

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Ram Land 30K-243**

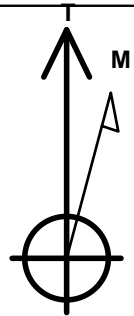
Surface Location: Ram Land 30GK-HZ Pad Sec.30-T4N-R66W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4758.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1346351.64	3188199.45	40.282170	-104.825430	

RKB-15' WELL @ 4773.0ft (RKB-15')

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2487'FSL, 1211'FWL, SEC.30	1.0	0.0	0.0	Point
BHL 2154'FNL & 780'FWL, SEC.31	7063.0	-4641.2	-440.9	Point



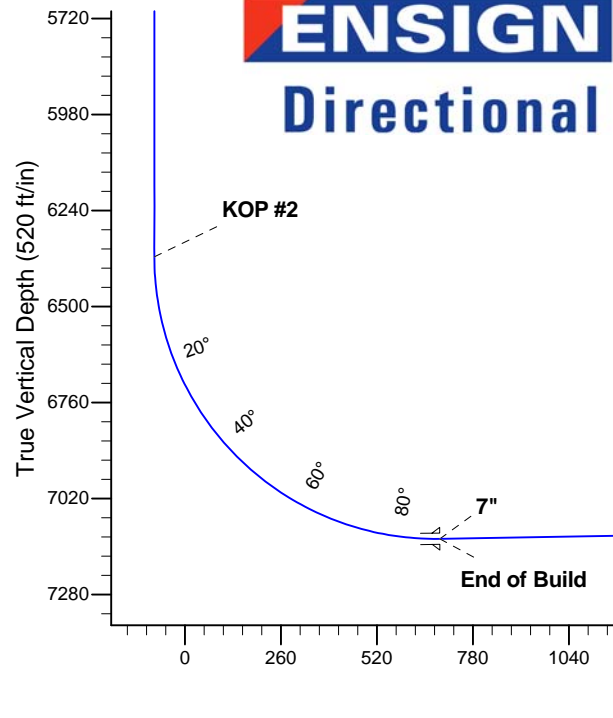
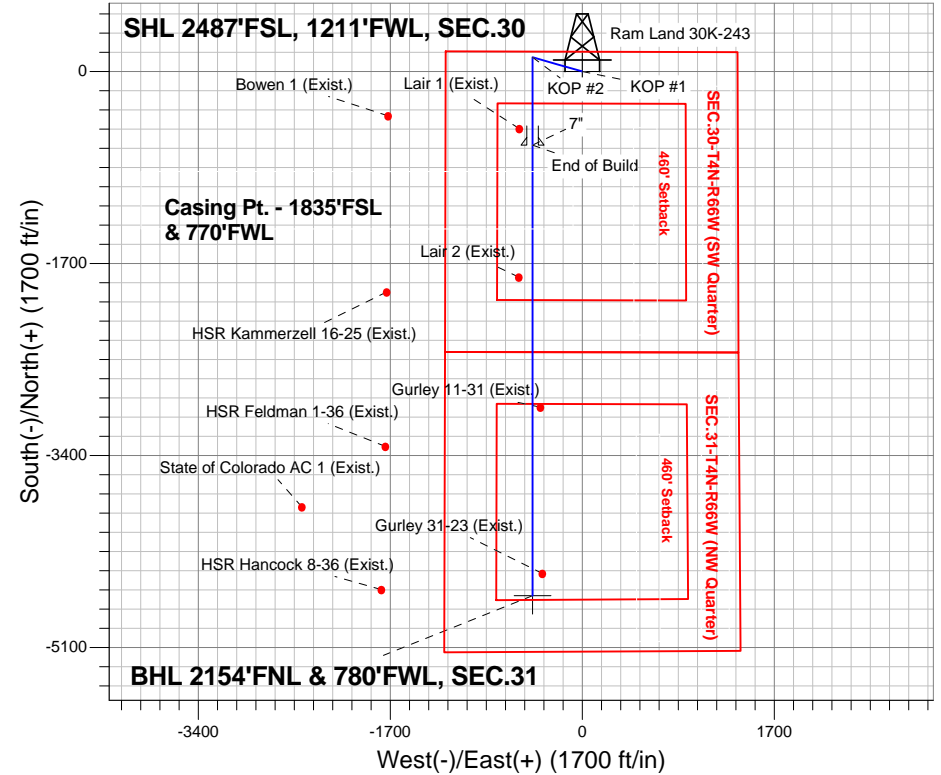
Azimuths to True North  
 Magnetic North: 8.61°

Magnetic Field  
 Strength: 52846.0snT  
 Dip Angle: 66.87°  
 Date: 7/9/2013  
 Model: IGRF2010

Ram Land 30GK-HZ Pad Sec.30-T4N-R66W  
 Ram Land 30K-243  
 Plan #1 (7-02-13)  
 14:25, July 11 2013

## ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6365.3	6393.1	KOP #2
7129.2	7605.8	End of Build



## 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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	1858.7	7.17	285.83	1857.8	6.1	-21.6	2.00	285.83	-4.0	
4	5169.1	7.17	285.83	5142.2	118.9	-419.3	0.00	0.00	-78.7	
5	5527.8	0.00	0.00	5500.0	125.0	-440.9	2.00	180.00	-82.7	
6	6393.1	0.00	0.00	6365.3	125.0	-440.9	0.00	0.00	-82.7	
7	7605.8	90.95	180.00	7129.2	-651.6	-440.9	7.50	180.00	690.4	
8	11595.9	90.95	180.00	7063.0	-4641.2	-440.9	0.00	0.00	4662.1	BHL 2154'FNL & 780'FWL, SEC.31

BHL 2154'FNL & 780'FWL, SEC.31



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.30-T4N-R66W**

**Ram Land 30GK-HZ Pad Sec.30-T4N-R66W**

**Ram Land 30K-243**

**Wellbore #1**

**Plan: Plan #1 (7-02-13)**

## **Standard Planning Report**

**09 July, 2013**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Project:</b>	SEC.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Ram Land 30K-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-02-13)		

<b>Project</b>	SEC.30-T4N-R66W, Weld County, CO		
<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

<b>Site</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W				
<b>Site Position:</b>		<b>Northing:</b>	1,346,533.34 ft	<b>Latitude:</b>	40.282640
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,189,570.75 ft	<b>Longitude:</b>	-104.820510
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"	<b>Grid Convergence:</b>	0.44 °

<b>Well</b>	Ram Land 30K-243					
<b>Well Position</b>	<b>+N/-S</b>	-171.3 ft	<b>Northing:</b>	1,346,351.64 ft	<b>Latitude:</b>	40.282170
	<b>+E/-W</b>	-1,372.7 ft	<b>Easting:</b>	3,188,199.45 ft	<b>Longitude:</b>	-104.825430
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	4,758.0 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	7/9/2013	8.61	66.87	52,846

<b>Design</b>	Plan #1 (7-02-13)			
<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	185.43

<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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,858.7	7.17	285.83	1,857.8	6.1	-21.6	2.00	2.00	0.00	285.83	
5,169.1	7.17	285.83	5,142.2	118.9	-419.3	0.00	0.00	0.00	0.00	
5,527.8	0.00	0.00	5,500.0	125.0	-440.9	2.00	-2.00	0.00	180.00	
6,393.1	0.00	0.00	6,365.3	125.0	-440.9	0.00	0.00	0.00	0.00	
7,605.8	90.95	180.00	7,129.2	-651.6	-440.9	7.50	7.50	0.00	180.00	
11,595.9	90.95	180.00	7,063.0	-4,641.2	-440.9	0.00	0.00	0.00	0.00	BHL 2154'FNL & 7E

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Project:</b>	SEC.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Ram Land 30K-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-02-13)		

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	
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>SHL 2487'FSL, 1211'FWL, SEC.30</b>										
100.0	0.00	0.00	100.0	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	
300.0	0.00	0.00	300.0	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	
500.0	0.00	0.00	500.0	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	
700.0	0.00	0.00	700.0	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	
900.0	0.00	0.00	900.0	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	
1,100.0	0.00	0.00	1,100.0	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	
1,300.0	0.00	0.00	1,300.0	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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>KOP #1</b>										
1,600.0	2.00	285.83	1,600.0	0.5	-1.7	-0.3	2.00	2.00	0.00	
1,700.0	4.00	285.83	1,699.8	1.9	-6.7	-1.3	2.00	2.00	0.00	
1,800.0	6.00	285.83	1,799.5	4.3	-15.1	-2.8	2.00	2.00	0.00	
1,858.7	7.17	285.83	1,857.8	6.1	-21.6	-4.0	2.00	2.00	0.00	
1,900.0	7.17	285.83	1,898.7	7.5	-26.5	-5.0	0.00	0.00	0.00	
2,000.0	7.17	285.83	1,998.0	10.9	-38.6	-7.2	0.00	0.00	0.00	
2,100.0	7.17	285.83	2,097.2	14.3	-50.6	-9.5	0.00	0.00	0.00	
2,200.0	7.17	285.83	2,196.4	17.7	-62.6	-11.7	0.00	0.00	0.00	
2,300.0	7.17	285.83	2,295.6	21.1	-74.6	-14.0	0.00	0.00	0.00	
2,400.0	7.17	285.83	2,394.8	24.6	-86.6	-16.3	0.00	0.00	0.00	
2,500.0	7.17	285.83	2,494.0	28.0	-98.6	-18.5	0.00	0.00	0.00	
2,600.0	7.17	285.83	2,593.3	31.4	-110.6	-20.8	0.00	0.00	0.00	
2,700.0	7.17	285.83	2,692.5	34.8	-122.7	-23.0	0.00	0.00	0.00	
2,800.0	7.17	285.83	2,791.7	38.2	-134.7	-25.3	0.00	0.00	0.00	
2,900.0	7.17	285.83	2,890.9	41.6	-146.7	-27.5	0.00	0.00	0.00	
3,000.0	7.17	285.83	2,990.1	45.0	-158.7	-29.8	0.00	0.00	0.00	
3,100.0	7.17	285.83	3,089.3	48.4	-170.7	-32.0	0.00	0.00	0.00	
3,200.0	7.17	285.83	3,188.6	51.8	-182.7	-34.3	0.00	0.00	0.00	
3,300.0	7.17	285.83	3,287.8	55.2	-194.8	-36.5	0.00	0.00	0.00	
3,400.0	7.17	285.83	3,387.0	58.6	-206.8	-38.8	0.00	0.00	0.00	
3,500.0	7.17	285.83	3,486.2	62.0	-218.8	-41.1	0.00	0.00	0.00	
3,600.0	7.17	285.83	3,585.4	65.4	-230.8	-43.3	0.00	0.00	0.00	
3,700.0	7.17	285.83	3,684.6	68.8	-242.8	-45.6	0.00	0.00	0.00	
3,800.0	7.17	285.83	3,783.9	72.2	-254.8	-47.8	0.00	0.00	0.00	
3,900.0	7.17	285.83	3,883.1	75.7	-266.8	-50.1	0.00	0.00	0.00	
4,000.0	7.17	285.83	3,982.3	79.1	-278.9	-52.3	0.00	0.00	0.00	
4,100.0	7.17	285.83	4,081.5	82.5	-290.9	-54.6	0.00	0.00	0.00	
4,200.0	7.17	285.83	4,180.7	85.9	-302.9	-56.8	0.00	0.00	0.00	
4,300.0	7.17	285.83	4,279.9	89.3	-314.9	-59.1	0.00	0.00	0.00	
4,400.0	7.17	285.83	4,379.2	92.7	-326.9	-61.4	0.00	0.00	0.00	
4,500.0	7.17	285.83	4,478.4	96.1	-338.9	-63.6	0.00	0.00	0.00	
4,600.0	7.17	285.83	4,577.6	99.5	-351.0	-65.9	0.00	0.00	0.00	
4,700.0	7.17	285.83	4,676.8	102.9	-363.0	-68.1	0.00	0.00	0.00	
4,800.0	7.17	285.83	4,776.0	106.3	-375.0	-70.4	0.00	0.00	0.00	

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<b>Project:</b>	SEC.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Ram Land 30K-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-02-13)		

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)
4,900.0	7.17	285.83	4,875.3	109.7	-387.0	-72.6	0.00	0.00	0.00
5,000.0	7.17	285.83	4,974.5	113.1	-399.0	-74.9	0.00	0.00	0.00
5,100.0	7.17	285.83	5,073.7	116.5	-411.0	-77.1	0.00	0.00	0.00
5,169.1	7.17	285.83	5,142.2	118.9	-419.3	-78.7	0.00	0.00	0.00
5,200.0	6.56	285.83	5,172.9	119.9	-422.9	-79.4	2.00	-2.00	0.00
5,300.0	4.56	285.83	5,272.4	122.5	-432.2	-81.1	2.00	-2.00	0.00
5,400.0	2.56	285.83	5,372.3	124.2	-438.2	-82.2	2.00	-2.00	0.00
5,500.0	0.56	285.83	5,472.2	125.0	-440.8	-82.7	2.00	-2.00	0.00
5,527.8	0.00	0.00	5,500.0	125.0	-440.9	-82.7	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,572.2	125.0	-440.9	-82.7	0.00	0.00	0.00
5,700.0	0.00	0.00	5,672.2	125.0	-440.9	-82.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,772.2	125.0	-440.9	-82.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,872.2	125.0	-440.9	-82.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,972.2	125.0	-440.9	-82.7	0.00	0.00	0.00
6,100.0	0.00	0.00	6,072.2	125.0	-440.9	-82.7	0.00	0.00	0.00
6,200.0	0.00	0.00	6,172.2	125.0	-440.9	-82.7	0.00	0.00	0.00
6,300.0	0.00	0.00	6,272.2	125.0	-440.9	-82.7	0.00	0.00	0.00
6,393.1	0.00	0.00	6,365.3	125.0	-440.9	-82.7	0.00	0.00	0.00
<b>KOP #2</b>									
6,400.0	0.52	180.00	6,372.2	125.0	-440.9	-82.7	7.49	7.49	0.00
6,500.0	8.02	180.00	6,471.9	117.5	-440.9	-75.3	7.50	7.50	0.00
6,600.0	15.52	180.00	6,569.7	97.2	-440.9	-55.0	7.50	7.50	0.00
6,700.0	23.02	180.00	6,664.0	64.2	-440.9	-22.2	7.50	7.50	0.00
6,800.0	30.52	180.00	6,753.2	19.2	-440.9	22.6	7.50	7.50	0.00
6,900.0	38.02	180.00	6,835.8	-37.1	-440.9	78.6	7.50	7.50	0.00
7,000.0	45.52	180.00	6,910.4	-103.6	-440.9	144.9	7.50	7.50	0.00
7,100.0	53.02	180.00	6,975.6	-179.4	-440.9	220.3	7.50	7.50	0.00
7,200.0	60.52	180.00	7,030.3	-263.0	-440.9	303.5	7.50	7.50	0.00
7,300.0	68.02	180.00	7,073.7	-353.0	-440.9	393.1	7.50	7.50	0.00
7,400.0	75.52	180.00	7,105.0	-447.9	-440.9	487.6	7.50	7.50	0.00
7,500.0	83.02	180.00	7,123.6	-546.1	-440.9	585.3	7.50	7.50	0.00
7,600.0	90.52	180.00	7,129.2	-645.8	-440.9	684.6	7.50	7.50	0.00
7,605.8	90.95	180.00	7,129.2	-651.6	-440.9	690.4	7.47	7.47	0.00
<b>End of Build - 7"</b>									
7,700.0	90.95	180.00	7,127.6	-745.8	-440.9	784.2	0.00	0.00	0.00
7,800.0	90.95	180.00	7,125.9	-845.8	-440.9	883.7	0.00	0.00	0.00
7,900.0	90.95	180.00	7,124.3	-945.8	-440.9	983.3	0.00	0.00	0.00
8,000.0	90.95	180.00	7,122.6	-1,045.8	-440.9	1,082.8	0.00	0.00	0.00
8,100.0	90.95	180.00	7,121.0	-1,145.8	-440.9	1,182.3	0.00	0.00	0.00
8,200.0	90.95	180.00	7,119.3	-1,245.8	-440.9	1,281.9	0.00	0.00	0.00
8,300.0	90.95	180.00	7,117.6	-1,345.7	-440.9	1,381.4	0.00	0.00	0.00
8,400.0	90.95	180.00	7,116.0	-1,445.7	-440.9	1,480.9	0.00	0.00	0.00
8,500.0	90.95	180.00	7,114.3	-1,545.7	-440.9	1,580.5	0.00	0.00	0.00
8,600.0	90.95	180.00	7,112.7	-1,645.7	-440.9	1,680.0	0.00	0.00	0.00
8,700.0	90.95	180.00	7,111.0	-1,745.7	-440.9	1,779.6	0.00	0.00	0.00
8,800.0	90.95	180.00	7,109.4	-1,845.7	-440.9	1,879.1	0.00	0.00	0.00
8,900.0	90.95	180.00	7,107.7	-1,945.7	-440.9	1,978.6	0.00	0.00	0.00
9,000.0	90.95	180.00	7,106.0	-2,045.6	-440.9	2,078.2	0.00	0.00	0.00
9,100.0	90.95	180.00	7,104.4	-2,145.6	-440.9	2,177.7	0.00	0.00	0.00
9,200.0	90.95	180.00	7,102.7	-2,245.6	-440.9	2,277.2	0.00	0.00	0.00
9,300.0	90.95	180.00	7,101.1	-2,345.6	-440.9	2,376.8	0.00	0.00	0.00
9,400.0	90.95	180.00	7,099.4	-2,445.6	-440.9	2,476.3	0.00	0.00	0.00
9,500.0	90.95	180.00	7,097.8	-2,545.6	-440.9	2,575.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Project:</b>	SEC.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Ram Land 30K-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (7-02-13)		

**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)
9,600.0	90.95	180.00	7,096.1	-2,645.6	-440.9	2,675.4	0.00	0.00	0.00
9,700.0	90.95	180.00	7,094.4	-2,745.5	-440.9	2,774.9	0.00	0.00	0.00
9,800.0	90.95	180.00	7,092.8	-2,845.5	-440.9	2,874.5	0.00	0.00	0.00
9,900.0	90.95	180.00	7,091.1	-2,945.5	-440.9	2,974.0	0.00	0.00	0.00
10,000.0	90.95	180.00	7,089.5	-3,045.5	-440.9	3,073.6	0.00	0.00	0.00
10,100.0	90.95	180.00	7,087.8	-3,145.5	-440.9	3,173.1	0.00	0.00	0.00
10,200.0	90.95	180.00	7,086.1	-3,245.5	-440.9	3,272.6	0.00	0.00	0.00
10,300.0	90.95	180.00	7,084.5	-3,345.5	-440.9	3,372.2	0.00	0.00	0.00
10,400.0	90.95	180.00	7,082.8	-3,445.5	-440.9	3,471.7	0.00	0.00	0.00
10,500.0	90.95	180.00	7,081.2	-3,545.4	-440.9	3,571.2	0.00	0.00	0.00
10,600.0	90.95	180.00	7,079.5	-3,645.4	-440.9	3,670.8	0.00	0.00	0.00
10,700.0	90.95	180.00	7,077.9	-3,745.4	-440.9	3,770.3	0.00	0.00	0.00
10,800.0	90.95	180.00	7,076.2	-3,845.4	-440.9	3,869.9	0.00	0.00	0.00
10,900.0	90.95	180.00	7,074.5	-3,945.4	-440.9	3,969.4	0.00	0.00	0.00
11,000.0	90.95	180.00	7,072.9	-4,045.4	-440.9	4,068.9	0.00	0.00	0.00
11,100.0	90.95	180.00	7,071.2	-4,145.4	-440.9	4,168.5	0.00	0.00	0.00
11,200.0	90.95	180.00	7,069.6	-4,245.3	-440.9	4,268.0	0.00	0.00	0.00
11,300.0	90.95	180.00	7,067.9	-4,345.3	-440.9	4,367.5	0.00	0.00	0.00
11,400.0	90.95	180.00	7,066.2	-4,445.3	-440.9	4,467.1	0.00	0.00	0.00
11,500.0	90.95	180.00	7,064.6	-4,545.3	-440.9	4,566.6	0.00	0.00	0.00
11,595.9	90.95	180.00	7,063.0	-4,641.2	-440.9	4,662.1	0.00	0.00	0.00

**BHL 2154'FNL & 780'FWL, SEC.31**

**Casing Points**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,605.8	7,129.2	7"	7	7-1/2

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP #1
6,393.1	6,365.3	125.0	-440.9	KOP #2
7,605.8	7,129.2	-651.6	-440.9	End of Build



**Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.30-T4N-R66W**

**Ram Land 30GK-HZ Pad Sec.30-T4N-R66W**

**Ram Land 30K-243**

**Wellbore #1**

**Plan #1 (7-02-13)**

## **Anticollision Report**

**09 July, 2013**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (7-02-13)		
<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>	7/9/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,595.9	Plan #1 (7-02-13) (Wellbore #1)	MWD	MWD - Standard

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Existing Wells</b>						
Gurley 11-31 (Exist.) - Wellbore #1 - Wellbore #1	9,927.2	7,081.7	69.8	-131.2	0.347	Level 1, CC, ES, SF
Gurley 31-23 (Exist.) - Wellbore #1 - Wellbore #1	11,399.2	7,060.3	86.5	-141.6	0.379	Level 1, CC
Gurley 31-23 (Exist.) - Wellbore #1 - Wellbore #1	11,400.0	7,060.2	86.5	-141.6	0.379	Level 1, ES, SF
Lair 1 (Exist.) - Wellbore #1 - Wellbore #1	7,459.8	7,104.7	117.1	-43.3	0.730	Level 1, CC, ES, SF
Lair 2 (Exist.) - Wellbore #1 - Wellbore #1	8,775.8	7,100.8	122.7	-57.7	0.680	Level 1, CC, ES, SF
<b>Ram Land 30GK-HZ Pad Sec.30-T4N-R66W</b>						
Ram Land 30G-303 - Wellbore #1 - Plan #1 (7-02-13)	200.0	200.0	61.4	60.7	91.030	CC, ES
Ram Land 30G-303 - Wellbore #1 - Plan #1 (7-02-13)	11,595.9	11,728.2	666.2	486.2	3.701	SF
Ram Land 30G-423 - Wellbore #1 - Plan #1 (7-02-13)	400.0	400.0	30.7	29.1	19.506	CC, ES
Ram Land 30G-423 - Wellbore #1 - Plan #1 (7-02-13)	11,595.9	11,761.8	384.7	227.1	2.441	SF
<b>Ram Land 30KO-HZ Pad Sec.30-T4N-R66W</b>						
Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)	1,761.9	1,777.3	154.7	147.0	20.158	CC, ES
Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)	11,595.9	11,719.4	438.4	273.0	2.650	SF

Offset Design													Existing Wells - Gurley 11-31 (Exist.) - Wellbore #1 - Wellbore #1		Offset Site Error: 0.0 ft	
Survey Program: 7500-UNKNOWN													Offset Well Error: 0.0 ft			
Reference		Offset		Semi Major Axis			Offset Wellbore Centre			Distance				Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
9,000.0	7,106.0	7,097.0	7,097.0	42.9	141.9	-102.42	-2,972.7	-371.1	929.7	749.2	180.49	5.151				
9,100.0	7,104.4	7,095.4	7,095.4	44.7	141.9	-101.12	-2,972.7	-371.1	830.0	647.0	183.01	4.535				
9,200.0	7,102.7	7,093.7	7,093.7	46.5	141.9	-99.80	-2,972.7	-371.1	730.4	545.0	185.47	3.938				
9,300.0	7,101.1	7,092.1	7,092.1	48.3	141.8	-98.47	-2,972.7	-371.1	631.0	443.1	187.87	3.359				
9,400.0	7,099.4	7,090.4	7,090.4	50.1	141.8	-97.14	-2,972.7	-371.1	531.7	341.6	190.18	2.796				
9,500.0	7,097.8	7,088.8	7,088.8	51.9	141.8	-95.79	-2,972.7	-371.1	432.8	240.4	192.42	2.249				
9,600.0	7,096.1	7,087.1	7,087.1	53.7	141.7	-94.44	-2,972.7	-371.1	334.5	140.0	194.57	1.719				
9,700.0	7,094.4	7,085.4	7,085.4	55.5	141.7	-93.09	-2,972.7	-371.1	237.7	41.0	196.63	1.209	Level 2			
9,800.0	7,092.8	7,083.8	7,083.8	57.4	141.7	-91.73	-2,972.7	-371.1	145.1	-53.5	198.59	0.731	Level 1			
9,900.0	7,091.1	7,082.1	7,082.1	59.2	141.6	-90.37	-2,972.7	-371.1	74.9	-125.6	200.46	0.374	Level 1			
9,927.2	7,090.7	7,081.7	7,081.7	59.7	141.6	-90.00	-2,972.7	-371.1	69.8	-131.2	200.95	0.347	Level 1, CC, ES, SF			
10,000.0	7,089.5	7,080.5	7,080.5	61.1	141.6	-89.01	-2,972.7	-371.1	100.8	-101.4	202.22	0.499	Level 1			

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells - Gurley 11-31 (Exist.) - Wellbore #1 - Wellbore #1														
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		
10,100.0	7,087.8	7,078.8	7,078.8	62.9	141.6	-87.65	-2,972.7	-371.1	186.3	-17.5	203.88	0.914	Level 1	
10,200.0	7,086.1	7,077.1	7,077.1	64.8	141.5	-86.29	-2,972.7	-371.1	281.5	76.1	205.42	1.371	Level 3	
10,300.0	7,084.5	7,075.5	7,075.5	66.6	141.5	-84.94	-2,972.7	-371.1	379.2	172.4	206.86	1.833		
10,400.0	7,082.8	7,073.8	7,073.8	68.5	141.5	-83.59	-2,972.7	-371.1	477.9	269.7	208.19	2.295		
10,500.0	7,081.2	7,072.2	7,072.2	70.3	141.4	-82.25	-2,972.7	-371.1	577.0	367.5	209.41	2.755		
10,600.0	7,079.5	7,070.5	7,070.5	72.2	141.4	-80.92	-2,972.7	-371.1	676.3	465.8	210.51	3.213		
10,700.0	7,077.9	7,068.9	7,068.9	74.1	141.4	-79.60	-2,972.7	-371.1	775.8	564.3	211.51	3.668		
10,800.0	7,076.2	7,067.2	7,067.2	75.9	141.3	-78.29	-2,972.7	-371.1	875.5	663.1	212.39	4.122		
10,900.0	7,074.5	7,065.5	7,065.5	77.8	141.3	-76.99	-2,972.7	-371.1	975.2	762.0	213.17	4.575		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells - Gurley 31-23 (Exist.) - Wellbore #1 - Wellbore #1														
Reference		Offset		Semi Major Axis			Offset Wellbore Centre			Distance			Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,500.0	7,081.2	7,075.2	7,075.2	70.3	141.5	-99.78	-4,444.5	-354.4	903.2	694.4	208.82	4.325		
10,600.0	7,079.5	7,073.5	7,073.5	72.2	141.5	-98.71	-4,444.5	-354.4	803.8	592.5	211.21	3.805		
10,700.0	7,077.9	7,071.9	7,071.9	74.1	141.4	-97.63	-4,444.5	-354.4	704.4	490.9	213.56	3.299		
10,800.0	7,076.2	7,070.2	7,070.2	75.9	141.4	-96.55	-4,444.5	-354.4	605.3	389.5	215.84	2.805		
10,900.0	7,074.5	7,068.5	7,068.5	77.8	141.4	-95.46	-4,444.5	-354.4	506.6	288.5	218.06	2.323		
11,000.0	7,072.9	7,066.9	7,066.9	79.7	141.3	-94.37	-4,444.5	-354.4	408.4	188.2	220.21	1.855		
11,100.0	7,071.2	7,065.2	7,065.2	81.6	141.3	-93.28	-4,444.5	-354.4	311.4	89.1	222.30	1.401	Level 3	
11,200.0	7,069.6	7,063.6	7,063.6	83.4	141.3	-92.19	-4,444.5	-354.4	217.1	-7.2	224.32	0.968	Level 1	
11,300.0	7,067.9	7,061.9	7,061.9	85.3	141.2	-91.09	-4,444.5	-354.4	131.6	-94.6	226.26	0.582	Level 1	
11,399.2	7,066.3	7,060.3	7,060.3	87.2	141.2	-90.00	-4,444.5	-354.4	86.5	-141.6	228.11	0.379	Level 1, CC	
11,400.0	7,066.2	7,060.2	7,060.2	87.2	141.2	-89.99	-4,444.5	-354.4	86.5	-141.6	228.13	0.379	Level 1, ES, SF	
11,500.0	7,064.6	7,058.6	7,058.6	89.1	141.2	-88.89	-4,444.5	-354.4	132.8	-97.1	229.92	0.578	Level 1	
11,595.9	7,063.0	7,057.0	7,057.0	90.9	141.1	-87.84	-4,444.5	-354.4	214.9	-16.7	231.56	0.928	Level 1	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells - Lair 1 (Exist.) - Wellbore #1 - Wellbore #1														
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-132.22	-506.4	-558.0	753.6					
100.0	100.0	87.0	87.0	0.1	1.7	-132.22	-506.4	-558.0	753.5	751.7	1.85	406.747		
200.0	200.0	187.0	187.0	0.3	3.7	-132.22	-506.4	-558.0	753.5	749.5	4.08	184.809		
300.0	300.0	287.0	287.0	0.6	5.7	-132.22	-506.4	-558.0	753.5	747.2	6.30	119.568		
400.0	400.0	387.0	387.0	0.8	7.7	-132.22	-506.4	-558.0	753.5	745.0	8.53	88.371		
500.0	500.0	487.0	487.0	1.0	9.7	-132.22	-506.4	-558.0	753.5	742.8	10.75	70.085		
600.0	600.0	587.0	587.0	1.2	11.7	-132.22	-506.4	-558.0	753.5	740.6	12.98	58.069		
700.0	700.0	687.0	687.0	1.5	13.7	-132.22	-506.4	-558.0	753.5	738.3	15.20	49.571		
800.0	800.0	787.0	787.0	1.7	15.7	-132.22	-506.4	-558.0	753.5	736.1	17.43	43.242		
900.0	900.0	887.0	887.0	1.9	17.7	-132.22	-506.4	-558.0	753.5	733.9	19.65	38.346		
1,000.0	1,000.0	987.0	987.0	2.1	19.7	-132.22	-506.4	-558.0	753.5	731.7	21.88	34.446		
1,100.0	1,100.0	1,087.0	1,087.0	2.4	21.7	-132.22	-506.4	-558.0	753.5	729.4	24.10	31.267		
1,200.0	1,200.0	1,187.0	1,187.0	2.6	23.7	-132.22	-506.4	-558.0	753.5	727.2	26.32	28.624		
1,300.0	1,300.0	1,287.0	1,287.0	2.8	25.7	-132.22	-506.4	-558.0	753.5	725.0	28.55	26.394		
1,400.0	1,400.0	1,387.0	1,387.0	3.0	27.7	-132.22	-506.4	-558.0	753.5	722.8	30.77	24.486		
1,500.0	1,500.0	1,487.0	1,487.0	3.3	29.7	-132.22	-506.4	-558.0	753.5	720.5	33.00	22.835		
1,600.0	1,600.0	1,587.0	1,587.0	3.5	31.7	-58.18	-506.4	-558.0	752.6	717.4	35.21	21.376		
1,700.0	1,699.8	1,686.8	1,686.8	3.7	33.7	-58.56	-506.4	-558.0	749.9	712.5	37.40	20.052		
1,800.0	1,799.5	1,786.5	1,786.5	3.9	35.7	-59.21	-506.4	-558.0	745.3	705.8	39.57	18.835		
1,900.0	1,898.7	1,885.7	1,885.7	4.1	37.7	-60.06	-506.4	-558.0	739.3	697.5	41.76	17.703		
2,000.0	1,998.0	1,985.0	1,985.0	4.4	39.7	-60.90	-506.4	-558.0	733.1	689.1	43.99	16.667		
2,100.0	2,097.2	2,084.2	2,084.2	4.6	41.7	-61.76	-506.4	-558.0	727.1	680.9	46.22	15.732		
2,200.0	2,196.4	2,183.4	2,183.4	4.9	43.7	-62.62	-506.4	-558.0	721.2	672.8	48.46	14.883		
2,300.0	2,295.6	2,282.6	2,282.6	5.2	45.7	-63.51	-506.4	-558.0	715.5	664.8	50.71	14.111		
2,400.0	2,394.8	2,381.8	2,381.8	5.5	47.6	-64.40	-506.4	-558.0	710.0	657.0	52.96	13.406		
2,500.0	2,494.0	2,481.0	2,481.0	5.7	49.6	-65.31	-506.4	-558.0	704.7	649.4	55.23	12.760		
2,600.0	2,593.3	2,580.3	2,580.3	6.0	51.6	-66.24	-506.4	-558.0	699.5	642.0	57.49	12.167		
2,700.0	2,692.5	2,679.5	2,679.5	6.3	53.6	-67.17	-506.4	-558.0	694.5	634.8	59.77	11.621		
2,800.0	2,791.7	2,778.7	2,778.7	6.6	55.6	-68.12	-506.4	-558.0	689.8	627.7	62.04	11.118		
2,900.0	2,890.9	2,877.9	2,877.9	6.9	57.6	-69.08	-506.4	-558.0	685.2	620.8	64.32	10.652		
3,000.0	2,990.1	2,977.1	2,977.1	7.2	59.5	-70.06	-506.4	-558.0	680.8	614.2	66.61	10.220		
3,100.0	3,089.3	3,076.3	3,076.3	7.5	61.5	-71.05	-506.4	-558.0	676.6	607.7	68.90	9.820		
3,200.0	3,188.6	3,175.6	3,175.6	7.8	63.5	-72.05	-506.4	-558.0	672.6	601.4	71.19	9.448		
3,300.0	3,287.8	3,274.8	3,274.8	8.1	65.5	-73.06	-506.4	-558.0	668.8	595.4	73.49	9.101		
3,400.0	3,387.0	3,374.0	3,374.0	8.4	67.5	-74.08	-506.4	-558.0	665.3	589.5	75.79	8.778		
3,500.0	3,486.2	3,473.2	3,473.2	8.8	69.5	-75.11	-506.4	-558.0	661.9	583.9	78.09	8.477		
3,600.0	3,585.4	3,572.4	3,572.4	9.1	71.4	-76.15	-506.4	-558.0	658.8	578.4	80.39	8.195		
3,700.0	3,684.6	3,671.6	3,671.6	9.4	73.4	-77.20	-506.4	-558.0	655.9	573.2	82.70	7.932		
3,800.0	3,783.9	3,770.9	3,770.9	9.7	75.4	-78.26	-506.4	-558.0	653.2	568.2	85.00	7.685		
3,900.0	3,883.1	3,870.1	3,870.1	10.0	77.4	-79.33	-506.4	-558.0	650.8	563.5	87.31	7.454		
4,000.0	3,982.3	3,969.3	3,969.3	10.3	79.4	-80.41	-506.4	-558.0	648.6	559.0	89.62	7.237		
4,100.0	4,081.5	4,068.5	4,068.5	10.6	81.4	-81.49	-506.4	-558.0	646.6	554.7	91.93	7.034		
4,200.0	4,180.7	4,167.7	4,167.7	10.9	83.4	-82.58	-506.4	-558.0	644.9	550.6	94.24	6.843		
4,300.0	4,279.9	4,266.9	4,266.9	11.3	85.3	-83.68	-506.4	-558.0	643.4	546.8	96.55	6.663		
4,400.0	4,379.2	4,366.2	4,366.2	11.6	87.3	-84.77	-506.4	-558.0	642.1	543.2	98.86	6.495		
4,500.0	4,478.4	4,465.4	4,465.4	11.9	89.3	-85.88	-506.4	-558.0	641.1	539.9	101.17	6.336		
4,600.0	4,577.6	4,564.6	4,564.6	12.2	91.3	-86.98	-506.4	-558.0	640.3	536.8	103.48	6.187		
4,700.0	4,676.8	4,663.8	4,663.8	12.5	93.3	-88.09	-506.4	-558.0	639.7	533.9	105.79	6.047		
4,800.0	4,776.0	4,763.0	4,763.0	12.8	95.3	-89.20	-506.4	-558.0	639.4	531.3	108.10	5.915		
4,871.9	4,847.4	4,834.4	4,834.4	13.1	96.7	-90.00	-506.4	-558.0	639.4	529.6	109.76	5.825		
4,900.0	4,875.3	4,862.3	4,862.3	13.2	97.2	-90.31	-506.4	-558.0	639.4	529.0	110.41	5.791		

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells - Lair 1 (Exist.) - Wellbore #1 - Wellbore #1														
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		
5,000.0	4,974.5	4,961.5	4,961.5	13.5	99.2	-91.42	-506.4	-558.0	639.6	526.9	112.71	5.674		
5,100.0	5,073.7	5,060.7	5,060.7	13.8	101.2	-92.53	-506.4	-558.0	640.0	525.0	115.02	5.564		
5,200.0	5,172.9	5,159.9	5,159.9	14.1	103.2	-93.63	-506.4	-558.0	640.7	523.4	117.31	5.462		
5,300.0	5,272.4	5,259.4	5,259.4	14.3	105.2	-94.50	-506.4	-558.0	641.4	521.9	119.52	5.366		
5,400.0	5,372.3	5,359.3	5,359.3	14.5	107.2	-95.06	-506.4	-558.0	641.9	520.2	121.71	5.274		
5,500.0	5,472.2	5,459.2	5,459.2	14.7	109.2	-95.31	-506.4	-558.0	642.1	518.3	123.87	5.184		
5,600.0	5,572.2	5,559.2	5,559.2	14.9	111.2	-169.49	-506.4	-558.0	642.1	516.1	126.03	5.095		
5,700.0	5,672.2	5,659.2	5,659.2	15.0	113.2	-169.49	-506.4	-558.0	642.1	513.9	128.21	5.009		
5,800.0	5,772.2	5,759.2	5,759.2	15.2	115.2	-169.49	-506.4	-558.0	642.1	511.8	130.39	4.925		
5,900.0	5,872.2	5,859.2	5,859.2	15.4	117.2	-169.49	-506.4	-558.0	642.1	509.6	132.57	4.844		
6,000.0	5,972.2	5,959.2	5,959.2	15.6	119.2	-169.49	-506.4	-558.0	642.1	507.4	134.75	4.765		
6,100.0	6,072.2	6,059.2	6,059.2	15.8	121.2	-169.49	-506.4	-558.0	642.1	505.2	136.94	4.689		
6,200.0	6,172.2	6,159.2	6,159.2	15.9	123.2	-169.49	-506.4	-558.0	642.1	503.0	139.12	4.616		
6,300.0	6,272.2	6,259.2	6,259.2	16.1	125.2	-169.49	-506.4	-558.0	642.1	500.8	141.31	4.544		
6,400.0	6,372.2	6,359.2	6,359.2	16.3	127.2	10.51	-506.4	-558.0	642.1	498.6	143.48	4.475		
6,500.0	6,471.9	6,458.9	6,458.9	16.5	129.2	10.73	-506.4	-558.0	634.8	490.5	144.26	4.400		
6,600.0	6,569.7	6,556.7	6,556.7	16.6	131.1	11.39	-506.4	-558.0	614.8	472.2	142.60	4.311		
6,700.0	6,664.0	6,651.0	6,651.0	16.7	133.0	12.57	-506.4	-558.0	582.5	443.9	138.55	4.204		
6,800.0	6,753.2	6,740.2	6,740.2	16.8	134.8	14.50	-506.4	-558.0	538.4	406.1	132.33	4.069		
6,900.0	6,835.8	6,822.8	6,822.8	16.9	136.5	17.58	-506.4	-558.0	483.7	359.1	124.62	3.881		
7,000.0	6,910.4	6,897.4	6,897.4	17.1	137.9	22.54	-506.4	-558.0	419.4	302.2	117.17	3.579		
7,100.0	6,975.6	6,962.6	6,962.6	17.3	139.3	30.77	-506.4	-558.0	347.3	233.0	114.31	3.039		
7,200.0	7,030.3	7,017.3	7,017.3	17.7	140.3	44.35	-506.4	-558.0	270.1	146.5	123.61	2.185		
7,300.0	7,073.7	7,060.7	7,060.7	18.3	141.2	63.88	-506.4	-558.0	193.0	48.2	144.77	1.333	Level 3	
7,400.0	7,105.0	7,092.0	7,092.0	19.0	141.8	82.88	-506.4	-558.0	130.9	-27.6	158.52	0.826	Level 1	
7,459.8	7,117.7	7,104.7	7,104.7	19.5	142.1	90.00	-506.4	-558.0	117.1	-43.3	160.46	0.730	Level 1, CC, ES, SF	
7,500.0	7,123.6	7,110.6	7,110.6	19.9	142.2	92.36	-506.4	-558.0	123.7	-37.2	160.82	0.769	Level 1	
7,600.0	7,129.2	7,116.2	7,116.2	21.0	142.3	89.38	-506.4	-558.0	182.1	19.8	162.27	1.122	Level 2	
7,700.0	7,127.6	7,114.6	7,114.6	22.2	142.3	88.06	-506.4	-558.0	266.5	103.1	163.45	1.631		
7,800.0	7,125.9	7,112.9	7,112.9	23.5	142.3	87.25	-506.4	-558.0	359.1	194.4	164.70	2.180		
7,900.0	7,124.3	7,111.3	7,111.3	24.9	142.2	86.44	-506.4	-558.0	454.8	288.8	166.00	2.739		
8,000.0	7,122.6	7,109.6	7,109.6	26.4	142.2	85.63	-506.4	-558.0	552.0	384.6	167.33	3.299		
8,100.0	7,121.0	7,108.0	7,108.0	27.9	142.2	84.83	-506.4	-558.0	650.0	481.4	168.67	3.854		
8,200.0	7,119.3	7,106.3	7,106.3	29.4	142.1	84.02	-506.4	-558.0	748.6	578.6	170.02	4.403		
8,300.0	7,117.6	7,104.6	7,104.6	31.0	142.1	83.22	-506.4	-558.0	847.5	676.1	171.38	4.945		
8,400.0	7,116.0	7,103.0	7,103.0	32.6	142.1	82.42	-506.4	-558.0	946.6	773.9	172.73	5.480		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells - Lair 2 (Exist.) - Wellbore #1 - Wellbore #1														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,800.0	7,125.9	7,116.9	7,116.9	23.5	142.3	97.51	-1,821.5	-563.6	983.4	820.1	163.33	6.021		
7,900.0	7,124.3	7,115.3	7,115.3	24.9	142.3	96.75	-1,821.5	-563.6	884.3	719.3	165.00	5.359		
8,000.0	7,122.6	7,113.6	7,113.6	26.4	142.3	95.98	-1,821.5	-563.6	785.4	618.7	166.72	4.711		
8,100.0	7,121.0	7,112.0	7,112.0	27.9	142.2	95.22	-1,821.5	-563.6	686.8	518.3	168.46	4.077		
8,200.0	7,119.3	7,110.3	7,110.3	29.4	142.2	94.45	-1,821.5	-563.6	588.7	418.5	170.23	3.458		
8,300.0	7,117.6	7,108.6	7,108.6	31.0	142.2	93.68	-1,821.5	-563.6	491.3	319.3	172.00	2.857		
8,400.0	7,116.0	7,107.0	7,107.0	32.6	142.1	92.91	-1,821.5	-563.6	395.3	221.5	173.78	2.275		
8,500.0	7,114.3	7,105.3	7,105.3	34.3	142.1	92.13	-1,821.5	-563.6	301.9	126.3	175.56	1.719		
8,600.0	7,112.7	7,103.7	7,103.7	36.0	142.1	91.36	-1,821.5	-563.6	214.4	37.1	177.34	1.209 Level 2		
8,700.0	7,111.0	7,102.0	7,102.0	37.7	142.0	90.59	-1,821.5	-563.6	144.3	-34.8	179.10	0.805 Level 1		
8,775.8	7,109.8	7,100.8	7,100.8	39.0	142.0	90.00	-1,821.5	-563.6	122.7	-57.7	180.43	0.680 Level 1, CC, ES, SF		
8,800.0	7,109.4	7,100.4	7,100.4	39.4	142.0	89.81	-1,821.5	-563.6	125.1	-55.8	180.85	0.692 Level 1		
8,900.0	7,107.7	7,098.7	7,098.7	41.2	142.0	89.04	-1,821.5	-563.6	174.6	-8.0	182.58	0.956 Level 1		
9,000.0	7,106.0	7,097.0	7,097.0	42.9	141.9	88.27	-1,821.5	-563.6	255.5	71.2	184.29	1.387 Level 3		
9,100.0	7,104.4	7,095.4	7,095.4	44.7	141.9	87.49	-1,821.5	-563.6	346.6	160.6	185.98	1.863		
9,200.0	7,102.7	7,093.7	7,093.7	46.5	141.9	86.72	-1,821.5	-563.6	441.5	253.9	187.65	2.353		
9,300.0	7,101.1	7,092.1	7,092.1	48.3	141.8	85.95	-1,821.5	-563.6	538.3	349.0	189.29	2.844		
9,400.0	7,099.4	7,090.4	7,090.4	50.1	141.8	85.18	-1,821.5	-563.6	636.0	445.1	190.90	3.332		
9,500.0	7,097.8	7,088.8	7,088.8	51.9	141.8	84.41	-1,821.5	-563.6	734.4	541.9	192.48	3.815		
9,600.0	7,096.1	7,087.1	7,087.1	53.7	141.7	83.65	-1,821.5	-563.6	833.1	639.1	194.03	4.294		
9,700.0	7,094.4	7,085.4	7,085.4	55.5	141.7	82.88	-1,821.5	-563.6	932.1	736.6	195.56	4.767		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference				Offset			Semi Major Axis			Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	0.0	-61.4	61.4					
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	0.0	-61.4	61.4	61.2	0.22	273.091		
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	0.0	-61.4	61.4	60.7	0.67	91.030	CC, ES	
300.0	300.0	297.9	297.9	0.6	0.5	-89.83	0.2	-63.0	63.1	62.0	1.11	56.781		
400.0	400.0	395.5	395.4	0.8	0.8	-89.34	0.8	-68.0	68.2	66.6	1.56	43.821		
500.0	500.0	492.7	492.2	1.0	1.0	-88.66	1.8	-76.2	76.6	74.6	2.02	37.876		
600.0	600.0	589.3	588.1	1.2	1.3	-87.93	3.2	-87.6	88.5	85.9	2.52	35.091		
700.0	700.0	684.9	682.6	1.5	1.6	-87.25	4.9	-102.0	103.6	100.6	3.05	33.920		
800.0	800.0	781.4	777.5	1.7	2.0	-86.64	7.0	-119.4	121.7	118.0	3.63	33.521		
900.0	900.0	879.7	874.1	1.9	2.3	-86.17	9.2	-137.4	140.2	135.9	4.23	33.134		
1,000.0	1,000.0	978.0	970.7	2.1	2.7	-85.81	11.4	-155.5	158.6	153.8	4.84	32.786		
1,100.0	1,100.0	1,076.2	1,067.2	2.4	3.1	-85.53	13.6	-173.6	177.1	171.7	5.45	32.482		
1,200.0	1,200.0	1,174.5	1,163.8	2.6	3.5	-85.30	15.8	-191.6	195.6	189.6	6.07	32.219		
1,300.0	1,300.0	1,272.8	1,260.4	2.8	4.0	-85.11	17.9	-209.7	214.1	207.5	6.69	31.992		
1,400.0	1,400.0	1,371.0	1,356.9	3.0	4.4	-84.95	20.1	-227.7	232.6	225.3	7.32	31.796		
1,500.0	1,500.0	1,469.3	1,453.5	3.3	4.8	-84.81	22.3	-245.8	251.2	243.2	7.94	31.625		
1,600.0	1,600.0	1,567.9	1,550.4	3.5	5.2	-10.53	24.5	-263.9	268.0	260.9	7.12	37.630		
1,700.0	1,699.8	1,667.0	1,647.8	3.7	5.6	-10.57	26.7	-282.1	281.4	273.8	7.58	37.128		
1,800.0	1,799.5	1,766.5	1,745.5	3.9	6.0	-10.74	28.9	-300.4	291.4	283.4	8.04	36.261		
1,900.0	1,898.7	1,866.2	1,843.5	4.1	6.4	-11.03	31.1	-318.8	298.3	289.8	8.50	35.102		
2,000.0	1,998.0	1,966.0	1,941.6	4.4	6.8	-11.35	33.4	-337.1	304.6	295.7	8.97	33.957		
2,100.0	2,097.2	2,065.8	2,039.7	4.6	7.3	-11.66	35.6	-355.4	311.0	301.5	9.45	32.916		
2,200.0	2,196.4	2,165.6	2,137.7	4.9	7.7	-11.95	37.8	-373.8	317.3	307.4	9.93	31.966		
2,300.0	2,295.6	2,265.4	2,235.8	5.2	8.1	-12.23	40.0	-392.1	323.7	313.3	10.41	31.096		
2,400.0	2,394.8	2,365.1	2,333.9	5.5	8.5	-12.51	42.2	-410.5	330.0	319.1	10.89	30.297		
2,500.0	2,494.0	2,464.9	2,431.9	5.7	8.9	-12.77	44.5	-428.8	336.4	325.0	11.38	29.560		
2,600.0	2,593.3	2,564.7	2,530.0	6.0	9.4	-13.02	46.7	-447.2	342.7	330.9	11.87	28.880		
2,700.0	2,692.5	2,664.5	2,628.0	6.3	9.8	-13.26	48.9	-465.5	349.1	336.8	12.36	28.249		
2,800.0	2,791.7	2,764.3	2,726.1	6.6	10.2	-13.49	51.1	-483.8	355.5	342.6	12.85	27.664		
2,900.0	2,890.9	2,864.1	2,824.2	6.9	10.6	-13.72	53.3	-502.2	361.9	348.5	13.34	27.118		
3,000.0	2,990.1	2,963.9	2,922.2	7.2	11.0	-13.94	55.6	-520.5	368.3	354.4	13.84	26.610		
3,100.0	3,089.3	3,063.6	3,020.3	7.5	11.5	-14.15	57.8	-538.9	374.7	360.3	14.34	26.134		
3,200.0	3,188.6	3,163.4	3,118.3	7.8	11.9	-14.35	60.0	-557.2	381.1	366.2	14.83	25.688		
3,300.0	3,287.8	3,263.2	3,216.4	8.1	12.3	-14.55	62.2	-575.5	387.5	372.1	15.33	25.270		
3,400.0	3,387.0	3,363.0	3,314.5	8.4	12.7	-14.74	64.4	-593.9	393.9	378.1	15.83	24.876		
3,500.0	3,486.2	3,462.8	3,412.5	8.8	13.1	-14.92	66.7	-612.2	400.3	384.0	16.34	24.506		
3,600.0	3,585.4	3,562.6	3,510.6	9.1	13.6	-15.10	68.9	-630.6	406.7	389.9	16.84	24.156		
3,700.0	3,684.6	3,662.4	3,608.6	9.4	14.0	-15.27	71.1	-648.9	413.1	395.8	17.34	23.825		
3,800.0	3,783.9	3,762.1	3,706.7	9.7	14.4	-15.44	73.3	-667.3	419.6	401.7	17.85	23.512		
3,900.0	3,883.1	3,861.9	3,804.8	10.0	14.8	-15.60	75.5	-685.6	426.0	407.7	18.35	23.215		
4,000.0	3,982.3	3,961.7	3,902.8	10.3	15.3	-15.76	77.8	-703.9	432.4	413.6	18.86	22.934		
4,100.0	4,081.5	4,061.5	4,000.9	10.6	15.7	-15.91	80.0	-722.3	438.9	419.5	19.36	22.666		
4,200.0	4,180.7	4,161.3	4,098.9	10.9	16.1	-16.06	82.2	-740.6	445.3	425.4	19.87	22.412		
4,300.0	4,279.9	4,261.1	4,197.0	11.3	16.5	-16.20	84.4	-759.0	451.8	431.4	20.38	22.169		
4,400.0	4,379.2	4,360.9	4,295.1	11.6	16.9	-16.34	86.6	-777.3	458.2	437.3	20.89	21.938		
4,500.0	4,478.4	4,460.6	4,393.1	11.9	17.4	-16.48	88.9	-795.6	464.6	443.3	21.40	21.717		
4,600.0	4,577.6	4,560.4	4,491.2	12.2	17.8	-16.61	91.1	-814.0	471.1	449.2	21.91	21.506		
4,700.0	4,676.8	4,660.2	4,589.2	12.5	18.2	-16.74	93.3	-832.3	477.5	455.1	22.42	21.304		
4,800.0	4,776.0	4,760.0	4,687.3	12.8	18.6	-16.86	95.5	-850.7	484.0	461.1	22.93	21.111		
4,900.0	4,875.3	4,859.8	4,785.4	13.2	19.0	-16.99	97.8	-869.0	490.5	467.0	23.44	20.926		
5,000.0	4,974.5	4,959.6	4,883.4	13.5	19.5	-17.10	100.0	-887.4	496.9	473.0	23.95	20.748		

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													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	5,073.7	5,059.4	4,981.5	13.8	19.9	-17.22	102.2	-905.7	503.4	478.9	24.46	20.578		
5,200.0	5,172.9	5,159.1	5,079.5	14.1	20.3	-17.34	104.4	-924.0	510.0	485.0	24.97	20.428		
5,300.0	5,272.4	5,258.7	5,177.4	14.3	20.7	-17.41	106.6	-942.3	519.2	493.8	25.40	20.439		
5,400.0	5,372.3	5,357.9	5,274.9	14.5	21.1	-17.39	108.8	-960.6	531.6	505.8	25.80	20.608		
5,500.0	5,472.2	5,456.6	5,371.9	14.7	21.6	-17.28	111.0	-978.7	547.4	521.2	26.15	20.931		
5,600.0	5,572.2	5,554.9	5,468.5	14.9	22.0	-91.21	113.2	-996.8	565.6	539.0	26.55	21.299		
5,700.0	5,672.2	5,653.2	5,565.1	15.0	22.4	-90.96	115.4	-1,014.8	583.9	556.9	27.00	21.629		
5,800.0	5,772.2	5,751.5	5,661.6	15.2	22.8	-90.72	117.6	-1,032.9	602.3	574.8	27.44	21.947		
5,900.0	5,872.2	5,849.8	5,758.2	15.4	23.2	-90.49	119.8	-1,051.0	620.6	592.8	27.89	22.254		
6,000.0	5,972.2	5,972.6	5,879.3	15.6	23.6	-90.25	122.3	-1,071.4	637.3	609.0	28.35	22.481		
6,100.0	6,072.2	6,100.3	6,006.0	15.8	23.9	-90.07	124.2	-1,087.3	649.7	620.9	28.80	22.564		
6,200.0	6,172.2	6,229.2	6,134.5	15.9	24.2	-89.96	125.4	-1,097.5	657.7	628.5	29.23	22.503		
6,300.0	6,272.2	6,358.8	6,263.9	16.1	24.3	-89.92	126.0	-1,102.0	661.2	631.5	29.65	22.300		
6,400.0	6,372.2	6,467.0	6,372.2	16.3	24.5	90.09	126.0	-1,102.3	661.4	631.3	30.04	22.014		
6,500.0	6,471.9	6,567.1	6,472.3	16.5	24.6	90.63	124.8	-1,102.3	661.4	631.1	30.34	21.799		
6,600.0	6,569.7	6,668.3	6,572.6	16.6	24.7	91.34	112.4	-1,102.3	661.5	631.0	30.57	21.638		
6,700.0	6,664.0	6,770.6	6,671.5	16.7	24.8	92.04	86.6	-1,102.3	661.8	631.0	30.79	21.496		
6,800.0	6,753.2	6,874.0	6,767.1	16.8	24.8	92.70	47.3	-1,102.3	662.1	631.1	31.03	21.335		
6,900.0	6,835.8	6,978.5	6,857.4	16.9	24.9	93.32	-5.2	-1,102.3	662.5	631.1	31.37	21.116		
7,000.0	6,910.4	7,084.1	6,940.5	17.1	25.0	93.88	-70.2	-1,102.3	662.9	631.0	31.88	20.792		
7,100.0	6,975.6	7,190.6	7,014.4	17.3	25.2	94.38	-146.8	-1,102.3	663.3	630.7	32.62	20.337		
7,200.0	7,030.3	7,298.0	7,077.4	17.7	25.4	94.79	-233.6	-1,102.3	663.7	630.1	33.63	19.738		
7,300.0	7,073.7	7,406.0	7,128.0	18.3	25.7	95.12	-329.0	-1,102.3	664.0	629.1	34.94	19.002		
7,400.0	7,105.0	7,514.6	7,164.7	19.0	26.2	95.36	-431.1	-1,102.3	664.3	627.7	36.58	18.161		
7,500.0	7,123.6	7,623.6	7,186.6	19.9	26.8	95.49	-537.7	-1,102.3	664.4	625.9	38.50	17.258		
7,600.0	7,129.2	7,732.7	7,193.2	21.0	27.5	95.53	-646.6	-1,102.3	664.4	623.8	40.66	16.340		
7,615.2	7,129.1	7,748.0	7,193.0	21.2	27.7	95.52	-661.8	-1,102.3	664.4	623.4	41.03	16.193		
7,700.0	7,127.6	7,832.8	7,191.9	22.2	28.4	95.56	-746.6	-1,102.3	664.5	621.4	43.11	15.415		
7,800.0	7,125.9	7,932.8	7,190.7	23.5	29.3	95.59	-846.6	-1,102.3	664.5	618.8	45.73	14.531		
7,900.0	7,124.3	8,032.8	7,189.4	24.9	30.4	95.63	-946.6	-1,102.3	664.6	616.0	48.52	13.697		
8,000.0	7,122.6	8,132.8	7,188.2	26.4	31.5	95.66	-1,046.6	-1,102.3	664.6	613.2	51.43	12.921		
8,100.0	7,121.0	8,232.8	7,186.9	27.9	32.8	95.70	-1,146.6	-1,102.3	664.6	610.2	54.46	12.203		
8,200.0	7,119.3	8,332.8	7,185.7	29.4	34.1	95.73	-1,246.6	-1,102.3	664.7	607.1	57.59	11.542		
8,300.0	7,117.6	8,432.8	7,184.4	31.0	35.4	95.76	-1,346.6	-1,102.3	664.7	603.9	60.79	10.935		
8,400.0	7,116.0	8,532.8	7,183.1	32.6	36.8	95.80	-1,446.6	-1,102.3	664.8	600.7	64.06	10.378		
8,500.0	7,114.3	8,632.8	7,181.9	34.3	38.3	95.83	-1,546.6	-1,102.3	664.8	597.4	67.38	9.866		
8,600.0	7,112.7	8,732.8	7,180.6	36.0	39.8	95.87	-1,646.6	-1,102.3	664.8	594.1	70.76	9.396		
8,700.0	7,111.0	8,832.8	7,179.4	37.7	41.4	95.90	-1,746.6	-1,102.3	664.9	590.7	74.17	8.964		
8,800.0	7,109.4	8,932.8	7,178.1	39.4	43.0	95.94	-1,846.6	-1,102.3	664.9	587.3	77.63	8.565		
8,900.0	7,107.7	9,032.8	7,176.9	41.2	44.6	95.97	-1,946.6	-1,102.3	665.0	583.9	81.12	8.198		
9,000.0	7,106.0	9,132.8	7,175.6	42.9	46.2	96.01	-2,046.6	-1,102.3	665.0	580.4	84.63	7.858		
9,100.0	7,104.4	9,232.8	7,174.4	44.7	47.8	96.04	-2,146.6	-1,102.3	665.1	576.9	88.17	7.543		
9,200.0	7,102.7	9,332.8	7,173.1	46.5	49.5	96.07	-2,246.6	-1,102.3	665.1	573.4	91.73	7.251		
9,300.0	7,101.1	9,432.8	7,171.8	48.3	51.2	96.11	-2,346.6	-1,102.3	665.1	569.8	95.31	6.979		
9,400.0	7,099.4	9,532.8	7,170.6	50.1	52.9	96.14	-2,446.6	-1,102.3	665.2	566.3	98.91	6.725		
9,500.0	7,097.8	9,632.8	7,169.3	51.9	54.6	96.18	-2,546.6	-1,102.3	665.2	562.7	102.52	6.489		
9,600.0	7,096.1	9,732.8	7,168.1	53.7	56.4	96.21	-2,646.6	-1,102.3	665.3	559.1	106.14	6.268		
9,700.0	7,094.4	9,832.8	7,166.8	55.5	58.1	96.25	-2,746.6	-1,102.3	665.3	555.5	109.78	6.060		
9,800.0	7,092.8	9,932.8	7,165.6	57.4	59.9	96.28	-2,846.4	-1,102.3	665.4	551.9	113.43	5.866		
9,900.0	7,091.1	10,032.8	7,164.3	59.2	61.6	96.31	-2,946.4	-1,102.3	665.4	548.3	117.09	5.683		
10,000.0	7,089.5	10,132.8	7,163.0	61.1	63.4	96.35	-3,046.4	-1,102.3	665.4	544.7	120.76	5.511		

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference													Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor		
				Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
10,100.0	7,087.8	10,232.8	7,161.8	62.9	65.2	96.38	-3,146.4	-1,102.3	665.5	541.1	124.43	5.348		
10,200.0	7,086.1	10,332.8	7,160.5	64.8	67.0	96.42	-3,246.4	-1,102.3	665.5	537.4	128.11	5.195		
10,300.0	7,084.5	10,432.8	7,159.3	66.6	68.8	96.45	-3,346.4	-1,102.3	665.6	533.8	131.80	5.050		
10,400.0	7,082.8	10,532.8	7,158.0	68.5	70.6	96.49	-3,446.4	-1,102.3	665.6	530.1	135.50	4.912		
10,500.0	7,081.2	10,632.8	7,156.8	70.3	72.4	96.52	-3,546.4	-1,102.3	665.7	526.5	139.20	4.782		
10,600.0	7,079.5	10,732.8	7,155.5	72.2	74.2	96.55	-3,646.4	-1,102.3	665.7	522.8	142.91	4.658		
10,700.0	7,077.9	10,832.8	7,154.2	74.1	76.1	96.59	-3,746.4	-1,102.3	665.8	519.1	146.62	4.541		
10,800.0	7,076.2	10,932.8	7,153.0	75.9	77.9	96.62	-3,846.4	-1,102.3	665.8	515.5	150.34	4.429		
10,900.0	7,074.5	11,032.8	7,151.7	77.8	79.7	96.66	-3,946.4	-1,102.3	665.8	511.8	154.06	4.322		
11,000.0	7,072.9	11,132.8	7,150.5	79.7	81.6	96.69	-4,046.3	-1,102.3	665.9	508.1	157.78	4.220		
11,100.0	7,071.2	11,232.8	7,149.2	81.6	83.4	96.73	-4,146.3	-1,102.3	665.9	504.4	161.51	4.123		
11,200.0	7,069.6	11,332.8	7,148.0	83.4	85.2	96.76	-4,246.3	-1,102.3	666.0	500.8	165.24	4.031		
11,300.0	7,067.9	11,432.8	7,146.7	85.3	87.1	96.80	-4,346.3	-1,102.3	666.0	497.1	168.97	3.942		
11,400.0	7,066.2	11,532.8	7,145.4	87.2	88.9	96.83	-4,446.3	-1,102.3	666.1	493.4	172.70	3.857		
11,500.0	7,064.6	11,632.8	7,144.2	89.1	90.8	96.86	-4,546.3	-1,102.3	666.1	489.7	176.44	3.775		
11,595.9	7,063.0	11,728.2	7,143.0	90.9	92.6	96.90	-4,641.7	-1,102.3	666.2	486.2	180.02	3.701 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft		
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference													Distance		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-30.7	30.7							
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.7	30.7	30.5	0.22	136.545				
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.7	30.7	30.0	0.67	45.515				
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-30.7	30.7	29.6	1.12	27.309				
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-30.7	30.7	29.1	1.57	19.506 CC, ES				
500.0	500.0	498.9	498.9	1.0	1.0	-89.50	0.3	-32.4	32.4	30.4	2.01	16.107				
600.0	600.0	597.6	597.4	1.2	1.2	-88.26	1.1	-37.4	37.5	35.1	2.45	15.305				
700.0	700.0	695.8	695.3	1.5	1.4	-86.82	2.5	-45.7	46.0	43.1	2.91	15.827				
800.0	800.0	793.3	792.1	1.7	1.7	-85.51	4.5	-57.3	58.0	54.6	3.39	17.083				
900.0	900.0	891.9	889.7	1.9	2.0	-84.51	6.8	-71.1	72.2	68.3	3.91	18.462				
1,000.0	1,000.0	990.9	987.6	2.1	2.3	-83.83	9.2	-85.1	86.5	82.0	4.44	19.469				
1,100.0	1,100.0	1,089.9	1,085.6	2.4	2.6	-83.35	11.6	-99.1	100.8	95.8	4.98	20.224				
1,200.0	1,200.0	1,188.9	1,183.6	2.6	3.0	-82.98	13.9	-113.0	115.1	109.5	5.53	20.808				
1,300.0	1,300.0	1,287.8	1,281.5	2.8	3.3	-82.70	16.3	-127.0	129.3	123.3	6.08	21.270				
1,400.0	1,400.0	1,386.8	1,379.5	3.0	3.6	-82.47	18.6	-140.9	143.6	137.0	6.64	21.645				
1,500.0	1,500.0	1,485.8	1,477.4	3.3	4.0	-82.28	21.0	-154.9	157.9	150.7	7.19	21.955				
1,600.0	1,600.0	1,585.0	1,575.6	3.5	4.3	-8.00	23.4	-168.9	170.5	163.5	6.98	24.416				
1,700.0	1,699.8	1,684.5	1,674.1	3.7	4.7	-8.06	25.7	-182.9	179.7	172.3	7.43	24.197				
1,800.0	1,799.5	1,784.4	1,772.9	3.9	5.0	-8.28	28.1	-197.0	185.4	177.5	7.87	23.568				
1,900.0	1,898.7	1,884.3	1,871.9	4.1	5.4	-8.64	30.5	-211.1	187.9	179.6	8.31	22.613				
2,000.0	1,998.0	1,984.3	1,970.8	4.4	5.7	-9.03	32.9	-225.2	189.9	181.1	8.77	21.656				
2,100.0	2,097.2	2,084.3	2,069.8	4.6	6.1	-9.40	35.3	-239.3	191.9	182.7	9.23	20.787				
2,200.0	2,196.4	2,184.2	2,168.7	4.9	6.4	-9.77	37.7	-253.4	193.9	184.2	9.70	19.995				
2,300.0	2,295.6	2,284.2	2,267.7	5.2	6.8	-10.13	40.0	-267.5	195.9	185.7	10.16	19.271				
2,400.0	2,394.8	2,384.2	2,366.6	5.5	7.1	-10.49	42.4	-281.6	197.9	187.2	10.63	18.608				
2,500.0	2,494.0	2,484.2	2,465.5	5.7	7.5	-10.83	44.8	-295.8	199.9	188.8	11.11	17.997				
2,600.0	2,593.3	2,584.1	2,564.5	6.0	7.8	-11.17	47.2	-309.9	201.9	190.3	11.58	17.434				
2,700.0	2,692.5	2,684.1	2,663.4	6.3	8.2	-11.51	49.6	-324.0	203.9	191.9	12.06	16.913				
2,800.0	2,791.7	2,784.1	2,762.4	6.6	8.5	-11.83	52.0	-338.1	205.9	193.4	12.54	16.430				
2,900.0	2,890.9	2,884.1	2,861.3	6.9	8.9	-12.15	54.3	-352.2	208.0	195.0	13.02	15.980				
3,000.0	2,990.1	2,984.0	2,960.3	7.2	9.2	-12.47	56.7	-366.3	210.0	196.5	13.50	15.562				
3,100.0	3,089.3	3,084.0	3,059.2	7.5	9.6	-12.77	59.1	-380.4	212.1	198.1	13.98	15.170				
3,200.0	3,188.6	3,184.0	3,158.1	7.8	9.9	-13.08	61.5	-394.5	214.1	199.7	14.46	14.804				
3,300.0	3,287.8	3,283.9	3,257.1	8.1	10.3	-13.37	63.9	-408.6	216.2	201.2	14.95	14.461				
3,400.0	3,387.0	3,383.9	3,356.0	8.4	10.6	-13.66	66.3	-422.7	218.3	202.8	15.44	14.138				
3,500.0	3,486.2	3,483.9	3,455.0	8.8	11.0	-13.95	68.6	-436.8	220.3	204.4	15.93	13.835				
3,600.0	3,585.4	3,583.9	3,553.9	9.1	11.3	-14.23	71.0	-450.9	222.4	206.0	16.42	13.549				
3,700.0	3,684.6	3,683.8	3,652.9	9.4	11.7	-14.50	73.4	-465.0	224.5	207.6	16.91	13.278				
3,800.0	3,783.9	3,783.8	3,751.8	9.7	12.0	-14.77	75.8	-479.1	226.6	209.2	17.40	13.023				
3,900.0	3,883.1	3,883.8	3,850.8	10.0	12.4	-15.04	78.2	-493.2	228.7	210.8	17.89	12.780				
4,000.0	3,982.3	3,983.8	3,949.7	10.3	12.7	-15.30	80.6	-507.3	230.8	212.4	18.39	12.551				
4,100.0	4,081.5	4,083.7	4,048.6	10.6	13.1	-15.55	82.9	-521.4	232.9	214.0	18.88	12.333				
4,200.0	4,180.7	4,183.7	4,147.6	10.9	13.4	-15.80	85.3	-535.5	235.0	215.6	19.38	12.126				
4,300.0	4,279.9	4,283.7	4,246.5	11.3	13.8	-16.05	87.7	-549.6	237.1	217.2	19.88	11.928				
4,400.0	4,379.2	4,383.6	4,345.5	11.6	14.1	-16.29	90.1	-563.7	239.2	218.8	20.37	11.740				
4,500.0	4,478.4	4,483.6	4,444.4	11.9	14.5	-16.53	92.5	-577.8	241.3	220.4	20.87	11.561				
4,600.0	4,577.6	4,583.6	4,543.4	12.2	14.9	-16.76	94.9	-591.9	243.4	222.1	21.37	11.389				
4,700.0	4,676.8	4,683.6	4,642.3	12.5	15.2	-16.99	97.3	-606.0	245.6	223.7	21.88	11.226				
4,800.0	4,776.0	4,783.5	4,741.3	12.8	15.6	-17.21	99.6	-620.1	247.7	225.3	22.38	11.069				
4,900.0	4,875.3	4,883.5	4,840.2	13.2	15.9	-17.44	102.0	-634.2	249.8	226.9	22.88	10.919				
5,000.0	4,974.5	4,983.5	4,939.1	13.5	16.3	-17.65	104.4	-648.3	252.0	228.6	23.38	10.775				

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft		
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference													Distance		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
5,100.0	5,073.7	5,083.4	5,038.1	13.8	16.6	-17.87		106.8	-662.4	254.1	230.2	23.89	10.637			
5,200.0	5,172.9	5,183.4	5,137.0	14.1	17.0	-18.07		109.2	-676.6	256.4	232.0	24.39	10.513			
5,300.0	5,272.4	5,283.3	5,235.9	14.3	17.3	-18.11		111.6	-690.6	261.2	236.4	24.83	10.521			
5,400.0	5,372.3	5,383.0	5,334.5	14.5	17.7	-17.95		113.9	-704.7	269.4	244.2	25.23	10.679			
5,500.0	5,472.2	5,482.3	5,432.8	14.7	18.0	-17.59		116.3	-718.7	280.8	255.3	25.58	10.980			
5,600.0	5,572.2	5,581.3	5,530.8	14.9	18.4	-91.25		118.7	-732.7	294.8	268.8	25.96	11.354			
5,700.0	5,672.2	5,684.9	5,633.4	15.0	18.7	-90.74		121.1	-747.0	308.5	282.2	26.38	11.694			
5,800.0	5,772.2	5,796.3	5,744.1	15.2	19.0	-90.34		123.1	-758.9	319.2	292.5	26.78	11.919			
5,900.0	5,872.2	5,908.5	5,856.1	15.4	19.2	-90.11		124.4	-766.6	326.1	298.9	27.18	11.999			
6,000.0	5,972.2	6,021.2	5,968.7	15.6	19.4	-90.00		125.0	-770.0	329.1	301.6	27.57	11.937			
6,100.0	6,072.2	6,124.7	6,072.2	15.8	19.5	-90.00		125.0	-770.2	329.3	301.3	27.97	11.775			
6,200.0	6,172.2	6,224.7	6,172.2	15.9	19.6	-90.00		125.0	-770.2	329.3	300.9	28.36	11.610			
6,300.0	6,272.2	6,324.7	6,272.2	16.1	19.8	-90.00		125.0	-770.2	329.3	300.5	28.76	11.450			
6,365.5	6,337.7	6,390.2	6,337.7	16.2	19.9	90.03		125.0	-770.2	329.3	300.3	29.02	11.348			
6,400.0	6,372.2	6,424.7	6,372.2	16.3	19.9	90.01		125.0	-770.2	329.3	300.1	29.16	11.293			
6,422.7	6,394.9	6,447.4	6,394.9	16.3	20.0	90.10		125.0	-770.2	329.3	300.1	29.23	11.265			
6,500.0	6,471.9	6,524.4	6,471.9	16.5	20.1	91.29		125.0	-770.2	329.4	299.9	29.45	11.186			
6,600.0	6,569.7	6,624.4	6,571.8	16.6	20.2	94.29		122.2	-770.2	330.2	300.6	29.63	11.145			
6,700.0	6,664.0	6,727.4	6,673.5	16.7	20.3	97.39		106.5	-770.2	332.1	302.3	29.81	11.142			
6,800.0	6,753.2	6,833.0	6,774.7	16.8	20.4	100.36		76.4	-770.2	334.9	304.9	30.02	11.157			
6,900.0	6,835.8	6,941.5	6,873.2	16.9	20.5	103.14		31.3	-770.2	338.4	308.1	30.28	11.175			
7,000.0	6,910.4	7,052.8	6,966.6	17.1	20.7	105.67		-29.1	-770.2	342.3	311.7	30.62	11.180			
7,100.0	6,975.6	7,166.8	7,052.2	17.3	20.8	107.91		-104.3	-770.2	346.3	315.3	31.07	11.147			
7,200.0	7,030.3	7,283.4	7,127.1	17.7	21.1	109.79		-193.5	-770.2	350.2	318.5	31.67	11.056			
7,300.0	7,073.7	7,402.3	7,188.7	18.3	21.5	111.29		-295.0	-770.2	353.6	321.1	32.48	10.885			
7,400.0	7,105.0	7,523.0	7,234.3	19.0	22.1	112.37		-406.6	-770.2	356.2	322.6	33.56	10.613			
7,500.0	7,123.6	7,644.9	7,262.0	19.9	22.9	113.02		-525.2	-770.2	357.8	322.9	34.93	10.242			
7,600.0	7,129.2	7,751.0	7,273.8	21.0	23.8	113.69		-630.6	-770.2	360.0	323.6	36.32	9.910			
7,700.0	7,127.6	7,865.4	7,280.3	22.2	25.0	114.87		-744.8	-770.2	363.0	324.6	38.35	9.464			
7,800.0	7,125.9	7,967.1	7,279.9	23.5	26.1	115.06		-846.5	-770.2	363.5	322.7	40.74	8.921			
7,900.0	7,124.3	8,067.1	7,279.4	24.9	27.3	115.22		-946.5	-770.2	364.0	320.7	43.26	8.414			
8,000.0	7,122.6	8,167.1	7,278.9	26.4	28.7	115.39		-1,046.5	-770.2	364.5	318.6	45.90	7.942			
8,100.0	7,121.0	8,267.1	7,278.5	27.9	30.1	115.56		-1,146.5	-770.2	365.0	316.4	48.63	7.505			
8,200.0	7,119.3	8,367.1	7,278.0	29.4	31.5	115.73		-1,246.5	-770.2	365.5	314.1	51.45	7.104			
8,300.0	7,117.6	8,467.1	7,277.5	31.0	33.0	115.90		-1,346.5	-770.2	366.0	311.7	54.34	6.737			
8,400.0	7,116.0	8,567.1	7,277.1	32.6	34.5	116.06		-1,446.5	-770.2	366.6	309.3	57.28	6.400			
8,500.0	7,114.3	8,667.1	7,276.6	34.3	36.1	116.23		-1,546.5	-770.2	367.1	306.8	60.27	6.091			
8,600.0	7,112.7	8,767.1	7,276.1	36.0	37.7	116.40		-1,646.5	-770.2	367.6	304.3	63.29	5.808			
8,700.0	7,111.0	8,867.1	7,275.6	37.7	39.4	116.56		-1,746.5	-770.2	368.1	301.8	66.35	5.549			
8,800.0	7,109.4	8,967.1	7,275.2	39.4	41.0	116.73		-1,846.5	-770.2	368.7	299.2	69.43	5.310			
8,900.0	7,107.7	9,067.0	7,274.7	41.2	42.7	116.89		-1,946.4	-770.2	369.2	296.7	72.54	5.090			
9,000.0	7,106.0	9,167.0	7,274.2	42.9	44.4	117.06		-2,046.4	-770.2	369.8	294.1	75.66	4.887			
9,100.0	7,104.4	9,267.0	7,273.8	44.7	46.1	117.22		-2,146.4	-770.2	370.3	291.5	78.80	4.699			
9,200.0	7,102.7	9,367.0	7,273.3	46.5	47.9	117.38		-2,246.4	-770.2	370.8	288.9	81.94	4.525			
9,300.0	7,101.1	9,467.0	7,272.8	48.3	49.6	117.54		-2,346.4	-770.2	371.4	286.3	85.10	4.364			
9,400.0	7,099.4	9,567.0	7,272.3	50.1	51.4	117.71		-2,446.4	-770.2	371.9	283.7	88.27	4.214			
9,500.0	7,097.8	9,667.0	7,271.9	51.9	53.1	117.87		-2,546.4	-770.2	372.5	281.0	91.44	4.074			
9,600.0	7,096.1	9,767.0	7,271.4	53.7	54.9	118.03		-2,646.4	-770.2	373.0	278.4	94.62	3.943			
9,700.0	7,094.4	9,867.0	7,270.9	55.5	56.7	118.19		-2,746.4	-770.2	373.6	275.8	97.80	3.820			
9,800.0	7,092.8	9,967.0	7,270.5	57.4	58.5	118.35		-2,846.4	-770.2	374.2	273.2	100.98	3.705			
9,900.0	7,091.1	10,067.0	7,270.0	59.2	60.3	118.51		-2,946.4	-770.2	374.7	270.6	104.16	3.598			

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference													Warning	
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	Warning	
10,000.0	7,089.5	10,167.0	7,269.5	61.1	62.1	118.67	-3,046.4	-770.2	375.3	268.0	107.34	3.496		
10,100.0	7,087.8	10,267.0	7,269.0	62.9	63.9	118.83	-3,146.3	-770.2	375.9	265.4	110.52	3.401		
10,200.0	7,086.1	10,367.0	7,268.6	64.8	65.8	118.99	-3,246.3	-770.2	376.4	262.7	113.70	3.311		
10,300.0	7,084.5	10,466.9	7,268.1	66.6	67.6	119.14	-3,346.3	-770.2	377.0	260.1	116.87	3.226		
10,400.0	7,082.8	10,566.9	7,267.6	68.5	69.4	119.30	-3,446.3	-770.2	377.6	257.6	120.05	3.145		
10,500.0	7,081.2	10,666.9	7,267.2	70.3	71.3	119.46	-3,546.3	-770.2	378.2	255.0	123.22	3.069		
10,600.0	7,079.5	10,766.9	7,266.7	72.2	73.1	119.61	-3,646.3	-770.2	378.8	252.4	126.38	2.997		
10,700.0	7,077.9	10,866.9	7,266.2	74.1	75.0	119.77	-3,746.3	-770.2	379.4	249.8	129.55	2.928		
10,800.0	7,076.2	10,966.9	7,265.7	75.9	76.8	119.93	-3,846.3	-770.2	379.9	247.2	132.70	2.863		
10,900.0	7,074.5	11,066.9	7,265.3	77.8	78.7	120.08	-3,946.3	-770.2	380.5	244.7	135.86	2.801		
11,000.0	7,072.9	11,166.9	7,264.8	79.7	80.5	120.23	-4,046.3	-770.2	381.1	242.1	139.00	2.742		
11,100.0	7,071.2	11,266.9	7,264.3	81.6	82.4	120.39	-4,146.3	-770.2	381.7	239.6	142.15	2.685		
11,200.0	7,069.6	11,366.9	7,263.9	83.4	84.3	120.54	-4,246.3	-770.2	382.3	237.1	145.28	2.632		
11,300.0	7,067.9	11,466.9	7,263.4	85.3	86.1	120.69	-4,346.2	-770.2	382.9	234.5	148.41	2.580		
11,400.0	7,066.2	11,566.9	7,262.9	87.2	88.0	120.85	-4,446.2	-770.2	383.5	232.0	151.54	2.531		
11,500.0	7,064.6	11,666.9	7,262.4	89.1	89.9	121.00	-4,546.2	-770.2	384.2	229.5	154.66	2.484		
11,595.9	7,063.0	11,761.8	7,262.0	90.9	91.6	121.14	-4,641.2	-770.2	384.7	227.1	157.63	2.441 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft		
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference													Distance		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	198.1	198.1							
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	198.1	198.1	197.9	0.22	881.339				
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	198.1	198.1	197.4	0.67	293.780				
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	198.1	198.1	197.0	1.12	176.268				
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	198.1	198.1	196.5	1.57	125.906				
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	198.1	198.1	196.1	2.02	97.927				
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	198.1	198.1	195.6	2.47	80.122				
700.0	700.0	700.0	700.0	1.5	1.5	90.00	0.0	198.1	198.1	195.2	2.92	67.795				
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	198.1	198.1	194.7	3.37	58.756				
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	198.1	198.1	194.3	3.82	51.843				
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	198.1	198.1	193.8	4.27	46.386				
1,100.0	1,100.0	1,106.5	1,106.5	2.4	2.4	89.74	0.9	196.3	196.4	191.7	4.73	41.550				
1,200.0	1,200.0	1,212.8	1,212.6	2.6	2.6	88.94	3.5	191.0	191.5	186.3	5.18	36.939				
1,300.0	1,300.0	1,317.0	1,316.4	2.8	2.8	87.54	7.8	182.5	183.4	177.8	5.65	32.485				
1,400.0	1,400.0	1,416.5	1,415.3	3.0	3.1	85.91	12.4	173.4	174.6	168.5	6.10	28.614				
1,500.0	1,500.0	1,516.0	1,514.3	3.3	3.3	84.11	17.0	164.4	165.9	159.3	6.56	25.288				
1,600.0	1,600.0	1,615.6	1,613.4	3.5	3.6	156.58	21.5	155.3	158.9	152.0	6.97	22.801				
1,700.0	1,699.8	1,715.5	1,712.7	3.7	3.8	155.25	26.1	146.2	155.3	147.9	7.40	20.976				
1,761.9	1,761.5	1,777.3	1,774.3	3.8	4.0	154.66	29.0	140.5	154.7	147.0	7.67	20.158 CC, ES				
1,800.0	1,799.5	1,815.4	1,812.2	3.9	4.1	154.40	30.7	137.0	154.9	147.1	7.84	19.763				
1,900.0	1,898.7	1,915.4	1,911.6	4.1	4.4	154.05	35.3	127.9	157.5	149.2	8.28	19.005				
2,000.0	1,998.0	2,015.3	2,011.1	4.4	4.7	153.82	39.9	118.8	160.5	151.8	8.75	18.352				
2,100.0	2,097.2	2,115.3	2,110.5	4.6	4.9	153.59	44.5	109.7	163.6	154.4	9.21	17.752				
2,200.0	2,196.4	2,215.3	2,209.9	4.9	5.2	153.37	49.1	100.5	166.7	157.0	9.69	17.202				
2,300.0	2,295.6	2,315.2	2,309.3	5.2	5.5	153.16	53.7	91.4	169.7	159.6	10.17	16.695				
2,400.0	2,394.8	2,415.2	2,408.8	5.5	5.8	152.96	58.3	82.3	172.8	162.2	10.65	16.228				
2,500.0	2,494.0	2,515.1	2,508.2	5.7	6.1	152.77	62.9	73.2	175.9	164.7	11.13	15.796				
2,600.0	2,593.3	2,615.1	2,607.6	6.0	6.3	152.58	67.5	64.0	179.0	167.3	11.62	15.396				
2,700.0	2,692.5	2,715.0	2,707.1	6.3	6.6	152.40	72.1	54.9	182.0	169.9	12.12	15.024				
2,800.0	2,791.7	2,815.0	2,806.5	6.6	6.9	152.22	76.6	45.8	185.1	172.5	12.61	14.679				
2,900.0	2,890.9	2,914.9	2,905.9	6.9	7.2	152.05	81.2	36.7	188.2	175.1	13.11	14.357				
3,000.0	2,990.1	3,014.9	3,005.3	7.2	7.5	151.89	85.8	27.5	191.3	177.7	13.61	14.057				
3,100.0	3,089.3	3,114.8	3,104.8	7.5	7.8	151.73	90.4	18.4	194.4	180.3	14.11	13.776				
3,200.0	3,188.6	3,214.8	3,204.2	7.8	8.1	151.57	95.0	9.3	197.5	182.8	14.61	13.512				
3,300.0	3,287.8	3,314.7	3,303.6	8.1	8.4	151.42	99.6	0.2	200.5	185.4	15.12	13.265				
3,400.0	3,387.0	3,414.7	3,403.0	8.4	8.6	151.28	104.2	-9.0	203.6	188.0	15.63	13.032				
3,500.0	3,486.2	3,514.6	3,502.5	8.8	8.9	151.14	108.8	-18.1	206.7	190.6	16.13	12.813				
3,600.0	3,585.4	3,614.6	3,601.9	9.1	9.2	151.00	113.4	-27.2	209.8	193.2	16.64	12.607				
3,700.0	3,684.6	3,714.5	3,701.3	9.4	9.5	150.87	118.0	-36.3	212.9	195.8	17.15	12.411				
3,800.0	3,783.9	3,809.3	3,795.8	9.7	9.7	150.98	121.7	-43.8	217.1	199.5	17.61	12.326				
3,900.0	3,883.1	3,903.5	3,889.8	10.0	9.9	151.60	124.0	-48.4	223.9	205.9	18.02	12.423				
4,000.0	3,982.3	4,000.0	3,986.3	10.3	10.1	152.69	125.0	-50.2	233.2	214.8	18.40	12.677				
4,100.0	4,081.5	4,095.2	4,081.5	10.6	10.2	153.97	125.0	-50.3	244.3	225.6	18.77	13.016				
4,200.0	4,180.7	4,194.5	4,180.7	10.9	10.4	155.20	125.0	-50.3	255.6	236.5	19.17	13.334				
4,300.0	4,279.9	4,293.7	4,279.9	11.3	10.6	156.32	125.0	-50.3	267.0	247.5	19.58	13.640				
4,400.0	4,379.2	4,392.9	4,379.2	11.6	10.8	157.35	125.0	-50.3	278.5	258.6	19.99	13.936				
4,500.0	4,478.4	4,492.1	4,478.4	11.9	11.0	158.30	125.0	-50.3	290.1	269.7	20.40	14.221				
4,600.0	4,577.6	4,591.3	4,577.6	12.2	11.2	159.18	125.0	-50.3	301.8	281.0	20.82	14.495				
4,700.0	4,676.8	4,690.5	4,676.8	12.5	11.4	159.99	125.0	-50.3	313.5	292.2	21.24	14.759				
4,800.0	4,776.0	4,789.8	4,776.0	12.8	11.6	160.74	125.0	-50.3	325.3	303.6	21.66	15.014				
4,900.0	4,875.3	4,889.0	4,875.3	13.2	11.8	161.44	125.0	-50.3	337.1	315.0	22.09	15.259				

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 Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft		
Survey Program: 0-MWD													Offset Well Error:	0.0 ft		
Reference													Distance		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis 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				
5,000.0	4,974.5	4,988.2	4,974.5	13.5	12.0	162.09	125.0	-50.3	349.0	326.4	22.52	15.496				
5,100.0	5,073.7	5,087.4	5,073.7	13.8	12.2	162.70	125.0	-50.3	360.9	337.9	22.95	15.724				
5,200.0	5,172.9	5,186.7	5,172.9	14.1	12.4	163.28	125.0	-50.3	372.7	349.3	23.39	15.935				
5,300.0	5,272.4	5,286.2	5,272.4	14.3	12.6	163.75	125.0	-50.3	381.9	358.2	23.79	16.053				
5,400.0	5,372.3	5,386.0	5,372.3	14.5	12.8	164.04	125.0	-50.3	387.9	363.7	24.18	16.043				
5,500.0	5,472.2	5,485.9	5,472.2	14.7	13.0	164.17	125.0	-50.3	390.5	366.0	24.54	15.912				
5,600.0	5,572.2	5,585.9	5,572.2	14.9	13.2	90.00	125.0	-50.3	390.6	365.7	24.93	15.668				
5,700.0	5,672.2	5,685.9	5,672.2	15.0	13.4	90.00	125.0	-50.3	390.6	365.3	25.35	15.409				
5,800.0	5,772.2	5,785.9	5,772.2	15.2	13.6	90.00	125.0	-50.3	390.6	364.9	25.77	15.158				
5,900.0	5,872.2	5,885.9	5,872.2	15.4	13.8	90.00	125.0	-50.3	390.6	364.5	26.19	14.914				
6,000.0	5,972.2	5,985.9	5,972.2	15.6	14.0	90.00	125.0	-50.3	390.6	364.0	26.62	14.678				
6,100.0	6,072.2	6,085.9	6,072.2	15.8	14.2	90.00	125.0	-50.3	390.6	363.6	27.04	14.448				
6,200.0	6,172.2	6,185.9	6,172.2	15.9	14.4	90.00	125.0	-50.3	390.6	363.2	27.46	14.225				
6,300.0	6,272.2	6,285.9	6,272.2	16.1	14.6	90.00	125.0	-50.3	390.6	362.8	27.89	14.009				
6,365.9	6,338.1	6,351.8	6,338.1	16.2	14.8	-90.03	125.0	-50.3	390.6	362.5	28.17	13.869				
6,400.0	6,372.2	6,385.9	6,372.2	16.3	14.8	-90.00	125.0	-50.3	390.6	362.3	28.31	13.799				
6,422.8	6,395.0	6,408.7	6,395.0	16.3	14.9	-90.08	125.0	-50.3	390.6	362.2	28.40	13.756				
6,500.0	6,471.9	6,485.6	6,471.9	16.5	15.0	-91.08	125.0	-50.3	390.7	362.0	28.72	13.605				
6,600.0	6,569.7	6,585.6	6,571.8	16.6	15.2	-93.62	122.2	-50.3	391.5	362.3	29.11	13.445				
6,700.0	6,664.0	6,688.6	6,673.5	16.7	15.4	-96.23	106.5	-50.3	393.0	363.6	29.42	13.358				
6,800.0	6,753.2	6,794.3	6,774.7	16.8	15.5	-98.76	76.4	-50.3	395.4	365.7	29.66	13.329				
6,900.0	6,835.8	6,902.7	6,873.2	16.9	15.6	-101.13	31.2	-50.3	398.3	368.5	29.88	13.333				
7,000.0	6,910.4	7,014.0	6,966.6	17.1	15.8	-103.30	-29.1	-50.3	401.7	371.5	30.14	13.325				
7,100.0	6,975.6	7,128.0	7,052.2	17.3	16.0	-105.23	-104.3	-50.3	405.1	374.5	30.56	13.254				
7,200.0	7,030.3	7,244.6	7,127.1	17.7	16.3	-106.87	-193.5	-50.3	408.4	377.1	31.28	13.057				
7,300.0	7,073.7	7,363.5	7,188.7	18.3	16.9	-108.18	-295.0	-50.3	411.3	378.9	32.42	12.689				
7,400.0	7,105.0	7,484.2	7,234.3	19.0	17.8	-109.13	-406.6	-50.3	413.6	379.5	34.05	12.145				
7,500.0	7,123.6	7,606.1	7,262.0	19.9	19.0	-109.70	-525.2	-50.3	414.9	378.8	36.20	11.463				
7,600.0	7,129.2	7,712.2	7,273.8	21.0	20.1	-110.29	-630.6	-50.3	416.8	378.3	38.56	10.809				
7,700.0	7,127.6	7,826.6	7,280.3	22.2	21.6	-111.34	-744.8	-50.3	419.4	378.5	40.96	10.240				
7,800.0	7,125.9	7,928.3	7,279.9	23.5	22.9	-111.51	-846.5	-50.3	419.9	376.4	43.51	9.651				
7,900.0	7,124.3	8,028.3	7,279.4	24.9	24.3	-111.66	-946.5	-50.3	420.3	374.2	46.16	9.105				
8,000.0	7,122.6	8,128.3	7,278.9	26.4	25.8	-111.81	-1,046.5	-50.3	420.8	371.8	48.93	8.598				
8,100.0	7,121.0	8,228.3	7,278.5	27.9	27.3	-111.96	-1,146.5	-50.3	421.2	369.4	51.80	8.131				
8,200.0	7,119.3	8,328.3	7,278.0	29.4	28.9	-112.11	-1,246.5	-50.3	421.6	366.9	54.74	7.702				
8,300.0	7,117.6	8,428.3	7,277.5	31.0	30.5	-112.25	-1,346.5	-50.3	422.1	364.3	57.75	7.309				
8,400.0	7,116.0	8,528.3	7,277.0	32.6	32.2	-112.40	-1,446.5	-50.3	422.5	361.7	60.81	6.948				
8,500.0	7,114.3	8,628.3	7,276.6	34.3	33.9	-112.55	-1,546.5	-50.3	423.0	359.1	63.92	6.618				
8,600.0	7,112.7	8,728.3	7,276.1	36.0	35.6	-112.70	-1,646.5	-50.3	423.5	356.4	67.06	6.314				
8,700.0	7,111.0	8,828.3	7,275.6	37.7	37.3	-112.85	-1,746.5	-50.3	423.9	353.7	70.24	6.035				
8,800.0	7,109.4	8,928.2	7,275.2	39.4	39.0	-113.00	-1,846.5	-50.3	424.4	350.9	73.44	5.778				
8,900.0	7,107.7	9,028.2	7,274.7	41.2	40.8	-113.14	-1,946.4	-50.3	424.8	348.2	76.67	5.541				
9,000.0	7,106.0	9,128.2	7,274.2	42.9	42.6	-113.29	-2,046.4	-50.3	425.3	345.4	79.91	5.322				
9,100.0	7,104.4	9,228.2	7,273.7	44.7	44.3	-113.44	-2,146.4	-50.3	425.8	342.6	83.17	5.120				
9,200.0	7,102.7	9,328.2	7,273.3	46.5	46.1	-113.58	-2,246.4	-50.3	426.3	339.8	86.44	4.931				
9,300.0	7,101.1	9,428.2	7,272.8	48.3	47.9	-113.73	-2,346.4	-50.3	426.7	337.0	89.72	4.756				
9,400.0	7,099.4	9,528.2	7,272.3	50.1	49.8	-113.88	-2,446.4	-50.3	427.2	334.2	93.01	4.593				
9,500.0	7,097.8	9,628.2	7,271.9	51.9	51.6	-114.02	-2,546.4	-50.3	427.7	331.4	96.31	4.441				
9,600.0	7,096.1	9,728.2	7,271.4	53.7	53.4	-114.17	-2,646.4	-50.3	428.2	328.6	99.62	4.298				
9,700.0	7,094.4	9,828.2	7,270.9	55.5	55.2	-114.31	-2,746.4	-50.3	428.7	325.7	102.92	4.165				
9,800.0	7,092.8	9,928.2	7,270.4	57.4	57.1	-114.45	-2,846.4	-50.3	429.1	322.9	106.23	4.040				

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

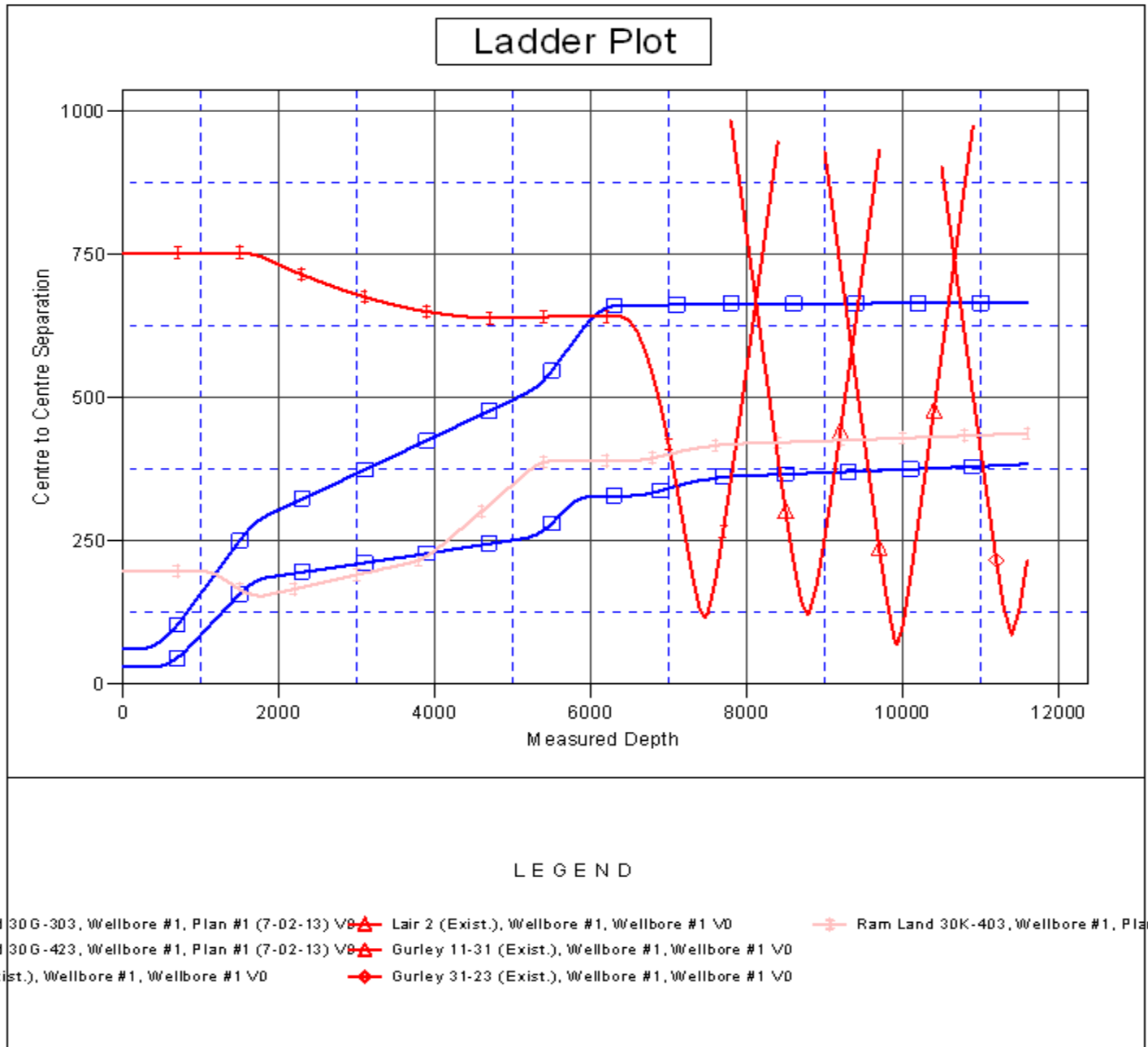
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference													Warning	
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,900.0	7,091.1	10,028.2	7,270.0	59.2	58.9	-114.60	-2,946.4	-50.3	429.6	320.1	109.55	3.922		
10,000.0	7,089.5	10,128.2	7,269.5	61.1	60.8	-114.74	-3,046.4	-50.3	430.1	317.3	112.86	3.811		
10,100.0	7,087.8	10,228.2	7,269.0	62.9	62.6	-114.89	-3,146.3	-50.3	430.6	314.5	116.18	3.707		
10,200.0	7,086.1	10,328.1	7,268.6	64.8	64.5	-115.03	-3,246.3	-50.3	431.1	311.6	119.50	3.608		
10,300.0	7,084.5	10,428.1	7,268.1	66.6	66.3	-115.17	-3,346.3	-50.3	431.6	308.8	122.81	3.515		
10,400.0	7,082.8	10,528.1	7,267.6	68.5	68.2	-115.31	-3,446.3	-50.3	432.1	306.0	126.12	3.426		
10,500.0	7,081.2	10,628.1	7,267.1	70.3	70.1	-115.46	-3,546.3	-50.3	432.7	303.2	129.44	3.343		
10,600.0	7,079.5	10,728.1	7,266.7	72.2	71.9	-115.60	-3,646.3	-50.3	433.2	300.4	132.75	3.263		
10,700.0	7,077.9	10,828.1	7,266.2	74.1	73.8	-115.74	-3,746.3	-50.3	433.7	297.6	136.05	3.188		
10,800.0	7,076.2	10,928.1	7,265.7	75.9	75.7	-115.88	-3,846.3	-50.3	434.2	294.8	139.36	3.116		
10,900.0	7,074.5	11,028.1	7,265.3	77.8	77.6	-116.02	-3,946.3	-50.3	434.7	292.1	142.66	3.047		
11,000.0	7,072.9	11,128.1	7,264.8	79.7	79.4	-116.16	-4,046.3	-50.3	435.2	289.3	145.95	2.982		
11,100.0	7,071.2	11,228.1	7,264.3	81.6	81.3	-116.30	-4,146.3	-50.3	435.8	286.5	149.25	2.920		
11,200.0	7,069.6	11,328.1	7,263.8	83.4	83.2	-116.44	-4,246.3	-50.3	436.3	283.8	152.54	2.860		
11,300.0	7,067.9	11,428.1	7,263.4	85.3	85.1	-116.58	-4,346.2	-50.3	436.8	281.0	155.82	2.803		
11,400.0	7,066.2	11,528.1	7,262.9	87.2	87.0	-116.72	-4,446.2	-50.3	437.4	278.2	159.10	2.749		
11,500.0	7,064.6	11,628.1	7,262.4	89.1	88.9	-116.86	-4,546.2	-50.3	437.9	275.5	162.38	2.697		
11,595.9	7,063.0	11,719.4	7,262.0	90.9	90.6	-116.98	-4,637.6	-50.3	438.4	273.0	165.45	2.650 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4773.0ft (RKB-15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

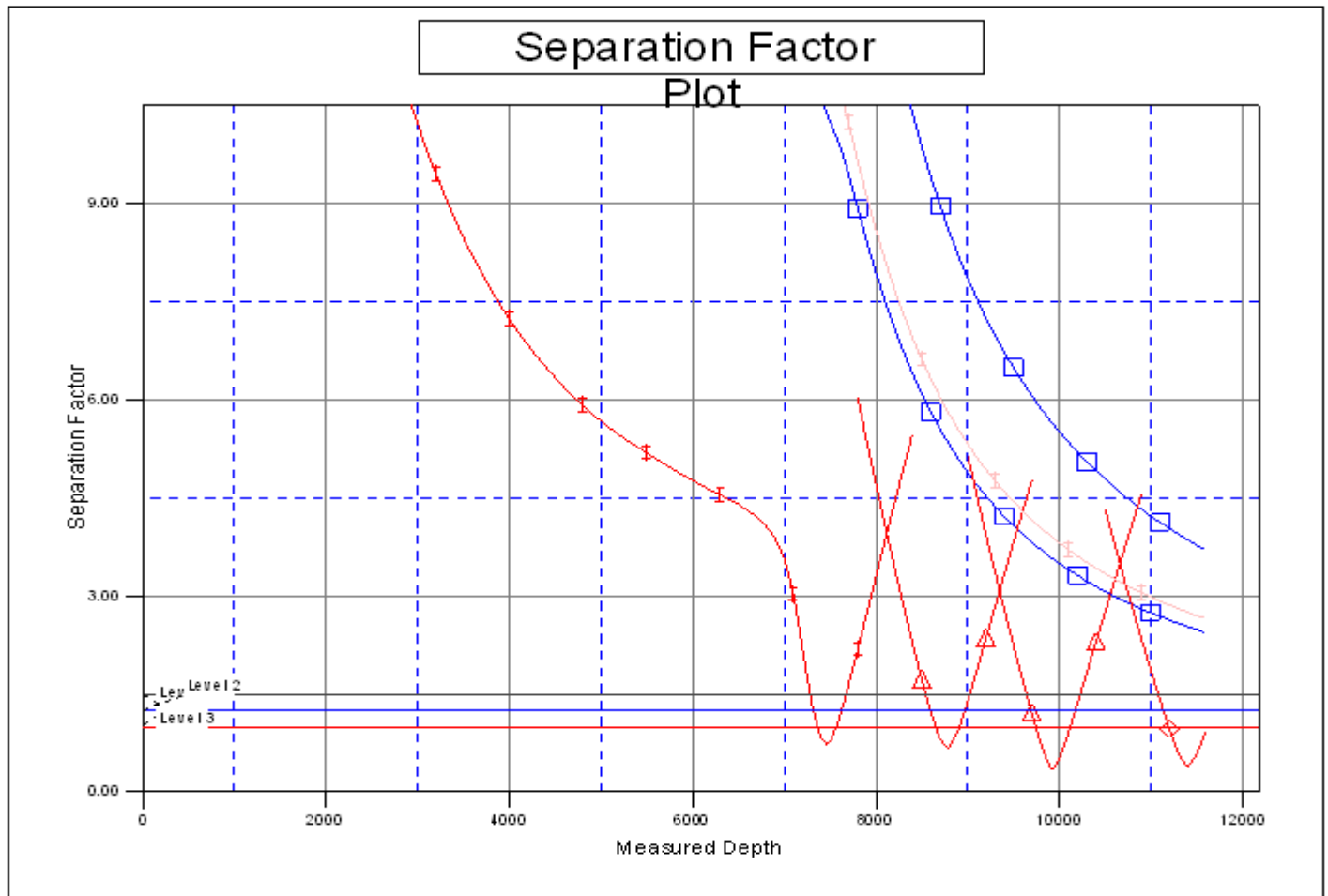
Coordinates are relative to: Ram Land 30K-243  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.44°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Ram Land 30K-243
<b>Project:</b>	SEC.30-T4N-R66W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Reference Site:</b>	Ram Land 30GK-HZ Pad Sec.30-T4N-R66W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB-15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Ram Land 30K-243	<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 (7-02-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4773.0ft (RKB-15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Ram Land 30K-243  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.44°



LEGEND

- id 30G-303, Wellbore #1, Plan #1 (7-02-13) VD ▲ Lair 2 (Exist.), Wellbore #1, Wellbore #1 VD ▲ Ram Land 30K-403, Wellbore #1, Plan
- id 30G-423, Wellbore #1, Plan #1 (7-02-13) VD ▲ Gurley 11-31 (Exist.), Wellbore #1, Wellbore #1 VD
- Exist.), Wellbore #1, Wellbore #1 VD ◆ Gurley 31-23 (Exist.), Wellbore #1, Wellbore #1 VD