

### Well Name: HFE 22SE

Surface Location: HFE 5 Pad Sec.22-T4N-R68W  
North American Datum 1983 , US State Plane 1983Colorado Northern Zone  
Ground Elevation: 4944.0

+N/-S  
0.0

+E/-W  
0.0

Northing  
1350662.68  
Original Well Elev

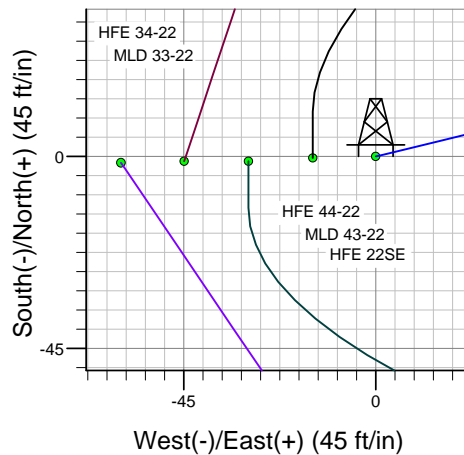
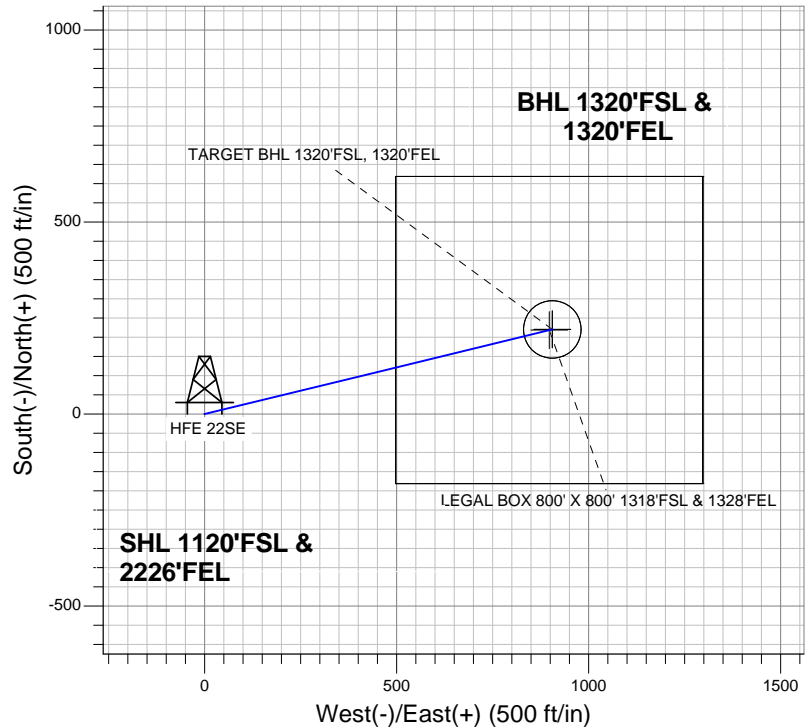
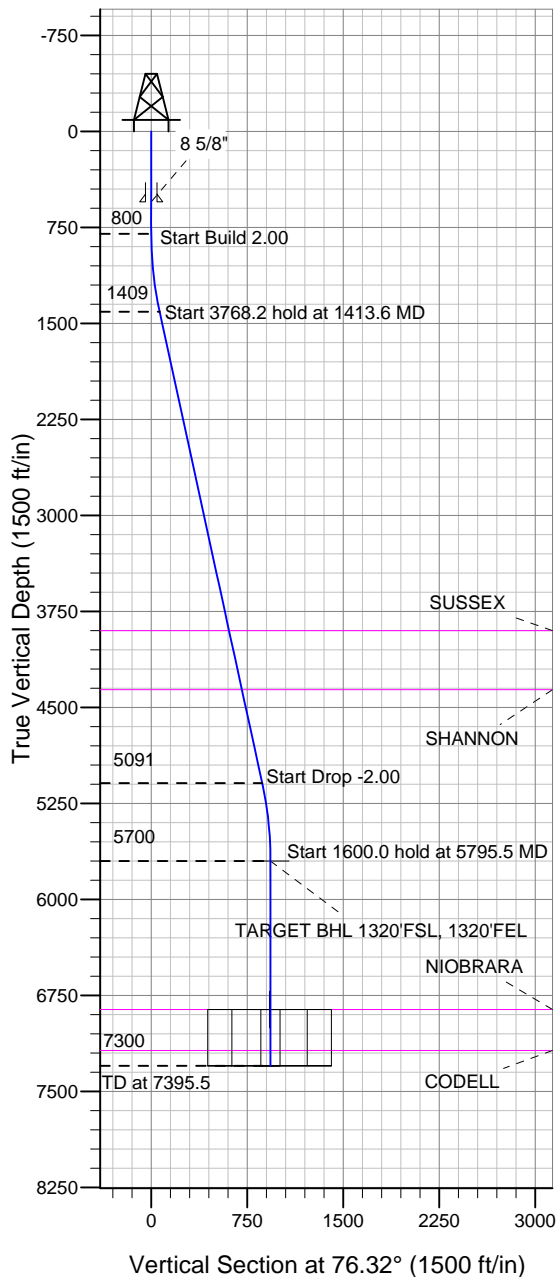
Easting  
3142901.67  
WELL @ 4957.0ft (Original Well Elev)

Latitude  
40.294836

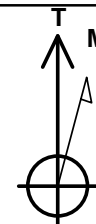
Longitude  
-104.987699

Slot

### Sundance Energy, Weld County, CO



HFE 5 Pad Sec.22-T4N-R68W  
HFE 22SE  
Plan #1 (8-02-12)  
12:15, August 07 2012



Azimuths to True North  
Magnetic North: 8.82°  
Magnetic Field  
Strength: 52930.4snT  
Dip Angle: 66.89°  
Date: 8/7/2012  
Model: IGRF2010

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1320'FSL, 1320'FEL	5700.0	220.4	905.5	40.295441	-104.984453	Point
LEGAL BOX 800' X 800' 1318'FSL & 1328'FEL	6860.0	218.4	897.5	40.295435	-104.984482	Rectangle (Sides: L800.0 W800.0)
TARGET CIRCLE 1320'FSL & 1320'FEL	6860.0	220.4	905.5	40.295441	-104.984453	Circle (Radius: 75.0)

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1413.6	12.27	76.32	1409.0	15.5	63.6	2.00	76.32	65.5	
4	5181.8	12.27	76.32	5091.0	204.9	841.9	0.00	0.00	866.5	
5	5795.5	0.00	0.00	5700.0	220.4	905.5	2.00	180.00	931.9	TARGET BHL 1320'FSL, 1320'FEL
6	7395.5	0.00	0.00	7300.0	220.4	905.5	0.00	0.00	931.9	



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

**SEC.22-T4N-R68W**

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

**HFE 22SE**

**Wellbore #1**

**Plan: Plan #1 (8-02-12)**

## **Standard Planning Report**

**07 August, 2012**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HFE 22SE
<b>Company:</b>	Sundance Energy, Weld County, CO	<b>TVD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

<b>Project</b>	SEC.22-T4N-R68W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site										HFE 5 Pad Sec.22-T4N-R68W																			
<b>Site Position:</b>					<b>Northing:</b>					1,350,660.89ft					<b>Latitude:</b>					40.294832									
<b>From:</b>					Lat/Long					<b>Easting:</b>					3,142,841.99ft					<b>Longitude:</b>					-104.987913				
<b>Position Uncertainty:</b>					0.0 ft					<b>Slot Radius:</b>					"					<b>Grid Convergence:</b>					0.33 °				

Well	HFE 22SE					
Well Position	+N-S	1.4 ft	Northing:	1,350,662.68 ft	Latitude:	40.294836
	+E-W	59.7 ft	Easting:	3,142,901.67 ft	Longitude:	-104.987699
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,944.0 ft

Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/7/2012	8.82	66.89	52,930

Design	Plan #1 (8-02-12)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	76.32

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,413.6	12.27	76.32	1,409.0	15.5	63.6	2.00	2.00	0.00	76.32	
5,181.8	12.27	76.32	5,091.0	204.9	841.9	0.00	0.00	0.00	0.00	
5,795.5	0.00	0.00	5,700.0	220.4	905.5	2.00	-2.00	0.00	180.00	TARGET BHL 1320
7,395.5	0.00	0.00	7,300.0	220.4	905.5	0.00	0.00	0.00	0.00	

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<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
550.0	0.00	0.00	550.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.80	76.32	840.0	0.1	0.3	0.3	2.00	2.00	0.00
880.0	1.60	76.32	880.0	0.3	1.1	1.1	2.00	2.00	0.00
920.0	2.40	76.32	920.0	0.6	2.4	2.5	2.00	2.00	0.00
960.0	3.20	76.32	959.9	1.1	4.3	4.5	2.00	2.00	0.00
1,000.0	4.00	76.32	999.8	1.7	6.8	7.0	2.00	2.00	0.00
1,040.0	4.80	76.32	1,039.7	2.4	9.8	10.0	2.00	2.00	0.00
1,080.0	5.60	76.32	1,079.6	3.2	13.3	13.7	2.00	2.00	0.00
1,120.0	6.40	76.32	1,119.3	4.2	17.3	17.9	2.00	2.00	0.00
1,160.0	7.20	76.32	1,159.1	5.3	21.9	22.6	2.00	2.00	0.00
1,200.0	8.00	76.32	1,198.7	6.6	27.1	27.9	2.00	2.00	0.00
1,240.0	8.80	76.32	1,238.3	8.0	32.8	33.7	2.00	2.00	0.00
1,280.0	9.60	76.32	1,277.8	9.5	39.0	40.1	2.00	2.00	0.00
1,320.0	10.40	76.32	1,317.1	11.1	45.7	47.1	2.00	2.00	0.00
1,360.0	11.20	76.32	1,356.4	12.9	53.0	54.6	2.00	2.00	0.00
1,400.0	12.00	76.32	1,395.6	14.8	60.8	62.6	2.00	2.00	0.00
1,413.6	12.27	76.32	1,409.0	15.5	63.6	65.5	2.00	2.00	0.00
1,440.0	12.27	76.32	1,434.7	16.8	69.1	71.1	0.00	0.00	0.00
1,480.0	12.27	76.32	1,473.8	18.8	77.3	79.6	0.00	0.00	0.00
1,520.0	12.27	76.32	1,512.9	20.8	85.6	88.1	0.00	0.00	0.00
1,560.0	12.27	76.32	1,552.0	22.8	93.8	96.6	0.00	0.00	0.00
1,600.0	12.27	76.32	1,591.1	24.9	102.1	105.1	0.00	0.00	0.00
1,640.0	12.27	76.32	1,630.1	26.9	110.4	113.6	0.00	0.00	0.00
1,680.0	12.27	76.32	1,669.2	28.9	118.6	122.1	0.00	0.00	0.00
1,720.0	12.27	76.32	1,708.3	30.9	126.9	130.6	0.00	0.00	0.00
1,760.0	12.27	76.32	1,747.4	32.9	135.1	139.1	0.00	0.00	0.00
1,800.0	12.27	76.32	1,786.5	34.9	143.4	147.6	0.00	0.00	0.00
1,840.0	12.27	76.32	1,825.6	36.9	151.7	156.1	0.00	0.00	0.00
1,880.0	12.27	76.32	1,864.7	38.9	159.9	164.6	0.00	0.00	0.00
1,920.0	12.27	76.32	1,903.7	40.9	168.2	173.1	0.00	0.00	0.00
1,960.0	12.27	76.32	1,942.8	43.0	176.5	181.6	0.00	0.00	0.00
2,000.0	12.27	76.32	1,981.9	45.0	184.7	190.1	0.00	0.00	0.00

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<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

Planned 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)
2,040.0	12.27	76.32	2,021.0	47.0	193.0	198.6	0.00	0.00	0.00
2,080.0	12.27	76.32	2,060.1	49.0	201.2	207.1	0.00	0.00	0.00
2,120.0	12.27	76.32	2,099.2	51.0	209.5	215.6	0.00	0.00	0.00
2,160.0	12.27	76.32	2,138.3	53.0	217.8	224.1	0.00	0.00	0.00
2,200.0	12.27	76.32	2,177.3	55.0	226.0	232.6	0.00	0.00	0.00
2,240.0	12.27	76.32	2,216.4	57.0	234.3	241.1	0.00	0.00	0.00
2,280.0	12.27	76.32	2,255.5	59.0	242.5	249.6	0.00	0.00	0.00
2,320.0	12.27	76.32	2,294.6	61.1	250.8	258.1	0.00	0.00	0.00
2,360.0	12.27	76.32	2,333.7	63.1	259.1	266.6	0.00	0.00	0.00
2,400.0	12.27	76.32	2,372.8	65.1	267.3	275.1	0.00	0.00	0.00
2,440.0	12.27	76.32	2,411.9	67.1	275.6	283.6	0.00	0.00	0.00
2,480.0	12.27	76.32	2,450.9	69.1	283.9	292.1	0.00	0.00	0.00
2,520.0	12.27	76.32	2,490.0	71.1	292.1	300.6	0.00	0.00	0.00
2,560.0	12.27	76.32	2,529.1	73.1	300.4	309.1	0.00	0.00	0.00
2,600.0	12.27	76.32	2,568.2	75.1	308.6	317.6	0.00	0.00	0.00
2,640.0	12.27	76.32	2,607.3	77.1	316.9	326.2	0.00	0.00	0.00
2,680.0	12.27	76.32	2,646.4	79.2	325.2	334.7	0.00	0.00	0.00
2,720.0	12.27	76.32	2,685.5	81.2	333.4	343.2	0.00	0.00	0.00
2,760.0	12.27	76.32	2,724.6	83.2	341.7	351.7	0.00	0.00	0.00
2,800.0	12.27	76.32	2,763.6	85.2	349.9	360.2	0.00	0.00	0.00
2,840.0	12.27	76.32	2,802.7	87.2	358.2	368.7	0.00	0.00	0.00
2,880.0	12.27	76.32	2,841.8	89.2	366.5	377.2	0.00	0.00	0.00
2,920.0	12.27	76.32	2,880.9	91.2	374.7	385.7	0.00	0.00	0.00
2,960.0	12.27	76.32	2,920.0	93.2	383.0	394.2	0.00	0.00	0.00
3,000.0	12.27	76.32	2,959.1	95.2	391.2	402.7	0.00	0.00	0.00
3,040.0	12.27	76.32	2,998.2	97.3	399.5	411.2	0.00	0.00	0.00
3,080.0	12.27	76.32	3,037.2	99.3	407.8	419.7	0.00	0.00	0.00
3,120.0	12.27	76.32	3,076.3	101.3	416.0	428.2	0.00	0.00	0.00
3,160.0	12.27	76.32	3,115.4	103.3	424.3	436.7	0.00	0.00	0.00
3,200.0	12.27	76.32	3,154.5	105.3	432.6	445.2	0.00	0.00	0.00
3,240.0	12.27	76.32	3,193.6	107.3	440.8	453.7	0.00	0.00	0.00
3,280.0	12.27	76.32	3,232.7	109.3	449.1	462.2	0.00	0.00	0.00
3,320.0	12.27	76.32	3,271.8	111.3	457.3	470.7	0.00	0.00	0.00
3,360.0	12.27	76.32	3,310.8	113.3	465.6	479.2	0.00	0.00	0.00
3,400.0	12.27	76.32	3,349.9	115.4	473.9	487.7	0.00	0.00	0.00
3,440.0	12.27	76.32	3,389.0	117.4	482.1	496.2	0.00	0.00	0.00
3,480.0	12.27	76.32	3,428.1	119.4	490.4	504.7	0.00	0.00	0.00
3,520.0	12.27	76.32	3,467.2	121.4	498.6	513.2	0.00	0.00	0.00
3,560.0	12.27	76.32	3,506.3	123.4	506.9	521.7	0.00	0.00	0.00
3,600.0	12.27	76.32	3,545.4	125.4	515.2	530.2	0.00	0.00	0.00
3,640.0	12.27	76.32	3,584.4	127.4	523.4	538.7	0.00	0.00	0.00
3,680.0	12.27	76.32	3,623.5	129.4	531.7	547.2	0.00	0.00	0.00
3,720.0	12.27	76.32	3,662.6	131.4	540.0	555.7	0.00	0.00	0.00
3,760.0	12.27	76.32	3,701.7	133.5	548.2	564.2	0.00	0.00	0.00
3,800.0	12.27	76.32	3,740.8	135.5	556.5	572.7	0.00	0.00	0.00
3,840.0	12.27	76.32	3,779.9	137.5	564.7	581.2	0.00	0.00	0.00
3,880.0	12.27	76.32	3,819.0	139.5	573.0	589.7	0.00	0.00	0.00
3,920.0	12.27	76.32	3,858.0	141.5	581.3	598.2	0.00	0.00	0.00
3,960.0	12.27	76.32	3,897.1	143.5	589.5	606.7	0.00	0.00	0.00
3,962.9	12.27	76.32	3,900.0	143.7	590.1	607.4	0.00	0.00	0.00
<b>SUSSEX</b>									
4,000.0	12.27	76.32	3,936.2	145.5	597.8	615.2	0.00	0.00	0.00
4,040.0	12.27	76.32	3,975.3	147.5	606.0	623.7	0.00	0.00	0.00

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<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

Planned 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)
4,080.0	12.27	76.32	4,014.4	149.5	614.3	632.2	0.00	0.00	0.00
4,120.0	12.27	76.32	4,053.5	151.6	622.6	640.7	0.00	0.00	0.00
4,160.0	12.27	76.32	4,092.6	153.6	630.8	649.2	0.00	0.00	0.00
4,200.0	12.27	76.32	4,131.6	155.6	639.1	657.8	0.00	0.00	0.00
4,240.0	12.27	76.32	4,170.7	157.6	647.3	666.3	0.00	0.00	0.00
4,280.0	12.27	76.32	4,209.8	159.6	655.6	674.8	0.00	0.00	0.00
4,320.0	12.27	76.32	4,248.9	161.6	663.9	683.3	0.00	0.00	0.00
4,360.0	12.27	76.32	4,288.0	163.6	672.1	691.8	0.00	0.00	0.00
4,400.0	12.27	76.32	4,327.1	165.6	680.4	700.3	0.00	0.00	0.00
4,434.7	12.27	76.32	4,361.0	167.4	687.6	707.6	0.00	0.00	0.00
SHANNON									
4,440.0	12.27	76.32	4,366.2	167.6	688.7	708.8	0.00	0.00	0.00
4,480.0	12.27	76.32	4,405.2	169.7	696.9	717.3	0.00	0.00	0.00
4,520.0	12.27	76.32	4,444.3	171.7	705.2	725.8	0.00	0.00	0.00
4,560.0	12.27	76.32	4,483.4	173.7	713.4	734.3	0.00	0.00	0.00
4,600.0	12.27	76.32	4,522.5	175.7	721.7	742.8	0.00	0.00	0.00
4,640.0	12.27	76.32	4,561.6	177.7	730.0	751.3	0.00	0.00	0.00
4,680.0	12.27	76.32	4,600.7	179.7	738.2	759.8	0.00	0.00	0.00
4,720.0	12.27	76.32	4,639.8	181.7	746.5	768.3	0.00	0.00	0.00
4,760.0	12.27	76.32	4,678.8	183.7	754.7	776.8	0.00	0.00	0.00
4,800.0	12.27	76.32	4,717.9	185.7	763.0	785.3	0.00	0.00	0.00
4,840.0	12.27	76.32	4,757.0	187.8	771.3	793.8	0.00	0.00	0.00
4,880.0	12.27	76.32	4,796.1	189.8	779.5	802.3	0.00	0.00	0.00
4,920.0	12.27	76.32	4,835.2	191.8	787.8	810.8	0.00	0.00	0.00
4,960.0	12.27	76.32	4,874.3	193.8	796.1	819.3	0.00	0.00	0.00
5,000.0	12.27	76.32	4,913.4	195.8	804.3	827.8	0.00	0.00	0.00
5,040.0	12.27	76.32	4,952.4	197.8	812.6	836.3	0.00	0.00	0.00
5,080.0	12.27	76.32	4,991.5	199.8	820.8	844.8	0.00	0.00	0.00
5,120.0	12.27	76.32	5,030.6	201.8	829.1	853.3	0.00	0.00	0.00
5,160.0	12.27	76.32	5,069.7	203.8	837.4	861.8	0.00	0.00	0.00
5,181.8	12.27	76.32	5,091.0	204.9	841.9	866.5	0.00	0.00	0.00
5,200.0	11.91	76.32	5,108.8	205.8	845.6	870.3	2.00	-2.00	0.00
5,240.0	11.11	76.32	5,148.0	207.7	853.3	878.2	2.00	-2.00	0.00
5,280.0	10.31	76.32	5,187.3	209.5	860.5	885.7	2.00	-2.00	0.00
5,320.0	9.51	76.32	5,226.7	211.1	867.2	892.6	2.00	-2.00	0.00
5,360.0	8.71	76.32	5,266.2	212.6	873.4	898.9	2.00	-2.00	0.00
5,400.0	7.91	76.32	5,305.8	214.0	879.0	904.7	2.00	-2.00	0.00
5,440.0	7.11	76.32	5,345.4	215.2	884.1	909.9	2.00	-2.00	0.00
5,480.0	6.31	76.32	5,385.2	216.3	888.6	914.6	2.00	-2.00	0.00
5,520.0	5.51	76.32	5,424.9	217.3	892.6	918.7	2.00	-2.00	0.00
5,560.0	4.71	76.32	5,464.8	218.1	896.1	922.3	2.00	-2.00	0.00
5,600.0	3.91	76.32	5,504.7	218.9	899.0	925.3	2.00	-2.00	0.00
5,640.0	3.11	76.32	5,544.6	219.4	901.4	927.7	2.00	-2.00	0.00
5,680.0	2.31	76.32	5,584.6	219.9	903.2	929.6	2.00	-2.00	0.00
5,720.0	1.51	76.32	5,624.5	220.2	904.5	930.9	2.00	-2.00	0.00
5,760.0	0.71	76.32	5,664.5	220.4	905.3	931.7	2.00	-2.00	0.00
5,795.5	0.00	0.00	5,700.0	220.4	905.5	931.9	2.00	-2.00	0.00
TARGET BHL 1320'FSL, 1320'FEL									
5,800.0	0.00	0.00	5,704.5	220.4	905.5	931.9	0.00	0.00	0.00
5,840.0	0.00	0.00	5,744.5	220.4	905.5	931.9	0.00	0.00	0.00
5,880.0	0.00	0.00	5,784.5	220.4	905.5	931.9	0.00	0.00	0.00
5,920.0	0.00	0.00	5,824.5	220.4	905.5	931.9	0.00	0.00	0.00
5,960.0	0.00	0.00	5,864.5	220.4	905.5	931.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,904.5	220.4	905.5	931.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HFE 22SE
<b>Company:</b>	Sundance Energy, Weld County, CO	<b>TVD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

Planned 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)
6,040.0	0.00	0.00	5,944.5	220.4	905.5	931.9	0.00	0.00	0.00
6,080.0	0.00	0.00	5,984.5	220.4	905.5	931.9	0.00	0.00	0.00
6,120.0	0.00	0.00	6,024.5	220.4	905.5	931.9	0.00	0.00	0.00
6,160.0	0.00	0.00	6,064.5	220.4	905.5	931.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,104.5	220.4	905.5	931.9	0.00	0.00	0.00
6,240.0	0.00	0.00	6,144.5	220.4	905.5	931.9	0.00	0.00	0.00
6,280.0	0.00	0.00	6,184.5	220.4	905.5	931.9	0.00	0.00	0.00
6,320.0	0.00	0.00	6,224.5	220.4	905.5	931.9	0.00	0.00	0.00
6,360.0	0.00	0.00	6,264.5	220.4	905.5	931.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,304.5	220.4	905.5	931.9	0.00	0.00	0.00
6,440.0	0.00	0.00	6,344.5	220.4	905.5	931.9	0.00	0.00	0.00
6,480.0	0.00	0.00	6,384.5	220.4	905.5	931.9	0.00	0.00	0.00
6,520.0	0.00	0.00	6,424.5	220.4	905.5	931.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,464.5	220.4	905.5	931.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,504.5	220.4	905.5	931.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,544.5	220.4	905.5	931.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,584.5	220.4	905.5	931.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,624.5	220.4	905.5	931.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,664.5	220.4	905.5	931.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,704.5	220.4	905.5	931.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,744.5	220.4	905.5	931.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,784.5	220.4	905.5	931.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,824.5	220.4	905.5	931.9	0.00	0.00	0.00
6,955.5	0.00	0.00	6,860.0	220.4	905.5	931.9	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1320'FSL & 1320'FEL - LEGAL BOX 800' X 800' 1318'FSL & 1328'FEL									
6,960.0	0.00	0.00	6,864.5	220.4	905.5	931.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,904.5	220.4	905.5	931.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,944.5	220.4	905.5	931.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,984.5	220.4	905.5	931.9	0.00	0.00	0.00
7,120.0	0.00	0.00	7,024.5	220.4	905.5	931.9	0.00	0.00	0.00
7,160.0	0.00	0.00	7,064.5	220.4	905.5	931.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,104.5	220.4	905.5	931.9	0.00	0.00	0.00
7,240.0	0.00	0.00	7,144.5	220.4	905.5	931.9	0.00	0.00	0.00
7,275.5	0.00	0.00	7,180.0	220.4	905.5	931.9	0.00	0.00	0.00
CODELL									
7,280.0	0.00	0.00	7,184.5	220.4	905.5	931.9	0.00	0.00	0.00
7,320.0	0.00	0.00	7,224.5	220.4	905.5	931.9	0.00	0.00	0.00
7,360.0	0.00	0.00	7,264.5	220.4	905.5	931.9	0.00	0.00	0.00
7,395.5	0.00	0.00	7,300.0	220.4	905.5	931.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HFE 22SE
<b>Company:</b>	Sundance Energy, Weld County, CO	<b>TVD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Project:</b>	SEC.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>North Reference:</b>	True
<b>Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (8-02-12)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
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
- plan hits target center									
- Circle (radius 75.0)									
LEGAL BOX 800' X 80'	0.00	0.00	6,860.0	218.4	897.5	1,350,886.25	3,143,797.85	40.295435	-104.984482
- plan misses target center by 8.2ft at 6955.5ft MD (6860.0 TVD, 220.4 N, 905.5 E)									
- Rectangle (sides W800.0 H800.0 D440.0)									
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
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
550.0	550.0	8 5/8"	8-5/8	12-1/4	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,962.9	3,900.0	SUSSEX		0.00		
4,434.7	4,361.0	SHANNON		0.00		
6,955.5	6,860.0	NIOBRARA		0.00		
7,275.5	7,180.0	CODELL		0.00		





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

**SEC.22-T4N-R68W**

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

**HFE 22SE**

**Wellbore #1**

**Plan #1 (8-02-12)**

## **Anticollision Report**

**07 August, 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>Reference Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (8-02-12)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 8/2/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	7,395.5	Plan #1 (8-02-12) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
HFE 5 Pad Sec.22-T4N-R68W						
HFE 44-22 - Wellbore #1 - Plan #1 (8-02-12)	400.0	399.0	29.9	28.3	19.011	CC
HFE 44-22 - Wellbore #1 - Plan #1 (8-02-12)	500.0	498.9	30.0	28.0	15.022	ES
HFE 44-22 - Wellbore #1 - Plan #1 (8-02-12)	900.0	899.4	39.9	36.1	10.565	SF
MLD 43-22 - Wellbore #1 - Plan #1 (8-02-12)	246.7	245.7	14.8	13.9	16.740	CC
MLD 43-22 - Wellbore #1 - Plan #1 (8-02-12)	300.0	299.0	14.8	13.7	13.207	ES
MLD 43-22 - Wellbore #1 - Plan #1 (8-02-12)	500.0	498.4	20.7	18.7	10.129	SF

<b>Offset Design</b> HFE 5 Pad Sec.22-T4N-R68W - HFE 44-22 - Wellbore #1 - Plan #1 (8-02-12)													<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b> 0-MWD													<b>Offset Well Error:</b>	0.0 ft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>		<b>Minimum Separation</b>		<b>Separation Factor</b>		<b>Warning</b>				
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>		
0.0	0.0	0.0	0.0	0.0	0.0	-92.10	-1.1	-29.8	29.9					
100.0	100.0	99.0	99.0	0.1	0.1	-92.10	-1.1	-29.8	29.9	29.6	0.22	133.552		
200.0	200.0	199.0	199.0	0.3	0.3	-92.10	-1.1	-29.8	29.9	29.2	0.67	44.443		
300.0	300.0	299.0	299.0	0.6	0.6	-92.10	-1.1	-29.8	29.9	28.7	1.12	26.630		
400.0	400.0	399.0	399.0	0.8	0.8	-92.10	-1.1	-29.8	29.9	28.3	1.57	19.011	CC	
500.0	500.0	498.9	498.9	1.0	1.0	-95.36	-2.8	-29.8	30.0	28.0	2.00	15.022	ES	
600.0	600.0	598.6	598.4	1.2	1.2	-104.96	-8.0	-29.8	30.9	28.5	2.41	12.804		
700.0	700.0	698.6	698.1	1.5	1.4	-118.87	-16.2	-29.4	33.6	30.8	2.85	11.802		
800.0	800.0	799.1	798.2	1.7	1.6	-133.87	-25.0	-26.0	36.0	32.7	3.29	10.939		
900.0	900.0	899.4	897.8	1.9	1.9	134.91	-33.6	-19.0	39.9	36.1	3.77	10.565	SF	
1,000.0	999.8	999.4	996.9	2.1	2.2	122.75	-42.2	-8.6	46.5	42.3	4.24	10.979		
1,100.0	1,099.5	1,099.2	1,095.3	2.3	2.5	113.61	-50.8	5.3	55.5	50.7	4.74	11.712		
1,200.0	1,198.7	1,198.6	1,192.9	2.6	2.9	106.94	-59.2	22.5	66.1	60.9	5.28	12.516		
1,300.0	1,297.5	1,297.8	1,289.6	2.9	3.3	102.04	-67.5	43.1	78.2	72.3	5.90	13.247		
1,400.0	1,395.6	1,396.7	1,385.2	3.2	3.7	98.40	-75.8	66.9	91.3	84.7	6.60	13.830		
1,500.0	1,493.3	1,495.3	1,479.6	3.6	4.2	95.18	-83.9	94.0	105.2	97.8	7.38	14.252		
1,600.0	1,591.1	1,593.3	1,572.6	4.0	4.8	91.17	-91.8	124.0	120.0	111.8	8.21	14.624		
1,700.0	1,688.8	1,690.8	1,664.0	4.4	5.4	86.74	-99.6	157.0	136.1	127.0	9.05	15.039		
1,800.0	1,786.5	1,788.9	1,755.7	4.8	6.1	82.93	-107.5	191.0	153.0	143.1	9.90	15.463		
1,900.0	1,884.2	1,887.0	1,847.4	5.2	6.8	79.88	-115.3	224.9	170.5	159.8	10.75	15.868		
2,000.0	1,981.9	1,985.1	1,939.1	5.6	7.5	77.41	-123.1	258.8	188.4	176.8	11.60	16.246		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<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>Reference Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
2,100.0	2,079.6	2,083.2	2,030.8	6.1	8.2	75.36	-130.9	292.8	206.5	194.1	12.45	16.594	
2,200.0	2,177.3	2,181.3	2,122.5	6.5	8.9	73.64	-138.8	326.7	224.9	211.6	13.30	16.914	
2,300.0	2,275.1	2,279.4	2,214.2	6.9	9.6	72.19	-146.6	360.7	243.4	229.3	14.15	17.206	
2,400.0	2,372.8	2,377.5	2,306.0	7.4	10.4	70.94	-154.4	394.6	262.1	247.1	15.00	17.473	
2,500.0	2,470.5	2,475.6	2,397.7	7.8	11.1	69.85	-162.2	428.5	280.9	265.0	15.85	17.718	
2,600.0	2,568.2	2,573.7	2,489.4	8.3	11.8	68.91	-170.1	462.5	299.7	283.0	16.71	17.942	
2,700.0	2,665.9	2,671.8	2,581.1	8.7	12.5	68.07	-177.9	496.4	318.7	301.1	17.56	18.148	
2,800.0	2,763.6	2,769.9	2,672.8	9.2	13.3	67.33	-185.7	530.3	337.6	319.2	18.41	18.337	
2,900.0	2,861.4	2,867.9	2,764.5	9.6	14.0	66.66	-193.5	564.3	356.7	337.4	19.27	18.512	
3,000.0	2,959.1	2,966.0	2,856.2	10.1	14.8	66.07	-201.4	598.2	375.8	355.6	20.12	18.674	
3,100.0	3,056.8	3,064.1	2,947.9	10.6	15.5	65.53	-209.2	632.2	394.9	373.9	20.98	18.824	
3,200.0	3,154.5	3,162.2	3,039.6	11.0	16.2	65.04	-217.0	666.1	414.0	392.2	21.83	18.964	
3,300.0	3,252.2	3,260.3	3,131.3	11.5	17.0	64.60	-224.8	700.0	433.2	410.5	22.69	19.093	
3,400.0	3,349.9	3,358.4	3,223.0	11.9	17.7	64.19	-232.6	734.0	452.4	428.8	23.54	19.214	
3,500.0	3,447.6	3,456.5	3,314.7	12.4	18.5	63.81	-240.5	767.9	471.6	447.2	24.40	19.327	
3,600.0	3,545.4	3,554.6	3,406.4	12.8	19.2	63.47	-248.3	801.9	490.8	465.5	25.26	19.433	
3,700.0	3,643.1	3,652.7	3,498.1	13.3	19.9	63.15	-256.1	835.8	510.0	483.9	26.11	19.533	
3,800.0	3,740.8	3,750.8	3,589.8	13.8	20.7	62.85	-263.9	869.7	529.3	502.3	26.97	19.626	
3,900.0	3,838.5	3,848.9	3,681.5	14.2	21.4	62.58	-271.8	903.7	548.6	520.7	27.83	19.714	
4,000.0	3,936.2	3,947.0	3,773.2	14.7	22.2	62.32	-279.6	937.6	567.9	539.2	28.68	19.797	
4,100.0	4,033.9	4,045.1	3,864.9	15.2	22.9	62.08	-287.4	971.6	587.1	557.6	29.54	19.876	
4,200.0	4,131.6	4,143.2	3,956.6	15.6	23.7	61.86	-295.2	1,005.5	606.5	576.1	30.40	19.950	
4,300.0	4,229.4	4,241.2	4,048.3	16.1	24.4	61.65	-303.1	1,039.4	625.8	594.5	31.26	20.020	
4,400.0	4,327.1	4,339.3	4,140.0	16.5	25.2	61.45	-310.9	1,073.4	645.1	613.0	32.11	20.087	
4,500.0	4,424.8	4,437.4	4,231.7	17.0	25.9	61.26	-318.7	1,107.3	664.4	631.4	32.97	20.150	
4,600.0	4,522.5	4,535.5	4,323.4	17.5	26.6	61.08	-326.5	1,141.2	683.7	649.9	33.83	20.210	
4,700.0	4,620.2	4,633.6	4,415.1	17.9	27.4	60.92	-334.4	1,175.2	703.1	668.4	34.69	20.268	
4,800.0	4,717.9	4,731.7	4,506.8	18.4	28.1	60.76	-342.2	1,209.1	722.4	686.9	35.55	20.322	
4,900.0	4,815.6	4,829.8	4,598.5	18.8	28.9	60.61	-350.0	1,243.1	741.8	705.4	36.41	20.374	
5,000.0	4,913.4	4,927.9	4,690.2	19.3	29.6	60.47	-357.8	1,277.0	761.1	723.8	37.27	20.424	
5,100.0	5,011.1	5,026.0	4,781.9	19.8	30.4	60.34	-365.6	1,310.9	780.5	742.3	38.12	20.472	
5,200.0	5,108.8	5,124.1	4,873.6	20.2	31.1	60.27	-373.5	1,344.9	799.9	760.9	38.99	20.516	
5,300.0	5,207.0	5,221.9	4,965.0	20.6	31.9	60.36	-381.3	1,378.7	820.4	780.6	39.76	20.631	
5,400.0	5,305.8	5,344.4	5,080.2	20.8	32.6	60.22	-390.6	1,419.4	841.5	801.0	40.46	20.798	
5,500.0	5,405.0	5,474.6	5,204.4	21.1	33.3	59.99	-399.4	1,457.4	860.7	819.6	41.02	20.980	
5,600.0	5,504.7	5,606.3	5,331.8	21.3	33.9	59.70	-407.0	1,490.2	877.9	836.4	41.47	21.167	
5,700.0	5,604.5	5,739.6	5,462.0	21.5	34.4	59.34	-413.3	1,517.5	893.1	851.3	41.80	21.365	
5,800.0	5,704.5	5,874.2	5,594.8	21.6	34.8	135.23	-418.3	1,539.1	906.2	864.2	42.02	21.568	
5,900.0	5,804.5	6,010.3	5,730.0	21.7	35.1	134.69	-421.9	1,554.8	916.3	874.1	42.19	21.716	
6,000.0	5,904.5	6,147.7	5,866.9	21.8	35.3	134.37	-424.0	1,564.2	922.3	879.8	42.41	21.745	
6,100.0	6,004.5	6,284.3	6,003.5	22.0	35.4	134.27	-424.7	1,567.2	924.2	881.5	42.68	21.654	
6,200.0	6,104.5	6,384.3	6,103.5	22.1	35.5	134.27	-424.7	1,567.2	924.2	881.2	42.93	21.526	
6,300.0	6,204.5	6,484.3	6,203.5	22.2	35.6	134.27	-424.7	1,567.2	924.2	881.0	43.19	21.398	
6,400.0	6,304.5	6,584.3	6,303.5	22.4	35.7	134.27	-424.7	1,567.2	924.2	880.7	43.45	21.270	
6,500.0	6,404.5	6,684.3	6,403.5	22.5	35.8	134.27	-424.7	1,567.2	924.2	880.5	43.71	21.142	
6,600.0	6,504.5	6,784.3	6,503.5	22.6	35.8	134.27	-424.7	1,567.2	924.2	880.2	43.98	21.014	
6,700.0	6,604.5	6,884.3	6,603.5	22.8	35.9	134.27	-424.7	1,567.2	924.2	879.9	44.25	20.887	
6,800.0	6,704.5	6,984.3	6,703.5	22.9	36.0	134.27	-424.7	1,567.2	924.2	879.6	44.52	20.759	
6,900.0	6,804.5	7,084.3	6,803.5	23.0	36.1	134.27	-424.7	1,567.2	924.2	879.4	44.79	20.632	
7,000.0	6,904.5	7,184.3	6,903.5	23.2	36.2	134.27	-424.7	1,567.2	924.2	879.1	45.07	20.505	
7,100.0	7,004.5	7,284.3	7,003.5	23.3	36.3	134.27	-424.7	1,567.2	924.2	878.8	45.35	20.378	
7,200.0	7,104.5	7,384.3	7,103.5	23.5	36.4	134.27	-424.7	1,567.2	924.2	878.5	45.63	20.252	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<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>Reference Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> HFE 5 Pad Sec.22-T4N-R68W - HFE 44-22 - Wellbore #1 - Plan #1 (8-02-12)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,300.0	7,204.5	7,484.3	7,203.5	23.6	36.5	134.27	-424.7	1,567.2	924.2	878.2	45.92	20.126	
7,395.5	7,300.0	7,579.8	7,299.0	23.8	36.5	134.27	-424.7	1,567.2	924.2	878.0	46.19	20.006	

<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>Reference Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design HFE 5 Pad Sec.22-T4N-R68W - MLD 43-22 - Wellbore #1 - Plan #1 (8-02-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-91.41	-0.4	-14.8	14.8	14.8	0.00	N/A		
100.0	100.0	99.0	99.0	0.1	0.1	-91.41	-0.4	-14.8	14.8	14.6	0.22	66.128		
200.0	200.0	199.0	199.0	0.3	0.3	-91.41	-0.4	-14.8	14.8	14.1	0.67	22.006		
246.7	246.7	245.7	245.7	0.4	0.4	-90.00	0.0	-14.8	14.8	13.9	0.88	16.740 CC		
300.0	300.0	299.0	299.0	0.6	0.6	-84.80	1.3	-14.8	14.8	13.7	1.12	13.207 ES		
400.0	400.0	398.7	398.5	0.8	0.8	-66.19	6.5	-14.8	16.2	14.6	1.58	10.217		
500.0	500.0	498.4	497.9	1.0	1.0	-44.07	14.9	-14.4	20.7	18.7	2.05	10.129 SF		
600.0	600.0	598.1	597.1	1.2	1.3	-24.39	24.5	-11.1	27.0	24.4	2.52	10.703		
700.0	700.0	697.3	695.5	1.5	1.6	-7.38	35.0	-4.5	35.5	32.5	3.02	11.729		
800.0	800.0	795.7	792.8	1.7	1.9	6.44	46.4	5.2	47.1	43.5	3.56	13.220		
900.0	900.0	893.5	888.9	1.9	2.2	-60.25	58.5	18.1	61.2	57.3	3.86	15.850		
1,000.0	999.8	990.7	983.9	2.1	2.6	-54.36	71.4	34.1	76.4	72.1	4.32	17.682		
1,100.0	1,099.5	1,087.5	1,077.8	2.3	3.0	-50.49	85.2	53.1	92.1	87.3	4.81	19.170		
1,200.0	1,198.7	1,183.9	1,170.5	2.6	3.5	-47.79	99.6	75.0	108.1	102.8	5.32	20.314		
1,300.0	1,297.5	1,279.8	1,261.9	2.9	4.1	-45.82	114.8	99.9	124.2	118.4	5.88	21.141		
1,400.0	1,395.6	1,375.2	1,351.9	3.2	4.7	-44.34	130.7	127.5	140.4	133.9	6.48	21.668		
1,500.0	1,493.3	1,470.2	1,440.3	3.6	5.3	-43.07	147.2	157.9	157.4	150.3	7.13	22.086		
1,600.0	1,591.1	1,568.4	1,531.2	4.0	6.0	-41.71	164.7	190.7	175.7	167.9	7.81	22.509		
1,700.0	1,688.8	1,666.7	1,622.2	4.4	6.8	-40.60	182.2	223.5	194.0	185.5	8.49	22.847		
1,800.0	1,786.5	1,764.9	1,713.1	4.8	7.5	-39.69	199.6	256.3	212.4	203.2	9.19	23.122		
1,900.0	1,884.2	1,863.2	1,804.1	5.2	8.2	-38.92	217.1	289.1	230.8	221.0	9.89	23.349		
2,000.0	1,981.9	1,961.4	1,895.0	5.6	9.0	-38.27	234.6	321.9	249.3	238.7	10.59	23.539		
2,100.0	2,079.6	2,059.6	1,985.9	6.1	9.7	-37.70	252.0	354.8	267.8	256.5	11.30	23.699		
2,200.0	2,177.3	2,157.9	2,076.9	6.5	10.5	-37.21	269.5	387.6	286.3	274.3	12.01	23.838		
2,300.0	2,275.1	2,256.1	2,167.8	6.9	11.2	-36.78	286.9	420.4	304.9	292.1	12.72	23.957		
2,400.0	2,372.8	2,354.4	2,258.8	7.4	12.0	-36.40	304.4	453.2	323.4	310.0	13.44	24.062		
2,500.0	2,470.5	2,452.6	2,349.7	7.8	12.8	-36.06	321.9	486.0	342.0	327.8	14.16	24.155		
2,600.0	2,568.2	2,550.9	2,440.7	8.3	13.5	-35.75	339.3	518.8	360.5	345.7	14.88	24.237		
2,700.0	2,665.9	2,649.1	2,531.6	8.7	14.3	-35.48	356.8	551.6	379.1	363.5	15.59	24.311		
2,800.0	2,763.6	2,747.3	2,622.5	9.2	15.1	-35.23	374.3	584.4	397.7	381.4	16.31	24.377		
2,900.0	2,861.4	2,845.6	2,713.5	9.6	15.8	-35.00	391.7	617.2	416.3	399.3	17.04	24.436		
3,000.0	2,959.1	2,943.8	2,804.4	10.1	16.6	-34.79	409.2	650.0	434.9	417.1	17.76	24.491		
3,100.0	3,056.8	3,042.1	2,895.4	10.6	17.4	-34.60	426.6	682.8	453.5	435.0	18.48	24.540		
3,200.0	3,154.5	3,140.3	2,986.3	11.0	18.1	-34.42	444.1	715.6	472.1	452.9	19.20	24.585		
3,300.0	3,252.2	3,238.6	3,077.2	11.5	18.9	-34.26	461.6	748.5	490.7	470.8	19.93	24.627		
3,400.0	3,349.9	3,336.8	3,168.2	11.9	19.7	-34.11	479.0	781.3	509.3	488.7	20.65	24.665		
3,500.0	3,447.6	3,435.1	3,259.1	12.4	20.4	-33.97	496.5	814.1	528.0	506.6	21.37	24.701		
3,600.0	3,545.4	3,533.3	3,350.1	12.8	21.2	-33.84	514.0	846.9	546.6	524.5	22.10	24.734		
3,700.0	3,643.1	3,631.5	3,441.0	13.3	22.0	-33.72	531.4	879.7	565.2	542.4	22.82	24.764		
3,800.0	3,740.8	3,729.8	3,532.0	13.8	22.7	-33.60	548.9	912.5	583.8	560.3	23.55	24.793		
3,900.0	3,838.5	3,828.0	3,622.9	14.2	23.5	-33.50	566.3	945.3	602.5	578.2	24.27	24.819		
4,000.0	3,936.2	3,926.3	3,713.8	14.7	24.3	-33.40	583.8	978.1	621.1	596.1	25.00	24.844		
4,100.0	4,033.9	4,024.5	3,804.8	15.2	25.1	-33.30	601.3	1,010.9	639.7	614.0	25.73	24.867		
4,200.0	4,131.6	4,122.8	3,895.7	15.6	25.8	-33.21	618.7	1,043.7	658.4	631.9	26.45	24.889		
4,300.0	4,229.4	4,221.0	3,986.7	16.1	26.6	-33.13	636.2	1,076.5	677.0	649.8	27.18	24.910		
4,400.0	4,327.1	4,319.2	4,077.6	16.5	27.4	-33.05	653.7	1,109.3	695.6	667.7	27.90	24.929		
4,500.0	4,424.8	4,417.5	4,168.6	17.0	28.1	-32.97	671.1	1,142.2	714.3	685.6	28.63	24.948		
4,600.0	4,522.5	4,515.7	4,259.5	17.5	28.9	-32.90	688.6	1,175.0	732.9	703.6	29.36	24.965		
4,700.0	4,620.2	4,614.0	4,350.4	17.9	29.7	-32.83	706.0	1,207.8	751.6	721.5	30.08	24.982		
4,800.0	4,717.9	4,712.2	4,441.4	18.4	30.5	-32.77	723.5	1,240.6	770.2	739.4	30.81	24.997		
4,900.0	4,815.6	4,810.5	4,532.3	18.8	31.2	-32.70	741.0	1,273.4	788.8	757.3	31.54	25.012		
5,000.0	4,913.4	4,908.7	4,623.3	19.3	32.0	-32.65	758.4	1,306.2	807.5	775.2	32.27	25.026		

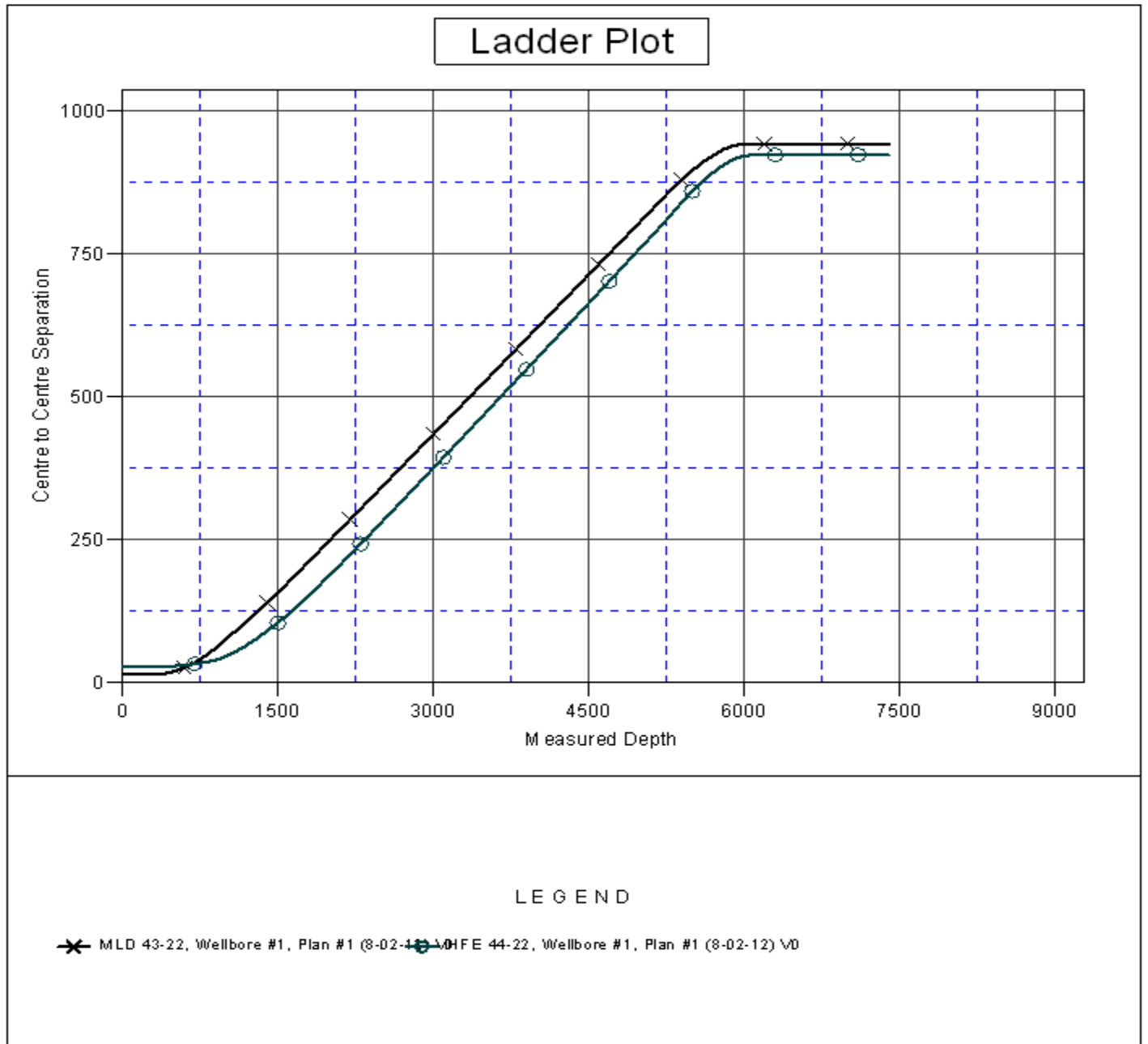
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<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>Reference Site:</b>	HFE 5 Pad Sec.22-T4N-R68W	<b>MD Reference:</b>	WELL @ 4957.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	HFE 22SE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
HFE 5 Pad Sec.22-T4N-R68W - MLD 43-22 - Wellbore #1 - Plan #1 (8-02-12)												<b>Offset Well Error:</b>	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,011.1	5,006.9	4,714.2	19.8	32.8	-32.59	775.9	1,339.0	826.1	793.1	32.99	25.040	
5,200.0	5,108.8	5,105.2	4,805.1	20.2	33.5	-32.57	793.4	1,371.8	844.8	811.1	33.71	25.060	
5,300.0	5,207.0	5,237.4	4,928.4	20.6	34.4	-32.64	815.8	1,413.9	863.7	829.3	34.37	25.128	
5,400.0	5,305.8	5,375.8	5,059.7	20.8	35.1	-32.67	836.3	1,452.5	881.1	846.2	34.93	25.226	
5,500.0	5,405.0	5,515.7	5,194.5	21.1	35.8	-32.64	854.1	1,485.9	896.8	861.4	35.39	25.340	
5,600.0	5,504.7	5,657.0	5,332.2	21.3	36.3	-32.58	868.8	1,513.6	910.8	875.1	35.75	25.474	
5,700.0	5,604.5	5,799.6	5,472.6	21.5	36.8	-32.47	880.5	1,535.5	923.1	887.1	36.03	25.623	
5,800.0	5,704.5	5,943.3	5,615.2	21.6	37.1	44.01	888.9	1,551.2	933.6	897.4	36.21	25.786	
5,900.0	5,804.5	6,088.2	5,759.6	21.7	37.3	44.21	893.9	1,560.7	940.7	904.2	36.51	25.766	
6,000.0	5,904.5	6,232.1	5,903.5	21.8	37.5	44.28	895.5	1,563.8	942.9	906.1	36.82	25.606	
6,100.0	6,004.5	6,332.1	6,003.5	22.0	37.6	44.28	895.5	1,563.8	942.9	905.8	37.11	25.407	
6,200.0	6,104.5	6,432.1	6,103.5	22.1	37.6	44.28	895.5	1,563.8	942.9	905.5	37.41	25.206	
6,300.0	6,204.5	6,532.1	6,203.5	22.2	37.7	44.28	895.5	1,563.8	942.9	905.2	37.71	25.006	
6,400.0	6,304.5	6,632.1	6,303.5	22.4	37.8	44.28	895.5	1,563.8	942.9	904.9	38.01	24.807	
6,500.0	6,404.5	6,732.1	6,403.5	22.5	37.9	44.28	895.5	1,563.8	942.9	904.6	38.31	24.610	
6,600.0	6,504.5	6,832.1	6,503.5	22.6	37.9	44.28	895.5	1,563.8	942.9	904.3	38.62	24.414	
6,700.0	6,604.5	6,932.1	6,603.5	22.8	38.0	44.28	895.5	1,563.8	942.9	904.0	38.93	24.219	
6,800.0	6,704.5	7,032.1	6,703.5	22.9	38.1	44.28	895.5	1,563.8	942.9	903.7	39.25	24.026	
6,900.0	6,804.5	7,132.1	6,803.5	23.0	38.2	44.28	895.5	1,563.8	942.9	903.4	39.56	23.834	
7,000.0	6,904.5	7,232.1	6,903.5	23.2	38.3	44.28	895.5	1,563.8	942.9	903.0	39.88	23.644	
7,100.0	7,004.5	7,332.1	7,003.5	23.3	38.4	44.28	895.5	1,563.8	942.9	902.7	40.20	23.455	
7,200.0	7,104.5	7,432.1	7,103.5	23.5	38.5	44.28	895.5	1,563.8	942.9	902.4	40.52	23.268	
7,300.0	7,204.5	7,532.1	7,203.5	23.6	38.5	44.28	895.5	1,563.8	942.9	902.1	40.85	23.082	
7,395.5	7,300.0	7,627.6	7,299.0	23.8	38.6	44.28	895.5	1,563.8	942.9	901.8	41.16	22.907	

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<b>Reference Design:</b>	Plan #1 (8-02-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4957.0ft (Original Well Elev) Coordinates are relative to: HFE 22SE  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.33°



Reference Depths are relative to WELL @ 4957.0ft (Original Well Elev)Coordinates are relative to: HFE 22SE  
Offset Depths are relative to Offset DatumCoordinate System is US State Plane 1983, Colorado Northern Zone  
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