

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Sorin Natural Resources 2U-203

Surface Location: Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

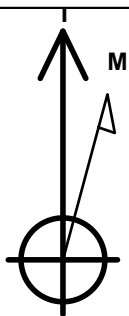
Ground Elevation: 4671.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1370686.20	3211957.26	40.348440	-104.739530	

RKB -15' WELL @ 4686.0ft (RKB -15')

### WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500' FSL & 200' FEL	6951.0	-4874.4	1056.6	



Azimuths to True North  
Magnetic North: 8.63°

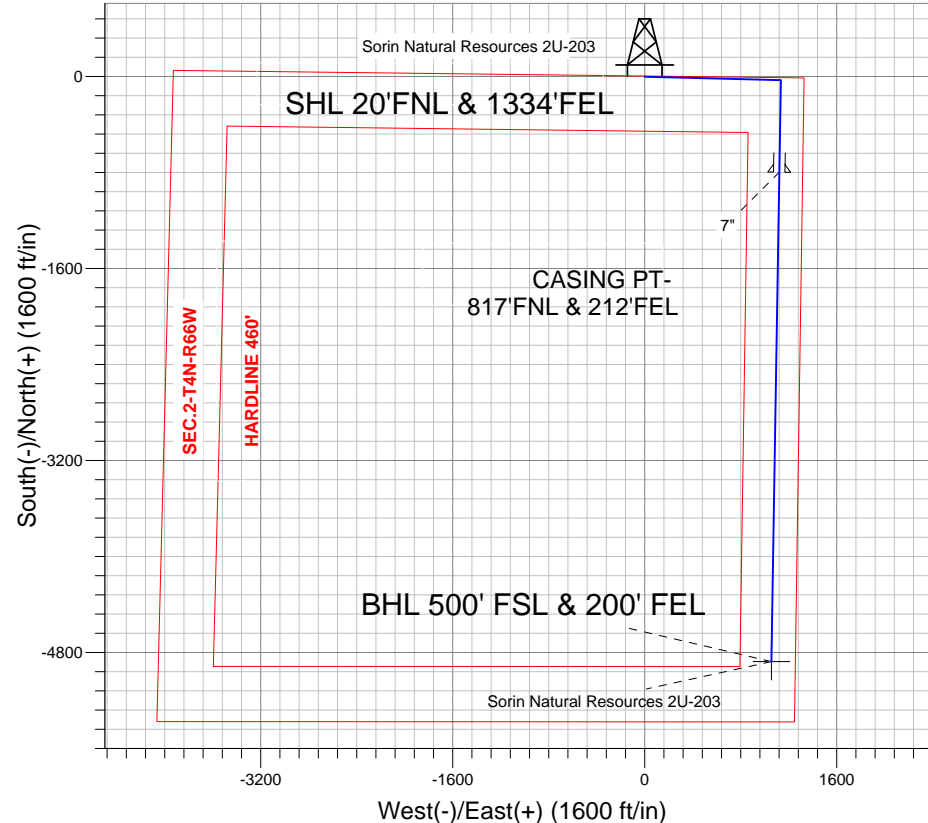
Magnetic Field  
Strength: 52937.3nT  
Dip Angle: 66.96°  
Date: 1/28/2013  
Model: IGRF2010

### ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6202.7	6320.7	KOP #2
6966.7	7523.6	End of Build

Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W  
Sorin Natural Resources 2U-203  
Plan #1 (01-28-13)  
11:33, January 29 2013

South(-)/North(+) (1600 ft/in)



BHL 500' FSL & 200' FEL

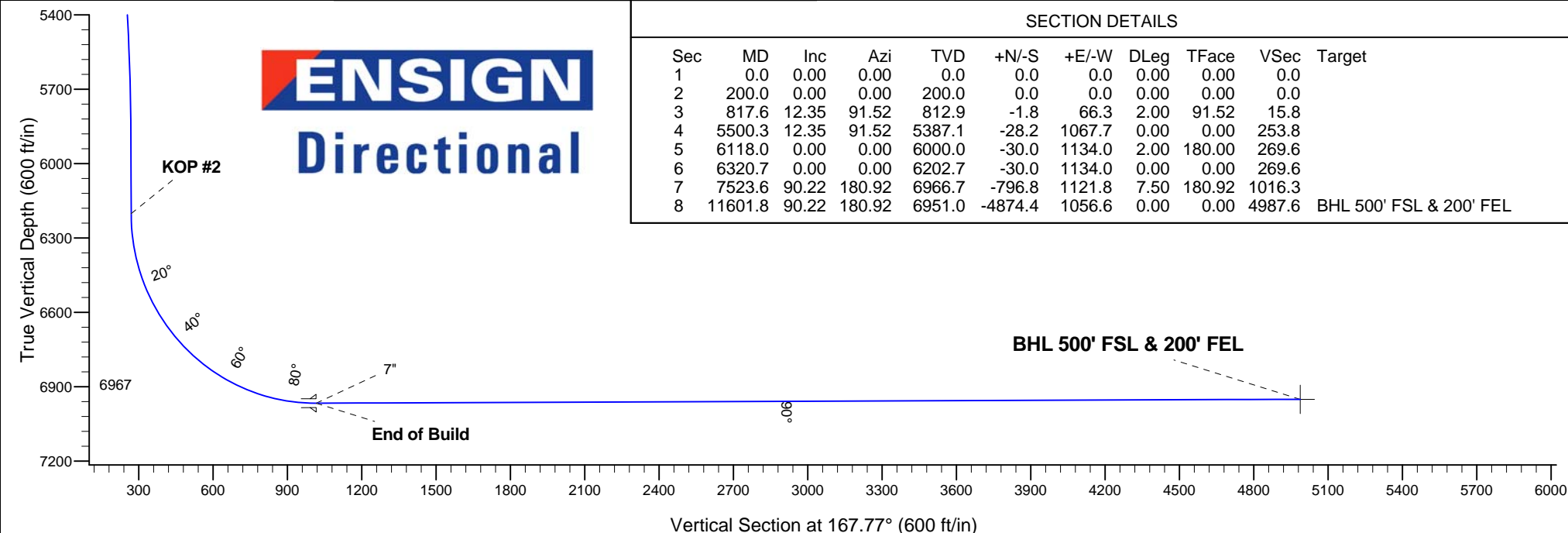
Sorin Natural Resources 2U-203

West(-)/East(+) (1600 ft/in)

### 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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	817.6	12.35	91.52	812.9	-1.8	66.3	2.00	91.52	15.8	
4	5500.3	12.35	91.52	5387.1	-28.2	1067.7	0.00	0.00	253.8	
5	6118.0	0.00	0.00	6000.0	-30.0	1134.0	2.00	180.00	269.6	
6	6320.7	0.00	0.00	6202.7	-30.0	1134.0	0.00	0.00	269.6	
7	7523.6	90.22	180.92	6966.7	-796.8	1121.8	7.50	180.92	1016.3	
8	11601.8	90.22	180.92	6951.0	-4874.4	1056.6	0.00	0.00	4987.6	BHL 500' FSL & 200' FEL

BHL 500' FSL & 200' FEL



**ENSIGN**  
Directional

KOP #2

End of Build

Vertical Section at 167.77° (600 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T4N-R66W**

**Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W**

**Sorin Natural Resources 2U-203**

**Wellbore #1**

**Plan: Plan #1 (01-28-13)**

## **Standard Planning Report**

**29 January, 2013**

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
817.6	12.35	91.52	812.9	-1.8	66.3	2.00	2.00	0.00	91.52	
5,500.3	12.35	91.52	5,387.1	-28.2	1,067.7	0.00	0.00	0.00	0.00	
6,118.0	0.00	0.00	6,000.0	-30.0	1,134.0	2.00	-2.00	0.00	180.00	
6,320.7	0.00	0.00	6,202.7	-30.0	1,134.0	0.00	0.00	0.00	0.00	
7,523.6	90.22	180.92	6,966.7	-796.8	1,121.8	7.50	7.50	0.00	180.92	
11,601.8	90.22	180.92	6,951.0	-4,874.4	1,056.6	0.00	0.00	0.00	0.00	BHL 500' FSL & 20

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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	0.80	91.52	240.0	0.0	0.3	0.1	2.00	2.00	0.00
280.0	1.60	91.52	280.0	0.0	1.1	0.3	2.00	2.00	0.00
320.0	2.40	91.52	320.0	-0.1	2.5	0.6	2.00	2.00	0.00
360.0	3.20	91.52	359.9	-0.1	4.5	1.1	2.00	2.00	0.00
400.0	4.00	91.52	399.8	-0.2	7.0	1.7	2.00	2.00	0.00
440.0	4.80	91.52	439.7	-0.3	10.0	2.4	2.00	2.00	0.00
480.0	5.60	91.52	479.6	-0.4	13.7	3.2	2.00	2.00	0.00
520.0	6.40	91.52	519.3	-0.5	17.8	4.2	2.00	2.00	0.00
560.0	7.20	91.52	559.1	-0.6	22.6	5.4	2.00	2.00	0.00
600.0	8.00	91.52	598.7	-0.7	27.9	6.6	2.00	2.00	0.00
640.0	8.80	91.52	638.3	-0.9	33.7	8.0	2.00	2.00	0.00
680.0	9.60	91.52	677.8	-1.1	40.1	9.5	2.00	2.00	0.00
720.0	10.40	91.52	717.1	-1.2	47.0	11.2	2.00	2.00	0.00
760.0	11.20	91.52	756.4	-1.4	54.5	13.0	2.00	2.00	0.00
800.0	12.00	91.52	795.6	-1.7	62.6	14.9	2.00	2.00	0.00
817.6	12.35	91.52	812.9	-1.8	66.3	15.8	2.00	2.00	0.00
840.0	12.35	91.52	834.7	-1.9	71.1	16.9	0.00	0.00	0.00
880.0	12.35	91.52	873.8	-2.1	79.6	18.9	0.00	0.00	0.00
920.0	12.35	91.52	912.9	-2.3	88.2	21.0	0.00	0.00	0.00
960.0	12.35	91.52	951.9	-2.6	96.7	23.0	0.00	0.00	0.00
1,000.0	12.35	91.52	991.0	-2.8	105.3	25.0	0.00	0.00	0.00
1,040.0	12.35	91.52	1,030.1	-3.0	113.9	27.1	0.00	0.00	0.00
1,080.0	12.35	91.52	1,069.2	-3.2	122.4	29.1	0.00	0.00	0.00
1,120.0	12.35	91.52	1,108.2	-3.5	131.0	31.1	0.00	0.00	0.00
1,160.0	12.35	91.52	1,147.3	-3.7	139.5	33.2	0.00	0.00	0.00
1,200.0	12.35	91.52	1,186.4	-3.9	148.1	35.2	0.00	0.00	0.00
1,240.0	12.35	91.52	1,225.4	-4.1	156.6	37.2	0.00	0.00	0.00
1,280.0	12.35	91.52	1,264.5	-4.4	165.2	39.3	0.00	0.00	0.00
1,320.0	12.35	91.52	1,303.6	-4.6	173.7	41.3	0.00	0.00	0.00
1,360.0	12.35	91.52	1,342.7	-4.8	182.3	43.3	0.00	0.00	0.00
1,400.0	12.35	91.52	1,381.7	-5.0	190.8	45.4	0.00	0.00	0.00
1,440.0	12.35	91.52	1,420.8	-5.3	199.4	47.4	0.00	0.00	0.00
1,480.0	12.35	91.52	1,459.9	-5.5	207.9	49.4	0.00	0.00	0.00
1,520.0	12.35	91.52	1,499.0	-5.7	216.5	51.5	0.00	0.00	0.00
1,560.0	12.35	91.52	1,538.0	-6.0	225.1	53.5	0.00	0.00	0.00
1,600.0	12.35	91.52	1,577.1	-6.2	233.6	55.5	0.00	0.00	0.00
1,640.0	12.35	91.52	1,616.2	-6.4	242.2	57.6	0.00	0.00	0.00
1,680.0	12.35	91.52	1,655.3	-6.6	250.7	59.6	0.00	0.00	0.00
1,720.0	12.35	91.52	1,694.3	-6.9	259.3	61.6	0.00	0.00	0.00
1,760.0	12.35	91.52	1,733.4	-7.1	267.8	63.7	0.00	0.00	0.00
1,800.0	12.35	91.52	1,772.5	-7.3	276.4	65.7	0.00	0.00	0.00
1,840.0	12.35	91.52	1,811.6	-7.5	284.9	67.7	0.00	0.00	0.00
1,880.0	12.35	91.52	1,850.6	-7.8	293.5	69.8	0.00	0.00	0.00
1,920.0	12.35	91.52	1,889.7	-8.0	302.0	71.8	0.00	0.00	0.00
1,960.0	12.35	91.52	1,928.8	-8.2	310.6	73.8	0.00	0.00	0.00
2,000.0	12.35	91.52	1,967.9	-8.4	319.2	75.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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	12.35	91.52	2,006.9	-8.7	327.7	77.9	0.00	0.00	0.00
2,080.0	12.35	91.52	2,046.0	-8.9	336.3	79.9	0.00	0.00	0.00
2,120.0	12.35	91.52	2,085.1	-9.1	344.8	82.0	0.00	0.00	0.00
2,160.0	12.35	91.52	2,124.2	-9.3	353.4	84.0	0.00	0.00	0.00
2,200.0	12.35	91.52	2,163.2	-9.6	361.9	86.0	0.00	0.00	0.00
2,240.0	12.35	91.52	2,202.3	-9.8	370.5	88.1	0.00	0.00	0.00
2,280.0	12.35	91.52	2,241.4	-10.0	379.0	90.1	0.00	0.00	0.00
2,320.0	12.35	91.52	2,280.4	-10.3	387.6	92.1	0.00	0.00	0.00
2,360.0	12.35	91.52	2,319.5	-10.5	396.1	94.2	0.00	0.00	0.00
2,400.0	12.35	91.52	2,358.6	-10.7	404.7	96.2	0.00	0.00	0.00
2,440.0	12.35	91.52	2,397.7	-10.9	413.2	98.2	0.00	0.00	0.00
2,480.0	12.35	91.52	2,436.7	-11.2	421.8	100.3	0.00	0.00	0.00
2,520.0	12.35	91.52	2,475.8	-11.4	430.4	102.3	0.00	0.00	0.00
2,560.0	12.35	91.52	2,514.9	-11.6	438.9	104.3	0.00	0.00	0.00
2,600.0	12.35	91.52	2,554.0	-11.8	447.5	106.4	0.00	0.00	0.00
2,640.0	12.35	91.52	2,593.0	-12.1	456.0	108.4	0.00	0.00	0.00
2,680.0	12.35	91.52	2,632.1	-12.3	464.6	110.4	0.00	0.00	0.00
2,720.0	12.35	91.52	2,671.2	-12.5	473.1	112.5	0.00	0.00	0.00
2,760.0	12.35	91.52	2,710.3	-12.7	481.7	114.5	0.00	0.00	0.00
2,800.0	12.35	91.52	2,749.3	-13.0	490.2	116.5	0.00	0.00	0.00
2,840.0	12.35	91.52	2,788.4	-13.2	498.8	118.6	0.00	0.00	0.00
2,880.0	12.35	91.52	2,827.5	-13.4	507.3	120.6	0.00	0.00	0.00
2,920.0	12.35	91.52	2,866.6	-13.6	515.9	122.6	0.00	0.00	0.00
2,960.0	12.35	91.52	2,905.6	-13.9	524.4	124.7	0.00	0.00	0.00
3,000.0	12.35	91.52	2,944.7	-14.1	533.0	126.7	0.00	0.00	0.00
3,040.0	12.35	91.52	2,983.8	-14.3	541.6	128.7	0.00	0.00	0.00
3,080.0	12.35	91.52	3,022.9	-14.6	550.1	130.8	0.00	0.00	0.00
3,120.0	12.35	91.52	3,061.9	-14.8	558.7	132.8	0.00	0.00	0.00
3,160.0	12.35	91.52	3,101.0	-15.0	567.2	134.8	0.00	0.00	0.00
3,200.0	12.35	91.52	3,140.1	-15.2	575.8	136.9	0.00	0.00	0.00
3,240.0	12.35	91.52	3,179.1	-15.5	584.3	138.9	0.00	0.00	0.00
3,280.0	12.35	91.52	3,218.2	-15.7	592.9	140.9	0.00	0.00	0.00
3,320.0	12.35	91.52	3,257.3	-15.9	601.4	143.0	0.00	0.00	0.00
3,360.0	12.35	91.52	3,296.4	-16.1	610.0	145.0	0.00	0.00	0.00
3,400.0	12.35	91.52	3,335.4	-16.4	618.5	147.0	0.00	0.00	0.00
3,440.0	12.35	91.52	3,374.5	-16.6	627.1	149.1	0.00	0.00	0.00
3,480.0	12.35	91.52	3,413.6	-16.8	635.7	151.1	0.00	0.00	0.00
3,520.0	12.35	91.52	3,452.7	-17.0	644.2	153.1	0.00	0.00	0.00
3,560.0	12.35	91.52	3,491.7	-17.3	652.8	155.2	0.00	0.00	0.00
3,600.0	12.35	91.52	3,530.8	-17.5	661.3	157.2	0.00	0.00	0.00
3,640.0	12.35	91.52	3,569.9	-17.7	669.9	159.2	0.00	0.00	0.00
3,680.0	12.35	91.52	3,609.0	-17.9	678.4	161.3	0.00	0.00	0.00
3,720.0	12.35	91.52	3,648.0	-18.2	687.0	163.3	0.00	0.00	0.00
3,760.0	12.35	91.52	3,687.1	-18.4	695.5	165.3	0.00	0.00	0.00
3,800.0	12.35	91.52	3,726.2	-18.6	704.1	167.4	0.00	0.00	0.00
3,840.0	12.35	91.52	3,765.3	-18.9	712.6	169.4	0.00	0.00	0.00
3,880.0	12.35	91.52	3,804.3	-19.1	721.2	171.4	0.00	0.00	0.00
3,920.0	12.35	91.52	3,843.4	-19.3	729.7	173.5	0.00	0.00	0.00
3,960.0	12.35	91.52	3,882.5	-19.5	738.3	175.5	0.00	0.00	0.00
4,000.0	12.35	91.52	3,921.6	-19.8	746.9	177.5	0.00	0.00	0.00
4,040.0	12.35	91.52	3,960.6	-20.0	755.4	179.6	0.00	0.00	0.00
4,080.0	12.35	91.52	3,999.7	-20.2	764.0	181.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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)
4,120.0	12.35	91.52	4,038.8	-20.4	772.5	183.6	0.00	0.00	0.00
4,160.0	12.35	91.52	4,077.8	-20.7	781.1	185.7	0.00	0.00	0.00
4,200.0	12.35	91.52	4,116.9	-20.9	789.6	187.7	0.00	0.00	0.00
4,240.0	12.35	91.52	4,156.0	-21.1	798.2	189.7	0.00	0.00	0.00
4,280.0	12.35	91.52	4,195.1	-21.3	806.7	191.8	0.00	0.00	0.00
4,320.0	12.35	91.52	4,234.1	-21.6	815.3	193.8	0.00	0.00	0.00
4,360.0	12.35	91.52	4,273.2	-21.8	823.8	195.8	0.00	0.00	0.00
4,400.0	12.35	91.52	4,312.3	-22.0	832.4	197.9	0.00	0.00	0.00
4,440.0	12.35	91.52	4,351.4	-22.2	840.9	199.9	0.00	0.00	0.00
4,480.0	12.35	91.52	4,390.4	-22.5	849.5	201.9	0.00	0.00	0.00
4,520.0	12.35	91.52	4,429.5	-22.7	858.1	204.0	0.00	0.00	0.00
4,560.0	12.35	91.52	4,468.6	-22.9	866.6	206.0	0.00	0.00	0.00
4,600.0	12.35	91.52	4,507.7	-23.2	875.2	208.0	0.00	0.00	0.00
4,640.0	12.35	91.52	4,546.7	-23.4	883.7	210.1	0.00	0.00	0.00
4,680.0	12.35	91.52	4,585.8	-23.6	892.3	212.1	0.00	0.00	0.00
4,720.0	12.35	91.52	4,624.9	-23.8	900.8	214.1	0.00	0.00	0.00
4,760.0	12.35	91.52	4,664.0	-24.1	909.4	216.2	0.00	0.00	0.00
4,800.0	12.35	91.52	4,703.0	-24.3	917.9	218.2	0.00	0.00	0.00
4,840.0	12.35	91.52	4,742.1	-24.5	926.5	220.2	0.00	0.00	0.00
4,880.0	12.35	91.52	4,781.2	-24.7	935.0	222.3	0.00	0.00	0.00
4,920.0	12.35	91.52	4,820.3	-25.0	943.6	224.3	0.00	0.00	0.00
4,960.0	12.35	91.52	4,859.3	-25.2	952.2	226.3	0.00	0.00	0.00
5,000.0	12.35	91.52	4,898.4	-25.4	960.7	228.4	0.00	0.00	0.00
5,040.0	12.35	91.52	4,937.5	-25.6	969.3	230.4	0.00	0.00	0.00
5,080.0	12.35	91.52	4,976.6	-25.9	977.8	232.4	0.00	0.00	0.00
5,120.0	12.35	91.52	5,015.6	-26.1	986.4	234.5	0.00	0.00	0.00
5,160.0	12.35	91.52	5,054.7	-26.3	994.9	236.5	0.00	0.00	0.00
5,200.0	12.35	91.52	5,093.8	-26.5	1,003.5	238.5	0.00	0.00	0.00
5,240.0	12.35	91.52	5,132.8	-26.8	1,012.0	240.6	0.00	0.00	0.00
5,280.0	12.35	91.52	5,171.9	-27.0	1,020.6	242.6	0.00	0.00	0.00
5,320.0	12.35	91.52	5,211.0	-27.2	1,029.1	244.6	0.00	0.00	0.00
5,360.0	12.35	91.52	5,250.1	-27.5	1,037.7	246.7	0.00	0.00	0.00
5,400.0	12.35	91.52	5,289.1	-27.7	1,046.2	248.7	0.00	0.00	0.00
5,440.0	12.35	91.52	5,328.2	-27.9	1,054.8	250.7	0.00	0.00	0.00
5,480.0	12.35	91.52	5,367.3	-28.1	1,063.4	252.8	0.00	0.00	0.00
5,500.3	12.35	91.52	5,387.1	-28.2	1,067.7	253.8	0.00	0.00	0.00
5,520.0	11.96	91.52	5,406.4	-28.4	1,071.8	254.8	2.00	-2.00	0.00
5,560.0	11.16	91.52	5,445.6	-28.6	1,079.9	256.7	2.00	-2.00	0.00
5,600.0	10.36	91.52	5,484.9	-28.8	1,087.3	258.5	2.00	-2.00	0.00
5,640.0	9.56	91.52	5,524.3	-28.9	1,094.2	260.1	2.00	-2.00	0.00
5,680.0	8.76	91.52	5,563.8	-29.1	1,100.6	261.6	2.00	-2.00	0.00
5,720.0	7.96	91.52	5,603.3	-29.3	1,106.4	263.0	2.00	-2.00	0.00
5,760.0	7.16	91.52	5,643.0	-29.4	1,111.7	264.2	2.00	-2.00	0.00
5,800.0	6.36	91.52	5,682.7	-29.5	1,116.4	265.4	2.00	-2.00	0.00
5,840.0	5.56	91.52	5,722.5	-29.6	1,120.5	266.4	2.00	-2.00	0.00
5,880.0	4.76	91.52	5,762.3	-29.7	1,124.1	267.2	2.00	-2.00	0.00
5,920.0	3.96	91.52	5,802.2	-29.8	1,127.2	267.9	2.00	-2.00	0.00
5,960.0	3.16	91.52	5,842.1	-29.9	1,129.6	268.5	2.00	-2.00	0.00
6,000.0	2.36	91.52	5,882.1	-29.9	1,131.6	269.0	2.00	-2.00	0.00
6,040.0	1.56	91.52	5,922.1	-30.0	1,132.9	269.3	2.00	-2.00	0.00
6,080.0	0.76	91.52	5,962.0	-30.0	1,133.7	269.5	2.00	-2.00	0.00
6,118.0	0.00	0.00	6,000.0	-30.0	1,134.0	269.6	2.00	-2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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)
6,120.0	0.00	0.00	6,002.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,042.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,082.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,240.0	0.00	0.00	6,122.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,280.0	0.00	0.00	6,162.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,320.0	0.00	0.00	6,202.0	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,320.7	0.00	0.00	6,202.7	-30.0	1,134.0	269.6	0.00	0.00	0.00
6,360.0	2.95	180.92	6,242.0	-31.0	1,134.0	270.5	7.50	7.50	0.00
6,400.0	5.95	180.92	6,281.9	-34.1	1,133.9	273.6	7.50	7.50	0.00
6,440.0	8.95	180.92	6,321.6	-39.3	1,133.9	278.6	7.50	7.50	0.00
6,480.0	11.95	180.92	6,360.9	-46.6	1,133.7	285.7	7.50	7.50	0.00
6,520.0	14.95	180.92	6,399.8	-55.9	1,133.6	294.7	7.50	7.50	0.00
6,560.0	17.95	180.92	6,438.2	-67.2	1,133.4	305.8	7.50	7.50	0.00
6,600.0	20.95	180.92	6,475.9	-80.5	1,133.2	318.7	7.50	7.50	0.00
6,640.0	23.95	180.92	6,512.8	-95.8	1,132.9	333.6	7.50	7.50	0.00
6,680.0	26.95	180.92	6,548.9	-112.9	1,132.7	350.3	7.50	7.50	0.00
6,720.0	29.95	180.92	6,584.1	-132.0	1,132.4	368.9	7.50	7.50	0.00
6,760.0	32.95	180.92	6,618.2	-152.9	1,132.0	389.2	7.50	7.50	0.00
6,800.0	35.95	180.92	6,651.2	-175.5	1,131.7	411.2	7.50	7.50	0.00
6,840.0	38.95	180.92	6,683.0	-199.8	1,131.3	434.9	7.50	7.50	0.00
6,880.0	41.95	180.92	6,713.4	-225.7	1,130.9	460.2	7.50	7.50	0.00
6,920.0	44.95	180.92	6,742.4	-253.2	1,130.4	487.0	7.50	7.50	0.00
6,960.0	47.95	180.92	6,770.0	-282.2	1,130.0	515.2	7.50	7.50	0.00
7,000.0	50.95	180.92	6,796.0	-312.6	1,129.5	544.8	7.50	7.50	0.00
7,040.0	53.95	180.92	6,820.4	-344.3	1,129.0	575.7	7.50	7.50	0.00
7,080.0	56.95	180.92	6,843.1	-377.3	1,128.5	607.8	7.50	7.50	0.00
7,120.0	59.95	180.92	6,864.0	-411.3	1,127.9	640.9	7.50	7.50	0.00
7,160.0	62.95	180.92	6,883.1	-446.5	1,127.3	675.2	7.50	7.50	0.00
7,200.0	65.95	180.92	6,900.3	-482.5	1,126.8	710.3	7.50	7.50	0.00
7,240.0	68.95	180.92	6,915.7	-519.5	1,126.2	746.3	7.50	7.50	0.00
7,280.0	71.95	180.92	6,929.1	-557.2	1,125.6	783.0	7.50	7.50	0.00
7,320.0	74.95	180.92	6,940.5	-595.5	1,125.0	820.3	7.50	7.50	0.00
7,360.0	77.95	180.92	6,949.8	-634.4	1,124.3	858.2	7.50	7.50	0.00
7,400.0	80.95	180.92	6,957.2	-673.7	1,123.7	896.5	7.50	7.50	0.00
7,440.0	83.95	180.92	6,962.4	-713.3	1,123.1	935.1	7.50	7.50	0.00
7,480.0	86.95	180.92	6,965.6	-753.2	1,122.4	973.9	7.50	7.50	0.00
7,520.0	89.95	180.92	6,966.7	-793.2	1,121.8	1,012.8	7.50	7.50	0.00
7,523.6	90.22	180.92	6,966.7	-796.8	1,121.8	1,016.3	7.50	7.50	0.00
7,560.0	90.22	180.92	6,966.5	-833.2	1,121.2	1,051.8	0.00	0.00	0.00
7,600.0	90.22	180.92	6,966.4	-873.2	1,120.5	1,090.7	0.00	0.00	0.00
7,640.0	90.22	180.92	6,966.2	-913.2	1,119.9	1,129.7	0.00	0.00	0.00
7,680.0	90.22	180.92	6,966.1	-953.2	1,119.3	1,168.6	0.00	0.00	0.00
7,720.0	90.22	180.92	6,965.9	-993.1	1,118.6	1,207.6	0.00	0.00	0.00
7,760.0	90.22	180.92	6,965.8	-1,033.1	1,118.0	1,246.5	0.00	0.00	0.00
7,800.0	90.22	180.92	6,965.6	-1,073.1	1,117.3	1,285.5	0.00	0.00	0.00
7,840.0	90.22	180.92	6,965.4	-1,113.1	1,116.7	1,324.4	0.00	0.00	0.00
7,880.0	90.22	180.92	6,965.3	-1,153.1	1,116.1	1,363.4	0.00	0.00	0.00
7,920.0	90.22	180.92	6,965.1	-1,193.1	1,115.4	1,402.3	0.00	0.00	0.00
7,960.0	90.22	180.92	6,965.0	-1,233.1	1,114.8	1,441.3	0.00	0.00	0.00
8,000.0	90.22	180.92	6,964.8	-1,273.1	1,114.1	1,480.2	0.00	0.00	0.00
8,040.0	90.22	180.92	6,964.7	-1,313.1	1,113.5	1,519.2	0.00	0.00	0.00
8,080.0	90.22	180.92	6,964.5	-1,353.1	1,112.9	1,558.1	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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)
8,120.0	90.22	180.92	6,964.4	-1,393.1	1,112.2	1,597.1	0.00	0.00	0.00
8,160.0	90.22	180.92	6,964.2	-1,433.1	1,111.6	1,636.0	0.00	0.00	0.00
8,200.0	90.22	180.92	6,964.1	-1,473.1	1,110.9	1,675.0	0.00	0.00	0.00
8,240.0	90.22	180.92	6,963.9	-1,513.1	1,110.3	1,713.9	0.00	0.00	0.00
8,280.0	90.22	180.92	6,963.8	-1,553.1	1,109.7	1,752.9	0.00	0.00	0.00
8,320.0	90.22	180.92	6,963.6	-1,593.1	1,109.0	1,791.9	0.00	0.00	0.00
8,360.0	90.22	180.92	6,963.4	-1,633.1	1,108.4	1,830.8	0.00	0.00	0.00
8,400.0	90.22	180.92	6,963.3	-1,673.1	1,107.8	1,869.8	0.00	0.00	0.00
8,440.0	90.22	180.92	6,963.1	-1,713.0	1,107.1	1,908.7	0.00	0.00	0.00
8,480.0	90.22	180.92	6,963.0	-1,753.0	1,106.5	1,947.7	0.00	0.00	0.00
8,520.0	90.22	180.92	6,962.8	-1,793.0	1,105.8	1,986.6	0.00	0.00	0.00
8,560.0	90.22	180.92	6,962.7	-1,833.0	1,105.2	2,025.6	0.00	0.00	0.00
8,600.0	90.22	180.92	6,962.5	-1,873.0	1,104.6	2,064.5	0.00	0.00	0.00
8,640.0	90.22	180.92	6,962.4	-1,913.0	1,103.9	2,103.5	0.00	0.00	0.00
8,680.0	90.22	180.92	6,962.2	-1,953.0	1,103.3	2,142.4	0.00	0.00	0.00
8,720.0	90.22	180.92	6,962.1	-1,993.0	1,102.6	2,181.4	0.00	0.00	0.00
8,760.0	90.22	180.92	6,961.9	-2,033.0	1,102.0	2,220.3	0.00	0.00	0.00
8,800.0	90.22	180.92	6,961.8	-2,073.0	1,101.4	2,259.3	0.00	0.00	0.00
8,840.0	90.22	180.92	6,961.6	-2,113.0	1,100.7	2,298.2	0.00	0.00	0.00
8,880.0	90.22	180.92	6,961.5	-2,153.0	1,100.1	2,337.2	0.00	0.00	0.00
8,920.0	90.22	180.92	6,961.3	-2,193.0	1,099.4	2,376.1	0.00	0.00	0.00
8,960.0	90.22	180.92	6,961.1	-2,233.0	1,098.8	2,415.1	0.00	0.00	0.00
9,000.0	90.22	180.92	6,961.0	-2,273.0	1,098.2	2,454.0	0.00	0.00	0.00
9,040.0	90.22	180.92	6,960.8	-2,313.0	1,097.5	2,493.0	0.00	0.00	0.00
9,080.0	90.22	180.92	6,960.7	-2,353.0	1,096.9	2,531.9	0.00	0.00	0.00
9,120.0	90.22	180.92	6,960.5	-2,393.0	1,096.3	2,570.9	0.00	0.00	0.00
9,160.0	90.22	180.92	6,960.4	-2,433.0	1,095.6	2,609.8	0.00	0.00	0.00
9,200.0	90.22	180.92	6,960.2	-2,472.9	1,095.0	2,648.8	0.00	0.00	0.00
9,240.0	90.22	180.92	6,960.1	-2,512.9	1,094.3	2,687.7	0.00	0.00	0.00
9,280.0	90.22	180.92	6,959.9	-2,552.9	1,093.7	2,726.7	0.00	0.00	0.00
9,320.0	90.22	180.92	6,959.8	-2,592.9	1,093.1	2,765.6	0.00	0.00	0.00
9,360.0	90.22	180.92	6,959.6	-2,632.9	1,092.4	2,804.6	0.00	0.00	0.00
9,400.0	90.22	180.92	6,959.5	-2,672.9	1,091.8	2,843.5	0.00	0.00	0.00
9,440.0	90.22	180.92	6,959.3	-2,712.9	1,091.1	2,882.5	0.00	0.00	0.00
9,480.0	90.22	180.92	6,959.1	-2,752.9	1,090.5	2,921.4	0.00	0.00	0.00
9,520.0	90.22	180.92	6,959.0	-2,792.9	1,089.9	2,960.4	0.00	0.00	0.00
9,560.0	90.22	180.92	6,958.8	-2,832.9	1,089.2	2,999.3	0.00	0.00	0.00
9,600.0	90.22	180.92	6,958.7	-2,872.9	1,088.6	3,038.3	0.00	0.00	0.00
9,640.0	90.22	180.92	6,958.5	-2,912.9	1,087.9	3,077.3	0.00	0.00	0.00
9,680.0	90.22	180.92	6,958.4	-2,952.9	1,087.3	3,116.2	0.00	0.00	0.00
9,720.0	90.22	180.92	6,958.2	-2,992.9	1,086.7	3,155.2	0.00	0.00	0.00
9,760.0	90.22	180.92	6,958.1	-3,032.9	1,086.0	3,194.1	0.00	0.00	0.00
9,800.0	90.22	180.92	6,957.9	-3,072.9	1,085.4	3,233.1	0.00	0.00	0.00
9,840.0	90.22	180.92	6,957.8	-3,112.9	1,084.8	3,272.0	0.00	0.00	0.00
9,880.0	90.22	180.92	6,957.6	-3,152.9	1,084.1	3,311.0	0.00	0.00	0.00
9,920.0	90.22	180.92	6,957.5	-3,192.8	1,083.5	3,349.9	0.00	0.00	0.00
9,960.0	90.22	180.92	6,957.3	-3,232.8	1,082.8	3,388.9	0.00	0.00	0.00
10,000.0	90.22	180.92	6,957.2	-3,272.8	1,082.2	3,427.8	0.00	0.00	0.00
10,040.0	90.22	180.92	6,957.0	-3,312.8	1,081.6	3,466.8	0.00	0.00	0.00
10,080.0	90.22	180.92	6,956.8	-3,352.8	1,080.9	3,505.7	0.00	0.00	0.00
10,120.0	90.22	180.92	6,956.7	-3,392.8	1,080.3	3,544.7	0.00	0.00	0.00
10,160.0	90.22	180.92	6,956.5	-3,432.8	1,079.6	3,583.6	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

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)
10,200.0	90.22	180.92	6,956.4	-3,472.8	1,079.0	3,622.6	0.00	0.00	0.00
10,240.0	90.22	180.92	6,956.2	-3,512.8	1,078.4	3,661.5	0.00	0.00	0.00
10,280.0	90.22	180.92	6,956.1	-3,552.8	1,077.7	3,700.5	0.00	0.00	0.00
10,320.0	90.22	180.92	6,955.9	-3,592.8	1,077.1	3,739.4	0.00	0.00	0.00
10,360.0	90.22	180.92	6,955.8	-3,632.8	1,076.4	3,778.4	0.00	0.00	0.00
10,400.0	90.22	180.92	6,955.6	-3,672.8	1,075.8	3,817.3	0.00	0.00	0.00
10,440.0	90.22	180.92	6,955.5	-3,712.8	1,075.2	3,856.3	0.00	0.00	0.00
10,480.0	90.22	180.92	6,955.3	-3,752.8	1,074.5	3,895.2	0.00	0.00	0.00
10,520.0	90.22	180.92	6,955.2	-3,792.8	1,073.9	3,934.2	0.00	0.00	0.00
10,560.0	90.22	180.92	6,955.0	-3,832.8	1,073.3	3,973.1	0.00	0.00	0.00
10,600.0	90.22	180.92	6,954.8	-3,872.8	1,072.6	4,012.1	0.00	0.00	0.00
10,640.0	90.22	180.92	6,954.7	-3,912.8	1,072.0	4,051.0	0.00	0.00	0.00
10,680.0	90.22	180.92	6,954.5	-3,952.7	1,071.3	4,090.0	0.00	0.00	0.00
10,720.0	90.22	180.92	6,954.4	-3,992.7	1,070.7	4,128.9	0.00	0.00	0.00
10,760.0	90.22	180.92	6,954.2	-4,032.7	1,070.1	4,167.9	0.00	0.00	0.00
10,800.0	90.22	180.92	6,954.1	-4,072.7	1,069.4	4,206.8	0.00	0.00	0.00
10,840.0	90.22	180.92	6,953.9	-4,112.7	1,068.8	4,245.8	0.00	0.00	0.00
10,880.0	90.22	180.92	6,953.8	-4,152.7	1,068.1	4,284.7	0.00	0.00	0.00
10,920.0	90.22	180.92	6,953.6	-4,192.7	1,067.5	4,323.7	0.00	0.00	0.00
10,960.0	90.22	180.92	6,953.5	-4,232.7	1,066.9	4,362.7	0.00	0.00	0.00
11,000.0	90.22	180.92	6,953.3	-4,272.7	1,066.2	4,401.6	0.00	0.00	0.00
11,040.0	90.22	180.92	6,953.2	-4,312.7	1,065.6	4,440.6	0.00	0.00	0.00
11,080.0	90.22	180.92	6,953.0	-4,352.7	1,064.9	4,479.5	0.00	0.00	0.00
11,120.0	90.22	180.92	6,952.8	-4,392.7	1,064.3	4,518.5	0.00	0.00	0.00
11,160.0	90.22	180.92	6,952.7	-4,432.7	1,063.7	4,557.4	0.00	0.00	0.00
11,200.0	90.22	180.92	6,952.5	-4,472.7	1,063.0	4,596.4	0.00	0.00	0.00
11,240.0	90.22	180.92	6,952.4	-4,512.7	1,062.4	4,635.3	0.00	0.00	0.00
11,280.0	90.22	180.92	6,952.2	-4,552.7	1,061.8	4,674.3	0.00	0.00	0.00
11,320.0	90.22	180.92	6,952.1	-4,592.7	1,061.1	4,713.2	0.00	0.00	0.00
11,360.0	90.22	180.92	6,951.9	-4,632.7	1,060.5	4,752.2	0.00	0.00	0.00
11,400.0	90.22	180.92	6,951.8	-4,672.6	1,059.8	4,791.1	0.00	0.00	0.00
11,440.0	90.22	180.92	6,951.6	-4,712.6	1,059.2	4,830.1	0.00	0.00	0.00
11,480.0	90.22	180.92	6,951.5	-4,752.6	1,058.6	4,869.0	0.00	0.00	0.00
11,520.0	90.22	180.92	6,951.3	-4,792.6	1,057.9	4,908.0	0.00	0.00	0.00
11,560.0	90.22	180.92	6,951.2	-4,832.6	1,057.3	4,946.9	0.00	0.00	0.00
11,600.0	90.22	180.92	6,951.0	-4,872.6	1,056.6	4,985.9	0.00	0.00	0.00
11,601.8	90.22	180.92	6,951.0	-4,874.4	1,056.6	4,987.6	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,523.6	6,966.7	7"		7	8-3/4

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2U-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-28-13)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1
6,320.7	6,202.7	-30.0	1,134.0	KOP #2
7,523.6	6,966.7	-796.8	1,121.8	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T4N-R66W**

**Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W**

**Sorin Natural Resources 2U-203**

**Wellbore #1**

**Plan #1 (01-28-13)**

## **Anticollision Report**

**29 January, 2013**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (01-28-13)		
<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 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 1/29/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,601.8	Plan #1 (01-28-13) (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>						
Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W						
Sorin Natural Resources 2R-223 - Wellbore #1 - Plan #1	200.0	200.0	58.5	57.9	86.808	CC, ES
Sorin Natural Resources 2R-223 - Wellbore #1 - Plan #1	11,601.8	11,512.7	635.5	446.9	3.369	SF
Sorin Natural Resources 2R-403 - Wellbore #1 - Plan #1	200.0	200.0	89.2	88.5	132.278	CC, ES
Sorin Natural Resources 2R-403 - Wellbore #1 - Plan #1	11,601.8	11,653.3	982.3	796.3	5.283	SF
Sorin Natural Resources 2U-443 - Wellbore #1 - Plan #1	200.0	200.0	27.9	27.2	41.337	CC, ES
Sorin Natural Resources 2U-443 - Wellbore #1 - Plan #1	11,601.8	11,728.5	317.7	158.3	1.992	SF

<b>Offset Design</b>												
Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-223 - Wellbore #1												
Survey Program: 0-MWD												
Reference												
Offset												
Semi Major Axis												
Reference												
Offset												
Highside Toolface (°)												
Offset Wellbore Centre												
+N/-S (ft)												
+E/-W (ft)												
Distance												
Between Centres (ft)												
Between Ellipses (ft)												
Minimum Separation (ft)												
Separation Factor												
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)	Offset Wellbore Centre +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	-89.99	0.0	-58.5	58.5			
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-58.5	58.5	58.3	0.22	260.423
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-58.5	58.5	57.9	0.67	86.808 CC, ES
300.0	300.0	300.0	300.0	0.6	0.6	178.54	0.0	-58.5	60.3	59.2	1.12	53.839
400.0	399.8	399.8	399.8	0.8	0.8	178.65	0.0	-58.5	65.5	63.9	1.57	41.793
500.0	499.5	499.5	499.5	1.0	1.0	178.80	0.0	-58.5	74.2	72.2	2.02	36.716
600.0	598.7	598.7	598.7	1.3	1.2	178.97	0.0	-58.5	86.4	83.9	2.48	34.858
700.0	697.5	697.5	697.5	1.6	1.5	179.12	0.0	-58.5	102.0	99.1	2.94	34.725
800.0	795.6	795.6	795.6	2.0	1.7	179.26	0.0	-58.5	121.1	117.7	3.40	35.615
900.0	893.3	893.3	893.3	2.5	1.9	179.37	0.0	-58.5	142.5	138.6	3.86	36.881
1,000.0	991.0	991.0	991.0	2.9	2.1	179.45	0.0	-58.5	163.9	159.5	4.33	37.846
1,100.0	1,088.7	1,094.8	1,094.8	3.4	2.3	179.50	-0.1	-57.0	183.8	179.0	4.79	38.339
1,200.0	1,186.4	1,200.5	1,200.4	3.8	2.6	179.50	-0.4	-51.5	200.1	194.9	5.25	38.125
1,300.0	1,284.1	1,307.4	1,306.8	4.3	2.8	179.46	-0.9	-42.1	212.8	207.1	5.72	37.205
1,400.0	1,381.7	1,410.9	1,409.6	4.7	3.0	179.40	-1.5	-29.6	222.2	216.0	6.19	35.874
1,500.0	1,479.4	1,510.5	1,508.4	5.2	3.3	179.34	-2.2	-17.1	231.2	224.5	6.67	34.645
1,600.0	1,577.1	1,610.1	1,607.2	5.7	3.6	179.28	-2.9	-4.7	240.2	233.0	7.16	33.559
1,700.0	1,674.8	1,709.7	1,706.0	6.1	3.8	179.23	-3.5	7.8	249.2	241.5	7.65	32.595
1,800.0	1,772.5	1,809.3	1,804.8	6.6	4.1	179.18	-4.2	20.3	258.2	250.0	8.14	31.735
1,900.0	1,870.2	1,908.9	1,903.6	7.1	4.4	179.14	-4.9	32.7	267.2	258.5	8.63	30.964

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-223 - Wellbore #1										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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
2,000.0	1,967.9	2,008.5	2,002.4	7.5	4.7	179.09	-5.5	45.2	276.2	267.0	9.12	30.269		
2,100.0	2,065.5	2,108.1	2,101.2	8.0	5.0	179.05	-6.2	57.6	285.2	275.5	9.62	29.639		
2,200.0	2,163.2	2,207.7	2,200.1	8.5	5.3	179.02	-6.9	70.1	294.1	284.0	10.12	29.067		
2,300.0	2,260.9	2,307.3	2,298.9	8.9	5.6	178.98	-7.6	82.6	303.1	292.5	10.62	28.545		
2,400.0	2,358.6	2,406.9	2,397.7	9.4	5.9	178.95	-8.2	95.0	312.1	301.0	11.12	28.067		
2,500.0	2,456.3	2,506.5	2,496.5	9.9	6.2	178.92	-8.9	107.5	321.1	309.5	11.62	27.627		
2,600.0	2,554.0	2,606.1	2,595.3	10.4	6.5	178.89	-9.6	120.0	330.1	318.0	12.13	27.223		
2,700.0	2,651.6	2,705.7	2,694.1	10.8	6.9	178.86	-10.2	132.4	339.1	326.5	12.63	26.848		
2,800.0	2,749.3	2,805.3	2,792.9	11.3	7.2	178.83	-10.9	144.9	348.1	335.0	13.13	26.501		
2,900.0	2,847.0	2,904.8	2,891.7	11.8	7.5	178.81	-11.6	157.4	357.1	343.4	13.64	26.179		
3,000.0	2,944.7	3,004.4	2,990.5	12.2	7.8	178.79	-12.2	169.8	366.1	351.9	14.15	25.878		
3,100.0	3,042.4	3,104.0	3,089.3	12.7	8.1	178.76	-12.9	182.3	375.1	360.4	14.65	25.597		
3,200.0	3,140.1	3,203.6	3,188.1	13.2	8.4	178.74	-13.6	194.7	384.1	368.9	15.16	25.335		
3,300.0	3,237.8	3,303.2	3,287.0	13.6	8.7	178.72	-14.2	207.2	393.0	377.4	15.67	25.088		
3,400.0	3,335.4	3,402.8	3,385.8	14.1	9.1	178.70	-14.9	219.7	402.0	385.9	16.17	24.857		
3,500.0	3,433.1	3,502.4	3,484.6	14.6	9.4	178.68	-15.6	232.1	411.0	394.3	16.68	24.639		
3,600.0	3,530.8	3,602.0	3,583.4	15.1	9.7	178.66	-16.2	244.6	420.0	402.8	17.19	24.433		
3,700.0	3,628.5	3,701.6	3,682.2	15.5	10.0	178.65	-16.9	257.1	429.0	411.3	17.70	24.239		
3,800.0	3,726.2	3,801.2	3,781.0	16.0	10.3	178.63	-17.6	269.5	438.0	419.8	18.21	24.056		
3,900.0	3,823.9	3,900.8	3,879.8	16.5	10.7	178.61	-18.2	282.0	447.0	428.3	18.72	23.882		
4,000.0	3,921.6	4,000.4	3,978.6	16.9	11.0	178.60	-18.9	294.5	456.0	436.8	19.23	23.717		
4,100.0	4,019.2	4,100.0	4,077.4	17.4	11.3	178.58	-19.6	306.9	465.0	445.2	19.74	23.560		
4,200.0	4,116.9	4,199.6	4,176.2	17.9	11.6	178.57	-20.2	319.4	474.0	453.7	20.25	23.411		
4,300.0	4,214.6	4,299.2	4,275.1	18.4	11.9	178.56	-20.9	331.8	483.0	462.2	20.76	23.269		
4,400.0	4,312.3	4,398.8	4,373.9	18.8	12.3	178.54	-21.6	344.3	492.0	470.7	21.27	23.134		
4,500.0	4,410.0	4,498.4	4,472.7	19.3	12.6	178.53	-22.2	356.8	500.9	479.2	21.78	23.004		
4,600.0	4,507.7	4,598.0	4,571.5	19.8	12.9	178.52	-22.9	369.2	509.9	487.7	22.29	22.881		
4,700.0	4,605.3	4,697.6	4,670.3	20.2	13.2	178.51	-23.6	381.7	518.9	496.1	22.80	22.763		
4,800.0	4,703.0	4,797.1	4,769.1	20.7	13.6	178.49	-24.2	394.2	527.9	504.6	23.31	22.650		
4,900.0	4,800.7	4,896.7	4,867.9	21.2	13.9	178.48	-24.9	406.6	536.9	513.1	23.82	22.542		
5,000.0	4,898.4	4,996.3	4,966.7	21.7	14.2	178.47	-25.6	419.1	545.9	521.6	24.33	22.438		
5,100.0	4,996.1	5,095.9	5,065.5	22.1	14.5	178.46	-26.2	431.6	554.9	530.1	24.84	22.338		
5,200.0	5,093.8	5,195.5	5,164.3	22.6	14.8	178.45	-26.9	444.0	563.9	538.5	25.35	22.243		
5,300.0	5,191.5	5,295.1	5,263.1	23.1	15.2	178.44	-27.6	456.5	572.9	547.0	25.86	22.151		
5,400.0	5,289.1	5,394.7	5,362.0	23.5	15.5	178.43	-28.2	468.9	581.9	555.5	26.37	22.062		
5,500.0	5,386.8	5,490.9	5,457.4	24.0	15.8	178.43	-28.9	480.9	590.9	564.1	26.87	21.989		
5,600.0	5,484.9	5,573.4	5,539.4	24.4	16.0	178.43	-29.4	489.6	600.2	572.9	27.31	21.979		
5,700.0	5,583.5	5,655.6	5,621.4	24.7	16.2	178.44	-29.7	495.9	608.9	581.2	27.67	22.004		
5,800.0	5,682.7	5,737.8	5,703.5	24.9	16.3	178.45	-29.9	499.8	616.9	588.9	27.99	22.041		
5,900.0	5,782.3	5,819.8	5,785.4	25.2	16.4	178.46	-30.0	501.4	624.3	596.0	28.26	22.089		
6,000.0	5,882.1	5,916.4	5,882.1	25.3	16.6	178.48	-30.0	501.5	630.1	601.6	28.53	22.083		
6,100.0	5,982.0	6,016.4	5,982.0	25.4	16.7	178.49	-30.0	501.5	632.5	603.7	28.77	21.980		
6,200.0	6,082.0	6,116.4	6,082.0	25.5	16.9	-90.00	-30.0	501.5	632.5	603.4	29.15	21.700		
6,300.0	6,182.0	6,216.4	6,182.0	25.6	17.1	-90.00	-30.0	501.5	632.5	603.0	29.52	21.430		
6,400.0	6,281.9	6,315.4	6,281.0	25.7	17.2	89.14	-33.5	501.4	632.5	602.7	29.84	21.200		
6,482.0	6,362.9	6,396.4	6,361.0	25.8	17.4	89.20	-45.5	501.2	632.5	602.4	30.14	20.988		
6,500.0	6,380.4	6,414.2	6,378.4	25.9	17.4	89.21	-49.3	501.1	632.5	602.3	30.21	20.941		
6,600.0	6,475.9	6,513.0	6,473.1	26.0	17.6	89.30	-77.6	500.7	632.5	601.9	30.62	20.659		
6,700.0	6,566.7	6,612.1	6,563.4	26.1	17.8	89.41	-117.9	500.0	632.5	601.4	31.11	20.332		
6,800.0	6,651.2	6,711.2	6,648.0	26.3	18.0	89.52	-169.6	499.1	632.6	600.8	31.74	19.932		
6,900.0	6,728.1	6,810.6	6,725.2	26.5	18.4	89.64	-231.9	498.1	632.6	600.0	32.55	19.433		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
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		
7,000.0	6,796.0	6,910.1	6,793.8	26.8	18.8	89.77	-303.9	496.9	632.6	599.0	33.61	18.820		
7,100.0	6,853.7	7,009.8	6,852.6	27.2	19.3	89.90	-384.4	495.6	632.7	597.7	34.96	18.096		
7,200.0	6,900.3	7,109.7	6,900.5	27.6	20.0	90.03	-472.0	494.1	632.7	596.1	36.62	17.279		
7,300.0	6,935.0	7,209.9	6,936.6	28.2	20.9	90.16	-565.2	492.6	632.8	594.2	38.58	16.401		
7,400.0	6,957.2	7,310.2	6,960.3	28.9	21.9	90.29	-662.6	491.0	632.9	592.0	40.83	15.500		
7,500.0	6,966.4	7,410.7	6,971.0	29.7	23.0	90.42	-762.5	489.3	632.9	589.6	43.31	14.613		
7,600.0	6,966.4	7,510.9	6,971.3	30.6	24.2	90.45	-862.7	487.6	633.0	587.0	45.96	13.774		
7,700.0	6,966.0	7,610.9	6,970.8	31.6	25.6	90.44	-962.7	486.0	633.1	584.3	48.74	12.987		
7,800.0	6,965.6	7,710.9	6,970.3	32.7	26.9	90.43	-1,062.6	484.3	633.1	581.5	51.67	12.254		
7,900.0	6,965.2	7,810.9	6,969.8	33.9	28.4	90.41	-1,162.6	482.6	633.2	578.5	54.70	11.576		
8,000.0	6,964.8	7,910.9	6,969.3	35.2	29.9	90.40	-1,262.6	481.0	633.3	575.4	57.83	10.951		
8,100.0	6,964.4	8,010.9	6,968.8	36.5	31.4	90.39	-1,362.6	479.3	633.3	572.3	61.04	10.376		
8,200.0	6,964.1	8,110.9	6,968.3	37.8	33.0	90.38	-1,462.6	477.7	633.4	569.1	64.31	9.848		
8,300.0	6,963.7	8,210.9	6,967.8	39.2	34.7	90.37	-1,562.6	476.0	633.4	565.8	67.65	9.364		
8,400.0	6,963.3	8,310.9	6,967.3	40.7	36.3	90.36	-1,662.6	474.3	633.5	562.5	71.03	8.919		
8,500.0	6,962.9	8,410.9	6,966.8	42.2	38.0	90.35	-1,762.5	472.7	633.6	559.1	74.46	8.509		
8,600.0	6,962.5	8,510.9	6,966.2	43.7	39.7	90.34	-1,862.5	471.0	633.6	555.7	77.92	8.131		
8,700.0	6,962.1	8,610.9	6,965.7	45.3	41.4	90.33	-1,962.5	469.4	633.7	552.3	81.42	7.783		
8,800.0	6,961.8	8,710.9	6,965.2	46.9	43.1	90.31	-2,062.5	467.7	633.8	548.8	84.95	7.460		
8,900.0	6,961.4	8,810.9	6,964.7	48.5	44.9	90.30	-2,162.5	466.0	633.8	545.3	88.50	7.162		
9,000.0	6,961.0	8,910.9	6,964.2	50.1	46.6	90.29	-2,262.5	464.4	633.9	541.8	92.07	6.884		
9,100.0	6,960.6	9,010.9	6,963.7	51.8	48.4	90.28	-2,362.4	462.7	634.0	538.3	95.67	6.627		
9,200.0	6,960.2	9,110.9	6,963.2	53.5	50.2	90.27	-2,462.4	461.1	634.0	534.7	99.28	6.386		
9,300.0	6,959.8	9,210.9	6,962.7	55.1	52.0	90.26	-2,562.4	459.4	634.1	531.2	102.91	6.162		
9,400.0	6,959.5	9,310.9	6,962.2	56.8	53.8	90.25	-2,662.4	457.7	634.1	527.6	106.55	5.952		
9,500.0	6,959.1	9,410.9	6,961.7	58.6	55.6	90.24	-2,762.4	456.1	634.2	524.0	110.20	5.755		
9,600.0	6,958.7	9,510.9	6,961.2	60.3	57.4	90.23	-2,862.4	454.4	634.3	520.4	113.87	5.570		
9,700.0	6,958.3	9,610.9	6,960.7	62.0	59.2	90.21	-2,962.4	452.7	634.3	516.8	117.55	5.396		
9,800.0	6,957.9	9,710.9	6,960.2	63.8	61.1	90.20	-3,062.3	451.1	634.4	513.2	121.23	5.233		
9,900.0	6,957.5	9,810.9	6,959.7	65.5	62.9	90.19	-3,162.3	449.4	634.5	509.5	124.93	5.079		
10,000.0	6,957.2	9,910.9	6,959.2	67.3	64.7	90.18	-3,262.3	447.8	634.5	505.9	128.63	4.933		
10,100.0	6,956.8	10,010.9	6,958.7	69.1	66.6	90.17	-3,362.3	446.1	634.6	502.2	132.34	4.795		
10,200.0	6,956.4	10,110.9	6,958.1	70.9	68.4	90.16	-3,462.3	444.4	634.6	498.6	136.06	4.665		
10,300.0	6,956.0	10,210.9	6,957.6	72.7	70.3	90.15	-3,562.3	442.8	634.7	494.9	139.78	4.541		
10,400.0	6,955.6	10,310.9	6,957.1	74.5	72.1	90.14	-3,662.2	441.1	634.8	491.3	143.51	4.423		
10,500.0	6,955.2	10,410.9	6,956.6	76.3	74.0	90.13	-3,762.2	439.5	634.8	487.6	147.24	4.312		
10,600.0	6,954.8	10,510.9	6,956.1	78.1	75.8	90.12	-3,862.2	437.8	634.9	483.9	150.98	4.205		
10,700.0	6,954.5	10,610.9	6,955.6	79.9	77.7	90.10	-3,962.2	436.1	635.0	480.2	154.72	4.104		
10,800.0	6,954.1	10,710.9	6,955.1	81.7	79.6	90.09	-4,062.2	434.5	635.0	476.6	158.47	4.007		
10,900.0	6,953.7	10,810.9	6,954.6	83.5	81.4	90.08	-4,162.2	432.8	635.1	472.9	162.22	3.915		
11,000.0	6,953.3	10,910.9	6,954.1	85.3	83.3	90.07	-4,262.2	431.2	635.2	469.2	165.97	3.827		
11,100.0	6,952.9	11,010.9	6,953.6	87.2	85.2	90.06	-4,362.1	429.5	635.2	465.5	169.73	3.743		
11,200.0	6,952.5	11,110.9	6,953.1	89.0	87.0	90.05	-4,462.1	427.8	635.3	461.8	173.49	3.662		
11,300.0	6,952.2	11,210.9	6,952.6	90.8	88.9	90.04	-4,562.1	426.2	635.3	458.1	177.26	3.584		
11,400.0	6,951.8	11,310.9	6,952.1	92.7	90.8	90.03	-4,662.1	424.5	635.4	454.4	181.02	3.510		
11,500.0	6,951.4	11,410.9	6,951.6	94.5	92.7	90.02	-4,762.1	422.8	635.5	450.7	184.79	3.439		
11,600.0	6,951.0	11,510.9	6,951.1	96.4	94.5	90.00	-4,862.1	421.2	635.5	447.0	188.56	3.370		
11,601.8	6,951.0	11,512.7	6,951.1	96.4	94.6	90.00	-4,863.8	421.2	635.5	446.9	188.63	3.369 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-403 - Wellbore #1		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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
							+N/-S (ft)	+E/-W (ft)								
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-89.2	89.2							
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-89.2	89.2	89.0	0.22	396.835	CC, ES			
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-89.2	89.2	88.5	0.67	132.278				
300.0	300.0	300.0	300.0	0.6	0.6	178.52	0.0	-89.2	90.9	89.8	1.12	81.224				
400.0	399.8	399.8	399.8	0.8	0.8	178.60	0.0	-89.2	96.2	94.6	1.57	61.353				
500.0	499.5	499.5	499.5	1.0	1.0	178.71	0.0	-89.2	104.9	102.9	2.02	51.883				
600.0	598.7	598.7	598.7	1.3	1.2	178.84	0.0	-89.2	117.1	114.6	2.48	47.225				
700.0	697.5	697.5	697.5	1.6	1.5	178.97	0.0	-89.2	132.7	129.8	2.94	45.157				
800.0	795.6	795.6	795.6	2.0	1.7	179.09	0.0	-89.2	151.8	148.4	3.40	44.628				
900.0	893.3	893.3	893.3	2.5	1.9	179.20	0.0	-89.2	173.1	169.3	3.86	44.815				
1,000.0	991.0	991.0	991.0	2.9	2.1	179.29	0.0	-89.2	194.5	190.2	4.33	44.925				
1,100.0	1,088.7	1,088.7	1,088.7	3.4	2.3	179.36	0.0	-89.2	215.9	211.1	4.80	44.976				
1,200.0	1,186.4	1,186.4	1,186.4	3.8	2.6	179.42	0.0	-89.2	237.3	232.0	5.27	44.993				
1,300.0	1,284.1	1,284.1	1,284.1	4.3	2.8	179.47	0.0	-89.2	258.7	252.9	5.75	44.990				
1,400.0	1,381.7	1,381.7	1,381.7	4.7	3.0	179.51	0.0	-89.2	280.1	273.9	6.23	44.976				
1,500.0	1,479.4	1,479.4	1,479.4	5.2	3.2	179.54	0.0	-89.2	301.5	294.8	6.71	44.955				
1,600.0	1,577.1	1,586.8	1,586.8	5.7	3.4	179.55	-0.1	-87.9	321.7	314.5	7.19	44.741				
1,700.0	1,674.8	1,698.2	1,698.1	6.1	3.7	179.49	-0.8	-82.4	338.2	330.6	7.66	44.131				
1,800.0	1,772.5	1,810.9	1,810.3	6.6	3.9	179.37	-1.9	-72.4	350.9	342.8	8.15	43.064				
1,900.0	1,870.2	1,915.2	1,913.8	7.1	4.1	179.22	-3.3	-60.1	360.5	351.9	8.63	41.795				
2,000.0	1,967.9	2,014.8	2,012.7	7.5	4.4	179.07	-4.7	-48.1	369.9	360.8	9.10	40.640				
2,100.0	2,065.5	2,114.3	2,111.5	8.0	4.6	178.93	-6.1	-36.0	379.3	369.8	9.58	39.584				
2,200.0	2,163.2	2,213.9	2,210.3	8.5	4.9	178.80	-7.5	-24.0	388.8	378.7	10.07	38.616				
2,300.0	2,260.9	2,313.4	2,309.1	8.9	5.2	178.68	-8.8	-11.9	398.2	387.6	10.55	37.728				
2,400.0	2,358.6	2,413.0	2,407.9	9.4	5.4	178.56	-10.2	0.1	407.6	396.5	11.04	36.908				
2,500.0	2,456.3	2,512.5	2,506.7	9.9	5.7	178.44	-11.6	12.2	417.0	405.4	11.53	36.151				
2,600.0	2,554.0	2,612.1	2,605.5	10.4	6.0	178.34	-13.0	24.2	426.4	414.4	12.03	35.449				
2,700.0	2,651.6	2,711.6	2,704.3	10.8	6.3	178.23	-14.4	36.2	435.8	423.3	12.52	34.798				
2,800.0	2,749.3	2,811.2	2,803.2	11.3	6.6	178.13	-15.7	48.3	445.2	432.2	13.02	34.193				
2,900.0	2,847.0	2,910.7	2,902.0	11.8	6.9	178.04	-17.1	60.3	454.6	441.1	13.52	33.628				
3,000.0	2,944.7	3,010.3	3,000.8	12.2	7.2	177.94	-18.5	72.4	464.1	450.0	14.02	33.100				
3,100.0	3,042.4	3,109.8	3,099.6	12.7	7.5	177.86	-19.9	84.4	473.5	459.0	14.52	32.607				
3,200.0	3,140.1	3,209.4	3,198.4	13.2	7.7	177.77	-21.2	96.4	482.9	467.9	15.02	32.143				
3,300.0	3,237.8	3,308.9	3,297.2	13.6	8.0	177.69	-22.6	108.5	492.3	476.8	15.53	31.708				
3,400.0	3,335.4	3,408.5	3,396.0	14.1	8.4	177.61	-24.0	120.5	501.7	485.7	16.03	31.298				
3,500.0	3,433.1	3,508.0	3,494.8	14.6	8.7	177.54	-25.4	132.6	511.2	494.6	16.54	30.912				
3,600.0	3,530.8	3,607.6	3,593.7	15.1	9.0	177.46	-26.8	144.6	520.6	503.5	17.04	30.548				
3,700.0	3,628.5	3,700.0	3,685.4	15.5	9.2	177.40	-28.0	155.6	530.3	512.7	17.53	30.257				
3,800.0	3,726.2	3,784.4	3,769.4	16.0	9.4	177.38	-28.9	163.6	542.3	524.4	17.96	30.189				
3,900.0	3,823.9	3,867.5	3,852.3	16.5	9.6	177.39	-29.6	169.0	557.3	538.9	18.40	30.290				
4,000.0	3,921.6	3,949.8	3,934.6	16.9	9.7	177.43	-29.9	172.1	575.0	556.2	18.83	30.544				
4,100.0	4,019.2	4,034.5	4,019.2	17.4	9.9	177.50	-30.0	172.8	595.5	576.3	19.26	30.921				
4,200.0	4,116.9	4,132.2	4,116.9	17.9	10.1	177.58	-30.0	172.8	616.9	597.2	19.72	31.278				
4,300.0	4,214.6	4,229.9	4,214.6	18.4	10.3	177.66	-30.0	172.8	638.3	618.1	20.19	31.609				
4,400.0	4,312.3	4,327.5	4,312.3	18.8	10.4	177.74	-30.0	172.8	659.6	639.0	20.66	31.923				
4,500.0	4,410.0	4,425.2	4,410.0	19.3	10.6	177.81	-30.0	172.8	681.0	659.9	21.13	32.222				
4,600.0	4,507.7	4,522.9	4,507.7	19.8	10.8	177.88	-30.0	172.8	702.4	680.8	21.61	32.508				
4,700.0	4,605.3	4,620.6	4,605.3	20.2	11.0	177.94	-30.0	172.8	723.8	701.7	22.08	32.779				
4,800.0	4,703.0	4,718.3	4,703.0	20.7	11.2	178.00	-30.0	172.8	745.2	722.6	22.55	33.039				
4,900.0	4,800.7	4,816.0	4,800.7	21.2	11.4	178.06	-30.0	172.8	766.5	743.5	23.03	33.287				
5,000.0	4,898.4	4,913.6	4,898.4	21.7	11.6	178.11	-30.0	172.8	787.9	764.4	23.50	33.524				

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



Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-403 - Wellbore #1													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)			
5,100.0	4,996.1	5,011.3	4,996.1	22.1	11.8	178.16	-30.0	172.8	809.3	785.3	23.98	33.751		
5,200.0	5,093.8	5,109.0	5,093.8	22.6	12.0	178.21	-30.0	172.8	830.7	806.2	24.45	33.968		
5,300.0	5,191.5	5,206.7	5,191.5	23.1	12.2	178.25	-30.0	172.8	852.1	827.1	24.93	34.177		
5,400.0	5,289.1	5,304.4	5,289.1	23.5	12.4	178.29	-30.0	172.8	873.4	848.0	25.41	34.377		
5,500.0	5,386.8	5,402.1	5,386.8	24.0	12.6	178.33	-30.0	172.8	894.8	868.9	25.89	34.569		
5,600.0	5,484.9	5,500.1	5,484.9	24.4	12.8	178.38	-30.0	172.8	914.5	888.1	26.38	34.667		
5,700.0	5,583.5	5,598.8	5,583.5	24.7	13.0	178.42	-30.0	172.8	930.8	904.0	26.82	34.710		
5,800.0	5,682.7	5,697.9	5,682.7	24.9	13.2	178.45	-30.0	172.8	943.6	916.4	27.21	34.671		
5,900.0	5,782.3	5,797.5	5,782.3	25.2	13.4	178.47	-30.0	172.8	952.9	925.3	27.58	34.555		
6,000.0	5,882.1	5,897.3	5,882.1	25.3	13.6	178.48	-30.0	172.8	958.8	930.9	27.90	34.364		
6,100.0	5,982.0	5,997.3	5,982.0	25.4	13.8	178.48	-30.0	172.8	961.1	933.0	28.18	34.101		
6,200.0	6,082.0	6,097.3	6,082.0	25.5	14.0	-90.00	-30.0	172.8	961.2	932.6	28.58	33.635		
6,300.0	6,182.0	6,197.3	6,182.0	25.6	14.2	-90.00	-30.0	172.8	961.2	932.2	28.96	33.186		
6,400.0	6,281.9	6,297.1	6,281.9	25.7	14.4	89.33	-30.0	172.8	961.1	931.8	29.32	32.786		
6,474.0	6,355.1	6,370.3	6,355.1	25.8	14.6	90.00	-30.0	172.8	961.1	931.5	29.60	32.473		
6,500.0	6,380.4	6,395.7	6,380.5	25.9	14.6	90.32	-30.0	172.8	961.1	931.4	29.69	32.368		
6,600.0	6,475.9	6,495.4	6,479.8	26.0	14.8	91.62	-37.6	172.7	961.5	931.4	30.07	31.980		
6,700.0	6,566.7	6,598.1	6,580.2	26.1	15.0	92.90	-58.8	172.3	962.4	931.9	30.48	31.571		
6,800.0	6,651.2	6,704.2	6,680.0	26.3	15.2	94.16	-94.7	171.8	963.7	932.8	30.98	31.108		
6,900.0	6,728.1	6,813.8	6,776.8	26.5	15.5	95.36	-145.9	170.9	965.5	933.9	31.62	30.536		
7,000.0	6,796.0	6,927.1	6,868.1	26.8	15.9	96.48	-212.7	169.9	967.5	935.0	32.48	29.783		
7,100.0	6,853.7	7,043.9	6,950.8	27.2	16.4	97.50	-295.0	168.5	969.6	935.9	33.68	28.791		
7,200.0	6,900.3	7,164.2	7,021.9	27.6	17.2	98.39	-391.9	167.0	971.7	936.4	35.30	27.527		
7,300.0	6,935.0	7,287.6	7,078.1	28.2	18.2	99.11	-501.6	165.2	973.5	936.1	37.40	26.029		
7,400.0	6,957.2	7,413.5	7,116.5	28.9	19.5	99.63	-621.3	163.3	974.9	934.9	39.99	24.380		
7,500.0	6,966.4	7,533.7	7,134.8	29.7	21.0	99.96	-740.1	161.4	975.9	933.0	42.91	22.745		
7,600.0	6,966.4	7,642.7	7,144.5	30.6	22.4	100.50	-848.6	159.7	977.6	931.9	45.68	21.398		
7,700.0	6,966.0	7,751.6	7,146.1	31.6	23.9	100.61	-957.4	157.9	977.9	929.3	48.56	20.138		
7,800.0	6,965.6	7,851.6	7,146.2	32.7	25.4	100.64	-1,057.4	156.3	978.0	926.6	51.44	19.012		
7,900.0	6,965.2	7,951.6	7,146.3	33.9	26.9	100.67	-1,157.4	154.7	978.1	923.7	54.43	17.969		
8,000.0	6,964.8	8,051.6	7,146.5	35.2	28.5	100.70	-1,257.4	153.1	978.2	920.7	57.52	17.007		
8,100.0	6,964.4	8,151.6	7,146.6	36.5	30.1	100.73	-1,357.4	151.5	978.3	917.6	60.68	16.123		
8,200.0	6,964.1	8,251.6	7,146.7	37.8	31.7	100.76	-1,457.4	149.9	978.4	914.5	63.90	15.311		
8,300.0	6,963.7	8,351.6	7,146.8	39.2	33.4	100.79	-1,557.4	148.2	978.5	911.3	67.19	14.564		
8,400.0	6,963.3	8,451.6	7,147.0	40.7	35.1	100.82	-1,657.3	146.6	978.6	908.1	70.52	13.878		
8,500.0	6,962.9	8,551.6	7,147.1	42.2	36.8	100.85	-1,757.3	145.0	978.7	904.9	73.89	13.246		
8,600.0	6,962.5	8,651.6	7,147.2	43.7	38.5	100.88	-1,857.3	143.4	978.9	901.6	77.30	12.663		
8,700.0	6,962.1	8,751.6	7,147.3	45.3	40.3	100.90	-1,957.3	141.8	979.0	898.2	80.74	12.125		
8,800.0	6,961.8	8,851.6	7,147.5	46.9	42.1	100.93	-2,057.3	140.2	979.1	894.9	84.21	11.627		
8,900.0	6,961.4	8,951.6	7,147.6	48.5	43.8	100.96	-2,157.3	138.6	979.2	891.5	87.70	11.165		
9,000.0	6,961.0	9,051.6	7,147.7	50.1	45.6	100.99	-2,257.3	137.0	979.3	888.1	91.22	10.736		
9,100.0	6,960.6	9,151.6	7,147.8	51.8	47.4	101.02	-2,357.2	135.4	979.4	884.7	94.75	10.337		
9,200.0	6,960.2	9,251.6	7,148.0	53.5	49.2	101.05	-2,457.2	133.7	979.5	881.2	98.30	9.965		
9,300.0	6,959.8	9,351.6	7,148.1	55.1	51.1	101.08	-2,557.2	132.1	979.6	877.8	101.86	9.617		
9,400.0	6,959.5	9,451.6	7,148.2	56.8	52.9	101.11	-2,657.2	130.5	979.7	874.3	105.44	9.292		
9,500.0	6,959.1	9,551.6	7,148.3	58.6	54.7	101.14	-2,757.2	128.9	979.9	870.8	109.03	8.987		
9,600.0	6,958.7	9,651.6	7,148.5	60.3	56.5	101.17	-2,857.2	127.3	980.0	867.3	112.63	8.701		
9,700.0	6,958.3	9,751.6	7,148.6	62.0	58.4	101.20	-2,957.2	125.7	980.1	863.8	116.24	8.432		
9,800.0	6,957.9	9,851.6	7,148.7	63.8	60.2	101.22	-3,057.1	124.1	980.2	860.3	119.86	8.178		
9,900.0	6,957.5	9,951.6	7,148.8	65.5	62.1	101.25	-3,157.1	122.5	980.3	856.8	123.48	7.939		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-403 - Wellbore #1										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	Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
10,000.0	6,957.2	10,051.6	7,149.0	67.3	63.9	101.28	-3,257.1	120.9	980.4	853.3	127.12	7.713					
10,100.0	6,956.8	10,151.6	7,149.1	69.1	65.8	101.31	-3,357.1	119.2	980.5	849.8	130.76	7.499					
10,200.0	6,956.4	10,251.6	7,149.2	70.9	67.7	101.34	-3,457.1	117.6	980.6	846.2	134.40	7.296					
10,300.0	6,956.0	10,351.6	7,149.3	72.7	69.5	101.37	-3,557.1	116.0	980.8	842.7	138.05	7.104					
10,400.0	6,955.6	10,451.6	7,149.5	74.5	71.4	101.40	-3,657.1	114.4	980.9	839.2	141.71	6.922					
10,500.0	6,955.2	10,551.6	7,149.6	76.3	73.3	101.43	-3,757.0	112.8	981.0	835.6	145.37	6.748					
10,600.0	6,954.8	10,651.6	7,149.7	78.1	75.1	101.46	-3,857.0	111.2	981.1	832.1	149.04	6.583					
10,700.0	6,954.5	10,751.6	7,149.9	79.9	77.0	101.49	-3,957.0	109.6	981.2	828.5	152.70	6.426					
10,800.0	6,954.1	10,851.6	7,150.0	81.7	78.9	101.51	-4,057.0	108.0	981.3	824.9	156.38	6.275					
10,900.0	6,953.7	10,951.6	7,150.1	83.5	80.8	101.54	-4,157.0	106.4	981.4	821.4	160.05	6.132					
11,000.0	6,953.3	11,051.6	7,150.2	85.3	82.6	101.57	-4,257.0	104.8	981.6	817.8	163.73	5.995					
11,100.0	6,952.9	11,151.6	7,150.4	87.2	84.5	101.60	-4,357.0	103.1	981.7	814.3	167.41	5.864					
11,200.0	6,952.5	11,251.6	7,150.5	89.0	86.4	101.63	-4,456.9	101.5	981.8	810.7	171.10	5.738					
11,300.0	6,952.2	11,351.6	7,150.6	90.8	88.3	101.66	-4,556.9	99.9	981.9	807.1	174.78	5.618					
11,400.0	6,951.8	11,451.6	7,150.7	92.7	90.2	101.69	-4,656.9	98.3	982.0	803.5	178.47	5.502					
11,500.0	6,951.4	11,551.6	7,150.9	94.5	92.1	101.72	-4,756.9	96.7	982.1	800.0	182.16	5.392					
11,600.0	6,951.0	11,651.6	7,151.0	96.4	93.9	101.75	-4,856.9	95.1	982.3	796.4	185.85	5.285					
11,601.8	6,951.0	11,653.3	7,151.0	96.4	94.0	101.75	-4,858.7	95.1	982.3	796.3	185.91	5.283 SF					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-443 - Wellbore #1										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		
0.0	0.0	0.0	0.0	0.0	0.0	-89.98	0.0	-27.9	27.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.98	0.0	-27.9	27.9	27.6	0.22	124.011		
200.0	200.0	200.0	200.0	0.3	0.3	-89.98	0.0	-27.9	27.9	27.2	0.67	41.337 CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	178.59	0.0	-27.9	29.6	28.5	1.12	26.454		
400.0	399.8	399.8	399.8	0.8	0.8	178.80	0.0	-27.9	34.8	33.3	1.57	22.233		
500.0	499.5	500.9	500.9	1.0	1.0	178.98	-0.1	-26.1	41.8	39.8	2.00	20.866		
600.0	598.7	602.3	602.1	1.3	1.2	179.09	-0.2	-20.7	48.7	46.3	2.43	20.020		
700.0	697.5	703.9	703.4	1.6	1.5	179.14	-0.5	-11.8	55.6	52.7	2.88	19.316		
800.0	795.6	805.8	804.4	2.0	1.7	179.16	-0.9	0.8	62.4	59.1	3.34	18.701		
900.0	893.3	908.0	905.3	2.5	2.1	179.14	-1.5	17.0	68.0	64.1	3.82	17.804		
1,000.0	991.0	1,007.9	1,003.7	2.9	2.4	179.10	-2.0	34.7	71.7	67.4	4.31	16.644		
1,100.0	1,088.7	1,107.9	1,102.0	3.4	2.8	179.06	-2.6	52.4	75.5	70.7	4.81	15.693		
1,200.0	1,186.4	1,207.8	1,200.4	3.8	3.2	179.02	-3.2	70.0	79.3	74.0	5.32	14.906		
1,300.0	1,284.1	1,307.7	1,298.7	4.3	3.5	178.99	-3.8	87.7	83.1	77.3	5.83	14.244		
1,400.0	1,381.7	1,407.6	1,397.1	4.7	3.9	178.96	-4.4	105.3	86.9	80.5	6.35	13.689		
1,500.0	1,479.4	1,507.6	1,495.5	5.2	4.3	178.93	-4.9	123.0	90.7	83.8	6.86	13.209		
1,600.0	1,577.1	1,607.5	1,593.8	5.7	4.7	178.91	-5.5	140.7	94.4	87.0	7.38	12.792		
1,700.0	1,674.8	1,707.4	1,692.2	6.1	5.1	178.88	-6.1	158.3	98.2	90.3	7.90	12.429		
1,800.0	1,772.5	1,807.4	1,790.5	6.6	5.5	178.86	-6.7	176.0	102.0	93.6	8.42	12.108		
1,900.0	1,870.2	1,907.3	1,888.9	7.1	5.9	178.84	-7.3	193.7	105.8	96.8	8.95	11.824		
2,000.0	1,967.9	2,007.2	1,987.2	7.5	6.3	178.82	-7.8	211.3	109.6	100.1	9.47	11.570		
2,100.0	2,065.5	2,107.1	2,085.6	8.0	6.7	178.80	-8.4	229.0	113.3	103.3	9.99	11.342		
2,200.0	2,163.2	2,207.1	2,183.9	8.5	7.1	178.79	-9.0	246.6	117.1	106.6	10.52	11.136		
2,300.0	2,260.9	2,307.0	2,282.3	8.9	7.5	178.77	-9.6	264.3	120.9	109.9	11.04	10.949		
2,400.0	2,358.6	2,406.9	2,380.6	9.4	7.9	178.76	-10.2	282.0	124.7	113.1	11.57	10.778		
2,500.0	2,456.3	2,506.9	2,479.0	9.9	8.3	178.74	-10.7	299.6	128.5	116.4	12.09	10.622		
2,600.0	2,554.0	2,606.8	2,577.3	10.4	8.7	178.73	-11.3	317.3	132.2	119.6	12.62	10.479		
2,700.0	2,651.6	2,706.7	2,675.7	10.8	9.1	178.72	-11.9	335.0	136.0	122.9	13.15	10.347		
2,800.0	2,749.3	2,806.6	2,774.0	11.3	9.5	178.71	-12.5	352.6	139.8	126.1	13.67	10.225		
2,900.0	2,847.0	2,906.6	2,872.4	11.8	9.9	178.70	-13.1	370.3	143.6	129.4	14.20	10.111		
3,000.0	2,944.7	3,006.5	2,970.8	12.2	10.3	178.69	-13.6	388.0	147.4	132.6	14.73	10.006		
3,100.0	3,042.4	3,106.4	3,069.1	12.7	10.7	178.68	-14.2	405.6	151.1	135.9	15.26	9.908		
3,200.0	3,140.1	3,206.3	3,167.5	13.2	11.1	178.67	-14.8	423.3	154.9	139.1	15.78	9.816		
3,300.0	3,237.8	3,306.3	3,265.8	13.6	11.5	178.66	-15.4	440.9	158.7	142.4	16.31	9.731		
3,400.0	3,335.4	3,406.2	3,364.2	14.1	11.9	178.65	-16.0	458.6	162.5	145.7	16.84	9.650		
3,500.0	3,433.1	3,506.1	3,462.5	14.6	12.4	178.64	-16.5	476.3	166.3	148.9	17.37	9.574		
3,600.0	3,530.8	3,606.1	3,560.9	15.1	12.8	178.63	-17.1	493.9	170.1	152.2	17.89	9.503		
3,700.0	3,628.5	3,706.0	3,659.2	15.5	13.2	178.63	-17.7	511.6	173.8	155.4	18.42	9.436		
3,800.0	3,726.2	3,805.9	3,757.6	16.0	13.6	178.62	-18.3	529.3	177.6	158.7	18.95	9.372		
3,900.0	3,823.9	3,905.8	3,855.9	16.5	14.0	178.61	-18.9	546.9	181.4	161.9	19.48	9.312		
4,000.0	3,921.6	4,005.8	3,954.3	16.9	14.4	178.61	-19.4	564.6	185.2	165.2	20.01	9.255		
4,100.0	4,019.2	4,105.7	4,052.6	17.4	14.8	178.60	-20.0	582.3	189.0	168.4	20.54	9.201		
4,200.0	4,116.9	4,205.6	4,151.0	17.9	15.2	178.59	-20.6	599.9	192.7	171.7	21.07	9.150		
4,300.0	4,214.6	4,305.6	4,249.3	18.4	15.6	178.59	-21.2	617.6	196.5	174.9	21.59	9.101		
4,400.0	4,312.3	4,405.5	4,347.7	18.8	16.0	178.58	-21.8	635.2	200.3	178.2	22.12	9.054		
4,500.0	4,410.0	4,505.4	4,446.1	19.3	16.4	178.58	-22.3	652.9	204.1	181.4	22.65	9.010		
4,600.0	4,507.7	4,605.3	4,544.4	19.8	16.8	178.57	-22.9	670.6	207.9	184.7	23.18	8.967		
4,700.0	4,605.3	4,705.3	4,642.8	20.2	17.2	178.57	-23.5	688.2	211.6	187.9	23.71	8.926		
4,800.0	4,703.0	4,805.2	4,741.1	20.7	17.6	178.56	-24.1	705.9	215.4	191.2	24.24	8.888		
4,900.0	4,800.7	4,905.1	4,839.5	21.2	18.0	178.56	-24.7	723.6	219.2	194.4	24.77	8.850		
5,000.0	4,898.4	5,005.1	4,937.8	21.7	18.4	178.55	-25.2	741.2	223.0	197.7	25.30	8.815		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-443 - Wellbore #1										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				
5,100.0	4,996.1	5,105.0	5,036.2	22.1	18.8	178.55	-25.8	758.9	226.8	200.9	25.83	8.781				
5,200.0	5,093.8	5,204.9	5,134.5	22.6	19.3	178.55	-26.4	776.6	230.6	204.2	26.36	8.748				
5,300.0	5,191.5	5,304.8	5,232.9	23.1	19.7	178.54	-27.0	794.2	234.3	207.5	26.89	8.716				
5,400.0	5,289.1	5,404.8	5,331.2	23.5	20.1	178.54	-27.6	811.9	238.1	210.7	27.41	8.686				
5,500.0	5,386.8	5,504.7	5,429.6	24.0	20.5	178.53	-28.1	829.5	241.9	214.0	27.94	8.657				
5,600.0	5,484.9	5,600.0	5,523.4	24.4	20.8	178.52	-28.7	846.2	244.2	215.7	28.44	8.586				
5,700.0	5,583.5	5,694.0	5,616.4	24.7	21.1	178.51	-29.1	860.3	245.4	216.6	28.82	8.518				
5,800.0	5,682.7	5,786.1	5,707.8	24.9	21.3	178.50	-29.5	871.2	246.5	217.3	29.14	8.458				
5,900.0	5,782.3	5,878.2	5,799.5	25.2	21.5	178.49	-29.8	879.1	247.2	217.8	29.41	8.406				
6,000.0	5,882.1	5,970.3	5,891.5	25.3	21.6	178.49	-29.9	884.1	247.7	218.1	29.63	8.359				
6,100.0	5,982.0	6,062.3	5,983.5	25.4	21.8	178.49	-30.0	886.1	247.9	218.1	29.80	8.317				
6,200.0	6,082.0	6,160.9	6,082.0	25.5	21.9	-90.00	-30.0	886.1	247.9	217.7	30.16	8.219				
6,300.0	6,182.0	6,260.9	6,182.0	25.6	22.0	-90.00	-30.0	886.1	247.9	217.4	30.51	8.125				
6,396.7	6,278.6	6,357.4	6,278.6	25.7	22.1	90.21	-30.0	886.1	247.8	217.1	30.77	8.055				
6,400.0	6,281.9	6,360.7	6,281.9	25.7	22.2	90.04	-30.0	886.1	247.8	217.1	30.79	8.051				
6,500.0	6,380.4	6,459.4	6,380.6	25.9	22.3	93.82	-30.0	886.1	248.4	217.2	31.18	7.969				
6,600.0	6,475.9	6,560.6	6,481.4	26.0	22.4	98.75	-37.8	886.0	250.9	219.1	31.80	7.892				
6,700.0	6,566.7	6,665.0	6,583.4	26.1	22.6	103.49	-59.8	885.6	255.2	222.8	32.44	7.867				
6,800.0	6,651.2	6,772.9	6,684.6	26.3	22.7	107.92	-96.8	885.0	261.1	228.1	32.93	7.929				
6,900.0	6,728.1	6,884.3	6,782.6	26.5	22.9	111.93	-149.6	884.1	268.0	234.8	33.17	8.077				
7,000.0	6,796.0	6,999.3	6,874.7	26.8	23.2	115.44	-218.4	883.0	275.4	242.1	33.28	8.273				
7,100.0	6,853.7	7,117.9	6,957.6	27.2	23.6	118.41	-303.0	881.6	282.7	249.2	33.50	8.439				
7,200.0	6,900.3	7,239.7	7,028.1	27.6	24.1	120.80	-402.1	880.0	289.3	255.2	34.13	8.478				
7,300.0	6,935.0	7,364.4	7,083.0	28.2	24.8	122.58	-513.8	878.1	294.8	259.3	35.50	8.303				
7,400.0	6,957.2	7,491.2	7,119.5	28.9	25.7	123.75	-635.1	876.1	298.6	260.8	37.81	7.898				
7,500.0	6,966.4	7,608.6	7,136.0	29.7	26.8	124.40	-751.2	874.2	301.2	260.3	40.92	7.361				
7,600.0	6,966.4	7,719.9	7,145.1	30.6	27.9	125.74	-862.1	872.3	306.1	262.8	43.21	7.082				
7,700.0	6,966.0	7,826.8	7,146.0	31.6	29.1	125.92	-969.0	870.6	306.8	261.2	45.58	6.730				
7,800.0	6,965.6	7,926.8	7,146.0	32.7	30.3	125.97	-1,069.0	868.9	307.0	259.0	48.01	6.395				
7,900.0	6,965.2	8,026.8	7,146.0	33.9	31.6	126.02	-1,169.0	867.2	307.3	256.8	50.52	6.083				
8,000.0	6,964.8	8,126.8	7,146.0	35.2	32.9	126.08	-1,269.0	865.6	307.6	254.5	53.10	5.792				
8,100.0	6,964.4	8,226.8	7,146.0	36.5	34.3	126.13	-1,369.0	863.9	307.9	252.1	55.75	5.522				
8,200.0	6,964.1	8,326.8	7,146.0	37.8	35.8	126.18	-1,468.9	862.3	308.1	249.7	58.44	5.272				
8,300.0	6,963.7	8,426.8	7,146.0	39.2	37.3	126.23	-1,568.9	860.6	308.4	247.2	61.19	5.041				
8,400.0	6,963.3	8,526.8	7,146.0	40.7	38.8	126.28	-1,668.9	858.9	308.7	244.7	63.97	4.826				
8,500.0	6,962.9	8,626.8	7,146.0	42.2	40.4	126.33	-1,768.9	857.3	309.0	242.2	66.78	4.627				
8,600.0	6,962.5	8,726.8	7,146.0	43.7	42.0	126.38	-1,868.9	855.6	309.3	239.6	69.62	4.442				
8,700.0	6,962.1	8,826.8	7,146.0	45.3	43.6	126.43	-1,968.9	854.0	309.5	237.0	72.49	4.270				
8,800.0	6,961.8	8,926.8	7,146.0	46.9	45.3	126.48	-2,068.9	852.3	309.8	234.4	75.38	4.110				
8,900.0	6,961.4	9,026.8	7,146.0	48.5	46.9	126.53	-2,168.8	850.6	310.1	231.8	78.29	3.961				
9,000.0	6,961.0	9,126.8	7,146.0	50.1	48.6	126.58	-2,268.8	849.0	310.4	229.2	81.22	3.822				
9,100.0	6,960.6	9,226.8	7,146.0	51.8	50.3	126.63	-2,368.8	847.3	310.7	226.5	84.16	3.691				
9,200.0	6,960.2	9,326.8	7,146.0	53.5	52.1	126.68	-2,468.8	845.6	310.9	223.8	87.11	3.569				
9,300.0	6,959.8	9,426.8	7,146.0	55.1	53.8	126.73	-2,568.8	844.0	311.2	221.1	90.07	3.455				
9,400.0	6,959.5	9,526.8	7,146.0	56.8	55.5	126.78	-2,668.8	842.3	311.5	218.5	93.05	3.348				
9,500.0	6,959.1	9,626.8	7,146.0	58.6	57.3	126.83	-2,768.8	840.7	311.8	215.8	96.03	3.247				
9,600.0	6,958.7	9,726.8	7,146.0	60.3	59.1	126.88	-2,868.7	839.0	312.1	213.0	99.02	3.152				
9,700.0	6,958.3	9,826.8	7,146.0	62.0	60.8	126.93	-2,968.7	837.3	312.3	210.3	102.02	3.062				
9,800.0	6,957.9	9,926.8	7,146.0	63.8	62.6	126.98	-3,068.7	835.7	312.6	207.6	105.02	2.977				
9,900.0	6,957.5	10,026.8	7,146.0	65.5	64.4	127.03	-3,168.7	834.0	312.9	204.9	108.02	2.897				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-443 - Wellbore #1										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			
10,000.0	6,957.2	10,126.8	7,146.0	67.3	66.2	127.08	-3,268.7	832.4	313.2	202.2	111.03	2.821			
10,100.0	6,956.8	10,226.8	7,146.0	69.1	68.0	127.13	-3,368.7	830.7	313.5	199.4	114.05	2.749			
10,200.0	6,956.4	10,326.8	7,146.0	70.9	69.8	127.18	-3,468.7	829.0	313.8	196.7	117.07	2.680			
10,300.0	6,956.0	10,426.8	7,146.0	72.7	71.6	127.23	-3,568.6	827.4	314.0	194.0	120.09	2.615			
10,400.0	6,955.6	10,526.8	7,146.0	74.5	73.4	127.28	-3,668.6	825.7	314.3	191.2	123.11	2.553			
10,500.0	6,955.2	10,626.8	7,146.0	76.3	75.3	127.32	-3,768.6	824.1	314.6	188.5	126.13	2.494			
10,600.0	6,954.8	10,726.8	7,146.0	78.1	77.1	127.37	-3,868.6	822.4	314.9	185.7	129.16	2.438			
10,700.0	6,954.5	10,826.8	7,146.0	79.9	78.9	127.42	-3,968.6	820.7	315.2	183.0	132.18	2.384			
10,800.0	6,954.1	10,926.8	7,146.0	81.7	80.8	127.47	-4,068.6	819.1	315.5	180.2	135.21	2.333			
10,900.0	6,953.7	11,026.8	7,146.0	83.5	82.6	127.52	-4,168.6	817.4	315.7	177.5	138.24	2.284			
11,000.0	6,953.3	11,126.8	7,146.0	85.3	84.5	127.57	-4,268.5	815.8	316.0	174.8	141.27	2.237			
11,100.0	6,952.9	11,226.8	7,146.0	87.2	86.3	127.62	-4,368.5	814.1	316.3	172.0	144.30	2.192			
11,200.0	6,952.5	11,326.8	7,146.0	89.0	88.2	127.66	-4,468.5	812.4	316.6	169.3	147.32	2.149			
11,300.0	6,952.2	11,426.8	7,146.0	90.8	90.0	127.71	-4,568.5	810.8	316.9	166.5	150.35	2.108			
11,400.0	6,951.8	11,526.8	7,146.0	92.7	91.9	127.76	-4,668.5	809.1	317.2	163.8	153.38	2.068			
11,500.0	6,951.4	11,626.8	7,146.0	94.5	93.7	127.81	-4,768.5	807.5	317.5	161.0	156.41	2.030			
11,600.0	6,951.0	11,726.8	7,146.0	96.4	95.6	127.86	-4,868.5	805.8	317.7	158.3	159.43	1.993			
11,601.8	6,951.0	11,728.5	7,146.0	96.4	95.6	127.86	-4,870.2	805.8	317.7	158.3	159.49	1.992 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB -15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Sorin Natural Resources 2U-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.49°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2U-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Reference Site:</b>	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4686.0ft (RKB -15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2U-203	<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 (01-28-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB -15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Sorin Natural Resources 2U-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.49°

