

ENSIGN

Directional

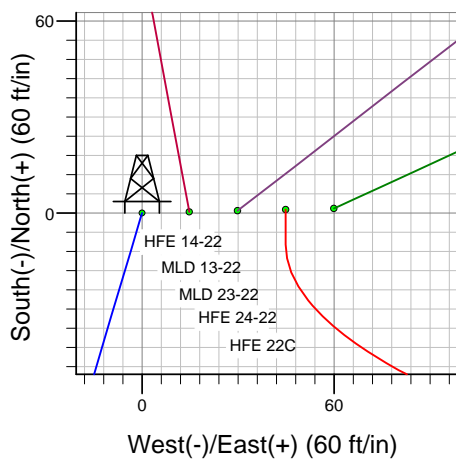
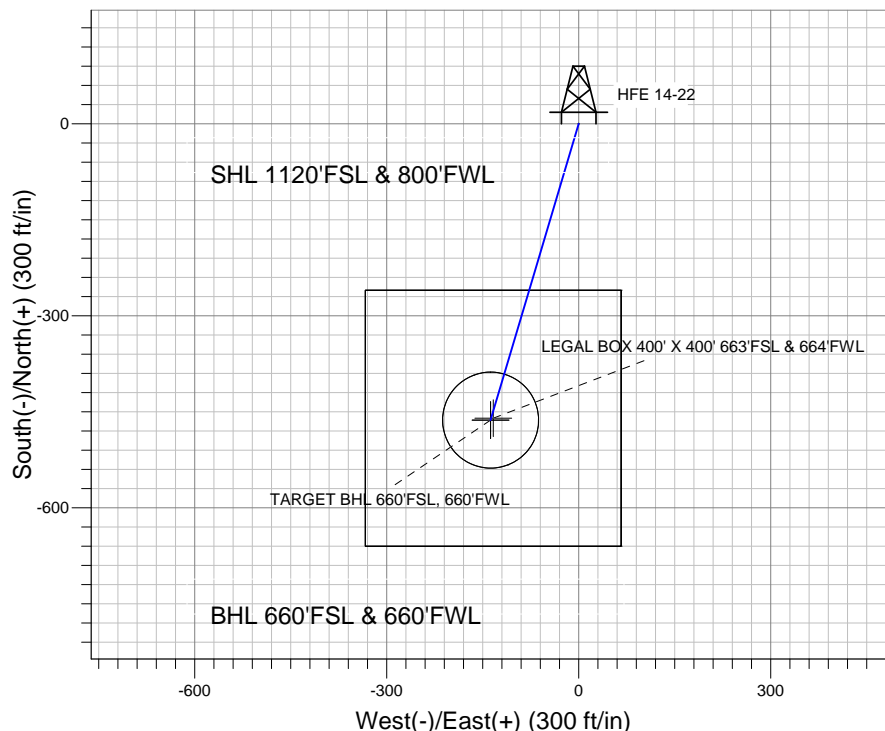
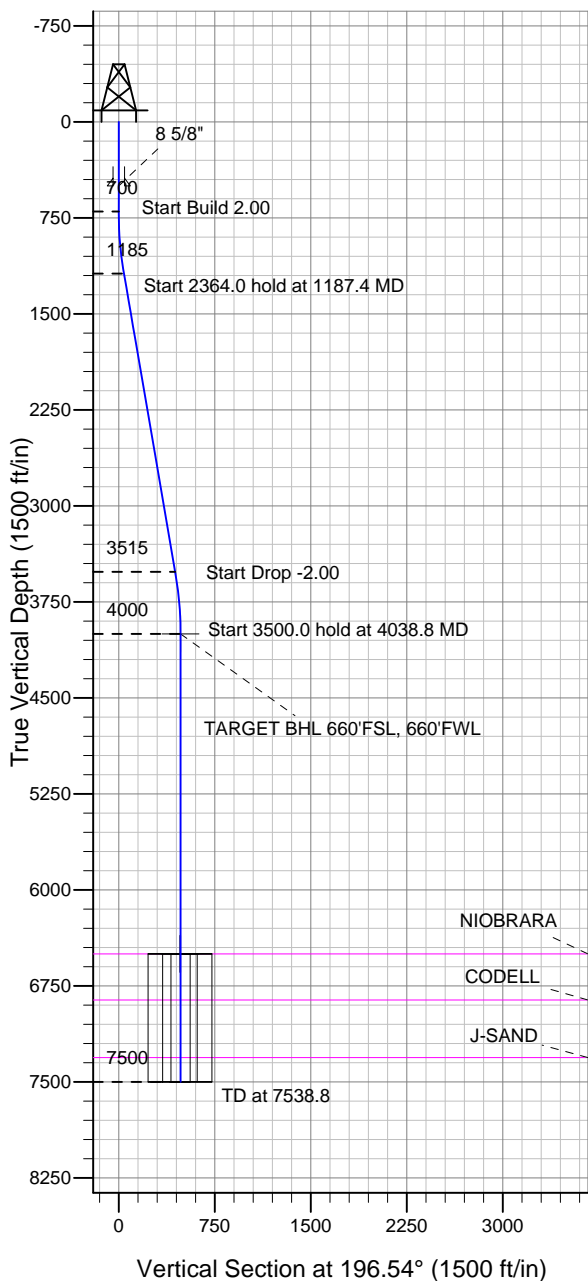
Well Name: HFE 14-22

Surface Location: HFE 14-22 Pad Sec.22-T4N-R68W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4920.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1350597.13	3140616.63	40.294692	-104.995892	
		Original Well Elev WELL @ 4933.0ft (Original Well Elev)				

Sundance Energy, Weld County, CO



HFE 14-22 Pad Sec.22-T4N-R68W
 HFE 14-22
 Plan #1 (4-10-12)
 10:41, April 11 2012



Azimuths to True North
 Magnetic North: 8.87°

Magnetic Field
 Strength: 52963.5snT
 Dip Angle: 66.90°
 Date: 4/11/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 660'FSL, 660'FWL	4000.0	-463.0	-137.5	40.293421	-104.996385	Point
LEGAL BOX 400' X 400' 663'FSL & 664'FWL	6500.0	-460.0	-133.5	40.293429	-104.996371	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 660'FSL & 660'FWL	6500.0	-463.0	-137.5	40.293421	-104.996385	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	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	1187.4	9.75	196.54	1185.1	-39.7	-11.8	2.00	196.54	41.4	
4	3551.4	9.75	196.54	3514.9	-423.4	-125.7	0.00	0.00	441.7	
5	4038.8	0.00	0.00	4000.0	-463.0	-137.5	2.00	180.00	483.0	TARGET BHL 660'FSL, 660'FWL
6	7538.8	0.00	0.00	7500.0	-463.0	-137.5	0.00	0.00	483.0	



Directional

Sundance Energy, Weld County, CO

SEC.22-T4N-R68W

HFE 14-22 Pad Sec.22-T4N-R68W

HFE 14-22

Wellbore #1

Plan: Plan #1 (4-10-12)

Standard Planning Report

11 April, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

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

Site	HFE 14-22 Pad Sec.22-T4N-R68W				
Site Position:		Northing:	1,350,597.13ft	Latitude:	40.294692
From:	Lat/Long	Easting:	3,140,616.63ft	Longitude:	-104.995892
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.33 °

Well	HFE 14-22					
Well Position	+N-S	0.0 ft	Northing:	1,350,597.13 ft	Latitude:	40.294692
	+E-W	0.0 ft	Easting:	3,140,616.63 ft	Longitude:	-104.995892
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,920.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/11/2012	8.87	66.90	52,963

Design	Plan #1 (4-10-12)			
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	196.54

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	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,187.4	9.75	196.54	1,185.1	-39.7	-11.8	2.00	2.00	0.00	196.54	
3,551.4	9.75	196.54	3,514.9	-423.4	-125.7	0.00	0.00	0.00	0.00	
4,038.8	0.00	0.00	4,000.0	-463.0	-137.5	2.00	-2.00	0.00	180.00	TARGET BHL 660'I
7,538.8	0.00	0.00	7,500.0	-463.0	-137.5	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.40	196.54	720.0	-0.1	0.0	0.1	2.00	2.00	0.00
760.0	1.20	196.54	760.0	-0.6	-0.2	0.6	2.00	2.00	0.00
800.0	2.00	196.54	800.0	-1.7	-0.5	1.7	2.00	2.00	0.00
840.0	2.80	196.54	839.9	-3.3	-1.0	3.4	2.00	2.00	0.00
880.0	3.60	196.54	879.9	-5.4	-1.6	5.7	2.00	2.00	0.00
920.0	4.40	196.54	919.8	-8.1	-2.4	8.4	2.00	2.00	0.00
960.0	5.20	196.54	959.6	-11.3	-3.4	11.8	2.00	2.00	0.00
1,000.0	6.00	196.54	999.5	-15.0	-4.5	15.7	2.00	2.00	0.00
1,040.0	6.80	196.54	1,039.2	-19.3	-5.7	20.2	2.00	2.00	0.00
1,080.0	7.60	196.54	1,078.9	-24.1	-7.2	25.2	2.00	2.00	0.00
1,120.0	8.40	196.54	1,118.5	-29.5	-8.8	30.7	2.00	2.00	0.00
1,160.0	9.20	196.54	1,158.0	-35.3	-10.5	36.9	2.00	2.00	0.00
1,187.4	9.75	196.54	1,185.1	-39.7	-11.8	41.4	2.00	2.00	0.00
1,200.0	9.75	196.54	1,197.5	-41.7	-12.4	43.5	0.00	0.00	0.00
1,240.0	9.75	196.54	1,236.9	-48.2	-14.3	50.3	0.00	0.00	0.00
1,280.0	9.75	196.54	1,276.3	-54.7	-16.2	57.0	0.00	0.00	0.00
1,320.0	9.75	196.54	1,315.7	-61.2	-18.2	63.8	0.00	0.00	0.00
1,360.0	9.75	196.54	1,355.2	-67.7	-20.1	70.6	0.00	0.00	0.00
1,400.0	9.75	196.54	1,394.6	-74.2	-22.0	77.4	0.00	0.00	0.00
1,440.0	9.75	196.54	1,434.0	-80.7	-24.0	84.1	0.00	0.00	0.00
1,480.0	9.75	196.54	1,473.4	-87.1	-25.9	90.9	0.00	0.00	0.00
1,520.0	9.75	196.54	1,512.8	-93.6	-27.8	97.7	0.00	0.00	0.00
1,560.0	9.75	196.54	1,552.3	-100.1	-29.7	104.5	0.00	0.00	0.00
1,600.0	9.75	196.54	1,591.7	-106.6	-31.7	111.2	0.00	0.00	0.00
1,640.0	9.75	196.54	1,631.1	-113.1	-33.6	118.0	0.00	0.00	0.00
1,680.0	9.75	196.54	1,670.5	-119.6	-35.5	124.8	0.00	0.00	0.00
1,720.0	9.75	196.54	1,710.0	-126.1	-37.5	131.5	0.00	0.00	0.00
1,760.0	9.75	196.54	1,749.4	-132.6	-39.4	138.3	0.00	0.00	0.00
1,800.0	9.75	196.54	1,788.8	-139.1	-41.3	145.1	0.00	0.00	0.00
1,840.0	9.75	196.54	1,828.2	-145.6	-43.2	151.9	0.00	0.00	0.00
1,880.0	9.75	196.54	1,867.7	-152.1	-45.2	158.6	0.00	0.00	0.00
1,920.0	9.75	196.54	1,907.1	-158.6	-47.1	165.4	0.00	0.00	0.00
1,960.0	9.75	196.54	1,946.5	-165.1	-49.0	172.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

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)
2,000.0	9.75	196.54	1,985.9	-171.6	-51.0	179.0	0.00	0.00	0.00
2,040.0	9.75	196.54	2,025.3	-178.0	-52.9	185.7	0.00	0.00	0.00
2,080.0	9.75	196.54	2,064.8	-184.5	-54.8	192.5	0.00	0.00	0.00
2,120.0	9.75	196.54	2,104.2	-191.0	-56.7	199.3	0.00	0.00	0.00
2,160.0	9.75	196.54	2,143.6	-197.5	-58.7	206.1	0.00	0.00	0.00
2,200.0	9.75	196.54	2,183.0	-204.0	-60.6	212.8	0.00	0.00	0.00
2,240.0	9.75	196.54	2,222.5	-210.5	-62.5	219.6	0.00	0.00	0.00
2,280.0	9.75	196.54	2,261.9	-217.0	-64.5	226.4	0.00	0.00	0.00
2,320.0	9.75	196.54	2,301.3	-223.5	-66.4	233.1	0.00	0.00	0.00
2,360.0	9.75	196.54	2,340.7	-230.0	-68.3	239.9	0.00	0.00	0.00
2,400.0	9.75	196.54	2,380.1	-236.5	-70.2	246.7	0.00	0.00	0.00
2,440.0	9.75	196.54	2,419.6	-243.0	-72.2	253.5	0.00	0.00	0.00
2,480.0	9.75	196.54	2,459.0	-249.5	-74.1	260.2	0.00	0.00	0.00
2,520.0	9.75	196.54	2,498.4	-256.0	-76.0	267.0	0.00	0.00	0.00
2,560.0	9.75	196.54	2,537.8	-262.4	-78.0	273.8	0.00	0.00	0.00
2,600.0	9.75	196.54	2,577.3	-268.9	-79.9	280.6	0.00	0.00	0.00
2,640.0	9.75	196.54	2,616.7	-275.4	-81.8	287.3	0.00	0.00	0.00
2,680.0	9.75	196.54	2,656.1	-281.9	-83.7	294.1	0.00	0.00	0.00
2,720.0	9.75	196.54	2,695.5	-288.4	-85.7	300.9	0.00	0.00	0.00
2,760.0	9.75	196.54	2,734.9	-294.9	-87.6	307.6	0.00	0.00	0.00
2,800.0	9.75	196.54	2,774.4	-301.4	-89.5	314.4	0.00	0.00	0.00
2,840.0	9.75	196.54	2,813.8	-307.9	-91.5	321.2	0.00	0.00	0.00
2,880.0	9.75	196.54	2,853.2	-314.4	-93.4	328.0	0.00	0.00	0.00
2,920.0	9.75	196.54	2,892.6	-320.9	-95.3	334.7	0.00	0.00	0.00
2,960.0	9.75	196.54	2,932.1	-327.4	-97.2	341.5	0.00	0.00	0.00
3,000.0	9.75	196.54	2,971.5	-333.9	-99.2	348.3	0.00	0.00	0.00
3,040.0	9.75	196.54	3,010.9	-340.4	-101.1	355.1	0.00	0.00	0.00
3,080.0	9.75	196.54	3,050.3	-346.9	-103.0	361.8	0.00	0.00	0.00
3,120.0	9.75	196.54	3,089.7	-353.3	-105.0	368.6	0.00	0.00	0.00
3,160.0	9.75	196.54	3,129.2	-359.8	-106.9	375.4	0.00	0.00	0.00
3,200.0	9.75	196.54	3,168.6	-366.3	-108.8	382.2	0.00	0.00	0.00
3,240.0	9.75	196.54	3,208.0	-372.8	-110.7	388.9	0.00	0.00	0.00
3,280.0	9.75	196.54	3,247.4	-379.3	-112.7	395.7	0.00	0.00	0.00
3,320.0	9.75	196.54	3,286.9	-385.8	-114.6	402.5	0.00	0.00	0.00
3,360.0	9.75	196.54	3,326.3	-392.3	-116.5	409.2	0.00	0.00	0.00
3,400.0	9.75	196.54	3,365.7	-398.8	-118.5	416.0	0.00	0.00	0.00
3,440.0	9.75	196.54	3,405.1	-405.3	-120.4	422.8	0.00	0.00	0.00
3,480.0	9.75	196.54	3,444.5	-411.8	-122.3	429.6	0.00	0.00	0.00
3,520.0	9.75	196.54	3,484.0	-418.3	-124.2	436.3	0.00	0.00	0.00
3,551.4	9.75	196.54	3,514.9	-423.4	-125.7	441.7	0.00	0.00	0.00
3,560.0	9.58	196.54	3,523.4	-424.8	-126.2	443.1	2.00	-2.00	0.00
3,600.0	8.78	196.54	3,562.9	-430.9	-128.0	449.5	2.00	-2.00	0.00
3,640.0	7.98	196.54	3,602.5	-436.5	-129.6	455.3	2.00	-2.00	0.00
3,680.0	7.18	196.54	3,642.1	-441.5	-131.1	460.6	2.00	-2.00	0.00
3,720.0	6.38	196.54	3,681.8	-446.0	-132.5	465.3	2.00	-2.00	0.00
3,760.0	5.58	196.54	3,721.6	-450.0	-133.7	469.5	2.00	-2.00	0.00
3,800.0	4.78	196.54	3,761.4	-453.5	-134.7	473.1	2.00	-2.00	0.00
3,840.0	3.98	196.54	3,801.3	-456.4	-135.6	476.1	2.00	-2.00	0.00
3,880.0	3.18	196.54	3,841.2	-458.8	-136.3	478.6	2.00	-2.00	0.00
3,920.0	2.38	196.54	3,881.2	-460.7	-136.8	480.6	2.00	-2.00	0.00
3,960.0	1.58	196.54	3,921.2	-462.0	-137.2	481.9	2.00	-2.00	0.00
4,000.0	0.78	196.54	3,961.2	-462.8	-137.5	482.8	2.00	-2.00	0.00
4,038.8	0.00	0.00	4,000.0	-463.0	-137.5	483.0	2.00	-2.00	420.92

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

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)
TARGET BHL 660'FSL, 660'FWL									
4,040.0	0.00	0.00	4,001.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,080.0	0.00	0.00	4,041.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,120.0	0.00	0.00	4,081.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,160.0	0.00	0.00	4,121.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,161.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,240.0	0.00	0.00	4,201.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,280.0	0.00	0.00	4,241.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,320.0	0.00	0.00	4,281.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,360.0	0.00	0.00	4,321.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,361.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,440.0	0.00	0.00	4,401.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,480.0	0.00	0.00	4,441.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,520.0	0.00	0.00	4,481.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,560.0	0.00	0.00	4,521.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,561.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,640.0	0.00	0.00	4,601.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,680.0	0.00	0.00	4,641.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,720.0	0.00	0.00	4,681.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,760.0	0.00	0.00	4,721.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,761.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,840.0	0.00	0.00	4,801.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,880.0	0.00	0.00	4,841.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,920.0	0.00	0.00	4,881.2	-463.0	-137.5	483.0	0.00	0.00	0.00
4,960.0	0.00	0.00	4,921.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,961.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,040.0	0.00	0.00	5,001.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,080.0	0.00	0.00	5,041.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,120.0	0.00	0.00	5,081.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,121.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,161.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,201.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,241.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,281.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,321.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,361.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,401.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,441.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,481.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,521.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,561.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,601.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,641.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,681.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,721.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,761.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,801.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,841.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,881.2	-463.0	-137.5	483.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,921.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,961.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,040.0	0.00	0.00	6,001.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,080.0	0.00	0.00	6,041.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,120.0	0.00	0.00	6,081.2	-463.0	-137.5	483.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

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)
6,160.0	0.00	0.00	6,121.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,161.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,201.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,241.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,281.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,321.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,361.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,401.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,441.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,520.0	0.00	0.00	6,481.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,538.8	0.00	0.00	6,500.0	-463.0	-137.5	483.0	0.00	0.00	0.00
NIOBRARA - LEGAL BOX 400' X 400' 663'FSL & 664'FWL - TARGET CIRCLE 660'FSL & 660'FWL									
6,560.0	0.00	0.00	6,521.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,561.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,640.0	0.00	0.00	6,601.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,680.0	0.00	0.00	6,641.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,720.0	0.00	0.00	6,681.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,760.0	0.00	0.00	6,721.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,761.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,840.0	0.00	0.00	6,801.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,880.0	0.00	0.00	6,841.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,898.8	0.00	0.00	6,860.0	-463.0	-137.5	483.0	0.00	0.00	0.00
CODELL									
6,920.0	0.00	0.00	6,881.2	-463.0	-137.5	483.0	0.00	0.00	0.00
6,960.0	0.00	0.00	6,921.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,961.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,040.0	0.00	0.00	7,001.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,080.0	0.00	0.00	7,041.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,120.0	0.00	0.00	7,081.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,160.0	0.00	0.00	7,121.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,161.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,240.0	0.00	0.00	7,201.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,280.0	0.00	0.00	7,241.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,320.0	0.00	0.00	7,281.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,348.8	0.00	0.00	7,310.0	-463.0	-137.5	483.0	0.00	0.00	0.00
J-SAND									
7,360.0	0.00	0.00	7,321.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,361.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,440.0	0.00	0.00	7,401.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,480.0	0.00	0.00	7,441.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,520.0	0.00	0.00	7,481.2	-463.0	-137.5	483.0	0.00	0.00	0.00
7,538.8	0.00	0.00	7,500.0	-463.0	-137.5	483.0	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
500.0	500.0	8 5/8"	8-5/8	12-1/4

Database:	Landmark	Local Co-ordinate Reference:	Well HFE 14-22
Company:	Sundance Energy, Weld County, CO	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Project:	SEC.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site:	HFE 14-22 Pad Sec.22-T4N-R68W	North Reference:	True
Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-10-12)		

Formations						
	Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	6,538.8	6,500.0	NIOBRARA		0.00	
	6,898.8	6,860.0	CODELL		0.00	
	7,348.8	7,310.0	J-SAND		0.00	



Directional

Sundance Energy, Weld County, CO

SEC.22-T4N-R68W

HFE 14-22 Pad Sec.22-T4N-R68W

HFE 14-22

Wellbore #1

Plan #1 (4-10-12)

Anticollision Report

11 April, 2012

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well HFE 14-22
Project:	SEC.22-T4N-R68W	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Reference Site:	HFE 14-22 Pad Sec.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-10-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (4-10-12)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 4/11/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,538.8	Plan #1 (4-10-12) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
HFE 14-22 Pad Sec.22-T4N-R68W						
MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)	700.0	700.0	14.8	11.9	5.061	CC, ES
MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)	800.0	800.0	15.4	12.1	4.611	SF

Offset Design HFE 14-22 Pad Sec.22-T4N-R68W - MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	88.60	0.4	14.8	14.8	14.8	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	88.60	0.4	14.8	14.8	14.6	0.22	65.797		
200.0	200.0	200.0	200.0	0.3	0.3	88.60	0.4	14.8	14.8	14.1	0.67	21.932		
300.0	300.0	300.0	300.0	0.6	0.6	88.60	0.4	14.8	14.8	13.7	1.12	13.159		
400.0	400.0	400.0	400.0	0.8	0.8	88.60	0.4	14.8	14.8	13.2	1.57	9.400		
500.0	500.0	500.0	500.0	1.0	1.0	88.60	0.4	14.8	14.8	12.8	2.02	7.311		
600.0	600.0	600.0	600.0	1.2	1.2	88.60	0.4	14.8	14.8	12.3	2.47	5.982		
700.0	700.0	700.0	700.0	1.5	1.5	88.60	0.4	14.8	14.8	11.9	2.92	5.061 CC, ES		
800.0	800.0	800.0	800.0	1.7	1.7	-114.11	0.4	14.8	15.4	12.1	3.34	4.611 SF		
900.0	899.8	899.8	899.8	1.8	1.9	-129.27	0.4	14.8	18.2	14.4	3.75	4.854		
1,000.0	999.5	999.0	999.0	2.0	2.1	-148.40	2.0	14.5	25.5	21.3	4.16	6.128		
1,100.0	1,098.7	1,096.8	1,096.7	2.3	2.4	-163.79	7.0	13.5	40.0	35.5	4.59	8.732		
1,187.4	1,185.1	1,180.8	1,180.3	2.5	2.6	-172.14	13.9	12.3	58.9	53.9	4.96	11.875		
1,200.0	1,197.5	1,192.7	1,192.2	2.5	2.6	-173.05	15.0	12.0	62.0	57.0	5.01	12.370		
1,300.0	1,296.0	1,286.7	1,285.5	2.9	2.8	-178.53	26.0	10.0	88.8	83.4	5.45	16.295		
1,400.0	1,394.6	1,378.9	1,376.6	3.2	3.1	177.90	39.6	7.5	118.9	113.0	5.90	20.163		
1,500.0	1,493.1	1,469.1	1,465.4	3.5	3.3	175.33	55.7	4.4	152.0	145.7	6.35	23.946		
1,600.0	1,591.7	1,561.8	1,556.2	3.9	3.6	173.39	74.2	1.0	187.1	180.3	6.81	27.487		
1,700.0	1,690.2	1,655.3	1,647.7	4.2	4.0	172.04	92.8	-2.5	222.4	215.1	7.27	30.608		
1,800.0	1,788.8	1,748.7	1,739.2	4.6	4.3	171.07	111.4	-6.0	257.8	250.0	7.73	33.344		
1,900.0	1,887.4	1,842.2	1,830.7	5.0	4.7	170.33	130.0	-9.4	293.2	285.0	8.20	35.739		
2,000.0	1,985.9	1,935.7	1,922.3	5.3	5.0	169.75	148.6	-12.9	328.6	320.0	8.68	37.870		
2,100.0	2,084.5	2,029.1	2,013.8	5.7	5.4	169.28	167.2	-16.4	364.1	355.0	9.16	39.764		
2,200.0	2,183.0	2,122.6	2,105.3	6.1	5.8	168.89	185.8	-19.9	399.6	390.0	9.64	41.457		
2,300.0	2,281.6	2,216.0	2,196.8	6.5	6.1	168.57	204.4	-23.4	435.1	425.0	10.12	42.978		

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

Offset Design													HFE 14-22 Pad Sec.22-T4N-R68W - MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)		Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
2,400.0	2,380.1	2,309.5	2,288.3	6.9	6.5	168.30	223.1	-26.8	470.6	460.0	10.61	44.351				
2,500.0	2,478.7	2,403.0	2,379.9	7.2	6.9	168.06	241.7	-30.3	506.1	495.0	11.10	45.596				
2,600.0	2,577.3	2,496.4	2,471.4	7.6	7.3	167.86	260.3	-33.8	541.7	530.1	11.59	46.728				
2,700.0	2,675.8	2,589.9	2,562.9	8.0	7.7	167.68	278.9	-37.3	577.2	565.1	12.09	47.761				
2,800.0	2,774.4	2,683.3	2,654.4	8.4	8.1	167.52	297.5	-40.7	612.7	600.2	12.58	48.708				
2,900.0	2,872.9	2,776.8	2,745.9	8.8	8.5	167.38	316.1	-44.2	648.3	635.2	13.08	49.579				
3,000.0	2,971.5	2,870.3	2,837.5	9.2	8.8	167.25	334.7	-47.7	683.8	670.3	13.57	50.383				
3,100.0	3,070.0	2,963.7	2,929.0	9.6	9.2	167.14	353.3	-51.2	719.4	705.3	14.07	51.125				
3,200.0	3,168.6	3,057.2	3,020.5	10.0	9.6	167.04	372.0	-54.7	754.9	740.4	14.57	51.814				
3,300.0	3,267.1	3,150.6	3,112.0	10.4	10.0	166.94	390.6	-58.1	790.5	775.4	15.07	52.454				
3,400.0	3,365.7	3,244.1	3,203.6	10.7	10.4	166.86	409.2	-61.6	826.0	810.5	15.57	53.051				
3,500.0	3,464.3	3,337.5	3,295.1	11.1	10.8	166.78	427.8	-65.1	861.6	845.5	16.07	53.607				
3,551.4	3,514.9	3,385.6	3,342.1	11.3	11.0	166.74	437.4	-66.9	879.9	863.5	16.33	53.880				
3,600.0	3,562.9	3,431.1	3,386.7	11.5	11.2	166.78	446.4	-68.6	896.8	880.2	16.60	54.018				
3,700.0	3,662.0	3,525.7	3,479.4	11.7	11.6	166.82	465.3	-72.1	929.2	912.1	17.13	54.251				
3,800.0	3,761.4	3,621.3	3,573.0	12.0	12.1	166.80	484.3	-75.6	958.4	940.7	17.63	54.346				
3,900.0	3,861.2	3,717.9	3,667.5	12.2	12.5	166.72	503.5	-79.2	984.3	966.2	18.12	54.318				
4,000.0	3,961.2	3,815.2	3,762.8	12.3	12.9	166.59	522.9	-82.9	1,006.9	988.3	18.58	54.182				
4,038.8	4,000.0	3,853.2	3,800.0	12.4	13.0	3.07	530.5	-84.3	1,014.8	996.1	18.76	54.089				
4,100.0	4,061.2	3,913.1	3,858.6	12.5	13.3	2.91	542.4	-86.5	1,026.9	1,007.8	19.04	53.941				
4,200.0	4,161.2	4,011.0	3,954.5	12.6	13.7	2.65	561.9	-90.1	1,046.6	1,027.1	19.48	53.736				
4,300.0	4,261.2	4,108.9	4,050.4	12.7	14.2	2.40	581.4	-93.8	1,066.4	1,046.4	19.92	53.537				
4,400.0	4,361.2	4,206.8	4,146.3	12.9	14.6	2.16	600.9	-97.4	1,086.1	1,065.8	20.36	53.344				
4,500.0	4,461.2	4,304.8	4,242.2	13.0	15.0	1.93	620.4	-101.1	1,105.9	1,085.1	20.81	53.157				
4,600.0	4,561.2	4,402.7	4,338.1	13.1	15.4	1.70	639.9	-104.7	1,125.7	1,104.5	21.25	52.975				
4,700.0	4,661.2	4,500.6	4,434.0	13.3	15.8	1.49	659.4	-108.4	1,145.6	1,123.9	21.70	52.798				
4,800.0	4,761.2	4,598.5	4,529.9	13.4	16.3	1.28	678.9	-112.0	1,165.4	1,143.2	22.14	52.627				
4,900.0	4,861.2	4,696.5	4,625.8	13.6	16.7	1.08	698.4	-115.7	1,185.2	1,162.6	22.59	52.460				
5,000.0	4,961.2	4,794.4	4,721.7	13.7	17.1	0.88	717.9	-119.3	1,205.1	1,182.1	23.04	52.298				
5,100.0	5,061.2	4,892.3	4,817.6	13.9	17.5	0.70	737.4	-122.9	1,225.0	1,201.5	23.49	52.141				
5,200.0	5,161.2	4,990.2	4,913.5	14.0	18.0	0.51	756.9	-126.6	1,244.9	1,220.9	23.95	51.988				
5,300.0	5,261.2	5,088.2	5,009.4	14.2	18.4	0.34	776.4	-130.2	1,264.8	1,240.4	24.40	51.839				
5,400.0	5,361.2	5,186.1	5,105.3	14.3	18.8	0.17	795.9	-133.9	1,284.7	1,259.8	24.85	51.695				
5,500.0	5,461.2	5,351.5	5,268.0	14.5	19.4	-0.08	825.0	-139.3	1,302.4	1,277.0	25.42	51.247				
5,600.0	5,561.2	5,531.8	5,446.9	14.6	19.8	-0.25	846.2	-143.3	1,314.2	1,288.3	25.95	50.650				
5,700.0	5,661.2	5,714.1	5,629.0	14.8	20.2	-0.33	856.3	-145.2	1,319.8	1,293.3	26.45	49.895				
5,800.0	5,761.2	5,846.3	5,761.2	15.0	20.3	-0.34	857.2	-145.3	1,320.3	1,293.4	26.88	49.124				
5,900.0	5,861.2	5,946.3	5,861.2	15.1	20.5	-0.34	857.2	-145.3	1,320.3	1,293.0	27.27	48.415				
6,000.0	5,961.2	6,046.3	5,961.2	15.3	20.6	-0.34	857.2	-145.3	1,320.3	1,292.6	27.67	47.723				
6,100.0	6,061.2	6,146.3	6,061.2	15.5	20.7	-0.34	857.2	-145.3	1,320.3	1,292.2	28.06	47.047				
6,200.0	6,161.2	6,246.3	6,161.2	15.6	20.9	-0.34	857.2	-145.3	1,320.3	1,291.8	28.46	46.388				
6,300.0	6,261.2	6,346.3	6,261.2	15.8	21.0	-0.34	857.2	-145.3	1,320.3	1,291.4	28.86	45.745				
6,400.0	6,361.2	6,446.3	6,361.2	16.0	21.2	-0.34	857.2	-145.3	1,320.3	1,291.0	29.26	45.117				
6,500.0	6,461.2	6,546.3	6,461.2	16.2	21.3	-0.34	857.2	-145.3	1,320.3	1,290.6	29.67	44.504				
6,600.0	6,561.2	6,646.3	6,561.2	16.3	21.5	-0.34	857.2	-145.3	1,320.3	1,290.2	30.07	43.906				
6,700.0	6,661.2	6,746.3	6,661.2	16.5	21.6	-0.34	857.2	-145.3	1,320.3	1,289.8	30.48	43.321				
6,800.0	6,761.2	6,846.3	6,761.2	16.7	21.7	-0.34	857.2	-145.3	1,320.3	1,289.4	30.88	42.751				
6,900.0	6,861.2	6,946.3	6,861.2	16.9	21.9	-0.34	857.2	-145.3	1,320.3	1,289.0	31.29	42.193				
7,000.0	6,961.2	7,046.3	6,961.2	17.0	22.0	-0.34	857.2	-145.3	1,320.3	1,288.6	31.70	41.649				
7,100.0	7,061.2	7,146.3	7,061.2	17.2	22.2	-0.34	857.2	-145.3	1,320.3	1,288.2	32.11	41.117				
7,200.0	7,161.2	7,246.3	7,161.2	17.4	22.3	-0.34	857.2	-145.3	1,320.3	1,287.7	32.52	40.597				
7,300.0	7,261.2	7,346.3	7,261.2	17.6	22.5	-0.34	857.2	-145.3	1,320.3	1,287.3	32.93	40.089				

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well HFE 14-22
Project:	SEC.22-T4N-R68W	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Reference Site:	HFE 14-22 Pad Sec.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-10-12)	Offset TVD Reference:	Offset Datum

Offset Design HFE 14-22 Pad Sec.22-T4N-R68W - MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,400.0	7,361.2	7,446.3	7,361.2	17.8	22.7	-0.34	857.2	-145.3	1,320.3	1,286.9	33.35	39.592	
7,500.0	7,461.2	7,546.3	7,461.2	17.9	22.8	-0.34	857.2	-145.3	1,320.3	1,286.5	33.76	39.106	
7,538.8	7,500.0	7,585.2	7,500.0	18.0	22.9	-0.34	857.2	-145.3	1,320.3	1,286.3	33.92	38.921	

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well HFE 14-22
Project:	SEC.22-T4N-R68W	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Reference Site:	HFE 14-22 Pad Sec.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-10-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4933.0ft (Original Well Elev) Coordinates are relative to: HFE 14-22
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.33°



Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well HFE 14-22
Project:	SEC.22-T4N-R68W	TVD Reference:	WELL @ 4933.0ft (Original Well Elev)
Reference Site:	HFE 14-22 Pad Sec.22-T4N-R68W	MD Reference:	WELL @ 4933.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	HFE 14-22	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-10-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4933.0ft (Original Well Elev) Coordinates are relative to: HFE 14-22
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.33°

