

PETROLEUM DEVELOPMENT CORP Weld County CO

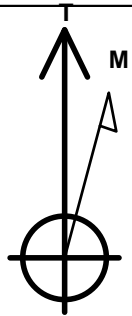
Well Name: **Klein 19N-432**

Surface Location: Klein 19O-HZ Pad Sec.19-T5N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4626.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1384509.29	3253110.45	40.385320	-104.591380	
RKB - 15' WELL @ 4641.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2389'FNL & 2251'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 1786'FNL & 500'FEL, Sec.20	6847.0	665.0	7025.6	Point



Azimuths to True North
Magnetic North: 8.40°

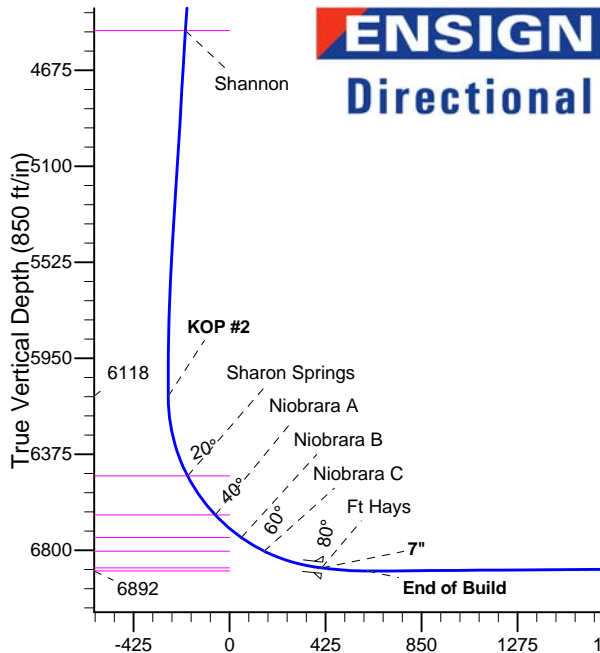
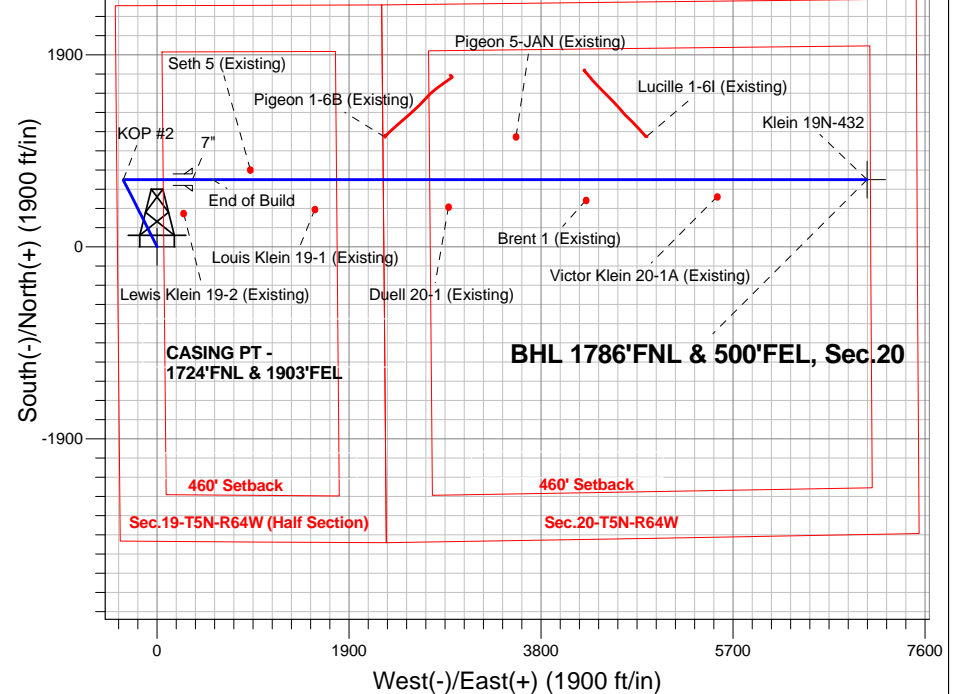
Magnetic Field
Strength: 52855.3srT
Dip Angle: 66.97°
Date: 3/10/2014
Model: IGRF2010

Klein 19O-HZ Pad Sec.19-T5N-R64W
Klein 19N-432
Plan #1 (3-05-14)
9:46, March 13 2014

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6118.4	6177.2	KOP #2
6892.2	7499.2	End of Build

SHL 2389'FNL & 2251'FEL, Sec.19



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	1466.8	9.34	333.19	1464.7	33.9	-17.1	2.00	333.19	-13.8	
4	5592.0	9.34	333.19	5535.3	631.1	-318.9	0.00	0.00	-258.0	
5	6058.8	0.00	0.00	6000.0	665.0	-336.0	2.00	180.00	-271.8	
6	6177.2	0.00	0.00	6118.5	665.0	-336.0	0.00	0.00	-271.8	
7	7297.2	84.00	90.00	6878.2	665.0	348.1	7.50	90.00	409.2	
8	7371.2	84.00	90.00	6886.0	665.0	421.7	0.00	0.00	482.5	
9	7499.2	90.40	90.00	6892.2	665.0	549.5	5.00	0.00	609.7	
10	13975.6	90.40	90.00	6847.0	665.0	7025.6	0.00	0.00	7057.0	BHL 1786'FNL & 500'FEL, Sec.20

BHL 1786'FNL & 500'FEL, Sec.20

Vertical Section at 84.59° (850 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

Klein 19O-HZ Pad Sec.19-T5N-R64W

Klein 19N-432

Wellbore #1

Plan: Plan #1 (3-05-14)

Standard Planning Report

13 March, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-05-14)		

Project	SEC.19-T5N-R64W		
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 Klein 19O-HZ Pad Sec.19-T5N-R64W					
Site Position:		Northing:	1,384,542.09 ft	Latitude:	40.385410
From:	Lat/Long	Easting:	3,253,110.11 ft	Longitude:	-104.591380
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.59 °

Well	Klein 19N-432					
Well Position	+N-S	-32.8 ft	Northing:	1,384,509.29 ft	Latitude:	40.385320
	+E-W	0.0 ft	Easting:	3,253,110.45 ft	Longitude:	-104.591380
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,626.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/10/2014	8.40	66.97	52,855

Design	Plan #1 (3-05-14)			
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	84.59

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	
1,466.8	9.34	333.19	1,464.7	33.9	-17.1	2.00	2.00	0.00	333.19	
5,592.0	9.34	333.19	5,535.3	631.1	-318.9	0.00	0.00	0.00	0.00	
6,058.8	0.00	0.00	6,000.0	665.0	-336.0	2.00	-2.00	0.00	180.00	
6,177.2	0.00	0.00	6,118.5	665.0	-336.0	0.00	0.00	0.00	0.00	
7,297.2	84.00	90.00	6,878.2	665.0	348.1	7.50	7.50	0.00	90.00	
7,371.2	84.00	90.00	6,886.0	665.0	421.7	0.00	0.00	0.00	0.00	
7,499.2	90.40	90.00	6,892.2	665.0	549.5	5.00	5.00	0.00	0.00	
13,975.6	90.40	90.00	6,847.0	665.0	7,025.6	0.00	0.00	0.00	0.00	BHL 1786'FNL & 5C

Database:	landmark	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-05-14)		

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
SHL 2389'FNL & 2251'FEL, Sec.19									
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	2.00	333.19	1,100.0	1.6	-0.8	-0.6	2.00	2.00	0.00
1,200.0	4.00	333.19	1,199.8	6.2	-3.1	-2.5	2.00	2.00	0.00
1,300.0	6.00	333.19	1,299.5	14.0	-7.1	-5.7	2.00	2.00	0.00
1,400.0	8.00	333.19	1,398.7	24.9	-12.6	-10.2	2.00	2.00	0.00
1,466.8	9.34	333.19	1,464.7	33.9	-17.1	-13.8	2.00	2.00	0.00
1,500.0	9.34	333.19	1,497.5	38.7	-19.5	-15.8	0.00	0.00	0.00
1,600.0	9.34	333.19	1,596.2	53.2	-26.9	-21.7	0.00	0.00	0.00
1,700.0	9.34	333.19	1,694.8	67.6	-34.2	-27.6	0.00	0.00	0.00
1,800.0	9.34	333.19	1,793.5	82.1	-41.5	-33.6	0.00	0.00	0.00
1,900.0	9.34	333.19	1,892.2	96.6	-48.8	-39.5	0.00	0.00	0.00
2,000.0	9.34	333.19	1,990.9	111.1	-56.1	-45.4	0.00	0.00	0.00
2,100.0	9.34	333.19	2,089.6	125.5	-63.4	-51.3	0.00	0.00	0.00
2,200.0	9.34	333.19	2,188.2	140.0	-70.7	-57.2	0.00	0.00	0.00
2,300.0	9.34	333.19	2,286.9	154.5	-78.1	-63.2	0.00	0.00	0.00
2,400.0	9.34	333.19	2,385.6	169.0	-85.4	-69.1	0.00	0.00	0.00
2,500.0	9.34	333.19	2,484.3	183.5	-92.7	-75.0	0.00	0.00	0.00
2,600.0	9.34	333.19	2,582.9	197.9	-100.0	-80.9	0.00	0.00	0.00
2,700.0	9.34	333.19	2,681.6	212.4	-107.3	-86.8	0.00	0.00	0.00
2,800.0	9.34	333.19	2,780.3	226.9	-114.6	-92.8	0.00	0.00	0.00
2,900.0	9.34	333.19	2,879.0	241.4	-122.0	-98.7	0.00	0.00	0.00
3,000.0	9.34	333.19	2,977.6	255.9	-129.3	-104.6	0.00	0.00	0.00
3,100.0	9.34	333.19	3,076.3	270.3	-136.6	-110.5	0.00	0.00	0.00
3,200.0	9.34	333.19	3,175.0	284.8	-143.9	-116.4	0.00	0.00	0.00
3,300.0	9.34	333.19	3,273.7	299.3	-151.2	-122.3	0.00	0.00	0.00
3,400.0	9.34	333.19	3,372.3	313.8	-158.5	-128.3	0.00	0.00	0.00
3,500.0	9.34	333.19	3,471.0	328.2	-165.9	-134.2	0.00	0.00	0.00
3,580.1	9.34	333.19	3,550.0	339.8	-171.7	-138.9	0.00	0.00	0.00
Parkman									
3,600.0	9.34	333.19	3,569.7	342.7	-173.2	-140.1	0.00	0.00	0.00
3,700.0	9.34	333.19	3,668.4	357.2	-180.5	-146.0	0.00	0.00	0.00
3,800.0	9.34	333.19	3,767.0	371.7	-187.8	-151.9	0.00	0.00	0.00
3,900.0	9.34	333.19	3,865.7	386.2	-195.1	-157.9	0.00	0.00	0.00
4,000.0	9.34	333.19	3,964.4	400.6	-202.4	-163.8	0.00	0.00	0.00
4,100.0	9.34	333.19	4,063.1	415.1	-209.7	-169.7	0.00	0.00	0.00
4,200.0	9.34	333.19	4,161.7	429.6	-217.1	-175.6	0.00	0.00	0.00
4,300.0	9.34	333.19	4,260.4	444.1	-224.4	-181.5	0.00	0.00	0.00
4,340.1	9.34	333.19	4,300.0	449.9	-227.3	-183.9	0.00	0.00	0.00
Sussex									
4,400.0	9.34	333.19	4,359.1	458.6	-231.7	-187.4	0.00	0.00	0.00

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-05-14)		

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)
4,500.0	9.34	333.19	4,457.8	473.0	-239.0	-193.4	0.00	0.00	0.00
4,542.8	9.34	333.19	4,500.0	479.2	-242.1	-195.9	0.00	0.00	0.00
Shannon									
4,600.0	9.34	333.19	4,556.4	487.5	-246.3	-199.3	0.00	0.00	0.00
4,700.0	9.34	333.19	4,655.1	502.0	-253.6	-205.2	0.00	0.00	0.00
4,800.0	9.34	333.19	4,753.8	516.5	-261.0	-211.1	0.00	0.00	0.00
4,900.0	9.34	333.19	4,852.5	530.9	-268.3	-217.0	0.00	0.00	0.00
5,000.0	9.34	333.19	4,951.1	545.4	-275.6	-223.0	0.00	0.00	0.00
5,100.0	9.34	333.19	5,049.8	559.9	-282.9	-228.9	0.00	0.00	0.00
5,200.0	9.34	333.19	5,148.5	574.4	-290.2	-234.8	0.00	0.00	0.00
5,300.0	9.34	333.19	5,247.2	588.9	-297.5	-240.7	0.00	0.00	0.00
5,400.0	9.34	333.19	5,345.8	603.3	-304.8	-246.6	0.00	0.00	0.00
5,500.0	9.34	333.19	5,444.5	617.8	-312.2	-252.6	0.00	0.00	0.00
5,592.0	9.34	333.19	5,535.3	631.1	-318.9	-258.0	0.00	0.00	0.00
5,600.0	9.18	333.19	5,543.2	632.3	-319.5	-258.5	2.00	-2.00	0.00
5,700.0	7.18	333.19	5,642.2	645.0	-325.9	-263.7	2.00	-2.00	0.00
5,800.0	5.18	333.19	5,741.6	654.6	-330.7	-267.6	2.00	-2.00	0.00
5,900.0	3.18	333.19	5,841.3	661.1	-334.0	-270.2	2.00	-2.00	0.00
6,000.0	1.18	333.19	5,941.2	664.5	-335.7	-271.6	2.00	-2.00	0.00
6,058.8	0.00	0.00	6,000.0	665.0	-336.0	-271.8	2.00	-2.00	0.00
6,100.0	0.00	0.00	6,041.2	665.0	-336.0	-271.8	0.00	0.00	0.00
6,177.2	0.00	0.00	6,118.4	665.0	-336.0	-271.8	0.00	0.00	0.00
KOP #2									
6,200.0	1.71	90.00	6,141.2	665.0	-335.7	-271.5	7.49	7.49	0.00
6,300.0	9.21	90.00	6,240.7	665.0	-326.2	-262.0	7.50	7.50	0.00
6,400.0	16.71	90.00	6,338.1	665.0	-303.7	-239.7	7.50	7.50	0.00
6,500.0	24.21	90.00	6,431.7	665.0	-268.8	-205.0	7.50	7.50	0.00
6,543.7	27.48	90.00	6,471.0	665.0	-249.8	-186.0	7.50	7.50	0.00
Sharon Springs									
6,600.0	31.71	90.00	6,520.0	665.0	-222.0	-158.3	7.50	7.50	0.00
6,700.0	39.21	90.00	6,601.4	665.0	-164.0	-100.6	7.50	7.50	0.00
6,756.8	43.47	90.00	6,644.0	665.0	-126.5	-63.3	7.50	7.50	0.00
Niobrara A									
6,800.0	46.71	90.00	6,674.5	665.0	-95.9	-32.8	7.50	7.50	0.00
6,900.0	54.21	90.00	6,738.1	665.0	-18.8	43.9	7.50	7.50	0.00
6,910.1	54.97	90.00	6,744.0	665.0	-10.6	52.1	7.50	7.50	0.00
Niobrara B									
7,000.0	61.71	90.00	6,791.2	665.0	65.9	128.2	7.50	7.50	0.00
7,028.1	63.81	90.00	6,804.0	665.0	90.8	153.1	7.50	7.50	0.00
Niobrara C									
7,100.0	69.21	90.00	6,832.7	665.0	156.8	218.7	7.50	7.50	0.00
7,200.0	76.71	90.00	6,861.9	665.0	252.3	313.8	7.50	7.50	0.00
7,295.1	83.84	90.00	6,878.0	665.0	345.9	407.1	7.50	7.50	0.00
Ft Hays									
7,297.2	84.00	90.00	6,878.2	665.0	348.1	409.2	7.50	7.50	0.00
7"									
7,300.0	84.00	90.00	6,878.5	665.0	350.8	411.9	0.09	0.09	0.00
7,371.2	84.00	90.00	6,886.0	665.0	421.7	482.5	0.00	0.00	0.00
7,400.0	85.44	90.00	6,888.6	665.0	450.3	511.0	5.00	5.00	0.00
7,467.7	88.83	90.00	6,892.0	665.0	518.0	578.3	5.00	5.00	0.00
Codell									
7,499.2	90.40	90.00	6,892.2	665.0	549.4	609.7	5.00	5.00	0.00

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-05-14)		

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)
End of Build									
7,500.0	90.40	90.00	6,892.2	665.0	550.2	610.4	0.21	0.21	0.00
7,600.0	90.40	90.00	6,891.5	665.0	650.2	710.0	0.00	0.00	0.00
7,700.0	90.40	90.00	6,890.8	665.0	750.2	809.6	0.00	0.00	0.00
7,800.0	90.40	90.00	6,890.1	665.0	850.2	909.1	0.00	0.00	0.00
7,900.0	90.40	90.00	6,889.4	665.0	950.2	1,008.7	0.00	0.00	0.00
8,000.0	90.40	90.00	6,888.7	665.0	1,050.2	1,108.2	0.00	0.00	0.00
8,100.0	90.40	90.00	6,888.0	665.0	1,150.2	1,207.8	0.00	0.00	0.00
8,200.0	90.40	90.00	6,887.3	665.0	1,250.2	1,307.3	0.00	0.00	0.00
8,300.0	90.40	90.00	6,886.6	665.0	1,350.2	1,406.9	0.00	0.00	0.00
8,400.0	90.40	90.00	6,885.9	665.0	1,450.2	1,506.4	0.00	0.00	0.00
8,500.0	90.40	90.00	6,885.2	665.0	1,550.2	1,606.0	0.00	0.00	0.00
8,600.0	90.40	90.00	6,884.5	665.0	1,650.2	1,705.5	0.00	0.00	0.00
8,700.0	90.40	90.00	6,883.8	665.0	1,750.2	1,805.1	0.00	0.00	0.00
8,800.0	90.40	90.00	6,883.1	665.0	1,850.2	1,904.6	0.00	0.00	0.00
8,900.0	90.40	90.00	6,882.4	665.0	1,950.2	2,004.2	0.00	0.00	0.00
9,000.0	90.40	90.00	6,881.7	665.0	2,050.2	2,103.7	0.00	0.00	0.00
9,100.0	90.40	90.00	6,881.0	665.0	2,150.2	2,203.3	0.00	0.00	0.00
9,200.0	90.40	90.00	6,880.3	665.0	2,250.2	2,302.8	0.00	0.00	0.00
9,300.0	90.40	90.00	6,879.6	665.0	2,350.2	2,402.4	0.00	0.00	0.00
9,400.0	90.40	90.00	6,878.9	665.0	2,450.2	2,501.9	0.00	0.00	0.00
9,500.0	90.40	90.00	6,878.2	665.0	2,550.2	2,601.5	0.00	0.00	0.00
9,600.0	90.40	90.00	6,877.5	665.0	2,650.2	2,701.1	0.00	0.00	0.00
9,700.0	90.40	90.00	6,876.8	665.0	2,750.2	2,800.6	0.00	0.00	0.00
9,800.0	90.40	90.00	6,876.2	665.0	2,850.2	2,900.2	0.00	0.00	0.00
9,900.0	90.40	90.00	6,875.5	665.0	2,950.2	2,999.7	0.00	0.00	0.00
10,000.0	90.40	90.00	6,874.8	665.0	3,050.2	3,099.3	0.00	0.00	0.00
10,100.0	90.40	90.00	6,874.1	665.0	3,150.2	3,198.8	0.00	0.00	0.00
10,200.0	90.40	90.00	6,873.4	665.0	3,250.2	3,298.4	0.00	0.00	0.00
10,300.0	90.40	90.00	6,872.7	665.0	3,350.2	3,397.9	0.00	0.00	0.00
10,400.0	90.40	90.00	6,872.0	665.0	3,450.2	3,497.5	0.00	0.00	0.00
10,500.0	90.40	90.00	6,871.3	665.0	3,550.2	3,597.0	0.00	0.00	0.00
10,600.0	90.40	90.00	6,870.6	665.0	3,650.2	3,696.6	0.00	0.00	0.00
10,700.0	90.40	90.00	6,869.9	665.0	3,750.2	3,796.1	0.00	0.00	0.00
10,800.0	90.40	90.00	6,869.2	665.0	3,850.2	3,895.7	0.00	0.00	0.00
10,900.0	90.40	90.00	6,868.5	665.0	3,950.2	3,995.2	0.00	0.00	0.00
11,000.0	90.40	90.00	6,867.8	665.0	4,050.1	4,094.8	0.00	0.00	0.00
11,100.0	90.40	90.00	6,867.1	665.0	4,150.1	4,194.3	0.00	0.00	0.00
11,200.0	90.40	90.00	6,866.4	665.0	4,250.1	4,293.9	0.00	0.00	0.00
11,300.0	90.40	90.00	6,865.7	665.0	4,350.1	4,393.4	0.00	0.00	0.00
11,400.0	90.40	90.00	6,865.0	665.0	4,450.1	4,493.0	0.00	0.00	0.00
11,500.0	90.40	90.00	6,864.3	665.0	4,550.1	4,592.6	0.00	0.00	0.00
11,600.0	90.40	90.00	6,863.6	665.0	4,650.1	4,692.1	0.00	0.00	0.00
11,700.0	90.40	90.00	6,862.9	665.0	4,750.1	4,791.7	0.00	0.00	0.00
11,800.0	90.40	90.00	6,862.2	665.0	4,850.1	4,891.2	0.00	0.00	0.00
11,900.0	90.40	90.00	6,861.5	665.0	4,950.1	4,990.8	0.00	0.00	0.00
12,000.0	90.40	90.00	6,860.8	665.0	5,050.1	5,090.3	0.00	0.00	0.00
12,100.0	90.40	90.00	6,860.1	665.0	5,150.1	5,189.9	0.00	0.00	0.00
12,200.0	90.40	90.00	6,859.4	665.0	5,250.1	5,289.4	0.00	0.00	0.00
12,300.0	90.40	90.00	6,858.7	665.0	5,350.1	5,389.0	0.00	0.00	0.00
12,400.0	90.40	90.00	6,858.0	665.0	5,450.1	5,488.5	0.00	0.00	0.00
12,500.0	90.40	90.00	6,857.3	665.0	5,550.1	5,588.1	0.00	0.00	0.00
12,600.0	90.40	90.00	6,856.6	665.0	5,650.1	5,687.6	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-05-14)		

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)
12,700.0	90.40	90.00	6,855.9	665.0	5,750.1	5,787.2	0.00	0.00	0.00
12,800.0	90.40	90.00	6,855.2	665.0	5,850.1	5,886.7	0.00	0.00	0.00
12,900.0	90.40	90.00	6,854.5	665.0	5,950.1	5,986.3	0.00	0.00	0.00
13,000.0	90.40	90.00	6,853.8	665.0	6,050.1	6,085.8	0.00	0.00	0.00
13,100.0	90.40	90.00	6,853.1	665.0	6,150.1	6,185.4	0.00	0.00	0.00
13,200.0	90.40	90.00	6,852.4	665.0	6,250.1	6,284.9	0.00	0.00	0.00
13,300.0	90.40	90.00	6,851.7	665.0	6,350.1	6,384.5	0.00	0.00	0.00
13,400.0	90.40	90.00	6,851.0	665.0	6,450.1	6,484.1	0.00	0.00	0.00
13,500.0	90.40	90.00	6,850.3	665.0	6,550.1	6,583.6	0.00	0.00	0.00
13,600.0	90.40	90.00	6,849.6	665.0	6,650.1	6,683.2	0.00	0.00	0.00
13,700.0	90.40	90.00	6,848.9	665.0	6,750.1	6,782.7	0.00	0.00	0.00
13,800.0	90.40	90.00	6,848.2	665.0	6,850.1	6,882.3	0.00	0.00	0.00
13,900.0	90.40	90.00	6,847.5	665.0	6,950.1	6,981.8	0.00	0.00	0.00
13,975.6	90.40	90.00	6,847.0	665.0	7,025.6	7,057.0	0.00	0.00	0.00
BHL 1786'FNL & 500'FEL, Sec.20									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,297.2	6,878.2	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,580.1	3,550.0	Parkman		0.00	
4,340.1	4,300.0	Sussex		0.00	
4,542.8	4,500.0	Shannon		0.00	
6,543.7	6,471.0	Sharon Springs		0.00	
6,756.8	6,644.0	Niobrara A		0.00	
6,910.1	6,744.0	Niobrara B		0.00	
7,028.1	6,804.0	Niobrara C		0.00	
7,295.1	6,878.0	Ft Hays		0.00	
7,467.7	6,892.0	Codell		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,000.0	1,000.0	0.0	0.0	KOP #1
6,177.2	6,118.4	665.0	-336.0	KOP #2
7,499.2	6,892.2	665.0	549.4	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

Klein 19O-HZ Pad Sec.19-T5N-R64W

Klein 19N-432

Wellbore #1

Plan #1 (3-05-14)

Anticollision Report

13 March, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (3-05-14)
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	3/13/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,975.6	Plan #1 (3-05-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Klein (Existing) Sec.19-T5N-R64W						
Brent 1 (Existing) - Wellbore #1 - Wellbore #1	11,195.4	6,848.4	202.0	-58.9	0.774	Level 1, CC
Brent 1 (Existing) - Wellbore #1 - Wellbore #1	11,200.0	6,848.4	202.0	-59.0	0.774	Level 1, ES, SF
Duell 20-1 (Existing) - Wellbore #1 - Wellbore #1	9,833.1	6,855.9	267.7	44.5	1.199	Level 2, CC, ES, SF
Lewis Klein 19-2 (Existing) - Wellbore #1 - Wellbore #1	7,209.8	6,848.1	329.8	172.9	2.102	CC, ES, SF
Louis Klein 19-1 (Existing) - Wellbore #1 - Wellbore #1	8,509.8	6,867.2	289.7	102.1	1.545	CC, ES, SF
Lucille 1-6I (Existing) - Wellbore #1 - Wellbore #1	11,794.5	6,961.6	429.8	274.2	2.763	CC
Lucille 1-6I (Existing) - Wellbore #1 - Wellbore #1	11,800.0	6,961.7	429.8	274.1	2.760	ES, SF
Pigeon 1-6B (Existing) - Wellbore #1 - Wellbore #1	9,205.3	7,000.5	426.7	341.9	5.033	CC, ES
Pigeon 1-6B (Existing) - Wellbore #1 - Wellbore #1	9,300.0	7,000.2	437.1	349.7	5.004	SF
Pigeon 5-JAN (Existing) - Wellbore #1 - Wellbore #1	10,501.6	6,851.3	428.2	186.6	1.772	CC, ES, SF
Seth 5 (Existing) - Wellbore #1 - Wellbore #1	7,871.9	6,872.6	100.1	-71.3	0.584	Level 1, CC, ES, SF
Victor Klein 20-1A (Existing) - Wellbore #1 - Wellbore #1	12,493.6	6,835.3	165.3	-131.5	0.557	Level 1, CC, SF
Victor Klein 20-1A (Existing) - Wellbore #1 - Wellbore #1	12,500.0	6,835.3	165.4	-131.6	0.557	Level 1, ES
Klein 19O-HZ Pad Sec.19-T5N-R64W						
Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)	800.0	800.0	32.8	29.4	9.724	CC
Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)	13,975.6	13,923.6	377.0	20.2	1.057	Level 2, ES, SF
Klein 19O-232 - Wellbore #1 - Plan #1 (3-05-14)	1,000.0	1,000.0	153.2	149.0	35.881	CC, ES
Klein 19O-232 - Wellbore #1 - Plan #1 (3-05-14)	2,400.0	2,396.2	281.7	270.6	25.457	SF
Klein 19O-312 - Wellbore #1 - Plan #1 (3-05-14)	1,000.0	1,000.0	151.2	147.0	35.416	CC
Klein 19O-312 - Wellbore #1 - Plan #1 (3-05-14)	13,975.6	13,902.7	443.5	53.0	1.136	Level 2, ES, SF
Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)	1,000.0	1,000.0	150.5	146.2	35.236	CC, ES
Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)	13,975.6	13,946.4	598.5	196.5	1.489	Level 3, SF
Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)	1,000.0	1,000.0	161.3	157.1	37.778	CC
Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)	1,100.0	1,103.9	161.4	156.7	34.319	ES
Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)	1,800.0	1,802.9	211.9	203.6	25.662	SF
Klein 19P-312 - Wellbore #1 - Plan #1 (3-05-14)	400.0	400.0	29.1	27.6	18.524	CC, ES
Klein 19P-312 - Wellbore #1 - Plan #1 (3-05-14)	600.0	598.2	34.7	32.2	14.320	SF
Klein 19P-402 - Wellbore #1 - Plan #1 (3-05-14)	200.0	200.0	58.3	57.6	86.451	CC, ES
Klein 19P-402 - Wellbore #1 - Plan #1 (3-05-14)	700.0	687.3	95.7	92.8	33.018	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Brent 1 (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7091-UNKNOWN												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	6,872.7	6,854.7	6,854.7	99.2	137.1	91.77	463.0	4,245.5	917.8	681.8	236.06	3.888	
10,400.0	6,872.0	6,854.0	6,854.0	102.0	137.1	91.57	463.0	4,245.5	820.6	581.8	238.83	3.436	
10,500.0	6,871.3	6,853.3	6,853.3	104.7	137.1	91.38	463.0	4,245.5	724.1	482.5	241.60	2.997	
10,600.0	6,870.6	6,852.6	6,852.6	107.5	137.1	91.18	463.0	4,245.5	628.7	384.3	244.37	2.573	
10,700.0	6,869.9	6,851.9	6,851.9	110.3	137.0	90.98	463.0	4,245.5	535.0	287.8	247.14	2.165	
10,800.0	6,869.2	6,851.2	6,851.2	113.0	137.0	90.78	463.0	4,245.5	444.0	194.1	249.91	1.777	
10,900.0	6,868.5	6,850.5	6,850.5	115.8	137.0	90.58	463.0	4,245.5	357.8	105.1	252.68	1.416	Level 3
11,000.0	6,867.8	6,849.8	6,849.8	118.6	137.0	90.39	463.0	4,245.5	281.0	25.6	255.44	1.100	Level 2
11,100.0	6,867.1	6,849.1	6,849.1	121.4	137.0	90.19	463.0	4,245.5	223.4	-34.9	258.21	0.865	Level 1
11,195.4	6,866.4	6,848.4	6,848.4	124.0	137.0	90.00	463.0	4,245.5	202.0	-58.9	260.84	0.774	Level 1, CC
11,200.0	6,866.4	6,848.4	6,848.4	124.1	137.0	89.99	463.0	4,245.5	202.0	-59.0	260.97	0.774	Level 1, ES, SF
11,300.0	6,865.7	6,847.7	6,847.7	126.9	137.0	89.79	463.0	4,245.5	227.5	-36.3	263.73	0.862	Level 1
11,400.0	6,865.0	6,847.0	6,847.0	129.7	136.9	89.59	463.0	4,245.5	287.5	21.0	266.49	1.079	Level 2
11,500.0	6,864.3	6,846.3	6,846.3	132.5	136.9	89.40	463.0	4,245.5	365.5	96.2	269.25	1.357	Level 3
11,600.0	6,863.6	6,845.6	6,845.6	135.3	136.9	89.20	463.0	4,245.5	452.2	180.2	272.00	1.663	
11,700.0	6,862.9	6,844.9	6,844.9	138.1	136.9	89.00	463.0	4,245.5	543.5	268.8	274.76	1.978	
11,800.0	6,862.2	6,844.2	6,844.2	140.8	136.9	88.80	463.0	4,245.5	637.5	359.9	277.50	2.297	
11,900.0	6,861.5	6,843.5	6,843.5	143.6	136.9	88.60	463.0	4,245.5	733.0	452.7	280.25	2.615	
12,000.0	6,860.8	6,842.8	6,842.8	146.4	136.9	88.41	463.0	4,245.5	829.6	546.6	283.00	2.931	
12,100.0	6,860.1	6,842.1	6,842.1	149.2	136.8	88.21	463.0	4,245.5	926.9	641.1	285.74	3.244	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Duell 20-1 (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7020-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,900.0	6,882.4	6,862.4	6,862.4	60.9	137.2	91.39	397.3	2,883.3	970.7	772.8	197.89	4.906	
9,000.0	6,881.7	6,861.7	6,861.7	63.6	137.2	91.24	397.3	2,883.3	875.1	674.5	200.58	4.363	
9,100.0	6,881.0	6,861.0	6,861.0	66.3	137.2	91.10	397.3	2,883.3	780.4	577.2	203.28	3.839	
9,200.0	6,880.3	6,860.3	6,860.3	69.0	137.2	90.95	397.3	2,883.3	687.4	481.4	205.99	3.337	
9,300.0	6,879.6	6,859.6	6,859.6	71.7	137.2	90.80	397.3	2,883.3	596.5	387.8	208.71	2.858	
9,400.0	6,878.9	6,858.9	6,858.9	74.5	137.2	90.65	397.3	2,883.3	509.2	297.7	211.43	2.408	
9,500.0	6,878.2	6,858.2	6,858.2	77.2	137.2	90.50	397.3	2,883.3	427.4	213.2	214.15	1.996	
9,600.0	6,877.5	6,857.5	6,857.5	79.9	137.2	90.35	397.3	2,883.3	355.0	138.1	216.88	1.637	
9,700.0	6,876.8	6,856.8	6,856.8	82.7	137.1	90.20	397.3	2,883.3	299.0	79.4	219.61	1.361	Level 3
9,800.0	6,876.2	6,856.2	6,856.2	85.4	137.1	90.05	397.3	2,883.3	269.8	47.4	222.34	1.213	Level 2
9,833.1	6,875.9	6,855.9	6,855.9	86.3	137.1	90.00	397.3	2,883.3	267.7	44.5	223.25	1.199	Level 2, CC, ES, SF
9,900.0	6,875.5	6,855.5	6,855.5	88.2	137.1	89.90	397.3	2,883.3	276.0	50.9	225.08	1.226	Level 2
10,000.0	6,874.8	6,854.8	6,854.8	90.9	137.1	89.75	397.3	2,883.3	315.5	87.7	227.82	1.385	Level 3
10,100.0	6,874.1	6,854.1	6,854.1	93.7	137.1	89.60	397.3	2,883.3	378.0	147.5	230.55	1.640	
10,200.0	6,873.4	6,853.4	6,853.4	96.4	137.1	89.45	397.3	2,883.3	454.2	220.9	233.29	1.947	
10,300.0	6,872.7	6,852.7	6,852.7	99.2	137.1	89.30	397.3	2,883.3	538.2	302.2	236.04	2.280	
10,400.0	6,872.0	6,852.0	6,852.0	102.0	137.0	89.15	397.3	2,883.3	626.9	388.1	238.78	2.626	
10,500.0	6,871.3	6,851.3	6,851.3	104.7	137.0	89.00	397.3	2,883.3	718.6	477.1	241.52	2.975	
10,600.0	6,870.6	6,850.6	6,850.6	107.5	137.0	88.85	397.3	2,883.3	812.3	568.0	244.26	3.325	
10,700.0	6,869.9	6,849.9	6,849.9	110.3	137.0	88.71	397.3	2,883.3	907.3	660.3	247.00	3.673	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lewis Klein 19-2 (Existing) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 7082-UNKNOWN													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	38.00	335.2	261.9	425.6					
100.0	100.0	84.0	84.0	0.1	1.7	38.00	335.2	261.9	425.3	423.5	1.79	237.272		
200.0	200.0	184.0	184.0	0.3	3.7	38.00	335.2	261.9	425.3	421.3	4.02	105.873		
300.0	300.0	284.0	284.0	0.6	5.7	38.00	335.2	261.9	425.3	419.1	6.24	68.139		
400.0	400.0	384.0	384.0	0.8	7.7	38.00	335.2	261.9	425.3	416.9	8.47	50.234		
500.0	500.0	484.0	484.0	1.0	9.7	38.00	335.2	261.9	425.3	414.6	10.69	39.781		
600.0	600.0	584.0	584.0	1.2	11.7	38.00	335.2	261.9	425.3	412.4	12.92	32.929		
700.0	700.0	684.0	684.0	1.5	13.7	38.00	335.2	261.9	425.3	410.2	15.14	28.091		
800.0	800.0	784.0	784.0	1.7	15.7	38.00	335.2	261.9	425.3	408.0	17.37	24.492		
900.0	900.0	884.0	884.0	1.9	17.7	38.00	335.2	261.9	425.3	405.7	19.59	21.711		
1,000.0	1,000.0	984.0	984.0	2.1	19.7	38.00	335.2	261.9	425.3	403.5	21.82	19.497		
1,100.0	1,100.0	1,084.0	1,084.0	2.4	21.7	65.03	335.2	261.9	424.6	400.6	24.04	17.665		
1,200.0	1,199.8	1,183.8	1,183.8	2.6	23.7	65.72	335.2	261.9	422.4	396.2	26.25	16.092		
1,300.0	1,299.5	1,283.5	1,283.5	2.8	25.7	66.86	335.2	261.9	418.9	390.4	28.46	14.718		
1,400.0	1,398.7	1,382.7	1,382.7	3.1	27.7	68.49	335.2	261.9	414.2	383.6	30.68	13.503		
1,500.0	1,497.5	1,481.5	1,481.5	3.3	29.6	70.55	335.2	261.9	408.8	375.9	32.91	12.419		
1,600.0	1,596.2	1,580.2	1,580.2	3.6	31.6	72.70	335.2	261.9	403.6	368.4	35.18	11.471		
1,700.0	1,694.8	1,678.8	1,678.8	3.9	33.6	74.90	335.2	261.9	399.0	361.5	37.47	10.649		
1,800.0	1,793.5	1,777.5	1,777.5	4.2	35.6	77.14	335.2	261.9	395.0	355.3	39.77	9.933		
1,900.0	1,892.2	1,876.2	1,876.2	4.6	37.5	79.42	335.2	261.9	391.7	349.6	42.08	9.309		
2,000.0	1,990.9	1,974.9	1,974.9	4.9	39.5	81.74	335.2	261.9	389.0	344.6	44.39	8.763		
2,100.0	2,089.6	2,073.6	2,073.6	5.2	41.5	84.09	335.2	261.9	387.0	340.3	46.71	8.284		
2,200.0	2,188.2	2,172.2	2,172.2	5.6	43.4	86.45	335.2	261.9	385.6	336.6	49.03	7.864		
2,300.0	2,286.9	2,270.9	2,270.9	5.9	45.4	88.83	335.2	261.9	385.0	333.6	51.36	7.496		
2,349.0	2,335.2	2,319.2	2,319.2	6.1	46.4	90.00	335.2	261.9	384.9	332.4	52.50	7.332		
2,400.0	2,385.6	2,369.6	2,369.6	6.3	47.4	91.22	335.2	261.9	385.0	331.3	53.68	7.171		
2,500.0	2,484.3	2,468.3	2,468.3	6.6	49.4	93.59	335.2	261.9	385.6	329.7	56.00	6.887		
2,600.0	2,582.9	2,566.9	2,566.9	7.0	51.3	95.96	335.2	261.9	387.0	328.7	58.31	6.637		
2,700.0	2,681.6	2,665.6	2,665.6	7.4	53.3	98.31	335.2	261.9	389.1	328.4	60.62	6.418		
2,800.0	2,780.3	2,764.3	2,764.3	7.7	55.3	100.62	335.2	261.9	391.8	328.8	62.92	6.226		
2,900.0	2,879.0	2,863.0	2,863.0	8.1	57.3	102.91	335.2	261.9	395.1	329.9	65.21	6.059		
3,000.0	2,977.6	2,961.6	2,961.6	8.4	59.2	105.15	335.2	261.9	399.1	331.6	67.50	5.913		
3,100.0	3,076.3	3,060.3	3,060.3	8.8	61.2	107.35	335.2	261.9	403.7	333.9	69.77	5.786		
3,200.0	3,175.0	3,159.0	3,159.0	9.2	63.2	109.49	335.2	261.9	408.9	336.8	72.04	5.676		
3,300.0	3,273.7	3,257.7	3,257.7	9.5	65.2	111.58	335.2	261.9	414.6	340.3	74.29	5.581		
3,400.0	3,372.3	3,356.3	3,356.3	9.9	67.1	113.61	335.2	261.9	420.9	344.4	76.54	5.500		
3,500.0	3,471.0	3,455.0	3,455.0	10.3	69.1	115.58	335.2	261.9	427.8	349.0	78.78	5.430		
3,600.0	3,569.7	3,553.7	3,553.7	10.6	71.1	117.49	335.2	261.9	435.1	354.1	81.01	5.371		
3,700.0	3,668.4	3,652.4	3,652.4	11.0	73.0	119.33	335.2	261.9	442.9	359.7	83.24	5.321		
3,800.0	3,767.0	3,751.0	3,751.0	11.4	75.0	121.11	335.2	261.9	451.1	365.7	85.45	5.280		
3,900.0	3,865.7	3,849.7	3,849.7	11.7	77.0	122.82	335.2	261.9	459.8	372.2	87.66	5.245		
4,000.0	3,964.4	3,948.4	3,948.4	12.1	79.0	124.48	335.2	261.9	468.9	379.0	89.86	5.218		
4,100.0	4,063.1	4,047.1	4,047.1	12.5	80.9	126.06	335.2	261.9	478.3	386.3	92.06	5.196		
4,200.0	4,161.7	4,145.7	4,145.7	12.9	82.9	127.59	335.2	261.9	488.1	393.9	94.25	5.179		
4,300.0	4,260.4	4,244.4	4,244.4	13.2	84.9	129.06	335.2	261.9	498.3	401.8	96.44	5.167		
4,400.0	4,359.1	4,343.1	4,343.1	13.6	86.9	130.46	335.2	261.9	508.7	410.1	98.62	5.158		
4,500.0	4,457.8	4,441.8	4,441.8	14.0	88.8	131.82	335.2	261.9	519.5	418.7	100.81	5.153		
4,600.0	4,556.4	4,540.4	4,540.4	14.3	90.8	133.11	335.2	261.9	530.5	427.5	102.98	5.152		
4,700.0	4,655.1	4,639.1	4,639.1	14.7	92.8	134.36	335.2	261.9	541.8	436.7	105.16	5.152		
4,800.0	4,753.8	4,737.8	4,737.8	15.1	94.8	135.55	335.2	261.9	553.4	446.0	107.33	5.156		
4,900.0	4,852.5	4,836.5	4,836.5	15.5	96.7	136.69	335.2	261.9	565.1	455.6	109.50	5.161		

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lewis Klein 19-2 (Existing) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7082-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,000.0	4,951.1	4,935.1	4,935.1	15.8	98.7	137.79	335.2	261.9	577.1	465.4	111.67	5.168		
5,100.0	5,049.8	5,033.8	5,033.8	16.2	100.7	138.85	335.2	261.9	589.3	475.5	113.84	5.177		
5,200.0	5,148.5	5,132.5	5,132.5	16.6	102.6	139.86	335.2	261.9	601.7	485.7	116.01	5.186		
5,300.0	5,247.2	5,231.2	5,231.2	17.0	104.6	140.83	335.2	261.9	614.2	496.1	118.18	5.198		
5,400.0	5,345.8	5,329.8	5,329.8	17.3	106.6	141.76	335.2	261.9	627.0	506.6	120.34	5.210		
5,500.0	5,444.5	5,428.5	5,428.5	17.7	108.6	142.65	335.2	261.9	639.8	517.3	122.51	5.223		
5,600.0	5,543.2	5,527.2	5,527.2	18.1	110.5	143.53	335.2	261.9	652.9	528.2	124.70	5.235		
5,700.0	5,642.2	5,626.2	5,626.2	18.3	112.5	144.39	335.2	261.9	664.4	537.2	127.18	5.224		
5,800.0	5,741.6	5,725.6	5,725.6	18.6	114.5	145.02	335.2	261.9	673.2	543.6	129.59	5.195		
5,900.0	5,841.3	5,825.3	5,825.3	18.8	116.5	145.44	335.2	261.9	679.2	547.3	131.91	5.149		
6,000.0	5,941.2	5,925.2	5,925.2	18.9	118.5	145.66	335.2	261.9	682.3	548.2	134.15	5.086		
6,100.0	6,041.2	6,025.2	6,025.2	19.1	120.5	118.89	335.2	261.9	682.8	544.5	138.27	4.938		
6,200.0	6,141.2	6,125.2	6,125.2	19.2	122.5	28.91	335.2	261.9	682.5	544.1	138.40	4.931		
6,300.0	6,240.7	6,224.7	6,224.7	19.3	124.5	29.61	335.2	261.9	674.2	535.1	139.07	4.848		
6,400.0	6,338.1	6,322.1	6,322.1	19.4	126.4	31.34	335.2	261.9	654.8	516.8	137.96	4.746		
6,500.0	6,431.7	6,415.7	6,415.7	19.3	128.3	34.27	335.2	261.9	624.8	489.3	135.53	4.610		
6,600.0	6,520.0	6,504.0	6,504.0	19.3	130.1	38.71	335.2	261.9	585.6	452.7	132.83	4.408		
6,700.0	6,601.4	6,585.4	6,585.4	19.2	131.7	44.99	335.2	261.9	538.7	407.1	131.60	4.093		
6,800.0	6,674.5	6,658.5	6,658.5	19.2	133.2	53.36	335.2	261.9	486.6	352.7	133.91	3.634		
6,900.0	6,738.1	6,722.1	6,722.1	19.1	134.4	63.54	335.2	261.9	433.1	292.9	140.27	3.088		
7,000.0	6,791.2	6,775.2	6,775.2	19.0	135.5	74.27	335.2	261.9	383.7	235.6	148.05	2.592		
7,100.0	6,832.7	6,816.7	6,816.7	19.1	136.3	83.55	335.2	261.9	346.2	192.5	153.72	2.252		
7,200.0	6,861.9	6,845.9	6,845.9	20.1	136.9	89.62	335.2	261.9	330.0	173.3	156.71	2.106		
7,209.8	6,864.1	6,848.1	6,848.1	20.3	137.0	90.00	335.2	261.9	329.8	172.9	156.94	2.102 CC, ES, SF		
7,300.0	6,878.5	6,862.5	6,862.5	21.8	137.3	91.62	335.2	261.9	341.6	182.9	158.71	2.153		
7,400.0	6,888.6	6,872.6	6,872.6	23.7	137.5	92.60	335.2	261.9	379.9	219.2	160.72	2.364		
7,500.0	6,892.2	6,876.2	6,876.2	25.7	137.5	89.65	335.2	261.9	438.1	275.2	162.89	2.690		
7,600.0	6,891.5	6,875.5	6,875.5	27.9	137.5	89.53	335.2	261.9	509.5	344.5	165.03	3.088		
7,700.0	6,890.8	6,874.8	6,874.8	30.2	137.5	89.41	335.2	261.9	589.3	422.0	167.27	3.523		
7,800.0	6,890.1	6,874.1	6,874.1	32.5	137.5	89.29	335.2	261.9	674.5	504.9	169.60	3.977		
7,900.0	6,889.4	6,873.4	6,873.4	34.9	137.5	89.17	335.2	261.9	763.3	591.3	172.00	4.438		
8,000.0	6,888.7	6,872.7	6,872.7	37.4	137.5	89.04	335.2	261.9	854.6	680.1	174.45	4.899		
8,100.0	6,888.0	6,872.0	6,872.0	39.9	137.4	88.92	335.2	261.9	947.6	770.7	176.95	5.355		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Louis Klein 19-1 (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6990-UNKNOWN												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
7,600.0	6,891.5	6,873.5	6,873.5	27.9	137.5	91.26	375.3	1,560.0	954.8	789.8	165.01	5.786	
7,700.0	6,890.8	6,872.8	6,872.8	30.2	137.5	91.12	375.3	1,560.0	860.1	692.8	167.27	5.142	
7,800.0	6,890.1	6,872.1	6,872.1	32.5	137.4	90.98	375.3	1,560.0	766.7	597.1	169.61	4.520	
7,900.0	6,889.4	6,871.4	6,871.4	34.9	137.4	90.84	375.3	1,560.0	675.1	503.1	172.01	3.925	
8,000.0	6,888.7	6,870.7	6,870.7	37.4	137.4	90.70	375.3	1,560.0	586.4	411.9	174.48	3.361	
8,100.0	6,888.0	6,870.0	6,870.0	39.9	137.4	90.57	375.3	1,560.0	501.9	324.9	176.98	2.836	
8,200.0	6,887.3	6,869.3	6,869.3	42.5	137.4	90.43	375.3	1,560.0	424.2	244.6	179.52	2.363	
8,300.0	6,886.6	6,868.6	6,868.6	45.0	137.4	90.29	375.3	1,560.0	357.7	175.6	182.09	1.964	
8,400.0	6,885.9	6,867.9	6,867.9	47.6	137.4	90.15	375.3	1,560.0	309.8	125.1	184.69	1.678	
8,500.0	6,885.2	6,867.2	6,867.2	50.3	137.3	90.01	375.3	1,560.0	289.9	102.6	187.30	1.548	
8,509.8	6,885.2	6,867.2	6,867.2	50.5	137.3	90.00	375.3	1,560.0	289.7	102.1	187.56	1.545 CC, ES, SF	
8,600.0	6,884.5	6,866.5	6,866.5	52.9	137.3	89.88	375.3	1,560.0	303.4	113.5	189.94	1.597	
8,700.0	6,883.8	6,865.8	6,865.8	55.6	137.3	89.74	375.3	1,560.0	346.5	154.0	192.58	1.799	
8,800.0	6,883.1	6,865.1	6,865.1	58.2	137.3	89.60	375.3	1,560.0	410.0	214.8	195.24	2.100	
8,900.0	6,882.4	6,864.4	6,864.4	60.9	137.3	89.46	375.3	1,560.0	486.0	288.0	197.91	2.455	
9,000.0	6,881.7	6,863.7	6,863.7	63.6	137.3	89.32	375.3	1,560.0	569.4	368.8	200.59	2.838	
9,100.0	6,881.0	6,863.0	6,863.0	66.3	137.3	89.19	375.3	1,560.0	657.4	454.2	203.28	3.234	
9,200.0	6,880.3	6,862.3	6,862.3	69.0	137.2	89.05	375.3	1,560.0	748.5	542.5	205.97	3.634	
9,300.0	6,879.6	6,861.6	6,861.6	71.7	137.2	88.91	375.3	1,560.0	841.6	632.9	208.67	4.033	
9,400.0	6,878.9	6,860.9	6,860.9	74.5	137.2	88.77	375.3	1,560.0	936.1	724.7	211.37	4.429	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lucille 1-6I (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error: 0.0 ft	
Survey Program: 641-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	Offset		+N/-S (ft)	+E/-W (ft)					
10,900.0	6,868.5	6,954.0	6,827.6	115.8	15.9	-88.32	1,094.7	4,844.5	992.4	861.8	130.60	7.599	
11,000.0	6,867.8	6,954.9	6,828.5	118.6	15.9	-88.44	1,094.7	4,844.5	903.3	769.9	133.39	6.772	
11,100.0	6,867.1	6,955.7	6,829.4	121.4	15.9	-88.55	1,094.7	4,844.6	816.7	680.6	136.18	5.998	
11,200.0	6,866.4	6,956.6	6,830.2	124.1	15.9	-88.67	1,094.7	4,844.6	733.6	594.6	138.96	5.279	
11,300.0	6,865.7	6,957.5	6,831.1	126.9	15.9	-88.78	1,094.7	4,844.6	655.2	513.4	141.75	4.622	
11,400.0	6,865.0	6,958.3	6,832.0	129.7	15.9	-88.90	1,094.7	4,844.6	583.4	438.9	144.54	4.036	
11,500.0	6,864.3	6,959.2	6,832.8	132.5	15.9	-89.01	1,094.7	4,844.6	521.0	373.7	147.33	3.536	
11,600.0	6,863.6	6,960.0	6,833.6	135.3	15.9	-89.12	1,094.7	4,844.6	471.8	321.6	150.12	3.142	
11,700.0	6,862.9	6,961.0	6,834.6	138.1	15.9	-89.25	1,094.8	4,844.6	440.1	287.1	152.92	2.878	
11,794.5	6,862.2	6,961.6	6,835.3	140.7	15.9	-89.34	1,094.8	4,844.6	429.8	274.2	155.56	2.763 CC	
11,800.0	6,862.2	6,961.7	6,835.3	140.8	15.9	-89.34	1,094.8	4,844.6	429.8	274.1	155.71	2.760 ES, SF	
11,900.0	6,861.5	6,962.5	6,836.1	143.6	15.9	-89.46	1,094.8	4,844.7	442.5	284.0	158.50	2.792	
12,000.0	6,860.8	6,963.3	6,837.0	146.4	15.9	-89.57	1,094.8	4,844.7	476.4	315.1	161.29	2.953	
12,100.0	6,860.1	6,964.2	6,837.8	149.2	15.9	-89.68	1,094.8	4,844.7	527.3	363.2	164.09	3.213	
12,200.0	6,859.4	6,965.0	6,838.7	152.0	15.9	-89.79	1,094.8	4,844.7	590.8	424.0	166.88	3.541	
12,300.0	6,858.7	6,965.9	6,839.5	154.8	15.9	-89.90	1,094.8	4,844.7	663.5	493.8	169.67	3.910	
12,400.0	6,858.0	6,966.7	6,840.4	157.6	15.9	-90.02	1,094.8	4,844.7	742.5	570.0	172.47	4.305	
12,500.0	6,857.3	6,967.6	6,841.2	160.4	15.9	-90.13	1,094.8	4,844.7	826.0	650.8	175.26	4.713	
12,600.0	6,856.6	6,968.4	6,842.1	163.2	15.9	-90.25	1,094.8	4,844.7	912.9	734.9	178.05	5.127	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Pigeon 1-6B (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 487-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,885.9	7,002.7	6,879.6	47.6	16.7	-92.45	1,091.3	2,255.6	911.3	848.1	63.17	14.426	
8,500.0	6,885.2	7,002.4	6,879.3	50.3	16.7	-92.42	1,091.3	2,255.6	824.3	758.5	65.80	12.526	
8,600.0	6,884.5	7,002.1	6,879.0	52.9	16.7	-92.38	1,091.3	2,255.6	740.5	672.1	68.46	10.818	
8,700.0	6,883.8	7,001.9	6,878.8	55.6	16.7	-92.34	1,091.3	2,255.6	661.3	590.2	71.12	9.298	
8,800.0	6,883.1	7,001.6	6,878.5	58.2	16.7	-92.31	1,091.3	2,255.6	588.5	514.7	73.80	7.973	
8,900.0	6,882.4	7,001.3	6,878.2	60.9	16.7	-92.27	1,091.3	2,255.6	524.6	448.1	76.49	6.858	
9,000.0	6,881.7	7,001.1	6,877.9	63.6	16.7	-92.23	1,091.4	2,255.6	473.5	394.3	79.19	5.979	
9,100.0	6,881.0	7,000.8	6,877.7	66.3	16.7	-92.20	1,091.4	2,255.6	439.5	357.6	81.91	5.365	
9,200.0	6,880.3	7,000.5	6,877.4	69.0	16.7	-92.16	1,091.4	2,255.6	426.7	342.1	84.62	5.042	
9,205.3	6,880.3	7,000.5	6,877.4	69.2	16.7	-92.16	1,091.4	2,255.6	426.7	341.9	84.77	5.033 CC, ES	
9,300.0	6,879.6	7,000.2	6,877.1	71.7	16.7	-92.12	1,091.4	2,255.6	437.1	349.7	87.35	5.004 SF	
9,400.0	6,878.9	7,000.0	6,876.8	74.5	16.7	-92.09	1,091.4	2,255.5	469.0	378.9	90.08	5.207	
9,500.0	6,878.2	6,999.7	6,876.6	77.2	16.7	-92.05	1,091.4	2,255.5	518.6	425.8	92.82	5.587	
9,600.0	6,877.5	6,999.4	6,876.3	79.9	16.7	-92.01	1,091.4	2,255.5	581.3	485.7	95.56	6.083	
9,700.0	6,876.8	6,999.1	6,876.0	82.7	16.7	-91.98	1,091.4	2,255.5	653.3	555.0	98.31	6.646	
9,800.0	6,876.2	6,998.9	6,875.8	85.4	16.7	-91.94	1,091.4	2,255.5	732.0	630.9	101.06	7.243	
9,900.0	6,875.5	6,998.6	6,875.5	88.2	16.7	-91.90	1,091.4	2,255.5	815.3	711.5	103.81	7.854	
10,000.0	6,874.8	6,998.3	6,875.2	90.9	16.7	-91.87	1,091.5	2,255.5	902.0	795.5	106.57	8.464	
10,100.0	6,874.1	6,998.0	6,874.9	93.7	16.7	-91.83	1,091.5	2,255.5	991.3	881.9	109.33	9.067	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Pigeon 5-JAN (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7105-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,600.0	6,877.5	6,857.5	6,857.5	79.9	137.2	-90.84	1,093.2	3,551.8	998.1	781.3	216.82	4.603	
9,700.0	6,876.8	6,856.8	6,856.8	82.7	137.1	-90.75	1,093.2	3,551.8	908.8	689.2	219.56	4.139	
9,800.0	6,876.2	6,856.2	6,856.2	85.4	137.1	-90.66	1,093.2	3,551.8	821.9	599.6	222.31	3.697	
9,900.0	6,875.5	6,855.5	6,855.5	88.2	137.1	-90.56	1,093.2	3,551.8	738.4	513.4	225.05	3.281	
10,000.0	6,874.8	6,854.8	6,854.8	90.9	137.1	-90.47	1,093.2	3,551.8	659.5	431.7	227.80	2.895	
10,100.0	6,874.1	6,854.1	6,854.1	93.7	137.1	-90.38	1,093.2	3,551.8	587.1	356.5	230.56	2.546	
10,200.0	6,873.4	6,853.4	6,853.4	96.4	137.1	-90.28	1,093.2	3,551.8	523.7	290.4	233.31	2.245	
10,300.0	6,872.7	6,852.7	6,852.7	99.2	137.1	-90.19	1,093.2	3,551.8	473.3	237.2	236.07	2.005	
10,400.0	6,872.0	6,852.0	6,852.0	102.0	137.0	-90.09	1,093.2	3,551.8	440.1	201.3	238.83	1.843	
10,500.0	6,871.3	6,851.3	6,851.3	104.7	137.0	-90.00	1,093.2	3,551.8	428.2	186.6	241.59	1.772	
10,501.6	6,871.3	6,851.3	6,851.3	104.8	137.0	-90.00	1,093.2	3,551.8	428.2	186.6	241.63	1.772 CC, ES, SF	
10,600.0	6,870.6	6,850.6	6,850.6	107.5	137.0	-89.91	1,093.2	3,551.8	439.3	195.0	244.35	1.798	
10,700.0	6,869.9	6,849.9	6,849.9	110.3	137.0	-89.81	1,093.2	3,551.8	471.9	224.8	247.11	1.910	
10,800.0	6,869.2	6,849.2	6,849.2	113.0	137.0	-89.72	1,093.2	3,551.8	521.9	272.0	249.87	2.089	
10,900.0	6,868.5	6,848.5	6,848.5	115.8	137.0	-89.63	1,093.2	3,551.8	584.9	332.2	252.64	2.315	
11,000.0	6,867.8	6,847.8	6,847.8	118.6	137.0	-89.53	1,093.2	3,551.8	657.1	401.7	255.40	2.573	
11,100.0	6,867.1	6,847.1	6,847.1	121.4	136.9	-89.44	1,093.2	3,551.8	735.8	477.6	258.17	2.850	
11,200.0	6,866.4	6,846.4	6,846.4	124.1	136.9	-89.35	1,093.2	3,551.8	819.2	558.3	260.93	3.139	
11,300.0	6,865.7	6,845.7	6,845.7	126.9	136.9	-89.25	1,093.2	3,551.8	905.9	642.2	263.70	3.436	
11,400.0	6,865.0	6,845.0	6,845.0	129.7	136.9	-89.16	1,093.2	3,551.8	995.2	728.7	266.47	3.735	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Seth 5 (Existing) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7053-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
6,900.0	6,738.1	6,721.1	6,721.1	19.1	134.4	-10.31	765.1	922.1	946.2	852.2	94.02	10.064		
7,000.0	6,791.2	6,774.2	6,774.2	19.0	135.5	-13.85	765.1	922.1	862.1	779.6	82.41	10.460		
7,100.0	6,832.7	6,815.7	6,815.7	19.1	136.3	-20.22	765.1	922.1	771.8	694.3	77.54	9.954		
7,200.0	6,861.9	6,844.9	6,844.9	20.1	136.9	-33.02	765.1	922.1	677.2	583.8	93.42	7.249		
7,300.0	6,878.5	6,861.5	6,861.5	21.8	137.2	-59.18	765.1	922.1	579.9	442.0	137.93	4.205		
7,400.0	6,888.6	6,871.6	6,871.6	23.7	137.4	-69.45	765.1	922.1	482.2	330.8	151.45	3.184		
7,500.0	6,892.2	6,875.2	6,875.2	25.7	137.5	-91.49	765.1	922.1	385.1	222.3	162.78	2.366		
7,600.0	6,891.5	6,874.5	6,874.5	27.9	137.5	-91.09	765.1	922.1	289.7	124.7	164.96	1.756		
7,700.0	6,890.8	6,873.8	6,873.8	30.2	137.5	-90.69	765.1	922.1	198.9	31.6	167.24	1.189	Level 2	
7,800.0	6,890.1	6,873.1	6,873.1	32.5	137.5	-90.29	765.1	922.1	123.2	-46.4	169.61	0.726	Level 1	
7,871.9	6,889.6	6,872.6	6,872.6	34.3	137.5	-90.00	765.1	922.1	100.1	-71.3	171.35	0.584	Level 1, CC, ES, SF	
7,900.0	6,889.4	6,872.4	6,872.4	34.9	137.4	-89.89	765.1	922.1	104.0	-68.1	172.03	0.604	Level 1	
8,000.0	6,888.7	6,871.7	6,871.7	37.4	137.4	-89.49	765.1	922.1	162.6	-11.9	174.50	0.932	Level 1	
8,100.0	6,888.0	6,871.0	6,871.0	39.9	137.4	-89.09	765.1	922.1	249.1	72.1	177.00	1.407	Level 3	
8,200.0	6,887.3	6,870.3	6,870.3	42.5	137.4	-88.69	765.1	922.1	343.1	163.5	179.53	1.911		
8,300.0	6,886.6	6,869.6	6,869.6	45.0	137.4	-88.29	765.1	922.1	439.7	257.6	182.08	2.415		
8,400.0	6,885.9	6,868.9	6,868.9	47.6	137.4	-87.89	765.1	922.1	537.5	352.9	184.65	2.911		
8,500.0	6,885.2	6,868.2	6,868.2	50.3	137.4	-87.49	765.1	922.1	636.1	448.8	187.23	3.397		
8,600.0	6,884.5	6,867.5	6,867.5	52.9	137.4	-87.09	765.1	922.1	735.0	545.2	189.82	3.872		
8,700.0	6,883.8	6,866.8	6,866.8	55.6	137.3	-86.69	765.1	922.1	834.1	641.7	192.41	4.335		
8,800.0	6,883.1	6,866.1	6,866.1	58.2	137.3	-86.30	765.1	922.1	933.5	738.5	195.00	4.787		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Victor Klein 20-1A (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN												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
11,600.0	6,863.6	6,841.6	6,841.6	135.3	136.8	92.16	499.7	5,543.7	908.7	636.8	271.85	3.343	
11,700.0	6,862.9	6,840.9	6,840.9	138.1	136.8	91.92	499.7	5,543.7	810.6	535.9	274.66	2.951	
11,800.0	6,862.2	6,840.2	6,840.2	140.8	136.8	91.68	499.7	5,543.7	713.0	435.5	277.46	2.570	
11,900.0	6,861.5	6,839.5	6,839.5	143.6	136.8	91.44	499.7	5,543.7	616.1	335.9	280.25	2.198	
12,000.0	6,860.8	6,838.8	6,838.8	146.4	136.8	91.19	499.7	5,543.7	520.5	237.4	283.05	1.839	
12,100.0	6,860.1	6,838.1	6,838.1	149.2	136.8	90.95	499.7	5,543.7	426.9	141.0	285.84	1.493	Level 3
12,200.0	6,859.4	6,837.4	6,837.4	152.0	136.7	90.71	499.7	5,543.7	336.9	48.3	288.62	1.167	Level 2
12,300.0	6,858.7	6,836.7	6,836.7	154.8	136.7	90.47	499.7	5,543.7	254.5	-36.9	291.41	0.873	Level 1
12,400.0	6,858.0	6,836.0	6,836.0	157.6	136.7	90.23	499.7	5,543.7	189.9	-104.3	294.18	0.646	Level 1
12,493.6	6,857.3	6,835.3	6,835.3	160.2	136.7	90.00	499.7	5,543.7	165.3	-131.5	296.78	0.557	Level 1, CC, SF
12,500.0	6,857.3	6,835.3	6,835.3	160.4	136.7	89.98	499.7	5,543.7	165.4	-131.6	296.96	0.557	Level 1, ES
12,600.0	6,856.6	6,834.6	6,834.6	163.2	136.7	89.74	499.7	5,543.7	196.6	-103.2	299.73	0.656	Level 1
12,700.0	6,855.9	6,833.9	6,833.9	165.9	136.7	89.50	499.7	5,543.7	264.4	-38.1	302.49	0.874	Level 1
12,800.0	6,855.2	6,833.2	6,833.2	168.7	136.7	89.26	499.7	5,543.7	348.2	42.9	305.25	1.141	Level 2
12,900.0	6,854.5	6,832.5	6,832.5	171.5	136.7	89.02	499.7	5,543.7	438.7	130.7	308.00	1.424	Level 3
13,000.0	6,853.8	6,831.8	6,831.8	174.3	136.6	88.77	499.7	5,543.7	532.7	222.0	310.75	1.714	
13,100.0	6,853.1	6,831.1	6,831.1	177.1	136.6	88.53	499.7	5,543.7	628.5	315.0	313.50	2.005	
13,200.0	6,852.4	6,830.4	6,830.4	179.9	136.6	88.29	499.7	5,543.7	725.5	409.3	316.23	2.294	
13,300.0	6,851.7	6,829.7	6,829.7	182.7	136.6	88.05	499.7	5,543.7	823.2	504.2	318.97	2.581	
13,400.0	6,851.0	6,829.0	6,829.0	185.5	136.6	87.81	499.7	5,543.7	921.4	599.7	321.69	2.864	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis					Distance					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	0.00	32.8	0.0	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	32.8	0.0	32.8	32.6	0.22	145.858		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	32.8	0.0	32.8	32.1	0.67	48.619		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	32.8	0.0	32.8	31.7	1.12	29.172		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	32.8	0.0	32.8	31.2	1.57	20.837		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	32.8	0.0	32.8	30.8	2.02	16.206		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	32.8	0.0	32.8	30.3	2.47	13.260		
700.0	700.0	700.0	700.0	1.5	1.5	0.00	32.8	0.0	32.8	29.9	2.92	11.220		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	32.8	0.0	32.8	29.4	3.37	9.724 CC		
900.0	900.0	898.9	898.9	1.9	1.9	-0.94	34.4	-0.6	34.4	30.6	3.82	9.014		
1,000.0	1,000.0	997.5	997.4	2.1	2.1	-3.28	39.2	-2.2	39.4	35.1	4.27	9.224		
1,100.0	1,100.0	1,095.9	1,095.4	2.4	2.4	21.42	47.2	-5.0	46.1	41.4	4.71	9.772		
1,200.0	1,199.8	1,194.0	1,192.8	2.6	2.6	20.32	58.3	-8.9	52.9	47.7	5.16	10.253		
1,300.0	1,299.5	1,291.9	1,289.5	2.8	2.9	19.90	72.5	-13.9	59.8	54.2	5.60	10.666		
1,400.0	1,398.7	1,389.5	1,385.4	3.1	3.2	19.94	89.8	-20.0	66.7	60.7	6.06	11.016		
1,500.0	1,497.5	1,488.1	1,481.5	3.3	3.5	20.33	110.1	-27.0	73.5	67.0	6.53	11.265		
1,600.0	1,596.2	1,587.8	1,578.8	3.6	3.9	20.80	131.0	-34.4	80.2	73.1	7.03	11.401		
1,700.0	1,694.8	1,687.6	1,676.1	3.9	4.3	21.20	152.0	-41.7	86.8	79.2	7.54	11.504		
1,800.0	1,793.5	1,787.4	1,773.4	4.2	4.7	21.54	173.0	-49.1	93.4	85.3	8.06	11.585		
1,900.0	1,892.2	1,887.2	1,870.6	4.6	5.2	21.84	193.9	-56.4	100.0	91.4	8.59	11.643		
2,000.0	1,990.9	1,987.0	1,967.9	4.9	5.6	22.10	214.9	-63.7	106.6	97.5	9.12	11.687		
2,100.0	2,089.6	2,086.7	2,065.2	5.2	6.0	22.33	235.9	-71.1	113.3	103.6	9.66	11.720		
2,200.0	2,188.2	2,186.5	2,162.5	5.6	6.5	22.54	256.9	-78.4	119.9	109.7	10.21	11.745		
2,300.0	2,286.9	2,286.3	2,259.7	5.9	6.9	22.72	277.8	-85.8	126.5	115.8	10.75	11.763		
2,400.0	2,385.6	2,386.1	2,357.0	6.3	7.4	22.88	298.8	-93.1	133.1	121.8	11.31	11.776		
2,500.0	2,484.3	2,485.8	2,454.3	6.6	7.8	23.03	319.8	-100.4	139.8	127.9	11.86	11.784		
2,600.0	2,582.9	2,585.6	2,551.6	7.0	8.3	23.17	340.7	-107.8	146.4	134.0	12.42	11.790		
2,700.0	2,681.6	2,685.4	2,648.8	7.4	8.7	23.29	361.7	-115.1	153.0	140.1	12.98	11.793		
2,800.0	2,780.3	2,785.2	2,746.1	7.7	9.2	23.40	382.7	-122.4	159.7	146.1	13.54	11.794		
2,900.0	2,879.0	2,885.0	2,843.4	8.1	9.6	23.51	403.6	-129.8	166.3	152.2	14.10	11.794		
3,000.0	2,977.6	2,984.7	2,940.7	8.4	10.1	23.61	424.6	-137.1	172.9	158.3	14.66	11.792		
3,100.0	3,076.3	3,084.5	3,037.9	8.8	10.6	23.70	445.6	-144.5	179.6	164.3	15.23	11.789		
3,200.0	3,175.0	3,184.3	3,135.2	9.2	11.0	23.78	466.5	-151.8	186.2	170.4	15.80	11.786		
3,300.0	3,273.7	3,284.1	3,232.5	9.5	11.5	23.86	487.5	-159.1	192.8	176.5	16.37	11.782		
3,400.0	3,372.3	3,383.9	3,329.8	9.9	12.0	23.93	508.5	-166.5	199.5	182.5	16.94	11.777		
3,500.0	3,471.0	3,483.6	3,427.0	10.3	12.4	24.00	529.4	-173.8	206.1	188.6	17.51	11.773		
3,600.0	3,569.7	3,583.4	3,524.3	10.6	12.9	24.06	550.4	-181.1	212.7	194.7	18.08	11.768		
3,700.0	3,668.4	3,683.2	3,621.6	11.0	13.3	24.12	571.4	-188.5	219.4	200.7	18.65	11.762		
3,800.0	3,767.0	3,783.0	3,718.9	11.4	13.8	24.17	592.3	-195.8	226.0	206.8	19.22	11.757		
3,900.0	3,865.7	3,882.8	3,816.1	11.7	14.3	24.23	613.3	-203.2	232.6	212.8	19.80	11.752		
4,000.0	3,964.4	3,982.5	3,913.4	12.1	14.7	24.28	634.3	-210.5	239.3	218.9	20.37	11.746		
4,100.0	4,063.1	4,082.3	4,010.7	12.5	15.2	24.32	655.2	-217.8	245.9	225.0	20.95	11.741		
4,200.0	4,161.7	4,182.1	4,108.0	12.9	15.7	24.37	676.2	-225.2	252.5	231.0	21.52	11.735		
4,300.0	4,260.4	4,281.9	4,205.2	13.2	16.2	24.41	697.2	-232.5	259.2	237.1	22.10	11.730		
4,400.0	4,359.1	4,381.7	4,302.5	13.6	16.6	24.45	718.2	-239.9	265.8	243.1	22.67	11.724		
4,500.0	4,457.8	4,481.4	4,399.8	14.0	17.1	24.49	739.1	-247.2	272.5	249.2	23.25	11.719		
4,600.0	4,556.4	4,581.2	4,497.1	14.3	17.6	24.53	760.1	-254.5	279.1	255.3	23.83	11.714		
4,700.0	4,655.1	4,681.0	4,594.3	14.7	18.0	24.56	781.1	-261.9	285.7	261.3	24.40	11.709		
4,800.0	4,753.8	4,780.8	4,691.6	15.1	18.5	24.59	802.0	-269.2	292.4	267.4	24.98	11.704		
4,900.0	4,852.5	4,880.6	4,788.9	15.5	19.0	24.63	823.0	-276.5	299.0	273.4	25.56	11.699		
5,000.0	4,951.1	4,980.3	4,886.2	15.8	19.4	24.66	844.0	-283.9	305.6	279.5	26.14	11.694		

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)													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
5,100.0	5,049.8	5,080.1	4,983.4	16.2	19.9	24.69		864.9	-291.2	312.3	285.6	26.72	11.689	
5,200.0	5,148.5	5,179.9	5,080.7	16.6	20.4	24.71		885.9	-298.6	318.9	291.6	27.29	11.684	
5,300.0	5,247.2	5,279.7	5,178.0	17.0	20.8	24.74		906.9	-305.9	325.6	297.7	27.87	11.680	
5,400.0	5,345.8	5,381.1	5,276.9	17.3	21.3	24.77		928.1	-313.3	332.2	303.7	28.45	11.674	
5,500.0	5,444.5	5,493.5	5,387.1	17.7	21.7	24.94		949.2	-320.7	336.4	307.4	29.02	11.593	
5,600.0	5,543.2	5,606.1	5,498.2	18.1	22.0	25.33		966.2	-326.6	337.0	307.4	29.60	11.384	
5,700.0	5,642.2	5,718.7	5,609.9	18.3	22.3	25.78		979.0	-331.1	335.6	305.5	30.08	11.155	
5,800.0	5,741.6	5,831.1	5,721.9	18.6	22.5	26.17		987.7	-334.2	333.7	303.2	30.51	10.938	
5,900.0	5,841.3	5,943.4	5,834.1	18.8	22.7	26.51		992.2	-335.7	331.2	300.3	30.87	10.730	
6,000.0	5,941.2	6,050.5	5,941.2	18.9	22.8	26.76		992.9	-336.0	328.4	297.3	31.16	10.540	
6,085.6	6,026.8	6,136.0	6,026.8	19.1	22.9	26.84		992.9	-336.0	327.5	296.1	31.40	10.429	
6,100.0	6,041.2	6,150.5	6,041.2	19.1	23.0	0.06		992.9	-335.7	327.9	287.6	40.27	8.143	
6,200.0	6,141.2	6,249.5	6,139.8	19.2	23.0	-88.37		992.9	-326.4	328.0	296.0	32.03	10.242	
6,300.0	6,240.7	6,346.7	6,234.5	19.3	23.1	-86.18		992.9	-305.0	328.6	296.0	32.61	10.079	
6,400.0	6,338.1	6,442.4	6,324.4	19.4	23.0	-84.07		992.9	-272.3	329.7	296.6	33.03	9.980	
6,500.0	6,431.7	6,536.8	6,408.3	19.3	23.0	-82.08		992.9	-229.3	331.1	297.8	33.32	9.937	
6,600.0	6,520.0	6,629.9	6,485.4	19.3	23.0	-80.25		992.9	-177.1	332.7	299.2	33.51	9.930	
6,700.0	6,601.4	6,722.0	6,554.8	19.2	22.9	-78.59		992.9	-116.6	334.6	300.8	33.71	9.925	
6,800.0	6,674.5	6,813.2	6,615.8	19.2	22.9	-77.13		992.9	-49.0	336.4	302.3	34.06	9.876	
6,900.0	6,738.1	6,903.5	6,667.9	19.1	22.8	-75.88		992.9	24.8	338.1	303.4	34.74	9.733	
7,000.0	6,791.2	6,993.3	6,710.7	19.0	22.8	-74.85		992.9	103.6	339.7	303.8	35.92	9.457	
7,100.0	6,832.7	7,082.5	6,743.7	19.1	22.9	-74.06		992.9	186.4	341.0	303.3	37.72	9.040	
7,200.0	6,861.9	7,171.3	6,766.9	20.1	23.1	-73.51		992.9	272.1	342.0	301.8	40.15	8.516	
7,300.0	6,878.5	7,259.9	6,779.9	21.8	23.8	-73.20		992.9	359.7	342.5	299.3	43.18	7.933	
7,400.0	6,888.6	7,348.7	6,782.7	23.7	25.0	-72.18		992.9	448.4	344.6	298.2	46.41	7.425	
7,500.0	6,892.2	7,448.5	6,780.8	25.7	26.7	-71.24		992.9	548.2	346.3	296.0	50.25	6.891	
7,600.0	6,891.5	7,548.5	6,779.0	27.9	28.8	-71.06		992.9	648.1	346.7	292.4	54.28	6.387	
7,700.0	6,890.8	7,648.5	6,777.1	30.2	30.9	-70.88		992.9	748.1	347.0	288.5	58.50	5.932	
7,800.0	6,890.1	7,748.5	6,775.3	32.5	33.2	-70.70		992.9	848.1	347.4	284.5	62.88	5.525	
7,900.0	6,889.4	7,848.5	6,773.4	34.9	35.6	-70.52		992.9	948.1	347.8	280.4	67.38	5.162	
8,000.0	6,888.7	7,948.5	6,771.6	37.4	38.0	-70.34		992.9	1,048.1	348.2	276.2	71.98	4.837	
8,100.0	6,888.0	8,048.4	6,769.7	39.9	40.5	-70.16		992.9	1,148.0	348.6	271.9	76.65	4.547	
8,200.0	6,887.3	8,148.4	6,767.9	42.5	43.0	-69.99		992.9	1,248.0	349.0	267.6	81.39	4.288	
8,300.0	6,886.6	8,248.4	6,766.0	45.0	45.5	-69.81		992.9	1,348.0	349.4	263.2	86.17	4.054	
8,400.0	6,885.9	8,348.4	6,764.2	47.6	48.1	-69.63		992.9	1,448.0	349.8	258.8	90.99	3.844	
8,500.0	6,885.2	8,448.4	6,762.4	50.3	50.7	-69.45		992.9	1,547.9	350.2	254.3	95.84	3.654	
8,600.0	6,884.5	8,548.4	6,760.5	52.9	53.3	-69.28		992.9	1,647.9	350.6	249.8	100.72	3.481	
8,700.0	6,883.8	8,648.4	6,758.7	55.6	56.0	-69.10		992.9	1,747.9	351.0	245.4	105.62	3.323	
8,800.0	6,883.1	8,748.4	6,756.8	58.2	58.6	-68.93		992.9	1,847.9	351.4	240.9	110.53	3.179	
8,900.0	6,882.4	8,848.4	6,755.0	60.9	61.3	-68.75		992.9	1,947.8	351.8	236.4	115.45	3.047	
9,000.0	6,881.7	8,948.4	6,753.1	63.6	63.9	-68.58		992.9	2,047.8	352.2	231.8	120.38	2.926	
9,100.0	6,881.0	9,048.4	6,751.3	66.3	66.6	-68.40		992.9	2,147.8	352.6	227.3	125.32	2.814	
9,200.0	6,880.3	9,148.4	6,749.4	69.0	69.3	-68.23		992.9	2,247.8	353.1	222.8	130.26	2.710	
9,300.0	6,879.6	9,248.4	6,747.6	71.7	72.0	-68.06		992.9	2,347.7	353.5	218.3	135.21	2.615	
9,400.0	6,878.9	9,348.4	6,745.7	74.5	74.8	-67.88		992.9	2,447.7	353.9	213.8	140.15	2.525	
9,500.0	6,878.2	9,448.4	6,743.9	77.2	77.5	-67.71		992.9	2,547.7	354.4	209.3	145.09	2.442	
9,600.0	6,877.5	9,548.3	6,742.0	79.9	80.2	-67.54		992.9	2,647.7	354.8	204.8	150.03	2.365	
9,700.0	6,876.8	9,648.3	6,740.2	82.7	82.9	-67.37		992.9	2,747.7	355.2	200.3	154.97	2.292	
9,800.0	6,876.2	9,748.3	6,738.3	85.4	85.7	-67.20		992.9	2,847.6	355.7	195.8	159.90	2.224	
9,900.0	6,875.5	9,848.3	6,736.5	88.2	88.4	-67.02		992.9	2,947.6	356.1	191.3	164.83	2.161	
10,000.0	6,874.8	9,948.3	6,734.6	90.9	91.2	-66.85		992.9	3,047.6	356.6	186.8	169.75	2.101	

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,874.1	10,048.3	6,732.8	93.7	93.9	-66.68	992.9	3,147.6	357.0	182.4	174.66	2.044		
10,200.0	6,873.4	10,148.3	6,730.9	96.4	96.7	-66.51	992.9	3,247.5	357.5	177.9	179.57	1.991		
10,300.0	6,872.7	10,248.3	6,729.1	99.2	99.4	-66.35	992.9	3,347.5	358.0	173.5	184.46	1.941		
10,400.0	6,872.0	10,348.3	6,727.2	102.0	102.2	-66.18	992.9	3,447.5	358.4	169.1	189.35	1.893		
10,500.0	6,871.3	10,448.3	6,725.4	104.7	104.9	-66.01	992.9	3,547.5	358.9	164.7	194.24	1.848		
10,600.0	6,870.6	10,548.3	6,723.5	107.5	107.7	-65.84	992.9	3,647.4	359.4	160.3	199.11	1.805		
10,700.0	6,869.9	10,648.3	6,721.7	110.3	110.5	-65.67	992.9	3,747.4	359.8	155.9	203.97	1.764		
10,800.0	6,869.2	10,748.3	6,719.8	113.0	113.2	-65.51	992.9	3,847.4	360.3	151.5	208.82	1.725		
10,900.0	6,868.5	10,848.3	6,718.0	115.8	116.0	-65.34	992.9	3,947.4	360.8	147.1	213.67	1.689		
11,000.0	6,867.8	10,948.3	6,716.1	118.6	118.8	-65.17	992.9	4,047.3	361.3	142.8	218.50	1.653		
11,100.0	6,867.1	11,048.3	6,714.3	121.4	121.5	-65.01	992.9	4,147.3	361.8	138.4	223.32	1.620		
11,200.0	6,866.4	11,148.2	6,712.4	124.1	124.3	-64.84	992.9	4,247.3	362.2	134.1	228.13	1.588		
11,300.0	6,865.7	11,248.2	6,710.6	126.9	127.1	-64.68	992.9	4,347.3	362.7	129.8	232.93	1.557		
11,400.0	6,865.0	11,348.2	6,708.7	129.7	129.9	-64.51	992.9	4,447.2	363.2	125.5	237.72	1.528		
11,500.0	6,864.3	11,448.2	6,706.9	132.5	132.6	-64.35	992.9	4,547.2	363.7	121.2	242.49	1.500 Level 3		
11,600.0	6,863.6	11,548.2	6,705.0	135.3	135.4	-64.19	992.9	4,647.2	364.2	117.0	247.26	1.473 Level 3		
11,700.0	6,862.9	11,648.2	6,703.2	138.1	138.2	-64.02	992.9	4,747.2	364.7	112.7	252.01	1.447 Level 3		
11,800.0	6,862.2	11,748.2	6,701.3	140.8	141.0	-63.86	992.9	4,847.2	365.2	108.5	256.75	1.423 Level 3		
11,900.0	6,861.5	11,848.2	6,699.5	143.6	143.8	-63.70	992.9	4,947.1	365.7	104.3	261.48	1.399 Level 3		
12,000.0	6,860.8	11,948.2	6,697.6	146.4	146.5	-63.54	992.9	5,047.1	366.3	100.1	266.20	1.376 Level 3		
12,100.0	6,860.1	12,048.2	6,695.8	149.2	149.3	-63.38	992.9	5,147.1	366.8	95.9	270.90	1.354 Level 3		
12,200.0	6,859.4	12,148.2	6,693.9	152.0	152.1	-63.22	992.9	5,247.1	367.3	91.7	275.59	1.333 Level 3		
12,300.0	6,858.7	12,248.2	6,692.1	154.8	154.9	-63.06	992.9	5,347.0	367.8	87.5	280.27	1.312 Level 3		
12,400.0	6,858.0	12,348.2	6,690.2	157.6	157.7	-62.90	992.9	5,447.0	368.3	83.4	284.94	1.293 Level 3		
12,500.0	6,857.3	12,448.2	6,688.4	160.4	160.5	-62.74	992.9	5,547.0	368.9	79.3	289.59	1.274 Level 3		
12,600.0	6,856.6	12,548.2	6,686.5	163.2	163.3	-62.58	992.9	5,647.0	369.4	75.2	294.23	1.255 Level 3		
12,700.0	6,855.9	12,648.1	6,684.7	165.9	166.0	-62.42	992.9	5,746.9	369.9	71.1	298.86	1.238 Level 2		
12,800.0	6,855.2	12,748.1	6,682.8	168.7	168.8	-62.26	992.9	5,846.9	370.5	67.0	303.47	1.221 Level 2		
12,900.0	6,854.5	12,848.1	6,681.0	171.5	171.6	-62.10	992.9	5,946.9	371.0	62.9	308.07	1.204 Level 2		
13,000.0	6,853.8	12,948.1	6,679.1	174.3	174.4	-61.95	992.9	6,046.9	371.5	58.9	312.66	1.188 Level 2		
13,100.0	6,853.1	13,048.1	6,677.3	177.1	177.2	-61.79	992.9	6,146.8	372.1	54.8	317.24	1.173 Level 2		
13,200.0	6,852.4	13,148.1	6,675.4	179.9	180.0	-61.64	992.9	6,246.8	372.6	50.8	321.80	1.158 Level 2		
13,300.0	6,851.7	13,248.1	6,673.6	182.7	182.8	-61.48	992.9	6,346.8	373.2	46.8	326.34	1.143 Level 2		
13,400.0	6,851.0	13,348.1	6,671.7	185.5	185.6	-61.32	992.9	6,446.8	373.7	42.8	330.88	1.129 Level 2		
13,500.0	6,850.3	13,448.1	6,669.9	188.3	188.4	-61.17	992.9	6,546.7	374.3	38.9	335.40	1.116 Level 2		
13,600.0	6,849.6	13,548.1	6,668.0	191.1	191.2	-61.02	992.9	6,646.7	374.8	34.9	339.91	1.103 Level 2		
13,700.0	6,848.9	13,648.1	6,666.2	193.9	194.0	-60.86	992.9	6,746.7	375.4	31.0	344.40	1.090 Level 2		
13,800.0	6,848.2	13,748.1	6,664.3	196.7	196.8	-60.71	992.9	6,846.7	376.0	27.1	348.88	1.078 Level 2		
13,900.0	6,847.5	13,848.1	6,662.5	199.5	199.6	-60.56	992.9	6,946.7	376.5	23.2	353.35	1.066 Level 2		
13,975.6	6,847.0	13,923.6	6,661.1	201.6	201.7	-60.44	992.9	7,022.2	377.0	20.2	356.71	1.057 Level 2, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-232 - Wellbore #1 - Plan #1 (3-05-14)													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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	100.96		-29.1	150.4	153.2				
100.0	100.0	100.0	100.0	0.1	0.1	100.96		-29.1	150.4	153.2	153.0	0.22	681.739	
200.0	200.0	200.0	200.0	0.3	0.3	100.96		-29.1	150.4	153.2	152.6	0.67	227.246	
300.0	300.0	300.0	300.0	0.6	0.6	100.96		-29.1	150.4	153.2	152.1	1.12	136.348	
400.0	400.0	400.0	400.0	0.8	0.8	100.96		-29.1	150.4	153.2	151.7	1.57	97.391	
500.0	500.0	500.0	500.0	1.0	1.0	100.96		-29.1	150.4	153.2	151.2	2.02	75.749	
600.0	600.0	600.0	600.0	1.2	1.2	100.96		-29.1	150.4	153.2	150.8	2.47	61.976	
700.0	700.0	700.0	700.0	1.5	1.5	100.96		-29.1	150.4	153.2	150.3	2.92	52.441	
800.0	800.0	800.0	800.0	1.7	1.7	100.96		-29.1	150.4	153.2	149.9	3.37	45.449	
900.0	900.0	900.0	900.0	1.9	1.9	100.96		-29.1	150.4	153.2	149.4	3.82	40.102	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	100.96		-29.1	150.4	153.2	149.0	4.27	35.881 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	128.27		-29.1	150.4	154.3	149.6	4.72	32.709	
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	129.71		-29.1	150.4	157.6	152.4	5.16	30.534	
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	131.97		-29.1	150.4	163.3	157.7	5.61	29.131	
1,400.0	1,398.7	1,398.7	1,398.7	3.1	3.0	134.86		-29.1	150.4	171.7	165.7	6.05	28.369	
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	138.18		-29.1	150.4	183.0	176.5	6.51	28.123	
1,600.0	1,596.2	1,600.5	1,600.4	3.6	3.5	141.87		-29.9	148.9	194.4	187.4	6.96	27.938	
1,700.0	1,694.8	1,703.3	1,703.1	3.9	3.7	145.96		-32.3	144.0	204.4	197.0	7.39	27.658	
1,800.0	1,793.5	1,805.6	1,805.0	4.2	3.9	150.46		-36.3	135.8	213.5	205.7	7.83	27.270	
1,900.0	1,892.2	1,907.2	1,905.8	4.6	4.1	155.37		-41.8	124.5	222.2	213.9	8.28	26.839	
2,000.0	1,990.9	2,007.7	2,005.1	4.9	4.3	160.64		-48.8	110.1	231.1	222.3	8.75	26.412	
2,100.0	2,089.6	2,107.1	2,102.5	5.2	4.6	166.22		-57.2	92.8	240.8	231.6	9.25	26.026	
2,200.0	2,188.2	2,205.0	2,197.9	5.6	5.0	172.00		-67.0	72.9	252.1	242.3	9.80	25.713	
2,300.0	2,286.9	2,301.1	2,290.7	5.9	5.3	177.83		-77.9	50.5	265.6	255.2	10.41	25.505	
2,400.0	2,385.6	2,396.2	2,382.4	6.3	5.7	-176.79		-89.0	27.6	281.7	270.6	11.06	25.457 SF	
2,500.0	2,484.3	2,491.4	2,474.0	6.6	6.1	-171.98		-100.2	4.6	300.1	288.3	11.75	25.549	
2,600.0	2,582.9	2,586.5	2,565.7	7.0	6.6	-167.73		-111.4	-18.3	320.4	308.0	12.44	25.748	
2,700.0	2,681.6	2,681.6	2,657.3	7.4	7.0	-163.97		-122.6	-41.2	342.3	329.1	13.15	26.024	
2,800.0	2,780.3	2,776.7	2,748.9	7.7	7.5	-160.66		-133.7	-64.1	365.5	351.6	13.87	26.353	
2,900.0	2,879.0	2,871.9	2,840.6	8.1	8.0	-157.74		-144.9	-87.1	389.7	375.2	14.59	26.716	
3,000.0	2,977.6	2,967.0	2,932.2	8.4	8.5	-155.15		-156.1	-110.0	414.9	399.6	15.31	27.101	
3,100.0	3,076.3	3,062.1	3,023.9	8.8	9.0	-152.86		-167.3	-132.9	440.7	424.7	16.03	27.496	
3,200.0	3,175.0	3,157.2	3,115.5	9.2	9.5	-150.81		-178.4	-155.8	467.2	450.4	16.75	27.895	
3,300.0	3,273.7	3,252.4	3,207.1	9.5	10.0	-148.98		-189.6	-178.8	494.2	476.7	17.47	28.292	
3,400.0	3,372.3	3,347.5	3,298.8	9.9	10.5	-147.34		-200.8	-201.7	521.6	503.4	18.18	28.684	
3,500.0	3,471.0	3,442.6	3,390.4	10.3	11.0	-145.85		-212.0	-224.6	549.3	530.4	18.90	29.067	
3,600.0	3,569.7	3,537.7	3,482.1	10.6	11.5	-144.51		-223.1	-247.6	577.4	557.8	19.61	29.439	
3,700.0	3,668.4	3,632.9	3,573.7	11.0	12.1	-143.29		-234.3	-270.5	605.8	585.4	20.33	29.801	
3,800.0	3,767.0	3,728.0	3,665.4	11.4	12.6	-142.18		-245.5	-293.4	634.3	613.3	21.04	30.150	
3,900.0	3,865.7	3,823.1	3,757.0	11.7	13.1	-141.17		-256.7	-316.3	663.1	641.4	21.75	30.487	
4,000.0	3,964.4	3,918.2	3,848.6	12.1	13.6	-140.24		-267.8	-339.3	692.1	669.6	22.46	30.812	
4,100.0	4,063.1	4,013.4	3,940.3	12.5	14.2	-139.38		-279.0	-362.2	721.2	698.0	23.17	31.125	
4,200.0	4,161.7	4,108.5	4,031.9	12.9	14.7	-138.59		-290.2	-385.1	750.4	726.6	23.88	31.425	
4,300.0	4,260.4	4,203.6	4,123.6	13.2	15.2	-137.85		-301.4	-408.0	779.8	755.2	24.59	31.714	
4,400.0	4,359.1	4,298.7	4,215.2	13.6	15.8	-137.17		-312.5	-431.0	809.3	784.0	25.30	31.992	
4,500.0	4,457.8	4,393.9	4,306.9	14.0	16.3	-136.54		-323.7	-453.9	838.9	812.9	26.01	32.258	
4,600.0	4,556.4	4,489.0	4,398.5	14.3	16.8	-135.95		-334.9	-476.8	868.6	841.8	26.71	32.515	
4,700.0	4,655.1	4,584.1	4,490.1	14.7	17.4	-135.40		-346.0	-499.7	898.3	870.9	27.42	32.761	
4,800.0	4,753.8	4,679.2	4,581.8	15.1	17.9	-134.89		-357.2	-522.7	928.1	900.0	28.13	32.998	
4,900.0	4,852.5	4,774.4	4,673.4	15.5	18.4	-134.40		-368.4	-545.6	958.0	929.2	28.83	33.225	
5,000.0	4,951.1	4,869.5	4,765.1	15.8	19.0	-133.95		-379.6	-568.5	988.0	958.4	29.54	33.444	

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-312 - Wellbore #1 - Plan #1 (3-05-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	77.48		32.8	147.6	151.2				
100.0	100.0	100.0	100.0	0.1	0.1	77.48		32.8	147.6	151.2	151.0	0.22	672.901	
200.0	200.0	200.0	200.0	0.3	0.3	77.48		32.8	147.6	151.2	150.6	0.67	224.300	
300.0	300.0	300.0	300.0	0.6	0.6	77.48		32.8	147.6	151.2	150.1	1.12	134.580	
400.0	400.0	400.0	400.0	0.8	0.8	77.48		32.8	147.6	151.2	149.7	1.57	96.129	
500.0	500.0	500.0	500.0	1.0	1.0	77.48		32.8	147.6	151.2	149.2	2.02	74.767	
600.0	600.0	600.0	600.0	1.2	1.2	77.48		32.8	147.6	151.2	148.8	2.47	61.173	
700.0	700.0	700.0	700.0	1.5	1.5	77.48		32.8	147.6	151.2	148.3	2.92	51.762	
800.0	800.0	800.0	800.0	1.7	1.7	77.48		32.8	147.6	151.2	147.9	3.37	44.860	
900.0	900.0	900.0	900.0	1.9	1.9	77.48		32.8	147.6	151.2	147.4	3.82	39.582	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	77.48		32.8	147.6	151.2	147.0	4.27	35.416 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	104.92		32.8	147.6	151.7	147.0	4.72	32.152	
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	106.78		32.8	147.6	153.1	148.0	5.16	29.650	
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	109.78		32.8	147.6	155.9	150.2	5.62	27.758	
1,400.0	1,398.7	1,398.7	1,398.7	3.1	3.0	113.77		32.8	147.6	160.4	154.3	6.08	26.406	
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	118.50		32.8	147.6	167.3	160.7	6.55	25.550	
1,600.0	1,596.2	1,602.2	1,602.1	3.6	3.5	123.22		33.5	146.0	174.0	167.0	7.03	24.749	
1,700.0	1,694.8	1,707.6	1,707.5	3.9	3.7	127.32		35.7	140.7	178.2	170.7	7.51	23.720	
1,800.0	1,793.5	1,813.5	1,812.9	4.2	3.9	131.05		39.4	131.8	179.6	171.6	8.00	22.447	
1,900.0	1,892.2	1,916.6	1,915.2	4.6	4.2	134.52		44.2	120.0	178.3	169.8	8.48	21.020	
2,000.0	1,990.9	2,016.1	2,013.8	4.9	4.4	137.89		49.2	108.1	177.0	168.1	8.95	19.775	
2,100.0	2,089.6	2,115.5	2,112.4	5.2	4.7	141.30		54.1	96.2	176.4	167.0	9.42	18.728	
2,146.3	2,135.2	2,161.5	2,158.0	5.4	4.8	142.88		56.4	90.7	176.3	166.7	9.63	18.302	
2,200.0	2,188.2	2,214.9	2,211.0	5.6	5.0	144.72		59.1	84.3	176.4	166.5	9.88	17.851	
2,300.0	2,286.9	2,314.4	2,309.6	5.9	5.3	148.12		64.0	72.4	177.1	166.7	10.35	17.117	
2,400.0	2,385.6	2,413.8	2,408.2	6.3	5.5	151.49		68.9	60.5	178.4	167.6	10.81	16.505	
2,500.0	2,484.3	2,513.2	2,506.8	6.6	5.8	154.81		73.9	48.6	180.3	169.0	11.27	15.994	
2,600.0	2,582.9	2,612.7	2,605.4	7.0	6.1	158.04		78.8	36.7	182.8	171.0	11.74	15.569	
2,700.0	2,681.6	2,712.1	2,704.0	7.4	6.4	161.17		83.7	24.8	185.8	173.6	12.21	15.214	
2,800.0	2,780.3	2,811.6	2,802.6	7.7	6.7	164.20		88.7	12.9	189.4	176.7	12.70	14.918	
2,900.0	2,879.0	2,911.0	2,901.2	8.1	7.0	167.11		93.6	1.0	193.5	180.4	13.19	14.671	
3,000.0	2,977.6	3,010.4	2,999.8	8.4	7.3	169.89		98.5	-10.9	198.1	184.4	13.70	14.465	
3,100.0	3,076.3	3,109.9	3,098.4	8.8	7.6	172.54		103.5	-22.8	203.2	189.0	14.22	14.292	
3,200.0	3,175.0	3,209.3	3,197.0	9.2	7.9	175.05		108.4	-34.7	208.7	193.9	14.75	14.147	
3,300.0	3,273.7	3,308.7	3,295.6	9.5	8.2	177.44		113.3	-46.5	214.5	199.2	15.29	14.025	
3,400.0	3,372.3	3,408.2	3,394.2	9.9	8.5	179.69		118.3	-58.4	220.7	204.9	15.85	13.923	
3,500.0	3,471.0	3,507.6	3,492.8	10.3	8.9	-178.17		123.2	-70.3	227.2	210.8	16.42	13.838	
3,600.0	3,569.7	3,607.1	3,591.4	10.6	9.2	-176.17		128.2	-82.2	234.0	217.0	17.00	13.767	
3,700.0	3,668.4	3,706.5	3,690.0	11.0	9.5	-174.27		133.1	-94.1	241.1	223.6	17.59	13.709	
3,800.0	3,767.0	3,805.9	3,788.6	11.4	9.8	-172.49		138.0	-106.0	248.5	230.3	18.19	13.660	
3,900.0	3,865.7	3,905.4	3,887.2	11.7	10.1	-170.80		143.0	-117.9	256.1	237.3	18.80	13.621	
4,000.0	3,964.4	4,004.8	3,985.8	12.1	10.4	-169.22		147.9	-129.8	263.8	244.4	19.41	13.590	
4,100.0	4,063.1	4,104.3	4,084.4	12.5	10.8	-167.73		152.8	-141.7	271.8	251.8	20.04	13.565	
4,200.0	4,161.7	4,203.7	4,183.0	12.9	11.1	-166.32		157.8	-153.6	279.9	259.3	20.66	13.547	
4,300.0	4,260.4	4,303.1	4,281.6	13.2	11.4	-164.99		162.7	-165.5	288.2	266.9	21.30	13.533	
4,400.0	4,359.1	4,402.6	4,380.2	13.6	11.7	-163.74		167.6	-177.4	296.7	274.7	21.94	13.525	
4,500.0	4,457.8	4,502.0	4,478.8	14.0	12.0	-162.56		172.6	-189.3	305.3	282.7	22.58	13.520	
4,600.0	4,556.4	4,601.4	4,577.4	14.3	12.4	-161.44		177.5	-201.2	314.0	290.7	23.23	13.518	
4,700.0	4,655.1	4,700.9	4,676.0	14.7	12.7	-160.38		182.4	-213.1	322.8	298.9	23.87	13.520	
4,800.0	4,753.8	4,800.3	4,774.6	15.1	13.0	-159.38		187.4	-225.0	331.7	307.2	24.53	13.524	
4,900.0	4,852.5	4,899.8	4,873.2	15.5	13.3	-158.43		192.3	-236.9	340.7	315.5	25.18	13.530	

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-312 - Wellbore #1 - Plan #1 (3-05-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,951.1	4,999.2	4,971.8	15.8	13.7	-157.53		197.3	-248.8	349.8	324.0	25.84	13.539	
5,100.0	5,049.8	5,098.6	5,070.4	16.2	14.0	-156.68		202.2	-260.7	359.0	332.5	26.50	13.549	
5,200.0	5,148.5	5,198.1	5,169.0	16.6	14.3	-155.86		207.1	-272.6	368.2	341.1	27.16	13.561	
5,300.0	5,247.2	5,297.5	5,267.6	17.0	14.6	-155.09		212.1	-284.5	377.6	349.8	27.82	13.573	
5,400.0	5,345.8	5,396.9	5,366.2	17.3	15.0	-154.36		217.0	-296.4	387.0	358.5	28.48	13.587	
5,500.0	5,444.5	5,496.4	5,464.8	17.7	15.3	-153.66		221.9	-308.3	396.4	367.3	29.14	13.602	
5,600.0	5,543.2	5,594.0	5,561.6	18.1	15.6	-153.04		226.7	-319.8	406.0	376.2	29.79	13.631	
5,700.0	5,642.2	5,688.4	5,655.6	18.3	15.8	-152.73		230.4	-328.7	414.8	384.5	30.27	13.703	
5,800.0	5,741.6	5,783.0	5,749.9	18.6	16.0	-152.60		232.9	-334.7	421.8	391.1	30.68	13.748	
5,900.0	5,841.3	5,877.6	5,844.4	18.8	16.1	-152.65		234.2	-337.9	426.9	395.9	31.01	13.768	
6,000.0	5,941.2	5,974.4	5,941.2	18.9	16.3	-152.84		234.4	-338.4	430.1	398.8	31.28	13.750	
6,100.0	6,041.2	6,074.4	6,041.2	19.1	16.5	-179.69		234.4	-338.4	430.6	398.6	32.03	13.442	
6,185.9	6,127.1	6,160.4	6,127.2	19.2	16.6	90.18		234.4	-336.2	430.6	398.8	31.85	13.518	
6,200.0	6,141.2	6,174.5	6,141.2	19.2	16.6	89.92		234.4	-335.1	430.6	398.7	31.86	13.514	
6,300.0	6,240.7	6,273.8	6,239.2	19.3	16.6	89.09		234.4	-319.5	430.7	398.7	31.93	13.488	
6,400.0	6,338.1	6,372.3	6,333.6	19.4	16.6	88.27		234.4	-291.5	430.8	398.9	31.87	13.516	
6,500.0	6,431.7	6,470.1	6,423.0	19.3	16.5	87.49		234.4	-252.1	431.0	399.3	31.76	13.570	
6,600.0	6,520.0	6,567.2	6,506.1	19.3	16.5	86.76		234.4	-201.9	431.3	399.6	31.69	13.609	
6,700.0	6,601.4	6,663.6	6,581.6	19.2	16.4	86.08		234.4	-142.0	431.6	399.8	31.78	13.582	
6,800.0	6,674.5	6,759.5	6,648.6	19.2	16.5	85.47		234.4	-73.6	432.0	399.8	32.17	13.428	
6,900.0	6,738.1	6,854.9	6,706.3	19.1	16.9	84.93		234.4	2.3	432.3	399.3	33.01	13.098	
7,000.0	6,791.2	6,950.0	6,753.9	19.0	17.5	84.48		234.4	84.6	432.6	398.2	34.40	12.577	
7,100.0	6,832.7	7,044.5	6,790.8	19.1	18.4	84.12		234.4	171.5	432.9	396.5	36.41	11.891	
7,200.0	6,861.9	7,138.9	6,816.6	20.1	19.6	83.85		234.4	262.2	433.1	394.1	39.00	11.105	
7,300.0	6,878.5	7,233.1	6,831.0	21.8	21.1	83.68		234.4	355.2	433.2	391.2	42.09	10.293	
7,400.0	6,888.6	7,327.5	6,834.0	23.7	22.8	82.80		234.4	449.6	434.1	388.5	45.51	9.537	
7,500.0	6,892.2	7,427.3	6,832.6	25.7	24.7	82.12		234.4	549.4	434.7	385.4	49.33	8.813	
7,600.0	6,891.5	7,527.3	6,831.2	27.9	26.8	82.03		234.4	649.4	434.8	381.3	53.53	8.123	
7,700.0	6,890.8	7,627.3	6,829.8	30.2	29.1	81.93		234.4	749.4	434.9	377.0	57.96	7.504	
7,800.0	6,890.1	7,727.3	6,828.4	32.5	31.4	81.84		234.4	849.4	435.0	372.5	62.56	6.954	
7,900.0	6,889.4	7,827.3	6,826.9	34.9	33.7	81.75		234.4	949.3	435.1	367.8	67.30	6.465	
8,000.0	6,888.7	7,927.3	6,825.5	37.4	36.2	81.65		234.4	1,049.3	435.2	363.1	72.16	6.031	
8,100.0	6,888.0	8,027.3	6,824.1	39.9	38.7	81.56		234.4	1,149.3	435.3	358.2	77.11	5.646	
8,200.0	6,887.3	8,127.3	6,822.7	42.5	41.2	81.47		234.4	1,249.3	435.4	353.3	82.13	5.302	
8,300.0	6,886.6	8,227.3	6,821.3	45.0	43.8	81.37		234.4	1,349.3	435.5	348.3	87.21	4.994	
8,400.0	6,885.9	8,327.3	6,819.9	47.6	46.4	81.28		234.4	1,449.3	435.6	343.3	92.34	4.718	
8,500.0	6,885.2	8,427.3	6,818.5	50.3	49.0	81.19		234.4	1,549.3	435.8	338.2	97.52	4.469	
8,600.0	6,884.5	8,527.3	6,817.1	52.9	51.7	81.09		234.4	1,649.3	435.9	333.1	102.72	4.243	
8,700.0	6,883.8	8,627.3	6,815.6	55.6	54.3	81.00		234.4	1,749.2	436.0	328.0	107.96	4.038	
8,800.0	6,883.1	8,727.3	6,814.2	58.2	57.0	80.91		234.4	1,849.2	436.1	322.9	113.22	3.852	
8,900.0	6,882.4	8,827.3	6,812.8	60.9	59.7	80.82		234.4	1,949.2	436.2	317.7	118.50	3.681	
9,000.0	6,881.7	8,927.3	6,811.4	63.6	62.4	80.72		234.4	2,049.2	436.3	312.5	123.80	3.524	
9,100.0	6,881.0	9,027.3	6,810.0	66.3	65.1	80.63		234.4	2,149.2	436.4	307.3	129.12	3.380	
9,200.0	6,880.3	9,127.3	6,808.6	69.0	67.8	80.54		234.4	2,249.2	436.6	302.1	134.45	3.247	
9,300.0	6,879.6	9,227.3	6,807.2	71.7	70.5	80.44		234.4	2,349.2	436.7	296.9	139.79	3.124	
9,400.0	6,878.9	9,327.3	6,805.7	74.5	73.2	80.35		234.4	2,449.2	436.8	291.7	145.13	3.010	
9,500.0	6,878.2	9,427.3	6,804.3	77.2	76.0	80.26		234.4	2,549.1	436.9	286.4	150.49	2.903	
9,600.0	6,877.5	9,527.3	6,802.9	79.9	78.7	80.17		234.4	2,649.1	437.0	281.2	155.85	2.804	
9,700.0	6,876.8	9,627.3	6,801.5	82.7	81.4	80.07		234.4	2,749.1	437.2	275.9	161.22	2.711	
9,800.0	6,876.2	9,727.3	6,800.1	85.4	84.2	79.98		234.4	2,849.1	437.3	270.7	166.60	2.625	
9,900.0	6,875.5	9,827.3	6,798.7	88.2	86.9	79.89		234.4	2,949.1	437.4	265.4	171.98	2.543	

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-312 - Wellbore #1 - Plan #1 (3-05-14)													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
10,000.0	6,874.8	9,927.3	6,797.3	90.9	89.7	79.80		234.4	3,049.1	437.5	260.2	177.36	2.467	
10,100.0	6,874.1	10,027.3	6,795.8	93.7	92.5	79.71		234.4	3,149.1	437.7	254.9	182.74	2.395	
10,200.0	6,873.4	10,127.2	6,794.4	96.4	95.2	79.61		234.4	3,249.1	437.8	249.7	188.13	2.327	
10,300.0	6,872.7	10,227.2	6,793.0	99.2	98.0	79.52		234.4	3,349.0	437.9	244.4	193.52	2.263	
10,400.0	6,872.0	10,327.2	6,791.6	102.0	100.7	79.43		234.4	3,449.0	438.0	239.1	198.91	2.202	
10,500.0	6,871.3	10,427.2	6,790.2	104.7	103.5	79.34		234.4	3,549.0	438.2	233.9	204.30	2.145	
10,600.0	6,870.6	10,527.2	6,788.8	107.5	106.3	79.25		234.4	3,649.0	438.3	228.6	209.69	2.090	
10,700.0	6,869.9	10,627.2	6,787.4	110.3	109.1	79.15		234.4	3,749.0	438.4	223.4	215.08	2.039	
10,800.0	6,869.2	10,727.2	6,786.0	113.0	111.8	79.06		234.4	3,849.0	438.6	218.1	220.47	1.989	
10,900.0	6,868.5	10,827.2	6,784.5	115.8	114.6	78.97		234.4	3,949.0	438.7	212.9	225.86	1.942	
11,000.0	6,867.8	10,927.2	6,783.1	118.6	117.4	78.88		234.4	4,049.0	438.9	207.6	231.25	1.898	
11,100.0	6,867.1	11,027.2	6,781.7	121.4	120.2	78.79		234.4	4,148.9	439.0	202.4	236.63	1.855	
11,200.0	6,866.4	11,127.2	6,780.3	124.1	122.9	78.69		234.4	4,248.9	439.1	197.1	242.02	1.814	
11,300.0	6,865.7	11,227.2	6,778.9	126.9	125.7	78.60		234.4	4,348.9	439.3	191.9	247.41	1.776	
11,400.0	6,865.0	11,327.2	6,777.5	129.7	128.5	78.51		234.4	4,448.9	439.4	186.6	252.79	1.738	
11,500.0	6,864.3	11,427.2	6,776.1	132.5	131.3	78.42		234.4	4,548.9	439.6	181.4	258.17	1.703	
11,600.0	6,863.6	11,527.2	6,774.6	135.3	134.1	78.33		234.4	4,648.9	439.7	176.1	263.55	1.668	
11,700.0	6,862.9	11,627.2	6,773.2	138.1	136.9	78.24		234.4	4,748.9	439.8	170.9	268.93	1.636	
11,800.0	6,862.2	11,727.2	6,771.8	140.8	139.6	78.15		234.4	4,848.9	440.0	165.7	274.31	1.604	
11,900.0	6,861.5	11,827.2	6,770.4	143.6	142.4	78.06		234.4	4,948.8	440.1	160.5	279.68	1.574	
12,000.0	6,860.8	11,927.2	6,769.0	146.4	145.2	77.96		234.4	5,048.8	440.3	155.2	285.05	1.545	
12,100.0	6,860.1	12,027.2	6,767.6	149.2	148.0	77.87		234.4	5,148.8	440.4	150.0	290.42	1.517	
12,200.0	6,859.4	12,127.2	6,766.2	152.0	150.8	77.78		234.4	5,248.8	440.6	144.8	295.78	1.490 Level 3	
12,300.0	6,858.7	12,227.2	6,764.7	154.8	153.6	77.69		234.4	5,348.8	440.7	139.6	301.15	1.464 Level 3	
12,400.0	6,858.0	12,327.2	6,763.3	157.6	156.4	77.60		234.4	5,448.8	440.9	134.4	306.51	1.438 Level 3	
12,500.0	6,857.3	12,427.2	6,761.9	160.4	159.2	77.51		234.4	5,548.8	441.1	129.2	311.86	1.414 Level 3	
12,600.0	6,856.6	12,527.2	6,760.5	163.2	162.0	77.42		234.4	5,648.8	441.2	124.0	317.22	1.391 Level 3	
12,700.0	6,855.9	12,627.2	6,759.1	165.9	164.8	77.33		234.4	5,748.7	441.4	118.8	322.57	1.368 Level 3	
12,800.0	6,855.2	12,727.2	6,757.7	168.7	167.5	77.24		234.4	5,848.7	441.5	113.6	327.91	1.346 Level 3	
12,900.0	6,854.5	12,827.2	6,756.3	171.5	170.3	77.15		234.4	5,948.7	441.7	108.4	333.26	1.325 Level 3	
13,000.0	6,853.8	12,927.2	6,754.9	174.3	173.1	77.06		234.4	6,048.7	441.8	103.2	338.60	1.305 Level 3	
13,100.0	6,853.1	13,027.2	6,753.4	177.1	175.9	76.97		234.4	6,148.7	442.0	98.1	343.93	1.285 Level 3	
13,200.0	6,852.4	13,127.2	6,752.0	179.9	178.7	76.88		234.4	6,248.7	442.2	92.9	349.26	1.266 Level 3	
13,300.0	6,851.7	13,227.2	6,750.6	182.7	181.5	76.79		234.4	6,348.7	442.3	87.7	354.59	1.247 Level 2	
13,400.0	6,851.0	13,327.2	6,749.2	185.5	184.3	76.70		234.4	6,448.6	442.5	82.6	359.92	1.229 Level 2	
13,500.0	6,850.3	13,427.2	6,747.8	188.3	187.1	76.61		234.4	6,548.6	442.7	77.4	365.24	1.212 Level 2	
13,600.0	6,849.6	13,527.2	6,746.4	191.1	189.9	76.52		234.4	6,648.6	442.8	72.3	370.56	1.195 Level 2	
13,700.0	6,848.9	13,627.2	6,745.0	193.9	192.7	76.43		234.4	6,748.6	443.0	67.1	375.87	1.179 Level 2	
13,800.0	6,848.2	13,727.2	6,743.5	196.7	195.5	76.34		234.4	6,848.6	443.2	62.0	381.18	1.163 Level 2	
13,900.0	6,847.5	13,827.2	6,742.1	199.5	198.3	76.25		234.4	6,948.6	443.3	56.8	386.49	1.147 Level 2	
13,975.6	6,847.0	13,902.7	6,741.1	201.6	200.4	76.18		234.4	7,024.1	443.5	53.0	390.49	1.136 Level 2, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)													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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	88.61	3.6	150.4	150.5					
100.0	100.0	100.0	100.0	0.1	0.1	88.61	3.6	150.4	150.5	150.3	0.22	669.490		
200.0	200.0	200.0	200.0	0.3	0.3	88.61	3.6	150.4	150.5	149.8	0.67	223.163		
300.0	300.0	300.0	300.0	0.6	0.6	88.61	3.6	150.4	150.5	149.4	1.12	133.898		
400.0	400.0	400.0	400.0	0.8	0.8	88.61	3.6	150.4	150.5	148.9	1.57	95.641		
500.0	500.0	500.0	500.0	1.0	1.0	88.61	3.6	150.4	150.5	148.5	2.02	74.388		
600.0	600.0	600.0	600.0	1.2	1.2	88.61	3.6	150.4	150.5	148.0	2.47	60.863		
700.0	700.0	700.0	700.0	1.5	1.5	88.61	3.6	150.4	150.5	147.6	2.92	51.499		
800.0	800.0	800.0	800.0	1.7	1.7	88.61	3.6	150.4	150.5	147.1	3.37	44.633		
900.0	900.0	900.0	900.0	1.9	1.9	88.61	3.6	150.4	150.5	146.7	3.82	39.382		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	88.61	3.6	150.4	150.5	146.2	4.27	35.236 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	116.00	3.6	150.4	151.2	146.5	4.72	32.058		
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	117.71	3.6	150.4	153.6	148.4	5.16	29.752		
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	120.43	3.6	150.4	157.9	152.2	5.61	28.133		
1,400.0	1,398.7	1,398.7	1,398.7	3.1	3.0	123.97	3.6	150.4	164.4	158.3	6.06	27.105		
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	128.08	3.6	150.4	173.5	167.0	6.53	26.585		
1,600.0	1,596.2	1,596.2	1,596.2	3.6	3.5	132.03	3.6	150.4	184.1	177.1	7.00	26.290		
1,700.0	1,694.8	1,694.8	1,694.8	3.9	3.7	135.54	3.6	150.4	195.4	187.9	7.48	26.130		
1,800.0	1,793.5	1,793.5	1,793.5	4.2	3.9	138.67	3.6	150.4	207.3	199.4	7.95	26.071		
1,900.0	1,892.2	1,892.2	1,892.2	4.6	4.1	141.44	3.6	150.4	219.9	211.4	8.43	26.087		
2,000.0	1,990.9	1,990.9	1,990.9	4.9	4.4	143.92	3.6	150.4	232.8	223.9	8.90	26.157		
2,100.0	2,089.6	2,097.2	2,097.2	5.2	4.6	146.45	3.9	148.8	244.8	235.4	9.37	26.115		
2,200.0	2,188.2	2,204.8	2,204.7	5.6	4.8	149.12	4.6	143.2	253.7	243.9	9.83	25.814		
2,300.0	2,286.9	2,312.6	2,312.0	5.9	5.0	152.01	5.8	133.5	259.8	249.5	10.29	25.262		
2,400.0	2,385.6	2,417.4	2,416.0	6.3	5.3	155.07	7.5	120.5	263.4	252.7	10.74	24.533		
2,500.0	2,484.3	2,516.4	2,514.1	6.6	5.5	157.99	9.2	107.4	267.0	255.8	11.18	23.870		
2,600.0	2,582.9	2,615.4	2,612.2	7.0	5.8	160.81	10.9	94.2	271.2	259.6	11.64	23.303		
2,700.0	2,681.6	2,714.4	2,710.3	7.4	6.0	163.55	12.6	81.1	276.1	264.0	12.10	22.817		
2,800.0	2,780.3	2,813.5	2,808.4	7.7	6.3	166.19	14.4	67.9	281.6	269.0	12.57	22.398		
2,900.0	2,879.0	2,912.5	2,906.6	8.1	6.6	168.72	16.1	54.8	287.7	274.6	13.06	22.035		
3,000.0	2,977.6	3,011.5	3,004.7	8.4	6.9	171.15	17.8	41.6	294.3	280.8	13.55	21.720		
3,100.0	3,076.3	3,110.5	3,102.8	8.8	7.1	173.47	19.5	28.5	301.5	287.4	14.06	21.444		
3,200.0	3,175.0	3,209.5	3,200.9	9.2	7.4	175.67	21.2	15.3	309.1	294.5	14.58	21.204		
3,300.0	3,273.7	3,308.5	3,299.0	9.5	7.7	177.77	22.9	2.2	317.1	302.0	15.11	20.992		
3,400.0	3,372.3	3,407.5	3,397.1	9.9	8.0	179.77	24.6	-10.9	325.6	310.0	15.65	20.805		
3,500.0	3,471.0	3,506.5	3,495.3	10.3	8.3	-178.34	26.3	-24.1	334.4	318.2	16.20	20.640		
3,600.0	3,569.7	3,605.5	3,593.4	10.6	8.6	-176.55	28.0	-37.2	343.6	326.9	16.77	20.494		
3,700.0	3,668.4	3,704.5	3,691.5	11.0	8.9	-174.85	29.7	-50.4	353.1	335.8	17.34	20.365		
3,800.0	3,767.0	3,803.5	3,789.6	11.4	9.2	-173.24	31.4	-63.5	362.9	345.0	17.92	20.250		
3,900.0	3,865.7	3,902.5	3,887.7	11.7	9.5	-171.71	33.1	-76.7	373.0	354.5	18.51	20.149		
4,000.0	3,964.4	4,001.6	3,985.8	12.1	9.8	-170.27	34.8	-89.8	383.3	364.2	19.11	20.058		
4,100.0	4,063.1	4,100.6	4,084.0	12.5	10.2	-168.90	36.6	-103.0	393.9	374.2	19.72	19.978		
4,200.0	4,161.7	4,199.6	4,182.1	12.9	10.5	-167.60	38.3	-116.1	404.7	384.3	20.33	19.908		
4,300.0	4,260.4	4,298.6	4,280.2	13.2	10.8	-166.37	40.0	-129.3	415.6	394.7	20.94	19.845		
4,400.0	4,359.1	4,397.6	4,378.3	13.6	11.1	-165.20	41.7	-142.4	426.8	405.2	21.57	19.790		
4,500.0	4,457.8	4,496.6	4,476.4	14.0	11.4	-164.10	43.4	-155.5	438.1	415.9	22.19	19.741		
4,600.0	4,556.4	4,595.6	4,574.5	14.3	11.7	-163.04	45.1	-168.7	449.5	426.7	22.82	19.698		
4,700.0	4,655.1	4,694.6	4,672.7	14.7	12.1	-162.04	46.8	-181.8	461.2	437.7	23.46	19.661		
4,800.0	4,753.8	4,793.6	4,770.8	15.1	12.4	-161.09	48.5	-195.0	472.9	448.8	24.09	19.628		
4,900.0	4,852.5	4,892.6	4,868.9	15.5	12.7	-160.19	50.2	-208.1	484.8	460.0	24.73	19.600		
5,000.0	4,951.1	4,991.6	4,967.0	15.8	13.0	-159.33	51.9	-221.3	496.7	471.4	25.37	19.576		

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)													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
5,100.0	5,049.8	5,090.6	5,065.1	16.2	13.3	-158.51		53.6	-234.4	508.8	482.8	26.02	19.555	
5,200.0	5,148.5	5,189.6	5,163.2	16.6	13.7	-157.72		55.3	-247.6	521.0	494.3	26.67	19.538	
5,300.0	5,247.2	5,288.7	5,261.4	17.0	14.0	-156.98		57.0	-260.7	533.3	506.0	27.32	19.523	
5,400.0	5,345.8	5,387.7	5,359.5	17.3	14.3	-156.26		58.7	-273.9	545.6	517.7	27.97	19.511	
5,500.0	5,444.5	5,486.7	5,457.6	17.7	14.6	-155.58		60.5	-287.0	558.1	529.5	28.62	19.501	
5,600.0	5,543.2	5,585.7	5,555.7	18.1	15.0	-154.94		62.2	-300.1	570.6	541.3	29.27	19.492	
5,700.0	5,642.2	5,683.7	5,652.9	18.3	15.3	-154.35		63.8	-312.9	581.4	551.5	29.88	19.458	
5,800.0	5,741.6	5,780.3	5,748.9	18.6	15.5	-153.89		65.1	-322.9	589.6	559.2	30.36	19.418	
5,900.0	5,841.3	5,877.3	5,845.7	18.8	15.7	-153.58		66.0	-329.7	595.1	564.3	30.76	19.344	
6,000.0	5,941.2	5,974.5	5,942.8	18.9	15.9	-153.42		66.5	-333.3	598.0	566.9	31.09	19.233	
6,100.0	6,041.2	6,072.9	6,041.2	19.1	16.0	-153.80		66.5	-333.9	598.5	566.9	31.56	18.963	
6,200.0	6,141.2	6,172.9	6,141.2	19.2	16.2	-154.80		66.5	-333.5	598.5	566.7	31.74	18.853	
6,300.0	6,240.7	6,272.6	6,240.4	19.3	16.3	-155.80		66.5	-324.1	598.5	566.5	31.94	18.735	
6,400.0	6,338.1	6,372.3	6,337.5	19.4	16.3	-156.80		66.5	-301.8	598.5	566.5	32.00	18.701	
6,500.0	6,431.7	6,472.0	6,430.9	19.3	16.2	-157.80		66.5	-267.0	598.5	566.5	31.97	18.717	
6,600.0	6,520.0	6,571.8	6,519.0	19.3	16.2	-158.80		66.5	-220.4	598.5	566.5	31.94	18.734	
6,700.0	6,601.4	6,671.6	6,600.3	19.2	16.2	-159.80		66.5	-162.7	598.5	566.4	32.04	18.681	
6,800.0	6,674.5	6,771.4	6,673.5	19.2	16.3	-160.80		66.5	-94.9	598.5	566.1	32.40	18.472	
6,900.0	6,738.1	6,871.2	6,737.1	19.1	16.6	-161.80		66.5	-18.1	598.5	565.3	33.20	18.026	
7,000.0	6,791.2	6,971.0	6,790.3	19.0	17.2	-162.80		66.5	66.3	598.5	563.9	34.58	17.308	
7,100.0	6,832.7	7,070.9	6,832.0	19.1	18.2	-163.80		66.5	157.0	598.5	561.9	36.60	16.350	
7,200.0	6,861.9	7,170.8	6,861.5	20.1	19.5	-164.80		66.5	252.4	598.5	559.2	39.27	15.239	
7,300.0	6,878.5	7,270.8	6,878.3	21.8	21.0	-165.80		66.5	350.9	598.5	556.0	42.48	14.087	
7,400.0	6,888.6	7,370.8	6,888.4	23.7	22.8	-166.80		66.5	450.3	598.5	552.3	46.15	12.968	
7,500.0	6,892.2	7,470.8	6,892.2	25.7	24.8	-167.80		66.5	550.2	598.5	548.3	50.13	11.938	
7,600.0	6,891.5	7,570.8	6,891.5	27.9	26.9	-168.80		66.5	650.2	598.5	544.1	54.39	11.002	
7,700.0	6,890.8	7,670.8	6,890.8	30.2	29.1	-169.80		66.5	750.2	598.5	539.6	58.87	10.165	
7,800.0	6,890.1	7,770.8	6,890.1	32.5	31.4	-170.80		66.5	850.2	598.5	534.9	63.53	9.420	
7,900.0	6,889.4	7,870.8	6,889.4	34.9	33.8	-171.80		66.5	950.2	598.5	530.1	68.34	8.758	
8,000.0	6,888.7	7,970.8	6,888.7	37.4	36.2	-172.80		66.5	1,050.2	598.5	525.2	73.26	8.169	
8,100.0	6,888.0	8,070.8	6,888.0	39.9	38.7	-173.80		66.5	1,150.2	598.5	520.2	78.27	7.646	
8,200.0	6,887.3	8,170.8	6,887.3	42.5	41.2	-174.80		66.5	1,250.2	598.5	515.1	83.36	7.179	
8,300.0	6,886.6	8,270.8	6,886.6	45.0	43.8	-175.80		66.5	1,350.2	598.5	509.9	88.52	6.761	
8,400.0	6,885.9	8,370.8	6,885.9	47.6	46.4	-176.80		66.5	1,450.2	598.5	504.7	93.72	6.385	
8,500.0	6,885.2	8,470.8	6,885.2	50.3	49.0	-177.80		66.5	1,550.2	598.5	499.5	98.98	6.046	
8,600.0	6,884.5	8,570.8	6,884.5	52.9	51.7	-178.80		66.5	1,650.2	598.5	494.2	104.27	5.740	
8,700.0	6,883.8	8,670.8	6,883.8	55.6	54.3	-179.80		66.5	1,750.2	598.5	488.9	109.59	5.461	
8,800.0	6,883.1	8,770.8	6,883.1	58.2	57.0	-180.80		66.5	1,850.2	598.5	483.5	114.94	5.207	
8,900.0	6,882.4	8,870.8	6,882.4	60.9	59.7	-181.80		66.5	1,950.2	598.5	478.1	120.32	4.974	
9,000.0	6,881.7	8,970.8	6,881.7	63.6	62.4	-182.80		66.5	2,050.2	598.5	472.7	125.72	4.760	
9,100.0	6,881.0	9,070.8	6,881.0	66.3	65.1	-183.80		66.5	2,150.2	598.5	467.3	131.13	4.564	
9,200.0	6,880.3	9,170.8	6,880.3	69.0	67.8	-184.80		66.5	2,250.2	598.5	461.9	136.56	4.382	
9,300.0	6,879.6	9,270.8	6,879.6	71.7	70.5	-185.80		66.5	2,350.2	598.5	456.4	142.01	4.214	
9,400.0	6,878.9	9,370.8	6,878.9	74.5	73.2	-186.80		66.5	2,450.2	598.5	451.0	147.47	4.058	
9,500.0	6,878.2	9,470.8	6,878.2	77.2	76.0	-187.80		66.5	2,550.2	598.5	445.5	152.94	3.913	
9,600.0	6,877.5	9,570.8	6,877.5	79.9	78.7	-188.80		66.5	2,650.2	598.5	440.0	158.42	3.778	
9,700.0	6,876.8	9,670.8	6,876.8	82.7	81.4	-189.80		66.5	2,750.2	598.5	434.5	163.91	3.651	
9,800.0	6,876.2	9,770.8	6,876.2	85.4	84.2	-190.80		66.5	2,850.2	598.5	429.0	169.41	3.533	
9,900.0	6,875.5	9,870.8	6,875.5	88.2	86.9	-191.80		66.5	2,950.2	598.5	423.5	174.92	3.421	
10,000.0	6,874.8	9,970.8	6,874.8	90.9	89.7	-192.80		66.5	3,050.2	598.5	418.0	180.43	3.317	
10,100.0	6,874.1	10,070.8	6,874.1	93.7	92.5	-193.80		66.5	3,150.2	598.5	412.5	185.95	3.218	

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 Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)													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	
10,200.0	6,873.4	10,170.8	6,873.4	96.4	95.2	90.00	66.5	3,250.2	598.5	407.0	191.47	3.126		
10,300.0	6,872.7	10,270.8	6,872.7	99.2	98.0	90.00	66.5	3,350.2	598.5	401.5	197.00	3.038		
10,400.0	6,872.0	10,370.8	6,872.0	102.0	100.7	90.00	66.5	3,450.2	598.5	395.9	202.54	2.955		
10,500.0	6,871.3	10,470.8	6,871.3	104.7	103.5	90.00	66.5	3,550.2	598.5	390.4	208.08	2.876		
10,600.0	6,870.6	10,570.8	6,870.6	107.5	106.3	90.00	66.5	3,650.2	598.5	384.8	213.62	2.801		
10,700.0	6,869.9	10,670.8	6,869.9	110.3	109.1	90.00	66.5	3,750.2	598.5	379.3	219.17	2.731		
10,800.0	6,869.2	10,770.8	6,869.2	113.0	111.8	90.00	66.5	3,850.2	598.5	373.7	224.72	2.663		
10,900.0	6,868.5	10,870.8	6,868.5	115.8	114.6	90.00	66.5	3,950.2	598.5	368.2	230.27	2.599		
11,000.0	6,867.8	10,970.8	6,867.8	118.6	117.4	90.00	66.5	4,050.1	598.5	362.6	235.83	2.538		
11,100.0	6,867.1	11,070.8	6,867.1	121.4	120.2	90.00	66.5	4,150.1	598.5	357.1	241.39	2.479		
11,200.0	6,866.4	11,170.8	6,866.4	124.1	122.9	90.00	66.5	4,250.1	598.5	351.5	246.95	2.423		
11,300.0	6,865.7	11,270.8	6,865.7	126.9	125.7	90.00	66.5	4,350.1	598.5	345.9	252.52	2.370		
11,400.0	6,865.0	11,370.8	6,865.0	129.7	128.5	90.00	66.5	4,450.1	598.5	340.4	258.08	2.319		
11,500.0	6,864.3	11,470.8	6,864.3	132.5	131.3	90.00	66.5	4,550.1	598.5	334.8	263.65	2.270		
11,600.0	6,863.6	11,570.8	6,863.6	135.3	134.1	90.00	66.5	4,650.1	598.5	329.2	269.22	2.223		
11,700.0	6,862.9	11,670.8	6,862.9	138.1	136.9	90.00	66.5	4,750.1	598.5	323.7	274.80	2.178		
11,800.0	6,862.2	11,770.8	6,862.2	140.8	139.7	90.00	66.5	4,850.1	598.5	318.1	280.37	2.135		
11,900.0	6,861.5	11,870.8	6,861.5	143.6	142.4	90.00	66.5	4,950.1	598.5	312.5	285.95	2.093		
12,000.0	6,860.8	11,970.8	6,860.8	146.4	145.2	90.00	66.5	5,050.1	598.5	306.9	291.52	2.053		
12,100.0	6,860.1	12,070.8	6,860.1	149.2	148.0	90.00	66.5	5,150.1	598.5	301.4	297.10	2.014		
12,200.0	6,859.4	12,170.8	6,859.4	152.0	150.8	90.00	66.5	5,250.1	598.5	295.8	302.69	1.977		
12,300.0	6,858.7	12,270.8	6,858.7	154.8	153.6	90.00	66.5	5,350.1	598.5	290.2	308.27	1.941		
12,400.0	6,858.0	12,370.8	6,858.0	157.6	156.4	90.00	66.5	5,450.1	598.5	284.6	313.85	1.907		
12,500.0	6,857.3	12,470.8	6,857.3	160.4	159.2	90.00	66.5	5,550.1	598.5	279.0	319.44	1.873		
12,600.0	6,856.6	12,570.8	6,856.6	163.2	162.0	90.00	66.5	5,650.1	598.5	273.4	325.02	1.841		
12,700.0	6,855.9	12,670.8	6,855.9	165.9	164.8	90.00	66.5	5,750.1	598.5	267.8	330.61	1.810		
12,800.0	6,855.2	12,770.8	6,855.2	168.7	167.6	90.00	66.5	5,850.1	598.5	262.3	336.20	1.780		
12,900.0	6,854.5	12,870.8	6,854.5	171.5	170.4	90.00	66.5	5,950.1	598.5	256.7	341.79	1.751		
13,000.0	6,853.8	12,970.8	6,853.8	174.3	173.2	90.00	66.5	6,050.1	598.5	251.1	347.37	1.723		
13,100.0	6,853.1	13,070.8	6,853.1	177.1	175.9	90.00	66.5	6,150.1	598.5	245.5	352.97	1.696		
13,200.0	6,852.4	13,170.8	6,852.4	179.9	178.7	90.00	66.5	6,250.1	598.5	239.9	358.56	1.669		
13,300.0	6,851.7	13,270.8	6,851.7	182.7	181.5	90.00	66.5	6,350.1	598.5	234.3	364.15	1.643		
13,400.0	6,851.0	13,370.8	6,851.0	185.5	184.3	90.00	66.5	6,450.1	598.5	228.7	369.74	1.619		
13,500.0	6,850.3	13,470.8	6,850.3	188.3	187.1	90.00	66.5	6,550.1	598.5	223.1	375.34	1.594		
13,600.0	6,849.6	13,570.8	6,849.6	191.1	189.9	90.00	66.5	6,650.1	598.5	217.5	380.93	1.571		
13,700.0	6,848.9	13,670.8	6,848.9	193.9	192.7	90.00	66.5	6,750.1	598.5	211.9	386.53	1.548		
13,800.0	6,848.2	13,770.8	6,848.2	196.7	195.5	90.00	66.5	6,850.1	598.5	206.3	392.12	1.526		
13,900.0	6,847.5	13,870.8	6,847.5	199.5	198.3	90.00	66.5	6,950.1	598.5	200.7	397.72	1.505		
13,975.6	6,847.0	13,946.4	6,847.0	201.6	200.4	90.00	66.5	7,025.6	598.5	196.5	401.95	1.489 Level 3, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)													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)	Semi Major Axis (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	111.18		-58.3	150.4	161.3				
100.0	100.0	100.0	100.0	0.1	0.1	111.18		-58.3	150.4	161.3	161.1	0.22	717.782	
200.0	200.0	200.0	200.0	0.3	0.3	111.18		-58.3	150.4	161.3	160.7	0.67	239.261	
300.0	300.0	300.0	300.0	0.6	0.6	111.18		-58.3	150.4	161.3	160.2	1.12	143.556	
400.0	400.0	400.0	400.0	0.8	0.8	111.18		-58.3	150.4	161.3	159.8	1.57	102.540	
500.0	500.0	500.0	500.0	1.0	1.0	111.18		-58.3	150.4	161.3	159.3	2.02	79.754	
600.0	600.0	600.0	600.0	1.2	1.2	111.18		-58.3	150.4	161.3	158.9	2.47	65.253	
700.0	700.0	700.0	700.0	1.5	1.5	111.18		-58.3	150.4	161.3	158.4	2.92	55.214	
800.0	800.0	800.0	800.0	1.7	1.7	111.18		-58.3	150.4	161.3	158.0	3.37	47.852	
900.0	900.0	900.0	900.0	1.9	1.9	111.18		-58.3	150.4	161.3	157.5	3.82	42.222	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	111.18		-58.3	150.4	161.3	157.1	4.27	37.778 CC	
1,100.0	1,100.0	1,103.9	1,103.8	2.4	2.3	138.91		-59.1	148.8	161.4	156.7	4.70	34.319 ES	
1,200.0	1,199.8	1,207.3	1,207.1	2.6	2.6	141.66		-61.7	143.7	162.0	156.9	5.12	31.641	
1,300.0	1,299.5	1,310.0	1,309.4	2.8	2.8	146.12		-65.8	135.5	163.7	158.1	5.55	29.516	
1,400.0	1,398.7	1,411.5	1,410.1	3.1	3.0	152.04		-71.6	124.1	167.7	161.7	5.99	27.983	
1,500.0	1,497.5	1,511.5	1,508.8	3.3	3.3	159.02		-78.8	109.8	175.1	168.6	6.47	27.044	
1,600.0	1,596.2	1,610.1	1,605.5	3.6	3.6	166.38		-87.5	92.7	184.8	177.8	7.01	26.341	
1,700.0	1,694.8	1,707.3	1,700.2	3.9	3.9	173.79		-97.4	72.9	196.8	189.2	7.61	25.867	
1,800.0	1,793.5	1,802.9	1,792.5	4.2	4.4	-178.96		-108.7	50.6	211.9	203.6	8.26	25.662 SF	
1,900.0	1,892.2	1,897.5	1,883.2	4.6	4.8	-172.22		-120.7	26.8	230.2	221.3	8.95	25.738	
2,000.0	1,990.9	1,992.2	1,974.0	4.9	5.3	-166.47		-132.8	2.8	251.5	241.8	9.65	26.064	
2,100.0	2,089.6	2,086.8	2,064.7	5.2	5.8	-161.60		-144.9	-21.1	274.8	264.5	10.36	26.542	
2,200.0	2,188.2	2,181.4	2,155.5	5.6	6.3	-157.49		-157.0	-45.0	299.9	288.8	11.06	27.113	
2,300.0	2,286.9	2,276.1	2,246.2	5.9	6.8	-153.99		-169.0	-69.0	326.2	314.5	11.77	27.726	
2,400.0	2,385.6	2,370.7	2,337.0	6.3	7.3	-151.02		-181.1	-92.9	353.5	341.1	12.47	28.353	
2,500.0	2,484.3	2,465.3	2,427.8	6.6	7.9	-148.46		-193.2	-116.8	381.6	368.5	13.17	28.975	
2,600.0	2,582.9	2,560.0	2,518.5	7.0	8.4	-146.25		-205.3	-140.7	410.4	396.5	13.87	29.581	
2,700.0	2,681.6	2,654.6	2,609.3	7.4	9.0	-144.32		-217.4	-164.7	439.6	425.0	14.57	30.164	
2,800.0	2,780.3	2,749.2	2,700.0	7.7	9.5	-142.63		-229.4	-188.6	469.2	453.9	15.27	30.721	
2,900.0	2,879.0	2,843.9	2,790.8	8.1	10.1	-141.14		-241.5	-212.5	499.2	483.2	15.97	31.251	
3,000.0	2,977.6	2,938.5	2,881.5	8.4	10.6	-139.82		-253.6	-236.5	529.4	512.7	16.67	31.752	
3,100.0	3,076.3	3,033.1	2,972.3	8.8	11.2	-138.64		-265.7	-260.4	559.9	542.5	17.37	32.227	
3,200.0	3,175.0	3,127.8	3,063.1	9.2	11.7	-137.58		-277.8	-284.3	590.6	572.5	18.07	32.675	
3,300.0	3,273.7	3,222.4	3,153.8	9.5	12.3	-136.62		-289.9	-308.3	621.4	602.6	18.77	33.099	
3,400.0	3,372.3	3,317.1	3,244.6	9.9	12.8	-135.76		-301.9	-332.2	652.4	632.9	19.47	33.499	
3,500.0	3,471.0	3,411.7	3,335.3	10.3	13.4	-134.97		-314.0	-356.1	683.5	663.3	20.18	33.876	
3,600.0	3,569.7	3,506.3	3,426.1	10.6	14.0	-134.25		-326.1	-380.1	714.7	693.8	20.88	34.233	
3,700.0	3,668.4	3,601.0	3,516.8	11.0	14.5	-133.59		-338.2	-404.0	746.0	724.4	21.58	34.571	
3,800.0	3,767.0	3,695.6	3,607.6	11.4	15.1	-132.98		-350.3	-427.9	777.4	755.1	22.28	34.891	
3,900.0	3,865.7	3,790.2	3,698.4	11.7	15.7	-132.42		-362.3	-451.9	808.8	785.8	22.98	35.193	
4,000.0	3,964.4	3,884.9	3,789.1	12.1	16.2	-131.90		-374.4	-475.8	840.3	816.7	23.68	35.480	
4,100.0	4,063.1	3,979.5	3,879.9	12.5	16.8	-131.42		-386.5	-499.7	871.9	847.5	24.39	35.752	
4,200.0	4,161.7	4,074.1	3,970.6	12.9	17.4	-130.97		-398.6	-523.7	903.6	878.5	25.09	36.011	
4,300.0	4,260.4	4,168.8	4,061.4	13.2	17.9	-130.55		-410.7	-547.6	935.2	909.4	25.79	36.257	
4,400.0	4,359.1	4,263.4	4,152.2	13.6	18.5	-130.16		-422.8	-571.5	967.0	940.5	26.50	36.491	
4,500.0	4,457.8	4,358.0	4,242.9	14.0	19.1	-129.80		-434.8	-595.5	998.7	971.5	27.20	36.714	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-312 - Wellbore #1 - Plan #1 (3-05-14)													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)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-29.1	0.0	29.1	28.9	0.22	129.668		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-29.1	0.0	29.1	28.5	0.67	43.223		
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-29.1	0.0	29.1	28.0	1.12	25.934		
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-29.1	0.0	29.1	27.6	1.57	18.524 CC, ES		
500.0	500.0	499.2	499.2	1.0	1.0	-177.88	-30.4	-1.1	30.5	28.5	2.00	15.240		
600.0	600.0	598.2	598.0	1.2	1.2	-172.55	-34.3	-4.5	34.7	32.2	2.42	14.320 SF		
700.0	700.0	696.6	696.1	1.5	1.4	-166.13	-40.7	-10.1	42.1	39.3	2.86	14.759		
800.0	800.0	794.4	793.2	1.7	1.7	-160.30	-49.6	-17.8	53.1	49.8	3.30	16.114		
900.0	900.0	891.3	888.9	1.9	2.0	-155.66	-60.9	-27.5	67.7	64.0	3.75	18.058		
1,000.0	1,000.0	987.1	983.0	2.1	2.3	-152.17	-74.4	-39.3	85.9	81.6	4.22	20.358		
1,100.0	1,100.0	1,081.3	1,074.9	2.4	2.7	-123.17	-90.0	-52.9	108.3	103.6	4.68	23.118		
1,200.0	1,199.8	1,173.6	1,164.3	2.6	3.1	-122.51	-107.6	-68.1	135.7	130.6	5.16	26.326		
1,300.0	1,299.5	1,263.6	1,250.6	2.8	3.6	-122.64	-126.7	-84.7	168.0	162.3	5.64	29.804		
1,400.0	1,398.7	1,352.3	1,334.9	3.1	4.1	-123.12	-147.5	-102.8	204.8	198.6	6.13	33.389		
1,500.0	1,497.5	1,444.1	1,421.9	3.3	4.7	-124.13	-169.7	-122.0	244.2	237.5	6.65	36.730		
1,600.0	1,596.2	1,535.7	1,508.6	3.6	5.3	-125.34	-191.7	-141.1	284.0	276.9	7.19	39.491		
1,700.0	1,694.8	1,627.2	1,595.4	3.9	5.8	-126.26	-213.8	-160.3	324.0	316.3	7.75	41.798		
1,800.0	1,793.5	1,718.8	1,682.2	4.2	6.4	-126.97	-235.9	-179.4	364.1	355.7	8.33	43.726		
1,900.0	1,892.2	1,810.3	1,768.9	4.6	7.0	-127.54	-258.0	-198.6	404.1	395.2	8.91	45.354		
2,000.0	1,990.9	1,901.9	1,855.7	4.9	7.6	-128.01	-280.0	-217.7	444.2	434.7	9.50	46.742		
2,100.0	2,089.6	1,993.4	1,942.5	5.2	8.2	-128.40	-302.1	-236.9	484.4	474.3	10.11	47.932		
2,200.0	2,188.2	2,085.0	2,029.2	5.6	8.8	-128.73	-324.2	-256.0	524.5	513.8	10.71	48.964		
2,300.0	2,286.9	2,176.5	2,116.0	5.9	9.4	-129.02	-346.2	-275.2	564.6	553.3	11.32	49.864		
2,400.0	2,385.6	2,268.1	2,202.7	6.3	10.0	-129.27	-368.3	-294.4	604.8	592.9	11.94	50.655		
2,500.0	2,484.3	2,359.6	2,289.5	6.6	10.6	-129.48	-390.4	-313.5	645.0	632.4	12.56	51.355		
2,600.0	2,582.9	2,451.2	2,376.3	7.0	11.2	-129.67	-412.5	-332.7	685.1	672.0	13.18	51.978		
2,700.0	2,681.6	2,542.7	2,463.0	7.4	11.8	-129.84	-434.5	-351.8	725.3	711.5	13.81	52.535		
2,800.0	2,780.3	2,634.3	2,549.8	7.7	12.4	-129.99	-456.6	-371.0	765.5	751.1	14.43	53.035		
2,900.0	2,879.0	2,725.8	2,636.6	8.1	13.0	-130.13	-478.7	-390.1	805.7	790.6	15.06	53.487		
3,000.0	2,977.6	2,817.4	2,723.3	8.4	13.6	-130.25	-500.7	-409.3	845.9	830.2	15.69	53.896		
3,100.0	3,076.3	2,908.9	2,810.1	8.8	14.2	-130.37	-522.8	-428.5	886.1	869.8	16.33	54.269		
3,200.0	3,175.0	3,000.5	2,896.8	9.2	14.8	-130.47	-544.9	-447.6	926.3	909.3	16.96	54.610		
3,300.0	3,273.7	3,092.1	2,983.6	9.5	15.4	-130.56	-567.0	-466.8	966.5	948.9	17.60	54.922		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-402 - Wellbore #1 - Plan #1 (3-05-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-180.00	-58.3	0.0	58.3				
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-180.00	-58.3	0.0	58.3	58.1	0.22	259.354	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-180.00	-58.3	0.0	58.3	57.6	0.67	86.451 CC, ES	
300.0	300.0	298.4	298.4	0.6	0.5	-179.01	-179.01	-59.6	-1.0	59.7	58.6	1.10	54.146	
400.0	400.0	396.5	396.4	0.8	0.7	-176.30	-176.30	-63.6	-4.1	63.9	62.3	1.54	41.600	
500.0	500.0	494.2	493.7	1.0	1.0	-172.53	-172.53	-70.3	-9.2	71.1	69.2	1.98	35.883	
600.0	600.0	591.2	590.0	1.2	1.3	-168.42	-168.42	-79.4	-16.3	81.7	79.3	2.44	33.528	
700.0	700.0	687.3	685.0	1.5	1.6	-164.51	-164.51	-91.1	-25.2	95.7	92.8	2.90	33.018 SF	
800.0	800.0	782.3	778.3	1.7	1.9	-161.09	-161.09	-105.0	-36.0	113.1	109.7	3.37	33.587	
900.0	900.0	876.1	869.8	1.9	2.4	-158.21	-158.21	-121.2	-48.4	134.0	130.1	3.85	34.800	
1,000.0	1,000.0	968.3	959.2	2.1	2.8	-155.86	-155.86	-139.4	-62.5	158.2	153.8	4.35	36.394	
1,100.0	1,100.0	1,058.8	1,046.0	2.4	3.3	-127.10	-127.10	-159.5	-78.0	186.6	181.8	4.82	38.701	
1,200.0	1,199.8	1,146.9	1,129.7	2.6	3.8	-126.02	-126.02	-181.2	-94.6	220.0	214.7	5.30	41.493	
1,300.0	1,299.5	1,234.5	1,212.2	2.8	4.4	-125.50	-125.50	-204.6	-112.7	258.0	252.2	5.79	44.583	
1,400.0	1,398.7	1,325.9	1,298.0	3.1	5.0	-125.46	-125.46	-229.5	-131.9	298.5	292.2	6.29	47.444	
1,500.0	1,497.5	1,416.3	1,382.9	3.3	5.7	-125.97	-125.97	-254.2	-150.9	340.9	334.0	6.81	50.061	
1,600.0	1,596.2	1,506.5	1,467.6	3.6	6.3	-126.85	-126.85	-278.9	-169.9	383.7	376.3	7.36	52.130	
1,700.0	1,694.8	1,596.8	1,552.3	3.9	6.9	-127.57	-127.57	-303.5	-188.8	426.6	418.7	7.93	53.812	
1,800.0	1,793.5	1,687.0	1,637.0	4.2	7.5	-128.15	-128.15	-328.1	-207.8	469.5	461.0	8.51	55.196	
1,900.0	1,892.2	1,777.2	1,721.7	4.6	8.2	-128.63	-128.63	-352.7	-226.8	512.5	503.4	9.10	56.349	
2,000.0	1,990.9	1,867.4	1,806.3	4.9	8.8	-129.04	-129.04	-377.4	-245.7	555.5	545.8	9.69	57.321	
2,100.0	2,089.6	1,957.6	1,891.0	5.2	9.4	-129.39	-129.39	-402.0	-264.7	598.5	588.2	10.29	58.146	
2,200.0	2,188.2	2,047.8	1,975.7	5.6	10.1	-129.69	-129.69	-426.6	-283.7	641.6	630.7	10.90	58.854	
2,300.0	2,286.9	2,138.1	2,060.4	5.9	10.7	-129.96	-129.96	-451.3	-302.7	684.6	673.1	11.51	59.466	
2,400.0	2,385.6	2,228.3	2,145.1	6.3	11.3	-130.19	-130.19	-475.9	-321.6	727.7	715.5	12.13	59.999	
2,500.0	2,484.3	2,318.5	2,229.8	6.6	12.0	-130.40	-130.40	-500.5	-340.6	770.7	758.0	12.75	60.466	
2,600.0	2,582.9	2,408.7	2,314.5	7.0	12.6	-130.59	-130.59	-525.2	-359.6	813.8	800.5	13.37	60.879	
2,700.0	2,681.6	2,498.9	2,399.2	7.4	13.3	-130.75	-130.75	-549.8	-378.5	856.9	842.9	13.99	61.245	
2,800.0	2,780.3	2,589.1	2,483.9	7.7	13.9	-130.90	-130.90	-574.4	-397.5	900.0	885.4	14.62	61.572	
2,900.0	2,879.0	2,679.4	2,568.6	8.1	14.5	-131.04	-131.04	-599.1	-416.5	943.1	927.8	15.24	61.864	
3,000.0	2,977.6	2,769.6	2,653.3	8.4	15.2	-131.17	-131.17	-623.7	-435.4	986.2	970.3	15.87	62.128	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4641.0ft (RKB - 15')

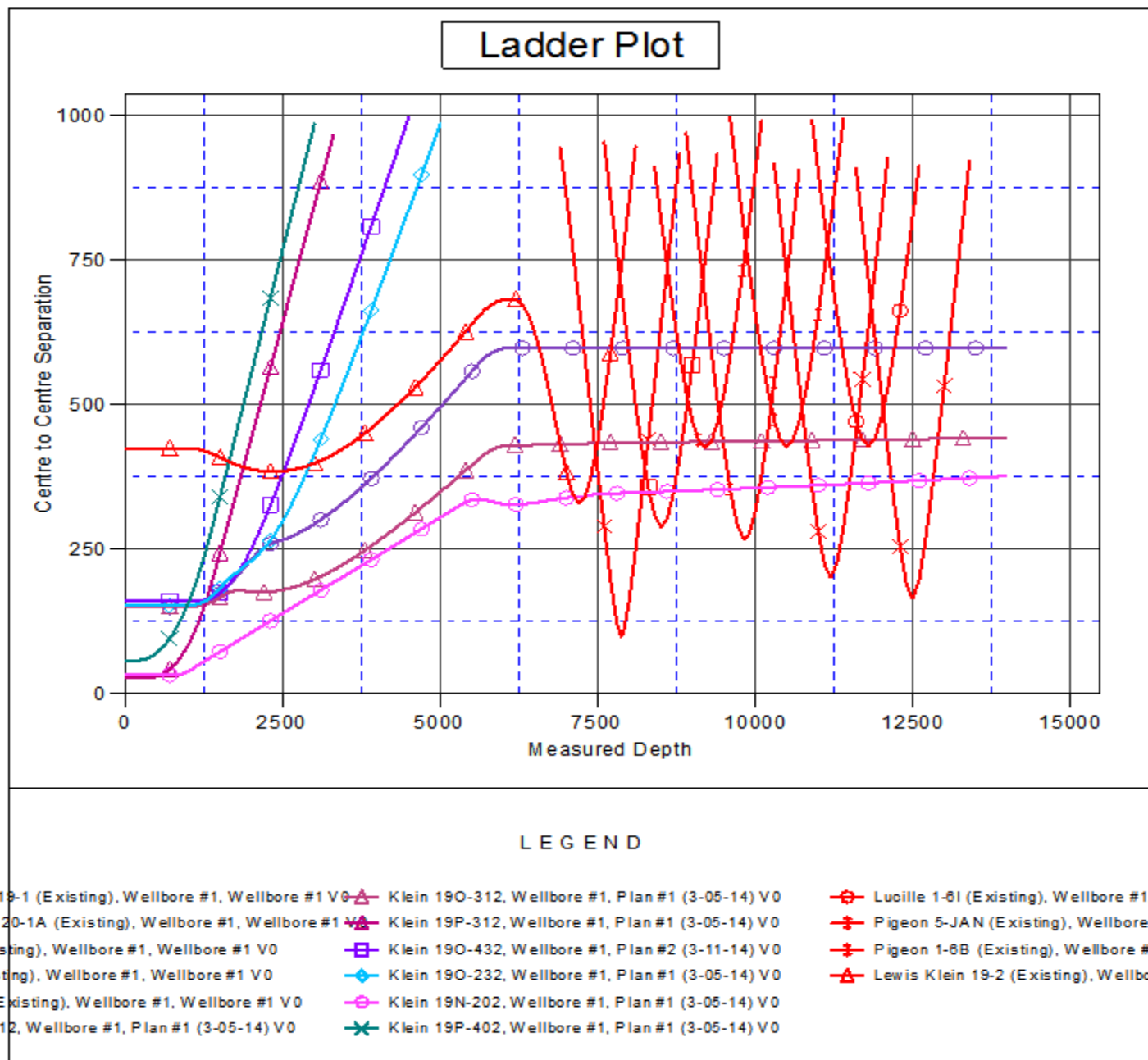
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Klein 19N-432

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 15')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (3-05-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4641.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Klein 19N-432

Coordinate System is US State Plane 1983, Colorado Northern Zone

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