

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Guttersen 6M-303**

Surface Location: Guttersen 6M-203 Pad Sec.6-T2N-R63W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4823.0

+N/-S

0.0

+E/-W

0.0

Northing

1308041.89

Easting

3285363.04

Latitude

40.174460

Longitude

-104.478770

Slot

RKB - 15' WELL @ 4838.0ft (RKB - 15')

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
BHL 500'FSL, 2468'FEL	6678.0	-4710.4	-315.8	Point

T

M

Azimuths to True North

Magnetic North: 8.37°

Magnetic Field

Strength: 52791.0snT

Dip Angle: 66.83°

Date: 11/5/2013

Model: IGRF2010

ANNOTATIONS

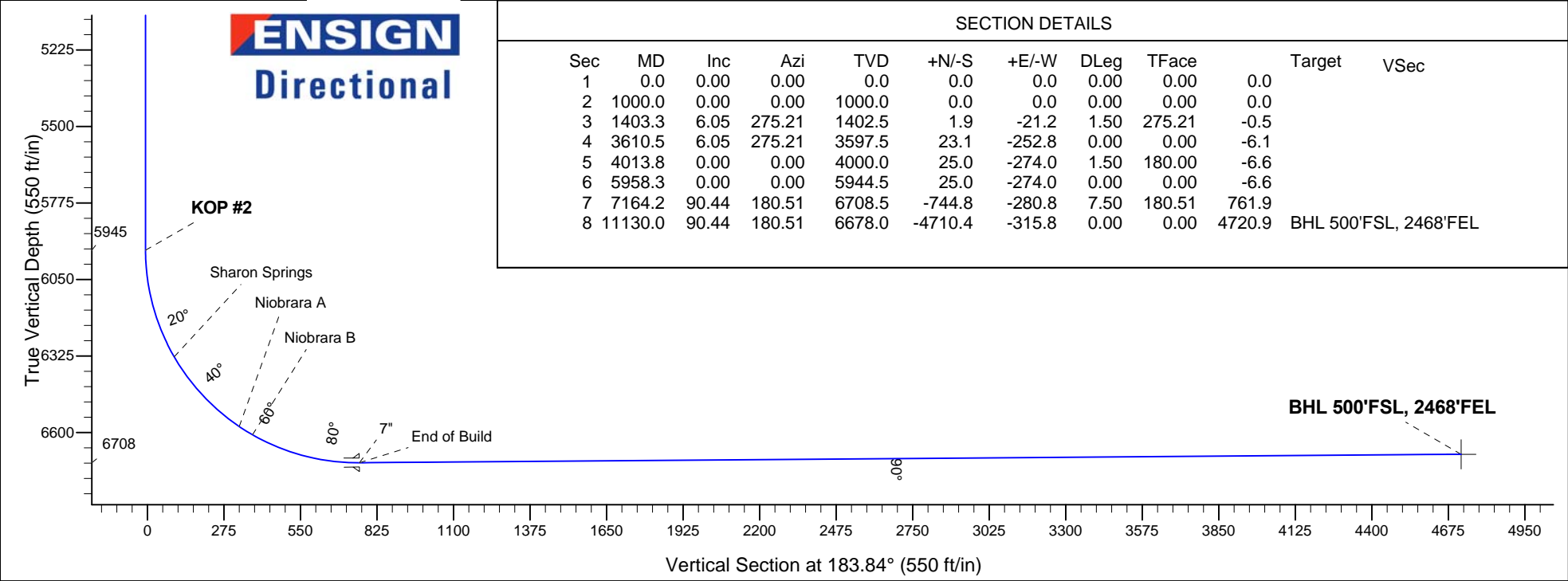
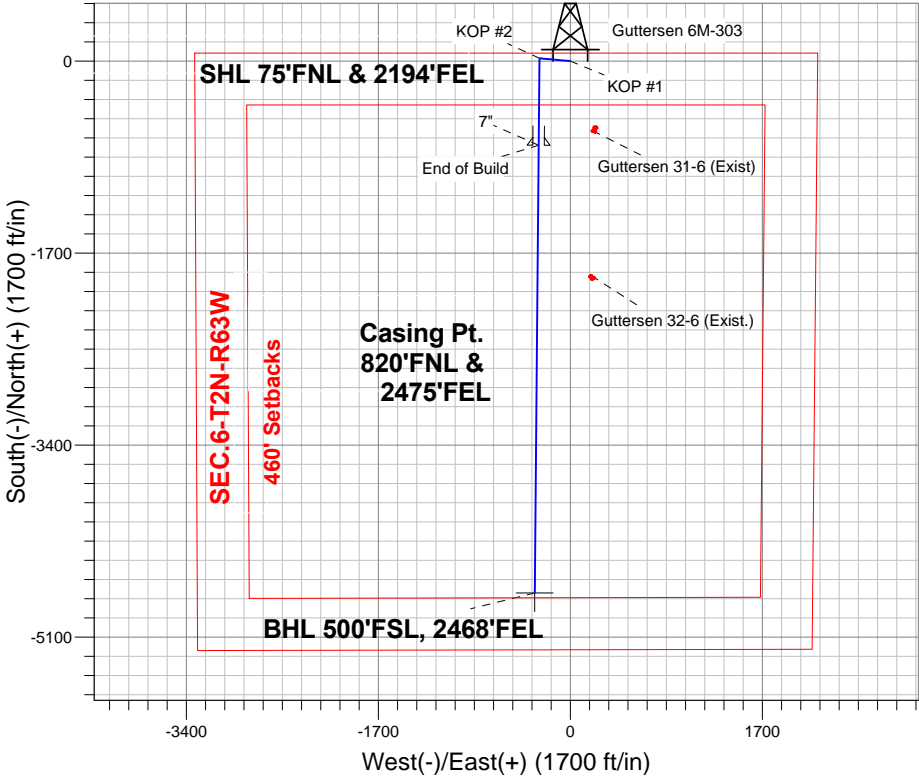
TVD	MD	Annotation
1000.0	1000.0	KOP #1
5944.5	5958.3	KOP #2
6708.5	7164.2	End of Build

Guttersen 6M-203 Pad Sec.6-T2N-R63W

Guttersen 6M-303

Plan #2 (11-05-13)

11:03, November 05 2013



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1403.3	6.05	275.21	1402.5	1.9	-21.2	1.50	275.21	-0.5	
4	3610.5	6.05	275.21	3597.5	23.1	-252.8	0.00	0.00	-6.1	
5	4013.8	0.00	0.00	4000.0	25.0	-274.0	1.50	180.00	-6.6	
6	5958.3	0.00	0.00	5944.5	25.0	-274.0	0.00	0.00	-6.6	
7	7164.2	90.44	180.51	6708.5	-744.8	-280.8	7.50	180.51	761.9	
8	11130.0	90.44	180.51	6678.0	-4710.4	-315.8	0.00	0.00	4720.9	BHL 500'FSL, 2468'FEL

BHL 500'FSL, 2468'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.6-T2N-R63W

Guttersen 6M-203 Pad Sec.6-T2N-R63W

Guttersen 6M-303

Wellbore #1

Plan: Plan #2 (11-05-13)

Standard Planning Report

05 November, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 6M-303
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Project:	SEC.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	North Reference:	True
Well:	Guttersen 6M-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (11-05-13)		

Project	SEC.6-T2N-R63W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site Guttersen 6M-203 Pad Sec.6-T2N-R63W					
Site Position:		Northing:		1,308,041.91 ft	
From:		Easting:		3,285,363.04 ft	
Position Uncertainty:		Slot Radius:		Grid Convergence:	
Lat/Long		0.0 ft		"	
				°	
				40.174460	
				-104.478770	

Well	Guttersen 6M-303					
Well Position	+N/-S	0.0 ft	Northing:	1,308,041.89 ft	Latitude:	40.174460
	+E/-W	0.0 ft	Easting:	3,285,363.04 ft	Longitude:	-104.478770
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,823.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/5/2013	8.37	66.83	52,791

Design	Plan #2 (11-05-13)			
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	183.84

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,403.3	6.05	275.21	1,402.5	1.9	-21.2	1.50	1.50	0.00	275.21	
3,610.5	6.05	275.21	3,597.5	23.1	-252.8	0.00	0.00	0.00	0.00	
4,013.8	0.00	0.00	4,000.0	25.0	-274.0	1.50	-1.50	0.00	180.00	
5,958.3	0.00	0.00	5,944.5	25.0	-274.0	0.00	0.00	0.00	0.00	
7,164.2	90.44	180.51	6,708.5	-744.8	-280.8	7.50	7.50	0.00	180.51	
11,130.0	90.44	180.51	6,678.0	-4,710.4	-315.8	0.00	0.00	0.00	0.00	BHL 500'FSL, 2468

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Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Project:	SEC.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	North Reference:	True
Well:	Guttersen 6M-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (11-05-13)		

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
Guttersen 31-6 (Exist.) Target Circle - Guttersen 32-6 (Exist.) Target Circle									
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
KOP #1									
1,100.0	1.50	275.21	1,100.0	0.1	-1.3	0.0	1.50	1.50	0.00
1,200.0	3.00	275.21	1,199.9	0.5	-5.2	-0.1	1.50	1.50	0.00
1,300.0	4.50	275.21	1,299.7	1.1	-11.7	-0.3	1.50	1.50	0.00
1,400.0	6.00	275.21	1,399.3	1.9	-20.8	-0.5	1.50	1.50	0.00
1,403.3	6.05	275.21	1,402.5	1.9	-21.2	-0.5	1.50	1.50	0.00
1,500.0	6.05	275.21	1,498.7	2.9	-31.3	-0.8	0.00	0.00	0.00
1,600.0	6.05	275.21	1,598.2	3.8	-41.8	-1.0	0.00	0.00	0.00
1,700.0	6.05	275.21	1,697.6	4.8	-52.3	-1.3	0.00	0.00	0.00
1,800.0	6.05	275.21	1,797.0	5.7	-62.8	-1.5	0.00	0.00	0.00
1,900.0	6.05	275.21	1,896.5	6.7	-73.3	-1.8	0.00	0.00	0.00
2,000.0	6.05	275.21	1,995.9	7.6	-83.8	-2.0	0.00	0.00	0.00
2,100.0	6.05	275.21	2,095.4	8.6	-94.3	-2.3	0.00	0.00	0.00
2,200.0	6.05	275.21	2,194.8	9.6	-104.8	-2.5	0.00	0.00	0.00
2,300.0	6.05	275.21	2,294.3	10.5	-115.3	-2.8	0.00	0.00	0.00
2,400.0	6.05	275.21	2,393.7	11.5	-125.8	-3.0	0.00	0.00	0.00
2,500.0	6.05	275.21	2,493.1	12.4	-136.3	-3.3	0.00	0.00	0.00
2,600.0	6.05	275.21	2,592.6	13.4	-146.8	-3.5	0.00	0.00	0.00
2,700.0	6.05	275.21	2,692.0	14.3	-157.3	-3.8	0.00	0.00	0.00
2,800.0	6.05	275.21	2,791.5	15.3	-167.8	-4.0	0.00	0.00	0.00
2,900.0	6.05	275.21	2,890.9	16.3	-178.3	-4.3	0.00	0.00	0.00
3,000.0	6.05	275.21	2,990.4	17.2	-188.7	-4.6	0.00	0.00	0.00
3,100.0	6.05	275.21	3,089.8	18.2	-199.2	-4.8	0.00	0.00	0.00
3,200.0	6.05	275.21	3,189.2	19.1	-209.7	-5.1	0.00	0.00	0.00
3,300.0	6.05	275.21	3,288.7	20.1	-220.2	-5.3	0.00	0.00	0.00
3,400.0	6.05	275.21	3,388.1	21.1	-230.7	-5.6	0.00	0.00	0.00
3,500.0	6.05	275.21	3,487.6	22.0	-241.2	-5.8	0.00	0.00	0.00
3,600.0	6.05	275.21	3,587.0	23.0	-251.7	-6.1	0.00	0.00	0.00
3,610.5	6.05	275.21	3,597.5	23.1	-252.8	-6.1	0.00	0.00	0.00
3,673.3	5.11	275.21	3,660.0	23.6	-258.9	-6.2	1.50	-1.50	0.00
Parkman									
3,700.0	4.71	275.21	3,686.6	23.8	-261.2	-6.3	1.50	-1.50	0.00
3,800.0	3.21	275.21	3,786.3	24.5	-268.0	-6.5	1.50	-1.50	0.00
3,900.0	1.71	275.21	3,886.2	24.8	-272.3	-6.6	1.50	-1.50	0.00
4,000.0	0.21	275.21	3,986.2	25.0	-274.0	-6.6	1.50	-1.50	0.00
4,013.8	0.00	0.00	4,000.0	25.0	-274.0	-6.6	1.50	-1.50	0.00
4,100.0	0.00	0.00	4,086.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,200.0	0.00	0.00	4,186.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,223.8	0.00	0.00	4,210.0	25.0	-274.0	-6.6	0.00	0.00	0.00
Sussex									
4,300.0	0.00	0.00	4,286.2	25.0	-274.0	-6.6	0.00	0.00	0.00

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Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	North Reference:	True
Well:	Guttersen 6M-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (11-05-13)		

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)
4,400.0	0.00	0.00	4,386.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,413.8	0.00	0.00	4,400.0	25.0	-274.0	-6.6	0.00	0.00	0.00
Shannon									
4,500.0	0.00	0.00	4,486.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,586.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,686.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,786.2	25.0	-274.0	-6.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,886.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,986.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,100.0	0.00	0.00	5,086.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,186.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,286.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,386.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,486.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,586.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,686.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,786.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,886.2	25.0	-274.0	-6.6	0.00	0.00	0.00
5,958.3	0.00	0.00	5,944.5	25.0	-274.0	-6.6	0.00	0.00	0.00
KOP #2									
6,000.0	3.13	180.51	5,986.2	23.9	-274.0	-5.5	7.50	7.50	0.00
6,100.0	10.63	180.51	6,085.4	11.9	-274.1	6.5	7.50	7.50	0.00
6,200.0	18.13	180.51	6,182.2	-12.9	-274.3	31.2	7.50	7.50	0.00
6,300.0	25.63	180.51	6,274.9	-50.1	-274.7	68.4	7.50	7.50	0.00
6,360.0	30.13	180.51	6,328.0	-78.2	-274.9	96.4	7.50	7.50	0.00
Sharon Springs									
6,400.0	33.13	180.51	6,362.0	-99.2	-275.1	117.3	7.50	7.50	0.00
6,500.0	40.63	180.51	6,442.0	-159.1	-275.6	177.2	7.50	7.50	0.00
6,600.0	48.13	180.51	6,513.4	-229.0	-276.2	247.0	7.50	7.50	0.00
6,700.0	55.63	180.51	6,575.1	-307.6	-276.9	325.5	7.50	7.50	0.00
6,705.2	56.02	180.51	6,578.0	-311.9	-277.0	329.8	7.50	7.50	0.00
Niobrara A									
6,762.1	60.28	180.51	6,608.0	-360.2	-277.4	378.0	7.50	7.50	0.00
Niobrara B									
6,800.0	63.13	180.51	6,626.0	-393.6	-277.7	411.3	7.50	7.50	0.00
6,900.0	70.63	180.51	6,665.2	-485.5	-278.5	503.0	7.50	7.50	0.00
7,000.0	78.13	180.51	6,692.1	-581.7	-279.4	599.1	7.50	7.50	0.00
7,100.0	85.63	180.51	6,706.3	-680.7	-280.2	697.9	7.50	7.50	0.00
7,164.2	90.44	180.51	6,708.5	-744.8	-280.8	761.9	7.50	7.50	0.00
End of Build - 7"									
7,200.0	90.44	180.51	6,708.2	-780.6	-281.1	797.6	0.00	0.00	0.00
7,300.0	90.44	180.51	6,707.4	-880.6	-282.0	897.5	0.00	0.00	0.00
7,400.0	90.44	180.51	6,706.6	-980.6	-282.9	997.3	0.00	0.00	0.00
7,500.0	90.44	180.51	6,705.9	-1,080.6	-283.8	1,097.1	0.00	0.00	0.00
7,600.0	90.44	180.51	6,705.1	-1,180.6	-284.7	1,197.0	0.00	0.00	0.00
7,700.0	90.44	180.51	6,704.3	-1,280.6	-285.5	1,296.8	0.00	0.00	0.00
7,800.0	90.44	180.51	6,703.6	-1,380.5	-286.4	1,396.6	0.00	0.00	0.00
7,900.0	90.44	180.51	6,702.8	-1,480.5	-287.3	1,496.4	0.00	0.00	0.00
8,000.0	90.44	180.51	6,702.0	-1,580.5	-288.2	1,596.3	0.00	0.00	0.00
8,100.0	90.44	180.51	6,701.3	-1,680.5	-289.1	1,696.1	0.00	0.00	0.00
8,200.0	90.44	180.51	6,700.5	-1,780.5	-290.0	1,795.9	0.00	0.00	0.00
8,300.0	90.44	180.51	6,699.7	-1,880.5	-290.8	1,895.8	0.00	0.00	0.00

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Project:	SEC.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	North Reference:	True
Well:	Guttersen 6M-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (11-05-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,400.0	90.44	180.51	6,699.0	-1,980.5	-291.7	1,995.6	0.00	0.00	0.00
8,500.0	90.44	180.51	6,698.2	-2,080.5	-292.6	2,095.4	0.00	0.00	0.00
8,600.0	90.44	180.51	6,697.4	-2,180.5	-293.5	2,195.2	0.00	0.00	0.00
8,700.0	90.44	180.51	6,696.7	-2,280.5	-294.4	2,295.1	0.00	0.00	0.00
8,800.0	90.44	180.51	6,695.9	-2,380.5	-295.3	2,394.9	0.00	0.00	0.00
8,900.0	90.44	180.51	6,695.1	-2,480.5	-296.1	2,494.7	0.00	0.00	0.00
9,000.0	90.44	180.51	6,694.4	-2,580.5	-297.0	2,594.6	0.00	0.00	0.00
9,100.0	90.44	180.51	6,693.6	-2,680.5	-297.9	2,694.4	0.00	0.00	0.00
9,200.0	90.44	180.51	6,692.8	-2,780.5	-298.8	2,794.2	0.00	0.00	0.00
9,300.0	90.44	180.51	6,692.1	-2,880.4	-299.7	2,894.0	0.00	0.00	0.00
9,400.0	90.44	180.51	6,691.3	-2,980.4	-300.6	2,993.9	0.00	0.00	0.00
9,500.0	90.44	180.51	6,690.5	-3,080.4	-301.4	3,093.7	0.00	0.00	0.00
9,600.0	90.44	180.51	6,689.7	-3,180.4	-302.3	3,193.5	0.00	0.00	0.00
9,700.0	90.44	180.51	6,689.0	-3,280.4	-303.2	3,293.4	0.00	0.00	0.00
9,800.0	90.44	180.51	6,688.2	-3,380.4	-304.1	3,393.2	0.00	0.00	0.00
9,900.0	90.44	180.51	6,687.4	-3,480.4	-305.0	3,493.0	0.00	0.00	0.00
10,000.0	90.44	180.51	6,686.7	-3,580.4	-305.9	3,592.8	0.00	0.00	0.00
10,100.0	90.44	180.51	6,685.9	-3,680.4	-306.7	3,692.7	0.00	0.00	0.00
10,200.0	90.44	180.51	6,685.1	-3,780.4	-307.6	3,792.5	0.00	0.00	0.00
10,300.0	90.44	180.51	6,684.4	-3,880.4	-308.5	3,892.3	0.00	0.00	0.00
10,400.0	90.44	180.51	6,683.6	-3,980.4	-309.4	3,992.2	0.00	0.00	0.00
10,500.0	90.44	180.51	6,682.8	-4,080.4	-310.3	4,092.0	0.00	0.00	0.00
10,600.0	90.44	180.51	6,682.1	-4,180.4	-311.2	4,191.8	0.00	0.00	0.00
10,700.0	90.44	180.51	6,681.3	-4,280.4	-312.0	4,291.6	0.00	0.00	0.00
10,800.0	90.44	180.51	6,680.5	-4,380.3	-312.9	4,391.5	0.00	0.00	0.00
10,900.0	90.44	180.51	6,679.8	-4,480.3	-313.8	4,491.3	0.00	0.00	0.00
11,000.0	90.44	180.51	6,679.0	-4,580.3	-314.7	4,591.1	0.00	0.00	0.00
11,100.0	90.44	180.51	6,678.2	-4,680.3	-315.6	4,690.9	0.00	0.00	0.00
11,130.0	90.44	180.51	6,678.0	-4,710.4	-315.8	4,720.9	0.00	0.00	0.00
BHL 500'FSL, 2468'FEL									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,164.2	6,708.5	7"	7	7-1/2

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,673.3	3,660.0	Parkman		0.00	
4,223.8	4,210.0	Sussex		0.00	
4,413.8	4,400.0	Shannon		0.00	
6,360.0	6,328.0	Sharon Springs		0.00	
6,705.2	6,578.0	Niobrara A		0.00	
6,762.1	6,608.0	Niobrara B		0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 6M-303
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Project:	SEC.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	North Reference:	True
Well:	Guttersen 6M-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (11-05-13)		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
5,958.3	5,944.5	25.0	-274.0	KOP #2
7,164.2	6,708.5	-744.8	-280.8	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.6-T2N-R63W

Guttersen 6M-203 Pad Sec.6-T2N-R63W

Guttersen 6M-303

Wellbore #1

Plan #2 (11-05-13)

Anticollision Report

05 November, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersten 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersten 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (11-05-13)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	11/5/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,129.3	Plan #2 (11-05-13) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.6-T2N-R63W						
Guttersten 31-6 (Exist) - Wellbore #1 - Wellbore #1	7,032.3	6,696.2	477.9	446.7	15.297	CC, ES
Guttersten 31-6 (Exist) - Wellbore #1 - Wellbore #1	7,100.0	6,706.0	482.6	450.5	15.033	SF
Guttersten 32-6 (Exist.) - Wellbore #1 - Wellbore #1	8,317.0	6,679.8	473.2	422.3	9.285	CC, ES
Guttersten 32-6 (Exist.) - Wellbore #1 - Wellbore #1	8,400.0	6,676.4	480.4	428.0	9.165	SF
Guttersten 6M-203 Pad Sec.6-T2N-R63W						
Guttersten 6M-423 - Wellbore #1 - Plan #1 (5-31-13)	1,000.0	1,000.0	27.9	23.7	6.544	CC, ES
Guttersten 6M-423 - Wellbore #1 - Plan #1 (5-31-13)	11,130.0	11,227.7	377.6	208.0	2.227	SF
Guttersten 6R-243 - Wellbore #1 - Plan #1 (5-31-13)	1,000.0	1,000.0	58.7	54.4	13.742	CC, ES
Guttersten 6R-243 - Wellbore #1 - Plan #1 (5-31-13)	11,130.0	11,084.2	677.5	496.7	3.748	SF

Offset Design												Offset Site Error:	0.0ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0ft
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	158.54	-590.2	231.9	634.1				
100.0	100.0	103.0	103.0	0.1	0.1	158.60	-590.1	231.3	633.9	633.6	0.25	2,501.240	
200.0	200.0	202.9	202.9	0.3	0.4	158.70	-590.1	230.1	633.4	632.6	0.74	851.981	
300.0	300.0	301.8	301.8	0.6	0.7	158.79	-590.1	229.1	633.0	631.8	1.23	514.450	
400.0	400.0	401.9	401.9	0.8	0.9	158.85	-590.1	228.2	632.7	631.0	1.72	367.783	
500.0	500.0	505.3	505.3	1.0	1.2	158.91	-589.8	227.5	632.1	629.9	2.20	287.055	
600.0	600.0	605.3	605.3	1.2	1.4	158.94	-589.1	226.9	631.3	628.7	2.66	237.337	
700.0	700.0	705.5	705.4	1.5	1.7	158.96	-588.4	226.3	630.5	627.3	3.12	202.038	
800.0	800.0	806.0	805.9	1.7	1.9	158.98	-587.7	225.8	629.6	626.0	3.59	175.312	
900.0	900.0	905.4	905.3	1.9	2.2	159.01	-586.9	225.1	628.7	624.6	4.07	154.593	
1,000.0	1,000.0	1,004.5	1,004.5	2.1	2.4	159.04	-586.3	224.6	627.9	623.3	4.54	138.164	
1,059.9	1,059.9	1,064.3	1,064.3	2.3	2.6	-116.20	-586.0	224.3	627.7	622.8	4.83	130.071	
1,100.0	1,100.0	1,104.3	1,104.3	2.3	2.7	-116.26	-585.8	224.1	627.8	622.7	5.01	125.214	
1,200.0	1,199.9	1,204.0	1,203.9	2.6	2.9	-116.50	-585.4	223.3	628.9	623.4	5.48	114.846	
1,300.0	1,299.7	1,303.5	1,303.4	2.8	3.2	-116.90	-585.2	222.0	631.2	625.2	5.94	106.225	
1,400.0	1,399.3	1,400.9	1,400.9	3.0	3.4	-117.46	-585.3	220.7	634.9	628.5	6.40	99.159	
1,500.0	1,498.7	1,501.3	1,501.2	3.2	3.7	-118.17	-585.5	219.3	639.6	632.7	6.88	92.955	

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 Guttersten 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersten 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T2N-R63W - Guttersten 31-6 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program: 100-NS-GYRO-MS											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)					
1,600.0	1,598.2	1,603.3	1,603.2	3.5	3.9	-118.89	-585.6	217.8	644.0	636.6	7.38	87.238	
1,700.0	1,697.6	1,702.3	1,702.2	3.8	4.2	-119.58	-585.4	216.2	648.5	640.6	7.89	82.199	
1,800.0	1,797.0	1,803.2	1,803.1	4.0	4.4	-120.28	-585.2	214.8	652.9	644.5	8.41	77.664	
1,900.0	1,896.5	1,903.2	1,903.1	4.3	4.7	-120.97	-584.8	213.3	657.3	648.4	8.93	73.621	
2,000.0	1,995.9	2,000.0	1,999.9	4.6	4.9	-121.60	-585.0	211.7	662.2	652.8	9.43	70.238	
2,100.0	2,095.4	2,093.6	2,093.4	4.8	5.1	-122.21	-585.6	210.6	667.9	658.0	9.89	67.556	
2,200.0	2,194.8	2,188.0	2,187.8	5.1	5.3	-122.87	-586.5	210.3	674.2	663.9	10.28	65.597	
2,300.0	2,294.3	2,284.4	2,284.2	5.4	5.3	-123.57	-587.7	210.5	681.3	670.7	10.61	64.186	
2,400.0	2,393.7	2,378.7	2,378.5	5.7	5.4	-124.24	-589.3	211.2	689.0	678.1	10.94	62.994	
2,500.0	2,493.1	2,472.9	2,472.7	6.0	5.5	-124.89	-591.6	212.1	697.6	686.3	11.27	61.883	
2,600.0	2,592.6	2,569.5	2,569.2	6.3	5.6	-125.50	-594.7	212.8	706.9	695.2	11.63	60.759	
2,700.0	2,692.0	2,668.4	2,668.0	6.6	5.7	-126.04	-598.4	213.1	716.4	704.4	12.03	59.559	
2,800.0	2,791.5	2,767.8	2,767.4	6.8	5.8	-126.52	-602.6	212.6	726.0	713.5	12.45	58.312	
2,900.0	2,890.9	2,866.8	2,866.3	7.1	6.0	-126.96	-606.8	212.1	735.6	722.8	12.88	57.097	
3,000.0	2,990.4	2,966.5	2,965.9	7.4	6.2	-127.41	-611.0	211.6	745.4	732.0	13.32	55.943	
3,100.0	3,089.8	3,069.3	3,068.6	7.7	6.3	-127.90	-614.9	211.5	754.9	741.2	13.76	54.851	
3,200.0	3,189.2	3,170.7	3,169.9	8.0	6.5	-128.45	-617.8	212.0	764.1	749.9	14.18	53.866	
3,300.0	3,288.7	3,271.7	3,271.0	8.3	6.6	-129.04	-620.0	213.0	773.1	758.5	14.58	53.020	
3,400.0	3,388.1	3,373.7	3,373.0	8.6	6.7	-129.69	-621.5	214.7	782.0	767.0	14.95	52.311	
3,500.0	3,487.6	3,473.7	3,472.9	8.9	6.8	-130.37	-622.3	216.7	790.6	775.3	15.30	51.687	
3,600.0	3,587.0	3,576.5	3,575.7	9.2	6.9	-131.03	-623.2	218.5	799.2	783.6	15.66	51.050	
3,700.0	3,686.6	3,679.6	3,678.7	9.4	7.1	-131.67	-623.9	219.6	806.7	790.7	16.01	50.400	
3,800.0	3,786.3	3,781.1	3,780.3	9.6	7.2	-132.12	-624.4	220.4	812.1	795.8	16.31	49.798	
3,900.0	3,886.2	3,885.5	3,884.7	9.8	7.3	-132.43	-624.5	221.1	815.5	798.9	16.59	49.169	
4,000.0	3,986.2	3,987.5	3,986.7	10.0	7.4	-132.55	-624.4	221.3	816.7	799.8	16.89	48.365	
4,100.0	4,086.2	4,090.9	4,090.0	10.2	7.6	142.68	-624.3	221.0	816.5	799.2	17.25	47.318	
4,200.0	4,186.2	4,192.3	4,191.4	10.4	7.8	142.71	-624.1	220.2	815.9	798.2	17.67	46.176	
4,300.0	4,286.2	4,293.9	4,293.1	10.5	8.0	142.76	-623.9	219.3	815.1	797.1	18.08	45.075	
4,400.0	4,386.2	4,395.5	4,394.7	10.7	8.3	142.79	-623.4	218.4	814.2	795.7	18.49	44.032	
4,500.0	4,486.2	4,498.1	4,497.2	10.9	8.5	142.82	-622.7	217.2	813.0	794.1	18.90	43.012	
4,600.0	4,586.2	4,599.5	4,598.6	11.1	8.7	142.86	-621.9	215.9	811.6	792.2	19.31	42.021	
4,700.0	4,686.2	4,698.8	4,698.0	11.3	8.9	142.91	-621.1	214.5	810.1	790.3	19.73	41.063	
4,800.0	4,786.2	4,796.2	4,795.3	11.5	9.1	142.95	-620.5	213.2	808.8	788.6	20.14	40.151	
4,888.1	4,874.3	4,875.2	4,874.3	11.7	9.3	143.02	-620.7	212.2	808.3	787.8	20.50	39.427	
4,900.0	4,886.2	4,885.8	4,884.9	11.7	9.3	143.03	-620.8	212.1	808.3	787.7	20.55	39.334	
5,000.0	4,986.2	4,994.2	4,993.3	11.9	9.6	143.15	-621.6	210.6	808.1	787.1	21.00	38.476	
5,100.0	5,086.2	5,093.9	5,093.0	12.1	9.8	143.21	-621.4	209.4	807.2	785.8	21.44	37.646	
5,200.0	5,186.2	5,193.4	5,192.5	12.3	10.0	143.27	-621.3	208.3	806.4	784.5	21.88	36.848	
5,300.0	5,286.2	5,294.4	5,293.5	12.5	10.3	143.32	-621.0	207.2	805.6	783.2	22.33	36.077	
5,400.0	5,386.2	5,397.8	5,396.8	12.7	10.5	143.37	-620.6	205.9	804.5	781.7	22.78	35.317	
5,500.0	5,486.2	5,494.1	5,493.1	12.9	10.7	143.45	-620.3	204.4	803.4	780.1	23.22	34.603	
5,600.0	5,586.2	5,594.4	5,593.5	13.1	11.0	143.54	-620.4	202.9	802.5	778.8	23.67	33.902	
5,700.0	5,686.2	5,700.0	5,699.0	13.3	11.2	143.63	-620.0	201.1	801.2	777.0	24.14	33.193	
5,800.0	5,786.2	5,797.8	5,796.8	13.5	11.5	143.73	-619.6	199.0	799.6	775.0	24.59	32.524	
5,900.0	5,886.2	5,897.9	5,896.9	13.7	11.7	143.79	-619.0	197.6	798.3	773.3	25.02	31.904	
6,000.0	5,986.2	5,998.0	5,997.0	13.9	11.9	-36.83	-618.0	196.7	796.0	770.6	25.40	31.339	
6,100.0	6,085.4	6,093.3	6,092.2	14.1	12.1	-37.82	-617.1	196.1	785.4	759.9	25.50	30.796	
6,200.0	6,182.2	6,185.4	6,184.4	14.2	12.2	-39.89	-616.5	196.0	765.2	739.8	25.38	30.156	
6,300.0	6,274.9	6,277.9	6,276.8	14.4	12.4	-43.25	-616.2	196.1	736.2	711.1	25.14	29.279	
6,400.0	6,362.0	6,364.4	6,363.3	14.7	12.5	-48.00	-615.8	196.2	699.3	674.3	25.01	27.957	
6,500.0	6,442.0	6,441.4	6,440.4	14.9	12.6	-54.11	-615.7	196.3	656.6	631.4	25.19	26.063	

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 Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T2N-R63W - Guttersen 31-6 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,600.0	6,513.4	6,509.0	6,508.0	15.3	12.7	-61.42	-615.9	196.6	611.0	585.1	25.84	23.641		
6,700.0	6,575.1	6,567.5	6,566.4	15.9	12.7	-69.41	-616.4	197.1	565.8	538.9	26.93	21.008		
6,800.0	6,626.0	6,618.7	6,617.6	16.6	12.8	-77.41	-617.2	197.6	525.4	497.1	28.26	18.590		
6,900.0	6,665.2	6,660.9	6,659.8	17.5	12.8	-84.31	-617.8	198.0	494.6	465.0	29.58	16.717		
7,000.0	6,692.1	6,689.7	6,688.7	18.5	12.8	-88.80	-618.1	198.2	479.0	448.2	30.83	15.536		
7,032.3	6,698.1	6,696.2	6,695.1	18.9	12.8	-89.64	-618.2	198.3	477.9	446.7	31.25	15.297 CC, ES		
7,100.0	6,706.3	6,706.0	6,705.0	19.7	12.9	-90.45	-618.2	198.3	482.6	450.5	32.10	15.033 SF		
7,200.0	6,708.2	6,709.2	6,708.1	21.0	12.9	-89.84	-618.3	198.3	506.2	472.8	33.44	15.139		
7,300.0	6,707.4	6,709.1	6,708.0	22.4	12.9	-89.83	-618.3	198.3	547.3	512.4	34.85	15.703		
7,400.0	6,706.6	6,709.0	6,707.9	23.9	12.9	-89.82	-618.3	198.3	602.4	566.0	36.34	16.576		
7,500.0	6,705.9	6,708.9	6,707.8	25.4	12.9	-89.81	-618.3	198.3	667.9	630.1	37.89	17.631		
7,600.0	6,705.1	6,708.8	6,707.8	27.0	12.9	-89.80	-618.3	198.3	741.3	701.8	39.48	18.776		
7,700.0	6,704.3	6,708.7	6,707.7	28.6	12.9	-89.79	-618.3	198.3	820.2	779.1	41.11	19.950		
7,800.0	6,703.6	6,708.7	6,707.6	30.2	12.9	-89.78	-618.3	198.3	903.4	860.6	42.78	21.117		
7,900.0	6,702.8	6,708.6	6,707.5	31.9	12.9	-89.77	-618.3	198.3	989.6	945.2	44.48	22.251		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.6-T2N-R63W - Guttersen 32-6 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 100-NS-GYRO-MS													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)			
7,500.0	6,705.9	6,715.1	6,714.1	25.4	12.2	-91.75	-1,900.2	183.5	943.5	906.3	37.24	25.337		
7,600.0	6,705.1	6,710.7	6,709.8	27.0	12.2	-91.23	-1,900.4	183.3	858.5	819.7	38.82	22.113		
7,700.0	6,704.3	6,706.4	6,705.5	28.6	12.2	-90.71	-1,900.6	183.0	777.1	736.7	40.45	19.213		
7,800.0	6,703.6	6,700.0	6,699.1	30.2	12.2	-89.94	-1,900.8	182.7	700.6	658.5	42.10	16.641		
7,900.0	6,702.8	6,700.0	6,699.1	31.9	12.2	-89.94	-1,900.8	182.7	630.5	586.7	43.79	14.398		
8,000.0	6,702.0	6,693.3	6,692.4	33.6	12.2	-89.13	-1,901.1	182.4	569.5	524.0	45.48	12.520		
8,100.0	6,701.3	6,689.0	6,688.1	35.4	12.2	-88.61	-1,901.2	182.2	520.6	473.4	47.20	11.029		
8,200.0	6,700.5	6,684.7	6,683.8	37.1	12.2	-88.09	-1,901.4	182.0	487.5	438.5	48.93	9.963		
8,300.0	6,699.7	6,680.5	6,679.6	38.9	12.1	-87.58	-1,901.6	181.8	473.6	422.9	50.67	9.345		
8,317.0	6,699.6	6,679.8	6,678.9	39.2	12.1	-87.50	-1,901.6	181.8	473.2	422.3	50.97	9.285 CC, ES		
8,400.0	6,699.0	6,676.4	6,675.5	40.6	12.1	-87.08	-1,901.7	181.6	480.4	428.0	52.42	9.165 SF		
8,500.0	6,698.2	6,672.3	6,671.4	42.4	12.1	-86.59	-1,901.9	181.5	507.3	453.1	54.18	9.363		
8,600.0	6,697.4	6,668.3	6,667.4	44.2	12.1	-86.11	-1,902.0	181.3	551.2	495.3	55.95	9.853		
8,700.0	6,696.7	6,664.4	6,663.5	46.0	12.1	-85.63	-1,902.2	181.1	608.6	550.8	57.71	10.544		
8,800.0	6,695.9	6,660.5	6,659.6	47.8	12.1	-85.16	-1,902.3	181.0	675.9	616.4	59.48	11.362		
8,900.0	6,695.1	6,656.7	6,655.8	49.7	12.1	-84.70	-1,902.4	180.8	750.5	689.2	61.26	12.251		
9,000.0	6,694.4	6,652.9	6,652.1	51.5	12.1	-84.25	-1,902.6	180.7	830.4	767.4	63.03	13.174		
9,100.0	6,693.6	6,649.2	6,648.4	53.3	12.1	-83.80	-1,902.7	180.5	914.3	849.5	64.81	14.107		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 6M-203 Pad Sec.6-T2N-R63W - Guttersen 6M-423 - Wellbore #1 - Plan #1 (5-31-13)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	90.03	0.0	27.9	27.9				
100.0	100.0	100.0	100.0	0.1	0.1	90.03	0.0	27.9	27.9	27.7	0.22	124.329	
200.0	200.0	200.0	200.0	0.3	0.3	90.03	0.0	27.9	27.9	27.3	0.67	41.443	
300.0	300.0	300.0	300.0	0.6	0.6	90.03	0.0	27.9	27.9	26.8	1.12	24.866	
400.0	400.0	400.0	400.0	0.8	0.8	90.03	0.0	27.9	27.9	26.4	1.57	17.761	
500.0	500.0	500.0	500.0	1.0	1.0	90.03	0.0	27.9	27.9	25.9	2.02	13.814	
600.0	600.0	600.0	600.0	1.2	1.2	90.03	0.0	27.9	27.9	25.5	2.47	11.303	
700.0	700.0	700.0	700.0	1.5	1.5	90.03	0.0	27.9	27.9	25.0	2.92	9.564	
800.0	800.0	800.0	800.0	1.7	1.7	90.03	0.0	27.9	27.9	24.6	3.37	8.289	
900.0	900.0	900.0	900.0	1.9	1.9	90.03	0.0	27.9	27.9	24.1	3.82	7.313	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.03	0.0	27.9	27.9	23.7	4.27	6.544 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	175.04	0.0	27.9	29.2	24.5	4.71	6.214	
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	175.62	0.0	27.9	33.2	28.0	5.13	6.462	
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	176.34	0.0	27.9	39.7	34.1	5.56	7.141	
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	177.02	0.0	27.9	48.8	42.8	5.98	8.161	
1,500.0	1,498.7	1,498.7	1,498.7	3.2	3.3	177.55	0.0	27.9	59.3	52.9	6.42	9.247	
1,600.0	1,598.2	1,598.2	1,598.2	3.5	3.5	177.92	0.0	27.9	69.9	63.0	6.86	10.191	
1,700.0	1,697.6	1,697.6	1,697.6	3.8	3.7	178.19	0.0	27.9	80.4	73.1	7.30	11.018	
1,800.0	1,797.0	1,797.0	1,797.0	4.0	3.9	178.40	0.0	27.9	90.9	83.2	7.74	11.748	
1,900.0	1,896.5	1,896.5	1,896.5	4.3	4.2	178.57	0.0	27.9	101.5	93.3	8.19	12.396	
2,000.0	1,995.9	1,995.9	1,995.9	4.6	4.4	178.70	0.0	27.9	112.0	103.4	8.63	12.974	
2,100.0	2,095.4	2,095.4	2,095.4	4.8	4.6	178.81	0.0	27.9	122.5	113.5	9.08	13.494	
2,200.0	2,194.8	2,194.8	2,194.8	5.1	4.8	178.91	0.0	27.9	133.1	123.6	9.53	13.964	
2,300.0	2,294.3	2,294.3	2,294.3	5.4	5.0	178.99	0.0	27.9	143.6	133.6	9.98	14.390	
2,400.0	2,393.7	2,393.7	2,393.7	5.7	5.3	179.06	0.0	27.9	154.2	143.7	10.43	14.778	
2,500.0	2,493.1	2,493.1	2,493.1	6.0	5.5	179.12	0.0	27.9	164.7	153.8	10.88	15.133	
2,600.0	2,592.6	2,592.6	2,592.6	6.3	5.7	179.17	0.0	27.9	175.2	163.9	11.34	15.458	
2,700.0	2,692.0	2,692.0	2,692.0	6.6	5.9	179.22	0.0	27.9	185.8	174.0	11.79	15.758	
2,800.0	2,791.5	2,791.5	2,791.5	6.8	6.2	179.26	0.0	27.9	196.3	184.1	12.24	16.035	
2,900.0	2,890.9	2,890.9	2,890.9	7.1	6.4	179.30	0.0	27.9	206.8	194.1	12.70	16.292	
3,000.0	2,990.4	2,990.4	2,990.4	7.4	6.6	179.33	0.0	27.9	217.4	204.2	13.15	16.531	
3,100.0	3,089.8	3,085.6	3,085.6	7.7	6.8	179.22	0.5	28.8	228.7	215.1	13.59	16.832	
3,200.0	3,189.2	3,179.9	3,179.9	8.0	7.0	178.80	2.2	31.6	242.1	228.1	14.02	17.267	
3,300.0	3,288.7	3,275.1	3,274.9	8.3	7.2	178.13	5.0	36.4	257.4	243.0	14.45	17.809	
3,400.0	3,388.1	3,373.8	3,373.3	8.6	7.4	177.44	8.3	41.9	273.3	258.4	14.89	18.349	
3,500.0	3,487.6	3,472.5	3,471.8	8.9	7.7	176.83	11.6	47.4	289.2	273.9	15.34	18.859	
3,600.0	3,587.0	3,571.1	3,570.3	9.2	7.9	176.28	14.8	52.9	305.2	289.4	15.78	19.339	
3,700.0	3,686.6	3,670.0	3,668.9	9.4	8.1	175.78	18.1	58.4	320.1	303.9	16.22	19.732	
3,800.0	3,786.3	3,770.4	3,769.1	9.6	8.3	175.29	21.4	63.9	332.4	315.8	16.63	19.986	
3,900.0	3,886.2	3,878.2	3,876.8	9.8	8.5	174.93	24.0	68.2	340.7	323.7	17.02	20.012	
4,000.0	3,986.2	3,986.5	3,985.1	10.0	8.7	174.79	25.0	69.9	343.9	326.5	17.39	19.770	
4,100.0	4,086.2	4,087.6	4,086.2	10.2	8.9	90.00	25.0	69.9	343.9	326.2	17.79	19.335	
4,200.0	4,186.2	4,187.6	4,186.2	10.4	9.1	90.00	25.0	69.9	343.9	325.7	18.22	18.881	
4,300.0	4,286.2	4,287.6	4,286.2	10.5	9.4	90.00	25.0	69.9	343.9	325.3	18.65	18.444	
4,400.0	4,386.2	4,387.6	4,386.2	10.7	9.6	90.00	25.0	69.9	343.9	324.9	19.08	18.026	
4,500.0	4,486.2	4,487.6	4,486.2	10.9	9.8	90.00	25.0	69.9	343.9	324.4	19.51	17.626	
4,600.0	4,586.2	4,587.6	4,586.2	11.1	10.0	90.00	25.0	69.9	343.9	324.0	19.95	17.242	
4,700.0	4,686.2	4,687.6	4,686.2	11.3	10.3	90.00	25.0	69.9	343.9	323.6	20.38	16.875	
4,800.0	4,786.2	4,787.6	4,786.2	11.5	10.5	90.00	25.0	69.9	343.9	323.1	20.82	16.522	
4,900.0	4,886.2	4,887.6	4,886.2	11.7	10.7	90.00	25.0	69.9	343.9	322.7	21.25	16.183	
5,000.0	4,986.2	4,987.6	4,986.2	11.9	10.9	90.00	25.0	69.9	343.9	322.3	21.69	15.857	

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 Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 6M-203 Pad Sec.6-T2N-R63W - Guttersen 6M-423 - Wellbore #1 - Plan #1 (5-31-13)													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 (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	5,086.2	5,087.6	5,086.2	12.1	11.1	90.00	25.0	69.9	343.9	321.8	22.13	15.544		
5,200.0	5,186.2	5,187.6	5,186.2	12.3	11.4	90.00	25.0	69.9	343.9	321.4	22.56	15.243		
5,300.0	5,286.2	5,287.6	5,286.2	12.5	11.6	90.00	25.0	69.9	343.9	320.9	23.00	14.953		
5,400.0	5,386.2	5,387.6	5,386.2	12.7	11.8	90.00	25.0	69.9	343.9	320.5	23.44	14.673		
5,500.0	5,486.2	5,487.6	5,486.2	12.9	12.0	90.00	25.0	69.9	343.9	320.1	23.88	14.403		
5,600.0	5,586.2	5,587.6	5,586.2	13.1	12.3	90.00	25.0	69.9	343.9	319.6	24.32	14.143		
5,700.0	5,686.2	5,687.6	5,686.2	13.3	12.5	90.00	25.0	69.9	343.9	319.2	24.76	13.892		
5,800.0	5,786.2	5,787.6	5,786.2	13.5	12.7	90.00	25.0	69.9	343.9	318.7	25.20	13.650		
5,900.0	5,886.2	5,887.6	5,886.2	13.7	12.9	90.00	25.0	69.9	343.9	318.3	25.64	13.415		
5,942.4	5,928.6	5,930.0	5,928.6	13.8	13.0	-90.59	25.0	69.9	343.9	318.1	25.82	13.321		
6,000.0	5,986.2	5,987.6	5,986.2	13.9	13.2	-90.69	25.0	69.9	344.0	317.9	26.07	13.193		
6,100.0	6,085.4	6,087.5	6,086.0	14.1	13.4	-92.55	24.3	69.9	344.3	317.8	26.46	13.009		
6,200.0	6,182.2	6,189.4	6,187.3	14.2	13.6	-94.89	13.3	69.8	345.2	318.4	26.81	12.879		
6,300.0	6,274.9	6,293.4	6,288.2	14.4	13.7	-97.15	-11.7	69.6	346.7	319.6	27.14	12.774		
6,400.0	6,362.0	6,399.5	6,386.6	14.7	13.9	-99.29	-51.1	69.3	348.6	321.1	27.52	12.670		
6,500.0	6,442.0	6,507.6	6,480.3	14.9	14.2	-101.26	-104.8	68.9	350.9	322.9	27.99	12.534		
6,600.0	6,513.4	6,617.8	6,567.0	15.3	14.5	-103.02	-172.6	68.3	353.2	324.6	28.66	12.326		
6,700.0	6,575.1	6,729.7	6,644.2	15.9	15.0	-104.55	-253.6	67.7	355.6	326.0	29.60	12.015		
6,800.0	6,626.0	6,843.3	6,709.6	16.6	15.8	-105.79	-346.3	66.9	357.7	326.9	30.89	11.583		
6,900.0	6,665.2	6,958.3	6,761.1	17.5	16.7	-106.74	-449.0	66.1	359.5	326.9	32.58	11.033		
7,000.0	6,692.1	7,074.3	6,796.8	18.5	17.9	-107.36	-559.2	65.2	360.8	326.1	34.70	10.395		
7,100.0	6,706.3	7,188.7	6,815.4	19.7	19.3	-107.67	-672.0	64.2	361.4	324.3	37.18	9.722		
7,200.0	6,708.2	7,292.7	6,825.5	21.0	20.6	-108.79	-775.5	63.4	363.9	324.3	39.60	9.189		
7,300.0	6,707.4	7,400.7	6,828.0	22.4	22.1	-109.30	-883.4	62.5	365.0	322.7	42.29	8.631		
7,400.0	6,706.6	7,500.7	6,828.0	23.9	23.6	-109.41	-983.4	61.7	365.3	320.2	45.07	8.105		
7,500.0	6,705.9	7,600.7	6,828.0	25.4	25.1	-109.52	-1,083.4	60.8	365.6	317.6	47.97	7.622		
7,600.0	6,705.1	7,700.7	6,828.0	27.0	26.7	-109.63	-1,183.4	60.0	365.9	315.0	50.95	7.182		
7,700.0	6,704.3	7,800.7	6,828.0	28.6	28.3	-109.74	-1,283.4	59.2	366.2	312.2	54.01	6.781		
7,800.0	6,703.6	7,900.7	6,828.0	30.2	30.0	-109.85	-1,383.4	58.3	366.5	309.4	57.13	6.416		
7,900.0	6,702.8	8,000.7	6,828.0	31.9	31.7	-109.96	-1,483.4	57.5	366.9	306.6	60.30	6.084		
8,000.0	6,702.0	8,100.6	6,828.0	33.6	33.4	-110.07	-1,583.4	56.7	367.2	303.7	63.51	5.781		
8,100.0	6,701.3	8,200.6	6,828.0	35.4	35.1	-110.18	-1,683.4	55.8	367.5	300.7	66.76	5.505		
8,200.0	6,700.5	8,300.6	6,828.0	37.1	36.9	-110.29	-1,783.4	55.0	367.8	297.8	70.04	5.251		
8,300.0	6,699.7	8,400.6	6,828.0	38.9	38.6	-110.40	-1,883.4	54.2	368.1	294.8	73.34	5.019		
8,400.0	6,699.0	8,500.6	6,828.0	40.6	40.4	-110.50	-1,983.4	53.4	368.4	291.8	76.67	4.806		
8,500.0	6,698.2	8,600.6	6,828.0	42.4	42.2	-110.61	-2,083.4	52.5	368.8	288.7	80.01	4.609		
8,600.0	6,697.4	8,700.6	6,828.0	44.2	44.0	-110.72	-2,183.4	51.7	369.1	285.7	83.37	4.427		
8,700.0	6,696.7	8,800.6	6,828.0	46.0	45.8	-110.83	-2,283.4	50.9	369.4	282.7	86.74	4.259		
8,800.0	6,695.9	8,900.6	6,828.0	47.8	47.6	-110.94	-2,383.3	50.0	369.7	279.6	90.12	4.102		
8,900.0	6,695.1	9,000.6	6,828.0	49.7	49.4	-111.05	-2,483.3	49.2	370.0	276.5	93.51	3.957		
9,000.0	6,694.4	9,100.6	6,828.0	51.5	51.3	-111.15	-2,583.3	48.4	370.4	273.5	96.91	3.822		
9,100.0	6,693.6	9,200.6	6,828.0	53.3	53.1	-111.26	-2,683.3	47.6	370.7	270.4	100.32	3.695		
9,200.0	6,692.8	9,300.6	6,828.0	55.2	55.0	-111.37	-2,783.3	46.7	371.0	267.3	103.73	3.577		
9,300.0	6,692.1	9,400.6	6,828.0	57.0	56.8	-111.48	-2,883.3	45.9	371.4	264.2	107.15	3.466		
9,400.0	6,691.3	9,500.6	6,828.0	58.9	58.7	-111.58	-2,983.3	45.1	371.7	261.1	110.57	3.362		
9,500.0	6,690.5	9,600.6	6,828.0	60.7	60.5	-111.69	-3,083.3	44.2	372.0	258.0	113.99	3.264		
9,600.0	6,689.7	9,700.6	6,828.0	62.6	62.4	-111.80	-3,183.3	43.4	372.4	254.9	117.41	3.171		
9,700.0	6,689.0	9,800.6	6,828.0	64.4	64.2	-111.90	-3,283.3	42.6	372.7	251.9	120.84	3.084		
9,800.0	6,688.2	9,900.6	6,828.0	66.3	66.1	-112.01	-3,383.3	41.7	373.0	248.8	124.26	3.002		
9,900.0	6,687.4	10,000.6	6,828.0	68.2	68.0	-112.11	-3,483.3	40.9	373.4	245.7	127.69	2.924		
10,000.0	6,686.7	10,100.6	6,828.0	70.0	69.8	-112.22	-3,583.3	40.1	373.7	242.6	131.12	2.850		

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 Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 6M-203 Pad Sec.6-T2N-R63W - Guttersen 6M-423 - Wellbore #1 - Plan #1 (5-31-13)													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)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
10,100.0	6,685.9	10,200.6	6,828.0	71.9	71.7	-112.33	-3,683.3	39.3	374.1	239.5	134.55	2.780		
10,200.0	6,685.1	10,300.6	6,828.0	73.8	73.6	-112.43	-3,783.3	38.4	374.4	236.4	137.97	2.714		
10,300.0	6,684.4	10,400.6	6,828.0	75.7	75.5	-112.54	-3,883.3	37.6	374.7	233.3	141.40	2.650		
10,400.0	6,683.6	10,500.6	6,828.0	77.5	77.3	-112.64	-3,983.2	36.8	375.1	230.3	144.82	2.590		
10,500.0	6,682.8	10,600.6	6,828.0	79.4	79.2	-112.75	-4,083.2	35.9	375.4	227.2	148.24	2.533		
10,600.0	6,682.1	10,700.6	6,828.0	81.3	81.1	-112.85	-4,183.2	35.1	375.8	224.1	151.66	2.478		
10,700.0	6,681.3	10,800.6	6,828.0	83.2	83.0	-112.96	-4,283.2	34.3	376.1	221.0	155.08	2.425		
10,800.0	6,680.5	10,900.6	6,828.0	85.1	84.9	-113.06	-4,383.2	33.5	376.5	218.0	158.50	2.375		
10,900.0	6,679.8	11,000.6	6,828.0	87.0	86.8	-113.16	-4,483.2	32.6	376.8	214.9	161.91	2.327		
11,000.0	6,679.0	11,100.6	6,828.0	88.8	88.7	-113.27	-4,583.2	31.8	377.2	211.9	165.32	2.281		
11,100.0	6,678.2	11,200.6	6,828.0	90.7	90.5	-113.37	-4,683.2	31.0	377.5	208.8	168.73	2.237		
11,130.0	6,678.0	11,227.7	6,828.0	91.2	91.1	-113.40	-4,710.4	30.7	377.6	208.0	169.60	2.227 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersten 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersten 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersten 6M-203 Pad Sec.6-T2N-R63W - Guttersten 6R-243 - Wellbore #1 - Plan #1 (5-31-13)													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	90.00	90.00	0.0	58.7	58.7				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	90.00	0.0	58.7	58.7	58.5	0.22	261.091	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	90.00	0.0	58.7	58.7	58.0	0.67	87.030	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	90.00	0.0	58.7	58.7	57.6	1.12	52.218	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	90.00	0.0	58.7	58.7	57.1	1.57	37.299	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	90.00	0.0	58.7	58.7	56.7	2.02	29.010	
600.0	600.0	600.0	600.0	1.2	1.2	90.00	90.00	0.0	58.7	58.7	56.2	2.47	23.736	
700.0	700.0	700.0	700.0	1.5	1.5	90.00	90.00	0.0	58.7	58.7	55.8	2.92	20.084	
800.0	800.0	800.0	800.0	1.7	1.7	90.00	90.00	0.0	58.7	58.7	55.3	3.37	17.406	
900.0	900.0	900.0	900.0	1.9	1.9	90.00	90.00	0.0	58.7	58.7	54.9	3.82	15.358	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	90.00	0.0	58.7	58.7	54.4	4.27	13.742 CC, ES	
1,100.0	1,100.0	1,098.4	1,098.4	2.3	2.3	174.81	174.81	0.1	59.9	61.3	56.6	4.69	13.060	
1,200.0	1,199.9	1,196.5	1,196.4	2.6	2.5	174.85	174.85	0.4	63.7	69.0	63.9	5.09	13.549	
1,300.0	1,299.7	1,293.7	1,293.4	2.8	2.8	174.90	174.90	0.8	69.9	81.9	76.4	5.50	14.884	
1,400.0	1,399.3	1,389.8	1,389.1	3.0	3.0	174.95	174.95	1.5	78.5	99.9	93.9	5.91	16.886	
1,500.0	1,498.7	1,486.9	1,485.7	3.2	3.2	174.99	174.99	2.3	88.9	120.9	114.6	6.33	19.094	
1,600.0	1,598.2	1,584.6	1,582.8	3.5	3.5	175.02	175.02	3.0	99.5	142.1	135.4	6.76	21.036	
1,700.0	1,697.6	1,682.4	1,680.0	3.8	3.7	175.04	175.04	3.8	110.0	163.3	156.1	7.18	22.733	
1,800.0	1,797.0	1,780.1	1,777.1	4.0	4.0	175.05	175.05	4.6	120.6	184.4	176.8	7.61	24.226	
1,900.0	1,896.5	1,877.8	1,874.3	4.3	4.2	175.06	175.06	5.4	131.1	205.6	197.6	8.05	25.546	
2,000.0	1,995.9	1,975.6	1,971.5	4.6	4.5	175.07	175.07	6.2	141.7	226.8	218.3	8.49	26.722	
2,100.0	2,095.4	2,073.3	2,068.6	4.8	4.8	175.08	175.08	7.0	152.2	248.0	239.0	8.93	27.775	
2,200.0	2,194.8	2,171.0	2,165.8	5.1	5.0	175.09	175.09	7.8	162.8	269.1	259.8	9.37	28.721	
2,300.0	2,294.3	2,268.8	2,262.9	5.4	5.3	175.09	175.09	8.5	173.3	290.3	280.5	9.82	29.576	
2,400.0	2,393.7	2,366.5	2,360.1	5.7	5.6	175.10	175.10	9.3	183.8	311.5	301.2	10.26	30.351	
2,500.0	2,493.1	2,464.2	2,457.3	6.0	5.9	175.10	175.10	10.1	194.4	332.6	321.9	10.71	31.058	
2,600.0	2,592.6	2,562.0	2,554.4	6.3	6.2	175.11	175.11	10.9	204.9	353.8	342.6	11.16	31.704	
2,700.0	2,692.0	2,659.7	2,651.6	6.6	6.4	175.11	175.11	11.7	215.5	375.0	363.4	11.61	32.296	
2,800.0	2,791.5	2,757.4	2,748.7	6.8	6.7	175.11	175.11	12.5	226.0	396.1	384.1	12.06	32.842	
2,900.0	2,890.9	2,855.2	2,845.9	7.1	7.0	175.12	175.12	13.3	236.6	417.3	404.8	12.51	33.345	
3,000.0	2,990.4	2,952.9	2,943.1	7.4	7.3	175.12	175.12	14.1	247.1	438.5	425.5	12.97	33.811	
3,100.0	3,089.8	3,050.6	3,040.2	7.7	7.6	175.12	175.12	14.8	257.7	459.6	446.2	13.42	34.244	
3,200.0	3,189.2	3,148.4	3,137.4	8.0	7.9	175.12	175.12	15.6	268.2	480.8	466.9	13.88	34.646	
3,300.0	3,288.7	3,246.1	3,234.5	8.3	8.2	175.13	175.13	16.4	278.8	502.0	487.6	14.33	35.022	
3,400.0	3,388.1	3,343.8	3,331.7	8.6	8.5	175.13	175.13	17.2	289.3	523.1	508.3	14.79	35.373	
3,500.0	3,487.6	3,441.6	3,428.9	8.9	8.7	175.13	175.13	18.0	299.9	544.3	529.1	15.25	35.701	
3,600.0	3,587.0	3,539.3	3,526.0	9.2	9.0	175.13	175.13	18.8	310.4	565.5	549.8	15.70	36.010	
3,700.0	3,686.6	3,637.3	3,623.4	9.4	9.3	175.15	175.15	19.6	321.0	585.6	569.5	16.17	36.216	
3,800.0	3,786.3	3,735.7	3,721.2	9.6	9.6	175.14	175.14	20.4	331.6	603.2	586.6	16.61	36.320	
3,900.0	3,886.2	3,834.6	3,819.5	9.8	9.9	175.11	175.11	21.2	342.3	618.2	601.2	17.04	36.286	
4,000.0	3,986.2	3,933.8	3,918.2	10.0	10.2	175.06	175.06	22.0	353.0	630.7	613.2	17.46	36.127	
4,100.0	4,086.2	4,033.2	4,017.0	10.2	10.5	90.20	90.20	22.8	363.8	641.5	623.6	17.89	35.866	
4,200.0	4,186.2	4,138.6	4,121.8	10.4	10.8	90.12	90.12	23.6	375.0	652.2	633.8	18.33	35.576	
4,300.0	4,286.2	4,258.9	4,241.7	10.5	11.1	90.06	90.06	24.3	385.0	660.5	641.7	18.78	35.174	
4,400.0	4,386.2	4,379.7	4,362.3	10.7	11.3	90.02	90.02	24.8	391.2	665.6	646.4	19.21	34.656	
4,500.0	4,486.2	4,500.7	4,483.3	10.9	11.5	90.00	90.00	25.0	393.6	667.7	648.0	19.63	34.004	
4,600.0	4,586.2	4,603.6	4,586.2	11.1	11.7	90.00	90.00	25.0	393.7	667.7	647.6	20.05	33.309	
4,700.0	4,686.2	4,703.6	4,686.2	11.3	11.9	90.00	90.00	25.0	393.7	667.7	647.2	20.46	32.632	
4,800.0	4,786.2	4,803.6	4,786.2	11.5	12.0	90.00	90.00	25.0	393.7	667.7	646.8	20.88	31.980	
4,900.0	4,886.2	4,903.6	4,886.2	11.7	12.2	90.00	90.00	25.0	393.7	667.7	646.4	21.30	31.352	
5,000.0	4,986.2	5,003.6	4,986.2	11.9	12.4	90.00	90.00	25.0	393.7	667.7	646.0	21.72	30.746	

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 Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 6M-203 Pad Sec.6-T2N-R63W - Guttersen 6R-243 - Wellbore #1 - Plan #1 (5-31-13)													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 (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	
5,100.0	5,086.2	5,103.6	5,086.2	12.1	12.6	90.00	25.0	393.7	667.7	645.5	22.14	30.162		
5,200.0	5,186.2	5,203.6	5,186.2	12.3	12.8	90.00	25.0	393.7	667.7	645.1	22.56	29.598		
5,300.0	5,286.2	5,303.6	5,286.2	12.5	13.0	90.00	25.0	393.7	667.7	644.7	22.98	29.053		
5,400.0	5,386.2	5,403.6	5,386.2	12.7	13.2	90.00	25.0	393.7	667.7	644.3	23.41	28.527		
5,500.0	5,486.2	5,503.6	5,486.2	12.9	13.4	90.00	25.0	393.7	667.7	643.9	23.83	28.018		
5,600.0	5,586.2	5,603.6	5,586.2	13.1	13.6	90.00	25.0	393.7	667.7	643.4	24.26	27.527		
5,700.0	5,686.2	5,703.6	5,686.2	13.3	13.8	90.00	25.0	393.7	667.7	643.0	24.68	27.051		
5,800.0	5,786.2	5,803.6	5,786.2	13.5	13.9	90.00	25.0	393.7	667.7	642.6	25.11	26.590		
5,900.0	5,886.2	5,903.6	5,886.2	13.7	14.1	90.00	25.0	393.7	667.7	642.1	25.54	26.145		
6,000.0	5,986.2	6,004.0	5,986.3	13.9	14.3	-90.13	19.5	393.6	667.7	641.7	25.94	25.743		
6,009.3	5,995.5	6,013.3	5,995.5	13.9	14.3	-90.08	18.3	393.6	667.7	641.7	25.97	25.711		
6,100.0	6,085.4	6,103.5	6,084.0	14.1	14.5	-89.57	1.1	393.5	667.7	641.4	26.29	25.401		
6,200.0	6,182.2	6,202.1	6,177.8	14.2	14.7	-89.01	-29.5	393.2	667.8	641.1	26.64	25.063		
6,300.0	6,274.9	6,300.0	6,266.1	14.4	14.9	-88.48	-71.5	392.9	668.0	640.9	27.06	24.686		
6,400.0	6,362.0	6,397.1	6,347.7	14.7	15.1	-87.97	-124.0	392.5	668.2	640.6	27.59	24.219		
6,500.0	6,442.0	6,493.6	6,421.6	14.9	15.4	-87.50	-186.0	392.0	668.4	640.1	28.30	23.618		
6,600.0	6,513.4	6,589.4	6,486.6	15.3	15.8	-87.07	-256.3	391.4	668.7	639.5	29.26	22.855		
6,700.0	6,575.1	6,684.8	6,542.1	15.9	16.4	-86.69	-333.7	390.8	669.0	638.5	30.51	21.930		
6,800.0	6,626.0	6,779.6	6,587.3	16.6	17.1	-86.37	-417.0	390.1	669.3	637.2	32.07	20.871		
6,900.0	6,665.2	6,874.1	6,621.7	17.5	17.9	-86.10	-505.0	389.4	669.6	635.6	33.94	19.727		
7,000.0	6,692.1	6,968.3	6,645.0	18.5	19.0	-85.90	-596.2	388.6	669.8	633.7	36.10	18.554		
7,100.0	6,706.3	7,062.3	6,656.8	19.7	20.1	-85.76	-689.3	387.8	670.0	631.5	38.50	17.403		
7,200.0	6,708.2	7,158.1	6,657.7	21.0	21.3	-85.68	-785.1	387.1	670.1	629.0	41.11	16.300		
7,300.0	6,707.4	7,258.1	6,655.8	22.4	22.7	-85.58	-885.1	386.2	670.2	626.3	43.94	15.254		
7,400.0	6,706.6	7,358.1	6,653.9	23.9	24.1	-85.49	-985.0	385.4	670.4	623.5	46.90	14.293		
7,500.0	6,705.9	7,458.1	6,652.0	25.4	25.7	-85.39	-1,085.0	384.6	670.6	620.6	49.98	13.415		
7,600.0	6,705.1	7,558.1	6,650.1	27.0	27.2	-85.29	-1,185.0	383.8	670.7	617.6	53.16	12.617		
7,700.0	6,704.3	7,658.1	6,648.2	28.6	28.8	-85.20	-1,285.0	383.0	670.9	614.5	56.41	11.892		
7,800.0	6,703.6	7,758.0	6,646.3	30.2	30.5	-85.10	-1,384.9	382.2	671.0	611.3	59.73	11.234		
7,900.0	6,702.8	7,858.0	6,644.4	31.9	32.1	-85.00	-1,484.9	381.3	671.2	608.1	63.11	10.636		
8,000.0	6,702.0	7,958.0	6,642.5	33.6	33.8	-84.91	-1,584.9	380.5	671.4	604.8	66.53	10.092		
8,100.0	6,701.3	8,058.0	6,640.6	35.4	35.6	-84.81	-1,684.8	379.7	671.5	601.5	69.99	9.595		
8,200.0	6,700.5	8,158.0	6,638.7	37.1	37.3	-84.72	-1,784.8	378.9	671.7	598.2	73.48	9.142		
8,300.0	6,699.7	8,258.0	6,636.8	38.9	39.0	-84.62	-1,884.8	378.1	671.9	594.9	77.00	8.726		
8,400.0	6,699.0	8,358.0	6,634.9	40.6	40.8	-84.53	-1,984.8	377.2	672.0	591.5	80.55	8.344		
8,500.0	6,698.2	8,458.0	6,633.0	42.4	42.6	-84.43	-2,084.7	376.4	672.2	588.1	84.11	7.992		
8,600.0	6,697.4	8,558.0	6,631.1	44.2	44.4	-84.33	-2,184.7	375.6	672.4	584.7	87.70	7.667		
8,700.0	6,696.7	8,658.0	6,629.2	46.0	46.2	-84.24	-2,284.7	374.8	672.6	581.3	91.30	7.366		
8,800.0	6,695.9	8,758.0	6,627.3	47.8	48.0	-84.14	-2,384.6	374.0	672.8	577.8	94.92	7.087		
8,900.0	6,695.1	8,858.0	6,625.3	49.7	49.8	-84.05	-2,484.6	373.2	672.9	574.4	98.55	6.828		
9,000.0	6,694.4	8,958.0	6,623.4	51.5	51.7	-83.95	-2,584.6	372.3	673.1	570.9	102.19	6.587		
9,100.0	6,693.6	9,058.0	6,621.5	53.3	53.5	-83.86	-2,684.6	371.5	673.3	567.5	105.84	6.361		
9,200.0	6,692.8	9,158.0	6,619.6	55.2	55.3	-83.76	-2,784.5	370.7	673.5	564.0	109.50	6.151		
9,300.0	6,692.1	9,257.9	6,617.7	57.0	57.2	-83.67	-2,884.5	369.9	673.7	560.5	113.17	5.953		
9,400.0	6,691.3	9,357.9	6,615.8	58.9	59.0	-83.57	-2,984.5	369.1	673.9	557.0	116.84	5.767		
9,500.0	6,690.5	9,457.9	6,613.9	60.7	60.9	-83.48	-3,084.5	368.3	674.1	553.5	120.52	5.593		
9,600.0	6,689.7	9,557.9	6,612.0	62.6	62.7	-83.38	-3,184.4	367.4	674.3	550.1	124.21	5.429		
9,700.0	6,689.0	9,657.9	6,610.1	64.4	64.6	-83.29	-3,284.4	366.6	674.5	546.6	127.90	5.274		
9,800.0	6,688.2	9,757.9	6,608.2	66.3	66.4	-83.19	-3,384.4	365.8	674.7	543.1	131.59	5.127		
9,900.0	6,687.4	9,857.9	6,606.3	68.2	68.3	-83.10	-3,484.3	365.0	674.9	539.6	135.29	4.988		
10,000.0	6,686.7	9,957.9	6,604.4	70.0	70.2	-83.00	-3,584.3	364.2	675.1	536.1	138.99	4.857		

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

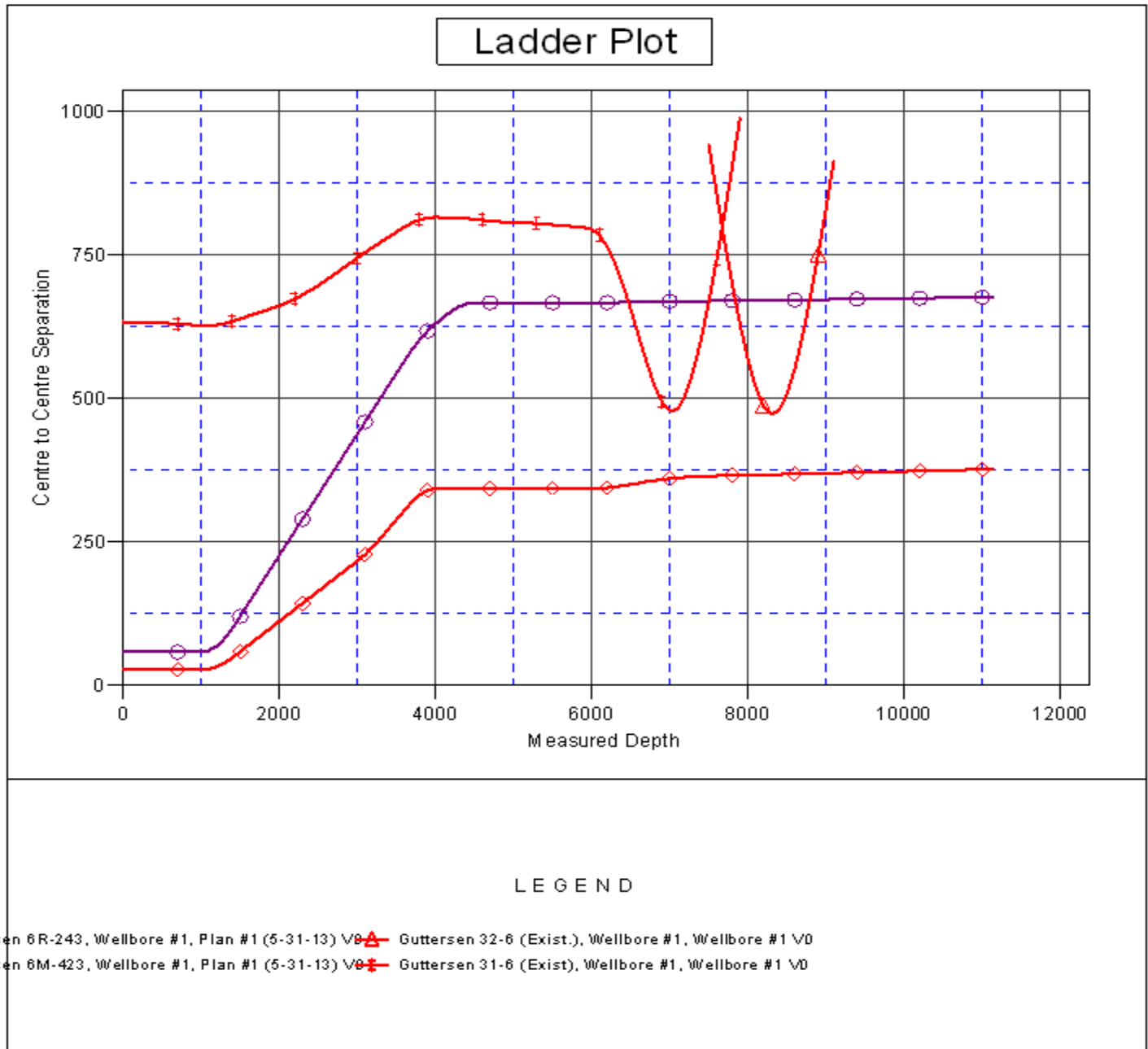
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 6M-203 Pad Sec.6-T2N-R63W - Guttersen 6R-243 - Wellbore #1 - Plan #1 (5-31-13)												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)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,100.0	6,685.9	10,057.9	6,602.5	71.9	72.0	-82.91	-3,684.3	363.3	675.3	532.6	142.69	4.732	
10,200.0	6,685.1	10,157.9	6,600.6	73.8	73.9	-82.81	-3,784.3	362.5	675.5	529.1	146.39	4.614	
10,300.0	6,684.4	10,257.9	6,598.7	75.7	75.8	-82.72	-3,884.2	361.7	675.7	525.6	150.10	4.502	
10,400.0	6,683.6	10,357.9	6,596.8	77.5	77.7	-82.62	-3,984.2	360.9	675.9	522.1	153.81	4.394	
10,500.0	6,682.8	10,457.9	6,594.9	79.4	79.5	-82.53	-4,084.2	360.1	676.1	518.6	157.52	4.292	
10,600.0	6,682.1	10,557.9	6,593.0	81.3	81.4	-82.43	-4,184.1	359.3	676.3	515.1	161.23	4.195	
10,700.0	6,681.3	10,657.9	6,591.1	83.2	83.3	-82.34	-4,284.1	358.4	676.5	511.6	164.95	4.102	
10,800.0	6,680.5	10,757.9	6,589.2	85.1	85.2	-82.24	-4,384.1	357.6	676.7	508.1	168.66	4.013	
10,900.0	6,679.8	10,857.8	6,587.3	87.0	87.1	-82.15	-4,484.1	356.8	677.0	504.6	172.37	3.927	
11,000.0	6,679.0	10,957.8	6,585.4	88.8	89.0	-82.05	-4,584.0	356.0	677.2	501.1	176.09	3.846	
11,100.0	6,678.2	11,057.8	6,583.5	90.7	90.8	-81.96	-4,684.0	355.2	677.4	497.6	179.80	3.768	
11,130.0	6,678.0	11,084.2	6,583.0	91.2	91.3	-81.94	-4,710.4	355.0	677.5	496.7	180.75	3.748 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 6M-303	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 #2 (11-05-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4838.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Guttersen 6M-303
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.66°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 6M-303
Project:	SEC.6-T2N-R63W	TVD Reference:	WELL @ 4838.0ft (RKB - 15')
Reference Site:	Guttersen 6M-203 Pad Sec.6-T2N-R63W	MD Reference:	WELL @ 4838.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
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Reference Wellbore	Wellbore #1	Database:	Landmark
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