

PETROLEUM DEVELOPMENT CORP Weld County CO

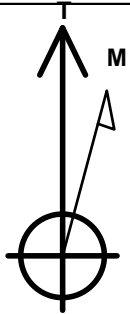
Well Name: **Klein 190-312**

Surface Location: Klein 190-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	1384543.59	3253257.75	40.385410	-104.590850	
RKB -15' WELL @ 4641.0ft (RKB -15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2358'FNL & 2101'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 2215'FNL & 500'FEL, Sec.20	6741.0	201.6	6880.9	Point



Azimuths to True North
Magnetic North: 8.40°

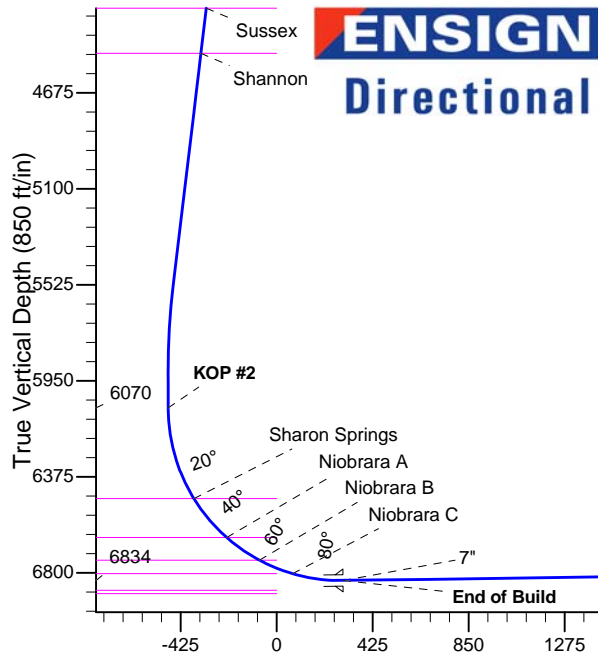
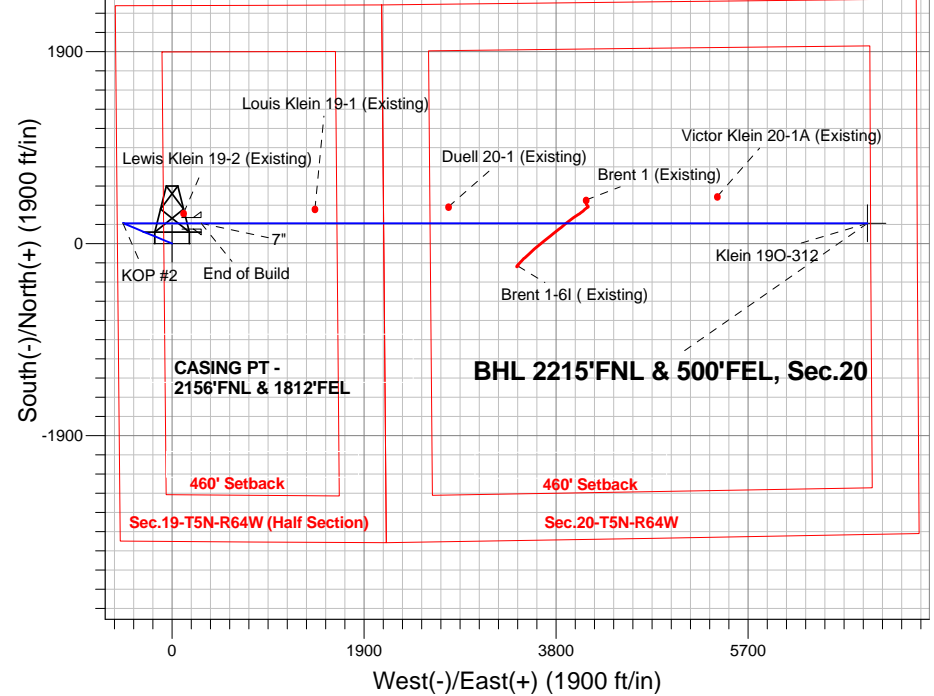
Magnetic Field
Strength: 52855.1nT
Dip Angle: 66.97°
Date: 3/11/2014
Model: IGRF2010

Klein 190-HZ Pad Sec.19-T5N-R64W
Klein 190-312
Plan #1 (3-05-14)
16:13, March 13 2014

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6070.3	6103.5	KOP #2
6834.2	7314.3	End of Build

SHL 2358'FNL & 2101'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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	1872.2	7.44	292.53	1871.1	9.2	-22.3	2.00	292.53	-22.0	
4	5561.0	7.44	292.53	5528.9	192.4	-463.7	0.00	0.00	-457.9	
5	5933.2	0.00	0.00	5900.0	201.6	-486.0	2.00	180.00	-479.9	
6	6103.5	0.00	0.00	6070.3	201.6	-486.0	0.00	0.00	-479.9	
7	7314.3	90.81	90.00	6834.2	201.6	288.7	7.50	90.00	294.5	
8	13907.1	90.81	90.00	6741.0	201.6	6880.9	0.00	0.00	6883.8	BHL 2215'FNL & 500'FEL, Sec.20

BHL 2215'FNL & 500'FEL, Sec.20

Vertical Section at 88.32° (850 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19O-312

Wellbore #1

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

Standard Planning Report

13 March, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Klein 190-312
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-312	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 190-HZ Pad Sec.19-T5N-R64W		
Site Position:		Northing:	1,384,542.09 ft
From:	Lat/Long	Easting:	3,253,110.11 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.385410
		Longitude:	-104.591380
		Grid Convergence:	0.59 °

Well	Klein 190-312		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	147.6 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/11/2014	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	88.32

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,872.2	7.44	292.53	1,871.1	9.2	-22.3	2.00	2.00	0.00	292.53	
5,561.0	7.44	292.53	5,528.9	192.4	-463.7	0.00	0.00	0.00	0.00	
5,933.2	0.00	0.00	5,900.0	201.6	-486.0	2.00	-2.00	0.00	180.00	
6,103.5	0.00	0.00	6,070.3	201.6	-486.0	0.00	0.00	0.00	0.00	
7,314.3	90.81	90.00	6,834.2	201.6	288.7	7.50	7.50	0.00	90.00	
13,907.1	90.81	90.00	6,741.0	201.6	6,880.9	0.00	0.00	0.00	0.00	BHL 2215'FNL & 5C

Database:	landmark	Local Co-ordinate Reference:	Well Klein 190-312
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-312	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 2358'FNL & 2101'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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,600.0	2.00	292.53	1,600.0	0.7	-1.6	-1.6	2.00	2.00	0.00
1,700.0	4.00	292.53	1,699.8	2.7	-6.4	-6.4	2.00	2.00	0.00
1,800.0	6.00	292.53	1,799.5	6.0	-14.5	-14.3	2.00	2.00	0.00
1,872.2	7.44	292.53	1,871.1	9.2	-22.3	-22.0	2.00	2.00	0.00
1,900.0	7.44	292.53	1,898.7	10.6	-25.6	-25.3	0.00	0.00	0.00
2,000.0	7.44	292.53	1,997.9	15.6	-37.6	-37.1	0.00	0.00	0.00
2,100.0	7.44	292.53	2,097.0	20.6	-49.6	-48.9	0.00	0.00	0.00
2,200.0	7.44	292.53	2,196.2	25.5	-61.5	-60.8	0.00	0.00	0.00
2,300.0	7.44	292.53	2,295.3	30.5	-73.5	-72.6	0.00	0.00	0.00
2,400.0	7.44	292.53	2,394.5	35.4	-85.5	-84.4	0.00	0.00	0.00
2,500.0	7.44	292.53	2,493.7	40.4	-97.4	-96.2	0.00	0.00	0.00
2,600.0	7.44	292.53	2,592.8	45.4	-109.4	-108.0	0.00	0.00	0.00
2,700.0	7.44	292.53	2,692.0	50.3	-121.4	-119.8	0.00	0.00	0.00
2,800.0	7.44	292.53	2,791.1	55.3	-133.3	-131.6	0.00	0.00	0.00
2,900.0	7.44	292.53	2,890.3	60.3	-145.3	-143.5	0.00	0.00	0.00
3,000.0	7.44	292.53	2,989.5	65.2	-157.3	-155.3	0.00	0.00	0.00
3,100.0	7.44	292.53	3,088.6	70.2	-169.2	-167.1	0.00	0.00	0.00
3,200.0	7.44	292.53	3,187.8	75.2	-181.2	-178.9	0.00	0.00	0.00
3,300.0	7.44	292.53	3,286.9	80.1	-193.2	-190.7	0.00	0.00	0.00
3,400.0	7.44	292.53	3,386.1	85.1	-205.1	-202.5	0.00	0.00	0.00
3,500.0	7.44	292.53	3,485.2	90.0	-217.1	-214.4	0.00	0.00	0.00
3,565.3	7.44	292.53	3,550.0	93.3	-224.9	-222.1	0.00	0.00	0.00
Parkman									
3,600.0	7.44	292.53	3,584.4	95.0	-229.0	-226.2	0.00	0.00	0.00
3,700.0	7.44	292.53	3,683.6	100.0	-241.0	-238.0	0.00	0.00	0.00
3,800.0	7.44	292.53	3,782.7	104.9	-253.0	-249.8	0.00	0.00	0.00
3,900.0	7.44	292.53	3,881.9	109.9	-264.9	-261.6	0.00	0.00	0.00
4,000.0	7.44	292.53	3,981.0	114.9	-276.9	-273.4	0.00	0.00	0.00
4,100.0	7.44	292.53	4,080.2	119.8	-288.9	-285.2	0.00	0.00	0.00
4,200.0	7.44	292.53	4,179.3	124.8	-300.8	-297.1	0.00	0.00	0.00
4,300.0	7.44	292.53	4,278.5	129.8	-312.8	-308.9	0.00	0.00	0.00
4,321.7	7.44	292.53	4,300.0	130.8	-315.4	-311.4	0.00	0.00	0.00
Sussex									
4,400.0	7.44	292.53	4,377.7	134.7	-324.8	-320.7	0.00	0.00	0.00

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB -15')
Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-312	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	7.44	292.53	4,476.8	139.7	-336.7	-332.5	0.00	0.00	0.00
4,523.4	7.44	292.53	4,500.0	140.8	-339.5	-335.3	0.00	0.00	0.00
Shannon									
4,600.0	7.44	292.53	4,576.0	144.6	-348.7	-344.3	0.00	0.00	0.00
4,700.0	7.44	292.53	4,675.1	149.6	-360.7	-356.1	0.00	0.00	0.00
4,800.0	7.44	292.53	4,774.3	154.6	-372.6	-368.0	0.00	0.00	0.00
4,900.0	7.44	292.53	4,873.4	159.5	-384.6	-379.8	0.00	0.00	0.00
5,000.0	7.44	292.53	4,972.6	164.5	-396.6	-391.6	0.00	0.00	0.00
5,100.0	7.44	292.53	5,071.8	169.5	-408.5	-403.4	0.00	0.00	0.00
5,200.0	7.44	292.53	5,170.9	174.4	-420.5	-415.2	0.00	0.00	0.00
5,300.0	7.44	292.53	5,270.1	179.4	-432.5	-427.0	0.00	0.00	0.00
5,400.0	7.44	292.53	5,369.2	184.4	-444.4	-438.8	0.00	0.00	0.00
5,500.0	7.44	292.53	5,468.4	189.3	-456.4	-450.7	0.00	0.00	0.00
5,561.0	7.44	292.53	5,528.9	192.4	-463.7	-457.9	0.00	0.00	0.00
5,600.0	6.66	292.53	5,567.6	194.2	-468.1	-462.2	2.00	-2.00	0.00
5,700.0	4.66	292.53	5,667.1	198.0	-477.2	-471.2	2.00	-2.00	0.00
5,800.0	2.66	292.53	5,766.9	200.4	-483.1	-477.1	2.00	-2.00	0.00
5,900.0	0.66	292.53	5,866.8	201.5	-485.8	-479.7	2.00	-2.00	0.00
5,933.2	0.00	0.00	5,900.0	201.6	-486.0	-479.9	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,966.8	201.6	-486.0	-479.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,066.8	201.6	-486.0	-479.9	0.00	0.00	0.00
6,103.5	0.00	0.00	6,070.3	201.6	-486.0	-479.9	0.00	0.00	0.00
KOP #2									
6,200.0	7.24	90.00	6,166.6	201.6	-479.9	-473.8	7.50	7.50	0.00
6,300.0	14.74	90.00	6,264.7	201.6	-460.9	-454.8	7.50	7.50	0.00
6,400.0	22.24	90.00	6,359.4	201.6	-429.2	-423.1	7.50	7.50	0.00
6,500.0	29.74	90.00	6,449.3	201.6	-385.4	-379.3	7.50	7.50	0.00
6,525.3	31.63	90.00	6,471.0	201.6	-372.5	-366.4	7.50	7.50	0.00
Sharon Springs									
6,600.0	37.24	90.00	6,532.6	201.6	-330.3	-324.2	7.50	7.50	0.00
6,700.0	44.74	90.00	6,608.0	201.6	-264.7	-258.7	7.50	7.50	0.00
6,752.5	48.67	90.00	6,644.0	201.6	-226.6	-220.5	7.50	7.50	0.00
Niobrara A									
6,800.0	52.24	90.00	6,674.3	201.6	-189.9	-183.9	7.50	7.50	0.00
6,900.0	59.74	90.00	6,730.2	201.6	-107.1	-101.1	7.50	7.50	0.00
6,928.4	61.86	90.00	6,744.0	201.6	-82.3	-76.4	7.50	7.50	0.00
Niobrara B									
7,000.0	67.24	90.00	6,774.8	201.6	-17.6	-11.7	7.50	7.50	0.00
7,087.7	73.82	90.00	6,804.0	201.6	65.0	70.9	7.50	7.50	0.00
Niobrara C									
7,100.0	74.74	90.00	6,807.3	201.6	76.8	82.7	7.50	7.50	0.00
7,200.0	82.24	90.00	6,827.3	201.6	174.8	180.6	7.50	7.50	0.00
7,300.0	89.74	90.00	6,834.3	201.6	274.4	280.2	7.50	7.50	0.00
7,314.3	90.81	90.00	6,834.2	201.6	288.7	294.5	7.50	7.50	0.00
End of Build - 7"									
7,400.0	90.81	90.00	6,833.0	201.6	374.4	380.2	0.00	0.00	0.00
7,500.0	90.81	90.00	6,831.6	201.6	474.4	480.1	0.00	0.00	0.00
7,600.0	90.81	90.00	6,830.2	201.6	574.4	580.1	0.00	0.00	0.00
7,700.0	90.81	90.00	6,828.7	201.6	674.4	680.0	0.00	0.00	0.00
7,800.0	90.81	90.00	6,827.3	201.6	774.4	780.0	0.00	0.00	0.00
7,900.0	90.81	90.00	6,825.9	201.6	874.4	879.9	0.00	0.00	0.00
8,000.0	90.81	90.00	6,824.5	201.6	974.4	979.9	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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)
8,100.0	90.81	90.00	6,823.1	201.6	1,074.4	1,079.8	0.00	0.00	0.00
8,200.0	90.81	90.00	6,821.7	201.6	1,174.3	1,179.7	0.00	0.00	0.00
8,300.0	90.81	90.00	6,820.3	201.6	1,274.3	1,279.7	0.00	0.00	0.00
8,400.0	90.81	90.00	6,818.9	201.6	1,374.3	1,379.6	0.00	0.00	0.00
8,500.0	90.81	90.00	6,817.4	201.6	1,474.3	1,479.6	0.00	0.00	0.00
8,600.0	90.81	90.00	6,816.0	201.6	1,574.3	1,579.5	0.00	0.00	0.00
8,700.0	90.81	90.00	6,814.6	201.6	1,674.3	1,679.5	0.00	0.00	0.00
8,800.0	90.81	90.00	6,813.2	201.6	1,774.3	1,779.4	0.00	0.00	0.00
8,900.0	90.81	90.00	6,811.8	201.6	1,874.3	1,879.4	0.00	0.00	0.00
9,000.0	90.81	90.00	6,810.4	201.6	1,974.3	1,979.3	0.00	0.00	0.00
9,100.0	90.81	90.00	6,809.0	201.6	2,074.3	2,079.3	0.00	0.00	0.00
9,200.0	90.81	90.00	6,807.5	201.6	2,174.2	2,179.2	0.00	0.00	0.00
9,300.0	90.81	90.00	6,806.1	201.6	2,274.2	2,279.2	0.00	0.00	0.00
9,400.0	90.81	90.00	6,804.7	201.6	2,374.2	2,379.1	0.00	0.00	0.00
9,500.0	90.81	90.00	6,803.3	201.6	2,474.2	2,479.1	0.00	0.00	0.00
9,600.0	90.81	90.00	6,801.9	201.6	2,574.2	2,579.0	0.00	0.00	0.00
9,700.0	90.81	90.00	6,800.5	201.6	2,674.2	2,679.0	0.00	0.00	0.00
9,800.0	90.81	90.00	6,799.1	201.6	2,774.2	2,778.9	0.00	0.00	0.00
9,900.0	90.81	90.00	6,797.6	201.6	2,874.2	2,878.8	0.00	0.00	0.00
10,000.0	90.81	90.00	6,796.2	201.6	2,974.2	2,978.8	0.00	0.00	0.00
10,100.0	90.81	90.00	6,794.8	201.6	3,074.2	3,078.7	0.00	0.00	0.00
10,200.0	90.81	90.00	6,793.4	201.6	3,174.1	3,178.7	0.00	0.00	0.00
10,300.0	90.81	90.00	6,792.0	201.6	3,274.1	3,278.6	0.00	0.00	0.00
10,400.0	90.81	90.00	6,790.6	201.6	3,374.1	3,378.6	0.00	0.00	0.00
10,500.0	90.81	90.00	6,789.2	201.6	3,474.1	3,478.5	0.00	0.00	0.00
10,600.0	90.81	90.00	6,787.8	201.6	3,574.1	3,578.5	0.00	0.00	0.00
10,700.0	90.81	90.00	6,786.3	201.6	3,674.1	3,678.4	0.00	0.00	0.00
10,800.0	90.81	90.00	6,784.9	201.6	3,774.1	3,778.4	0.00	0.00	0.00
10,900.0	90.81	90.00	6,783.5	201.6	3,874.1	3,878.3	0.00	0.00	0.00
11,000.0	90.81	90.00	6,782.1	201.6	3,974.1	3,978.3	0.00	0.00	0.00
11,100.0	90.81	90.00	6,780.7	201.6	4,074.1	4,078.2	0.00	0.00	0.00
11,200.0	90.81	90.00	6,779.3	201.6	4,174.0	4,178.2	0.00	0.00	0.00
11,300.0	90.81	90.00	6,777.9	201.6	4,274.0	4,278.1	0.00	0.00	0.00
11,400.0	90.81	90.00	6,776.4	201.6	4,374.0	4,378.1	0.00	0.00	0.00
11,500.0	90.81	90.00	6,775.0	201.6	4,474.0	4,478.0	0.00	0.00	0.00
11,600.0	90.81	90.00	6,773.6	201.6	4,574.0	4,577.9	0.00	0.00	0.00
11,700.0	90.81	90.00	6,772.2	201.6	4,674.0	4,677.9	0.00	0.00	0.00
11,800.0	90.81	90.00	6,770.8	201.6	4,774.0	4,777.8	0.00	0.00	0.00
11,900.0	90.81	90.00	6,769.4	201.6	4,874.0	4,877.8	0.00	0.00	0.00
12,000.0	90.81	90.00	6,768.0	201.6	4,974.0	4,977.7	0.00	0.00	0.00
12,100.0	90.81	90.00	6,766.5	201.6	5,074.0	5,077.7	0.00	0.00	0.00
12,200.0	90.81	90.00	6,765.1	201.6	5,173.9	5,177.6	0.00	0.00	0.00
12,300.0	90.81	90.00	6,763.7	201.6	5,273.9	5,277.6	0.00	0.00	0.00
12,400.0	90.81	90.00	6,762.3	201.6	5,373.9	5,377.5	0.00	0.00	0.00
12,500.0	90.81	90.00	6,760.9	201.6	5,473.9	5,477.5	0.00	0.00	0.00
12,600.0	90.81	90.00	6,759.5	201.6	5,573.9	5,577.4	0.00	0.00	0.00
12,700.0	90.81	90.00	6,758.1	201.6	5,673.9	5,677.4	0.00	0.00	0.00
12,800.0	90.81	90.00	6,756.7	201.6	5,773.9	5,777.3	0.00	0.00	0.00
12,900.0	90.81	90.00	6,755.2	201.6	5,873.9	5,877.3	0.00	0.00	0.00
13,000.0	90.81	90.00	6,753.8	201.6	5,973.9	5,977.2	0.00	0.00	0.00
13,100.0	90.81	90.00	6,752.4	201.6	6,073.9	6,077.2	0.00	0.00	0.00
13,200.0	90.81	90.00	6,751.0	201.6	6,173.8	6,177.1	0.00	0.00	0.00
13,300.0	90.81	90.00	6,749.6	201.6	6,273.8	6,277.0	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Klein 190-312
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-312	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)
13,400.0	90.81	90.00	6,748.2	201.6	6,373.8	6,377.0	0.00	0.00	0.00
13,500.0	90.81	90.00	6,746.8	201.6	6,473.8	6,476.9	0.00	0.00	0.00
13,600.0	90.81	90.00	6,745.3	201.6	6,573.8	6,576.9	0.00	0.00	0.00
13,700.0	90.81	90.00	6,743.9	201.6	6,673.8	6,676.8	0.00	0.00	0.00
13,800.0	90.81	90.00	6,742.5	201.6	6,773.8	6,776.8	0.00	0.00	0.00
13,900.0	90.81	90.00	6,741.1	201.6	6,873.8	6,876.7	0.00	0.00	0.00
13,907.1	90.81	90.00	6,741.0	201.6	6,880.9	6,883.8	0.00	0.00	0.00

BHL 2215'FNL & 500'FEL, Sec.20

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,314.3	6,834.2	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,565.3	3,550.0	Parkman		0.00	
4,321.7	4,300.0	Sussex		0.00	
4,523.4	4,500.0	Shannon		0.00	
6,525.3	6,471.0	Sharon Springs		0.00	
6,752.5	6,644.0	Niobrara A		0.00	
6,928.4	6,744.0	Niobrara B		0.00	
7,087.7	6,804.0	Niobrara C		0.00	
	6,878.0	Ft Hays		0.00	
	6,892.0	Codell		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP #1
6,103.5	6,070.3	201.6	-486.0	KOP #2
7,314.3	6,834.2	201.6	288.7	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19O-312

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 190-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB -15')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 190-312	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	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	3/13/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,907.1	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	11,123.8	6,762.3	228.6	-29.5	0.886	Level 1, CC, ES, SF
Brent 1-6I (Existing) - Wellbore #1 - Wellbore #1	10,447.0	6,907.4	426.7	149.4	1.539	CC, ES, SF
Duell 20-1 (Existing) - Wellbore #1 - Wellbore #1	9,761.4	6,779.6	162.9	-57.8	0.738	Level 1, CC, ES, SF
Lewis Klein 19-2 (Existing) - Wellbore #1 - Wellbore #1	7,138.5	6,800.5	100.8	-54.9	0.647	Level 1, CC, ES, SF
Louis Klein 19-1 (Existing) - Wellbore #1 - Wellbore #1	8,438.1	6,800.3	140.9	-44.4	0.760	Level 1, CC, ES, SF
Victor Klein 20-1A (Existing) - Wellbore #1 - Wellbore #1	12,422.1	6,740.0	265.3	-28.5	0.903	Level 1, CC, ES, SF
Klein 190-HZ Pad Sec.19-T5N-R64W						
Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)	800.0	800.0	147.6	144.3	43.793	CC, ES
Klein 19N-202 - Wellbore #1 - Plan #1 (3-05-14)	13,907.1	13,927.0	762.7	362.3	1.905	SF
Klein 19N-432 - Wellbore #1 - Plan #1 (3-05-14)	1,000.0	1,000.0	151.2	147.0	35.416	CC
Klein 19N-432 - Wellbore #1 - Plan #1 (3-05-14)	13,907.1	13,975.6	443.5	52.9	1.135	Level 2, ES, SF
Klein 19O-232 - Wellbore #1 - Plan #1 (3-05-14)	1,500.0	1,500.0	62.0	55.5	9.511	CC, ES
Klein 19O-232 - Wellbore #1 - Plan #1 (3-05-14)	13,907.1	14,288.1	697.1	289.4	1.710	SF
Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)	1,500.0	1,500.0	29.3	22.8	4.492	CC
Klein 19O-412 - Wellbore #1 - Plan #1 (3-05-14)	13,907.1	13,949.3	198.5	-146.2	0.576	Level 1, ES, SF
Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)	1,000.0	1,000.0	91.1	86.8	21.337	CC, ES
Klein 19O-432 - Wellbore #1 - Plan #2 (3-11-14)	13,907.1	14,691.2	854.6	442.2	2.072	SF
Klein 19P-312 - Wellbore #1 - Plan #1 (3-05-14)	400.0	400.0	160.1	158.5	101.764	CC, ES
Klein 19P-312 - Wellbore #1 - Plan #1 (3-05-14)	1,500.0	1,412.9	344.7	337.0	44.642	SF
Klein 19P-402 - Wellbore #1 - Plan #1 (3-05-14)	200.0	200.0	173.5	172.8	257.278	CC, ES
Klein 19P-402 - Wellbore #1 - Plan #1 (3-05-14)	1,500.0	1,385.1	429.2	420.6	49.842	SF

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
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Separation (ft)	Factor
10,200.0	6,793.4	6,775.4	6,775.4	97.2	135.5	-93.27	430.2	4,097.9	951.6	719.3	232.31	4.096
10,300.0	6,792.0	6,774.0	6,774.0	100.0	135.5	-92.92	430.2	4,097.9	854.9	619.7	235.13	3.636
10,400.0	6,790.6	6,772.6	6,772.6	102.8	135.5	-92.56	430.2	4,097.9	759.0	521.1	237.93	3.190
10,500.0	6,789.2	6,771.2	6,771.2	105.5	135.4	-92.21	430.2	4,097.9	664.3	423.6	240.74	2.760
10,600.0	6,787.8	6,769.8	6,769.8	108.3	135.4	-91.85	430.2	4,097.9	571.5	328.0	243.54	2.347
10,700.0	6,786.3	6,768.3	6,768.3	111.1	135.4	-91.50	430.2	4,097.9	481.5	235.2	246.33	1.955

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	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	
10,800.0	6,784.9	6,766.9	6,766.9	113.8	135.3	-91.15	430.2	4,097.9	396.4	147.3	249.11	1.591		
10,900.0	6,783.5	6,765.5	6,765.5	116.6	135.3	-90.79	430.2	4,097.9	319.9	68.0	251.89	1.270	Level 3	
11,000.0	6,782.1	6,764.1	6,764.1	119.4	135.3	-90.44	430.2	4,097.9	260.0	5.3	254.66	1.021	Level 2	
11,100.0	6,780.7	6,762.7	6,762.7	122.2	135.3	-90.08	430.2	4,097.9	229.9	-27.6	257.42	0.893	Level 1	
11,123.8	6,780.3	6,762.3	6,762.3	122.8	135.2	-90.00	430.2	4,097.9	228.6	-29.5	258.08	0.886	Level 1, CC, ES, SF	
11,200.0	6,779.3	6,761.3	6,761.3	125.0	135.2	-89.73	430.2	4,097.9	241.0	-19.2	260.18	0.926	Level 1	
11,300.0	6,777.9	6,759.9	6,759.9	127.7	135.2	-89.38	430.2	4,097.9	288.6	25.7	262.93	1.098	Level 2	
11,400.0	6,776.4	6,758.4	6,758.4	130.5	135.2	-89.02	430.2	4,097.9	358.5	92.8	265.66	1.349	Level 3	
11,500.0	6,775.0	6,757.0	6,757.0	133.3	135.1	-88.67	430.2	4,097.9	440.2	171.8	268.39	1.640		
11,600.0	6,773.6	6,755.6	6,755.6	136.1	135.1	-88.31	430.2	4,097.9	528.2	257.1	271.11	1.948		
11,700.0	6,772.2	6,754.2	6,754.2	138.9	135.1	-87.96	430.2	4,097.9	619.8	346.0	273.82	2.264		
11,800.0	6,770.8	6,752.8	6,752.8	141.7	135.1	-87.61	430.2	4,097.9	713.7	437.2	276.52	2.581		
11,900.0	6,769.4	6,751.4	6,751.4	144.5	135.0	-87.25	430.2	4,097.9	809.1	529.9	279.21	2.898		
12,000.0	6,768.0	6,750.0	6,750.0	147.2	135.0	-86.90	430.2	4,097.9	905.4	623.6	281.88	3.212		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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 1-6I (Existing) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 647-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
9,600.0	6,801.9	6,905.2	6,769.4	80.7	188.0	89.67	-225.1	3,421.0	948.4	694.2	254.17	3.731	
9,700.0	6,800.5	6,905.5	6,769.7	83.4	188.0	89.70	-225.1	3,421.1	860.3	603.4	256.90	3.349	
9,800.0	6,799.1	6,905.7	6,770.0	86.2	188.0	89.74	-225.1	3,421.1	775.0	515.4	259.63	2.985	
9,900.0	6,797.6	6,906.0	6,770.2	88.9	188.0	89.77	-225.1	3,421.1	693.7	431.4	262.36	2.644	
10,000.0	6,796.2	6,906.2	6,770.5	91.7	188.0	89.81	-225.1	3,421.1	617.9	352.9	265.09	2.331	
10,100.0	6,794.8	6,906.5	6,770.7	94.5	188.0	89.84	-225.1	3,421.1	550.0	282.1	267.83	2.053	
10,200.0	6,793.4	6,906.8	6,771.0	97.2	188.0	89.88	-225.1	3,421.1	493.0	222.5	270.57	1.822	
10,300.0	6,792.0	6,907.0	6,771.3	100.0	188.0	89.91	-225.1	3,421.1	451.3	178.0	273.31	1.651	
10,400.0	6,790.6	6,907.3	6,771.5	102.8	188.0	89.95	-225.1	3,421.1	429.3	153.2	276.06	1.555	
10,447.0	6,789.9	6,907.4	6,771.7	104.1	188.0	89.96	-225.1	3,421.1	426.7	149.4	277.35	1.539 CC, ES, SF	
10,500.0	6,789.2	6,907.6	6,771.8	105.5	188.0	89.98	-225.1	3,421.1	430.0	151.2	278.81	1.542	
10,600.0	6,787.8	6,907.8	6,772.1	108.3	187.9	90.02	-225.1	3,421.1	453.3	171.8	281.55	1.610	
10,700.0	6,786.3	6,908.1	6,772.3	111.1	187.9	90.06	-225.1	3,421.1	496.1	211.8	284.30	1.745	
10,800.0	6,784.9	6,908.4	6,772.6	113.8	187.9	90.09	-225.1	3,421.1	553.8	266.8	287.05	1.929	
10,900.0	6,783.5	6,908.7	6,772.9	116.6	187.9	90.13	-225.1	3,421.1	622.3	332.5	289.81	2.147	
11,000.0	6,782.1	6,908.9	6,773.2	119.4	187.9	90.17	-225.1	3,421.1	698.5	406.0	292.56	2.388	
11,100.0	6,780.7	6,909.2	6,773.4	122.2	187.9	90.21	-225.1	3,421.1	780.1	484.8	295.32	2.642	
11,200.0	6,779.3	6,909.5	6,773.7	125.0	187.9	90.24	-225.1	3,421.1	865.5	567.5	298.07	2.904	
11,300.0	6,777.9	6,909.8	6,774.0	127.7	187.9	90.28	-225.1	3,421.1	953.8	653.0	300.83	3.171	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	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)			
8,800.0	6,813.2	6,793.2	6,793.2	58.9	135.9	-94.77	364.5	2,735.6	975.0	781.0	194.07	5.024		
8,900.0	6,811.8	6,791.8	6,791.8	61.6	135.8	-94.28	364.5	2,735.6	876.6	679.8	196.86	4.453		
9,000.0	6,810.4	6,790.4	6,790.4	64.3	135.8	-93.78	364.5	2,735.6	778.6	578.9	199.65	3.900		
9,100.0	6,809.0	6,789.0	6,789.0	67.0	135.8	-93.29	364.5	2,735.6	681.1	478.7	202.44	3.365		
9,200.0	6,807.5	6,787.5	6,787.5	69.8	135.8	-92.79	364.5	2,735.6	584.5	379.3	205.22	2.848		
9,300.0	6,806.1	6,786.1	6,786.1	72.5	135.7	-92.29	364.5	2,735.6	489.3	281.3	208.00	2.352		
9,400.0	6,804.7	6,784.7	6,784.7	75.2	135.7	-91.80	364.5	2,735.6	396.4	185.6	210.77	1.881		
9,500.0	6,803.3	6,783.3	6,783.3	78.0	135.7	-91.30	364.5	2,735.6	308.0	94.5	213.53	1.442	Level 3	
9,600.0	6,801.9	6,781.9	6,781.9	80.7	135.6	-90.80	364.5	2,735.6	229.3	13.0	216.29	1.060	Level 2	
9,700.0	6,800.5	6,780.5	6,780.5	83.4	135.6	-90.31	364.5	2,735.6	174.1	-45.0	219.03	0.795	Level 1	
9,761.4	6,799.6	6,779.6	6,779.6	85.1	135.6	-90.00	364.5	2,735.6	162.9	-57.8	220.71	0.738	Level 1, CC, ES, SF	
9,800.0	6,799.1	6,779.1	6,779.1	86.2	135.6	-89.81	364.5	2,735.6	167.4	-54.4	221.76	0.755	Level 1	
9,900.0	6,797.6	6,777.6	6,777.6	88.9	135.6	-89.31	364.5	2,735.6	213.8	-10.7	224.48	0.953	Level 1	
10,000.0	6,796.2	6,776.2	6,776.2	91.7	135.5	-88.81	364.5	2,735.6	288.8	61.6	227.18	1.271	Level 3	
10,100.0	6,794.8	6,774.8	6,774.8	94.5	135.5	-88.32	364.5	2,735.6	375.7	145.8	229.87	1.634		
10,200.0	6,793.4	6,773.4	6,773.4	97.2	135.5	-87.82	364.5	2,735.6	467.8	235.2	232.54	2.012		
10,300.0	6,792.0	6,772.0	6,772.0	100.0	135.4	-87.32	364.5	2,735.6	562.6	327.4	235.20	2.392		
10,400.0	6,790.6	6,770.6	6,770.6	102.8	135.4	-86.83	364.5	2,735.6	658.9	421.1	237.84	2.770		
10,500.0	6,789.2	6,769.2	6,769.2	105.5	135.4	-86.33	364.5	2,735.6	756.2	515.8	240.47	3.145		
10,600.0	6,787.8	6,767.8	6,767.8	108.3	135.4	-85.84	364.5	2,735.6	854.1	611.1	243.07	3.514		
10,700.0	6,786.3	6,766.3	6,766.3	111.1	135.3	-85.34	364.5	2,735.6	952.5	706.8	245.66	3.877		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	20.69	20.69	302.4	114.2	323.6				
100.0	100.0	84.0	84.0	0.1	1.7	20.69	20.69	302.4	114.2	323.2	321.4	1.79	180.312	
200.0	200.0	184.0	184.0	0.3	3.7	20.69	20.69	302.4	114.2	323.2	319.2	4.02	80.457	
300.0	300.0	284.0	284.0	0.6	5.7	20.69	20.69	302.4	114.2	323.2	317.0	6.24	51.781	
400.0	400.0	384.0	384.0	0.8	7.7	20.69	20.69	302.4	114.2	323.2	314.8	8.47	38.175	
500.0	500.0	484.0	484.0	1.0	9.7	20.69	20.69	302.4	114.2	323.2	312.5	10.69	30.231	
600.0	600.0	584.0	584.0	1.2	11.7	20.69	20.69	302.4	114.2	323.2	310.3	12.92	25.024	
700.0	700.0	684.0	684.0	1.5	13.7	20.69	20.69	302.4	114.2	323.2	308.1	15.14	21.347	
800.0	800.0	784.0	784.0	1.7	15.7	20.69	20.69	302.4	114.2	323.2	305.9	17.37	18.613	
900.0	900.0	884.0	884.0	1.9	17.7	20.69	20.69	302.4	114.2	323.2	303.6	19.59	16.499	
1,000.0	1,000.0	984.0	984.0	2.1	19.7	20.69	20.69	302.4	114.2	323.2	301.4	21.82	14.816	
1,100.0	1,100.0	1,084.0	1,084.0	2.4	21.7	20.69	20.69	302.4	114.2	323.2	299.2	24.04	13.445	
1,200.0	1,200.0	1,184.0	1,184.0	2.6	23.7	20.69	20.69	302.4	114.2	323.2	297.0	26.26	12.306	
1,300.0	1,300.0	1,284.0	1,284.0	2.8	25.7	20.69	20.69	302.4	114.2	323.2	294.7	28.49	11.345	
1,400.0	1,400.0	1,384.0	1,384.0	3.0	27.7	20.69	20.69	302.4	114.2	323.2	292.5	30.71	10.523	
1,500.0	1,500.0	1,484.0	1,484.0	3.3	29.7	20.69	20.69	302.4	114.2	323.2	290.3	32.94	9.813	
1,600.0	1,600.0	1,584.0	1,584.0	3.5	31.7	88.47	88.47	302.4	114.2	323.2	288.0	35.16	9.193	
1,700.0	1,699.8	1,683.8	1,683.8	3.7	33.7	89.40	89.40	302.4	114.2	323.1	285.7	37.37	8.646	
1,743.6	1,743.4	1,727.4	1,727.4	3.8	34.5	90.00	90.00	302.4	114.2	323.1	284.7	38.33	8.428	
1,800.0	1,799.5	1,783.5	1,783.5	3.9	35.7	90.94	90.94	302.4	114.2	323.1	283.5	39.58	8.163	
1,900.0	1,898.7	1,882.7	1,882.7	4.2	37.7	93.06	93.06	302.4	114.2	323.5	281.7	41.80	7.740	
2,000.0	1,997.9	1,981.9	1,981.9	4.4	39.6	95.32	95.32	302.4	114.2	324.5	280.4	44.03	7.369	
2,100.0	2,097.0	2,081.0	2,081.0	4.7	41.6	97.57	97.57	302.4	114.2	325.9	279.7	46.27	7.044	
2,200.0	2,196.2	2,180.2	2,180.2	4.9	43.6	99.80	99.80	302.4	114.2	327.9	279.4	48.51	6.759	
2,300.0	2,295.3	2,279.3	2,279.3	5.2	45.6	101.99	101.99	302.4	114.2	330.4	279.6	50.76	6.509	
2,400.0	2,394.5	2,378.5	2,378.5	5.5	47.6	104.15	104.15	302.4	114.2	333.3	280.3	53.01	6.288	
2,500.0	2,493.7	2,477.7	2,477.7	5.8	49.6	106.28	106.28	302.4	114.2	336.8	281.5	55.26	6.094	
2,600.0	2,592.8	2,576.8	2,576.8	6.1	51.5	108.35	108.35	302.4	114.2	340.7	283.1	57.51	5.924	
2,700.0	2,692.0	2,676.0	2,676.0	6.4	53.5	110.38	110.38	302.4	114.2	345.0	285.2	59.75	5.773	
2,800.0	2,791.1	2,775.1	2,775.1	6.7	55.5	112.35	112.35	302.4	114.2	349.7	287.7	62.00	5.641	
2,900.0	2,890.3	2,874.3	2,874.3	7.0	57.5	114.28	114.28	302.4	114.2	354.9	290.7	64.24	5.524	
3,000.0	2,989.5	2,973.5	2,973.5	7.3	59.5	116.14	116.14	302.4	114.2	360.5	294.0	66.48	5.422	
3,100.0	3,088.6	3,072.6	3,072.6	7.6	61.5	117.95	117.95	302.4	114.2	366.4	297.7	68.72	5.332	
3,200.0	3,187.8	3,171.8	3,171.8	7.9	63.4	119.70	119.70	302.4	114.2	372.7	301.7	70.95	5.252	
3,300.0	3,286.9	3,270.9	3,270.9	8.2	65.4	121.39	121.39	302.4	114.2	379.3	306.1	73.18	5.183	
3,400.0	3,386.1	3,370.1	3,370.1	8.5	67.4	123.02	123.02	302.4	114.2	386.2	310.8	75.41	5.122	
3,500.0	3,485.2	3,469.2	3,469.2	8.8	69.4	124.59	124.59	302.4	114.2	393.5	315.9	77.64	5.069	
3,600.0	3,584.4	3,568.4	3,568.4	9.2	71.4	126.10	126.10	302.4	114.2	401.0	321.2	79.86	5.022	
3,700.0	3,683.6	3,667.6	3,667.6	9.5	73.4	127.56	127.56	302.4	114.2	408.8	326.8	82.08	4.981	
3,800.0	3,782.7	3,766.7	3,766.7	9.8	75.3	128.97	128.97	302.4	114.2	416.9	332.6	84.29	4.946	
3,900.0	3,881.9	3,865.9	3,865.9	10.1	77.3	130.32	130.32	302.4	114.2	425.2	338.7	86.50	4.916	
4,000.0	3,981.0	3,965.0	3,965.0	10.4	79.3	131.62	131.62	302.4	114.2	433.8	345.0	88.72	4.889	
4,100.0	4,080.2	4,064.2	4,064.2	10.7	81.3	132.87	132.87	302.4	114.2	442.5	351.6	90.92	4.867	
4,200.0	4,179.3	4,163.3	4,163.3	11.1	83.3	134.07	134.07	302.4	114.2	451.5	358.3	93.13	4.847	
4,300.0	4,278.5	4,262.5	4,262.5	11.4	85.2	135.22	135.22	302.4	114.2	460.6	365.3	95.34	4.831	
4,400.0	4,377.7	4,361.7	4,361.7	11.7	87.2	136.33	136.33	302.4	114.2	469.9	372.4	97.54	4.818	
4,500.0	4,476.8	4,460.8	4,460.8	12.0	89.2	137.39	137.39	302.4	114.2	479.4	379.7	99.74	4.806	
4,600.0	4,576.0	4,560.0	4,560.0	12.4	91.2	138.42	138.42	302.4	114.2	489.1	387.1	101.94	4.797	
4,700.0	4,675.1	4,659.1	4,659.1	12.7	93.2	139.40	139.40	302.4	114.2	498.9	394.7	104.14	4.790	
4,800.0	4,774.3	4,758.3	4,758.3	13.0	95.2	140.35	140.35	302.4	114.2	508.8	402.5	106.34	4.784	
4,900.0	4,873.4	4,857.4	4,857.4	13.3	97.1	141.26	141.26	302.4	114.2	518.9	410.3	108.54	4.780	

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 19O-312
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 19O-312	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	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	4,972.6	4,956.6	4,956.6	13.7	99.1	142.13	302.4	114.2	529.1	418.3	110.74	4.778		
5,100.0	5,071.8	5,055.8	5,055.8	14.0	101.1	142.97	302.4	114.2	539.4	426.4	112.94	4.776		
5,200.0	5,170.9	5,154.9	5,154.9	14.3	103.1	143.78	302.4	114.2	549.8	434.7	115.13	4.775		
5,300.0	5,270.1	5,254.1	5,254.1	14.6	105.1	144.56	302.4	114.2	560.3	443.0	117.33	4.776		
5,400.0	5,369.2	5,353.2	5,353.2	15.0	107.1	145.32	302.4	114.2	571.0	451.5	119.52	4.777		
5,500.0	5,468.4	5,452.4	5,452.4	15.3	109.0	146.04	302.4	114.2	581.7	460.0	121.72	4.779		
5,600.0	5,567.6	5,551.6	5,551.6	15.6	111.0	146.77	302.4	114.2	592.3	468.3	124.04	4.775		
5,700.0	5,667.1	5,651.1	5,651.1	15.8	113.0	147.37	302.4	114.2	600.6	474.1	126.47	4.749		
5,800.0	5,766.9	5,750.9	5,750.9	16.0	115.0	147.76	302.4	114.2	606.0	477.2	128.80	4.705		
5,900.0	5,866.8	5,850.8	5,850.8	16.2	117.0	147.93	302.4	114.2	608.5	477.4	131.04	4.643		
6,000.0	5,966.8	5,950.8	5,950.8	16.3	119.0	80.47	302.4	114.2	608.6	473.9	134.69	4.519		
6,100.0	6,066.8	6,050.8	6,050.8	16.5	121.0	80.47	302.4	114.2	608.6	471.7	136.87	4.447		
6,200.0	6,166.6	6,150.6	6,150.6	16.6	123.0	-9.70	302.4	114.2	602.6	466.2	136.44	4.417		
6,300.0	6,264.7	6,248.7	6,248.7	16.6	125.0	-10.27	302.4	114.2	583.8	448.7	135.15	4.320		
6,400.0	6,359.4	6,343.4	6,343.4	16.6	126.9	-11.33	302.4	114.2	552.7	421.1	131.57	4.201		
6,500.0	6,449.3	6,433.3	6,433.3	16.5	128.7	-13.08	302.4	114.2	509.7	383.8	125.88	4.049		
6,600.0	6,532.6	6,516.6	6,516.6	16.4	130.3	-15.90	302.4	114.2	455.8	337.1	118.65	3.841		
6,700.0	6,608.0	6,592.0	6,592.0	16.4	131.8	-20.52	302.4	114.2	392.1	280.7	111.40	3.520		
6,800.0	6,674.3	6,658.3	6,658.3	16.6	133.2	-28.42	302.4	114.2	320.4	212.3	108.11	2.963		
6,900.0	6,730.2	6,714.2	6,714.2	17.1	134.3	-42.10	302.4	114.2	243.1	126.2	116.94	2.079		
7,000.0	6,774.8	6,758.8	6,758.8	17.9	135.2	-63.15	302.4	114.2	166.0	26.3	139.65	1.188	Level 2	
7,100.0	6,807.3	6,791.3	6,791.3	19.1	135.8	-84.42	302.4	114.2	107.5	-46.8	154.30	0.697	Level 1	
7,138.5	6,816.5	6,800.5	6,800.5	19.6	136.0	-90.00	302.4	114.2	100.8	-54.9	155.66	0.647	Level 1, CC, ES, SF	
7,200.0	6,827.3	6,811.3	6,811.3	20.6	136.2	-94.64	302.4	114.2	117.6	-38.7	156.24	0.752	Level 1	
7,300.0	6,834.3	6,818.3	6,818.3	22.3	136.4	-90.42	302.4	114.2	189.3	30.6	158.63	1.193	Level 2	
7,400.0	6,833.0	6,817.0	6,817.0	24.2	136.3	-87.91	302.4	114.2	279.0	118.6	160.43	1.739		
7,500.0	6,831.6	6,815.6	6,815.6	26.2	136.3	-87.11	302.4	114.2	374.0	211.7	162.37	2.304		
7,600.0	6,830.2	6,814.2	6,814.2	28.4	136.3	-86.31	302.4	114.2	471.1	306.7	164.41	2.865		
7,700.0	6,828.7	6,812.7	6,812.7	30.7	136.3	-85.51	302.4	114.2	569.2	402.7	166.51	3.418		
7,800.0	6,827.3	6,811.3	6,811.3	33.1	136.2	-84.71	302.4	114.2	667.8	499.2	168.65	3.960		
7,900.0	6,825.9	6,809.9	6,809.9	35.5	136.2	-83.91	302.4	114.2	766.8	596.0	170.83	4.489		
8,000.0	6,824.5	6,808.5	6,808.5	38.0	136.2	-83.12	302.4	114.2	866.0	693.0	173.01	5.006		
8,100.0	6,823.1	6,807.1	6,807.1	40.5	136.1	-82.33	302.4	114.2	965.4	790.2	175.20	5.510		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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
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)			
7,500.0	6,831.6	6,813.6	6,813.6	26.2	136.3	-95.38	342.5	1,412.4	948.5	786.8	161.73	5.865		
7,600.0	6,830.2	6,812.2	6,812.2	28.4	136.2	-94.81	342.5	1,412.4	849.7	685.7	164.03	5.180		
7,700.0	6,828.7	6,810.7	6,810.7	30.7	136.2	-94.23	342.5	1,412.4	751.3	584.9	166.42	4.515		
7,800.0	6,827.3	6,809.3	6,809.3	33.1	136.2	-93.66	342.5	1,412.4	653.4	484.5	168.87	3.869		
7,900.0	6,825.9	6,807.9	6,807.9	35.5	136.2	-93.09	342.5	1,412.4	556.2	384.8	171.38	3.245		
8,000.0	6,824.5	6,806.5	6,806.5	38.0	136.1	-92.52	342.5	1,412.4	460.1	286.2	173.92	2.646		
8,100.0	6,823.1	6,805.1	6,805.1	40.5	136.1	-91.94	342.5	1,412.4	366.2	189.7	176.49	2.075		
8,200.0	6,821.7	6,803.7	6,803.7	43.1	136.1	-91.37	342.5	1,412.4	276.6	97.5	179.08	1.545		
8,300.0	6,820.3	6,802.3	6,802.3	45.7	136.0	-90.79	342.5	1,412.4	197.3	15.6	181.68	1.086	Level 2	
8,400.0	6,818.9	6,800.9	6,800.9	48.3	136.0	-90.22	342.5	1,412.4	145.9	-38.3	184.29	0.792	Level 1	
8,438.1	6,818.3	6,800.3	6,800.3	49.3	136.0	-90.00	342.5	1,412.4	140.9	-44.4	185.29	0.760	Level 1, CC, ES, SF	
8,500.0	6,817.4	6,799.4	6,799.4	50.9	136.0	-89.64	342.5	1,412.4	153.9	-33.0	186.90	0.823	Level 1	
8,600.0	6,816.0	6,798.0	6,798.0	53.6	136.0	-89.07	342.5	1,412.4	214.6	25.1	189.51	1.133	Level 2	
8,700.0	6,814.6	6,796.6	6,796.6	56.3	135.9	-88.49	342.5	1,412.4	297.4	105.3	192.12	1.548		
8,800.0	6,813.2	6,795.2	6,795.2	58.9	135.9	-87.92	342.5	1,412.4	388.4	193.6	194.72	1.994		
8,900.0	6,811.8	6,793.8	6,793.8	61.6	135.9	-87.35	342.5	1,412.4	482.9	285.6	197.31	2.447		
9,000.0	6,810.4	6,792.4	6,792.4	64.3	135.8	-86.77	342.5	1,412.4	579.3	379.4	199.89	2.898		
9,100.0	6,809.0	6,791.0	6,791.0	67.0	135.8	-86.20	342.5	1,412.4	676.7	474.2	202.45	3.342		
9,200.0	6,807.5	6,789.5	6,789.5	69.8	135.8	-85.63	342.5	1,412.4	774.8	569.8	205.00	3.779		
9,300.0	6,806.1	6,788.1	6,788.1	72.5	135.8	-85.06	342.5	1,412.4	873.3	665.7	207.54	4.208		
9,400.0	6,804.7	6,786.7	6,786.7	75.2	135.7	-84.49	342.5	1,412.4	972.1	762.0	210.05	4.628		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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
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)			
11,500.0	6,775.0	6,753.0	6,753.0	133.3	135.1	-92.81	466.9	5,396.0	959.4	691.4	268.02	3.580		
11,600.0	6,773.6	6,751.6	6,751.6	136.1	135.0	-92.51	466.9	5,396.0	863.8	592.9	270.84	3.189		
11,700.0	6,772.2	6,750.2	6,750.2	138.9	135.0	-92.20	466.9	5,396.0	769.2	495.6	273.66	2.811		
11,800.0	6,770.8	6,748.8	6,748.8	141.7	135.0	-91.90	466.9	5,396.0	676.3	399.8	276.47	2.446		
11,900.0	6,769.4	6,747.4	6,747.4	144.5	134.9	-91.59	466.9	5,396.0	585.6	306.3	279.27	2.097		
12,000.0	6,768.0	6,746.0	6,746.0	147.2	134.9	-91.29	466.9	5,396.0	498.5	216.5	282.07	1.767		
12,100.0	6,766.5	6,744.5	6,744.5	150.0	134.9	-90.98	466.9	5,396.0	417.3	132.4	284.87	1.465 Level 3		
12,200.0	6,765.1	6,743.1	6,743.1	152.8	134.9	-90.68	466.9	5,396.0	346.0	58.3	287.65	1.203 Level 2		
12,300.0	6,763.7	6,741.7	6,741.7	155.6	134.8	-90.37	466.9	5,396.0	292.1	1.6	290.43	1.006 Level 2		
12,400.0	6,762.3	6,740.3	6,740.3	158.4	134.8	-90.07	466.9	5,396.0	266.2	-27.0	293.21	0.908 Level 1		
12,422.1	6,762.0	6,740.0	6,740.0	159.0	134.8	-90.00	466.9	5,396.0	265.3	-28.5	293.82	0.903 Level 1, CC, ES, SF		
12,500.0	6,760.9	6,738.9	6,738.9	161.2	134.8	-89.76	466.9	5,396.0	276.5	-19.5	295.97	0.934 Level 1		
12,600.0	6,759.5	6,737.5	6,737.5	164.0	134.7	-89.46	466.9	5,396.0	319.4	20.7	298.73	1.069 Level 2		
12,700.0	6,758.1	6,736.1	6,736.1	166.8	134.7	-89.15	466.9	5,396.0	384.2	82.7	301.48	1.274 Level 3		
12,800.0	6,756.7	6,734.7	6,734.7	169.6	134.7	-88.85	466.9	5,396.0	461.7	157.5	304.22	1.518		
12,900.0	6,755.2	6,733.2	6,733.2	172.4	134.7	-88.54	466.9	5,396.0	546.6	239.6	306.96	1.781		
13,000.0	6,753.8	6,731.8	6,731.8	175.2	134.6	-88.24	466.9	5,396.0	635.8	326.1	309.68	2.053		
13,100.0	6,752.4	6,730.4	6,730.4	178.0	134.6	-87.93	466.9	5,396.0	727.9	415.5	312.40	2.330		
13,200.0	6,751.0	6,729.0	6,729.0	180.8	134.6	-87.63	466.9	5,396.0	821.8	506.7	315.11	2.608		
13,300.0	6,749.6	6,727.6	6,727.6	183.6	134.6	-87.32	466.9	5,396.0	917.0	599.2	317.81	2.885		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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 (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	-90.00	0.0	-147.6	147.6					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-147.6	147.6	147.4	0.22	656.899		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-147.6	147.6	147.0	0.67	218.966		
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-147.6	147.6	146.5	1.12	131.380		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-147.6	147.6	146.1	1.57	93.843		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-147.6	147.6	145.6	2.02	72.989		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-147.6	147.6	145.2	2.47	59.718		
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-147.6	147.6	144.7	2.92	50.531		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-147.6	147.6	144.3	3.37	43.793 CC, ES		
900.0	900.0	898.3	898.3	1.9	1.9	-89.39	1.6	-148.2	148.2	144.4	3.82	38.832		
1,000.0	1,000.0	996.3	996.2	2.1	2.1	-87.58	6.3	-149.9	150.1	145.8	4.27	35.181		
1,100.0	1,100.0	1,093.9	1,093.4	2.4	2.4	-84.68	14.2	-152.6	153.4	148.7	4.72	32.539		
1,200.0	1,200.0	1,190.9	1,189.6	2.6	2.6	-80.88	25.1	-156.4	158.8	153.6	5.17	30.730		
1,300.0	1,300.0	1,286.9	1,284.5	2.8	2.9	-76.42	39.0	-161.3	166.6	161.0	5.62	29.635		
1,400.0	1,400.0	1,381.8	1,377.8	3.0	3.2	-71.60	55.6	-167.1	177.5	171.4	6.09	29.160		
1,500.0	1,500.0	1,477.0	1,470.7	3.3	3.5	-66.68	75.0	-173.9	191.6	185.0	6.57	29.170		
1,600.0	1,600.0	1,574.7	1,566.0	3.5	3.9	5.30	95.5	-181.1	205.8	198.7	7.13	28.874		
1,700.0	1,699.8	1,672.8	1,661.7	3.7	4.3	9.34	116.1	-188.3	217.7	210.1	7.60	28.638		
1,800.0	1,799.5	1,771.2	1,757.6	3.9	4.7	13.13	136.8	-195.5	227.2	219.1	8.06	28.174		
1,900.0	1,898.7	1,869.8	1,853.7	4.2	5.1	16.85	157.5	-202.8	234.5	226.0	8.53	27.501		
2,000.0	1,997.9	1,968.4	1,949.8	4.4	5.5	20.43	178.2	-210.0	241.9	232.8	9.00	26.871		
2,100.0	2,097.0	2,067.0	2,045.9	4.7	5.9	23.79	198.9	-217.3	250.1	240.6	9.47	26.400		
2,200.0	2,196.2	2,165.6	2,142.0	4.9	6.4	26.93	219.7	-224.5	259.2	249.3	9.95	26.049		
2,300.0	2,295.3	2,264.2	2,238.2	5.2	6.8	29.85	240.4	-231.8	269.0	258.6	10.43	25.788		
2,400.0	2,394.5	2,362.8	2,334.3	5.5	7.3	32.57	261.1	-239.0	279.5	268.6	10.92	25.594		
2,500.0	2,493.7	2,461.3	2,430.4	5.8	7.7	35.09	281.8	-246.3	290.6	279.2	11.42	25.449		
2,600.0	2,592.8	2,559.9	2,526.5	6.1	8.2	37.42	302.5	-253.5	302.2	290.2	11.92	25.340		
2,700.0	2,692.0	2,658.5	2,622.6	6.4	8.6	39.57	323.3	-260.8	314.2	301.8	12.44	25.256		
2,800.0	2,791.1	2,757.1	2,718.7	6.7	9.1	41.57	344.0	-268.0	326.7	313.7	12.97	25.191		
2,900.0	2,890.3	2,855.7	2,814.9	7.0	9.5	43.42	364.7	-275.3	339.5	326.0	13.51	25.138		
3,000.0	2,989.5	2,954.3	2,911.0	7.3	10.0	45.14	385.4	-282.5	352.7	338.6	14.05	25.096		
3,100.0	3,088.6	3,052.9	3,007.1	7.6	10.4	46.73	406.1	-289.8	366.1	351.5	14.61	25.060		
3,200.0	3,187.8	3,151.5	3,103.2	7.9	10.9	48.21	426.9	-297.0	379.8	364.6	15.17	25.029		
3,300.0	3,286.9	3,250.1	3,199.3	8.2	11.3	49.59	447.6	-304.3	393.8	378.0	15.75	25.001		
3,400.0	3,386.1	3,348.7	3,295.5	8.5	11.8	50.87	468.3	-311.5	407.9	391.6	16.33	24.977		
3,500.0	3,485.2	3,447.3	3,391.6	8.8	12.2	52.07	489.0	-318.8	422.2	405.3	16.92	24.954		
3,600.0	3,584.4	3,545.9	3,487.7	9.2	12.7	53.18	509.7	-326.0	436.7	419.2	17.52	24.933		
3,700.0	3,683.6	3,644.4	3,583.8	9.5	13.2	54.23	530.4	-333.3	451.4	433.3	18.12	24.914		
3,800.0	3,782.7	3,743.0	3,679.9	9.8	13.6	55.21	551.2	-340.5	466.2	447.5	18.73	24.895		
3,900.0	3,881.9	3,841.6	3,776.0	10.1	14.1	56.13	571.9	-347.8	481.1	461.8	19.34	24.878		
4,000.0	3,981.0	3,940.2	3,872.2	10.4	14.6	57.00	592.6	-355.0	496.2	476.2	19.96	24.861		
4,100.0	4,080.2	4,038.8	3,968.3	10.7	15.0	57.81	613.3	-362.3	511.3	490.7	20.58	24.846		
4,200.0	4,179.3	4,137.4	4,064.4	11.1	15.5	58.58	634.0	-369.5	526.6	505.3	21.21	24.831		
4,300.0	4,278.5	4,236.0	4,160.5	11.4	15.9	59.30	654.8	-376.8	541.9	520.0	21.84	24.816		
4,400.0	4,377.7	4,334.6	4,256.6	11.7	16.4	59.99	675.5	-384.0	557.3	534.8	22.47	24.803		
4,500.0	4,476.8	4,433.2	4,352.7	12.0	16.9	60.64	696.2	-391.3	572.8	549.7	23.10	24.790		
4,600.0	4,576.0	4,531.8	4,448.9	12.4	17.3	61.25	716.9	-398.5	588.3	564.6	23.74	24.778		
4,700.0	4,675.1	4,630.4	4,545.0	12.7	17.8	61.83	737.6	-405.8	603.9	579.6	24.39	24.766		
4,800.0	4,774.3	4,729.0	4,641.1	13.0	18.2	62.38	758.3	-413.0	619.6	594.6	25.03	24.755		
4,900.0	4,873.4	4,827.5	4,737.2	13.3	18.7	62.91	779.1	-420.3	635.3	609.7	25.68	24.745		
5,000.0	4,972.6	4,926.1	4,833.3	13.7	19.2	63.41	799.8	-427.5	651.1	624.8	26.32	24.735		

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 19O-312
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 19O-312	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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,071.8	5,024.7	4,929.4	14.0	19.6	63.89		820.5	-434.8	666.9	640.0	26.97	24.725	
5,200.0	5,170.9	5,123.3	5,025.6	14.3	20.1	64.34		841.2	-442.0	682.8	655.2	27.63	24.716	
5,300.0	5,270.1	5,221.9	5,121.7	14.6	20.6	64.78		861.9	-449.3	698.7	670.4	28.28	24.708	
5,400.0	5,369.2	5,320.5	5,217.8	15.0	21.0	65.19		882.7	-456.5	714.6	685.7	28.93	24.700	
5,500.0	5,468.4	5,436.0	5,330.6	15.3	21.5	65.68		906.2	-464.8	730.0	700.4	29.61	24.652	
5,600.0	5,567.6	5,567.1	5,459.6	15.6	21.9	66.38		928.0	-472.4	741.7	711.4	30.27	24.499	
5,700.0	5,667.1	5,699.1	5,590.5	15.8	22.3	67.03		944.3	-478.1	750.2	719.4	30.81	24.350	
5,800.0	5,766.9	5,831.9	5,722.8	16.0	22.5	67.45		954.9	-481.8	755.8	724.5	31.26	24.177	
5,900.0	5,866.8	5,965.0	5,855.8	16.2	22.7	67.64		959.8	-483.5	758.3	726.7	31.63	23.975	
6,000.0	5,966.8	6,076.1	5,966.8	16.3	22.9	0.18		960.1	-483.6	758.5	722.6	35.86	21.152	
6,045.7	6,012.5	6,121.8	6,012.5	16.4	22.9	0.18		960.1	-483.6	758.5	722.5	36.01	21.065	
6,100.0	6,066.8	6,175.9	6,066.6	16.5	23.0	0.29		960.1	-482.2	758.5	722.3	36.17	20.972	
6,200.0	6,166.6	6,274.7	6,164.6	16.6	23.0	-89.21		960.1	-469.6	758.6	726.0	32.57	23.288	
6,300.0	6,264.7	6,372.8	6,259.4	16.6	23.1	-88.73		960.1	-444.9	758.7	726.0	32.69	23.208	
6,400.0	6,359.4	6,470.0	6,349.5	16.6	23.0	-88.27		960.1	-408.5	758.8	726.1	32.71	23.202	
6,500.0	6,449.3	6,566.6	6,433.7	16.5	23.0	-87.84		960.1	-361.3	759.0	726.3	32.69	23.217	
6,600.0	6,532.6	6,662.5	6,510.8	16.4	22.9	-87.44		960.1	-304.3	759.3	726.5	32.76	23.174	
6,700.0	6,608.0	6,757.9	6,579.7	16.4	22.9	-87.09		960.1	-238.5	759.5	726.4	33.06	22.975	
6,800.0	6,674.3	6,852.8	6,639.7	16.6	22.8	-86.79		960.1	-165.1	759.7	726.0	33.73	22.524	
6,900.0	6,730.2	6,947.2	6,689.9	17.1	22.8	-86.54		960.1	-85.1	759.9	725.0	34.92	21.758	
7,000.0	6,774.8	7,041.4	6,729.7	17.9	22.8	-86.35		960.1	0.1	760.0	723.3	36.73	20.690	
7,100.0	6,807.3	7,135.3	6,758.7	19.1	23.0	-86.21		960.1	89.4	760.2	721.0	39.16	19.412	
7,200.0	6,827.3	7,229.0	6,776.5	20.6	23.5	-86.14		960.1	181.4	760.2	718.1	42.14	18.041	
7,300.0	6,834.3	7,322.8	6,782.9	22.3	24.6	-86.13		960.1	274.8	760.2	714.7	45.55	16.691	
7,309.0	6,834.3	7,331.1	6,782.9	22.4	24.7	-86.13		960.1	283.2	760.2	714.4	45.88	16.572	
7,400.0	6,833.0	7,421.4	6,781.3	24.2	26.2	-86.10		960.1	373.5	760.3	710.9	49.38	15.397	
7,500.0	6,831.6	7,521.4	6,779.5	26.2	28.2	-86.07		960.1	473.5	760.3	706.8	53.53	14.204	
7,600.0	6,830.2	7,621.4	6,777.6	28.4	30.3	-86.04		960.1	573.4	760.3	702.4	57.92	13.127	
7,700.0	6,828.7	7,721.4	6,775.8	30.7	32.6	-86.01		960.1	673.4	760.3	697.8	62.51	12.164	
7,800.0	6,827.3	7,821.4	6,773.9	33.1	34.9	-85.97		960.1	773.4	760.4	693.1	67.25	11.306	
7,900.0	6,825.9	7,921.4	6,772.1	35.5	37.3	-85.94		960.1	873.4	760.4	688.3	72.12	10.544	
8,000.0	6,824.5	8,021.4	6,770.2	38.0	39.8	-85.91		960.1	973.4	760.4	683.4	77.08	9.865	
8,100.0	6,823.1	8,121.4	6,768.4	40.5	42.3	-85.87		960.1	1,073.3	760.5	678.3	82.13	9.259	
8,200.0	6,821.7	8,221.4	6,766.5	43.1	44.8	-85.84		960.1	1,173.3	760.5	673.3	87.25	8.717	
8,300.0	6,820.3	8,321.4	6,764.7	45.7	47.4	-85.81		960.1	1,273.3	760.5	668.1	92.42	8.229	
8,400.0	6,818.9	8,421.4	6,762.8	48.3	50.0	-85.78		960.1	1,373.3	760.6	662.9	97.64	7.790	
8,500.0	6,817.4	8,521.4	6,761.0	50.9	52.6	-85.74		960.1	1,473.3	760.6	657.7	102.89	7.392	
8,600.0	6,816.0	8,621.4	6,759.1	53.6	55.2	-85.71		960.1	1,573.3	760.6	652.4	108.19	7.031	
8,700.0	6,814.6	8,721.4	6,757.3	56.3	57.9	-85.68		960.1	1,673.2	760.7	647.2	113.51	6.701	
8,800.0	6,813.2	8,821.4	6,755.4	58.9	60.5	-85.65		960.1	1,773.2	760.7	641.8	118.85	6.400	
8,900.0	6,811.8	8,921.4	6,753.6	61.6	63.2	-85.61		960.1	1,873.2	760.7	636.5	124.22	6.124	
9,000.0	6,810.4	9,021.4	6,751.8	64.3	65.9	-85.58		960.1	1,973.2	760.8	631.2	129.61	5.870	
9,100.0	6,809.0	9,121.4	6,749.9	67.0	68.6	-85.55		960.1	2,073.2	760.8	625.8	135.01	5.635	
9,200.0	6,807.5	9,221.4	6,748.1	69.8	71.3	-85.51		960.1	2,173.1	760.8	620.4	140.43	5.418	
9,300.0	6,806.1	9,321.4	6,746.2	72.5	74.0	-85.48		960.1	2,273.1	760.9	615.0	145.86	5.216	
9,400.0	6,804.7	9,421.4	6,744.4	75.2	76.7	-85.45		960.1	2,373.1	760.9	609.6	151.31	5.029	
9,500.0	6,803.3	9,521.4	6,742.5	78.0	79.5	-85.42		960.1	2,473.1	760.9	604.2	156.76	4.854	
9,600.0	6,801.9	9,621.4	6,740.7	80.7	82.2	-85.38		960.1	2,573.1	761.0	598.7	162.22	4.691	
9,700.0	6,800.5	9,721.4	6,738.8	83.4	84.9	-85.35		960.1	2,673.1	761.0	593.3	167.69	4.538	
9,800.0	6,799.1	9,821.4	6,737.0	86.2	87.7	-85.32		960.1	2,773.0	761.0	587.9	173.17	4.395	
9,900.0	6,797.6	9,921.4	6,735.1	88.9	90.4	-85.29		960.1	2,873.0	761.1	582.4	178.66	4.260	

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 19O-312
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 19O-312	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						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,000.0	6,796.2	10,021.4	6,733.3	91.7	93.2	-85.25	960.1	2,973.0	761.1	577.0	184.15	4.133		
10,100.0	6,794.8	10,121.4	6,731.4	94.5	95.9	-85.22	960.1	3,073.0	761.1	571.5	189.64	4.014		
10,200.0	6,793.4	10,221.4	6,729.6	97.2	98.7	-85.19	960.1	3,173.0	761.2	566.0	195.15	3.901		
10,300.0	6,792.0	10,321.4	6,727.7	100.0	101.4	-85.15	960.1	3,272.9	761.2	560.6	200.65	3.794		
10,400.0	6,790.6	10,421.4	6,725.9	102.8	104.2	-85.12	960.1	3,372.9	761.3	555.1	206.16	3.693		
10,500.0	6,789.2	10,521.4	6,724.0	105.5	106.9	-85.09	960.1	3,472.9	761.3	549.6	211.67	3.597		
10,600.0	6,787.8	10,621.4	6,722.2	108.3	109.7	-85.06	960.1	3,572.9	761.3	544.1	217.19	3.505		
10,700.0	6,786.3	10,721.4	6,720.3	111.1	112.5	-85.02	960.1	3,672.9	761.4	538.7	222.71	3.419		
10,800.0	6,784.9	10,821.4	6,718.5	113.8	115.2	-84.99	960.1	3,772.9	761.4	533.2	228.23	3.336		
10,900.0	6,783.5	10,921.4	6,716.6	116.6	118.0	-84.96	960.1	3,872.8	761.4	527.7	233.76	3.257		
11,000.0	6,782.1	11,021.4	6,714.8	119.4	120.8	-84.93	960.1	3,972.8	761.5	522.2	239.29	3.182		
11,100.0	6,780.7	11,121.4	6,712.9	122.2	123.6	-84.89	960.1	4,072.8	761.5	516.7	244.82	3.111		
11,200.0	6,779.3	11,221.4	6,711.1	125.0	126.3	-84.86	960.1	4,172.8	761.6	511.2	250.35	3.042		
11,300.0	6,777.9	11,321.4	6,709.2	127.7	129.1	-84.83	960.1	4,272.8	761.6	505.7	255.88	2.976		
11,400.0	6,776.4	11,421.4	6,707.4	130.5	131.9	-84.79	960.1	4,372.7	761.6	500.2	261.42	2.913		
11,500.0	6,775.0	11,521.4	6,705.5	133.3	134.7	-84.76	960.1	4,472.7	761.7	494.7	266.95	2.853		
11,600.0	6,773.6	11,621.4	6,703.7	136.1	137.4	-84.73	960.1	4,572.7	761.7	489.2	272.49	2.795		
11,700.0	6,772.2	11,721.4	6,701.8	138.9	140.2	-84.70	960.1	4,672.7	761.8	483.7	278.03	2.740		
11,800.0	6,770.8	11,821.4	6,700.0	141.7	143.0	-84.66	960.1	4,772.7	761.8	478.2	283.57	2.686		
11,900.0	6,769.4	11,921.4	6,698.1	144.5	145.8	-84.63	960.1	4,872.7	761.8	472.7	289.11	2.635		
12,000.0	6,768.0	12,021.4	6,696.3	147.2	148.6	-84.60	960.1	4,972.6	761.9	467.2	294.66	2.586		
12,100.0	6,766.5	12,121.4	6,694.4	150.0	151.4	-84.57	960.1	5,072.6	761.9	461.7	300.20	2.538		
12,200.0	6,765.1	12,221.4	6,692.6	152.8	154.1	-84.53	960.1	5,172.6	762.0	456.2	305.74	2.492		
12,300.0	6,763.7	12,321.4	6,690.7	155.6	156.9	-84.50	960.1	5,272.6	762.0	450.7	311.29	2.448		
12,400.0	6,762.3	12,421.4	6,688.9	158.4	159.7	-84.47	960.1	5,372.6	762.0	445.2	316.83	2.405		
12,500.0	6,760.9	12,521.4	6,687.0	161.2	162.5	-84.44	960.1	5,472.5	762.1	439.7	322.38	2.364		
12,600.0	6,759.5	12,621.4	6,685.2	164.0	165.3	-84.40	960.1	5,572.5	762.1	434.2	327.92	2.324		
12,700.0	6,758.1	12,721.4	6,683.3	166.8	168.1	-84.37	960.1	5,672.5	762.2	428.7	333.47	2.286		
12,800.0	6,756.7	12,821.4	6,681.5	169.6	170.9	-84.34	960.1	5,772.5	762.2	423.2	339.02	2.248		
12,900.0	6,755.2	12,921.4	6,679.6	172.4	173.7	-84.30	960.1	5,872.5	762.3	417.7	344.56	2.212		
13,000.0	6,753.8	13,021.4	6,677.8	175.2	176.5	-84.27	960.1	5,972.5	762.3	412.2	350.11	2.177		
13,100.0	6,752.4	13,121.4	6,675.9	178.0	179.3	-84.24	960.1	6,072.4	762.3	406.7	355.66	2.143		
13,200.0	6,751.0	13,221.4	6,674.1	180.8	182.0	-84.21	960.1	6,172.4	762.4	401.2	361.21	2.111		
13,300.0	6,749.6	13,321.4	6,672.2	183.6	184.8	-84.17	960.1	6,272.4	762.4	395.7	366.75	2.079		
13,400.0	6,748.2	13,421.4	6,670.4	186.4	187.6	-84.14	960.1	6,372.4	762.5	390.2	372.30	2.048		
13,500.0	6,746.8	13,521.4	6,668.5	189.1	190.4	-84.11	960.1	6,472.4	762.5	384.7	377.85	2.018		
13,600.0	6,745.3	13,621.4	6,666.7	191.9	193.2	-84.08	960.1	6,572.4	762.6	379.2	383.40	1.989		
13,700.0	6,743.9	13,721.4	6,664.8	194.7	196.0	-84.04	960.1	6,672.3	762.6	373.7	388.95	1.961		
13,800.0	6,742.5	13,821.4	6,663.0	197.5	198.8	-84.01	960.1	6,772.3	762.7	368.2	394.49	1.933		
13,900.0	6,741.1	13,921.4	6,661.1	200.3	201.6	-83.98	960.1	6,872.3	762.7	362.7	400.04	1.907		
13,907.1	6,741.0	13,927.0	6,661.0	200.5	201.8	-83.98	960.1	6,877.9	762.7	362.3	400.39	1.905 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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-432 - 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	-102.52	-102.52	-32.8	-147.6	151.2				
100.0	100.0	100.0	100.0	0.1	0.1	-102.52	-102.52	-32.8	-147.6	151.2	151.0	0.22	672.901	
200.0	200.0	200.0	200.0	0.3	0.3	-102.52	-102.52	-32.8	-147.6	151.2	150.6	0.67	224.300	
300.0	300.0	300.0	300.0	0.6	0.6	-102.52	-102.52	-32.8	-147.6	151.2	150.1	1.12	134.580	
400.0	400.0	400.0	400.0	0.8	0.8	-102.52	-102.52	-32.8	-147.6	151.2	149.7	1.57	96.129	
500.0	500.0	500.0	500.0	1.0	1.0	-102.52	-102.52	-32.8	-147.6	151.2	149.2	2.02	74.767	
600.0	600.0	600.0	600.0	1.2	1.2	-102.52	-102.52	-32.8	-147.6	151.2	148.8	2.47	61.173	
700.0	700.0	700.0	700.0	1.5	1.5	-102.52	-102.52	-32.8	-147.6	151.2	148.3	2.92	51.762	
800.0	800.0	800.0	800.0	1.7	1.7	-102.52	-102.52	-32.8	-147.6	151.2	147.9	3.37	44.860	
900.0	900.0	900.0	900.0	1.9	1.9	-102.52	-102.52	-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	-102.52	-102.52	-32.8	-147.6	151.2	147.0	4.27	35.416 CC	
1,100.0	1,100.0	1,098.7	1,098.7	2.4	2.4	-101.90	-101.90	-31.3	-148.4	151.7	147.0	4.72	32.163	
1,200.0	1,200.0	1,197.1	1,197.0	2.6	2.6	-100.06	-100.06	-26.7	-150.7	153.1	147.9	5.16	29.654	
1,300.0	1,300.0	1,295.1	1,294.6	2.8	2.8	-97.10	-97.10	-19.2	-154.5	155.8	150.2	5.61	27.765	
1,400.0	1,400.0	1,392.4	1,391.2	3.0	3.0	-93.17	-93.17	-8.8	-159.7	160.2	154.2	6.06	26.438	
1,500.0	1,500.0	1,489.4	1,487.0	3.3	3.3	-88.50	-88.50	4.4	-166.4	167.0	160.5	6.52	25.625	
1,600.0	1,600.0	1,588.3	1,584.6	3.5	3.6	-16.52	-16.52	18.7	-173.6	173.7	166.6	7.01	24.761	
1,700.0	1,699.8	1,687.4	1,682.5	3.7	3.9	-12.60	-12.60	33.0	-180.9	177.9	170.5	7.48	23.795	
1,800.0	1,799.5	1,786.8	1,780.5	3.9	4.2	-9.07	-9.07	47.4	-188.2	179.5	171.6	7.94	22.620	
1,900.0	1,898.7	1,886.2	1,878.6	4.2	4.5	-5.72	-5.72	61.8	-195.4	178.5	170.1	8.40	21.257	
2,000.0	1,997.9	1,985.7	1,976.7	4.4	4.9	-2.36	-2.36	76.2	-202.7	177.2	168.3	8.87	19.967	
2,100.0	2,097.0	2,085.1	2,074.9	4.7	5.2	1.05	1.05	90.6	-210.0	176.5	167.1	9.35	18.882	
2,161.5	2,158.0	2,146.3	2,135.2	4.8	5.4	3.15	3.15	99.5	-214.5	176.3	166.7	9.63	18.302	
2,200.0	2,196.2	2,184.6	2,173.0	4.9	5.5	4.47	4.47	105.0	-217.3	176.4	166.6	9.81	17.972	
2,300.0	2,295.3	2,284.0	2,271.1	5.2	5.9	7.88	7.88	119.4	-224.5	176.9	166.7	10.28	17.210	
2,400.0	2,394.5	2,383.4	2,369.2	5.5	6.2	11.25	11.25	133.8	-231.8	178.1	167.4	10.75	16.574	
2,500.0	2,493.7	2,482.9	2,467.3	5.8	6.6	14.58	14.58	148.2	-239.1	179.9	168.7	11.22	16.043	
2,600.0	2,592.8	2,582.3	2,565.5	6.1	6.9	17.82	17.82	162.6	-246.4	182.3	170.7	11.69	15.600	
2,700.0	2,692.0	2,681.7	2,663.6	6.4	7.3	20.97	20.97	177.0	-253.6	185.3	173.2	12.17	15.232	
2,800.0	2,791.1	2,781.2	2,761.7	6.7	7.7	24.02	24.02	191.4	-260.9	188.8	176.2	12.65	14.925	
2,900.0	2,890.3	2,880.6	2,859.8	7.0	8.0	26.94	26.94	205.8	-268.2	192.9	179.7	13.15	14.668	
3,000.0	2,989.5	2,980.1	2,958.0	7.3	8.4	29.74	29.74	220.2	-275.5	197.4	183.8	13.66	14.454	
3,100.0	3,088.6	3,079.5	3,056.1	7.6	8.7	32.41	32.41	234.6	-282.7	202.4	188.2	14.18	14.275	
3,200.0	3,187.8	3,178.9	3,154.2	7.9	9.1	34.95	34.95	249.0	-290.0	207.8	193.1	14.71	14.126	
3,300.0	3,286.9	3,278.4	3,252.3	8.2	9.5	37.35	37.35	263.4	-297.3	213.6	198.3	15.26	14.001	
3,400.0	3,386.1	3,377.8	3,350.4	8.5	9.8	39.63	39.63	277.8	-304.6	219.7	203.9	15.81	13.896	
3,500.0	3,485.2	3,477.2	3,448.6	8.8	10.2	41.78	41.78	292.2	-311.8	226.2	209.8	16.38	13.809	
3,600.0	3,584.4	3,576.7	3,546.7	9.2	10.6	43.81	43.81	306.6	-319.1	233.0	216.0	16.96	13.737	
3,700.0	3,683.6	3,676.1	3,644.8	9.5	10.9	45.72	45.72	321.0	-326.4	240.0	222.5	17.55	13.677	
3,800.0	3,782.7	3,775.6	3,742.9	9.8	11.3	47.52	47.52	335.4	-333.7	247.4	229.2	18.15	13.629	
3,900.0	3,881.9	3,875.0	3,841.0	10.1	11.7	49.22	49.22	349.8	-340.9	254.9	236.1	18.76	13.589	
4,000.0	3,981.0	3,974.4	3,939.2	10.4	12.0	50.81	50.81	364.1	-348.2	262.6	243.3	19.37	13.558	
4,100.0	4,080.2	4,073.9	4,037.3	10.7	12.4	52.32	52.32	378.5	-355.5	270.6	250.6	19.99	13.534	
4,200.0	4,179.3	4,173.3	4,135.4	11.1	12.8	53.74	53.74	392.9	-362.8	278.7	258.1	20.62	13.516	
4,300.0	4,278.5	4,272.8	4,233.5	11.4	13.1	55.08	55.08	407.3	-370.0	287.0	265.7	21.25	13.503	
4,400.0	4,377.7	4,372.2	4,331.6	11.7	13.5	56.34	56.34	421.7	-377.3	295.4	273.5	21.89	13.494	
4,500.0	4,476.8	4,471.6	4,429.8	12.0	13.9	57.54	57.54	436.1	-384.6	303.9	281.4	22.53	13.490	
4,600.0	4,576.0	4,571.1	4,527.9	12.4	14.2	58.66	58.66	450.5	-391.9	312.6	289.5	23.18	13.489	
4,700.0	4,675.1	4,670.5	4,626.0	12.7	14.6	59.73	59.73	464.9	-399.1	321.4	297.6	23.82	13.491	
4,800.0	4,774.3	4,769.9	4,724.1	13.0	15.0	60.74	60.74	479.3	-406.4	330.3	305.9	24.48	13.496	
4,900.0	4,873.4	4,869.4	4,822.3	13.3	15.3	61.70	61.70	493.7	-413.7	339.3	314.2	25.13	13.503	

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 19O-312
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 19O-312	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-432 - 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
5,000.0	4,972.6	4,968.8	4,920.4	13.7	15.7	62.61		508.1	-420.9	348.4	322.6	25.79	13.512	
5,100.0	5,071.8	5,068.3	5,018.5	14.0	16.1	63.47		522.5	-428.2	357.6	331.1	26.44	13.523	
5,200.0	5,170.9	5,167.7	5,116.6	14.3	16.5	64.28		536.9	-435.5	366.8	339.7	27.10	13.535	
5,300.0	5,270.1	5,267.1	5,214.7	14.6	16.8	65.06		551.3	-442.8	376.2	348.4	27.76	13.549	
5,400.0	5,369.2	5,366.6	5,312.9	15.0	17.2	65.80		565.7	-450.0	385.5	357.1	28.42	13.564	
5,500.0	5,468.4	5,466.0	5,411.0	15.3	17.6	66.51		580.1	-457.3	395.0	365.9	29.09	13.579	
5,600.0	5,567.6	5,565.4	5,509.1	15.6	17.9	67.21		594.5	-464.6	404.6	374.9	29.73	13.608	
5,700.0	5,667.1	5,675.6	5,618.0	15.8	18.3	67.74		609.4	-472.1	414.4	384.1	30.24	13.704	
5,800.0	5,766.9	5,790.2	5,731.8	16.0	18.6	67.99		621.0	-478.0	422.1	391.4	30.66	13.767	
5,900.0	5,866.8	5,905.2	5,846.5	16.2	18.8	67.98		628.5	-481.8	427.5	396.5	31.01	13.788	
6,000.0	5,966.8	6,020.5	5,961.7	16.3	19.0	0.33		632.0	-483.5	430.4	398.7	31.77	13.548	
6,100.0	6,066.8	6,125.6	6,066.8	16.5	19.1	0.31		632.2	-483.6	430.6	398.5	32.13	13.404	
6,162.5	6,129.3	6,188.1	6,129.3	16.6	19.2	-90.01		632.2	-483.6	430.6	398.8	31.83	13.528	
6,200.0	6,166.6	6,225.5	6,166.7	16.6	19.3	-90.29		632.2	-482.1	430.6	398.7	31.89	13.501	
6,300.0	6,264.7	6,326.0	6,266.3	16.6	19.3	-91.13		632.2	-469.2	430.7	398.8	31.92	13.492	
6,400.0	6,359.4	6,427.4	6,364.2	16.6	19.4	-91.95		632.2	-443.1	430.9	399.0	31.84	13.530	
6,500.0	6,449.3	6,529.5	6,458.4	16.5	19.3	-92.73		632.2	-403.8	431.1	399.4	31.73	13.586	
6,600.0	6,532.6	6,632.5	6,547.3	16.4	19.3	-93.47		632.2	-351.9	431.4	399.7	31.70	13.611	
6,700.0	6,608.0	6,736.3	6,629.0	16.4	19.2	-94.16		632.2	-288.0	431.8	399.9	31.88	13.543	
6,800.0	6,674.3	6,840.8	6,701.7	16.6	19.1	-94.77		632.2	-213.1	432.1	399.7	32.45	13.315	
6,900.0	6,730.2	6,946.0	6,763.9	17.1	19.1	-95.29		632.2	-128.4	432.5	398.9	33.58	12.879	
7,000.0	6,774.8	7,051.7	6,814.1	17.9	19.0	-95.72		632.2	-35.5	432.8	397.4	35.37	12.237	
7,100.0	6,807.3	7,157.8	6,851.1	19.1	19.5	-96.05		632.2	63.9	433.0	395.2	37.85	11.442	
7,200.0	6,827.3	7,264.3	6,874.1	20.6	21.2	-96.27		632.2	167.8	433.2	392.3	40.94	10.580	
7,300.0	6,834.3	7,366.2	6,885.4	22.3	23.0	-96.78		632.2	269.1	433.7	389.3	44.39	9.771	
7,400.0	6,833.0	7,470.8	6,892.1	24.2	25.1	-97.81		632.2	373.4	434.6	386.5	48.19	9.019	
7,500.0	6,831.6	7,572.3	6,891.7	26.2	27.3	-97.95		632.2	474.8	434.8	382.4	52.34	8.306	
7,600.0	6,830.2	7,672.3	6,891.0	28.4	29.5	-98.04		632.2	574.8	434.9	378.2	56.71	7.668	
7,700.0	6,828.7	7,772.2	6,890.3	30.7	31.9	-98.14		632.2	674.8	435.0	373.7	61.27	7.099	
7,800.0	6,827.3	7,872.2	6,889.6	33.1	34.3	-98.23		632.2	774.8	435.1	369.1	65.98	6.594	
7,900.0	6,825.9	7,972.2	6,888.9	35.5	36.7	-98.32		632.2	874.8	435.2	364.4	70.81	6.146	
8,000.0	6,824.5	8,072.2	6,888.2	38.0	39.2	-98.42		632.2	974.8	435.3	359.6	75.73	5.748	
8,100.0	6,823.1	8,172.2	6,887.5	40.5	41.7	-98.51		632.2	1,074.8	435.4	354.7	80.74	5.393	
8,200.0	6,821.7	8,272.2	6,886.8	43.1	44.3	-98.60		632.2	1,174.8	435.5	349.7	85.80	5.076	
8,300.0	6,820.3	8,372.2	6,886.1	45.7	46.9	-98.69		632.2	1,274.8	435.6	344.7	90.92	4.791	
8,400.0	6,818.9	8,472.2	6,885.4	48.3	49.5	-98.79		632.2	1,374.8	435.7	339.6	96.08	4.535	
8,500.0	6,817.4	8,572.2	6,884.7	50.9	52.2	-98.88		632.2	1,474.8	435.8	334.6	101.28	4.303	
8,600.0	6,816.0	8,672.2	6,884.0	53.6	54.8	-98.97		632.2	1,574.8	435.9	329.4	106.51	4.093	
8,700.0	6,814.6	8,772.2	6,883.3	56.3	57.5	-99.07		632.2	1,674.8	436.1	324.3	111.76	3.902	
8,800.0	6,813.2	8,872.2	6,882.6	58.9	60.2	-99.16		632.2	1,774.8	436.2	319.1	117.04	3.727	
8,900.0	6,811.8	8,972.2	6,881.9	61.6	62.9	-99.25		632.2	1,874.8	436.3	314.0	122.34	3.566	
9,000.0	6,810.4	9,072.2	6,881.2	64.3	65.6	-99.34		632.2	1,974.8	436.4	308.8	127.65	3.419	
9,100.0	6,809.0	9,172.2	6,880.5	67.0	68.3	-99.44		632.2	2,074.8	436.5	303.6	132.97	3.283	
9,200.0	6,807.5	9,272.2	6,879.8	69.8	71.0	-99.53		632.2	2,174.8	436.6	298.3	138.31	3.157	
9,300.0	6,806.1	9,372.2	6,879.1	72.5	73.7	-99.62		632.2	2,274.7	436.8	293.1	143.65	3.040	
9,400.0	6,804.7	9,472.2	6,878.4	75.2	76.4	-99.72		632.2	2,374.7	436.9	287.9	149.01	2.932	
9,500.0	6,803.3	9,572.2	6,877.7	78.0	79.2	-99.81		632.2	2,474.7	437.0	282.6	154.37	2.831	
9,600.0	6,801.9	9,672.2	6,877.0	80.7	81.9	-99.90		632.2	2,574.7	437.1	277.4	159.74	2.737	
9,700.0	6,800.5	9,772.2	6,876.3	83.4	84.7	-99.99		632.2	2,674.7	437.2	272.1	165.11	2.648	
9,800.0	6,799.1	9,872.2	6,875.6	86.2	87.4	-100.08		632.2	2,774.7	437.4	266.9	170.49	2.565	
9,900.0	6,797.6	9,972.2	6,874.9	88.9	90.2	-100.18		632.2	2,874.7	437.5	261.6	175.87	2.488	

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 19O-312
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 19O-312	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-432 - 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	6,796.2	10,072.2	6,874.3	91.7	92.9	-100.27		632.2	2,974.7	437.6	256.4	181.25	2.414	
10,100.0	6,794.8	10,172.2	6,873.6	94.5	95.7	-100.36		632.2	3,074.7	437.8	251.1	186.64	2.345	
10,200.0	6,793.4	10,272.2	6,872.9	97.2	98.4	-100.45		632.2	3,174.7	437.9	245.9	192.02	2.280	
10,300.0	6,792.0	10,372.2	6,872.2	100.0	101.2	-100.55		632.2	3,274.7	438.0	240.6	197.41	2.219	
10,400.0	6,790.6	10,472.2	6,871.5	102.8	104.0	-100.64		632.2	3,374.7	438.1	235.3	202.80	2.160	
10,500.0	6,789.2	10,572.2	6,870.8	105.5	106.7	-100.73		632.2	3,474.7	438.3	230.1	208.19	2.105	
10,600.0	6,787.8	10,672.2	6,870.1	108.3	109.5	-100.82		632.2	3,574.7	438.4	224.8	213.58	2.053	
10,700.0	6,786.3	10,772.2	6,869.4	111.1	112.3	-100.91		632.2	3,674.7	438.5	219.6	218.97	2.003	
10,800.0	6,784.9	10,872.2	6,868.7	113.8	115.0	-101.00		632.2	3,774.7	438.7	214.3	224.36	1.955	
10,900.0	6,783.5	10,972.2	6,868.0	116.6	117.8	-101.10		632.2	3,874.7	438.8	209.1	229.75	1.910	
11,000.0	6,782.1	11,072.2	6,867.3	119.4	120.6	-101.19		632.2	3,974.7	439.0	203.8	235.14	1.867	
11,100.0	6,780.7	11,172.2	6,866.6	122.2	123.4	-101.28		632.2	4,074.7	439.1	198.6	240.53	1.826	
11,200.0	6,779.3	11,272.2	6,865.9	125.0	126.2	-101.37		632.2	4,174.7	439.2	193.3	245.91	1.786	
11,300.0	6,777.9	11,372.2	6,865.2	127.7	128.9	-101.46		632.2	4,274.6	439.4	188.1	251.30	1.748	
11,400.0	6,776.4	11,472.2	6,864.5	130.5	131.7	-101.55		632.2	4,374.6	439.5	182.8	256.68	1.712	
11,500.0	6,775.0	11,572.2	6,863.8	133.3	134.5	-101.65		632.2	4,474.6	439.7	177.6	262.06	1.678	
11,600.0	6,773.6	11,672.2	6,863.1	136.1	137.3	-101.74		632.2	4,574.6	439.8	172.4	267.44	1.645	
11,700.0	6,772.2	11,772.2	6,862.4	138.9	140.1	-101.83		632.2	4,674.6	440.0	167.1	272.82	1.613	
11,800.0	6,770.8	11,872.2	6,861.7	141.7	142.9	-101.92		632.2	4,774.6	440.1	161.9	278.19	1.582	
11,900.0	6,769.4	11,972.2	6,861.0	144.5	145.6	-102.01		632.2	4,874.6	440.3	156.7	283.56	1.553	
12,000.0	6,768.0	12,072.2	6,860.3	147.2	148.4	-102.10		632.2	4,974.6	440.4	151.5	288.93	1.524	
12,100.0	6,766.5	12,172.2	6,859.6	150.0	151.2	-102.19		632.2	5,074.6	440.6	146.3	294.30	1.497 Level 3	
12,200.0	6,765.1	12,272.2	6,858.9	152.8	154.0	-102.28		632.2	5,174.6	440.7	141.0	299.66	1.471 Level 3	
12,300.0	6,763.7	12,372.2	6,858.2	155.6	156.8	-102.37		632.2	5,274.6	440.9	135.8	305.02	1.445 Level 3	
12,400.0	6,762.3	12,472.2	6,857.5	158.4	159.6	-102.47		632.2	5,374.6	441.0	130.6	310.38	1.421 Level 3	
12,500.0	6,760.9	12,572.2	6,856.8	161.2	162.4	-102.56		632.2	5,474.6	441.2	125.4	315.73	1.397 Level 3	
12,600.0	6,759.5	12,672.2	6,856.1	164.0	165.2	-102.65		632.2	5,574.6	441.3	120.2	321.08	1.374 Level 3	
12,700.0	6,758.1	12,772.2	6,855.4	166.8	168.0	-102.74		632.2	5,674.6	441.5	115.0	326.43	1.352 Level 3	
12,800.0	6,756.7	12,872.2	6,854.7	169.6	170.8	-102.83		632.2	5,774.6	441.6	109.9	331.77	1.331 Level 3	
12,900.0	6,755.2	12,972.2	6,854.0	172.4	173.6	-102.92		632.2	5,874.6	441.8	104.7	337.11	1.311 Level 3	
13,000.0	6,753.8	13,072.2	6,853.3	175.2	176.3	-103.01		632.2	5,974.6	442.0	99.5	342.45	1.291 Level 3	
13,100.0	6,752.4	13,172.2	6,852.6	178.0	179.1	-103.10		632.2	6,074.6	442.1	94.3	347.78	1.271 Level 3	
13,200.0	6,751.0	13,272.2	6,851.9	180.8	181.9	-103.19		632.2	6,174.6	442.3	89.2	353.11	1.253 Level 3	
13,300.0	6,749.6	13,372.2	6,851.2	183.6	184.7	-103.28		632.2	6,274.5	442.4	84.0	358.44	1.234 Level 2	
13,400.0	6,748.2	13,472.2	6,850.5	186.4	187.5	-103.37		632.2	6,374.5	442.6	78.8	363.76	1.217 Level 2	
13,500.0	6,746.8	13,572.2	6,849.8	189.1	190.3	-103.46		632.2	6,474.5	442.8	73.7	369.08	1.200 Level 2	
13,600.0	6,745.3	13,672.2	6,849.1	191.9	193.1	-103.55		632.2	6,574.5	442.9	68.5	374.40	1.183 Level 2	
13,700.0	6,743.9	13,772.2	6,848.4	194.7	195.9	-103.64		632.2	6,674.5	443.1	63.4	379.71	1.167 Level 2	
13,800.0	6,742.5	13,872.2	6,847.7	197.5	198.7	-103.73		632.2	6,774.5	443.3	58.3	385.01	1.151 Level 2	
13,900.0	6,741.1	13,972.2	6,847.0	200.3	201.5	-103.82		632.2	6,874.5	443.4	53.1	390.31	1.136 Level 2	
13,907.1	6,741.0	13,975.6	6,847.0	200.5	201.6	-103.82		632.2	6,878.0	443.5	52.9	390.60	1.135 Level 2, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	177.42	177.42	-61.9	2.8	62.0				
100.0	100.0	100.0	100.0	0.1	0.1	177.42	177.42	-61.9	2.8	62.0	61.8	0.22	275.822	
200.0	200.0	200.0	200.0	0.3	0.3	177.42	177.42	-61.9	2.8	62.0	61.3	0.67	91.941	
300.0	300.0	300.0	300.0	0.6	0.6	177.42	177.42	-61.9	2.8	62.0	60.9	1.12	55.164	
400.0	400.0	400.0	400.0	0.8	0.8	177.42	177.42	-61.9	2.8	62.0	60.4	1.57	39.403	
500.0	500.0	500.0	500.0	1.0	1.0	177.42	177.42	-61.9	2.8	62.0	60.0	2.02	30.647	
600.0	600.0	600.0	600.0	1.2	1.2	177.42	177.42	-61.9	2.8	62.0	59.5	2.47	25.075	
700.0	700.0	700.0	700.0	1.5	1.5	177.42	177.42	-61.9	2.8	62.0	59.1	2.92	21.217	
800.0	800.0	800.0	800.0	1.7	1.7	177.42	177.42	-61.9	2.8	62.0	58.6	3.37	18.388	
900.0	900.0	900.0	900.0	1.9	1.9	177.42	177.42	-61.9	2.8	62.0	58.2	3.82	16.225	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	177.42	177.42	-61.9	2.8	62.0	57.7	4.27	14.517	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	177.42	177.42	-61.9	2.8	62.0	57.3	4.72	13.134	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	177.42	177.42	-61.9	2.8	62.0	56.8	5.17	11.992	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	177.42	177.42	-61.9	2.8	62.0	56.4	5.62	11.033	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	177.42	177.42	-61.9	2.8	62.0	55.9	6.07	10.216	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	177.42	177.42	-61.9	2.8	62.0	55.5	6.52	9.511 CC, ES	
1,600.0	1,600.0	1,599.1	1,599.1	3.5	3.5	-115.07	-115.07	-62.7	1.2	63.4	56.5	6.94	9.141	
1,700.0	1,699.8	1,698.1	1,698.0	3.7	3.7	-114.98	-114.98	-64.9	-3.4	67.7	60.4	7.34	9.224	
1,800.0	1,799.5	1,796.9	1,796.4	3.9	3.9	-114.84	-114.84	-68.7	-11.0	74.8	67.1	7.76	9.642	
1,900.0	1,898.7	1,895.3	1,894.1	4.2	4.1	-114.64	-114.64	-73.9	-21.7	84.7	76.5	8.21	10.320	
2,000.0	1,997.9	1,993.3	1,990.9	4.4	4.3	-113.22	-113.22	-80.5	-35.3	96.4	87.7	8.69	11.086	
2,100.0	2,097.0	2,090.8	2,086.6	4.7	4.6	-110.53	-110.53	-88.5	-51.8	109.6	100.4	9.21	11.898	
2,200.0	2,196.2	2,187.5	2,180.9	4.9	4.9	-107.12	-107.12	-97.9	-71.0	124.7	115.0	9.76	12.774	
2,300.0	2,295.3	2,283.3	2,273.5	5.2	5.3	-103.36	-103.36	-108.6	-92.9	142.1	131.7	10.34	13.737	
2,400.0	2,394.5	2,381.1	2,367.8	5.5	5.7	-99.94	-99.94	-120.0	-116.4	160.8	149.8	10.94	14.691	
2,500.0	2,493.7	2,478.9	2,462.0	5.8	6.1	-97.23	-97.23	-131.5	-140.0	179.9	168.4	11.55	15.575	
2,600.0	2,592.8	2,576.8	2,556.3	6.1	6.5	-95.05	-95.05	-143.0	-163.6	199.4	187.3	12.17	16.387	
2,700.0	2,692.0	2,674.6	2,650.5	6.4	7.0	-93.25	-93.25	-154.5	-187.2	219.1	206.3	12.79	17.130	
2,800.0	2,791.1	2,772.4	2,744.8	6.7	7.5	-91.75	-91.75	-166.0	-210.8	239.0	225.6	13.42	17.810	
2,900.0	2,890.3	2,870.2	2,839.0	7.0	8.0	-90.48	-90.48	-177.5	-234.3	259.0	245.0	14.05	18.433	
3,000.0	2,989.5	2,968.1	2,933.3	7.3	8.5	-89.40	-89.40	-189.0	-257.9	279.1	264.5	14.69	19.005	
3,100.0	3,088.6	3,065.9	3,027.5	7.6	9.0	-88.46	-88.46	-200.5	-281.5	299.3	284.0	15.33	19.529	
3,200.0	3,187.8	3,163.7	3,121.8	7.9	9.5	-87.63	-87.63	-212.0	-305.1	319.6	303.6	15.97	20.012	
3,300.0	3,286.9	3,261.5	3,216.0	8.2	10.0	-86.91	-86.91	-223.5	-328.6	339.9	323.3	16.62	20.457	
3,400.0	3,386.1	3,359.4	3,310.3	8.5	10.6	-86.27	-86.27	-235.0	-352.2	360.3	343.0	17.27	20.869	
3,500.0	3,485.2	3,457.2	3,404.5	8.8	11.1	-85.70	-85.70	-246.5	-375.8	380.7	362.8	17.92	21.250	
3,600.0	3,584.4	3,555.0	3,498.7	9.2	11.6	-85.18	-85.18	-257.9	-399.4	401.2	382.6	18.57	21.604	
3,700.0	3,683.6	3,652.9	3,593.0	9.5	12.2	-84.71	-84.71	-269.4	-423.0	421.6	402.4	19.22	21.933	
3,800.0	3,782.7	3,750.7	3,687.2	9.8	12.7	-84.29	-84.29	-280.9	-446.5	442.1	422.2	19.88	22.239	
3,900.0	3,881.9	3,848.5	3,781.5	10.1	13.2	-83.91	-83.91	-292.4	-470.1	462.6	442.1	20.54	22.526	
4,000.0	3,981.0	3,946.3	3,875.7	10.4	13.8	-83.56	-83.56	-303.9	-493.7	483.2	462.0	21.20	22.793	
4,100.0	4,080.2	4,044.2	3,970.0	10.7	14.3	-83.23	-83.23	-315.4	-517.3	503.7	481.9	21.86	23.044	
4,200.0	4,179.3	4,142.0	4,064.2	11.1	14.9	-82.93	-82.93	-326.9	-540.8	524.3	501.8	22.52	23.280	
4,300.0	4,278.5	4,239.8	4,158.5	11.4	15.4	-82.66	-82.66	-338.4	-564.4	544.9	521.7	23.18	23.501	
4,400.0	4,377.7	4,337.7	4,252.7	11.7	16.0	-82.40	-82.40	-349.9	-588.0	565.5	541.6	23.85	23.710	
4,500.0	4,476.8	4,435.5	4,347.0	12.0	16.5	-82.17	-82.17	-361.4	-611.6	586.1	561.5	24.51	23.907	
4,600.0	4,576.0	4,533.3	4,441.2	12.4	17.1	-81.94	-81.94	-372.9	-635.2	606.7	581.5	25.18	24.093	
4,700.0	4,675.1	4,631.1	4,535.4	12.7	17.6	-81.74	-81.74	-384.4	-658.7	627.3	601.4	25.85	24.269	
4,800.0	4,774.3	4,729.0	4,629.7	13.0	18.2	-81.54	-81.54	-395.9	-682.3	647.9	621.4	26.52	24.435	
4,900.0	4,873.4	4,826.8	4,723.9	13.3	18.7	-81.36	-81.36	-407.3	-705.9	668.5	641.3	27.18	24.593	
5,000.0	4,972.6	4,924.6	4,818.2	13.7	19.3	-81.19	-81.19	-418.8	-729.5	689.2	661.3	27.85	24.743	

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 19O-312
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 19O-312	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,071.8	5,022.4	4,912.4	14.0	19.9	-81.03	-430.3	-753.0	709.8	681.3	28.52	24.886		
5,200.0	5,170.9	5,120.3	5,006.7	14.3	20.4	-80.88	-441.8	-776.6	730.4	701.3	29.19	25.022		
5,300.0	5,270.1	5,238.3	5,120.8	14.6	21.0	-80.77	-455.1	-803.8	750.1	720.2	29.89	25.095		
5,400.0	5,369.2	5,365.2	5,244.6	15.0	21.4	-80.87	-467.0	-828.4	766.3	735.7	30.59	25.052		
5,500.0	5,468.4	5,493.3	5,370.8	15.3	21.8	-81.20	-476.7	-848.2	778.8	747.5	31.29	24.888		
5,600.0	5,567.6	5,622.1	5,498.6	15.6	22.1	-81.79	-483.9	-862.9	787.7	755.7	31.98	24.630		
5,700.0	5,667.1	5,751.5	5,627.5	15.8	22.4	-82.39	-488.6	-872.5	793.2	760.7	32.54	24.374		
5,800.0	5,766.9	5,881.1	5,757.0	16.0	22.6	-82.83	-490.7	-876.9	795.5	762.5	33.02	24.094		
5,900.0	5,866.8	5,990.9	5,866.8	16.2	22.7	-83.05	-490.9	-877.2	795.3	762.0	33.37	23.832		
5,954.9	5,921.7	6,045.7	5,921.7	16.3	22.8	-83.08	-490.9	-877.2	795.3	761.7	33.55	23.708		
6,000.0	5,966.8	6,090.9	5,966.8	16.3	22.8	-150.53	-490.9	-877.2	795.3	761.3	34.02	23.378		
6,100.0	6,066.8	6,288.0	6,161.8	16.5	22.8	-152.09	-490.9	-852.8	789.3	755.3	34.09	23.155		
6,200.0	6,166.6	6,469.8	6,330.8	16.6	22.5	115.15	-490.9	-786.8	775.0	740.6	34.40	22.528		
6,300.0	6,264.7	6,631.2	6,464.0	16.6	22.1	111.90	-490.9	-696.2	758.0	723.5	34.57	21.928		
6,400.0	6,359.4	6,773.4	6,563.4	16.6	21.9	108.41	-490.9	-594.8	740.6	705.7	34.92	21.208		
6,500.0	6,449.3	6,899.6	6,634.5	16.5	21.9	104.83	-490.9	-490.6	724.5	688.9	35.58	20.361		
6,600.0	6,532.6	7,013.0	6,683.0	16.4	22.3	101.21	-490.9	-388.3	711.0	674.4	36.61	19.420		
6,700.0	6,608.0	7,116.2	6,713.6	16.4	22.9	97.57	-490.9	-289.8	700.9	662.9	37.96	18.463		
6,800.0	6,674.3	7,211.5	6,729.7	16.6	23.7	93.93	-490.9	-195.9	694.7	655.1	39.61	17.541		
6,900.0	6,730.2	7,300.6	6,734.2	17.1	24.8	90.29	-490.9	-107.0	692.5	651.0	41.50	16.685		
6,908.0	6,734.1	7,307.5	6,734.1	17.2	24.9	90.00	-490.9	-100.2	692.5	650.8	41.68	16.614		
7,000.0	6,774.8	7,389.6	6,733.3	17.9	26.0	86.85	-490.9	-18.1	693.7	650.0	43.73	15.864		
7,100.0	6,807.3	7,483.7	6,732.3	19.1	27.5	84.05	-490.9	76.0	696.5	650.1	46.38	15.017		
7,200.0	6,827.3	7,581.4	6,731.3	20.6	29.3	82.19	-490.9	173.7	699.1	649.6	49.50	14.124		
7,300.0	6,834.3	7,681.0	6,730.2	22.3	31.3	81.46	-490.9	273.3	700.2	647.2	53.07	13.195		
7,400.0	6,833.0	7,781.0	6,729.2	24.2	33.4	81.47	-490.9	373.3	700.2	643.2	57.04	12.275		
7,500.0	6,831.6	7,881.0	6,728.1	26.2	35.6	81.50	-490.9	473.3	700.1	638.9	61.27	11.426		
7,600.0	6,830.2	7,981.0	6,727.1	28.4	37.9	81.53	-490.9	573.3	700.1	634.4	65.71	10.653		
7,700.0	6,828.7	8,081.0	6,726.0	30.7	40.3	81.56	-490.9	673.3	700.0	629.7	70.32	9.955		
7,800.0	6,827.3	8,181.0	6,725.0	33.1	42.7	81.59	-490.9	773.3	700.0	624.9	75.06	9.326		
7,900.0	6,825.9	8,281.0	6,723.9	35.5	45.1	81.62	-490.9	873.3	699.9	620.0	79.91	8.759		
8,000.0	6,824.5	8,381.0	6,722.9	38.0	47.6	81.65	-490.9	973.3	699.9	615.0	84.84	8.249		
8,100.0	6,823.1	8,481.0	6,721.9	40.5	50.2	81.68	-490.9	1,073.3	699.8	610.0	89.86	7.788		
8,200.0	6,821.7	8,581.0	6,720.8	43.1	52.7	81.71	-490.9	1,173.3	699.8	604.8	94.93	7.371		
8,300.0	6,820.3	8,681.0	6,719.8	45.7	55.3	81.74	-490.9	1,273.3	699.7	599.6	100.06	6.993		
8,400.0	6,818.9	8,781.0	6,718.7	48.3	57.9	81.77	-490.9	1,373.3	699.7	594.4	105.24	6.648		
8,500.0	6,817.4	8,881.0	6,717.7	50.9	60.5	81.80	-490.9	1,473.3	699.6	589.2	110.45	6.334		
8,600.0	6,816.0	8,981.0	6,716.6	53.6	63.2	81.83	-490.9	1,573.3	699.6	583.9	115.70	6.046		
8,700.0	6,814.6	9,081.0	6,715.6	56.3	65.8	81.86	-490.9	1,673.3	699.5	578.5	120.98	5.782		
8,800.0	6,813.2	9,181.0	6,714.5	58.9	68.5	81.89	-490.9	1,773.3	699.4	573.2	126.28	5.539		
8,900.0	6,811.8	9,281.0	6,713.5	61.6	71.2	81.92	-490.9	1,873.2	699.4	567.8	131.61	5.314		
9,000.0	6,810.4	9,381.0	6,712.4	64.3	73.9	81.95	-490.9	1,973.2	699.3	562.4	136.95	5.106		
9,100.0	6,809.0	9,481.0	6,711.4	67.0	76.6	81.98	-490.9	2,073.2	699.3	557.0	142.32	4.914		
9,200.0	6,807.5	9,581.0	6,710.3	69.8	79.3	82.01	-490.9	2,173.2	699.2	551.5	147.70	4.734		
9,300.0	6,806.1	9,681.0	6,709.3	72.5	82.0	82.04	-490.9	2,273.2	699.2	546.1	153.09	4.567		
9,400.0	6,804.7	9,781.0	6,708.2	75.2	84.7	82.07	-490.9	2,373.2	699.1	540.6	158.50	4.411		
9,500.0	6,803.3	9,881.0	6,707.2	78.0	87.4	82.10	-490.9	2,473.2	699.1	535.2	163.92	4.265		
9,600.0	6,801.9	9,981.0	6,706.1	80.7	90.2	82.13	-490.9	2,573.2	699.0	529.7	169.35	4.128		
9,700.0	6,800.5	10,081.0	6,705.1	83.4	92.9	82.16	-490.9	2,673.2	699.0	524.2	174.79	3.999		
9,800.0	6,799.1	10,181.0	6,704.0	86.2	95.6	82.19	-490.9	2,773.2	698.9	518.7	180.24	3.878		
9,900.0	6,797.6	10,281.0	6,703.0	88.9	98.4	82.22	-490.9	2,873.2	698.9	513.2	185.70	3.764		

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 19O-312
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 19O-312	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,796.2	10,381.0	6,702.0	91.7	101.1	82.25		-490.9	2,973.2	698.8	507.7	191.17	3.656	
10,100.0	6,794.8	10,481.0	6,700.9	94.5	103.9	82.28		-490.9	3,073.2	698.8	502.2	196.64	3.554	
10,200.0	6,793.4	10,581.0	6,699.9	97.2	106.6	82.31		-490.9	3,173.2	698.7	496.6	202.12	3.457	
10,300.0	6,792.0	10,681.0	6,698.8	100.0	109.4	82.34		-490.9	3,273.2	698.7	491.1	207.60	3.366	
10,400.0	6,790.6	10,781.0	6,697.8	102.8	112.1	82.37		-490.9	3,373.2	698.6	485.5	213.09	3.279	
10,500.0	6,789.2	10,881.0	6,696.7	105.5	114.9	82.40		-490.9	3,473.1	698.6	480.0	218.59	3.196	
10,600.0	6,787.8	10,981.0	6,695.7	108.3	117.6	82.43		-490.9	3,573.1	698.5	474.5	224.09	3.117	
10,700.0	6,786.3	11,081.0	6,694.6	111.1	120.4	82.45		-490.9	3,673.1	698.5	468.9	229.60	3.042	
10,800.0	6,784.9	11,181.0	6,693.6	113.8	123.2	82.48		-490.9	3,773.1	698.5	463.3	235.11	2.971	
10,900.0	6,783.5	11,281.0	6,692.5	116.6	125.9	82.51		-490.9	3,873.1	698.4	457.8	240.62	2.902	
11,000.0	6,782.1	11,381.0	6,691.5	119.4	128.7	82.54		-490.9	3,973.1	698.4	452.2	246.14	2.837	
11,100.0	6,780.7	11,481.0	6,690.4	122.2	131.5	82.57		-490.9	4,073.1	698.3	446.6	251.66	2.775	
11,200.0	6,779.3	11,581.0	6,689.4	125.0	134.3	82.60		-490.9	4,173.1	698.3	441.1	257.19	2.715	
11,300.0	6,777.9	11,681.0	6,688.3	127.7	137.0	82.63		-490.9	4,273.1	698.2	435.5	262.72	2.658	
11,400.0	6,776.4	11,781.0	6,687.3	130.5	139.8	82.66		-490.9	4,373.1	698.2	429.9	268.25	2.603	
11,500.0	6,775.0	11,881.0	6,686.2	133.3	142.6	82.69		-490.9	4,473.1	698.1	424.3	273.78	2.550	
11,600.0	6,773.6	11,981.0	6,685.2	136.1	145.4	82.72		-490.9	4,573.1	698.1	418.8	279.32	2.499	
11,700.0	6,772.2	12,081.0	6,684.2	138.9	148.1	82.75		-490.9	4,673.1	698.0	413.2	284.86	2.450	
11,800.0	6,770.8	12,181.0	6,683.1	141.7	150.9	82.78		-490.9	4,773.1	698.0	407.6	290.40	2.404	
11,900.0	6,769.4	12,281.0	6,682.1	144.5	153.7	82.81		-490.9	4,873.1	697.9	402.0	295.95	2.358	
12,000.0	6,768.0	12,381.0	6,681.0	147.2	156.5	82.84		-490.9	4,973.1	697.9	396.4	301.49	2.315	
12,100.0	6,766.5	12,481.0	6,680.0	150.0	159.3	82.87		-490.9	5,073.1	697.8	390.8	307.04	2.273	
12,200.0	6,765.1	12,581.0	6,678.9	152.8	162.0	82.90		-490.9	5,173.0	697.8	385.2	312.59	2.232	
12,300.0	6,763.7	12,681.0	6,677.9	155.6	164.8	82.93		-490.9	5,273.0	697.8	379.6	318.15	2.193	
12,400.0	6,762.3	12,781.0	6,676.8	158.4	167.6	82.96		-490.9	5,373.0	697.7	374.0	323.70	2.155	
12,500.0	6,760.9	12,881.0	6,675.8	161.2	170.4	82.99		-490.9	5,473.0	697.7	368.4	329.26	2.119	
12,600.0	6,759.5	12,981.0	6,674.7	164.0	173.2	83.02		-490.9	5,573.0	697.6	362.8	334.82	2.084	
12,700.0	6,758.1	13,081.0	6,673.7	166.8	176.0	83.05		-490.9	5,673.0	697.6	357.2	340.38	2.049	
12,800.0	6,756.7	13,181.0	6,672.6	169.6	178.8	83.08		-490.8	5,773.0	697.5	351.6	345.94	2.016	
12,900.0	6,755.2	13,281.0	6,671.6	172.4	181.6	83.11		-490.8	5,873.0	697.5	346.0	351.51	1.984	
13,000.0	6,753.8	13,381.0	6,670.5	175.2	184.3	83.14		-490.8	5,973.0	697.4	340.4	357.08	1.953	
13,100.0	6,752.4	13,481.0	6,669.5	178.0	187.1	83.17		-490.8	6,073.0	697.4	334.8	362.64	1.923	
13,200.0	6,751.0	13,581.0	6,668.4	180.8	189.9	83.20		-490.8	6,173.0	697.4	329.1	368.21	1.894	
13,300.0	6,749.6	13,681.0	6,667.4	183.6	192.7	83.23		-490.8	6,273.0	697.3	323.5	373.78	1.866	
13,400.0	6,748.2	13,781.0	6,666.4	186.4	195.5	83.26		-490.8	6,373.0	697.3	317.9	379.36	1.838	
13,500.0	6,746.8	13,881.0	6,665.3	189.1	198.3	83.29		-490.8	6,473.0	697.2	312.3	384.93	1.811	
13,600.0	6,745.3	13,981.0	6,664.3	191.9	201.1	83.32		-490.8	6,573.0	697.2	306.7	390.50	1.785	
13,700.0	6,743.9	14,081.0	6,663.2	194.7	203.9	83.35		-490.8	6,673.0	697.1	301.1	396.08	1.760	
13,800.0	6,742.5	14,181.0	6,662.2	197.5	206.7	83.38		-490.8	6,772.9	697.1	295.4	401.66	1.736	
13,900.0	6,741.1	14,280.9	6,661.1	200.3	209.5	83.41		-490.8	6,872.9	697.1	289.8	407.24	1.712	
13,907.1	6,741.0	14,288.1	6,661.0	200.5	209.7	83.41		-490.8	6,880.0	697.1	289.4	407.63	1.710 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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)	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	174.54	-29.1	2.8	29.3				
100.0	100.0	100.0	100.0	0.1	0.1	174.54	-29.1	2.8	29.3	29.1	0.22	130.277	
200.0	200.0	200.0	200.0	0.3	0.3	174.54	-29.1	2.8	29.3	28.6	0.67	43.426	
300.0	300.0	300.0	300.0	0.6	0.6	174.54	-29.1	2.8	29.3	28.2	1.12	26.055	
400.0	400.0	400.0	400.0	0.8	0.8	174.54	-29.1	2.8	29.3	27.7	1.57	18.611	
500.0	500.0	500.0	500.0	1.0	1.0	174.54	-29.1	2.8	29.3	27.3	2.02	14.475	
600.0	600.0	600.0	600.0	1.2	1.2	174.54	-29.1	2.8	29.3	26.8	2.47	11.843	
700.0	700.0	700.0	700.0	1.5	1.5	174.54	-29.1	2.8	29.3	26.4	2.92	10.021	
800.0	800.0	800.0	800.0	1.7	1.7	174.54	-29.1	2.8	29.3	25.9	3.37	8.685	
900.0	900.0	900.0	900.0	1.9	1.9	174.54	-29.1	2.8	29.3	25.5	3.82	7.663	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	174.54	-29.1	2.8	29.3	25.0	4.27	6.857	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	174.54	-29.1	2.8	29.3	24.6	4.72	6.204	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	174.54	-29.1	2.8	29.3	24.1	5.17	5.664	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	174.54	-29.1	2.8	29.3	23.7	5.62	5.211	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	174.54	-29.1	2.8	29.3	23.2	6.07	4.825	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	174.54	-29.1	2.8	29.3	22.8	6.52	4.492 CC	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-120.90	-29.1	2.8	30.1	23.2	6.96	4.331	
1,700.0	1,699.8	1,699.8	1,699.8	3.7	3.7	-128.64	-29.1	2.8	33.1	25.7	7.39	4.482	
1,800.0	1,799.5	1,799.5	1,799.5	3.9	3.9	-138.55	-29.1	2.8	39.2	31.4	7.82	5.009	
1,900.0	1,898.7	1,898.7	1,898.7	4.2	4.2	-147.85	-29.1	2.8	48.9	40.6	8.25	5.928	
2,000.0	1,997.9	1,997.9	1,997.9	4.4	4.4	-154.41	-29.1	2.8	60.3	51.6	8.68	6.940	
2,100.0	2,097.0	2,099.0	2,099.0	4.7	4.6	-158.10	-28.9	1.1	70.8	61.7	9.12	7.769	
2,200.0	2,196.2	2,200.8	2,200.7	4.9	4.8	-159.36	-28.2	-4.2	78.7	69.2	9.55	8.245	
2,300.0	2,295.3	2,303.1	2,302.5	5.2	5.0	-158.97	-27.1	-13.1	83.7	73.8	9.99	8.379	
2,400.0	2,394.5	2,404.9	2,403.6	5.5	5.3	-157.21	-25.5	-25.5	86.0	75.5	10.46	8.221	
2,500.0	2,493.7	2,504.9	2,502.6	5.8	5.5	-155.11	-23.8	-38.7	87.4	76.5	10.94	7.993	
2,600.0	2,592.8	2,604.8	2,601.7	6.1	5.8	-153.07	-22.0	-52.0	89.0	77.5	11.43	7.784	
2,700.0	2,692.0	2,704.8	2,700.7	6.4	6.0	-151.11	-20.3	-65.3	90.6	78.7	11.94	7.592	
2,800.0	2,791.1	2,804.7	2,799.8	6.7	6.3	-149.22	-18.6	-78.6	92.4	79.9	12.46	7.416	
2,900.0	2,890.3	2,904.6	2,898.8	7.0	6.6	-147.40	-16.9	-91.8	94.2	81.2	12.99	7.254	
3,000.0	2,989.5	3,004.6	2,997.8	7.3	6.8	-145.66	-15.1	-105.1	96.2	82.6	13.54	7.105	
3,100.0	3,088.6	3,104.5	3,096.9	7.6	7.1	-143.98	-13.4	-118.4	98.2	84.1	14.10	6.967	
3,200.0	3,187.8	3,204.5	3,195.9	7.9	7.4	-142.37	-11.7	-131.6	100.3	85.7	14.67	6.840	
3,300.0	3,286.9	3,304.4	3,295.0	8.2	7.7	-140.83	-10.0	-144.9	102.5	87.3	15.25	6.723	
3,400.0	3,386.1	3,404.3	3,394.0	8.5	8.0	-139.36	-8.2	-158.2	104.8	88.9	15.84	6.616	
3,500.0	3,485.2	3,504.3	3,493.0	8.8	8.3	-137.95	-6.5	-171.4	107.1	90.7	16.44	6.516	
3,600.0	3,584.4	3,604.2	3,592.1	9.2	8.6	-136.60	-4.8	-184.7	109.5	92.4	17.04	6.424	
3,700.0	3,683.6	3,704.1	3,691.1	9.5	8.9	-135.31	-3.1	-198.0	111.9	94.3	17.66	6.339	
3,800.0	3,782.7	3,804.1	3,790.2	9.8	9.2	-134.07	-1.3	-211.2	114.4	96.2	18.28	6.261	
3,900.0	3,881.9	3,904.0	3,889.2	10.1	9.5	-132.89	0.4	-224.5	117.0	98.1	18.90	6.189	
4,000.0	3,981.0	4,004.0	3,988.2	10.4	9.9	-131.76	2.1	-237.8	119.6	100.0	19.53	6.122	
4,100.0	4,080.2	4,103.9	4,087.3	10.7	10.2	-130.68	3.8	-251.1	122.2	102.1	20.17	6.060	
4,200.0	4,179.3	4,203.8	4,186.3	11.1	10.5	-129.64	5.5	-264.3	124.9	104.1	20.81	6.002	
4,300.0	4,278.5	4,303.8	4,285.3	11.4	10.8	-128.65	7.3	-277.6	127.6	106.2	21.46	5.949	
4,400.0	4,377.7	4,403.7	4,384.4	11.7	11.1	-127.69	9.0	-290.9	130.4	108.3	22.10	5.899	
4,500.0	4,476.8	4,503.7	4,483.4	12.0	11.4	-126.78	10.7	-304.1	133.2	110.4	22.75	5.854	
4,600.0	4,576.0	4,603.6	4,582.5	12.4	11.8	-125.91	12.4	-317.4	136.0	112.6	23.41	5.811	
4,700.0	4,675.1	4,703.5	4,681.5	12.7	12.1	-125.07	14.2	-330.7	138.9	114.8	24.06	5.772	
4,800.0	4,774.3	4,803.5	4,780.5	13.0	12.4	-124.27	15.9	-343.9	141.8	117.0	24.72	5.735	
4,900.0	4,873.4	4,903.4	4,879.6	13.3	12.7	-123.50	17.6	-357.2	144.7	119.3	25.38	5.701	
5,000.0	4,972.6	5,003.4	4,978.6	13.7	13.1	-122.75	19.3	-370.5	147.6	121.6	26.04	5.669	

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 190-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB -15')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 190-312	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 190-HZ Pad Sec.19-T5N-R64W - Klein 190-412 - 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	5,071.8	5,103.3	5,077.7	14.0	13.4	-122.04		21.1	-383.7	150.6	123.9	26.70	5.639	
5,200.0	5,170.9	5,203.2	5,176.7	14.3	13.7	-121.36		22.8	-397.0	153.6	126.2	27.37	5.611	
5,300.0	5,270.1	5,303.2	5,275.7	14.6	14.0	-120.70		24.5	-410.3	156.6	128.5	28.03	5.585	
5,400.0	5,369.2	5,403.1	5,374.8	15.0	14.4	-120.06		26.2	-423.6	159.6	130.9	28.70	5.561	
5,500.0	5,468.4	5,503.0	5,473.8	15.3	14.7	-119.45		27.9	-436.8	162.6	133.3	29.37	5.538	
5,600.0	5,567.6	5,603.0	5,572.9	15.6	15.0	-118.81		29.7	-450.1	165.6	135.6	30.02	5.515	
5,700.0	5,667.1	5,702.2	5,671.2	15.8	15.3	-117.53		31.3	-462.7	167.3	136.7	30.60	5.468	
5,800.0	5,766.9	5,800.9	5,769.5	16.0	15.6	-116.24		32.6	-472.3	168.2	137.2	31.07	5.414	
5,900.0	5,866.8	5,900.0	5,868.4	16.2	15.7	-115.02		33.4	-478.5	168.3	136.8	31.48	5.347	
6,000.0	5,966.8	5,998.8	5,967.1	16.3	15.9	-114.41		33.7	-481.3	167.9	140.8	27.18	6.179	
6,049.8	6,016.6	6,048.3	6,016.6	16.4	16.0	-114.47		33.8	-481.5	167.9	140.5	27.37	6.136	
6,100.0	6,066.8	6,098.5	6,066.8	16.5	16.1	-114.47		33.8	-481.5	167.9	140.3	27.56	6.092	
6,195.1	6,161.7	6,193.4	6,161.7	16.6	16.2	-114.47		33.8	-480.3	167.8	135.3	32.51	5.163	
6,200.0	6,166.6	6,198.3	6,166.6	16.6	16.2	-114.47		33.8	-480.0	167.8	135.3	32.52	5.161	
6,300.0	6,264.7	6,298.5	6,265.9	16.6	16.3	-114.47		33.8	-467.2	168.0	135.3	32.67	5.141	
6,400.0	6,359.4	6,399.6	6,363.5	16.6	16.3	-114.47		33.8	-441.2	168.3	135.7	32.66	5.153	
6,500.0	6,449.3	6,501.5	6,457.6	16.5	16.2	-114.47		33.8	-402.1	168.9	136.3	32.54	5.189	
6,600.0	6,532.6	6,604.2	6,546.3	16.4	16.2	-114.47		33.8	-350.5	169.6	137.2	32.41	5.233	
6,700.0	6,608.0	6,707.8	6,627.9	16.4	16.2	-114.47		33.8	-286.9	170.5	138.0	32.42	5.258	
6,800.0	6,674.3	6,812.0	6,700.6	16.6	16.4	-114.47		33.8	-212.3	171.4	138.6	32.74	5.234	
6,900.0	6,730.2	6,917.0	6,762.9	17.1	16.9	-114.47		33.8	-127.9	172.3	138.7	33.55	5.134	
7,000.0	6,774.8	7,022.5	6,813.2	17.9	17.7	-114.47		33.8	-35.2	173.1	138.1	35.01	4.944	
7,100.0	6,807.3	7,128.6	6,850.5	19.1	18.9	-114.47		33.8	63.9	173.8	136.6	37.17	4.676	
7,200.0	6,827.3	7,235.0	6,873.8	20.6	20.4	-114.47		33.8	167.7	174.3	134.3	39.98	4.360	
7,300.0	6,834.3	7,337.0	6,885.2	22.3	22.2	-114.47		33.8	269.1	175.5	132.4	43.11	4.071	
7,400.0	6,833.0	7,441.5	6,892.0	24.2	24.2	-114.47		33.8	373.3	177.9	131.6	46.33	3.841	
7,500.0	6,831.6	7,543.0	6,891.7	26.2	26.3	-114.47		33.8	474.8	178.3	128.1	50.17	3.554	
7,600.0	6,830.2	7,643.0	6,891.0	28.4	28.4	-114.47		33.8	574.8	178.5	124.3	54.23	3.293	
7,700.0	6,828.7	7,743.0	6,890.3	30.7	30.7	-114.47		33.8	674.8	178.8	120.3	58.47	3.058	
7,800.0	6,827.3	7,843.0	6,889.6	33.1	33.1	-114.47		33.8	774.8	179.0	116.2	62.85	2.849	
7,900.0	6,825.9	7,943.0	6,888.9	35.5	35.5	-114.47		33.8	874.8	179.3	111.9	67.34	2.662	
8,000.0	6,824.5	8,043.0	6,888.2	38.0	38.0	-114.47		33.8	974.8	179.5	107.6	71.92	2.496	
8,100.0	6,823.1	8,143.0	6,887.5	40.5	40.5	-114.47		33.8	1,074.8	179.8	103.2	76.56	2.348	
8,200.0	6,821.7	8,243.0	6,886.8	43.1	43.1	-114.47		33.8	1,174.8	180.0	98.8	81.26	2.216	
8,300.0	6,820.3	8,343.0	6,886.1	45.7	45.7	-114.47		33.8	1,274.8	180.3	94.3	86.00	2.097	
8,400.0	6,818.9	8,443.0	6,885.4	48.3	48.3	-114.47		33.8	1,374.8	180.6	89.8	90.78	1.989	
8,500.0	6,817.4	8,543.0	6,884.7	50.9	50.9	-114.47		33.8	1,474.8	180.8	85.3	95.57	1.892	
8,600.0	6,816.0	8,643.0	6,884.0	53.6	53.6	-114.47		33.8	1,574.8	181.1	80.7	100.39	1.804	
8,700.0	6,814.6	8,743.0	6,883.3	56.3	56.2	-114.47		33.8	1,674.8	181.4	76.1	105.22	1.724	
8,800.0	6,813.2	8,843.0	6,882.6	58.9	58.9	-114.47		33.8	1,774.8	181.6	71.6	110.07	1.650	
8,900.0	6,811.8	8,943.0	6,882.0	61.6	61.6	-114.47		33.8	1,874.8	181.9	67.0	114.92	1.583	
9,000.0	6,810.4	9,043.0	6,881.3	64.3	64.3	-114.47		33.8	1,974.8	182.2	62.4	119.77	1.521	
9,100.0	6,809.0	9,143.0	6,880.6	67.0	67.0	-114.47		33.8	2,074.8	182.5	57.9	124.62	1.464 Level 3	
9,200.0	6,807.5	9,243.0	6,879.9	69.8	69.7	-114.47		33.8	2,174.8	182.8	53.3	129.48	1.412 Level 3	
9,300.0	6,806.1	9,343.0	6,879.2	72.5	72.5	-114.47		33.8	2,274.7	183.0	48.7	134.33	1.363 Level 3	
9,400.0	6,804.7	9,443.0	6,878.5	75.2	75.2	-114.47		33.8	2,374.7	183.3	44.2	139.18	1.317 Level 3	
9,500.0	6,803.3	9,543.0	6,877.8	78.0	77.9	-114.47		33.8	2,474.7	183.6	39.6	144.02	1.275 Level 3	
9,600.0	6,801.9	9,643.0	6,877.1	80.7	80.7	-114.47		33.8	2,574.7	183.9	35.1	148.86	1.235 Level 2	
9,700.0	6,800.5	9,743.0	6,876.4	83.4	83.4	-114.47		33.8	2,674.7	184.2	30.5	153.69	1.199 Level 2	
9,800.0	6,799.1	9,843.0	6,875.7	86.2	86.2	-114.47		33.8	2,774.7	184.5	26.0	158.51	1.164 Level 2	
9,900.0	6,797.6	9,943.0	6,875.0	88.9	88.9	-114.47		33.8	2,874.7	184.8	21.5	163.32	1.132 Level 2	

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 190-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB -15')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Klein 190-312	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	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,000.0	6,796.2	10,043.0	6,874.3	91.7	91.7	114.94	33.8	2,974.7	185.1	17.0	168.12	1.101	Level 2	
10,100.0	6,794.8	10,143.0	6,873.6	94.5	94.5	115.14	33.8	3,074.7	185.4	12.5	172.91	1.072	Level 2	
10,200.0	6,793.4	10,243.0	6,872.9	97.2	97.2	115.34	33.8	3,174.7	185.7	8.0	177.69	1.045	Level 2	
10,300.0	6,792.0	10,343.0	6,872.2	100.0	100.0	115.54	33.8	3,274.7	186.0	3.6	182.46	1.019	Level 2	
10,400.0	6,790.6	10,443.0	6,871.5	102.8	102.7	115.73	33.8	3,374.7	186.3	-0.9	187.22	0.995	Level 1	
10,500.0	6,789.2	10,543.0	6,870.8	105.5	105.5	115.93	33.8	3,474.7	186.6	-5.3	191.96	0.972	Level 1	
10,600.0	6,787.8	10,643.0	6,870.1	108.3	108.3	116.13	33.8	3,574.7	187.0	-9.7	196.70	0.950	Level 1	
10,700.0	6,786.3	10,743.0	6,869.4	111.1	111.1	116.33	33.8	3,674.7	187.3	-14.1	201.42	0.930	Level 1	
10,800.0	6,784.9	10,843.0	6,868.7	113.8	113.8	116.52	33.8	3,774.7	187.6	-18.5	206.12	0.910	Level 1	
10,900.0	6,783.5	10,943.0	6,868.0	116.6	116.6	116.72	33.8	3,874.7	187.9	-22.9	210.81	0.891	Level 1	
11,000.0	6,782.1	11,043.0	6,867.3	119.4	119.4	116.91	33.8	3,974.7	188.2	-27.3	215.49	0.873	Level 1	
11,100.0	6,780.7	11,143.0	6,866.6	122.2	122.2	117.11	33.8	4,074.7	188.6	-31.6	220.15	0.856	Level 1	
11,200.0	6,779.3	11,243.0	6,865.9	125.0	125.0	117.30	33.8	4,174.7	188.9	-35.9	224.80	0.840	Level 1	
11,300.0	6,777.9	11,342.9	6,865.2	127.7	127.7	117.49	33.8	4,274.6	189.2	-40.2	229.44	0.825	Level 1	
11,400.0	6,776.4	11,442.9	6,864.5	130.5	130.5	117.68	33.8	4,374.6	189.5	-44.5	234.05	0.810	Level 1	
11,500.0	6,775.0	11,542.9	6,863.8	133.3	133.3	117.87	33.8	4,474.6	189.9	-48.8	238.66	0.796	Level 1	
11,600.0	6,773.6	11,642.9	6,863.1	136.1	136.1	118.06	33.8	4,574.6	190.2	-53.0	243.25	0.782	Level 1	
11,700.0	6,772.2	11,742.9	6,862.4	138.9	138.9	118.25	33.8	4,674.6	190.5	-57.3	247.82	0.769	Level 1	
11,800.0	6,770.8	11,842.9	6,861.7	141.7	141.7	118.44	33.8	4,774.6	190.9	-61.5	252.38	0.756	Level 1	
11,900.0	6,769.4	11,942.9	6,861.0	144.5	144.5	118.63	33.8	4,874.6	191.2	-65.7	256.92	0.744	Level 1	
12,000.0	6,768.0	12,042.9	6,860.3	147.2	147.2	118.82	33.8	4,974.6	191.6	-69.9	261.45	0.733	Level 1	
12,100.0	6,766.5	12,142.9	6,859.6	150.0	150.0	119.01	33.8	5,074.6	191.9	-74.0	265.96	0.722	Level 1	
12,200.0	6,765.1	12,242.9	6,858.9	152.8	152.8	119.19	33.8	5,174.6	192.3	-78.2	270.46	0.711	Level 1	
12,300.0	6,763.7	12,342.9	6,858.2	155.6	155.6	119.38	33.8	5,274.6	192.6	-82.3	274.93	0.701	Level 1	
12,400.0	6,762.3	12,442.9	6,857.5	158.4	158.4	119.56	33.8	5,374.6	193.0	-86.4	279.40	0.691	Level 1	
12,500.0	6,760.9	12,542.9	6,856.8	161.2	161.2	119.75	33.8	5,474.6	193.3	-90.5	283.84	0.681	Level 1	
12,600.0	6,759.5	12,642.9	6,856.1	164.0	164.0	119.93	33.8	5,574.6	193.7	-94.6	288.28	0.672	Level 1	
12,700.0	6,758.1	12,742.9	6,855.4	166.8	166.8	120.12	33.8	5,674.6	194.0	-98.7	292.69	0.663	Level 1	
12,800.0	6,756.7	12,842.9	6,854.7	169.6	169.6	120.30	33.8	5,774.6	194.4	-102.7	297.09	0.654	Level 1	
12,900.0	6,755.2	12,942.9	6,854.0	172.4	172.4	120.48	33.8	5,874.6	194.8	-106.7	301.47	0.646	Level 1	
13,000.0	6,753.8	13,042.9	6,853.3	175.2	175.2	120.66	33.8	5,974.6	195.1	-110.7	305.84	0.638	Level 1	
13,100.0	6,752.4	13,142.9	6,852.6	178.0	178.0	120.84	33.8	6,074.6	195.5	-114.7	310.18	0.630	Level 1	
13,200.0	6,751.0	13,242.9	6,851.9	180.8	180.8	121.02	33.8	6,174.6	195.9	-118.7	314.52	0.623	Level 1	
13,300.0	6,749.6	13,342.9	6,851.2	183.6	183.6	121.20	33.8	6,274.5	196.2	-122.6	318.83	0.615	Level 1	
13,400.0	6,748.2	13,442.9	6,850.5	186.4	186.4	121.38	33.8	6,374.5	196.6	-126.5	323.13	0.608	Level 1	
13,500.0	6,746.8	13,542.9	6,849.8	189.1	189.1	121.56	33.8	6,474.5	197.0	-130.4	327.41	0.602	Level 1	
13,600.0	6,745.3	13,642.9	6,849.1	191.9	191.9	121.73	33.8	6,574.5	197.3	-134.3	331.68	0.595	Level 1	
13,700.0	6,743.9	13,742.9	6,848.4	194.7	194.7	121.91	33.8	6,674.5	197.7	-138.2	335.93	0.589	Level 1	
13,800.0	6,742.5	13,842.9	6,847.7	197.5	197.5	122.09	33.8	6,774.5	198.1	-142.1	340.16	0.582	Level 1	
13,900.0	6,741.1	13,942.9	6,847.0	200.3	200.3	122.26	33.8	6,874.5	198.5	-145.9	344.38	0.576	Level 1	
13,907.1	6,741.0	13,949.3	6,847.0	200.5	200.5	122.27	33.8	6,881.0	198.5	-146.2	344.67	0.576 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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-MWDD													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	178.25	-91.1	2.8	91.1					
100.0	100.0	100.0	100.0	0.1	0.1	178.25	-91.1	2.8	91.1	90.9	0.22	405.401		
200.0	200.0	200.0	200.0	0.3	0.3	178.25	-91.1	2.8	91.1	90.4	0.67	135.134		
300.0	300.0	300.0	300.0	0.6	0.6	178.25	-91.1	2.8	91.1	90.0	1.12	81.080		
400.0	400.0	400.0	400.0	0.8	0.8	178.25	-91.1	2.8	91.1	89.5	1.57	57.914		
500.0	500.0	500.0	500.0	1.0	1.0	178.25	-91.1	2.8	91.1	89.1	2.02	45.045		
600.0	600.0	600.0	600.0	1.2	1.2	178.25	-91.1	2.8	91.1	88.6	2.47	36.855		
700.0	700.0	700.0	700.0	1.5	1.5	178.25	-91.1	2.8	91.1	88.2	2.92	31.185		
800.0	800.0	800.0	800.0	1.7	1.7	178.25	-91.1	2.8	91.1	87.7	3.37	27.027		
900.0	900.0	900.0	900.0	1.9	1.9	178.25	-91.1	2.8	91.1	87.3	3.82	23.847		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	178.25	-91.1	2.8	91.1	86.8	4.27	21.337 CC, ES		
1,100.0	1,100.0	1,098.6	1,098.6	2.4	2.3	179.21	-91.8	1.3	91.9	87.2	4.70	19.556		
1,200.0	1,200.0	1,197.0	1,196.9	2.6	2.5	-178.02	-94.1	-3.3	94.2	89.1	5.11	18.438		
1,300.0	1,300.0	1,295.0	1,294.4	2.8	2.7	-173.73	-97.9	-10.8	98.7	93.1	5.53	17.836		
1,400.0	1,400.0	1,392.2	1,391.0	3.0	3.0	-168.42	-103.2	-21.1	105.7	99.7	5.96	17.738		
1,500.0	1,500.0	1,488.6	1,486.2	3.3	3.2	-162.65	-109.8	-34.3	115.9	109.5	6.40	18.114		
1,600.0	1,600.0	1,584.0	1,580.0	3.5	3.5	-89.93	-117.8	-50.2	129.6	122.7	6.89	18.800		
1,700.0	1,699.8	1,678.6	1,672.3	3.7	3.8	-86.18	-127.1	-68.6	146.5	139.2	7.36	19.923		
1,800.0	1,799.5	1,772.4	1,763.0	3.9	4.2	-83.63	-137.7	-89.6	166.2	158.4	7.84	21.200		
1,900.0	1,898.7	1,867.4	1,854.3	4.2	4.7	-82.13	-149.7	-113.2	188.0	179.6	8.36	22.487		
2,000.0	1,997.9	1,964.9	1,947.8	4.4	5.1	-81.34	-162.1	-137.9	210.1	201.2	8.91	23.575		
2,100.0	2,097.0	2,062.3	2,041.3	4.7	5.7	-80.70	-174.5	-162.6	232.3	222.8	9.48	24.497		
2,200.0	2,196.2	2,159.8	2,134.8	4.9	6.2	-80.18	-187.0	-187.2	254.4	244.4	10.06	25.279		
2,300.0	2,295.3	2,257.3	2,228.3	5.2	6.7	-79.73	-199.4	-211.9	276.6	265.9	10.66	25.948		
2,400.0	2,394.5	2,354.8	2,321.7	5.5	7.3	-79.36	-211.9	-236.5	298.8	287.5	11.27	26.522		
2,500.0	2,493.7	2,452.3	2,415.2	5.8	7.8	-79.03	-224.3	-261.2	321.0	309.1	11.88	27.020		
2,600.0	2,592.8	2,549.8	2,508.7	6.1	8.4	-78.75	-236.8	-285.8	343.2	330.7	12.50	27.453		
2,700.0	2,692.0	2,647.3	2,602.2	6.4	8.9	-78.50	-249.2	-310.5	365.5	352.3	13.13	27.832		
2,800.0	2,791.1	2,744.8	2,695.7	6.7	9.5	-78.28	-261.7	-335.1	387.7	373.9	13.76	28.166		
2,900.0	2,890.3	2,842.2	2,789.2	7.0	10.1	-78.09	-274.1	-359.8	409.9	395.5	14.40	28.462		
3,000.0	2,989.5	2,939.7	2,882.7	7.3	10.6	-77.91	-286.6	-384.4	432.2	417.1	15.04	28.725		
3,100.0	3,088.6	3,037.2	2,976.2	7.6	11.2	-77.75	-299.0	-409.1	454.4	438.7	15.69	28.960		
3,200.0	3,187.8	3,134.7	3,069.7	7.9	11.8	-77.61	-311.4	-433.7	476.6	460.3	16.34	29.171		
3,300.0	3,286.9	3,232.2	3,163.2	8.2	12.3	-77.48	-323.9	-458.4	498.9	481.9	16.99	29.362		
3,400.0	3,386.1	3,329.7	3,256.7	8.5	12.9	-77.36	-336.3	-483.1	521.1	503.5	17.65	29.534		
3,500.0	3,485.2	3,427.2	3,350.2	8.8	13.5	-77.25	-348.8	-507.7	543.4	525.1	18.30	29.691		
3,600.0	3,584.4	3,524.7	3,443.7	9.2	14.1	-77.14	-361.2	-532.4	565.6	546.7	18.96	29.834		
3,700.0	3,683.6	3,622.1	3,537.2	9.5	14.7	-77.05	-373.7	-557.0	587.9	568.3	19.62	29.964		
3,800.0	3,782.7	3,719.6	3,630.7	9.8	15.2	-76.96	-386.1	-581.7	610.2	589.9	20.28	30.084		
3,900.0	3,881.9	3,817.1	3,724.2	10.1	15.8	-76.88	-398.6	-606.3	632.4	611.5	20.95	30.194		
4,000.0	3,981.0	3,914.6	3,817.7	10.4	16.4	-76.81	-411.0	-631.0	654.7	633.1	21.61	30.295		
4,100.0	4,080.2	4,012.1	3,911.1	10.7	17.0	-76.74	-423.5	-655.6	676.9	654.7	22.28	30.389		
4,200.0	4,179.3	4,109.6	4,004.6	11.1	17.6	-76.67	-435.9	-680.3	699.2	676.3	22.94	30.476		
4,300.0	4,278.5	4,207.1	4,098.1	11.4	18.2	-76.61	-448.4	-704.9	721.5	697.9	23.61	30.557		
4,400.0	4,377.7	4,304.6	4,191.6	11.7	18.8	-76.55	-460.8	-729.6	743.7	719.4	24.28	30.632		
4,500.0	4,476.8	4,402.1	4,285.1	12.0	19.3	-76.50	-473.2	-754.2	766.0	741.0	24.95	30.702		
4,600.0	4,576.0	4,499.5	4,378.6	12.4	19.9	-76.45	-485.7	-778.9	788.3	762.6	25.62	30.768		
4,700.0	4,675.1	4,597.0	4,472.1	12.7	20.5	-76.40	-498.1	-803.6	810.5	784.2	26.29	30.829		
4,800.0	4,774.3	4,694.5	4,565.6	13.0	21.1	-76.35	-510.6	-828.2	832.8	805.8	26.96	30.887		
4,900.0	4,873.4	4,792.0	4,659.1	13.3	21.7	-76.31	-523.0	-852.9	855.0	827.4	27.63	30.941		
5,000.0	4,972.6	4,889.5	4,752.6	13.7	22.3	-76.27	-535.5	-877.5	877.3	849.0	28.31	30.992		

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 19O-312
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 19O-312	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	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	5,071.8	4,987.0	4,846.1	14.0	22.9	-76.23		-547.9	-902.2	899.6	870.6	28.98	31.040	
5,200.0	5,170.9	5,084.5	4,939.6	14.3	23.5	-76.19		-560.4	-926.8	921.8	892.2	29.66	31.085	
5,300.0	5,270.1	5,182.0	5,033.1	14.6	24.1	-76.15		-572.8	-951.5	944.1	913.8	30.33	31.128	
5,400.0	5,369.2	5,279.4	5,126.6	15.0	24.6	-76.12		-585.3	-976.1	966.4	935.4	31.01	31.168	
5,500.0	5,468.4	5,391.5	5,234.1	15.3	25.3	-76.09		-599.4	-1,004.1	988.4	956.7	31.72	31.161	
6,400.0	6,359.4	7,196.4	6,822.5	16.6	26.1	111.82		-646.4	-606.7	982.4	944.9	37.48	26.213	
6,500.0	6,449.3	7,359.8	6,864.3	16.5	26.8	107.11		-646.4	-449.0	946.2	906.7	39.52	23.942	
6,600.0	6,532.6	7,443.2	6,873.9	16.4	27.4	105.49		-646.4	-366.1	914.8	874.1	40.64	22.511	
6,700.0	6,608.0	7,530.8	6,881.4	16.4	28.2	103.43		-646.4	-278.8	891.1	848.9	42.15	21.139	
6,800.0	6,674.3	7,620.9	6,882.8	16.6	29.2	100.96		-646.4	-188.8	873.2	829.2	44.08	19.809	
6,900.0	6,730.2	7,703.4	6,882.4	17.1	30.3	98.79		-646.4	-106.3	861.5	815.3	46.22	18.641	
7,000.0	6,774.8	7,792.6	6,881.9	17.9	31.7	96.63		-646.4	-17.1	854.7	805.8	48.88	17.488	
7,100.0	6,807.3	7,886.9	6,881.5	19.1	33.4	94.81		-646.4	77.2	851.2	799.2	51.99	16.372	
7,200.0	6,827.3	7,984.7	6,881.0	20.6	35.2	93.59		-646.4	175.0	849.7	794.2	55.50	15.311	
7,300.0	6,834.3	8,084.4	6,880.5	22.3	37.2	93.12		-646.4	274.7	849.2	789.9	59.30	14.320	
7,321.3	6,834.3	8,105.7	6,880.4	22.7	37.6	93.11		-646.4	296.0	849.2	789.1	60.15	14.118	
7,400.0	6,833.0	8,184.4	6,880.0	24.2	39.3	93.17		-646.4	374.7	849.3	785.9	63.34	13.408	
7,500.0	6,831.6	8,284.4	6,879.5	26.2	41.5	93.23		-646.4	474.7	849.3	781.7	67.62	12.561	
7,600.0	6,830.2	8,384.4	6,878.9	28.4	43.8	93.29		-646.4	574.7	849.4	777.3	72.09	11.783	
7,700.0	6,828.7	8,484.4	6,878.4	30.7	46.2	93.35		-646.4	674.6	849.4	772.7	76.71	11.073	
7,800.0	6,827.3	8,584.4	6,877.9	33.1	48.6	93.41		-646.4	774.6	849.5	768.0	81.47	10.427	
7,900.0	6,825.9	8,684.4	6,877.4	35.5	51.0	93.48		-646.4	874.6	849.5	763.2	86.33	9.840	
8,000.0	6,824.5	8,784.4	6,876.9	38.0	53.5	93.54		-646.4	974.6	849.6	758.3	91.28	9.307	
8,100.0	6,823.1	8,884.4	6,876.4	40.5	56.0	93.60		-646.4	1,074.6	849.7	753.4	96.30	8.823	
8,200.0	6,821.7	8,984.4	6,875.9	43.1	58.5	93.66		-646.4	1,174.6	849.7	748.3	101.39	8.381	
8,300.0	6,820.3	9,084.3	6,875.4	45.7	61.1	93.72		-646.4	1,274.6	849.8	743.2	106.52	7.978	
8,400.0	6,818.9	9,184.3	6,874.9	48.3	63.7	93.78		-646.4	1,374.6	849.8	738.1	111.70	7.608	
8,500.0	6,817.4	9,284.3	6,874.4	50.9	66.3	93.84		-646.4	1,474.6	849.9	733.0	116.92	7.269	
8,600.0	6,816.0	9,384.3	6,873.9	53.6	68.9	93.90		-646.4	1,574.6	849.9	727.8	122.17	6.957	
8,700.0	6,814.6	9,484.3	6,873.4	56.3	71.5	93.96		-646.4	1,674.6	850.0	722.6	127.45	6.670	
8,800.0	6,813.2	9,584.3	6,872.9	58.9	74.2	94.03		-646.4	1,774.6	850.1	717.3	132.75	6.404	
8,900.0	6,811.8	9,684.3	6,872.4	61.6	76.8	94.09		-646.4	1,874.6	850.1	712.1	138.08	6.157	
9,000.0	6,810.4	9,784.3	6,871.9	64.3	79.5	94.15		-646.4	1,974.6	850.2	706.8	143.42	5.928	
9,100.0	6,809.0	9,884.3	6,871.4	67.0	82.2	94.21		-646.4	2,074.6	850.3	701.5	148.79	5.715	
9,200.0	6,807.5	9,984.3	6,870.9	69.8	84.9	94.27		-646.4	2,174.6	850.3	696.2	154.17	5.516	
9,300.0	6,806.1	10,084.3	6,870.3	72.5	87.6	94.33		-646.4	2,274.6	850.4	690.8	159.56	5.330	
9,400.0	6,804.7	10,184.3	6,869.8	75.2	90.3	94.39		-646.4	2,374.6	850.5	685.5	164.96	5.156	
9,500.0	6,803.3	10,284.3	6,869.3	78.0	93.0	94.45		-646.4	2,474.6	850.5	680.2	170.38	4.992	
9,600.0	6,801.9	10,384.3	6,868.8	80.7	95.7	94.51		-646.4	2,574.5	850.6	674.8	175.81	4.838	
9,700.0	6,800.5	10,484.3	6,868.3	83.4	98.4	94.57		-646.4	2,674.5	850.7	669.4	181.24	4.694	
9,800.0	6,799.1	10,584.3	6,867.8	86.2	101.1	94.64		-646.4	2,774.5	850.8	664.1	186.68	4.557	
9,900.0	6,797.6	10,684.3	6,867.3	88.9	103.8	94.70		-646.4	2,874.5	850.8	658.7	192.13	4.428	
10,000.0	6,796.2	10,784.3	6,866.8	91.7	106.6	94.76		-646.4	2,974.5	850.9	653.3	197.59	4.307	
10,100.0	6,794.8	10,884.3	6,866.3	94.5	109.3	94.82		-646.4	3,074.5	851.0	647.9	203.05	4.191	
10,200.0	6,793.4	10,984.3	6,865.8	97.2	112.0	94.88		-646.4	3,174.5	851.1	642.5	208.52	4.082	
10,300.0	6,792.0	11,084.3	6,865.3	100.0	114.8	94.94		-646.4	3,274.5	851.1	637.2	213.99	3.978	
10,400.0	6,790.6	11,184.3	6,864.8	102.8	117.5	95.00		-646.4	3,374.5	851.2	631.8	219.46	3.879	
10,500.0	6,789.2	11,284.3	6,864.3	105.5	120.3	95.06		-646.4	3,474.5	851.3	626.4	224.94	3.784	
10,600.0	6,787.8	11,384.3	6,863.8	108.3	123.0	95.12		-646.4	3,574.5	851.4	621.0	230.43	3.695	
10,700.0	6,786.3	11,484.2	6,863.3	111.1	125.8	95.18		-646.4	3,674.5	851.5	615.5	235.91	3.609	
10,800.0	6,784.9	11,584.2	6,862.8	113.8	128.5	95.24		-646.4	3,774.5	851.5	610.1	241.40	3.527	

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 19O-312
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 19O-312	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
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,900.0	6,783.5	11,684.2	6,862.2	116.6	131.3	95.30	-646.4	3,874.5	851.6	604.7	246.90	3.449	
11,000.0	6,782.1	11,784.2	6,861.7	119.4	134.1	95.37	-646.4	3,974.5	851.7	599.3	252.39	3.375	
11,100.0	6,780.7	11,884.2	6,861.2	122.2	136.8	95.43	-646.4	4,074.5	851.8	593.9	257.89	3.303	
11,200.0	6,779.3	11,984.2	6,860.7	125.0	139.6	95.49	-646.4	4,174.5	851.9	588.5	263.38	3.234	
11,300.0	6,777.9	12,084.2	6,860.2	127.7	142.4	95.55	-646.4	4,274.5	852.0	583.1	268.88	3.169	
11,400.0	6,776.4	12,184.2	6,859.7	130.5	145.1	95.61	-646.4	4,374.4	852.1	577.7	274.39	3.105	
11,500.0	6,775.0	12,284.2	6,859.2	133.3	147.9	95.67	-646.4	4,474.4	852.1	572.3	279.89	3.045	
11,600.0	6,773.6	12,384.2	6,858.7	136.1	150.7	95.73	-646.4	4,574.4	852.2	566.8	285.39	2.986	
11,700.0	6,772.2	12,484.2	6,858.2	138.9	153.4	95.79	-646.4	4,674.4	852.3	561.4	290.90	2.930	
11,800.0	6,770.8	12,584.2	6,857.7	141.7	156.2	95.85	-646.4	4,774.4	852.4	556.0	296.40	2.876	
11,900.0	6,769.4	12,684.2	6,857.2	144.5	159.0	95.91	-646.4	4,874.4	852.5	550.6	301.91	2.824	
12,000.0	6,768.0	12,784.2	6,856.7	147.2	161.8	95.97	-646.4	4,974.4	852.6	545.2	307.42	2.773	
12,100.0	6,766.5	12,884.2	6,856.2	150.0	164.5	96.03	-646.4	5,074.4	852.7	539.8	312.92	2.725	
12,200.0	6,765.1	12,984.2	6,855.7	152.8	167.3	96.09	-646.4	5,174.4	852.8	534.4	318.43	2.678	
12,300.0	6,763.7	13,084.2	6,855.2	155.6	170.1	96.15	-646.4	5,274.4	852.9	529.0	323.94	2.633	
12,400.0	6,762.3	13,184.2	6,854.7	158.4	172.9	96.22	-646.4	5,374.4	853.0	523.5	329.45	2.589	
12,500.0	6,760.9	13,284.2	6,854.1	161.2	175.6	96.28	-646.4	5,474.4	853.1	518.1	334.95	2.547	
12,600.0	6,759.5	13,384.2	6,853.6	164.0	178.4	96.34	-646.4	5,574.4	853.2	512.7	340.46	2.506	
12,700.0	6,758.1	13,484.2	6,853.1	166.8	181.2	96.40	-646.4	5,674.4	853.3	507.3	345.97	2.466	
12,800.0	6,756.7	13,584.2	6,852.6	169.6	184.0	96.46	-646.4	5,774.4	853.4	501.9	351.47	2.428	
12,900.0	6,755.2	13,684.2	6,852.1	172.4	186.8	96.52	-646.4	5,874.4	853.5	496.5	356.98	2.391	
13,000.0	6,753.8	13,784.2	6,851.6	175.2	189.6	96.58	-646.4	5,974.4	853.6	491.1	362.49	2.355	
13,100.0	6,752.4	13,884.1	6,851.1	178.0	192.3	96.64	-646.4	6,074.4	853.7	485.7	367.99	2.320	
13,200.0	6,751.0	13,984.1	6,850.6	180.8	195.1	96.70	-646.4	6,174.4	853.8	480.3	373.50	2.286	
13,300.0	6,749.6	14,084.1	6,850.1	183.6	197.9	96.76	-646.4	6,274.3	853.9	474.9	379.00	2.253	
13,400.0	6,748.2	14,184.1	6,849.6	186.4	200.7	96.82	-646.4	6,374.3	854.0	469.5	384.51	2.221	
13,500.0	6,746.8	14,284.1	6,849.1	189.1	203.5	96.88	-646.4	6,474.3	854.1	464.1	390.01	2.190	
13,600.0	6,745.3	14,384.1	6,848.6	191.9	206.3	96.94	-646.4	6,574.3	854.2	458.7	395.51	2.160	
13,700.0	6,743.9	14,484.1	6,848.1	194.7	209.1	97.00	-646.4	6,674.3	854.3	453.3	401.02	2.130	
13,800.0	6,742.5	14,584.1	6,847.6	197.5	211.9	97.06	-646.4	6,774.3	854.5	447.9	406.52	2.102	
13,900.0	6,741.1	14,684.1	6,847.1	200.3	214.6	97.12	-646.4	6,874.3	854.6	442.6	412.02	2.074	
13,907.1	6,741.0	14,691.2	6,847.0	200.5	214.8	97.13	-646.4	6,881.4	854.6	442.2	412.41	2.072 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-112.76	-112.76	-61.9	-147.6	160.1				
100.0	100.0	100.0	100.0	0.1	0.1	-112.76	-112.76	-61.9	-147.6	160.1	159.9	0.22	712.349	
200.0	200.0	200.0	200.0	0.3	0.3	-112.76	-112.76	-61.9	-147.6	160.1	159.4	0.67	237.450	
300.0	300.0	300.0	300.0	0.6	0.6	-112.76	-112.76	-61.9	-147.6	160.1	159.0	1.12	142.470	
400.0	400.0	400.0	400.0	0.8	0.8	-112.76	-112.76	-61.9	-147.6	160.1	158.5	1.57	101.764 CC, ES	
500.0	500.0	495.2	495.2	1.0	1.0	-113.00	-113.00	-63.1	-148.7	161.6	159.6	1.99	81.199	
600.0	600.0	590.2	590.0	1.2	1.2	-113.72	-113.72	-66.7	-151.8	166.1	163.7	2.40	69.135	
700.0	700.0	684.7	684.3	1.5	1.4	-114.83	-114.83	-72.6	-156.9	173.6	170.8	2.84	61.196	
800.0	800.0	778.7	777.6	1.7	1.6	-116.23	-116.23	-80.8	-164.0	184.2	180.9	3.30	55.761	
900.0	900.0	871.8	869.7	1.9	1.9	-117.79	-117.79	-91.2	-173.1	198.0	194.1	3.81	51.998	
1,000.0	1,000.0	964.0	960.3	2.1	2.2	-119.42	-119.42	-103.7	-183.9	214.8	210.5	4.35	49.375	
1,100.0	1,100.0	1,054.9	1,049.3	2.4	2.6	-121.03	-121.03	-118.2	-196.5	234.9	229.9	4.94	47.566	
1,200.0	1,200.0	1,144.6	1,136.2	2.6	3.0	-122.57	-122.57	-134.6	-210.7	258.0	252.5	5.57	46.352	
1,300.0	1,300.0	1,232.8	1,221.1	2.8	3.4	-124.00	-124.00	-152.7	-226.4	284.3	278.0	6.24	45.586	
1,400.0	1,400.0	1,319.4	1,303.7	3.0	3.9	-125.30	-125.30	-172.4	-243.5	313.5	306.6	6.94	45.187	
1,500.0	1,500.0	1,412.9	1,392.3	3.3	4.5	-126.54	-126.54	-194.9	-263.1	344.7	337.0	7.72	44.642 SF	
1,600.0	1,600.0	1,507.8	1,482.3	3.5	5.1	-59.81	-59.81	-217.8	-282.9	375.1	368.1	7.01	53.505	
1,700.0	1,699.8	1,603.0	1,572.5	3.7	5.7	-60.82	-60.82	-240.8	-302.8	404.1	396.7	7.49	53.970	
1,800.0	1,799.5	1,698.3	1,662.8	3.9	6.3	-62.07	-62.07	-263.7	-322.8	431.8	423.9	7.97	54.183	
1,900.0	1,898.7	1,793.6	1,753.1	4.2	6.9	-63.64	-63.64	-286.7	-342.7	458.4	450.0	8.46	54.193	
2,000.0	1,997.9	1,888.8	1,843.4	4.4	7.5	-65.45	-65.45	-309.7	-362.7	485.1	476.2	8.96	54.151	
2,100.0	2,097.0	1,984.1	1,933.6	4.7	8.1	-67.07	-67.07	-332.6	-382.6	512.2	502.7	9.47	54.073	
2,200.0	2,196.2	2,079.4	2,023.9	4.9	8.8	-68.53	-68.53	-355.6	-402.5	539.6	529.6	10.00	53.962	
2,300.0	2,295.3	2,174.7	2,114.2	5.2	9.4	-69.85	-69.85	-378.6	-422.5	567.4	556.8	10.54	53.823	
2,400.0	2,394.5	2,270.0	2,204.5	5.5	10.0	-71.05	-71.05	-401.6	-442.4	595.4	584.3	11.09	53.662	
2,500.0	2,493.7	2,365.2	2,294.8	5.8	10.6	-72.15	-72.15	-424.5	-462.3	623.6	611.9	11.66	53.484	
2,600.0	2,592.8	2,460.5	2,385.1	6.1	11.3	-73.15	-73.15	-447.5	-482.3	652.0	639.8	12.23	53.293	
2,700.0	2,692.0	2,555.8	2,475.4	6.4	11.9	-74.07	-74.07	-470.5	-502.2	680.6	667.8	12.82	53.095	
2,800.0	2,791.1	2,651.1	2,565.7	6.7	12.5	-74.91	-74.91	-493.4	-522.1	709.3	695.9	13.41	52.892	
2,900.0	2,890.3	2,746.3	2,656.0	7.0	13.2	-75.69	-75.69	-516.4	-542.1	738.2	724.2	14.01	52.687	
3,000.0	2,989.5	2,841.6	2,746.3	7.3	13.8	-76.41	-76.41	-539.4	-562.0	767.1	752.5	14.62	52.482	
3,100.0	3,088.6	2,936.9	2,836.6	7.6	14.4	-77.08	-77.08	-562.3	-581.9	796.2	781.0	15.23	52.278	
3,200.0	3,187.8	3,032.2	2,926.9	7.9	15.0	-77.70	-77.70	-585.3	-601.9	825.4	809.5	15.85	52.078	
3,300.0	3,286.9	3,127.4	3,017.1	8.2	15.7	-78.28	-78.28	-608.3	-621.8	854.7	838.2	16.47	51.881	
3,400.0	3,386.1	3,222.7	3,107.4	8.5	16.3	-78.82	-78.82	-631.3	-641.8	884.0	866.9	17.10	51.689	
3,500.0	3,485.2	3,318.0	3,197.7	8.8	16.9	-79.33	-79.33	-654.2	-661.7	913.4	895.7	17.73	51.502	
3,600.0	3,584.4	3,413.3	3,288.0	9.2	17.6	-79.80	-79.80	-677.2	-681.6	942.8	924.5	18.37	51.321	
3,700.0	3,683.6	3,508.5	3,378.3	9.5	18.2	-80.25	-80.25	-700.2	-701.6	972.4	953.4	19.01	51.145	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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	-121.67	-121.67	-91.1	-147.6	173.5				
100.0	100.0	100.0	100.0	0.1	0.1	-121.67	-121.67	-91.1	-147.6	173.5	173.3	0.22	771.835	
200.0	200.0	200.0	200.0	0.3	0.3	-121.67	-121.67	-91.1	-147.6	173.5	172.8	0.67	257.278 CC, ES	
300.0	300.0	294.6	294.6	0.6	0.5	-121.85	-121.85	-92.3	-148.6	175.0	173.9	1.09	160.284	
400.0	400.0	389.0	388.9	0.8	0.7	-122.37	-122.37	-96.0	-151.5	179.7	178.2	1.52	118.556	
500.0	500.0	483.0	482.5	1.0	1.0	-123.19	-123.19	-102.1	-156.2	187.4	185.5	1.97	95.287	
600.0	600.0	576.4	575.3	1.2	1.2	-124.21	-124.21	-110.6	-162.7	198.3	195.9	2.45	80.799	
700.0	700.0	669.0	666.9	1.5	1.5	-125.38	-125.38	-121.4	-171.0	212.3	209.4	2.98	71.277	
800.0	800.0	760.6	757.0	1.7	1.9	-126.59	-126.59	-134.4	-181.0	229.5	226.0	3.54	64.765	
900.0	900.0	851.0	845.4	1.9	2.2	-127.81	-127.81	-149.4	-192.6	249.8	245.7	4.15	60.212	
1,000.0	1,000.0	940.2	932.0	2.1	2.7	-128.98	-128.98	-166.4	-205.7	273.2	268.4	4.79	56.995	
1,100.0	1,100.0	1,027.9	1,016.4	2.4	3.1	-130.07	-130.07	-185.2	-220.1	299.6	294.1	5.47	54.726	
1,200.0	1,200.0	1,114.1	1,098.6	2.6	3.6	-131.08	-131.08	-205.6	-235.9	328.9	322.7	6.19	53.143	
1,300.0	1,300.0	1,198.5	1,178.4	2.8	4.2	-132.00	-132.00	-227.6	-252.8	361.2	354.2	6.94	52.054	
1,400.0	1,400.0	1,291.2	1,265.5	3.0	4.8	-132.89	-132.89	-252.9	-272.2	395.2	387.4	7.77	50.873	
1,500.0	1,500.0	1,385.1	1,353.6	3.3	5.4	-133.65	-133.65	-278.5	-292.0	429.2	420.6	8.61	49.842 SF	
1,600.0	1,600.0	1,479.1	1,441.9	3.5	6.1	-66.38	-66.38	-304.2	-311.8	462.7	455.5	7.18	64.401	
1,700.0	1,699.8	1,573.3	1,530.3	3.7	6.7	-66.89	-66.89	-329.9	-331.6	495.0	487.3	7.68	64.460	
1,800.0	1,799.5	1,667.6	1,618.8	3.9	7.4	-67.64	-67.64	-355.6	-351.4	526.2	518.0	8.18	64.342	
1,900.0	1,898.7	1,761.9	1,707.3	4.2	8.1	-68.74	-68.74	-381.4	-371.2	556.5	547.8	8.68	64.088	
2,000.0	1,997.9	1,856.2	1,795.8	4.4	8.7	-70.20	-70.20	-407.1	-391.0	586.9	577.7	9.19	63.829	
2,100.0	2,097.0	1,950.4	1,884.3	4.7	9.4	-71.52	-71.52	-432.8	-410.8	617.5	607.8	9.72	63.531	
2,200.0	2,196.2	2,044.6	1,972.7	4.9	10.0	-72.72	-72.72	-458.6	-430.7	648.5	638.2	10.26	63.205	
2,300.0	2,295.3	2,138.9	2,061.2	5.2	10.7	-73.81	-73.81	-484.3	-450.5	679.7	668.8	10.81	62.859	
2,400.0	2,394.5	2,233.1	2,149.7	5.5	11.4	-74.80	-74.80	-510.0	-470.3	711.0	699.7	11.38	62.501	
2,500.0	2,493.7	2,327.4	2,238.1	5.8	12.0	-75.71	-75.71	-535.7	-490.1	742.6	730.6	11.95	62.137	
2,600.0	2,592.8	2,421.6	2,326.6	6.1	12.7	-76.55	-76.55	-561.5	-509.9	774.3	761.8	12.54	61.772	
2,700.0	2,692.0	2,515.9	2,415.1	6.4	13.4	-77.32	-77.32	-587.2	-529.7	806.2	793.0	13.13	61.410	
2,800.0	2,791.1	2,610.1	2,503.6	6.7	14.0	-78.04	-78.04	-612.9	-549.6	838.2	824.4	13.73	61.054	
2,900.0	2,890.3	2,704.4	2,592.0	7.0	14.7	-78.70	-78.70	-638.7	-569.4	870.2	855.9	14.34	60.706	
3,000.0	2,989.5	2,798.6	2,680.5	7.3	15.4	-79.31	-79.31	-664.4	-589.2	902.4	887.5	14.95	60.367	
3,100.0	3,088.6	2,892.8	2,769.0	7.6	16.0	-79.89	-79.89	-690.1	-609.0	934.7	919.1	15.57	60.038	
3,200.0	3,187.8	2,987.1	2,857.4	7.9	16.7	-80.42	-80.42	-715.9	-628.8	967.1	950.9	16.19	59.721	
3,300.0	3,286.9	3,081.3	2,945.9	8.2	17.4	-80.92	-80.92	-741.6	-648.6	999.5	982.7	16.82	59.414	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-312
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 19O-312	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')

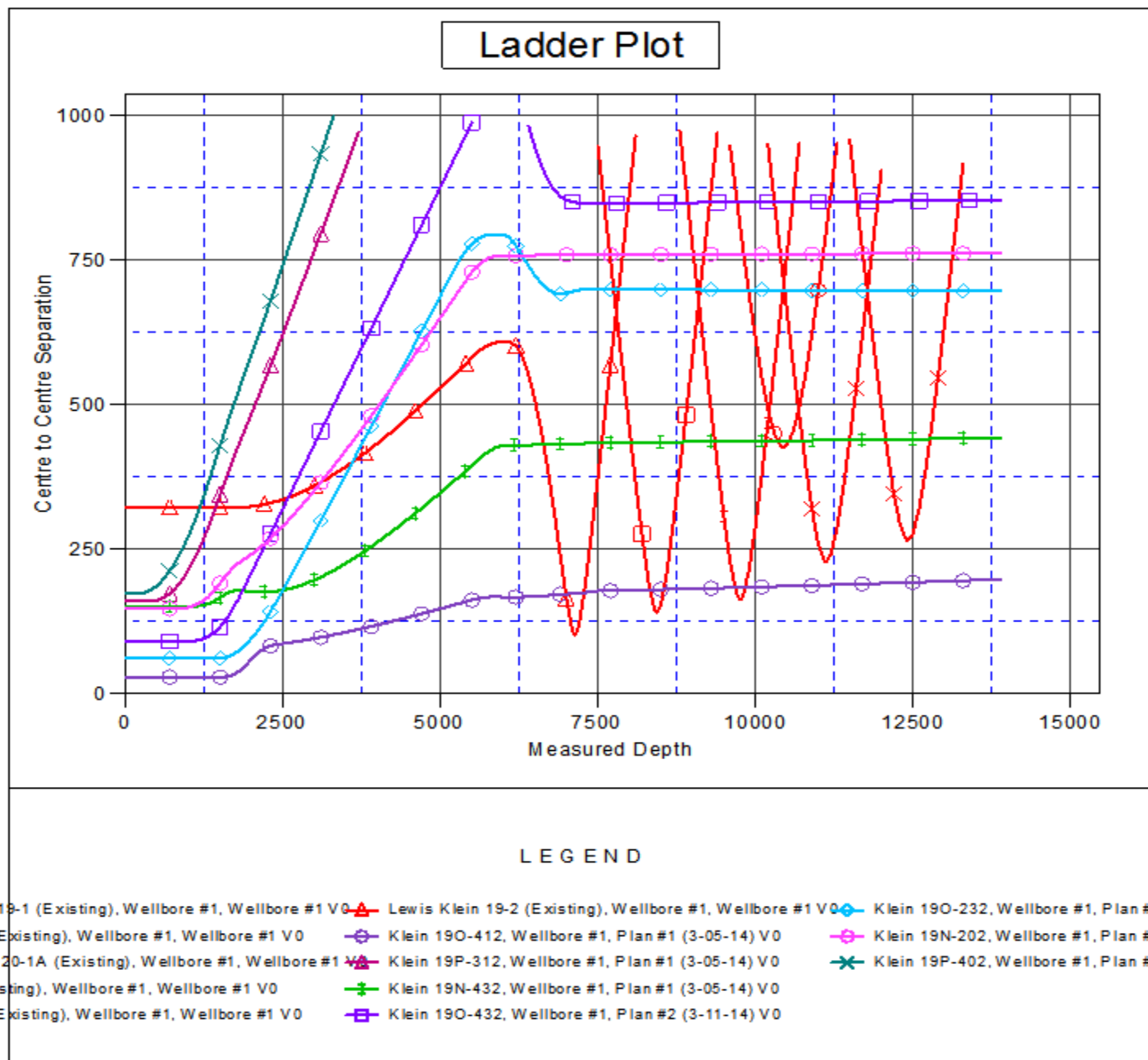
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Klein 19O-312

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 19O-312
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 19O-312	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 19O-312

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

