

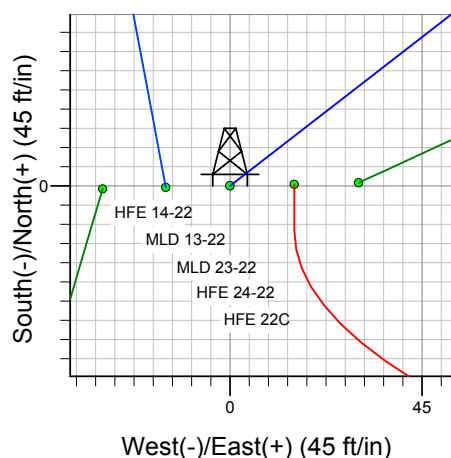
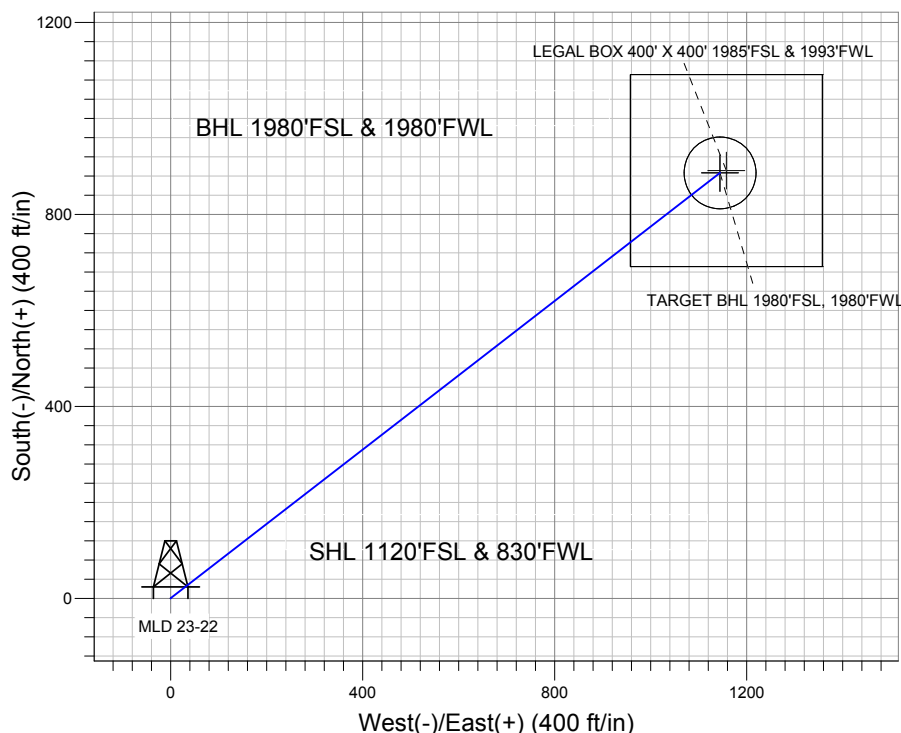
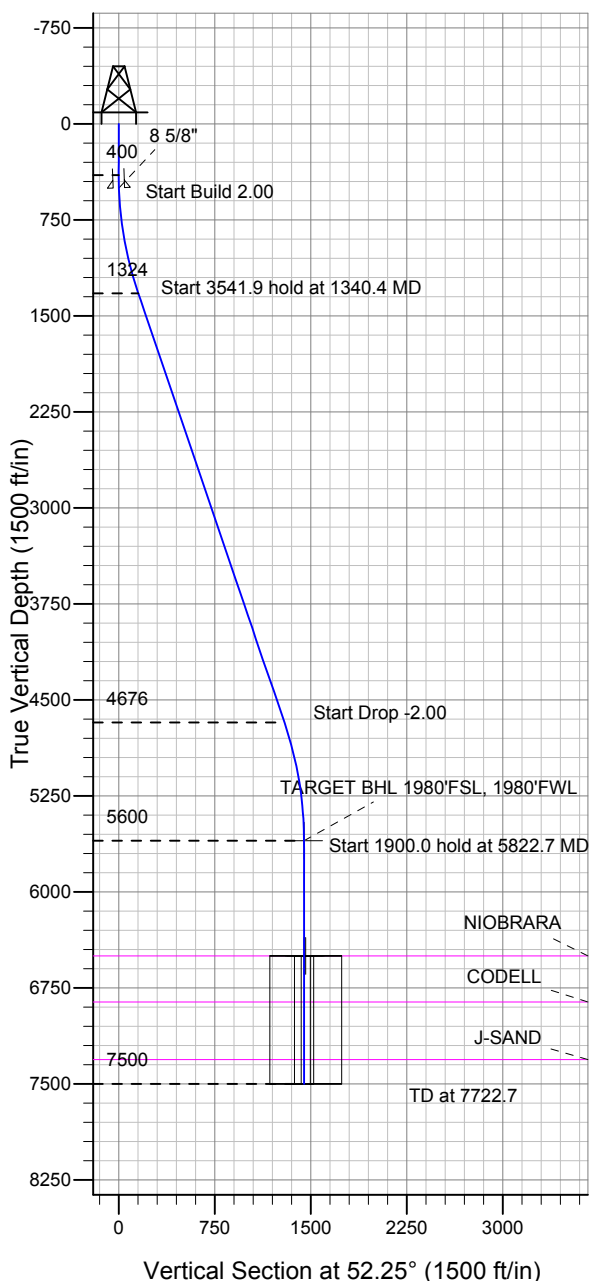
ENSIGN

Directional

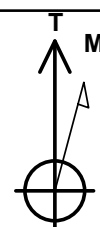
Well Name: MLD 23-22

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 1350598.02 3140646.47 40.294694 -104.995785
 Original Well Elev WELL @ 4933.0ft (Original Well Elev)

Sundance Energy, Weld County, CO



HFE 14-22 Pad Sec.22-T4N-R68W
 MLD 23-22
 Plan #1 (4-10-12)
 11:19, April 11 2012



Azimuths to True North
 Magnetic North: 8.87°

Magnetic Field
 Strength: 52963.5nT
 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 1980°FSL, 1980°FWL	5600.0	886.4	1144.8	40.297127	-104.991681	Point
LEGAL BOX 400' X 400' 1985°FSL & 1993°FWL	6500.0	891.4	1157.8	40.297141	-104.991634	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 1980°FSL & 1980°FWL	6500.0	886.4	1144.8	40.297127	-104.991681	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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1340.4	18.81	52.25	1323.6	93.6	120.9	2.00	52.25	153.0	
4	4882.3	18.81	52.25	4676.4	792.7	1023.8	0.00	0.00	1294.9	
5	5822.7	0.00	0.00	5600.0	886.4	1144.8	2.00	180.00	1447.8	TARGET BHL 1980°FSL, 1980°FWL
6	7722.7	0.00	0.00	7500.0	886.4	1144.8	0.00	0.00	1447.8	



Directional

Sundance Energy, Weld County, CO

SEC.22-T4N-R68W

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

MLD 23-22

Wellbore #1

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

Standard Planning Report

11 April, 2012

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,340.4	18.81	52.25	1,323.6	93.6	120.9	2.00	2.00	0.00	52.25	
4,882.3	18.81	52.25	4,676.4	792.7	1,023.8	0.00	0.00	0.00	0.00	
5,822.7	0.00	0.00	5,600.0	886.4	1,144.8	2.00	-2.00	0.00	180.00	TARGET BHL 1980
7,722.7	0.00	0.00	7,500.0	886.4	1,144.8	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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	0.80	52.25	440.0	0.2	0.2	0.3	2.00	2.00	0.00
480.0	1.60	52.25	480.0	0.7	0.9	1.1	2.00	2.00	0.00
500.0	2.00	52.25	500.0	1.1	1.4	1.7	2.00	2.00	0.00
8 5/8"									
520.0	2.40	52.25	520.0	1.5	2.0	2.5	2.00	2.00	0.00
560.0	3.20	52.25	559.9	2.7	3.5	4.5	2.00	2.00	0.00
600.0	4.00	52.25	599.8	4.3	5.5	7.0	2.00	2.00	0.00
640.0	4.80	52.25	639.7	6.2	7.9	10.0	2.00	2.00	0.00
680.0	5.60	52.25	679.6	8.4	10.8	13.7	2.00	2.00	0.00
720.0	6.40	52.25	719.3	10.9	14.1	17.9	2.00	2.00	0.00
760.0	7.20	52.25	759.1	13.8	17.9	22.6	2.00	2.00	0.00
800.0	8.00	52.25	798.7	17.1	22.0	27.9	2.00	2.00	0.00
840.0	8.80	52.25	838.3	20.6	26.7	33.7	2.00	2.00	0.00
880.0	9.60	52.25	877.8	24.6	31.7	40.1	2.00	2.00	0.00
920.0	10.40	52.25	917.1	28.8	37.2	47.1	2.00	2.00	0.00
960.0	11.20	52.25	956.4	33.4	43.1	54.6	2.00	2.00	0.00
1,000.0	12.00	52.25	995.6	38.3	49.5	62.6	2.00	2.00	0.00
1,040.0	12.80	52.25	1,034.7	43.6	56.3	71.2	2.00	2.00	0.00
1,080.0	13.60	52.25	1,073.6	49.2	63.5	80.3	2.00	2.00	0.00
1,120.0	14.40	52.25	1,112.4	55.1	71.2	90.0	2.00	2.00	0.00
1,160.0	15.20	52.25	1,151.1	61.4	79.2	100.2	2.00	2.00	0.00
1,200.0	16.00	52.25	1,189.6	67.9	87.7	111.0	2.00	2.00	0.00
1,240.0	16.80	52.25	1,228.0	74.9	96.7	122.3	2.00	2.00	0.00
1,280.0	17.60	52.25	1,266.2	82.1	106.0	134.1	2.00	2.00	0.00
1,320.0	18.40	52.25	1,304.3	89.7	115.8	146.5	2.00	2.00	0.00
1,340.4	18.81	52.25	1,323.6	93.6	120.9	153.0	2.00	2.00	0.00
1,360.0	18.81	52.25	1,342.2	97.5	125.9	159.3	0.00	0.00	0.00
1,400.0	18.81	52.25	1,380.0	105.4	136.1	172.2	0.00	0.00	0.00
1,440.0	18.81	52.25	1,417.9	113.3	146.3	185.1	0.00	0.00	0.00
1,480.0	18.81	52.25	1,455.7	121.2	156.5	198.0	0.00	0.00	0.00
1,520.0	18.81	52.25	1,493.6	129.1	166.7	210.9	0.00	0.00	0.00
1,560.0	18.81	52.25	1,531.5	137.0	176.9	223.8	0.00	0.00	0.00
1,600.0	18.81	52.25	1,569.3	144.9	187.1	236.7	0.00	0.00	0.00
1,640.0	18.81	52.25	1,607.2	152.8	197.3	249.6	0.00	0.00	0.00
1,680.0	18.81	52.25	1,645.1	160.7	207.5	262.5	0.00	0.00	0.00
1,720.0	18.81	52.25	1,682.9	168.6	217.7	275.3	0.00	0.00	0.00
1,760.0	18.81	52.25	1,720.8	176.5	227.9	288.2	0.00	0.00	0.00
1,800.0	18.81	52.25	1,758.7	184.4	238.1	301.1	0.00	0.00	0.00
1,840.0	18.81	52.25	1,796.5	192.3	248.3	314.0	0.00	0.00	0.00
1,880.0	18.81	52.25	1,834.4	200.2	258.5	326.9	0.00	0.00	0.00
1,920.0	18.81	52.25	1,872.3	208.0	268.7	339.8	0.00	0.00	0.00
1,960.0	18.81	52.25	1,910.1	215.9	278.9	352.7	0.00	0.00	0.00
2,000.0	18.81	52.25	1,948.0	223.8	289.1	365.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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)
2,040.0	18.81	52.25	1,985.8	231.7	299.3	378.5	0.00	0.00	0.00
2,080.0	18.81	52.25	2,023.7	239.6	309.5	391.4	0.00	0.00	0.00
2,120.0	18.81	52.25	2,061.6	247.5	319.7	404.3	0.00	0.00	0.00
2,160.0	18.81	52.25	2,099.4	255.4	329.9	417.2	0.00	0.00	0.00
2,200.0	18.81	52.25	2,137.3	263.3	340.1	430.1	0.00	0.00	0.00
2,240.0	18.81	52.25	2,175.2	271.2	350.3	443.0	0.00	0.00	0.00
2,280.0	18.81	52.25	2,213.0	279.1	360.5	455.9	0.00	0.00	0.00
2,320.0	18.81	52.25	2,250.9	287.0	370.7	468.8	0.00	0.00	0.00
2,360.0	18.81	52.25	2,288.8	294.9	380.9	481.7	0.00	0.00	0.00
2,400.0	18.81	52.25	2,326.6	302.8	391.1	494.6	0.00	0.00	0.00
2,440.0	18.81	52.25	2,364.5	310.7	401.3	507.5	0.00	0.00	0.00
2,480.0	18.81	52.25	2,402.4	318.6	411.5	520.4	0.00	0.00	0.00
2,520.0	18.81	52.25	2,440.2	326.5	421.6	533.3	0.00	0.00	0.00
2,560.0	18.81	52.25	2,478.1	334.4	431.8	546.2	0.00	0.00	0.00
2,600.0	18.81	52.25	2,515.9	342.3	442.0	559.1	0.00	0.00	0.00
2,640.0	18.81	52.25	2,553.8	350.2	452.2	572.0	0.00	0.00	0.00
2,680.0	18.81	52.25	2,591.7	358.1	462.4	584.9	0.00	0.00	0.00
2,720.0	18.81	52.25	2,629.5	365.9	472.6	597.7	0.00	0.00	0.00
2,760.0	18.81	52.25	2,667.4	373.8	482.8	610.6	0.00	0.00	0.00
2,800.0	18.81	52.25	2,705.3	381.7	493.0	623.5	0.00	0.00	0.00
2,840.0	18.81	52.25	2,743.1	389.6	503.2	636.4	0.00	0.00	0.00
2,880.0	18.81	52.25	2,781.0	397.5	513.4	649.3	0.00	0.00	0.00
2,920.0	18.81	52.25	2,818.9	405.4	523.6	662.2	0.00	0.00	0.00
2,960.0	18.81	52.25	2,856.7	413.3	533.8	675.1	0.00	0.00	0.00
3,000.0	18.81	52.25	2,894.6	421.2	544.0	688.0	0.00	0.00	0.00
3,040.0	18.81	52.25	2,932.5	429.1	554.2	700.9	0.00	0.00	0.00
3,080.0	18.81	52.25	2,970.3	437.0	564.4	713.8	0.00	0.00	0.00
3,120.0	18.81	52.25	3,008.2	444.9	574.6	726.7	0.00	0.00	0.00
3,160.0	18.81	52.25	3,046.0	452.8	584.8	739.6	0.00	0.00	0.00
3,200.0	18.81	52.25	3,083.9	460.7	595.0	752.5	0.00	0.00	0.00
3,240.0	18.81	52.25	3,121.8	468.6	605.2	765.4	0.00	0.00	0.00
3,280.0	18.81	52.25	3,159.6	476.5	615.4	778.3	0.00	0.00	0.00
3,320.0	18.81	52.25	3,197.5	484.4	625.6	791.2	0.00	0.00	0.00
3,360.0	18.81	52.25	3,235.4	492.3	635.8	804.1	0.00	0.00	0.00
3,400.0	18.81	52.25	3,273.2	500.2	646.0	817.0	0.00	0.00	0.00
3,440.0	18.81	52.25	3,311.1	508.1	656.2	829.9	0.00	0.00	0.00
3,480.0	18.81	52.25	3,349.0	516.0	666.4	842.8	0.00	0.00	0.00
3,520.0	18.81	52.25	3,386.8	523.9	676.6	855.7	0.00	0.00	0.00
3,560.0	18.81	52.25	3,424.7	531.7	686.8	868.6	0.00	0.00	0.00
3,600.0	18.81	52.25	3,462.5	539.6	697.0	881.5	0.00	0.00	0.00
3,640.0	18.81	52.25	3,500.4	547.5	707.2	894.4	0.00	0.00	0.00
3,680.0	18.81	52.25	3,538.3	555.4	717.4	907.2	0.00	0.00	0.00
3,720.0	18.81	52.25	3,576.1	563.3	727.5	920.1	0.00	0.00	0.00
3,760.0	18.81	52.25	3,614.0	571.2	737.7	933.0	0.00	0.00	0.00
3,800.0	18.81	52.25	3,651.9	579.1	747.9	945.9	0.00	0.00	0.00
3,840.0	18.81	52.25	3,689.7	587.0	758.1	958.8	0.00	0.00	0.00
3,880.0	18.81	52.25	3,727.6	594.9	768.3	971.7	0.00	0.00	0.00
3,920.0	18.81	52.25	3,765.5	602.8	778.5	984.6	0.00	0.00	0.00
3,960.0	18.81	52.25	3,803.3	610.7	788.7	997.5	0.00	0.00	0.00
4,000.0	18.81	52.25	3,841.2	618.6	798.9	1,010.4	0.00	0.00	0.00
4,040.0	18.81	52.25	3,879.1	626.5	809.1	1,023.3	0.00	0.00	0.00
4,080.0	18.81	52.25	3,916.9	634.4	819.3	1,036.2	0.00	0.00	0.00
4,120.0	18.81	52.25	3,954.8	642.3	829.5	1,049.1	0.00	0.00	0.00
4,160.0	18.81	52.25	3,992.6	650.2	839.7	1,062.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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)
4,200.0	18.81	52.25	4,030.5	658.1	849.9	1,074.9	0.00	0.00	0.00
4,240.0	18.81	52.25	4,068.4	666.0	860.1	1,087.8	0.00	0.00	0.00
4,280.0	18.81	52.25	4,106.2	673.9	870.3	1,100.7	0.00	0.00	0.00
4,320.0	18.81	52.25	4,144.1	681.8	880.5	1,113.6	0.00	0.00	0.00
4,360.0	18.81	52.25	4,182.0	689.6	890.7	1,126.5	0.00	0.00	0.00
4,400.0	18.81	52.25	4,219.8	697.5	900.9	1,139.4	0.00	0.00	0.00
4,440.0	18.81	52.25	4,257.7	705.4	911.1	1,152.3	0.00	0.00	0.00
4,480.0	18.81	52.25	4,295.6	713.3	921.3	1,165.2	0.00	0.00	0.00
4,520.0	18.81	52.25	4,333.4	721.2	931.5	1,178.1	0.00	0.00	0.00
4,560.0	18.81	52.25	4,371.3	729.1	941.7	1,191.0	0.00	0.00	0.00
4,600.0	18.81	52.25	4,409.2	737.0	951.9	1,203.9	0.00	0.00	0.00
4,640.0	18.81	52.25	4,447.0	744.9	962.1	1,216.7	0.00	0.00	0.00
4,680.0	18.81	52.25	4,484.9	752.8	972.3	1,229.6	0.00	0.00	0.00
4,720.0	18.81	52.25	4,522.7	760.7	982.5	1,242.5	0.00	0.00	0.00
4,760.0	18.81	52.25	4,560.6	768.6	992.7	1,255.4	0.00	0.00	0.00
4,800.0	18.81	52.25	4,598.5	776.5	1,002.9	1,268.3	0.00	0.00	0.00
4,840.0	18.81	52.25	4,636.3	784.4	1,013.1	1,281.2	0.00	0.00	0.00
4,880.0	18.81	52.25	4,674.2	792.3	1,023.3	1,294.1	0.00	0.00	0.00
4,882.3	18.81	52.25	4,676.4	792.7	1,023.8	1,294.9	0.00	0.00	0.00
4,920.0	18.05	52.25	4,712.1	800.0	1,033.3	1,306.8	2.00	-2.00	0.00
4,960.0	17.25	52.25	4,750.3	807.5	1,042.9	1,318.9	2.00	-2.00	0.00
5,000.0	16.45	52.25	4,788.5	814.6	1,052.0	1,330.5	2.00	-2.00	0.00
5,040.0	15.65	52.25	4,827.0	821.3	1,060.8	1,341.6	2.00	-2.00	0.00
5,080.0	14.85	52.25	4,865.6	827.8	1,069.1	1,352.1	2.00	-2.00	0.00
5,120.0	14.05	52.25	4,904.3	833.9	1,077.0	1,362.1	2.00	-2.00	0.00
5,160.0	13.25	52.25	4,943.2	839.7	1,084.5	1,371.5	2.00	-2.00	0.00
5,200.0	12.45	52.25	4,982.2	845.1	1,091.5	1,380.4	2.00	-2.00	0.00
5,240.0	11.65	52.25	5,021.3	850.2	1,098.1	1,388.8	2.00	-2.00	0.00
5,280.0	10.85	52.25	5,060.5	855.0	1,104.3	1,396.6	2.00	-2.00	0.00
5,320.0	10.05	52.25	5,099.9	859.5	1,110.0	1,403.8	2.00	-2.00	0.00
5,360.0	9.25	52.25	5,139.3	863.6	1,115.3	1,410.6	2.00	-2.00	0.00
5,400.0	8.45	52.25	5,178.8	867.3	1,120.2	1,416.7	2.00	-2.00	0.00
5,440.0	7.65	52.25	5,218.4	870.8	1,124.6	1,422.3	2.00	-2.00	0.00
5,480.0	6.85	52.25	5,258.1	873.9	1,128.6	1,427.4	2.00	-2.00	0.00
5,520.0	6.05	52.25	5,297.8	876.6	1,132.2	1,431.9	2.00	-2.00	0.00
5,560.0	5.25	52.25	5,337.6	879.0	1,135.3	1,435.8	2.00	-2.00	0.00
5,600.0	4.45	52.25	5,377.5	881.1	1,138.0	1,439.2	2.00	-2.00	0.00
5,640.0	3.65	52.25	5,417.4	882.8	1,140.2	1,442.0	2.00	-2.00	0.00
5,680.0	2.85	52.25	5,457.3	884.2	1,142.0	1,444.3	2.00	-2.00	0.00
5,720.0	2.05	52.25	5,497.3	885.3	1,143.3	1,446.0	2.00	-2.00	0.00
5,760.0	1.25	52.25	5,537.3	886.0	1,144.2	1,447.2	2.00	-2.00	0.00
5,800.0	0.45	52.25	5,577.3	886.3	1,144.7	1,447.7	2.00	-2.00	0.00
5,822.7	0.00	0.00	5,600.0	886.4	1,144.8	1,447.8	2.00	-2.00	-229.99
TARGET BHL 1980'FSL, 1980'FWL									
5,840.0	0.00	0.00	5,617.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
5,880.0	0.00	0.00	5,657.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
5,920.0	0.00	0.00	5,697.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
5,960.0	0.00	0.00	5,737.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,777.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,040.0	0.00	0.00	5,817.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,080.0	0.00	0.00	5,857.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,120.0	0.00	0.00	5,897.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,160.0	0.00	0.00	5,937.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,200.0	0.00	0.00	5,977.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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)
6,240.0	0.00	0.00	6,017.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,057.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,097.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,360.0	0.00	0.00	6,137.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,177.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,440.0	0.00	0.00	6,217.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,480.0	0.00	0.00	6,257.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,520.0	0.00	0.00	6,297.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,560.0	0.00	0.00	6,337.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,377.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,640.0	0.00	0.00	6,417.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,680.0	0.00	0.00	6,457.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,720.0	0.00	0.00	6,497.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,722.7	0.00	0.00	6,500.0	886.4	1,144.8	1,447.8	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1980'FSL & 1980'FWL - LEGAL BOX 400' X 400' 1985'FSL & 1993'FWL									
6,760.0	0.00	0.00	6,537.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,577.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,840.0	0.00	0.00	6,617.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,880.0	0.00	0.00	6,657.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,920.0	0.00	0.00	6,697.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
6,960.0	0.00	0.00	6,737.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,777.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,040.0	0.00	0.00	6,817.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,080.0	0.00	0.00	6,857.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,082.7	0.00	0.00	6,860.0	886.4	1,144.8	1,447.8	0.00	0.00	0.00
CODELL									
7,120.0	0.00	0.00	6,897.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,160.0	0.00	0.00	6,937.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,200.0	0.00	0.00	6,977.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,240.0	0.00	0.00	7,017.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,280.0	0.00	0.00	7,057.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,320.0	0.00	0.00	7,097.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,360.0	0.00	0.00	7,137.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,400.0	0.00	0.00	7,177.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,440.0	0.00	0.00	7,217.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,480.0	0.00	0.00	7,257.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,520.0	0.00	0.00	7,297.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,532.7	0.00	0.00	7,310.0	886.4	1,144.8	1,447.8	0.00	0.00	0.00
J-SAND									
7,560.0	0.00	0.00	7,337.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,600.0	0.00	0.00	7,377.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,640.0	0.00	0.00	7,417.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,680.0	0.00	0.00	7,457.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,720.0	0.00	0.00	7,497.3	886.4	1,144.8	1,447.8	0.00	0.00	0.00
7,722.7	0.00	0.00	7,500.0	886.4	1,144.8	1,447.8	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 MLD 23-22
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:	MLD 23-22	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 (°)
	6,722.7	6,500.0	NIOBRARA		0.00	
	7,082.7	6,860.0	CODELL		0.00	
	7,532.7	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

MLD 23-22

Wellbore #1

Plan #1 (4-10-12)

Anticollision Report

11 April, 2012

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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	7,722.7	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						
HFE 24-22 - Wellbore #1 - Plan #1 (4-10-12)	245.7	245.7	15.1	14.2	17.324	CC
HFE 24-22 - Wellbore #1 - Plan #1 (4-10-12)	300.0	300.0	15.1	14.0	13.735	ES
HFE 24-22 - Wellbore #1 - Plan #1 (4-10-12)	500.0	498.9	21.3	19.3	10.733	SF
MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)	400.0	400.0	15.1	13.5	9.577	CC, ES
MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)	500.0	500.0	16.5	14.5	8.171	SF

Offset Design												Offset Site Error:		0.0 ft
Survey Program: 0-MWVD												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		
0.0	0.0	0.0	0.0	0.0	0.0	88.61	0.4	15.1	15.1	15.1	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	88.61	0.4	15.1	15.1	14.8	0.22	67.039		
200.0	200.0	200.0	200.0	0.3	0.3	88.61	0.4	15.1	15.1	14.4	0.67	22.346		
245.7	245.7	245.7	245.7	0.4	0.4	90.00	0.0	15.1	15.1	14.2	0.87	17.324	CC	
300.0	300.0	300.0	300.0	0.6	0.5	95.23	-1.4	15.1	15.1	14.0	1.10	13.735	ES	
400.0	400.0	399.7	399.5	0.8	0.7	113.64	-6.6	15.1	16.4	14.9	1.53	10.736		
500.0	500.0	498.9	498.3	1.0	1.0	85.97	-14.8	15.5	21.3	19.3	1.98	10.733	SF	
600.0	599.8	597.7	596.7	1.2	1.2	101.59	-23.4	18.9	30.9	28.5	2.43	12.730		
700.0	699.5	696.2	694.6	1.5	1.5	109.40	-32.0	25.6	43.9	41.1	2.89	15.207		
800.0	798.7	794.4	792.0	1.7	1.8	113.34	-40.6	35.7	59.6	56.3	3.39	17.595		
900.0	897.5	892.2	888.5	2.0	2.1	115.35	-49.1	49.1	77.7	73.7	3.95	19.689		
1,000.0	995.6	989.6	984.0	2.4	2.5	116.34	-57.6	65.7	97.9	93.4	4.57	21.415		
1,100.0	1,093.1	1,086.4	1,078.5	2.8	2.9	116.74	-65.9	85.5	120.3	115.0	5.29	22.761		
1,200.0	1,189.6	1,182.8	1,171.7	3.3	3.4	116.80	-74.2	108.3	144.7	138.6	6.09	23.768		
1,300.0	1,285.3	1,279.3	1,264.8	3.8	3.8	117.33	-82.5	132.3	170.9	163.9	6.98	24.478		
1,340.4	1,323.6	1,318.1	1,302.2	4.1	4.0	117.74	-85.8	142.0	181.9	174.6	7.36	24.717		
1,400.0	1,380.0	1,375.3	1,357.4	4.4	4.3	118.63	-90.7	156.2	198.4	190.5	7.94	24.985		
1,500.0	1,474.7	1,471.3	1,450.0	5.0	4.8	119.83	-98.9	180.1	226.2	217.2	8.94	25.311		
1,600.0	1,569.3	1,567.2	1,542.6	5.7	5.4	120.76	-107.1	204.0	254.0	244.1	9.95	25.539		
1,700.0	1,664.0	1,663.2	1,635.2	6.3	5.9	121.52	-115.4	227.9	281.9	270.9	10.97	25.701		
1,800.0	1,758.7	1,759.2	1,727.8	6.9	6.4	122.13	-123.6	251.9	309.8	297.8	12.00	25.820		
1,900.0	1,853.3	1,855.2	1,820.3	7.6	6.9	122.65	-131.8	275.8	337.8	324.7	13.04	25.909		

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 - HFE 24-22 - 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							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	Offset Wellbore Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)					
2,000.0	1,948.0	1,951.1	1,912.9	8.2	7.5	123.08	-140.0	299.7	365.7	351.6	14.08	25.977				
2,100.0	2,042.6	2,047.1	2,005.5	8.9	8.0	123.46	-148.3	323.6	393.7	378.6	15.12	26.031				
2,200.0	2,137.3	2,143.1	2,098.1	9.5	8.5	123.78	-156.5	347.5	421.7	405.5	16.17	26.074				
2,300.0	2,232.0	2,239.1	2,190.7	10.2	9.1	124.07	-164.7	371.4	449.7	432.5	17.23	26.108				
2,400.0	2,326.6	2,335.0	2,283.3	10.8	9.6	124.32	-172.9	395.3	477.7	459.5	18.28	26.136				
2,500.0	2,421.3	2,431.0	2,375.8	11.5	10.1	124.54	-181.2	419.2	505.8	486.4	19.33	26.159				
2,600.0	2,515.9	2,527.0	2,468.4	12.1	10.7	124.74	-189.4	443.1	533.8	513.4	20.39	26.178				
2,700.0	2,610.6	2,623.0	2,561.0	12.8	11.2	124.92	-197.6	467.0	561.8	540.4	21.45	26.194				
2,800.0	2,705.3	2,718.9	2,653.6	13.4	11.8	125.08	-205.9	491.0	589.9	567.4	22.51	26.208				
2,900.0	2,799.9	2,814.9	2,746.2	14.1	12.3	125.23	-214.1	514.9	617.9	594.3	23.57	26.219				
3,000.0	2,894.6	2,910.9	2,838.8	14.7	12.8	125.36	-222.3	538.8	646.0	621.3	24.63	26.229				
3,100.0	2,989.2	3,006.9	2,931.4	15.4	13.4	125.49	-230.5	562.7	674.0	648.3	25.69	26.238				
3,200.0	3,083.9	3,102.8	3,023.9	16.1	13.9	125.60	-238.8	586.6	702.1	675.3	26.75	26.245				
3,300.0	3,178.6	3,198.8	3,116.5	16.7	14.5	125.71	-247.0	610.5	730.1	702.3	27.81	26.251				
3,400.0	3,273.2	3,294.8	3,209.1	17.4	15.0	125.80	-255.2	634.4	758.2	729.3	28.88	26.257				
3,500.0	3,367.9	3,390.8	3,301.7	18.0	15.6	125.90	-263.4	658.3	786.2	756.3	29.94	26.262				
3,600.0	3,462.5	3,486.7	3,394.3	18.7	16.1	125.98	-271.7	682.2	814.3	783.3	31.00	26.266				
3,700.0	3,557.2	3,582.7	3,486.9	19.4	16.7	126.06	-279.9	706.1	842.4	810.3	32.07	26.270				
3,800.0	3,651.9	3,678.7	3,579.4	20.0	17.2	126.13	-288.1	730.1	870.4	837.3	33.13	26.273				
3,900.0	3,746.5	3,774.7	3,672.0	20.7	17.7	126.20	-296.3	754.0	898.5	864.3	34.19	26.276				
4,000.0	3,841.2	3,870.6	3,764.6	21.3	18.3	126.27	-304.6	777.9	926.6	891.3	35.26	26.278				
4,100.0	3,935.9	3,966.6	3,857.2	22.0	18.8	126.33	-312.8	801.8	954.6	918.3	36.32	26.281				
4,200.0	4,030.5	4,062.6	3,949.8	22.7	19.4	126.38	-321.0	825.7	982.7	945.3	37.39	26.283				
4,300.0	4,125.2	4,158.6	4,042.4	23.3	19.9	126.44	-329.2	849.6	1,010.8	972.3	38.46	26.284				
4,400.0	4,219.8	4,254.6	4,134.9	24.0	20.5	126.49	-337.5	873.5	1,038.8	999.3	39.52	26.286				
4,500.0	4,314.5	4,350.5	4,227.5	24.6	21.0	126.54	-345.7	897.4	1,066.9	1,026.3	40.59	26.287				
4,600.0	4,409.2	4,446.5	4,320.1	25.3	21.6	126.58	-353.9	921.3	1,095.0	1,053.3	41.65	26.289				
4,700.0	4,503.8	4,542.5	4,412.7	26.0	22.1	126.63	-362.1	945.3	1,123.1	1,080.3	42.72	26.290				
4,800.0	4,598.5	4,638.5	4,505.3	26.6	22.6	126.67	-370.4	969.2	1,151.1	1,107.3	43.78	26.291				
4,882.3	4,676.4	4,717.5	4,581.5	27.2	23.1	126.70	-377.1	988.8	1,174.2	1,129.6	44.66	26.291				
4,900.0	4,693.2	4,734.4	4,597.9	27.3	23.2	126.79	-378.6	993.1	1,179.2	1,134.3	44.86	26.288				
5,000.0	4,788.5	4,830.8	4,690.8	27.8	23.7	127.18	-386.8	1,017.1	1,205.9	1,160.0	45.87	26.292				
5,100.0	4,884.9	4,927.6	4,784.2	28.2	24.3	127.40	-395.1	1,041.2	1,230.6	1,183.7	46.85	26.268				
5,200.0	4,982.2	5,030.2	4,883.3	28.6	24.8	127.45	-403.9	1,066.5	1,253.1	1,205.4	47.78	26.229				
5,300.0	5,080.2	5,144.0	4,994.0	28.9	25.3	127.43	-412.4	1,091.4	1,272.7	1,224.1	48.58	26.196				
5,400.0	5,178.8	5,259.2	5,107.0	29.2	25.6	127.42	-419.6	1,112.2	1,288.9	1,239.7	49.28	26.153				
5,500.0	5,278.0	5,375.3	5,221.8	29.5	26.0	127.42	-425.3	1,129.0	1,301.8	1,251.9	49.87	26.102				
5,600.0	5,377.5	5,492.3	5,338.1	29.7	26.2	127.41	-429.6	1,141.3	1,311.3	1,260.9	50.35	26.041				
5,700.0	5,477.3	5,609.9	5,455.3	29.9	26.4	127.41	-432.3	1,149.2	1,317.3	1,266.6	50.72	25.974				
5,800.0	5,577.3	5,727.8	5,573.2	30.0	26.6	127.41	-433.4	1,152.5	1,319.8	1,268.8	50.97	25.896				
5,822.7	5,600.0	5,754.6	5,600.0	30.0	26.6	179.66	-433.5	1,152.7	1,319.9	1,268.9	51.01	25.876				
5,900.0	5,677.3	5,831.9	5,677.3	30.1	26.7	179.66	-433.5	1,152.7	1,319.9	1,268.7	51.16	25.801				
6,000.0	5,777.3	5,931.9	5,777.3	30.1	26.8	179.66	-433.5	1,152.7	1,319.9	1,268.5	51.36	25.698				
6,100.0	5,877.3	6,031.9	5,877.3	30.2	26.9	179.66	-433.5	1,152.7	1,319.9	1,268.3	51.57	25.594				
6,200.0	5,977.3	6,131.9	5,977.3	30.3	27.0	179.66	-433.5	1,152.7	1,319.9	1,268.1	51.78	25.489				
6,300.0	6,077.3	6,231.9	6,077.3	30.4	27.1	179.66	-433.5	1,152.7	1,319.9	1,267.9	52.00	25.384				
6,400.0	6,177.3	6,331.9	6,177.3	30.5	27.2	179.66	-433.5	1,152.7	1,319.9	1,267.7	52.22	25.278				
6,500.0	6,277.3	6,431.9	6,277.3	30.6	27.3	179.66	-433.5	1,152.7	1,319.9	1,267.5	52.44	25.171				
6,600.0	6,377.3	6,531.9	6,377.3	30.7	27.4	179.66	-433.5	1,152.7	1,319.9	1,267.2	52.66	25.065				
6,700.0	6,477.3	6,631.9	6,477.3	30.8	27.5	179.66	-433.5	1,152.7	1,319.9	1,267.0	52.89	24.957				
6,800.0	6,577.3	6,731.9	6,577.3	30.9	27.6	179.66	-433.5	1,152.7	1,319.9	1,266.8	53.12	24.850				
6,900.0	6,677.3	6,831.9	6,677.3	31.0	27.7	179.66	-433.5	1,152.7	1,319.9	1,266.6	53.35	24.741				

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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 - HFE 24-22 - 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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,000.0	6,777.3	6,931.9	6,777.3	31.1	27.8	179.66	-433.5	1,152.7	1,319.9	1,266.3	53.58	24.633	
7,100.0	6,877.3	7,031.9	6,877.3	31.2	27.9	179.66	-433.5	1,152.7	1,319.9	1,266.1	53.82	24.524	
7,200.0	6,977.3	7,131.9	6,977.3	31.3	28.0	179.66	-433.5	1,152.7	1,319.9	1,265.8	54.06	24.415	
7,300.0	7,077.3	7,231.9	7,077.3	31.4	28.1	179.66	-433.5	1,152.7	1,319.9	1,265.6	54.30	24.306	
7,400.0	7,177.3	7,331.9	7,177.3	31.5	28.2	179.66	-433.5	1,152.7	1,319.9	1,265.4	54.55	24.197	
7,500.0	7,277.3	7,431.9	7,277.3	31.6	28.4	179.66	-433.5	1,152.7	1,319.9	1,265.1	54.80	24.087	
7,600.0	7,377.3	7,531.9	7,377.3	31.7	28.5	179.66	-433.5	1,152.7	1,319.9	1,264.9	55.05	23.977	
7,700.0	7,477.3	7,631.9	7,477.3	31.9	28.6	179.66	-433.5	1,152.7	1,319.9	1,264.6	55.30	23.868	
7,722.7	7,500.0	7,654.6	7,500.0	31.9	28.6	179.66	-433.5	1,152.7	1,319.9	1,264.5	55.36	23.843	

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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
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	-91.39	-0.4	-15.1	15.1	15.1	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-91.39	-0.4	-15.1	15.1	14.8	0.22	67.039		
200.0	200.0	200.0	200.0	0.3	0.3	-91.39	-0.4	-15.1	15.1	14.4	0.67	22.346		
300.0	300.0	300.0	300.0	0.6	0.6	-91.39	-0.4	-15.1	15.1	13.9	1.12	13.408		
400.0	400.0	400.0	400.0	0.8	0.8	-91.39	-0.4	-15.1	15.1	13.5	1.57	9.577 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	-147.21	-0.4	-15.1	16.5	14.5	2.02	8.171 SF		
600.0	599.8	599.8	599.8	1.2	1.2	-154.89	-0.4	-15.1	21.1	18.6	2.47	8.552		
700.0	699.5	699.5	699.5	1.5	1.5	-162.11	-0.4	-15.1	29.2	26.3	2.92	10.019		
800.0	798.7	798.7	798.7	1.7	1.7	-167.29	-0.4	-15.1	41.0	37.6	3.37	12.174		
900.0	897.5	897.5	897.5	2.0	1.9	-170.74	-0.4	-15.1	56.4	52.6	3.82	14.764		
1,000.0	995.6	996.5	996.5	2.4	2.1	-171.86	1.2	-15.4	74.7	70.5	4.27	17.509		
1,100.0	1,093.1	1,095.2	1,095.1	2.8	2.4	-170.82	6.2	-16.3	95.4	90.7	4.72	20.204		
1,200.0	1,189.6	1,193.6	1,193.1	3.3	2.6	-168.80	14.4	-17.8	118.4	113.2	5.19	22.812		
1,300.0	1,285.3	1,291.3	1,290.1	3.8	2.8	-166.37	25.9	-20.0	144.0	138.3	5.69	25.293		
1,340.4	1,323.6	1,330.5	1,328.9	4.1	2.9	-165.35	31.4	-21.0	155.1	149.2	5.91	26.238		
1,400.0	1,380.0	1,388.4	1,386.0	4.4	3.1	-163.85	40.5	-22.7	171.7	165.4	6.26	27.424		
1,500.0	1,474.7	1,485.2	1,481.2	5.0	3.4	-161.14	58.2	-26.0	199.3	192.4	6.91	28.868		
1,600.0	1,569.3	1,580.9	1,574.9	5.7	3.7	-158.71	77.2	-29.6	227.1	219.5	7.61	29.846		
1,700.0	1,664.0	1,676.6	1,668.6	6.3	4.0	-156.80	96.3	-33.1	255.1	246.8	8.34	30.574		
1,800.0	1,758.7	1,772.3	1,762.3	6.9	4.4	-155.27	115.4	-36.7	283.4	274.2	9.10	31.123		
1,900.0	1,853.3	1,867.9	1,855.9	7.6	4.7	-154.02	134.4	-40.2	311.7	301.9	9.89	31.536		
2,000.0	1,948.0	1,963.6	1,949.6	8.2	5.1	-152.98	153.5	-43.8	340.3	329.6	10.68	31.859		
2,100.0	2,042.6	2,059.3	2,043.3	8.9	5.5	-152.09	172.5	-47.4	368.9	357.4	11.49	32.111		
2,200.0	2,137.3	2,155.0	2,137.0	9.5	5.9	-151.34	191.6	-50.9	397.5	385.2	12.30	32.310		
2,300.0	2,232.0	2,250.7	2,230.7	10.2	6.3	-150.68	210.6	-54.5	426.3	413.1	13.13	32.469		
2,400.0	2,326.6	2,346.3	2,324.4	10.8	6.7	-150.11	229.7	-58.0	455.0	441.1	13.96	32.598		
2,500.0	2,421.3	2,442.0	2,418.1	11.5	7.1	-149.61	248.7	-61.6	483.8	469.0	14.79	32.704		
2,600.0	2,515.9	2,537.7	2,511.8	12.1	7.5	-149.16	267.8	-65.2	512.7	497.0	15.63	32.791		
2,700.0	2,610.6	2,633.4	2,605.5	12.8	7.9	-148.76	286.8	-68.7	541.5	525.1	16.48	32.863		
2,800.0	2,705.3	2,729.1	2,699.2	13.4	8.3	-148.40	305.9	-72.3	570.4	553.1	17.33	32.924		
2,900.0	2,799.9	2,824.7	2,792.9	14.1	8.7	-148.08	324.9	-75.9	599.3	581.1	18.17	32.975		
3,000.0	2,894.6	2,920.4	2,886.6	14.7	9.1	-147.78	344.0	-79.4	628.2	609.2	19.03	33.018		
3,100.0	2,989.2	3,016.1	2,980.3	15.4	9.5	-147.51	363.0	-83.0	657.2	637.3	19.88	33.055		
3,200.0	3,083.9	3,111.8	3,074.0	16.1	9.9	-147.27	382.1	-86.5	686.1	665.4	20.74	33.087		
3,300.0	3,178.6	3,207.5	3,167.7	16.7	10.3	-147.04	401.2	-90.1	715.1	693.5	21.59	33.114		
3,400.0	3,273.2	3,303.1	3,261.4	17.4	10.7	-146.83	420.2	-93.7	744.0	721.6	22.45	33.137		
3,500.0	3,367.9	3,398.8	3,355.1	18.0	11.1	-146.64	439.3	-97.2	773.0	749.7	23.31	33.158		
3,600.0	3,462.5	3,494.5	3,448.8	18.7	11.5	-146.46	458.3	-100.8	802.0	777.8	24.17	33.175		
3,700.0	3,557.2	3,590.2	3,542.5	19.4	11.9	-146.29	477.4	-104.3	831.0	805.9	25.04	33.191		
3,800.0	3,651.9	3,685.9	3,636.2	20.0	12.3	-146.14	496.4	-107.9	860.0	834.1	25.90	33.204		
3,900.0	3,746.5	3,781.5	3,729.9	20.7	12.7	-145.99	515.5	-111.5	889.0	862.2	26.76	33.216		
4,000.0	3,841.2	3,877.2	3,823.6	21.3	13.2	-145.86	534.5	-115.0	918.0	890.3	27.63	33.226		
4,100.0	3,935.9	3,972.9	3,917.3	22.0	13.6	-145.73	553.6	-118.6	947.0	918.5	28.49	33.235		
4,200.0	4,030.5	4,068.6	4,010.9	22.7	14.0	-145.61	572.6	-122.1	976.0	946.6	29.36	33.243		
4,300.0	4,125.2	4,164.3	4,104.6	23.3	14.4	-145.50	591.7	-125.7	1,005.0	974.8	30.23	33.250		
4,400.0	4,219.8	4,259.9	4,198.3	24.0	14.8	-145.39	610.7	-129.3	1,034.0	1,002.9	31.09	33.257		
4,500.0	4,314.5	4,355.6	4,292.0	24.6	15.2	-145.29	629.8	-132.8	1,063.0	1,031.1	31.96	33.262		
4,600.0	4,409.2	4,451.3	4,385.7	25.3	15.6	-145.19	648.9	-136.4	1,092.1	1,059.2	32.83	33.267		
4,700.0	4,503.8	4,547.0	4,479.4	26.0	16.0	-145.10	667.9	-139.9	1,121.1	1,087.4	33.70	33.271		
4,800.0	4,598.5	4,642.7	4,573.1	26.6	16.5	-145.02	687.0	-143.5	1,150.1	1,115.6	34.56	33.275		
4,882.3	4,676.4	4,721.4	4,650.2	27.2	16.8	-144.95	702.6	-146.4	1,174.0	1,138.7	35.28	33.277		
4,900.0	4,693.2	4,738.3	4,666.8	27.3	16.9	-144.99	706.0	-147.1	1,179.1	1,143.7	35.44	33.272		

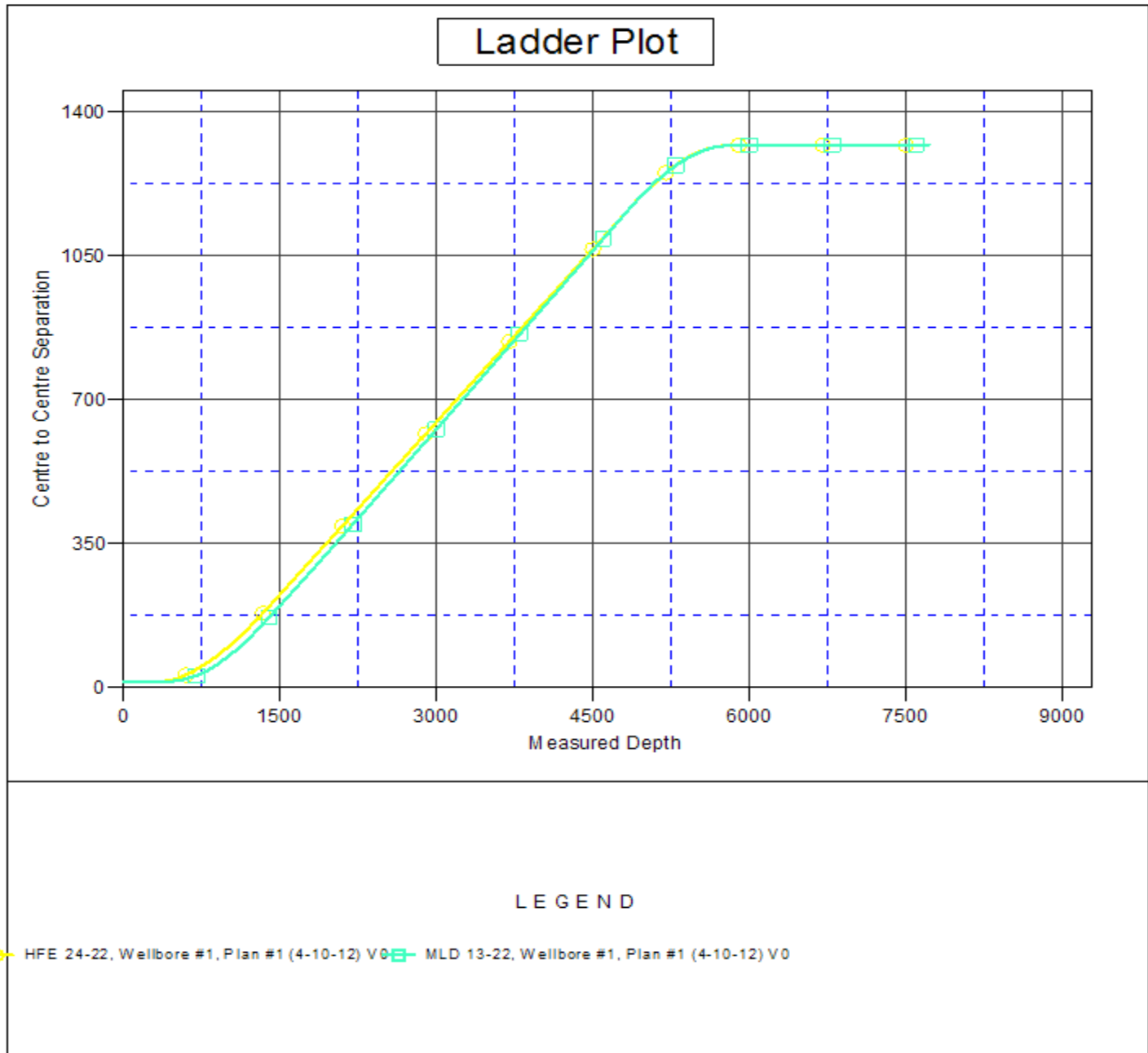
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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												Offset Site Error:	0.0 ft
HFE 14-22 Pad Sec.22-T4N-R68W - MLD 13-22 - Wellbore #1 - Plan #1 (4-10-12)												Offset Well Error:	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
5,000.0	4,788.5	4,834.5	4,761.0	27.8	17.3	-145.17	725.2	-150.6	1,206.3	1,170.0	36.29	33.241	
5,100.0	4,884.9	4,931.4	4,855.9	28.2	17.7	-145.22	744.5	-154.2	1,230.7	1,193.6	37.13	33.150	
5,200.0	4,982.2	5,028.8	4,951.2	28.6	18.1	-145.16	763.9	-157.9	1,252.4	1,214.4	37.94	33.007	
5,300.0	5,080.2	5,126.6	5,047.0	28.9	18.6	-144.98	783.3	-161.5	1,271.3	1,232.5	38.74	32.816	
5,400.0	5,178.8	5,226.3	5,144.6	29.2	19.0	-144.69	803.1	-165.2	1,287.4	1,247.9	39.50	32.589	
5,500.0	5,278.0	5,331.6	5,248.3	29.5	19.3	-144.37	821.3	-168.6	1,300.5	1,260.3	40.17	32.373	
5,600.0	5,377.5	5,437.9	5,353.6	29.7	19.6	-144.10	835.8	-171.3	1,310.3	1,269.6	40.71	32.188	
5,700.0	5,477.3	5,545.0	5,460.2	29.9	19.9	-143.87	846.6	-173.3	1,316.7	1,275.6	41.14	32.006	
5,800.0	5,577.3	5,652.7	5,567.6	30.0	20.1	-143.67	853.5	-174.6	1,319.8	1,278.3	41.47	31.826	
5,822.7	5,600.0	5,677.2	5,592.0	30.0	20.1	-91.38	854.5	-174.8	1,320.0	1,278.5	41.53	31.785	
5,900.0	5,677.3	5,760.6	5,675.5	30.1	20.2	-91.30	856.4	-175.2	1,320.3	1,278.5	41.75	31.623	
6,000.0	5,777.3	5,862.4	5,777.3	30.1	20.4	-91.30	856.5	-175.2	1,320.3	1,278.3	42.00	31.435	
6,100.0	5,877.3	5,962.4	5,877.3	30.2	20.5	-91.30	856.5	-175.2	1,320.3	1,278.1	42.25	31.247	
6,200.0	5,977.3	6,062.4	5,977.3	30.3	20.6	-91.30	856.5	-175.2	1,320.3	1,277.8	42.51	31.060	
6,300.0	6,077.3	6,162.4	6,077.3	30.4	20.8	-91.30	856.5	-175.2	1,320.3	1,277.5	42.77	30.872	
6,400.0	6,177.3	6,262.4	6,177.3	30.5	20.9	-91.30	856.5	-175.2	1,320.3	1,277.3	43.03	30.684	
6,500.0	6,277.3	6,362.4	6,277.3	30.6	21.0	-91.30	856.5	-175.2	1,320.3	1,277.0	43.29	30.497	
6,600.0	6,377.3	6,462.4	6,377.3	30.7	21.2	-91.30	856.5	-175.2	1,320.3	1,276.7	43.56	30.309	
6,700.0	6,477.3	6,562.4	6,477.3	30.8	21.3	-91.30	856.5	-175.2	1,320.3	1,276.5	43.83	30.122	
6,800.0	6,577.3	6,662.4	6,577.3	30.9	21.5	-91.30	856.5	-175.2	1,320.3	1,276.2	44.11	29.935	
6,900.0	6,677.3	6,762.4	6,677.3	31.0	21.6	-91.30	856.5	-175.2	1,320.3	1,275.9	44.38	29.748	
7,000.0	6,777.3	6,862.4	6,777.3	31.1	21.8	-91.30	856.5	-175.2	1,320.3	1,275.6	44.66	29.562	
7,100.0	6,877.3	6,962.4	6,877.3	31.2	21.9	-91.30	856.5	-175.2	1,320.3	1,275.4	44.94	29.377	
7,200.0	6,977.3	7,062.4	6,977.3	31.3	22.1	-91.30	856.5	-175.2	1,320.3	1,275.1	45.23	29.192	
7,300.0	7,077.3	7,162.4	7,077.3	31.4	22.2	-91.30	856.5	-175.2	1,320.3	1,274.8	45.52	29.008	
7,400.0	7,177.3	7,262.4	7,177.3	31.5	22.4	-91.30	856.5	-175.2	1,320.3	1,274.5	45.81	28.824	
7,500.0	7,277.3	7,362.4	7,277.3	31.6	22.5	-91.30	856.5	-175.2	1,320.3	1,274.2	46.10	28.641	
7,600.0	7,377.3	7,462.4	7,377.3	31.7	22.7	-91.30	856.5	-175.2	1,320.3	1,273.9	46.39	28.459	
7,700.0	7,477.3	7,562.4	7,477.3	31.9	22.8	-91.30	856.5	-175.2	1,320.3	1,273.6	46.69	28.277	
7,722.7	7,500.0	7,585.2	7,500.0	31.9	22.9	-91.30	856.5	-175.2	1,320.3	1,273.6	46.76	28.236	

Company:	Sundance Energy, Weld County, CO	Local Co-ordinate Reference:	Well MLD 23-22
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:	MLD 23-22	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: MLD 23-22
 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 MLD 23-22
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:	MLD 23-22	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: MLD 23-22
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