57 N                                 | 13.53 E | 860.67@                  | 0.90           | 7.01              |
| 6062.00                   | 91.28          | 358.16                  | 5394.24     | 892.47                      | 32.00                    | 892.54 N                                 | 12.70 E | 892.63@                  | 0.82           | 4.18              |
| 6093.00                   | 91.89          | 358.25                  | 5393.38     | 923.45                      | 31.00                    | 923.51 N                                 | 11.73 E | 923.59@                  | 0.73           | 1.99              |
| 6125.00                   | 92.07          | 358.25                  | 5392.27     | 955.42                      | 32.00                    | 955.48 N                                 | 10.75 E | 955.54@                  | 0.64           | 0.56              |
| 6156.00                   | 92.15          | 357.63                  | 5391.13     | 986.38                      | 31.00                    | 986.44 N                                 | 9.64 E  | 986.48@                  | 0.56           | 2.02              |
| 6187.00                   | 92.51          | 358.25                  | 5389.87     | 1017.34                     | 31.00                    | 1017.39 N                                | 8.53 E  | 1017.43@                 | 0.48           | 2.31              |
| 6219.00                   | 93.30          | 358.60                  | 5388.25     | 1049.29                     | 32.00                    | 1049.34 N                                | 7.65 E  | 1049.36@                 | 0.42           | 2.70              |
| 6250.00                   | 93.21          | 357.70                  | 5386.49     | 1080.23                     | 31.00                    | 1080.27 N                                | 6.65 E  | 1080.29@                 | 0.35           | 2.91              |
| 6282.00                   | 91.19          | 357.63                  | 5385.26     | 1112.18                     | 32.00                    | 1112.22 N                                | 5.35 E  | 1112.23@                 | 0.28           | 6.32              |
| 6313.00                   | 89.34          | 357.11                  | 5385.12     | 1143.16                     | 31.00                    | 1143.18 N                                | 3.92 E  | 1143.19@                 | 0.20           | 6.20              |
| 6345.00                   | 88.99          | 357.19                  | 5385.58     | 1175.12                     | 32.00                    | 1175.14 N                                | 2.33 E  | 1175.14@                 | 0.11           | 1.12              |
| 6376.00                   | 88.81          | 356.93                  | 5386.18     | 1206.08                     | 31.00                    | 1206.09 N                                | 0.74 E  | 1206.10@                 | 0.04           | 1.02              |
| 6408.00                   | 88.55          | 357.37                  | 5386.92     | 1238.04                     | 32.00                    | 1238.05 N                                | 0.85W   | 1238.05@                 | 359.96         | 1.60              |
| 6438.00                   | 90.13          | 356.75                  | 5387.26     | 1268.00                     | 30.00                    | 1268.00 N                                | 2.38W   | 1268.01@                 | 359.89         | 5.66              |
| 6469.00                   | 90.84          | 356.40                  | 5387.00     | 1298.95                     | 31.00                    | 1298.95 N                                | 4.24W   | 1298.95@                 | 359.81         | 2.55              |
| 6501.00                   | 91.01          | 356.31                  | 5386.48     | 1330.89                     | 32.00                    | 1330.88 N                                | 6.27W   | 1330.89@                 | 359.73         | 0.60              |
| 6532.00                   | 90.48          | 356.58                  | 5386.08     | 1361.84                     | 31.00                    | 1361.82 N                                | 8.19W   | 1361.84@                 | 359.66         | 1.92              |
| 6562.00                   | 91.01          | 357.11                  | 5385.69     | 1391.80                     | 30.00                    | 1391.77 N                                | 9.84W   | 1391.80@                 | 359.59         | 2.50              |
| 6594.00                   | 91.28          | 356.84                  | 5385.05     | 1423.75                     | 32.00                    | 1423.72 N                                | 11.53W  | 1423.76@                 | 359.54         | 1.19              |
| 6625.00                   | 90.31          | 357.54                  | 5384.62     | 1454.72                     | 31.00                    | 1454.68 N                                | 13.05W  | 1454.73@                 | 359.49         | 3.86              |
| 6656.00                   | 90.13          | 357.02                  | 5384.50     | 1485.69                     | 31.00                    | 1485.64 N                                | 14.52W  | 1485.71@                 | 359.44         | 1.78              |
| 6688.00                   | 90.22          | 357.37                  | 5384.40     | 1517.66                     | 32.00                    | 1517.60 N                                | 16.09W  | 1517.69@                 | 359.39         | 1.13              |
| 6719.00                   | 89.43          | 358.42                  | 5384.50     | 1548.64                     | 31.00                    | 1548.58 N                                | 17.23W  | 1548.68@                 | 359.36         | 4.24              |
| 6750.00                   | 89.08          | 358.51                  | 5384.90     | 1579.63                     | 31.00                    | 1579.57 N                                | 18.06W  | 1579.67@                 | 359.35         | 1.17              |
| 6781.00                   | 88.90          | 358.25                  | 5385.45     | 1610.62                     | 31.00                    | 1610.55 N                                | 18.93W  | 1610.66@                 | 359.33         | 1.02              |
| 6812.00                   | 88.72          | 358.33                  | 5386.09     | 1641.60                     | 31.00                    | 1641.53 N                                | 19.86W  | 1641.65@                 | 359.31         | 0.64              |
| 6844.00                   | 87.67          | 359.04                  | 5387.10     | 1673.58                     | 32.00                    | 1673.50 N                                | 20.59W  | 1673.63@                 | 359.29         | 3.96              |
| 6875.00                   | 87.49          | 359.92                  | 5388.41     | 1704.55                     | 31.00                    | 1704.47 N                                | 20.87W  | 1704.60@                 | 359.30         | 2.90              |
| 6907.00                   | 88.55          | 359.38                  | 5389.51     | 1736.53                     | 32.00                    | 1736.45 N                                | 21.07W  | 1736.58@                 | 359.30         | 3.72              |
| 6938.00                   | 88.99          | 359.04                  | 5390.18     | 1767.52                     | 31.00                    | 1767.44 N                                | 21.50W  | 1767.57@                 | 359.30         | 1.79              |
| 6970.00                   | 89.43          | 358.95                  | 5390.62     | 1799.52                     | 32.00                    | 1799.44 N                                | 22.06W  | 1799.57@                 | 359.30         | 1.40              |
| 7001.00                   | 89.52          | 359.92                  | 5390.91     | 1830.51                     | 31.00                    | 1830.43 N                                | 22.36W  | 1830.57@                 | 359.30         | 3.14              |
| 7031.00                   | 89.52          | 0.09                    | 5391.16     | 1860.51                     | 30.00                    | 1860.43 N                                | 22.36W  | 1860.57@                 | 359.31         | 0.57              |
| 7063.00                   | 89.87          | 0.44                    | 5391.33     | 1892.51                     | 32.00                    | 1892.43 N                                | 22.21W  | 1892.56@                 | 359.33         | 1.55              |
| 7094.00                   | 91.28          | 0.80                    | 5391.02     | 1923.50                     | 31.00                    | 1923.43 N                                | 21.86W  | 1923.55@                 | 359.35         | 4.69              |
| 7126.00                   | 91.54          | 0.80                    | 5390.23     | 1955.49                     | 32.00                    | 1955.41 N                                | 21.43W  | 1955.53@                 | 359.37         | 0.81              |
| 7156.00                   | 91.98          | 0.27                    | 5389.31     | 1985.47                     | 30.00                    | 1985.40 N                                | 21.15W  | 1985.51@                 | 359.39         | 2.30              |

# **Pathfinder** **Survey Report**

Page 3  
Date: 4/12/2005  
Wellpath ID: kc23h\_hz

| Measured<br>Depth<br>(ft) | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | TOTAL<br>Rectangular Offsets<br>(ft) | Closure<br>Dist. Dir.<br>(ft) (deg.) | DLS<br>(dg/100ft) |
|---------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|--------------------------------------|--------------------------------------|-------------------|
| 7187.00                   | 90.75          | 359.76                  | 5388.57     | 2016.46                     | 31.00                    | 2016.39 N 21.14W                     | 2016.50@359.40                       | 4.30              |
| 7219.00                   | 90.22          | 0.00                    | 5388.30     | 2048.46                     | 32.00                    | 2048.39 N 21.21W                     | 2048.50@359.41                       | 1.82              |
| 7250.00                   | 90.13          | 359.59                  | 5388.20     | 2079.46                     | 31.00                    | 2079.39 N 21.32W                     | 2079.50@359.41                       | 1.35              |
| 7281.00                   | 89.69          | 359.13                  | 5388.25     | 2110.46                     | 31.00                    | 2110.38 N 21.67W                     | 2110.50@359.41                       | 2.05              |
| 7313.00                   | 89.25          | 359.48                  | 5388.55     | 2142.46                     | 32.00                    | 2142.38 N 22.06W                     | 2142.49@359.41                       | 1.76              |
| 7345.00                   | 89.08          | 359.13                  | 5389.01     | 2174.45                     | 32.00                    | 2174.38 N 22.44W                     | 2174.49@359.41                       | 1.22              |
| 7376.00                   | 88.99          | 359.21                  | 5389.54     | 2205.45                     | 31.00                    | 2205.37 N 22.89W                     | 2205.49@359.41                       | 0.39              |
| 7407.00                   | 88.90          | 359.65                  | 5390.11     | 2236.44                     | 31.00                    | 2236.36 N 23.20W                     | 2236.48@359.41                       | 1.45              |
| 7438.00                   | 88.81          | 359.30                  | 5390.73     | 2267.43                     | 31.00                    | 2267.35 N 23.49W                     | 2267.47@359.41                       | 1.17              |
| 7470.00                   | 89.60          | 359.21                  | 5391.17     | 2299.43                     | 32.00                    | 2299.35 N 23.90W                     | 2299.47@359.40                       | 2.48              |
| 7501.00                   | 89.43          | 358.95                  | 5391.43     | 2330.43                     | 31.00                    | 2330.34 N 24.40W                     | 2330.47@359.40                       | 1.00              |
| 7532.00                   | 89.96          | 358.86                  | 5391.60     | 2361.42                     | 31.00                    | 2361.34 N 24.99W                     | 2361.47@359.39                       | 1.73              |
| 7564.00                   | 89.87          | 359.30                  | 5391.65     | 2393.42                     | 32.00                    | 2393.33 N 25.50W                     | 2393.47@359.39                       | 1.40              |
| 7595.00                   | 91.01          | 0.27                    | 5391.41     | 2424.42                     | 31.00                    | 2424.33 N 25.62W                     | 2424.47@359.39                       | 4.83              |
| 7627.00                   | 91.71          | 0.09                    | 5390.65     | 2456.41                     | 32.00                    | 2456.32 N 25.52W                     | 2456.45@359.40                       | 2.26              |
| 7658.00                   | 92.07          | 0.44                    | 5389.63     | 2487.39                     | 31.00                    | 2487.30 N 25.39W                     | 2487.43@359.42                       | 1.62              |
| 7690.00                   | 91.01          | 1.59                    | 5388.77     | 2519.37                     | 32.00                    | 2519.29 N 24.81W                     | 2519.41@359.44                       | 4.89              |
| 7721.00                   | 90.66          | 1.85                    | 5388.31     | 2550.35                     | 31.00                    | 2550.27 N 23.89W                     | 2550.38@359.46                       | 1.41              |
| 7752.00                   | 90.40          | 1.85                    | 5388.03     | 2581.33                     | 31.00                    | 2581.25 N 22.89W                     | 2581.35@359.49                       | 0.84              |
| 7784.00                   | 90.22          | 1.15                    | 5387.85     | 2613.31                     | 32.00                    | 2613.24 N 22.04W                     | 2613.33@359.52                       | 2.26              |
| 7815.00                   | 90.40          | 2.20                    | 5387.69     | 2644.29                     | 31.00                    | 2644.22 N 21.14W                     | 2644.31@359.54                       | 3.44              |
| 7847.00                   | 91.45          | 2.64                    | 5387.17     | 2676.25                     | 32.00                    | 2676.19 N 19.79W                     | 2676.26@359.58                       | 3.56              |
| 7878.00                   | 91.45          | 2.47                    | 5386.38     | 2707.21                     | 31.00                    | 2707.15 N 18.40W                     | 2707.21@359.61                       | 0.55              |
| 7910.00                   | 91.28          | 2.12                    | 5385.62     | 2739.16                     | 32.00                    | 2739.12 N 17.12W                     | 2739.17@359.64                       | 1.22              |
| 7941.00                   | 91.36          | 1.50                    | 5384.91     | 2770.14                     | 31.00                    | 2770.09 N 16.14W                     | 2770.14@359.67                       | 2.02              |
| 7973.00                   | 91.45          | 1.85                    | 5384.12     | 2802.11                     | 32.00                    | 2802.07 N 15.21W                     | 2802.11@359.69                       | 1.13              |
| 8005.00                   | 90.56          | 2.64                    | 5383.56     | 2834.07                     | 32.00                    | 2834.04 N 13.99W                     | 2834.07@359.72                       | 3.72              |
| 8036.00                   | 90.84          | 2.20                    | 5383.18     | 2865.04                     | 31.00                    | 2865.01 N 12.69W                     | 2865.04@359.75                       | 1.68              |
| 8067.00                   | 91.01          | 2.82                    | 5382.68     | 2896.00                     | 31.00                    | 2895.97 N 11.29W                     | 2896.00@359.78                       | 2.07              |
| 8099.00                   | 90.66          | 2.73                    | 5382.22     | 2927.95                     | 32.00                    | 2927.93 N 9.74W                      | 2927.95@359.81                       | 1.13              |
| 8130.00                   | 90.40          | 3.08                    | 5381.93     | 2958.90                     | 31.00                    | 2958.89 N 8.17W                      | 2958.90@359.84                       | 1.41              |
| 8161.00                   | 88.72          | 2.64                    | 5382.17     | 2989.85                     | 31.00                    | 2989.85 N 6.62W                      | 2989.86@359.87                       | 5.60              |
| 8193.00                   | 88.55          | 3.26                    | 5382.93     | 3021.79                     | 32.00                    | 3021.80 N 4.99W                      | 3021.80@359.91                       | 2.01              |
| 8224.00                   | 88.90          | 2.29                    | 5383.62     | 3052.74                     | 31.00                    | 3052.76 N 3.49W                      | 3052.76@359.93                       | 3.33              |
| 8256.00                   | 89.16          | 3.08                    | 5384.16     | 3084.69                     | 32.00                    | 3084.72 N 1.99W                      | 3084.72@359.96                       | 2.60              |
| 8287.00                   | 89.69          | 3.17                    | 5384.47     | 3115.64                     | 31.00                    | 3115.67 N 0.29W                      | 3115.67@359.99                       | 1.73              |
| 8317.00                   | 88.99          | 3.08                    | 5384.82     | 3145.58                     | 30.00                    | 3145.62 N 1.35 E                     | 3145.62@ 0.02                        | 2.35              |
| 8350.00                   | 88.46          | 2.55                    | 5385.55     | 3178.53                     | 33.00                    | 3178.57 N 2.97 E                     | 3178.57@ 0.05                        | 2.27              |
| 8382.00                   | 88.55          | 2.82                    | 5386.39     | 3210.48                     | 32.00                    | 3210.53 N 4.47 E                     | 3210.53@ 0.08                        | 0.89              |
| 8413.00                   | 87.58          | 2.20                    | 5387.44     | 3241.42                     | 31.00                    | 3241.48 N 5.82 E                     | 3241.48@ 0.10                        | 3.71              |
| 8444.00                   | 87.41          | 2.73                    | 5388.79     | 3272.36                     | 31.00                    | 3272.42 N 7.16 E                     | 3272.43@ 0.13                        | 1.79              |
| 8476.00                   | 87.41          | 2.47                    | 5390.24     | 3304.29                     | 32.00                    | 3304.35 N 8.61 E                     | 3304.37@ 0.15                        | 0.81              |
| 8507.00                   | 87.41          | 2.12                    | 5391.64     | 3335.22                     | 31.00                    | 3335.30 N 9.85 E                     | 3335.31@ 0.17                        | 1.13              |
| 8538.00                   | 87.14          | 1.76                    | 5393.11     | 3366.17                     | 31.00                    | 3366.24 N 10.90 E                    | 3366.26@ 0.19                        | 1.45              |
| 8569.00                   | 86.79          | 1.76                    | 5394.75     | 3397.10                     | 31.00                    | 3397.19 N 11.85 E                    | 3397.21@ 0.20                        | 1.13              |



# Pathfinder Survey Report

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Date: 4/12/2005  
Wellpath ID: kc23h\_hz

| Measured<br>Depth<br>(ft) | Incl<br>(deg.) | Drift<br>Dir.<br>(deg.) | TVD<br>(ft) | Vertical<br>Section<br>(ft) | Course<br>Length<br>(ft) | T O T A L<br>Rectangular Offsets<br>(ft) |         | Closure<br>Dist.<br>(ft) | Dir.<br>(deg.) | DLS<br>(dg/100ft) |
|---------------------------|----------------|-------------------------|-------------|-----------------------------|--------------------------|------------------------------------------|---------|--------------------------|----------------|-------------------|
| 8600.00                   | 86.53          | 1.41                    | 5396.56     | 3428.03                     | 31.00                    | 3428.12 N                                | 12.70 E | 3428.15@                 | 0.21           | 1.40              |
| 8632.00                   | 86.35          | 1.32                    | 5398.54     | 3459.96                     | 32.00                    | 3460.05 N                                | 13.46 E | 3460.06@                 | 0.22           | 0.63              |
| 8663.00                   | 86.09          | 0.88                    | 5400.59     | 3490.88                     | 31.00                    | 3490.98 N                                | 14.06 E | 3491.01@                 | 0.23           | 1.65              |
| 8694.00                   | 86.35          | 1.06                    | 5402.63     | 3521.81                     | 31.00                    | 3521.91 N                                | 14.58 E | 3521.94@                 | 0.24           | 1.02              |
| 8726.00                   | 86.44          | 1.32                    | 5404.64     | 3553.74                     | 32.00                    | 3553.84 N                                | 15.24 E | 3553.87@                 | 0.25           | 0.86              |
| 8757.00                   | 86.70          | 0.71                    | 5406.50     | 3584.67                     | 31.00                    | 3584.78 N                                | 15.79 E | 3584.81@                 | 0.25           | 2.14              |
| 8789.00                   | 86.53          | 0.27                    | 5408.39     | 3616.61                     | 32.00                    | 3616.72 N                                | 16.06 E | 3616.75@                 | 0.25           | 1.47              |
| 8820.00                   | 86.79          | 0.53                    | 5410.19     | 3647.56                     | 31.00                    | 3647.66 N                                | 16.28 E | 3647.70@                 | 0.26           | 1.19              |
| 8851.00                   | 87.67          | 0.88                    | 5411.69     | 3678.52                     | 31.00                    | 3678.63 N                                | 16.66 E | 3678.66@                 | 0.26           | 3.05              |
| 8883.00                   | 87.76          | 0.27                    | 5412.97     | 3710.49                     | 32.00                    | 3710.60 N                                | 16.98 E | 3710.64@                 | 0.26           | 1.93              |
| 8914.00                   | 87.49          | 359.92                  | 5414.25     | 3741.46                     | 31.00                    | 3741.57 N                                | 17.03 E | 3741.61@                 | 0.26           | 1.43              |
| 8946.00                   | 87.49          | 359.65                  | 5415.65     | 3773.43                     | 32.00                    | 3773.54 N                                | 16.91 E | 3773.56@                 | 0.26           | 0.84              |
| 8977.00                   | 88.55          | 359.48                  | 5416.73     | 3804.41                     | 31.00                    | 3804.52 N                                | 16.68 E | 3804.56@                 | 0.25           | 3.46              |
| 9008.00                   | 89.16          | 358.51                  | 5417.35     | 3835.40                     | 31.00                    | 3835.51 N                                | 16.14 E | 3835.54@                 | 0.24           | 3.70              |
| 9040.00                   | 89.69          | 358.77                  | 5417.67     | 3867.39                     | 32.00                    | 3867.50 N                                | 15.38 E | 3867.53@                 | 0.23           | 1.84              |
| 9071.00                   | 89.25          | 358.77                  | 5417.95     | 3898.39                     | 31.00                    | 3898.49 N                                | 14.71 E | 3898.52@                 | 0.22           | 1.42              |
| 9102.00                   | 88.99          | 357.90                  | 5418.43     | 3929.38                     | 31.00                    | 3929.47 N                                | 13.81 E | 3929.50@                 | 0.20           | 2.93              |
| 9134.00                   | 90.40          | 358.51                  | 5418.60     | 3961.36                     | 32.00                    | 3961.46 N                                | 12.81 E | 3961.46@                 | 0.19           | 4.80              |
| 9166.00                   | 90.48          | 357.90                  | 5418.35     | 3993.35                     | 32.00                    | 3993.44 N                                | 11.81 E | 3993.46@                 | 0.17           | 1.92              |
| 9197.00                   | 91.80          | 358.33                  | 5417.74     | 4024.33                     | 31.00                    | 4024.42 N                                | 10.79 E | 4024.43@                 | 0.15           | 4.48              |
| 9228.00                   | 92.24          | 357.90                  | 5416.64     | 4055.30                     | 31.00                    | 4055.38 N                                | 9.77 E  | 4055.39@                 | 0.14           | 1.98              |
| 9260.00                   | 92.42          | 357.63                  | 5415.34     | 4087.25                     | 32.00                    | 4087.33 N                                | 8.52 E  | 4087.34@                 | 0.12           | 1.01              |
| 9292.00                   | 92.95          | 357.63                  | 5413.84     | 4119.20                     | 32.00                    | 4119.27 N                                | 7.20 E  | 4119.27@                 | 0.10           | 1.66              |
| 9323.00                   | 92.86          | 357.46                  | 5412.27     | 4150.13                     | 31.00                    | 4150.20 N                                | 5.87 E  | 4150.20@                 | 0.08           | 0.62              |
| Projection To Bit         |                |                         |             |                             |                          |                                          |         |                          |                |                   |
| 9370.00                   | 92.86          | 357.46                  | 5409.93     | 4197.04                     | 47.00                    | 4197.09 N                                | 3.79 E  | 4197.10@                 | 0.05           | 0.00              |