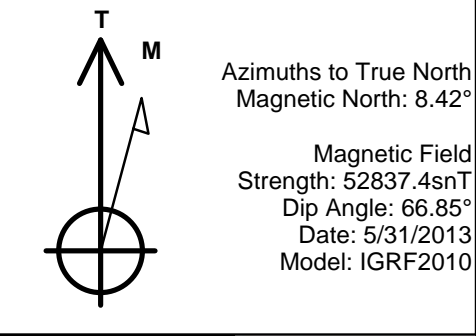


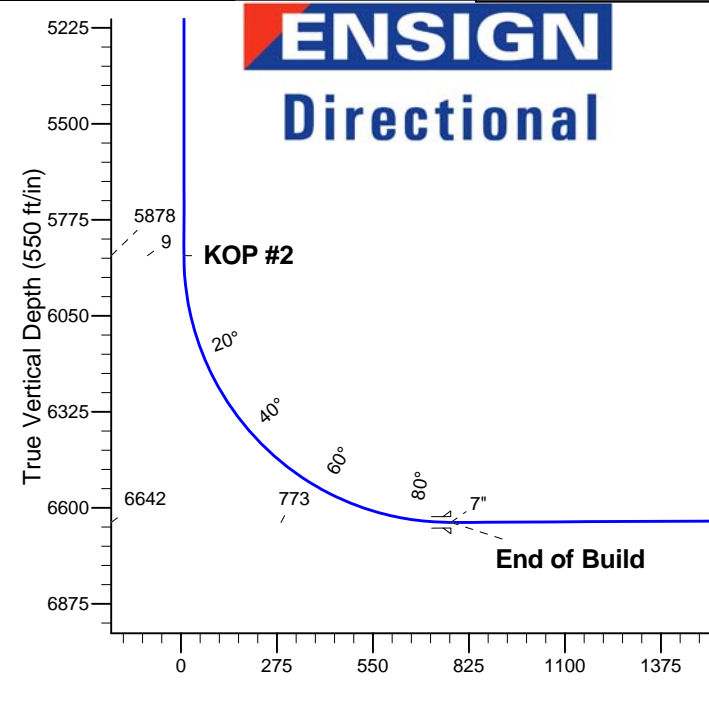
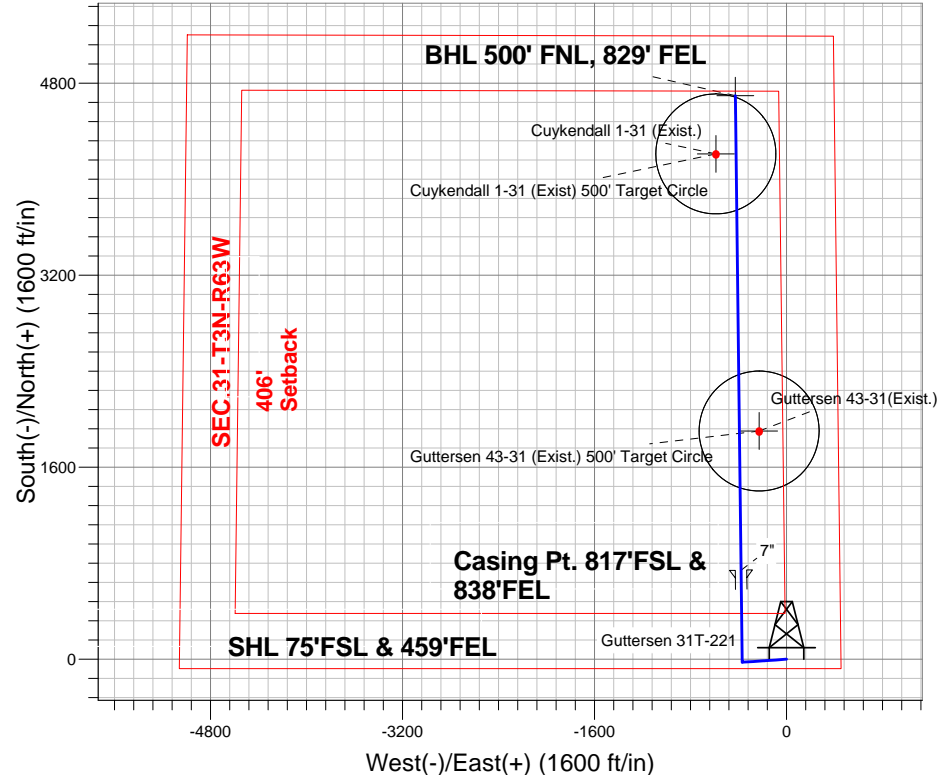
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Guttersen 31T-221**
Surface Location: Guttersen 31Y-201 Pad Sec.31-T3N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4836.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1308211.283287096.50 40.174870 -104.472560
RKB - 15' WELL @ 4851.0ft (RKB - 15')

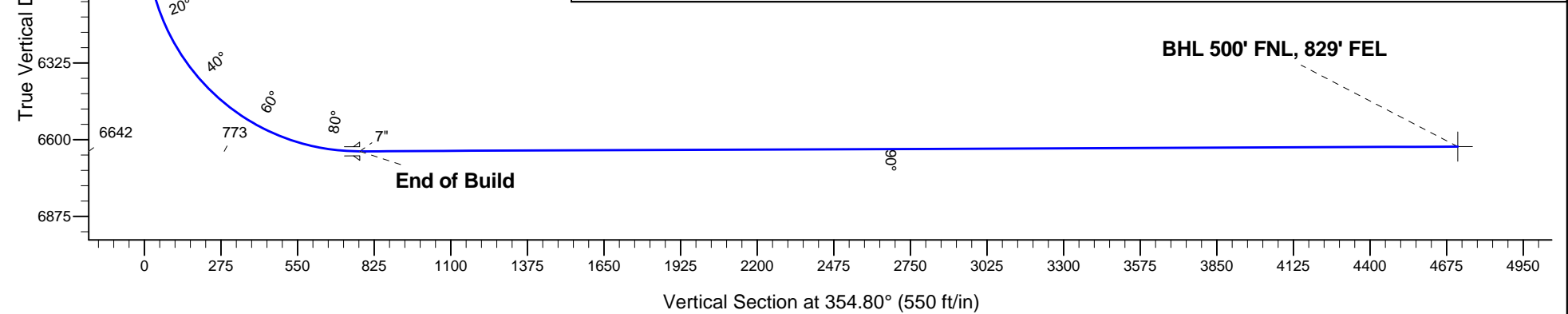
WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
BHL 500' FNL, 829' FEL	6625.0	4695.8	-427.5	Point



Guttersen 31Y-201 Pad Sec.31-T3N-R63W Guttersen 31T-221 Plan #1 (5-31-13) 15:00, May 31 2013		
ANNOTATIONS		
TVD	MD	Annotation
1000.0	1000.0	KOP #1
5877.7	5896.7	KOP #2
6641.6	7099.9	End of Build



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1302.7	6.05	266.13	1302.1	-1.1	-15.9	2.00	266.13	0.4	
4	4516.4	6.05	266.13	4497.9	-23.9	-354.1	0.00	0.00	8.3	
5	4819.0	0.00	0.00	4800.0	-25.0	-370.0	2.00	180.00	8.6	
6	5896.7	0.00	0.00	5877.6	-25.0	-370.0	0.00	0.00	8.6	
7	7099.9	90.24	359.30	6641.6	742.1	-379.3	7.50	359.30	773.4	
8	11053.9	90.24	359.30	6625.0	4695.8	-427.5	0.00	0.00	4715.2	BHL 500' FNL, 829' FEL





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.31-T3N-R63W

Guttersen 31Y-201 Pad Sec.31-T3N-R63W

Guttersen 31T-221

Wellbore #1

Plan: Plan #1 (5-31-13)

Standard Planning Report

31 May, 2013

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	
1,302.7	6.05	266.13	1,302.1	-1.1	-15.9	2.00	2.00	0.00	266.13	
4,516.4	6.05	266.13	4,497.9	-23.9	-354.1	0.00	0.00	0.00	0.00	
4,819.0	0.00	0.00	4,800.0	-25.0	-370.0	2.00	-2.00	0.00	180.00	
5,896.7	0.00	0.00	5,877.6	-25.0	-370.0	0.00	0.00	0.00	0.00	
7,099.9	90.24	359.30	6,641.6	742.1	-379.3	7.50	7.50	0.00	359.30	
11,053.9	90.24	359.30	6,625.0	4,695.8	-427.5	0.00	0.00	0.00	0.00	BHL 500' FNL, 829'

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 31T-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Project:	SEC.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	North Reference:	True
Well:	Guttersen 31T-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-31-13)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
Guttersen 43-31 (Exist.) 500' Target Circle									
14.0	0.00	0.00	14.0	0.0	0.0	0.0	0.00	0.00	0.00
Cuykendall 1-31 (Exist) 500' Target Circle									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,040.0	0.80	266.13	1,040.0	0.0	-0.3	0.0	2.00	2.00	0.00
1,080.0	1.60	266.13	1,080.0	-0.1	-1.1	0.0	2.00	2.00	0.00
1,120.0	2.40	266.13	1,120.0	-0.2	-2.5	0.1	2.00	2.00	0.00
1,160.0	3.20	266.13	1,159.9	-0.3	-4.5	0.1	2.00	2.00	0.00
1,200.0	4.00	266.13	1,199.8	-0.5	-7.0	0.2	2.00	2.00	0.00
1,240.0	4.80	266.13	1,239.7	-0.7	-10.0	0.2	2.00	2.00	0.00
1,280.0	5.60	266.13	1,279.6	-0.9	-13.6	0.3	2.00	2.00	0.00
1,302.7	6.05	266.13	1,302.1	-1.1	-15.9	0.4	2.00	2.00	0.00
1,320.0	6.05	266.13	1,319.3	-1.2	-17.8	0.4	0.00	0.00	0.00
1,360.0	6.05	266.13	1,359.1	-1.5	-22.0	0.5	0.00	0.00	0.00
1,400.0	6.05	266.13	1,398.9	-1.8	-26.2	0.6	0.00	0.00	0.00
1,440.0	6.05	266.13	1,438.7	-2.1	-30.4	0.7	0.00	0.00	0.00
1,480.0	6.05	266.13	1,478.4	-2.3	-34.6	0.8	0.00	0.00	0.00
1,520.0	6.05	266.13	1,518.2	-2.6	-38.8	0.9	0.00	0.00	0.00
1,560.0	6.05	266.13	1,558.0	-2.9	-43.0	1.0	0.00	0.00	0.00
1,600.0	6.05	266.13	1,597.8	-3.2	-47.2	1.1	0.00	0.00	0.00
1,640.0	6.05	266.13	1,637.6	-3.5	-51.4	1.2	0.00	0.00	0.00
1,680.0	6.05	266.13	1,677.3	-3.8	-55.6	1.3	0.00	0.00	0.00
1,720.0	6.05	266.13	1,717.1	-4.0	-59.8	1.4	0.00	0.00	0.00
1,760.0	6.05	266.13	1,756.9	-4.3	-64.1	1.5	0.00	0.00	0.00
1,800.0	6.05	266.13	1,796.7	-4.6	-68.3	1.6	0.00	0.00	0.00
1,840.0	6.05	266.13	1,836.4	-4.9	-72.5	1.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 31T-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Project:	SEC.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	North Reference:	True
Well:	Guttersen 31T-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-31-13)		

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)	
1,880.0	6.05	266.13	1,876.2	-5.2	-76.7	1.8	0.00	0.00	0.00	
1,920.0	6.05	266.13	1,916.0	-5.5	-80.9	1.9	0.00	0.00	0.00	
1,960.0	6.05	266.13	1,955.8	-5.7	-85.1	2.0	0.00	0.00	0.00	
2,000.0	6.05	266.13	1,995.5	-6.0	-89.3	2.1	0.00	0.00	0.00	
2,040.0	6.05	266.13	2,035.3	-6.3	-93.5	2.2	0.00	0.00	0.00	
2,080.0	6.05	266.13	2,075.1	-6.6	-97.7	2.3	0.00	0.00	0.00	
2,120.0	6.05	266.13	2,114.9	-6.9	-101.9	2.4	0.00	0.00	0.00	
2,160.0	6.05	266.13	2,154.7	-7.2	-106.1	2.5	0.00	0.00	0.00	
2,200.0	6.05	266.13	2,194.4	-7.5	-110.3	2.6	0.00	0.00	0.00	
2,240.0	6.05	266.13	2,234.2	-7.7	-114.6	2.7	0.00	0.00	0.00	
2,280.0	6.05	266.13	2,274.0	-8.0	-118.8	2.8	0.00	0.00	0.00	
2,320.0	6.05	266.13	2,313.8	-8.3	-123.0	2.9	0.00	0.00	0.00	
2,360.0	6.05	266.13	2,353.5	-8.6	-127.2	3.0	0.00	0.00	0.00	
2,400.0	6.05	266.13	2,393.3	-8.9	-131.4	3.1	0.00	0.00	0.00	
2,440.0	6.05	266.13	2,433.1	-9.2	-135.6	3.2	0.00	0.00	0.00	
2,480.0	6.05	266.13	2,472.9	-9.4	-139.8	3.3	0.00	0.00	0.00	
2,520.0	6.05	266.13	2,512.6	-9.7	-144.0	3.4	0.00	0.00	0.00	
2,560.0	6.05	266.13	2,552.4	-10.0	-148.2	3.5	0.00	0.00	0.00	
2,600.0	6.05	266.13	2,592.2	-10.3	-152.4	3.6	0.00	0.00	0.00	
2,640.0	6.05	266.13	2,632.0	-10.6	-156.6	3.7	0.00	0.00	0.00	
2,680.0	6.05	266.13	2,671.8	-10.9	-160.9	3.8	0.00	0.00	0.00	
2,720.0	6.05	266.13	2,711.5	-11.2	-165.1	3.9	0.00	0.00	0.00	
2,760.0	6.05	266.13	2,751.3	-11.4	-169.3	4.0	0.00	0.00	0.00	
2,800.0	6.05	266.13	2,791.1	-11.7	-173.5	4.1	0.00	0.00	0.00	
2,840.0	6.05	266.13	2,830.9	-12.0	-177.7	4.2	0.00	0.00	0.00	
2,880.0	6.05	266.13	2,870.6	-12.3	-181.9	4.3	0.00	0.00	0.00	
2,920.0	6.05	266.13	2,910.4	-12.6	-186.1	4.3	0.00	0.00	0.00	
2,960.0	6.05	266.13	2,950.2	-12.9	-190.3	4.4	0.00	0.00	0.00	
3,000.0	6.05	266.13	2,990.0	-13.1	-194.5	4.5	0.00	0.00	0.00	
3,040.0	6.05	266.13	3,029.8	-13.4	-198.7	4.6	0.00	0.00	0.00	
3,080.0	6.05	266.13	3,069.5	-13.7	-202.9	4.7	0.00	0.00	0.00	
3,120.0	6.05	266.13	3,109.3	-14.0	-207.1	4.8	0.00	0.00	0.00	
3,160.0	6.05	266.13	3,149.1	-14.3	-211.4	4.9	0.00	0.00	0.00	
3,200.0	6.05	266.13	3,188.9	-14.6	-215.6	5.0	0.00	0.00	0.00	
3,240.0	6.05	266.13	3,228.6	-14.8	-219.8	5.1	0.00	0.00	0.00	
3,280.0	6.05	266.13	3,268.4	-15.1	-224.0	5.2	0.00	0.00	0.00	
3,320.0	6.05	266.13	3,308.2	-15.4	-228.2	5.3	0.00	0.00	0.00	
3,360.0	6.05	266.13	3,348.0	-15.7	-232.4	5.4	0.00	0.00	0.00	
3,400.0	6.05	266.13	3,387.7	-16.0	-236.6	5.5	0.00	0.00	0.00	
3,440.0	6.05	266.13	3,427.5	-16.3	-240.8	5.6	0.00	0.00	0.00	
3,480.0	6.05	266.13	3,467.3	-16.6	-245.0	5.7	0.00	0.00	0.00	
3,520.0	6.05	266.13	3,507.1	-16.8	-249.2	5.8	0.00	0.00	0.00	
3,560.0	6.05	266.13	3,546.9	-17.1	-253.4	5.9	0.00	0.00	0.00	
3,600.0	6.05	266.13	3,586.6	-17.4	-257.6	6.0	0.00	0.00	0.00	
3,640.0	6.05	266.13	3,626.4	-17.7	-261.9	6.1	0.00	0.00	0.00	
3,680.0	6.05	266.13	3,666.2	-18.0	-266.1	6.2	0.00	0.00	0.00	
3,720.0	6.05	266.13	3,706.0	-18.3	-270.3	6.3	0.00	0.00	0.00	
3,760.0	6.05	266.13	3,745.7	-18.5	-274.5	6.4	0.00	0.00	0.00	
3,800.0	6.05	266.13	3,785.5	-18.8	-278.7	6.5	0.00	0.00	0.00	
3,840.0	6.05	266.13	3,825.3	-19.1	-282.9	6.6	0.00	0.00	0.00	
3,880.0	6.05	266.13	3,865.1	-19.4	-287.1	6.7	0.00	0.00	0.00	
3,920.0	6.05	266.13	3,904.8	-19.7	-291.3	6.8	0.00	0.00	0.00	
3,960.0	6.05	266.13	3,944.6	-20.0	-295.5	6.9	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 31T-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Project:	SEC.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	North Reference:	True
Well:	Guttersen 31T-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-31-13)		

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)
4,000.0	6.05	266.13	3,984.4	-20.3	-299.7	7.0	0.00	0.00	0.00
4,040.0	6.05	266.13	4,024.2	-20.5	-303.9	7.1	0.00	0.00	0.00
4,080.0	6.05	266.13	4,064.0	-20.8	-308.1	7.2	0.00	0.00	0.00
4,120.0	6.05	266.13	4,103.7	-21.1	-312.4	7.3	0.00	0.00	0.00
4,160.0	6.05	266.13	4,143.5	-21.4	-316.6	7.4	0.00	0.00	0.00
4,200.0	6.05	266.13	4,183.3	-21.7	-320.8	7.5	0.00	0.00	0.00
4,240.0	6.05	266.13	4,223.1	-22.0	-325.0	7.6	0.00	0.00	0.00
4,280.0	6.05	266.13	4,262.8	-22.2	-329.2	7.7	0.00	0.00	0.00
4,320.0	6.05	266.13	4,302.6	-22.5	-333.4	7.8	0.00	0.00	0.00
4,360.0	6.05	266.13	4,342.4	-22.8	-337.6	7.9	0.00	0.00	0.00
4,400.0	6.05	266.13	4,382.2	-23.1	-341.8	8.0	0.00	0.00	0.00
4,440.0	6.05	266.13	4,421.9	-23.4	-346.0	8.1	0.00	0.00	0.00
4,480.0	6.05	266.13	4,461.7	-23.7	-350.2	8.2	0.00	0.00	0.00
4,516.4	6.05	266.13	4,497.9	-23.9	-354.1	8.3	0.00	0.00	0.00
4,520.0	5.98	266.13	4,501.5	-23.9	-354.4	8.3	2.00	-2.00	0.00
4,560.0	5.18	266.13	4,541.3	-24.2	-358.3	8.4	2.00	-2.00	0.00
4,600.0	4.38	266.13	4,581.2	-24.4	-361.6	8.5	2.00	-2.00	0.00
4,640.0	3.58	266.13	4,621.1	-24.6	-364.4	8.5	2.00	-2.00	0.00
4,680.0	2.78	266.13	4,661.0	-24.8	-366.6	8.6	2.00	-2.00	0.00
4,720.0	1.98	266.13	4,701.0	-24.9	-368.3	8.6	2.00	-2.00	0.00
4,760.0	1.18	266.13	4,741.0	-25.0	-369.4	8.6	2.00	-2.00	0.00
4,800.0	0.38	266.13	4,781.0	-25.0	-369.9	8.6	2.00	-2.00	0.00
4,819.0	0.00	0.00	4,800.0	-25.0	-370.0	8.6	2.00	-2.00	0.00
4,840.0	0.00	0.00	4,821.0	-25.0	-370.0	8.6	0.00	0.00	0.00
4,880.0	0.00	0.00	4,861.0	-25.0	-370.0	8.6	0.00	0.00	0.00
4,920.0	0.00	0.00	4,901.0	-25.0	-370.0	8.6	0.00	0.00	0.00
4,960.0	0.00	0.00	4,941.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,981.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,040.0	0.00	0.00	5,021.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,080.0	0.00	0.00	5,061.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,120.0	0.00	0.00	5,101.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,160.0	0.00	0.00	5,141.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,181.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,240.0	0.00	0.00	5,221.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,280.0	0.00	0.00	5,261.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,320.0	0.00	0.00	5,301.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,360.0	0.00	0.00	5,341.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,381.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,440.0	0.00	0.00	5,421.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,480.0	0.00	0.00	5,461.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,520.0	0.00	0.00	5,501.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,560.0	0.00	0.00	5,541.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,581.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,621.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,661.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,701.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,741.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,781.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,821.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,861.0	-25.0	-370.0	8.6	0.00	0.00	0.00
5,896.7	0.00	0.00	5,877.7	-25.0	-370.0	8.6	0.00	0.00	0.00
KOP #2									
5,920.0	1.75	359.30	5,901.0	-24.6	-370.0	9.0	7.51	7.51	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 31T-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Project:	SEC.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	North Reference:	True
Well:	Guttersen 31T-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-31-13)		

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)
5,960.0	4.75	359.30	5,940.9	-22.4	-370.0	11.3	7.50	7.50	0.00
6,000.0	7.75	359.30	5,980.6	-18.0	-370.1	15.6	7.50	7.50	0.00
6,040.0	10.75	359.30	6,020.1	-11.6	-370.2	22.0	7.50	7.50	0.00
6,080.0	13.75	359.30	6,059.2	-3.1	-370.3	30.5	7.50	7.50	0.00
6,120.0	16.75	359.30	6,097.8	7.4	-370.4	41.0	7.50	7.50	0.00
6,160.0	19.75	359.30	6,135.8	19.9	-370.5	53.4	7.50	7.50	0.00
6,200.0	22.75	359.30	6,173.0	34.4	-370.7	67.9	7.50	7.50	0.00
6,240.0	25.75	359.30	6,209.5	50.9	-370.9	84.3	7.50	7.50	0.00
6,280.0	28.75	359.30	6,245.1	69.2	-371.1	102.5	7.50	7.50	0.00
6,320.0	31.75	359.30	6,279.6	89.3	-371.4	122.6	7.50	7.50	0.00
6,360.0	34.75	359.30	6,313.1	111.2	-371.7	144.5	7.50	7.50	0.00
6,400.0	37.75	359.30	6,345.3	134.9	-371.9	168.1	7.50	7.50	0.00
6,440.0	40.75	359.30	6,376.3	160.2	-372.3	193.3	7.50	7.50	0.00
6,480.0	43.75	359.30	6,405.9	187.1	-372.6	220.1	7.50	7.50	0.00
6,520.0	46.75	359.30	6,434.1	215.5	-372.9	248.4	7.50	7.50	0.00
6,560.0	49.75	359.30	6,460.7	245.3	-373.3	278.2	7.50	7.50	0.00
6,600.0	52.75	359.30	6,485.7	276.5	-373.7	309.2	7.50	7.50	0.00
6,640.0	55.75	359.30	6,509.1	309.0	-374.1	341.6	7.50	7.50	0.00
6,680.0	58.75	359.30	6,530.7	342.6	-374.5	375.1	7.50	7.50	0.00
6,720.0	61.75	359.30	6,550.6	377.3	-374.9	409.8	7.50	7.50	0.00
6,760.0	64.75	359.30	6,568.6	413.0	-375.3	445.4	7.50	7.50	0.00
6,800.0	67.75	359.30	6,584.7	449.6	-375.8	481.9	7.50	7.50	0.00
6,840.0	70.75	359.30	6,598.9	487.0	-376.2	519.1	7.50	7.50	0.00
6,880.0	73.75	359.30	6,611.0	525.1	-376.7	557.1	7.50	7.50	0.00
6,920.0	76.75	359.30	6,621.2	563.8	-377.2	595.7	7.50	7.50	0.00
6,960.0	79.75	359.30	6,629.4	603.0	-377.6	634.7	7.50	7.50	0.00
7,000.0	82.75	359.30	6,635.5	642.5	-378.1	674.1	7.50	7.50	0.00
7,040.0	85.75	359.30	6,639.5	682.3	-378.6	713.8	7.50	7.50	0.00
7,080.0	88.75	359.30	6,641.4	722.2	-379.1	753.6	7.50	7.50	0.00
7,099.9	90.24	359.30	6,641.6	742.1	-379.3	773.5	7.49	7.49	0.00
End of Build - 7"									
7,120.0	90.24	359.30	6,641.5	762.2	-379.6	793.5	0.00	0.00	0.00
7,160.0	90.24	359.30	6,641.3	802.2	-380.1	833.4	0.00	0.00	0.00
7,200.0	90.24	359.30	6,641.1	842.2	-380.6	873.2	0.00	0.00	0.00
7,240.0	90.24	359.30	6,641.0	882.2	-381.0	913.1	0.00	0.00	0.00
7,280.0	90.24	359.30	6,640.8	922.2	-381.5	953.0	0.00	0.00	0.00
7,320.0	90.24	359.30	6,640.6	962.2	-382.0	992.9	0.00	0.00	0.00
7,360.0	90.24	359.30	6,640.5	1,002.2	-382.5	1,032.7	0.00	0.00	0.00
7,400.0	90.24	359.30	6,640.3	1,042.2	-383.0	1,072.6	0.00	0.00	0.00
7,440.0	90.24	359.30	6,640.1	1,082.2	-383.5	1,112.5	0.00	0.00	0.00
7,480.0	90.24	359.30	6,640.0	1,122.2	-384.0	1,152.4	0.00	0.00	0.00
7,520.0	90.24	359.30	6,639.8	1,162.2	-384.5	1,192.3	0.00	0.00	0.00
7,560.0	90.24	359.30	6,639.6	1,202.2	-384.9	1,232.1	0.00	0.00	0.00
7,600.0	90.24	359.30	6,639.5	1,242.2	-385.4	1,272.0	0.00	0.00	0.00
7,640.0	90.24	359.30	6,639.3	1,282.2	-385.9	1,311.9	0.00	0.00	0.00
7,680.0	90.24	359.30	6,639.1	1,322.2	-386.4	1,351.8	0.00	0.00	0.00
7,720.0	90.24	359.30	6,639.0	1,362.2	-386.9	1,391.6	0.00	0.00	0.00
7,760.0	90.24	359.30	6,638.8	1,402.2	-387.4	1,431.5	0.00	0.00	0.00
7,800.0	90.24	359.30	6,638.6	1,442.2	-387.9	1,471.4	0.00	0.00	0.00
7,840.0	90.24	359.30	6,638.5	1,482.2	-388.3	1,511.3	0.00	0.00	0.00
7,880.0	90.24	359.30	6,638.3	1,522.2	-388.8	1,551.1	0.00	0.00	0.00
7,920.0	90.24	359.30	6,638.1	1,562.1	-389.3	1,591.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Guttersen 31T-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Project:	SEC.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	North Reference:	True
Well:	Guttersen 31T-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-31-13)		

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)
7,960.0	90.24	359.30	6,638.0	1,602.1	-389.8	1,630.9	0.00	0.00	0.00
8,000.0	90.24	359.30	6,637.8	1,642.1	-390.3	1,670.8	0.00	0.00	0.00
8,040.0	90.24	359.30	6,637.6	1,682.1	-390.8	1,710.6	0.00	0.00	0.00
8,080.0	90.24	359.30	6,637.5	1,722.1	-391.3	1,750.5	0.00	0.00	0.00
8,120.0	90.24	359.30	6,637.3	1,762.1	-391.8	1,790.4	0.00	0.00	0.00
8,160.0	90.24	359.30	6,637.1	1,802.1	-392.2	1,830.3	0.00	0.00	0.00
8,200.0	90.24	359.30	6,637.0	1,842.1	-392.7	1,870.1	0.00	0.00	0.00
8,240.0	90.24	359.30	6,636.8	1,882.1	-393.2	1,910.0	0.00	0.00	0.00
8,280.0	90.24	359.30	6,636.6	1,922.1	-393.7	1,949.9	0.00	0.00	0.00
8,320.0	90.24	359.30	6,636.5	1,962.1	-394.2	1,989.8	0.00	0.00	0.00
8,360.0	90.24	359.30	6,636.3	2,002.1	-394.7	2,029.6	0.00	0.00	0.00
8,400.0	90.24	359.30	6,636.1	2,042.1	-395.2	2,069.5	0.00	0.00	0.00
8,440.0	90.24	359.30	6,635.9	2,082.1	-395.7	2,109.4	0.00	0.00	0.00
8,480.0	90.24	359.30	6,635.8	2,122.1	-396.1	2,149.3	0.00	0.00	0.00
8,520.0	90.24	359.30	6,635.6	2,162.1	-396.6	2,189.2	0.00	0.00	0.00
8,560.0	90.24	359.30	6,635.4	2,202.1	-397.1	2,229.0	0.00	0.00	0.00
8,600.0	90.24	359.30	6,635.3	2,242.1	-397.6	2,268.9	0.00	0.00	0.00
8,640.0	90.24	359.30	6,635.1	2,282.1	-398.1	2,308.8	0.00	0.00	0.00
8,680.0	90.24	359.30	6,634.9	2,322.1	-398.6	2,348.7	0.00	0.00	0.00
8,720.0	90.24	359.30	6,634.8	2,362.1	-399.1	2,388.5	0.00	0.00	0.00
8,760.0	90.24	359.30	6,634.6	2,402.1	-399.5	2,428.4	0.00	0.00	0.00
8,800.0	90.24	359.30	6,634.4	2,442.1	-400.0	2,468.3	0.00	0.00	0.00
8,840.0	90.24	359.30	6,634.3	2,482.1	-400.5	2,508.2	0.00	0.00	0.00
8,880.0	90.24	359.30	6,634.1	2,522.1	-401.0	2,548.0	0.00	0.00	0.00
8,920.0	90.24	359.30	6,633.9	2,562.1	-401.5	2,587.9	0.00	0.00	0.00
8,960.0	90.24	359.30	6,633.8	2,602.1	-402.0	2,627.8	0.00	0.00	0.00
9,000.0	90.24	359.30	6,633.6	2,642.1	-402.5	2,667.7	0.00	0.00	0.00
9,040.0	90.24	359.30	6,633.4	2,682.1	-403.0	2,707.5	0.00	0.00	0.00
9,080.0	90.24	359.30	6,633.3	2,722.1	-403.4	2,747.4	0.00	0.00	0.00
9,120.0	90.24	359.30	6,633.1	2,762.1	-403.9	2,787.3	0.00	0.00	0.00
9,160.0	90.24	359.30	6,632.9	2,802.0	-404.4	2,827.2	0.00	0.00	0.00
9,200.0	90.24	359.30	6,632.8	2,842.0	-404.9	2,867.0	0.00	0.00	0.00
9,240.0	90.24	359.30	6,632.6	2,882.0	-405.4	2,906.9	0.00	0.00	0.00
9,280.0	90.24	359.30	6,632.4	2,922.0	-405.9	2,946.8	0.00	0.00	0.00
9,320.0	90.24	359.30	6,632.3	2,962.0	-406.4	2,986.7	0.00	0.00	0.00
9,360.0	90.24	359.30	6,632.1	3,002.0	-406.9	3,026.6	0.00	0.00	0.00
9,400.0	90.24	359.30	6,631.9	3,042.0	-407.3	3,066.4	0.00	0.00	0.00
9,440.0	90.24	359.30	6,631.8	3,082.0	-407.8	3,106.3	0.00	0.00	0.00
9,480.0	90.24	359.30	6,631.6	3,122.0	-408.3	3,146.2	0.00	0.00	0.00
9,520.0	90.24	359.30	6,631.4	3,162.0	-408.8	3,186.1	0.00	0.00	0.00
9,560.0	90.24	359.30	6,631.3	3,202.0	-409.3	3,225.9	0.00	0.00	0.00
9,600.0	90.24	359.30	6,631.1	3,242.0	-409.8	3,265.8	0.00	0.00	0.00
9,640.0	90.24	359.30	6,630.9	3,282.0	-410.3	3,305.7	0.00	0.00	0.00
9,680.0	90.24	359.30	6,630.8	3,322.0	-410.7	3,345.6	0.00	0.00	0.00
9,720.0	90.24	359.30	6,630.6	3,362.0	-411.2	3,385.4	0.00	0.00	0.00
9,760.0	90.24	359.30	6,630.4	3,402.0	-411.7	3,425.3	0.00	0.00	0.00
9,800.0	90.24	359.30	6,630.3	3,442.0	-412.2	3,465.2	0.00	0.00	0.00
9,840.0	90.24	359.30	6,630.1	3,482.0	-412.7	3,505.1	0.00	0.00	0.00
9,880.0	90.24	359.30	6,629.9	3,522.0	-413.2	3,544.9	0.00	0.00	0.00
9,920.0	90.24	359.30	6,629.7	3,562.0	-413.7	3,584.8	0.00	0.00	0.00
9,960.0	90.24	359.30	6,629.6	3,602.0	-414.2	3,624.7	0.00	0.00	0.00
10,000.0	90.24	359.30	6,629.4	3,642.0	-414.6	3,664.6	0.00	0.00	0.00
10,040.0	90.24	359.30	6,629.2	3,682.0	-415.1	3,704.4	0.00	0.00	0.00

Planned Survey		BHL 500' FNL, 829' FEL								
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
10,080.0	90.24	359.30	6,629.1	3,722.0	-415.6	3,744.3	0.00	0.00	0.00	
10,120.0	90.24	359.30	6,628.9	3,762.0	-416.1	3,784.2	0.00	0.00	0.00	
10,160.0	90.24	359.30	6,628.7	3,802.0	-416.6	3,824.1	0.00	0.00	0.00	
10,200.0	90.24	359.30	6,628.6	3,842.0	-417.1	3,864.0	0.00	0.00	0.00	
10,240.0	90.24	359.30	6,628.4	3,882.0	-417.6	3,903.8	0.00	0.00	0.00	
10,280.0	90.24	359.30	6,628.2	3,922.0	-418.1	3,943.7	0.00	0.00	0.00	
10,320.0	90.24	359.30	6,628.1	3,962.0	-418.5	3,983.6	0.00	0.00	0.00	
10,360.0	90.24	359.30	6,627.9	4,001.9	-419.0	4,023.5	0.00	0.00	0.00	
10,400.0	90.24	359.30	6,627.7	4,041.9	-419.5	4,063.3	0.00	0.00	0.00	
10,440.0	90.24	359.30	6,627.6	4,081.9	-420.0	4,103.2	0.00	0.00	0.00	
10,480.0	90.24	359.30	6,627.4	4,121.9	-420.5	4,143.1	0.00	0.00	0.00	
10,520.0	90.24	359.30	6,627.2	4,161.9	-421.0	4,183.0	0.00	0.00	0.00	
10,560.0	90.24	359.30	6,627.1	4,201.9	-421.5	4,222.8	0.00	0.00	0.00	
10,600.0	90.24	359.30	6,626.9	4,241.9	-421.9	4,262.7	0.00	0.00	0.00	
10,640.0	90.24	359.30	6,626.7	4,281.9	-422.4	4,302.6	0.00	0.00	0.00	
10,680.0	90.24	359.30	6,626.6	4,321.9	-422.9	4,342.5	0.00	0.00	0.00	
10,720.0	90.24	359.30	6,626.4	4,361.9	-423.4	4,382.3	0.00	0.00	0.00	
10,760.0	90.24	359.30	6,626.2	4,401.9	-423.9	4,422.2	0.00	0.00	0.00	
10,800.0	90.24	359.30	6,626.1	4,441.9	-424.4	4,462.1	0.00	0.00	0.00	
10,840.0	90.24	359.30	6,625.9	4,481.9	-424.9	4,502.0	0.00	0.00	0.00	
10,880.0	90.24	359.30	6,625.7	4,521.9	-425.4	4,541.8	0.00	0.00	0.00	
10,920.0	90.24	359.30	6,625.6	4,561.9	-425.8	4,581.7	0.00	0.00	0.00	
10,960.0	90.24	359.30	6,625.4	4,601.9	-426.3	4,621.6	0.00	0.00	0.00	
11,000.0	90.24	359.30	6,625.2	4,641.9	-426.8	4,661.5	0.00	0.00	0.00	
11,040.0	90.24	359.30	6,625.1	4,681.9	-427.3	4,701.3	0.00	0.00	0.00	
11,053.9	90.24	359.30	6,625.0	4,695.8	-427.5	4,715.2	0.00	0.00	0.00	
BHL 500' FNL, 829' FEL										

Plan Annotations					
	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S	+E/-W	
			(ft)	(ft)	
	1,000.0	1,000.0	0.0	0.0	KOP #1
	5,896.7	5,877.7	-25.0	-370.0	KOP #2
	7,099.9	6,641.6	742.1	-379.3	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.31-T3N-R63W

Guttersen 31Y-201 Pad Sec.31-T3N-R63W

Guttersen 31T-221

Wellbore #1

Plan #1 (5-31-13)

Anticollision Report

31 May, 2013

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31T-401 - 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)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	-89.99	0.0	-30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	-89.99	0.0	-30.7	30.7	30.5	0.22	136.761	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	-89.99	0.0	-30.7	30.7	30.1	0.67	45.587 CC, ES	
300.0	300.0	298.9	298.9	0.6	0.5	-90.11	-90.11	-0.1	-32.4	32.5	31.4	1.11	29.221	
400.0	400.0	397.6	397.4	0.8	0.8	-90.39	-90.39	-0.3	-37.5	37.6	36.1	1.56	24.199	
500.0	500.0	495.8	495.2	1.0	1.0	-90.72	-90.72	-0.6	-46.0	46.2	44.2	2.03	22.818	
600.0	600.0	593.6	592.4	1.2	1.3	-91.02	-91.02	-1.0	-57.7	58.2	55.6	2.53	22.994	
700.0	700.0	692.7	690.6	1.5	1.6	-91.24	-91.24	-1.5	-70.7	71.3	68.2	3.06	23.285	
800.0	800.0	791.9	788.9	1.7	1.9	-91.39	-91.39	-2.0	-83.7	84.4	80.8	3.60	23.433	
900.0	900.0	891.0	887.2	1.9	2.2	-91.50	-91.50	-2.5	-96.7	97.5	93.4	4.15	23.512	
1,000.0	1,000.0	990.1	985.5	2.1	2.6	-91.58	-91.58	-3.0	-109.7	110.7	106.0	4.70	23.557	
1,100.0	1,100.0	1,089.5	1,084.0	2.3	2.9	2.24	2.24	-3.5	-122.7	122.0	117.3	4.73	25.813	
1,200.0	1,199.8	1,189.2	1,182.8	2.6	3.2	2.27	2.27	-4.0	-135.8	130.0	124.8	5.16	25.187	
1,300.0	1,299.5	1,289.1	1,281.8	2.8	3.6	2.35	2.35	-4.5	-148.8	134.4	128.8	5.60	24.019	
1,400.0	1,398.9	1,389.0	1,380.9	3.0	3.9	2.47	2.47	-5.0	-162.0	137.0	131.0	6.05	22.662	
1,500.0	1,498.3	1,489.0	1,480.0	3.3	4.2	2.58	2.58	-5.5	-175.1	139.6	133.1	6.50	21.478	
1,600.0	1,597.8	1,589.0	1,579.1	3.5	4.6	2.68	2.68	-6.0	-188.2	142.2	135.2	6.96	20.438	
1,700.0	1,697.2	1,688.9	1,678.2	3.8	4.9	2.79	2.79	-6.5	-201.3	144.8	137.4	7.42	19.519	
1,800.0	1,796.7	1,788.9	1,777.3	4.0	5.2	2.89	2.89	-7.0	-214.4	147.4	139.5	7.88	18.702	
1,900.0	1,896.1	1,888.9	1,876.4	4.3	5.6	2.98	2.98	-7.6	-227.5	150.0	141.7	8.35	17.971	
2,000.0	1,995.5	1,988.8	1,975.5	4.6	5.9	3.07	3.07	-8.1	-240.6	152.6	143.8	8.81	17.314	
2,100.0	2,095.0	2,088.8	2,074.6	4.9	6.2	3.16	3.16	-8.6	-253.7	155.2	145.9	9.28	16.720	
2,200.0	2,194.4	2,188.8	2,173.7	5.1	6.6	3.25	3.25	-9.1	-266.8	157.8	148.1	9.75	16.181	
2,300.0	2,293.9	2,288.7	2,272.8	5.4	6.9	3.33	3.33	-9.6	-279.9	160.4	150.2	10.23	15.690	
2,400.0	2,393.3	2,388.7	2,371.9	5.7	7.2	3.41	3.41	-10.1	-293.0	163.0	152.3	10.70	15.241	
2,500.0	2,492.8	2,488.7	2,471.0	6.0	7.6	3.49	3.49	-10.6	-306.1	165.6	154.5	11.17	14.828	
2,600.0	2,592.2	2,588.6	2,570.1	6.3	7.9	3.57	3.57	-11.1	-319.2	168.2	156.6	11.64	14.448	
2,700.0	2,691.6	2,688.6	2,669.2	6.6	8.3	3.64	3.64	-11.6	-332.3	170.9	158.7	12.12	14.098	
2,800.0	2,791.1	2,788.5	2,768.3	6.9	8.6	3.71	3.71	-12.1	-345.4	173.5	160.9	12.59	13.772	
2,900.0	2,890.5	2,888.5	2,867.4	7.2	8.9	3.78	3.78	-12.6	-358.5	176.1	163.0	13.07	13.470	
3,000.0	2,990.0	2,988.5	2,966.5	7.5	9.3	3.85	3.85	-13.1	-371.7	178.7	165.1	13.55	13.189	
3,100.0	3,089.4	3,088.4	3,065.6	7.8	9.6	3.92	3.92	-13.6	-384.8	181.3	167.3	14.02	12.927	
3,200.0	3,188.9	3,188.4	3,164.8	8.0	9.9	3.98	3.98	-14.1	-397.9	183.9	169.4	14.50	12.681	
3,300.0	3,288.3	3,288.4	3,263.9	8.3	10.3	4.04	4.04	-14.6	-411.0	186.5	171.5	14.98	12.451	
3,400.0	3,387.7	3,388.3	3,363.0	8.6	10.6	4.10	4.10	-15.1	-424.1	189.1	173.6	15.46	12.234	
3,500.0	3,487.2	3,488.3	3,462.1	8.9	11.0	4.16	4.16	-15.6	-437.2	191.7	175.8	15.94	12.031	
3,600.0	3,586.6	3,588.3	3,561.2	9.2	11.3	4.22	4.22	-16.1	-450.3	194.3	177.9	16.41	11.839	
3,700.0	3,686.1	3,688.2	3,660.3	9.5	11.6	4.27	4.27	-16.6	-463.4	196.9	180.0	16.89	11.658	
3,800.0	3,785.5	3,788.2	3,759.4	9.8	12.0	4.33	4.33	-17.1	-476.5	199.5	182.2	17.37	11.486	
3,900.0	3,885.0	3,888.2	3,858.5	10.1	12.3	4.38	4.38	-17.6	-489.6	202.1	184.3	17.85	11.324	
4,000.0	3,984.4	3,988.1	3,957.6	10.4	12.6	4.43	4.43	-18.1	-502.7	204.8	186.4	18.33	11.170	
4,100.0	4,083.8	4,088.1	4,056.7	10.7	13.0	4.48	4.48	-18.6	-515.8	207.4	188.6	18.81	11.024	
4,200.0	4,183.3	4,188.1	4,155.8	11.0	13.3	4.53	4.53	-19.1	-528.9	210.0	190.7	19.29	10.885	
4,300.0	4,282.7	4,288.0	4,254.9	11.3	13.7	4.58	4.58	-19.6	-542.0	212.6	192.8	19.77	10.752	
4,400.0	4,382.2	4,388.0	4,354.0	11.6	14.0	4.62	4.62	-20.1	-555.1	215.2	194.9	20.25	10.626	
4,500.0	4,481.6	4,488.0	4,453.1	11.9	14.3	4.67	4.67	-20.6	-568.2	217.8	197.1	20.73	10.505	
4,600.0	4,581.2	4,587.9	4,552.1	12.2	14.7	4.69	4.69	-21.1	-581.3	221.6	200.4	21.19	10.462	
4,700.0	4,681.0	4,687.6	4,651.0	12.4	15.0	4.65	4.65	-21.6	-594.4	228.9	207.3	21.58	10.605	
4,800.0	4,781.0	4,787.0	4,749.6	12.5	15.3	4.55	4.55	-22.1	-607.5	239.6	217.7	21.95	10.916	
4,900.0	4,881.0	4,886.2	4,847.8	12.7	15.7	-89.46	-89.46	-22.6	-620.5	252.6	230.3	22.38	11.287	
5,000.0	4,981.0	4,985.3	4,946.1	12.9	16.0	-89.60	-89.60	-23.1	-633.5	265.8	242.9	22.82	11.645	

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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31T-401 - 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	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	5,081.0	5,084.5	5,044.4	13.0	16.3	-89.72	-23.6	-646.4	278.9	255.6	23.26	11.989	
5,200.0	5,181.0	5,185.7	5,144.8	13.2	16.7	-89.83	-24.1	-659.6	291.9	268.2	23.70	12.318	
5,300.0	5,281.0	5,296.7	5,255.1	13.4	16.9	-89.92	-24.6	-671.3	302.4	278.3	24.10	12.544	
5,400.0	5,381.0	5,408.4	5,366.6	13.6	17.1	-89.98	-24.9	-678.6	309.0	284.5	24.50	12.610	
5,500.0	5,481.0	5,520.5	5,478.6	13.8	17.3	-90.00	-25.0	-681.7	311.7	286.8	24.89	12.520	
5,600.0	5,581.0	5,622.8	5,581.0	13.9	17.4	-90.00	-25.0	-681.7	311.7	286.5	25.29	12.329	
5,700.0	5,681.0	5,722.8	5,681.0	14.1	17.6	-90.00	-25.0	-681.7	311.7	286.1	25.68	12.141	
5,800.0	5,781.0	5,822.8	5,781.0	14.3	17.7	-90.00	-25.0	-681.7	311.7	285.7	26.07	11.958	
5,900.0	5,881.0	5,922.8	5,881.0	14.5	17.9	-89.30	-25.0	-681.7	311.7	285.3	26.45	11.786	
5,972.9	5,953.7	5,995.6	5,953.7	14.6	18.0	-90.00	-25.0	-681.7	311.7	285.0	26.72	11.664	
6,000.0	5,980.6	6,022.5	5,980.6	14.7	18.0	-90.58	-25.0	-681.7	311.7	284.9	26.82	11.623	
6,100.0	6,078.6	6,120.9	6,079.1	14.9	18.2	-94.08	-24.8	-681.7	312.6	285.4	27.16	11.509	
6,200.0	6,173.0	6,222.6	6,180.3	15.1	18.3	-98.33	-15.8	-681.8	315.2	287.7	27.54	11.448	
6,300.0	6,262.5	6,327.9	6,282.9	15.3	18.5	-102.44	7.6	-682.1	319.6	291.7	27.97	11.427	
6,400.0	6,345.3	6,437.1	6,384.8	15.5	18.6	-106.30	46.4	-682.6	325.4	297.0	28.43	11.447	
6,500.0	6,420.2	6,550.2	6,483.5	15.8	18.8	-109.82	101.6	-683.2	332.1	303.2	28.93	11.479	
6,600.0	6,485.7	6,667.5	6,576.0	16.2	19.1	-112.94	173.5	-684.1	339.3	309.8	29.47	11.514	
6,700.0	6,540.9	6,788.7	6,658.9	16.8	19.5	-115.59	261.8	-685.1	346.3	316.2	30.08	11.514	
6,800.0	6,584.7	6,913.7	6,728.6	17.6	20.0	-117.72	365.2	-686.4	352.6	321.7	30.83	11.435	
6,900.0	6,616.4	7,041.7	6,781.6	18.5	20.8	-119.29	481.6	-687.8	357.5	325.7	31.82	11.238	
7,000.0	6,635.5	7,172.0	6,814.8	19.7	21.9	-120.28	607.5	-689.2	360.8	327.7	33.12	10.895	
7,100.0	6,641.6	7,284.3	6,828.3	20.9	23.0	-120.93	718.9	-690.6	363.7	329.2	34.49	10.544	
7,200.0	6,641.1	7,401.4	6,835.9	22.2	24.4	-122.02	835.7	-692.0	367.3	330.7	36.64	10.025	
7,300.0	6,640.7	7,504.5	6,835.9	23.7	25.7	-122.08	938.8	-693.2	367.5	328.4	39.14	9.390	
7,400.0	6,640.3	7,604.5	6,835.7	25.2	27.1	-122.11	1,038.8	-694.4	367.6	325.9	41.73	8.810	
7,500.0	6,639.9	7,704.5	6,835.6	26.7	28.5	-122.15	1,138.8	-695.5	367.7	323.3	44.41	8.280	
7,600.0	6,639.5	7,804.5	6,835.4	28.3	30.0	-122.19	1,238.8	-696.7	367.9	320.7	47.18	7.797	
7,700.0	6,639.0	7,904.5	6,835.3	29.9	31.6	-122.23	1,338.8	-697.9	368.0	318.0	50.01	7.357	
7,800.0	6,638.6	8,004.5	6,835.1	31.6	33.2	-122.26	1,438.8	-699.1	368.1	315.2	52.90	6.957	
7,900.0	6,638.2	8,104.5	6,835.0	33.3	34.8	-122.30	1,538.8	-700.3	368.2	312.3	55.84	6.594	
8,000.0	6,637.8	8,204.5	6,834.8	35.0	36.4	-122.34	1,638.8	-701.5	368.3	309.5	58.82	6.262	
8,100.0	6,637.4	8,304.5	6,834.6	36.7	38.1	-122.38	1,738.8	-702.6	368.4	306.6	61.83	5.959	
8,200.0	6,637.0	8,404.5	6,834.5	38.5	39.8	-122.41	1,838.8	-703.8	368.5	303.7	64.87	5.681	
8,300.0	6,636.5	8,504.5	6,834.3	40.3	41.5	-122.45	1,938.8	-705.0	368.6	300.7	67.93	5.427	
8,400.0	6,636.1	8,604.5	6,834.2	42.0	43.3	-122.49	2,038.7	-706.2	368.7	297.7	71.01	5.193	
8,500.0	6,635.7	8,704.5	6,834.0	43.8	45.0	-122.53	2,138.7	-707.4	368.9	294.7	74.11	4.977	
8,600.0	6,635.3	8,804.5	6,833.9	45.6	46.8	-122.56	2,238.7	-708.5	369.0	291.7	77.23	4.777	
8,700.0	6,634.9	8,904.5	6,833.7	47.5	48.5	-122.60	2,338.7	-709.7	369.1	288.7	80.36	4.593	
8,800.0	6,634.4	9,004.5	6,833.5	49.3	50.3	-122.64	2,438.7	-710.9	369.2	285.7	83.50	4.421	
8,900.0	6,634.0	9,104.5	6,833.4	51.1	52.1	-122.67	2,538.7	-712.1	369.3	282.6	86.66	4.262	
9,000.0	6,633.6	9,204.5	6,833.2	52.9	53.9	-122.71	2,638.7	-713.3	369.4	279.6	89.82	4.113	
9,100.0	6,633.2	9,304.5	6,833.1	54.8	55.7	-122.75	2,738.7	-714.5	369.5	276.5	92.99	3.974	
9,200.0	6,632.8	9,404.5	6,832.9	56.6	57.6	-122.78	2,838.7	-715.6	369.6	273.5	96.16	3.844	
9,300.0	6,632.3	9,504.5	6,832.8	58.5	59.4	-122.82	2,938.7	-716.8	369.7	270.4	99.34	3.722	
9,400.0	6,631.9	9,604.5	6,832.6	60.3	61.2	-122.86	3,038.7	-718.0	369.9	267.3	102.53	3.607	
9,500.0	6,631.5	9,704.5	6,832.4	62.2	63.1	-122.90	3,138.7	-719.2	370.0	264.3	105.72	3.500	
9,600.0	6,631.1	9,804.5	6,832.3	64.1	64.9	-122.93	3,238.7	-720.4	370.1	261.2	108.91	3.398	
9,700.0	6,630.7	9,904.5	6,832.1	65.9	66.7	-122.97	3,338.6	-721.6	370.2	258.1	112.11	3.302	
9,800.0	6,630.3	10,004.5	6,832.0	67.8	68.6	-123.01	3,438.6	-722.7	370.3	255.0	115.31	3.211	
9,900.0	6,629.8	10,104.5	6,831.8	69.7	70.5	-123.04	3,538.6	-723.9	370.4	251.9	118.52	3.126	
10,000.0	6,629.4	10,204.5	6,831.7	71.6	72.3	-123.08	3,638.6	-725.1	370.5	248.8	121.72	3.044	

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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersten 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersten 31Y-201 Pad Sec.31-T3N-R63W - Guttersten 31T-401 - 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	6,629.0	10,304.5	6,831.5	73.4	74.2	-123.12	3,738.6	-726.3	370.7	245.7	124.93	2.967	
10,200.0	6,628.6	10,404.5	6,831.3	75.3	76.0	-123.15	3,838.6	-727.5	370.8	242.6	128.14	2.894	
10,300.0	6,628.2	10,504.5	6,831.2	77.2	77.9	-123.19	3,938.6	-728.7	370.9	239.5	131.35	2.824	
10,400.0	6,627.7	10,604.5	6,831.0	79.1	79.8	-123.23	4,038.6	-729.8	371.0	236.4	134.56	2.757	
10,500.0	6,627.3	10,704.5	6,830.9	81.0	81.6	-123.26	4,138.6	-731.0	371.1	233.3	137.77	2.694	
10,600.0	6,626.9	10,804.5	6,830.7	82.9	83.5	-123.30	4,238.6	-732.2	371.2	230.2	140.98	2.633	
10,700.0	6,626.5	10,904.5	6,830.6	84.7	85.4	-123.34	4,338.6	-733.4	371.3	227.2	144.19	2.575	
10,800.0	6,626.1	11,004.5	6,830.4	86.6	87.3	-123.37	4,438.6	-734.6	371.5	224.1	147.40	2.520	
10,900.0	6,625.6	11,104.5	6,830.2	88.5	89.2	-123.41	4,538.6	-735.7	371.6	221.0	150.61	2.467	
11,000.0	6,625.2	11,204.5	6,830.1	90.4	91.0	-123.45	4,638.5	-736.9	371.7	217.9	153.82	2.416	
11,053.9	6,625.0	11,258.4	6,830.0	91.4	92.1	-123.47	4,692.5	-737.6	371.7	216.2	155.56	2.390 SF	

Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31Y-201 - 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			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)			
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	58.7	58.7					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	58.7	58.7	58.5	0.22	261.089		
200.0	200.0	200.0	200.0	0.3	0.3	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	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	0.0	58.7	58.7	57.1	1.57	37.298		
500.0	500.0	500.0	500.0	1.0	1.0	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	0.0	58.7	58.7	56.2	2.47	23.735		
700.0	700.0	700.0	700.0	1.5	1.5	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	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	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	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	-176.09	-0.2	59.9	61.7	57.0	4.69	13.166		
1,200.0	1,199.8	1,196.3	1,196.2	2.6	2.5	-175.98	-0.6	63.7	70.7	65.7	5.08	13.925		
1,300.0	1,299.5	1,293.5	1,293.2	2.8	2.7	-175.85	-1.4	69.8	85.7	80.3	5.48	15.641		
1,400.0	1,398.9	1,391.9	1,391.3	3.0	3.0	-175.78	-2.3	77.0	103.5	97.6	5.89	17.574		
1,500.0	1,498.3	1,490.3	1,489.5	3.3	3.2	-175.73	-3.2	84.2	121.2	114.9	6.30	19.237		
1,600.0	1,597.8	1,588.7	1,587.6	3.5	3.4	-175.70	-4.1	91.4	139.0	132.3	6.72	20.675		
1,700.0	1,697.2	1,687.1	1,685.8	3.8	3.6	-175.67	-5.0	98.6	156.7	149.6	7.15	21.928		
1,800.0	1,796.7	1,785.5	1,783.9	4.0	3.9	-175.65	-5.9	105.8	174.5	166.9	7.58	23.027		
1,900.0	1,896.1	1,883.9	1,882.1	4.3	4.1	-175.63	-6.8	113.0	192.3	184.2	8.01	23.995		
2,000.0	1,995.5	1,982.4	1,980.2	4.6	4.4	-175.62	-7.7	120.1	210.0	201.6	8.45	24.857		
2,100.0	2,095.0	2,080.8	2,078.3	4.9	4.6	-175.60	-8.6	127.3	227.8	218.9	8.89	25.626		
2,200.0	2,194.4	2,179.2	2,176.5	5.1	4.8	-175.59	-9.5	134.5	245.5	236.2	9.33	26.315		
2,300.0	2,293.9	2,277.6	2,274.6	5.4	5.1	-175.58	-10.4	141.7	263.3	253.5	9.77	26.938		
2,400.0	2,393.3	2,376.0	2,372.8	5.7	5.3	-175.57	-11.3	148.9	281.0	270.8	10.22	27.501		
2,500.0	2,492.8	2,474.4	2,470.9	6.0	5.6	-175.57	-12.2	156.1	298.8	288.1	10.67	28.013		
2,600.0	2,592.2	2,572.8	2,569.1	6.3	5.8	-175.56	-13.1	163.2	316.5	305.4	11.11	28.481		
2,700.0	2,691.6	2,671.2	2,667.2	6.6	6.1	-175.56	-14.0	170.4	334.3	322.7	11.56	28.910		
2,800.0	2,791.1	2,769.6	2,765.4	6.9	6.3	-175.55	-14.9	177.6	352.0	340.0	12.01	29.304		
2,900.0	2,890.5	2,868.1	2,863.5	7.2	6.6	-175.55	-15.8	184.8	369.8	357.3	12.46	29.667		
3,000.0	2,990.0	2,966.5	2,961.6	7.5	6.8	-175.54	-16.7	192.0	387.5	374.6	12.92	30.003		
3,100.0	3,089.4	3,064.9	3,059.8	7.8	7.1	-175.54	-17.6	199.2	405.3	391.9	13.37	30.314		
3,200.0	3,188.9	3,163.3	3,157.9	8.0	7.4	-175.53	-18.6	206.3	423.1	409.2	13.82	30.604		
3,300.0	3,288.3	3,261.7	3,256.1	8.3	7.6	-175.53	-19.5	213.5	440.8	426.5	14.28	30.873		
3,400.0	3,387.7	3,360.1	3,354.2	8.6	7.9	-175.53	-20.4	220.7	458.6	443.8	14.73	31.125		
3,500.0	3,487.2	3,458.5	3,452.4	8.9	8.1	-175.53	-21.3	227.9	476.3	461.1	15.19	31.361		
3,600.0	3,586.6	3,556.9	3,550.5	9.2	8.4	-175.52	-22.2	235.1	494.1	478.4	15.64	31.582		
3,700.0	3,686.1	3,655.3	3,648.7	9.5	8.6	-175.52	-23.1	242.3	511.8	495.7	16.10	31.790		
3,800.0	3,785.5	3,758.2	3,751.3	9.8	8.9	-175.52	-24.0	249.6	529.5	512.9	16.56	31.973		
3,900.0	3,885.0	3,873.1	3,866.0	10.1	9.1	-175.55	-24.7	255.3	544.9	527.9	17.01	32.035		
4,000.0	3,984.4	3,988.9	3,981.8	10.4	9.3	-175.62	-25.0	257.6	557.4	539.9	17.46	31.926		
4,100.0	4,083.8	4,091.0	4,083.8	10.7	9.5	-175.70	-25.0	257.7	568.0	550.1	17.89	31.740		
4,200.0	4,183.3	4,190.4	4,183.3	11.0	9.7	-175.78	-25.0	257.7	578.5	560.1	18.33	31.556		
4,300.0	4,282.7	4,289.9	4,282.7	11.3	9.9	-175.86	-25.0	257.7	589.0	570.2	18.77	31.378		
4,400.0	4,382.2	4,389.3	4,382.2	11.6	10.1	-175.93	-25.0	257.7	599.5	580.3	19.21	31.207		
4,500.0	4,481.6	4,488.7	4,481.6	11.9	10.3	-176.00	-25.0	257.7	610.0	590.4	19.65	31.042		
4,600.0	4,581.2	4,588.3	4,581.2	12.2	10.5	-176.07	-25.0	257.7	619.3	599.2	20.11	30.801		
4,700.0	4,681.0	4,688.1	4,681.0	12.4	10.7	-176.12	-25.0	257.7	625.2	604.7	20.52	30.466		
4,800.0	4,781.0	4,788.1	4,781.0	12.5	10.9	-176.13	-25.0	257.7	627.6	606.7	20.91	30.012		
4,900.0	4,881.0	4,888.1	4,881.0	12.7	11.1	90.00	-25.0	257.7	627.7	606.4	21.32	29.447		
5,000.0	4,981.0	4,988.1	4,981.0	12.9	11.3	90.00	-25.0	257.7	627.7	606.0	21.73	28.889		

COMPASS 2003.21 Build 46

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31Y-201 - 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	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	5,081.0	5,088.1	5,081.0	13.0	11.5	90.00	-25.0	257.7	627.7	605.5	22.14	28.351		
5,200.0	5,181.0	5,188.1	5,181.0	13.2	11.7	90.00	-25.0	257.7	627.7	605.1	22.55	27.831		
5,300.0	5,281.0	5,288.1	5,281.0	13.4	11.9	90.00	-25.0	257.7	627.7	604.7	22.97	27.327		
5,400.0	5,381.0	5,388.1	5,381.0	13.6	12.1	90.00	-25.0	257.7	627.7	604.3	23.39	26.841		
5,500.0	5,481.0	5,488.1	5,481.0	13.8	12.3	90.00	-25.0	257.7	627.7	603.9	23.80	26.369		
5,600.0	5,581.0	5,588.1	5,581.0	13.9	12.5	90.00	-25.0	257.7	627.7	603.5	24.22	25.913		
5,700.0	5,681.0	5,688.1	5,681.0	14.1	12.7	90.00	-25.0	257.7	627.7	603.0	24.64	25.472		
5,800.0	5,781.0	5,788.1	5,781.0	14.3	12.9	90.00	-25.0	257.7	627.7	602.6	25.06	25.044		
5,864.5	5,845.5	5,852.6	5,845.5	14.4	13.1	90.71	-25.0	257.7	627.7	602.4	25.33	24.777		
5,900.0	5,881.0	5,888.1	5,881.0	14.5	13.2	90.70	-25.0	257.7	627.7	602.2	25.48	24.631		
6,000.0	5,980.6	5,989.1	5,981.7	14.7	13.4	90.69	-17.9	257.6	627.7	601.8	25.90	24.238		
6,100.0	6,078.6	6,090.1	6,080.5	14.9	13.6	90.68	2.4	257.4	627.7	601.4	26.30	23.868		
6,200.0	6,173.0	6,191.0	6,175.8	15.1	13.8	90.65	35.5	257.0	627.7	601.0	26.72	23.488		
6,300.0	6,262.5	6,291.9	6,265.8	15.3	14.0	90.61	80.9	256.4	627.7	600.5	27.23	23.055		
6,400.0	6,345.3	6,392.8	6,349.0	15.5	14.2	90.56	137.7	255.7	627.7	599.8	27.87	22.519		
6,500.0	6,420.2	6,493.5	6,424.0	15.8	14.6	90.50	204.9	254.9	627.7	599.0	28.74	21.842		
6,600.0	6,485.7	6,594.2	6,489.4	16.2	15.1	90.43	281.3	254.0	627.7	597.8	29.88	21.006		
6,700.0	6,540.9	6,694.7	6,544.2	16.8	15.8	90.35	365.5	253.0	627.7	596.4	31.35	20.025		
6,800.0	6,584.7	6,795.1	6,587.4	17.6	16.7	90.27	456.1	251.9	627.7	594.6	33.15	18.939		
6,900.0	6,616.4	6,895.5	6,618.3	18.5	17.8	90.19	551.4	250.8	627.8	592.5	35.26	17.802		
7,000.0	6,635.5	6,995.7	6,636.5	19.7	19.0	90.10	649.9	249.6	627.8	590.1	37.66	16.672		
7,100.0	6,641.6	7,095.7	6,641.6	20.9	20.3	90.00	749.7	248.4	627.8	587.5	40.26	15.593		
7,200.0	6,641.1	7,195.7	6,640.1	22.2	21.6	89.90	849.7	247.2	627.8	584.8	43.05	14.584		
7,300.0	6,640.7	7,295.7	6,638.5	23.7	23.1	89.80	949.7	246.0	627.8	581.9	45.98	13.654		
7,400.0	6,640.3	7,395.7	6,637.0	25.2	24.6	89.70	1,049.7	244.8	627.9	578.8	49.05	12.802		
7,500.0	6,639.9	7,495.7	6,635.5	26.7	26.2	89.60	1,149.6	243.6	627.9	575.7	52.21	12.026		
7,600.0	6,639.5	7,595.7	6,633.9	28.3	27.8	89.50	1,249.6	242.4	627.9	572.5	55.46	11.322		
7,700.0	6,639.0	7,695.7	6,632.4	29.9	29.5	89.39	1,349.6	241.2	628.0	569.2	58.78	10.683		
7,800.0	6,638.6	7,795.7	6,630.9	31.6	31.2	89.29	1,449.6	240.0	628.0	565.8	62.17	10.102		
7,900.0	6,638.2	7,895.7	6,629.3	33.3	32.9	89.19	1,549.5	238.8	628.0	562.4	65.60	9.574		
8,000.0	6,637.8	7,995.7	6,627.8	35.0	34.6	89.09	1,649.5	237.6	628.1	559.0	69.07	9.093		
8,100.0	6,637.4	8,095.7	6,626.3	36.7	36.4	88.99	1,749.5	236.4	628.1	555.5	72.59	8.653		
8,200.0	6,637.0	8,195.7	6,624.7	38.5	38.2	88.88	1,849.5	235.2	628.1	552.0	76.13	8.251		
8,300.0	6,636.5	8,295.7	6,623.2	40.3	39.9	88.78	1,949.4	234.0	628.2	548.5	79.70	7.882		
8,400.0	6,636.1	8,395.6	6,621.7	42.0	41.7	88.68	2,049.4	232.9	628.2	544.9	83.29	7.542		
8,500.0	6,635.7	8,495.6	6,620.1	43.8	43.5	88.58	2,149.4	231.7	628.3	541.4	86.91	7.229		
8,600.0	6,635.3	8,595.6	6,618.6	45.6	45.4	88.48	2,249.4	230.5	628.3	537.8	90.54	6.940		
8,700.0	6,634.9	8,695.6	6,617.0	47.5	47.2	88.38	2,349.3	229.3	628.4	534.2	94.19	6.671		
8,800.0	6,634.4	8,795.6	6,615.5	49.3	49.0	88.27	2,449.3	228.1	628.4	530.6	97.85	6.422		
8,900.0	6,634.0	8,895.6	6,614.0	51.1	50.9	88.17	2,549.3	226.9	628.5	527.0	101.53	6.190		
9,000.0	6,633.6	8,995.6	6,612.4	52.9	52.7	88.07	2,649.3	225.7	628.5	523.3	105.22	5.974		
9,100.0	6,633.2	9,095.6	6,610.9	54.8	54.6	87.97	2,749.2	224.5	628.6	519.7	108.91	5.772		
9,200.0	6,632.8	9,195.6	6,609.4	56.6	56.4	87.87	2,849.2	223.3	628.7	516.0	112.62	5.582		
9,300.0	6,632.3	9,295.6	6,607.8	58.5	58.3	87.77	2,949.2	222.1	628.7	512.4	116.33	5.405		
9,400.0	6,631.9	9,395.6	6,606.3	60.3	60.1	87.66	3,049.2	220.9	628.8	508.7	120.05	5.238		
9,500.0	6,631.5	9,495.6	6,604.8	62.2	62.0	87.56	3,149.1	219.7	628.9	505.1	123.78	5.081		
9,600.0	6,631.1	9,595.6	6,603.2	64.1	63.9	87.46	3,249.1	218.5	628.9	501.4	127.51	4.932		
9,700.0	6,630.7	9,695.6	6,601.7	65.9	65.7	87.36	3,349.1	217.3	629.0	497.8	131.24	4.793		
9,800.0	6,630.3	9,795.6	6,600.2	67.8	67.6	87.26	3,449.1	216.1	629.1	494.1	134.98	4.660		
9,900.0	6,629.8	9,895.6	6,598.6	69.7	69.5	87.16	3,549.0	214.9	629.1	490.4	138.73	4.535		
10,000.0	6,629.4	9,995.5	6,597.1	71.6	71.4	87.05	3,649.0	213.7	629.2	486.7	142.48	4.416		

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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersten 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersten 31Y-201 Pad Sec.31-T3N-R63W - Guttersten 31Y-201 - 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	6,629.0	10,095.5	6,595.5	73.4	73.3	86.95	3,749.0	212.5	629.3	483.1	146.23	4.303	
10,200.0	6,628.6	10,195.5	6,594.0	75.3	75.1	86.85	3,849.0	211.3	629.4	479.4	149.98	4.196	
10,300.0	6,628.2	10,295.5	6,592.5	77.2	77.0	86.75	3,948.9	210.1	629.5	475.7	153.74	4.094	
10,400.0	6,627.7	10,395.5	6,590.9	79.1	78.9	86.65	4,048.9	208.9	629.5	472.0	157.50	3.997	
10,500.0	6,627.3	10,495.5	6,589.4	81.0	80.8	86.55	4,148.9	207.7	629.6	468.4	161.26	3.904	
10,600.0	6,626.9	10,595.5	6,587.9	82.9	82.7	86.45	4,248.9	206.5	629.7	464.7	165.03	3.816	
10,700.0	6,626.5	10,695.5	6,586.3	84.7	84.6	86.34	4,348.8	205.3	629.8	461.0	168.79	3.731	
10,800.0	6,626.1	10,795.5	6,584.8	86.6	86.5	86.24	4,448.8	204.1	629.9	457.3	172.56	3.650	
10,900.0	6,625.6	10,895.5	6,583.3	88.5	88.4	86.14	4,548.8	202.9	630.0	453.7	176.33	3.573	
11,000.0	6,625.2	10,995.5	6,581.7	90.4	90.3	86.04	4,648.7	201.7	630.1	450.0	180.09	3.499	
11,024.4	6,625.1	11,019.9	6,581.3	90.9	90.7	86.02	4,673.2	201.4	630.1	449.2	180.94	3.482	
11,053.9	6,625.0	11,042.6	6,581.0	91.4	91.0	85.99	4,695.8	201.2	630.2	448.3	181.85	3.466 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31Y-441 - 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	
0.0	0.0	0.0	0.0	0.0	0.0	89.99	0.0	27.9	27.9					
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	27.9	27.9	27.7	0.22	124.328		
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	27.9	27.9	27.3	0.67	41.443		
300.0	300.0	300.0	300.0	0.6	0.6	89.99	0.0	27.9	27.9	26.8	1.12	24.866		
400.0	400.0	400.0	400.0	0.8	0.8	89.99	0.0	27.9	27.9	26.4	1.57	17.761		
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	27.9	27.9	25.9	2.02	13.814		
600.0	600.0	600.0	600.0	1.2	1.2	89.99	0.0	27.9	27.9	25.5	2.47	11.303		
700.0	700.0	700.0	700.0	1.5	1.5	89.99	0.0	27.9	27.9	25.0	2.92	9.564		
800.0	800.0	800.0	800.0	1.7	1.7	89.99	0.0	27.9	27.9	24.6	3.37	8.289		
900.0	900.0	900.0	900.0	1.9	1.9	89.99	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	89.99	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	-176.37	0.0	27.9	29.7	25.0	4.70	6.310		
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	-176.91	0.0	27.9	34.9	29.8	5.12	6.814		
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	-177.52	0.0	27.9	43.6	38.1	5.54	7.870		
1,400.0	1,398.9	1,398.9	1,398.9	3.0	3.0	-178.00	0.0	27.9	54.2	48.2	5.97	9.068		
1,500.0	1,498.3	1,498.3	1,498.3	3.3	3.3	-178.33	0.0	27.9	64.7	58.3	6.41	10.099		
1,600.0	1,597.8	1,597.8	1,597.8	3.5	3.5	-178.56	0.0	27.9	75.2	68.4	6.84	10.994		
1,700.0	1,697.2	1,697.2	1,697.2	3.8	3.7	-178.74	0.0	27.9	85.8	78.5	7.28	11.777		
1,800.0	1,796.7	1,796.7	1,796.7	4.0	3.9	-178.88	0.0	27.9	96.3	88.6	7.73	12.467		
1,900.0	1,896.1	1,896.1	1,896.1	4.3	4.1	-178.99	0.0	27.9	106.9	98.7	8.17	13.080		
2,000.0	1,995.5	1,995.5	1,995.5	4.6	4.4	-179.08	0.0	27.9	117.4	108.8	8.62	13.626		
2,100.0	2,095.0	2,095.0	2,095.0	4.9	4.6	-179.15	0.0	27.9	128.0	118.9	9.06	14.117		
2,200.0	2,194.4	2,194.4	2,194.4	5.1	4.8	-179.22	0.0	27.9	138.5	129.0	9.51	14.560		
2,300.0	2,293.9	2,293.9	2,293.9	5.4	5.0	-179.27	0.0	27.9	149.0	139.1	9.96	14.961		
2,400.0	2,393.3	2,393.3	2,393.3	5.7	5.3	-179.32	0.0	27.9	159.6	149.2	10.41	15.327		
2,500.0	2,492.8	2,492.8	2,492.8	6.0	5.5	-179.36	0.0	27.9	170.1	159.3	10.86	15.661		
2,600.0	2,592.2	2,592.2	2,592.2	6.3	5.7	-179.40	0.0	27.9	180.7	169.4	11.32	15.967		
2,700.0	2,691.6	2,691.6	2,691.6	6.6	5.9	-179.43	0.0	27.9	191.2	179.4	11.77	16.249		
2,800.0	2,791.1	2,791.1	2,791.1	6.9	6.2	-179.46	0.0	27.9	201.8	189.5	12.22	16.510		
2,900.0	2,890.5	2,890.5	2,890.5	7.2	6.4	-179.49	0.0	27.9	212.3	199.6	12.67	16.751		
3,000.0	2,990.0	2,990.0	2,990.0	7.5	6.6	-179.51	0.0	27.9	222.9	209.7	13.13	16.975		
3,100.0	3,089.4	3,097.1	3,097.1	7.8	6.8	-179.45	-0.4	26.4	231.9	218.3	13.58	17.076		
3,200.0	3,188.9	3,205.6	3,205.5	8.0	7.0	-179.18	-2.0	20.8	237.3	223.3	14.02	16.930		
3,300.0	3,288.3	3,314.4	3,313.8	8.3	7.3	-178.69	-4.7	11.4	239.0	224.6	14.46	16.532		
3,400.0	3,387.7	3,417.0	3,415.6	8.6	7.5	-178.08	-8.0	-0.4	238.0	223.1	14.89	15.981		
3,500.0	3,487.2	3,516.9	3,514.8	8.9	7.7	-177.46	-11.3	-11.9	236.9	221.5	15.33	15.453		
3,600.0	3,586.6	3,616.9	3,614.1	9.2	7.9	-176.84	-14.6	-23.5	235.7	220.0	15.76	14.953		
3,700.0	3,686.1	3,716.8	3,713.3	9.5	8.2	-176.21	-17.9	-35.1	234.6	218.4	16.21	14.478		
3,776.1	3,761.7	3,790.4	3,786.3	9.8	8.3	-175.76	-20.3	-43.5	234.0	217.5	16.54	14.148		
3,800.0	3,785.5	3,812.6	3,808.4	9.8	8.4	-175.64	-20.9	-45.7	234.1	217.4	16.64	14.066		
3,900.0	3,885.0	3,905.2	3,900.7	10.1	8.6	-175.28	-23.1	-53.4	236.4	219.3	17.07	13.847		
4,000.0	3,984.4	4,000.0	3,995.3	10.4	8.8	-175.13	-24.5	-58.2	241.8	224.3	17.50	13.815		
4,100.0	4,083.8	4,089.8	4,085.1	10.7	8.9	-175.19	-25.0	-60.0	250.3	232.4	17.91	13.972		
4,200.0	4,183.3	4,188.0	4,183.3	11.0	9.1	-175.38	-25.0	-60.1	260.7	242.4	18.34	14.215		
4,300.0	4,282.7	4,287.4	4,282.7	11.3	9.4	-175.56	-25.0	-60.1	271.3	252.5	18.79	14.433		
4,400.0	4,382.2	4,386.9	4,382.2	11.6	9.6	-175.72	-25.0	-60.1	281.8	262.5	19.25	14.639		
4,500.0	4,481.6	4,486.3	4,481.6	11.9	9.8	-175.88	-25.0	-60.1	292.3	272.6	19.70	14.835		
4,600.0	4,581.2	4,585.9	4,581.2	12.2	10.0	-176.02	-25.0	-60.1	301.6	281.4	20.16	14.964		
4,700.0	4,681.0	4,685.7	4,681.0	12.4	10.2	-176.10	-25.0	-60.1	307.5	286.9	20.56	14.952		
4,800.0	4,781.0	4,785.6	4,781.0	12.5	10.5	-176.13	-25.0	-60.1	309.9	288.9	20.95	14.793		
4,900.0	4,881.0	4,885.6	4,881.0	12.7	10.7	90.00	-25.0	-60.1	309.9	288.6	21.36	14.507		

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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 31Y-441 - 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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,981.0	4,985.6	4,981.0	12.9	10.9	90.00	90.00	-25.0	-60.1	309.9	288.2	21.79	14.226	
5,100.0	5,081.0	5,085.6	5,081.0	13.0	11.1	90.00	90.00	-25.0	-60.1	309.9	287.7	22.21	13.954	
5,200.0	5,181.0	5,185.6	5,181.0	13.2	11.3	90.00	90.00	-25.0	-60.1	309.9	287.3	22.64	13.692	
5,300.0	5,281.0	5,285.6	5,281.0	13.4	11.6	90.00	90.00	-25.0	-60.1	309.9	286.9	23.06	13.439	
5,400.0	5,381.0	5,385.6	5,381.0	13.6	11.8	90.00	90.00	-25.0	-60.1	309.9	286.5	23.49	13.195	
5,500.0	5,481.0	5,485.6	5,481.0	13.8	12.0	90.00	90.00	-25.0	-60.1	309.9	286.0	23.92	12.959	
5,600.0	5,581.0	5,585.6	5,581.0	13.9	12.2	90.00	90.00	-25.0	-60.1	309.9	285.6	24.35	12.731	
5,700.0	5,681.0	5,685.6	5,681.0	14.1	12.4	90.00	90.00	-25.0	-60.1	309.9	285.2	24.77	12.510	
5,800.0	5,781.0	5,785.6	5,781.0	14.3	12.7	90.00	90.00	-25.0	-60.1	309.9	284.7	25.20	12.297	
5,865.5	5,846.5	5,851.2	5,846.5	14.4	12.8	90.71	90.71	-25.0	-60.1	309.9	284.5	25.48	12.163	
5,900.0	5,881.0	5,885.6	5,881.0	14.5	12.9	90.70	90.70	-25.0	-60.1	309.9	284.3	25.63	12.093	
6,000.0	5,980.6	5,985.3	5,980.6	14.7	13.1	91.97	91.97	-25.0	-60.1	310.1	284.0	26.07	11.897	
6,100.0	6,078.6	6,083.9	6,079.2	14.9	13.3	95.45	95.45	-24.8	-60.1	311.4	284.9	26.51	11.746	
6,200.0	6,173.0	6,186.7	6,181.5	15.1	13.6	99.69	99.69	-15.6	-60.2	314.7	287.7	26.94	11.680	
6,300.0	6,262.5	6,293.1	6,285.2	15.3	13.8	103.74	103.74	8.3	-60.4	319.6	292.3	27.31	11.702	
6,400.0	6,345.3	6,403.5	6,388.0	15.5	14.0	107.52	107.52	47.9	-60.9	325.8	298.2	27.62	11.793	
6,500.0	6,420.2	6,517.9	6,487.4	15.8	14.3	110.94	110.94	104.3	-61.5	332.8	304.8	27.94	11.909	
6,600.0	6,485.7	6,636.3	6,580.4	16.2	14.7	113.92	113.92	177.6	-62.4	340.1	311.7	28.37	11.987	
6,700.0	6,540.9	6,758.7	6,663.3	16.8	15.3	116.41	116.41	267.4	-63.4	347.0	318.0	29.04	11.948	
6,800.0	6,584.7	6,884.6	6,732.5	17.6	16.2	118.37	118.37	372.4	-64.6	353.0	322.9	30.11	11.723	
6,900.0	6,616.4	7,013.4	6,784.5	18.5	17.4	119.75	119.75	490.1	-66.0	357.6	325.9	31.70	11.283	
7,000.0	6,635.5	7,144.2	6,816.3	19.7	18.8	120.55	120.55	616.8	-67.4	360.4	326.6	33.85	10.647	
7,100.0	6,641.6	7,254.3	6,829.0	20.9	20.2	121.12	121.12	726.1	-68.7	363.2	327.0	36.21	10.030	
7,200.0	6,641.1	7,372.9	6,836.0	22.2	21.8	122.10	122.10	844.4	-70.1	366.5	328.0	38.53	9.514	
7,300.0	6,640.7	7,474.6	6,835.8	23.7	23.2	122.14	122.14	946.1	-71.2	366.8	325.7	41.05	8.934	
7,400.0	6,640.3	7,574.6	6,835.7	25.2	24.7	122.17	122.17	1,046.1	-72.4	367.0	323.3	43.67	8.403	
7,500.0	6,639.9	7,674.6	6,835.5	26.7	26.3	122.20	122.20	1,146.1	-73.6	367.1	320.8	46.37	7.917	
7,600.0	6,639.5	7,774.6	6,835.4	28.3	27.9	122.23	122.23	1,246.1	-74.7	367.3	318.2	49.16	7.473	
7,700.0	6,639.0	7,874.6	6,835.2	29.9	29.5	122.26	122.26	1,346.1	-75.9	367.5	315.5	52.00	7.068	
7,800.0	6,638.6	7,974.6	6,835.1	31.6	31.2	122.29	122.29	1,446.1	-77.0	367.7	312.8	54.90	6.698	
7,900.0	6,638.2	8,074.6	6,834.9	33.3	32.9	122.32	122.32	1,546.0	-78.2	367.9	310.1	57.85	6.360	
8,000.0	6,637.8	8,174.6	6,834.7	35.0	34.6	122.35	122.35	1,646.0	-79.3	368.1	307.3	60.83	6.052	
8,100.0	6,637.4	8,274.6	6,834.6	36.7	36.4	122.38	122.38	1,746.0	-80.5	368.3	304.5	63.84	5.769	
8,200.0	6,637.0	8,374.6	6,834.4	38.5	38.1	122.41	122.41	1,846.0	-81.6	368.5	301.6	66.89	5.509	
8,300.0	6,636.5	8,474.6	6,834.3	40.3	39.9	122.43	122.43	1,946.0	-82.8	368.7	298.7	69.95	5.271	
8,400.0	6,636.1	8,574.6	6,834.1	42.0	41.7	122.46	122.46	2,046.0	-83.9	368.9	295.8	73.04	5.050	
8,500.0	6,635.7	8,674.6	6,834.0	43.8	43.5	122.49	122.49	2,146.0	-85.1	369.1	292.9	76.15	4.847	
8,600.0	6,635.3	8,774.6	6,833.8	45.6	45.3	122.52	122.52	2,246.0	-86.3	369.3	290.0	79.27	4.659	
8,700.0	6,634.9	8,874.6	6,833.7	47.5	47.1	122.55	122.55	2,346.0	-87.4	369.5	287.1	82.40	4.484	
8,800.0	6,634.4	8,974.6	6,833.5	49.3	48.9	122.58	122.58	2,446.0	-88.6	369.7	284.1	85.55	4.321	
8,900.0	6,634.0	9,074.6	6,833.3	51.1	50.8	122.61	122.61	2,546.0	-89.7	369.9	281.2	88.71	4.169	
9,000.0	6,633.6	9,174.6	6,833.2	52.9	52.6	122.64	122.64	2,646.0	-90.9	370.1	278.2	91.87	4.028	
9,100.0	6,633.2	9,274.6	6,833.0	54.8	54.4	122.67	122.67	2,746.0	-92.0	370.3	275.2	95.05	3.895	
9,200.0	6,632.8	9,374.6	6,832.9	56.6	56.3	122.70	122.70	2,846.0	-93.2	370.4	272.2	98.23	3.771	
9,300.0	6,632.3	9,474.6	6,832.7	58.5	58.2	122.73	122.73	2,945.9	-94.3	370.6	269.2	101.42	3.655	
9,400.0	6,631.9	9,574.6	6,832.6	60.3	60.0	122.75	122.75	3,045.9	-95.5	370.8	266.2	104.61	3.545	
9,500.0	6,631.5	9,674.6	6,832.4	62.2	61.9	122.78	122.78	3,145.9	-96.6	371.0	263.2	107.81	3.442	
9,600.0	6,631.1	9,774.6	6,832.3	64.1	63.7	122.81	122.81	3,245.9	-97.8	371.2	260.2	111.01	3.344	
9,700.0	6,630.7	9,874.6	6,832.1	65.9	65.6	122.84	122.84	3,345.9	-99.0	371.4	257.2	114.22	3.252	
9,800.0	6,630.3	9,974.6	6,831.9	67.8	67.5	122.87	122.87	3,445.9	-100.1	371.6	254.2	117.43	3.165	
9,900.0	6,629.8	10,074.6	6,831.8	69.7	69.4	122.90	122.90	3,545.9	-101.3	371.8	251.2	120.64	3.082	

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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersten 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersten 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersten 31Y-201 Pad Sec.31-T3N-R63W - Guttersten 31Y-441 - 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	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,000.0	6,629.4	10,174.6	6,831.6	71.6	71.2	122.93	3,645.9	-102.4	372.0	248.2	123.86	3.004	
10,100.0	6,629.0	10,274.6	6,831.5	73.4	73.1	122.96	3,745.9	-103.6	372.2	245.1	127.08	2.929	
10,200.0	6,628.6	10,374.6	6,831.3	75.3	75.0	122.99	3,845.9	-104.7	372.4	242.1	130.30	2.858	
10,300.0	6,628.2	10,474.6	6,831.2	77.2	76.9	123.01	3,945.9	-105.9	372.6	239.1	133.52	2.791	
10,400.0	6,627.7	10,574.6	6,831.0	79.1	78.8	123.04	4,045.9	-107.0	372.8	236.1	136.74	2.726	
10,500.0	6,627.3	10,674.6	6,830.9	81.0	80.7	123.07	4,145.9	-108.2	373.0	233.0	139.96	2.665	
10,600.0	6,626.9	10,774.6	6,830.7	82.9	82.6	123.10	4,245.9	-109.4	373.2	230.0	143.19	2.606	
10,700.0	6,626.5	10,874.6	6,830.5	84.7	84.5	123.13	4,345.8	-110.5	373.4	227.0	146.41	2.550	
10,800.0	6,626.1	10,974.6	6,830.4	86.6	86.3	123.16	4,445.8	-111.7	373.6	223.9	149.64	2.496	
10,900.0	6,625.6	11,074.6	6,830.2	88.5	88.2	123.19	4,545.8	-112.8	373.8	220.9	152.87	2.445	
11,000.0	6,625.2	11,174.6	6,830.1	90.4	90.1	123.21	4,645.8	-114.0	374.0	217.9	156.10	2.396	
11,021.9	6,625.1	11,196.4	6,830.0	90.8	90.5	123.22	4,667.7	-114.2	374.0	217.2	156.80	2.385	
11,053.9	6,625.0	11,224.6	6,830.0	91.4	91.1	123.23	4,695.8	-114.5	374.1	216.3	157.77	2.371 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Guttersen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Offset Design Guttersen 31Y-201 Pad Sec.31-T3N-R63W - Guttersen 43-31(Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,300.0	6,640.7	6,640.7	6,640.7	23.7	132.8	91.40	1,901.6	-229.1	971.5	815.7	155.83	6.234	
7,400.0	6,640.3	6,640.3	6,640.3	25.2	132.8	91.25	1,901.6	-229.1	873.1	715.8	157.36	5.549	
7,500.0	6,639.9	6,639.9	6,639.9	26.7	132.8	91.11	1,901.6	-229.1	775.1	616.2	158.93	4.877	
7,600.0	6,639.5	6,639.5	6,639.5	28.3	132.8	90.96	1,901.6	-229.1	677.7	517.2	160.55	4.221	
7,700.0	6,639.0	6,639.0	6,639.0	29.9	132.8	90.81	1,901.6	-229.1	581.2	419.0	162.21	3.583	
7,800.0	6,638.6	6,638.6	6,638.6	31.6	132.8	90.67	1,901.6	-229.1	486.1	322.2	163.89	2.966	
7,900.0	6,638.2	6,638.2	6,638.2	33.3	132.8	90.52	1,901.6	-229.1	393.5	227.9	165.60	2.376	
8,000.0	6,637.8	6,637.8	6,637.8	35.0	132.8	90.38	1,901.6	-229.1	305.5	138.1	167.33	1.826	
8,100.0	6,637.4	6,637.4	6,637.4	36.7	132.7	90.23	1,901.6	-229.1	227.6	58.5	169.08	1.346 Level 3	
8,200.0	6,637.0	6,637.0	6,637.0	38.5	132.7	90.08	1,901.6	-229.1	174.1	3.3	170.84	1.019 Level 2	
8,257.5	6,636.7	6,636.7	6,636.7	39.5	132.7	90.00	1,901.6	-229.1	164.3	-7.5	171.86	0.956 Level 1, CC, ES, SF	
8,300.0	6,636.5	6,636.5	6,636.5	40.3	132.7	89.94	1,901.6	-229.1	169.7	-2.9	172.61	0.983 Level 1	
8,400.0	6,636.1	6,636.1	6,636.1	42.0	132.7	89.79	1,901.6	-229.1	217.5	43.1	174.40	1.247 Level 2	
8,500.0	6,635.7	6,635.7	6,635.7	43.8	132.7	89.65	1,901.6	-229.1	292.9	116.7	176.19	1.662	
8,600.0	6,635.3	6,635.3	6,635.3	45.6	132.7	89.50	1,901.6	-229.1	379.9	201.9	178.00	2.134	
8,700.0	6,634.9	6,634.9	6,634.9	47.5	132.7	89.35	1,901.6	-229.1	472.0	292.2	179.81	2.625	
8,800.0	6,634.4	6,634.4	6,634.4	49.3	132.7	89.21	1,901.6	-229.1	566.8	385.2	181.63	3.121	
8,900.0	6,634.0	6,634.0	6,634.0	51.1	132.7	89.06	1,901.6	-229.1	663.2	479.7	183.45	3.615	
9,000.0	6,633.6	6,633.6	6,633.6	52.9	132.7	88.92	1,901.6	-229.1	760.4	575.2	185.27	4.104	
9,100.0	6,633.2	6,633.2	6,633.2	54.8	132.7	88.77	1,901.6	-229.1	858.3	671.2	187.11	4.587	
9,200.0	6,632.8	6,632.8	6,632.8	56.6	132.7	88.62	1,901.6	-229.1	956.7	767.7	188.94	5.063	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Gutteresen 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Gutteresen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Gutteresen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4851.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Gutteresen 31T-221
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 31T-221
Project:	SEC.31-T3N-R63W	TVD Reference:	WELL @ 4851.0ft (RKB - 15')
Reference Site:	Guttersen 31Y-201 Pad Sec.31-T3N-R63W	MD Reference:	WELL @ 4851.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Guttersen 31T-221	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 (5-31-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4851.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Guttersen 31T-221
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.66°

