

# PETROLEUM DEVELOPMENT CORP Weld County CO

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

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

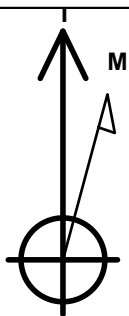
Ground Elevation: 4673.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1370695.38	3210900.78	40.348490	-104.743320	

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

### WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 500'FSL & 2523' FEL	6963.0	-4892.6	-209.1	Point



Azimuths to True North  
Magnetic North: 8.63°

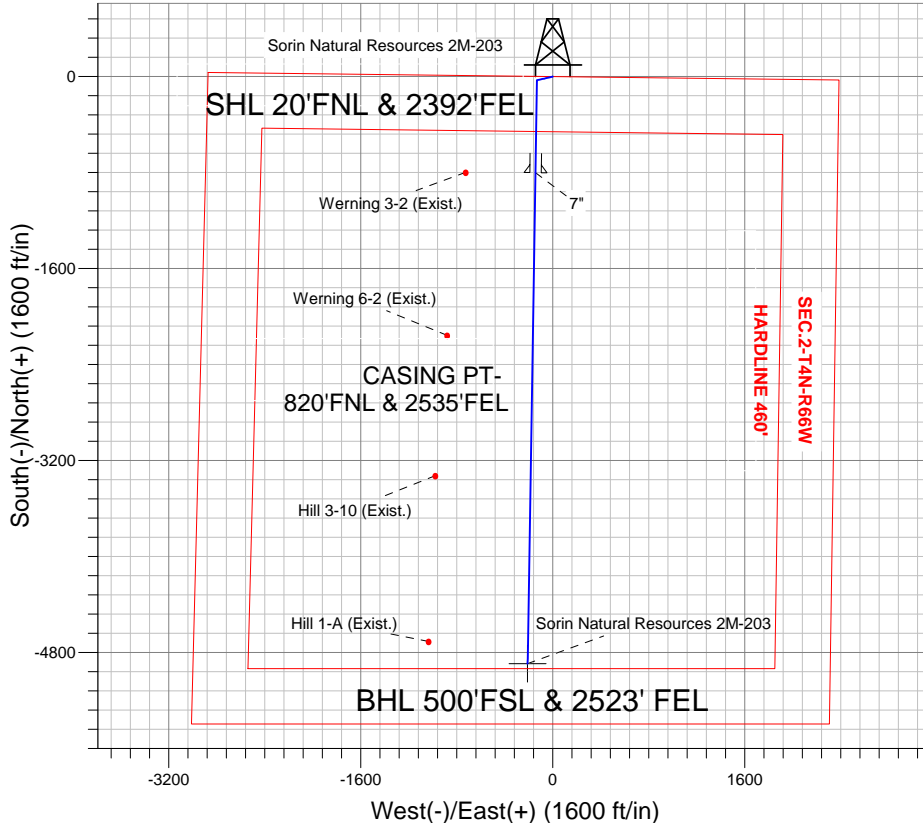
Magnetic Field  
Strength: 52936.9nT  
Dip Angle: 66.96°  
Date: 1/28/2013  
Model: IGRF2010

### ANNOTATIONS

TVD	MD	Annotation
3000.0	3000.0	KOP #1
6234.1	6241.1	KOP #2
6998.0	7447.6	End of Build

Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W  
Sorin Natural Resources 2M-203  
Plan #1 (01-25-13)  
14:18, January 28 2013

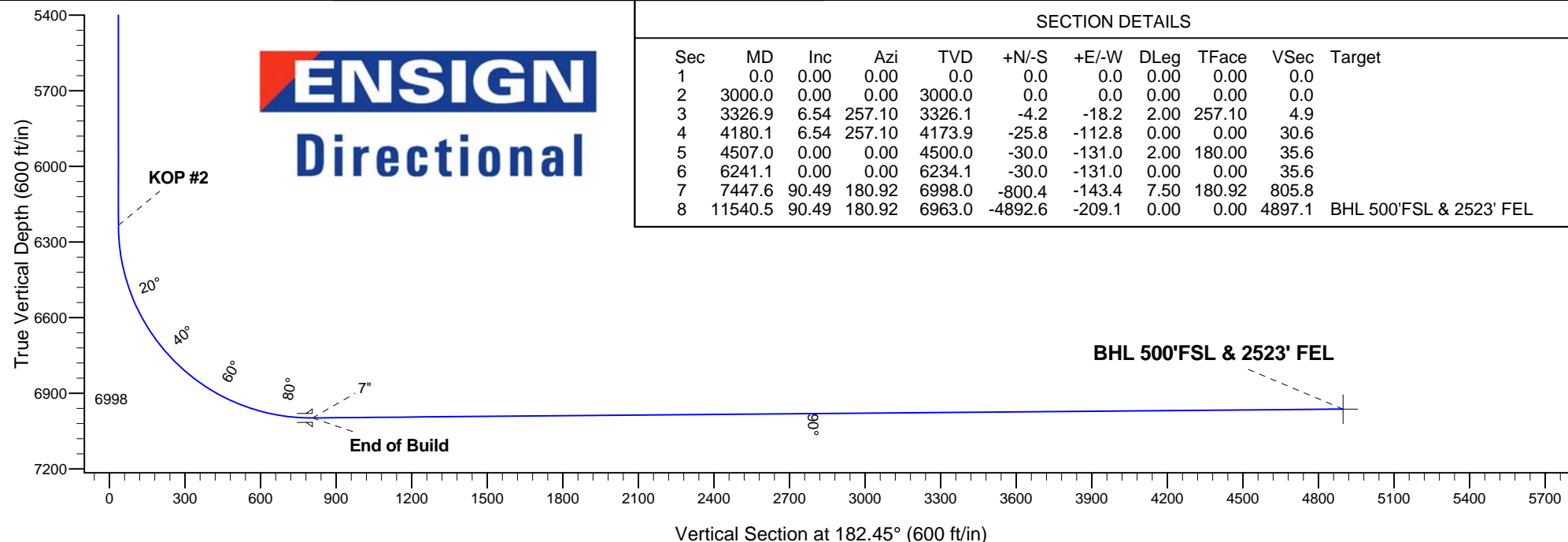
South(-)/North(+) (1600 ft/in)



### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	3000.0	0.00	0.00	3000.0	0.0	0.0	0.00	0.00	0.0	
3	3326.9	6.54	257.10	3326.1	-4.2	-18.2	2.00	257.10	4.9	
4	4180.1	6.54	257.10	4173.9	-25.8	-112.8	0.00	0.00	30.6	
5	4507.0	0.00	0.00	4500.0	-30.0	-131.0	2.00	180.00	35.6	
6	6241.1	0.00	0.00	6234.1	-30.0	-131.0	0.00	0.00	35.6	
7	7447.6	90.49	180.92	6998.0	-800.4	-143.4	7.50	180.92	805.8	
8	11540.5	90.49	180.92	6963.0	-4892.6	-209.1	0.00	0.00	4897.1	BHL 500'FSL & 2523' FEL

BHL 500'FSL & 2523' FEL



Vertical Section at 182.45° (600 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T4N-R66W**

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

**Sorin Natural Resources 2M-203**

**Wellbore #1**

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

## **Standard Planning Report**

**28 January, 2013**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,326.9	6.54	257.10	3,326.1	-4.2	-18.2	2.00	2.00	0.00	257.10	
4,180.1	6.54	257.10	4,173.9	-25.8	-112.8	0.00	0.00	0.00	0.00	
4,507.0	0.00	0.00	4,500.0	-30.0	-131.0	2.00	-2.00	0.00	180.00	
6,241.1	0.00	0.00	6,234.1	-30.0	-131.0	0.00	0.00	0.00	0.00	
7,447.6	90.49	180.92	6,998.0	-800.4	-143.4	7.50	7.50	0.00	180.92	
11,540.5	90.49	180.92	6,963.0	-4,892.6	-209.1	0.00	0.00	0.00	0.00	BHL 500'FSL & 252

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<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	0.00	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
1,520.0	0.00	0.00	1,520.0	0.0	0.0	0.0	0.00	0.00	0.00
1,560.0	0.00	0.00	1,560.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,640.0	0.00	0.00	1,640.0	0.0	0.0	0.0	0.00	0.00	0.00
1,680.0	0.00	0.00	1,680.0	0.0	0.0	0.0	0.00	0.00	0.00
1,720.0	0.00	0.00	1,720.0	0.0	0.0	0.0	0.00	0.00	0.00
1,760.0	0.00	0.00	1,760.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,840.0	0.00	0.00	1,840.0	0.0	0.0	0.0	0.00	0.00	0.00
1,880.0	0.00	0.00	1,880.0	0.0	0.0	0.0	0.00	0.00	0.00
1,920.0	0.00	0.00	1,920.0	0.0	0.0	0.0	0.00	0.00	0.00
1,960.0	0.00	0.00	1,960.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,040.0	0.00	0.00	2,040.0	0.0	0.0	0.0	0.00	0.00	0.00

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<b>Well:</b>	Sorin Natural Resources 2M-203	<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)
2,080.0	0.00	0.00	2,080.0	0.0	0.0	0.0	0.00	0.00	0.00
2,120.0	0.00	0.00	2,120.0	0.0	0.0	0.0	0.00	0.00	0.00
2,160.0	0.00	0.00	2,160.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,240.0	0.00	0.00	2,240.0	0.0	0.0	0.0	0.00	0.00	0.00
2,280.0	0.00	0.00	2,280.0	0.0	0.0	0.0	0.00	0.00	0.00
2,320.0	0.00	0.00	2,320.0	0.0	0.0	0.0	0.00	0.00	0.00
2,360.0	0.00	0.00	2,360.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,440.0	0.00	0.00	2,440.0	0.0	0.0	0.0	0.00	0.00	0.00
2,480.0	0.00	0.00	2,480.0	0.0	0.0	0.0	0.00	0.00	0.00
2,520.0	0.00	0.00	2,520.0	0.0	0.0	0.0	0.00	0.00	0.00
2,560.0	0.00	0.00	2,560.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,640.0	0.00	0.00	2,640.0	0.0	0.0	0.0	0.00	0.00	0.00
2,680.0	0.00	0.00	2,680.0	0.0	0.0	0.0	0.00	0.00	0.00
2,720.0	0.00	0.00	2,720.0	0.0	0.0	0.0	0.00	0.00	0.00
2,760.0	0.00	0.00	2,760.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,840.0	0.00	0.00	2,840.0	0.0	0.0	0.0	0.00	0.00	0.00
2,880.0	0.00	0.00	2,880.0	0.0	0.0	0.0	0.00	0.00	0.00
2,920.0	0.00	0.00	2,920.0	0.0	0.0	0.0	0.00	0.00	0.00
2,960.0	0.00	0.00	2,960.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,040.0	0.80	257.10	3,040.0	-0.1	-0.3	0.1	2.00	2.00	0.00
3,080.0	1.60	257.10	3,080.0	-0.2	-1.1	0.3	2.00	2.00	0.00
3,120.0	2.40	257.10	3,120.0	-0.6	-2.4	0.7	2.00	2.00	0.00
3,160.0	3.20	257.10	3,159.9	-1.0	-4.4	1.2	2.00	2.00	0.00
3,200.0	4.00	257.10	3,199.8	-1.6	-6.8	1.8	2.00	2.00	0.00
3,240.0	4.80	257.10	3,239.7	-2.2	-9.8	2.7	2.00	2.00	0.00
3,280.0	5.60	257.10	3,279.6	-3.1	-13.3	3.6	2.00	2.00	0.00
3,320.0	6.40	257.10	3,319.3	-4.0	-17.4	4.7	2.00	2.00	0.00
3,326.9	6.54	257.10	3,326.1	-4.2	-18.2	4.9	2.00	2.00	0.00
3,360.0	6.54	257.10	3,359.1	-5.0	-21.8	5.9	0.00	0.00	0.00
3,400.0	6.54	257.10	3,398.8	-6.0	-26.3	7.1	0.00	0.00	0.00
3,440.0	6.54	257.10	3,438.6	-7.0	-30.7	8.3	0.00	0.00	0.00
3,480.0	6.54	257.10	3,478.3	-8.0	-35.2	9.5	0.00	0.00	0.00
3,520.0	6.54	257.10	3,518.0	-9.1	-39.6	10.7	0.00	0.00	0.00
3,560.0	6.54	257.10	3,557.8	-10.1	-44.0	12.0	0.00	0.00	0.00
3,600.0	6.54	257.10	3,597.5	-11.1	-48.5	13.2	0.00	0.00	0.00
3,640.0	6.54	257.10	3,637.3	-12.1	-52.9	14.4	0.00	0.00	0.00
3,680.0	6.54	257.10	3,677.0	-13.1	-57.3	15.6	0.00	0.00	0.00
3,720.0	6.54	257.10	3,716.7	-14.1	-61.8	16.8	0.00	0.00	0.00
3,760.0	6.54	257.10	3,756.5	-15.2	-66.2	18.0	0.00	0.00	0.00
3,800.0	6.54	257.10	3,796.2	-16.2	-70.7	19.2	0.00	0.00	0.00
3,840.0	6.54	257.10	3,836.0	-17.2	-75.1	20.4	0.00	0.00	0.00
3,880.0	6.54	257.10	3,875.7	-18.2	-79.5	21.6	0.00	0.00	0.00
3,920.0	6.54	257.10	3,915.4	-19.2	-84.0	22.8	0.00	0.00	0.00
3,960.0	6.54	257.10	3,955.2	-20.2	-88.4	24.0	0.00	0.00	0.00
4,000.0	6.54	257.10	3,994.9	-21.3	-92.9	25.2	0.00	0.00	0.00
4,040.0	6.54	257.10	4,034.7	-22.3	-97.3	26.4	0.00	0.00	0.00
4,080.0	6.54	257.10	4,074.4	-23.3	-101.7	27.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<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)
4,120.0	6.54	257.10	4,114.1	-24.3	-106.2	28.8	0.00	0.00	0.00
4,160.0	6.54	257.10	4,153.9	-25.3	-110.6	30.0	0.00	0.00	0.00
4,180.1	6.54	257.10	4,173.9	-25.8	-112.8	30.6	0.00	0.00	0.00
4,200.0	6.14	257.10	4,193.6	-26.3	-115.0	31.2	2.00	-2.00	0.00
4,240.0	5.34	257.10	4,233.4	-27.2	-118.9	32.3	2.00	-2.00	0.00
4,280.0	4.54	257.10	4,273.3	-28.0	-122.2	33.2	2.00	-2.00	0.00
4,320.0	3.74	257.10	4,313.2	-28.6	-125.1	34.0	2.00	-2.00	0.00
4,360.0	2.94	257.10	4,353.1	-29.2	-127.3	34.6	2.00	-2.00	0.00
4,400.0	2.14	257.10	4,393.1	-29.6	-129.1	35.0	2.00	-2.00	0.00
4,440.0	1.34	257.10	4,433.0	-29.8	-130.2	35.4	2.00	-2.00	0.00
4,480.0	0.54	257.10	4,473.0	-30.0	-130.9	35.5	2.00	-2.00	0.00
4,507.0	0.00	0.00	4,500.0	-30.0	-131.0	35.6	2.00	-2.00	0.00
4,520.0	0.00	0.00	4,513.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,560.0	0.00	0.00	4,553.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,593.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,640.0	0.00	0.00	4,633.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,680.0	0.00	0.00	4,673.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,720.0	0.00	0.00	4,713.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,760.0	0.00	0.00	4,753.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,793.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,840.0	0.00	0.00	4,833.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,880.0	0.00	0.00	4,873.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,920.0	0.00	0.00	4,913.0	-30.0	-131.0	35.6	0.00	0.00	0.00
4,960.0	0.00	0.00	4,953.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,993.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,040.0	0.00	0.00	5,033.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,080.0	0.00	0.00	5,073.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,120.0	0.00	0.00	5,113.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,160.0	0.00	0.00	5,153.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,193.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,240.0	0.00	0.00	5,233.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,280.0	0.00	0.00	5,273.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,320.0	0.00	0.00	5,313.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,360.0	0.00	0.00	5,353.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,393.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,440.0	0.00	0.00	5,433.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,480.0	0.00	0.00	5,473.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,520.0	0.00	0.00	5,513.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,560.0	0.00	0.00	5,553.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,593.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,633.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,673.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,713.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,753.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,793.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,833.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,873.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,920.0	0.00	0.00	5,913.0	-30.0	-131.0	35.6	0.00	0.00	0.00
5,960.0	0.00	0.00	5,953.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,993.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,040.0	0.00	0.00	6,033.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,080.0	0.00	0.00	6,073.0	-30.0	-131.0	35.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<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	6,113.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,153.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,193.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,240.0	0.00	0.00	6,233.0	-30.0	-131.0	35.6	0.00	0.00	0.00
6,241.1	0.00	0.00	6,234.1	-30.0	-131.0	35.6	0.00	0.00	0.00
6,280.0	2.92	180.92	6,273.0	-31.0	-131.0	36.6	7.50	7.50	0.00
6,320.0	5.92	180.92	6,312.9	-34.1	-131.1	39.6	7.50	7.50	0.00
6,360.0	8.92	180.92	6,352.6	-39.2	-131.1	44.8	7.50	7.50	0.00
6,400.0	11.92	180.92	6,391.9	-46.5	-131.3	52.0	7.50	7.50	0.00
6,440.0	14.92	180.92	6,430.8	-55.8	-131.4	61.3	7.50	7.50	0.00
6,480.0	17.92	180.92	6,469.2	-67.1	-131.6	72.6	7.50	7.50	0.00
6,520.0	20.92	180.92	6,506.9	-80.4	-131.8	85.9	7.50	7.50	0.00
6,560.0	23.92	180.92	6,543.8	-95.6	-132.1	101.2	7.50	7.50	0.00
6,600.0	26.92	180.92	6,580.0	-112.8	-132.3	118.3	7.50	7.50	0.00
6,640.0	29.92	180.92	6,615.1	-131.8	-132.6	137.4	7.50	7.50	0.00
6,680.0	32.92	180.92	6,649.3	-152.7	-133.0	158.2	7.50	7.50	0.00
6,720.0	35.92	180.92	6,682.3	-175.3	-133.3	180.8	7.50	7.50	0.00
6,760.0	38.92	180.92	6,714.0	-199.6	-133.7	205.1	7.50	7.50	0.00
6,800.0	41.92	180.92	6,744.5	-225.5	-134.1	231.0	7.50	7.50	0.00
6,840.0	44.92	180.92	6,773.5	-253.0	-134.6	258.5	7.50	7.50	0.00
6,880.0	47.92	180.92	6,801.1	-282.0	-135.0	287.5	7.50	7.50	0.00
6,920.0	50.92	180.92	6,827.1	-312.3	-135.5	317.8	7.50	7.50	0.00
6,960.0	53.92	180.92	6,851.5	-344.0	-136.0	349.5	7.50	7.50	0.00
7,000.0	56.92	180.92	6,874.2	-376.9	-136.6	382.4	7.50	7.50	0.00
7,040.0	59.92	180.92	6,895.2	-411.0	-137.1	416.5	7.50	7.50	0.00
7,080.0	62.92	180.92	6,914.3	-446.1	-137.7	451.6	7.50	7.50	0.00
7,120.0	65.92	180.92	6,931.6	-482.2	-138.3	487.7	7.50	7.50	0.00
7,160.0	68.92	180.92	6,946.9	-519.1	-138.9	524.6	7.50	7.50	0.00
7,200.0	71.92	180.92	6,960.3	-556.8	-139.5	562.3	7.50	7.50	0.00
7,240.0	74.92	180.92	6,971.7	-595.1	-140.1	600.6	7.50	7.50	0.00
7,280.0	77.92	180.92	6,981.1	-634.0	-140.7	639.4	7.50	7.50	0.00
7,320.0	80.92	180.92	6,988.5	-673.3	-141.3	678.7	7.50	7.50	0.00
7,360.0	83.92	180.92	6,993.7	-713.0	-142.0	718.4	7.50	7.50	0.00
7,400.0	86.92	180.92	6,996.9	-752.8	-142.6	758.2	7.50	7.50	0.00
7,440.0	89.92	180.92	6,998.0	-792.8	-143.3	798.2	7.50	7.50	0.00
7,447.6	90.49	180.92	6,998.0	-800.4	-143.4	805.8	7.50	7.50	0.00
7,480.0	90.49	180.92	6,997.7	-832.8	-143.9	838.2	0.00	0.00	0.00
7,520.0	90.49	180.92	6,997.4	-872.8	-144.5	878.2	0.00	0.00	0.00
7,560.0	90.49	180.92	6,997.0	-912.8	-145.2	918.1	0.00	0.00	0.00
7,600.0	90.49	180.92	6,996.7	-952.8	-145.8	958.1	0.00	0.00	0.00
7,640.0	90.49	180.92	6,996.4	-992.8	-146.5	998.1	0.00	0.00	0.00
7,680.0	90.49	180.92	6,996.0	-1,032.8	-147.1	1,038.1	0.00	0.00	0.00
7,720.0	90.49	180.92	6,995.7	-1,072.7	-147.7	1,078.1	0.00	0.00	0.00
7,760.0	90.49	180.92	6,995.3	-1,112.7	-148.4	1,118.1	0.00	0.00	0.00
7,800.0	90.49	180.92	6,995.0	-1,152.7	-149.0	1,158.0	0.00	0.00	0.00
7,840.0	90.49	180.92	6,994.6	-1,192.7	-149.7	1,198.0	0.00	0.00	0.00
7,880.0	90.49	180.92	6,994.3	-1,232.7	-150.3	1,238.0	0.00	0.00	0.00
7,920.0	90.49	180.92	6,994.0	-1,272.7	-151.0	1,278.0	0.00	0.00	0.00
7,960.0	90.49	180.92	6,993.6	-1,312.7	-151.6	1,318.0	0.00	0.00	0.00
8,000.0	90.49	180.92	6,993.3	-1,352.7	-152.2	1,358.0	0.00	0.00	0.00
8,040.0	90.49	180.92	6,992.9	-1,392.7	-152.9	1,398.0	0.00	0.00	0.00
8,080.0	90.49	180.92	6,992.6	-1,432.7	-153.5	1,437.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<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)
8,120.0	90.49	180.92	6,992.3	-1,472.7	-154.2	1,477.9	0.00	0.00	0.00
8,160.0	90.49	180.92	6,991.9	-1,512.7	-154.8	1,517.9	0.00	0.00	0.00
8,200.0	90.49	180.92	6,991.6	-1,552.7	-155.5	1,557.9	0.00	0.00	0.00
8,240.0	90.49	180.92	6,991.2	-1,592.7	-156.1	1,597.9	0.00	0.00	0.00
8,280.0	90.49	180.92	6,990.9	-1,632.7	-156.7	1,637.9	0.00	0.00	0.00
8,320.0	90.49	180.92	6,990.5	-1,672.6	-157.4	1,677.8	0.00	0.00	0.00
8,360.0	90.49	180.92	6,990.2	-1,712.6	-158.0	1,717.8	0.00	0.00	0.00
8,400.0	90.49	180.92	6,989.9	-1,752.6	-158.7	1,757.8	0.00	0.00	0.00
8,440.0	90.49	180.92	6,989.5	-1,792.6	-159.3	1,797.8	0.00	0.00	0.00
8,480.0	90.49	180.92	6,989.2	-1,832.6	-159.9	1,837.8	0.00	0.00	0.00
8,520.0	90.49	180.92	6,988.8	-1,872.6	-160.6	1,877.8	0.00	0.00	0.00
8,560.0	90.49	180.92	6,988.5	-1,912.6	-161.2	1,917.7	0.00	0.00	0.00
8,600.0	90.49	180.92	6,988.1	-1,952.6	-161.9	1,957.7	0.00	0.00	0.00
8,640.0	90.49	180.92	6,987.8	-1,992.6	-162.5	1,997.7	0.00	0.00	0.00
8,680.0	90.49	180.92	6,987.5	-2,032.6	-163.2	2,037.7	0.00	0.00	0.00
8,720.0	90.49	180.92	6,987.1	-2,072.6	-163.8	2,077.7	0.00	0.00	0.00
8,760.0	90.49	180.92	6,986.8	-2,112.6	-164.4	2,117.7	0.00	0.00	0.00
8,800.0	90.49	180.92	6,986.4	-2,152.6	-165.1	2,157.7	0.00	0.00	0.00
8,840.0	90.49	180.92	6,986.1	-2,192.6	-165.7	2,197.6	0.00	0.00	0.00
8,880.0	90.49	180.92	6,985.8	-2,232.6	-166.4	2,237.6	0.00	0.00	0.00
8,920.0	90.49	180.92	6,985.4	-2,272.5	-167.0	2,277.6	0.00	0.00	0.00
8,960.0	90.49	180.92	6,985.1	-2,312.5	-167.7	2,317.6	0.00	0.00	0.00
9,000.0	90.49	180.92	6,984.7	-2,352.5	-168.3	2,357.6	0.00	0.00	0.00
9,040.0	90.49	180.92	6,984.4	-2,392.5	-168.9	2,397.6	0.00	0.00	0.00
9,080.0	90.49	180.92	6,984.0	-2,432.5	-169.6	2,437.5	0.00	0.00	0.00
9,120.0	90.49	180.92	6,983.7	-2,472.5	-170.2	2,477.5	0.00	0.00	0.00
9,160.0	90.49	180.92	6,983.4	-2,512.5	-170.9	2,517.5	0.00	0.00	0.00
9,200.0	90.49	180.92	6,983.0	-2,552.5	-171.5	2,557.5	0.00	0.00	0.00
9,240.0	90.49	180.92	6,982.7	-2,592.5	-172.2	2,597.5	0.00	0.00	0.00
9,280.0	90.49	180.92	6,982.3	-2,632.5	-172.8	2,637.5	0.00	0.00	0.00
9,320.0	90.49	180.92	6,982.0	-2,672.5	-173.4	2,677.5	0.00	0.00	0.00
9,360.0	90.49	180.92	6,981.6	-2,712.5	-174.1	2,717.4	0.00	0.00	0.00
9,400.0	90.49	180.92	6,981.3	-2,752.5	-174.7	2,757.4	0.00	0.00	0.00
9,440.0	90.49	180.92	6,981.0	-2,792.5	-175.4	2,797.4	0.00	0.00	0.00
9,480.0	90.49	180.92	6,980.6	-2,832.5	-176.0	2,837.4	0.00	0.00	0.00
9,520.0	90.49	180.92	6,980.3	-2,872.5	-176.6	2,877.4	0.00	0.00	0.00
9,560.0	90.49	180.92	6,979.9	-2,912.4	-177.3	2,917.4	0.00	0.00	0.00
9,600.0	90.49	180.92	6,979.6	-2,952.4	-177.9	2,957.3	0.00	0.00	0.00
9,640.0	90.49	180.92	6,979.3	-2,992.4	-178.6	2,997.3	0.00	0.00	0.00
9,680.0	90.49	180.92	6,978.9	-3,032.4	-179.2	3,037.3	0.00	0.00	0.00
9,720.0	90.49	180.92	6,978.6	-3,072.4	-179.9	3,077.3	0.00	0.00	0.00
9,760.0	90.49	180.92	6,978.2	-3,112.4	-180.5	3,117.3	0.00	0.00	0.00
9,800.0	90.49	180.92	6,977.9	-3,152.4	-181.1	3,157.3	0.00	0.00	0.00
9,840.0	90.49	180.92	6,977.5	-3,192.4	-181.8	3,197.2	0.00	0.00	0.00
9,880.0	90.49	180.92	6,977.2	-3,232.4	-182.4	3,237.2	0.00	0.00	0.00
9,920.0	90.49	180.92	6,976.9	-3,272.4	-183.1	3,277.2	0.00	0.00	0.00
9,960.0	90.49	180.92	6,976.5	-3,312.4	-183.7	3,317.2	0.00	0.00	0.00
10,000.0	90.49	180.92	6,976.2	-3,352.4	-184.4	3,357.2	0.00	0.00	0.00
10,040.0	90.49	180.92	6,975.8	-3,392.4	-185.0	3,397.2	0.00	0.00	0.00
10,080.0	90.49	180.92	6,975.5	-3,432.4	-185.6	3,437.2	0.00	0.00	0.00
10,120.0	90.49	180.92	6,975.1	-3,472.4	-186.3	3,477.1	0.00	0.00	0.00
10,160.0	90.49	180.92	6,974.8	-3,512.3	-186.9	3,517.1	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<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)
10,200.0	90.49	180.92	6,974.5	-3,552.3	-187.6	3,557.1	0.00	0.00	0.00
10,240.0	90.49	180.92	6,974.1	-3,592.3	-188.2	3,597.1	0.00	0.00	0.00
10,280.0	90.49	180.92	6,973.8	-3,632.3	-188.9	3,637.1	0.00	0.00	0.00
10,320.0	90.49	180.92	6,973.4	-3,672.3	-189.5	3,677.1	0.00	0.00	0.00
10,360.0	90.49	180.92	6,973.1	-3,712.3	-190.1	3,717.0	0.00	0.00	0.00
10,400.0	90.49	180.92	6,972.8	-3,752.3	-190.8	3,757.0	0.00	0.00	0.00
10,440.0	90.49	180.92	6,972.4	-3,792.3	-191.4	3,797.0	0.00	0.00	0.00
10,480.0	90.49	180.92	6,972.1	-3,832.3	-192.1	3,837.0	0.00	0.00	0.00
10,520.0	90.49	180.92	6,971.7	-3,872.3	-192.7	3,877.0	0.00	0.00	0.00
10,560.0	90.49	180.92	6,971.4	-3,912.3	-193.3	3,917.0	0.00	0.00	0.00
10,600.0	90.49	180.92	6,971.0	-3,952.3	-194.0	3,956.9	0.00	0.00	0.00
10,640.0	90.49	180.92	6,970.7	-3,992.3	-194.6	3,996.9	0.00	0.00	0.00
10,680.0	90.49	180.92	6,970.4	-4,032.3	-195.3	4,036.9	0.00	0.00	0.00
10,720.0	90.49	180.92	6,970.0	-4,072.3	-195.9	4,076.9	0.00	0.00	0.00
10,760.0	90.49	180.92	6,969.7	-4,112.2	-196.6	4,116.9	0.00	0.00	0.00
10,800.0	90.49	180.92	6,969.3	-4,152.2	-197.2	4,156.9	0.00	0.00	0.00
10,840.0	90.49	180.92	6,969.0	-4,192.2	-197.8	4,196.9	0.00	0.00	0.00
10,880.0	90.49	180.92	6,968.6	-4,232.2	-198.5	4,236.8	0.00	0.00	0.00
10,920.0	90.49	180.92	6,968.3	-4,272.2	-199.1	4,276.8	0.00	0.00	0.00
10,960.0	90.49	180.92	6,968.0	-4,312.2	-199.8	4,316.8	0.00	0.00	0.00
11,000.0	90.49	180.92	6,967.6	-4,352.2	-200.4	4,356.8	0.00	0.00	0.00
11,040.0	90.49	180.92	6,967.3	-4,392.2	-201.1	4,396.8	0.00	0.00	0.00
11,080.0	90.49	180.92	6,966.9	-4,432.2	-201.7	4,436.8	0.00	0.00	0.00
11,120.0	90.49	180.92	6,966.6	-4,472.2	-202.3	4,476.7	0.00	0.00	0.00
11,160.0	90.49	180.92	6,966.3	-4,512.2	-203.0	4,516.7	0.00	0.00	0.00
11,200.0	90.49	180.92	6,965.9	-4,552.2	-203.6	4,556.7	0.00	0.00	0.00
11,240.0	90.49	180.92	6,965.6	-4,592.2	-204.3	4,596.7	0.00	0.00	0.00
11,280.0	90.49	180.92	6,965.2	-4,632.2	-204.9	4,636.7	0.00	0.00	0.00
11,320.0	90.49	180.92	6,964.9	-4,672.2	-205.6	4,676.7	0.00	0.00	0.00
11,360.0	90.49	180.92	6,964.5	-4,712.1	-206.2	4,716.7	0.00	0.00	0.00
11,400.0	90.49	180.92	6,964.2	-4,752.1	-206.8	4,756.6	0.00	0.00	0.00
11,440.0	90.49	180.92	6,963.9	-4,792.1	-207.5	4,796.6	0.00	0.00	0.00
11,480.0	90.49	180.92	6,963.5	-4,832.1	-208.1	4,836.6	0.00	0.00	0.00
11,520.0	90.49	180.92	6,963.2	-4,872.1	-208.8	4,876.6	0.00	0.00	0.00
11,540.5	90.49	180.92	6,963.0	-4,892.6	-209.1	4,897.1	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,447.6	6,998.0	7"		7	8-3/4

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,000.0	3,000.0	0.0	0.0	KOP #1
6,241.1	6,234.1	-30.0	-131.0	KOP #2
7,447.6	6,998.0	-800.4	-143.4	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-203**

**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-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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	11,540.5	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)	Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Sorin Natural Existing wells Sec.2-T4N-R66W						
Hill 1-A (Exist.) - Wellbore #1 - Wellbore #1	11,368.0	7,000.5	828.1	596.8	3.581	CC, ES
Hill 1-A (Exist.) - Wellbore #1 - Wellbore #1	11,400.0	7,000.2	828.7	596.9	3.574	SF
Hill 3-10 (Exist.) - Wellbore #1 - Wellbore #1	9,986.5	7,010.3	794.5	589.0	3.866	CC
Hill 3-10 (Exist.) - Wellbore #1 - Wellbore #1	10,000.0	7,010.2	794.6	588.8	3.862	ES, SF
Werning 3-2 (Exist.) - Wellbore #1 - Wellbore #1	7,454.4	6,999.9	581.3	420.1	3.607	CC, ES
Werning 3-2 (Exist.) - Wellbore #1 - Wellbore #1	7,500.0	6,998.6	583.1	421.3	3.604	SF
Werning 6-2 (Exist.) - Wellbore #1 - Wellbore #1	8,815.6	6,986.3	715.6	532.2	3.901	CC, ES
Werning 6-2 (Exist.) - Wellbore #1 - Wellbore #1	8,900.0	6,985.6	720.6	535.6	3.896	SF
Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W						
Sorin Natural Resources 2M-423 - Wellbore #1 - Plan #1	1,000.0	1,000.0	30.7	26.4	7.180	CC, ES
Sorin Natural Resources 2M-423 - Wellbore #1 - Plan #1	11,540.5	11,708.7	438.8	266.7	2.550	SF
Sorin Natural Resources 2R-243 - Wellbore #1 - Plan #1	200.0	200.0	58.5	57.9	86.808	CC, ES
Sorin Natural Resources 2R-243 - Wellbore #1 - Plan #1	11,540.5	11,577.7	945.1	755.8	4.993	SF

Offset Design		Sorin Natural Existing wells Sec.2-T4N-R66W - Hill 1-A (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)						
10,900.0	6,968.5	7,004.5	7,004.5	82.4	140.1	90.28	-4,706.8	-1,034.3	951.2	728.7	222.50	4.275					
11,000.0	6,967.6	7,003.6	7,003.6	84.3	140.1	90.22	-4,706.8	-1,034.3	906.2	681.8	224.37	4.039					
11,100.0	6,966.8	7,002.8	7,002.8	86.2	140.1	90.16	-4,706.8	-1,034.3	870.4	644.1	226.24	3.847					
11,200.0	6,965.9	7,001.9	7,001.9	88.1	140.0	90.10	-4,706.8	-1,034.3	845.0	616.8	228.11	3.704					
11,300.0	6,965.1	7,001.1	7,001.1	90.0	140.0	90.04	-4,706.8	-1,034.3	830.9	600.9	229.98	3.613					
11,368.0	6,964.5	7,000.5	7,000.5	91.3	140.0	90.00	-4,706.8	-1,034.3	828.1	596.8	231.25	3.581	CC, ES				
11,400.0	6,964.2	7,000.2	7,000.2	91.9	140.0	89.98	-4,706.8	-1,034.3	828.7	596.9	231.85	3.574	SF				
11,500.0	6,963.3	6,999.3	6,999.3	93.8	140.0	89.92	-4,706.8	-1,034.3	838.5	604.8	233.73	3.588					
11,540.5	6,963.0	6,999.0	6,999.0	94.5	140.0	89.90	-4,706.8	-1,034.3	845.9	611.4	234.49	3.607					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Existing wells Sec.2-T4N-R66W - Hill 3-10 (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							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)				
9,400.0	6,981.3	7,015.3	7,015.3	54.4	140.3	90.36	-3,326.1	-978.5	987.5	792.8	194.70	5.072			
9,500.0	6,980.5	7,014.5	7,014.5	56.3	140.3	90.30	-3,326.1	-978.5	931.6	735.0	196.53	4.740			
9,600.0	6,979.6	7,013.6	7,013.6	58.1	140.3	90.24	-3,326.1	-978.5	883.5	685.1	198.36	4.454			
9,700.0	6,978.7	7,012.7	7,012.7	60.0	140.3	90.18	-3,326.1	-978.5	844.5	644.3	200.20	4.218			
9,800.0	6,977.9	7,011.9	7,011.9	61.8	140.2	90.12	-3,326.1	-978.5	816.0	614.0	202.04	4.039			
9,900.0	6,977.0	7,011.0	7,011.0	63.7	140.2	90.05	-3,326.1	-978.5	799.1	595.3	203.89	3.920			
9,986.5	6,976.3	7,010.3	7,010.3	65.3	140.2	90.00	-3,326.1	-978.5	794.5	589.0	205.48	3.866 CC			
10,000.0	6,976.2	7,010.2	7,010.2	65.6	140.2	89.99	-3,326.1	-978.5	794.6	588.8	205.73	3.862 ES, SF			
10,100.0	6,975.3	7,009.3	7,009.3	67.4	140.2	89.93	-3,326.1	-978.5	802.5	594.9	207.58	3.866			
10,200.0	6,974.5	7,008.5	7,008.5	69.3	140.2	89.87	-3,326.1	-978.5	822.6	613.2	209.44	3.928			
10,300.0	6,973.6	7,007.6	7,007.6	71.2	140.2	89.81	-3,326.1	-978.5	854.1	642.8	211.29	4.042			
10,400.0	6,972.8	7,006.8	7,006.8	73.0	140.1	89.74	-3,326.1	-978.5	895.6	682.5	213.15	4.202			
10,500.0	6,971.9	7,005.9	7,005.9	74.9	140.1	89.68	-3,326.1	-978.5	945.9	730.9	215.01	4.400			

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<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Existing wells Sec.2-T4N-R66W - Werning 3-2 (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	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)					
4,100.0	4,094.3	4,095.3	4,095.3	9.1	81.9	-38.55	-797.8	-724.7	992.2	901.7	90.50	10.963				
4,200.0	4,193.6	4,194.6	4,194.6	9.3	83.9	-38.94	-797.8	-724.7	983.4	890.6	92.75	10.602				
4,300.0	4,293.2	4,294.2	4,294.2	9.6	85.9	-39.18	-797.8	-724.7	976.4	881.3	95.12	10.264				
4,400.0	4,393.1	4,394.1	4,394.1	9.8	87.9	-39.33	-797.8	-724.7	972.1	874.7	97.43	9.978				
4,500.0	4,493.0	4,494.0	4,494.0	10.0	89.9	-39.39	-797.8	-724.7	970.6	871.0	99.66	9.739				
4,540.8	4,533.9	4,534.9	4,534.9	10.0	90.7	-39.39	-797.8	-724.7	970.5	870.0	100.55	9.652				
4,600.0	4,593.0	4,594.0	4,594.0	10.2	91.9	-142.29	-797.8	-724.7	970.6	868.7	101.86	9.529				
4,700.0	4,693.0	4,694.0	4,694.0	10.4	93.9	-142.29	-797.8	-724.7	970.6	866.5	104.08	9.326				
4,800.0	4,793.0	4,794.0	4,794.0	10.6	95.9	-142.29	-797.8	-724.7	970.6	864.3	106.30	9.131				
4,900.0	4,893.0	4,894.0	4,894.0	10.8	97.9	-142.29	-797.8	-724.7	970.6	862.1	108.52	8.944				
5,000.0	4,993.0	4,994.0	4,994.0	11.0	99.9	-142.29	-797.8	-724.7	970.6	859.9	110.74	8.765				
5,100.0	5,093.0	5,094.0	5,094.0	11.2	101.9	-142.29	-797.8	-724.7	970.6	857.6	112.96	8.593				
5,200.0	5,193.0	5,194.0	5,194.0	11.5	103.9	-142.29	-797.8	-724.7	970.6	855.4	115.18	8.427				
5,300.0	5,293.0	5,294.0	5,294.0	11.7	105.9	-142.29	-797.8	-724.7	970.6	853.2	117.40	8.268				
5,400.0	5,393.0	5,394.0	5,394.0	11.9	107.9	-142.29	-797.8	-724.7	970.6	851.0	119.62	8.114				
5,500.0	5,493.0	5,494.0	5,494.0	12.1	109.9	-142.29	-797.8	-724.7	970.6	848.8	121.84	7.966				
5,600.0	5,593.0	5,594.0	5,594.0	12.3	111.9	-142.29	-797.8	-724.7	970.6	846.5	124.06	7.824				
5,700.0	5,693.0	5,694.0	5,694.0	12.5	113.9	-142.29	-797.8	-724.7	970.6	844.3	126.28	7.686				
5,800.0	5,793.0	5,794.0	5,794.0	12.8	115.9	-142.29	-797.8	-724.7	970.6	842.1	128.50	7.553				
5,900.0	5,893.0	5,894.0	5,894.0	13.0	117.9	-142.29	-797.8	-724.7	970.6	839.9	130.72	7.425				
6,000.0	5,993.0	5,994.0	5,994.0	13.2	119.9	-142.29	-797.8	-724.7	970.6	837.7	132.94	7.301				
6,100.0	6,093.0	6,094.0	6,094.0	13.4	121.9	-142.29	-797.8	-724.7	970.6	835.4	135.17	7.181				
6,200.0	6,193.0	6,194.0	6,194.0	13.6	123.9	-142.29	-797.8	-724.7	970.6	833.2	137.39	7.065				
6,300.0	6,293.0	6,294.0	6,294.0	13.8	125.9	36.96	-797.8	-724.7	968.8	829.5	139.33	6.953				
6,400.0	6,391.9	6,392.9	6,392.9	14.0	127.9	37.99	-797.8	-724.7	957.5	817.6	139.89	6.845				
6,500.0	6,488.1	6,489.1	6,489.1	14.2	129.8	40.03	-797.8	-724.7	936.2	797.0	139.19	6.726				
6,600.0	6,580.0	6,581.0	6,581.0	14.5	131.6	43.19	-797.8	-724.7	905.7	767.8	137.84	6.570				
6,700.0	6,665.9	6,666.9	6,666.9	14.8	133.3	47.60	-797.8	-724.7	867.2	730.3	136.88	6.336				
6,800.0	6,744.5	6,745.5	6,745.5	15.1	134.9	53.33	-797.8	-724.7	822.4	684.9	137.55	5.979				
6,900.0	6,814.3	6,815.3	6,815.3	15.6	136.3	60.28	-797.8	-724.7	773.5	632.8	140.71	5.497				
7,000.0	6,874.2	6,875.2	6,875.2	16.3	137.5	68.00	-797.8	-724.7	723.2	577.3	145.97	4.955				
7,100.0	6,923.2	6,924.2	6,924.2	17.2	138.5	75.70	-797.8	-724.7	675.0	523.4	151.63	4.452				
7,200.0	6,960.3	6,961.3	6,961.3	18.2	139.2	82.39	-797.8	-724.7	633.0	476.9	156.02	4.057				
7,300.0	6,985.0	6,986.0	6,986.0	19.3	139.7	87.22	-797.8	-724.7	601.3	442.5	158.73	3.788				
7,400.0	6,996.9	6,997.9	6,997.9	20.6	140.0	89.71	-797.8	-724.7	583.9	423.5	160.41	3.640				
7,454.4	6,998.9	6,999.9	6,999.9	21.3	140.0	90.00	-797.8	-724.7	581.3	420.1	161.18	3.607 CC, ES				
7,500.0	6,997.6	6,998.6	6,998.6	21.9	140.0	89.96	-797.8	-724.7	583.1	421.3	161.78	3.604 SF				
7,600.0	6,996.7	6,997.7	6,997.7	23.3	140.0	89.88	-797.8	-724.7	599.3	436.1	163.20	3.672				
7,700.0	6,995.8	6,996.8	6,996.8	24.8	139.9	89.79	-797.8	-724.7	631.1	466.4	164.68	3.832				
7,800.0	6,995.0	6,996.0	6,996.0	26.4	139.9	89.71	-797.8	-724.7	676.3	510.1	166.22	4.069				
7,900.0	6,994.1	6,995.1	6,995.1	28.0	139.9	89.62	-797.8	-724.7	732.5	564.7	167.80	4.365				
8,000.0	6,993.3	6,994.3	6,994.3	29.6	139.9	89.54	-797.8	-724.7	797.3	627.9	169.42	4.706				
8,100.0	6,992.4	6,993.4	6,993.4	31.3	139.9	89.46	-797.8	-724.7	868.8	697.7	171.07	5.078				
8,200.0	6,991.6	6,992.6	6,992.6	33.0	139.9	89.37	-797.8	-724.7	945.4	772.7	172.74	5.473				

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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		
8,200.0	6,991.6	6,991.6	6,991.6	33.0	139.8	90.42	-2,156.7	-880.9	944.0	771.2	172.72	5.465			
8,300.0	6,990.7	6,990.7	6,990.7	34.7	139.8	90.35	-2,156.7	-880.9	882.0	707.6	174.43	5.057			
8,400.0	6,989.9	6,989.9	6,989.9	36.4	139.8	90.28	-2,156.7	-880.9	827.6	651.4	176.15	4.698			
8,500.0	6,989.0	6,989.0	6,989.0	38.2	139.8	90.22	-2,156.7	-880.9	782.1	604.2	177.89	4.397			
8,600.0	6,988.1	6,988.1	6,988.1	39.9	139.8	90.15	-2,156.7	-880.9	747.4	567.8	179.64	4.160			
8,700.0	6,987.3	6,987.3	6,987.3	41.7	139.7	90.08	-2,156.7	-880.9	724.9	543.5	181.41	3.996			
8,800.0	6,986.4	6,986.4	6,986.4	43.5	139.7	90.01	-2,156.7	-880.9	715.8	532.6	183.19	3.907			
8,815.6	6,986.3	6,986.3	6,986.3	43.8	139.7	90.00	-2,156.7	-880.9	715.6	532.2	183.47	3.901 CC, ES			
8,900.0	6,985.6	6,985.6	6,985.6	45.3	139.7	89.94	-2,156.7	-880.9	720.6	535.6	184.98	3.896 SF			
9,000.0	6,984.7	6,984.7	6,984.7	47.1	139.7	89.87	-2,156.7	-880.9	739.0	552.2	186.77	3.957			
9,100.0	6,983.9	6,983.9	6,983.9	48.9	139.7	89.81	-2,156.7	-880.9	770.1	581.5	188.58	4.084			
9,200.0	6,983.0	6,983.0	6,983.0	50.8	139.7	89.74	-2,156.7	-880.9	812.3	621.9	190.39	4.267			
9,300.0	6,982.2	6,982.2	6,982.2	52.6	139.6	89.67	-2,156.7	-880.9	864.1	671.9	192.20	4.496			
9,400.0	6,981.3	6,981.3	6,981.3	54.4	139.6	89.60	-2,156.7	-880.9	923.9	729.9	194.02	4.762			
9,500.0	6,980.5	6,980.5	6,980.5	56.3	139.6	89.53	-2,156.7	-880.9	990.2	794.3	195.85	5.056			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2M-423 - 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	90.03	0.0	30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	90.03	0.0	30.7	30.7	30.4	0.22	136.412		
200.0	200.0	200.0	200.0	0.3	0.3	90.03	0.0	30.7	30.7	30.0	0.67	45.471		
300.0	300.0	300.0	300.0	0.6	0.6	90.03	0.0	30.7	30.7	29.5	1.12	27.282		
400.0	400.0	400.0	400.0	0.8	0.8	90.03	0.0	30.7	30.7	29.1	1.57	19.487		
500.0	500.0	500.0	500.0	1.0	1.0	90.03	0.0	30.7	30.7	28.6	2.02	15.157		
600.0	600.0	600.0	600.0	1.2	1.2	90.03	0.0	30.7	30.7	28.2	2.47	12.401		
700.0	700.0	700.0	700.0	1.5	1.5	90.03	0.0	30.7	30.7	27.7	2.92	10.493		
800.0	800.0	800.0	800.0	1.7	1.7	90.03	0.0	30.7	30.7	27.3	3.37	9.094		
900.0	900.0	900.0	900.0	1.9	1.9	90.03	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	90.03	0.0	30.7	30.7	26.4	4.27	7.180 CC, ES		
1,100.0	1,100.0	1,099.2	1,099.2	2.4	2.3	90.33	-0.2	31.9	31.9	27.2	4.70	6.793		
1,200.0	1,200.0	1,198.2	1,198.2	2.6	2.5	91.08	-0.7	35.8	35.8	30.7	5.13	6.986		
1,300.0	1,300.0	1,297.0	1,296.7	2.8	2.8	92.04	-1.5	42.1	42.3	36.7	5.56	7.601		
1,400.0	1,400.0	1,396.2	1,395.6	3.0	3.0	92.93	-2.6	50.5	50.8	44.8	6.01	8.456		
1,500.0	1,500.0	1,495.9	1,494.8	3.3	3.2	93.58	-3.7	59.2	59.5	53.0	6.46	9.208		
1,600.0	1,600.0	1,595.5	1,594.0	3.5	3.4	94.07	-4.8	67.8	68.2	61.3	6.93	9.853		
1,700.0	1,700.0	1,695.1	1,693.3	3.7	3.7	94.44	-5.9	76.4	77.0	69.6	7.39	10.410		
1,800.0	1,800.0	1,794.7	1,792.5	3.9	3.9	94.74	-7.1	85.1	85.7	77.8	7.87	10.894		
1,900.0	1,900.0	1,894.3	1,891.8	4.2	4.2	94.98	-8.2	93.7	94.4	86.1	8.34	11.319		
2,000.0	2,000.0	1,993.9	1,991.0	4.4	4.4	95.18	-9.3	102.4	103.2	94.3	8.82	11.695		
2,100.0	2,100.0	2,093.6	2,090.2	4.6	4.7	95.36	-10.4	111.0	111.9	102.6	9.30	12.028		
2,200.0	2,200.0	2,193.2	2,189.5	4.8	5.0	95.50	-11.5	119.6	120.6	110.9	9.79	12.326		
2,300.0	2,300.0	2,292.8	2,288.7	5.1	5.2	95.63	-12.6	128.3	129.4	119.1	10.27	12.594		
2,400.0	2,400.0	2,392.4	2,387.9	5.3	5.5	95.74	-13.8	136.9	138.1	127.4	10.76	12.836		
2,500.0	2,500.0	2,492.0	2,487.2	5.5	5.8	95.83	-14.9	145.5	146.9	135.6	11.25	13.055		
2,600.0	2,600.0	2,591.6	2,586.4	5.7	6.0	95.92	-16.0	154.2	155.6	143.9	11.74	13.255		
2,700.0	2,700.0	2,691.3	2,685.6	6.0	6.3	96.00	-17.1	162.8	164.3	152.1	12.23	13.437		
2,800.0	2,800.0	2,790.9	2,784.9	6.2	6.6	96.07	-18.2	171.5	173.1	160.4	12.72	13.605		
2,900.0	2,900.0	2,890.5	2,884.1	6.4	6.8	96.13	-19.3	180.1	181.8	168.6	13.21	13.759		
3,000.0	3,000.0	2,990.1	2,983.3	6.6	7.1	96.19	-20.5	188.7	190.6	176.9	13.71	13.902		
3,100.0	3,100.0	3,089.6	3,082.4	6.8	7.4	-160.96	-21.6	197.4	200.9	187.4	13.52	14.864		
3,200.0	3,199.8	3,188.6	3,181.1	7.0	7.6	-161.28	-22.7	205.9	214.6	200.7	13.91	15.433		
3,300.0	3,299.5	3,287.1	3,279.2	7.2	7.9	-161.80	-23.8	214.5	231.6	217.3	14.28	16.216		
3,400.0	3,398.8	3,385.2	3,376.9	7.4	8.2	-162.49	-24.9	223.0	250.9	236.2	14.68	17.089		
3,500.0	3,498.2	3,483.2	3,474.6	7.7	8.4	-163.12	-26.0	231.5	270.5	255.3	15.11	17.905		
3,600.0	3,597.5	3,581.3	3,572.2	7.9	8.7	-163.67	-27.1	240.0	290.0	274.5	15.53	18.674		
3,700.0	3,696.9	3,679.6	3,670.2	8.1	9.0	-164.15	-28.2	248.5	309.6	293.6	15.96	19.401		
3,800.0	3,796.2	3,786.9	3,777.2	8.4	9.2	-164.63	-29.2	256.2	327.7	311.3	16.36	20.024		
3,900.0	3,895.6	3,895.1	3,885.3	8.6	9.4	-165.11	-29.8	261.0	343.0	326.3	16.77	20.456		
4,000.0	3,994.9	4,004.2	3,994.4	8.8	9.6	-165.60	-30.0	262.7	355.6	338.4	17.18	20.694		
4,100.0	4,094.3	4,104.1	4,094.3	9.1	9.8	-166.04	-30.0	262.7	366.7	349.1	17.59	20.841		
4,200.0	4,193.6	4,203.4	4,193.6	9.3	10.0	-166.47	-30.0	262.7	377.7	359.6	18.02	20.955		
4,300.0	4,293.2	4,303.0	4,293.2	9.6	10.2	-166.82	-30.0	262.7	386.4	367.9	18.49	20.900		
4,400.0	4,393.1	4,402.9	4,393.1	9.8	10.3	-167.02	-30.0	262.7	391.7	372.8	18.93	20.688		
4,500.0	4,493.0	4,502.9	4,493.0	10.0	10.5	-167.10	-30.0	262.7	393.7	374.3	19.35	20.341		
4,600.0	4,593.0	4,602.9	4,593.0	10.2	10.7	90.00	-30.0	262.7	393.7	373.9	19.77	19.917		
4,700.0	4,693.0	4,702.9	4,693.0	10.4	10.9	90.00	-30.0	262.7	393.7	373.5	20.19	19.493		
4,800.0	4,793.0	4,802.9	4,793.0	10.6	11.1	90.00	-30.0	262.7	393.7	373.0	20.62	19.087		
4,900.0	4,893.0	4,902.9	4,893.0	10.8	11.3	90.00	-30.0	262.7	393.7	372.6	21.06	18.696		
5,000.0	4,993.0	5,002.9	4,993.0	11.0	11.5	90.00	-30.0	262.7	393.7	372.2	21.49	18.321		

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-423 - 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	5,093.0	5,102.9	5,093.0	11.2	11.7	90.00	-30.0	262.7	393.7	371.7	21.92	17.959		
5,200.0	5,193.0	5,202.9	5,193.0	11.5	11.9	90.00	-30.0	262.7	393.7	371.3	22.35	17.612		
5,300.0	5,293.0	5,302.9	5,293.0	11.7	12.1	90.00	-30.0	262.7	393.7	370.9	22.79	17.276		
5,400.0	5,393.0	5,402.9	5,393.0	11.9	12.3	90.00	-30.0	262.7	393.7	370.4	23.22	16.953		
5,500.0	5,493.0	5,502.9	5,493.0	12.1	12.5	90.00	-30.0	262.7	393.7	370.0	23.66	16.642		
5,600.0	5,593.0	5,602.9	5,593.0	12.3	12.7	90.00	-30.0	262.7	393.7	369.6	24.09	16.341		
5,700.0	5,693.0	5,702.9	5,693.0	12.5	12.9	90.00	-30.0	262.7	393.7	369.1	24.53	16.051		
5,800.0	5,793.0	5,802.9	5,793.0	12.8	13.2	90.00	-30.0	262.7	393.7	368.7	24.96	15.770		
5,900.0	5,893.0	5,902.9	5,893.0	13.0	13.4	90.00	-30.0	262.7	393.7	368.3	25.40	15.499		
6,000.0	5,993.0	6,002.9	5,993.0	13.2	13.6	90.00	-30.0	262.7	393.7	367.8	25.84	15.237		
6,100.0	6,093.0	6,102.9	6,093.0	13.4	13.8	90.00	-30.0	262.7	393.7	367.4	26.27	14.983		
6,200.0	6,193.0	6,202.9	6,193.0	13.6	14.0	90.00	-30.0	262.7	393.7	366.9	26.71	14.737		
6,226.2	6,219.2	6,229.0	6,219.2	13.7	14.0	-90.96	-30.0	262.7	393.7	366.8	26.82	14.679		
6,300.0	6,293.0	6,302.8	6,293.0	13.8	14.2	-91.24	-30.0	262.7	393.7	366.6	27.13	14.514		
6,400.0	6,391.9	6,401.7	6,391.9	14.0	14.4	-93.24	-30.0	262.7	394.3	366.7	27.53	14.324		
6,500.0	6,488.1	6,503.7	6,493.6	14.2	14.6	-96.26	-36.0	262.6	396.1	368.2	27.92	14.188		
6,600.0	6,580.0	6,609.0	6,596.9	14.5	14.8	-99.19	-56.3	262.2	398.9	370.6	28.33	14.085		
6,700.0	6,665.9	6,717.7	6,699.5	14.8	15.0	-101.97	-91.9	261.7	402.7	373.9	28.79	13.990		
6,800.0	6,744.5	6,829.9	6,798.9	15.1	15.3	-104.54	-143.5	260.8	407.0	377.7	29.34	13.872		
6,900.0	6,814.3	6,945.4	6,892.4	15.6	15.7	-106.84	-211.3	259.7	411.7	381.6	30.06	13.696		
7,000.0	6,874.2	7,064.3	6,976.7	16.3	16.3	-108.82	-294.9	258.4	416.2	385.2	31.02	13.419		
7,100.0	6,923.2	7,186.2	7,048.6	17.2	17.1	-110.42	-393.1	256.8	420.2	387.9	32.29	13.016		
7,200.0	6,960.3	7,310.5	7,105.0	18.2	18.2	-111.62	-503.8	255.0	423.5	389.5	33.93	12.480		
7,300.0	6,985.0	7,436.7	7,143.1	19.3	19.5	-112.37	-623.9	253.0	425.6	389.6	35.98	11.827		
7,400.0	6,996.9	7,556.2	7,161.0	20.6	20.9	-112.72	-742.0	251.1	426.7	388.3	38.33	11.131		
7,500.0	6,997.6	7,665.3	7,170.6	21.9	22.4	-113.74	-850.6	249.3	429.9	389.3	40.64	10.579		
7,600.0	6,996.7	7,774.5	7,171.9	23.3	23.9	-114.00	-959.7	247.6	430.7	387.4	43.32	9.942		
7,700.0	6,995.8	7,874.5	7,171.5	24.8	25.4	-114.06	-1,059.7	246.0	430.9	384.8	46.06	9.356		
7,800.0	6,995.0	7,974.5	7,171.2	26.4	26.9	-114.12	-1,159.7	244.3	431.1	382.2	48.89	8.817		
7,900.0	6,994.1	8,074.5	7,170.8	28.0	28.5	-114.18	-1,259.7	242.7	431.3	379.5	51.81	8.324		
8,000.0	6,993.3	8,174.5	7,170.5	29.6	30.1	-114.25	-1,359.7	241.1	431.5	376.7	54.80	7.874		
8,100.0	6,992.4	8,274.5	7,170.1	31.3	31.8	-114.31	-1,459.7	239.5	431.7	373.8	57.84	7.463		
8,200.0	6,991.6	8,374.5	7,169.8	33.0	33.4	-114.37	-1,559.7	237.9	431.9	370.9	60.94	7.087		
8,300.0	6,990.7	8,474.5	7,169.4	34.7	35.1	-114.43	-1,659.6	236.3	432.1	368.0	64.08	6.743		
8,400.0	6,989.9	8,574.5	7,169.1	36.4	36.8	-114.49	-1,759.6	234.6	432.3	365.0	67.25	6.428		
8,500.0	6,989.0	8,674.5	7,168.7	38.2	38.6	-114.55	-1,859.6	233.0	432.5	362.0	70.45	6.139		
8,600.0	6,988.1	8,774.5	7,168.3	39.9	40.3	-114.61	-1,959.6	231.4	432.7	359.0	73.67	5.873		
8,700.0	6,987.3	8,874.5	7,168.0	41.7	42.1	-114.67	-2,059.6	229.8	432.9	355.9	76.92	5.627		
8,800.0	6,986.4	8,974.5	7,167.6	43.5	43.9	-114.74	-2,159.6	228.2	433.1	352.9	80.19	5.400		
8,900.0	6,985.6	9,074.5	7,167.3	45.3	45.7	-114.80	-2,259.6	226.6	433.3	349.8	83.47	5.190		
9,000.0	6,984.7	9,174.5	7,166.9	47.1	47.5	-114.86	-2,359.5	224.9	433.5	346.7	86.77	4.995		
9,100.0	6,983.9	9,274.5	7,166.6	48.9	49.3	-114.92	-2,459.5	223.3	433.7	343.6	90.08	4.814		
9,200.0	6,983.0	9,374.5	7,166.2	50.8	51.1	-114.98	-2,559.5	221.7	433.9	340.5	93.40	4.645		
9,300.0	6,982.2	9,474.5	7,165.9	52.6	52.9	-115.04	-2,659.5	220.1	434.1	337.3	96.73	4.487		
9,400.0	6,981.3	9,574.5	7,165.5	54.4	54.8	-115.10	-2,759.5	218.5	434.3	334.2	100.07	4.340		
9,500.0	6,980.5	9,674.5	7,165.2	56.3	56.6	-115.16	-2,859.5	216.9	434.5	331.1	103.42	4.201		
9,600.0	6,979.6	9,774.5	7,164.8	58.1	58.5	-115.22	-2,959.4	215.2	434.7	327.9	106.77	4.071		
9,700.0	6,978.7	9,874.5	7,164.5	60.0	60.3	-115.28	-3,059.4	213.6	434.9	324.8	110.12	3.949		
9,800.0	6,977.9	9,974.5	7,164.1	61.8	62.2	-115.34	-3,159.4	212.0	435.1	321.6	113.48	3.834		
9,900.0	6,977.0	10,074.5	7,163.8	63.7	64.0	-115.40	-3,259.4	210.4	435.3	318.5	116.85	3.725		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W - Sorin Natural Resources 2M-423 - Wellbore #1										Offset Site Error:		0.0 ft			
Survey Program: 0-MWD														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
10,000.0	6,976.2	10,174.5	7,163.4	65.6	65.9	-115.46	-3,359.4	208.8	435.5	315.3	120.21	3.623					
10,100.0	6,975.3	10,274.5	7,163.1	67.4	67.7	-115.52	-3,459.4	207.2	435.7	312.1	123.58	3.526					
10,200.0	6,974.5	10,374.5	7,162.7	69.3	69.6	-115.58	-3,559.4	205.5	435.9	309.0	126.95	3.434					
10,300.0	6,973.6	10,474.5	7,162.4	71.2	71.5	-115.64	-3,659.3	203.9	436.1	305.8	130.33	3.346					
10,400.0	6,972.8	10,574.5	7,162.0	73.0	73.3	-115.70	-3,759.3	202.3	436.3	302.6	133.70	3.263					
10,500.0	6,971.9	10,674.5	7,161.6	74.9	75.2	-115.76	-3,859.3	200.7	436.5	299.5	137.08	3.185					
10,600.0	6,971.0	10,774.4	7,161.3	76.8	77.1	-115.82	-3,959.3	199.1	436.8	296.3	140.45	3.110					
10,700.0	6,970.2	10,874.4	7,160.9	78.7	79.0	-115.88	-4,059.3	197.5	437.0	293.1	143.83	3.038					
10,800.0	6,969.3	10,974.4	7,160.6	80.6	80.8	-115.94	-4,159.3	195.9	437.2	290.0	147.21	2.970					
10,900.0	6,968.5	11,074.4	7,160.2	82.4	82.7	-116.00	-4,259.3	194.2	437.4	286.8	150.59	2.905					
11,000.0	6,967.6	11,174.4	7,159.9	84.3	84.6	-116.06	-4,359.2	192.6	437.6	283.6	153.96	2.842					
11,100.0	6,966.8	11,274.4	7,159.5	86.2	86.5	-116.12	-4,459.2	191.0	437.8	280.5	157.34	2.783					
11,200.0	6,965.9	11,374.4	7,159.2	88.1	88.4	-116.18	-4,559.2	189.4	438.0	277.3	160.72	2.725					
11,300.0	6,965.1	11,474.4	7,158.8	90.0	90.2	-116.24	-4,659.2	187.8	438.2	274.1	164.09	2.671					
11,400.0	6,964.2	11,574.4	7,158.5	91.9	92.1	-116.30	-4,759.2	186.2	438.4	271.0	167.47	2.618					
11,500.0	6,963.3	11,674.4	7,158.1	93.8	94.0	-116.36	-4,859.2	184.5	438.7	267.8	170.84	2.568					
11,514.1	6,963.2	11,688.5	7,158.1	94.0	94.3	-116.37	-4,873.2	184.3	438.7	267.4	171.31	2.561					
11,540.5	6,963.0	11,708.7	7,158.0	94.5	94.7	-116.38	-4,893.5	184.0	438.8	266.7	172.10	2.550 SF					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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		
0.0	0.0	0.0	0.0	0.0	0.0	90.02	0.0	58.5	58.5					
100.0	100.0	100.0	100.0	0.1	0.1	90.02	0.0	58.5	58.5	58.3	0.22	260.423		
200.0	200.0	200.0	200.0	0.3	0.3	90.02	0.0	58.5	58.5	57.9	0.67	86.808 CC, ES		
300.0	300.0	298.0	297.9	0.6	0.5	90.09	-0.1	60.2	60.2	59.1	1.11	54.322		
400.0	400.0	395.7	395.5	0.8	0.8	90.25	-0.3	65.2	65.4	63.8	1.55	42.141		
500.0	500.0	493.0	492.5	1.0	1.0	90.48	-0.6	73.5	73.9	71.9	2.02	36.600		
600.0	600.0	589.6	588.4	1.2	1.3	90.73	-1.1	85.0	85.8	83.2	2.52	34.058		
700.0	700.0	687.5	685.3	1.5	1.6	90.95	-1.6	99.2	100.3	97.2	3.05	32.830		
800.0	800.0	786.4	783.1	1.7	1.9	91.12	-2.2	113.7	115.0	111.4	3.61	31.867		
900.0	900.0	885.3	880.9	1.9	2.3	91.25	-2.8	128.2	129.7	125.5	4.17	31.109		
1,000.0	1,000.0	984.2	978.8	2.1	2.6	91.35	-3.4	142.8	144.4	139.6	4.73	30.502		
1,100.0	1,100.0	1,083.2	1,076.6	2.4	3.0	91.44	-4.0	157.3	159.1	153.8	5.30	30.009		
1,200.0	1,200.0	1,182.1	1,174.5	2.6	3.3	91.51	-4.5	171.8	173.8	167.9	5.87	29.602		
1,300.0	1,300.0	1,281.0	1,272.3	2.8	3.7	91.57	-5.1	186.3	188.5	182.0	6.44	29.260		
1,400.0	1,400.0	1,379.9	1,370.1	3.0	4.0	91.62	-5.7	200.9	203.2	196.2	7.01	28.970		
1,500.0	1,500.0	1,478.8	1,468.0	3.3	4.4	91.67	-6.3	215.4	217.9	210.3	7.59	28.721		
1,600.0	1,600.0	1,577.7	1,565.8	3.5	4.7	91.70	-6.8	229.9	232.6	224.4	8.16	28.505		
1,700.0	1,700.0	1,676.6	1,663.6	3.7	5.1	91.74	-7.4	244.5	247.3	238.5	8.73	28.315		
1,800.0	1,800.0	1,775.5	1,761.5	3.9	5.4	91.77	-8.0	259.0	262.0	252.7	9.31	28.148		
1,900.0	1,900.0	1,874.5	1,859.3	4.2	5.8	91.80	-8.6	273.5	276.7	266.8	9.88	28.000		
2,000.0	2,000.0	1,973.4	1,957.2	4.4	6.1	91.82	-9.2	288.1	291.4	280.9	10.46	27.867		
2,100.0	2,100.0	2,072.3	2,055.0	4.6	6.5	91.84	-9.7	302.6	306.1	295.1	11.03	27.747		
2,200.0	2,200.0	2,171.2	2,152.8	4.8	6.8	91.86	-10.3	317.1	320.8	309.2	11.61	27.639		
2,300.0	2,300.0	2,270.1	2,250.7	5.1	7.2	91.88	-10.9	331.7	335.5	323.3	12.18	27.540		
2,400.0	2,400.0	2,369.0	2,348.5	5.3	7.5	91.90	-11.5	346.2	350.2	337.4	12.76	27.451		
2,500.0	2,500.0	2,467.9	2,446.4	5.5	7.9	91.91	-12.0	360.7	364.9	351.6	13.33	27.369		
2,600.0	2,600.0	2,566.8	2,544.2	5.7	8.2	91.93	-12.6	375.3	379.6	365.7	13.91	27.293		
2,700.0	2,700.0	2,665.8	2,642.0	6.0	8.6	91.94	-13.2	389.8	394.3	379.8	14.48	27.223		
2,800.0	2,800.0	2,764.7	2,739.9	6.2	8.9	91.95	-13.8	404.3	409.0	393.9	15.06	27.159		
2,900.0	2,900.0	2,863.6	2,837.7	6.4	9.3	91.96	-14.4	418.9	423.7	408.1	15.64	27.099		
3,000.0	3,000.0	2,962.5	2,935.5	6.6	9.7	91.97	-14.9	433.4	438.4	422.2	16.21	27.043		
3,100.0	3,100.0	3,061.1	3,033.1	6.8	10.0	-165.09	-15.5	447.9	454.8	440.8	14.01	32.469		
3,200.0	3,199.8	3,159.2	3,130.1	7.0	10.4	-165.14	-16.1	462.3	474.5	460.1	14.39	32.978		
3,300.0	3,299.5	3,256.5	3,226.3	7.2	10.7	-165.27	-16.7	476.6	497.5	482.7	14.75	33.722		
3,400.0	3,398.8	3,353.2	3,322.0	7.4	11.1	-165.53	-17.2	490.8	522.9	507.7	15.16	34.489		
3,500.0	3,498.2	3,449.8	3,417.6	7.7	11.4	-165.80	-17.8	505.0	548.4	532.8	15.59	35.172		
3,600.0	3,597.5	3,546.5	3,513.2	7.9	11.8	-166.05	-18.4	519.2	573.9	557.9	16.03	35.812		
3,700.0	3,696.9	3,643.1	3,608.8	8.1	12.1	-166.28	-18.9	533.4	599.5	583.0	16.46	36.413		
3,800.0	3,796.2	3,739.8	3,704.4	8.4	12.4	-166.48	-19.5	547.6	625.0	608.1	16.90	36.978		
3,900.0	3,895.6	3,836.4	3,800.0	8.6	12.8	-166.68	-20.0	561.8	650.6	633.3	17.34	37.510		
4,000.0	3,994.9	3,933.1	3,895.6	8.8	13.1	-166.85	-20.6	576.0	676.2	658.4	17.79	38.012		
4,100.0	4,094.3	4,029.7	3,991.2	9.1	13.5	-167.02	-21.2	590.2	701.8	683.5	18.23	38.485		
4,200.0	4,193.6	4,126.4	4,086.8	9.3	13.8	-167.19	-21.7	604.4	727.3	708.6	18.70	38.893		
4,300.0	4,293.2	4,223.7	4,183.0	9.6	14.2	-167.40	-22.3	618.7	750.5	731.3	19.22	39.043		
4,400.0	4,393.1	4,321.6	4,279.9	9.8	14.5	-167.53	-22.9	633.1	770.5	750.8	19.73	39.050		
4,500.0	4,493.0	4,420.2	4,377.4	10.0	14.9	-167.58	-23.5	647.5	787.1	766.9	20.21	38.942		
4,600.0	4,593.0	4,519.2	4,475.3	10.2	15.2	89.57	-24.0	662.1	801.8	781.1	20.67	38.786		
4,700.0	4,693.0	4,618.1	4,573.1	10.4	15.6	89.62	-24.6	676.6	816.5	795.3	21.14	38.629		
4,800.0	4,793.0	4,717.0	4,671.0	10.6	16.0	89.67	-25.2	691.1	831.2	809.6	21.60	38.480		
4,900.0	4,893.0	4,815.9	4,768.8	10.8	16.3	89.71	-25.8	705.7	845.9	823.8	22.06	38.336		
5,000.0	4,993.0	4,914.8	4,866.6	11.0	16.7	89.75	-26.4	720.2	860.5	838.0	22.53	38.198		

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-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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		
5,100.0	5,093.0	5,013.7	4,964.5	11.2	17.0	89.80	-26.9	734.7	875.2	852.2	22.99	38.065		
5,200.0	5,193.0	5,112.6	5,062.3	11.5	17.4	89.84	-27.5	749.3	889.9	866.5	23.46	37.937		
5,300.0	5,293.0	5,211.5	5,160.1	11.7	17.7	89.88	-28.1	763.8	904.6	880.7	23.92	37.814		
5,400.0	5,393.0	5,310.5	5,258.0	11.9	18.1	89.92	-28.7	778.3	919.3	894.9	24.39	37.695		
5,500.0	5,493.0	5,446.9	5,393.3	12.1	18.5	89.96	-29.4	796.1	932.4	907.5	24.89	37.455		
5,600.0	5,593.0	5,595.0	5,540.8	12.3	18.8	89.99	-29.8	808.1	940.6	915.2	25.38	37.060		
5,700.0	5,693.0	5,743.9	5,689.6	12.5	19.0	90.00	-30.0	812.5	943.5	917.7	25.85	36.497		
5,800.0	5,793.0	5,847.3	5,793.0	12.8	19.1	90.00	-30.0	812.5	943.5	917.3	26.26	35.930		
5,900.0	5,893.0	5,947.3	5,893.0	13.0	19.3	90.00	-30.0	812.5	943.5	916.9	26.66	35.385		
6,000.0	5,993.0	6,047.3	5,993.0	13.2	19.4	90.00	-30.0	812.5	943.5	916.5	27.07	34.854		
6,100.0	6,093.0	6,147.3	6,093.0	13.4	19.5	90.00	-30.0	812.5	943.5	916.1	27.48	34.338		
6,200.0	6,193.0	6,247.3	6,193.0	13.6	19.7	90.00	-30.0	812.5	943.5	915.6	27.89	33.836		
6,300.0	6,293.0	6,348.6	6,294.3	13.8	19.8	-90.86	-33.3	812.5	943.5	915.3	28.26	33.390		
6,400.0	6,391.9	6,450.3	6,394.6	14.0	20.0	-90.77	-49.3	812.2	943.5	914.9	28.64	32.947		
6,500.0	6,488.1	6,551.8	6,491.8	14.2	20.1	-90.66	-78.5	811.8	943.5	914.4	29.05	32.473		
6,600.0	6,580.0	6,653.1	6,584.0	14.5	20.3	-90.53	-120.1	811.1	943.5	913.9	29.55	31.925		
6,659.2	6,631.6	6,712.9	6,635.6	14.6	20.5	-90.46	-150.3	810.6	943.5	913.6	29.92	31.534		
6,700.0	6,665.9	6,754.0	6,669.7	14.8	20.6	-90.40	-173.4	810.3	943.5	913.3	30.19	31.254		
6,800.0	6,744.5	6,854.7	6,747.3	15.1	20.9	-90.27	-237.3	809.3	943.5	912.5	31.02	30.416		
6,900.0	6,814.3	6,955.1	6,815.7	15.6	21.2	-90.12	-310.7	808.1	943.5	911.4	32.10	29.388		
7,000.0	6,874.2	7,055.1	6,873.8	16.3	21.7	-89.98	-392.1	806.8	943.5	910.0	33.48	28.178		
7,100.0	6,923.2	7,154.9	6,920.6	17.2	22.3	-89.84	-480.1	805.5	943.6	908.4	35.18	26.822		
7,200.0	6,960.3	7,254.4	6,955.4	18.2	23.1	-89.70	-573.1	804.0	943.6	906.4	37.18	25.380		
7,300.0	6,985.0	7,353.5	6,977.9	19.3	24.0	-89.56	-669.6	802.5	943.6	904.2	39.46	23.916		
7,400.0	6,996.9	7,452.4	6,987.6	20.6	25.0	-89.43	-768.0	800.9	943.7	901.7	41.96	22.490		
7,500.0	6,997.6	7,552.0	6,987.5	21.9	26.1	-89.39	-867.6	799.4	943.7	899.1	44.65	21.134		
7,600.0	6,996.7	7,652.0	6,986.8	23.3	27.3	-89.40	-967.5	797.8	943.8	896.3	47.49	19.872		
7,700.0	6,995.8	7,752.0	6,986.0	24.8	28.6	-89.40	-1,067.5	796.2	943.8	893.3	50.46	18.703		
7,800.0	6,995.0	7,852.0	6,985.3	26.4	30.0	-89.41	-1,167.5	794.6	943.8	890.3	53.54	17.628		
7,900.0	6,994.1	7,952.0	6,984.6	28.0	31.4	-89.42	-1,267.5	793.1	943.9	887.1	56.71	16.642		
8,000.0	6,993.3	8,052.0	6,983.8	29.6	32.9	-89.43	-1,367.5	791.5	943.9	883.9	59.96	15.741		
8,100.0	6,992.4	8,152.0	6,983.1	31.3	34.4	-89.43	-1,467.5	789.9	943.9	880.6	63.28	14.917		
8,200.0	6,991.6	8,252.0	6,982.4	33.0	36.0	-89.44	-1,567.5	788.3	943.9	877.3	66.64	14.164		
8,300.0	6,990.7	8,352.0	6,981.6	34.7	37.6	-89.45	-1,667.4	786.8	944.0	873.9	70.06	13.474		
8,400.0	6,989.9	8,452.0	6,980.9	36.4	39.2	-89.46	-1,767.4	785.2	944.0	870.5	73.52	12.840		
8,500.0	6,989.0	8,552.0	6,980.2	38.2	40.9	-89.46	-1,867.4	783.6	944.0	867.0	77.01	12.258		
8,600.0	6,988.1	8,652.0	6,979.4	39.9	42.5	-89.47	-1,967.4	782.0	944.1	863.5	80.54	11.722		
8,700.0	6,987.3	8,752.0	6,978.7	41.7	44.2	-89.48	-2,067.4	780.5	944.1	860.0	84.09	11.228		
8,800.0	6,986.4	8,852.0	6,978.0	43.5	45.9	-89.49	-2,167.4	778.9	944.1	856.5	87.66	10.770		
8,900.0	6,985.6	8,952.0	6,977.2	45.3	47.7	-89.49	-2,267.4	777.3	944.2	852.9	91.26	10.346		
9,000.0	6,984.7	9,052.0	6,976.5	47.1	49.4	-89.50	-2,367.3	775.7	944.2	849.3	94.87	9.953		
9,100.0	6,983.9	9,152.0	6,975.8	48.9	51.2	-89.51	-2,467.3	774.2	944.2	845.7	98.50	9.586		
9,200.0	6,983.0	9,252.0	6,975.0	50.8	52.9	-89.52	-2,567.3	772.6	944.3	842.1	102.14	9.244		
9,300.0	6,982.2	9,352.0	6,974.3	52.6	54.7	-89.52	-2,667.3	771.0	944.3	838.5	105.80	8.925		
9,400.0	6,981.3	9,452.0	6,973.6	54.4	56.5	-89.53	-2,767.3	769.4	944.3	834.8	109.47	8.626		
9,500.0	6,980.5	9,552.0	6,972.8	56.3	58.3	-89.54	-2,867.3	767.9	944.3	831.2	113.15	8.346		
9,600.0	6,979.6	9,652.0	6,972.1	58.1	60.1	-89.55	-2,967.2	766.3	944.4	827.5	116.84	8.083		
9,700.0	6,978.7	9,752.0	6,971.4	60.0	61.9	-89.55	-3,067.2	764.7	944.4	823.9	120.54	7.835		
9,800.0	6,977.9	9,852.0	6,970.6	61.8	63.7	-89.56	-3,167.2	763.2	944.4	820.2	124.25	7.601		
9,900.0	6,977.0	9,952.0	6,969.9	63.7	65.5	-89.57	-3,267.2	761.6	944.5	816.5	127.96	7.381		

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

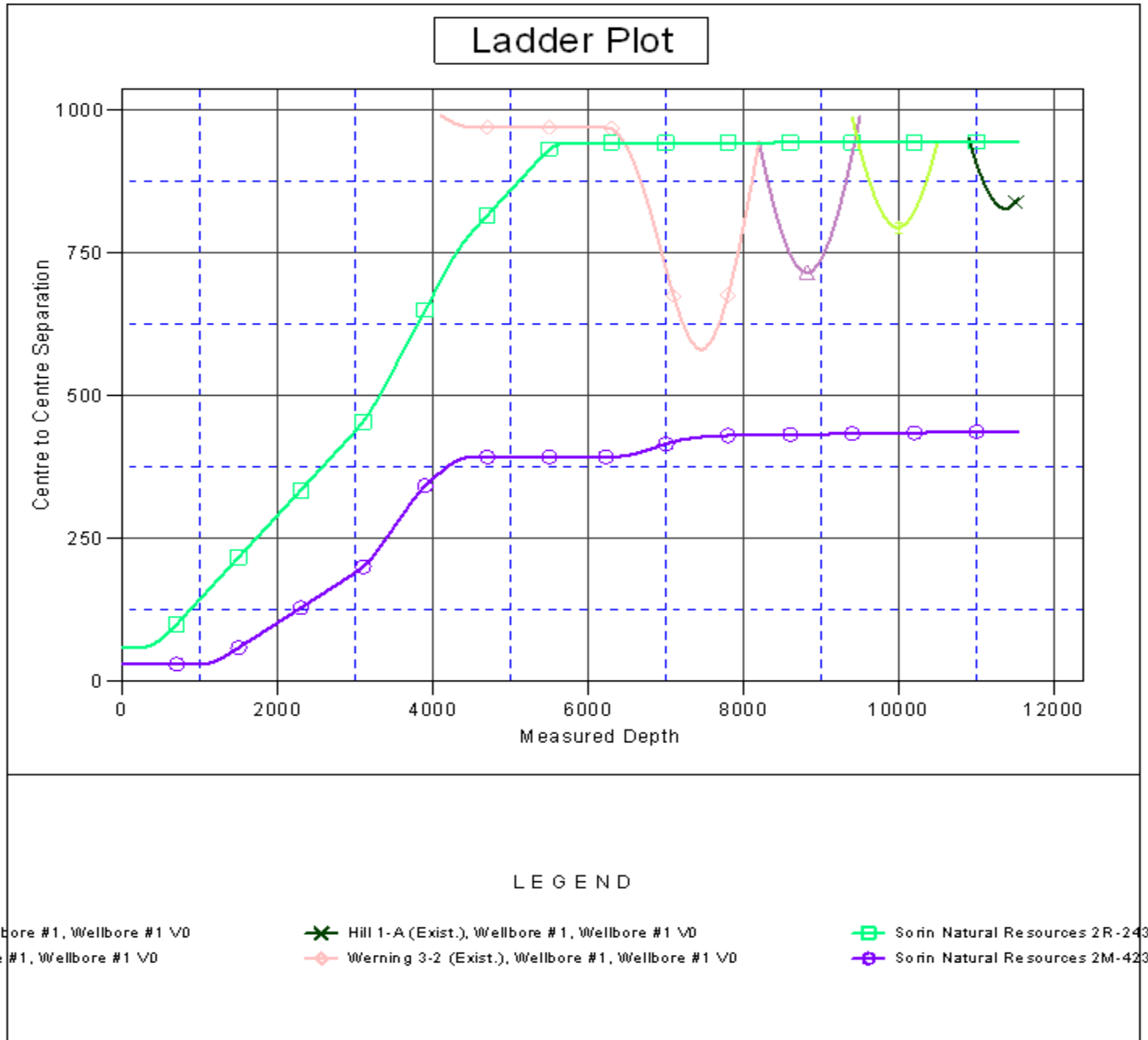
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<b>Project:</b>	SEC.2-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Reference Site:</b>	Sorin Natural Resources 2M-HZ Pad Sec.2-T4N-R66W	<b>MD Reference:</b>	WELL @ 4688.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sorin Natural Resources 2M-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,000.0	6,976.2	10,052.0	6,969.2	65.6	67.3	-89.58	-3,367.2	760.0	944.5	812.8	131.68	7.173			
10,100.0	6,975.3	10,152.0	6,968.5	67.4	69.2	-89.58	-3,467.2	758.4	944.5	809.1	135.41	6.975			
10,200.0	6,974.5	10,252.0	6,967.7	69.3	71.0	-89.59	-3,567.2	756.9	944.6	805.4	139.14	6.789			
10,300.0	6,973.6	10,352.0	6,967.0	71.2	72.8	-89.60	-3,667.1	755.3	944.6	801.7	142.88	6.611			
10,400.0	6,972.8	10,452.0	6,966.3	73.0	74.7	-89.61	-3,767.1	753.7	944.6	798.0	146.62	6.443			
10,500.0	6,971.9	10,552.0	6,965.5	74.9	76.5	-89.61	-3,867.1	752.1	944.7	794.3	150.37	6.282			
10,600.0	6,971.0	10,652.0	6,964.8	76.8	78.4	-89.62	-3,967.1	750.6	944.7	790.6	154.12	6.130			
10,700.0	6,970.2	10,752.0	6,964.1	78.7	80.2	-89.63	-4,067.1	749.0	944.7	786.8	157.88	5.984			
10,800.0	6,969.3	10,852.0	6,963.3	80.6	82.1	-89.64	-4,167.1	747.4	944.8	783.1	161.63	5.845			
10,900.0	6,968.5	10,952.0	6,962.6	82.4	83.9	-89.64	-4,267.0	745.8	944.8	779.4	165.40	5.712			
11,000.0	6,967.6	11,052.0	6,961.9	84.3	85.8	-89.65	-4,367.0	744.3	944.8	775.7	169.16	5.585			
11,100.0	6,966.8	11,152.0	6,961.1	86.2	87.7	-89.66	-4,467.0	742.7	944.8	771.9	172.93	5.464			
11,200.0	6,965.9	11,252.0	6,960.4	88.1	89.5	-89.66	-4,567.0	741.1	944.9	768.2	176.70	5.347			
11,300.0	6,965.1	11,352.0	6,959.7	90.0	91.4	-89.67	-4,667.0	739.5	944.9	764.4	180.47	5.236			
11,400.0	6,964.2	11,452.0	6,958.9	91.9	93.3	-89.68	-4,767.0	738.0	944.9	760.7	184.25	5.129			
11,500.0	6,963.3	11,552.0	6,958.2	93.8	95.1	-89.69	-4,867.0	736.4	945.0	756.9	188.03	5.026			
11,512.7	6,963.2	11,564.7	6,958.1	94.0	95.4	-89.69	-4,879.7	736.2	945.0	756.5	188.51	5.013			
11,540.5	6,963.0	11,577.7	6,958.0	94.5	95.6	-89.69	-4,892.6	736.0	945.1	755.8	189.28	4.993 SF			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.49°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sorin Natural Resources 2M-203
<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-203	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (01-25-13)	<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-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.49°

