



# Well Name: HFE 22SE

Surface Location: HFE 5 Pad Sec.22-T4N-R68W  
North American Datum 1983 US State Plane 1983 Colorado Northern Zone  
Ground Elevation: 4944.0  
Easting 3142901.67 Latitude 40.294836 Longitude -104.987699 Slot  
Original Well Elev WELL @ 4957.0ft (Original Well Elev)

+N/-S +E/-W  
0.0 0.0

Northing  
1350662.68

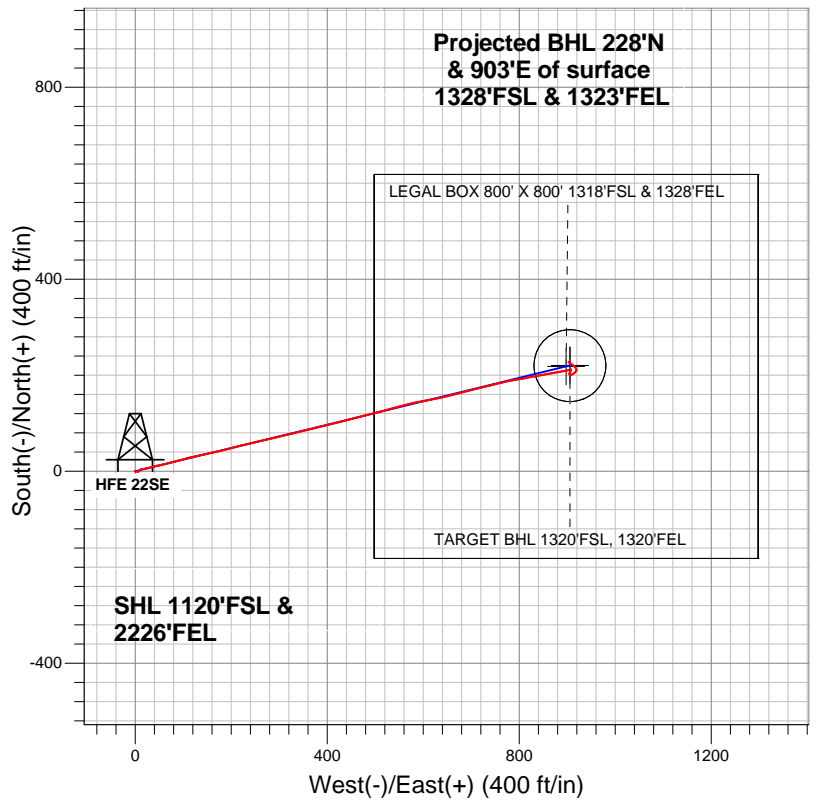
Easting  
3142901.67

Latitude  
40.294836

Longitude  
-104.987699

Slot

## Sundance Energy, Weld County, CO



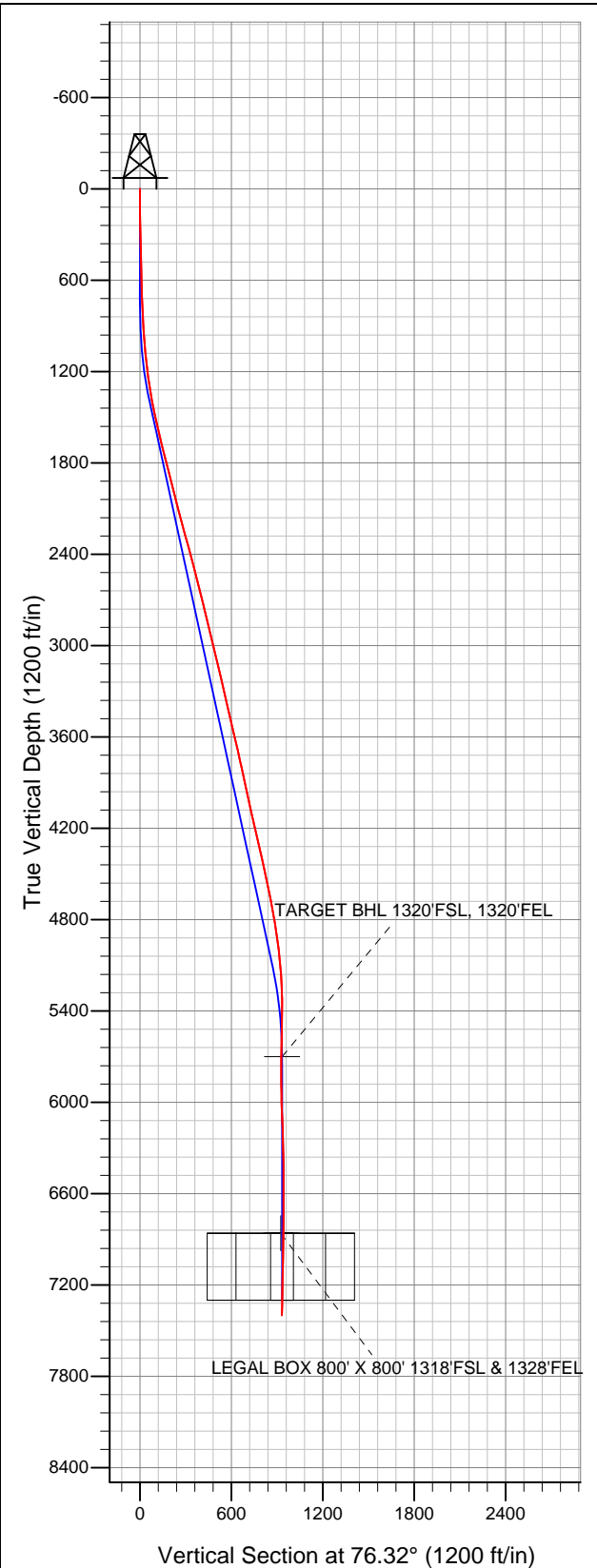
### LEGEND

- ◆ HFE 22SE, Wellbore #1, Plan #1 (10-24-12) R V0
- Wellbore #1
- Survey #1

## Final Survey Plot

Projected Final Survey -  
7500'MD & 7398'TVD @ 931'VS  
1.80 deg Inc 309.20 deg AZ

Project: SEC.22-T4N-R68W  
Site: HFE 5 Pad Sec.22-T4N-R68W  
Well: HFE 22SE  
Plan: Wellbore #1





## **Directional**

### **Sundance Energy, Weld County, CO**

**SEC.22-T4N-R68W**

**HFE 5 Pad Sec.22-T4N-R68W**

**HFE 22SE**

**Wellbore #1**

**Survey: Survey #1**

### **Standard Survey Report**

**02 November, 2012**



|                  |                                  |                                     |                                      |
|------------------|----------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Sundance Energy, Weld County, CO | <b>Local Co-ordinate Reference:</b> | Well HFE 22SE                        |
| <b>Project:</b>  | SEC.22-T4N-R68W                  | <b>TVD Reference:</b>               | WELL @ 4957.0ft (Original Well Elev) |
| <b>Site:</b>     | HFE 5 Pad Sec.22-T4N-R68W        | <b>MD Reference:</b>                | WELL @ 4957.0ft (Original Well Elev) |
| <b>Well:</b>     | HFE 22SE                         | <b>North Reference:</b>             | True                                 |
| <b>Wellbore:</b> | Wellbore #1                      | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Wellbore #1                      | <b>Database:</b>                    | Landmark                             |

#### Survey

| Measured Depth (ft)                                  | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|--|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 1,515.0  | 12.60           | 73.90       | 1,508.5             | 25.1       | 99.5       | 102.6                 | 1.66                  | 1.60                 | -2.24               |
| 1,640.0  | 13.30           | 77.90       | 1,630.3             | 31.9       | 126.6      | 130.6                 | 0.91                  | 0.56                 | 3.20                |
| 1,764.0  | 15.00           | 78.40       | 1,750.5             | 38.1       | 156.3      | 160.9                 | 1.37                  | 1.37                 | 0.40                |
| 1,889.0  | 13.70           | 75.10       | 1,871.6             | 45.2       | 186.4      | 191.8                 | 1.23                  | -1.04                | -2.64               |
| 2,014.0  | 14.40           | 77.20       | 1,992.9             | 52.4       | 215.9      | 222.2                 | 0.69                  | 0.56                 | 1.68                |
| 2,139.0  | 14.30           | 75.80       | 2,114.0             | 59.6       | 246.0      | 253.1                 | 0.29                  | -0.08                | -1.12               |
| 2,263.0  | 15.60           | 77.00       | 2,233.8             | 67.2       | 277.1      | 285.1                 | 1.08                  | 1.05                 | 0.97                |
| 2,388.0  | 15.50           | 76.70       | 2,354.2             | 74.8       | 309.7      | 318.6                 | 0.10                  | -0.08                | -0.24               |
| 2,513.0  | 14.10           | 76.50       | 2,475.1             | 82.2       | 340.8      | 350.6                 | 1.12                  | -1.12                | -0.16               |
| 2,638.0  | 14.40           | 76.10       | 2,596.2             | 89.5       | 370.7      | 381.3                 | 0.25                  | 0.24                 | -0.32               |
| 2,763.0  | 13.90           | 76.00       | 2,717.4             | 96.8       | 400.4      | 411.9                 | 0.40                  | -0.40                | -0.08               |
| 2,887.0  | 13.10           | 76.10       | 2,838.0             | 103.8      | 428.4      | 440.8                 | 0.65                  | -0.65                | 0.08                |
| 3,012.0  | 13.90           | 76.10       | 2,959.6             | 110.8      | 456.8      | 470.0                 | 0.64                  | 0.64                 | 0.00                |
| 3,137.0  | 13.70           | 75.80       | 3,080.9             | 118.1      | 485.7      | 499.8                 | 0.17                  | -0.16                | -0.24               |
| 3,262.0  | 13.30           | 74.40       | 3,202.5             | 125.6      | 513.9      | 529.0                 | 0.41                  | -0.32                | -1.12               |
| 3,386.0  | 12.40           | 75.40       | 3,323.4             | 132.7      | 540.5      | 556.6                 | 0.75                  | -0.73                | 0.81                |
| 3,511.0  | 13.10           | 75.80       | 3,445.3             | 139.6      | 567.2      | 584.2                 | 0.56                  | 0.56                 | 0.32                |
| 3,636.0  | 13.50           | 80.00       | 3,567.0             | 145.6      | 595.3      | 612.9                 | 0.84                  | 0.32                 | 3.36                |
| 3,761.0  | 13.10           | 79.00       | 3,688.6             | 150.8      | 623.6      | 641.6                 | 0.37                  | -0.32                | -0.80               |
| 3,885.0  | 11.60           | 76.00       | 3,809.7             | 156.5      | 649.5      | 668.1                 | 1.32                  | -1.21                | -2.42               |
| 4,010.0  | 12.40           | 74.90       | 3,932.0             | 163.1      | 674.7      | 694.1                 | 0.67                  | 0.64                 | -0.88               |
| 4,135.0  | 12.40           | 75.40       | 4,054.1             | 170.0      | 700.6      | 720.9                 | 0.09                  | 0.00                 | 0.40                |
| 4,260.0  | 13.20           | 77.70       | 4,176.0             | 176.4      | 727.5      | 748.6                 | 0.76                  | 0.64                 | 1.84                |
| 4,384.0  | 12.00           | 75.30       | 4,297.0             | 182.7      | 753.8      | 775.7                 | 1.06                  | -0.97                | -1.94               |
| 4,509.0  | 12.60           | 79.70       | 4,419.1             | 188.4      | 779.8      | 802.3                 | 0.89                  | 0.48                 | 3.52                |
| 4,634.0  | 13.50           | 79.30       | 4,540.9             | 193.6      | 807.6      | 830.4                 | 0.72                  | 0.72                 | -0.32               |
| 4,759.0  | 11.40           | 80.40       | 4,662.9             | 198.3      | 834.1      | 857.3                 | 1.69                  | -1.68                | 0.88                |
| 4,883.0  | 9.20            | 78.60       | 4,784.9             | 202.3      | 855.9      | 879.5                 | 1.79                  | -1.77                | -1.45               |
| 5,008.0  | 7.80            | 80.90       | 4,908.6             | 205.6      | 874.1      | 897.9                 | 1.15                  | -1.12                | 1.84                |
| 5,133.0  | 5.90            | 79.70       | 5,032.7             | 208.1      | 888.8      | 912.8                 | 1.52                  | -1.52                | -0.96               |
| 5,258.0  | 4.50            | 77.70       | 5,157.1             | 210.3      | 899.9      | 924.1                 | 1.13                  | -1.12                | -1.60               |
| 5,382.0  | 1.90            | 76.00       | 5,280.9             | 211.9      | 906.6      | 931.0                 | 2.10                  | -2.10                | -1.37               |
| 5,507.0  | 0.70            | 228.50      | 5,405.9             | 211.9      | 908.1      | 932.4                 | 2.03                  | -0.96                | 122.00              |
| 5,632.0  | 2.60            | 201.30      | 5,530.9             | 208.7      | 906.5      | 930.1                 | 1.60                  | 1.52                 | -21.76              |
| 5,757.0  | 1.80            | 208.50      | 5,655.8             | 204.3      | 904.5      | 927.2                 | 0.68                  | -0.64                | 5.76                |
| 5,800.9  | 1.36            | 193.21      | 5,699.6             | 203.2      | 904.1      | 926.5                 | 1.38                  | -1.00                | -34.86              |
| <b>TARGET BHL 1320'FSL, 1320'FEL</b>                 |                 |             |                     |            |            |                       |                       |                      |                     |
| 5,881.0  | 1.10            | 141.20      | 5,779.7             | 201.7      | 904.3      | 926.4                 | 1.38                  | -0.33                | -64.91              |
| 6,006.0  | 1.00            | 130.50      | 5,904.7             | 200.1      | 905.9      | 927.5                 | 0.18                  | -0.08                | -8.56               |
| 6,131.0  | 2.10            | 50.30       | 6,029.7             | 200.8      | 908.5      | 930.2                 | 1.73                  | 0.88                 | -64.16              |
| 6,256.0  | 2.60            | 57.20       | 6,154.6             | 203.8      | 912.6      | 934.9                 | 0.46                  | 0.40                 | 5.52                |
| 6,381.0  | 1.80            | 46.40       | 6,279.5             | 206.7      | 916.4      | 939.3                 | 0.72                  | -0.64                | -8.64               |
| 6,505.0  | 1.50            | 21.50       | 6,403.4             | 209.6      | 918.4      | 941.9                 | 0.62                  | -0.24                | -20.08              |
| 6,630.0  | 1.30            | 349.30      | 6,528.4             | 212.5      | 918.8      | 943.0                 | 0.64                  | -0.16                | -25.76              |
| 6,755.0  | 1.50            | 329.80      | 6,653.4             | 215.3      | 917.7      | 942.6                 | 0.41                  | 0.16                 | -15.60              |
| 6,880.0  | 1.20            | 314.20      | 6,778.3             | 217.6      | 915.9      | 941.4                 | 0.38                  | -0.24                | -12.48              |
| 6,961.9  | 1.33            | 314.69      | 6,860.2             | 218.9      | 914.6      | 940.5                 | 0.16                  | 0.16                 | 0.59                |
| <b>TARGET CIRCLE 1320'FSL &amp; 1320'FEL</b>         |                 |             |                     |            |            |                       |                       |                      |                     |
| 6,962.0  | 1.33            | 314.69      | 6,860.3             | 218.9      | 914.6      | 940.5                 | 0.00                  | 0.00                 | 0.00                |
| <b>LEGAL BOX 800' X 800' 1318'FSL &amp; 1328'FEL</b> |                 |             |                     |            |            |                       |                       |                      |                     |
| 7,004.0  | 1.40            | 314.90      | 6,902.3             | 219.6      | 913.9      | 939.9                 | 0.16                  | 0.16                 | 0.51                |
| 7,129.0  | 1.70            | 306.80      | 7,027.3             | 221.8      | 911.4      | 938.0                 | 0.30                  | 0.24                 | -6.48               |
| 7,254.0  | 1.50            | 302.90      | 7,152.2             | 223.8      | 908.5      | 935.7                 | 0.18                  | -0.16                | -3.12               |
| 7,379.0  | 1.70            | 304.00      | 7,277.2             | 225.7      | 905.6      | 933.3                 | 0.16                  | 0.16                 | 0.88                |

|                  |                                  |                                     |                                      |
|------------------|----------------------------------|-------------------------------------|--------------------------------------|
| <b>Company:</b>  | Sundance Energy, Weld County, CO | <b>Local Co-ordinate Reference:</b> | Well HFE 22SE                        |
| <b>Project:</b>  | SEC.22-T4N-R68W                  | <b>TVD Reference:</b>               | WELL @ 4957.0ft (Original Well Elev) |
| <b>Site:</b>     | HFE 5 Pad Sec.22-T4N-R68W        | <b>MD Reference:</b>                | WELL @ 4957.0ft (Original Well Elev) |
| <b>Well:</b>     | HFE 22SE                         | <b>North Reference:</b>             | True                                 |
| <b>Wellbore:</b> | Wellbore #1                      | <b>Survey Calculation Method:</b>   | Minimum Curvature                    |
| <b>Design:</b>   | Wellbore #1                      | <b>Database:</b>                    | Landmark                             |

| Survey              |                 |             |                     |            |            |                       |                       |                      |                     |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 7,454.0             | 1.80            | 309.20      | 7,352.1             | 227.1      | 903.8      | 931.8                 | 0.25                  | 0.13                 | 6.93                |
| 7,500.0             | 1.80            | 309.20      | 7,398.1             | 228.0      | 902.6      | 930.9                 | 0.00                  | 0.00                 | 0.00                |

| Wellbore Targets  |               |              |          |            |            |               |              |           |             |
|---|---------------|--------------|----------|------------|------------|---------------|--------------|-----------|-------------|
| Target Name   | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude  | Longitude   |
| - hit/miss target   |               |              |          |            |            |               |              |           |             |
| - Shape   |               |              |          |            |            |               |              |           |             |
| TARGET BHL 1320'F:  | 0.00          | 0.00         | 5,700.0  | 220.4      | 905.5      | 1,350,888.33  | 3,143,805.82 | 40.295441 | -104.984453 |
| - survey misses target center by 17.3ft at 5800.8ft MD (5699.5 TVD, 203.2 N, 904.1 E) |               |              |          |            |            |               |              |           |             |
| - Point   |               |              |          |            |            |               |              |           |             |
| TARGET CIRCLE 13:   | 0.00          | 0.00         | 6,860.0  | 220.4      | 905.5      | 1,350,888.33  | 3,143,805.82 | 40.295441 | -104.984453 |
| - survey misses target center by 9.3ft at 6961.9ft MD (6860.2 TVD, 218.9 N, 914.6 E)  |               |              |          |            |            |               |              |           |             |
| - Circle (radius 75.0)  |               |              |          |            |            |               |              |           |             |
| LEGAL BOX 800' X 800'   | 0.00          | 0.00         | 6,860.0  | 218.4      | 897.5      | 1,350,886.25  | 3,143,797.85 | 40.295435 | -104.984482 |
| - survey misses target center by 17.1ft at 6962.0ft MD (6860.3 TVD, 218.9 N, 914.6 E) |               |              |          |            |            |               |              |           |             |
| - Rectangle (sides W800.0 H800.0 D440.0)  |               |              |          |            |            |               |              |           |             |

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