

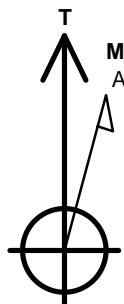
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Klein 19P-312**

Surface Location: Klein 19O-HZ Pad Sec.19-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4626.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1384480.14 3253110.75 40.385240 -104.591380
 RKB - 13' WELL @ 4639.0ft (RKB - 13')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' N/S Hardline (19P-312)	1.0	-1203.6	5118.7	Rectangle (Sides: L10707.3 W100.0)
SHL 2419'FNL & 2250'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 1565'FSL & 2353'FEL, Sec.21	6710.0	-1203.6	10472.4	Point

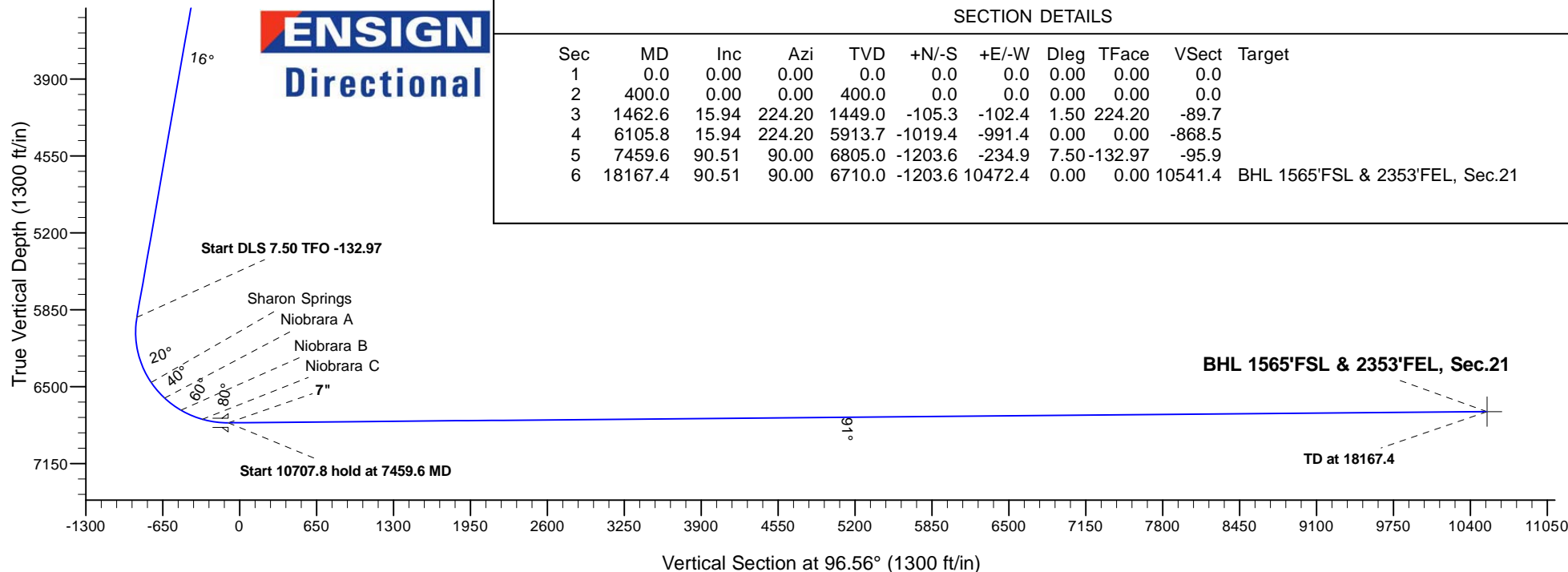
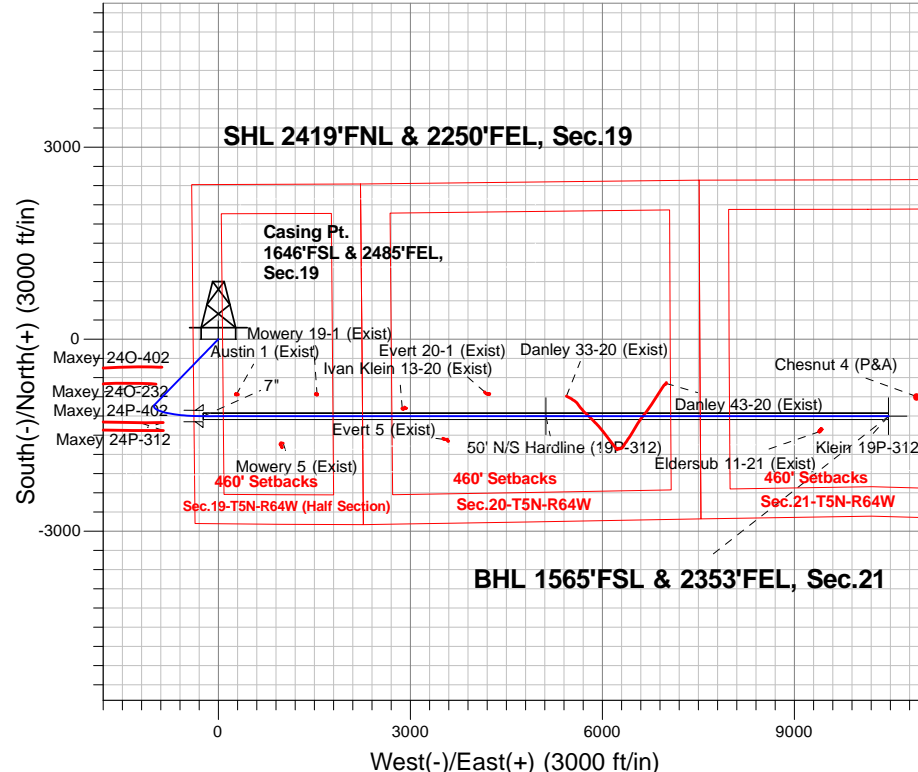


Azimuths to True North
 Magnetic North: 8.22°
 Magnetic Field
 Strength: 52713.0snT
 Dip Angle: 66.92°
 Date: 7/15/2015
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
400.0	400.0	KOP - Start Build 1.50
5913.6	6105.8	Start DLS 7.50 TFO -132.97
6805.0	7459.6	Start 10707.8 hold at 7459.6 MD
6710.0	18167.4	TD at 18167.4

Klein 19O-HZ Pad Sec.19-T5N-R64W
 Klein 19P-312
 Plan #3 (7-15-15)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1462.6	15.94	224.20	1449.0	-105.3	-102.4	1.50	224.20	-89.7	
4	6105.8	15.94	224.20	5913.7	-1019.4	-991.4	0.00	0.00	-868.5	
5	7459.6	90.51	90.00	6805.0	-1203.6	-234.9	7.50	-132.97	-95.9	
6	18167.4	90.51	90.00	6710.0	-1203.6	10472.4	0.00	0.00	10541.4	BHL 1565'FSL & 2353'FEL, Sec.21



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19P-312

Wellbore #1

Plan: Plan #3 (7-15-15)

Standard Planning Report

29 July, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Project	SEC.19-T5N-R64W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Klein 19O-HZ Pad Sec.19-T5N-R64W		
Site Position:		Northing:	1,384,542.09 usft
From:	Lat/Long	Easting:	3,253,110.12 usft
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "
		Latitude:	40.385410
		Longitude:	-104.591380
		Grid Convergence:	0.59 °

Well	Klein 19P-312		
Well Position	+N/-S	-61.9 ft	Northing:
	+E/-W	0.0 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	7/15/2015	8.22	66.92	52,713

Design	Plan #3 (7-15-15)			
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	96.56

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,462.6	15.94	224.20	1,449.0	-105.3	-102.4	1.50	1.50	0.00	224.20	
6,105.8	15.94	224.20	5,913.7	-1,019.4	-991.4	0.00	0.00	0.00	0.00	
7,459.6	90.51	90.00	6,805.0	-1,203.6	-234.9	7.50	5.51	-9.91	-132.97	
18,167.4	90.51	90.00	6,710.0	-1,203.6	10,472.4	0.00	0.00	0.00	0.00	BHL 1565'FSL & 235°

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.50									
500.0	1.50	224.20	500.0	-0.9	-0.9	-0.8	1.50	1.50	0.00
600.0	3.00	224.20	599.9	-3.8	-3.6	-3.2	1.50	1.50	0.00
700.0	4.50	224.20	699.7	-8.4	-8.2	-7.2	1.50	1.50	0.00
800.0	6.00	224.20	799.3	-15.0	-14.6	-12.8	1.50	1.50	0.00
900.0	7.50	224.20	898.6	-23.4	-22.8	-20.0	1.50	1.50	0.00
1,000.0	9.00	224.20	997.5	-33.7	-32.8	-28.7	1.50	1.50	0.00
1,100.0	10.50	224.20	1,096.1	-45.9	-44.6	-39.1	1.50	1.50	0.00
1,200.0	12.00	224.20	1,194.2	-59.8	-58.2	-51.0	1.50	1.50	0.00
1,300.0	13.50	224.20	1,291.7	-75.7	-73.6	-64.5	1.50	1.50	0.00
1,400.0	15.00	224.20	1,388.6	-93.3	-90.7	-79.5	1.50	1.50	0.00
1,462.6	15.94	224.20	1,449.0	-105.3	-102.4	-89.7	1.50	1.50	0.00
1,500.0	15.94	224.20	1,484.9	-112.6	-109.5	-96.0	0.00	0.00	0.00
1,600.0	15.94	224.20	1,581.1	-132.3	-128.7	-112.7	0.00	0.00	0.00
1,700.0	15.94	224.20	1,677.2	-152.0	-147.8	-129.5	0.00	0.00	0.00
1,800.0	15.94	224.20	1,773.4	-171.7	-167.0	-146.3	0.00	0.00	0.00
1,900.0	15.94	224.20	1,869.5	-191.4	-186.1	-163.1	0.00	0.00	0.00
2,000.0	15.94	224.20	1,965.7	-211.1	-205.3	-179.8	0.00	0.00	0.00
2,100.0	15.94	224.20	2,061.8	-230.8	-224.4	-196.6	0.00	0.00	0.00
2,200.0	15.94	224.20	2,158.0	-250.5	-243.6	-213.4	0.00	0.00	0.00
2,300.0	15.94	224.20	2,254.2	-270.1	-262.7	-230.1	0.00	0.00	0.00
2,400.0	15.94	224.20	2,350.3	-289.8	-281.8	-246.9	0.00	0.00	0.00
2,500.0	15.94	224.20	2,446.5	-309.5	-301.0	-263.7	0.00	0.00	0.00
2,600.0	15.94	224.20	2,542.6	-329.2	-320.1	-280.5	0.00	0.00	0.00
2,700.0	15.94	224.20	2,638.8	-348.9	-339.3	-297.2	0.00	0.00	0.00
2,800.0	15.94	224.20	2,734.9	-368.6	-358.4	-314.0	0.00	0.00	0.00
2,900.0	15.94	224.20	2,831.1	-388.3	-377.6	-330.8	0.00	0.00	0.00
3,000.0	15.94	224.20	2,927.2	-408.0	-396.7	-347.6	0.00	0.00	0.00
3,100.0	15.94	224.20	3,023.4	-427.6	-415.9	-364.3	0.00	0.00	0.00
3,200.0	15.94	224.20	3,119.5	-447.3	-435.0	-381.1	0.00	0.00	0.00
3,300.0	15.94	224.20	3,215.7	-467.0	-454.2	-397.9	0.00	0.00	0.00
3,400.0	15.94	224.20	3,311.9	-486.7	-473.3	-414.6	0.00	0.00	0.00
3,500.0	15.94	224.20	3,408.0	-506.4	-492.5	-431.4	0.00	0.00	0.00
3,600.0	15.94	224.20	3,504.2	-526.1	-511.6	-448.2	0.00	0.00	0.00
3,700.0	15.94	224.20	3,600.3	-545.8	-530.7	-465.0	0.00	0.00	0.00
3,800.0	15.94	224.20	3,696.5	-565.5	-549.9	-481.7	0.00	0.00	0.00
3,900.0	15.94	224.20	3,792.6	-585.2	-569.0	-498.5	0.00	0.00	0.00
4,000.0	15.94	224.20	3,888.8	-604.8	-588.2	-515.3	0.00	0.00	0.00
4,100.0	15.94	224.20	3,984.9	-624.5	-607.3	-532.0	0.00	0.00	0.00
4,200.0	15.94	224.20	4,081.1	-644.2	-626.5	-548.8	0.00	0.00	0.00
4,300.0	15.94	224.20	4,177.3	-663.9	-645.6	-565.6	0.00	0.00	0.00
4,400.0	15.94	224.20	4,273.4	-683.6	-664.8	-582.4	0.00	0.00	0.00
4,500.0	15.94	224.20	4,369.6	-703.3	-683.9	-599.1	0.00	0.00	0.00
4,600.0	15.94	224.20	4,465.7	-723.0	-703.1	-615.9	0.00	0.00	0.00
4,700.0	15.94	224.20	4,561.9	-742.7	-722.2	-632.7	0.00	0.00	0.00
4,800.0	15.94	224.20	4,658.0	-762.3	-741.3	-649.5	0.00	0.00	0.00
4,900.0	15.94	224.20	4,754.2	-782.0	-760.5	-666.2	0.00	0.00	0.00
5,000.0	15.94	224.20	4,850.3	-801.7	-779.6	-683.0	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	15.94	224.20	4,946.5	-821.4	-798.8	-699.8	0.00	0.00	0.00
5,200.0	15.94	224.20	5,042.7	-841.1	-817.9	-716.5	0.00	0.00	0.00
5,300.0	15.94	224.20	5,138.8	-860.8	-837.1	-733.3	0.00	0.00	0.00
5,400.0	15.94	224.20	5,235.0	-880.5	-856.2	-750.1	0.00	0.00	0.00
5,500.0	15.94	224.20	5,331.1	-900.2	-875.4	-766.9	0.00	0.00	0.00
5,600.0	15.94	224.20	5,427.3	-919.8	-894.5	-783.6	0.00	0.00	0.00
5,700.0	15.94	224.20	5,523.4	-939.5	-913.7	-800.4	0.00	0.00	0.00
5,800.0	15.94	224.20	5,619.6	-959.2	-932.8	-817.2	0.00	0.00	0.00
5,900.0	15.94	224.20	5,715.7	-978.9	-951.9	-834.0	0.00	0.00	0.00
6,000.0	15.94	224.20	5,811.9	-998.6	-971.1	-850.7	0.00	0.00	0.00
6,100.0	15.94	224.20	5,908.1	-1,018.3	-990.2	-867.5	0.00	0.00	0.00
6,105.8	15.94	224.20	5,913.6	-1,019.4	-991.3	-868.5	0.00	0.00	0.00
Start DLS 7.50 TFO -132.97									
6,200.0	12.24	199.09	6,005.1	-1,038.2	-1,003.6	-878.6	7.50	-3.93	-26.66
6,300.0	12.11	162.96	6,103.0	-1,058.2	-1,004.0	-876.7	7.50	-0.12	-36.12
6,400.0	15.96	135.93	6,200.1	-1,078.2	-991.4	-861.8	7.50	3.84	-27.03
6,500.0	21.76	121.02	6,294.7	-1,097.6	-965.9	-834.3	7.50	5.80	-14.91
6,600.0	28.34	112.45	6,385.3	-1,116.3	-928.0	-794.5	7.50	6.58	-8.57
6,700.0	35.27	106.96	6,470.2	-1,133.8	-878.4	-743.2	7.50	6.93	-5.49
6,800.0	42.37	103.10	6,548.1	-1,149.9	-817.9	-681.2	7.50	7.10	-3.86
6,900.0	49.57	100.17	6,617.6	-1,164.3	-747.5	-609.7	7.50	7.20	-2.93
7,000.0	56.83	97.81	6,677.4	-1,176.7	-668.5	-529.7	7.50	7.26	-2.36
7,100.0	64.13	95.81	6,726.7	-1,186.9	-582.1	-442.8	7.50	7.30	-2.00
7,200.0	71.45	94.05	6,764.5	-1,194.9	-489.9	-350.3	7.50	7.32	-1.76
7,300.0	78.78	92.44	6,790.1	-1,200.3	-393.5	-253.9	7.50	7.34	-1.62
7,400.0	86.13	90.90	6,803.2	-1,203.2	-294.5	-155.2	7.50	7.34	-1.54
7,459.6	90.51	90.00	6,805.0	-1,203.6	-234.9	-96.0	7.50	7.35	-1.51
Start 10707.8 hold at 7459.6 MD - 7"									
7,500.0	90.51	90.00	6,804.6	-1,203.6	-194.5	-55.8	0.01	0.01	0.00
7,600.0	90.51	90.00	6,803.8	-1,203.6	-94.5	43.5	0.00	0.00	0.00
7,700.0	90.51	90.00	6,802.9	-1,203.6	5.5	142.8	0.00	0.00	0.00
7,800.0	90.51	90.00	6,802.0	-1,203.6	105.4	242.2	0.00	0.00	0.00
7,900.0	90.51	90.00	6,801.1	-1,203.6	205.4	341.5	0.00	0.00	0.00
8,000.0	90.51	90.00	6,800.2	-1,203.6	305.4	440.9	0.00	0.00	0.00
8,100.0	90.51	90.00	6,799.3	-1,203.6	405.4	540.2	0.00	0.00	0.00
8,200.0	90.51	90.00	6,798.4	-1,203.6	505.4	639.5	0.00	0.00	0.00
8,300.0	90.51	90.00	6,797.5	-1,203.6	605.4	738.9	0.00	0.00	0.00
8,400.0	90.51	90.00	6,796.7	-1,203.6	705.4	838.2	0.00	0.00	0.00
8,500.0	90.51	90.00	6,795.8	-1,203.6	805.4	937.6	0.00	0.00	0.00
8,600.0	90.51	90.00	6,794.9	-1,203.6	905.4	1,036.9	0.00	0.00	0.00
8,700.0	90.51	90.00	6,794.0	-1,203.6	1,005.4	1,136.3	0.00	0.00	0.00
8,800.0	90.51	90.00	6,793.1	-1,203.6	1,105.4	1,235.6	0.00	0.00	0.00
8,900.0	90.51	90.00	6,792.2	-1,203.6	1,205.4	1,334.9	0.00	0.00	0.00
9,000.0	90.51	90.00	6,791.3	-1,203.6	1,305.4	1,434.3	0.00	0.00	0.00
9,100.0	90.51	90.00	6,790.4	-1,203.6	1,405.4	1,533.6	0.00	0.00	0.00
9,200.0	90.51	90.00	6,789.6	-1,203.6	1,505.4	1,633.0	0.00	0.00	0.00
9,300.0	90.51	90.00	6,788.7	-1,203.6	1,605.4	1,732.3	0.00	0.00	0.00
9,400.0	90.51	90.00	6,787.8	-1,203.6	1,705.4	1,831.7	0.00	0.00	0.00
9,500.0	90.51	90.00	6,786.9	-1,203.6	1,805.4	1,931.0	0.00	0.00	0.00
9,600.0	90.51	90.00	6,786.0	-1,203.6	1,905.4	2,030.3	0.00	0.00	0.00
9,700.0	90.51	90.00	6,785.1	-1,203.6	2,005.4	2,129.7	0.00	0.00	0.00
9,800.0	90.51	90.00	6,784.2	-1,203.6	2,105.4	2,229.0	0.00	0.00	0.00
9,900.0	90.51	90.00	6,783.3	-1,203.6	2,205.4	2,328.4	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,000.0	90.51	90.00	6,782.5	-1,203.6	2,305.4	2,427.7	0.00	0.00	0.00
10,100.0	90.51	90.00	6,781.6	-1,203.6	2,405.4	2,527.0	0.00	0.00	0.00
10,200.0	90.51	90.00	6,780.7	-1,203.6	2,505.4	2,626.4	0.00	0.00	0.00
10,300.0	90.51	90.00	6,779.8	-1,203.6	2,605.3	2,725.7	0.00	0.00	0.00
10,400.0	90.51	90.00	6,778.9	-1,203.6	2,705.3	2,825.1	0.00	0.00	0.00
10,500.0	90.51	90.00	6,778.0	-1,203.6	2,805.3	2,924.4	0.00	0.00	0.00
10,600.0	90.51	90.00	6,777.1	-1,203.6	2,905.3	3,023.8	0.00	0.00	0.00
10,700.0	90.51	90.00	6,776.3	-1,203.6	3,005.3	3,123.1	0.00	0.00	0.00
10,800.0	90.51	90.00	6,775.4	-1,203.6	3,105.3	3,222.4	0.00	0.00	0.00
10,900.0	90.51	90.00	6,774.5	-1,203.6	3,205.3	3,321.8	0.00	0.00	0.00
11,000.0	90.51	90.00	6,773.6	-1,203.6	3,305.3	3,421.1	0.00	0.00	0.00
11,100.0	90.51	90.00	6,772.7	-1,203.6	3,405.3	3,520.5	0.00	0.00	0.00
11,200.0	90.51	90.00	6,771.8	-1,203.6	3,505.3	3,619.8	0.00	0.00	0.00
11,300.0	90.51	90.00	6,770.9	-1,203.6	3,605.3	3,719.2	0.00	0.00	0.00
11,400.0	90.51	90.00	6,770.0	-1,203.6	3,705.3	3,818.5	0.00	0.00	0.00
11,500.0	90.51	90.00	6,769.2	-1,203.6	3,805.3	3,917.8	0.00	0.00	0.00
11,600.0	90.51	90.00	6,768.3	-1,203.6	3,905.3	4,017.2	0.00	0.00	0.00
11,700.0	90.51	90.00	6,767.4	-1,203.6	4,005.3	4,116.5	0.00	0.00	0.00
11,800.0	90.51	90.00	6,766.5	-1,203.6	4,105.3	4,215.9	0.00	0.00	0.00
11,900.0	90.51	90.00	6,765.6	-1,203.6	4,205.3	4,315.2	0.00	0.00	0.00
12,000.0	90.51	90.00	6,764.7	-1,203.6	4,305.3	4,414.5	0.00	0.00	0.00
12,100.0	90.51	90.00	6,763.8	-1,203.6	4,405.3	4,513.9	0.00	0.00	0.00
12,200.0	90.51	90.00	6,762.9	-1,203.6	4,505.3	4,613.2	0.00	0.00	0.00
12,300.0	90.51	90.00	6,762.1	-1,203.6	4,605.3	4,712.6	0.00	0.00	0.00
12,400.0	90.51	90.00	6,761.2	-1,203.6	4,705.3	4,811.9	0.00	0.00	0.00
12,500.0	90.51	90.00	6,760.3	-1,203.6	4,805.3	4,911.3	0.00	0.00	0.00
12,600.0	90.51	90.00	6,759.4	-1,203.6	4,905.3	5,010.6	0.00	0.00	0.00
12,700.0	90.51	90.00	6,758.5	-1,203.6	5,005.3	5,109.9	0.00	0.00	0.00
12,800.0	90.51	90.00	6,757.6	-1,203.6	5,105.2	5,209.3	0.00	0.00	0.00
12,900.0	90.51	90.00	6,756.7	-1,203.6	5,205.2	5,308.6	0.00	0.00	0.00
13,000.0	90.51	90.00	6,755.8	-1,203.6	5,305.2	5,408.0	0.00	0.00	0.00
13,100.0	90.51	90.00	6,755.0	-1,203.6	5,405.2	5,507.3	0.00	0.00	0.00
13,200.0	90.51	90.00	6,754.1	-1,203.6	5,505.2	5,606.7	0.00	0.00	0.00
13,300.0	90.51	90.00	6,753.2	-1,203.6	5,605.2	5,706.0	0.00	0.00	0.00
13,400.0	90.51	90.00	6,752.3	-1,203.6	5,705.2	5,805.3	0.00	0.00	0.00
13,500.0	90.51	90.00	6,751.4	-1,203.6	5,805.2	5,904.7	0.00	0.00	0.00
13,600.0	90.51	90.00	6,750.5	-1,203.6	5,905.2	6,004.0	0.00	0.00	0.00
13,700.0	90.51	90.00	6,749.6	-1,203.6	6,005.2	6,103.4	0.00	0.00	0.00
13,800.0	90.51	90.00	6,748.7	-1,203.6	6,105.2	6,202.7	0.00	0.00	0.00
13,900.0	90.51	90.00	6,747.9	-1,203.6	6,205.2	6,302.1	0.00	0.00	0.00
14,000.0	90.51	90.00	6,747.0	-1,203.6	6,305.2	6,401.4	0.00	0.00	0.00
14,100.0	90.51	90.00	6,746.1	-1,203.6	6,405.2	6,500.7	0.00	0.00	0.00
14,200.0	90.51	90.00	6,745.2	-1,203.6	6,505.2	6,600.1	0.00	0.00	0.00
14,300.0	90.51	90.00	6,744.3	-1,203.6	6,605.2	6,699.4	0.00	0.00	0.00
14,400.0	90.51	90.00	6,743.4	-1,203.6	6,705.2	6,798.8	0.00	0.00	0.00
14,500.0	90.51	90.00	6,742.5	-1,203.6	6,805.2	6,898.1	0.00	0.00	0.00
14,600.0	90.51	90.00	6,741.7	-1,203.6	6,905.2	6,997.4	0.00	0.00	0.00
14,700.0	90.51	90.00	6,740.8	-1,203.6	7,005.2	7,096.8	0.00	0.00	0.00
14,800.0	90.51	90.00	6,739.9	-1,203.6	7,105.2	7,196.1	0.00	0.00	0.00
14,900.0	90.51	90.00	6,739.0	-1,203.6	7,205.2	7,295.5	0.00	0.00	0.00
15,000.0	90.51	90.00	6,738.1	-1,203.6	7,305.2	7,394.8	0.00	0.00	0.00
15,100.0	90.51	90.00	6,737.2	-1,203.6	7,405.2	7,494.2	0.00	0.00	0.00
15,200.0	90.51	90.00	6,736.3	-1,203.6	7,505.2	7,593.5	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,300.0	90.51	90.00	6,735.4	-1,203.6	7,605.2	7,692.8	0.00	0.00	0.00
15,400.0	90.51	90.00	6,734.6	-1,203.6	7,705.1	7,792.2	0.00	0.00	0.00
15,500.0	90.51	90.00	6,733.7	-1,203.6	7,805.1	7,891.5	0.00	0.00	0.00
15,600.0	90.51	90.00	6,732.8	-1,203.6	7,905.1	7,990.9	0.00	0.00	0.00
15,700.0	90.51	90.00	6,731.9	-1,203.6	8,005.1	8,090.2	0.00	0.00	0.00
15,800.0	90.51	90.00	6,731.0	-1,203.6	8,105.1	8,189.6	0.00	0.00	0.00
15,900.0	90.51	90.00	6,730.1	-1,203.6	8,205.1	8,288.9	0.00	0.00	0.00
16,000.0	90.51	90.00	6,729.2	-1,203.6	8,305.1	8,388.2	0.00	0.00	0.00
16,100.0	90.51	90.00	6,728.3	-1,203.6	8,405.1	8,487.6	0.00	0.00	0.00
16,200.0	90.51	90.00	6,727.5	-1,203.6	8,505.1	8,586.9	0.00	0.00	0.00
16,300.0	90.51	90.00	6,726.6	-1,203.6	8,605.1	8,686.3	0.00	0.00	0.00
16,400.0	90.51	90.00	6,725.7	-1,203.6	8,705.1	8,785.6	0.00	0.00	0.00
16,500.0	90.51	90.00	6,724.8	-1,203.6	8,805.1	8,884.9	0.00	0.00	0.00
16,600.0	90.51	90.00	6,723.9	-1,203.6	8,905.1	8,984.3	0.00	0.00	0.00
16,700.0	90.51	90.00	6,723.0	-1,203.6	9,005.1	9,083.6	0.00	0.00	0.00
16,800.0	90.51	90.00	6,722.1	-1,203.6	9,105.1	9,183.0	0.00	0.00	0.00
16,900.0	90.51	90.00	6,721.2	-1,203.6	9,205.1	9,282.3	0.00	0.00	0.00
17,000.0	90.51	90.00	6,720.4	-1,203.6	9,305.1	9,381.7	0.00	0.00	0.00
17,100.0	90.51	90.00	6,719.5	-1,203.6	9,405.1	9,481.0	0.00	0.00	0.00
17,200.0	90.51	90.00	6,718.6	-1,203.6	9,505.1	9,580.3	0.00	0.00	0.00
17,300.0	90.51	90.00	6,717.7	-1,203.6	9,605.1	9,679.7	0.00	0.00	0.00
17,400.0	90.51	90.00	6,716.8	-1,203.6	9,705.1	9,779.0	0.00	0.00	0.00
17,500.0	90.51	90.00	6,715.9	-1,203.6	9,805.1	9,878.4	0.00	0.00	0.00
17,600.0	90.51	90.00	6,715.0	-1,203.6	9,905.1	9,977.7	0.00	0.00	0.00
17,700.0	90.51	90.00	6,714.1	-1,203.6	10,005.1	10,077.1	0.00	0.00	0.00
17,800.0	90.51	90.00	6,713.3	-1,203.6	10,105.1	10,176.4	0.00	0.00	0.00
17,900.0	90.51	90.00	6,712.4	-1,203.6	10,205.0	10,275.7	0.00	0.00	0.00
18,000.0	90.51	90.00	6,711.5	-1,203.6	10,305.0	10,375.1	0.00	0.00	0.00
18,100.0	90.51	90.00	6,710.6	-1,203.6	10,405.0	10,474.4	0.00	0.00	0.00
18,167.4	90.51	90.00	6,710.0	-1,203.6	10,472.4	10,541.4	0.00	0.00	0.00
TD at 18167.4									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
50' N/S Hardline (19P-3' - hit/miss target - Shape - plan misses target center by 5258.4ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E) - Rectangle (sides W100.0 H10,707.3 D0.0)	0.00	0.00	1.0	-1,203.6	5,118.7	1,383,329.10	3,258,241.35	40.381935	-104.573007
SHL 2419'FNL & 2250'F - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,384,480.16	3,253,110.75	40.385240	-104.591380
BHL 1565'FSL & 2353'FI - plan hits target center - Point	0.00	0.00	6,710.0	-1,203.6	10,472.4	1,383,383.92	3,263,594.53	40.381930	-104.553790

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19P-312
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-15-15)		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,459.6	6,805.0	7"	7	7-1/2

Formations				
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)
3,647.7	3,550.0	Parkman		0.00
4,427.7	4,300.0	Sussex		0.00
4,635.6	4,500.0	Shannon		0.00
6,691.2	6,463.0	Sharon Springs		0.00
6,867.5	6,596.0	Niobrara A		0.00
7,039.1	6,698.0	Niobrara B		0.00
7,235.6	6,775.0	Niobrara C		0.00

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
400.0	400.0	0.0	0.0	KOP - Start Build 1.50
6,105.8	5,913.6	-1,019.4	-991.3	Start DLS 7.50 TFO -132.97
7,459.6	6,805.0	-1,203.6	-234.9	Start 10707.8 hold at 7459.6 MD
18,167.4	6,710.0	-1,203.6	10,472.4	TD at 18167.4



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19P-312

Wellbore #1

Plan #3 (7-15-15)

Anticollision Report

29 July, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #3 (7-15-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 7/29/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	18,167.4	Plan #3 (7-15-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.21-T5N-R64W						
Chesnut 4 (P&A) - Wellbore #1 - Wellbore #1	18,168.4	6,695.0	535.1	88.7	1.199	Level 2, CC, ES, SF
Eldersub 11-21 (Exist) - Wellbore #1 - Wellbore #1	17,095.3	6,300.0	485.8	323.4	2.991	CC
Eldersub 11-21 (Exist) - Wellbore #1 - Wellbore #1	17,100.0	6,300.0	485.8	323.3	2.989	ES, SF
Klein 19O-HZ Pad Sec.19-T5N-R64W						
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	400.0	400.0	61.9	60.4	39.358	CC, ES
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	800.0	799.3	78.3	75.0	23.615	SF
Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)	400.0	400.0	29.1	27.6	18.521	CC, ES
Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)	700.0	699.7	38.5	35.6	13.422	SF
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	400.0	400.0	160.1	158.5	101.763	CC, ES
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	4,700.0	4,635.8	997.7	972.9	40.218	SF
Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)	400.0	400.0	153.2	151.7	97.392	CC
Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)	18,168.4	18,000.8	566.8	-50.8	0.918	Level 1, ES, SF
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	400.0	400.0	154.0	152.4	97.856	CC, ES
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	5,500.0	5,468.2	976.5	948.2	34.577	SF
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	400.0	400.0	150.4	148.9	95.614	CC, ES
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	18,168.4	17,809.5	831.7	222.1	1.364	Level 3, SF
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	200.0	200.0	29.2	28.5	43.253	CC
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	18,120.9	18,242.4	263.9	-335.9	0.440	Level 1, ES, SF
Maxey 24O-HZ Pad Sec.24-T5N-R65W						
Maxey 24O-232 - Wellbore #1 - Wellbore #1	6,750.0	11,018.0	497.8	359.9	3.610	ES, SF
Maxey 24O-232 - Wellbore #1 - Wellbore #1	6,755.8	11,018.0	497.7	359.9	3.612	CC
Maxey 24O-402 - Wellbore #1 - Wellbore #1	6,850.0	11,254.0	794.8	651.9	5.561	SF
Maxey 24O-402 - Wellbore #1 - Wellbore #1	6,893.8	11,254.0	793.3	650.9	5.573	CC, ES
Maxey 24P-312 - Wellbore #1 - Wellbore #1	6,924.1	11,196.0	235.2	141.3	2.504	CC, ES, SF
Maxey 24P-402 - Wellbore #1 - Wellbore #1	6,980.3	11,303.0	366.3	257.6	3.369	CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

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						
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W						
Austin 1 (Exist) - Wellbore #1 - Wellbore #1	7,970.7	6,794.2	336.8	289.7	7.159	CC, ES
Austin 1 (Exist) - Wellbore #1 - Wellbore #1	8,000.0	6,794.1	338.0	290.4	7.097	SF
Danley 33-20 (Exist) - Wellbore #1 - Wellbore #1	13,164.3	6,897.0	297.8	109.9	1.585	CC, ES, SF
Danley 43-20 (Exist) - Wellbore #1 - Wellbore #1	14,692.0	6,954.6	522.1	290.4	2.253	CC
Danley 43-20 (Exist) - Wellbore #1 - Wellbore #1	14,700.0	6,954.4	522.2	290.3	2.251	ES, SF
Evert 20-1 (Exist) - Wellbore #1 - Wellbore #1	11,854.6	6,758.6	377.8	144.5	1.619	CC, ES, SF
Evert 5 (Exist) - Wellbore #1 - Wellbore #1	11,206.1	6,760.7	353.0	220.9	2.672	CC, ES, SF
Ivan Klein 13-20 (Exist) - Wellbore #1 - Wellbore #1	10,563.8	6,761.9	122.5	9.6	1.085	Level 2, CC, ES, SF
Mowery 19-1 (Exist) - Wellbore #1 - Wellbore #1	9,236.0	6,778.5	330.7	253.3	4.276	CC, ES
Mowery 19-1 (Exist) - Wellbore #1 - Wellbore #1	9,300.0	6,778.3	336.8	257.8	4.263	SF
Mowery 5 (Exist) - Wellbore #1 - Wellbore #1	8,704.0	6,783.1	421.4	356.3	6.481	CC, ES
Mowery 5 (Exist) - Wellbore #1 - Wellbore #1	8,800.0	6,783.3	432.2	364.7	6.410	SF

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 6975-UNKNOWN													Offset Well Error:	0.0 ft
Existing Wells Sec.21-T5N-R64W - Chesnut 4 (P&A) - Wellbore #1 - Wellbore #1														
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		
17,700.0	6,714.1	6,699.1	6,699.1	299.7	134.0	-91.48	-893.8	10,909.7	956.2	522.9	433.36	2.207		
17,800.0	6,713.3	6,698.3	6,698.3	302.5	134.0	-91.32	-893.8	10,909.7	862.2	426.1	436.17	1.977		
17,900.0	6,712.4	6,697.4	6,697.4	305.3	133.9	-91.16	-893.8	10,909.7	769.8	330.8	438.97	1.754		
18,000.0	6,711.5	6,696.5	6,696.5	308.1	133.9	-90.99	-893.8	10,909.7	679.4	237.6	441.77	1.538		
18,100.0	6,710.6	6,695.6	6,695.6	310.9	133.9	-90.83	-893.8	10,909.7	592.2	147.6	444.57	1.332	Level 3	
18,167.4	6,710.0	6,695.0	6,695.0	312.7	133.9	-90.72	-893.8	10,909.7	535.9	89.5	446.45	1.200	Level 2	
18,168.4	6,710.0	6,695.0	6,695.0	312.8	133.9	-90.72	-893.8	10,909.7	535.1	88.7	446.47	1.199	Level 2, CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.21-T5N-R64W - Eldersub 11-21 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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		
16,300.0	6,726.6	6,300.0	6,298.6	260.5	11.0	29.47	-1,442.7	9,396.6	932.0	781.5	150.43	6.195		
16,400.0	6,725.7	6,300.0	6,298.6	263.3	11.0	29.47	-1,442.7	9,396.6	848.2	696.3	151.94	5.583		
16,500.0	6,724.8	6,300.0	6,298.6	266.1	11.0	29.47	-1,442.7	9,396.6	768.4	614.9	153.45	5.007		
16,600.0	6,723.9	6,300.0	6,298.6	268.9	11.0	29.47	-1,442.7	9,396.6	693.8	538.8	154.96	4.477		
16,700.0	6,723.0	6,300.0	6,298.6	271.7	11.0	29.47	-1,442.7	9,396.6	626.3	469.9	156.47	4.003		
16,800.0	6,722.1	6,300.0	6,298.6	274.5	11.0	29.47	-1,442.7	9,396.6	568.5	410.5	157.99	3.599		
16,900.0	6,721.2	6,300.0	6,298.6	277.3	11.0	29.47	-1,442.7	9,396.6	523.6	364.1	159.50	3.283		
17,000.0	6,720.4	6,300.0	6,298.6	280.1	11.0	29.47	-1,442.7	9,396.6	495.1	334.1	161.01	3.075		
17,095.3	6,719.5	6,300.0	6,298.6	282.7	11.0	29.47	-1,442.7	9,396.6	485.8	323.4	162.45	2.991 CC		
17,100.0	6,719.5	6,300.0	6,298.6	282.9	11.0	29.47	-1,442.7	9,396.6	485.8	323.3	162.52	2.989 ES, SF		
17,200.0	6,718.6	6,300.0	6,298.6	285.7	11.0	29.47	-1,442.7	9,396.6	497.0	332.9	164.03	3.030		
17,300.0	6,717.7	6,300.0	6,298.6	288.5	11.0	29.47	-1,442.7	9,396.6	527.2	361.6	165.54	3.184		
17,400.0	6,716.8	6,300.0	6,298.6	291.3	11.0	29.47	-1,442.7	9,396.6	573.4	406.4	167.06	3.433		
17,500.0	6,715.9	6,300.0	6,298.6	294.1	11.0	29.47	-1,442.7	9,396.6	632.3	463.7	168.57	3.751		
17,600.0	6,715.0	6,300.0	6,298.6	296.9	11.0	29.47	-1,442.7	9,396.6	700.5	530.4	170.08	4.119		
17,700.0	6,714.1	6,300.0	6,298.6	299.7	11.0	29.47	-1,442.7	9,396.6	775.7	604.1	171.59	4.520		
17,800.0	6,713.3	6,300.0	6,298.6	302.5	11.0	29.47	-1,442.7	9,396.6	855.9	682.8	173.10	4.944		
17,900.0	6,712.4	6,300.0	6,298.6	305.3	11.0	29.47	-1,442.7	9,396.6	940.0	765.3	174.62	5.383		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	61.9	0.0	61.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	61.9	0.0	61.9	61.7	0.22	275.507		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	61.9	0.0	61.9	61.3	0.67	91.836		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	61.9	0.0	61.9	60.8	1.12	55.101		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	61.9	0.0	61.9	60.4	1.57	39.358 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	136.62	61.9	0.0	62.9	60.9	2.00	31.387		
600.0	599.9	599.9	599.9	1.2	1.2	138.94	61.9	0.0	65.8	63.4	2.43	27.107		
700.0	699.7	699.7	699.7	1.4	1.5	142.37	61.9	0.0	70.8	68.0	2.87	24.722		
800.0	799.3	799.3	799.3	1.6	1.7	146.39	61.9	0.0	78.3	75.0	3.32	23.615 SF		
900.0	898.6	896.7	896.7	1.9	1.9	149.99	63.1	-0.4	89.4	85.6	3.77	23.694		
1,000.0	997.5	993.4	993.4	2.2	2.1	152.55	66.5	-1.8	105.0	100.8	4.24	24.784		
1,100.0	1,096.1	1,089.1	1,088.8	2.6	2.3	154.18	72.1	-3.9	125.0	120.3	4.71	26.551		
1,200.0	1,194.2	1,183.5	1,182.9	2.9	2.6	155.10	79.9	-6.9	149.3	144.1	5.19	28.757		
1,300.0	1,291.7	1,276.4	1,275.2	3.4	2.8	155.53	89.6	-10.6	177.6	172.0	5.69	31.243		
1,400.0	1,388.6	1,367.6	1,365.5	3.8	3.0	155.63	101.2	-15.1	210.0	203.8	6.20	33.892		
1,462.6	1,449.0	1,423.7	1,420.9	4.2	3.2	155.58	109.4	-18.2	232.3	225.7	6.52	35.597		
1,500.0	1,484.9	1,456.9	1,453.6	4.4	3.3	155.60	114.5	-20.2	246.1	239.4	6.73	36.589		
1,600.0	1,581.1	1,544.8	1,540.1	4.9	3.6	155.43	129.5	-25.9	284.2	277.0	7.28	39.052		
1,700.0	1,677.2	1,631.4	1,624.8	5.5	3.9	155.04	146.1	-32.3	324.0	316.1	7.85	41.250		
1,800.0	1,773.4	1,722.8	1,714.1	6.0	4.2	154.61	164.5	-39.4	364.5	356.0	8.45	43.129		
1,900.0	1,869.5	1,814.2	1,803.3	6.6	4.6	154.26	182.9	-46.4	405.0	395.9	9.06	44.708		
2,000.0	1,965.7	1,905.6	1,892.6	7.1	5.0	153.97	201.3	-53.5	445.5	435.8	9.67	46.048		
2,100.0	2,061.8	1,997.0	1,981.8	7.7	5.3	153.73	219.8	-60.6	486.0	475.7	10.30	47.190		
2,200.0	2,158.0	2,088.4	2,071.1	8.3	5.7	153.53	238.2	-67.6	526.6	515.6	10.93	48.172		
2,300.0	2,254.2	2,179.8	2,160.3	8.8	6.1	153.36	256.6	-74.7	567.1	555.5	11.57	49.024		
2,400.0	2,350.3	2,271.2	2,249.5	9.4	6.5	153.21	275.0	-81.8	607.7	595.4	12.21	49.768		
2,500.0	2,446.5	2,362.6	2,338.8	10.0	6.9	153.08	293.4	-88.9	648.2	635.3	12.86	50.423		
2,600.0	2,542.6	2,454.0	2,428.0	10.6	7.3	152.96	311.9	-95.9	688.8	675.3	13.50	51.003		
2,700.0	2,638.8	2,545.4	2,517.3	11.1	7.7	152.86	330.3	-103.0	729.3	715.2	14.16	51.519		
2,800.0	2,734.9	2,636.8	2,606.5	11.7	8.1	152.77	348.7	-110.1	769.9	755.1	14.81	51.981		
2,900.0	2,831.1	2,728.2	2,695.8	12.3	8.5	152.68	367.1	-117.1	810.4	795.0	15.47	52.396		
3,000.0	2,927.2	2,819.6	2,785.0	12.9	8.9	152.61	385.6	-124.2	851.0	834.9	16.13	52.771		
3,100.0	3,023.4	2,911.0	2,874.3	13.4	9.3	152.54	404.0	-131.3	891.5	874.8	16.79	53.111		
3,200.0	3,119.5	3,002.4	2,963.5	14.0	9.7	152.48	422.4	-138.3	932.1	914.7	17.45	53.421		
3,300.0	3,215.7	3,093.8	3,052.7	14.6	10.1	152.42	440.8	-145.4	972.7	954.6	18.11	53.704		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	129.650		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.217		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.930		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	29.1	0.0	29.1	27.6	1.57	18.521 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	137.53	29.1	0.0	30.1	28.1	2.00	15.023		
600.0	599.9	599.9	599.9	1.2	1.2	142.09	29.1	0.0	33.1	30.7	2.43	13.635		
700.0	699.7	699.7	699.7	1.4	1.5	148.04	29.1	0.0	38.5	35.6	2.87	13.422 SF		
800.0	799.3	799.3	799.3	1.6	1.7	153.96	29.1	0.0	46.5	43.2	3.31	14.030		
900.0	898.6	898.6	898.6	1.9	1.9	159.07	29.1	0.0	57.3	53.5	3.76	15.218		
1,000.0	997.5	997.5	997.5	2.2	2.1	163.15	29.1	0.0	70.9	66.7	4.22	16.809		
1,100.0	1,096.1	1,095.3	1,095.3	2.6	2.3	165.84	29.8	-0.4	87.7	83.0	4.67	18.771		
1,200.0	1,194.2	1,192.4	1,192.4	2.9	2.6	167.16	32.0	-1.5	107.9	102.8	5.13	21.051		
1,300.0	1,291.7	1,288.6	1,288.5	3.4	2.8	167.63	35.5	-3.5	131.5	125.9	5.59	23.537		
1,400.0	1,388.6	1,383.7	1,383.4	3.8	3.0	167.61	40.4	-6.1	158.3	152.3	6.05	26.155		
1,462.6	1,449.0	1,442.7	1,442.3	4.2	3.1	167.43	44.2	-8.2	176.8	170.5	6.35	27.838		
1,500.0	1,484.9	1,477.7	1,477.2	4.4	3.2	167.32	46.6	-9.5	188.3	181.7	6.53	28.813		
1,600.0	1,581.1	1,571.1	1,570.2	4.9	3.4	166.82	54.1	-13.6	219.4	212.4	7.03	31.199		
1,700.0	1,677.2	1,663.9	1,662.4	5.5	3.7	166.14	62.9	-18.3	251.4	243.8	7.55	33.302		
1,800.0	1,773.4	1,756.1	1,753.9	6.0	3.9	165.33	72.9	-23.8	284.1	276.1	8.08	35.165		
1,900.0	1,869.5	1,847.6	1,844.5	6.6	4.2	164.46	84.2	-29.8	317.8	309.1	8.63	36.822		
2,000.0	1,965.7	1,938.5	1,934.3	7.1	4.4	163.54	96.5	-36.6	352.3	343.1	9.20	38.297		
2,100.0	2,061.8	2,030.4	2,024.9	7.7	4.7	162.61	110.2	-44.0	387.5	377.7	9.79	39.594		
2,200.0	2,158.0	2,123.8	2,116.9	8.3	5.0	161.80	124.2	-51.5	423.0	412.6	10.39	40.713		
2,300.0	2,254.2	2,217.1	2,208.9	8.8	5.3	161.12	138.1	-59.1	458.5	447.5	11.00	41.686		
2,400.0	2,350.3	2,310.5	2,300.9	9.4	5.7	160.53	152.1	-66.7	494.0	482.4	11.61	42.538		
2,500.0	2,446.5	2,403.8	2,392.9	10.0	6.0	160.03	166.1	-74.3	529.6	517.4	12.23	43.288		
2,600.0	2,542.6	2,497.2	2,484.9	10.6	6.3	159.58	180.1	-81.9	565.2	552.4	12.86	43.952		
2,700.0	2,638.8	2,590.6	2,576.9	11.1	6.6	159.19	194.0	-89.5	600.9	587.4	13.49	44.543		
2,800.0	2,734.9	2,683.9	2,668.9	11.7	7.0	158.85	208.0	-97.0	636.5	622.4	14.12	45.072		
2,900.0	2,831.1	2,777.3	2,760.9	12.3	7.3	158.54	222.0	-104.6	672.2	657.5	14.76	45.548		
3,000.0	2,927.2	2,870.6	2,852.8	12.9	7.6	158.26	236.0	-112.2	707.9	692.5	15.40	45.978		
3,100.0	3,023.4	2,964.0	2,944.8	13.4	8.0	158.00	250.0	-119.8	743.6	727.6	16.04	46.369		
3,200.0	3,119.5	3,057.3	3,036.8	14.0	8.3	157.78	263.9	-127.4	779.4	762.7	16.68	46.725		
3,300.0	3,215.7	3,150.7	3,128.8	14.6	8.7	157.57	277.9	-134.9	815.1	797.8	17.32	47.050		
3,400.0	3,311.9	3,244.1	3,220.8	15.2	9.0	157.38	291.9	-142.5	850.8	832.9	17.97	47.348		
3,500.0	3,408.0	3,337.4	3,312.8	15.8	9.4	157.20	305.9	-150.1	886.6	868.0	18.62	47.622		
3,600.0	3,504.2	3,430.8	3,404.8	16.3	9.7	157.04	319.8	-157.7	922.3	903.1	19.27	47.876		
3,700.0	3,600.3	3,524.1	3,496.8	16.9	10.1	156.89	333.8	-165.3	958.1	938.2	19.92	48.110		
3,800.0	3,696.5	3,617.5	3,588.8	17.5	10.4	156.75	347.8	-172.9	993.9	973.3	20.57	48.327		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)													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	67.25	61.9	147.6	160.1					
100.0	100.0	100.0	100.0	0.1	0.1	67.25	61.9	147.6	160.1	159.9	0.22	712.342		
200.0	200.0	200.0	200.0	0.3	0.3	67.25	61.9	147.6	160.1	159.4	0.67	237.447		
300.0	300.0	300.0	300.0	0.6	0.6	67.25	61.9	147.6	160.1	159.0	1.12	142.468		
400.0	400.0	400.0	400.0	0.8	0.8	67.25	61.9	147.6	160.1	158.5	1.57	101.763 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	-157.13	61.9	147.6	161.3	159.3	2.00	80.501		
600.0	599.9	599.9	599.9	1.2	1.2	-157.64	61.9	147.6	164.9	162.5	2.43	67.938		
700.0	699.7	699.7	699.7	1.4	1.5	-158.44	61.9	147.6	171.0	168.1	2.86	59.700		
800.0	799.3	799.3	799.3	1.6	1.7	-159.47	61.9	147.6	179.6	176.2	3.31	54.248		
900.0	898.6	898.6	898.6	1.9	1.9	-160.65	61.9	147.6	190.6	186.8	3.76	50.671		
1,000.0	997.5	997.5	997.5	2.2	2.1	-161.92	61.9	147.6	204.2	200.0	4.22	48.411		
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-163.21	61.9	147.6	220.4	215.7	4.68	47.109		
1,200.0	1,194.2	1,194.2	1,194.2	2.9	2.6	-164.48	61.9	147.6	239.2	234.0	5.14	46.523		
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-165.70	61.9	147.6	260.5	254.9	5.60	46.485		
1,400.0	1,388.6	1,388.6	1,388.6	3.8	3.0	-166.84	61.9	147.6	284.5	278.4	6.07	46.874		
1,462.6	1,449.0	1,449.0	1,449.0	4.2	3.1	-167.51	61.9	147.6	300.8	294.4	6.36	47.294		
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-167.92	61.9	147.6	310.8	304.3	6.54	47.547		
1,600.0	1,581.1	1,584.7	1,584.7	4.9	3.4	-169.00	62.0	147.0	337.3	330.3	7.01	48.124		
1,700.0	1,677.2	1,685.7	1,685.7	5.5	3.6	-170.13	62.3	144.7	362.7	355.3	7.47	48.533		
1,800.0	1,773.4	1,787.2	1,787.0	6.0	3.9	-171.30	62.9	140.5	387.0	379.1	7.94	48.736		
1,900.0	1,869.5	1,889.0	1,888.7	6.6	4.1	-172.52	63.7	134.6	410.3	401.8	8.41	48.756		
2,000.0	1,965.7	1,991.3	1,990.7	7.1	4.3	-173.78	64.8	126.8	432.5	423.6	8.89	48.621		
2,100.0	2,061.8	2,093.8	2,092.8	7.7	4.5	-175.10	66.2	117.2	453.7	444.3	9.38	48.350		
2,200.0	2,158.0	2,196.6	2,194.9	8.3	4.8	-176.47	67.8	105.8	474.0	464.1	9.88	47.955		
2,300.0	2,254.2	2,296.9	2,294.4	8.8	5.1	-177.84	69.5	93.0	493.5	483.1	10.39	47.486		
2,400.0	2,350.3	2,394.4	2,391.0	9.4	5.3	-179.09	71.3	80.4	513.1	502.2	10.91	47.035		
2,500.0	2,446.5	2,491.8	2,487.6	10.0	5.6	179.75	73.0	67.8	533.0	521.6	11.44	46.595		
2,600.0	2,542.6	2,589.3	2,584.2	10.6	5.9	178.68	74.8	55.3	553.0	541.1	11.98	46.171		
2,700.0	2,638.8	2,686.7	2,680.8	11.1	6.1	177.68	76.5	42.7	573.3	560.7	12.53	45.761		
2,800.0	2,734.9	2,784.2	2,777.5	11.7	6.4	176.74	78.3	30.1	593.7	580.6	13.09	45.364		
2,900.0	2,831.1	2,881.6	2,874.1	12.3	6.7	175.87	80.0	17.5	614.2	600.5	13.65	44.982		
3,000.0	2,927.2	2,979.1	2,970.7	12.9	7.0	175.06	81.8	4.9	634.8	620.6	14.23	44.614		
3,100.0	3,023.4	3,076.5	3,067.3	13.4	7.3	174.29	83.5	-7.7	655.6	640.8	14.81	44.261		
3,200.0	3,119.5	3,174.0	3,163.9	14.0	7.6	173.58	85.3	-20.3	676.5	661.1	15.40	43.921		
3,300.0	3,215.7	3,271.4	3,260.6	14.6	7.9	172.90	87.0	-32.9	697.5	681.5	16.00	43.594		
3,400.0	3,311.9	3,368.9	3,357.2	15.2	8.2	172.27	88.8	-45.5	718.5	701.9	16.60	43.281		
3,500.0	3,408.0	3,466.3	3,453.8	15.8	8.5	171.67	90.5	-58.1	739.7	722.5	17.21	42.981		
3,600.0	3,504.2	3,563.8	3,550.4	16.3	8.8	171.10	92.3	-70.7	760.9	743.1	17.82	42.693		
3,700.0	3,600.3	3,661.3	3,647.1	16.9	9.1	170.56	94.0	-83.3	782.2	763.7	18.44	42.417		
3,800.0	3,696.5	3,758.7	3,743.7	17.5	9.4	170.06	95.8	-95.9	803.5	784.4	19.06	42.153		
3,900.0	3,792.6	3,856.2	3,840.3	18.1	9.7	169.58	97.5	-108.5	824.9	805.2	19.69	41.900		
4,000.0	3,888.8	3,953.6	3,936.9	18.7	10.0	169.12	99.3	-121.1	846.4	826.0	20.32	41.657		
4,100.0	3,984.9	4,051.1	4,033.5	19.2	10.3	168.69	101.1	-133.7	867.9	846.9	20.95	41.425		
4,200.0	4,081.1	4,148.5	4,130.2	19.8	10.7	168.27	102.8	-146.3	889.4	867.8	21.59	41.202		
4,300.0	4,177.3	4,246.0	4,226.8	20.4	11.0	167.88	104.6	-158.9	911.0	888.8	22.23	40.989		
4,400.0	4,273.4	4,343.4	4,323.4	21.0	11.3	167.50	106.3	-171.4	932.6	909.8	22.87	40.784		
4,500.0	4,369.6	4,440.9	4,420.0	21.6	11.6	167.14	108.1	-184.0	954.3	930.8	23.51	40.587		
4,600.0	4,465.7	4,538.3	4,516.6	22.2	11.9	166.80	109.8	-196.6	976.0	951.8	24.16	40.399		
4,700.0	4,561.9	4,635.8	4,613.3	22.7	12.2	166.47	111.6	-209.2	997.7	972.9	24.81	40.218 SF		

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)												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	100.97	-29.1	150.4	153.2				
100.0	100.0	100.0	100.0	0.1	0.1	100.97	-29.1	150.4	153.2	153.0	0.22	681.744	
200.0	200.0	200.0	200.0	0.3	0.3	100.97	-29.1	150.4	153.2	152.6	0.67	227.248	
300.0	300.0	300.0	300.0	0.6	0.6	100.97	-29.1	150.4	153.2	152.1	1.12	136.349	
400.0	400.0	400.0	400.0	0.8	0.8	100.97	-29.1	150.4	153.2	151.7	1.57	97.392 CC	
500.0	500.0	500.0	500.0	1.0	1.0	-123.63	-29.1	150.4	154.0	152.0	2.00	76.926	
600.0	599.9	599.9	599.9	1.2	1.2	-124.80	-29.1	150.4	156.2	153.7	2.42	64.472	
700.0	699.7	699.7	699.7	1.4	1.5	-126.68	-29.1	150.4	160.0	157.1	2.86	55.923	
800.0	799.3	799.3	799.3	1.6	1.7	-129.15	-29.1	150.4	165.6	162.3	3.32	49.937	
900.0	898.6	898.6	898.6	1.9	1.9	-132.06	-29.1	150.4	173.3	169.5	3.79	45.743	
1,000.0	997.5	997.5	997.5	2.2	2.1	-135.27	-29.1	150.4	183.3	179.0	4.27	42.877	
1,100.0	1,096.1	1,100.8	1,100.8	2.6	2.3	-138.62	-29.8	149.3	194.6	189.8	4.76	40.911	
1,200.0	1,194.2	1,204.5	1,204.4	2.9	2.5	-141.79	-31.8	145.7	206.0	200.8	5.23	39.403	
1,300.0	1,291.7	1,308.7	1,308.4	3.4	2.8	-144.79	-35.2	139.5	217.6	211.9	5.71	38.077	
1,400.0	1,388.6	1,413.3	1,412.5	3.8	3.0	-147.66	-40.0	130.9	229.2	223.0	6.21	36.918	
1,462.6	1,449.0	1,479.0	1,477.7	4.2	3.1	-149.40	-43.8	124.2	236.6	230.1	6.52	36.271	
1,500.0	1,484.9	1,518.3	1,516.7	4.4	3.2	-150.44	-46.2	119.8	240.8	234.1	6.71	35.873	
1,600.0	1,581.1	1,623.9	1,621.1	4.9	3.5	-152.94	-53.9	106.0	250.7	243.5	7.23	34.687	
1,700.0	1,677.2	1,730.2	1,725.7	5.5	3.9	-155.17	-63.0	89.7	258.2	250.5	7.75	33.339	
1,800.0	1,773.4	1,836.9	1,830.2	6.0	4.2	-157.19	-73.6	70.7	263.3	255.0	8.27	31.849	
1,900.0	1,869.5	1,943.9	1,934.3	6.6	4.7	-159.08	-85.7	49.1	265.9	257.1	8.79	30.244	
2,000.0	1,965.7	2,051.1	2,037.8	7.1	5.1	-160.90	-99.1	24.9	266.0	256.6	9.32	28.535	
2,100.0	2,061.8	2,158.1	2,140.5	7.7	5.7	-162.71	-114.0	-1.7	263.4	253.6	9.85	26.736	
2,200.0	2,158.0	2,262.9	2,240.1	8.3	6.2	-164.51	-129.9	-30.2	258.5	248.1	10.38	24.891	
2,300.0	2,254.2	2,362.5	2,334.5	8.8	6.8	-166.30	-145.3	-57.8	253.1	242.2	10.91	23.200	
2,400.0	2,350.3	2,462.0	2,428.9	9.4	7.4	-168.16	-160.7	-85.4	247.9	236.5	11.43	21.679	
2,500.0	2,446.5	2,561.5	2,523.2	10.0	8.0	-170.10	-176.1	-113.0	243.0	231.0	11.97	20.299	
2,600.0	2,542.6	2,661.1	2,617.6	10.6	8.7	-172.11	-191.5	-140.6	238.4	225.9	12.52	19.035	
2,700.0	2,638.8	2,760.6	2,712.0	11.1	9.3	-174.20	-206.9	-168.2	234.1	221.0	13.10	17.869	
2,800.0	2,734.9	2,860.1	2,806.4	11.7	9.9	-176.37	-222.3	-195.8	230.1	216.4	13.71	16.785	
2,900.0	2,831.1	2,959.7	2,900.7	12.3	10.6	-178.60	-237.7	-223.4	226.5	212.1	14.36	15.770	
3,000.0	2,927.2	3,059.2	2,995.1	12.9	11.2	179.09	-253.1	-251.0	223.2	208.1	15.07	14.815	
3,100.0	3,023.4	3,158.7	3,089.5	13.4	11.8	176.72	-268.5	-278.6	220.3	204.5	15.83	13.914	
3,200.0	3,119.5	3,258.3	3,183.9	14.0	12.5	174.29	-283.9	-306.3	217.8	201.1	16.67	13.064	
3,300.0	3,215.7	3,357.8	3,278.3	14.6	13.1	171.81	-299.3	-333.9	215.7	198.1	17.59	12.263	
3,400.0	3,311.9	3,457.3	3,372.6	15.2	13.8	169.29	-314.7	-361.5	214.0	195.4	18.59	11.511	
3,500.0	3,408.0	3,556.9	3,467.0	15.8	14.5	166.73	-330.1	-389.1	212.7	193.1	19.68	10.809	
3,600.0	3,504.2	3,656.4	3,561.4	16.3	15.1	164.15	-345.5	-416.7	211.9	191.1	20.86	10.158	
3,700.0	3,600.3	3,755.9	3,655.8	16.9	15.8	161.55	-360.9	-444.3	211.5	189.4	22.13	9.559	
3,739.7	3,638.5	3,795.4	3,693.2	17.2	16.0	160.52	-367.0	-455.3	211.5	188.8	22.65	9.335	
3,800.0	3,696.5	3,855.5	3,750.2	17.5	16.4	158.95	-376.3	-471.9	211.6	188.1	23.48	9.011	
3,900.0	3,792.6	3,955.0	3,844.5	18.1	17.1	156.35	-391.7	-499.5	212.0	187.1	24.90	8.515	
4,000.0	3,888.8	4,054.5	3,938.9	18.7	17.7	153.77	-407.1	-527.1	213.0	186.6	26.40	8.067	
4,100.0	3,984.9	4,154.1	4,033.3	19.2	18.4	151.22	-422.5	-554.7	214.3	186.4	27.95	7.667	
4,200.0	4,081.1	4,253.6	4,127.7	19.8	19.1	148.70	-437.9	-582.3	216.1	186.5	29.56	7.311	
4,300.0	4,177.3	4,353.1	4,222.1	20.4	19.7	146.23	-453.3	-610.0	218.3	187.1	31.20	6.996	
4,400.0	4,273.4	4,452.7	4,316.4	21.0	20.4	143.82	-468.7	-637.6	220.9	188.0	32.88	6.718	
4,500.0	4,369.6	4,552.2	4,410.8	21.6	21.1	141.46	-484.1	-665.2	223.9	189.3	34.57	6.475	
4,600.0	4,465.7	4,651.7	4,505.2	22.2	21.7	139.17	-499.5	-692.8	227.2	190.9	36.28	6.263	
4,700.0	4,561.9	4,751.3	4,599.6	22.7	22.4	136.94	-514.9	-720.4	230.9	192.9	37.99	6.078	
4,800.0	4,658.0	4,850.8	4,694.0	23.3	23.1	134.79	-530.2	-748.0	234.9	195.2	39.70	5.918	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,754.2	4,950.3	4,788.3	23.9	23.7	132.72	-545.6	-775.6	239.3	197.9	41.41	5.779	
5,000.0	4,850.3	5,049.9	4,882.7	24.5	24.4	130.72	-561.0	-803.2	244.0	200.9	43.10	5.661	
5,100.0	4,946.5	5,148.1	4,976.0	25.1	25.0	128.88	-576.1	-830.3	249.0	204.3	44.71	5.570	
5,200.0	5,042.7	5,244.6	5,068.3	25.7	25.5	127.69	-589.7	-854.6	255.3	209.3	46.01	5.549	
5,300.0	5,138.8	5,341.1	5,161.6	26.2	25.9	127.23	-601.8	-876.2	262.9	215.9	47.03	5.590	
5,400.0	5,235.0	5,437.5	5,255.5	26.8	26.3	127.43	-612.3	-895.1	271.8	223.9	47.82	5.683	
5,500.0	5,331.1	5,533.4	5,349.7	27.4	26.6	128.24	-621.2	-911.1	281.8	233.5	48.37	5.827	
5,600.0	5,427.3	5,628.8	5,443.9	28.0	26.9	129.56	-628.6	-924.3	293.3	244.6	48.69	6.023	
5,700.0	5,523.4	5,723.4	5,537.7	28.6	27.1	131.31	-634.4	-934.7	306.2	257.4	48.80	6.275	
5,800.0	5,619.6	5,817.0	5,630.9	29.1	27.3	133.40	-638.6	-942.2	321.0	272.3	48.71	6.590	
5,900.0	5,715.7	5,909.5	5,723.2	29.7	27.4	135.75	-641.3	-947.1	337.7	289.3	48.43	6.974	
6,000.0	5,811.9	6,000.0	5,813.7	30.3	27.5	138.23	-642.6	-949.4	356.7	308.7	48.00	7.431	
6,105.8	5,913.7	6,100.0	5,913.7	30.9	27.6	141.04	-642.7	-949.6	379.1	331.7	47.40	7.997	
6,150.0	5,956.3	6,142.7	5,956.3	31.1	27.7	152.50	-642.7	-949.6	388.6	341.7	46.91	8.284	
6,200.0	6,005.1	6,188.7	6,002.3	31.3	27.7	168.56	-642.7	-948.6	399.3	352.8	46.46	8.595	
6,250.0	6,054.0	6,233.9	6,047.4	31.5	27.7	-172.47	-642.7	-945.1	410.1	364.1	46.00	8.914	
6,300.0	6,103.0	6,278.9	6,091.9	31.6	27.7	-153.40	-642.7	-938.9	420.8	375.2	45.54	9.239	
6,350.0	6,151.7	6,323.6	6,135.8	31.7	27.6	-137.20	-642.7	-930.1	431.5	386.4	45.09	9.569	
6,400.0	6,200.1	6,368.1	6,178.9	31.7	27.6	-124.78	-642.7	-918.9	442.0	397.4	44.65	9.900	
6,450.0	6,247.8	6,412.5	6,221.0	31.8	27.5	-115.55	-642.7	-905.2	452.4	408.2	44.22	10.230	
6,500.0	6,294.7	6,456.7	6,262.2	31.8	27.4	-108.62	-642.7	-889.2	462.5	418.7	43.82	10.556	
6,550.0	6,340.6	6,500.0	6,301.6	31.7	27.3	-103.30	-642.7	-871.2	472.4	429.0	43.44	10.874	
6,600.0	6,385.3	6,544.7	6,341.2	31.7	27.2	-99.12	-642.7	-850.3	482.0	438.9	43.09	11.184	
6,650.0	6,428.5	6,588.7	6,378.8	31.6	27.0	-95.76	-642.7	-827.5	491.2	448.4	42.79	11.479	
6,700.0	6,470.2	6,632.6	6,414.9	31.6	26.9	-93.02	-642.7	-802.7	500.0	457.5	42.53	11.756	
6,750.0	6,510.1	6,676.4	6,449.6	31.5	26.8	-90.75	-642.7	-775.8	508.4	466.0	42.34	12.008	
6,800.0	6,548.1	6,720.3	6,482.7	31.4	26.7	-88.86	-642.7	-747.0	516.3	474.1	42.21	12.230	
6,850.0	6,584.0	6,764.2	6,514.0	31.3	26.6	-87.27	-642.7	-716.3	523.7	481.6	42.18	12.418	
6,900.0	6,617.6	6,808.1	6,543.6	31.1	26.5	-85.95	-642.7	-683.9	530.6	488.4	42.23	12.564	
6,950.0	6,648.8	6,850.0	6,570.1	31.0	26.4	-84.83	-642.7	-651.4	537.0	494.6	42.40	12.666	
7,000.0	6,677.4	6,896.1	6,597.1	30.9	26.3	-83.93	-642.7	-614.0	542.8	500.1	42.69	12.714	
7,050.0	6,703.4	6,940.2	6,620.7	30.7	26.3	-83.18	-642.7	-576.8	547.9	504.8	43.11	12.710	
7,100.0	6,726.7	6,984.4	6,642.3	30.6	26.3	-82.59	-642.7	-538.2	552.5	508.9	43.67	12.653	
7,150.0	6,747.0	7,028.7	6,661.6	30.4	26.3	-82.15	-642.7	-498.3	556.5	512.1	44.36	12.544	
7,200.0	6,764.5	7,073.1	6,678.6	30.3	26.4	-81.83	-642.7	-457.3	559.8	514.6	45.19	12.388	
7,250.0	6,778.8	7,117.7	6,693.2	30.1	26.5	-81.64	-642.7	-415.2	562.4	516.3	46.15	12.188	
7,300.0	6,790.1	7,162.4	6,705.4	30.0	26.6	-81.57	-642.7	-372.2	564.4	517.2	47.22	11.952	
7,350.0	6,798.3	7,207.2	6,715.0	29.9	26.8	-81.62	-642.7	-328.4	565.8	517.4	48.41	11.687	
7,400.0	6,803.2	7,250.0	6,721.8	29.8	27.1	-81.76	-642.7	-286.2	566.4	516.8	49.66	11.406	
7,450.0	6,805.0	7,297.4	6,726.6	29.7	27.4	-82.04	-642.7	-239.0	566.4	515.4	51.05	11.096	
7,459.6	6,805.0	7,306.1	6,727.2	29.7	27.5	-82.11	-642.7	-230.3	566.4	515.0	51.32	11.036	
7,500.0	6,804.6	7,342.7	6,728.4	29.7	27.7	-82.27	-642.7	-193.7	566.1	513.9	52.23	10.839	
7,533.1	6,804.3	7,374.3	6,728.3	29.7	28.0	-82.28	-642.7	-162.2	566.1	513.1	53.05	10.671	
7,600.0	6,803.8	7,441.2	6,727.7	29.8	28.7	-82.28	-642.7	-95.3	566.1	511.3	54.83	10.325	
7,700.0	6,802.9	7,541.2	6,726.8	30.3	29.9	-82.27	-642.7	4.7	566.1	508.3	57.84	9.788	
7,800.0	6,802.0	7,641.2	6,725.8	31.6	31.4	-82.27	-642.7	104.7	566.1	504.9	61.21	9.249	
7,900.0	6,801.1	7,741.2	6,724.9	33.3	33.1	-82.27	-642.7	204.7	566.1	501.2	64.88	8.725	
8,000.0	6,800.2	7,841.2	6,724.0	35.3	34.9	-82.26	-642.7	304.7	566.1	497.3	68.81	8.227	
8,100.0	6,799.3	7,941.2	6,723.1	37.4	36.9	-82.26	-642.7	404.7	566.1	493.2	72.96	7.760	
8,200.0	6,798.4	8,041.2	6,722.1	39.7	39.0	-82.25	-642.7	504.7	566.1	488.9	77.28	7.326	
8,300.0	6,797.5	8,141.2	6,721.2	42.0	41.2	-82.25	-642.7	604.7	566.1	484.4	81.75	6.925	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)											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			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
8,400.0	6,796.7	8,241.2	6,720.3	44.4	43.5	-82.25	-642.7	704.7	566.2	479.8	86.36	6.556			
8,500.0	6,795.8	8,341.2	6,719.4	46.8	45.9	-82.24	-642.7	804.7	566.2	475.1	91.07	6.217			
8,600.0	6,794.9	8,441.2	6,718.4	49.3	48.3	-82.24	-642.7	904.7	566.2	470.3	95.87	5.905			
8,700.0	6,794.0	8,541.2	6,717.5	51.8	50.7	-82.23	-642.7	1,004.7	566.2	465.4	100.75	5.619			
8,800.0	6,793.1	8,641.2	6,716.6	54.3	53.2	-82.23	-642.7	1,104.7	566.2	460.5	105.70	5.356			
8,900.0	6,792.2	8,741.2	6,715.7	56.9	55.7	-82.23	-642.7	1,204.7	566.2	455.5	110.71	5.114			
9,000.0	6,791.3	8,841.2	6,714.7	59.5	58.2	-82.22	-642.7	1,304.7	566.2	450.4	115.78	4.890			
9,100.0	6,790.4	8,941.2	6,713.8	62.1	60.8	-82.22	-642.7	1,404.7	566.2	445.3	120.88	4.684			
9,200.0	6,789.6	9,041.2	6,712.9	64.7	63.4	-82.22	-642.7	1,504.7	566.2	440.2	126.03	4.493			
9,300.0	6,788.7	9,141.2	6,712.0	67.3	66.0	-82.21	-642.7	1,604.7	566.2	435.0	131.21	4.315			
9,400.0	6,787.8	9,241.2	6,711.0	69.9	68.6	-82.21	-642.7	1,704.7	566.2	429.8	136.42	4.151			
9,500.0	6,786.9	9,341.2	6,710.1	72.6	71.2	-82.20	-642.7	1,804.7	566.2	424.6	141.66	3.997			
9,600.0	6,786.0	9,441.2	6,709.2	75.2	73.9	-82.20	-642.7	1,904.7	566.2	419.3	146.92	3.854			
9,700.0	6,785.1	9,541.2	6,708.3	77.9	76.6	-82.20	-642.6	2,004.7	566.2	414.0	152.20	3.720			
9,800.0	6,784.2	9,641.2	6,707.3	80.6	79.2	-82.19	-642.6	2,104.7	566.2	408.7	157.51	3.595			
9,900.0	6,783.3	9,741.2	6,706.4	83.3	81.9	-82.19	-642.6	2,204.6	566.2	403.4	162.83	3.478			
10,000.0	6,782.5	9,841.2	6,705.5	86.0	84.6	-82.19	-642.6	2,304.6	566.2	398.1	168.17	3.367			
10,100.0	6,781.6	9,941.2	6,704.6	88.7	87.3	-82.18	-642.6	2,404.6	566.2	392.7	173.52	3.263			
10,200.0	6,780.7	10,041.2	6,703.6	91.4	90.0	-82.18	-642.6	2,504.6	566.3	387.4	178.88	3.165			
10,300.0	6,779.8	10,141.2	6,702.7	94.1	92.7	-82.17	-642.6	2,604.6	566.3	382.0	184.26	3.073			
10,400.0	6,778.9	10,241.2	6,701.8	96.8	95.4	-82.17	-642.6	2,704.6	566.3	376.6	189.65	2.986			
10,500.0	6,778.0	10,341.2	6,700.9	99.5	98.1	-82.17	-642.6	2,804.6	566.3	371.2	195.05	2.903			
10,600.0	6,777.1	10,441.2	6,699.9	102.2	100.8	-82.16	-642.6	2,904.6	566.3	365.8	200.46	2.825			
10,700.0	6,776.3	10,541.2	6,699.0	105.0	103.6	-82.16	-642.6	3,004.6	566.3	360.4	205.87	2.751			
10,800.0	6,775.4	10,641.2	6,698.1	107.7	106.3	-82.16	-642.6	3,104.6	566.3	355.0	211.30	2.680			
10,900.0	6,774.5	10,741.2	6,697.2	110.4	109.0	-82.15	-642.6	3,204.6	566.3	349.6	216.73	2.613			
11,000.0	6,773.6	10,841.2	6,696.2	113.2	111.8	-82.15	-642.6	3,304.6	566.3	344.1	222.17	2.549			
11,100.0	6,772.7	10,941.2	6,695.3	115.9	114.5	-82.14	-642.6	3,404.6	566.3	338.7	227.61	2.488			
11,200.0	6,771.8	11,041.2	6,694.4	118.7	117.3	-82.14	-642.6	3,504.6	566.3	333.2	233.06	2.430			
11,300.0	6,770.9	11,141.2	6,693.5	121.4	120.0	-82.14	-642.6	3,604.6	566.3	327.8	238.52	2.374			
11,400.0	6,770.0	11,241.2	6,692.5	124.2	122.8	-82.13	-642.6	3,704.6	566.3	322.3	243.98	2.321			
11,500.0	6,769.2	11,341.2	6,691.6	126.9	125.5	-82.13	-642.6	3,804.6	566.3	316.9	249.45	2.270			
11,600.0	6,768.3	11,441.2	6,690.7	129.7	128.3	-82.13	-642.6	3,904.6	566.3	311.4	254.92	2.222			
11,700.0	6,767.4	11,541.2	6,689.8	132.5	131.1	-82.12	-642.6	4,004.6	566.3	306.0	260.39	2.175			
11,800.0	6,766.5	11,641.2	6,688.8	135.2	133.8	-82.12	-642.6	4,104.6	566.3	300.5	265.87	2.130			
11,900.0	6,765.6	11,741.2	6,687.9	138.0	136.6	-82.11	-642.6	4,204.6	566.4	295.0	271.35	2.087			
12,000.0	6,764.7	11,841.2	6,687.0	140.7	139.3	-82.11	-642.6	4,304.6	566.4	289.5	276.84	2.046			
12,100.0	6,763.8	11,941.2	6,686.1	143.5	142.1	-82.11	-642.6	4,404.6	566.4	284.0	282.32	2.006			
12,200.0	6,762.9	12,041.2	6,685.1	146.3	144.9	-82.10	-642.6	4,504.6	566.4	278.6	287.82	1.968			
12,300.0	6,762.1	12,141.2	6,684.2	149.0	147.6	-82.10	-642.6	4,604.5	566.4	273.1	293.31	1.931			
12,400.0	6,761.2	12,241.2	6,683.3	151.8	150.4	-82.09	-642.6	4,704.5	566.4	267.6	298.81	1.895			
12,500.0	6,760.3	12,341.2	6,682.4	154.6	153.2	-82.09	-642.6	4,804.5	566.4	262.1	304.30	1.861			
12,600.0	6,759.4	12,441.2	6,681.4	157.4	156.0	-82.09	-642.6	4,904.5	566.4	256.6	309.81	1.828			
12,700.0	6,758.5	12,541.2	6,680.5	160.1	158.7	-82.08	-642.6	5,004.5	566.4	251.1	315.31	1.796			
12,800.0	6,757.6	12,641.2	6,679.6	162.9	161.5	-82.08	-642.6	5,104.5	566.4	245.6	320.82	1.766			
12,900.0	6,756.7	12,741.2	6,678.7	165.7	164.3	-82.08	-642.6	5,204.5	566.4	240.1	326.32	1.736			
13,000.0	6,755.8	12,841.2	6,677.7	168.5	167.1	-82.07	-642.6	5,304.5	566.4	234.6	331.83	1.707			
13,100.0	6,755.0	12,941.2	6,676.8	171.2	169.9	-82.07	-642.6	5,404.5	566.4	229.1	337.35	1.679			
13,200.0	6,754.1	13,041.2	6,675.9	174.0	172.6	-82.06	-642.6	5,504.5	566.4	223.6	342.86	1.652			
13,300.0	6,753.2	13,141.2	6,675.0	176.8	175.4	-82.06	-642.6	5,604.5	566.4	218.1	348.37	1.626			
13,400.0	6,752.3	13,241.2	6,674.0	179.6	178.2	-82.06	-642.6	5,704.5	566.4	212.6	353.89	1.601			

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)													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		
13,500.0	6,751.4	13,341.2	6,673.1	182.4	181.0	-82.05	-642.6	5,804.5	566.4	207.0	359.41	1.576		
13,600.0	6,750.5	13,441.2	6,672.2	185.1	183.8	-82.05	-642.6	5,904.5	566.5	201.5	364.93	1.552		
13,700.0	6,749.6	13,541.2	6,671.3	187.9	186.6	-82.05	-642.6	6,004.5	566.5	196.0	370.45	1.529		
13,800.0	6,748.7	13,641.2	6,670.3	190.7	189.3	-82.04	-642.6	6,104.5	566.5	190.5	375.97	1.507		
13,900.0	6,747.9	13,741.2	6,669.4	193.5	192.1	-82.04	-642.6	6,204.5	566.5	185.0	381.49	1.485 Level 3		
14,000.0	6,747.0	13,841.2	6,668.5	196.3	194.9	-82.03	-642.6	6,304.5	566.5	179.5	387.02	1.464 Level 3		
14,100.0	6,746.1	13,941.2	6,667.6	199.1	197.7	-82.03	-642.6	6,404.5	566.5	173.9	392.54	1.443 Level 3		
14,200.0	6,745.2	14,041.2	6,666.6	201.9	200.5	-82.03	-642.6	6,504.5	566.5	168.4	398.07	1.423 Level 3		
14,300.0	6,744.3	14,141.2	6,665.7	204.6	203.3	-82.02	-642.6	6,604.5	566.5	162.9	403.60	1.404 Level 3		
14,400.0	6,743.4	14,241.2	6,664.8	207.4	206.1	-82.02	-642.6	6,704.5	566.5	157.4	409.13	1.385 Level 3		
14,500.0	6,742.5	14,341.2	6,663.9	210.2	208.9	-82.02	-642.6	6,804.5	566.5	151.8	414.66	1.366 Level 3		
14,600.0	6,741.7	14,441.2	6,662.9	213.0	211.6	-82.01	-642.6	6,904.4	566.5	146.3	420.19	1.348 Level 3		
14,700.0	6,740.8	14,541.2	6,662.0	215.8	214.4	-82.01	-642.6	7,004.4	566.5	140.8	425.72	1.331 Level 3		
14,800.0	6,739.9	14,641.2	6,661.1	218.6	217.2	-82.00	-642.6	7,104.4	566.5	135.3	431.25	1.314 Level 3		
14,900.0	6,739.0	14,741.2	6,660.2	221.4	220.0	-82.00	-642.6	7,204.4	566.5	129.7	436.78	1.297 Level 3		
15,000.0	6,738.1	14,841.2	6,659.2	224.2	222.8	-82.00	-642.6	7,304.4	566.5	124.2	442.31	1.281 Level 3		
15,100.0	6,737.2	14,941.2	6,658.3	227.0	225.6	-81.99	-642.6	7,404.4	566.5	118.7	447.85	1.265 Level 3		
15,200.0	6,736.3	15,041.2	6,657.4	229.8	228.4	-81.99	-642.6	7,504.4	566.5	113.2	453.38	1.250 Level 2		
15,300.0	6,735.4	15,141.2	6,656.5	232.5	231.2	-81.99	-642.6	7,604.4	566.6	107.6	458.92	1.235 Level 2		
15,400.0	6,734.6	15,241.2	6,655.5	235.3	234.0	-81.98	-642.6	7,704.4	566.6	102.1	464.45	1.220 Level 2		
15,500.0	6,733.7	15,341.2	6,654.6	238.1	236.8	-81.98	-642.6	7,804.4	566.6	96.6	469.99	1.205 Level 2		
15,600.0	6,732.8	15,441.2	6,653.7	240.9	239.6	-81.97	-642.6	7,904.4	566.6	91.0	475.53	1.191 Level 2		
15,700.0	6,731.9	15,541.2	6,652.8	243.7	242.4	-81.97	-642.6	8,004.4	566.6	85.5	481.07	1.178 Level 2		
15,800.0	6,731.0	15,641.2	6,651.8	246.5	245.2	-81.97	-642.6	8,104.4	566.6	80.0	486.60	1.164 Level 2		
15,900.0	6,730.1	15,741.2	6,650.9	249.3	248.0	-81.96	-642.6	8,204.4	566.6	74.4	492.14	1.151 Level 2		
16,000.0	6,729.2	15,841.2	6,650.0	252.1	250.8	-81.96	-642.6	8,304.4	566.6	68.9	497.68	1.138 Level 2		
16,100.0	6,728.3	15,941.2	6,649.1	254.9	253.6	-81.96	-642.6	8,404.4	566.6	63.4	503.22	1.126 Level 2		
16,200.0	6,727.5	16,041.2	6,648.1	257.7	256.3	-81.95	-642.6	8,504.4	566.6	57.8	508.76	1.114 Level 2		
16,300.0	6,726.6	16,141.2	6,647.2	260.5	259.1	-81.95	-642.6	8,604.4	566.6	52.3	514.30	1.102 Level 2		
16,400.0	6,725.7	16,241.2	6,646.3	263.3	261.9	-81.94	-642.6	8,704.4	566.6	46.8	519.84	1.090 Level 2		
16,500.0	6,724.8	16,341.2	6,645.4	266.1	264.7	-81.94	-642.6	8,804.4	566.6	41.2	525.39	1.078 Level 2		
16,600.0	6,723.9	16,441.2	6,644.4	268.9	267.5	-81.94	-642.6	8,904.4	566.6	35.7	530.93	1.067 Level 2		
16,700.0	6,723.0	16,541.2	6,643.5	271.7	270.3	-81.93	-642.6	9,004.4	566.6	30.2	536.47	1.056 Level 2		
16,800.0	6,722.1	16,641.2	6,642.6	274.5	273.1	-81.93	-642.6	9,104.4	566.6	24.6	542.01	1.045 Level 2		
16,900.0	6,721.2	16,741.2	6,641.7	277.3	275.9	-81.92	-642.6	9,204.3	566.6	19.1	547.56	1.035 Level 2		
17,000.0	6,720.4	16,841.2	6,640.7	280.1	278.7	-81.92	-642.6	9,304.3	566.7	13.6	553.10	1.025 Level 2		
17,100.0	6,719.5	16,941.2	6,639.8	282.9	281.5	-81.92	-642.6	9,404.3	566.7	8.0	558.64	1.014 Level 2		
17,200.0	6,718.6	17,041.2	6,638.9	285.7	284.3	-81.91	-642.6	9,504.3	566.7	2.5	564.19	1.004 Level 2		
17,300.0	6,717.7	17,141.2	6,638.0	288.5	287.1	-81.91	-642.6	9,604.3	566.7	-3.1	569.73	0.995 Level 1		
17,400.0	6,716.8	17,241.2	6,637.0	291.3	289.9	-81.91	-642.6	9,704.3	566.7	-8.6	575.27	0.985 Level 1		
17,500.0	6,715.9	17,341.2	6,636.1	294.1	292.7	-81.90	-642.6	9,804.3	566.7	-14.1	580.82	0.976 Level 1		
17,600.0	6,715.0	17,441.2	6,635.2	296.9	295.5	-81.90	-642.6	9,904.3	566.7	-19.7	586.36	0.966 Level 1		
17,700.0	6,714.1	17,541.2	6,634.3	299.7	298.3	-81.89	-642.6	10,004.3	566.7	-25.2	591.91	0.957 Level 1		
17,800.0	6,713.3	17,641.2	6,633.3	302.5	301.1	-81.89	-642.6	10,104.3	566.7	-30.8	597.45	0.949 Level 1		
17,900.0	6,712.4	17,741.2	6,632.4	305.3	303.9	-81.89	-642.6	10,204.3	566.7	-36.3	603.00	0.940 Level 1		
18,000.0	6,711.5	17,841.2	6,631.5	308.1	306.7	-81.88	-642.6	10,304.3	566.7	-41.8	608.55	0.931 Level 1		
18,100.0	6,710.6	17,941.2	6,630.6	310.9	309.5	-81.88	-642.6	10,404.3	566.7	-47.4	614.09	0.923 Level 1		
18,136.2	6,710.3	17,977.5	6,630.2	311.9	310.5	-81.88	-642.6	10,440.5	566.7	-49.4	616.10	0.920 Level 1		
18,167.4	6,710.0	18,000.8	6,630.0	312.7	311.2	-81.88	-642.6	10,463.8	566.8	-50.8	617.61	0.918 Level 1		
18,168.4	6,710.0	18,000.8	6,630.0	312.8	311.2	-81.88	-642.6	10,463.8	566.8	-50.8	617.63	0.918 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	77.71	32.8	150.4	154.0				
100.0	100.0	100.0	100.0	0.1	0.1	77.71	32.8	150.4	154.0	153.7	0.22	684.995	
200.0	200.0	200.0	200.0	0.3	0.3	77.71	32.8	150.4	154.0	153.3	0.67	228.332	
300.0	300.0	300.0	300.0	0.6	0.6	77.71	32.8	150.4	154.0	152.8	1.12	136.999	
400.0	400.0	400.0	400.0	0.8	0.8	77.71	32.8	150.4	154.0	152.4	1.57	97.856 CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	-146.75	32.8	150.4	155.1	153.1	2.00	77.407	
600.0	599.9	599.9	599.9	1.2	1.2	-147.50	32.8	150.4	158.4	155.9	2.43	65.271	
700.0	699.7	699.7	699.7	1.4	1.5	-148.69	32.8	150.4	163.9	161.0	2.86	57.246	
800.0	799.3	799.3	799.3	1.6	1.7	-150.21	32.8	150.4	171.8	168.5	3.31	51.880	
900.0	898.6	898.6	898.6	1.9	1.9	-151.97	32.8	150.4	182.1	178.3	3.77	48.324	
1,000.0	997.5	997.5	997.5	2.2	2.1	-153.87	32.8	150.4	194.9	190.7	4.23	46.054	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-155.80	32.8	150.4	210.3	205.6	4.70	44.733	
1,200.0	1,194.2	1,194.2	1,194.2	2.9	2.6	-157.70	32.8	150.4	228.3	223.1	5.17	44.132	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-159.51	32.8	150.4	248.9	243.2	5.65	44.087	
1,400.0	1,388.6	1,388.6	1,388.6	3.8	3.0	-161.20	32.8	150.4	272.1	266.0	6.12	44.480	
1,462.6	1,449.0	1,449.0	1,449.0	4.2	3.1	-162.19	32.8	150.4	288.1	281.6	6.41	44.908	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-162.80	32.8	150.4	297.9	291.3	6.59	45.174	
1,600.0	1,581.1	1,581.1	1,581.1	4.9	3.4	-164.23	32.8	150.4	324.3	317.2	7.08	45.829	
1,700.0	1,677.2	1,677.2	1,677.2	5.5	3.7	-165.44	32.8	150.4	350.9	343.3	7.56	46.412	
1,800.0	1,773.4	1,773.4	1,773.4	6.0	3.9	-166.49	32.8	150.4	377.6	369.5	8.05	46.932	
1,900.0	1,869.5	1,869.5	1,869.5	6.6	4.1	-167.40	32.8	150.4	404.4	395.8	8.53	47.397	
2,000.0	1,965.7	1,965.7	1,965.7	7.1	4.3	-168.19	32.8	150.4	431.3	422.2	9.02	47.814	
2,100.0	2,061.8	2,066.9	2,066.9	7.7	4.5	-168.94	32.7	150.1	457.9	448.4	9.51	48.170	
2,200.0	2,158.0	2,171.7	2,171.7	8.3	4.7	-169.70	32.0	148.0	483.0	473.0	9.98	48.406	
2,300.0	2,254.2	2,277.3	2,277.2	8.8	4.9	-170.46	30.8	144.0	506.5	496.0	10.45	48.471	
2,400.0	2,350.3	2,383.7	2,383.5	9.4	5.1	-171.23	29.1	138.1	528.4	517.4	10.93	48.359	
2,500.0	2,446.5	2,490.9	2,490.3	10.0	5.4	-172.01	26.7	130.3	548.6	537.2	11.41	48.090	
2,600.0	2,542.6	2,598.6	2,597.6	10.6	5.6	-172.81	23.7	120.5	567.3	555.4	11.90	47.683	
2,700.0	2,638.8	2,707.0	2,705.2	11.1	5.9	-173.64	20.2	108.7	584.3	571.9	12.39	47.150	
2,800.0	2,734.9	2,815.8	2,813.1	11.7	6.1	-174.50	16.0	94.9	599.6	586.7	12.89	46.506	
2,900.0	2,831.1	2,925.1	2,921.1	12.3	6.4	-175.39	11.2	79.1	613.4	600.0	13.40	45.761	
3,000.0	2,927.2	3,024.6	3,019.3	12.9	6.7	-176.21	6.6	63.7	626.3	612.4	13.91	45.039	
3,100.0	3,023.4	3,123.4	3,116.8	13.4	7.0	-176.99	1.9	48.3	639.3	624.9	14.41	44.356	
3,200.0	3,119.5	3,222.2	3,214.2	14.0	7.3	-177.74	-2.7	33.0	652.5	637.5	14.93	43.706	
3,300.0	3,215.7	3,321.0	3,311.7	14.6	7.6	-178.45	-7.3	17.7	665.7	650.3	15.45	43.087	
3,400.0	3,311.9	3,419.7	3,409.2	15.2	7.9	-179.15	-12.0	2.4	679.1	663.1	15.98	42.497	
3,500.0	3,408.0	3,518.5	3,506.7	15.8	8.2	-179.81	-16.6	-13.0	692.5	676.0	16.51	41.932	
3,600.0	3,504.2	3,617.3	3,604.1	16.3	8.5	-179.55	-21.2	-28.3	706.0	689.0	17.06	41.392	
3,700.0	3,600.3	3,716.1	3,701.6	16.9	8.9	-178.94	-25.8	-43.6	719.6	702.0	17.61	40.875	
3,800.0	3,696.5	3,814.9	3,799.1	17.5	9.2	-178.34	-30.5	-58.9	733.3	715.2	18.16	40.380	
3,900.0	3,792.6	3,913.6	3,896.5	18.1	9.5	-177.77	-35.1	-74.3	747.1	728.4	18.72	39.905	
4,000.0	3,888.8	4,012.4	3,994.0	18.7	9.9	-177.22	-39.7	-89.6	760.9	741.6	19.29	39.448	
4,100.0	3,984.9	4,111.2	4,091.5	19.2	10.2	-176.69	-44.4	-104.9	774.8	755.0	19.86	39.011	
4,200.0	4,081.1	4,210.0	4,189.0	19.8	10.5	-176.18	-49.0	-120.2	788.8	768.4	20.44	38.590	
4,300.0	4,177.3	4,308.7	4,286.4	20.4	10.9	-175.69	-53.6	-135.5	802.8	781.8	21.02	38.185	
4,400.0	4,273.4	4,407.5	4,383.9	21.0	11.2	-175.21	-58.3	-150.9	816.9	795.3	21.61	37.796	
4,500.0	4,369.6	4,506.3	4,481.4	21.6	11.6	-174.75	-62.9	-166.2	831.0	808.8	22.21	37.422	
4,600.0	4,465.7	4,605.1	4,578.8	22.2	11.9	-174.30	-67.5	-181.5	845.2	822.4	22.81	37.062	
4,700.0	4,561.9	4,703.8	4,676.3	22.7	12.3	-173.87	-72.1	-196.8	859.5	836.1	23.41	36.715	
4,800.0	4,658.0	4,802.6	4,773.8	23.3	12.7	-173.45	-76.8	-212.2	873.7	849.7	24.02	36.380	
4,900.0	4,754.2	4,901.4	4,871.3	23.9	13.0	-173.05	-81.4	-227.5	888.1	863.4	24.63	36.058	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)												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	
5,000.0	4,850.3	5,000.2	4,968.7	24.5	13.4	172.66	-86.0	-242.8	902.4	877.2	25.24	35.747	
5,100.0	4,946.5	5,099.0	5,066.2	25.1	13.7	172.28	-90.7	-258.1	916.8	891.0	25.86	35.448	
5,200.0	5,042.7	5,197.7	5,163.7	25.7	14.1	171.91	-95.3	-273.5	931.3	904.8	26.49	35.158	
5,300.0	5,138.8	5,296.5	5,261.1	26.2	14.5	171.56	-99.9	-288.8	945.8	918.7	27.12	34.879	
5,400.0	5,235.0	5,390.4	5,353.8	26.8	14.8	171.23	-104.3	-303.3	960.4	932.6	27.73	34.638	
5,500.0	5,331.1	5,468.2	5,430.8	27.4	15.0	171.02	-107.5	-313.9	976.5	948.2	28.24	34.577 SF	
5,600.0	5,427.3	5,545.4	5,507.5	28.0	15.2	170.90	-110.1	-322.4	994.7	966.0	28.73	34.618	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												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)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	150.4	150.4				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	150.4	150.4	150.2	0.22	669.295	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	150.4	150.4	149.8	0.67	223.098	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	150.4	150.4	149.3	1.12	133.859	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	150.4	150.4	148.9	1.57	95.614 CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	-134.54	0.0	150.4	151.4	149.3	2.00	75.594	
600.0	599.9	599.9	599.9	1.2	1.2	-135.55	0.0	150.4	154.1	151.7	2.42	63.585	
700.0	699.7	699.7	699.7	1.4	1.5	-137.16	0.0	150.4	158.9	156.0	2.86	55.511	
800.0	799.3	799.3	799.3	1.6	1.7	-139.24	0.0	150.4	165.7	162.4	3.31	50.000	
900.0	898.6	898.6	898.6	1.9	1.9	-141.66	0.0	150.4	174.8	171.0	3.78	46.260	
1,000.0	997.5	997.5	997.5	2.2	2.1	-144.29	0.0	150.4	186.3	182.0	4.25	43.804	
1,100.0	1,096.1	1,096.1	1,096.1	2.6	2.4	-146.99	0.0	150.4	200.3	195.6	4.73	42.317	
1,200.0	1,194.2	1,194.2	1,194.2	2.9	2.6	-149.65	0.0	150.4	217.0	211.8	5.22	41.581	
1,300.0	1,291.7	1,291.7	1,291.7	3.4	2.8	-152.20	0.0	150.4	236.4	230.7	5.71	41.436	
1,400.0	1,388.6	1,388.6	1,388.6	3.8	3.0	-154.59	0.0	150.4	258.6	252.4	6.19	41.760	
1,462.6	1,449.0	1,449.0	1,449.0	4.2	3.1	-155.98	0.0	150.4	273.9	267.4	6.50	42.160	
1,500.0	1,484.9	1,484.9	1,484.9	4.4	3.2	-156.82	0.0	150.4	283.3	276.6	6.68	42.421	
1,600.0	1,581.1	1,588.2	1,588.2	4.9	3.4	-158.96	-0.4	149.5	308.0	300.8	7.16	43.011	
1,700.0	1,677.2	1,694.1	1,694.0	5.5	3.6	-160.82	-2.1	146.0	330.3	322.6	7.62	43.327	
1,800.0	1,773.4	1,801.2	1,800.9	6.0	3.9	-162.48	-4.9	139.6	350.1	342.0	8.09	43.274	
1,900.0	1,869.5	1,909.5	1,908.7	6.6	4.1	-164.01	-9.1	130.5	367.4	358.9	8.57	42.889	
2,000.0	1,965.7	2,018.7	2,017.1	7.1	4.3	-165.45	-14.6	118.5	382.1	373.1	9.05	42.224	
2,100.0	2,061.8	2,128.7	2,125.8	7.7	4.6	-166.85	-21.5	103.5	394.2	384.7	9.54	41.318	
2,200.0	2,158.0	2,239.3	2,234.7	8.3	4.9	-168.24	-29.7	85.6	403.7	393.6	10.04	40.202	
2,300.0	2,254.2	2,350.3	2,343.3	8.8	5.3	-169.64	-39.2	64.7	410.5	399.9	10.55	38.913	
2,400.0	2,350.3	2,459.4	2,449.4	9.4	5.7	-171.05	-49.8	41.5	414.7	403.6	11.06	37.477	
2,500.0	2,446.5	2,558.9	2,545.9	10.0	6.1	-172.34	-59.9	19.4	418.1	406.6	11.57	36.129	
2,600.0	2,542.6	2,658.4	2,642.3	10.6	6.5	-173.61	-70.0	-2.7	421.8	409.7	12.09	34.880	
2,700.0	2,638.8	2,757.9	2,738.8	11.1	6.9	-174.86	-80.1	-24.7	425.7	413.1	12.62	33.721	
2,800.0	2,734.9	2,857.4	2,835.3	11.7	7.4	-176.09	-90.2	-46.8	429.8	416.6	13.17	32.638	
2,900.0	2,831.1	2,956.9	2,931.8	12.3	7.8	-177.29	-100.3	-68.9	434.0	420.3	13.72	31.624	
3,000.0	2,927.2	3,056.4	3,028.3	12.9	8.3	-178.47	-110.4	-91.0	438.5	424.2	14.30	30.671	
3,100.0	3,023.4	3,155.9	3,124.8	13.4	8.8	-179.62	-120.4	-113.0	443.1	428.2	14.88	29.773	
3,200.0	3,119.5	3,255.4	3,221.3	14.0	9.3	-179.25	-130.5	-135.1	447.9	432.5	15.49	28.924	
3,300.0	3,215.7	3,354.9	3,317.8	14.6	9.7	-178.15	-140.6	-157.2	452.9	436.8	16.11	28.121	
3,400.0	3,311.9	3,454.4	3,414.3	15.2	10.2	-177.06	-150.7	-179.2	458.1	441.4	16.74	27.360	
3,500.0	3,408.0	3,553.8	3,510.7	15.8	10.7	-176.01	-160.8	-201.3	463.4	446.0	17.40	26.638	
3,600.0	3,504.2	3,653.3	3,607.2	16.3	11.2	-174.98	-170.9	-223.4	468.9	450.8	18.07	25.952	
3,700.0	3,600.3	3,752.8	3,703.7	16.9	11.7	-173.97	-181.0	-245.5	474.5	455.7	18.75	25.300	
3,800.0	3,696.5	3,852.3	3,800.2	17.5	12.2	-172.98	-191.1	-267.5	480.3	460.8	19.46	24.680	
3,900.0	3,792.6	3,951.8	3,896.7	18.1	12.7	-172.02	-201.2	-289.6	486.2	466.0	20.18	24.090	
4,000.0	3,888.8	4,051.3	3,993.2	18.7	13.2	-171.08	-211.3	-311.7	492.2	471.3	20.92	23.529	
4,100.0	3,984.9	4,150.8	4,089.7	19.2	13.7	-170.17	-221.3	-333.7	498.4	476.7	21.67	22.995	
4,200.0	4,081.1	4,250.3	4,186.2	19.8	14.2	-169.27	-231.4	-355.8	504.7	482.2	22.44	22.487	
4,300.0	4,177.3	4,349.8	4,282.7	20.4	14.8	-168.40	-241.5	-377.9	511.1	487.8	23.23	22.003	
4,400.0	4,273.4	4,449.3	4,379.2	21.0	15.3	-167.55	-251.6	-400.0	517.6	493.6	24.03	21.543	
4,500.0	4,369.6	4,548.8	4,475.6	21.6	15.8	-166.73	-261.7	-422.0	524.2	499.4	24.84	21.104	
4,600.0	4,465.7	4,648.3	4,572.1	22.2	16.3	-165.92	-271.8	-444.1	531.0	505.3	25.67	20.687	
4,700.0	4,561.9	4,747.8	4,668.6	22.7	16.8	-165.13	-281.9	-466.2	537.8	511.3	26.51	20.289	
4,800.0	4,658.0	4,847.3	4,765.1	23.3	17.3	-164.36	-292.0	-488.2	544.8	517.4	27.36	19.911	
4,900.0	4,754.2	4,946.8	4,861.6	23.9	17.8	-163.62	-302.1	-510.3	551.8	523.6	28.22	19.551	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,850.3	5,046.3	4,958.1	24.5	18.4	162.89	-312.2	-532.4	558.9	529.8	29.10	19.207	
5,100.0	4,946.5	5,145.8	5,054.6	25.1	18.9	162.18	-322.2	-554.5	566.2	536.2	29.99	18.880	
5,200.0	5,042.7	5,245.3	5,151.1	25.7	19.4	161.48	-332.3	-576.5	573.5	542.6	30.88	18.569	
5,300.0	5,138.8	5,344.8	5,247.6	26.2	19.9	160.81	-342.4	-598.6	580.9	549.1	31.79	18.271	
5,400.0	5,235.0	5,438.3	5,338.3	26.8	20.4	160.21	-351.8	-619.1	588.5	555.9	32.65	18.027	
5,500.0	5,331.1	5,524.2	5,422.2	27.4	20.7	159.80	-359.5	-636.0	598.2	564.8	33.39	17.918	
5,600.0	5,427.3	5,609.9	5,506.3	28.0	21.0	159.57	-366.2	-650.6	610.1	576.1	34.03	17.927	
5,700.0	5,523.4	5,700.0	5,595.4	28.6	21.3	159.51	-372.1	-663.4	624.3	589.7	34.63	18.031	
5,800.0	5,619.6	5,779.7	5,674.4	29.1	21.5	159.60	-376.3	-672.7	640.7	605.6	35.12	18.243	
5,900.0	5,715.7	5,863.5	5,757.8	29.7	21.6	159.83	-379.7	-680.2	659.2	623.7	35.56	18.538	
6,000.0	5,811.9	5,946.5	5,840.6	30.3	21.8	160.18	-382.2	-685.5	680.0	644.0	35.94	18.919	
6,105.8	5,913.7	6,033.3	5,927.3	30.9	21.9	160.66	-383.6	-688.7	704.3	668.0	36.28	19.410	
6,150.0	5,956.3	6,069.3	5,963.4	31.1	22.0	171.35	-383.9	-689.3	714.7	678.4	36.25	19.714	
6,200.0	6,005.1	6,111.0	6,005.1	31.3	22.0	-173.29	-384.0	-689.6	725.6	689.4	36.26	20.012	
6,250.0	6,054.0	6,160.0	6,054.0	31.5	22.1	-155.24	-384.0	-689.6	735.5	699.1	36.36	20.230	
6,300.0	6,103.0	6,208.9	6,103.0	31.6	22.1	-137.32	-384.0	-689.6	744.0	707.4	36.53	20.367	
6,350.0	6,151.7	6,250.0	6,144.0	31.7	22.2	-122.34	-384.0	-689.1	751.3	714.6	36.71	20.468	
6,400.0	6,200.1	6,282.4	6,176.3	31.7	22.2	-111.03	-384.0	-687.2	758.2	721.4	36.83	20.588	
6,450.0	6,247.8	6,317.2	6,211.0	31.8	22.2	-102.92	-384.0	-683.7	764.7	727.8	36.96	20.693	
6,500.0	6,294.7	6,350.0	6,243.4	31.8	22.2	-97.07	-384.0	-679.0	770.8	733.8	37.07	20.794	
6,550.0	6,340.6	6,387.4	6,280.1	31.7	22.2	-92.90	-384.0	-671.9	776.5	739.3	37.20	20.871	
6,600.0	6,385.3	6,422.7	6,314.5	31.7	22.1	-89.81	-384.0	-663.6	781.8	744.4	37.34	20.938	
6,650.0	6,428.5	6,458.3	6,348.6	31.6	22.1	-87.54	-384.0	-653.6	786.6	749.1	37.49	20.983	
6,700.0	6,470.2	6,500.0	6,388.0	31.6	22.0	-85.99	-384.0	-639.8	791.1	753.4	37.69	20.988	
6,750.0	6,510.1	6,530.3	6,416.1	31.5	22.0	-84.67	-384.0	-628.5	795.1	757.3	37.87	20.999	
6,800.0	6,548.1	6,566.8	6,449.3	31.4	21.9	-83.84	-384.0	-613.4	798.8	760.7	38.11	20.960	
6,850.0	6,584.0	6,600.0	6,478.9	31.3	21.8	-83.23	-384.0	-598.3	802.1	763.8	38.39	20.897	
6,900.0	6,617.6	6,640.8	6,514.3	31.1	21.7	-83.04	-384.0	-578.0	805.1	766.3	38.76	20.773	
6,950.0	6,648.8	6,678.5	6,546.0	31.0	21.6	-82.98	-384.0	-557.6	807.7	768.5	39.17	20.622	
7,000.0	6,677.4	6,716.7	6,577.0	30.9	21.6	-83.10	-384.0	-535.4	810.0	770.4	39.64	20.433	
7,050.0	6,703.4	6,755.4	6,607.3	30.7	21.5	-83.39	-384.0	-511.3	812.0	771.8	40.18	20.207	
7,100.0	6,726.7	6,794.7	6,636.8	30.6	21.4	-83.83	-384.0	-485.3	813.7	772.9	40.79	19.947	
7,150.0	6,747.0	6,834.6	6,665.3	30.4	21.3	-84.41	-384.0	-457.4	815.2	773.7	41.48	19.655	
7,200.0	6,764.5	6,875.3	6,692.8	30.3	21.3	-85.12	-384.0	-427.5	816.4	774.2	42.22	19.336	
7,250.0	6,778.8	6,916.6	6,719.1	30.1	21.3	-85.94	-384.0	-395.6	817.4	774.4	43.03	18.997	
7,300.0	6,790.1	6,958.9	6,744.2	30.0	21.3	-86.88	-384.0	-361.6	818.2	774.3	43.89	18.641	
7,350.0	6,798.3	7,002.0	6,767.8	29.9	21.3	-87.93	-384.0	-325.5	818.8	774.0	44.81	18.273	
7,400.0	6,803.2	7,046.1	6,789.8	29.8	21.4	-89.09	-384.0	-287.3	819.3	773.5	45.79	17.894	
7,450.0	6,805.0	7,091.3	6,810.0	29.7	21.5	-90.35	-384.0	-246.8	819.6	772.8	46.81	17.509	
7,459.6	6,805.0	7,100.2	6,813.7	29.7	21.6	-90.60	-384.0	-238.8	819.7	772.7	47.01	17.437	
7,500.0	6,804.6	7,138.1	6,828.4	29.7	21.7	-91.65	-384.0	-203.8	820.0	772.2	47.81	17.153	
7,600.0	6,803.8	7,238.6	6,858.7	29.8	22.4	-93.83	-384.0	-108.1	821.6	771.5	50.11	16.395	
7,700.0	6,802.9	7,346.3	6,877.0	30.3	23.4	-95.16	-384.0	-2.0	823.0	770.1	52.93	15.550	
7,800.0	6,802.0	7,454.1	6,880.7	31.6	24.8	-95.49	-384.0	105.7	823.4	767.2	56.17	14.659	
7,900.0	6,801.1	7,554.1	6,880.4	33.3	26.3	-95.53	-384.0	205.7	823.5	763.8	59.67	13.801	
8,000.0	6,800.2	7,654.1	6,880.1	35.3	28.1	-95.57	-384.0	305.7	823.5	760.1	63.46	12.977	
8,100.0	6,799.3	7,754.1	6,879.8	37.4	30.0	-95.61	-384.0	405.7	823.6	756.1	67.51	12.199	
8,200.0	6,798.4	7,854.1	6,879.5	39.7	32.1	-95.65	-384.0	505.7	823.6	751.9	71.77	11.476	
8,300.0	6,797.5	7,954.1	6,879.2	42.0	34.2	-95.69	-384.0	605.7	823.7	747.5	76.21	10.809	
8,400.0	6,796.7	8,054.1	6,878.9	44.4	36.5	-95.73	-384.0	705.7	823.8	743.0	80.79	10.197	
8,500.0	6,795.8	8,154.1	6,878.6	46.8	38.8	-95.77	-384.0	805.7	823.8	738.3	85.49	9.637	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												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	
8,600.0	6,794.9	8,254.1	6,878.4	49.3	41.2	-95.81	-384.0	905.7	823.9	733.6	90.29	9.125	
8,700.0	6,794.0	8,354.1	6,878.1	51.8	43.7	-95.86	-384.0	1,005.7	823.9	728.8	95.18	8.656	
8,800.0	6,793.1	8,454.1	6,877.8	54.3	46.2	-95.90	-384.0	1,105.7	824.0	723.9	100.14	8.228	
8,900.0	6,792.2	8,554.1	6,877.5	56.9	48.7	-95.94	-384.0	1,205.7	824.1	718.9	105.17	7.836	
9,000.0	6,791.3	8,654.1	6,877.2	59.5	51.3	-95.98	-384.0	1,305.6	824.1	713.9	110.25	7.475	
9,100.0	6,790.4	8,754.1	6,876.9	62.1	53.9	-96.02	-384.0	1,405.6	824.2	708.8	115.37	7.144	
9,200.0	6,789.6	8,854.1	6,876.6	64.7	56.5	-96.06	-384.0	1,505.6	824.2	703.7	120.54	6.838	
9,300.0	6,788.7	8,954.1	6,876.3	67.3	59.1	-96.10	-384.0	1,605.6	824.3	698.6	125.74	6.556	
9,400.0	6,787.8	9,054.1	6,876.0	69.9	61.7	-96.14	-384.0	1,705.6	824.4	693.4	130.97	6.294	
9,500.0	6,786.9	9,154.1	6,875.7	72.6	64.4	-96.18	-384.0	1,805.6	824.4	688.2	136.23	6.052	
9,600.0	6,786.0	9,254.1	6,875.4	75.2	67.0	-96.22	-384.0	1,905.6	824.5	683.0	141.51	5.826	
9,700.0	6,785.1	9,354.1	6,875.1	77.9	69.7	-96.26	-384.0	2,005.6	824.6	677.8	146.81	5.616	
9,800.0	6,784.2	9,454.1	6,874.8	80.6	72.4	-96.30	-384.0	2,105.6	824.6	672.5	152.14	5.420	
9,900.0	6,783.3	9,554.1	6,874.5	83.3	75.1	-96.35	-384.0	2,205.6	824.7	667.2	157.48	5.237	
10,000.0	6,782.5	9,654.1	6,874.2	86.0	77.8	-96.39	-384.0	2,305.6	824.8	661.9	162.83	5.065	
10,100.0	6,781.6	9,754.1	6,873.9	88.7	80.5	-96.43	-384.0	2,405.6	824.8	656.6	168.20	4.904	
10,200.0	6,780.7	9,854.1	6,873.6	91.4	83.2	-96.47	-384.0	2,505.6	824.9	651.3	173.58	4.752	
10,300.0	6,779.8	9,954.1	6,873.3	94.1	86.0	-96.51	-384.0	2,605.6	825.0	646.0	178.97	4.610	
10,400.0	6,778.9	10,054.1	6,873.0	96.8	88.7	-96.55	-384.0	2,705.6	825.0	640.7	184.37	4.475	
10,500.0	6,778.0	10,154.1	6,872.7	99.5	91.4	-96.59	-384.0	2,805.6	825.1	635.3	189.78	4.348	
10,600.0	6,777.1	10,254.1	6,872.4	102.2	94.2	-96.63	-384.0	2,905.6	825.2	630.0	195.20	4.227	
10,700.0	6,776.3	10,354.1	6,872.1	105.0	96.9	-96.67	-384.0	3,005.6	825.2	624.6	200.62	4.113	
10,800.0	6,775.4	10,454.1	6,871.8	107.7	99.7	-96.71	-384.0	3,105.6	825.3	619.2	206.06	4.005	
10,900.0	6,774.5	10,554.1	6,871.5	110.4	102.4	-96.75	-384.0	3,205.6	825.4	613.9	211.50	3.903	
11,000.0	6,773.6	10,654.1	6,871.2	113.2	105.2	-96.79	-384.0	3,305.6	825.4	608.5	216.94	3.805	
11,100.0	6,772.7	10,754.1	6,870.9	115.9	107.9	-96.83	-384.0	3,405.6	825.5	603.1	222.39	3.712	
11,200.0	6,771.8	10,854.1	6,870.6	118.7	110.7	-96.87	-384.0	3,505.6	825.6	597.7	227.84	3.623	
11,300.0	6,770.9	10,954.1	6,870.3	121.4	113.4	-96.92	-384.0	3,605.6	825.7	592.4	233.30	3.539	
11,400.0	6,770.0	11,054.1	6,870.0	124.2	116.2	-96.96	-384.0	3,705.6	825.7	587.0	238.76	3.458	
11,500.0	6,769.2	11,154.1	6,869.7	126.9	119.0	-97.00	-384.0	3,805.6	825.8	581.6	244.23	3.381	
11,600.0	6,768.3	11,254.1	6,869.5	129.7	121.7	-97.04	-384.0	3,905.6	825.9	576.2	249.70	3.308	
11,700.0	6,767.4	11,354.1	6,869.2	132.5	124.5	-97.08	-384.0	4,005.6	826.0	570.8	255.17	3.237	
11,800.0	6,766.5	11,454.1	6,868.9	135.2	127.3	-97.12	-384.0	4,105.6	826.0	565.4	260.64	3.169	
11,900.0	6,765.6	11,554.1	6,868.6	138.0	130.0	-97.16	-384.0	4,205.6	826.1	560.0	266.12	3.104	
12,000.0	6,764.7	11,654.1	6,868.3	140.7	132.8	-97.20	-384.0	4,305.6	826.2	554.6	271.60	3.042	
12,100.0	6,763.8	11,754.1	6,868.0	143.5	135.6	-97.24	-384.0	4,405.6	826.2	549.2	277.08	2.982	
12,200.0	6,762.9	11,854.1	6,867.7	146.3	138.4	-97.28	-384.0	4,505.6	826.3	543.8	282.56	2.924	
12,300.0	6,762.1	11,954.1	6,867.4	149.0	141.1	-97.32	-384.0	4,605.6	826.4	538.3	288.05	2.869	
12,400.0	6,761.2	12,054.1	6,867.1	151.8	143.9	-97.36	-384.0	4,705.6	826.5	532.9	293.54	2.816	
12,500.0	6,760.3	12,154.1	6,866.8	154.6	146.7	-97.40	-384.0	4,805.6	826.6	527.5	299.02	2.764	
12,600.0	6,759.4	12,254.1	6,866.5	157.4	149.5	-97.44	-384.0	4,905.6	826.6	522.1	304.51	2.715	
12,700.0	6,758.5	12,354.1	6,866.2	160.1	152.3	-97.48	-384.0	5,005.6	826.7	516.7	310.00	2.667	
12,800.0	6,757.6	12,454.1	6,865.9	162.9	155.1	-97.52	-384.0	5,105.6	826.8	511.3	315.49	2.621	
12,900.0	6,756.7	12,554.1	6,865.6	165.7	157.8	-97.57	-384.0	5,205.6	826.9	505.9	320.98	2.576	
13,000.0	6,755.8	12,654.1	6,865.3	168.5	160.6	-97.61	-384.0	5,305.6	826.9	500.5	326.48	2.533	
13,100.0	6,755.0	12,754.1	6,865.0	171.2	163.4	-97.65	-384.0	5,405.6	827.0	495.0	331.97	2.491	
13,200.0	6,754.1	12,854.1	6,864.7	174.0	166.2	-97.69	-384.0	5,505.6	827.1	489.6	337.46	2.451	
13,300.0	6,753.2	12,954.1	6,864.4	176.8	169.0	-97.73	-384.0	5,605.6	827.2	484.2	342.96	2.412	
13,400.0	6,752.3	13,054.0	6,864.1	179.6	171.8	-97.77	-384.0	5,705.6	827.3	478.8	348.45	2.374	
13,500.0	6,751.4	13,154.0	6,863.8	182.4	174.6	-97.81	-384.0	5,805.6	827.3	473.4	353.95	2.337	
13,600.0	6,750.5	13,254.0	6,863.5	185.1	177.4	-97.85	-384.0	5,905.5	827.4	468.0	359.44	2.302	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												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)		
13,700.0	6,749.6	13,354.0	6,863.2	187.9	180.1	-97.89	-384.0	6,005.5	827.5	462.6	364.94	2.268	
13,800.0	6,748.7	13,454.0	6,862.9	190.7	182.9	-97.93	-384.0	6,105.5	827.6	457.1	370.43	2.234	
13,900.0	6,747.9	13,554.0	6,862.6	193.5	185.7	-97.97	-384.0	6,205.5	827.7	451.7	375.93	2.202	
14,000.0	6,747.0	13,654.0	6,862.3	196.3	188.5	-98.01	-384.0	6,305.5	827.7	446.3	381.42	2.170	
14,100.0	6,746.1	13,754.0	6,862.0	199.1	191.3	-98.05	-384.0	6,405.5	827.8	440.9	386.92	2.140	
14,200.0	6,745.2	13,854.0	6,861.7	201.9	194.1	-98.09	-384.0	6,505.5	827.9	435.5	392.41	2.110	
14,300.0	6,744.3	13,954.0	6,861.4	204.6	196.9	-98.13	-384.0	6,605.5	828.0	430.1	397.91	2.081	
14,400.0	6,743.4	14,054.0	6,861.1	207.4	199.7	-98.17	-384.0	6,705.5	828.1	424.7	403.40	2.053	
14,500.0	6,742.5	14,154.0	6,860.8	210.2	202.5	-98.21	-384.0	6,805.5	828.2	419.3	408.90	2.025	
14,600.0	6,741.7	14,254.0	6,860.5	213.0	205.3	-98.25	-384.0	6,905.5	828.3	413.9	414.39	1.999	
14,700.0	6,740.8	14,354.0	6,860.3	215.8	208.1	-98.29	-384.0	7,005.5	828.3	408.5	419.88	1.973	
14,800.0	6,739.9	14,454.0	6,860.0	218.6	210.9	-98.33	-384.0	7,105.5	828.4	403.0	425.38	1.948	
14,900.0	6,739.0	14,554.0	6,859.7	221.4	213.7	-98.37	-384.0	7,205.5	828.5	397.6	430.87	1.923	
15,000.0	6,738.1	14,654.0	6,859.4	224.2	216.5	-98.42	-384.0	7,305.5	828.6	392.2	436.36	1.899	
15,100.0	6,737.2	14,754.0	6,859.1	227.0	219.3	-98.46	-384.0	7,405.5	828.7	386.8	441.85	1.875	
15,200.0	6,736.3	14,854.0	6,858.8	229.8	222.1	-98.50	-384.0	7,505.5	828.8	381.4	447.34	1.853	
15,300.0	6,735.4	14,954.0	6,858.5	232.5	224.9	-98.54	-384.0	7,605.5	828.9	376.0	452.83	1.830	
15,400.0	6,734.6	15,054.0	6,858.2	235.3	227.7	-98.58	-384.0	7,705.5	828.9	370.6	458.32	1.809	
15,500.0	6,733.7	15,154.0	6,857.9	238.1	230.5	-98.62	-384.0	7,805.5	829.0	365.2	463.81	1.787	
15,600.0	6,732.8	15,254.0	6,857.6	240.9	233.2	-98.66	-384.0	7,905.5	829.1	359.8	469.30	1.767	
15,700.0	6,731.9	15,354.0	6,857.3	243.7	236.0	-98.70	-384.0	8,005.5	829.2	354.4	474.79	1.746	
15,800.0	6,731.0	15,454.0	6,857.0	246.5	238.8	-98.74	-384.0	8,105.5	829.3	349.0	480.27	1.727	
15,900.0	6,730.1	15,554.0	6,856.7	249.3	241.6	-98.78	-384.0	8,205.5	829.4	343.6	485.76	1.707	
16,000.0	6,729.2	15,654.0	6,856.4	252.1	244.4	-98.82	-384.0	8,305.5	829.5	338.2	491.25	1.689	
16,100.0	6,728.3	15,754.0	6,856.1	254.9	247.2	-98.86	-384.0	8,405.5	829.6	332.8	496.73	1.670	
16,200.0	6,727.5	15,854.0	6,855.8	257.7	250.0	-98.90	-384.0	8,505.5	829.7	327.5	502.21	1.652	
16,300.0	6,726.6	15,954.0	6,855.5	260.5	252.8	-98.94	-383.9	8,605.5	829.8	322.1	507.70	1.634	
16,400.0	6,725.7	16,054.0	6,855.2	263.3	255.6	-98.98	-383.9	8,705.5	829.9	316.7	513.18	1.617	
16,500.0	6,724.8	16,154.0	6,854.9	266.1	258.4	-99.02	-383.9	8,805.5	829.9	311.3	518.66	1.600	
16,600.0	6,723.9	16,254.0	6,854.6	268.9	261.2	-99.06	-383.9	8,905.5	830.0	305.9	524.14	1.584	
16,700.0	6,723.0	16,354.0	6,854.3	271.7	264.0	-99.10	-383.9	9,005.5	830.1	300.5	529.62	1.567	
16,800.0	6,722.1	16,454.0	6,854.0	274.5	266.8	-99.14	-383.9	9,105.5	830.2	295.1	535.10	1.552	
16,900.0	6,721.2	16,554.0	6,853.7	277.3	269.6	-99.18	-383.9	9,205.5	830.3	289.8	540.57	1.536	
17,000.0	6,720.4	16,654.0	6,853.4	280.1	272.4	-99.22	-383.9	9,305.5	830.4	284.4	546.05	1.521	
17,100.0	6,719.5	16,754.0	6,853.1	282.9	275.3	-99.26	-383.9	9,405.5	830.5	279.0	551.52	1.506	
17,200.0	6,718.6	16,854.0	6,852.8	285.7	278.1	-99.30	-383.9	9,505.5	830.6	273.6	557.00	1.491 Level 3	
17,300.0	6,717.7	16,954.0	6,852.5	288.5	280.9	-99.34	-383.9	9,605.5	830.7	268.2	562.47	1.477 Level 3	
17,400.0	6,716.8	17,054.0	6,852.2	291.3	283.7	-99.38	-383.9	9,705.5	830.8	262.9	567.94	1.463 Level 3	
17,500.0	6,715.9	17,154.0	6,851.9	294.1	286.5	-99.42	-383.9	9,805.5	830.9	257.5	573.41	1.449 Level 3	
17,600.0	6,715.0	17,254.0	6,851.6	296.9	289.3	-99.46	-383.9	9,905.5	831.0	252.1	578.88	1.436 Level 3	
17,700.0	6,714.1	17,354.0	6,851.4	299.7	292.1	-99.50	-383.9	10,005.5	831.1	246.7	584.35	1.422 Level 3	
17,800.0	6,713.3	17,454.0	6,851.1	302.5	294.9	-99.54	-383.9	10,105.5	831.2	241.4	589.82	1.409 Level 3	
17,900.0	6,712.4	17,554.0	6,850.8	305.3	297.7	-99.58	-383.9	10,205.5	831.3	236.0	595.28	1.396 Level 3	
18,000.0	6,711.5	17,654.0	6,850.5	308.1	300.5	-99.62	-383.9	10,305.5	831.4	230.6	600.75	1.384 Level 3	
18,100.0	6,710.6	17,754.0	6,850.2	310.9	303.3	-99.66	-383.9	10,405.5	831.5	225.3	606.21	1.372 Level 3	
18,131.1	6,710.3	17,785.0	6,850.1	311.7	304.1	-99.68	-383.9	10,436.5	831.5	223.6	607.91	1.368 Level 3	
18,167.4	6,710.0	17,809.5	6,850.0	312.7	304.8	-99.69	-383.9	10,460.9	831.6	222.1	609.57	1.364 Level 3	
18,168.4	6,710.0	17,809.5	6,850.0	312.8	304.8	-99.69	-383.9	10,460.9	831.7	222.1	609.59	1.364 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-29.2	0.0	29.2				
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-29.2	0.0	29.2	28.9	0.22	129.759	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.2	0.0	29.2	28.5	0.67	43.253 CC	
300.0	300.0	299.4	299.4	0.6	0.5	-178.32	-30.1	-0.9	30.1	29.0	1.10	27.330	
400.0	400.0	398.7	398.6	0.8	0.7	-173.87	-32.9	-3.5	33.2	31.6	1.53	21.624	
500.0	500.0	497.8	497.5	1.0	1.0	-33.31	-37.6	-7.9	37.4	35.5	1.96	19.135	
600.0	599.9	596.8	596.1	1.2	1.2	-29.62	-44.2	-14.1	41.9	39.5	2.38	17.610	
700.0	699.7	695.7	694.3	1.4	1.5	-26.72	-52.6	-22.0	46.6	43.7	2.83	16.471	
800.0	799.3	794.4	792.0	1.6	1.8	-24.40	-62.8	-31.6	51.3	48.0	3.29	15.586	
900.0	898.6	893.0	889.2	1.9	2.2	-22.54	-74.9	-42.9	56.0	52.3	3.77	14.872	
1,000.0	997.5	991.4	985.8	2.2	2.6	-21.02	-88.7	-55.9	60.8	56.6	4.26	14.275	
1,100.0	1,096.1	1,089.8	1,081.7	2.6	3.0	-19.77	-104.4	-70.6	65.6	60.9	4.77	13.759	
1,200.0	1,194.2	1,188.0	1,177.0	2.9	3.5	-18.74	-121.8	-86.9	70.5	65.2	5.30	13.300	
1,300.0	1,291.7	1,286.1	1,271.5	3.4	4.0	-17.88	-141.0	-104.9	75.2	69.4	5.84	12.883	
1,400.0	1,388.6	1,384.0	1,365.2	3.8	4.6	-17.17	-161.9	-124.6	80.0	73.6	6.40	12.503	
1,462.6	1,449.0	1,445.8	1,423.9	4.2	5.0	-16.79	-176.0	-137.7	82.9	76.2	6.76	12.260	
1,500.0	1,484.9	1,483.2	1,459.3	4.4	5.2	-16.62	-184.5	-145.8	84.5	77.5	6.99	12.087	
1,600.0	1,581.1	1,583.1	1,554.2	4.9	5.8	-16.20	-207.4	-167.3	88.6	81.0	7.60	11.669	
1,700.0	1,677.2	1,683.0	1,649.0	5.5	6.5	-15.82	-230.4	-188.8	92.8	84.6	8.21	11.306	
1,800.0	1,773.4	1,782.9	1,743.9	6.0	7.1	-15.47	-253.3	-210.3	96.9	88.1	8.82	10.990	
1,900.0	1,869.5	1,882.8	1,838.7	6.6	7.8	-15.15	-276.2	-231.8	101.1	91.7	9.44	10.713	
2,000.0	1,965.7	1,982.7	1,933.5	7.1	8.4	-14.85	-299.1	-253.3	105.3	95.2	10.06	10.468	
2,100.0	2,061.8	2,082.6	2,028.4	7.7	9.0	-14.58	-322.0	-274.8	109.4	98.8	10.68	10.250	
2,200.0	2,158.0	2,182.6	2,123.2	8.3	9.7	-14.32	-344.9	-296.3	113.6	102.3	11.30	10.055	
2,300.0	2,254.2	2,282.5	2,218.1	8.8	10.3	-14.09	-367.8	-317.8	117.8	105.9	11.92	9.880	
2,400.0	2,350.3	2,382.4	2,312.9	9.4	11.0	-13.87	-390.8	-339.3	122.0	109.4	12.55	9.722	
2,500.0	2,446.5	2,482.3	2,407.8	10.0	11.6	-13.66	-413.7	-360.7	126.2	113.0	13.17	9.579	
2,600.0	2,542.6	2,582.2	2,502.6	10.6	12.3	-13.47	-436.6	-382.2	130.3	116.5	13.79	9.449	
2,700.0	2,638.8	2,682.1	2,597.4	11.1	13.0	-13.29	-459.5	-403.7	134.5	120.1	14.42	9.330	
2,800.0	2,734.9	2,782.0	2,692.3	11.7	13.6	-13.12	-482.4	-425.2	138.7	123.7	15.04	9.220	
2,900.0	2,831.1	2,881.9	2,787.1	12.3	14.3	-12.96	-505.3	-446.7	142.9	127.2	15.67	9.119	
3,000.0	2,927.2	2,981.8	2,882.0	12.9	14.9	-12.81	-528.2	-468.2	147.1	130.8	16.29	9.026	
3,100.0	3,023.4	3,081.8	2,976.8	13.4	15.6	-12.67	-551.1	-489.7	151.3	134.3	16.92	8.940	
3,200.0	3,119.5	3,181.7	3,071.7	14.0	16.2	-12.53	-574.1	-511.2	155.4	137.9	17.54	8.860	
3,300.0	3,215.7	3,281.6	3,166.5	14.6	16.9	-12.41	-597.0	-532.7	159.6	141.5	18.17	8.786	
3,400.0	3,311.9	3,381.5	3,261.3	15.2	17.5	-12.29	-619.9	-554.2	163.8	145.0	18.79	8.716	
3,500.0	3,408.0	3,481.4	3,356.2	15.8	18.2	-12.17	-642.8	-575.7	168.0	148.6	19.42	8.651	
3,600.0	3,504.2	3,581.3	3,451.0	16.3	18.8	-12.06	-665.7	-597.2	172.2	152.1	20.05	8.590	
3,700.0	3,600.3	3,681.2	3,545.9	16.9	19.5	-11.96	-688.6	-618.7	176.4	155.7	20.67	8.533	
3,800.0	3,696.5	3,781.1	3,640.7	17.5	20.2	-11.86	-711.5	-640.2	180.6	159.3	21.30	8.479	
3,900.0	3,792.6	3,881.1	3,735.6	18.1	20.8	-11.76	-734.5	-661.7	184.8	162.8	21.92	8.428	
4,000.0	3,888.8	3,981.0	3,830.4	18.7	21.5	-11.67	-757.4	-683.2	189.0	166.4	22.55	8.380	
4,100.0	3,984.9	4,080.9	3,925.2	19.2	22.1	-11.59	-780.3	-704.7	193.2	170.0	23.17	8.335	
4,200.0	4,081.1	4,180.8	4,020.1	19.8	22.8	-11.51	-803.2	-726.2	197.3	173.5	23.80	8.292	
4,300.0	4,177.3	4,280.7	4,114.9	20.4	23.4	-11.43	-826.1	-747.7	201.5	177.1	24.43	8.251	
4,400.0	4,273.4	4,380.6	4,209.8	21.0	24.1	-11.35	-849.0	-769.2	205.7	180.7	25.05	8.212	
4,500.0	4,369.6	4,480.5	4,304.6	21.6	24.7	-11.28	-871.9	-790.7	209.9	184.2	25.68	8.176	
4,600.0	4,465.7	4,580.4	4,399.5	22.2	25.4	-11.21	-894.8	-812.2	214.1	187.8	26.30	8.141	
4,700.0	4,561.9	4,680.3	4,494.3	22.7	26.1	-11.14	-917.8	-833.7	218.3	191.4	26.93	8.107	
4,800.0	4,658.0	4,780.3	4,589.1	23.3	26.7	-11.07	-940.7	-855.2	222.5	195.0	27.55	8.075	
4,900.0	4,754.2	4,880.2	4,684.0	23.9	27.4	-11.01	-963.6	-876.7	226.7	198.5	28.18	8.045	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)				
5,000.0	4,850.3	4,980.1	4,778.8	24.5	28.0	-10.95	-986.5	-898.2	230.9	202.1	28.81	8.016			
5,100.0	4,946.5	5,080.0	4,873.7	25.1	28.7	-10.89	-1,009.4	-919.7	235.1	205.7	29.43	7.988			
5,200.0	5,042.7	5,179.9	4,968.5	25.7	29.3	-10.84	-1,032.3	-941.2	239.3	209.2	30.06	7.961			
5,300.0	5,138.8	5,279.8	5,063.4	26.2	30.0	-10.78	-1,055.2	-962.7	243.5	212.8	30.68	7.935			
5,400.0	5,235.0	5,379.7	5,158.2	26.8	30.7	-10.73	-1,078.1	-984.2	247.7	216.4	31.31	7.911			
5,500.0	5,331.1	5,479.6	5,253.0	27.4	31.3	-10.68	-1,101.1	-1,005.7	251.9	219.9	31.94	7.887			
5,600.0	5,427.3	5,579.5	5,347.9	28.0	32.0	-10.63	-1,124.0	-1,027.2	256.1	223.5	32.56	7.864			
5,700.0	5,523.4	5,679.5	5,442.7	28.6	32.6	-10.58	-1,146.9	-1,048.7	260.3	227.1	33.19	7.842			
5,800.0	5,619.6	5,779.4	5,537.6	29.1	33.3	-10.54	-1,169.8	-1,070.2	264.5	230.7	33.81	7.821			
5,900.0	5,715.7	5,879.3	5,632.4	29.7	33.9	-10.49	-1,192.7	-1,091.7	268.7	234.2	34.44	7.801			
6,000.0	5,811.9	5,979.2	5,727.3	30.3	34.6	-10.45	-1,215.6	-1,113.2	272.9	237.8	35.07	7.782			
6,105.8	5,913.7	6,089.6	5,832.1	30.9	35.3	-10.47	-1,241.0	-1,136.6	277.1	241.4	35.75	7.752			
6,150.0	5,956.3	6,144.3	5,884.7	31.1	35.5	-1.07	-1,253.7	-1,144.7	278.1	242.0	36.11	7.701			
6,200.0	6,005.1	6,206.0	5,944.5	31.3	35.8	12.92	-1,268.1	-1,149.2	278.8	242.3	36.49	7.640			
6,250.0	6,054.0	6,267.5	6,004.3	31.5	35.9	29.78	-1,282.6	-1,148.7	279.2	242.3	36.86	7.573			
6,300.0	6,103.0	6,328.8	6,063.6	31.6	36.1	46.69	-1,297.0	-1,143.4	279.2	242.0	37.24	7.497			
6,350.0	6,151.7	6,389.6	6,121.9	31.7	36.1	60.68	-1,311.1	-1,133.2	278.9	241.3	37.64	7.411			
6,400.0	6,200.1	6,450.0	6,178.7	31.7	36.2	70.84	-1,324.9	-1,118.4	278.3	240.2	38.07	7.311			
6,450.0	6,247.8	6,509.9	6,233.9	31.8	36.2	77.78	-1,338.3	-1,099.3	277.5	238.9	38.55	7.197			
6,500.0	6,294.7	6,569.2	6,286.8	31.8	36.2	82.38	-1,351.1	-1,076.0	276.5	237.4	39.11	7.069			
6,550.0	6,340.6	6,627.8	6,337.4	31.7	36.1	85.34	-1,363.4	-1,048.8	275.3	235.5	39.74	6.927			
6,600.0	6,385.3	6,685.8	6,385.2	31.7	36.0	87.14	-1,375.0	-1,018.2	274.0	233.5	40.46	6.772			
6,650.0	6,428.5	6,743.2	6,430.1	31.6	35.9	88.08	-1,385.9	-984.3	272.6	231.4	41.26	6.608			
6,700.0	6,470.2	6,799.7	6,471.8	31.6	35.8	88.40	-1,396.1	-947.5	271.3	229.1	42.14	6.437			
6,750.0	6,510.1	6,855.6	6,510.4	31.5	35.7	88.23	-1,405.5	-908.2	270.0	226.9	43.10	6.264			
6,800.0	6,548.1	6,910.7	6,545.5	31.4	35.5	87.69	-1,414.1	-866.7	268.7	224.6	44.10	6.093			
6,850.0	6,584.0	6,965.1	6,577.3	31.3	35.4	86.84	-1,421.9	-823.3	267.6	222.4	45.14	5.927			
6,900.0	6,617.6	7,018.7	6,605.6	31.1	35.2	85.76	-1,428.8	-778.3	266.6	220.4	46.19	5.771			
6,950.0	6,648.8	7,071.6	6,630.5	31.0	35.1	84.48	-1,434.9	-732.0	265.8	218.6	47.23	5.628			
7,000.0	6,677.4	7,123.8	6,651.9	30.9	34.9	83.04	-1,440.2	-684.7	265.2	217.0	48.24	5.499			
7,050.0	6,703.4	7,175.2	6,669.9	30.7	34.7	81.48	-1,444.6	-636.7	264.9	215.7	49.19	5.385			
7,098.6	6,726.0	7,224.6	6,684.2	30.6	34.6	79.86	-1,448.1	-589.6	264.8	214.7	50.06	5.289			
7,100.0	6,726.7	7,226.0	6,684.5	30.6	34.6	79.81	-1,448.2	-588.2	264.8	214.7	50.08	5.287			
7,150.0	6,747.0	7,276.2	6,695.9	30.4	34.4	78.08	-1,451.1	-539.5	264.9	214.0	50.90	5.204			
7,200.0	6,764.5	7,325.7	6,704.0	30.3	34.3	76.29	-1,453.1	-490.7	265.3	213.6	51.64	5.136			
7,250.0	6,778.8	7,374.6	6,709.0	30.1	34.1	74.46	-1,454.4	-442.1	265.9	213.6	52.32	5.082			
7,300.0	6,790.1	7,422.9	6,711.0	30.0	34.0	72.61	-1,455.0	-393.8	266.7	213.8	52.93	5.039			
7,350.0	6,798.3	7,471.8	6,710.7	29.9	33.9	70.88	-1,455.0	-344.9	267.7	214.1	53.54	5.000			
7,400.0	6,803.2	7,521.5	6,710.4	29.8	33.8	69.75	-1,455.0	-295.2	268.4	214.2	54.26	4.947			
7,450.0	6,805.0	7,571.5	6,710.0	29.7	33.8	69.29	-1,455.0	-245.3	268.8	213.6	55.18	4.871			
7,459.6	6,805.0	7,581.1	6,709.9	29.7	33.8	69.28	-1,455.0	-235.6	268.8	213.4	55.38	4.853			
7,500.0	6,804.6	7,621.5	6,709.6	29.7	33.7	69.29	-1,455.0	-195.3	268.8	212.4	56.38	4.766			
7,600.0	6,803.8	7,721.5	6,708.9	29.8	33.9	69.32	-1,455.0	-95.3	268.7	209.6	59.14	4.544			
7,700.0	6,802.9	7,821.5	6,708.1	30.3	34.5	69.35	-1,455.0	4.7	268.7	206.4	62.22	4.318			
7,800.0	6,802.0	7,921.5	6,707.4	31.6	35.6	69.38	-1,455.0	104.7	268.6	203.0	65.59	4.095			
7,900.0	6,801.1	8,021.5	6,706.6	33.3	37.3	69.40	-1,455.0	204.7	268.6	199.4	69.19	3.881			
8,000.0	6,800.2	8,121.5	6,705.9	35.3	39.3	69.43	-1,455.0	304.7	268.5	195.5	73.01	3.678			
8,100.0	6,799.3	8,221.5	6,705.1	37.4	41.4	69.46	-1,455.0	404.7	268.5	191.5	77.00	3.486			
8,200.0	6,798.4	8,321.5	6,704.4	39.7	43.6	69.49	-1,455.0	504.7	268.4	187.3	81.14	3.308			
8,300.0	6,797.5	8,421.5	6,703.6	42.0	46.0	69.51	-1,455.0	604.7	268.4	182.9	85.41	3.142			
8,400.0	6,796.7	8,521.5	6,702.9	44.4	48.3	69.54	-1,455.0	704.7	268.3	178.5	89.80	2.988			

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,500.0	6,795.8	8,621.5	6,702.1	46.8	50.8	69.57	-1,455.0	804.7	268.3	174.0	94.27	2.846	
8,600.0	6,794.9	8,721.5	6,701.4	49.3	53.2	69.60	-1,455.0	904.7	268.2	169.4	98.83	2.714	
8,700.0	6,794.0	8,821.5	6,700.6	51.8	55.7	69.62	-1,455.0	1,004.7	268.2	164.7	103.46	2.592	
8,800.0	6,793.1	8,921.5	6,699.9	54.3	58.2	69.65	-1,455.0	1,104.7	268.1	160.0	108.16	2.479	
8,900.0	6,792.2	9,021.4	6,699.1	56.9	60.8	69.68	-1,455.0	1,204.7	268.1	155.2	112.91	2.374	
9,000.0	6,791.3	9,121.4	6,698.4	59.5	63.4	69.71	-1,455.0	1,304.7	268.0	150.3	117.71	2.277	
9,100.0	6,790.4	9,221.4	6,697.6	62.1	65.9	69.73	-1,455.0	1,404.7	268.0	145.4	122.55	2.187	
9,200.0	6,789.6	9,321.4	6,696.9	64.7	68.5	69.76	-1,455.0	1,504.7	267.9	140.5	127.43	2.103	
9,300.0	6,788.7	9,421.4	6,696.1	67.3	71.2	69.79	-1,455.0	1,604.7	267.9	135.5	132.34	2.024	
9,400.0	6,787.8	9,521.4	6,695.4	69.9	73.8	69.82	-1,455.0	1,704.7	267.8	130.5	137.29	1.951	
9,500.0	6,786.9	9,621.4	6,694.6	72.6	76.4	69.85	-1,455.0	1,804.7	267.8	125.5	142.26	1.882	
9,600.0	6,786.0	9,721.4	6,693.9	75.2	79.1	69.87	-1,455.0	1,904.7	267.7	120.5	147.26	1.818	
9,700.0	6,785.1	9,821.4	6,693.1	77.9	81.7	69.90	-1,455.0	2,004.7	267.7	115.4	152.28	1.758	
9,800.0	6,784.2	9,921.4	6,692.4	80.6	84.4	69.93	-1,455.0	2,104.7	267.6	110.3	157.33	1.701	
9,900.0	6,783.3	10,021.4	6,691.6	83.3	87.1	69.96	-1,455.0	2,204.7	267.6	105.2	162.39	1.648	
10,000.0	6,782.5	10,121.4	6,690.9	86.0	89.8	69.98	-1,455.0	2,304.7	267.6	100.1	167.47	1.598	
10,100.0	6,781.6	10,221.4	6,690.1	88.7	92.5	70.01	-1,455.0	2,404.7	267.5	94.9	172.57	1.550	
10,200.0	6,780.7	10,321.4	6,689.4	91.4	95.2	70.04	-1,455.0	2,504.7	267.5	89.8	177.68	1.505	
10,300.0	6,779.8	10,421.4	6,688.6	94.1	97.9	70.07	-1,455.0	2,604.7	267.4	84.6	182.80	1.463 Level 3	
10,400.0	6,778.9	10,521.4	6,687.9	96.8	100.6	70.10	-1,455.0	2,704.7	267.4	79.4	187.94	1.423 Level 3	
10,500.0	6,778.0	10,621.4	6,687.1	99.5	103.3	70.12	-1,455.0	2,804.7	267.3	74.2	193.09	1.384 Level 3	
10,600.0	6,777.1	10,721.4	6,686.4	102.2	106.0	70.15	-1,455.0	2,904.7	267.3	69.0	198.25	1.348 Level 3	
10,700.0	6,776.3	10,821.4	6,685.6	105.0	108.7	70.18	-1,455.0	3,004.7	267.2	63.8	203.42	1.314 Level 3	
10,800.0	6,775.4	10,921.4	6,684.9	107.7	111.4	70.21	-1,455.0	3,104.7	267.2	58.6	208.60	1.281 Level 3	
10,900.0	6,774.5	11,021.4	6,684.1	110.4	114.2	70.24	-1,455.0	3,204.6	267.1	53.3	213.79	1.249 Level 2	
11,000.0	6,773.6	11,121.4	6,683.4	113.2	116.9	70.26	-1,455.0	3,304.6	267.1	48.1	218.99	1.220 Level 2	
11,100.0	6,772.7	11,221.4	6,682.7	115.9	119.6	70.29	-1,455.0	3,404.6	267.0	42.8	224.20	1.191 Level 2	
11,200.0	6,771.8	11,321.4	6,681.9	118.7	122.4	70.32	-1,455.0	3,504.6	267.0	37.6	229.42	1.164 Level 2	
11,300.0	6,770.9	11,421.4	6,681.2	121.4	125.1	70.35	-1,455.0	3,604.6	266.9	32.3	234.64	1.138 Level 2	
11,400.0	6,770.0	11,521.4	6,680.4	124.2	127.9	70.37	-1,455.0	3,704.6	266.9	27.0	239.87	1.113 Level 2	
11,500.0	6,769.2	11,621.4	6,679.7	126.9	130.6	70.40	-1,455.0	3,804.6	266.8	21.7	245.10	1.089 Level 2	
11,600.0	6,768.3	11,721.4	6,678.9	129.7	133.4	70.43	-1,455.0	3,904.6	266.8	16.5	250.35	1.066 Level 2	
11,700.0	6,767.4	11,821.4	6,678.2	132.5	136.1	70.46	-1,455.0	4,004.6	266.8	11.2	255.60	1.044 Level 2	
11,800.0	6,766.5	11,921.4	6,677.4	135.2	138.9	70.49	-1,455.0	4,104.6	266.7	5.9	260.85	1.022 Level 2	
11,900.0	6,765.6	12,021.4	6,676.7	138.0	141.6	70.51	-1,455.0	4,204.6	266.7	0.6	266.11	1.002 Level 2	
12,000.0	6,764.7	12,121.4	6,675.9	140.7	144.4	70.54	-1,455.0	4,304.6	266.6	-4.8	271.37	0.982 Level 1	
12,100.0	6,763.8	12,221.4	6,675.2	143.5	147.2	70.57	-1,455.0	4,404.6	266.6	-10.1	276.65	0.964 Level 1	
12,200.0	6,762.9	12,321.4	6,674.4	146.3	149.9	70.60	-1,455.0	4,504.6	266.5	-15.4	281.92	0.945 Level 1	
12,300.0	6,762.1	12,421.4	6,673.7	149.0	152.7	70.63	-1,455.0	4,604.6	266.5	-20.7	287.20	0.928 Level 1	
12,400.0	6,761.2	12,521.4	6,672.9	151.8	155.4	70.65	-1,455.0	4,704.6	266.4	-26.1	292.48	0.911 Level 1	
12,500.0	6,760.3	12,621.4	6,672.2	154.6	158.2	70.68	-1,455.0	4,804.6	266.4	-31.4	297.77	0.895 Level 1	
12,600.0	6,759.4	12,721.4	6,671.4	157.4	161.0	70.71	-1,455.0	4,904.6	266.3	-36.7	303.07	0.879 Level 1	
12,700.0	6,758.5	12,821.4	6,670.7	160.1	163.7	70.74	-1,455.0	5,004.6	266.3	-42.1	308.36	0.864 Level 1	
12,800.0	6,757.6	12,921.4	6,669.9	162.9	166.5	70.77	-1,455.0	5,104.6	266.3	-47.4	313.67	0.849 Level 1	
12,900.0	6,756.7	13,021.4	6,669.2	165.7	169.3	70.80	-1,455.0	5,204.6	266.2	-52.8	318.97	0.835 Level 1	
13,000.0	6,755.8	13,121.4	6,668.4	168.5	172.1	70.82	-1,455.0	5,304.6	266.2	-58.1	324.28	0.821 Level 1	
13,100.0	6,755.0	13,221.4	6,667.7	171.2	174.8	70.85	-1,455.0	5,404.6	266.1	-63.5	329.59	0.807 Level 1	
13,200.0	6,754.1	13,321.4	6,666.9	174.0	177.6	70.88	-1,455.0	5,504.6	266.1	-68.8	334.91	0.794 Level 1	
13,300.0	6,753.2	13,421.4	6,666.2	176.8	180.4	70.91	-1,455.0	5,604.6	266.0	-74.2	340.23	0.782 Level 1	
13,400.0	6,752.3	13,521.4	6,665.4	179.6	183.2	70.94	-1,455.0	5,704.6	266.0	-79.6	345.55	0.770 Level 1	
13,500.0	6,751.4	13,621.4	6,664.7	182.4	185.9	70.96	-1,455.0	5,804.6	265.9	-84.9	350.88	0.758 Level 1	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)													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	
13,600.0	6,750.5	13,721.4	6,663.9	185.1	188.7	70.99	-1,455.0	5,904.6	265.9	-90.3	356.21	0.746	Level 1	
13,700.0	6,749.6	13,821.4	6,663.2	187.9	191.5	71.02	-1,455.0	6,004.6	265.8	-95.7	361.54	0.735	Level 1	
13,800.0	6,748.7	13,921.4	6,662.4	190.7	194.3	71.05	-1,455.0	6,104.6	265.8	-101.1	366.88	0.724	Level 1	
13,900.0	6,747.9	14,021.4	6,661.7	193.5	197.1	71.08	-1,455.0	6,204.6	265.8	-106.5	372.21	0.714	Level 1	
14,000.0	6,747.0	14,121.4	6,660.9	196.3	199.8	71.10	-1,455.0	6,304.6	265.7	-111.8	377.56	0.704	Level 1	
14,100.0	6,746.1	14,221.4	6,660.2	199.1	202.6	71.13	-1,455.0	6,404.6	265.7	-117.2	382.90	0.694	Level 1	
14,200.0	6,745.2	14,321.4	6,659.4	201.9	205.4	71.16	-1,455.0	6,504.6	265.6	-122.6	388.25	0.684	Level 1	
14,300.0	6,744.3	14,421.4	6,658.7	204.6	208.2	71.19	-1,455.0	6,604.5	265.6	-128.0	393.60	0.675	Level 1	
14,400.0	6,743.4	14,521.4	6,657.9	207.4	211.0	71.22	-1,455.0	6,704.5	265.5	-133.4	398.95	0.666	Level 1	
14,500.0	6,742.5	14,621.4	6,657.2	210.2	213.8	71.25	-1,455.0	6,804.5	265.5	-138.8	404.31	0.657	Level 1	
14,600.0	6,741.7	14,721.4	6,656.4	213.0	216.5	71.27	-1,455.0	6,904.5	265.4	-144.2	409.67	0.648	Level 1	
14,700.0	6,740.8	14,821.4	6,655.7	215.8	219.3	71.30	-1,455.0	7,004.5	265.4	-149.6	415.03	0.639	Level 1	
14,800.0	6,739.9	14,921.4	6,654.9	218.6	222.1	71.33	-1,455.0	7,104.5	265.4	-155.0	420.39	0.631	Level 1	
14,900.0	6,739.0	15,021.4	6,654.2	221.4	224.9	71.36	-1,455.0	7,204.5	265.3	-160.4	425.76	0.623	Level 1	
15,000.0	6,738.1	15,121.4	6,653.4	224.2	227.7	71.39	-1,455.0	7,304.5	265.3	-165.9	431.13	0.615	Level 1	
15,100.0	6,737.2	15,221.4	6,652.7	227.0	230.5	71.42	-1,455.0	7,404.5	265.2	-171.3	436.50	0.608	Level 1	
15,200.0	6,736.3	15,321.4	6,651.9	229.8	233.3	71.44	-1,455.0	7,504.5	265.2	-176.7	441.87	0.600	Level 1	
15,300.0	6,735.4	15,421.4	6,651.2	232.5	236.1	71.47	-1,455.0	7,604.5	265.1	-182.1	447.25	0.593	Level 1	
15,400.0	6,734.6	15,521.4	6,650.4	235.3	238.9	71.50	-1,455.0	7,704.5	265.1	-187.5	452.62	0.586	Level 1	
15,500.0	6,733.7	15,621.4	6,649.7	238.1	241.6	71.53	-1,455.0	7,804.5	265.0	-193.0	458.00	0.579	Level 1	
15,600.0	6,732.8	15,721.4	6,648.9	240.9	244.4	71.56	-1,455.0	7,904.5	265.0	-198.4	463.39	0.572	Level 1	
15,700.0	6,731.9	15,821.4	6,648.2	243.7	247.2	71.59	-1,455.0	8,004.5	265.0	-203.8	468.77	0.565	Level 1	
15,800.0	6,731.0	15,921.4	6,647.4	246.5	250.0	71.61	-1,455.0	8,104.5	264.9	-209.2	474.16	0.559	Level 1	
15,900.0	6,730.1	16,021.4	6,646.7	249.3	252.8	71.64	-1,455.0	8,204.5	264.9	-214.7	479.55	0.552	Level 1	
16,000.0	6,729.2	16,121.4	6,645.9	252.1	255.6	71.67	-1,455.0	8,304.5	264.8	-220.1	484.94	0.546	Level 1	
16,100.0	6,728.3	16,221.4	6,645.2	254.9	258.4	71.70	-1,455.0	8,404.5	264.8	-225.6	490.34	0.540	Level 1	
16,200.0	6,727.5	16,321.4	6,644.4	257.7	261.2	71.73	-1,455.0	8,504.5	264.7	-231.0	495.73	0.534	Level 1	
16,300.0	6,726.6	16,421.4	6,643.7	260.5	264.0	71.76	-1,455.0	8,604.5	264.7	-236.4	501.13	0.528	Level 1	
16,400.0	6,725.7	16,521.4	6,643.0	263.3	266.8	71.78	-1,455.0	8,704.5	264.7	-241.9	506.53	0.522	Level 1	
16,500.0	6,724.8	16,621.4	6,642.2	266.1	269.6	71.81	-1,455.0	8,804.5	264.6	-247.3	511.93	0.517	Level 1	
16,600.0	6,723.9	16,721.4	6,641.5	268.9	272.4	71.84	-1,455.0	8,904.5	264.6	-252.8	517.34	0.511	Level 1	
16,700.0	6,723.0	16,821.4	6,640.7	271.7	275.2	71.87	-1,455.0	9,004.5	264.5	-258.2	522.74	0.506	Level 1	
16,800.0	6,722.1	16,921.4	6,640.0	274.5	278.0	71.90	-1,455.0	9,104.5	264.5	-263.7	528.15	0.501	Level 1	
16,900.0	6,721.2	17,021.4	6,639.2	277.3	280.7	71.93	-1,455.0	9,204.5	264.4	-269.1	533.56	0.496	Level 1	
17,000.0	6,720.4	17,121.4	6,638.5	280.1	283.5	71.95	-1,455.0	9,304.5	264.4	-274.6	538.97	0.491	Level 1	
17,100.0	6,719.5	17,221.4	6,637.7	282.9	286.3	71.98	-1,455.0	9,404.5	264.4	-280.0	544.39	0.486	Level 1	
17,200.0	6,718.6	17,321.4	6,637.0	285.7	289.1	72.01	-1,455.0	9,504.5	264.3	-285.5	549.81	0.481	Level 1	
17,300.0	6,717.7	17,421.4	6,636.2	288.5	291.9	72.04	-1,455.0	9,604.5	264.3	-291.0	555.22	0.476	Level 1	
17,400.0	6,716.8	17,521.4	6,635.5	291.3	294.7	72.07	-1,455.0	9,704.5	264.2	-296.4	560.64	0.471	Level 1	
17,500.0	6,715.9	17,621.4	6,634.7	294.1	297.5	72.10	-1,455.0	9,804.5	264.2	-301.9	566.07	0.467	Level 1	
17,600.0	6,715.0	17,721.4	6,634.0	296.9	300.3	72.13	-1,455.0	9,904.5	264.1	-307.3	571.49	0.462	Level 1	
17,700.0	6,714.1	17,821.4	6,633.2	299.7	303.1	72.15	-1,455.0	10,004.5	264.1	-312.8	576.92	0.458	Level 1	
17,800.0	6,713.3	17,921.4	6,632.5	302.5	305.9	72.18	-1,455.0	10,104.4	264.1	-318.3	582.34	0.453	Level 1	
17,900.0	6,712.4	18,021.4	6,631.7	305.3	308.7	72.21	-1,455.0	10,204.4	264.0	-323.8	587.77	0.449	Level 1	
18,000.0	6,711.5	18,121.4	6,631.0	308.1	311.5	72.24	-1,455.0	10,304.4	264.0	-329.2	593.20	0.445	Level 1	
18,100.0	6,710.6	18,221.4	6,630.2	310.9	314.3	72.27	-1,455.0	10,404.4	263.9	-334.7	598.64	0.441	Level 1	
18,120.9	6,710.4	18,242.4	6,630.1	311.4	314.9	72.27	-1,455.0	10,425.4	263.9	-335.9	599.78	0.440	Level 1, ES, SF	
18,167.4	6,710.0	18,250.5	6,630.0	312.7	315.1	72.28	-1,455.0	10,433.5	266.7	-334.6	601.24	0.444	Level 1	
18,168.4	6,710.0	18,250.5	6,630.0	312.8	315.1	72.28	-1,455.0	10,433.5	266.8	-334.5	601.26	0.444	Level 1	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 146-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		
6,000.0	5,811.9	11,018.0	6,717.7	30.3	125.1	155.16	-701.1	-972.2	942.0	806.8	135.23	6.966		
6,105.8	5,913.7	11,018.0	6,717.7	30.9	125.1	155.16	-701.1	-972.2	853.8	718.2	135.62	6.296		
6,150.0	5,956.3	11,014.3	6,717.7	31.1	125.0	160.14	-700.9	-975.9	818.0	677.9	140.10	5.839		
6,200.0	6,005.1	11,009.2	6,717.8	31.3	124.9	169.23	-700.6	-980.9	778.1	634.1	143.94	5.406		
6,250.0	6,054.0	11,007.5	6,717.8	31.5	124.8	-178.06	-700.5	-982.7	739.0	592.8	146.27	5.053		
6,300.0	6,103.0	11,009.0	6,717.8	31.6	124.9	-164.43	-700.6	-981.2	701.3	553.9	147.38	4.758		
6,350.0	6,151.7	11,013.7	6,717.7	31.7	125.0	-152.79	-700.8	-976.4	665.2	517.5	147.66	4.505		
6,400.0	6,200.1	11,018.0	6,717.7	31.7	125.1	-144.48	-701.1	-972.2	631.1	483.8	147.30	4.284		
6,450.0	6,247.8	11,018.0	6,717.7	31.8	125.1	-139.31	-701.1	-972.2	599.5	453.3	146.24	4.100		
6,500.0	6,294.7	11,018.0	6,717.7	31.8	125.1	-135.89	-701.1	-972.2	571.2	426.3	144.82	3.944		
6,550.0	6,340.6	11,018.0	6,717.7	31.7	125.1	-133.53	-701.1	-972.2	546.5	403.3	143.22	3.816		
6,600.0	6,385.3	11,018.0	6,717.7	31.7	125.1	-131.76	-701.1	-972.2	526.3	384.7	141.60	3.717		
6,650.0	6,428.5	11,018.0	6,717.7	31.6	125.1	-130.30	-701.1	-972.2	511.1	371.0	140.11	3.648		
6,700.0	6,470.2	11,018.0	6,717.7	31.6	125.1	-128.93	-701.1	-972.2	501.5	362.7	138.84	3.612		
6,750.0	6,510.1	11,018.0	6,717.7	31.5	125.1	-127.54	-701.1	-972.2	497.8	359.9	137.87	3.610 ES, SF		
6,755.8	6,514.7	11,018.0	6,717.7	31.5	125.1	-127.37	-701.1	-972.2	497.7	359.9	137.78	3.612 CC		
6,800.0	6,548.1	11,018.0	6,717.7	31.4	125.1	-126.02	-701.1	-972.2	500.1	362.8	137.28	3.643		
6,850.0	6,584.0	11,018.0	6,717.7	31.3	125.1	-124.30	-701.1	-972.2	508.4	371.3	137.10	3.708		
6,900.0	6,617.6	11,018.0	6,717.7	31.1	125.1	-122.34	-701.1	-972.2	522.3	385.0	137.36	3.803		
6,950.0	6,648.8	11,018.0	6,717.7	31.0	125.1	-120.08	-701.1	-972.2	541.4	403.3	138.08	3.921		
7,000.0	6,677.4	11,018.0	6,717.7	30.9	125.1	-117.48	-701.1	-972.2	565.0	425.8	139.23	4.058		
7,050.0	6,703.4	11,018.0	6,717.7	30.7	125.1	-114.52	-701.1	-972.2	592.6	451.8	140.77	4.210		
7,100.0	6,726.7	11,018.0	6,717.7	30.6	125.1	-111.18	-701.1	-972.2	623.4	480.8	142.61	4.372		
7,150.0	6,747.0	11,018.0	6,717.7	30.4	125.1	-107.43	-701.1	-972.2	657.0	512.4	144.60	4.544		
7,200.0	6,764.5	11,018.0	6,717.7	30.3	125.1	-103.31	-701.1	-972.2	692.7	546.2	146.55	4.727		
7,250.0	6,778.8	11,018.0	6,717.7	30.1	125.1	-98.83	-701.1	-972.2	730.2	581.9	148.23	4.926		
7,300.0	6,790.1	11,018.0	6,717.7	30.0	125.1	-94.07	-701.1	-972.2	768.9	619.5	149.40	5.147		
7,350.0	6,798.3	11,018.0	6,717.7	29.9	125.1	-89.12	-701.1	-972.2	808.6	658.8	149.82	5.397		
7,400.0	6,803.2	11,018.0	6,717.7	29.8	125.1	-84.07	-701.1	-972.2	849.1	699.7	149.34	5.685		
7,450.0	6,805.0	11,018.0	6,717.7	29.7	125.1	-79.06	-701.1	-972.2	889.9	742.0	147.90	6.017		
7,459.6	6,805.0	11,018.0	6,717.7	29.7	125.1	-78.11	-701.1	-972.2	897.8	750.3	147.52	6.086		
7,500.0	6,804.6	11,018.0	6,717.7	29.7	125.1	-78.11	-701.1	-972.2	931.2	783.2	147.99	6.292		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 140-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		
6,350.0	6,151.7	11,142.8	6,921.4	31.7	124.7	-153.53	-435.7	-991.5	987.0	839.6	147.44	6.694		
6,400.0	6,200.1	11,153.9	6,921.5	31.7	125.0	-144.25	-436.0	-980.4	957.0	809.6	147.39	6.493		
6,450.0	6,247.8	11,168.9	6,921.6	31.8	125.5	-137.54	-436.4	-965.4	928.9	781.6	147.23	6.309		
6,500.0	6,294.7	11,186.6	6,921.6	31.8	126.0	-132.63	-436.8	-947.7	902.8	755.8	147.05	6.140		
6,550.0	6,340.6	11,205.5	6,921.5	31.7	126.5	-128.94	-437.3	-928.8	879.0	732.1	146.87	5.985		
6,600.0	6,385.3	11,226.1	6,921.5	31.7	127.1	-125.99	-437.9	-908.3	857.6	710.8	146.76	5.843		
6,650.0	6,428.5	11,249.5	6,921.4	31.6	127.7	-123.42	-438.5	-884.8	838.5	691.7	146.85	5.710		
6,700.0	6,470.2	11,254.0	6,921.4	31.6	127.8	-122.34	-438.6	-880.3	822.3	676.3	145.94	5.634		
6,750.0	6,510.1	11,254.0	6,921.4	31.5	127.8	-121.66	-438.6	-880.3	809.4	664.6	144.82	5.589		
6,800.0	6,548.1	11,254.0	6,921.4	31.4	127.8	-120.99	-438.6	-880.3	800.2	656.4	143.79	5.565		
6,850.0	6,584.0	11,254.0	6,921.4	31.3	127.8	-120.27	-438.6	-880.3	794.8	651.9	142.93	5.561 SF		
6,893.8	6,613.5	11,254.0	6,921.4	31.1	127.8	-119.56	-438.6	-880.3	793.3	650.9	142.35	5.573 CC, ES		
6,900.0	6,617.6	11,254.0	6,921.4	31.1	127.8	-119.45	-438.6	-880.3	793.3	651.0	142.28	5.576		
6,950.0	6,648.8	11,254.0	6,921.4	31.0	127.8	-118.50	-438.6	-880.3	795.8	653.9	141.90	5.608		
7,000.0	6,677.4	11,254.0	6,921.4	30.9	127.8	-117.39	-438.6	-880.3	802.1	660.3	141.82	5.656		
7,050.0	6,703.4	11,254.0	6,921.4	30.7	127.8	-116.09	-438.6	-880.3	812.3	670.2	142.07	5.718		
7,100.0	6,726.7	11,254.0	6,921.4	30.6	127.8	-114.60	-438.6	-880.3	826.0	683.4	142.64	5.791		
7,150.0	6,747.0	11,254.0	6,921.4	30.4	127.8	-112.89	-438.6	-880.3	843.1	699.6	143.54	5.874		
7,200.0	6,764.5	11,254.0	6,921.4	30.3	127.8	-110.95	-438.6	-880.3	863.3	718.6	144.75	5.964		
7,250.0	6,778.8	11,254.0	6,921.4	30.1	127.8	-108.79	-438.6	-880.3	886.3	740.1	146.21	6.062		
7,300.0	6,790.1	11,254.0	6,921.4	30.0	127.8	-106.40	-438.6	-880.3	911.8	763.9	147.87	6.166		
7,350.0	6,798.3	11,254.0	6,921.4	29.9	127.8	-103.79	-438.6	-880.3	939.5	789.8	149.62	6.279		
7,400.0	6,803.2	11,254.0	6,921.4	29.8	127.8	-100.96	-438.6	-880.3	969.0	817.7	151.36	6.402		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 146-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	
6,105.8	5,913.7	11,046.3	6,777.2	30.9	124.3	-96.99	-1,304.4	-1,013.3	897.3	797.0	100.24	8.951	
6,150.0	5,956.3	11,041.9	6,777.0	31.1	124.2	-74.43	-1,304.5	-1,017.6	853.9	734.5	119.37	7.153	
6,200.0	6,005.1	11,035.0	6,776.9	31.3	124.0	-36.26	-1,304.5	-1,024.6	804.5	662.4	142.06	5.663	
6,250.0	6,054.0	11,035.0	6,776.9	31.5	124.0	7.37	-1,304.5	-1,024.6	755.0	610.8	144.17	5.236	
6,300.0	6,103.0	11,040.5	6,777.0	31.6	124.2	44.78	-1,304.5	-1,019.0	705.6	574.5	131.04	5.384	
6,350.0	6,151.7	11,045.1	6,777.1	31.7	124.3	73.54	-1,304.4	-1,014.4	656.6	540.1	116.50	5.636	
6,400.0	6,200.1	11,052.5	6,777.4	31.7	124.5	93.20	-1,304.3	-1,007.1	608.1	501.6	106.54	5.708	
6,450.0	6,247.8	11,062.7	6,777.7	31.8	124.8	106.56	-1,304.2	-996.8	560.6	460.3	100.29	5.589	
6,500.0	6,294.7	11,077.1	6,778.3	31.8	125.2	115.65	-1,303.9	-982.5	514.1	417.4	96.74	5.314	
6,550.0	6,340.6	11,095.0	6,779.1	31.7	125.7	121.92	-1,303.6	-964.6	469.0	374.1	94.95	4.940	
6,600.0	6,385.3	11,117.2	6,780.2	31.7	126.3	126.15	-1,303.2	-942.5	425.4	330.9	94.56	4.499	
6,650.0	6,428.5	11,141.4	6,781.2	31.6	127.0	129.03	-1,302.9	-918.2	383.6	288.6	95.03	4.037	
6,700.0	6,470.2	11,169.4	6,782.4	31.6	127.7	130.68	-1,302.7	-890.3	343.8	247.3	96.53	3.562	
6,750.0	6,510.1	11,196.0	6,783.6	31.5	128.5	131.78	-1,302.5	-863.7	306.3	208.1	98.19	3.120	
6,800.0	6,548.1	11,196.0	6,783.6	31.4	128.5	134.69	-1,302.5	-863.7	273.7	177.7	95.97	2.852	
6,850.0	6,584.0	11,196.0	6,783.6	31.3	128.5	136.77	-1,302.5	-863.7	249.6	155.0	94.60	2.639	
6,900.0	6,617.6	11,196.0	6,783.6	31.1	128.5	138.15	-1,302.5	-863.7	236.8	142.8	93.96	2.520	
6,924.1	6,632.9	11,196.0	6,783.6	31.1	128.5	138.59	-1,302.5	-863.7	235.2	141.3	93.91	2.504	CC, ES, SF
6,950.0	6,648.8	11,196.0	6,783.6	31.0	128.5	138.91	-1,302.5	-863.7	237.0	143.0	94.04	2.520	
7,000.0	6,677.4	11,196.0	6,783.6	30.9	128.5	139.08	-1,302.5	-863.7	250.3	155.4	94.92	2.637	
7,050.0	6,703.4	11,196.0	6,783.6	30.7	128.5	138.64	-1,302.5	-863.7	274.7	178.0	96.75	2.840	
7,100.0	6,726.7	11,196.0	6,783.6	30.6	128.5	137.51	-1,302.5	-863.7	307.6	207.8	99.75	3.083	
7,150.0	6,747.0	11,196.0	6,783.6	30.4	128.5	135.51	-1,302.5	-863.7	346.3	242.0	104.25	3.322	
7,200.0	6,764.5	11,196.0	6,783.6	30.3	128.5	132.36	-1,302.5	-863.7	389.0	278.4	110.62	3.517	
7,250.0	6,778.8	11,196.0	6,783.6	30.1	128.5	127.57	-1,302.5	-863.7	434.4	315.1	119.30	3.642	
7,300.0	6,790.1	11,196.0	6,783.6	30.0	128.5	120.31	-1,302.5	-863.7	481.6	351.0	130.57	3.688	
7,350.0	6,798.3	11,196.0	6,783.6	29.9	128.5	109.27	-1,302.5	-863.7	529.8	386.3	143.53	3.691	
7,400.0	6,803.2	11,196.0	6,783.6	29.8	128.5	93.05	-1,302.5	-863.7	578.7	425.5	153.22	3.777	
7,450.0	6,805.0	11,196.0	6,783.6	29.7	128.5	72.20	-1,302.5	-863.7	628.0	479.1	148.88	4.218	
7,459.6	6,805.0	11,196.0	6,783.6	29.7	128.5	68.00	-1,302.5	-863.7	637.5	491.7	145.77	4.373	
7,500.0	6,804.6	11,196.0	6,783.6	29.7	128.5	68.00	-1,302.5	-863.7	677.3	531.1	146.24	4.631	
7,600.0	6,803.8	11,196.0	6,783.6	29.8	128.5	68.00	-1,302.5	-863.7	776.2	628.7	147.55	5.260	
7,700.0	6,802.9	11,196.0	6,783.6	30.3	128.5	68.00	-1,302.5	-863.7	875.4	726.3	149.04	5.873	
7,800.0	6,802.0	11,196.0	6,783.6	31.6	128.5	68.00	-1,302.5	-863.7	974.7	824.0	150.68	6.469	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 146-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		
6,150.0	5,956.3	11,145.4	6,875.4	31.1	124.6	-61.36	-1,427.6	-1,017.0	990.4	855.7	134.64	7.356		
6,200.0	6,005.1	11,142.0	6,875.3	31.3	124.5	-31.31	-1,427.7	-1,020.4	941.7	797.1	144.70	6.508		
6,250.0	6,054.0	11,141.3	6,875.3	31.5	124.5	2.24	-1,427.7	-1,021.1	893.1	746.8	146.27	6.106		
6,300.0	6,103.0	11,143.4	6,875.4	31.6	124.6	33.99	-1,427.7	-1,019.0	844.6	703.9	140.69	6.003		
6,350.0	6,151.7	11,148.3	6,875.5	31.7	124.7	59.82	-1,427.6	-1,014.0	796.6	663.9	132.68	6.004		
6,400.0	6,200.1	11,157.2	6,875.7	31.7	125.0	78.83	-1,427.6	-1,005.2	749.2	623.6	125.64	5.964		
6,450.0	6,247.8	11,172.2	6,876.0	31.8	125.4	92.02	-1,427.5	-990.2	702.8	581.9	120.89	5.813		
6,500.0	6,294.7	11,189.3	6,876.2	31.8	125.9	101.56	-1,427.5	-973.1	657.3	539.8	117.52	5.593		
6,550.0	6,340.6	11,206.9	6,876.5	31.7	126.3	108.71	-1,427.4	-955.5	613.3	498.3	115.00	5.333		
6,600.0	6,385.3	11,227.8	6,877.0	31.7	126.9	113.85	-1,427.1	-934.5	570.8	457.2	113.65	5.023		
6,650.0	6,428.5	11,251.1	6,877.2	31.6	127.6	117.47	-1,427.3	-911.3	530.2	416.9	113.25	4.681		
6,700.0	6,470.2	11,277.6	6,877.2	31.6	128.3	119.85	-1,427.8	-884.8	491.7	377.9	113.82	4.320		
6,750.0	6,510.1	11,303.0	6,877.3	31.5	129.0	121.65	-1,428.3	-859.4	455.5	340.9	114.57	3.976		
6,800.0	6,548.1	11,303.0	6,877.3	31.4	129.0	124.98	-1,428.3	-859.4	423.4	311.3	112.06	3.778		
6,850.0	6,584.0	11,303.0	6,877.3	31.3	129.0	127.48	-1,428.3	-859.4	397.2	286.9	110.27	3.602		
6,900.0	6,617.6	11,303.0	6,877.3	31.1	129.0	129.31	-1,428.3	-859.4	378.3	269.2	109.15	3.466		
6,950.0	6,648.8	11,303.0	6,877.3	31.0	129.0	130.54	-1,428.3	-859.4	368.0	259.3	108.67	3.387		
6,980.3	6,666.4	11,303.0	6,877.3	30.9	129.0	131.01	-1,428.3	-859.4	366.3	257.6	108.71	3.369	CC, ES, SF	
7,000.0	6,677.4	11,303.0	6,877.3	30.9	129.0	131.22	-1,428.3	-859.4	367.0	258.2	108.85	3.372		
7,050.0	6,703.4	11,303.0	6,877.3	30.7	129.0	131.39	-1,428.3	-859.4	375.4	265.7	109.73	3.421		
7,100.0	6,726.7	11,303.0	6,877.3	30.6	129.0	131.04	-1,428.3	-859.4	392.5	281.2	111.38	3.524		
7,150.0	6,747.0	11,303.0	6,877.3	30.4	129.0	130.13	-1,428.3	-859.4	417.3	303.4	113.88	3.664		
7,200.0	6,764.5	11,303.0	6,877.3	30.3	129.0	128.58	-1,428.3	-859.4	448.3	331.0	117.29	3.822		
7,250.0	6,778.8	11,303.0	6,877.3	30.1	129.0	126.29	-1,428.3	-859.4	484.2	362.5	121.70	3.979		
7,300.0	6,790.1	11,303.0	6,877.3	30.0	129.0	123.09	-1,428.3	-859.4	524.0	396.8	127.17	4.120		
7,350.0	6,798.3	11,303.0	6,877.3	29.9	129.0	118.73	-1,428.3	-859.4	566.5	432.8	133.68	4.238		
7,400.0	6,803.2	11,303.0	6,877.3	29.8	129.0	112.89	-1,428.3	-859.4	611.2	470.2	140.98	4.335		
7,450.0	6,805.0	11,303.0	6,877.3	29.7	129.0	105.18	-1,428.3	-859.4	657.3	508.9	148.34	4.431		
7,459.6	6,805.0	11,303.0	6,877.3	29.7	129.0	103.45	-1,428.3	-859.4	666.3	516.7	149.65	4.453		
7,500.0	6,804.6	11,303.0	6,877.3	29.7	129.0	103.45	-1,428.3	-859.4	704.3	554.2	150.12	4.692		
7,600.0	6,803.8	11,303.0	6,877.3	29.8	129.0	103.45	-1,428.3	-859.4	799.5	648.0	151.45	5.279		
7,700.0	6,802.9	11,303.0	6,877.3	30.3	129.0	103.45	-1,428.3	-859.4	895.7	742.7	152.99	5.854		
7,800.0	6,802.0	11,303.0	6,877.3	31.6	129.0	103.45	-1,428.3	-859.4	992.6	837.9	154.69	6.417		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Austin 1 (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	162.52	-867.1	273.0	909.1				
100.0	100.0	90.1	90.0	0.1	0.1	162.46	-866.6	273.8	908.9	908.6	0.23	3,911.193	
200.0	200.0	192.4	192.4	0.3	0.4	162.36	-865.7	275.3	908.4	907.7	0.71	1,277.792	
263.8	263.8	250.8	250.8	0.5	0.5	162.32	-865.3	275.8	908.2	907.2	1.00	910.421	
300.0	300.0	283.4	283.4	0.6	0.6	162.30	-865.3	276.1	908.3	907.1	1.16	784.038	
400.0	400.0	375.4	375.4	0.8	0.8	162.23	-865.7	277.5	909.1	907.5	1.59	571.761	
500.0	500.0	479.7	479.7	1.0	1.0	-62.12	-866.5	279.0	909.7	907.7	2.04	446.479	
600.0	599.9	582.3	582.2	1.2	1.3	-62.43	-866.7	280.3	908.5	906.0	2.49	364.177	
700.0	699.7	677.5	677.5	1.4	1.6	-62.87	-867.0	281.5	906.2	903.2	2.96	306.658	
800.0	799.3	781.2	781.1	1.6	1.8	-63.55	-867.5	283.1	903.0	899.5	3.46	260.917	
900.0	898.6	875.1	875.0	1.9	2.1	-64.30	-867.8	284.3	898.5	894.6	3.96	226.627	
1,000.0	997.5	977.2	977.1	2.2	2.3	-65.31	-868.4	286.1	893.5	889.0	4.52	197.671	
1,100.0	1,096.1	1,078.2	1,078.1	2.6	2.6	-66.49	-868.5	287.5	887.2	882.1	5.11	173.542	
1,200.0	1,194.2	1,171.4	1,171.3	2.9	2.8	-67.72	-868.9	288.5	880.3	874.5	5.72	153.880	
1,300.0	1,291.7	1,273.3	1,273.1	3.4	3.1	-69.25	-869.5	289.8	873.1	866.7	6.40	136.484	
1,400.0	1,388.6	1,367.2	1,367.0	3.8	3.4	-70.84	-869.8	290.6	865.1	858.0	7.10	121.778	
1,462.6	1,449.0	1,427.0	1,426.8	4.2	3.5	-71.95	-870.1	291.5	860.3	852.8	7.58	113.560	
1,500.0	1,484.9	1,465.8	1,465.7	4.4	3.6	-72.66	-870.2	292.0	857.4	849.6	7.87	108.893	
1,600.0	1,581.1	1,562.9	1,562.7	4.9	3.9	-74.45	-870.2	293.2	850.0	841.3	8.66	98.104	
1,700.0	1,677.2	1,656.7	1,656.5	5.5	4.1	-76.17	-870.6	294.0	843.5	834.1	9.46	89.177	
1,800.0	1,773.4	1,756.8	1,756.7	6.0	4.4	-78.05	-870.9	295.1	838.1	827.8	10.28	81.557	
1,900.0	1,869.5	1,853.6	1,853.4	6.6	4.6	-79.90	-870.5	295.9	832.8	821.7	11.08	75.131	
2,000.0	1,965.7	1,946.1	1,946.0	7.1	4.8	-81.70	-870.4	297.1	828.9	817.0	11.90	69.671	
2,100.0	2,061.8	2,039.7	2,039.5	7.7	5.1	-83.52	-870.6	298.3	826.2	813.5	12.73	64.920	
2,200.0	2,158.0	2,135.5	2,135.3	8.3	5.3	-85.42	-870.7	300.0	824.8	811.3	13.56	60.819	
2,300.0	2,254.2	2,235.5	2,235.3	8.8	5.6	-87.42	-870.4	301.6	823.9	809.5	14.40	57.205	
2,342.5	2,295.0	2,275.2	2,275.0	9.1	5.7	-88.22	-870.2	302.3	823.8	809.0	14.75	55.850	
2,400.0	2,350.3	2,332.1	2,331.8	9.4	5.8	-89.37	-869.8	303.3	823.9	808.7	15.22	54.133	
2,500.0	2,446.5	2,434.8	2,434.6	10.0	6.0	-91.40	-869.2	304.2	824.3	808.3	16.02	51.447	
2,600.0	2,542.6	2,531.8	2,531.6	10.6	6.2	-93.33	-868.2	304.8	825.2	808.4	16.79	49.164	
2,700.0	2,638.8	2,624.4	2,624.2	11.1	6.4	-95.14	-867.6	305.3	827.3	809.8	17.54	47.156	
2,800.0	2,734.9	2,719.5	2,719.2	11.7	6.7	-97.00	-866.9	306.1	830.6	812.3	18.32	45.340	
2,900.0	2,831.1	2,814.8	2,814.5	12.3	6.9	-98.87	-866.2	307.1	835.0	815.9	19.09	43.744	
3,000.0	2,927.2	2,911.8	2,911.5	12.9	7.1	-100.74	-865.5	308.1	840.3	820.4	19.85	42.338	
3,100.0	3,023.4	3,013.6	3,013.3	13.4	7.3	-102.70	-864.1	308.9	846.0	825.5	20.57	41.129	
3,200.0	3,119.5	3,112.2	3,111.9	14.0	7.5	-104.59	-862.5	309.2	852.2	831.0	21.24	40.129	
3,300.0	3,215.7	3,204.5	3,204.1	14.6	7.7	-106.29	-861.5	309.4	859.4	837.5	21.88	39.273	
3,400.0	3,311.9	3,308.8	3,308.5	15.2	7.8	-108.17	-860.3	309.1	867.1	844.6	22.49	38.545	
3,500.0	3,408.0	3,400.0	3,399.7	15.8	7.9	-109.77	-859.5	308.8	875.6	852.5	23.07	37.962	
3,600.0	3,504.2	3,503.4	3,503.0	16.3	8.0	-111.53	-858.9	308.1	884.8	861.2	23.59	37.506	
3,700.0	3,600.3	3,598.6	3,598.2	16.9	8.1	-113.11	-858.2	307.1	894.2	870.2	24.07	37.147	
3,800.0	3,696.5	3,694.4	3,694.1	17.5	8.1	-114.69	-857.3	306.2	904.5	879.9	24.56	36.825	
3,900.0	3,792.6	3,786.8	3,786.4	18.1	8.2	-116.17	-856.5	305.5	915.7	890.6	25.06	36.544	
4,000.0	3,888.8	3,888.7	3,888.4	18.7	8.3	-117.77	-855.7	304.7	927.5	902.0	25.54	36.320	
4,100.0	3,984.9	3,991.9	3,991.5	19.2	8.4	-119.34	-854.7	303.1	939.3	913.3	25.99	36.144	
4,200.0	4,081.1	4,087.7	4,087.3	19.8	8.5	-120.73	-854.1	301.2	951.3	924.9	26.41	36.018	
4,300.0	4,177.3	4,181.7	4,181.3	20.4	8.5	-122.04	-854.2	299.4	964.1	937.3	26.82	35.944	
4,400.0	4,273.4	4,278.8	4,278.4	21.0	8.6	-123.35	-854.4	297.6	977.5	950.3	27.22	35.907	
4,500.0	4,369.6	4,386.3	4,385.8	21.6	8.6	-124.78	-853.9	295.1	991.0	963.4	27.62	35.884	
7,000.0	6,677.4	6,664.4	6,663.2	30.9	12.1	-41.78	-864.8	275.3	993.9	972.6	21.32	46.609	
7,050.0	6,703.4	6,690.8	6,689.6	30.7	12.1	-44.83	-865.2	275.5	955.6	933.8	21.85	43.736	

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 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Austin 1 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program:		100-NS-GYRO-MS											Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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		
7,100.0	6,726.7	6,714.4	6,713.2	30.6	12.2	-48.58	-865.6	275.6	915.9	892.8	23.14	39.583		
7,150.0	6,747.0	6,735.1	6,733.9	30.4	12.2	-53.09	-866.0	275.8	875.1	850.0	25.12	34.836		
7,200.0	6,764.5	6,752.9	6,751.7	30.3	12.2	-58.34	-866.2	275.9	833.3	805.7	27.60	30.190		
7,250.0	6,778.8	6,767.6	6,766.4	30.1	12.2	-64.28	-866.5	276.0	790.9	760.6	30.32	26.083		
7,300.0	6,790.1	6,779.3	6,778.1	30.0	12.3	-70.73	-866.7	276.0	748.1	715.1	32.98	22.682		
7,350.0	6,798.3	6,787.8	6,786.6	29.9	12.3	-77.41	-866.8	276.1	705.1	669.8	35.30	19.974		
7,400.0	6,803.2	6,793.1	6,791.9	29.8	12.3	-83.96	-866.9	276.1	662.3	625.2	37.11	17.848		
7,450.0	6,805.0	6,795.3	6,794.0	29.7	12.3	-90.03	-866.9	276.2	620.1	581.7	38.37	16.162		
7,459.6	6,805.0	6,795.3	6,794.1	29.7	12.3	-91.12	-866.9	276.2	612.0	573.4	38.55	15.875		
7,500.0	6,804.6	6,795.2	6,794.0	29.7	12.3	-91.11	-866.9	276.2	578.7	539.7	39.04	14.825		
7,600.0	6,803.8	6,795.0	6,793.8	29.8	12.3	-91.07	-866.9	276.2	500.8	460.4	40.41	12.394		
7,700.0	6,802.9	6,794.8	6,793.5	30.3	12.3	-91.03	-866.9	276.2	432.0	390.1	41.98	10.292		
7,800.0	6,802.0	6,794.6	6,793.3	31.6	12.3	-91.00	-866.9	276.2	377.5	333.8	43.72	8.634		
7,900.0	6,801.1	6,794.3	6,793.1	33.3	12.3	-90.96	-866.9	276.1	344.1	298.5	45.62	7.543		
7,970.7	6,800.5	6,794.2	6,793.0	34.7	12.3	-90.93	-866.9	276.1	336.8	289.7	47.04	7.159 CC, ES		
8,000.0	6,800.2	6,794.1	6,792.9	35.3	12.3	-90.92	-866.9	276.1	338.0	290.4	47.63	7.097 SF		
8,100.0	6,799.3	6,793.9	6,792.7	37.4	12.3	-90.89	-866.9	276.1	360.7	311.0	49.74	7.252		
8,200.0	6,798.4	6,793.7	6,792.5	39.7	12.3	-90.85	-866.9	276.1	407.4	355.5	51.94	7.844		
8,300.0	6,797.5	6,793.5	6,792.2	42.0	12.3	-90.81	-866.9	276.1	471.0	416.8	54.22	8.688		
8,400.0	6,796.7	6,793.3	6,792.0	44.4	12.3	-90.78	-866.9	276.1	545.7	489.1	56.55	9.649		
8,500.0	6,795.8	6,793.0	6,791.8	46.8	12.3	-90.74	-866.9	276.1	627.4	568.4	58.94	10.644		
8,600.0	6,794.9	6,792.8	6,791.6	49.3	12.3	-90.70	-866.9	276.1	713.8	652.4	61.37	11.630		
8,700.0	6,794.0	6,792.6	6,791.4	51.8	12.3	-90.67	-866.9	276.1	803.3	739.5	63.84	12.583		
8,800.0	6,793.1	6,792.4	6,791.2	54.3	12.3	-90.63	-866.9	276.1	895.1	828.8	66.35	13.491		
8,900.0	6,792.2	6,792.2	6,790.9	56.9	12.3	-90.59	-866.9	276.1	988.5	919.6	68.88	14.351		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Danley 33-20 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (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		
12,300.0	6,762.1	7,014.1	6,873.3	149.0	17.1	-107.99	-899.7	5,454.5	906.6	749.2	157.42	5.759		
12,400.0	6,761.2	7,000.5	6,859.8	151.8	17.1	-105.72	-900.4	5,456.2	813.7	651.9	161.76	5.030		
12,500.0	6,760.3	6,987.0	6,846.4	154.6	17.1	-103.38	-901.2	5,457.9	722.4	556.4	165.97	4.352		
12,600.0	6,759.4	6,973.4	6,833.0	157.4	17.0	-100.98	-902.0	5,459.7	633.4	463.4	170.01	3.726		
12,700.0	6,758.5	6,959.9	6,819.6	160.1	17.0	-98.53	-902.7	5,461.4	548.0	374.1	173.84	3.152		
12,800.0	6,757.6	6,946.3	6,806.2	162.9	17.0	-96.04	-903.5	5,463.1	467.9	290.5	177.43	2.637		
12,900.0	6,756.7	6,932.8	6,792.8	165.7	16.9	-93.51	-904.3	5,464.8	396.5	215.8	180.74	2.194		
13,000.0	6,755.8	6,919.2	6,779.4	168.5	16.9	-90.95	-905.0	5,466.5	339.4	155.6	183.74	1.847		
13,100.0	6,755.0	6,905.7	6,765.9	171.2	16.8	-88.37	-905.8	5,468.2	304.5	118.1	186.41	1.634		
13,164.3	6,754.4	6,897.0	6,757.3	173.0	16.8	-86.71	-906.3	5,469.3	297.8	109.9	187.95	1.585 CC, ES, SF		
13,200.0	6,754.1	6,892.1	6,752.5	174.0	16.8	-85.79	-906.6	5,469.9	299.9	111.2	188.73	1.589		
13,300.0	6,753.2	6,878.6	6,739.1	176.8	16.8	-83.21	-907.4	5,471.7	326.8	136.1	190.69	1.714		
13,400.0	6,752.3	6,865.0	6,725.7	179.6	16.7	-80.65	-908.1	5,473.4	378.5	186.2	192.27	1.968		
13,500.0	6,751.4	6,851.5	6,712.3	182.4	16.7	-78.11	-908.9	5,475.1	446.5	253.0	193.49	2.308		
13,600.0	6,750.5	6,838.0	6,698.9	185.1	16.7	-75.60	-909.7	5,476.8	524.5	330.2	194.33	2.699		
13,700.0	6,749.6	6,824.4	6,685.4	187.9	16.6	-73.14	-910.4	5,478.5	608.6	413.8	194.83	3.124		
13,800.0	6,748.7	6,810.9	6,672.0	190.7	16.6	-70.73	-911.2	5,480.2	696.7	501.7	194.99	3.573		
13,900.0	6,747.9	6,797.3	6,658.6	193.5	16.6	-68.37	-912.0	5,482.0	787.5	592.6	194.85	4.041		
14,000.0	6,747.0	6,783.8	6,645.2	196.3	16.5	-66.08	-912.7	5,483.7	880.0	685.6	194.41	4.526		
14,100.0	6,746.1	6,770.2	6,631.8	199.1	16.5	-63.85	-913.5	5,485.4	973.8	780.1	193.73	5.027		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Danley 43-20 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft	
Survey Program:		453-NS-GYRO-MS										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
13,900.0	6,747.9	6,977.4	6,795.9	193.5	18.5	-93.85	-682.2	6,996.9	948.4	739.1	209.23	4.533			
14,000.0	6,747.0	6,974.5	6,793.0	196.3	18.5	-93.53	-682.1	6,996.9	866.7	654.6	212.08	4.086			
14,100.0	6,746.1	6,971.6	6,790.1	199.1	18.5	-93.21	-682.1	6,997.0	789.2	574.2	214.93	3.672			
14,200.0	6,745.2	6,968.7	6,787.2	201.9	18.5	-92.89	-682.0	6,997.0	717.3	499.5	217.78	3.294			
14,300.0	6,744.3	6,965.8	6,784.3	204.6	18.5	-92.58	-681.9	6,997.1	652.8	432.2	220.62	2.959			
14,400.0	6,743.4	6,962.9	6,781.5	207.4	18.5	-92.26	-681.8	6,997.1	598.2	374.7	223.46	2.677			
14,500.0	6,742.5	6,960.1	6,778.6	210.2	18.5	-91.95	-681.8	6,997.2	556.3	330.0	226.29	2.458			
14,600.0	6,741.7	6,957.2	6,775.7	213.0	18.5	-91.64	-681.7	6,997.2	530.2	301.1	229.12	2.314			
14,692.0	6,740.8	6,954.6	6,773.1	215.6	18.5	-91.35	-681.6	6,997.3	522.1	290.4	231.71	2.253 CC			
14,700.0	6,740.8	6,954.4	6,772.9	215.8	18.5	-91.32	-681.6	6,997.3	522.2	290.3	231.94	2.251 ES, SF			
14,800.0	6,739.9	6,951.5	6,770.1	218.6	18.5	-91.01	-681.6	6,997.3	533.2	298.4	234.76	2.271			
14,900.0	6,739.0	6,948.7	6,767.2	221.4	18.5	-90.70	-681.5	6,997.4	562.0	324.5	237.57	2.366			
15,000.0	6,738.1	6,945.9	6,764.4	224.2	18.5	-90.39	-681.4	6,997.4	606.2	365.8	240.38	2.522			
15,100.0	6,737.2	6,943.1	6,761.6	227.0	18.5	-90.09	-681.4	6,997.5	662.6	419.4	243.18	2.725			
15,200.0	6,736.3	6,940.3	6,758.8	229.8	18.5	-89.78	-681.3	6,997.5	728.4	482.4	245.97	2.961			
15,300.0	6,735.4	6,937.5	6,756.0	232.5	18.5	-89.47	-681.3	6,997.6	801.3	552.5	248.76	3.221			
15,400.0	6,734.6	6,934.7	6,753.2	235.3	18.5	-89.17	-681.2	6,997.6	879.5	628.0	251.54	3.496			
15,500.0	6,733.7	6,931.9	6,750.5	238.1	18.5	-88.86	-681.1	6,997.7	961.8	707.5	254.32	3.782			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Evert 20-1 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
11,000.0	6,773.6	6,765.9	6,763.9	113.2	97.0	-90.43	-825.7	4,159.8	934.4	724.5	209.84	4.453	
11,100.0	6,772.7	6,765.2	6,763.2	115.9	97.0	-90.33	-825.7	4,159.8	843.9	631.3	212.59	3.969	
11,200.0	6,771.8	6,764.5	6,762.5	118.7	97.0	-90.22	-825.7	4,159.8	755.8	540.5	215.34	3.510	
11,300.0	6,770.9	6,763.7	6,761.7	121.4	97.0	-90.11	-825.8	4,159.8	671.1	453.0	218.10	3.077	
11,400.0	6,770.0	6,762.9	6,760.9	124.2	97.0	-89.99	-825.8	4,159.8	591.1	370.3	220.85	2.676	
11,500.0	6,769.2	6,762.1	6,760.1	126.9	97.1	-89.86	-825.8	4,159.8	518.2	294.6	223.61	2.317	
11,600.0	6,768.3	6,761.2	6,759.2	129.7	97.1	-89.73	-825.8	4,159.8	455.6	229.2	226.37	2.013	
11,700.0	6,767.4	6,760.2	6,758.2	132.5	97.1	-89.58	-825.8	4,159.8	408.2	179.1	229.13	1.782	
11,800.0	6,766.5	6,759.2	6,757.2	135.2	97.1	-89.43	-825.8	4,159.9	381.8	149.9	231.89	1.646	
11,854.6	6,766.0	6,758.6	6,756.6	136.7	97.1	-89.34	-825.8	4,159.9	377.8	144.5	233.39	1.619 CC, ES, SF	
11,900.0	6,765.6	6,758.1	6,756.1	138.0	97.1	-89.26	-825.8	4,159.9	380.6	145.9	234.65	1.622	
12,000.0	6,764.7	6,757.0	6,755.0	140.7	97.1	-89.08	-825.8	4,159.9	404.9	167.4	237.40	1.705	
12,100.0	6,763.8	6,755.7	6,753.7	143.5	97.1	-88.89	-825.8	4,159.9	450.5	210.4	240.16	1.876	
12,200.0	6,762.9	6,754.4	6,752.4	146.3	97.1	-88.69	-825.9	4,159.9	511.9	269.0	242.91	2.107	
12,300.0	6,762.1	6,752.9	6,750.9	149.0	97.1	-88.47	-825.9	4,159.9	584.1	338.4	245.66	2.377	
12,400.0	6,761.2	6,751.3	6,749.3	151.8	97.1	-88.22	-825.9	4,159.9	663.5	415.1	248.41	2.671	
12,500.0	6,760.3	6,749.6	6,747.6	154.6	97.1	-87.96	-825.9	4,159.9	747.8	496.7	251.14	2.978	
12,600.0	6,759.4	6,747.7	6,745.7	157.4	97.2	-87.68	-826.0	4,159.9	835.6	581.8	253.87	3.292	
12,700.0	6,758.5	6,745.6	6,743.6	160.1	97.2	-87.36	-826.0	4,159.9	925.9	669.3	256.59	3.609	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Evert 5 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	6,779.8	6,753.3	6,751.1	94.1	13.6	86.81	-1,556.2	3,511.1	972.4	865.1	107.29	9.064	
10,400.0	6,778.9	6,754.0	6,751.9	96.8	13.6	86.93	-1,556.2	3,511.2	880.0	770.0	110.01	7.999	
10,500.0	6,778.0	6,754.8	6,752.6	99.5	13.6	87.05	-1,556.3	3,511.2	789.4	676.7	112.73	7.002	
10,600.0	6,777.1	6,755.6	6,753.4	102.2	13.6	87.18	-1,556.3	3,511.2	701.4	585.9	115.47	6.074	
10,700.0	6,776.3	6,756.4	6,754.2	105.0	13.6	87.31	-1,556.3	3,511.2	617.0	498.8	118.20	5.220	
10,800.0	6,775.4	6,757.2	6,755.0	107.7	13.6	87.44	-1,556.3	3,511.2	538.1	417.1	120.94	4.449	
10,900.0	6,774.5	6,758.0	6,755.8	110.4	13.6	87.58	-1,556.4	3,511.2	467.2	343.6	123.69	3.778	
11,000.0	6,773.6	6,758.9	6,756.7	113.2	13.6	87.72	-1,556.4	3,511.2	408.8	282.4	126.43	3.233	
11,100.0	6,772.7	6,759.7	6,757.6	115.9	13.6	87.86	-1,556.4	3,511.3	368.6	239.5	129.18	2.854	
11,200.0	6,771.8	6,760.6	6,758.5	118.7	13.6	88.00	-1,556.5	3,511.3	353.1	221.2	131.94	2.676	
11,206.1	6,771.8	6,760.7	6,758.5	118.8	13.6	88.01	-1,556.5	3,511.3	353.0	220.9	132.11	2.672	CC, ES, SF
11,300.0	6,770.9	6,761.6	6,759.4	121.4	13.6	88.15	-1,556.5	3,511.3	365.3	230.6	134.69	2.712	
11,400.0	6,770.0	6,762.5	6,760.3	124.2	13.6	88.31	-1,556.5	3,511.3	402.8	265.3	137.45	2.930	
11,500.0	6,769.2	6,763.5	6,761.3	126.9	13.6	88.46	-1,556.6	3,511.3	459.4	319.2	140.21	3.276	
11,600.0	6,768.3	6,764.4	6,762.3	129.7	13.6	88.62	-1,556.6	3,511.3	529.0	386.0	142.98	3.700	
11,700.0	6,767.4	6,765.5	6,763.3	132.5	13.6	88.79	-1,556.6	3,511.4	607.1	461.4	145.74	4.166	
11,800.0	6,766.5	6,766.5	6,764.3	135.2	13.6	88.95	-1,556.7	3,511.4	690.9	542.4	148.51	4.652	
11,900.0	6,765.6	6,767.6	6,765.4	138.0	13.6	89.13	-1,556.7	3,511.4	778.5	627.3	151.27	5.147	
12,000.0	6,764.7	6,768.6	6,766.5	140.7	13.6	89.30	-1,556.7	3,511.4	868.9	714.8	154.04	5.641	
12,100.0	6,763.8	6,769.8	6,767.6	143.5	13.6	89.48	-1,556.8	3,511.4	961.1	804.3	156.81	6.129	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Ivan Klein 13-20 (Exist) - Wellbore #1 - Wellbore												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,600.0	6,786.0	6,764.0	6,762.3	75.2	12.1	-89.93	-1,081.1	2,869.2	971.6	884.7	86.91	11.179	
9,700.0	6,785.1	6,763.8	6,762.1	77.9	12.1	-89.84	-1,081.1	2,869.2	872.5	782.9	89.58	9.740	
9,800.0	6,784.2	6,763.6	6,761.9	80.6	12.1	-89.74	-1,081.1	2,869.1	773.6	681.3	92.25	8.386	
9,900.0	6,783.3	6,763.4	6,761.7	83.3	12.1	-89.65	-1,081.1	2,869.1	675.0	580.1	94.93	7.111	
10,000.0	6,782.5	6,763.2	6,761.5	86.0	12.1	-89.55	-1,081.1	2,869.1	577.0	479.4	97.62	5.911	
10,100.0	6,781.6	6,763.0	6,761.3	88.7	12.1	-89.45	-1,081.1	2,869.1	479.7	379.4	100.31	4.782	
10,200.0	6,780.7	6,762.8	6,761.1	91.4	12.1	-89.34	-1,081.1	2,869.1	383.9	280.9	103.01	3.727	
10,300.0	6,779.8	6,762.6	6,760.8	94.1	12.1	-89.24	-1,081.1	2,869.1	290.9	185.2	105.72	2.751	
10,400.0	6,778.9	6,762.3	6,760.6	96.8	12.1	-89.13	-1,081.2	2,869.1	204.6	96.1	108.43	1.886	
10,500.0	6,778.0	6,762.1	6,760.4	99.5	12.1	-89.02	-1,081.2	2,869.1	138.1	27.0	111.15	1.243 Level 2	
10,563.8	6,777.5	6,761.9	6,760.2	101.3	12.1	-88.95	-1,081.2	2,869.1	122.5	9.6	112.88	1.085 Level 2, CC, ES, SF	
10,600.0	6,777.1	6,761.8	6,760.1	102.2	12.1	-88.91	-1,081.2	2,869.1	127.7	13.9	113.87	1.122 Level 2	
10,700.0	6,776.3	6,761.6	6,759.9	105.0	12.1	-88.79	-1,081.2	2,869.1	183.2	66.6	116.59	1.571	
10,800.0	6,775.4	6,761.3	6,759.6	107.7	12.1	-88.67	-1,081.2	2,869.1	266.1	146.7	119.32	2.230	
10,900.0	6,774.5	6,761.1	6,759.4	110.4	12.1	-88.55	-1,081.2	2,869.1	357.8	235.8	122.05	2.932	
11,000.0	6,773.6	6,760.8	6,759.1	113.2	12.1	-88.43	-1,081.2	2,869.1	453.1	328.3	124.78	3.631	
11,100.0	6,772.7	6,760.5	6,758.8	115.9	12.1	-88.30	-1,081.2	2,869.1	550.0	422.5	127.51	4.313	
11,200.0	6,771.8	6,760.3	6,758.5	118.7	12.1	-88.17	-1,081.2	2,869.1	647.9	517.6	130.25	4.974	
11,300.0	6,770.9	6,760.0	6,758.3	121.4	12.1	-88.03	-1,081.2	2,869.1	746.3	613.3	132.98	5.612	
11,400.0	6,770.0	6,759.7	6,758.0	124.2	12.1	-87.90	-1,081.2	2,869.1	845.1	709.4	135.72	6.227	
11,500.0	6,769.2	6,759.4	6,757.7	126.9	12.1	-87.75	-1,081.2	2,869.1	944.2	805.7	138.46	6.819	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 19-1 (Exist) - Wellbore #1 - Wellbore #1													Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS														
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		
8,300.0	6,797.5	6,780.7	6,780.0	42.0	12.1	-90.99	-873.0	1,541.4	992.7	938.7	54.01	18.380		
8,400.0	6,796.7	6,780.4	6,779.7	44.4	12.1	-90.95	-873.0	1,541.4	899.0	842.7	56.34	15.956		
8,500.0	6,795.8	6,780.2	6,779.5	46.8	12.1	-90.91	-873.0	1,541.4	806.9	748.1	58.73	13.739		
8,600.0	6,794.9	6,780.0	6,779.2	49.3	12.1	-90.87	-873.0	1,541.4	716.8	655.6	61.16	11.720		
8,700.0	6,794.0	6,779.7	6,779.0	51.8	12.1	-90.83	-873.0	1,541.4	629.8	566.1	63.63	9.897		
8,800.0	6,793.1	6,779.5	6,778.8	54.3	12.1	-90.78	-873.0	1,541.4	547.2	481.1	66.13	8.274		
8,900.0	6,792.2	6,779.3	6,778.5	56.9	12.1	-90.74	-873.0	1,541.4	471.4	402.7	68.66	6.865		
9,000.0	6,791.3	6,779.0	6,778.3	59.5	12.1	-90.70	-873.0	1,541.4	406.2	335.0	71.22	5.704		
9,100.0	6,790.4	6,778.8	6,778.1	62.1	12.1	-90.66	-873.0	1,541.4	357.5	283.8	73.80	4.845		
9,200.0	6,789.6	6,778.5	6,777.8	64.7	12.1	-90.62	-873.0	1,541.4	332.6	256.2	76.40	4.354		
9,236.0	6,789.2	6,778.5	6,777.7	65.6	12.1	-90.60	-873.0	1,541.4	330.7	253.3	77.34	4.276 CC, ES		
9,300.0	6,788.7	6,778.3	6,777.6	67.3	12.1	-90.58	-873.0	1,541.4	336.8	257.8	79.01	4.263 SF		
9,400.0	6,787.8	6,778.1	6,777.3	69.9	12.1	-90.54	-873.0	1,541.4	369.1	287.5	81.64	4.521		
9,500.0	6,786.9	6,777.8	6,777.1	72.6	12.1	-90.50	-873.0	1,541.4	423.2	338.9	84.28	5.021		
9,600.0	6,786.0	6,777.6	6,776.9	75.2	12.1	-90.45	-873.0	1,541.4	491.8	404.9	86.94	5.657		
9,700.0	6,785.1	6,777.4	6,776.6	77.9	12.1	-90.41	-873.0	1,541.4	569.8	480.2	89.60	6.359		
9,800.0	6,784.2	6,777.1	6,776.4	80.6	12.1	-90.37	-873.0	1,541.4	653.8	561.5	92.28	7.085		
9,900.0	6,783.3	6,776.9	6,776.2	83.3	12.1	-90.33	-873.0	1,541.4	741.8	646.8	94.96	7.811		
10,000.0	6,782.5	6,776.6	6,775.9	86.0	12.1	-90.29	-872.9	1,541.4	832.5	734.9	97.66	8.525		
10,100.0	6,781.6	6,776.4	6,775.7	88.7	12.1	-90.25	-872.9	1,541.4	925.1	824.8	100.36	9.219		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 5 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (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	
7,800.0	6,802.0	6,781.1	6,779.2	31.6	13.4	89.76	-1,625.0	1,009.4	997.4	952.6	44.78	22.272	
7,900.0	6,801.1	6,781.4	6,779.4	33.3	13.4	89.78	-1,625.0	1,009.4	907.7	861.1	46.67	19.448	
8,000.0	6,800.2	6,781.6	6,779.6	35.3	13.4	89.81	-1,625.0	1,009.4	820.5	771.8	48.69	16.852	
8,100.0	6,799.3	6,781.8	6,779.8	37.4	13.4	89.84	-1,625.0	1,009.4	736.5	685.7	50.80	14.496	
8,200.0	6,798.4	6,782.0	6,780.0	39.7	13.4	89.87	-1,625.0	1,009.4	656.9	603.9	53.01	12.393	
8,300.0	6,797.5	6,782.2	6,780.2	42.0	13.4	89.90	-1,625.0	1,009.4	583.8	528.5	55.28	10.559	
8,400.0	6,796.7	6,782.4	6,780.4	44.4	13.4	89.93	-1,625.0	1,009.4	519.6	462.0	57.62	9.017	
8,500.0	6,795.8	6,782.6	6,780.6	46.8	13.4	89.96	-1,625.0	1,009.4	468.2	408.1	60.01	7.801	
8,600.0	6,794.9	6,782.8	6,780.9	49.3	13.4	89.99	-1,625.0	1,009.4	434.0	371.6	62.44	6.950	
8,700.0	6,794.0	6,783.1	6,781.1	51.8	13.4	90.02	-1,625.0	1,009.4	421.4	356.5	64.92	6.491	
8,704.0	6,794.0	6,783.1	6,781.1	51.9	13.4	90.02	-1,625.0	1,009.4	421.4	356.3	65.02	6.481 CC, ES	
8,800.0	6,793.1	6,783.3	6,781.3	54.3	13.4	90.04	-1,625.0	1,009.4	432.2	364.7	67.42	6.410 SF	
8,900.0	6,792.2	6,783.5	6,781.5	56.9	13.4	90.07	-1,625.0	1,009.4	464.7	394.8	69.95	6.643	
9,000.0	6,791.3	6,783.7	6,781.7	59.5	13.4	90.10	-1,625.0	1,009.4	514.9	442.4	72.51	7.101	
9,100.0	6,790.4	6,783.9	6,781.9	62.1	13.4	90.13	-1,625.0	1,009.4	578.2	503.1	75.09	7.700	
9,200.0	6,789.6	6,784.1	6,782.1	64.7	13.4	90.16	-1,625.0	1,009.4	650.8	573.1	77.69	8.377	
9,300.0	6,788.7	6,784.3	6,782.3	67.3	13.4	90.19	-1,625.0	1,009.4	729.9	649.6	80.31	9.089	
9,400.0	6,787.8	6,784.5	6,782.6	69.9	13.4	90.22	-1,625.0	1,009.4	813.6	730.7	82.94	9.810	
9,500.0	6,786.9	6,784.8	6,782.8	72.6	13.4	90.25	-1,625.0	1,009.4	900.6	815.1	85.58	10.524	
9,600.0	6,786.0	6,785.0	6,783.0	75.2	13.4	90.27	-1,625.0	1,009.4	990.1	901.9	88.24	11.221	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19P-312
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19P-312	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #3 (7-15-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4639.0ft (RKB - 13')

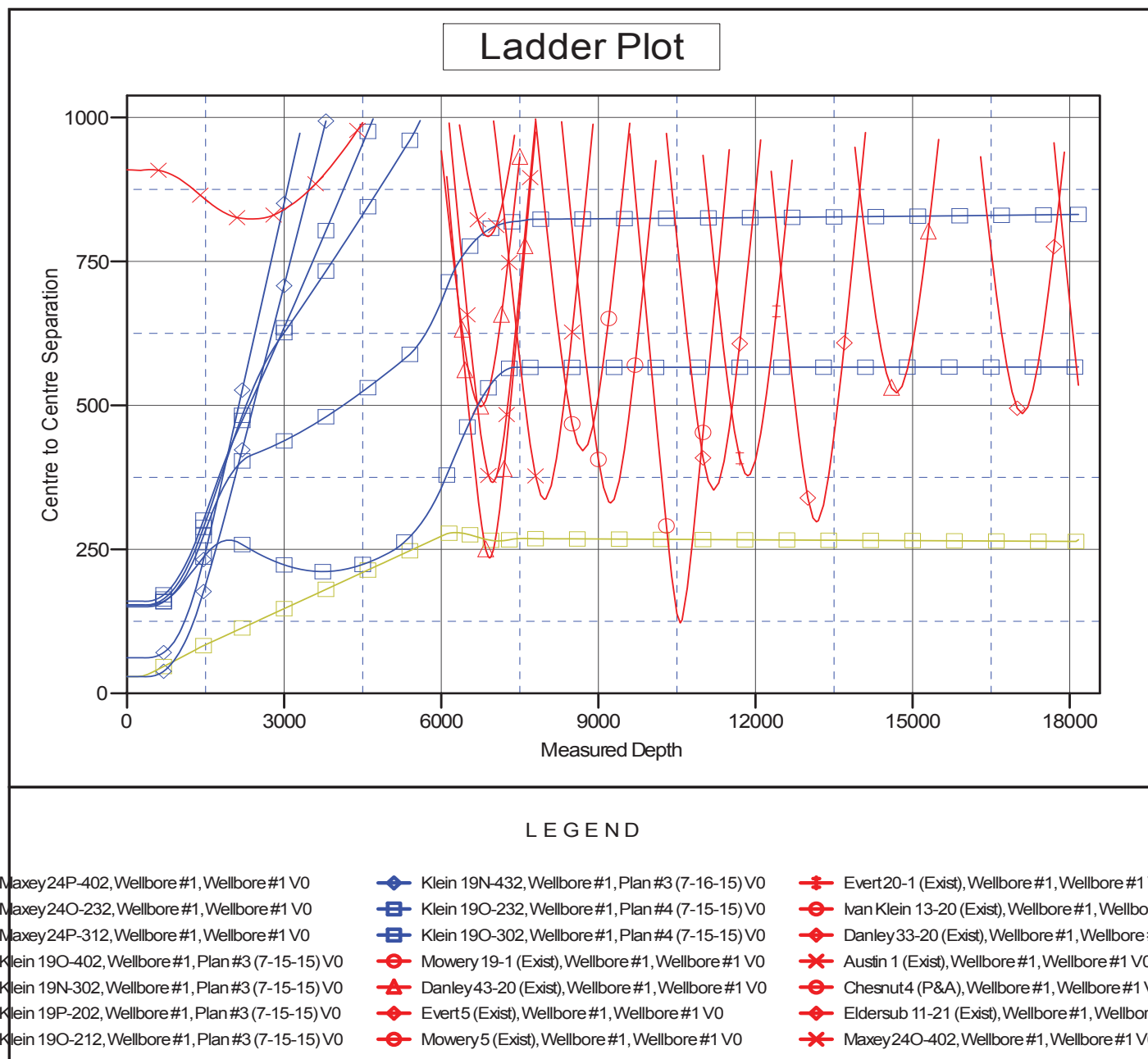
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Klein 19P-312

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



Coordinates are relative to: Klein 19P-312
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

