

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Ram Land 300-443**

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

+N/-S
0.0

+E/-W
0.0

Northing
1346353.61

Easting
3188458.91

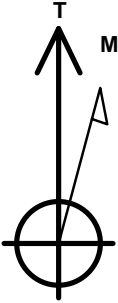
Latitude
40.282170

Longitude
-104.824500

Slot

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

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
BHL 2144'FNL, 2170'FWL, SEC.31	7274.0	-4633.9	689.3	Point

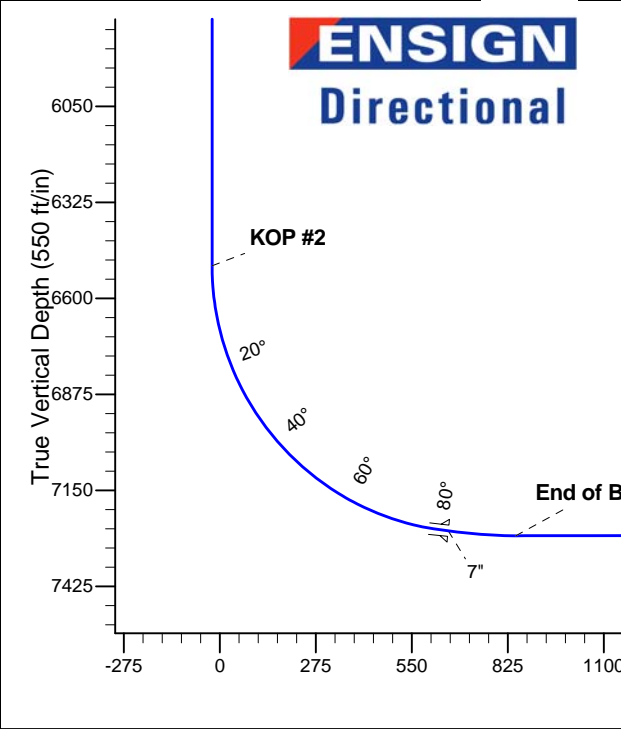
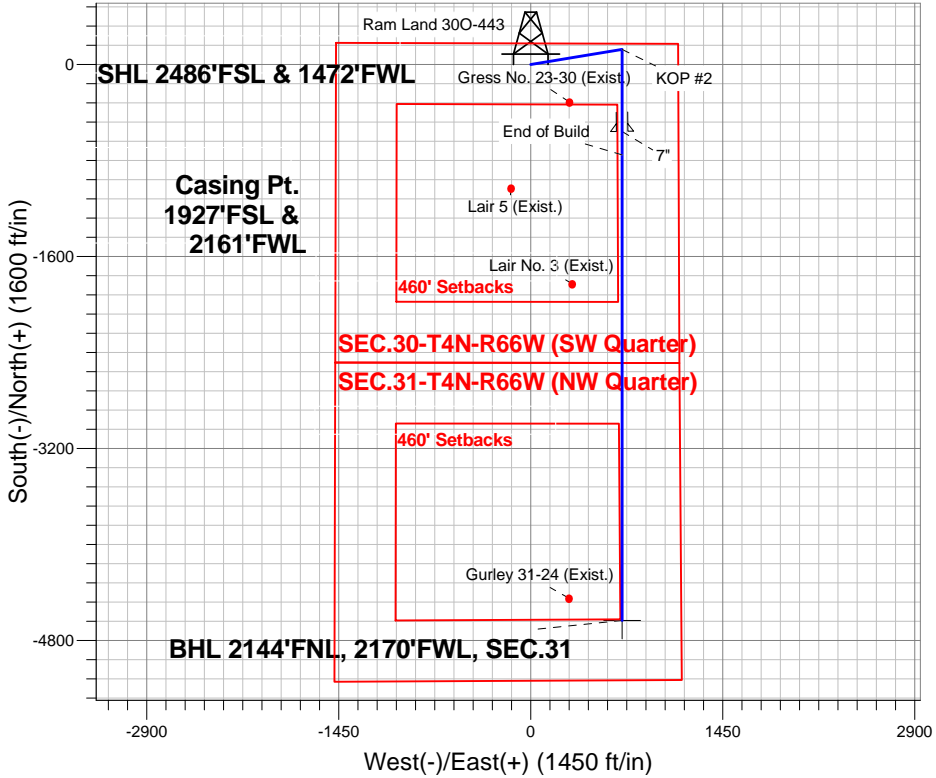


Azimuths to True North
Magnetic North: 8.61°

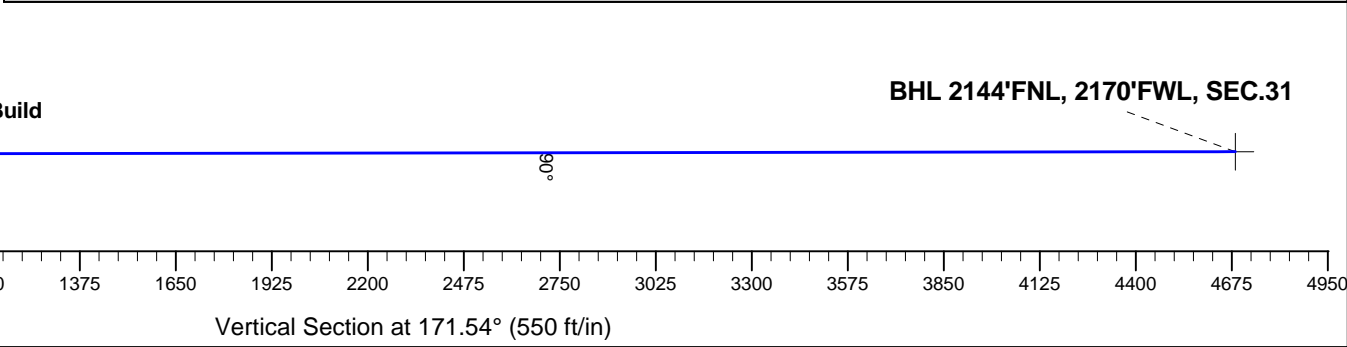
Magnetic Field
Strength: 52847.8snT
Dip Angle: 66.88°
Date: 7/3/2013
Model: IGRF2010

ANNOTATIONS		
TVD	MD	Annotation
400.0	400.0	KOP #1
6506.3	6555.9	KOP #2
7280.1	7871.7	End of Build

Ram Land 30KO-HZ Pad Sec.30-T4N-R66W
Ram Land 300-443
Plan #1 (6-27-13)
8:40, July 11 2013



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	816.6	8.33	79.72	815.2	5.4	29.8	2.00	79.72	-1.0	
4	5232.9	8.33	79.72	5184.8	119.6	659.5	0.00	0.00	-21.3	
5	5649.6	0.00	0.00	5600.0	125.0	689.3	2.00	180.00	-22.2	
6	6555.9	0.00	0.00	6506.3	125.0	689.3	0.00	0.00	-22.2	
7	7675.9	84.00	180.00	7266.1	-559.1	689.3	7.50	180.00	654.4	
8	7749.9	84.00	180.00	7273.8	-632.7	689.3	0.00	0.00	727.2	
9	7871.7	90.09	180.00	7280.1	-754.3	689.3	5.00	0.00	847.5	
10	11751.3	90.09	180.00	7274.0	-4633.9	689.3	0.00	0.00	4684.9	BHL 2144'FNL, 2170'FWL, SEC.31





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.30-T4N-R66W

Ram Land 30KO-HZ Pad Sec.30-T4N-R66W

Ram Land 30O-443

Wellbore #1

Plan: Plan #1 (6-27-13)

Standard Planning Report

08 July, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Ram Land 30O-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Project:	SEC.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	North Reference:	True
Well:	Ram Land 30O-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-27-13)		

Project	SEC.30-T4N-R66W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Ram Land 30KO-HZ Pad Sec.30-T4N-R66W											
Site Position:						Northing:			1,346,353.40 ft			Latitude:			40.282170		
From:			Lat/Long			Easting:			3,188,428.22 ft			Longitude:			-104.824610		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.44 °		

Well	Ram Land 30O-443					
Well Position	+N-S	0.0 ft	Northing:	1,346,353.61 ft	Latitude:	40.282170
	+E-W	30.7 ft	Easting:	3,188,458.91 ft	Longitude:	-104.824500
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,758.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/3/2013	8.61	66.88	52,848

Design	Plan #1 (6-27-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	171.54

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
816.6	8.33	79.72	815.2	5.4	29.8	2.00	2.00	0.00	79.72	
5,232.9	8.33	79.72	5,184.8	119.6	659.5	0.00	0.00	0.00	0.00	
5,649.6	0.00	0.00	5,600.0	125.0	689.3	2.00	-2.00	0.00	180.00	
6,555.9	0.00	0.00	6,506.3	125.0	689.3	0.00	0.00	0.00	0.00	
7,675.9	84.00	180.00	7,266.1	-559.1	689.3	7.50	7.50	0.00	180.00	
7,749.9	84.00	180.00	7,273.8	-632.7	689.3	0.00	0.00	0.00	0.00	
7,871.7	90.09	180.00	7,280.1	-754.3	689.3	5.00	5.00	0.00	0.00	
11,751.3	90.09	180.00	7,274.0	-4,633.9	689.3	0.00	0.00	0.00	0.00	BHL 2144'FNL, 217

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Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	North Reference:	True
Well:	Ram Land 30O-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-27-13)		

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
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
KOP #1									
500.0	2.00	79.72	500.0	0.3	1.7	-0.1	2.00	2.00	0.00
600.0	4.00	79.72	599.8	1.2	6.9	-0.2	2.00	2.00	0.00
700.0	6.00	79.72	699.5	2.8	15.4	-0.5	2.00	2.00	0.00
800.0	8.00	79.72	798.7	5.0	27.4	-0.9	2.00	2.00	0.00
816.6	8.33	79.72	815.2	5.4	29.8	-1.0	2.00	2.00	0.00
900.0	8.33	79.72	897.7	7.6	41.6	-1.3	0.00	0.00	0.00
1,000.0	8.33	79.72	996.6	10.1	55.9	-1.8	0.00	0.00	0.00
1,100.0	8.33	79.72	1,095.5	12.7	70.2	-2.3	0.00	0.00	0.00
1,200.0	8.33	79.72	1,194.5	15.3	84.4	-2.7	0.00	0.00	0.00
1,300.0	8.33	79.72	1,293.4	17.9	98.7	-3.2	0.00	0.00	0.00
1,400.0	8.33	79.72	1,392.4	20.5	112.9	-3.6	0.00	0.00	0.00
1,500.0	8.33	79.72	1,491.3	23.1	127.2	-4.1	0.00	0.00	0.00
1,600.0	8.33	79.72	1,590.3	25.7	141.5	-4.6	0.00	0.00	0.00
1,700.0	8.33	79.72	1,689.2	28.2	155.7	-5.0	0.00	0.00	0.00
1,800.0	8.33	79.72	1,788.2	30.8	170.0	-5.5	0.00	0.00	0.00
1,900.0	8.33	79.72	1,887.1	33.4	184.2	-5.9	0.00	0.00	0.00
2,000.0	8.33	79.72	1,986.0	36.0	198.5	-6.4	0.00	0.00	0.00
2,100.0	8.33	79.72	2,085.0	38.6	212.8	-6.9	0.00	0.00	0.00
2,200.0	8.33	79.72	2,183.9	41.2	227.0	-7.3	0.00	0.00	0.00
2,300.0	8.33	79.72	2,282.9	43.8	241.3	-7.8	0.00	0.00	0.00
2,400.0	8.33	79.72	2,381.8	46.3	255.5	-8.2	0.00	0.00	0.00
2,500.0	8.33	79.72	2,480.8	48.9	269.8	-8.7	0.00	0.00	0.00
2,600.0	8.33	79.72	2,579.7	51.5	284.1	-9.2	0.00	0.00	0.00
2,700.0	8.33	79.72	2,678.6	54.1	298.3	-9.6	0.00	0.00	0.00
2,800.0	8.33	79.72	2,777.6	56.7	312.6	-10.1	0.00	0.00	0.00
2,900.0	8.33	79.72	2,876.5	59.3	326.8	-10.5	0.00	0.00	0.00
3,000.0	8.33	79.72	2,975.5	61.9	341.1	-11.0	0.00	0.00	0.00
3,100.0	8.33	79.72	3,074.4	64.4	355.4	-11.5	0.00	0.00	0.00
3,200.0	8.33	79.72	3,173.4	67.0	369.6	-11.9	0.00	0.00	0.00
3,300.0	8.33	79.72	3,272.3	69.6	383.9	-12.4	0.00	0.00	0.00
3,400.0	8.33	79.72	3,371.3	72.2	398.1	-12.8	0.00	0.00	0.00
3,500.0	8.33	79.72	3,470.2	74.8	412.4	-13.3	0.00	0.00	0.00
3,600.0	8.33	79.72	3,569.1	77.4	426.7	-13.8	0.00	0.00	0.00
3,700.0	8.33	79.72	3,668.1	80.0	440.9	-14.2	0.00	0.00	0.00
3,800.0	8.33	79.72	3,767.0	82.5	455.2	-14.7	0.00	0.00	0.00
3,900.0	8.33	79.72	3,866.0	85.1	469.4	-15.1	0.00	0.00	0.00
4,000.0	8.33	79.72	3,964.9	87.7	483.7	-15.6	0.00	0.00	0.00
4,100.0	8.33	79.72	4,063.9	90.3	498.0	-16.1	0.00	0.00	0.00
4,200.0	8.33	79.72	4,162.8	92.9	512.2	-16.5	0.00	0.00	0.00
4,300.0	8.33	79.72	4,261.8	95.5	526.5	-17.0	0.00	0.00	0.00
4,400.0	8.33	79.72	4,360.7	98.1	540.7	-17.4	0.00	0.00	0.00
4,500.0	8.33	79.72	4,459.6	100.6	555.0	-17.9	0.00	0.00	0.00
4,600.0	8.33	79.72	4,558.6	103.2	569.3	-18.4	0.00	0.00	0.00
4,700.0	8.33	79.72	4,657.5	105.8	583.5	-18.8	0.00	0.00	0.00
4,800.0	8.33	79.72	4,756.5	108.4	597.8	-19.3	0.00	0.00	0.00
4,900.0	8.33	79.72	4,855.4	111.0	612.0	-19.7	0.00	0.00	0.00
5,000.0	8.33	79.72	4,954.4	113.6	626.3	-20.2	0.00	0.00	0.00

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Well:	Ram Land 30O-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-27-13)		

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)
5,100.0	8.33	79.72	5,053.3	116.2	640.6	-20.7	0.00	0.00	0.00
5,200.0	8.33	79.72	5,152.3	118.8	654.8	-21.1	0.00	0.00	0.00
5,232.9	8.33	79.72	5,184.8	119.6	659.5	-21.3	0.00	0.00	0.00
5,300.0	6.99	79.72	5,251.3	121.2	668.3	-21.6	2.00	-2.00	0.00
5,400.0	4.99	79.72	5,350.8	123.1	678.6	-21.9	2.00	-2.00	0.00
5,500.0	2.99	79.72	5,450.5	124.3	685.4	-22.1	2.00	-2.00	0.00
5,600.0	0.99	79.72	5,550.4	124.9	688.9	-22.2	2.00	-2.00	0.00
5,649.6	0.00	0.00	5,600.0	125.0	689.3	-22.2	2.00	-2.00	0.00
5,700.0	0.00	0.00	5,650.4	125.0	689.3	-22.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,750.4	125.0	689.3	-22.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,850.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,950.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,050.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,150.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,250.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,350.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,500.0	0.00	0.00	6,450.4	125.0	689.3	-22.2	0.00	0.00	0.00
6,555.9	0.00	0.00	6,506.3	125.0	689.3	-22.2	0.00	0.00	0.00
KOP #2									
6,600.0	3.31	180.00	6,550.4	123.7	689.3	-21.0	7.50	7.50	0.00
6,700.0	10.81	180.00	6,649.6	111.4	689.3	-8.8	7.50	7.50	0.00
6,800.0	18.31	180.00	6,746.3	86.3	689.3	16.0	7.50	7.50	0.00
6,900.0	25.81	180.00	6,838.9	48.8	689.3	53.1	7.50	7.50	0.00
7,000.0	33.31	180.00	6,925.8	-0.5	689.3	101.9	7.50	7.50	0.00
7,100.0	40.81	180.00	7,005.6	-60.7	689.3	161.5	7.50	7.50	0.00
7,200.0	48.31	180.00	7,076.8	-130.8	689.3	230.8	7.50	7.50	0.00
7,300.0	55.81	180.00	7,138.2	-209.6	689.3	308.8	7.50	7.50	0.00
7,400.0	63.31	180.00	7,188.9	-295.8	689.3	394.0	7.50	7.50	0.00
7,500.0	70.81	180.00	7,227.8	-387.8	689.3	485.0	7.50	7.50	0.00
7,600.0	78.31	180.00	7,254.4	-484.1	689.3	580.3	7.50	7.50	0.00
7,675.9	84.00	180.00	7,266.1	-559.1	689.3	654.4	7.50	7.50	0.00
7"									
7,700.0	84.00	180.00	7,268.6	-583.1	689.3	678.1	0.00	0.00	0.00
7,749.9	84.00	180.00	7,273.8	-632.7	689.3	727.2	0.00	0.00	0.00
7,800.0	86.51	180.00	7,278.0	-682.6	689.3	776.6	5.00	5.00	0.00
7,871.7	90.09	180.00	7,280.1	-754.3	689.3	847.5	5.00	5.00	0.00
End of Build									
7,900.0	90.09	180.00	7,280.0	-782.6	689.3	875.5	0.00	0.00	0.00
8,000.0	90.09	180.00	7,279.9	-882.6	689.3	974.4	0.00	0.00	0.00
8,100.0	90.09	180.00	7,279.7	-982.6	689.3	1,073.3	0.00	0.00	0.00
8,200.0	90.09	180.00	7,279.6	-1,082.6	689.3	1,172.2	0.00	0.00	0.00
8,300.0	90.09	180.00	7,279.4	-1,182.6	689.3	1,271.1	0.00	0.00	0.00
8,400.0	90.09	180.00	7,279.3	-1,282.6	689.3	1,370.0	0.00	0.00	0.00
8,500.0	90.09	180.00	7,279.1	-1,382.6	689.3	1,468.9	0.00	0.00	0.00
8,600.0	90.09	180.00	7,279.0	-1,482.6	689.3	1,567.9	0.00	0.00	0.00
8,700.0	90.09	180.00	7,278.8	-1,582.6	689.3	1,666.8	0.00	0.00	0.00
8,800.0	90.09	180.00	7,278.6	-1,682.6	689.3	1,765.7	0.00	0.00	0.00
8,900.0	90.09	180.00	7,278.5	-1,782.6	689.3	1,864.6	0.00	0.00	0.00
9,000.0	90.09	180.00	7,278.3	-1,882.6	689.3	1,963.5	0.00	0.00	0.00
9,100.0	90.09	180.00	7,278.2	-1,982.6	689.3	2,062.4	0.00	0.00	0.00
9,200.0	90.09	180.00	7,278.0	-2,082.6	689.3	2,161.3	0.00	0.00	0.00
9,300.0	90.09	180.00	7,277.9	-2,182.6	689.3	2,260.2	0.00	0.00	0.00
9,400.0	90.09	180.00	7,277.7	-2,282.6	689.3	2,359.2	0.00	0.00	0.00

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Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	North Reference:	True
Well:	Ram Land 30O-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-27-13)		

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)
9,500.0	90.09	180.00	7,277.5	-2,382.6	689.3	2,458.1	0.00	0.00	0.00
9,600.0	90.09	180.00	7,277.4	-2,482.6	689.3	2,557.0	0.00	0.00	0.00
9,700.0	90.09	180.00	7,277.2	-2,582.6	689.3	2,655.9	0.00	0.00	0.00
9,800.0	90.09	180.00	7,277.1	-2,682.6	689.3	2,754.8	0.00	0.00	0.00
9,900.0	90.09	180.00	7,276.9	-2,782.6	689.3	2,853.7	0.00	0.00	0.00
10,000.0	90.09	180.00	7,276.8	-2,882.6	689.3	2,952.6	0.00	0.00	0.00
10,100.0	90.09	180.00	7,276.6	-2,982.6	689.3	3,051.5	0.00	0.00	0.00
10,200.0	90.09	180.00	7,276.4	-3,082.6	689.3	3,150.4	0.00	0.00	0.00
10,300.0	90.09	180.00	7,276.3	-3,182.6	689.3	3,249.4	0.00	0.00	0.00
10,400.0	90.09	180.00	7,276.1	-3,282.6	689.3	3,348.3	0.00	0.00	0.00
10,500.0	90.09	180.00	7,276.0	-3,382.6	689.3	3,447.2	0.00	0.00	0.00
10,600.0	90.09	180.00	7,275.8	-3,482.6	689.3	3,546.1	0.00	0.00	0.00
10,700.0	90.09	180.00	7,275.7	-3,582.6	689.3	3,645.0	0.00	0.00	0.00
10,800.0	90.09	180.00	7,275.5	-3,682.6	689.3	3,743.9	0.00	0.00	0.00
10,900.0	90.09	180.00	7,275.3	-3,782.6	689.3	3,842.8	0.00	0.00	0.00
11,000.0	90.09	180.00	7,275.2	-3,882.6	689.3	3,941.7	0.00	0.00	0.00
11,100.0	90.09	180.00	7,275.0	-3,982.6	689.3	4,040.6	0.00	0.00	0.00
11,200.0	90.09	180.00	7,274.9	-4,082.6	689.3	4,139.6	0.00	0.00	0.00
11,300.0	90.09	180.00	7,274.7	-4,182.6	689.3	4,238.5	0.00	0.00	0.00
11,400.0	90.09	180.00	7,274.6	-4,282.6	689.3	4,337.4	0.00	0.00	0.00
11,500.0	90.09	180.00	7,274.4	-4,382.6	689.3	4,436.3	0.00	0.00	0.00
11,600.0	90.09	180.00	7,274.2	-4,482.6	689.3	4,535.2	0.00	0.00	0.00
11,700.0	90.09	180.00	7,274.1	-4,582.6	689.3	4,634.1	0.00	0.00	0.00
11,751.3	90.09	180.00	7,274.0	-4,633.9	689.3	4,684.9	0.00	0.00	0.00
BHL 2144'FNL, 2170'FWL, SEC.31									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,675.9	7,266.1	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
400.0	400.0	0.0	0.0	KOP #1
6,555.9	6,506.3	125.0	689.3	KOP #2
7,871.7	7,280.1	-754.3	689.3	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.30-T4N-R66W

Ram Land 30KO-HZ Pad Sec.30-T4N-R66W

Ram Land 30O-443

Wellbore #1

Plan #1 (6-27-13)

Anticollision Report

08 July, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (6-27-13)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 7/8/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,751.3	Plan #1 (6-27-13) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells						
Bruce 1 (Exist.) - Wellbore #1 - Wellbore #1	10,010.0	7,268.7	164.7	-38.8	0.809	Level 1, CC, ES, SF
Gress No. 23-30 (Exist.) - Wellbore #1 - Wellbore #1	2,211.2	2,181.0	360.5	310.4	7.194	CC
Gress No. 23-30 (Exist.) - Wellbore #1 - Wellbore #1	7,419.5	7,183.4	396.3	235.3	2.461	ES, SF
Gurley 31-24 (Exist.) - Wellbore #1 - Wellbore #1	11,565.6	7,268.3	401.8	169.3	1.728	CC, ES, SF
Lair No. 3 (Exist.) - Wellbore #1 - Wellbore #1	8,946.2	7,267.4	376.8	192.5	2.045	CC, ES, SF
Ram Land 30KO-HZ Pad Sec.30-T4N-R66W						
Ram Land 30K-123 - Wellbore #1 - Plan #1 (6-26-13)	400.0	401.0	30.7	29.1	19.479	CC, ES
Ram Land 30K-123 - Wellbore #1 - Plan #1 (6-26-13)	11,751.3	11,439.2	578.7	422.2	3.698	SF
Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)	400.0	400.0	61.4	59.8	39.013	CC, ES
Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)	11,751.3	11,715.7	999.1	818.0	5.517	SF
Ram Land 30O-303 - Wellbore #1 - Plan #1 (6-27-13)	200.0	200.0	30.9	30.2	45.835	CC, ES
Ram Land 30O-303 - Wellbore #1 - Plan #1 (6-27-13)	11,751.3	11,919.4	363.1	193.6	2.142	SF

Offset Design		Existing Wells - Bruce 1 (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			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				
9,100.0	7,278.2	7,270.2	7,270.2	43.1	145.4	90.50	-2,892.6	524.6	924.8	737.7	187.04	4.944				
9,200.0	7,278.0	7,270.0	7,270.0	44.8	145.4	90.44	-2,892.6	524.6	826.6	637.8	188.81	4.378				
9,300.0	7,277.9	7,269.9	7,269.9	46.5	145.4	90.39	-2,892.6	524.6	728.8	538.3	190.59	3.824				
9,400.0	7,277.7	7,269.7	7,269.7	48.3	145.4	90.33	-2,892.6	524.6	631.8	439.5	192.38	3.284				
9,500.0	7,277.5	7,269.5	7,269.5	50.0	145.4	90.28	-2,892.6	524.6	535.9	341.7	194.18	2.760				
9,600.0	7,277.4	7,269.4	7,269.4	51.8	145.4	90.22	-2,892.6	524.6	441.8	245.8	195.99	2.254				
9,700.0	7,277.2	7,269.2	7,269.2	53.6	145.4	90.17	-2,892.6	524.6	351.0	153.2	197.80	1.775				
9,800.0	7,277.1	7,269.1	7,269.1	55.4	145.4	90.11	-2,892.6	524.6	266.9	67.2	199.63	1.337	Level 3			
9,900.0	7,276.9	7,268.9	7,268.9	57.2	145.4	90.06	-2,892.6	524.6	198.0	-3.4	201.46	0.983	Level 1			
10,000.0	7,276.8	7,268.8	7,268.8	59.0	145.4	90.01	-2,892.6	524.6	165.0	-38.3	203.29	0.812	Level 1			
10,010.0	7,276.7	7,268.7	7,268.7	59.1	145.4	90.00	-2,892.6	524.6	164.7	-38.8	203.47	0.809	Level 1, CC, ES, SF			
10,100.0	7,276.6	7,268.6	7,268.6	60.8	145.4	89.95	-2,892.6	524.6	187.7	-17.5	205.13	0.915	Level 1			
10,200.0	7,276.4	7,268.4	7,268.4	62.6	145.4	89.90	-2,892.6	524.6	251.4	44.5	206.97	1.215	Level 2			
10,300.0	7,276.3	7,268.3	7,268.3	64.4	145.4	89.84	-2,892.6	524.6	333.5	124.7	208.82	1.597				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design				Existing Wells - Bruce 1 (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			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)				
10,400.0	7,276.1	7,268.1	7,268.1	66.3	145.4	89.79	-2,892.6	524.6	423.4	212.7	210.67	2.010			
10,500.0	7,276.0	7,268.0	7,268.0	68.1	145.4	89.73	-2,892.6	524.6	516.9	304.4	212.53	2.432			
10,600.0	7,275.8	7,267.8	7,267.8	69.9	145.4	89.68	-2,892.6	524.6	612.6	398.2	214.38	2.857			
10,700.0	7,275.7	7,267.7	7,267.7	71.8	145.4	89.62	-2,892.6	524.6	709.4	493.1	216.24	3.280			
10,800.0	7,275.5	7,267.5	7,267.5	73.6	145.3	89.57	-2,892.6	524.6	807.0	588.9	218.11	3.700			
10,900.0	7,275.3	7,267.3	7,267.3	75.5	145.3	89.51	-2,892.6	524.6	905.1	685.1	219.97	4.115			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Gress No. 23-30 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	136.92	136.92	-313.3	293.0	429.2				
100.0	100.0	86.0	86.0	0.1	1.7	136.92	136.92	-313.3	293.0	428.9	427.1	1.83	234.058	
200.0	200.0	186.0	186.0	0.3	3.7	136.92	136.92	-313.3	293.0	428.9	424.9	4.06	105.717	
300.0	300.0	286.0	286.0	0.6	5.7	136.92	136.92	-313.3	293.0	428.9	422.6	6.28	68.278	
400.0	400.0	386.0	386.0	0.8	7.7	136.92	136.92	-313.3	293.0	428.9	420.4	8.51	50.422	
500.0	500.0	486.0	486.0	1.0	9.7	57.41	57.41	-313.3	293.0	428.0	417.3	10.72	39.925	
600.0	599.8	585.8	585.8	1.2	11.7	58.05	58.05	-313.3	293.0	425.2	412.3	12.92	32.898	
700.0	699.5	685.5	685.5	1.5	13.7	59.14	59.14	-313.3	293.0	420.6	405.5	15.14	27.791	
800.0	798.7	784.7	784.7	1.7	15.7	60.68	60.68	-313.3	293.0	414.5	397.1	17.36	23.876	
900.0	897.7	883.7	883.7	2.0	17.7	62.46	62.46	-313.3	293.0	407.6	387.9	19.62	20.771	
1,000.0	996.6	982.6	982.6	2.3	19.7	64.28	64.28	-313.3	293.0	401.0	379.1	21.90	18.307	
1,100.0	1,095.5	1,081.5	1,081.5	2.7	21.6	66.16	66.16	-313.3	293.0	394.9	370.7	24.20	16.317	
1,200.0	1,194.5	1,180.5	1,180.5	3.0	23.6	68.09	68.09	-313.3	293.0	389.2	362.7	26.51	14.682	
1,300.0	1,293.4	1,279.4	1,279.4	3.3	25.6	70.08	70.08	-313.3	293.0	384.0	355.1	28.83	13.320	
1,400.0	1,392.4	1,378.4	1,378.4	3.7	27.6	72.12	72.12	-313.3	293.0	379.2	348.1	31.15	12.174	
1,500.0	1,491.3	1,477.3	1,477.3	4.0	29.5	74.21	74.21	-313.3	293.0	375.0	341.5	33.48	11.200	
1,600.0	1,590.3	1,576.3	1,576.3	4.4	31.5	76.34	76.34	-313.3	293.0	371.3	335.4	35.82	10.366	
1,700.0	1,689.2	1,675.2	1,675.2	4.7	33.5	78.51	78.51	-313.3	293.0	368.1	329.9	38.16	9.647	
1,800.0	1,788.2	1,774.2	1,774.2	5.1	35.5	80.71	80.71	-313.3	293.0	365.4	324.9	40.50	9.024	
1,900.0	1,887.1	1,873.1	1,873.1	5.4	37.5	82.94	82.94	-313.3	293.0	363.4	320.5	42.84	8.482	
2,000.0	1,986.0	1,972.0	1,972.0	5.8	39.4	85.20	85.20	-313.3	293.0	361.8	316.7	45.18	8.009	
2,100.0	2,085.0	2,071.0	2,071.0	6.1	41.4	87.47	87.47	-313.3	293.0	360.9	313.4	47.52	7.595	
2,200.0	2,183.9	2,169.9	2,169.9	6.5	43.4	89.74	89.74	-313.3	293.0	360.5	310.7	49.85	7.232	
2,211.2	2,195.0	2,181.0	2,181.0	6.5	43.6	90.00	90.00	-313.3	293.0	360.5	310.4	50.12	7.194 CC	
2,300.0	2,282.9	2,268.9	2,268.9	6.8	45.4	92.02	92.02	-313.3	293.0	360.8	308.6	52.19	6.913	
2,400.0	2,381.8	2,367.8	2,367.8	7.2	47.4	94.29	94.29	-313.3	293.0	361.6	307.1	54.51	6.633	
2,500.0	2,480.8	2,466.8	2,466.8	7.5	49.3	96.55	96.55	-313.3	293.0	363.0	306.1	56.83	6.387	
2,600.0	2,579.7	2,565.7	2,565.7	7.9	51.3	98.79	98.79	-313.3	293.0	364.9	305.8	59.14	6.170	
2,700.0	2,678.6	2,664.6	2,664.6	8.2	53.3	101.00	101.00	-313.3	293.0	367.4	306.0	61.45	5.980	
2,800.0	2,777.6	2,763.6	2,763.6	8.6	55.3	103.18	103.18	-313.3	293.0	370.5	306.8	63.74	5.813	
2,900.0	2,876.5	2,862.5	2,862.5	8.9	57.3	105.32	105.32	-313.3	293.0	374.1	308.1	66.03	5.666	
3,000.0	2,975.5	2,961.5	2,961.5	9.3	59.2	107.42	107.42	-313.3	293.0	378.2	309.9	68.31	5.537	
3,100.0	3,074.4	3,060.4	3,060.4	9.6	61.2	109.47	109.47	-313.3	293.0	382.9	312.3	70.57	5.425	
3,200.0	3,173.4	3,159.4	3,159.4	10.0	63.2	111.47	111.47	-313.3	293.0	388.0	315.1	72.83	5.327	
3,300.0	3,272.3	3,258.3	3,258.3	10.3	65.2	113.41	113.41	-313.3	293.0	393.6	318.5	75.08	5.242	
3,400.0	3,371.3	3,357.3	3,357.3	10.7	67.1	115.30	115.30	-313.3	293.0	399.6	322.3	77.33	5.168	
3,500.0	3,470.2	3,456.2	3,456.2	11.0	69.1	117.14	117.14	-313.3	293.0	406.1	326.5	79.56	5.104	
3,600.0	3,569.1	3,555.1	3,555.1	11.4	71.1	118.91	118.91	-313.3	293.0	412.9	331.1	81.79	5.049	
3,700.0	3,668.1	3,654.1	3,654.1	11.7	73.1	120.63	120.63	-313.3	293.0	420.2	336.2	84.01	5.002	
3,800.0	3,767.0	3,753.0	3,753.0	12.1	75.1	122.29	122.29	-313.3	293.0	427.8	341.6	86.22	4.962	
3,900.0	3,866.0	3,852.0	3,852.0	12.4	77.0	123.89	123.89	-313.3	293.0	435.8	347.3	88.43	4.928	
4,000.0	3,964.9	3,950.9	3,950.9	12.8	79.0	125.43	125.43	-313.3	293.0	444.1	353.4	90.63	4.900	
4,100.0	4,063.9	4,049.9	4,049.9	13.2	81.0	126.91	126.91	-313.3	293.0	452.7	359.9	92.83	4.877	
4,200.0	4,162.8	4,148.8	4,148.8	13.5	83.0	128.34	128.34	-313.3	293.0	461.6	366.6	95.02	4.858	
4,300.0	4,261.8	4,247.8	4,247.8	13.9	85.0	129.72	129.72	-313.3	293.0	470.8	373.6	97.21	4.843	
4,400.0	4,360.7	4,346.7	4,346.7	14.2	86.9	131.04	131.04	-313.3	293.0	480.2	380.8	99.40	4.831	
4,500.0	4,459.6	4,445.6	4,445.6	14.6	88.9	132.31	132.31	-313.3	293.0	489.9	388.3	101.58	4.823	
4,600.0	4,558.6	4,544.6	4,544.6	14.9	90.9	133.53	133.53	-313.3	293.0	499.8	396.1	103.76	4.817	
4,700.0	4,657.5	4,643.5	4,643.5	15.3	92.9	134.71	134.71	-313.3	293.0	510.0	404.0	105.94	4.814	
4,800.0	4,756.5	4,742.5	4,742.5	15.6	94.8	135.84	135.84	-313.3	293.0	520.3	412.2	108.12	4.813	
4,900.0	4,855.4	4,841.4	4,841.4	16.0	96.8	136.92	136.92	-313.3	293.0	530.9	420.6	110.29	4.813	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Gress No. 23-30 (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		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		
5,000.0	4,954.4	4,940.4	4,940.4	16.3	98.8	137.96	-313.3	293.0	541.6	429.1	112.46	4.816		
5,100.0	5,053.3	5,039.3	5,039.3	16.7	100.8	138.96	-313.3	293.0	552.5	437.9	114.64	4.820		
5,200.0	5,152.3	5,138.3	5,138.3	17.0	102.8	139.93	-313.3	293.0	563.6	446.8	116.81	4.825		
5,300.0	5,251.3	5,237.3	5,237.3	17.4	104.7	140.89	-313.3	293.0	574.2	455.0	119.15	4.819		
5,400.0	5,350.8	5,336.8	5,336.8	17.6	106.7	141.64	-313.3	293.0	582.3	460.9	121.48	4.794		
5,500.0	5,450.5	5,436.5	5,436.5	17.8	108.7	142.13	-313.3	293.0	587.8	464.1	123.75	4.750		
5,600.0	5,550.4	5,536.4	5,536.4	17.9	110.7	142.37	-313.3	293.0	590.6	464.6	125.95	4.689		
5,700.0	5,650.4	5,636.4	5,636.4	18.1	112.7	-137.88	-313.3	293.0	590.9	462.8	128.10	4.613		
5,800.0	5,750.4	5,736.4	5,736.4	18.2	114.7	-137.88	-313.3	293.0	590.9	460.6	130.27	4.536		
5,900.0	5,850.4	5,836.4	5,836.4	18.4	116.7	-137.88	-313.3	293.0	590.9	458.5	132.44	4.462		
6,000.0	5,950.4	5,936.4	5,936.4	18.5	118.7	-137.88	-313.3	293.0	590.9	456.3	134.61	4.390		
6,100.0	6,050.4	6,036.4	6,036.4	18.7	120.7	-137.88	-313.3	293.0	590.9	454.1	136.78	4.320		
6,200.0	6,150.4	6,136.4	6,136.4	18.8	122.7	-137.88	-313.3	293.0	590.9	452.0	138.95	4.253		
6,300.0	6,250.4	6,236.4	6,236.4	19.0	124.7	-137.88	-313.3	293.0	590.9	449.8	141.13	4.187		
6,400.0	6,350.4	6,336.4	6,336.4	19.1	126.7	-137.88	-313.3	293.0	590.9	447.6	143.30	4.123		
6,500.0	6,450.4	6,436.4	6,436.4	19.3	128.7	-137.88	-313.3	293.0	590.9	445.4	145.48	4.062		
6,600.0	6,550.4	6,536.4	6,536.4	19.4	130.7	42.25	-313.3	293.0	590.0	442.5	147.47	4.001		
6,700.0	6,649.6	6,635.6	6,635.6	19.5	132.7	43.53	-313.3	293.0	580.9	432.7	148.19	3.920		
6,800.0	6,746.3	6,732.3	6,732.3	19.6	134.6	46.25	-313.3	293.0	562.8	415.0	147.83	3.807		
6,900.0	6,838.9	6,824.9	6,824.9	19.7	136.5	50.56	-313.3	293.0	536.8	389.6	147.18	3.647		
7,000.0	6,925.8	6,911.8	6,911.8	19.8	138.2	56.59	-313.3	293.0	504.9	357.4	147.47	3.424		
7,100.0	7,005.6	6,991.6	6,991.6	20.0	139.8	64.25	-313.3	293.0	470.0	320.2	149.74	3.138		
7,200.0	7,076.8	7,062.8	7,062.8	20.2	141.3	72.97	-313.3	293.0	436.3	282.5	153.81	2.837		
7,300.0	7,138.2	7,124.2	7,124.2	20.4	142.5	81.64	-313.3	293.0	409.6	251.7	157.97	2.593		
7,400.0	7,188.9	7,174.9	7,174.9	20.8	143.5	88.86	-313.3	293.0	396.7	236.0	160.66	2.469		
7,419.5	7,197.4	7,183.4	7,183.4	20.9	143.7	90.00	-313.3	293.0	396.3	235.3	161.01	2.461 ES, SF		
7,500.0	7,227.8	7,213.8	7,213.8	21.3	144.3	93.54	-313.3	293.0	403.3	241.3	161.99	2.489		
7,600.0	7,254.4	7,240.4	7,240.4	22.0	144.8	94.99	-313.3	293.0	431.6	268.4	163.18	2.645		
7,700.0	7,268.6	7,254.6	7,254.6	22.9	145.1	94.07	-313.3	293.0	479.4	314.7	164.71	2.911		
7,800.0	7,278.0	7,264.0	7,264.0	23.8	145.3	93.25	-313.3	293.0	541.7	375.5	166.20	3.260		
7,900.0	7,280.0	7,266.0	7,266.0	24.9	145.3	89.89	-313.3	293.0	614.2	446.6	167.66	3.664		
8,000.0	7,279.9	7,265.9	7,265.9	26.1	145.3	89.87	-313.3	293.0	693.7	524.6	169.01	4.104		
8,100.0	7,279.7	7,265.7	7,265.7	27.4	145.3	89.85	-313.3	293.0	777.8	607.4	170.43	4.564		
8,200.0	7,279.6	7,265.6	7,265.6	28.8	145.3	89.83	-313.3	293.0	865.4	693.5	171.91	5.034		
8,300.0	7,279.4	7,265.4	7,265.4	30.2	145.3	89.80	-313.3	293.0	955.4	781.9	173.45	5.508		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Gurley 31-24 (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		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		
10,700.0	7,275.7	7,269.7	7,269.7	71.8	145.4	90.19	-4,448.2	287.4	954.3	738.0	216.31	4.412		
10,800.0	7,275.5	7,269.5	7,269.5	73.6	145.4	90.17	-4,448.2	287.4	864.6	646.5	218.18	3.963		
10,900.0	7,275.3	7,269.3	7,269.3	75.5	145.4	90.15	-4,448.2	287.4	777.5	557.4	220.04	3.533		
11,000.0	7,275.2	7,269.2	7,269.2	77.3	145.4	90.13	-4,448.2	287.4	693.8	471.9	221.91	3.126		
11,100.0	7,275.0	7,269.0	7,269.0	79.2	145.4	90.10	-4,448.2	287.4	615.0	391.2	223.79	2.748		
11,200.0	7,274.9	7,268.9	7,268.9	81.0	145.4	90.08	-4,448.2	287.4	543.3	317.6	225.66	2.407		
11,300.0	7,274.7	7,268.7	7,268.7	82.9	145.4	90.06	-4,448.2	287.4	481.7	254.1	227.54	2.117		
11,400.0	7,274.6	7,268.6	7,268.6	84.8	145.4	90.04	-4,448.2	287.4	434.6	205.2	229.42	1.894		
11,500.0	7,274.4	7,268.4	7,268.4	86.6	145.4	90.01	-4,448.2	287.4	407.2	175.9	231.30	1.760		
11,565.6	7,274.3	7,268.3	7,268.3	87.9	145.4	90.00	-4,448.2	287.4	401.8	169.3	232.53	1.728 CC, ES, SF		
11,600.0	7,274.2	7,268.2	7,268.2	88.5	145.4	89.99	-4,448.2	287.4	403.3	170.1	233.18	1.730		
11,700.0	7,274.1	7,268.1	7,268.1	90.4	145.4	89.97	-4,448.2	287.4	423.7	188.7	235.06	1.803		
11,751.3	7,274.0	7,268.0	7,268.0	91.4	145.4	89.96	-4,448.2	287.4	442.7	206.7	236.03	1.876		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design													Existing Wells - Lair No. 3 (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		Distance											
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
8,100.0	7,279.7	7,268.7	7,268.7	27.4	145.4	90.20	-1,828.8	312.5	926.3	755.8	170.50	5.433			
8,200.0	7,279.6	7,268.6	7,268.6	28.8	145.4	90.18	-1,828.8	312.5	835.9	664.0	171.99	4.861			
8,300.0	7,279.4	7,268.4	7,268.4	30.2	145.4	90.15	-1,828.8	312.5	748.0	574.5	173.52	4.311			
8,400.0	7,279.3	7,268.3	7,268.3	31.7	145.4	90.13	-1,828.8	312.5	663.6	488.5	175.10	3.790			
8,500.0	7,279.1	7,268.1	7,268.1	33.2	145.4	90.11	-1,828.8	312.5	584.0	407.3	176.72	3.305			
8,600.0	7,279.0	7,268.0	7,268.0	34.8	145.4	90.08	-1,828.8	312.5	511.7	333.3	178.37	2.869			
8,700.0	7,278.8	7,267.8	7,267.8	36.4	145.4	90.06	-1,828.8	312.5	450.1	270.0	180.05	2.500			
8,800.0	7,278.6	7,267.6	7,267.6	38.0	145.4	90.03	-1,828.8	312.5	404.1	222.4	181.75	2.224			
8,900.0	7,278.5	7,267.5	7,267.5	39.7	145.3	90.01	-1,828.8	312.5	379.6	196.1	183.47	2.069			
8,946.2	7,278.4	7,267.4	7,267.4	40.5	145.3	90.00	-1,828.8	312.5	376.8	192.5	184.27	2.045 CC, ES, SF			
9,000.0	7,278.3	7,267.3	7,267.3	41.4	145.3	89.99	-1,828.8	312.5	380.6	195.4	185.21	2.055			
9,100.0	7,278.2	7,267.2	7,267.2	43.1	145.3	89.96	-1,828.8	312.5	406.9	220.0	186.96	2.177			
9,200.0	7,278.0	7,267.0	7,267.0	44.8	145.3	89.94	-1,828.8	312.5	454.3	265.5	188.73	2.407			
9,300.0	7,277.9	7,266.9	7,266.9	46.5	145.3	89.92	-1,828.8	312.5	516.8	326.3	190.51	2.713			
9,400.0	7,277.7	7,266.7	7,266.7	48.3	145.3	89.89	-1,828.8	312.5	589.8	397.5	192.30	3.067			
9,500.0	7,277.5	7,266.5	7,266.5	50.0	145.3	89.87	-1,828.8	312.5	669.8	475.7	194.11	3.451			
9,600.0	7,277.4	7,266.4	7,266.4	51.8	145.3	89.84	-1,828.8	312.5	754.6	558.7	195.91	3.852			
9,700.0	7,277.2	7,266.2	7,266.2	53.6	145.3	89.82	-1,828.8	312.5	842.7	645.0	197.73	4.262			
9,800.0	7,277.1	7,266.1	7,266.1	55.4	145.3	89.80	-1,828.8	312.5	933.2	733.7	199.55	4.677			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-90.01	-90.01	0.0	-30.7	30.7	30.7	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.01	-90.01	0.0	-30.7	30.7	30.5	0.23	135.193	
200.0	200.0	201.0	201.0	0.3	0.3	-90.01	-90.01	0.0	-30.7	30.7	30.0	0.68	45.364	
300.0	300.0	301.0	301.0	0.6	0.6	-90.01	-90.01	0.0	-30.7	30.7	29.6	1.13	27.255	
400.0	400.0	401.0	401.0	0.8	0.8	-90.01	-90.01	0.0	-30.7	30.7	29.1	1.58	19.479 CC, ES	
500.0	500.0	501.0	501.0	1.0	1.0	-170.27	-170.27	0.0	-30.7	32.4	30.4	2.02	16.062	
600.0	599.8	600.8	600.8	1.2	1.2	-171.61	-171.61	0.0	-30.7	37.6	35.1	2.46	15.294	
700.0	699.5	700.5	700.5	1.5	1.5	-173.16	-173.16	0.0	-30.7	46.2	43.3	2.90	15.934	
800.0	798.7	799.7	799.7	1.7	1.7	-174.56	-174.56	0.0	-30.7	58.3	55.0	3.35	17.434	
900.0	897.7	898.7	898.7	2.0	1.9	-175.64	-175.64	0.0	-30.7	72.7	68.9	3.79	19.180	
1,000.0	996.6	997.6	997.6	2.3	2.1	-176.36	-176.36	0.0	-30.7	87.2	82.9	4.24	20.553	
1,100.0	1,095.5	1,096.5	1,096.5	2.7	2.4	-176.88	-176.88	0.0	-30.7	101.7	97.0	4.70	21.648	
1,200.0	1,194.5	1,195.5	1,195.5	3.0	2.6	-177.27	-177.27	0.0	-30.7	116.1	111.0	5.15	22.541	
1,300.0	1,293.4	1,294.4	1,294.4	3.3	2.8	-177.57	-177.57	0.0	-30.7	130.6	125.0	5.61	23.281	
1,400.0	1,392.4	1,393.4	1,393.4	3.7	3.0	-177.82	-177.82	0.0	-30.7	145.1	139.0	6.07	23.904	
1,500.0	1,491.3	1,492.3	1,492.3	4.0	3.2	-178.01	-178.01	0.0	-30.7	159.6	153.0	6.53	24.436	
1,600.0	1,590.3	1,591.3	1,591.3	4.4	3.5	-178.18	-178.18	0.0	-30.7	174.1	167.1	6.99	24.894	
1,700.0	1,689.2	1,690.2	1,690.2	4.7	3.7	-178.32	-178.32	0.0	-30.7	188.5	181.1	7.45	25.293	
1,800.0	1,788.2	1,789.2	1,789.2	5.1	3.9	-178.44	-178.44	0.0	-30.7	203.0	195.1	7.92	25.643	
1,900.0	1,887.1	1,888.1	1,888.1	5.4	4.1	-178.54	-178.54	0.0	-30.7	217.5	209.1	8.38	25.954	
2,000.0	1,986.0	1,987.0	1,987.0	5.8	4.4	-178.63	-178.63	0.0	-30.7	232.0	223.2	8.84	26.230	
2,100.0	2,085.0	2,093.5	2,093.5	6.1	4.6	-178.60	-178.60	0.7	-29.4	245.2	235.9	9.32	26.315	
2,200.0	2,183.9	2,202.0	2,201.8	6.5	4.8	-178.26	-178.26	3.4	-24.4	254.8	245.1	9.78	26.047	
2,300.0	2,282.9	2,307.7	2,307.1	6.8	5.1	-177.67	-177.67	7.8	-16.4	261.2	251.0	10.25	25.484	
2,400.0	2,381.8	2,407.5	2,406.5	7.2	5.3	-177.07	-177.07	12.4	-8.0	266.8	256.1	10.71	24.918	
2,500.0	2,480.8	2,507.3	2,505.8	7.5	5.5	-176.50	-176.50	16.9	0.3	272.5	261.3	11.17	24.395	
2,600.0	2,579.7	2,607.1	2,605.2	7.9	5.7	-175.95	-175.95	21.5	8.6	278.2	266.5	11.63	23.910	
2,700.0	2,678.6	2,706.9	2,704.5	8.2	6.0	-175.43	-175.43	26.0	17.0	283.9	271.8	12.10	23.459	
2,800.0	2,777.6	2,806.7	2,803.9	8.6	6.2	-174.92	-174.92	30.6	25.3	289.6	277.0	12.57	23.038	
2,900.0	2,876.5	2,906.5	2,903.2	8.9	6.5	-174.44	-174.44	35.1	33.6	295.3	282.3	13.04	22.646	
3,000.0	2,975.5	3,006.3	3,002.6	9.3	6.7	-173.97	-173.97	39.7	42.0	301.1	287.6	13.51	22.279	
3,100.0	3,074.4	3,106.1	3,101.9	9.6	7.0	-173.52	-173.52	44.2	50.3	306.9	292.9	13.99	21.934	
3,200.0	3,173.4	3,205.9	3,201.3	10.0	7.2	-173.09	-173.09	48.8	58.6	312.7	298.2	14.47	21.611	
3,300.0	3,272.3	3,305.8	3,300.7	10.3	7.5	-172.67	-172.67	53.4	67.0	318.5	303.5	14.95	21.307	
3,400.0	3,371.3	3,405.6	3,400.0	10.7	7.8	-172.27	-172.27	57.9	75.3	324.3	308.9	15.43	21.020	
3,500.0	3,470.2	3,505.4	3,499.4	11.0	8.0	-171.88	-171.88	62.5	83.7	330.2	314.3	15.91	20.750	
3,600.0	3,569.1	3,605.2	3,598.7	11.4	8.3	-171.51	-171.51	67.0	92.0	336.0	319.7	16.40	20.494	
3,700.0	3,668.1	3,705.0	3,698.1	11.7	8.5	-171.15	-171.15	71.6	100.3	341.9	325.0	16.88	20.252	
3,800.0	3,767.0	3,804.8	3,797.4	12.1	8.8	-170.80	-170.80	76.1	108.7	347.8	330.4	17.37	20.022	
3,900.0	3,866.0	3,904.6	3,896.8	12.4	9.1	-170.46	-170.46	80.7	117.0	353.7	335.9	17.86	19.805	
4,000.0	3,964.9	4,004.4	3,996.1	12.8	9.3	-170.14	-170.14	85.2	125.3	359.6	341.3	18.35	19.598	
4,100.0	4,063.9	4,104.2	4,095.5	13.2	9.6	-169.82	-169.82	89.8	133.7	365.6	346.7	18.84	19.401	
4,200.0	4,162.8	4,204.0	4,194.8	13.5	9.9	-169.51	-169.51	94.3	142.0	371.5	352.2	19.34	19.213	
4,300.0	4,261.8	4,303.8	4,294.2	13.9	10.2	-169.22	-169.22	98.9	150.3	377.5	357.6	19.83	19.034	
4,400.0	4,360.7	4,403.6	4,393.5	14.2	10.4	-168.93	-168.93	103.5	158.7	383.4	363.1	20.33	18.863	
4,500.0	4,459.6	4,503.4	4,492.9	14.6	10.7	-168.65	-168.65	108.0	167.0	389.4	368.6	20.82	18.700	
4,600.0	4,558.6	4,603.2	4,592.2	14.9	11.0	-168.38	-168.38	112.6	175.4	395.4	374.0	21.32	18.544	
4,700.0	4,657.5	4,703.0	4,691.6	15.3	11.2	-168.12	-168.12	117.1	183.7	401.4	379.5	21.82	18.394	
4,800.0	4,756.5	4,795.8	4,784.0	15.6	11.5	-167.93	-167.93	121.1	191.0	407.9	385.6	22.29	18.302	
4,900.0	4,855.4	4,884.4	4,872.4	16.0	11.7	-167.93	-167.93	123.6	195.6	416.9	394.2	22.71	18.362	
5,000.0	4,954.4	4,972.5	4,960.5	16.3	11.8	-168.11	-168.11	124.9	197.9	428.6	405.5	23.11	18.547	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	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		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
5,100.0	5,053.3	5,066.3	5,054.3	16.7	12.0	-168.46	125.0	198.1	442.5	419.0	23.52	18.814		
5,200.0	5,152.3	5,165.3	5,153.3	17.0	12.2	-168.82	125.0	198.1	456.8	432.8	23.96	19.064		
5,300.0	5,251.3	5,264.3	5,252.3	17.4	12.4	-169.18	125.0	198.1	470.2	445.8	24.41	19.267		
5,400.0	5,350.8	5,363.8	5,351.8	17.6	12.6	-169.45	125.0	198.1	480.5	455.7	24.81	19.369		
5,500.0	5,450.5	5,463.5	5,451.5	17.8	12.8	-169.63	125.0	198.1	487.3	462.1	25.18	19.353		
5,600.0	5,550.4	5,563.5	5,551.4	17.9	13.0	-169.71	125.0	198.1	490.7	465.2	25.52	19.227		
5,700.0	5,650.4	5,663.5	5,651.4	18.1	13.2	-90.00	125.0	198.1	491.2	465.3	25.89	18.973		
5,800.0	5,750.4	5,763.5	5,751.4	18.2	13.4	-90.00	125.0	198.1	491.2	464.9	26.29	18.682		
5,900.0	5,850.4	5,863.5	5,851.4	18.4	13.6	-90.00	125.0	198.1	491.2	464.5	26.70	18.399		
6,000.0	5,950.4	5,963.5	5,951.4	18.5	13.8	-90.00	125.0	198.1	491.2	464.1	27.10	18.123		
6,100.0	6,050.4	6,063.5	6,051.4	18.7	14.0	-90.00	125.0	198.1	491.2	463.7	27.51	17.855		
6,200.0	6,150.4	6,163.5	6,151.4	18.8	14.2	-90.00	125.0	198.1	491.2	463.2	27.92	17.593		
6,263.5	6,214.0	6,227.0	6,215.0	18.9	14.4	-90.00	125.0	198.1	491.2	463.0	28.18	17.431		
6,300.0	6,250.4	6,263.5	6,251.4	19.0	14.4	-90.02	124.8	198.1	491.2	462.8	28.32	17.344		
6,312.9	6,263.3	6,276.3	6,264.3	19.0	14.5	-90.07	124.4	198.1	491.2	462.8	28.36	17.317		
6,400.0	6,350.4	6,362.6	6,350.1	19.1	14.6	-91.03	116.2	198.1	491.2	462.6	28.63	17.159		
6,500.0	6,450.4	6,457.9	6,443.2	19.3	14.7	-93.39	95.9	198.1	492.1	463.2	28.88	17.038		
6,600.0	6,550.4	6,547.4	6,527.6	19.4	14.8	83.20	66.5	198.1	495.1	465.9	29.12	17.001		
6,700.0	6,649.6	6,633.3	6,604.9	19.5	14.9	79.68	29.1	198.1	500.1	470.8	29.36	17.033		
6,800.0	6,746.3	6,716.6	6,675.5	19.6	15.0	76.38	-15.2	198.1	506.7	477.0	29.63	17.098		
6,900.0	6,838.9	6,800.0	6,740.8	19.7	15.2	73.29	-67.0	198.1	514.3	484.3	29.95	17.173		
7,000.0	6,925.8	6,877.4	6,796.0	19.8	15.3	70.63	-121.1	198.1	522.4	492.2	30.26	17.265		
7,100.0	7,005.6	6,955.4	6,845.8	20.0	15.6	68.23	-181.1	198.1	530.6	500.1	30.58	17.353		
7,200.0	7,076.8	7,032.1	6,888.7	20.2	16.0	66.17	-244.7	198.1	538.5	507.6	30.91	17.419		
7,300.0	7,138.2	7,107.9	6,924.5	20.4	16.4	64.45	-311.5	198.1	545.6	514.4	31.28	17.443		
7,400.0	7,188.9	7,183.0	6,953.3	20.8	17.0	63.07	-380.7	198.1	551.7	520.0	31.73	17.390		
7,500.0	7,227.8	7,257.4	6,975.0	21.3	17.7	62.04	-451.9	198.1	556.6	524.3	32.30	17.232		
7,600.0	7,254.4	7,331.4	6,989.6	22.0	18.5	61.34	-524.4	198.1	559.9	526.9	33.05	16.941		
7,700.0	7,268.6	7,400.0	6,996.9	22.9	19.2	61.00	-592.6	198.1	561.9	527.8	34.12	16.469		
7,800.0	7,278.0	7,488.0	6,998.0	23.8	20.3	60.28	-680.6	198.1	565.9	530.2	35.68	15.860		
7,900.0	7,280.0	7,587.9	6,997.2	24.9	21.6	59.98	-780.5	198.1	567.3	529.7	37.53	15.116		
8,000.0	7,279.9	7,687.9	6,996.5	26.1	23.0	59.93	-880.5	198.1	567.6	527.6	39.92	14.218		
8,100.0	7,279.7	7,787.9	6,995.8	27.4	24.4	59.88	-980.5	198.1	567.8	525.4	42.44	13.380		
8,200.0	7,279.6	7,887.9	6,995.0	28.8	26.0	59.83	-1,080.5	198.1	568.1	523.1	45.07	12.604		
8,300.0	7,279.4	7,987.9	6,994.3	30.2	27.5	59.78	-1,180.5	198.1	568.4	520.6	47.80	11.891		
8,400.0	7,279.3	8,087.9	6,993.6	31.7	29.1	59.73	-1,280.5	198.1	568.7	518.1	50.60	11.238		
8,500.0	7,279.1	8,187.9	6,992.8	33.2	30.8	59.68	-1,380.5	198.1	569.0	515.5	53.47	10.641		
8,600.0	7,279.0	8,287.9	6,992.1	34.8	32.5	59.63	-1,480.5	198.1	569.3	512.9	56.39	10.095		
8,700.0	7,278.8	8,387.9	6,991.4	36.4	34.2	59.58	-1,580.5	198.1	569.6	510.2	59.36	9.596		
8,800.0	7,278.6	8,487.9	6,990.7	38.0	35.9	59.53	-1,680.5	198.1	569.9	507.5	62.36	9.138		
8,900.0	7,278.5	8,587.9	6,989.9	39.7	37.6	59.48	-1,780.5	198.1	570.2	504.8	65.40	8.718		
9,000.0	7,278.3	8,687.9	6,989.2	41.4	39.4	59.43	-1,880.5	198.1	570.5	502.0	68.47	8.332		
9,100.0	7,278.2	8,787.9	6,988.5	43.1	41.2	59.38	-1,980.5	198.1	570.7	499.2	71.55	7.976		
9,200.0	7,278.0	8,887.9	6,987.7	44.8	43.0	59.33	-2,080.4	198.1	571.0	496.4	74.66	7.648		
9,300.0	7,277.9	8,987.9	6,987.0	46.5	44.8	59.28	-2,180.4	198.1	571.3	493.5	77.79	7.344		
9,400.0	7,277.7	9,087.9	6,986.3	48.3	46.6	59.23	-2,280.4	198.1	571.6	490.7	80.93	7.063		
9,500.0	7,277.5	9,187.9	6,985.5	50.0	48.4	59.18	-2,380.4	198.1	571.9	487.8	84.09	6.801		
9,600.0	7,277.4	9,287.9	6,984.8	51.8	50.2	59.13	-2,480.4	198.1	572.2	485.0	87.26	6.558		
9,700.0	7,277.2	9,387.9	6,984.1	53.6	52.0	59.08	-2,580.4	198.1	572.5	482.1	90.44	6.331		
9,800.0	7,277.1	9,487.9	6,983.3	55.4	53.9	59.03	-2,680.4	198.1	572.8	479.2	93.62	6.118		
9,900.0	7,276.9	9,587.9	6,982.6	57.2	55.7	58.98	-2,780.4	198.1	573.1	476.3	96.82	5.920		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	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
10,000.0	7,276.8	9,687.9	6,981.9	59.0	57.6	58.93	-2,880.4	198.1	573.4	473.4	100.02	5.733	
10,100.0	7,276.6	9,787.9	6,981.1	60.8	59.4	58.88	-2,980.4	198.1	573.7	470.5	103.22	5.558	
10,200.0	7,276.4	9,887.9	6,980.4	62.6	61.3	58.83	-3,080.4	198.1	574.0	467.6	106.43	5.393	
10,300.0	7,276.3	9,987.9	6,979.7	64.4	63.1	58.78	-3,180.4	198.1	574.3	464.6	109.65	5.238	
10,400.0	7,276.1	10,087.9	6,978.9	66.3	65.0	58.74	-3,280.4	198.1	574.6	461.7	112.87	5.091	
10,500.0	7,276.0	10,187.9	6,978.2	68.1	66.9	58.69	-3,380.4	198.1	574.9	458.8	116.09	4.952	
10,600.0	7,275.8	10,287.9	6,977.5	69.9	68.7	58.64	-3,480.4	198.1	575.2	455.9	119.31	4.821	
10,700.0	7,275.7	10,387.9	6,976.7	71.8	70.6	58.59	-3,580.4	198.1	575.5	453.0	122.54	4.696	
10,800.0	7,275.5	10,487.9	6,976.0	73.6	72.5	58.54	-3,680.4	198.1	575.8	450.0	125.76	4.578	
10,900.0	7,275.3	10,587.9	6,975.3	75.5	74.4	58.49	-3,780.4	198.1	576.1	447.1	128.99	4.466	
11,000.0	7,275.2	10,687.9	6,974.5	77.3	76.2	58.44	-3,880.4	198.1	576.4	444.2	132.22	4.359	
11,100.0	7,275.0	10,787.9	6,973.8	79.2	78.1	58.39	-3,980.4	198.1	576.7	441.2	135.45	4.257	
11,200.0	7,274.9	10,887.8	6,973.1	81.0	80.0	58.34	-4,080.4	198.1	577.0	438.3	138.69	4.160	
11,300.0	7,274.7	10,987.8	6,972.3	82.9	81.9	58.30	-4,180.4	198.1	577.3	435.4	141.92	4.068	
11,400.0	7,274.6	11,087.8	6,971.6	84.8	83.8	58.25	-4,280.4	198.1	577.6	432.4	145.15	3.979	
11,500.0	7,274.4	11,187.8	6,970.9	86.6	85.7	58.20	-4,380.3	198.1	577.9	429.5	148.38	3.895	
11,600.0	7,274.2	11,287.8	6,970.1	88.5	87.5	58.15	-4,480.3	198.1	578.2	426.6	151.61	3.814	
11,700.0	7,274.1	11,387.8	6,969.4	90.4	89.4	58.10	-4,580.3	198.1	578.5	423.7	154.84	3.736	
11,751.3	7,274.0	11,439.2	6,969.0	91.4	90.4	58.08	-4,631.7	198.1	578.7	422.2	156.50	3.698 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Ram Land 30KO-HZ Pad Sec.30-T4N-R66W - Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-61.4	61.4				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-61.4	61.4	61.2	0.22	273.091	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-61.4	61.4	60.7	0.67	91.030	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-61.4	61.4	60.3	1.12	54.618	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-61.4	61.4	59.8	1.57	39.013 CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	-170.00	0.0	-61.4	63.1	61.1	2.02	31.307	
600.0	599.8	599.8	599.8	1.2	1.2	-170.75	0.0	-61.4	68.3	65.8	2.45	27.807	
700.0	699.5	699.5	699.5	1.5	1.5	-171.77	0.0	-61.4	76.9	74.0	2.90	26.524	
800.0	798.7	798.7	798.7	1.7	1.7	-172.86	0.0	-61.4	89.0	85.6	3.34	26.602	
900.0	897.7	897.7	897.7	2.0	1.9	-173.85	0.0	-61.4	103.3	99.5	3.79	27.258	
1,000.0	996.6	996.6	996.6	2.3	2.1	-174.61	0.0	-61.4	117.7	113.5	4.24	27.764	
1,100.0	1,095.5	1,091.9	1,091.9	2.7	2.3	-174.84	0.7	-62.7	133.5	128.8	4.68	28.499	
1,200.0	1,194.5	1,186.2	1,186.1	3.0	2.5	-174.38	2.7	-66.8	152.0	146.8	5.13	29.645	
1,300.0	1,293.4	1,279.3	1,278.9	3.3	2.8	-173.49	6.1	-73.5	173.2	167.7	5.57	31.089	
1,400.0	1,392.4	1,375.9	1,374.9	3.7	3.0	-172.46	10.5	-82.3	196.3	190.3	6.03	32.571	
1,500.0	1,491.3	1,473.1	1,471.6	4.0	3.2	-171.64	15.0	-91.2	219.4	213.0	6.48	33.862	
1,600.0	1,590.3	1,570.3	1,568.4	4.4	3.5	-170.98	19.5	-100.1	242.6	235.7	6.94	34.968	
1,700.0	1,689.2	1,667.6	1,665.1	4.7	3.7	-170.43	23.9	-108.9	265.8	258.4	7.40	35.925	
1,800.0	1,788.2	1,764.8	1,761.9	5.1	4.0	-169.97	28.4	-117.8	289.0	281.2	7.86	36.759	
1,900.0	1,887.1	1,862.1	1,858.6	5.4	4.2	-169.58	32.9	-126.7	312.3	303.9	8.33	37.483	
2,000.0	1,986.0	1,959.3	1,955.3	5.8	4.5	-169.24	37.3	-135.6	335.5	326.7	8.80	38.134	
2,100.0	2,085.0	2,056.6	2,052.1	6.1	4.8	-168.94	41.8	-144.5	358.8	349.5	9.27	38.709	
2,200.0	2,183.9	2,153.8	2,148.8	6.5	5.0	-168.69	46.3	-153.3	382.0	372.3	9.74	39.224	
2,300.0	2,282.9	2,251.0	2,245.5	6.8	5.3	-168.46	50.7	-162.2	405.3	395.1	10.21	39.687	
2,400.0	2,381.8	2,348.3	2,342.3	7.2	5.6	-168.25	55.2	-171.1	428.6	417.9	10.69	40.105	
2,500.0	2,480.8	2,445.5	2,439.0	7.5	5.9	-168.07	59.7	-180.0	451.8	440.7	11.16	40.485	
2,600.0	2,579.7	2,542.8	2,535.7	7.9	6.1	-167.91	64.1	-188.8	475.1	463.5	11.64	40.831	
2,700.0	2,678.6	2,640.0	2,632.5	8.2	6.4	-167.76	68.6	-197.7	498.4	486.3	12.11	41.148	
2,800.0	2,777.6	2,737.3	2,729.2	8.6	6.7	-167.62	73.1	-206.6	521.7	509.1	12.59	41.439	
2,900.0	2,876.5	2,834.5	2,825.9	8.9	7.0	-167.50	77.5	-215.5	545.0	531.9	13.07	41.707	
3,000.0	2,975.5	2,931.8	2,922.7	9.3	7.2	-167.38	82.0	-224.3	568.3	554.7	13.55	41.954	
3,100.0	3,074.4	3,029.0	3,019.4	9.6	7.5	-167.28	86.5	-233.2	591.6	577.5	14.02	42.184	
3,200.0	3,173.4	3,126.2	3,116.1	10.0	7.8	-167.18	91.0	-242.1	614.9	600.4	14.50	42.397	
3,300.0	3,272.3	3,223.5	3,212.9	10.3	8.1	-167.09	95.4	-251.0	638.2	623.2	14.98	42.595	
3,400.0	3,371.3	3,320.7	3,309.6	10.7	8.4	-167.00	99.9	-259.9	661.5	646.0	15.46	42.780	
3,500.0	3,470.2	3,418.0	3,406.3	11.0	8.7	-166.93	104.4	-268.7	684.8	668.8	15.94	42.953	
3,600.0	3,569.1	3,515.2	3,503.1	11.4	8.9	-166.85	108.8	-277.6	708.1	691.6	16.42	43.116	
3,700.0	3,668.1	3,612.5	3,599.8	11.7	9.2	-166.78	113.3	-286.5	731.4	714.5	16.90	43.268	
3,800.0	3,767.0	3,709.7	3,696.5	12.1	9.5	-166.72	117.8	-295.4	754.7	737.3	17.38	43.412	
3,900.0	3,866.0	3,835.5	3,821.8	12.4	9.8	-166.71	122.5	-304.8	776.4	758.5	17.89	43.397	
4,000.0	3,964.9	3,966.8	3,953.0	12.8	10.0	-166.88	124.8	-309.4	794.1	775.7	18.37	43.223	
4,100.0	4,063.9	4,077.6	4,063.9	13.2	10.2	-167.13	125.0	-309.7	808.5	789.6	18.82	42.955	
4,200.0	4,162.8	4,176.5	4,162.8	13.5	10.4	-167.36	125.0	-309.7	822.6	803.3	19.27	42.689	
4,300.0	4,261.8	4,275.5	4,261.8	13.9	10.6	-167.57	125.0	-309.7	836.7	817.0	19.72	42.427	
4,400.0	4,360.7	4,374.4	4,360.7	14.2	10.8	-167.78	125.0	-309.7	850.9	830.7	20.18	42.177	
4,500.0	4,459.6	4,473.4	4,459.6	14.6	11.0	-167.99	125.0	-309.7	865.1	844.5	20.63	41.937	
4,600.0	4,558.6	4,572.3	4,558.6	14.9	11.2	-168.18	125.0	-309.7	879.3	858.2	21.08	41.706	
4,700.0	4,657.5	4,671.3	4,657.5	15.3	11.4	-168.37	125.0	-309.7	893.5	871.9	21.54	41.485	
4,800.0	4,756.5	4,770.2	4,756.5	15.6	11.5	-168.56	125.0	-309.7	907.7	885.7	21.99	41.273	
4,900.0	4,855.4	4,869.2	4,855.4	16.0	11.7	-168.73	125.0	-309.7	921.9	899.4	22.45	41.069	
5,000.0	4,954.4	4,968.1	4,954.4	16.3	11.9	-168.91	125.0	-309.7	936.1	913.2	22.90	40.873	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	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
5,100.0	5,053.3	5,067.0	5,053.3	16.7	12.1	-169.08	125.0	-309.7	950.3	927.0	23.36	40.684	
5,200.0	5,152.3	5,166.0	5,152.3	17.0	12.3	-169.24	125.0	-309.7	964.6	940.8	23.82	40.502	
5,300.0	5,251.3	5,265.0	5,251.3	17.4	12.5	-169.42	125.0	-309.7	978.1	953.8	24.29	40.259	
5,400.0	5,350.8	5,364.5	5,350.8	17.6	12.7	-169.57	125.0	-309.7	988.3	963.6	24.74	39.956	
5,500.0	5,450.5	5,464.2	5,450.5	17.8	12.9	-169.67	125.0	-309.7	995.2	970.0	25.14	39.579	
5,600.0	5,550.4	5,564.2	5,550.4	17.9	13.1	-169.72	125.0	-309.7	998.6	973.1	25.52	39.129	
5,700.0	5,650.4	5,664.2	5,650.4	18.1	13.3	-90.00	125.0	-309.7	999.0	973.1	25.90	38.575	
5,800.0	5,750.4	5,764.2	5,750.4	18.2	13.6	-90.00	125.0	-309.7	999.0	972.7	26.30	37.984	
5,900.0	5,850.4	5,864.2	5,850.4	18.4	13.8	-90.00	125.0	-309.7	999.0	972.3	26.71	37.408	
6,000.0	5,950.4	5,964.2	5,950.4	18.5	14.0	-90.00	125.0	-309.7	999.0	971.9	27.11	36.849	
6,100.0	6,050.4	6,064.2	6,050.4	18.7	14.2	-90.00	125.0	-309.7	999.0	971.5	27.52	36.303	
6,200.0	6,150.4	6,164.2	6,150.4	18.8	14.4	-90.00	125.0	-309.7	999.0	971.1	27.93	35.773	
6,300.0	6,250.4	6,264.2	6,250.4	19.0	14.6	-90.00	125.0	-309.7	999.0	970.7	28.34	35.256	
6,400.0	6,350.4	6,364.2	6,350.4	19.1	14.8	-90.00	125.0	-309.7	999.0	970.3	28.75	34.752	
6,500.0	6,450.4	6,464.2	6,450.4	19.3	15.0	-90.00	125.0	-309.7	999.0	969.9	29.16	34.261	
6,558.0	6,508.5	6,522.2	6,508.5	19.4	15.1	90.06	125.0	-309.7	999.0	969.6	29.39	33.986	
6,600.0	6,550.4	6,564.2	6,550.4	19.4	15.2	90.00	123.7	-309.7	999.0	969.5	29.55	33.810	
6,700.0	6,649.6	6,664.2	6,649.6	19.5	15.3	90.00	111.5	-309.7	999.0	969.2	29.84	33.481	
6,800.0	6,746.3	6,764.2	6,746.3	19.6	15.5	90.00	86.4	-309.7	999.0	968.9	30.08	33.211	
6,900.0	6,838.9	6,864.2	6,839.0	19.7	15.6	90.00	48.9	-309.7	999.0	968.7	30.32	32.952	
7,000.0	6,925.8	6,964.2	6,925.9	19.8	15.7	90.01	-0.4	-309.7	999.0	968.4	30.61	32.640	
7,100.0	7,005.6	7,064.2	7,005.7	20.0	15.8	90.01	-60.6	-309.7	999.0	968.0	31.02	32.203	
7,200.0	7,076.8	7,164.2	7,076.9	20.2	16.0	90.01	-130.7	-309.7	999.0	967.4	31.64	31.577	
7,300.0	7,138.2	7,264.3	7,138.4	20.4	16.4	90.01	-209.5	-309.7	999.0	966.5	32.52	30.724	
7,400.0	7,188.9	7,364.3	7,189.0	20.8	16.9	90.01	-295.7	-309.7	999.0	965.3	33.70	29.640	
7,500.0	7,227.8	7,464.3	7,228.0	21.3	17.6	90.01	-387.8	-309.7	999.0	963.8	35.22	28.362	
7,600.0	7,254.4	7,564.3	7,254.6	22.0	18.5	90.01	-484.1	-309.7	999.0	962.0	37.06	26.955	
7,700.0	7,268.6	7,664.3	7,268.8	22.9	19.6	90.01	-583.1	-309.7	999.0	959.8	39.19	25.495	
7,800.0	7,278.0	7,764.4	7,278.2	23.8	20.8	90.01	-682.6	-309.7	999.0	957.5	41.55	24.043	
7,900.0	7,280.0	7,864.4	7,280.2	24.9	22.1	90.01	-782.6	-309.7	999.0	954.9	44.10	22.652	
7,937.1	7,280.0	7,901.5	7,280.0	25.4	22.5	90.00	-819.7	-309.7	999.0	953.9	45.10	22.150	
8,000.0	7,279.9	7,964.4	7,279.7	26.1	23.4	89.99	-882.6	-309.7	999.0	952.2	46.84	21.330	
8,100.0	7,279.7	8,064.4	7,279.2	27.4	24.9	89.97	-982.6	-309.7	999.0	949.3	49.71	20.097	
8,200.0	7,279.6	8,164.4	7,278.8	28.8	26.4	89.95	-1,082.6	-309.7	999.0	946.3	52.71	18.954	
8,300.0	7,279.4	8,264.4	7,278.3	30.2	27.9	89.93	-1,182.6	-309.7	999.0	943.2	55.81	17.901	
8,400.0	7,279.3	8,364.4	7,277.8	31.7	29.5	89.92	-1,282.6	-309.7	999.0	940.0	58.99	16.934	
8,500.0	7,279.1	8,464.4	7,277.3	33.2	31.1	89.90	-1,382.6	-309.7	999.0	936.8	62.25	16.047	
8,600.0	7,279.0	8,564.4	7,276.9	34.8	32.8	89.88	-1,482.6	-309.7	999.0	933.4	65.58	15.234	
8,700.0	7,278.8	8,664.4	7,276.4	36.4	34.5	89.86	-1,582.6	-309.7	999.0	930.1	68.96	14.488	
8,800.0	7,278.6	8,764.4	7,275.9	38.0	36.2	89.84	-1,682.6	-309.7	999.0	926.6	72.38	13.803	
8,900.0	7,278.5	8,864.4	7,275.5	39.7	37.9	89.83	-1,782.6	-309.7	999.0	923.2	75.84	13.172	
9,000.0	7,278.3	8,964.4	7,275.0	41.4	39.7	89.81	-1,882.6	-309.7	999.0	919.7	79.34	12.592	
9,100.0	7,278.2	9,064.4	7,274.5	43.1	41.4	89.79	-1,982.6	-309.7	999.0	916.2	82.87	12.056	
9,200.0	7,278.0	9,164.4	7,274.0	44.8	43.2	89.77	-2,082.6	-309.7	999.0	912.6	86.42	11.560	
9,300.0	7,277.9	9,264.4	7,273.6	46.5	45.0	89.75	-2,182.6	-309.7	999.0	909.0	90.00	11.100	
9,400.0	7,277.7	9,364.4	7,273.1	48.3	46.8	89.74	-2,282.6	-309.7	999.0	905.4	93.60	10.674	
9,500.0	7,277.5	9,464.4	7,272.6	50.0	48.6	89.72	-2,382.6	-309.7	999.0	901.8	97.22	10.276	
9,600.0	7,277.4	9,564.4	7,272.2	51.8	50.4	89.70	-2,482.6	-309.7	999.0	898.2	100.85	9.906	
9,700.0	7,277.2	9,664.4	7,271.7	53.6	52.2	89.68	-2,582.6	-309.7	999.0	894.5	104.50	9.560	
9,800.0	7,277.1	9,764.4	7,271.2	55.4	54.1	89.66	-2,682.6	-309.7	999.0	890.9	108.16	9.237	
9,900.0	7,276.9	9,864.4	7,270.7	57.2	55.9	89.65	-2,782.6	-309.7	999.0	887.2	111.83	8.933	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design		Ram Land 30KO-HZ Pad Sec.30-T4N-R66W - Ram Land 30K-403 - Wellbore #1 - Plan #1 (6-27-13)										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	7,276.8	9,964.4	7,270.3	59.0	57.7	89.63	-2,882.5	-309.7	999.0	883.5	115.52	8.648					
10,100.0	7,276.6	10,064.4	7,269.8	60.8	59.6	89.61	-2,982.5	-309.7	999.0	879.8	119.21	8.381					
10,200.0	7,276.4	10,164.4	7,269.3	62.6	61.4	89.59	-3,082.5	-309.7	999.0	876.1	122.91	8.128					
10,300.0	7,276.3	10,264.4	7,268.9	64.4	63.3	89.57	-3,182.5	-309.7	999.0	872.4	126.62	7.890					
10,400.0	7,276.1	10,364.4	7,268.4	66.3	65.2	89.56	-3,282.5	-309.7	999.1	868.7	130.34	7.665					
10,500.0	7,276.0	10,464.4	7,267.9	68.1	67.0	89.54	-3,382.5	-309.7	999.1	865.0	134.07	7.452					
10,600.0	7,275.8	10,564.4	7,267.4	69.9	68.9	89.52	-3,482.5	-309.7	999.1	861.3	137.80	7.250					
10,700.0	7,275.7	10,664.4	7,267.0	71.8	70.7	89.50	-3,582.5	-309.7	999.1	857.5	141.53	7.059					
10,800.0	7,275.5	10,764.4	7,266.5	73.6	72.6	89.48	-3,682.5	-309.7	999.1	853.8	145.28	6.877					
10,900.0	7,275.3	10,864.4	7,266.0	75.5	74.5	89.47	-3,782.5	-309.7	999.1	850.0	149.02	6.704					
11,000.0	7,275.2	10,964.4	7,265.6	77.3	76.4	89.45	-3,882.5	-309.7	999.1	846.3	152.78	6.539					
11,100.0	7,275.0	11,064.4	7,265.1	79.2	78.2	89.43	-3,982.5	-309.7	999.1	842.5	156.53	6.383					
11,200.0	7,274.9	11,164.4	7,264.6	81.0	80.1	89.41	-4,082.5	-309.7	999.1	838.8	160.29	6.233					
11,300.0	7,274.7	11,264.4	7,264.1	82.9	82.0	89.39	-4,182.5	-309.7	999.1	835.0	164.05	6.090					
11,400.0	7,274.6	11,364.4	7,263.7	84.8	83.9	89.38	-4,282.5	-309.7	999.1	831.3	167.82	5.953					
11,500.0	7,274.4	11,464.4	7,263.2	86.6	85.8	89.36	-4,382.5	-309.7	999.1	827.5	171.59	5.822					
11,600.0	7,274.2	11,564.4	7,262.7	88.5	87.7	89.34	-4,482.5	-309.7	999.1	823.7	175.36	5.697					
11,700.0	7,274.1	11,664.4	7,262.3	90.4	89.5	89.32	-4,582.5	-309.7	999.1	820.0	179.14	5.577					
11,751.3	7,274.0	11,715.7	7,262.0	91.4	90.5	89.31	-4,633.9	-309.7	999.1	818.0	181.08	5.517 SF					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	96.77	96.77	-3.6	30.7	30.9				
100.0	100.0	100.0	100.0	0.1	0.1	96.77	96.77	-3.6	30.7	30.9	30.7	0.22	137.504	
200.0	200.0	200.0	200.0	0.3	0.3	96.77	96.77	-3.6	30.7	30.9	30.2	0.67	45.835 CC, ES	
300.0	300.0	298.9	298.9	0.6	0.6	96.04	96.04	-3.4	32.4	32.6	31.5	1.11	29.270	
400.0	400.0	397.6	397.5	0.8	0.8	94.26	94.26	-2.8	37.4	37.6	36.1	1.56	24.129	
500.0	500.0	496.0	495.5	1.0	1.0	12.88	12.88	-1.7	45.8	44.4	42.4	1.99	22.274	
600.0	599.8	594.1	592.9	1.2	1.3	11.88	11.88	-0.2	57.5	51.2	48.7	2.43	21.074	
700.0	699.5	692.2	689.8	1.5	1.6	11.29	11.29	1.7	72.5	57.9	55.0	2.88	20.135	
800.0	798.7	792.1	788.2	1.7	2.0	11.24	11.24	3.8	89.3	62.7	59.4	3.33	18.817	
900.0	897.7	892.0	886.8	2.0	2.3	11.60	11.60	5.9	106.0	65.3	61.5	3.81	17.143	
1,000.0	996.6	992.0	985.3	2.3	2.7	11.94	11.94	8.0	122.7	67.8	63.5	4.29	15.795	
1,100.0	1,095.5	1,092.0	1,083.8	2.7	3.1	12.25	12.25	10.1	139.5	70.4	65.6	4.79	14.704	
1,200.0	1,194.5	1,191.9	1,182.3	3.0	3.5	12.55	12.55	12.2	156.2	72.9	67.6	5.28	13.804	
1,300.0	1,293.4	1,291.9	1,280.9	3.3	3.9	12.82	12.82	14.4	173.0	75.4	69.7	5.78	13.054	
1,400.0	1,392.4	1,391.9	1,379.4	3.7	4.3	13.08	13.08	16.5	189.7	78.0	71.7	6.28	12.415	
1,500.0	1,491.3	1,491.8	1,477.9	4.0	4.6	13.32	13.32	18.6	206.5	80.5	73.7	6.78	11.867	
1,600.0	1,590.3	1,591.8	1,576.5	4.4	5.0	13.54	13.54	20.7	223.2	83.1	75.8	7.29	11.393	
1,700.0	1,689.2	1,691.8	1,675.0	4.7	5.4	13.76	13.76	22.8	240.0	85.6	77.8	7.80	10.978	
1,800.0	1,788.2	1,791.7	1,773.5	5.1	5.8	13.96	13.96	25.0	256.7	88.1	79.8	8.31	10.612	
1,900.0	1,887.1	1,891.7	1,872.1	5.4	6.2	14.14	14.14	27.1	273.5	90.7	81.9	8.82	10.287	
2,000.0	1,986.0	1,991.7	1,970.6	5.8	6.6	14.32	14.32	29.2	290.2	93.2	83.9	9.33	9.996	
2,100.0	2,085.0	2,091.6	2,069.1	6.1	7.0	14.49	14.49	31.3	306.9	95.8	85.9	9.84	9.735	
2,200.0	2,183.9	2,191.6	2,167.7	6.5	7.4	14.65	14.65	33.4	323.7	98.3	88.0	10.35	9.498	
2,300.0	2,282.9	2,291.6	2,266.2	6.8	7.8	14.80	14.80	35.6	340.4	100.9	90.0	10.87	9.284	
2,400.0	2,381.8	2,391.5	2,364.7	7.2	8.2	14.95	14.95	37.7	357.2	103.4	92.0	11.38	9.088	
2,500.0	2,480.8	2,491.5	2,463.3	7.5	8.5	15.09	15.09	39.8	373.9	106.0	94.1	11.90	8.909	
2,600.0	2,579.7	2,591.5	2,561.8	7.9	8.9	15.22	15.22	41.9	390.7	108.5	96.1	12.41	8.744	
2,700.0	2,678.6	2,691.4	2,660.3	8.2	9.3	15.34	15.34	44.0	407.4	111.1	98.2	12.93	8.592	
2,800.0	2,777.6	2,791.4	2,758.9	8.6	9.7	15.46	15.46	46.1	424.2	113.6	100.2	13.44	8.452	
2,900.0	2,876.5	2,891.4	2,857.4	8.9	10.1	15.58	15.58	48.3	440.9	116.2	102.2	13.96	8.321	
3,000.0	2,975.5	2,991.3	2,955.9	9.3	10.5	15.68	15.68	50.4	457.7	118.7	104.3	14.48	8.200	
3,100.0	3,074.4	3,091.3	3,054.5	9.6	10.9	15.79	15.79	52.5	474.4	121.3	106.3	15.00	8.087	
3,200.0	3,173.4	3,191.3	3,153.0	10.0	11.3	15.89	15.89	54.6	491.1	123.8	108.3	15.52	7.981	
3,300.0	3,272.3	3,291.2	3,251.5	10.3	11.7	15.99	15.99	56.7	507.9	126.4	110.4	16.04	7.882	
3,400.0	3,371.3	3,391.2	3,350.0	10.7	12.1	16.08	16.08	58.9	524.6	128.9	112.4	16.56	7.789	
3,500.0	3,470.2	3,491.2	3,448.6	11.0	12.5	16.17	16.17	61.0	541.4	131.5	114.4	17.07	7.702	
3,600.0	3,569.1	3,591.2	3,547.1	11.4	12.8	16.25	16.25	63.1	558.1	134.1	116.5	17.59	7.619	
3,700.0	3,668.1	3,691.1	3,645.6	11.7	13.2	16.34	16.34	65.2	574.9	136.6	118.5	18.11	7.541	
3,800.0	3,767.0	3,791.1	3,744.2	12.1	13.6	16.41	16.41	67.3	591.6	139.2	120.5	18.64	7.468	
3,900.0	3,866.0	3,891.1	3,842.7	12.4	14.0	16.49	16.49	69.5	608.4	141.7	122.6	19.16	7.398	
4,000.0	3,964.9	3,991.0	3,941.2	12.8	14.4	16.57	16.57	71.6	625.1	144.3	124.6	19.68	7.332	
4,100.0	4,063.9	4,091.0	4,039.8	13.2	14.8	16.64	16.64	73.7	641.9	146.8	126.6	20.20	7.270	
4,200.0	4,162.8	4,191.0	4,138.3	13.5	15.2	16.71	16.71	75.8	658.6	149.4	128.7	20.72	7.210	
4,300.0	4,261.8	4,290.9	4,236.8	13.9	15.6	16.77	16.77	77.9	675.3	151.9	130.7	21.24	7.153	
4,400.0	4,360.7	4,390.9	4,335.4	14.2	16.0	16.84	16.84	80.0	692.1	154.5	132.7	21.76	7.099	
4,500.0	4,459.6	4,490.9	4,433.9	14.6	16.4	16.90	16.90	82.2	708.8	157.1	134.8	22.28	7.048	
4,600.0	4,558.6	4,590.8	4,532.4	14.9	16.8	16.96	16.96	84.3	725.6	159.6	136.8	22.81	6.998	
4,700.0	4,657.5	4,690.8	4,631.0	15.3	17.2	17.02	17.02	86.4	742.3	162.2	138.8	23.33	6.951	
4,800.0	4,756.5	4,790.8	4,729.5	15.6	17.5	17.07	17.07	88.5	759.1	164.7	140.9	23.85	6.906	
4,900.0	4,855.4	4,890.7	4,828.0	16.0	17.9	17.13	17.13	90.6	775.8	167.3	142.9	24.37	6.863	
5,000.0	4,954.4	4,990.7	4,926.6	16.3	18.3	17.18	17.18	92.8	792.6	169.8	144.9	24.90	6.822	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,053.3	5,090.7	5,025.1	16.7	18.7	17.23	94.9	809.3	172.4	147.0	25.42	6.782		
5,200.0	5,152.3	5,190.6	5,123.6	17.0	19.1	17.28	97.0	826.0	175.0	149.0	25.94	6.744		
5,300.0	5,251.3	5,290.6	5,222.1	17.4	19.5	17.27	99.1	842.8	178.3	151.8	26.44	6.743		
5,400.0	5,350.8	5,390.3	5,320.5	17.6	19.9	16.98	101.2	859.5	184.7	157.9	26.83	6.884		
5,500.0	5,450.5	5,489.8	5,418.5	17.8	20.3	16.43	103.3	876.2	194.5	167.4	27.16	7.161		
5,600.0	5,550.4	5,588.9	5,516.2	17.9	20.7	15.69	105.4	892.8	207.7	180.2	27.44	7.569		
5,700.0	5,650.4	5,687.6	5,613.4	18.1	21.1	94.54	107.5	909.3	223.8	196.1	27.73	8.069		
5,800.0	5,750.4	5,786.1	5,710.6	18.2	21.4	93.72	109.6	925.8	240.4	212.3	28.10	8.554		
5,900.0	5,850.4	5,884.7	5,807.7	18.4	21.8	93.01	111.7	942.3	257.0	228.5	28.48	9.024		
6,000.0	5,950.4	5,983.3	5,904.9	18.5	22.2	92.38	113.8	958.8	273.6	244.7	28.87	9.478		
6,100.0	6,050.4	6,081.8	6,002.0	18.7	22.6	91.82	115.9	975.3	290.3	261.0	29.26	9.919		
6,200.0	6,150.4	6,190.3	6,109.2	18.8	22.9	91.33	118.0	992.0	305.6	275.9	29.65	10.307		
6,300.0	6,250.4	6,301.6	6,219.7	19.0	23.2	90.97	119.6	1,004.9	317.2	287.2	30.03	10.562		
6,400.0	6,350.4	6,413.7	6,331.5	19.1	23.4	90.75	120.7	1,013.6	324.9	294.5	30.41	10.685		
6,500.0	6,450.4	6,526.4	6,444.1	19.3	23.6	90.65	121.3	1,018.0	328.8	298.0	30.79	10.680		
6,600.0	6,550.4	6,632.7	6,550.4	19.4	23.7	-89.59	121.4	1,018.6	329.3	298.1	31.15	10.572		
6,630.5	6,580.8	6,663.2	6,580.8	19.5	23.7	-90.00	121.4	1,018.6	329.3	298.1	31.22	10.547		
6,700.0	6,649.6	6,731.9	6,649.6	19.5	23.8	-91.69	121.4	1,018.6	329.4	298.1	31.35	10.509		
6,800.0	6,746.3	6,828.6	6,746.3	19.6	24.0	-95.77	121.4	1,018.6	331.1	299.7	31.48	10.518		
6,900.0	6,838.9	6,921.3	6,838.9	19.7	24.1	-101.22	121.4	1,018.6	337.2	305.5	31.67	10.646		
7,000.0	6,925.8	7,008.2	6,925.8	19.8	24.2	-107.19	121.4	1,018.6	351.1	319.2	31.88	11.015		
7,100.0	7,005.6	7,350.7	7,152.9	20.0	24.5	-106.17	-61.7	1,018.6	360.7	328.0	32.78	11.004		
7,200.0	7,076.8	7,420.4	7,152.4	20.2	24.6	-99.67	-131.4	1,018.6	337.9	304.6	33.26	10.158		
7,300.0	7,138.2	7,498.7	7,151.9	20.4	24.8	-91.95	-209.7	1,018.6	329.6	295.5	34.10	9.664		
7,324.6	7,151.7	7,519.2	7,151.7	20.5	24.8	-90.00	-230.2	1,018.6	329.3	294.9	34.38	9.578		
7,400.0	7,188.9	7,584.5	7,151.3	20.8	25.1	-84.20	-295.5	1,018.6	331.4	296.3	35.16	9.426		
7,500.0	7,227.8	7,676.3	7,150.6	21.3	25.5	-77.55	-387.3	1,018.6	338.2	301.9	36.35	9.305		
7,600.0	7,254.4	7,772.4	7,150.0	22.0	26.0	-72.76	-483.4	1,018.6	345.5	307.6	37.88	9.119		
7,700.0	7,268.6	7,871.2	7,149.3	22.9	26.7	-70.19	-582.2	1,018.6	350.2	310.4	39.89	8.779		
7,800.0	7,278.0	7,970.7	7,148.6	23.8	27.5	-68.59	-681.7	1,018.6	353.8	311.7	42.07	8.410		
7,900.0	7,280.0	8,070.7	7,147.9	24.9	28.5	-68.13	-781.7	1,018.6	354.8	310.1	44.73	7.932		
8,000.0	7,279.9	8,170.7	7,147.2	26.1	29.5	-68.05	-881.7	1,018.6	355.0	307.8	47.25	7.514		
8,100.0	7,279.7	8,270.7	7,146.5	27.4	30.6	-67.97	-981.7	1,018.6	355.2	305.3	49.90	7.119		
8,200.0	7,279.6	8,370.7	7,145.8	28.8	31.8	-67.89	-1,081.6	1,018.6	355.4	302.8	52.66	6.750		
8,300.0	7,279.4	8,470.7	7,145.1	30.2	33.1	-67.80	-1,181.6	1,018.6	355.6	300.1	55.50	6.407		
8,400.0	7,279.3	8,570.7	7,144.4	31.7	34.4	-67.72	-1,281.6	1,018.6	355.8	297.4	58.43	6.090		
8,500.0	7,279.1	8,670.7	7,143.7	33.2	35.8	-67.64	-1,381.6	1,018.6	356.0	294.6	61.43	5.796		
8,600.0	7,279.0	8,770.7	7,143.0	34.8	37.2	-67.56	-1,481.6	1,018.6	356.3	291.8	64.48	5.525		
8,700.0	7,278.8	8,870.7	7,142.3	36.4	38.7	-67.48	-1,581.6	1,018.6	356.5	288.9	67.58	5.275		
8,800.0	7,278.6	8,970.7	7,141.6	38.0	40.2	-67.40	-1,681.6	1,018.6	356.7	285.9	70.72	5.043		
8,900.0	7,278.5	9,070.7	7,140.9	39.7	41.8	-67.32	-1,781.6	1,018.6	356.9	283.0	73.90	4.829		
9,000.0	7,278.3	9,170.7	7,140.2	41.4	43.4	-67.24	-1,881.6	1,018.6	357.1	280.0	77.10	4.631		
9,100.0	7,278.2	9,270.7	7,139.5	43.1	45.0	-67.16	-1,981.6	1,018.6	357.3	277.0	80.34	4.447		
9,200.0	7,278.0	9,370.7	7,138.8	44.8	46.6	-67.08	-2,081.6	1,018.6	357.5	273.9	83.60	4.277		
9,300.0	7,277.9	9,470.7	7,138.1	46.5	48.3	-67.00	-2,181.6	1,018.6	357.7	270.8	86.87	4.118		
9,400.0	7,277.7	9,570.7	7,137.4	48.3	50.0	-66.92	-2,281.6	1,018.6	357.9	267.8	90.17	3.970		
9,500.0	7,277.5	9,670.6	7,136.7	50.0	51.7	-66.84	-2,381.6	1,018.6	358.1	264.7	93.48	3.831		
9,600.0	7,277.4	9,770.6	7,136.0	51.8	53.4	-66.76	-2,481.6	1,018.6	358.4	261.6	96.80	3.702		
9,700.0	7,277.2	9,870.6	7,135.3	53.6	55.1	-66.68	-2,581.6	1,018.6	358.6	258.4	100.13	3.581		
9,800.0	7,277.1	9,970.6	7,134.6	55.4	56.8	-66.60	-2,681.6	1,018.6	358.8	255.3	103.48	3.467		
9,900.0	7,276.9	10,070.6	7,133.9	57.2	58.6	-66.53	-2,781.6	1,018.6	359.0	252.2	106.83	3.360		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Offset Design		Ram Land 30KO-HZ Pad Sec.30-T4N-R66W - Ram Land 300-303 - Wellbore #1 - Plan #1 (6-27-13)										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 +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
10,000.0	7,276.8	10,170.6	7,133.2	59.0	60.4	-66.45	-2,881.6	1,018.6	359.2	249.0	110.19	3.260			
10,100.0	7,276.6	10,270.6	7,132.5	60.8	62.1	-66.37	-2,981.6	1,018.6	359.4	245.9	113.56	3.165			
10,200.0	7,276.4	10,370.6	7,131.8	62.6	63.9	-66.29	-3,081.6	1,018.6	359.6	242.7	116.93	3.076			
10,300.0	7,276.3	10,470.6	7,131.1	64.4	65.7	-66.21	-3,181.6	1,018.6	359.9	239.6	120.31	2.991			
10,400.0	7,276.1	10,570.6	7,130.4	66.3	67.5	-66.13	-3,281.6	1,018.6	360.1	236.4	123.69	2.911			
10,500.0	7,276.0	10,670.6	7,129.7	68.1	69.3	-66.05	-3,381.6	1,018.6	360.3	233.2	127.08	2.835			
10,600.0	7,275.8	10,770.6	7,129.0	69.9	71.1	-65.97	-3,481.6	1,018.6	360.5	230.1	130.46	2.763			
10,700.0	7,275.7	10,870.6	7,128.3	71.8	72.9	-65.89	-3,581.6	1,018.6	360.7	226.9	133.86	2.695			
10,800.0	7,275.5	10,970.6	7,127.6	73.6	74.7	-65.82	-3,681.5	1,018.6	361.0	223.7	137.25	2.630			
10,900.0	7,275.3	11,070.6	7,126.9	75.5	76.5	-65.74	-3,781.5	1,018.6	361.2	220.5	140.64	2.568			
11,000.0	7,275.2	11,170.6	7,126.2	77.3	78.4	-65.66	-3,881.5	1,018.6	361.4	217.4	144.04	2.509			
11,100.0	7,275.0	11,270.6	7,125.5	79.2	80.2	-65.58	-3,981.5	1,018.6	361.6	214.2	147.43	2.453			
11,200.0	7,274.9	11,370.6	7,124.8	81.0	82.0	-65.50	-4,081.5	1,018.6	361.9	211.0	150.83	2.399			
11,300.0	7,274.7	11,470.6	7,124.1	82.9	83.9	-65.43	-4,181.5	1,018.6	362.1	207.9	154.22	2.348			
11,400.0	7,274.6	11,570.6	7,123.4	84.8	85.7	-65.35	-4,281.5	1,018.6	362.3	204.7	157.62	2.299			
11,500.0	7,274.4	11,670.6	7,122.7	86.6	87.6	-65.27	-4,381.5	1,018.6	362.5	201.5	161.01	2.252			
11,600.0	7,274.2	11,770.6	7,122.0	88.5	89.4	-65.19	-4,481.5	1,018.6	362.8	198.3	164.41	2.206			
11,700.0	7,274.1	11,870.6	7,121.3	90.4	91.3	-65.12	-4,581.5	1,018.6	363.0	195.2	167.80	2.163			
11,751.3	7,274.0	11,919.4	7,121.0	91.4	92.2	-65.08	-4,630.3	1,018.6	363.1	193.6	169.50	2.142 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
Reference Site:	Ram Land 30KO-HZ Pad Sec.30-T4N-R66W	MD Reference:	WELL @ 4773.0ft (RKB 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Ram Land 300-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (6-27-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4773.0ft (RKB 15')

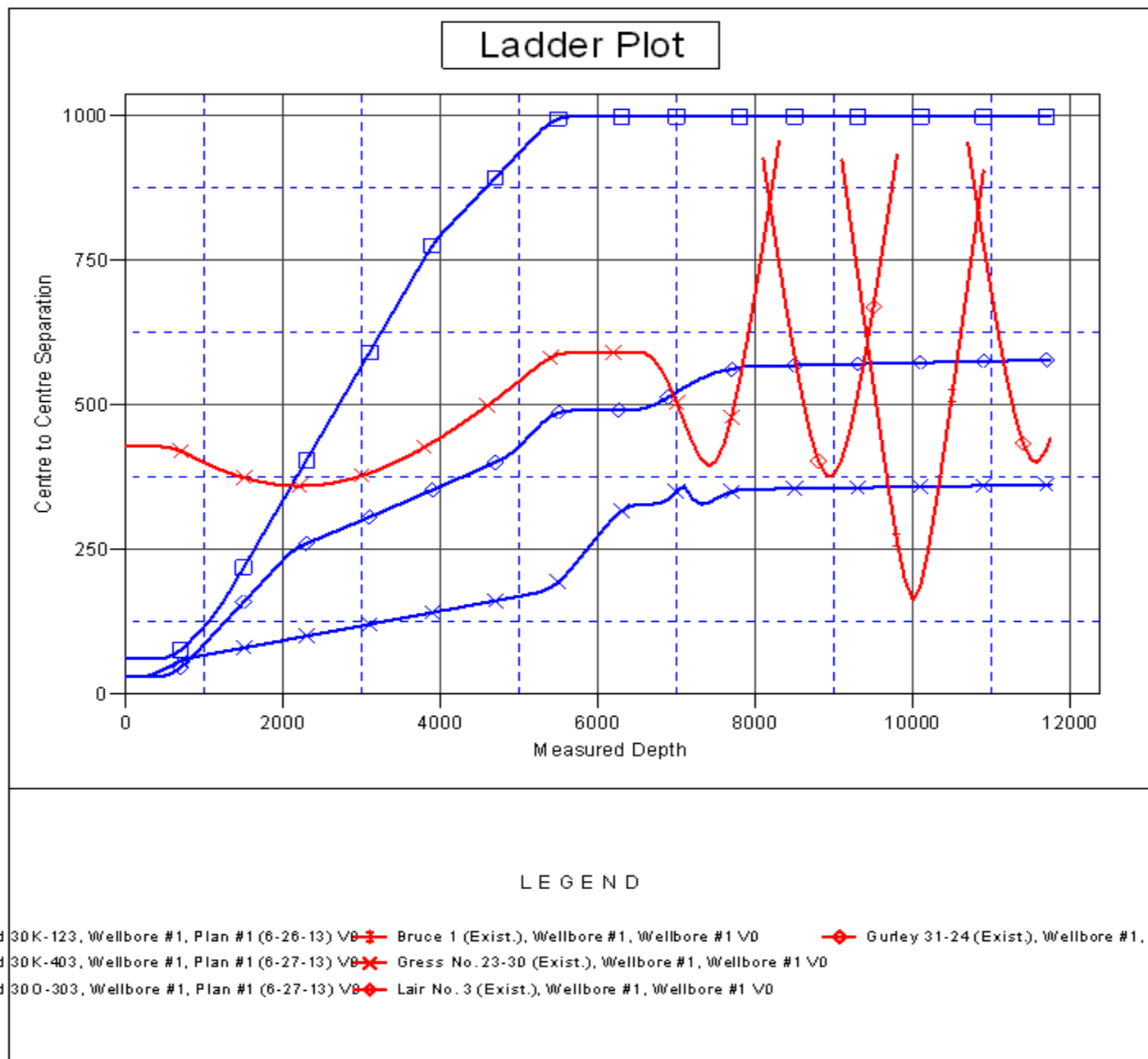
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Ram Land 300-443

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.44°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ram Land 300-443
Project:	SEC.30-T4N-R66W	TVD Reference:	WELL @ 4773.0ft (RKB 15')
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