

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Sorin Natural Resources 2R-403

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

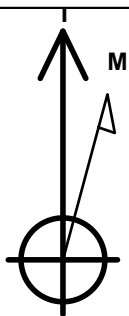
Ground Elevation: 4671.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1370685.44	3211868.07	40.348440	-104.739850	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500' FSL & 1162' FEL	7151.0	-4874.4	184.0	



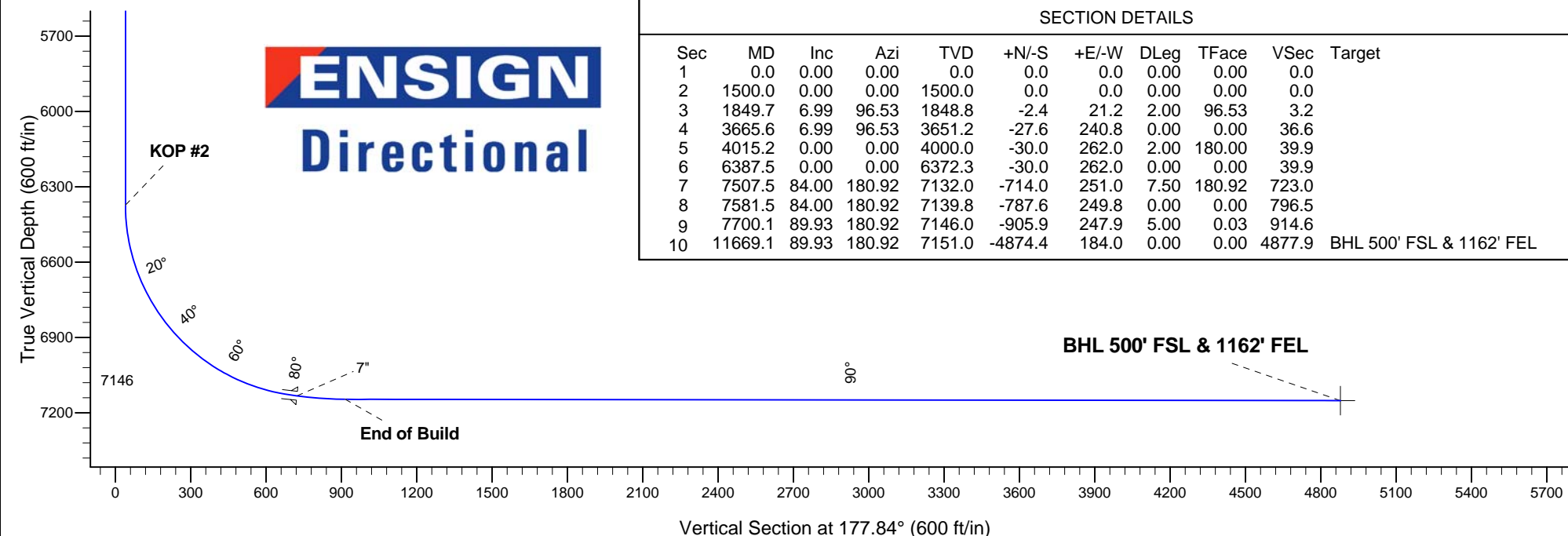
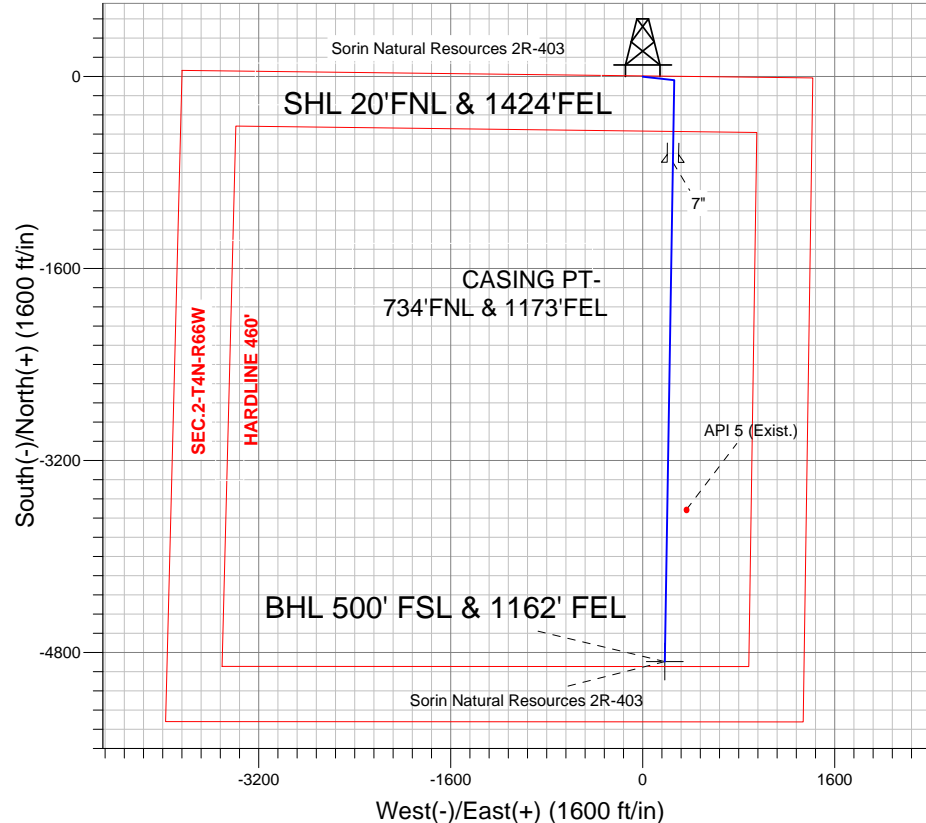
Azimuths to True North
Magnetic North: 8.63°

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

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6372.3	6387.5	KOP #2
7146.0	7700.1	End of Build

Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W
Sorin Natural Resources 2R-403
Plan #1 (01-28-13)
11:20, January 29 2013





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T4N-R66W

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

Sorin Natural Resources 2R-403

Wellbore #1

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

Standard Planning Report

29 January, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (01-28-13)		

Project	SEC.2-T4N-R66W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W											
Site Position:						Northing:			1,370,685.98 ft			Latitude:			40.348440		
From:			Lat/Long			Easting:			3,211,929.38 ft			Longitude:			-104.739630		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.49 °		

Well	Sorin Natural Resources 2R-403					
Well Position	+N-S	0.0 ft	Northing:	1,370,685.44 ft	Latitude:	40.348440
	+E-W	-61.3 ft	Easting:	3,211,868.07 ft	Longitude:	-104.739850
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,671.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/28/2013	8.63	66.96	52,937

Design	Plan #1 (01-28-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	177.84

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,849.7	6.99	96.53	1,848.8	-2.4	21.2	2.00	2.00	0.00	96.53	
3,665.6	6.99	96.53	3,651.2	-27.6	240.8	0.00	0.00	0.00	0.00	
4,015.2	0.00	0.00	4,000.0	-30.0	262.0	2.00	-2.00	0.00	180.00	
6,387.5	0.00	0.00	6,372.3	-30.0	262.0	0.00	0.00	0.00	0.00	
7,507.5	84.00	180.92	7,132.0	-714.0	251.0	7.50	7.50	0.00	180.92	
7,581.5	84.00	180.92	7,139.8	-787.6	249.8	0.00	0.00	0.00	0.00	
7,700.1	89.93	180.92	7,146.0	-905.9	247.9	5.00	5.00	0.00	0.03	
11,669.1	89.93	180.92	7,151.0	-4,874.4	184.0	0.00	0.00	0.00	0.00	BHL 500' FSL & 11°

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Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,520.0	0.40	96.53	1,520.0	0.0	0.1	0.0	2.00	2.00	0.00
1,560.0	1.20	96.53	1,560.0	-0.1	0.6	0.1	2.00	2.00	0.00
1,600.0	2.00	96.53	1,600.0	-0.2	1.7	0.3	2.00	2.00	0.00
1,640.0	2.80	96.53	1,639.9	-0.4	3.4	0.5	2.00	2.00	0.00
1,680.0	3.60	96.53	1,679.9	-0.6	5.6	0.9	2.00	2.00	0.00
1,720.0	4.40	96.53	1,719.8	-1.0	8.4	1.3	2.00	2.00	0.00
1,760.0	5.20	96.53	1,759.6	-1.3	11.7	1.8	2.00	2.00	0.00
1,800.0	6.00	96.53	1,799.5	-1.8	15.6	2.4	2.00	2.00	0.00
1,840.0	6.80	96.53	1,839.2	-2.3	20.0	3.0	2.00	2.00	0.00
1,849.7	6.99	96.53	1,848.8	-2.4	21.2	3.2	2.00	2.00	0.00
1,880.0	6.99	96.53	1,878.9	-2.8	24.8	3.8	0.00	0.00	0.00
1,920.0	6.99	96.53	1,918.6	-3.4	29.7	4.5	0.00	0.00	0.00
1,960.0	6.99	96.53	1,958.3	-4.0	34.5	5.3	0.00	0.00	0.00

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Wellbore:	Wellbore #1		
Design:	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)
2,000.0	6.99	96.53	1,998.0	-4.5	39.4	6.0	0.00	0.00	0.00
2,040.0	6.99	96.53	2,037.7	-5.1	44.2	6.7	0.00	0.00	0.00
2,080.0	6.99	96.53	2,077.4	-5.6	49.0	7.5	0.00	0.00	0.00
2,120.0	6.99	96.53	2,117.1	-6.2	53.9	8.2	0.00	0.00	0.00
2,160.0	6.99	96.53	2,156.8	-6.7	58.7	8.9	0.00	0.00	0.00
2,200.0	6.99	96.53	2,196.5	-7.3	63.6	9.7	0.00	0.00	0.00
2,240.0	6.99	96.53	2,236.2	-7.8	68.4	10.4	0.00	0.00	0.00
2,280.0	6.99	96.53	2,275.9	-8.4	73.2	11.1	0.00	0.00	0.00
2,320.0	6.99	96.53	2,315.6	-8.9	78.1	11.9	0.00	0.00	0.00
2,360.0	6.99	96.53	2,355.3	-9.5	82.9	12.6	0.00	0.00	0.00
2,400.0	6.99	96.53	2,395.0	-10.0	87.7	13.3	0.00	0.00	0.00
2,440.0	6.99	96.53	2,434.7	-10.6	92.6	14.1	0.00	0.00	0.00
2,480.0	6.99	96.53	2,474.4	-11.2	97.4	14.8	0.00	0.00	0.00
2,520.0	6.99	96.53	2,514.1	-11.7	102.3	15.6	0.00	0.00	0.00
2,560.0	6.99	96.53	2,553.8	-12.3	107.1	16.3	0.00	0.00	0.00
2,600.0	6.99	96.53	2,593.6	-12.8	111.9	17.0	0.00	0.00	0.00
2,640.0	6.99	96.53	2,633.3	-13.4	116.8	17.8	0.00	0.00	0.00
2,680.0	6.99	96.53	2,673.0	-13.9	121.6	18.5	0.00	0.00	0.00
2,720.0	6.99	96.53	2,712.7	-14.5	126.4	19.2	0.00	0.00	0.00
2,760.0	6.99	96.53	2,752.4	-15.0	131.3	20.0	0.00	0.00	0.00
2,800.0	6.99	96.53	2,792.1	-15.6	136.1	20.7	0.00	0.00	0.00
2,840.0	6.99	96.53	2,831.8	-16.1	141.0	21.4	0.00	0.00	0.00
2,880.0	6.99	96.53	2,871.5	-16.7	145.8	22.2	0.00	0.00	0.00
2,920.0	6.99	96.53	2,911.2	-17.2	150.6	22.9	0.00	0.00	0.00
2,960.0	6.99	96.53	2,950.9	-17.8	155.5	23.7	0.00	0.00	0.00
3,000.0	6.99	96.53	2,990.6	-18.4	160.3	24.4	0.00	0.00	0.00
3,040.0	6.99	96.53	3,030.3	-18.9	165.2	25.1	0.00	0.00	0.00
3,080.0	6.99	96.53	3,070.0	-19.5	170.0	25.9	0.00	0.00	0.00
3,120.0	6.99	96.53	3,109.7	-20.0	174.8	26.6	0.00	0.00	0.00
3,160.0	6.99	96.53	3,149.4	-20.6	179.7	27.3	0.00	0.00	0.00
3,200.0	6.99	96.53	3,189.1	-21.1	184.5	28.1	0.00	0.00	0.00
3,240.0	6.99	96.53	3,228.8	-21.7	189.3	28.8	0.00	0.00	0.00
3,280.0	6.99	96.53	3,268.5	-22.2	194.2	29.5	0.00	0.00	0.00
3,320.0	6.99	96.53	3,308.2	-22.8	199.0	30.3	0.00	0.00	0.00
3,360.0	6.99	96.53	3,347.9	-23.3	203.9	31.0	0.00	0.00	0.00
3,400.0	6.99	96.53	3,387.6	-23.9	208.7	31.8	0.00	0.00	0.00
3,440.0	6.99	96.53	3,427.3	-24.5	213.5	32.5	0.00	0.00	0.00
3,480.0	6.99	96.53	3,467.0	-25.0	218.4	33.2	0.00	0.00	0.00
3,520.0	6.99	96.53	3,506.7	-25.6	223.2	34.0	0.00	0.00	0.00
3,560.0	6.99	96.53	3,546.4	-26.1	228.1	34.7	0.00	0.00	0.00
3,600.0	6.99	96.53	3,586.1	-26.7	232.9	35.4	0.00	0.00	0.00
3,640.0	6.99	96.53	3,625.8	-27.2	237.7	36.2	0.00	0.00	0.00
3,665.6	6.99	96.53	3,651.2	-27.6	240.8	36.6	0.00	0.00	0.00
3,680.0	6.70	96.53	3,665.5	-27.8	242.5	36.9	2.00	-2.00	0.00
3,720.0	5.90	96.53	3,705.3	-28.3	246.9	37.6	2.00	-2.00	0.00
3,760.0	5.10	96.53	3,745.1	-28.7	250.7	38.1	2.00	-2.00	0.00
3,800.0	4.30	96.53	3,785.0	-29.1	254.0	38.6	2.00	-2.00	0.00
3,840.0	3.50	96.53	3,824.9	-29.4	256.7	39.1	2.00	-2.00	0.00
3,880.0	2.70	96.53	3,864.8	-29.6	258.8	39.4	2.00	-2.00	0.00
3,920.0	1.90	96.53	3,904.8	-29.8	260.4	39.6	2.00	-2.00	0.00
3,960.0	1.10	96.53	3,944.8	-29.9	261.5	39.8	2.00	-2.00	0.00
4,000.0	0.30	96.53	3,984.8	-30.0	262.0	39.9	2.00	-2.00	0.00

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Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
4,015.2	0.00	0.00	4,000.0	-30.0	262.0	39.9	2.00	-2.00	0.00
4,040.0	0.00	0.00	4,024.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,080.0	0.00	0.00	4,064.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,120.0	0.00	0.00	4,104.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,160.0	0.00	0.00	4,144.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,200.0	0.00	0.00	4,184.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,240.0	0.00	0.00	4,224.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,280.0	0.00	0.00	4,264.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,320.0	0.00	0.00	4,304.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,360.0	0.00	0.00	4,344.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,400.0	0.00	0.00	4,384.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,440.0	0.00	0.00	4,424.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,480.0	0.00	0.00	4,464.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,520.0	0.00	0.00	4,504.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,560.0	0.00	0.00	4,544.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,600.0	0.00	0.00	4,584.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,640.0	0.00	0.00	4,624.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,680.0	0.00	0.00	4,664.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,720.0	0.00	0.00	4,704.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,760.0	0.00	0.00	4,744.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,800.0	0.00	0.00	4,784.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,840.0	0.00	0.00	4,824.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,880.0	0.00	0.00	4,864.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,920.0	0.00	0.00	4,904.8	-30.0	262.0	39.9	0.00	0.00	0.00
4,960.0	0.00	0.00	4,944.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,000.0	0.00	0.00	4,984.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,040.0	0.00	0.00	5,024.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,080.0	0.00	0.00	5,064.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,120.0	0.00	0.00	5,104.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,160.0	0.00	0.00	5,144.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,200.0	0.00	0.00	5,184.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,240.0	0.00	0.00	5,224.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,280.0	0.00	0.00	5,264.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,320.0	0.00	0.00	5,304.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,360.0	0.00	0.00	5,344.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,384.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,440.0	0.00	0.00	5,424.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,480.0	0.00	0.00	5,464.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,520.0	0.00	0.00	5,504.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,560.0	0.00	0.00	5,544.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,584.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,640.0	0.00	0.00	5,624.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,680.0	0.00	0.00	5,664.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,720.0	0.00	0.00	5,704.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,760.0	0.00	0.00	5,744.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,784.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,840.0	0.00	0.00	5,824.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,880.0	0.00	0.00	5,864.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,920.0	0.00	0.00	5,904.8	-30.0	262.0	39.9	0.00	0.00	0.00
5,960.0	0.00	0.00	5,944.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,984.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,040.0	0.00	0.00	6,024.8	-30.0	262.0	39.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
6,080.0	0.00	0.00	6,064.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,120.0	0.00	0.00	6,104.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,160.0	0.00	0.00	6,144.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,184.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,240.0	0.00	0.00	6,224.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,280.0	0.00	0.00	6,264.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,320.0	0.00	0.00	6,304.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,360.0	0.00	0.00	6,344.8	-30.0	262.0	39.9	0.00	0.00	0.00
6,387.5	0.00	0.00	6,372.3	-30.0	262.0	39.9	0.00	0.00	0.00
6,400.0	0.94	180.92	6,384.8	-30.1	262.0	40.0	7.50	7.50	0.00
6,440.0	3.94	180.92	6,424.7	-31.8	262.0	41.7	7.50	7.50	0.00
6,480.0	6.94	180.92	6,464.5	-35.6	261.9	45.4	7.50	7.50	0.00
6,520.0	9.94	180.92	6,504.1	-41.5	261.8	51.3	7.50	7.50	0.00
6,560.0	12.94	180.92	6,543.3	-49.4	261.7	59.2	7.50	7.50	0.00
6,600.0	15.94	180.92	6,582.0	-59.4	261.5	69.2	7.50	7.50	0.00
6,640.0	18.94	180.92	6,620.2	-71.3	261.3	81.2	7.50	7.50	0.00
6,680.0	21.94	180.92	6,657.7	-85.3	261.1	95.1	7.50	7.50	0.00
6,720.0	24.94	180.92	6,694.4	-101.2	260.9	111.0	7.50	7.50	0.00
6,760.0	27.94	180.92	6,730.2	-119.0	260.6	128.8	7.50	7.50	0.00
6,800.0	30.94	180.92	6,765.0	-138.7	260.3	148.4	7.50	7.50	0.00
6,840.0	33.94	180.92	6,798.8	-160.1	259.9	169.8	7.50	7.50	0.00
6,880.0	36.94	180.92	6,831.3	-183.3	259.5	193.0	7.50	7.50	0.00
6,920.0	39.94	180.92	6,862.7	-208.2	259.1	217.8	7.50	7.50	0.00
6,960.0	42.94	180.92	6,892.7	-234.6	258.7	244.2	7.50	7.50	0.00
7,000.0	45.94	180.92	6,921.2	-262.6	258.3	272.2	7.50	7.50	0.00
7,040.0	48.94	180.92	6,948.3	-292.1	257.8	301.6	7.50	7.50	0.00
7,080.0	51.94	180.92	6,973.7	-322.9	257.3	332.4	7.50	7.50	0.00
7,120.0	54.94	180.92	6,997.6	-355.0	256.8	364.5	7.50	7.50	0.00
7,160.0	57.94	180.92	7,019.7	-388.4	256.2	397.8	7.50	7.50	0.00
7,200.0	60.94	180.92	7,040.0	-422.8	255.7	432.1	7.50	7.50	0.00
7,240.0	63.94	180.92	7,058.5	-458.2	255.1	467.5	7.50	7.50	0.00
7,280.0	66.94	180.92	7,075.1	-494.6	254.5	503.9	7.50	7.50	0.00
7,320.0	69.94	180.92	7,089.8	-531.8	253.9	541.0	7.50	7.50	0.00
7,360.0	72.94	180.92	7,102.6	-569.7	253.3	578.9	7.50	7.50	0.00
7,400.0	75.94	180.92	7,113.3	-608.2	252.7	617.3	7.50	7.50	0.00
7,440.0	78.94	180.92	7,122.0	-647.3	252.1	656.3	7.50	7.50	0.00
7,480.0	81.94	180.92	7,128.6	-686.7	251.5	695.7	7.50	7.50	0.00
7,507.5	84.00	180.92	7,132.0	-714.0	251.0	723.0	7.50	7.50	0.00
7,520.0	84.00	180.92	7,133.3	-726.4	250.8	735.4	0.00	0.00	0.00
7,560.0	84.00	180.92	7,137.5	-766.2	250.2	775.1	0.00	0.00	0.00
7,581.5	84.00	180.92	7,139.8	-787.6	249.8	796.5	0.00	0.00	0.00
7,600.0	84.92	180.92	7,141.5	-806.0	249.5	814.8	5.00	5.00	0.00
7,640.0	86.92	180.92	7,144.4	-845.9	248.9	854.7	5.00	5.00	0.00
7,680.0	88.92	180.92	7,145.8	-885.9	248.3	894.6	5.00	5.00	0.00
7,700.1	89.93	180.92	7,146.0	-905.9	247.9	914.6	5.00	5.00	0.00
7,720.0	89.93	180.92	7,146.1	-925.8	247.6	934.5	0.00	0.00	0.00
7,760.0	89.93	180.92	7,146.1	-965.8	247.0	974.5	0.00	0.00	0.00
7,800.0	89.93	180.92	7,146.2	-1,005.8	246.3	1,014.4	0.00	0.00	0.00
7,840.0	89.93	180.92	7,146.2	-1,045.8	245.7	1,054.4	0.00	0.00	0.00
7,880.0	89.93	180.92	7,146.3	-1,085.8	245.0	1,094.3	0.00	0.00	0.00
7,920.0	89.93	180.92	7,146.3	-1,125.8	244.4	1,134.2	0.00	0.00	0.00
7,960.0	89.93	180.92	7,146.4	-1,165.8	243.7	1,174.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
8,000.0	89.93	180.92	7,146.4	-1,205.8	243.1	1,214.1	0.00	0.00	0.00
8,040.0	89.93	180.92	7,146.5	-1,245.8	242.5	1,254.1	0.00	0.00	0.00
8,080.0	89.93	180.92	7,146.5	-1,285.8	241.8	1,294.0	0.00	0.00	0.00
8,120.0	89.93	180.92	7,146.6	-1,325.8	241.2	1,333.9	0.00	0.00	0.00
8,160.0	89.93	180.92	7,146.6	-1,365.8	240.5	1,373.9	0.00	0.00	0.00
8,200.0	89.93	180.92	7,146.7	-1,405.8	239.9	1,413.8	0.00	0.00	0.00
8,240.0	89.93	180.92	7,146.7	-1,445.8	239.2	1,453.8	0.00	0.00	0.00
8,280.0	89.93	180.92	7,146.8	-1,485.8	238.6	1,493.7	0.00	0.00	0.00
8,320.0	89.93	180.92	7,146.8	-1,525.8	237.9	1,533.7	0.00	0.00	0.00
8,360.0	89.93	180.92	7,146.9	-1,565.8	237.3	1,573.6	0.00	0.00	0.00
8,400.0	89.93	180.92	7,146.9	-1,605.8	236.7	1,613.5	0.00	0.00	0.00
8,440.0	89.93	180.92	7,147.0	-1,645.8	236.0	1,653.5	0.00	0.00	0.00
8,480.0	89.93	180.92	7,147.0	-1,685.7	235.4	1,693.4	0.00	0.00	0.00
8,520.0	89.93	180.92	7,147.1	-1,725.7	234.7	1,733.4	0.00	0.00	0.00
8,560.0	89.93	180.92	7,147.1	-1,765.7	234.1	1,773.3	0.00	0.00	0.00
8,600.0	89.93	180.92	7,147.2	-1,805.7	233.4	1,813.3	0.00	0.00	0.00
8,640.0	89.93	180.92	7,147.2	-1,845.7	232.8	1,853.2	0.00	0.00	0.00
8,680.0	89.93	180.92	7,147.3	-1,885.7	232.1	1,893.1	0.00	0.00	0.00
8,720.0	89.93	180.92	7,147.3	-1,925.7	231.5	1,933.1	0.00	0.00	0.00
8,760.0	89.93	180.92	7,147.4	-1,965.7	230.9	1,973.0	0.00	0.00	0.00
8,800.0	89.93	180.92	7,147.4	-2,005.7	230.2	2,013.0	0.00	0.00	0.00
8,840.0	89.93	180.92	7,147.5	-2,045.7	229.6	2,052.9	0.00	0.00	0.00
8,880.0	89.93	180.92	7,147.5	-2,085.7	228.9	2,092.8	0.00	0.00	0.00
8,920.0	89.93	180.92	7,147.6	-2,125.7	228.3	2,132.8	0.00	0.00	0.00
8,960.0	89.93	180.92	7,147.6	-2,165.7	227.6	2,172.7	0.00	0.00	0.00
9,000.0	89.93	180.92	7,147.7	-2,205.7	227.0	2,212.7	0.00	0.00	0.00
9,040.0	89.93	180.92	7,147.7	-2,245.7	226.3	2,252.6	0.00	0.00	0.00
9,080.0	89.93	180.92	7,147.8	-2,285.7	225.7	2,292.6	0.00	0.00	0.00
9,120.0	89.93	180.92	7,147.8	-2,325.7	225.1	2,332.5	0.00	0.00	0.00
9,160.0	89.93	180.92	7,147.9	-2,365.7	224.4	2,372.4	0.00	0.00	0.00
9,200.0	89.93	180.92	7,147.9	-2,405.7	223.8	2,412.4	0.00	0.00	0.00
9,240.0	89.93	180.92	7,148.0	-2,445.7	223.1	2,452.3	0.00	0.00	0.00
9,280.0	89.93	180.92	7,148.0	-2,485.6	222.5	2,492.3	0.00	0.00	0.00
9,320.0	89.93	180.92	7,148.1	-2,525.6	221.8	2,532.2	0.00	0.00	0.00
9,360.0	89.93	180.92	7,148.1	-2,565.6	221.2	2,572.2	0.00	0.00	0.00
9,400.0	89.93	180.92	7,148.2	-2,605.6	220.5	2,612.1	0.00	0.00	0.00
9,440.0	89.93	180.92	7,148.2	-2,645.6	219.9	2,652.0	0.00	0.00	0.00
9,480.0	89.93	180.92	7,148.3	-2,685.6	219.3	2,692.0	0.00	0.00	0.00
9,520.0	89.93	180.92	7,148.3	-2,725.6	218.6	2,731.9	0.00	0.00	0.00
9,560.0	89.93	180.92	7,148.4	-2,765.6	218.0	2,771.9	0.00	0.00	0.00
9,600.0	89.93	180.92	7,148.4	-2,805.6	217.3	2,811.8	0.00	0.00	0.00
9,640.0	89.93	180.92	7,148.5	-2,845.6	216.7	2,851.7	0.00	0.00	0.00
9,680.0	89.93	180.92	7,148.5	-2,885.6	216.0	2,891.7	0.00	0.00	0.00
9,720.0	89.93	180.92	7,148.6	-2,925.6	215.4	2,931.6	0.00	0.00	0.00
9,760.0	89.93	180.92	7,148.6	-2,965.6	214.8	2,971.6	0.00	0.00	0.00
9,800.0	89.93	180.92	7,148.7	-3,005.6	214.1	3,011.5	0.00	0.00	0.00
9,840.0	89.93	180.92	7,148.7	-3,045.6	213.5	3,051.5	0.00	0.00	0.00
9,880.0	89.93	180.92	7,148.8	-3,085.6	212.8	3,091.4	0.00	0.00	0.00
9,920.0	89.93	180.92	7,148.8	-3,125.6	212.2	3,131.3	0.00	0.00	0.00
9,960.0	89.93	180.92	7,148.9	-3,165.6	211.5	3,171.3	0.00	0.00	0.00
10,000.0	89.93	180.92	7,148.9	-3,205.6	210.9	3,211.2	0.00	0.00	0.00
10,040.0	89.93	180.92	7,149.0	-3,245.5	210.2	3,251.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
10,080.0	89.93	180.92	7,149.0	-3,285.5	209.6	3,291.1	0.00	0.00	0.00
10,120.0	89.93	180.92	7,149.1	-3,325.5	209.0	3,331.1	0.00	0.00	0.00
10,160.0	89.93	180.92	7,149.1	-3,365.5	208.3	3,371.0	0.00	0.00	0.00
10,200.0	89.93	180.92	7,149.2	-3,405.5	207.7	3,410.9	0.00	0.00	0.00
10,240.0	89.93	180.92	7,149.2	-3,445.5	207.0	3,450.9	0.00	0.00	0.00
10,280.0	89.93	180.92	7,149.3	-3,485.5	206.4	3,490.8	0.00	0.00	0.00
10,320.0	89.93	180.92	7,149.3	-3,525.5	205.7	3,530.8	0.00	0.00	0.00
10,360.0	89.93	180.92	7,149.4	-3,565.5	205.1	3,570.7	0.00	0.00	0.00
10,400.0	89.93	180.92	7,149.4	-3,605.5	204.4	3,610.6	0.00	0.00	0.00
10,440.0	89.93	180.92	7,149.5	-3,645.5	203.8	3,650.6	0.00	0.00	0.00
10,480.0	89.93	180.92	7,149.5	-3,685.5	203.2	3,690.5	0.00	0.00	0.00
10,520.0	89.93	180.92	7,149.6	-3,725.5	202.5	3,730.5	0.00	0.00	0.00
10,560.0	89.93	180.92	7,149.6	-3,765.5	201.9	3,770.4	0.00	0.00	0.00
10,600.0	89.93	180.92	7,149.7	-3,805.5	201.2	3,810.4	0.00	0.00	0.00
10,640.0	89.93	180.92	7,149.7	-3,845.5	200.6	3,850.3	0.00	0.00	0.00
10,680.0	89.93	180.92	7,149.8	-3,885.5	199.9	3,890.2	0.00	0.00	0.00
10,720.0	89.93	180.92	7,149.8	-3,925.5	199.3	3,930.2	0.00	0.00	0.00
10,760.0	89.93	180.92	7,149.9	-3,965.5	198.6	3,970.1	0.00	0.00	0.00
10,800.0	89.93	180.92	7,149.9	-4,005.4	198.0	4,010.1	0.00	0.00	0.00
10,840.0	89.93	180.92	7,150.0	-4,045.4	197.4	4,050.0	0.00	0.00	0.00
10,880.0	89.93	180.92	7,150.0	-4,085.4	196.7	4,089.9	0.00	0.00	0.00
10,920.0	89.93	180.92	7,150.1	-4,125.4	196.1	4,129.9	0.00	0.00	0.00
10,960.0	89.93	180.92	7,150.1	-4,165.4	195.4	4,169.8	0.00	0.00	0.00
11,000.0	89.93	180.92	7,150.2	-4,205.4	194.8	4,209.8	0.00	0.00	0.00
11,040.0	89.93	180.92	7,150.2	-4,245.4	194.1	4,249.7	0.00	0.00	0.00
11,080.0	89.93	180.92	7,150.3	-4,285.4	193.5	4,289.7	0.00	0.00	0.00
11,120.0	89.93	180.92	7,150.3	-4,325.4	192.8	4,329.6	0.00	0.00	0.00
11,160.0	89.93	180.92	7,150.4	-4,365.4	192.2	4,369.5	0.00	0.00	0.00
11,200.0	89.93	180.92	7,150.4	-4,405.4	191.6	4,409.5	0.00	0.00	0.00
11,240.0	89.93	180.92	7,150.5	-4,445.4	190.9	4,449.4	0.00	0.00	0.00
11,280.0	89.93	180.92	7,150.5	-4,485.4	190.3	4,489.4	0.00	0.00	0.00
11,320.0	89.93	180.92	7,150.6	-4,525.4	189.6	4,529.3	0.00	0.00	0.00
11,360.0	89.93	180.92	7,150.6	-4,565.4	189.0	4,569.3	0.00	0.00	0.00
11,400.0	89.93	180.92	7,150.7	-4,605.4	188.3	4,609.2	0.00	0.00	0.00
11,440.0	89.93	180.92	7,150.7	-4,645.4	187.7	4,649.1	0.00	0.00	0.00
11,480.0	89.93	180.92	7,150.8	-4,685.4	187.0	4,689.1	0.00	0.00	0.00
11,520.0	89.93	180.92	7,150.8	-4,725.4	186.4	4,729.0	0.00	0.00	0.00
11,560.0	89.93	180.92	7,150.9	-4,765.3	185.8	4,769.0	0.00	0.00	0.00
11,600.0	89.93	180.92	7,150.9	-4,805.3	185.1	4,808.9	0.00	0.00	0.00
11,640.0	89.93	180.92	7,151.0	-4,845.3	184.5	4,848.8	0.00	0.00	0.00
11,669.1	89.93	180.92	7,151.0	-4,874.4	184.0	4,877.9	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,507.5	7,132.0	7"	7	8-3/4

Database:	Landmark	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Project:	SEC.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	North Reference:	True
Well:	Sorin Natural Resources 2R-403	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (01-28-13)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP #1
6,387.5	6,372.3	-30.0	262.0	KOP #2
7,700.1	7,146.0	-906.0	247.9	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 2R-403

Wellbore #1

Plan #1 (01-28-13)

Anticollision Report

29 January, 2013

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	Offset Datum

Offset Design														Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN														Offset Well Error:	0.0 ft
Reference															
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		
1,600.0	1,600.0	1,635.0	1,635.0	3.5	32.7	77.72	-3,606.7	365.2	3,624.7	3,588.6	36.17	100.219			
1,700.0	1,699.8	1,734.8	1,734.8	3.7	34.7	77.82	-3,606.7	365.2	3,623.6	3,585.2	38.36	94.457			
1,800.0	1,799.5	1,834.5	1,834.5	3.9	36.7	77.99	-3,606.7	365.2	3,621.8	3,581.2	40.56	89.293			
1,849.7	1,848.8	1,883.8	1,883.8	4.0	37.7	78.10	-3,606.7	365.2	3,620.6	3,579.0	41.65	86.920			
1,900.0	1,898.8	1,933.8	1,933.8	4.1	38.7	78.20	-3,606.7	365.2	3,619.3	3,576.6	42.77	84.624			
2,000.0	1,998.0	2,033.0	2,033.0	4.4	40.7	78.38	-3,606.7	365.2	3,616.9	3,571.9	44.99	80.386			
2,100.0	2,097.3	2,132.3	2,132.3	4.6	42.6	78.57	-3,606.7	365.2	3,614.4	3,567.2	47.23	76.532			
2,200.0	2,196.5	2,231.5	2,231.5	4.9	44.6	78.76	-3,606.7	365.2	3,612.0	3,562.5	49.47	73.015			
2,300.0	2,295.8	2,330.8	2,330.8	5.1	46.6	78.95	-3,606.7	365.2	3,609.6	3,557.9	51.72	69.793			
2,400.0	2,395.0	2,430.0	2,430.0	5.4	48.6	79.14	-3,606.7	365.2	3,607.3	3,553.3	53.97	66.834			
2,500.0	2,494.3	2,529.3	2,529.3	5.7	50.6	79.32	-3,606.7	365.2	3,605.0	3,548.8	56.23	64.107			
2,600.0	2,593.6	2,628.6	2,628.6	6.0	52.6	79.51	-3,606.7	365.2	3,602.7	3,544.2	58.50	61.586			
2,700.0	2,692.8	2,727.8	2,727.8	6.2	54.6	79.70	-3,606.7	365.2	3,600.5	3,539.8	60.77	59.250			
2,800.0	2,792.1	2,827.1	2,827.1	6.5	56.5	79.89	-3,606.7	365.2	3,598.4	3,535.3	63.04	57.080			
2,900.0	2,891.3	2,926.3	2,926.3	6.8	58.5	80.08	-3,606.7	365.2	3,596.2	3,530.9	65.32	55.058			
3,000.0	2,990.6	3,025.6	3,025.6	7.1	60.5	80.27	-3,606.7	365.2	3,594.1	3,526.5	67.60	53.172			
3,100.0	3,089.8	3,124.8	3,124.8	7.4	62.5	80.46	-3,606.7	365.2	3,592.1	3,522.2	69.88	51.407			
3,200.0	3,189.1	3,224.1	3,224.1	7.7	64.5	80.65	-3,606.7	365.2	3,590.1	3,517.9	72.16	49.752			
3,300.0	3,288.3	3,323.3	3,323.3	8.0	66.5	80.84	-3,606.7	365.2	3,588.1	3,513.7	74.44	48.199			
3,400.0	3,387.6	3,422.6	3,422.6	8.3	68.5	81.03	-3,606.7	365.2	3,586.2	3,509.4	76.73	46.737			
3,500.0	3,486.9	3,521.9	3,521.9	8.6	70.4	81.22	-3,606.7	365.2	3,584.3	3,505.3	79.02	45.360			
3,600.0	3,586.1	3,621.1	3,621.1	8.9	72.4	81.41	-3,606.7	365.2	3,582.4	3,501.1	81.31	44.060			
3,665.6	3,651.2	3,686.2	3,686.2	9.1	73.7	81.54	-3,606.7	365.2	3,581.2	3,498.4	82.81	43.246			
3,700.0	3,685.4	3,720.4	3,720.4	9.2	74.4	81.59	-3,606.7	365.2	3,580.6	3,497.1	83.59	42.836			
3,800.0	3,785.0	3,820.0	3,820.0	9.5	76.4	81.71	-3,606.7	365.2	3,579.3	3,493.5	85.81	41.711			
3,900.0	3,884.8	3,919.8	3,919.8	9.7	78.4	81.79	-3,606.7	365.2	3,578.5	3,490.5	88.02	40.657			
4,000.0	3,984.8	4,019.8	4,019.8	9.8	80.4	81.81	-3,606.7	365.2	3,578.1	3,487.9	90.20	39.670			
4,015.2	4,000.0	4,035.0	4,035.0	9.9	80.7	178.35	-3,606.7	365.2	3,578.1	3,487.6	90.52	39.528			
4,100.0	4,084.8	4,119.8	4,119.8	10.0	82.4	178.35	-3,606.7	365.2	3,578.1	3,485.8	92.37	38.739			
4,200.0	4,184.8	4,219.8	4,219.8	10.2	84.4	178.35	-3,606.7	365.2	3,578.1	3,483.6	94.56	37.842			
4,300.0	4,284.8	4,319.8	4,319.8	10.4	86.4	178.35	-3,606.7	365.2	3,578.1	3,481.4	96.75	36.984			
4,400.0	4,384.8	4,419.8	4,419.8	10.6	88.4	178.35	-3,606.7	365.2	3,578.1	3,479.2	98.94	36.165			
4,500.0	4,484.8	4,519.8	4,519.8	10.8	90.4	178.35	-3,606.7	365.2	3,578.1	3,477.0	101.13	35.380			
4,600.0	4,584.8	4,619.8	4,619.8	11.0	92.4	178.35	-3,606.7	365.2	3,578.1	3,474.8	103.33	34.628			
4,700.0	4,684.8	4,719.8	4,719.8	11.2	94.4	178.35	-3,606.7	365.2	3,578.1	3,472.6	105.53	33.907			
4,800.0	4,784.8	4,819.8	4,819.8	11.4	96.4	178.35	-3,606.7	365.2	3,578.1	3,470.4	107.72	33.216			
4,900.0	4,884.8	4,919.8	4,919.8	11.6	98.4	178.35	-3,606.7	365.2	3,578.1	3,468.2	109.92	32.551			
5,000.0	4,984.8	5,019.8	5,019.8	11.8	100.4	178.35	-3,606.7	365.2	3,578.1	3,466.0	112.12	31.913			
5,100.0	5,084.8	5,119.8	5,119.8	12.0	102.4	178.35	-3,606.7	365.2	3,578.1	3,463.8	114.32	31.299			
5,200.0	5,184.8	5,219.8	5,219.8	12.2	104.4	178.35	-3,606.7	365.2	3,578.1	3,461.6	116.52	30.707			
5,300.0	5,284.8	5,319.8	5,319.8	12.4	106.4	178.35	-3,606.7	365.2	3,578.1	3,459.4	118.73	30.138			
5,400.0	5,384.8	5,419.8	5,419.8	12.6	108.4	178.35	-3,606.7	365.2	3,578.1	3,457.2	120.93	29.589			
5,500.0	5,484.8	5,519.8	5,519.8	12.8	110.4	178.35	-3,606.7	365.2	3,578.1	3,455.0	123.13	29.059			
5,600.0	5,584.8	5,619.8	5,619.8	13.0	112.4	178.35	-3,606.7	365.2	3,578.1	3,452.8	125.34	28.548			
5,700.0	5,684.8	5,719.8	5,719.8	13.2	114.4	178.35	-3,606.7	365.2	3,578.1	3,450.6	127.54	28.055			
5,800.0	5,784.8	5,819.8	5,819.8	13.4	116.4	178.35	-3,606.7	365.2	3,578.1	3,448.4	129.75	27.578			
5,900.0	5,884.8	5,919.8	5,919.8	13.6	118.4	178.35	-3,606.7	365.2	3,578.1	3,446.2	131.95	27.117			
6,000.0	5,984.8	6,019.8	6,019.8	13.8	120.4	178.35	-3,606.7	365.2	3,578.1	3,444.0	134.16	26.671			
6,100.0	6,084.8	6,119.8	6,119.8	14.0	122.4	178.35	-3,606.7	365.2	3,578.1	3,441.8	136.37	26.239			
6,200.0	6,184.8	6,219.8	6,219.8	14.2	124.4	178.35	-3,606.7	365.2	3,578.1	3,439.6	138.57	25.821			
6,300.0	6,284.8	6,319.8	6,319.8	14.4	126.4	178.35	-3,606.7	365.2	3,578.1	3,437.4	140.78	25.416			

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

Offset Design													Offset Site Error:		0.0 ft
Survey Program: 7300-UNKNOWN													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		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
6,387.5	6,372.3	6,407.3	6,407.3	14.6	128.1	178.35	-3,606.7	365.2	3,578.1	3,435.4	142.72	25.072			
6,400.0	6,384.8	6,419.8	6,419.8	14.6	128.4	-2.57	-3,606.7	365.2	3,578.0	3,435.1	142.98	25.025			
6,450.0	6,434.7	6,469.7	6,469.7	14.7	129.4	-2.58	-3,606.7	365.2	3,575.6	3,432.0	143.61	24.898			
6,500.0	6,484.3	6,519.3	6,519.3	14.8	130.4	-2.61	-3,606.7	365.2	3,569.9	3,426.3	143.62	24.856			
6,550.0	6,533.5	6,568.5	6,568.5	14.9	131.4	-2.64	-3,606.7	365.2	3,560.9	3,417.9	143.01	24.900			
6,600.0	6,582.0	6,617.0	6,617.0	15.0	132.3	-2.70	-3,606.7	365.2	3,548.8	3,407.0	141.76	25.034			
6,650.0	6,629.6	6,664.6	6,664.6	15.1	133.3	-2.77	-3,606.7	365.2	3,533.5	3,393.7	139.86	25.264			
6,700.0	6,676.1	6,711.1	6,711.1	15.2	134.2	-2.85	-3,606.7	365.2	3,515.2	3,377.9	137.32	25.598			
6,750.0	6,721.3	6,756.3	6,756.3	15.3	135.1	-2.96	-3,606.7	365.2	3,493.8	3,359.7	134.15	26.045			
6,800.0	6,765.0	6,800.0	6,800.0	15.5	136.0	-3.09	-3,606.7	365.2	3,469.6	3,339.2	130.34	26.619			
6,850.0	6,807.0	6,842.0	6,842.0	15.6	136.8	-3.25	-3,606.7	365.2	3,442.5	3,316.6	125.92	27.340			
6,900.0	6,847.2	6,882.2	6,882.2	15.8	137.6	-3.44	-3,606.7	365.2	3,412.8	3,291.9	120.90	28.228			
6,950.0	6,885.3	6,920.3	6,920.3	16.0	138.4	-3.67	-3,606.7	365.2	3,380.5	3,265.1	115.31	29.316			
7,000.0	6,921.2	6,956.2	6,956.2	16.2	139.1	-3.95	-3,606.7	365.2	3,345.7	3,236.5	109.19	30.642			
7,050.0	6,954.8	6,989.8	6,989.8	16.5	139.8	-4.30	-3,606.7	365.2	3,308.7	3,206.2	102.57	32.258			
7,100.0	6,985.9	7,020.9	7,020.9	16.7	140.4	-4.72	-3,606.7	365.2	3,269.6	3,174.1	95.52	34.228			
7,150.0	7,014.3	7,049.3	7,049.3	17.1	141.0	-5.25	-3,606.7	365.2	3,228.6	3,140.4	88.12	36.636			
7,200.0	7,040.0	7,075.0	7,075.0	17.5	141.5	-5.93	-3,606.7	365.2	3,185.7	3,105.2	80.49	39.578			
7,250.0	7,062.9	7,097.9	7,097.9	17.9	142.0	-6.83	-3,606.7	365.2	3,141.3	3,068.5	72.82	43.137			
7,300.0	7,082.7	7,117.7	7,117.7	18.3	142.4	-8.05	-3,606.7	365.2	3,095.5	3,030.0	65.48	47.275			
7,350.0	7,099.6	7,134.6	7,134.6	18.8	142.7	-9.79	-3,606.7	365.2	3,048.5	2,989.3	59.22	51.480			
7,400.0	7,113.3	7,148.3	7,148.3	19.4	143.0	-12.44	-3,606.7	365.2	3,000.5	2,944.8	55.74	53.831			
7,450.0	7,123.9	7,158.9	7,158.9	19.9	143.2	-16.93	-3,606.7	365.2	2,951.7	2,892.9	58.83	50.171			
7,500.0	7,131.2	7,166.2	7,166.2	20.5	143.3	-25.87	-3,606.7	365.2	2,902.3	2,825.9	76.41	37.986			
7,507.5	7,132.0	7,167.0	7,167.0	20.6	143.3	-27.99	-3,606.7	365.2	2,894.9	2,813.7	81.18	35.661			
7,581.5	7,139.8	7,174.8	7,174.8	21.6	143.5	-28.61	-3,606.7	365.2	2,821.4	2,738.2	83.21	33.908			
7,600.0	7,141.5	7,176.5	7,176.5	21.8	143.5	-32.98	-3,606.7	365.2	2,803.0	2,709.9	93.16	30.090			
7,700.1	7,146.0	7,181.0	7,181.0	23.2	143.6	-88.80	-3,606.7	365.2	2,703.3	2,536.9	166.36	16.250			
7,800.0	7,146.2	7,181.2	7,181.2	24.6	143.6	-88.84	-3,606.7	365.2	2,603.5	2,435.7	167.82	15.514			
7,900.0	7,146.3	7,181.3	7,181.3	26.1	143.6	-88.88	-3,606.7	365.2	2,503.7	2,334.4	169.34	14.785			
8,000.0	7,146.4	7,181.4	7,181.4	27.6	143.6	-88.93	-3,606.7	365.2	2,403.9	2,233.0	170.91	14.066			
8,100.0	7,146.5	7,181.5	7,181.5	29.2	143.6	-88.97	-3,606.7	365.2	2,304.2	2,131.7	172.52	13.356			
8,200.0	7,146.7	7,181.7	7,181.7	30.9	143.6	-89.02	-3,606.7	365.2	2,204.4	2,030.3	174.17	12.657			
8,300.0	7,146.8	7,181.8	7,181.8	32.5	143.6	-89.06	-3,606.7	365.2	2,104.7	1,928.9	175.85	11.969			
8,400.0	7,146.9	7,181.9	7,181.9	34.2	143.6	-89.11	-3,606.7	365.2	2,005.0	1,827.5	177.55	11.293			
8,500.0	7,147.0	7,182.0	7,182.0	35.9	143.6	-89.15	-3,606.7	365.2	1,905.4	1,726.1	179.28	10.628			
8,600.0	7,147.2	7,182.2	7,182.2	37.6	143.6	-89.20	-3,606.7	365.2	1,805.7	1,624.7	181.02	9.975			
8,700.0	7,147.3	7,182.3	7,182.3	39.4	143.6	-89.24	-3,606.7	365.2	1,706.2	1,523.4	182.78	9.334			
8,800.0	7,147.4	7,182.4	7,182.4	41.1	143.6	-89.29	-3,606.7	365.2	1,606.6	1,422.1	184.55	8.705			
8,900.0	7,147.5	7,182.5	7,182.5	42.9	143.7	-89.33	-3,606.7	365.2	1,507.2	1,320.8	186.34	8.088			
9,000.0	7,147.7	7,182.7	7,182.7	44.7	143.7	-89.38	-3,606.7	365.2	1,407.8	1,219.6	188.14	7.483			
9,100.0	7,147.8	7,182.8	7,182.8	46.5	143.7	-89.42	-3,606.7	365.2	1,308.5	1,118.5	189.95	6.889			
9,200.0	7,147.9	7,182.9	7,182.9	48.3	143.7	-89.46	-3,606.7	365.2	1,209.3	1,017.5	191.76	6.306			
9,300.0	7,148.0	7,183.0	7,183.0	50.1	143.7	-89.51	-3,606.7	365.2	1,110.3	916.7	193.59	5.735			
9,400.0	7,148.2	7,183.2	7,183.2	51.9	143.7	-89.55	-3,606.7	365.2	1,011.4	816.0	195.42	5.176			
9,500.0	7,148.3	7,183.3	7,183.3	53.8	143.7	-89.60	-3,606.7	365.2	912.8	715.6	197.25	4.628			
9,600.0	7,148.4	7,183.4	7,183.4	55.6	143.7	-89.64	-3,606.7	365.2	814.6	615.5	199.10	4.091			
9,700.0	7,148.5	7,183.5	7,183.5	57.4	143.7	-89.69	-3,606.7	365.2	716.8	515.9	200.94	3.567			
9,800.0	7,148.7	7,183.7	7,183.7	59.3	143.7	-89.73	-3,606.7	365.2	619.8	417.0	202.79	3.056			
9,900.0	7,148.8	7,183.8	7,183.8	61.1	143.7	-89.78	-3,606.7	365.2	523.8	319.2	204.65	2.560			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sorin Natural Existing wells Sec.2-T4N-R66W - API 5 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 7300-UNKNOWN														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	7,148.9	7,183.9	7,183.9	63.0	143.7	-89.82	-3,606.7	365.2	429.8	223.2	206.51	2.081				
10,100.0	7,149.0	7,184.0	7,184.0	64.8	143.7	-89.87	-3,606.7	365.2	339.1	130.7	208.37	1.627				
10,200.0	7,149.2	7,184.2	7,184.2	66.7	143.7	-89.91	-3,606.7	365.2	255.5	45.2	210.24	1.215 Level 2				
10,300.0	7,149.3	7,184.3	7,184.3	68.6	143.7	-89.96	-3,606.7	365.2	188.6	-23.5	212.10	0.889 Level 1				
10,398.5	7,149.4	7,184.4	7,184.4	70.4	143.7	-90.00	-3,606.7	365.2	160.8	-53.2	213.95	0.751 Level 1, CC				
10,400.0	7,149.4	7,184.4	7,184.4	70.4	143.7	-90.00	-3,606.7	365.2	160.8	-53.2	213.98	0.751 Level 1, ES, SF				
10,500.0	7,149.5	7,184.5	7,184.5	72.3	143.7	-90.05	-3,606.7	365.2	190.1	-25.8	215.85	0.881 Level 1				
10,600.0	7,149.7	7,184.7	7,184.7	74.2	143.7	-90.09	-3,606.7	365.2	257.7	40.0	217.72	1.184 Level 2				
10,700.0	7,149.8	7,184.8	7,184.8	76.0	143.7	-90.13	-3,606.7	365.2	341.6	122.0	219.60	1.556				
10,800.0	7,149.9	7,184.9	7,184.9	77.9	143.7	-90.18	-3,606.7	365.2	432.4	210.9	221.48	1.952				
10,900.0	7,150.0	7,185.0	7,185.0	79.8	143.7	-90.22	-3,606.7	365.2	526.6	303.2	223.36	2.358				
11,000.0	7,150.2	7,185.2	7,185.2	81.7	143.7	-90.27	-3,606.7	365.2	622.5	397.3	225.24	2.764				
11,100.0	7,150.3	7,185.3	7,185.3	83.5	143.7	-90.31	-3,606.7	365.2	719.6	492.5	227.13	3.168				
11,200.0	7,150.4	7,185.4	7,185.4	85.4	143.7	-90.36	-3,606.7	365.2	817.4	588.4	229.01	3.569				
11,300.0	7,150.5	7,185.5	7,185.5	87.3	143.7	-90.40	-3,606.7	365.2	915.7	684.8	230.90	3.966				
11,400.0	7,150.7	7,185.7	7,185.7	89.2	143.7	-90.45	-3,606.7	365.2	1,014.3	781.5	232.79	4.357				
11,500.0	7,150.8	7,185.8	7,185.8	91.1	143.7	-90.49	-3,606.7	365.2	1,113.1	878.4	234.67	4.743				
11,600.0	7,150.9	7,185.9	7,185.9	93.0	143.7	-90.54	-3,606.7	365.2	1,212.1	975.6	236.56	5.124				
11,669.1	7,151.0	7,186.0	7,186.0	94.3	143.7	-90.57	-3,606.7	365.2	1,280.7	1,042.8	237.87	5.384				
11,669.6	7,151.0	7,186.0	7,186.0	94.3	143.7	-90.57	-3,606.7	365.2	1,281.2	1,043.3	237.88	5.386				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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 +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	90.00	0.0	30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	30.7	30.7	30.4	0.22	136.412		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	30.7	30.7	30.0	0.67	45.471		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	30.7	30.7	29.5	1.12	27.282		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	30.7	30.7	29.1	1.57	19.487		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	30.7	30.7	28.6	2.02	15.157		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	30.7	30.7	28.2	2.47	12.401		
700.0	700.0	700.0	700.0	1.5	1.5	90.00	0.0	30.7	30.7	27.7	2.92	10.493		
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	30.7	30.7	27.3	3.37	9.094		
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	30.7	30.7	26.8	3.82	8.024		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	30.7	30.7	26.4	4.27	7.180 CC, ES		
1,100.0	1,100.0	1,098.9	1,098.9	2.4	2.3	90.16	-0.1	32.4	32.4	27.7	4.70	6.884		
1,200.0	1,200.0	1,197.6	1,197.4	2.6	2.5	90.56	-0.4	37.5	37.6	32.4	5.13	7.319		
1,300.0	1,300.0	1,295.8	1,295.2	2.8	2.8	91.02	-0.8	45.9	46.1	40.6	5.57	8.285		
1,400.0	1,400.0	1,394.0	1,392.7	3.0	3.0	91.43	-1.4	57.5	57.9	51.9	6.03	9.612		
1,500.0	1,500.0	1,493.2	1,491.2	3.3	3.2	91.72	-2.1	69.9	70.5	64.0	6.51	10.833		
1,600.0	1,600.0	1,592.6	1,589.8	3.5	3.5	-4.69	-2.8	82.3	81.3	74.4	6.84	11.875		
1,700.0	1,699.8	1,692.3	1,688.7	3.7	3.8	-4.78	-3.4	94.8	88.6	81.4	7.25	12.226		
1,800.0	1,799.5	1,792.2	1,787.9	3.9	4.1	-5.04	-4.1	107.3	92.5	84.8	7.65	12.083		
1,849.7	1,848.8	1,841.9	1,837.1	4.0	4.2	-5.24	-4.4	113.5	93.1	85.2	7.85	11.854		
1,900.0	1,898.8	1,892.2	1,887.1	4.1	4.4	-5.46	-4.8	119.8	93.3	85.2	8.07	11.560		
2,000.0	1,998.0	1,992.2	1,986.3	4.4	4.7	-5.91	-5.4	132.3	93.7	85.2	8.51	11.016		
2,100.0	2,097.3	2,092.2	2,085.5	4.6	5.0	-6.34	-6.1	144.8	94.1	85.2	8.95	10.519		
2,200.0	2,196.5	2,192.2	2,184.7	4.9	5.3	-6.78	-6.8	157.4	94.6	85.2	9.40	10.064		
2,300.0	2,295.8	2,292.2	2,283.9	5.1	5.6	-7.21	-7.5	169.9	95.0	85.1	9.85	9.647		
2,400.0	2,395.0	2,392.2	2,383.1	5.4	5.9	-7.63	-8.1	182.4	95.4	85.1	10.30	9.263		
2,500.0	2,494.3	2,492.2	2,482.3	5.7	6.2	-8.05	-8.8	194.9	95.9	85.1	10.76	8.910		
2,600.0	2,593.6	2,592.2	2,581.5	6.0	6.5	-8.47	-9.5	207.4	96.3	85.1	11.22	8.583		
2,700.0	2,692.8	2,692.2	2,680.7	6.2	6.8	-8.89	-10.1	219.9	96.7	85.1	11.68	8.280		
2,800.0	2,792.1	2,792.2	2,779.9	6.5	7.1	-9.30	-10.8	232.4	97.2	85.0	12.15	7.998		
2,900.0	2,891.3	2,892.2	2,879.2	6.8	7.4	-9.70	-11.5	245.0	97.7	85.0	12.62	7.737		
3,000.0	2,990.6	2,992.2	2,978.4	7.1	7.8	-10.11	-12.2	257.5	98.1	85.0	13.10	7.493		
3,100.0	3,089.8	3,092.2	3,077.6	7.4	8.1	-10.51	-12.8	270.0	98.6	85.0	13.57	7.265		
3,200.0	3,189.1	3,192.2	3,176.8	7.7	8.4	-10.90	-13.5	282.5	99.1	85.0	14.05	7.052		
3,300.0	3,288.3	3,292.2	3,276.0	8.0	8.7	-11.29	-14.2	295.0	99.5	85.0	14.53	6.851		
3,400.0	3,387.6	3,392.2	3,375.2	8.3	9.0	-11.68	-14.8	307.5	100.0	85.0	15.01	6.663		
3,500.0	3,486.9	3,492.2	3,474.4	8.6	9.3	-12.06	-15.5	320.0	100.5	85.0	15.49	6.487		
3,600.0	3,586.1	3,592.2	3,573.6	8.9	9.7	-12.44	-16.2	332.6	101.0	85.0	15.98	6.320		
3,665.6	3,651.2	3,657.7	3,638.7	9.1	9.9	-12.69	-16.6	340.8	101.3	85.0	16.30	6.216		
3,700.0	3,685.4	3,692.2	3,672.8	9.2	10.0	-12.80	-16.8	345.1	101.7	85.2	16.47	6.176		
3,800.0	3,785.0	3,792.1	3,772.0	9.5	10.3	-12.82	-17.5	357.6	105.1	88.1	16.91	6.212		
3,900.0	3,884.8	3,891.9	3,870.9	9.7	10.6	-12.46	-18.2	370.1	111.8	94.5	17.33	6.455		
4,000.0	3,984.8	3,991.3	3,969.6	9.8	11.0	-11.81	-18.8	382.5	122.0	104.3	17.71	6.890		
4,015.2	4,000.0	4,006.4	3,984.6	9.9	11.0	84.84	-19.0	384.4	123.9	106.1	17.79	6.963		
4,100.0	4,084.8	4,090.5	4,068.1	10.0	11.3	85.49	-19.5	394.9	134.4	116.2	18.14	7.408		
4,200.0	4,184.8	4,189.7	4,166.5	10.2	11.6	86.13	-20.2	407.3	146.8	128.2	18.57	7.905		
4,300.0	4,284.8	4,289.0	4,264.9	10.4	11.9	86.68	-20.8	419.8	159.3	140.3	19.01	8.380		
4,400.0	4,384.8	4,388.2	4,363.3	10.6	12.2	87.14	-21.5	432.2	171.7	152.3	19.44	8.832		
4,500.0	4,484.8	4,487.4	4,461.8	10.8	12.6	87.55	-22.2	444.6	184.2	164.3	19.88	9.264		
4,600.0	4,584.8	4,586.6	4,560.2	11.0	12.9	87.90	-22.8	457.0	196.7	176.4	20.33	9.676		
4,700.0	4,684.8	4,685.8	4,658.6	11.2	13.2	88.21	-23.5	469.4	209.2	188.4	20.77	10.071		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
4,800.0	4,784.8	4,785.0	4,757.1	11.4	13.5	88.48	-24.2	481.8	221.7	200.4	21.21	10.449				
4,900.0	4,884.8	4,884.2	4,855.5	11.6	13.8	88.73	-24.8	494.3	234.1	212.5	21.66	10.810				
5,000.0	4,984.8	4,983.4	4,953.9	11.8	14.2	88.95	-25.5	506.7	246.6	224.5	22.11	11.157				
5,100.0	5,084.8	5,082.6	5,052.4	12.0	14.5	89.15	-26.2	519.1	259.1	236.6	22.55	11.490				
5,200.0	5,184.8	5,181.9	5,150.8	12.2	14.8	89.33	-26.8	531.5	271.7	248.7	23.00	11.809				
5,300.0	5,284.8	5,281.1	5,249.2	12.4	15.1	89.49	-27.5	543.9	284.2	260.7	23.45	12.116				
5,400.0	5,384.8	5,380.3	5,347.6	12.6	15.4	89.64	-28.2	556.3	296.7	272.8	23.90	12.411				
5,500.0	5,484.8	5,480.1	5,446.7	12.8	15.8	89.78	-28.8	568.8	309.2	284.8	24.35	12.695				
5,600.0	5,584.8	5,591.8	5,557.8	13.0	16.0	89.90	-29.5	580.4	319.6	294.8	24.78	12.894				
5,700.0	5,684.8	5,704.3	5,670.0	13.2	16.2	89.97	-29.8	587.7	326.0	300.8	25.20	12.937				
5,800.0	5,784.8	5,817.1	5,782.8	13.4	16.4	90.00	-30.0	590.6	328.6	303.0	25.62	12.828				
5,900.0	5,884.8	5,919.1	5,884.8	13.6	16.6	90.00	-30.0	590.7	328.7	302.6	26.03	12.628				
6,000.0	5,984.8	6,019.1	5,984.8	13.8	16.7	90.00	-30.0	590.7	328.7	302.2	26.44	12.431				
6,100.0	6,084.8	6,119.1	6,084.8	14.0	16.9	90.00	-30.0	590.7	328.7	301.8	26.85	12.239				
6,200.0	6,184.8	6,219.1	6,184.8	14.2	17.1	90.00	-30.0	590.7	328.7	301.4	27.27	12.053				
6,300.0	6,284.8	6,319.4	6,284.9	14.4	17.2	90.68	-33.9	590.6	328.6	301.0	27.67	11.877				
6,314.1	6,298.8	6,333.4	6,298.8	14.4	17.3	90.95	-35.5	590.6	328.6	300.9	27.72	11.854				
6,387.5	6,372.3	6,405.2	6,369.7	14.6	17.4	93.03	-47.4	590.4	328.8	300.8	27.99	11.747				
6,400.0	6,384.8	6,417.2	6,381.4	14.6	17.4	-87.44	-50.0	590.3	328.9	300.9	28.03	11.736				
6,450.0	6,434.7	6,464.9	6,427.4	14.7	17.5	-85.66	-62.3	590.1	329.6	301.4	28.21	11.685				
6,500.0	6,484.3	6,511.9	6,472.0	14.8	17.6	-83.91	-77.2	589.9	330.5	302.1	28.39	11.642				
6,550.0	6,533.5	6,558.4	6,515.1	14.9	17.7	-82.20	-94.6	589.6	331.8	303.2	28.58	11.609				
6,600.0	6,582.0	6,604.4	6,556.6	15.0	17.8	-80.54	-114.3	589.3	333.3	304.5	28.77	11.585				
6,650.0	6,629.6	6,650.0	6,596.6	15.1	17.9	-78.93	-136.4	588.9	335.0	306.1	28.96	11.569				
6,700.0	6,676.1	6,694.9	6,634.5	15.2	18.0	-77.40	-160.3	588.5	336.9	307.8	29.15	11.560				
6,750.0	6,721.3	6,739.4	6,670.7	15.3	18.1	-75.92	-186.3	588.1	339.0	309.7	29.34	11.554				
6,800.0	6,765.0	6,783.6	6,705.0	15.5	18.3	-74.53	-214.0	587.6	341.2	311.7	29.54	11.550				
6,850.0	6,807.0	6,827.4	6,737.5	15.6	18.4	-73.20	-243.5	587.1	343.5	313.8	29.76	11.543				
6,900.0	6,847.2	6,870.9	6,767.9	15.8	18.6	-71.96	-274.5	586.6	345.9	315.9	29.99	11.531				
6,950.0	6,885.3	6,914.0	6,796.3	16.0	18.8	-70.79	-306.9	586.1	348.2	318.0	30.26	11.508				
7,000.0	6,921.2	6,956.9	6,822.7	16.2	19.0	-69.71	-340.7	585.5	350.5	320.0	30.56	11.470				
7,050.0	6,954.8	7,000.0	6,847.3	16.5	19.3	-68.70	-376.1	584.9	352.8	321.9	30.92	11.411				
7,100.0	6,985.9	7,041.8	6,869.2	16.7	19.5	-67.80	-411.7	584.3	355.0	323.7	31.34	11.329				
7,150.0	7,014.3	7,083.9	6,889.2	17.1	19.8	-66.98	-448.7	583.7	357.1	325.3	31.83	11.219				
7,200.0	7,040.0	7,125.8	6,907.1	17.5	20.2	-66.23	-486.6	583.1	359.0	326.6	32.40	11.080				
7,250.0	7,062.9	7,167.6	6,922.9	17.9	20.5	-65.58	-525.3	582.4	360.8	327.8	33.06	10.913				
7,300.0	7,082.7	7,209.2	6,936.4	18.3	20.9	-65.01	-564.6	581.8	362.4	328.6	33.82	10.716				
7,350.0	7,099.6	7,250.0	6,947.6	18.8	21.3	-64.53	-603.8	581.1	363.8	329.1	34.67	10.494				
7,400.0	7,113.3	7,292.0	6,957.0	19.4	21.7	-64.12	-644.8	580.4	364.9	329.3	35.63	10.243				
7,450.0	7,123.9	7,333.3	6,963.9	19.9	22.1	-63.80	-685.5	579.8	365.9	329.2	36.68	9.975				
7,500.0	7,131.2	7,374.5	6,968.7	20.5	22.6	-63.57	-726.4	579.1	366.6	328.7	37.83	9.691				
7,507.5	7,132.0	7,380.7	6,969.2	20.6	22.7	-63.54	-732.6	579.0	366.6	328.6	38.01	9.647				
7,581.5	7,139.8	7,441.4	6,971.6	21.6	23.4	-63.00	-793.2	578.0	368.7	329.3	39.45	9.346				
7,600.0	7,141.5	7,458.8	6,971.6	21.8	23.6	-62.72	-810.6	577.7	369.6	329.7	39.87	9.270				
7,700.1	7,146.0	7,558.7	6,971.1	23.2	24.9	-61.93	-910.5	576.0	371.9	329.4	42.49	8.752				
7,800.0	7,146.2	7,658.6	6,970.6	24.6	26.2	-61.84	-1,010.4	574.4	372.1	327.0	45.08	8.255				
7,900.0	7,146.3	7,758.6	6,970.1	26.1	27.6	-61.75	-1,110.4	572.7	372.4	324.6	47.77	7.795				
8,000.0	7,146.4	7,858.6	6,969.5	27.6	29.1	-61.67	-1,210.4	571.1	372.6	322.1	50.55	7.372				
8,100.0	7,146.5	7,958.6	6,969.0	29.2	30.6	-61.58	-1,310.3	569.4	372.9	319.5	53.40	6.983				
8,200.0	7,146.7	8,058.6	6,968.5	30.9	32.2	-61.49	-1,410.3	567.7	373.1	316.8	56.30	6.627				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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	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)					
8,300.0	7,146.8	8,158.6	6,968.0	32.5	33.8	-61.40	-1,510.3	566.1	373.4	314.1	59.26	6.301				
8,400.0	7,146.9	8,258.6	6,967.5	34.2	35.4	-61.31	-1,610.3	564.4	373.7	311.4	62.26	6.002				
8,500.0	7,147.0	8,358.6	6,967.0	35.9	37.1	-61.22	-1,710.3	562.7	373.9	308.6	65.29	5.727				
8,600.0	7,147.2	8,458.6	6,966.5	37.6	38.8	-61.13	-1,810.3	561.1	374.2	305.8	68.36	5.474				
8,700.0	7,147.3	8,558.6	6,966.0	39.4	40.5	-61.04	-1,910.2	559.4	374.4	303.0	71.45	5.241				
8,800.0	7,147.4	8,658.6	6,965.5	41.1	42.2	-60.96	-2,010.2	557.8	374.7	300.1	74.56	5.026				
8,900.0	7,147.5	8,758.6	6,965.0	42.9	44.0	-60.87	-2,110.2	556.1	375.0	297.3	77.69	4.827				
9,000.0	7,147.7	8,858.6	6,964.5	44.7	45.7	-60.78	-2,210.2	554.4	375.2	294.4	80.83	4.642				
9,100.0	7,147.8	8,958.6	6,964.0	46.5	47.5	-60.69	-2,310.2	552.8	375.5	291.5	83.99	4.471				
9,200.0	7,147.9	9,058.6	6,963.5	48.3	49.3	-60.60	-2,410.2	551.1	375.8	288.6	87.15	4.311				
9,300.0	7,148.0	9,158.6	6,963.0	50.1	51.0	-60.52	-2,510.1	549.5	376.0	285.7	90.33	4.163				
9,400.0	7,148.2	9,258.6	6,962.5	51.9	52.8	-60.43	-2,610.1	547.8	376.3	282.8	93.52	4.024				
9,500.0	7,148.3	9,358.6	6,962.0	53.8	54.6	-60.34	-2,710.1	546.1	376.6	279.8	96.71	3.894				
9,600.0	7,148.4	9,458.6	6,961.5	55.6	56.5	-60.26	-2,810.1	544.5	376.8	276.9	99.91	3.772				
9,700.0	7,148.5	9,558.6	6,960.9	57.4	58.3	-60.17	-2,910.1	542.8	377.1	274.0	103.11	3.657				
9,800.0	7,148.7	9,658.6	6,960.4	59.3	60.1	-60.08	-3,010.1	541.2	377.4	271.0	106.32	3.549				
9,900.0	7,148.8	9,758.6	6,959.9	61.1	61.9	-59.99	-3,110.0	539.5	377.6	268.1	109.53	3.448				
10,000.0	7,148.9	9,858.6	6,959.4	63.0	63.8	-59.91	-3,210.0	537.8	377.9	265.2	112.74	3.352				
10,100.0	7,149.0	9,958.6	6,958.9	64.8	65.6	-59.82	-3,310.0	536.2	378.2	262.2	115.95	3.262				
10,200.0	7,149.2	10,058.6	6,958.4	66.7	67.4	-59.73	-3,410.0	534.5	378.5	259.3	119.16	3.176				
10,300.0	7,149.3	10,158.6	6,957.9	68.6	69.3	-59.65	-3,510.0	532.8	378.7	256.4	122.38	3.095				
10,400.0	7,149.4	10,258.6	6,957.4	70.4	71.1	-59.56	-3,610.0	531.2	379.0	253.4	125.59	3.018				
10,500.0	7,149.5	10,358.6	6,956.9	72.3	73.0	-59.48	-3,709.9	529.5	379.3	250.5	128.80	2.945				
10,600.0	7,149.7	10,458.6	6,956.4	74.2	74.9	-59.39	-3,809.9	527.9	379.6	247.5	132.02	2.875				
10,700.0	7,149.8	10,558.6	6,955.9	76.0	76.7	-59.30	-3,909.9	526.2	379.8	244.6	135.23	2.809				
10,800.0	7,149.9	10,658.6	6,955.4	77.9	78.6	-59.22	-4,009.9	524.5	380.1	241.7	138.44	2.746				
10,900.0	7,150.0	10,758.6	6,954.9	79.8	80.4	-59.13	-4,109.9	522.9	380.4	238.8	141.65	2.686				
11,000.0	7,150.2	10,858.6	6,954.4	81.7	82.3	-59.05	-4,209.9	521.2	380.7	235.8	144.86	2.628				
11,100.0	7,150.3	10,958.6	6,953.9	83.5	84.2	-58.96	-4,309.8	519.6	381.0	232.9	148.06	2.573				
11,200.0	7,150.4	11,058.6	6,953.4	85.4	86.1	-58.88	-4,409.8	517.9	381.2	230.0	151.27	2.520				
11,300.0	7,150.5	11,158.6	6,952.8	87.3	87.9	-58.79	-4,509.8	516.2	381.5	227.1	154.47	2.470				
11,400.0	7,150.7	11,258.6	6,952.3	89.2	89.8	-58.71	-4,609.8	514.6	381.8	224.2	157.67	2.422				
11,500.0	7,150.8	11,358.6	6,951.8	91.1	91.7	-58.62	-4,709.8	512.9	382.1	221.2	160.86	2.375				
11,600.0	7,150.9	11,458.6	6,951.3	93.0	93.6	-58.54	-4,809.8	511.3	382.4	218.3	164.06	2.331				
11,669.1	7,151.0	11,523.2	6,951.0	94.3	94.8	-58.48	-4,874.4	510.2	382.6	216.4	166.19	2.302				
11,669.6	7,151.0	11,523.2	6,951.0	94.3	94.8	-58.48	-4,874.4	510.2	382.6	216.4	166.20	2.302 SF				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-203 - 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	90.01	0.0	89.2	89.2					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	89.2	89.2	89.0	0.22	396.835		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	89.2	89.2	88.5	0.67	132.278	CC, ES	
300.0	300.0	296.9	296.9	0.6	0.5	90.03	-0.1	90.8	90.9	89.8	1.11	82.113		
400.0	400.0	393.7	393.5	0.8	0.8	90.11	-0.2	95.7	96.0	94.4	1.55	62.062		
500.0	500.0	490.0	489.5	1.0	1.0	90.22	-0.4	103.9	104.4	102.4	2.01	51.942		
600.0	600.0	585.6	584.4	1.2	1.3	90.35	-0.7	115.1	116.1	113.6	2.50	46.379		
700.0	700.0	680.4	678.1	1.5	1.6	90.47	-1.1	129.4	131.2	128.2	3.04	43.209		
800.0	800.0	774.1	770.2	1.7	1.9	90.60	-1.5	146.5	149.5	145.9	3.61	41.406		
900.0	900.0	869.5	863.5	1.9	2.3	90.71	-2.1	166.6	170.5	166.3	4.23	40.304		
1,000.0	1,000.0	967.2	958.9	2.1	2.8	90.80	-2.6	187.5	191.9	187.1	4.88	39.305		
1,100.0	1,100.0	1,064.9	1,054.4	2.4	3.2	90.87	-3.2	208.4	213.3	207.8	5.54	38.483		
1,200.0	1,200.0	1,162.5	1,149.8	2.6	3.6	90.93	-3.7	229.3	234.7	228.5	6.21	37.802		
1,300.0	1,300.0	1,260.2	1,245.2	2.8	4.1	90.98	-4.3	250.1	256.1	249.2	6.88	37.232		
1,400.0	1,400.0	1,357.9	1,340.6	3.0	4.5	91.02	-4.8	271.0	277.5	270.0	7.55	36.750		
1,500.0	1,500.0	1,455.6	1,436.1	3.3	5.0	91.05	-5.4	291.9	298.9	290.7	8.23	36.338		
1,600.0	1,600.0	1,553.6	1,531.8	3.5	5.5	-5.44	-5.9	312.9	318.6	311.4	7.14	44.645		
1,700.0	1,699.8	1,652.3	1,628.2	3.7	5.9	-5.47	-6.5	334.0	334.9	327.3	7.59	44.106		
1,800.0	1,799.5	1,751.5	1,725.1	3.9	6.4	-5.55	-7.0	355.2	347.7	339.6	8.05	43.188		
1,849.7	1,848.8	1,800.9	1,773.3	4.0	6.6	-5.61	-7.3	365.8	352.8	344.5	8.28	42.613		
1,900.0	1,898.8	1,851.0	1,822.3	4.1	6.8	-5.69	-7.6	376.5	357.5	349.0	8.52	41.981		
2,000.0	1,998.0	1,950.5	1,919.5	4.4	7.3	-5.83	-8.2	397.8	366.9	357.9	8.99	40.809		
2,100.0	2,097.3	2,050.1	2,016.8	4.6	7.8	-5.97	-8.7	419.1	376.3	366.9	9.47	39.738		
2,200.0	2,196.5	2,149.6	2,114.0	4.9	8.2	-6.11	-9.3	440.3	385.7	375.8	9.95	38.756		
2,300.0	2,295.8	2,249.2	2,211.3	5.1	8.7	-6.23	-9.9	461.6	395.1	384.7	10.44	37.855		
2,400.0	2,395.0	2,348.7	2,308.5	5.4	9.2	-6.36	-10.4	482.9	404.5	393.6	10.93	37.025		
2,500.0	2,494.3	2,448.3	2,405.8	5.7	9.6	-6.47	-11.0	504.2	414.0	402.5	11.42	36.258		
2,600.0	2,593.6	2,547.8	2,503.0	6.0	10.1	-6.58	-11.6	525.5	423.4	411.5	11.91	35.548		
2,700.0	2,692.8	2,647.4	2,600.3	6.2	10.6	-6.69	-12.1	546.8	432.8	420.4	12.40	34.890		
2,800.0	2,792.1	2,747.0	2,697.5	6.5	11.0	-6.79	-12.7	568.1	442.2	429.3	12.90	34.277		
2,900.0	2,891.3	2,846.5	2,794.8	6.8	11.5	-6.88	-13.2	589.4	451.6	438.2	13.40	33.707		
3,000.0	2,990.6	2,946.1	2,892.0	7.1	12.0	-6.98	-13.8	610.7	461.0	447.1	13.90	33.173		
3,100.0	3,089.8	3,045.6	2,989.3	7.4	12.5	-7.07	-14.4	632.0	470.4	456.0	14.40	32.675		
3,200.0	3,189.1	3,145.2	3,086.5	7.7	12.9	-7.15	-14.9	653.2	479.9	465.0	14.90	32.207		
3,300.0	3,288.3	3,244.7	3,183.8	8.0	13.4	-7.23	-15.5	674.5	489.3	473.9	15.40	31.767		
3,400.0	3,387.6	3,344.3	3,281.0	8.3	13.9	-7.31	-16.1	695.8	498.7	482.8	15.91	31.354		
3,500.0	3,486.9	3,443.8	3,378.3	8.6	14.3	-7.39	-16.6	717.1	508.1	491.7	16.41	30.964		
3,600.0	3,586.1	3,543.4	3,475.5	8.9	14.8	-7.46	-17.2	738.4	517.6	500.6	16.92	30.597		
3,665.6	3,651.2	3,608.7	3,539.3	9.1	15.1	-7.51	-17.6	752.4	523.7	506.5	17.25	30.367		
3,700.0	3,685.4	3,642.9	3,572.7	9.2	15.3	-7.54	-17.7	759.7	527.2	509.8	17.41	30.278		
3,800.0	3,785.0	3,742.1	3,669.7	9.5	15.7	-7.60	-18.3	780.9	539.5	521.7	17.85	30.217		
3,900.0	3,884.8	3,840.9	3,766.1	9.7	16.2	-7.62	-18.9	802.0	555.3	537.0	18.27	30.392		
4,000.0	3,984.8	3,939.0	3,862.0	9.8	16.7	-7.60	-19.4	823.0	574.4	555.8	18.66	30.788		
4,015.2	4,000.0	3,953.9	3,876.5	9.9	16.7	88.93	-19.5	826.2	577.6	558.9	18.74	30.818		
4,100.0	4,084.8	4,036.7	3,957.4	10.0	17.1	89.01	-20.0	843.9	595.8	576.6	19.13	31.142		
4,200.0	4,184.8	4,134.4	4,052.8	10.2	17.6	89.10	-20.5	864.8	617.1	597.5	19.60	31.490		
4,300.0	4,284.8	4,232.1	4,148.3	10.4	18.0	89.18	-21.1	885.7	638.5	618.4	20.07	31.822		
4,400.0	4,384.8	4,329.8	4,243.7	10.6	18.5	89.26	-21.6	906.6	659.9	639.3	20.53	32.136		
4,500.0	4,484.8	4,427.5	4,339.1	10.8	19.0	89.33	-22.2	927.5	681.3	660.3	21.00	32.436		
4,600.0	4,584.8	4,525.1	4,434.5	11.0	19.4	89.39	-22.7	948.4	702.6	681.2	21.47	32.721		
4,700.0	4,684.8	4,622.8	4,530.0	11.2	19.9	89.46	-23.3	969.2	724.0	702.1	21.94	32.993		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-203 - 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		
4,800.0	4,784.8	4,720.5	4,625.4	11.4	20.3	89.52	-23.8	990.1	745.4	723.0	22.42	33.252		
4,900.0	4,884.8	4,818.2	4,720.8	11.6	20.8	89.57	-24.4	1,011.0	766.8	743.9	22.89	33.500		
5,000.0	4,984.8	4,915.9	4,816.2	11.8	21.3	89.62	-24.9	1,031.9	788.2	764.8	23.36	33.737		
5,100.0	5,084.8	5,013.6	4,911.7	12.0	21.7	89.67	-25.5	1,052.8	809.5	785.7	23.84	33.964		
5,200.0	5,184.8	5,111.3	5,007.1	12.2	22.2	89.72	-26.1	1,073.7	830.9	806.6	24.31	34.181		
5,300.0	5,284.8	5,208.9	5,102.5	12.4	22.6	89.77	-26.6	1,094.6	852.3	827.5	24.78	34.390		
5,400.0	5,384.8	5,306.6	5,197.9	12.6	23.1	89.81	-27.2	1,115.5	873.7	848.4	25.26	34.590		
5,500.0	5,484.8	5,404.3	5,293.4	12.8	23.6	89.85	-27.7	1,136.4	895.1	869.3	25.73	34.781		
5,600.0	5,584.8	5,502.8	5,389.5	13.0	24.0	89.89	-28.3	1,157.4	916.5	890.2	26.21	34.964		
5,700.0	5,684.8	5,647.9	5,532.0	13.2	24.6	89.94	-29.0	1,184.7	935.3	908.5	26.75	34.960		
5,800.0	5,784.8	5,795.5	5,678.2	13.4	24.9	89.97	-29.5	1,205.1	949.1	921.8	27.26	34.821		
5,900.0	5,884.8	5,944.8	5,826.9	13.6	25.2	89.99	-29.9	1,218.0	957.7	930.0	27.73	34.531		
6,000.0	5,984.8	6,095.0	5,977.1	13.8	25.4	90.00	-30.0	1,223.1	961.1	932.9	28.19	34.092		
6,100.0	6,084.8	6,202.7	6,084.8	14.0	25.5	90.00	-30.0	1,223.2	961.2	932.6	28.59	33.622		
6,200.0	6,184.8	6,302.7	6,184.8	14.2	25.6	90.00	-30.0	1,223.2	961.2	932.2	28.97	33.173		
6,300.0	6,284.8	6,404.1	6,285.9	14.4	25.8	90.27	-34.6	1,223.1	961.1	931.8	29.36	32.737		
6,370.3	6,355.1	6,474.0	6,355.1	14.6	25.8	90.92	-45.4	1,222.9	961.1	931.5	29.62	32.447		
6,387.5	6,372.3	6,490.8	6,371.5	14.6	25.8	91.13	-48.9	1,222.9	961.1	931.4	29.68	32.379		
6,400.0	6,384.8	6,502.9	6,383.3	14.6	25.9	-89.63	-51.6	1,222.8	961.1	931.4	29.70	32.358		
6,450.0	6,434.7	6,551.0	6,429.5	14.7	25.9	-89.00	-64.5	1,222.6	961.2	931.4	29.87	32.177		
6,500.0	6,484.3	6,598.4	6,474.3	14.8	26.0	-88.37	-79.9	1,222.4	961.5	931.4	30.05	31.995		
6,550.0	6,533.5	6,645.2	6,517.6	14.9	26.0	-87.75	-97.9	1,222.1	961.9	931.6	30.24	31.810		
6,600.0	6,582.0	6,691.4	6,559.1	15.0	26.1	-87.14	-118.2	1,221.8	962.3	931.9	30.43	31.619		
6,650.0	6,629.6	6,737.1	6,598.9	15.1	26.2	-86.54	-140.7	1,221.4	962.9	932.3	30.65	31.420		
6,700.0	6,676.1	6,782.3	6,636.8	15.2	26.3	-85.96	-165.3	1,221.0	963.6	932.7	30.88	31.208		
6,750.0	6,721.3	6,827.1	6,672.9	15.3	26.3	-85.40	-191.8	1,220.6	964.3	933.2	31.13	30.979		
6,800.0	6,765.0	6,871.4	6,707.0	15.5	26.4	-84.86	-220.1	1,220.2	965.1	933.7	31.41	30.726		
6,850.0	6,807.0	6,915.3	6,739.1	15.6	26.5	-84.34	-250.0	1,219.7	965.9	934.2	31.73	30.444		
6,900.0	6,847.2	6,958.9	6,769.2	15.8	26.7	-83.85	-281.4	1,219.2	966.8	934.7	32.09	30.129		
6,950.0	6,885.3	7,000.0	6,796.0	16.0	26.8	-83.39	-312.6	1,218.7	967.7	935.2	32.49	29.783		
7,000.0	6,921.2	7,044.9	6,823.3	16.2	26.9	-82.93	-348.3	1,218.1	968.6	935.7	32.97	29.375		
7,050.0	6,954.8	7,087.5	6,847.1	16.5	27.1	-82.51	-383.6	1,217.5	969.5	936.0	33.51	28.929		
7,100.0	6,985.9	7,129.8	6,868.8	16.7	27.3	-82.12	-419.9	1,217.0	970.4	936.3	34.12	28.438		
7,150.0	7,014.3	7,171.9	6,888.4	17.1	27.5	-81.75	-457.1	1,216.4	971.3	936.5	34.81	27.902		
7,200.0	7,040.0	7,213.7	6,905.8	17.5	27.7	-81.42	-495.2	1,215.8	972.1	936.5	35.57	27.326		
7,250.0	7,062.9	7,255.4	6,921.1	17.9	27.9	-81.13	-533.9	1,215.1	972.9	936.4	36.42	26.714		
7,300.0	7,082.7	7,300.0	6,935.0	18.3	28.2	-80.84	-576.3	1,214.5	973.6	936.2	37.37	26.051		
7,350.0	7,099.6	7,338.2	6,945.0	18.8	28.4	-80.63	-613.2	1,213.9	974.2	935.8	38.35	25.400		
7,400.0	7,113.3	7,379.4	6,953.6	19.4	28.7	-80.43	-653.4	1,213.2	974.7	935.3	39.44	24.716		
7,450.0	7,123.9	7,420.6	6,960.1	19.9	29.1	-80.26	-694.0	1,212.6	975.2	934.6	40.59	24.024		
7,500.0	7,131.2	7,461.6	6,964.4	20.5	29.4	-80.13	-734.8	1,211.9	975.6	933.8	41.81	23.333		
7,507.5	7,132.0	7,467.7	6,964.8	20.6	29.4	-80.12	-741.0	1,211.8	975.6	933.6	42.00	23.229		
7,581.5	7,139.8	7,529.1	6,966.6	21.6	30.0	-79.85	-802.3	1,210.9	976.6	932.9	43.68	22.358		
7,600.0	7,141.5	7,547.5	6,966.6	21.8	30.1	-79.73	-820.7	1,210.6	976.9	932.7	44.19	22.106		
7,700.1	7,146.0	7,647.4	6,966.2	23.2	31.1	-79.40	-920.6	1,209.0	977.8	930.7	47.09	20.765		
7,800.0	7,146.2	7,747.3	6,965.8	24.6	32.1	-79.37	-1,020.5	1,207.4	977.9	928.0	49.91	19.595		
7,900.0	7,146.3	7,847.3	6,965.4	26.1	33.3	-79.34	-1,120.5	1,205.8	978.0	925.2	52.84	18.508		
8,000.0	7,146.4	7,947.3	6,965.0	27.6	34.5	-79.31	-1,220.5	1,204.2	978.2	922.3	55.88	17.504		
8,100.0	7,146.5	8,047.3	6,964.6	29.2	35.8	-79.29	-1,320.5	1,202.6	978.3	919.3	59.00	16.580		
8,200.0	7,146.7	8,147.3	6,964.3	30.9	37.1	-79.26	-1,420.4	1,201.0	978.4	916.2	62.20	15.731		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2U-203 - 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				
8,300.0	7,146.8	8,247.3	6,963.9	32.5	38.5	-79.23	-1,520.4	1,199.4	978.5	913.0	65.45	14.950				
8,400.0	7,146.9	8,347.3	6,963.5	34.2	39.9	-79.20	-1,620.4	1,197.8	978.6	909.8	68.76	14.233				
8,500.0	7,147.0	8,447.3	6,963.1	35.9	41.4	-79.17	-1,720.4	1,196.2	978.7	906.6	72.11	13.573				
8,600.0	7,147.2	8,547.3	6,962.7	37.6	42.9	-79.14	-1,820.4	1,194.6	978.8	903.3	75.50	12.965				
8,700.0	7,147.3	8,647.3	6,962.3	39.4	44.5	-79.11	-1,920.4	1,193.0	978.9	900.0	78.92	12.403				
8,800.0	7,147.4	8,747.3	6,962.0	41.1	46.0	-79.08	-2,020.4	1,191.4	979.0	896.6	82.38	11.885				
8,900.0	7,147.5	8,847.3	6,961.6	42.9	47.6	-79.05	-2,120.3	1,189.8	979.1	893.3	85.86	11.404				
9,000.0	7,147.7	8,947.3	6,961.2	44.7	49.3	-79.02	-2,220.3	1,188.2	979.2	889.9	89.36	10.959				
9,100.0	7,147.8	9,047.3	6,960.8	46.5	50.9	-78.99	-2,320.3	1,186.6	979.4	886.5	92.88	10.544				
9,200.0	7,147.9	9,147.3	6,960.4	48.3	52.6	-78.96	-2,420.3	1,185.0	979.5	883.0	96.42	10.158				
9,300.0	7,148.0	9,247.3	6,960.0	50.1	54.3	-78.94	-2,520.3	1,183.4	979.6	879.6	99.98	9.798				
9,400.0	7,148.2	9,347.3	6,959.7	51.9	55.9	-78.91	-2,620.3	1,181.8	979.7	876.1	103.55	9.461				
9,500.0	7,148.3	9,447.3	6,959.3	53.8	57.7	-78.88	-2,720.2	1,180.2	979.8	872.7	107.13	9.146				
9,600.0	7,148.4	9,547.3	6,958.9	55.6	59.4	-78.85	-2,820.2	1,178.6	979.9	869.2	110.73	8.850				
9,700.0	7,148.5	9,647.3	6,958.5	57.4	61.1	-78.82	-2,920.2	1,177.0	980.0	865.7	114.33	8.572				
9,800.0	7,148.7	9,747.3	6,958.1	59.3	62.9	-78.79	-3,020.2	1,175.4	980.1	862.2	117.94	8.310				
9,900.0	7,148.8	9,847.3	6,957.7	61.1	64.6	-78.76	-3,120.2	1,173.8	980.2	858.7	121.57	8.063				
10,000.0	7,148.9	9,947.3	6,957.4	63.0	66.4	-78.73	-3,220.2	1,172.2	980.4	855.2	125.20	7.831				
10,100.0	7,149.0	10,047.3	6,957.0	64.8	68.2	-78.70	-3,320.2	1,170.6	980.5	851.6	128.83	7.610				
10,200.0	7,149.2	10,147.3	6,956.6	66.7	69.9	-78.67	-3,420.1	1,169.0	980.6	848.1	132.48	7.402				
10,300.0	7,149.3	10,247.3	6,956.2	68.6	71.7	-78.65	-3,520.1	1,167.4	980.7	844.6	136.12	7.204				
10,400.0	7,149.4	10,347.3	6,955.8	70.4	73.5	-78.62	-3,620.1	1,165.8	980.8	841.0	139.78	7.017				
10,500.0	7,149.5	10,447.3	6,955.4	72.3	75.3	-78.59	-3,720.1	1,164.2	980.9	837.5	143.44	6.839				
10,600.0	7,149.7	10,547.3	6,955.0	74.2	77.1	-78.56	-3,820.1	1,162.6	981.0	833.9	147.10	6.669				
10,700.0	7,149.8	10,647.3	6,954.7	76.0	78.9	-78.53	-3,920.1	1,161.1	981.2	830.4	150.77	6.508				
10,800.0	7,149.9	10,747.3	6,954.3	77.9	80.7	-78.50	-4,020.1	1,159.5	981.3	826.8	154.44	6.354				
10,900.0	7,150.0	10,847.3	6,953.9	79.8	82.6	-78.47	-4,120.0	1,157.9	981.4	823.3	158.11	6.207				
11,000.0	7,150.2	10,947.3	6,953.5	81.7	84.4	-78.44	-4,220.0	1,156.3	981.5	819.7	161.79	6.067				
11,100.0	7,150.3	11,047.3	6,953.1	83.5	86.2	-78.41	-4,320.0	1,154.7	981.6	816.1	165.47	5.932				
11,200.0	7,150.4	11,147.3	6,952.7	85.4	88.0	-78.38	-4,420.0	1,153.1	981.7	812.6	169.15	5.804				
11,300.0	7,150.5	11,247.3	6,952.4	87.3	89.9	-78.36	-4,520.0	1,151.5	981.8	809.0	172.83	5.681				
11,400.0	7,150.7	11,347.3	6,952.0	89.2	91.7	-78.33	-4,620.0	1,149.9	982.0	805.4	176.52	5.563				
11,500.0	7,150.8	11,447.3	6,951.6	91.1	93.6	-78.30	-4,720.0	1,148.3	982.1	801.9	180.21	5.450				
11,600.0	7,150.9	11,547.3	6,951.2	93.0	95.4	-78.27	-4,819.9	1,146.7	982.2	798.3	183.90	5.341				
11,629.9	7,151.0	11,577.2	6,951.1	93.5	96.0	-78.26	-4,849.8	1,146.2	982.2	797.2	185.00	5.309				
11,669.1	7,151.0	11,601.8	6,951.0	94.3	96.4	-78.25	-4,874.4	1,145.8	982.4	796.2	186.18	5.276				
11,669.6	7,151.0	11,601.8	6,951.0	94.3	96.4	-78.25	-4,874.4	1,145.8	982.4	796.2	186.19	5.276 SF				

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	90.00	0.0	61.3	61.3					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	61.3	61.3	61.1	0.22	272.824		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	61.3	61.3	60.6	0.67	90.941		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	61.3	61.3	60.2	1.12	54.565		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	61.3	61.3	59.7	1.57	38.975 CC, ES		
500.0	500.0	497.9	497.8	1.0	1.0	90.05	-0.1	63.0	63.0	61.0	2.01	31.417		
600.0	600.0	595.5	595.4	1.2	1.2	90.18	-0.2	68.0	68.1	65.7	2.44	27.939		
700.0	700.0	692.7	692.2	1.5	1.4	90.37	-0.5	76.3	76.7	73.8	2.89	26.504		
800.0	800.0	789.2	788.0	1.7	1.7	90.57	-0.9	87.7	88.5	85.2	3.37	26.244		
900.0	900.0	884.8	882.5	1.9	2.0	90.75	-1.3	102.2	103.7	99.8	3.89	26.654		
1,000.0	1,000.0	982.4	978.6	2.1	2.3	90.91	-1.9	119.4	121.3	116.8	4.45	27.278		
1,100.0	1,100.0	1,080.8	1,075.4	2.4	2.7	91.04	-2.5	136.8	139.0	134.0	5.03	27.655		
1,200.0	1,200.0	1,179.2	1,172.3	2.6	3.0	91.13	-3.0	154.2	156.7	151.0	5.62	27.899		
1,300.0	1,300.0	1,277.7	1,269.2	2.8	3.4	91.21	-3.6	171.6	174.3	168.1	6.21	28.063		
1,400.0	1,400.0	1,376.1	1,366.0	3.0	3.8	91.27	-4.2	189.0	192.0	185.2	6.82	28.177		
1,500.0	1,500.0	1,474.5	1,462.9	3.3	4.2	91.32	-4.8	206.4	209.7	202.3	7.42	28.258		
1,600.0	1,600.0	1,573.2	1,560.1	3.5	4.6	-5.18	-5.3	223.8	225.7	218.7	6.99	32.309		
1,700.0	1,699.8	1,672.4	1,657.7	3.7	5.0	-5.23	-5.9	241.3	238.2	230.8	7.42	32.086		
1,800.0	1,799.5	1,772.0	1,755.7	3.9	5.4	-5.35	-6.5	258.9	247.3	239.4	7.86	31.443		
1,849.7	1,848.8	1,821.5	1,804.5	4.0	5.6	-5.44	-6.8	267.7	250.5	242.4	8.08	30.990		
1,900.0	1,898.8	1,871.8	1,854.0	4.1	5.8	-5.55	-7.1	276.6	253.3	245.0	8.31	30.472		
2,000.0	1,998.0	1,971.6	1,952.2	4.4	6.2	-5.74	-7.6	294.2	259.0	250.2	8.78	29.511		
2,100.0	2,097.3	2,071.5	2,050.5	4.6	6.6	-5.93	-8.2	311.9	264.6	255.4	9.24	28.634		
2,200.0	2,196.5	2,171.3	2,148.8	4.9	7.0	-6.12	-8.8	329.5	270.2	260.5	9.71	27.831		
2,300.0	2,295.8	2,271.2	2,247.0	5.1	7.4	-6.29	-9.4	347.2	275.9	265.7	10.18	27.094		
2,400.0	2,395.0	2,371.0	2,345.3	5.4	7.8	-6.46	-10.0	364.8	281.5	270.9	10.66	26.415		
2,500.0	2,494.3	2,470.8	2,443.5	5.7	8.2	-6.62	-10.5	382.5	287.2	276.0	11.14	25.788		
2,600.0	2,593.6	2,570.7	2,541.8	6.0	8.6	-6.77	-11.1	400.1	292.8	281.2	11.61	25.208		
2,700.0	2,692.8	2,670.5	2,640.1	6.2	9.0	-6.92	-11.7	417.8	298.4	286.3	12.10	24.671		
2,800.0	2,792.1	2,770.3	2,738.3	6.5	9.4	-7.06	-12.3	435.4	304.1	291.5	12.58	24.171		
2,900.0	2,891.3	2,870.2	2,836.6	6.8	9.8	-7.20	-12.9	453.1	309.7	296.7	13.07	23.705		
3,000.0	2,990.6	2,970.0	2,934.9	7.1	10.2	-7.33	-13.4	470.7	315.4	301.8	13.55	23.270		
3,100.0	3,089.8	3,069.9	3,033.1	7.4	10.6	-7.46	-14.0	488.4	321.0	307.0	14.04	22.864		
3,200.0	3,189.1	3,169.7	3,131.4	7.7	11.0	-7.59	-14.6	506.0	326.7	312.2	14.53	22.482		
3,300.0	3,288.3	3,269.5	3,229.7	8.0	11.4	-7.71	-15.2	523.6	332.3	317.3	15.02	22.124		
3,400.0	3,387.6	3,369.4	3,327.9	8.3	11.8	-7.82	-15.8	541.3	338.0	322.5	15.51	21.788		
3,500.0	3,486.9	3,469.2	3,426.2	8.6	12.2	-7.93	-16.3	558.9	343.7	327.7	16.01	21.471		
3,600.0	3,586.1	3,569.0	3,524.4	8.9	12.6	-8.04	-16.9	576.6	349.3	332.8	16.50	21.171		
3,665.6	3,651.2	3,634.5	3,588.9	9.1	12.9	-8.11	-17.3	588.2	353.0	336.2	16.82	20.984		
3,700.0	3,685.4	3,668.9	3,622.7	9.2	13.0	-8.15	-17.5	594.2	355.2	338.2	16.99	20.908		
3,800.0	3,785.0	3,768.5	3,720.8	9.5	13.4	-8.21	-18.1	611.8	363.8	346.3	17.43	20.867		
3,900.0	3,884.8	3,867.8	3,818.5	9.7	13.8	-8.20	-18.6	629.4	375.8	357.9	17.85	21.051		
4,000.0	3,984.8	3,966.6	3,915.7	9.8	14.2	-8.13	-19.2	646.9	391.2	372.9	18.24	21.447		
4,015.2	4,000.0	3,981.6	3,930.5	9.9	14.3	88.42	-19.3	649.5	393.8	375.5	18.32	21.494		
4,100.0	4,084.8	4,065.0	4,012.6	10.0	14.6	88.55	-19.8	664.3	408.8	390.1	18.70	21.861		
4,200.0	4,184.8	4,163.4	4,109.4	10.2	15.0	88.68	-20.4	681.7	426.5	407.3	19.16	22.262		
4,300.0	4,284.8	4,261.8	4,206.3	10.4	15.4	88.81	-20.9	699.0	444.1	424.5	19.61	22.644		
4,400.0	4,384.8	4,360.3	4,303.2	10.6	15.8	88.93	-21.5	716.4	461.8	441.7	20.07	23.007		
4,500.0	4,484.8	4,458.7	4,400.1	10.8	16.2	89.04	-22.1	733.8	479.4	458.9	20.53	23.354		
4,600.0	4,584.8	4,557.1	4,496.9	11.0	16.6	89.14	-22.6	751.2	497.1	476.1	20.99	23.684		
4,700.0	4,684.8	4,655.5	4,593.8	11.2	17.0	89.23	-23.2	768.6	514.8	493.3	21.45	23.999		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation					
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor					
4,800.0	4,784.8	4,754.0	4,690.7	11.4	17.4	89.32	-23.8	786.0	532.4	510.5	21.91	24.300					
4,900.0	4,884.8	4,852.4	4,787.6	11.6	17.8	89.40	-24.4	803.4	550.1	527.7	22.37	24.588					
5,000.0	4,984.8	4,950.8	4,884.4	11.8	18.2	89.48	-24.9	820.8	567.8	545.0	22.84	24.864					
5,100.0	5,084.8	5,049.2	4,981.3	12.0	18.6	89.55	-25.5	838.2	585.5	562.2	23.30	25.128					
5,200.0	5,184.8	5,147.7	5,078.2	12.2	19.0	89.62	-26.1	855.6	603.1	579.4	23.76	25.382					
5,300.0	5,284.8	5,246.1	5,175.0	12.4	19.4	89.69	-26.6	873.0	620.8	596.6	24.23	25.625					
5,400.0	5,384.8	5,344.5	5,271.9	12.6	19.8	89.75	-27.2	890.4	638.5	613.8	24.69	25.858					
5,500.0	5,484.8	5,442.9	5,368.8	12.8	20.2	89.80	-27.8	907.8	656.2	631.0	25.16	26.083					
5,600.0	5,584.8	5,541.4	5,465.7	13.0	20.6	89.86	-28.4	925.2	673.8	648.2	25.62	26.298					
5,700.0	5,684.8	5,662.1	5,584.7	13.2	21.0	89.92	-29.0	945.1	690.4	664.3	26.10	26.450					
5,800.0	5,784.8	5,793.2	5,714.9	13.4	21.3	89.96	-29.5	961.1	702.6	676.0	26.57	26.446					
5,900.0	5,884.8	5,925.5	5,846.8	13.6	21.6	89.99	-29.9	971.2	710.2	683.2	27.02	26.288					
6,000.0	5,984.8	6,058.5	5,979.7	13.8	21.8	90.00	-30.0	975.2	713.3	685.8	27.46	25.975					
6,100.0	6,084.8	6,163.6	6,084.8	14.0	21.9	90.00	-30.0	975.3	713.3	685.5	27.86	25.601					
6,200.0	6,184.8	6,263.6	6,184.8	14.2	22.0	90.00	-30.0	975.3	713.3	685.1	28.26	25.242					
6,300.0	6,284.8	6,363.6	6,284.8	14.4	22.2	90.00	-30.0	975.3	713.3	684.7	28.66	24.890					
6,387.5	6,372.3	6,451.1	6,372.3	14.6	22.3	90.00	-30.0	975.3	713.3	684.3	29.01	24.590					
6,400.0	6,384.8	6,463.8	6,385.0	14.6	22.3	-90.92	-30.1	975.3	713.3	684.3	29.03	24.569					
6,450.0	6,434.7	6,514.6	6,435.7	14.7	22.4	-90.92	-32.6	975.3	713.3	684.1	29.22	24.416					
6,500.0	6,484.3	6,565.3	6,486.1	14.8	22.4	-90.91	-38.5	975.2	713.3	683.9	29.40	24.262					
6,550.0	6,533.5	6,616.1	6,536.0	14.9	22.5	-90.90	-47.7	975.0	713.3	683.7	29.59	24.105					
6,600.0	6,582.0	6,666.9	6,585.2	15.0	22.6	-90.88	-60.3	974.8	713.3	683.5	29.79	23.942					
6,650.0	6,629.6	6,717.6	6,633.4	15.1	22.6	-90.87	-76.0	974.6	713.3	683.3	30.01	23.771					
6,700.0	6,676.1	6,768.3	6,680.5	15.2	22.7	-90.84	-94.9	974.2	713.3	683.0	30.24	23.588					
6,750.0	6,721.3	6,819.1	6,726.2	15.3	22.8	-90.82	-116.9	973.9	713.3	682.8	30.50	23.387					
6,800.0	6,765.0	6,869.7	6,770.3	15.5	22.9	-90.79	-141.8	973.5	713.2	682.4	30.79	23.165					
6,850.0	6,807.0	6,920.4	6,812.6	15.6	23.0	-90.76	-169.6	973.0	713.2	682.1	31.12	22.918					
6,900.0	6,847.2	6,971.0	6,853.0	15.8	23.1	-90.72	-200.2	972.5	713.2	681.7	31.50	22.641					
6,950.0	6,885.3	7,021.6	6,891.2	16.0	23.2	-90.68	-233.3	972.0	713.2	681.2	31.93	22.333					
7,000.0	6,921.2	7,072.2	6,927.2	16.2	23.4	-90.64	-268.8	971.4	713.1	680.7	32.43	21.990					
7,050.0	6,954.8	7,122.7	6,960.7	16.5	23.6	-90.59	-306.6	970.7	713.1	680.1	32.99	21.614					
7,100.0	6,985.9	7,173.2	6,991.5	16.7	23.8	-90.55	-346.5	970.1	713.1	679.5	33.63	21.205					
7,150.0	7,014.3	7,223.6	7,019.7	17.1	24.0	-90.50	-388.4	969.4	713.1	678.7	34.34	20.765					
7,200.0	7,040.0	7,274.0	7,045.0	17.5	24.3	-90.44	-431.9	968.7	713.0	677.9	35.13	20.298					
7,250.0	7,062.9	7,324.4	7,067.4	17.9	24.5	-90.39	-477.0	967.9	713.0	677.0	36.00	19.808					
7,300.0	7,082.7	7,374.7	7,086.8	18.3	24.9	-90.33	-523.4	967.1	713.0	676.0	36.94	19.302					
7,350.0	7,099.6	7,424.9	7,103.0	18.8	25.2	-90.28	-571.0	966.4	713.0	675.0	37.96	18.784					
7,400.0	7,113.3	7,475.1	7,116.0	19.4	25.6	-90.22	-619.4	965.5	712.9	673.9	39.04	18.260					
7,450.0	7,123.9	7,525.3	7,125.9	19.9	26.0	-90.16	-668.6	964.7	712.9	672.7	40.19	17.737					
7,500.0	7,131.2	7,575.4	7,132.5	20.5	26.5	-90.10	-718.2	963.9	712.9	671.5	41.40	17.220					
7,507.5	7,132.0	7,582.9	7,133.3	20.6	26.5	-90.10	-725.7	963.8	712.9	671.3	41.58	17.143					
7,581.5	7,139.8	7,656.9	7,140.9	21.6	27.2	-90.09	-799.3	962.6	712.8	669.4	43.48	16.396					
7,600.0	7,141.5	7,675.4	7,142.5	21.8	27.4	-90.08	-817.7	962.3	712.8	668.9	43.97	16.213					
7,700.1	7,146.0	7,775.5	7,146.0	23.2	28.5	-89.99	-917.8	960.6	712.8	666.1	46.70	15.264					
7,800.0	7,146.2	7,875.4	7,146.0	24.6	29.7	-89.98	-1,017.7	958.9	712.7	663.2	49.57	14.379					
7,900.0	7,146.3	7,975.4	7,146.0	26.1	30.9	-89.97	-1,117.7	957.3	712.7	660.1	52.55	13.560					
8,000.0	7,146.4	8,075.4	7,146.0	27.6	32.2	-89.96	-1,217.6	955.6	712.6	657.0	55.65	12.806					
8,100.0	7,146.5	8,175.4	7,146.0	29.2	33.6	-89.95	-1,317.6	954.0	712.6	653.7	58.83	12.113					
8,200.0	7,146.7	8,275.4	7,146.0	30.9	35.1	-89.94	-1,417.6	952.3	712.5	650.4	62.08	11.477					
8,300.0	7,146.8	8,375.4	7,146.0	32.5	36.5	-89.93	-1,517.6	950.6	712.5	647.1	65.40	10.895					

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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	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)			
8,400.0	7,146.9	8,475.4	7,146.0	34.2	38.0	-89.92	-1,617.6	949.0	712.4	643.7	68.77	10.360		
8,500.0	7,147.0	8,575.4	7,146.0	35.9	39.6	-89.91	-1,717.6	947.3	712.4	640.2	72.18	9.869		
8,600.0	7,147.2	8,675.4	7,146.0	37.6	41.2	-89.90	-1,817.6	945.7	712.3	636.7	75.64	9.418		
8,700.0	7,147.3	8,775.4	7,146.0	39.4	42.8	-89.89	-1,917.5	944.0	712.3	633.1	79.13	9.002		
8,800.0	7,147.4	8,875.4	7,146.0	41.1	44.4	-89.88	-2,017.5	942.3	712.2	629.6	82.65	8.618		
8,900.0	7,147.5	8,975.4	7,146.0	42.9	46.1	-89.87	-2,117.5	940.7	712.2	626.0	86.19	8.262		
9,000.0	7,147.7	9,075.4	7,146.0	44.7	47.8	-89.86	-2,217.5	939.0	712.1	622.4	89.76	7.933		
9,100.0	7,147.8	9,175.4	7,146.0	46.5	49.5	-89.85	-2,317.5	937.4	712.1	618.7	93.36	7.628		
9,200.0	7,147.9	9,275.4	7,146.0	48.3	51.2	-89.84	-2,417.5	935.7	712.0	615.1	96.97	7.343		
9,300.0	7,148.0	9,375.4	7,146.0	50.1	52.9	-89.83	-2,517.5	934.0	712.0	611.4	100.59	7.078		
9,400.0	7,148.2	9,475.4	7,146.0	51.9	54.6	-89.82	-2,617.4	932.4	711.9	607.7	104.23	6.830		
9,500.0	7,148.3	9,575.4	7,146.0	53.8	56.4	-89.81	-2,717.4	930.7	711.9	604.0	107.89	6.598		
9,600.0	7,148.4	9,675.4	7,146.0	55.6	58.1	-89.80	-2,817.4	929.1	711.8	600.3	111.55	6.381		
9,700.0	7,148.5	9,775.4	7,146.0	57.4	59.9	-89.79	-2,917.4	927.4	711.8	596.6	115.23	6.177		
9,800.0	7,148.7	9,875.4	7,146.0	59.3	61.7	-89.78	-3,017.4	925.7	711.7	592.8	118.91	5.985		
9,900.0	7,148.8	9,975.4	7,146.0	61.1	63.5	-89.77	-3,117.4	924.1	711.7	589.1	122.61	5.804		
10,000.0	7,148.9	10,075.4	7,146.0	63.0	65.3	-89.76	-3,217.4	922.4	711.6	585.3	126.31	5.634		
10,100.0	7,149.0	10,175.4	7,146.0	64.8	67.1	-89.75	-3,317.4	920.8	711.6	581.6	130.02	5.473		
10,200.0	7,149.2	10,275.4	7,146.0	66.7	68.9	-89.74	-3,417.3	919.1	711.5	577.8	133.74	5.320		
10,300.0	7,149.3	10,375.4	7,146.0	68.6	70.7	-89.73	-3,517.3	917.4	711.5	574.0	137.47	5.176		
10,400.0	7,149.4	10,475.4	7,146.0	70.4	72.5	-89.72	-3,617.3	915.8	711.4	570.2	141.20	5.039		
10,500.0	7,149.5	10,575.4	7,146.0	72.3	74.3	-89.71	-3,717.3	914.1	711.4	566.5	144.93	4.909		
10,600.0	7,149.7	10,675.4	7,146.0	74.2	76.2	-89.70	-3,817.3	912.5	711.3	562.7	148.67	4.785		
10,700.0	7,149.8	10,775.4	7,146.0	76.0	78.0	-89.69	-3,917.3	910.8	711.3	558.9	152.41	4.667		
10,800.0	7,149.9	10,875.4	7,146.0	77.9	79.8	-89.68	-4,017.3	909.1	711.2	555.1	156.16	4.554		
10,900.0	7,150.0	10,975.4	7,146.0	79.8	81.7	-89.67	-4,117.2	907.5	711.2	551.3	159.92	4.447		
11,000.0	7,150.2	11,075.4	7,146.0	81.7	83.5	-89.66	-4,217.2	905.8	711.1	547.5	163.67	4.345		
11,100.0	7,150.3	11,175.4	7,146.0	83.5	85.4	-89.65	-4,317.2	904.2	711.1	543.7	167.43	4.247		
11,200.0	7,150.4	11,275.4	7,146.0	85.4	87.2	-89.64	-4,417.2	902.5	711.0	539.9	171.19	4.153		
11,300.0	7,150.5	11,375.4	7,146.0	87.3	89.1	-89.63	-4,517.2	900.8	711.0	536.0	174.96	4.064		
11,400.0	7,150.7	11,475.4	7,146.0	89.2	90.9	-89.62	-4,617.2	899.2	711.0	532.2	178.73	3.978		
11,500.0	7,150.8	11,575.4	7,146.0	91.1	92.8	-89.61	-4,717.2	897.5	710.9	528.4	182.50	3.895		
11,600.0	7,150.9	11,675.4	7,146.0	93.0	94.6	-89.60	-4,817.1	895.9	710.9	524.6	186.27	3.816		
11,647.6	7,151.0	11,723.1	7,146.0	93.9	95.5	-89.60	-4,864.8	895.1	710.8	522.8	188.07	3.780		
11,669.1	7,151.0	11,732.7	7,146.0	94.3	95.7	-89.60	-4,874.4	894.9	710.9	522.3	188.66	3.768		
11,669.6	7,151.0	11,732.7	7,146.0	94.3	95.7	-89.60	-4,874.4	894.9	710.9	522.3	188.67	3.768 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sorin Natural Resources 2R-403	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 (01-28-13)	Offset TVD Reference:	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 2R-403
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.49°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sorin Natural Resources 2R-403
Project:	SEC.2-T4N-R66W	TVD Reference:	WELL @ 4686.0ft (RKB- 15')
Reference Site:	Sorin Natural Resources 2R-HZ Pad Sec.2-T4N-R66W	MD Reference:	WELL @ 4686.0ft (RKB- 15')
Site Error:	0.0ft	North Reference:	True
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Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (01-28-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4686.0ft (RKB- 15')
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