

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Sorin Natural Resources 2M-423

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

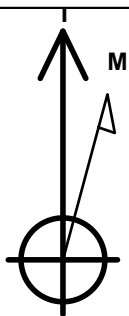
Ground Elevation: 4673.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1370695.63	3210931.44	40.348490	-104.743210	

RKB - 15' WELL @ 4688.0ft (RKB - 15')

### WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500' FSL & 2130' FEL	7158.0	-4892.6	153.3	Point



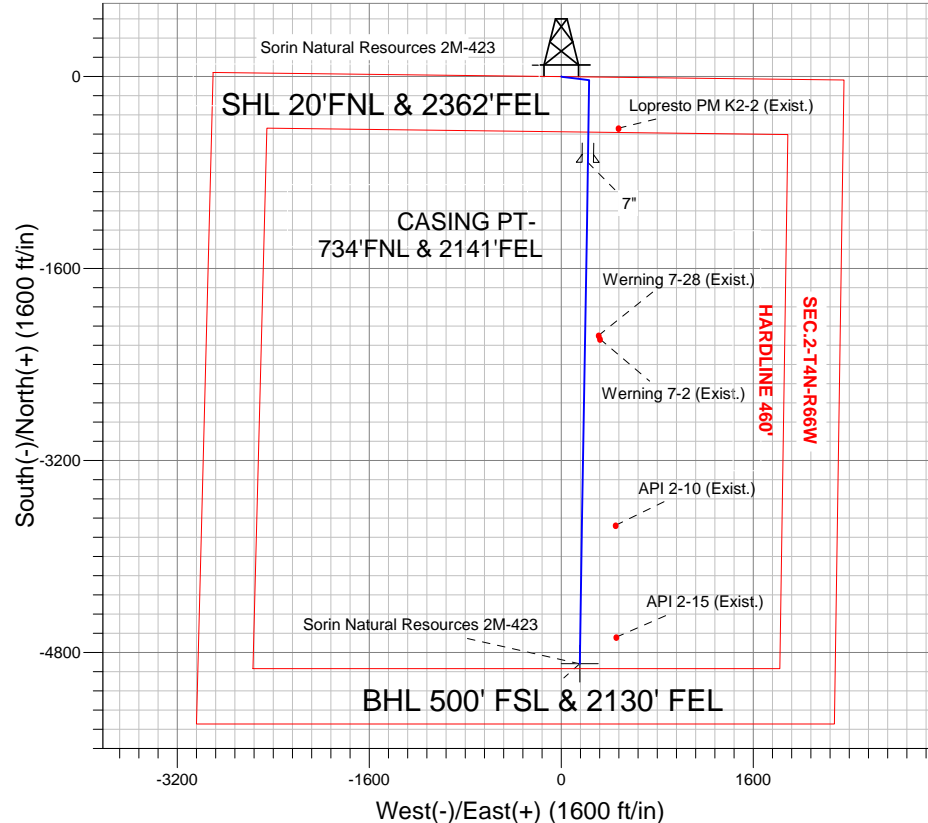
Azimuths to True North  
Magnetic North: 8.63°

Magnetic Field  
Strength: 52937.0nT  
Dip Angle: 66.96°  
Date: 1/28/2013  
Model: IGRF2010

### ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6398.3	6408.1	KOP #2
7172.0	7726.1	End of Build

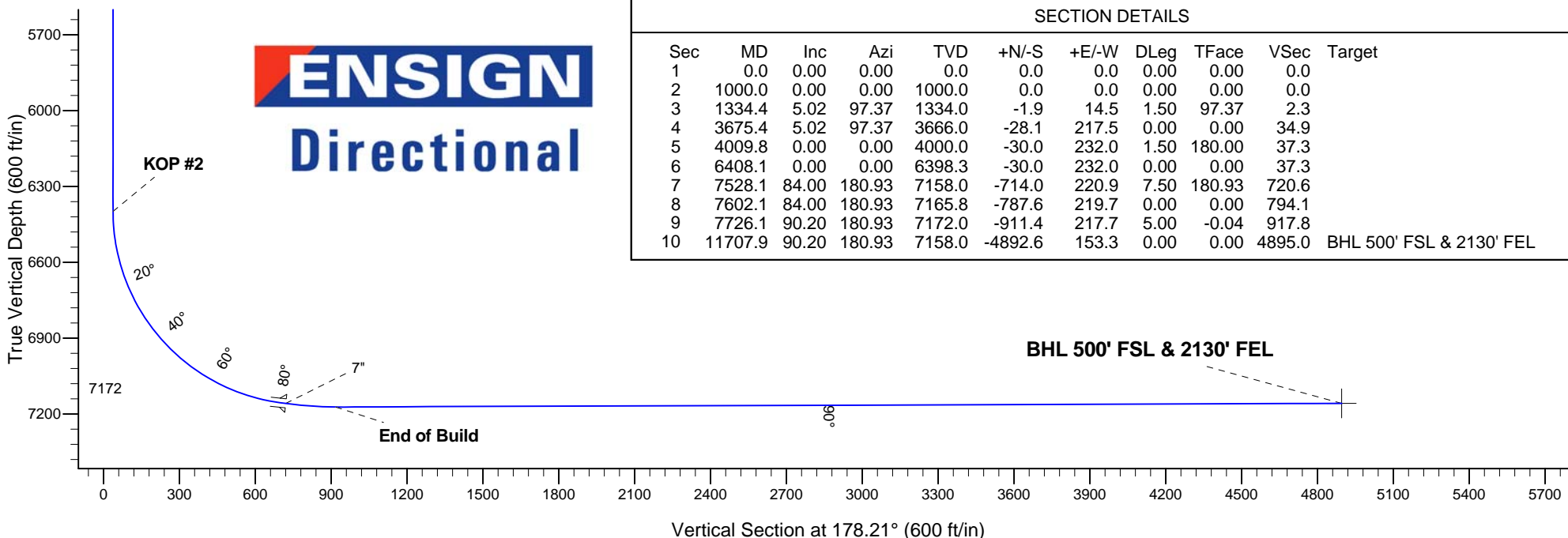
Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W  
Sorin Natural Resources 2M-423  
Plan #1 (01-25-13)  
14:33, January 28 2013



### 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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1334.4	5.02	97.37	1334.0	-1.9	14.5	1.50	97.37	2.3	
4	3675.4	5.02	97.37	3666.0	-28.1	217.5	0.00	0.00	34.9	
5	4009.8	0.00	0.00	4000.0	-30.0	232.0	1.50	180.00	37.3	
6	6408.1	0.00	0.00	6398.3	-30.0	232.0	0.00	0.00	37.3	
7	7528.1	84.00	180.93	7158.0	-714.0	220.9	7.50	180.93	720.6	
8	7602.1	84.00	180.93	7165.8	-787.6	219.7	0.00	0.00	794.1	
9	7726.1	90.20	180.93	7172.0	-911.4	217.7	5.00	-0.04	917.8	
10	11707.9	90.20	180.93	7158.0	-4892.6	153.3	0.00	0.00	4895.0	BHL 500' FSL & 2130' FEL

### BHL 500' FSL & 2130' FEL





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T4N-R66W**

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

**Sorin Natural Resources 2M-423**

**Wellbore #1**

**Plan: Plan #1 (01-25-13)**

## **Standard Planning Report**

**28 January, 2013**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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

Site						Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W											
<b>Site Position:</b>						<b>Northing:</b>			1,370,695.40ft			<b>Latitude:</b>			40.348490		
<b>From:</b>			Lat/Long			<b>Easting:</b>			3,210,900.78ft			<b>Longitude:</b>			-104.743320		
<b>Position Uncertainty:</b>			0.0 ft			<b>Slot Radius:</b>			"			<b>Grid Convergence:</b>			0.49 °		

Well	Sorin Natural Resources 2M-423					
Well Position	+N-S	0.0 ft	Northing:	1,370,695.63 ft	Latitude:	40.348490
	+E-W	30.7 ft	Easting:	3,210,931.44 ft	Longitude:	-104.743210
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,673.0 ft

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

<b>Design</b>	Plan #1 (01-25-13)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	178.21

<b>Plan Sections</b>										
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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,334.4	5.02	97.37	1,334.0	-1.9	14.5	1.50	1.50	0.00	97.37	
3,675.4	5.02	97.37	3,666.0	-28.1	217.5	0.00	0.00	0.00	0.00	
4,009.8	0.00	0.00	4,000.0	-30.0	232.0	1.50	-1.50	0.00	180.00	
6,408.1	0.00	0.00	6,398.3	-30.0	232.0	0.00	0.00	0.00	0.00	
7,528.1	84.00	180.93	7,158.0	-714.0	220.9	7.50	7.50	0.00	180.93	
7,602.1	84.00	180.93	7,165.8	-787.6	219.7	0.00	0.00	0.00	0.00	
7,726.1	90.20	180.93	7,172.0	-911.4	217.7	5.00	5.00	0.00	-0.04	
11,707.9	90.20	180.93	7,158.0	-4,892.6	153.3	0.00	0.00	0.00	0.00	BHL 500' FSL & 21:

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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	0.60	97.37	1,040.0	0.0	0.2	0.0	1.50	1.50	0.00
1,080.0	1.20	97.37	1,080.0	-0.1	0.8	0.1	1.50	1.50	0.00
1,120.0	1.80	97.37	1,120.0	-0.2	1.9	0.3	1.50	1.50	0.00
1,160.0	2.40	97.37	1,160.0	-0.4	3.3	0.5	1.50	1.50	0.00
1,200.0	3.00	97.37	1,199.9	-0.7	5.2	0.8	1.50	1.50	0.00
1,240.0	3.60	97.37	1,239.8	-1.0	7.5	1.2	1.50	1.50	0.00
1,280.0	4.20	97.37	1,279.7	-1.3	10.2	1.6	1.50	1.50	0.00
1,320.0	4.80	97.37	1,319.6	-1.7	13.3	2.1	1.50	1.50	0.00
1,334.4	5.02	97.37	1,334.0	-1.9	14.5	2.3	1.50	1.50	0.00
1,360.0	5.02	97.37	1,359.5	-2.2	16.7	2.7	0.00	0.00	0.00
1,400.0	5.02	97.37	1,399.3	-2.6	20.2	3.2	0.00	0.00	0.00
1,440.0	5.02	97.37	1,439.2	-3.1	23.7	3.8	0.00	0.00	0.00
1,480.0	5.02	97.37	1,479.0	-3.5	27.1	4.4	0.00	0.00	0.00
1,520.0	5.02	97.37	1,518.9	-4.0	30.6	4.9	0.00	0.00	0.00
1,560.0	5.02	97.37	1,558.7	-4.4	34.1	5.5	0.00	0.00	0.00
1,600.0	5.02	97.37	1,598.6	-4.9	37.5	6.0	0.00	0.00	0.00
1,640.0	5.02	97.37	1,638.4	-5.3	41.0	6.6	0.00	0.00	0.00
1,680.0	5.02	97.37	1,678.2	-5.8	44.5	7.1	0.00	0.00	0.00
1,720.0	5.02	97.37	1,718.1	-6.2	47.9	7.7	0.00	0.00	0.00
1,760.0	5.02	97.37	1,757.9	-6.6	51.4	8.3	0.00	0.00	0.00
1,800.0	5.02	97.37	1,797.8	-7.1	54.9	8.8	0.00	0.00	0.00
1,840.0	5.02	97.37	1,837.6	-7.5	58.3	9.4	0.00	0.00	0.00
1,880.0	5.02	97.37	1,877.5	-8.0	61.8	9.9	0.00	0.00	0.00
1,920.0	5.02	97.37	1,917.3	-8.4	65.3	10.5	0.00	0.00	0.00
1,960.0	5.02	97.37	1,957.2	-8.9	68.8	11.0	0.00	0.00	0.00
2,000.0	5.02	97.37	1,997.0	-9.3	72.2	11.6	0.00	0.00	0.00

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<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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	5.02	97.37	2,036.9	-9.8	75.7	12.2	0.00	0.00	0.00
2,080.0	5.02	97.37	2,076.7	-10.2	79.2	12.7	0.00	0.00	0.00
2,120.0	5.02	97.37	2,116.6	-10.7	82.6	13.3	0.00	0.00	0.00
2,160.0	5.02	97.37	2,156.4	-11.1	86.1	13.8	0.00	0.00	0.00
2,200.0	5.02	97.37	2,196.3	-11.6	89.6	14.4	0.00	0.00	0.00
2,240.0	5.02	97.37	2,236.1	-12.0	93.0	14.9	0.00	0.00	0.00
2,280.0	5.02	97.37	2,276.0	-12.5	96.5	15.5	0.00	0.00	0.00
2,320.0	5.02	97.37	2,315.8	-12.9	100.0	16.1	0.00	0.00	0.00
2,360.0	5.02	97.37	2,355.6	-13.4	103.4	16.6	0.00	0.00	0.00
2,400.0	5.02	97.37	2,395.5	-13.8	106.9	17.2	0.00	0.00	0.00
2,440.0	5.02	97.37	2,435.3	-14.3	110.4	17.7	0.00	0.00	0.00
2,480.0	5.02	97.37	2,475.2	-14.7	113.8	18.3	0.00	0.00	0.00
2,520.0	5.02	97.37	2,515.0	-15.2	117.3	18.8	0.00	0.00	0.00
2,560.0	5.02	97.37	2,554.9	-15.6	120.8	19.4	0.00	0.00	0.00
2,600.0	5.02	97.37	2,594.7	-16.1	124.2	19.9	0.00	0.00	0.00
2,640.0	5.02	97.37	2,634.6	-16.5	127.7	20.5	0.00	0.00	0.00
2,680.0	5.02	97.37	2,674.4	-17.0	131.2	21.1	0.00	0.00	0.00
2,720.0	5.02	97.37	2,714.3	-17.4	134.7	21.6	0.00	0.00	0.00
2,760.0	5.02	97.37	2,754.1	-17.9	138.1	22.2	0.00	0.00	0.00
2,800.0	5.02	97.37	2,794.0	-18.3	141.6	22.7	0.00	0.00	0.00
2,840.0	5.02	97.37	2,833.8	-18.8	145.1	23.3	0.00	0.00	0.00
2,880.0	5.02	97.37	2,873.7	-19.2	148.5	23.8	0.00	0.00	0.00
2,920.0	5.02	97.37	2,913.5	-19.7	152.0	24.4	0.00	0.00	0.00
2,960.0	5.02	97.37	2,953.3	-20.1	155.5	25.0	0.00	0.00	0.00
3,000.0	5.02	97.37	2,993.2	-20.6	158.9	25.5	0.00	0.00	0.00
3,040.0	5.02	97.37	3,033.0	-21.0	162.4	26.1	0.00	0.00	0.00
3,080.0	5.02	97.37	3,072.9	-21.4	165.9	26.6	0.00	0.00	0.00
3,120.0	5.02	97.37	3,112.7	-21.9	169.3	27.2	0.00	0.00	0.00
3,160.0	5.02	97.37	3,152.6	-22.3	172.8	27.7	0.00	0.00	0.00
3,200.0	5.02	97.37	3,192.4	-22.8	176.3	28.3	0.00	0.00	0.00
3,240.0	5.02	97.37	3,232.3	-23.2	179.7	28.9	0.00	0.00	0.00
3,280.0	5.02	97.37	3,272.1	-23.7	183.2	29.4	0.00	0.00	0.00
3,320.0	5.02	97.37	3,312.0	-24.1	186.7	30.0	0.00	0.00	0.00
3,360.0	5.02	97.37	3,351.8	-24.6	190.1	30.5	0.00	0.00	0.00
3,400.0	5.02	97.37	3,391.7	-25.0	193.6	31.1	0.00	0.00	0.00
3,440.0	5.02	97.37	3,431.5	-25.5	197.1	31.6	0.00	0.00	0.00
3,480.0	5.02	97.37	3,471.4	-25.9	200.5	32.2	0.00	0.00	0.00
3,520.0	5.02	97.37	3,511.2	-26.4	204.0	32.8	0.00	0.00	0.00
3,560.0	5.02	97.37	3,551.1	-26.8	207.5	33.3	0.00	0.00	0.00
3,600.0	5.02	97.37	3,590.9	-27.3	211.0	33.9	0.00	0.00	0.00
3,640.0	5.02	97.37	3,630.7	-27.7	214.4	34.4	0.00	0.00	0.00
3,675.4	5.02	97.37	3,666.0	-28.1	217.5	34.9	0.00	0.00	0.00
3,680.0	4.95	97.37	3,670.6	-28.2	217.9	35.0	1.50	-1.50	0.00
3,720.0	4.35	97.37	3,710.5	-28.6	221.1	35.5	1.50	-1.50	0.00
3,760.0	3.75	97.37	3,750.4	-29.0	223.9	36.0	1.50	-1.50	0.00
3,800.0	3.15	97.37	3,790.3	-29.3	226.3	36.3	1.50	-1.50	0.00
3,840.0	2.55	97.37	3,830.2	-29.5	228.3	36.6	1.50	-1.50	0.00
3,880.0	1.95	97.37	3,870.2	-29.7	229.8	36.9	1.50	-1.50	0.00
3,920.0	1.35	97.37	3,910.2	-29.9	231.0	37.1	1.50	-1.50	0.00
3,960.0	0.75	97.37	3,950.2	-30.0	231.7	37.2	1.50	-1.50	0.00
4,000.0	0.15	97.37	3,990.2	-30.0	232.0	37.2	1.50	-1.50	0.00
4,009.8	0.00	0.00	4,000.0	-30.0	232.0	37.3	1.50	-1.50	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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)
4,040.0	0.00	0.00	4,030.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,080.0	0.00	0.00	4,070.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,120.0	0.00	0.00	4,110.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,160.0	0.00	0.00	4,150.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,200.0	0.00	0.00	4,190.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,240.0	0.00	0.00	4,230.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,280.0	0.00	0.00	4,270.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,320.0	0.00	0.00	4,310.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,360.0	0.00	0.00	4,350.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,400.0	0.00	0.00	4,390.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,440.0	0.00	0.00	4,430.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,480.0	0.00	0.00	4,470.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,520.0	0.00	0.00	4,510.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,560.0	0.00	0.00	4,550.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,600.0	0.00	0.00	4,590.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,640.0	0.00	0.00	4,630.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,680.0	0.00	0.00	4,670.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,720.0	0.00	0.00	4,710.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,760.0	0.00	0.00	4,750.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,800.0	0.00	0.00	4,790.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,840.0	0.00	0.00	4,830.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,880.0	0.00	0.00	4,870.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,920.0	0.00	0.00	4,910.2	-30.0	232.0	37.3	0.00	0.00	0.00
4,960.0	0.00	0.00	4,950.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,990.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,040.0	0.00	0.00	5,030.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,080.0	0.00	0.00	5,070.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,120.0	0.00	0.00	5,110.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,160.0	0.00	0.00	5,150.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,190.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,240.0	0.00	0.00	5,230.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,280.0	0.00	0.00	5,270.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,320.0	0.00	0.00	5,310.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,360.0	0.00	0.00	5,350.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,390.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,440.0	0.00	0.00	5,430.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,480.0	0.00	0.00	5,470.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,520.0	0.00	0.00	5,510.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,560.0	0.00	0.00	5,550.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,590.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,640.0	0.00	0.00	5,630.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,680.0	0.00	0.00	5,670.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,720.0	0.00	0.00	5,710.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,760.0	0.00	0.00	5,750.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,790.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,840.0	0.00	0.00	5,830.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,880.0	0.00	0.00	5,870.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,920.0	0.00	0.00	5,910.2	-30.0	232.0	37.3	0.00	0.00	0.00
5,960.0	0.00	0.00	5,950.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,990.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,040.0	0.00	0.00	6,030.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,080.0	0.00	0.00	6,070.2	-30.0	232.0	37.3	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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	6,110.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,160.0	0.00	0.00	6,150.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,190.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,240.0	0.00	0.00	6,230.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,280.0	0.00	0.00	6,270.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,320.0	0.00	0.00	6,310.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,360.0	0.00	0.00	6,350.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,390.2	-30.0	232.0	37.3	0.00	0.00	0.00
6,408.1	0.00	0.00	6,398.3	-30.0	232.0	37.3	0.00	0.00	0.00
6,440.0	2.39	180.93	6,430.2	-30.7	232.0	37.9	7.50	7.50	0.00
6,480.0	5.39	180.93	6,470.1	-33.4	231.9	40.6	7.50	7.50	0.00
6,520.0	8.39	180.93	6,509.8	-38.2	231.9	45.4	7.50	7.50	0.00
6,560.0	11.39	180.93	6,549.2	-45.0	231.8	52.3	7.50	7.50	0.00
6,600.0	14.39	180.93	6,588.2	-54.0	231.6	61.2	7.50	7.50	0.00
6,640.0	17.39	180.93	6,626.6	-64.9	231.4	72.1	7.50	7.50	0.00
6,680.0	20.39	180.93	6,664.5	-77.9	231.2	85.1	7.50	7.50	0.00
6,720.0	23.39	180.93	6,701.6	-92.8	231.0	100.0	7.50	7.50	0.00
6,760.0	26.39	180.93	6,737.9	-109.6	230.7	116.8	7.50	7.50	0.00
6,800.0	29.39	180.93	6,773.2	-128.3	230.4	135.5	7.50	7.50	0.00
6,840.0	32.39	180.93	6,807.5	-148.9	230.1	156.0	7.50	7.50	0.00
6,880.0	35.39	180.93	6,840.7	-171.2	229.7	178.3	7.50	7.50	0.00
6,920.0	38.39	180.93	6,872.7	-195.2	229.3	202.2	7.50	7.50	0.00
6,960.0	41.39	180.93	6,903.4	-220.8	228.9	227.9	7.50	7.50	0.00
7,000.0	44.39	180.93	6,932.7	-248.0	228.5	255.1	7.50	7.50	0.00
7,040.0	47.39	180.93	6,960.6	-276.7	228.0	283.7	7.50	7.50	0.00
7,080.0	50.39	180.93	6,986.8	-306.9	227.5	313.8	7.50	7.50	0.00
7,120.0	53.39	180.93	7,011.5	-338.3	227.0	345.3	7.50	7.50	0.00
7,160.0	56.39	180.93	7,034.5	-371.1	226.5	378.0	7.50	7.50	0.00
7,200.0	59.39	180.93	7,055.8	-404.9	225.9	411.8	7.50	7.50	0.00
7,240.0	62.39	180.93	7,075.2	-439.9	225.3	446.7	7.50	7.50	0.00
7,280.0	65.39	180.93	7,092.8	-475.8	224.8	482.6	7.50	7.50	0.00
7,320.0	68.39	180.93	7,108.5	-512.6	224.2	519.3	7.50	7.50	0.00
7,360.0	71.39	180.93	7,122.3	-550.1	223.6	556.8	7.50	7.50	0.00
7,400.0	74.39	180.93	7,134.1	-588.3	222.9	595.0	7.50	7.50	0.00
7,440.0	77.39	180.93	7,143.8	-627.1	222.3	633.8	7.50	7.50	0.00
7,480.0	80.39	180.93	7,151.5	-666.4	221.7	673.0	7.50	7.50	0.00
7,520.0	83.39	180.93	7,157.2	-705.9	221.0	712.5	7.50	7.50	0.00
7,528.1	84.00	180.93	7,158.0	-714.0	220.9	720.6	7.50	7.50	0.00
7,560.0	84.00	180.93	7,161.4	-745.7	220.4	752.3	0.00	0.00	0.00
7,600.0	84.00	180.93	7,165.6	-785.5	219.7	792.0	0.00	0.00	0.00
7,602.1	84.00	180.93	7,165.8	-787.6	219.7	794.1	0.00	0.00	0.00
7,640.0	85.89	180.93	7,169.1	-825.3	219.1	831.8	5.00	5.00	0.00
7,680.0	87.89	180.93	7,171.3	-865.3	218.4	871.7	5.00	5.00	0.00
7,720.0	89.89	180.93	7,172.1	-905.2	217.8	911.6	5.00	5.00	0.00
7,726.1	90.20	180.93	7,172.0	-911.4	217.7	917.8	5.00	5.00	0.00
7,760.0	90.20	180.93	7,171.9	-945.2	217.1	951.6	0.00	0.00	0.00
7,800.0	90.20	180.93	7,171.8	-985.2	216.5	991.5	0.00	0.00	0.00
7,840.0	90.20	180.93	7,171.6	-1,025.2	215.9	1,031.5	0.00	0.00	0.00
7,880.0	90.20	180.93	7,171.5	-1,065.2	215.2	1,071.4	0.00	0.00	0.00
7,920.0	90.20	180.93	7,171.4	-1,105.2	214.6	1,111.4	0.00	0.00	0.00
7,960.0	90.20	180.93	7,171.2	-1,145.2	213.9	1,151.4	0.00	0.00	0.00
8,000.0	90.20	180.93	7,171.1	-1,185.2	213.3	1,191.3	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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)
8,040.0	90.20	180.93	7,170.9	-1,225.2	212.6	1,231.3	0.00	0.00	0.00
8,080.0	90.20	180.93	7,170.8	-1,265.2	212.0	1,271.2	0.00	0.00	0.00
8,120.0	90.20	180.93	7,170.7	-1,305.2	211.3	1,311.2	0.00	0.00	0.00
8,160.0	90.20	180.93	7,170.5	-1,345.2	210.7	1,351.1	0.00	0.00	0.00
8,200.0	90.20	180.93	7,170.4	-1,385.2	210.0	1,391.1	0.00	0.00	0.00
8,240.0	90.20	180.93	7,170.2	-1,425.2	209.4	1,431.0	0.00	0.00	0.00
8,280.0	90.20	180.93	7,170.1	-1,465.2	208.7	1,471.0	0.00	0.00	0.00
8,320.0	90.20	180.93	7,170.0	-1,505.2	208.1	1,510.9	0.00	0.00	0.00
8,360.0	90.20	180.93	7,169.8	-1,545.2	207.5	1,550.9	0.00	0.00	0.00
8,400.0	90.20	180.93	7,169.7	-1,585.2	206.8	1,590.9	0.00	0.00	0.00
8,440.0	90.20	180.93	7,169.5	-1,625.2	206.2	1,630.8	0.00	0.00	0.00
8,480.0	90.20	180.93	7,169.4	-1,665.1	205.5	1,670.8	0.00	0.00	0.00
8,520.0	90.20	180.93	7,169.2	-1,705.1	204.9	1,710.7	0.00	0.00	0.00
8,560.0	90.20	180.93	7,169.1	-1,745.1	204.2	1,750.7	0.00	0.00	0.00
8,600.0	90.20	180.93	7,169.0	-1,785.1	203.6	1,790.6	0.00	0.00	0.00
8,640.0	90.20	180.93	7,168.8	-1,825.1	202.9	1,830.6	0.00	0.00	0.00
8,680.0	90.20	180.93	7,168.7	-1,865.1	202.3	1,870.5	0.00	0.00	0.00
8,720.0	90.20	180.93	7,168.5	-1,905.1	201.6	1,910.5	0.00	0.00	0.00
8,760.0	90.20	180.93	7,168.4	-1,945.1	201.0	1,950.4	0.00	0.00	0.00
8,800.0	90.20	180.93	7,168.3	-1,985.1	200.3	1,990.4	0.00	0.00	0.00
8,840.0	90.20	180.93	7,168.1	-2,025.1	199.7	2,030.4	0.00	0.00	0.00
8,880.0	90.20	180.93	7,168.0	-2,065.1	199.0	2,070.3	0.00	0.00	0.00
8,920.0	90.20	180.93	7,167.8	-2,105.1	198.4	2,110.3	0.00	0.00	0.00
8,960.0	90.20	180.93	7,167.7	-2,145.1	197.8	2,150.2	0.00	0.00	0.00
9,000.0	90.20	180.93	7,167.6	-2,185.1	197.1	2,190.2	0.00	0.00	0.00
9,040.0	90.20	180.93	7,167.4	-2,225.1	196.5	2,230.1	0.00	0.00	0.00
9,080.0	90.20	180.93	7,167.3	-2,265.1	195.8	2,270.1	0.00	0.00	0.00
9,120.0	90.20	180.93	7,167.1	-2,305.1	195.2	2,310.0	0.00	0.00	0.00
9,160.0	90.20	180.93	7,167.0	-2,345.1	194.5	2,350.0	0.00	0.00	0.00
9,200.0	90.20	180.93	7,166.8	-2,385.0	193.9	2,389.9	0.00	0.00	0.00
9,240.0	90.20	180.93	7,166.7	-2,425.0	193.2	2,429.9	0.00	0.00	0.00
9,280.0	90.20	180.93	7,166.6	-2,465.0	192.6	2,469.9	0.00	0.00	0.00
9,320.0	90.20	180.93	7,166.4	-2,505.0	191.9	2,509.8	0.00	0.00	0.00
9,360.0	90.20	180.93	7,166.3	-2,545.0	191.3	2,549.8	0.00	0.00	0.00
9,400.0	90.20	180.93	7,166.1	-2,585.0	190.6	2,589.7	0.00	0.00	0.00
9,440.0	90.20	180.93	7,166.0	-2,625.0	190.0	2,629.7	0.00	0.00	0.00
9,480.0	90.20	180.93	7,165.9	-2,665.0	189.3	2,669.6	0.00	0.00	0.00
9,520.0	90.20	180.93	7,165.7	-2,705.0	188.7	2,709.6	0.00	0.00	0.00
9,560.0	90.20	180.93	7,165.6	-2,745.0	188.1	2,749.5	0.00	0.00	0.00
9,600.0	90.20	180.93	7,165.4	-2,785.0	187.4	2,789.5	0.00	0.00	0.00
9,640.0	90.20	180.93	7,165.3	-2,825.0	186.8	2,829.4	0.00	0.00	0.00
9,680.0	90.20	180.93	7,165.2	-2,865.0	186.1	2,869.4	0.00	0.00	0.00
9,720.0	90.20	180.93	7,165.0	-2,905.0	185.5	2,909.4	0.00	0.00	0.00
9,760.0	90.20	180.93	7,164.9	-2,945.0	184.8	2,949.3	0.00	0.00	0.00
9,800.0	90.20	180.93	7,164.7	-2,985.0	184.2	2,989.3	0.00	0.00	0.00
9,840.0	90.20	180.93	7,164.6	-3,025.0	183.5	3,029.2	0.00	0.00	0.00
9,880.0	90.20	180.93	7,164.4	-3,065.0	182.9	3,069.2	0.00	0.00	0.00
9,920.0	90.20	180.93	7,164.3	-3,104.9	182.2	3,109.1	0.00	0.00	0.00
9,960.0	90.20	180.93	7,164.2	-3,144.9	181.6	3,149.1	0.00	0.00	0.00
10,000.0	90.20	180.93	7,164.0	-3,184.9	180.9	3,189.0	0.00	0.00	0.00
10,040.0	90.20	180.93	7,163.9	-3,224.9	180.3	3,229.0	0.00	0.00	0.00
10,080.0	90.20	180.93	7,163.7	-3,264.9	179.6	3,269.0	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

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)
10,120.0	90.20	180.93	7,163.6	-3,304.9	179.0	3,308.9	0.00	0.00	0.00
10,160.0	90.20	180.93	7,163.5	-3,344.9	178.4	3,348.9	0.00	0.00	0.00
10,200.0	90.20	180.93	7,163.3	-3,384.9	177.7	3,388.8	0.00	0.00	0.00
10,240.0	90.20	180.93	7,163.2	-3,424.9	177.1	3,428.8	0.00	0.00	0.00
10,280.0	90.20	180.93	7,163.0	-3,464.9	176.4	3,468.7	0.00	0.00	0.00
10,320.0	90.20	180.93	7,162.9	-3,504.9	175.8	3,508.7	0.00	0.00	0.00
10,360.0	90.20	180.93	7,162.8	-3,544.9	175.1	3,548.6	0.00	0.00	0.00
10,400.0	90.20	180.93	7,162.6	-3,584.9	174.5	3,588.6	0.00	0.00	0.00
10,440.0	90.20	180.93	7,162.5	-3,624.9	173.8	3,628.5	0.00	0.00	0.00
10,480.0	90.20	180.93	7,162.3	-3,664.9	173.2	3,668.5	0.00	0.00	0.00
10,520.0	90.20	180.93	7,162.2	-3,704.9	172.5	3,708.5	0.00	0.00	0.00
10,560.0	90.20	180.93	7,162.0	-3,744.9	171.9	3,748.4	0.00	0.00	0.00
10,600.0	90.20	180.93	7,161.9	-3,784.9	171.2	3,788.4	0.00	0.00	0.00
10,640.0	90.20	180.93	7,161.8	-3,824.8	170.6	3,828.3	0.00	0.00	0.00
10,680.0	90.20	180.93	7,161.6	-3,864.8	169.9	3,868.3	0.00	0.00	0.00
10,720.0	90.20	180.93	7,161.5	-3,904.8	169.3	3,908.2	0.00	0.00	0.00
10,760.0	90.20	180.93	7,161.3	-3,944.8	168.7	3,948.2	0.00	0.00	0.00
10,800.0	90.20	180.93	7,161.2	-3,984.8	168.0	3,988.1	0.00	0.00	0.00
10,840.0	90.20	180.93	7,161.1	-4,024.8	167.4	4,028.1	0.00	0.00	0.00
10,880.0	90.20	180.93	7,160.9	-4,064.8	166.7	4,068.0	0.00	0.00	0.00
10,920.0	90.20	180.93	7,160.8	-4,104.8	166.1	4,108.0	0.00	0.00	0.00
10,960.0	90.20	180.93	7,160.6	-4,144.8	165.4	4,148.0	0.00	0.00	0.00
11,000.0	90.20	180.93	7,160.5	-4,184.8	164.8	4,187.9	0.00	0.00	0.00
11,040.0	90.20	180.93	7,160.4	-4,224.8	164.1	4,227.9	0.00	0.00	0.00
11,080.0	90.20	180.93	7,160.2	-4,264.8	163.5	4,267.8	0.00	0.00	0.00
11,120.0	90.20	180.93	7,160.1	-4,304.8	162.8	4,307.8	0.00	0.00	0.00
11,160.0	90.20	180.93	7,159.9	-4,344.8	162.2	4,347.7	0.00	0.00	0.00
11,200.0	90.20	180.93	7,159.8	-4,384.8	161.5	4,387.7	0.00	0.00	0.00
11,240.0	90.20	180.93	7,159.7	-4,424.8	160.9	4,427.6	0.00	0.00	0.00
11,280.0	90.20	180.93	7,159.5	-4,464.8	160.3	4,467.6	0.00	0.00	0.00
11,320.0	90.20	180.93	7,159.4	-4,504.8	159.6	4,507.5	0.00	0.00	0.00
11,360.0	90.20	180.93	7,159.2	-4,544.8	159.0	4,547.5	0.00	0.00	0.00
11,400.0	90.20	180.93	7,159.1	-4,584.7	158.3	4,587.5	0.00	0.00	0.00
11,440.0	90.20	180.93	7,158.9	-4,624.7	157.7	4,627.4	0.00	0.00	0.00
11,480.0	90.20	180.93	7,158.8	-4,664.7	157.0	4,667.4	0.00	0.00	0.00
11,520.0	90.20	180.93	7,158.7	-4,704.7	156.4	4,707.3	0.00	0.00	0.00
11,560.0	90.20	180.93	7,158.5	-4,744.7	155.7	4,747.3	0.00	0.00	0.00
11,600.0	90.20	180.93	7,158.4	-4,784.7	155.1	4,787.2	0.00	0.00	0.00
11,640.0	90.20	180.93	7,158.2	-4,824.7	154.4	4,827.2	0.00	0.00	0.00
11,680.0	90.20	180.93	7,158.1	-4,864.7	153.8	4,867.1	0.00	0.00	0.00
11,707.9	90.20	180.93	7,158.0	-4,892.6	153.3	4,895.0	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,528.1	7,158.0	7"	7	8-3/4

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Project:</b>	SEC.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Sorin Natural Resources 2M-423	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (01-25-13)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,408.1	6,398.3	-30.0	232.0	KOP #2
7,726.1	7,172.0	-911.3	217.7	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T4N-R66W**

**Sorin Natural Resources 2M-HZ Pad**

**Sec.2-T4N-R66W**

**Sorin Natural Resources 2M-423**

**Wellbore #1**

**Plan #1 (01-25-13)**

## **Anticollision Report**

**28 January, 2013**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (01-25-13)		
<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> 1/28/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,707.8	Plan #1 (01-25-13) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Sorin Natural Existing wells Sec.2-T4N-R66W						
API 2-10 (Exist.) - Wellbore #1 - Wellbore #1	10,548.4	7,193.1	279.6	63.0	1.291	Level 3, CC, ES, SF
API 2-15 (Exist.) - Wellbore #1 - Wellbore #1	11,480.8	7,193.8	300.2	66.1	1.282	Level 3, CC, ES, SF
Lopresto PM K2-2 (Exist.) - Wellbore #1 - Wellbore #1	7,224.0	7,066.7	251.1	92.8	1.586	CC, ES, SF
Werning 7-2 (Exist.) - Wellbore #1 - Wellbore #1	8,998.8	7,165.6	123.5	-64.0	0.659	Level 1, CC
Werning 7-2 (Exist.) - Wellbore #1 - Wellbore #1	9,000.0	7,165.6	123.5	-64.0	0.659	Level 1, ES, SF
Werning 7-28 (Exist.) - Wellbore #1 - Wellbore #1	8,969.8	7,165.7	114.6	-72.3	0.613	Level 1, CC, ES, SF
Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W						
Sorin Natural Resources 2M-203 - Wellbore #1 - Plan #1	1,000.0	1,000.0	30.7	26.4	7.180	CC, ES
Sorin Natural Resources 2M-203 - Wellbore #1 - Plan #1	11,708.7	11,533.4	438.7	266.7	2.551	SF
Sorin Natural Resources 2R-243 - Wellbore #1 - Plan #1	200.0	200.0	27.9	27.2	41.337	CC, ES
Sorin Natural Resources 2R-243 - Wellbore #1 - Plan #1	11,708.7	11,577.7	587.1	406.4	3.249	SF

Offset Design		Sorin Natural Existing wells Sec.2-T4N-R66W - API 2-10 (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									
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)					
9,600.0	7,165.4	7,196.4	7,196.4	55.2	143.9	-90.69	-3,737.8	451.6	988.7	789.7	199.01	4.968				
9,700.0	7,165.1	7,196.1	7,196.1	57.1	143.9	-90.61	-3,737.8	451.6	893.3	692.4	200.85	4.447				
9,800.0	7,164.7	7,195.7	7,195.7	58.9	143.9	-90.54	-3,737.8	451.6	798.9	596.2	202.70	3.941				
9,900.0	7,164.4	7,195.4	7,195.4	60.8	143.9	-90.47	-3,737.8	451.6	706.1	501.6	204.54	3.452				
10,000.0	7,164.0	7,195.0	7,195.0	62.6	143.9	-90.40	-3,737.8	451.6	615.5	409.1	206.40	2.982				
10,100.0	7,163.7	7,194.7	7,194.7	64.5	143.9	-90.32	-3,737.8	451.6	528.4	320.2	208.25	2.537				
10,200.0	7,163.3	7,194.3	7,194.3	66.3	143.9	-90.25	-3,737.8	451.6	446.7	236.6	210.11	2.126				
10,300.0	7,163.0	7,194.0	7,194.0	68.2	143.9	-90.18	-3,737.8	451.6	374.0	162.0	211.97	1.764				
10,400.0	7,162.6	7,193.6	7,193.6	70.1	143.9	-90.11	-3,737.8	451.6	316.5	102.7	213.83	1.480	Level 3			
10,500.0	7,162.3	7,193.3	7,193.3	71.9	143.9	-90.03	-3,737.8	451.6	283.7	68.0	215.70	1.315	Level 3			
10,548.4	7,162.1	7,193.1	7,193.1	72.8	143.9	-90.00	-3,737.8	451.6	279.6	63.0	216.60	1.291	Level 3, CC, ES, SF			
10,600.0	7,161.9	7,192.9	7,192.9	73.8	143.9	-89.96	-3,737.8	451.6	284.3	66.7	217.56	1.307	Level 3			
10,700.0	7,161.6	7,192.6	7,192.6	75.7	143.9	-89.89	-3,737.8	451.6	318.0	98.6	219.43	1.449	Level 3			
10,800.0	7,161.2	7,192.2	7,192.2	77.6	143.8	-89.82	-3,737.8	451.6	376.1	154.8	221.30	1.700				

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 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference Offset Semi Major Axis														
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	
10,900.0	7,160.9	7,191.9	7,191.9	79.4	143.8	-89.75	-3,737.8	451.6	449.2	226.0	223.17	2.013		
11,000.0	7,160.5	7,191.5	7,191.5	81.3	143.8	-89.67	-3,737.8	451.6	531.1	306.1	225.05	2.360		
11,100.0	7,160.1	7,191.1	7,191.1	83.2	143.8	-89.60	-3,737.8	451.6	618.4	391.5	226.92	2.725		
11,200.0	7,159.8	7,190.8	7,190.8	85.1	143.8	-89.53	-3,737.8	451.6	709.0	480.2	228.80	3.099		
11,300.0	7,159.4	7,190.4	7,190.4	87.0	143.8	-89.46	-3,737.8	451.6	801.9	571.2	230.67	3.476		
11,400.0	7,159.1	7,190.1	7,190.1	88.8	143.8	-89.38	-3,737.8	451.6	896.3	663.8	232.55	3.854		
11,500.0	7,158.7	7,189.7	7,189.7	90.7	143.8	-89.31	-3,737.8	451.6	991.8	757.4	234.43	4.231		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													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)				
10,600.0	7,161.9	7,196.9	7,196.9	73.8	143.9	-90.59	-4,670.4	457.2	930.6	713.0	217.62	4.276			
10,700.0	7,161.6	7,196.6	7,196.6	75.7	143.9	-90.53	-4,670.4	457.2	836.6	617.1	219.49	3.811			
10,800.0	7,161.2	7,196.2	7,196.2	77.6	143.9	-90.46	-4,670.4	457.2	744.1	522.7	221.37	3.361			
10,900.0	7,160.9	7,195.9	7,195.9	79.4	143.9	-90.39	-4,670.4	457.2	653.8	430.6	223.24	2.929			
11,000.0	7,160.5	7,195.5	7,195.5	81.3	143.9	-90.32	-4,670.4	457.2	566.9	341.7	225.12	2.518			
11,100.0	7,160.1	7,195.1	7,195.1	83.2	143.9	-90.26	-4,670.4	457.2	484.9	257.9	227.00	2.136			
11,200.0	7,159.8	7,194.8	7,194.8	85.1	143.9	-90.19	-4,670.4	457.2	411.1	182.2	228.87	1.796			
11,300.0	7,159.4	7,194.4	7,194.4	87.0	143.9	-90.12	-4,670.4	457.2	350.5	119.7	230.75	1.519			
11,400.0	7,159.1	7,194.1	7,194.1	88.8	143.9	-90.05	-4,670.4	457.2	310.9	78.3	232.63	1.337	Level 3		
11,480.8	7,158.8	7,193.8	7,193.8	90.4	143.9	-90.00	-4,670.4	457.2	300.2	66.1	234.16	1.282	Level 3, CC, ES, SF		
11,500.0	7,158.7	7,193.7	7,193.7	90.7	143.9	-89.99	-4,670.4	457.2	300.9	66.3	234.52	1.283	Level 3		
11,600.0	7,158.4	7,193.4	7,193.4	92.6	143.9	-89.92	-4,670.4	457.2	323.0	86.6	236.40	1.366	Level 3		
11,700.0	7,158.0	7,193.0	7,193.0	94.5	143.9	-89.85	-4,670.4	457.2	371.7	133.5	238.28	1.560			
11,708.7	7,158.0	7,193.0	7,193.0	94.7	143.9	-89.85	-4,670.4	457.2	376.9	138.5	238.44	1.581			

Offset Design										Sorin Natural Existing wells Sec.2-T4N-R66W - Lopresto PM K2-2 (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							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	132.05	-429.9	476.6	641.8					
100.0	100.0	99.0	99.0	0.1	2.0	132.05	-429.9	476.6	641.8	639.8	2.09	306.725		
200.0	200.0	199.0	199.0	0.3	4.0	132.05	-429.9	476.6	641.8	637.5	4.32	148.667		
300.0	300.0	299.0	299.0	0.6	6.0	132.05	-429.9	476.6	641.8	635.3	6.54	98.110		
400.0	400.0	399.0	399.0	0.8	8.0	132.05	-429.9	476.6	641.8	633.1	8.77	73.213		
500.0	500.0	499.0	499.0	1.0	10.0	132.05	-429.9	476.6	641.8	630.9	10.99	58.394		
600.0	600.0	599.0	599.0	1.2	12.0	132.05	-429.9	476.6	641.8	628.6	13.22	48.564		
700.0	700.0	699.0	699.0	1.5	14.0	132.05	-429.9	476.6	641.8	626.4	15.44	41.567		
800.0	800.0	799.0	799.0	1.7	16.0	132.05	-429.9	476.6	641.8	624.2	17.67	36.333		
900.0	900.0	899.0	899.0	1.9	18.0	132.05	-429.9	476.6	641.8	622.0	19.89	32.269		
1,000.0	1,000.0	999.0	999.0	2.1	20.0	132.05	-429.9	476.6	641.8	619.7	22.12	29.023		
1,100.0	1,100.0	1,099.0	1,099.0	2.3	22.0	34.75	-429.9	476.6	640.8	616.5	24.32	26.349		
1,200.0	1,199.9	1,198.9	1,198.9	2.5	24.0	34.98	-429.9	476.6	637.5	611.1	26.50	24.061		
1,300.0	1,299.7	1,298.7	1,298.7	2.8	26.0	35.37	-429.9	476.6	632.2	603.5	28.66	22.055		
1,400.0	1,399.3	1,398.3	1,398.3	3.0	28.0	35.84	-429.9	476.6	625.2	594.4	30.85	20.266		
1,500.0	1,498.9	1,497.9	1,497.9	3.2	30.0	36.32	-429.9	476.6	618.1	585.1	33.06	18.700		
1,600.0	1,598.6	1,597.6	1,597.6	3.5	32.0	36.80	-429.9	476.6	611.1	575.8	35.27	17.328		
1,700.0	1,698.2	1,697.2	1,697.2	3.7	33.9	37.30	-429.9	476.6	604.1	566.6	37.48	16.118		
1,800.0	1,797.8	1,796.8	1,796.8	3.9	35.9	37.81	-429.9	476.6	597.2	557.5	39.70	15.043		
1,900.0	1,897.4	1,896.4	1,896.4	4.2	37.9	38.33	-429.9	476.6	590.3	548.4	41.92	14.081		
2,000.0	1,997.0	1,996.0	1,996.0	4.5	39.9	38.86	-429.9	476.6	583.4	539.3	44.14	13.217		
2,100.0	2,096.6	2,095.6	2,095.6	4.7	41.9	39.40	-429.9	476.6	576.6	530.3	46.37	12.436		
2,200.0	2,196.3	2,195.3	2,195.3	5.0	43.9	39.96	-429.9	476.6	569.9	521.3	48.60	11.727		
2,300.0	2,295.9	2,294.9	2,294.9	5.2	45.9	40.53	-429.9	476.6	563.2	512.4	50.83	11.081		
2,400.0	2,395.5	2,394.5	2,394.5	5.5	47.9	41.11	-429.9	476.6	556.6	503.5	53.06	10.489		
2,500.0	2,495.1	2,494.1	2,494.1	5.8	49.9	41.71	-429.9	476.6	550.0	494.7	55.30	9.947		
2,600.0	2,594.7	2,593.7	2,593.7	6.0	51.9	42.32	-429.9	476.6	543.5	486.0	57.54	9.447		
2,700.0	2,694.3	2,693.3	2,693.3	6.3	53.9	42.95	-429.9	476.6	537.1	477.3	59.78	8.985		
2,800.0	2,794.0	2,793.0	2,793.0	6.6	55.9	43.59	-429.9	476.6	530.7	468.7	62.02	8.557		
2,900.0	2,893.6	2,892.6	2,892.6	6.8	57.9	44.25	-429.9	476.6	524.4	460.1	64.26	8.160		
3,000.0	2,993.2	2,992.2	2,992.2	7.1	59.8	44.92	-429.9	476.6	518.1	451.6	66.51	7.791		
3,100.0	3,092.8	3,091.8	3,091.8	7.4	61.8	45.61	-429.9	476.6	512.0	443.2	68.75	7.447		
3,200.0	3,192.4	3,191.4	3,191.4	7.7	63.8	46.32	-429.9	476.6	505.9	434.9	71.00	7.125		
3,300.0	3,292.0	3,291.0	3,291.0	7.9	65.8	47.04	-429.9	476.6	499.9	426.6	73.25	6.824		
3,400.0	3,391.7	3,390.7	3,390.7	8.2	67.8	47.78	-429.9	476.6	494.0	418.4	75.51	6.542		
3,500.0	3,491.3	3,490.3	3,490.3	8.5	69.8	48.54	-429.9	476.6	488.1	410.3	77.76	6.277		
3,600.0	3,590.9	3,589.9	3,589.9	8.8	71.8	49.32	-429.9	476.6	482.4	402.3	80.02	6.028		
3,700.0	3,690.5	3,689.5	3,689.5	9.0	73.8	50.09	-429.9	476.6	476.7	394.4	82.29	5.793		
3,800.0	3,790.3	3,789.3	3,789.3	9.2	75.8	50.67	-429.9	476.6	472.4	387.8	84.55	5.587		
3,900.0	3,890.2	3,889.2	3,889.2	9.4	77.8	51.03	-429.9	476.6	469.8	383.0	86.78	5.413		
4,000.0	3,990.2	3,989.2	3,989.2	9.6	79.8	51.17	-429.9	476.6	468.8	379.8	88.97	5.269		
4,042.0	4,032.1	4,031.1	4,031.1	9.7	80.6	51.18	-429.9	476.6	468.7	378.8	89.89	5.214		
4,100.0	4,090.2	4,089.2	4,089.2	9.8	81.8	148.54	-429.9	476.6	468.8	377.6	91.14	5.143		
4,173.9	4,164.1	4,163.1	4,163.1	9.9	83.3	148.54	-429.9	476.6	468.8	376.0	92.77	5.053		
4,200.0	4,190.2	4,189.2	4,189.2	10.0	83.8	148.54	-429.9	476.6	468.8	375.4	93.34	5.022		
4,278.9	4,269.0	4,268.0	4,268.0	10.1	85.4	148.54	-429.9	476.6	468.8	373.7	95.07	4.930		
4,300.0	4,290.2	4,289.2	4,289.2	10.1	85.8	148.54	-429.9	476.6	468.8	373.2	95.54	4.907		
4,378.9	4,369.0	4,368.0	4,368.0	10.3	87.4	148.54	-429.9	476.6	468.8	371.5	97.27	4.819		
4,400.0	4,390.2	4,389.2	4,389.2	10.3	87.8	148.54	-429.9	476.6	468.8	371.0	97.74	4.796		
4,478.9	4,469.0	4,468.0	4,468.0	10.5	89.4	148.54	-429.9	476.6	468.8	369.3	99.47	4.712		
4,500.0	4,490.2	4,489.2	4,489.2	10.5	89.8	148.54	-429.9	476.6	468.8	368.8	99.94	4.691		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design											Sorin Natural Existing wells Sec.2-T4N-R66W - Lopresto PM K2-2 (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 (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	
4,578.9	4,569.0	4,568.0	4,568.0	10.7	91.4	148.54	-429.9	476.6	468.8	367.1	101.67	4.610			
4,600.0	4,590.2	4,589.2	4,589.2	10.7	91.8	148.54	-429.9	476.6	468.8	366.6	102.14	4.589			
4,678.9	4,669.0	4,668.0	4,668.0	10.9	93.4	148.54	-429.9	476.6	468.8	364.9	103.88	4.513			
4,700.0	4,690.2	4,689.2	4,689.2	10.9	93.8	148.54	-429.9	476.6	468.8	364.4	104.34	4.493			
4,778.9	4,769.0	4,768.0	4,768.0	11.1	95.4	148.54	-429.9	476.6	468.8	362.7	106.08	4.419			
4,800.0	4,790.2	4,789.2	4,789.2	11.1	95.8	148.54	-429.9	476.6	468.8	362.2	106.54	4.400			
4,878.9	4,869.0	4,868.0	4,868.0	11.3	97.4	148.54	-429.9	476.6	468.8	360.5	108.28	4.329			
4,900.0	4,890.2	4,889.2	4,889.2	11.3	97.8	148.54	-429.9	476.6	468.8	360.0	108.75	4.311			
4,978.9	4,969.0	4,968.0	4,968.0	11.5	99.4	148.54	-429.9	476.6	468.8	358.3	110.49	4.243			
5,000.0	4,990.2	4,989.2	4,989.2	11.5	99.8	148.54	-429.9	476.6	468.8	357.8	110.95	4.225			
5,078.9	5,069.0	5,068.0	5,068.0	11.7	101.4	148.54	-429.9	476.6	468.8	356.1	112.69	4.160			
5,100.0	5,090.2	5,089.2	5,089.2	11.7	101.8	148.54	-429.9	476.6	468.8	355.6	113.16	4.143			
5,178.9	5,169.0	5,168.0	5,168.0	11.9	103.4	148.54	-429.9	476.6	468.8	353.9	114.90	4.080			
5,200.0	5,190.2	5,189.2	5,189.2	11.9	103.8	148.54	-429.9	476.6	468.8	353.4	115.36	4.063			
5,278.9	5,269.0	5,268.0	5,268.0	12.1	105.4	148.54	-429.9	476.6	468.8	351.7	117.10	4.003			
5,300.0	5,290.2	5,289.2	5,289.2	12.1	105.8	148.54	-429.9	476.6	468.8	351.2	117.57	3.987			
5,378.9	5,369.0	5,368.0	5,368.0	12.3	107.4	148.54	-429.9	476.6	468.8	349.5	119.31	3.929			
5,400.0	5,390.2	5,389.2	5,389.2	12.3	107.8	148.54	-429.9	476.6	468.8	349.0	119.78	3.914			
5,478.9	5,469.0	5,468.0	5,468.0	12.5	109.4	148.54	-429.9	476.6	468.8	347.2	121.52	3.858			
5,500.0	5,490.2	5,489.2	5,489.2	12.5	109.8	148.54	-429.9	476.6	468.8	346.8	121.99	3.843			
5,578.9	5,569.0	5,568.0	5,568.0	12.7	111.4	148.54	-429.9	476.6	468.8	345.0	123.73	3.789			
5,600.0	5,590.2	5,589.2	5,589.2	12.7	111.8	148.54	-429.9	476.6	468.8	344.6	124.19	3.774			
5,678.9	5,669.0	5,668.0	5,668.0	12.9	113.4	148.54	-429.9	476.6	468.8	342.8	125.94	3.722			
5,700.0	5,690.2	5,689.2	5,689.2	12.9	113.8	148.54	-429.9	476.6	468.8	342.4	126.40	3.708			
5,778.9	5,769.0	5,768.0	5,768.0	13.1	115.4	148.54	-429.9	476.6	468.8	340.6	128.15	3.658			
5,800.0	5,790.2	5,789.2	5,789.2	13.1	115.8	148.54	-429.9	476.6	468.8	340.1	128.61	3.645			
5,878.9	5,869.0	5,868.0	5,868.0	13.3	117.4	148.54	-429.9	476.6	468.8	338.4	130.36	3.596			
5,900.0	5,890.2	5,889.2	5,889.2	13.4	117.8	148.54	-429.9	476.6	468.8	337.9	130.82	3.583			
5,978.9	5,969.0	5,968.0	5,968.0	13.5	119.4	148.54	-429.9	476.6	468.8	336.2	132.57	3.536			
6,000.0	5,990.2	5,989.2	5,989.2	13.6	119.8	148.54	-429.9	476.6	468.8	335.7	133.03	3.524			
6,078.9	6,069.0	6,068.0	6,068.0	13.7	121.4	148.54	-429.9	476.6	468.8	334.0	134.78	3.478			
6,100.0	6,090.2	6,089.2	6,089.2	13.8	121.8	148.54	-429.9	476.6	468.8	333.5	135.24	3.466			
6,178.9	6,169.0	6,168.0	6,168.0	13.9	123.4	148.54	-429.9	476.6	468.8	331.8	136.99	3.422			
6,200.0	6,190.2	6,189.2	6,189.2	14.0	123.8	148.54	-429.9	476.6	468.8	331.3	137.46	3.410			
6,278.9	6,269.0	6,268.0	6,268.0	14.1	125.4	148.54	-429.9	476.6	468.8	329.6	139.20	3.368			
6,300.0	6,290.2	6,289.2	6,289.2	14.2	125.8	148.54	-429.9	476.6	468.8	329.1	139.67	3.356			
6,378.9	6,369.0	6,368.0	6,368.0	14.3	127.4	148.54	-429.9	476.6	468.8	327.3	141.41	3.315			
6,400.0	6,390.2	6,389.2	6,389.2	14.4	127.8	148.54	-429.9	476.6	468.8	326.9	141.88	3.304			
6,500.0	6,490.0	6,489.0	6,489.0	14.6	129.8	-32.94	-429.9	476.6	464.1	320.7	143.37	3.237			
6,600.0	6,588.2	6,587.2	6,587.2	14.8	131.7	-34.88	-429.9	476.6	448.7	305.5	143.19	3.134			
6,700.0	6,683.1	6,682.1	6,682.1	15.0	133.6	-38.46	-429.9	476.6	423.3	281.4	141.89	2.983			
6,800.0	6,773.2	6,772.2	6,772.2	15.3	135.4	-44.09	-429.9	476.6	389.3	248.6	140.70	2.767			
6,900.0	6,856.9	6,855.9	6,855.9	15.6	137.1	-52.28	-429.9	476.6	349.3	207.7	141.60	2.467			
7,000.0	6,932.7	6,931.7	6,931.7	16.0	138.6	-63.16	-429.9	476.6	307.7	161.5	146.18	2.105			
7,100.0	6,999.4	6,998.4	6,998.4	16.5	140.0	-75.75	-429.9	476.6	271.5	118.6	152.97	1.775			
7,200.0	7,055.8	7,054.8	7,054.8	17.2	141.1	-87.58	-429.9	476.6	252.0	94.3	157.71	1.598			
7,224.0	7,067.7	7,066.7	7,066.7	17.4	141.3	-90.00	-429.9	476.6	251.1	92.8	158.28	1.586 CC, ES, SF			
7,300.0	7,100.9	7,099.9	7,099.9	18.1	142.0	-96.09	-429.9	476.6	260.2	101.3	158.91	1.638			
7,400.0	7,134.1	7,133.1	7,133.1	19.1	142.7	-99.88	-429.9	476.6	299.1	140.0	159.17	1.879			
7,500.0	7,154.6	7,153.6	7,153.6	20.2	143.1	-98.32	-429.9	476.6	361.7	200.5	161.24	2.243			

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 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference Offset Semi Major Axis														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,600.0	7,165.6	7,164.6	7,164.6	21.5	143.3	-98.52	-429.9	476.6	438.7	276.1	162.63	2.698		
7,700.0	7,171.8	7,170.8	7,170.8	22.9	143.4	-92.02	-429.9	476.6	523.7	357.8	165.81	3.158		
7,800.0	7,171.8	7,170.8	7,170.8	24.3	143.4	-89.55	-429.9	476.6	613.3	445.9	167.38	3.664		
7,900.0	7,171.4	7,170.4	7,170.4	25.8	143.4	-89.47	-429.9	476.6	705.7	536.8	168.88	4.179		
8,000.0	7,171.1	7,170.1	7,170.1	27.3	143.4	-89.39	-429.9	476.6	800.0	629.5	170.43	4.694		
8,100.0	7,170.7	7,169.7	7,169.7	28.9	143.4	-89.31	-429.9	476.6	895.4	723.4	172.02	5.206		
8,200.0	7,170.4	7,169.4	7,169.4	30.5	143.4	-89.23	-429.9	476.6	991.8	818.2	173.65	5.712		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

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 (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		
8,100.0	7,170.7	7,168.7	7,168.7	28.9	143.4	-91.47	-2,185.8	320.6	907.2	735.3	171.93	5.277			
8,200.0	7,170.4	7,168.4	7,168.4	30.5	143.4	-91.31	-2,185.8	320.6	808.2	634.7	173.57	4.657			
8,300.0	7,170.0	7,168.0	7,168.0	32.2	143.4	-91.14	-2,185.8	320.6	709.6	534.3	175.24	4.049			
8,400.0	7,169.7	7,167.7	7,167.7	33.9	143.4	-90.98	-2,185.8	320.6	611.4	434.4	176.94	3.455			
8,500.0	7,169.3	7,167.3	7,167.3	35.6	143.3	-90.82	-2,185.8	320.6	513.8	335.1	178.66	2.876			
8,600.0	7,169.0	7,167.0	7,167.0	37.3	143.3	-90.65	-2,185.8	320.6	417.4	237.0	180.40	2.314			
8,700.0	7,168.6	7,166.6	7,166.6	39.0	143.3	-90.49	-2,185.8	320.6	323.3	141.1	182.16	1.775			
8,800.0	7,168.3	7,166.3	7,166.3	40.8	143.3	-90.33	-2,185.8	320.6	234.0	50.1	183.92	1.272	Level 3		
8,900.0	7,167.9	7,165.9	7,165.9	42.6	143.3	-90.16	-2,185.8	320.6	158.1	-27.6	185.70	0.851	Level 1		
8,998.8	7,167.6	7,165.6	7,165.6	44.3	143.3	-90.00	-2,185.8	320.6	123.5	-64.0	187.47	0.659	Level 1, CC		
9,000.0	7,167.6	7,165.6	7,165.6	44.4	143.3	-90.00	-2,185.8	320.6	123.5	-64.0	187.49	0.659	Level 1, ES, SF		
9,100.0	7,167.2	7,165.2	7,165.2	46.1	143.3	-89.83	-2,185.8	320.6	159.7	-29.6	189.29	0.844	Level 1		
9,200.0	7,166.8	7,164.8	7,164.8	48.0	143.3	-89.67	-2,185.8	320.6	236.1	45.0	191.09	1.236	Level 2		
9,300.0	7,166.5	7,164.5	7,164.5	49.8	143.3	-89.51	-2,185.8	320.6	325.6	132.7	192.90	1.688			
9,400.0	7,166.1	7,164.1	7,164.1	51.6	143.3	-89.34	-2,185.8	320.6	419.8	225.1	194.72	2.156			
9,500.0	7,165.8	7,163.8	7,163.8	53.4	143.3	-89.18	-2,185.8	320.6	516.2	319.7	196.54	2.627			
9,600.0	7,165.4	7,163.4	7,163.4	55.2	143.3	-89.02	-2,185.8	320.6	613.8	415.4	198.36	3.094			
9,700.0	7,165.1	7,163.1	7,163.1	57.1	143.3	-88.85	-2,185.8	320.6	712.0	511.8	200.19	3.557			
9,800.0	7,164.7	7,162.7	7,162.7	58.9	143.3	-88.69	-2,185.8	320.6	810.7	608.7	202.02	4.013			
9,900.0	7,164.4	7,162.4	7,162.4	60.8	143.2	-88.52	-2,185.8	320.6	909.7	705.8	203.85	4.462			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

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 (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		
8,000.0	7,171.1	7,169.1	7,169.1	27.3	143.4	-91.71	-2,156.7	312.2	976.5	806.2	170.31	5.734			
8,100.0	7,170.7	7,168.7	7,168.7	28.9	143.4	-91.53	-2,156.7	312.2	877.3	705.3	171.92	5.103			
8,200.0	7,170.4	7,168.4	7,168.4	30.5	143.4	-91.36	-2,156.7	312.2	778.2	604.7	173.57	4.484			
8,300.0	7,170.0	7,168.0	7,168.0	32.2	143.4	-91.18	-2,156.7	312.2	679.5	504.2	175.24	3.877			
8,400.0	7,169.7	7,167.7	7,167.7	33.9	143.4	-91.00	-2,156.7	312.2	581.2	404.2	176.94	3.285			
8,500.0	7,169.3	7,167.3	7,167.3	35.6	143.3	-90.83	-2,156.7	312.2	483.5	304.9	178.66	2.706			
8,600.0	7,169.0	7,167.0	7,167.0	37.3	143.3	-90.65	-2,156.7	312.2	387.1	206.7	180.40	2.146			
8,700.0	7,168.6	7,166.6	7,166.6	39.0	143.3	-90.48	-2,156.7	312.2	293.1	110.9	182.16	1.609			
8,800.0	7,168.3	7,166.3	7,166.3	40.8	143.3	-90.30	-2,156.7	312.2	204.8	20.9	183.92	1.114	Level 2		
8,900.0	7,167.9	7,165.9	7,165.9	42.6	143.3	-90.12	-2,156.7	312.2	134.2	-51.5	185.70	0.723	Level 1		
8,969.8	7,167.7	7,165.7	7,165.7	43.8	143.3	-90.00	-2,156.7	312.2	114.6	-72.3	186.95	0.613	Level 1, CC, ES, SF		
9,000.0	7,167.6	7,165.6	7,165.6	44.4	143.3	-89.95	-2,156.7	312.2	118.6	-68.9	187.49	0.632	Level 1		
9,100.0	7,167.2	7,165.2	7,165.2	46.1	143.3	-89.77	-2,156.7	312.2	173.5	-15.8	189.29	0.917	Level 1		
9,200.0	7,166.8	7,164.8	7,164.8	48.0	143.3	-89.59	-2,156.7	312.2	257.2	66.1	191.09	1.346	Level 3		
9,300.0	7,166.5	7,164.5	7,164.5	49.8	143.3	-89.42	-2,156.7	312.2	349.6	156.7	192.90	1.812			
9,400.0	7,166.1	7,164.1	7,164.1	51.6	143.3	-89.24	-2,156.7	312.2	445.3	250.5	194.71	2.287			
9,500.0	7,165.8	7,163.8	7,163.8	53.4	143.3	-89.07	-2,156.7	312.2	542.5	346.0	196.53	2.760			
9,600.0	7,165.4	7,163.4	7,163.4	55.2	143.3	-88.89	-2,156.7	312.2	640.6	442.2	198.35	3.229			
9,700.0	7,165.1	7,163.1	7,163.1	57.1	143.3	-88.71	-2,156.7	312.2	739.2	539.0	200.18	3.693			
9,800.0	7,164.7	7,162.7	7,162.7	58.9	143.3	-88.54	-2,156.7	312.2	838.1	636.1	202.01	4.149			
9,900.0	7,164.4	7,162.4	7,162.4	60.8	143.2	-88.36	-2,156.7	312.2	937.3	733.4	203.84	4.598			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2M-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	-89.97	0.0	-30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	-89.97	0.0	-30.7	30.7	30.4	0.22	136.412		
200.0	200.0	200.0	200.0	0.3	0.3	-89.97	0.0	-30.7	30.7	30.0	0.67	45.471		
300.0	300.0	300.0	300.0	0.6	0.6	-89.97	0.0	-30.7	30.7	29.5	1.12	27.282		
400.0	400.0	400.0	400.0	0.8	0.8	-89.97	0.0	-30.7	30.7	29.1	1.57	19.487		
500.0	500.0	500.0	500.0	1.0	1.0	-89.97	0.0	-30.7	30.7	28.6	2.02	15.157		
600.0	600.0	600.0	600.0	1.2	1.2	-89.97	0.0	-30.7	30.7	28.2	2.47	12.401		
700.0	700.0	700.0	700.0	1.5	1.5	-89.97	0.0	-30.7	30.7	27.7	2.92	10.493		
800.0	800.0	800.0	800.0	1.7	1.7	-89.97	0.0	-30.7	30.7	27.3	3.37	9.094		
900.0	900.0	900.0	900.0	1.9	1.9	-89.97	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	-89.97	0.0	-30.7	30.7	26.4	4.27	7.180 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	172.96	0.0	-30.7	32.0	27.3	4.70	6.794		
1,200.0	1,199.9	1,199.9	1,199.9	2.5	2.6	173.72	0.0	-30.7	35.9	30.7	5.12	6.999		
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	174.68	0.0	-30.7	42.4	36.8	5.54	7.641		
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	175.57	0.0	-30.7	50.9	45.0	5.97	8.528		
1,500.0	1,498.9	1,498.9	1,498.9	3.2	3.3	176.22	0.0	-30.7	59.6	53.2	6.40	9.314		
1,600.0	1,598.6	1,598.6	1,598.6	3.5	3.5	176.70	0.0	-30.7	68.4	61.5	6.84	9.996		
1,700.0	1,698.2	1,698.2	1,698.2	3.7	3.7	177.08	0.0	-30.7	77.1	69.8	7.28	10.594		
1,800.0	1,797.8	1,797.8	1,797.8	3.9	3.9	177.38	0.0	-30.7	85.8	78.1	7.72	11.121		
1,900.0	1,897.4	1,897.4	1,897.4	4.2	4.2	177.62	0.0	-30.7	94.6	86.4	8.16	11.588		
2,000.0	1,997.0	1,997.0	1,997.0	4.5	4.4	177.82	0.0	-30.7	103.3	94.7	8.60	12.006		
2,100.0	2,096.6	2,096.6	2,096.6	4.7	4.6	177.99	0.0	-30.7	112.0	103.0	9.05	12.381		
2,200.0	2,196.3	2,196.3	2,196.3	5.0	4.8	178.14	0.0	-30.7	120.8	111.3	9.50	12.719		
2,300.0	2,295.9	2,295.9	2,295.9	5.2	5.0	178.26	0.0	-30.7	129.5	119.6	9.94	13.026		
2,400.0	2,395.5	2,395.5	2,395.5	5.5	5.3	178.37	0.0	-30.7	138.3	127.9	10.39	13.306		
2,500.0	2,495.1	2,495.1	2,495.1	5.8	5.5	178.47	0.0	-30.7	147.0	136.2	10.84	13.561		
2,600.0	2,594.7	2,594.7	2,594.7	6.0	5.7	178.55	0.0	-30.7	155.7	144.4	11.29	13.796		
2,700.0	2,694.3	2,694.3	2,694.3	6.3	5.9	178.63	0.0	-30.7	164.5	152.7	11.74	14.011		
2,800.0	2,794.0	2,794.0	2,794.0	6.6	6.2	178.70	0.0	-30.7	173.2	161.0	12.19	14.211		
2,900.0	2,893.6	2,893.6	2,893.6	6.8	6.4	178.76	0.0	-30.7	182.0	169.3	12.64	14.395		
3,000.0	2,993.2	2,993.2	2,993.2	7.1	6.6	178.82	0.0	-30.7	190.7	177.6	13.09	14.567		
3,100.0	3,092.8	3,087.1	3,087.0	7.4	6.8	178.74	-0.3	-32.0	200.8	187.3	13.52	14.855		
3,200.0	3,192.4	3,179.8	3,179.7	7.7	7.0	178.41	-1.2	-36.2	213.9	200.0	13.93	15.360		
3,300.0	3,292.0	3,271.7	3,271.3	7.9	7.2	177.88	-2.9	-43.2	230.1	215.7	14.33	16.050		
3,400.0	3,391.7	3,365.6	3,364.6	8.2	7.4	177.21	-5.1	-53.1	249.0	234.3	14.75	16.882		
3,500.0	3,491.3	3,463.6	3,462.0	8.5	7.6	176.57	-7.6	-64.0	268.5	253.3	15.17	17.699		
3,600.0	3,590.9	3,561.6	3,559.4	8.8	7.8	176.02	-10.1	-74.9	288.1	272.5	15.60	18.470		
3,700.0	3,690.5	3,659.7	3,656.8	9.0	8.0	175.54	-12.6	-85.8	307.6	291.5	16.02	19.194		
3,800.0	3,790.3	3,758.1	3,754.6	9.2	8.3	175.11	-15.1	-96.7	325.2	308.8	16.42	19.802		
3,900.0	3,890.2	3,856.9	3,852.7	9.4	8.5	174.68	-17.6	-107.6	340.4	323.5	16.82	20.237		
4,000.0	3,990.2	3,956.1	3,951.3	9.6	8.7	174.24	-20.1	-118.6	352.9	335.7	17.21	20.505		
4,100.0	4,090.2	4,055.4	4,050.0	9.8	9.0	-88.84	-22.7	-129.7	364.0	346.3	17.62	20.655		
4,200.0	4,190.2	4,154.8	4,148.7	10.0	9.2	-89.26	-25.2	-140.7	375.0	357.0	18.04	20.792		
4,300.0	4,290.2	4,265.3	4,258.6	10.1	9.5	-89.66	-27.7	-151.7	385.0	366.6	18.47	20.845		
4,400.0	4,390.2	4,380.2	4,373.3	10.3	9.7	-89.91	-29.4	-158.9	391.3	372.4	18.91	20.691		
4,500.0	4,490.2	4,495.6	4,488.7	10.5	10.0	-90.00	-30.0	-161.6	393.6	374.3	19.34	20.352		
4,600.0	4,590.2	4,597.1	4,590.2	10.7	10.2	-90.00	-30.0	-161.7	393.7	373.9	19.75	19.928		
4,700.0	4,690.2	4,697.1	4,690.2	10.9	10.4	-90.00	-30.0	-161.7	393.7	373.5	20.18	19.505		
4,800.0	4,790.2	4,797.1	4,790.2	11.1	10.6	-90.00	-30.0	-161.7	393.7	373.0	20.61	19.098		
4,900.0	4,890.2	4,897.1	4,890.2	11.3	10.8	-90.00	-30.0	-161.7	393.7	372.6	21.04	18.707		
5,000.0	4,990.2	4,997.1	4,990.2	11.5	11.0	-90.00	-30.0	-161.7	393.7	372.2	21.47	18.331		

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

Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2M-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							
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	5,090.2	5,097.1	5,090.2	11.7	11.2	-90.00	-30.0	-161.7	393.7	371.8	21.91	17.970		
5,200.0	5,190.2	5,197.1	5,190.2	11.9	11.4	-90.00	-30.0	-161.7	393.7	371.3	22.34	17.621		
5,300.0	5,290.2	5,297.1	5,290.2	12.1	11.7	-90.00	-30.0	-161.7	393.7	370.9	22.77	17.286		
5,400.0	5,390.2	5,397.1	5,390.2	12.3	11.9	-90.00	-30.0	-161.7	393.7	370.5	23.21	16.962		
5,500.0	5,490.2	5,497.1	5,490.2	12.5	12.1	-90.00	-30.0	-161.7	393.7	370.0	23.64	16.650		
5,600.0	5,590.2	5,597.1	5,590.2	12.7	12.3	-90.00	-30.0	-161.7	393.7	369.6	24.08	16.349		
5,700.0	5,690.2	5,697.1	5,690.2	12.9	12.5	-90.00	-30.0	-161.7	393.7	369.1	24.51	16.059		
5,800.0	5,790.2	5,797.1	5,790.2	13.1	12.8	-90.00	-30.0	-161.7	393.7	368.7	24.95	15.778		
5,900.0	5,890.2	5,897.1	5,890.2	13.4	13.0	-90.00	-30.0	-161.7	393.7	368.3	25.39	15.506		
6,000.0	5,990.2	5,997.1	5,990.2	13.6	13.2	-90.00	-30.0	-161.7	393.7	367.8	25.82	15.244		
6,100.0	6,090.2	6,097.1	6,090.2	13.8	13.4	-90.00	-30.0	-161.7	393.7	367.4	26.26	14.990		
6,200.0	6,190.2	6,197.1	6,190.2	14.0	13.6	-90.00	-30.0	-161.7	393.7	367.0	26.70	14.744		
6,234.2	6,224.4	6,231.4	6,224.4	14.0	13.7	-90.00	-30.0	-161.7	393.7	366.8	26.85	14.661		
6,300.0	6,290.2	6,296.6	6,289.6	14.2	13.8	-90.29	-32.0	-161.7	393.7	366.6	27.12	14.519		
6,400.0	6,390.2	6,393.8	6,385.8	14.4	14.0	-92.21	-45.2	-161.9	394.2	366.7	27.52	14.327		
6,500.0	6,490.0	6,487.7	6,476.5	14.6	14.2	83.96	-69.5	-162.3	395.9	368.0	27.90	14.189		
6,600.0	6,588.2	6,579.5	6,561.6	14.8	14.4	81.19	-103.7	-162.8	398.5	370.2	28.30	14.078		
6,700.0	6,683.1	6,669.4	6,640.3	15.0	14.7	78.61	-146.9	-163.5	401.7	373.0	28.75	13.976		
6,800.0	6,773.2	6,757.6	6,712.2	15.3	15.0	76.25	-198.1	-164.4	405.5	376.2	29.25	13.864		
6,900.0	6,856.9	6,844.5	6,776.7	15.6	15.3	74.14	-256.1	-165.3	409.5	379.6	29.84	13.723		
7,000.0	6,932.7	6,930.1	6,833.4	16.0	15.8	72.30	-320.2	-166.3	413.4	382.9	30.55	13.532		
7,100.0	6,999.4	7,014.7	6,882.1	16.5	16.4	70.74	-389.3	-167.4	417.1	385.7	31.42	13.275		
7,200.0	7,055.8	7,100.0	6,923.2	17.2	17.2	69.45	-464.0	-168.6	420.4	387.9	32.50	12.936		
7,300.0	7,100.9	7,181.7	6,954.4	18.1	18.0	68.49	-539.5	-169.8	423.1	389.3	33.79	12.521		
7,400.0	7,134.1	7,264.4	6,977.7	19.1	18.9	67.81	-618.8	-171.1	425.0	389.7	35.34	12.027		
7,500.0	7,154.6	7,350.0	6,992.6	20.2	19.9	67.42	-703.0	-172.5	426.2	389.0	37.18	11.463		
7,500.3	7,154.6	7,350.0	6,992.6	20.2	19.9	67.42	-703.0	-172.5	426.2	389.0	37.18	11.462		
7,600.0	7,165.6	7,429.0	6,997.9	21.5	20.9	67.00	-781.8	-173.7	427.7	388.5	39.20	10.910		
7,700.0	7,171.8	7,524.7	6,997.3	22.9	22.3	66.09	-877.4	-175.3	430.4	389.0	41.38	10.401		
7,800.0	7,171.8	7,624.7	6,996.5	24.3	23.7	65.98	-977.4	-176.9	430.7	386.7	44.00	9.789		
7,900.0	7,171.4	7,724.7	6,995.6	25.8	25.2	65.92	-1,077.4	-178.5	430.9	384.2	46.76	9.215		
8,000.0	7,171.1	7,824.7	6,994.8	27.3	26.8	65.86	-1,177.4	-180.1	431.1	381.5	49.62	8.688		
8,100.0	7,170.7	7,924.7	6,993.9	28.9	28.4	65.80	-1,277.4	-181.7	431.3	378.8	52.56	8.207		
8,200.0	7,170.4	8,024.7	6,993.1	30.5	30.0	65.74	-1,377.4	-183.3	431.5	376.0	55.56	7.767		
8,300.0	7,170.0	8,124.7	6,992.2	32.2	31.7	65.68	-1,477.3	-184.9	431.7	373.1	58.62	7.365		
8,400.0	7,169.7	8,224.7	6,991.4	33.9	33.4	65.62	-1,577.3	-186.5	431.9	370.2	61.73	6.997		
8,500.0	7,169.3	8,324.7	6,990.5	35.6	35.1	65.55	-1,677.3	-188.1	432.1	367.2	64.87	6.661		
8,600.0	7,169.0	8,424.7	6,989.6	37.3	36.9	65.49	-1,777.3	-189.7	432.3	364.3	68.05	6.353		
8,700.0	7,168.6	8,524.7	6,988.8	39.0	38.6	65.43	-1,877.3	-191.3	432.5	361.3	71.26	6.069		
8,800.0	7,168.3	8,624.7	6,987.9	40.8	40.4	65.37	-1,977.2	-192.9	432.7	358.2	74.49	5.809		
8,900.0	7,167.9	8,724.7	6,987.1	42.6	42.2	65.31	-2,077.2	-194.5	432.9	355.2	77.75	5.568		
9,000.0	7,167.6	8,824.7	6,986.2	44.4	44.0	65.25	-2,177.2	-196.1	433.1	352.1	81.02	5.346		
9,100.0	7,167.2	8,924.7	6,985.4	46.1	45.8	65.19	-2,277.2	-197.7	433.3	349.0	84.31	5.140		
9,200.0	7,166.8	9,024.7	6,984.5	48.0	47.6	65.13	-2,377.2	-199.4	433.5	345.9	87.61	4.948		
9,300.0	7,166.5	9,124.7	6,983.7	49.8	49.4	65.07	-2,477.2	-201.0	433.7	342.8	90.92	4.770		
9,400.0	7,166.1	9,224.7	6,982.8	51.6	51.2	65.01	-2,577.1	-202.6	433.9	339.7	94.24	4.604		
9,500.0	7,165.8	9,324.7	6,982.0	53.4	53.1	64.95	-2,677.1	-204.2	434.1	336.5	97.57	4.449		
9,600.0	7,165.4	9,424.7	6,981.1	55.2	54.9	64.88	-2,777.1	-205.8	434.3	333.4	100.91	4.304		
9,700.0	7,165.1	9,524.7	6,980.2	57.1	56.7	64.82	-2,877.1	-207.4	434.5	330.3	104.26	4.168		
9,800.0	7,164.7	9,624.6	6,979.4	58.9	58.6	64.76	-2,977.1	-209.0	434.7	327.1	107.61	4.040		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2M-203 - Wellbore #1														Offset Site Error: 0.0 ft
Survey Program: 0-MWD														Offset Well Error: 0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,900.0	7,164.4	9,724.6	6,978.5	60.8	60.4	64.70	64.70	-3,077.0	-210.6	434.9	324.0	110.97	3.919	
10,000.0	7,164.0	9,824.6	6,977.7	62.6	62.3	64.64	64.64	-3,177.0	-212.2	435.1	320.8	114.33	3.806	
10,100.0	7,163.7	9,924.6	6,976.8	64.5	64.2	64.58	64.58	-3,277.0	-213.8	435.3	317.7	117.69	3.699	
10,200.0	7,163.3	10,024.6	6,976.0	66.3	66.0	64.52	64.52	-3,377.0	-215.4	435.6	314.5	121.06	3.598	
10,300.0	7,163.0	10,124.6	6,975.1	68.2	67.9	64.46	64.46	-3,477.0	-217.0	435.8	311.3	124.43	3.502	
10,400.0	7,162.6	10,224.6	6,974.3	70.1	69.8	64.40	64.40	-3,577.0	-218.6	436.0	308.2	127.80	3.411	
10,500.0	7,162.3	10,324.6	6,973.4	71.9	71.6	64.34	64.34	-3,676.9	-220.2	436.2	305.0	131.18	3.325	
10,600.0	7,161.9	10,424.6	6,972.5	73.8	73.5	64.28	64.28	-3,776.9	-221.8	436.4	301.8	134.55	3.243	
10,700.0	7,161.6	10,524.6	6,971.7	75.7	75.4	64.22	64.22	-3,876.9	-223.4	436.6	298.7	137.93	3.165	
10,800.0	7,161.2	10,624.6	6,970.8	77.6	77.3	64.16	64.16	-3,976.9	-225.0	436.8	295.5	141.31	3.091	
10,900.0	7,160.9	10,724.6	6,970.0	79.4	79.1	64.10	64.10	-4,076.9	-226.7	437.0	292.3	144.68	3.020	
11,000.0	7,160.5	10,824.6	6,969.1	81.3	81.0	64.04	64.04	-4,176.9	-228.3	437.2	289.2	148.06	2.953	
11,100.0	7,160.1	10,924.6	6,968.3	83.2	82.9	63.98	63.98	-4,276.8	-229.9	437.4	286.0	151.44	2.889	
11,200.0	7,159.8	11,024.6	6,967.4	85.1	84.8	63.92	63.92	-4,376.8	-231.5	437.6	282.8	154.82	2.827	
11,300.0	7,159.4	11,124.6	6,966.6	87.0	86.7	63.86	63.86	-4,476.8	-233.1	437.9	279.7	158.19	2.768	
11,400.0	7,159.1	11,224.6	6,965.7	88.8	88.6	63.80	63.80	-4,576.8	-234.7	438.1	276.5	161.57	2.711	
11,500.0	7,158.7	11,324.6	6,964.8	90.7	90.5	63.74	63.74	-4,676.8	-236.3	438.3	273.3	164.94	2.657	
11,600.0	7,158.4	11,424.6	6,964.0	92.6	92.3	63.68	63.68	-4,776.7	-237.9	438.5	270.2	168.32	2.605	
11,700.0	7,158.0	11,524.6	6,963.1	94.5	94.2	63.62	63.62	-4,876.7	-239.5	438.7	267.0	171.69	2.555	
11,708.7	7,158.0	11,533.4	6,963.1	94.7	94.4	63.62	63.62	-4,885.5	-239.6	438.7	266.7	171.98	2.551 SF	



Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-243 - 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)			
0.0	0.0	0.0	0.0	0.0	0.0	90.02	0.0	27.9	27.9					
100.0	100.0	100.0	100.0	0.1	0.1	90.02	0.0	27.9	27.9	27.6	0.22	124.011		
200.0	200.0	200.0	200.0	0.3	0.3	90.02	0.0	27.9	27.9	27.2	0.67	41.337 CC, ES		
300.0	300.0	299.0	299.0	0.6	0.5	90.15	-0.1	29.6	29.6	28.5	1.11	26.640		
400.0	400.0	397.8	397.6	0.8	0.8	90.46	-0.3	34.7	34.8	33.2	1.55	22.365		
500.0	500.0	496.1	495.5	1.0	1.0	90.82	-0.6	43.1	43.4	41.4	2.02	21.429		
600.0	600.0	593.7	592.4	1.2	1.3	91.13	-1.1	54.9	55.4	52.9	2.53	21.921		
700.0	700.0	692.0	689.7	1.5	1.6	91.37	-1.7	69.2	69.9	66.9	3.06	22.820		
800.0	800.0	790.9	787.6	1.7	1.9	91.53	-2.2	83.7	84.6	81.0	3.62	23.389		
900.0	900.0	889.8	885.4	1.9	2.3	91.64	-2.8	98.2	99.3	95.2	4.18	23.767		
1,000.0	1,000.0	988.7	983.2	2.1	2.6	91.72	-3.4	112.8	114.0	109.3	4.75	24.034		
1,100.0	1,100.0	1,087.8	1,081.2	2.3	3.0	-5.62	-4.0	127.3	127.5	122.7	4.74	26.881		
1,200.0	1,199.9	1,187.2	1,179.6	2.5	3.3	-5.71	-4.5	141.9	138.3	133.1	5.18	26.719		
1,300.0	1,299.7	1,286.9	1,278.2	2.8	3.7	-5.89	-5.1	156.6	146.5	140.9	5.62	26.092		
1,400.0	1,399.3	1,386.7	1,376.9	3.0	4.0	-6.14	-5.7	171.2	152.7	146.7	6.07	25.179		
1,500.0	1,498.9	1,486.5	1,475.6	3.2	4.4	-6.37	-6.3	185.9	158.8	152.2	6.52	24.345		
1,600.0	1,598.6	1,586.3	1,574.3	3.5	4.7	-6.60	-6.9	200.5	164.8	157.8	6.98	23.609		
1,700.0	1,698.2	1,686.2	1,673.1	3.7	5.1	-6.80	-7.5	215.2	170.9	163.4	7.44	22.954		
1,800.0	1,797.8	1,786.0	1,771.8	3.9	5.4	-6.99	-8.0	229.9	176.9	169.0	7.91	22.369		
1,900.0	1,897.4	1,885.8	1,870.5	4.2	5.8	-7.17	-8.6	244.5	183.0	174.6	8.38	21.844		
2,000.0	1,997.0	1,985.6	1,969.3	4.5	6.2	-7.34	-9.2	259.2	189.0	180.2	8.85	21.370		
2,100.0	2,096.6	2,085.4	2,068.0	4.7	6.5	-7.50	-9.8	273.9	195.1	185.8	9.32	20.940		
2,200.0	2,196.3	2,185.2	2,166.7	5.0	6.9	-7.64	-10.4	288.5	201.2	191.4	9.79	20.549		
2,300.0	2,295.9	2,285.0	2,265.4	5.2	7.2	-7.78	-11.0	303.2	207.2	197.0	10.26	20.192		
2,400.0	2,395.5	2,384.9	2,364.2	5.5	7.6	-7.91	-11.5	317.9	213.3	202.5	10.74	19.864		
2,500.0	2,495.1	2,484.7	2,462.9	5.8	7.9	-8.04	-12.1	332.5	219.3	208.1	11.21	19.562		
2,600.0	2,594.7	2,584.5	2,561.6	6.0	8.3	-8.16	-12.7	347.2	225.4	213.7	11.69	19.284		
2,700.0	2,694.3	2,684.3	2,660.4	6.3	8.7	-8.27	-13.3	361.9	231.5	219.3	12.17	19.026		
2,800.0	2,794.0	2,784.1	2,759.1	6.6	9.0	-8.37	-13.9	376.5	237.5	224.9	12.64	18.787		
2,900.0	2,893.6	2,883.9	2,857.8	6.8	9.4	-8.47	-14.5	391.2	243.6	230.5	13.12	18.565		
3,000.0	2,993.2	2,983.7	2,956.6	7.1	9.7	-8.57	-15.0	405.8	249.7	236.1	13.60	18.357		
3,100.0	3,092.8	3,083.6	3,055.3	7.4	10.1	-8.66	-15.6	420.5	255.8	241.7	14.08	18.163		
3,200.0	3,192.4	3,183.4	3,154.0	7.7	10.4	-8.74	-16.2	435.2	261.8	247.3	14.56	17.981		
3,300.0	3,292.0	3,283.2	3,252.7	7.9	10.8	-8.83	-16.8	449.8	267.9	252.9	15.04	17.811		
3,400.0	3,391.7	3,383.0	3,351.5	8.2	11.2	-8.91	-17.4	464.5	274.0	258.4	15.52	17.650		
3,500.0	3,491.3	3,482.8	3,450.2	8.5	11.5	-8.98	-18.0	479.2	280.0	264.0	16.00	17.499		
3,600.0	3,590.9	3,582.6	3,548.9	8.8	11.9	-9.05	-18.5	493.8	286.1	269.6	16.48	17.356		
3,700.0	3,690.5	3,682.4	3,647.7	9.0	12.2	-9.12	-19.1	508.5	292.3	275.3	16.96	17.233		
3,800.0	3,790.3	3,782.1	3,746.3	9.2	12.6	-9.15	-19.7	523.1	300.3	282.9	17.38	17.274		
3,900.0	3,890.2	3,881.6	3,844.6	9.4	13.0	-9.10	-20.3	537.7	310.8	293.0	17.79	17.473		
4,000.0	3,990.2	3,980.7	3,942.7	9.6	13.3	-9.00	-20.9	552.3	324.0	305.8	18.19	17.813		
4,100.0	4,090.2	4,079.6	4,040.5	9.8	13.7	88.54	-21.5	566.8	338.6	320.0	18.64	18.162		
4,200.0	4,190.2	4,178.5	4,138.3	10.0	14.0	88.69	-22.0	581.4	353.3	334.2	19.09	18.508		
4,300.0	4,290.2	4,277.4	4,236.2	10.1	14.4	88.84	-22.6	595.9	368.0	348.4	19.53	18.837		
4,400.0	4,390.2	4,376.3	4,334.0	10.3	14.7	88.97	-23.2	610.4	382.6	362.7	19.98	19.150		
4,500.0	4,490.2	4,475.3	4,431.9	10.5	15.1	89.09	-23.8	625.0	397.3	376.9	20.43	19.448		
4,600.0	4,590.2	4,574.2	4,529.7	10.7	15.4	89.20	-24.3	639.5	412.0	391.1	20.88	19.733		
4,700.0	4,690.2	4,673.1	4,627.5	10.9	15.8	89.31	-24.9	654.0	426.7	405.4	21.33	20.005		
4,800.0	4,790.2	4,772.0	4,725.4	11.1	16.1	89.41	-25.5	668.6	441.4	419.6	21.78	20.266		
4,900.0	4,890.2	4,870.9	4,823.2	11.3	16.5	89.50	-26.1	683.1	456.1	433.8	22.23	20.514		
5,000.0	4,990.2	4,969.8	4,921.0	11.5	16.9	89.59	-26.7	697.6	470.7	448.1	22.68	20.753		

Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-243 - 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	5,090.2	5,068.7	5,018.9	11.7	17.2	89.67	-27.2	712.2	485.4	462.3	23.14	20.981		
5,200.0	5,190.2	5,167.6	5,116.7	11.9	17.6	89.75	-27.8	726.7	500.1	476.5	23.59	21.200		
5,300.0	5,290.2	5,266.6	5,214.6	12.1	17.9	89.82	-28.4	741.2	514.8	490.8	24.04	21.411		
5,400.0	5,390.2	5,373.2	5,320.0	12.3	18.3	89.89	-29.0	756.6	529.3	504.7	24.51	21.597		
5,500.0	5,490.2	5,495.3	5,441.5	12.5	18.6	89.95	-29.5	770.2	540.4	515.4	24.95	21.659		
5,600.0	5,590.2	5,618.5	5,564.3	12.7	18.8	89.99	-29.9	778.7	547.3	521.9	25.38	21.566		
5,700.0	5,690.2	5,742.1	5,687.9	12.9	19.0	90.00	-30.0	781.8	549.9	524.1	25.80	21.313		
5,800.0	5,790.2	5,844.4	5,790.2	13.1	19.1	90.00	-30.0	781.9	549.9	523.7	26.20	20.990		
5,900.0	5,890.2	5,944.4	5,890.2	13.4	19.3	90.00	-30.0	781.9	549.9	523.3	26.59	20.677		
6,000.0	5,990.2	6,044.4	5,990.2	13.6	19.4	90.00	-30.0	781.9	549.9	522.9	26.99	20.371		
6,100.0	6,090.2	6,144.4	6,090.2	13.8	19.5	90.00	-30.0	781.9	549.9	522.5	27.39	20.074		
6,200.0	6,190.2	6,244.4	6,190.2	14.0	19.7	90.00	-30.0	781.9	549.9	522.1	27.79	19.784		
6,300.0	6,290.2	6,345.0	6,290.7	14.2	19.8	90.30	-32.9	781.8	549.8	521.6	28.19	19.504		
6,348.5	6,338.7	6,393.4	6,338.7	14.3	19.9	90.90	-38.7	781.7	549.8	521.4	28.38	19.376		
6,400.0	6,390.2	6,443.7	6,388.2	14.4	20.0	91.86	-47.8	781.6	549.9	521.3	28.57	19.250		
6,500.0	6,490.0	6,538.7	6,479.4	14.6	20.1	-86.82	-73.9	781.2	550.7	521.8	28.92	19.046		
6,600.0	6,588.2	6,631.2	6,564.6	14.8	20.3	-84.64	-110.1	780.6	552.4	523.1	29.30	18.852		
6,700.0	6,683.1	6,721.6	6,642.9	15.0	20.5	-82.58	-155.0	779.9	554.7	525.0	29.72	18.664		
6,800.0	6,773.2	6,810.2	6,714.0	15.3	20.7	-80.65	-207.8	779.1	557.5	527.3	30.20	18.462		
6,900.0	6,856.9	6,900.0	6,779.4	15.6	21.0	-78.84	-269.3	778.1	560.7	529.9	30.79	18.209		
7,000.0	6,932.7	6,982.8	6,832.9	16.0	21.4	-77.32	-332.4	777.1	564.0	532.5	31.54	17.882		
7,100.0	6,999.4	7,067.2	6,880.0	16.5	21.8	-75.94	-402.3	776.0	567.2	534.7	32.52	17.441		
7,200.0	7,055.8	7,150.0	6,918.6	17.2	22.3	-74.79	-475.6	774.9	570.2	536.4	33.79	16.877		
7,300.0	7,100.9	7,233.4	6,949.1	18.1	22.9	-73.85	-553.1	773.6	572.8	537.4	35.40	16.181		
7,400.0	7,134.1	7,315.5	6,970.8	19.1	23.6	-73.14	-632.3	772.4	574.9	537.5	37.35	15.392		
7,500.0	7,154.6	7,400.0	6,984.0	20.2	24.4	-72.66	-715.7	771.1	576.3	536.7	39.66	14.534		
7,600.0	7,165.6	7,478.6	6,988.0	21.5	25.3	-72.21	-794.1	769.8	578.1	536.2	41.87	13.806		
7,700.0	7,171.8	7,577.0	6,987.3	22.9	26.4	-71.47	-892.6	768.3	580.3	535.7	44.61	13.009		
7,800.0	7,171.8	7,677.0	6,986.6	24.3	27.7	-71.40	-992.5	766.7	580.6	533.2	47.42	12.244		
7,900.0	7,171.4	7,777.0	6,985.9	25.8	29.0	-71.36	-1,092.5	765.1	580.8	530.5	50.27	11.552		
8,000.0	7,171.1	7,877.0	6,985.1	27.3	30.4	-71.33	-1,192.5	763.6	580.9	527.7	53.22	10.914		
8,100.0	7,170.7	7,977.0	6,984.4	28.9	31.8	-71.30	-1,292.5	762.0	581.1	524.8	56.26	10.329		
8,200.0	7,170.4	8,077.0	6,983.7	30.5	33.3	-71.26	-1,392.5	760.4	581.2	521.9	59.36	9.792		
8,300.0	7,170.0	8,177.0	6,982.9	32.2	34.8	-71.23	-1,492.5	758.9	581.4	518.9	62.52	9.300		
8,400.0	7,169.7	8,277.0	6,982.2	33.9	36.4	-71.19	-1,592.4	757.3	581.6	515.8	65.73	8.848		
8,500.0	7,169.3	8,377.0	6,981.5	35.6	38.0	-71.16	-1,692.4	755.7	581.7	512.8	68.98	8.433		
8,600.0	7,169.0	8,477.0	6,980.7	37.3	39.6	-71.13	-1,792.4	754.1	581.9	509.6	72.27	8.052		
8,700.0	7,168.6	8,577.0	6,980.0	39.0	41.3	-71.09	-1,892.4	752.6	582.1	506.5	75.59	7.700		
8,800.0	7,168.3	8,677.0	6,979.3	40.8	43.0	-71.06	-1,992.4	751.0	582.2	503.3	78.94	7.375		
8,900.0	7,167.9	8,777.0	6,978.5	42.6	44.7	-71.02	-2,092.4	749.4	582.4	500.1	82.31	7.075		
9,000.0	7,167.6	8,877.0	6,977.8	44.4	46.4	-70.99	-2,192.4	747.8	582.6	496.8	85.71	6.797		
9,100.0	7,167.2	8,977.0	6,977.1	46.1	48.1	-70.96	-2,292.3	746.3	582.7	493.6	89.12	6.539		
9,200.0	7,166.8	9,077.0	6,976.3	48.0	49.8	-70.92	-2,392.3	744.7	582.9	490.3	92.55	6.298		
9,300.0	7,166.5	9,177.0	6,975.6	49.8	51.6	-70.89	-2,492.3	743.1	583.0	487.1	95.99	6.074		
9,400.0	7,166.1	9,277.0	6,974.9	51.6	53.4	-70.85	-2,592.3	741.5	583.2	483.8	99.45	5.865		
9,500.0	7,165.8	9,377.0	6,974.1	53.4	55.1	-70.82	-2,692.3	740.0	583.4	480.5	102.91	5.669		
9,600.0	7,165.4	9,477.0	6,973.4	55.2	56.9	-70.79	-2,792.3	738.4	583.5	477.1	106.39	5.485		
9,700.0	7,165.1	9,577.0	6,972.7	57.1	58.7	-70.75	-2,892.2	736.8	583.7	473.8	109.88	5.312		
9,800.0	7,164.7	9,677.0	6,971.9	58.9	60.5	-70.72	-2,992.2	735.2	583.9	470.5	113.37	5.150		
9,900.0	7,164.4	9,777.0	6,971.2	60.8	62.3	-70.68	-3,092.2	733.7	584.0	467.2	116.87	4.997		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2R-243 - 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	7,164.0	9,877.0	6,970.5	62.6	64.1	-70.65	-3,192.2	732.1	584.2	463.8	120.38	4.853			
10,100.0	7,163.7	9,977.0	6,969.7	64.5	66.0	-70.62	-3,292.2	730.5	584.4	460.5	123.89	4.717			
10,200.0	7,163.3	10,077.0	6,969.0	66.3	67.8	-70.58	-3,392.2	729.0	584.5	457.1	127.41	4.588			
10,300.0	7,163.0	10,177.0	6,968.3	68.2	69.6	-70.55	-3,492.1	727.4	584.7	453.8	130.93	4.466			
10,400.0	7,162.6	10,277.0	6,967.5	70.1	71.5	-70.52	-3,592.1	725.8	584.9	450.4	134.46	4.350			
10,500.0	7,162.3	10,377.0	6,966.8	71.9	73.3	-70.48	-3,692.1	724.2	585.0	447.0	137.99	4.240			
10,600.0	7,161.9	10,477.0	6,966.1	73.8	75.1	-70.45	-3,792.1	722.7	585.2	443.7	141.53	4.135			
10,700.0	7,161.6	10,577.0	6,965.3	75.7	77.0	-70.41	-3,892.1	721.1	585.4	440.3	145.07	4.035			
10,800.0	7,161.2	10,677.0	6,964.6	77.6	78.8	-70.38	-3,992.1	719.5	585.5	436.9	148.61	3.940			
10,900.0	7,160.9	10,777.0	6,963.9	79.4	80.7	-70.35	-4,092.1	717.9	585.7	433.6	152.15	3.850			
11,000.0	7,160.5	10,877.0	6,963.1	81.3	82.5	-70.31	-4,192.0	716.4	585.9	430.2	155.70	3.763			
11,100.0	7,160.1	10,977.0	6,962.4	83.2	84.4	-70.28	-4,292.0	714.8	586.0	426.8	159.24	3.680			
11,200.0	7,159.8	11,077.0	6,961.7	85.1	86.3	-70.25	-4,392.0	713.2	586.2	423.4	162.79	3.601			
11,300.0	7,159.4	11,177.0	6,960.9	87.0	88.1	-70.21	-4,492.0	711.6	586.4	420.0	166.34	3.525			
11,400.0	7,159.1	11,277.0	6,960.2	88.8	90.0	-70.18	-4,592.0	710.1	586.5	416.7	169.89	3.452			
11,500.0	7,158.7	11,377.0	6,959.5	90.7	91.9	-70.15	-4,692.0	708.5	586.7	413.3	173.45	3.383			
11,600.0	7,158.4	11,477.0	6,958.7	92.6	93.7	-70.11	-4,791.9	706.9	586.9	409.9	177.00	3.316			
11,700.0	7,158.0	11,577.0	6,958.0	94.5	95.6	-70.08	-4,891.9	705.3	587.1	406.5	180.56	3.251			
11,708.7	7,158.0	11,577.7	6,958.0	94.7	95.6	-70.08	-4,892.6	705.3	587.1	406.4	180.72	3.249 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4688.0ft (RKB - 15')

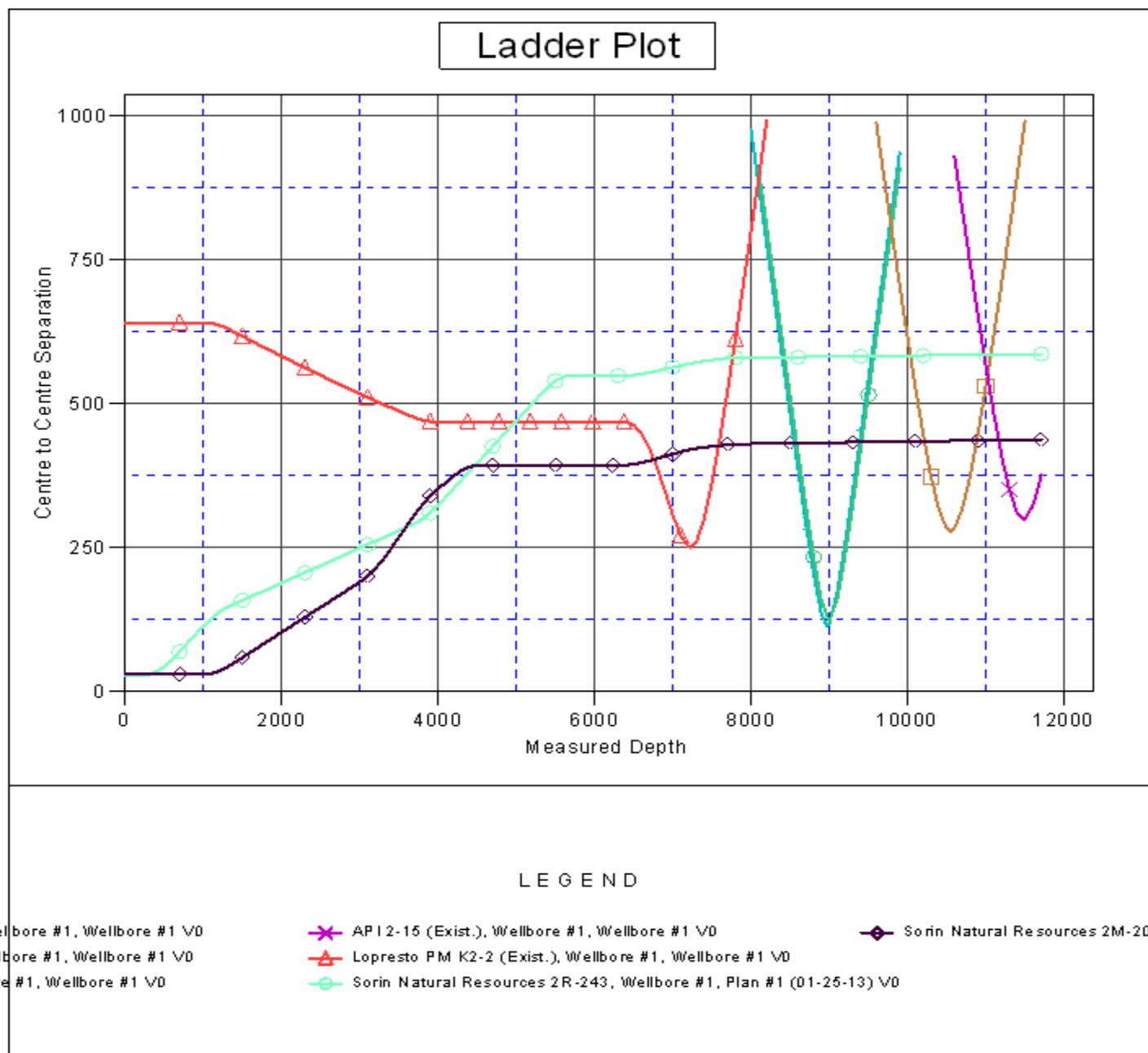
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Sorin Natural Resources 2M-423

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 2M-423
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-423	<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 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4688.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Sorin Natural Resources 2M-423  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.49°

