

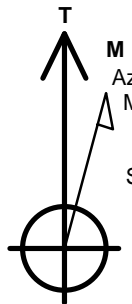
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Klein 19N-202**

Surface Location: Klein 19MN-HZ Pad Sec.19-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4628.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1386209.05 3252956.53 40.389990 -104.591870
 RKB - 13' WELL @ 4641.0ft (RKB - 13')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50°N/S Hardline (19N-202)	1.0	-409.4	5594.3	Rectangle (Sides: L10071.6 W100.0)
SHL 689'FNL & 2372'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 1176'FNL & 2306'FEL, SEC. 21	6621.0	-409.4	10630.1	Point



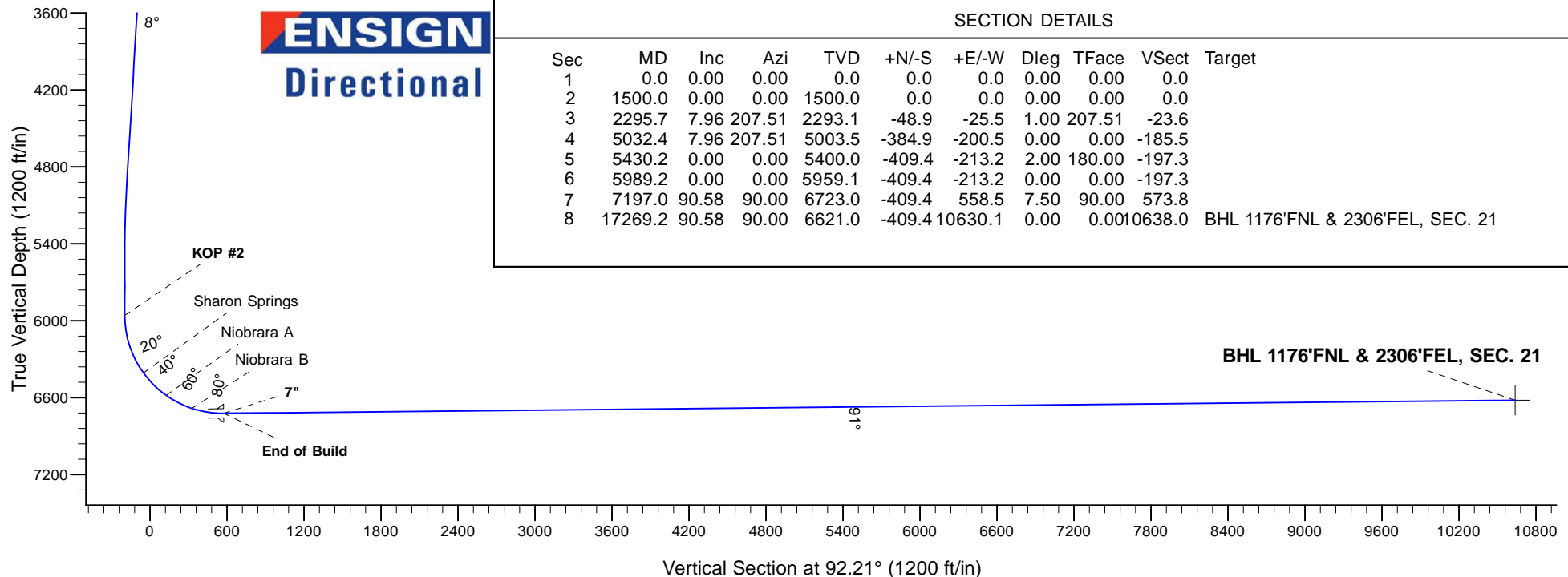
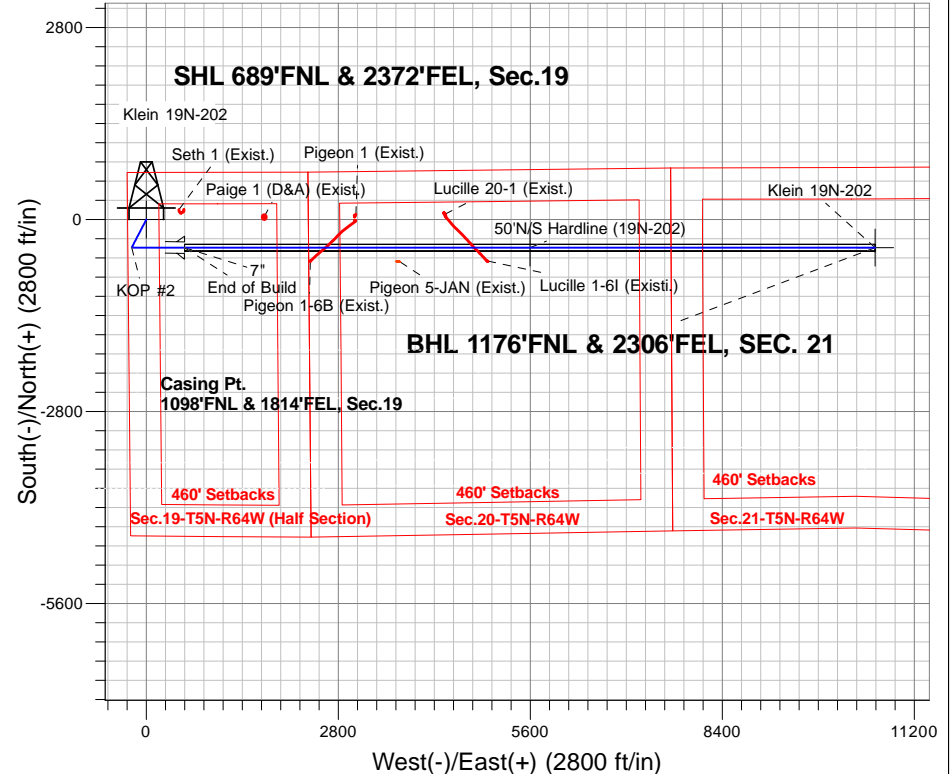
Azimuths to True North
 Magnetic North: 8.22°

Magnetic Field
 Strength: 52715.7snT
 Dip Angle: 66.93°
 Date: 7/14/2015
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
5959.0	5989.2	KOP #2
6723.0	7197.0	End of Build

Klein 19MN-HZ Pad Sec.19-T5N-R64W
 Klein 19N-202
 Plan #3 (7-14-15)





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19N-202

Wellbore #1

Plan: Plan #3 (7-14-15)

Standard Planning Report

15 July, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-202
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

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 19MN-HZ Pad Sec.19-T5N-R64W		
Site Position:		Northing:	1,386,208.48 usft
From:	Lat/Long	Easting:	3,252,898.04 usft
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "
		Latitude:	40.389990
		Longitude:	-104.592080
		Grid Convergence:	0.59 °

Well	Klein 19N-202		
Well Position	+N/-S	0.0 ft	Northing: 1,386,209.05 usft
	+E/-W	58.5 ft	Easting: 3,252,956.54 usft
Position Uncertainty	0.0 ft	Wellhead Elevation:	Latitude: 40.389990
			Longitude: -104.591870
			Ground Level: 4,628.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/14/2015	8.22	66.93	52,716

Design	Plan #3 (7-14-15)			
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	92.21

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,295.7	7.96	207.51	2,293.1	-48.9	-25.5	1.00	1.00	0.00	207.51	
5,032.4	7.96	207.51	5,003.5	-384.9	-200.5	0.00	0.00	0.00	0.00	
5,430.2	0.00	0.00	5,400.0	-409.4	-213.2	2.00	-2.00	0.00	180.00	
5,989.2	0.00	0.00	5,959.1	-409.4	-213.2	0.00	0.00	0.00	0.00	
7,197.0	90.58	90.00	6,723.0	-409.4	558.5	7.50	7.50	0.00	90.00	
17,269.2	90.58	90.00	6,621.0	-409.4	10,630.1	0.00	0.00	0.00	0.00	BHL 1176'FNL & 2306'

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-202
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

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
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,600.0	1.00	207.51	1,600.0	-0.8	-0.4	-0.4	1.00	1.00	0.00
1,700.0	2.00	207.51	1,700.0	-3.1	-1.6	-1.5	1.00	1.00	0.00
1,800.0	3.00	207.51	1,799.9	-7.0	-3.6	-3.4	1.00	1.00	0.00
1,900.0	4.00	207.51	1,899.7	-12.4	-6.4	-6.0	1.00	1.00	0.00
2,000.0	5.00	207.51	1,999.4	-19.3	-10.1	-9.3	1.00	1.00	0.00
2,100.0	6.00	207.51	2,098.9	-27.8	-14.5	-13.4	1.00	1.00	0.00
2,200.0	7.00	207.51	2,198.3	-37.9	-19.7	-18.3	1.00	1.00	0.00
2,295.7	7.96	207.51	2,293.1	-48.9	-25.5	-23.6	1.00	1.00	0.00
2,300.0	7.96	207.51	2,297.4	-49.5	-25.8	-23.8	0.00	0.00	0.00
2,400.0	7.96	207.51	2,396.4	-61.7	-32.1	-29.8	0.00	0.00	0.00
2,500.0	7.96	207.51	2,495.5	-74.0	-38.5	-35.7	0.00	0.00	0.00
2,600.0	7.96	207.51	2,594.5	-86.3	-44.9	-41.6	0.00	0.00	0.00
2,700.0	7.96	207.51	2,693.6	-98.6	-51.3	-47.5	0.00	0.00	0.00
2,800.0	7.96	207.51	2,792.6	-110.8	-57.7	-53.4	0.00	0.00	0.00
2,900.0	7.96	207.51	2,891.6	-123.1	-64.1	-59.3	0.00	0.00	0.00
3,000.0	7.96	207.51	2,990.7	-135.4	-70.5	-65.3	0.00	0.00	0.00
3,100.0	7.96	207.51	3,089.7	-147.7	-76.9	-71.2	0.00	0.00	0.00
3,200.0	7.96	207.51	3,188.7	-159.9	-83.3	-77.1	0.00	0.00	0.00
3,300.0	7.96	207.51	3,287.8	-172.2	-89.7	-83.0	0.00	0.00	0.00
3,400.0	7.96	207.51	3,386.8	-184.5	-96.1	-88.9	0.00	0.00	0.00
3,500.0	7.96	207.51	3,485.9	-196.8	-102.5	-94.8	0.00	0.00	0.00
3,600.0	7.96	207.51	3,584.9	-209.1	-108.9	-100.8	0.00	0.00	0.00
3,700.0	7.96	207.51	3,683.9	-221.3	-115.3	-106.7	0.00	0.00	0.00
3,800.0	7.96	207.51	3,783.0	-233.6	-121.7	-112.6	0.00	0.00	0.00
3,900.0	7.96	207.51	3,882.0	-245.9	-128.1	-118.5	0.00	0.00	0.00
4,000.0	7.96	207.51	3,981.0	-258.2	-134.5	-124.4	0.00	0.00	0.00
4,100.0	7.96	207.51	4,080.1	-270.4	-140.8	-130.3	0.00	0.00	0.00
4,200.0	7.96	207.51	4,179.1	-282.7	-147.2	-136.3	0.00	0.00	0.00
4,300.0	7.96	207.51	4,278.2	-295.0	-153.6	-142.2	0.00	0.00	0.00
4,400.0	7.96	207.51	4,377.2	-307.3	-160.0	-148.1	0.00	0.00	0.00
4,500.0	7.96	207.51	4,476.2	-319.5	-166.4	-154.0	0.00	0.00	0.00
4,600.0	7.96	207.51	4,575.3	-331.8	-172.8	-159.9	0.00	0.00	0.00
4,700.0	7.96	207.51	4,674.3	-344.1	-179.2	-165.8	0.00	0.00	0.00
4,800.0	7.96	207.51	4,773.3	-356.4	-185.6	-171.8	0.00	0.00	0.00
4,900.0	7.96	207.51	4,872.4	-368.7	-192.0	-177.7	0.00	0.00	0.00
5,000.0	7.96	207.51	4,971.4	-380.9	-198.4	-183.6	0.00	0.00	0.00

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Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

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)
5,032.4	7.96	207.51	5,003.5	-384.9	-200.5	-185.5	0.00	0.00	0.00
5,100.0	6.60	207.51	5,070.6	-392.5	-204.4	-189.2	2.00	-2.00	0.00
5,200.0	4.60	207.51	5,170.1	-401.2	-208.9	-193.3	2.00	-2.00	0.00
5,300.0	2.60	207.51	5,269.9	-406.7	-211.8	-196.0	2.00	-2.00	0.00
5,400.0	0.60	207.51	5,369.8	-409.2	-213.1	-197.2	2.00	-2.00	0.00
5,430.2	0.00	0.00	5,400.0	-409.4	-213.2	-197.3	2.00	-2.00	0.00
5,500.0	0.00	0.00	5,469.8	-409.4	-213.2	-197.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,569.8	-409.4	-213.2	-197.3	0.00	0.00	0.00
5,700.0	0.00	0.00	5,669.8	-409.4	-213.2	-197.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,769.8	-409.4	-213.2	-197.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,869.8	-409.4	-213.2	-197.3	0.00	0.00	0.00
5,989.2	0.00	0.00	5,959.0	-409.4	-213.2	-197.3	0.00	0.00	0.00
KOP #2									
6,000.0	0.81	90.00	5,969.8	-409.4	-213.1	-197.2	7.48	7.48	0.00
6,100.0	8.31	90.00	6,069.4	-409.4	-205.2	-189.3	7.50	7.50	0.00
6,200.0	15.81	90.00	6,167.2	-409.4	-184.3	-168.4	7.50	7.50	0.00
6,300.0	23.31	90.00	6,261.3	-409.4	-150.9	-135.0	7.50	7.50	0.00
6,400.0	30.81	90.00	6,350.3	-409.4	-105.4	-89.6	7.50	7.50	0.00
6,500.0	38.31	90.00	6,432.6	-409.4	-48.7	-32.9	7.50	7.50	0.00
6,600.0	45.81	90.00	6,506.8	-409.4	18.2	34.0	7.50	7.50	0.00
6,700.0	53.31	90.00	6,571.6	-409.4	94.3	110.0	7.50	7.50	0.00
6,800.0	60.81	90.00	6,626.0	-409.4	178.1	193.8	7.50	7.50	0.00
6,900.0	68.31	90.00	6,668.9	-409.4	268.4	283.9	7.50	7.50	0.00
7,000.0	75.81	90.00	6,699.7	-409.4	363.4	378.9	7.50	7.50	0.00
7,100.0	83.31	90.00	6,717.8	-409.4	461.7	477.1	7.50	7.50	0.00
7,197.0	90.58	90.00	6,723.0	-409.4	558.5	573.9	7.50	7.50	0.00
End of Build - 7"									
7,200.0	90.58	90.00	6,722.9	-409.4	561.5	576.9	0.00	0.00	0.00
7,300.0	90.58	90.00	6,721.9	-409.4	661.5	676.8	0.00	0.00	0.00
7,400.0	90.58	90.00	6,720.9	-409.4	761.5	776.7	0.00	0.00	0.00
7,500.0	90.58	90.00	6,719.9	-409.4	861.5	876.6	0.00	0.00	0.00
7,600.0	90.58	90.00	6,718.9	-409.4	961.5	976.5	0.00	0.00	0.00
7,700.0	90.58	90.00	6,717.9	-409.4	1,061.5	1,076.5	0.00	0.00	0.00
7,800.0	90.58	90.00	6,716.9	-409.4	1,161.5	1,176.4	0.00	0.00	0.00
7,900.0	90.58	90.00	6,715.8	-409.4	1,261.5	1,276.3	0.00	0.00	0.00
8,000.0	90.58	90.00	6,714.8	-409.4	1,361.5	1,376.2	0.00	0.00	0.00
8,100.0	90.58	90.00	6,713.8	-409.4	1,461.5	1,476.1	0.00	0.00	0.00
8,200.0	90.58	90.00	6,712.8	-409.4	1,561.5	1,576.1	0.00	0.00	0.00
8,300.0	90.58	90.00	6,711.8	-409.4	1,661.5	1,676.0	0.00	0.00	0.00
8,400.0	90.58	90.00	6,710.8	-409.4	1,761.5	1,775.9	0.00	0.00	0.00
8,500.0	90.58	90.00	6,709.8	-409.4	1,861.4	1,875.8	0.00	0.00	0.00
8,600.0	90.58	90.00	6,708.8	-409.4	1,961.4	1,975.7	0.00	0.00	0.00
8,700.0	90.58	90.00	6,707.7	-409.4	2,061.4	2,075.7	0.00	0.00	0.00
8,800.0	90.58	90.00	6,706.7	-409.4	2,161.4	2,175.6	0.00	0.00	0.00
8,900.0	90.58	90.00	6,705.7	-409.4	2,261.4	2,275.5	0.00	0.00	0.00
9,000.0	90.58	90.00	6,704.7	-409.4	2,361.4	2,375.4	0.00	0.00	0.00
9,100.0	90.58	90.00	6,703.7	-409.4	2,461.4	2,475.3	0.00	0.00	0.00
9,200.0	90.58	90.00	6,702.7	-409.4	2,561.4	2,575.3	0.00	0.00	0.00
9,300.0	90.58	90.00	6,701.7	-409.4	2,661.4	2,675.2	0.00	0.00	0.00
9,400.0	90.58	90.00	6,700.7	-409.4	2,761.4	2,775.1	0.00	0.00	0.00
9,500.0	90.58	90.00	6,699.6	-409.4	2,861.4	2,875.0	0.00	0.00	0.00
9,600.0	90.58	90.00	6,698.6	-409.4	2,961.4	2,974.9	0.00	0.00	0.00
9,700.0	90.58	90.00	6,697.6	-409.4	3,061.4	3,074.9	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-202
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

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)
9,800.0	90.58	90.00	6,696.6	-409.4	3,161.4	3,174.8	0.00	0.00	0.00
9,900.0	90.58	90.00	6,695.6	-409.4	3,261.4	3,274.7	0.00	0.00	0.00
10,000.0	90.58	90.00	6,694.6	-409.4	3,361.4	3,374.6	0.00	0.00	0.00
10,100.0	90.58	90.00	6,693.6	-409.4	3,461.4	3,474.6	0.00	0.00	0.00
10,200.0	90.58	90.00	6,692.6	-409.4	3,561.4	3,574.5	0.00	0.00	0.00
10,300.0	90.58	90.00	6,691.5	-409.4	3,661.4	3,674.4	0.00	0.00	0.00
10,400.0	90.58	90.00	6,690.5	-409.4	3,761.3	3,774.3	0.00	0.00	0.00
10,500.0	90.58	90.00	6,689.5	-409.4	3,861.3	3,874.2	0.00	0.00	0.00
10,600.0	90.58	90.00	6,688.5	-409.4	3,961.3	3,974.2	0.00	0.00	0.00
10,700.0	90.58	90.00	6,687.5	-409.4	4,061.3	4,074.1	0.00	0.00	0.00
10,800.0	90.58	90.00	6,686.5	-409.4	4,161.3	4,174.0	0.00	0.00	0.00
10,900.0	90.58	90.00	6,685.5	-409.4	4,261.3	4,273.9	0.00	0.00	0.00
11,000.0	90.58	90.00	6,684.5	-409.4	4,361.3	4,373.8	0.00	0.00	0.00
11,100.0	90.58	90.00	6,683.4	-409.4	4,461.3	4,473.8	0.00	0.00	0.00
11,200.0	90.58	90.00	6,682.4	-409.4	4,561.3	4,573.7	0.00	0.00	0.00
11,300.0	90.58	90.00	6,681.4	-409.4	4,661.3	4,673.6	0.00	0.00	0.00
11,400.0	90.58	90.00	6,680.4	-409.4	4,761.3	4,773.5	0.00	0.00	0.00
11,500.0	90.58	90.00	6,679.4	-409.4	4,861.3	4,873.4	0.00	0.00	0.00
11,600.0	90.58	90.00	6,678.4	-409.4	4,961.3	4,973.4	0.00	0.00	0.00
11,700.0	90.58	90.00	6,677.4	-409.4	5,061.3	5,073.3	0.00	0.00	0.00
11,800.0	90.58	90.00	6,676.4	-409.4	5,161.3	5,173.2	0.00	0.00	0.00
11,900.0	90.58	90.00	6,675.4	-409.4	5,261.3	5,273.1	0.00	0.00	0.00
12,000.0	90.58	90.00	6,674.3	-409.4	5,361.3	5,373.0	0.00	0.00	0.00
12,100.0	90.58	90.00	6,673.3	-409.4	5,461.3	5,473.0	0.00	0.00	0.00
12,200.0	90.58	90.00	6,672.3	-409.4	5,561.3	5,572.9	0.00	0.00	0.00
12,300.0	90.58	90.00	6,671.3	-409.4	5,661.3	5,672.8	0.00	0.00	0.00
12,400.0	90.58	90.00	6,670.3	-409.4	5,761.2	5,772.7	0.00	0.00	0.00
12,500.0	90.58	90.00	6,669.3	-409.4	5,861.2	5,872.7	0.00	0.00	0.00
12,600.0	90.58	90.00	6,668.3	-409.4	5,961.2	5,972.6	0.00	0.00	0.00
12,700.0	90.58	90.00	6,667.3	-409.4	6,061.2	6,072.5	0.00	0.00	0.00
12,800.0	90.58	90.00	6,666.2	-409.4	6,161.2	6,172.4	0.00	0.00	0.00
12,900.0	90.58	90.00	6,665.2	-409.4	6,261.2	6,272.3	0.00	0.00	0.00
13,000.0	90.58	90.00	6,664.2	-409.4	6,361.2	6,372.3	0.00	0.00	0.00
13,100.0	90.58	90.00	6,663.2	-409.4	6,461.2	6,472.2	0.00	0.00	0.00
13,200.0	90.58	90.00	6,662.2	-409.4	6,561.2	6,572.1	0.00	0.00	0.00
13,300.0	90.58	90.00	6,661.2	-409.4	6,661.2	6,672.0	0.00	0.00	0.00
13,400.0	90.58	90.00	6,660.2	-409.4	6,761.2	6,771.9	0.00	0.00	0.00
13,500.0	90.58	90.00	6,659.2	-409.4	6,861.2	6,871.9	0.00	0.00	0.00
13,600.0	90.58	90.00	6,658.1	-409.4	6,961.2	6,971.8	0.00	0.00	0.00
13,700.0	90.58	90.00	6,657.1	-409.4	7,061.2	7,071.7	0.00	0.00	0.00
13,800.0	90.58	90.00	6,656.1	-409.4	7,161.2	7,171.6	0.00	0.00	0.00
13,900.0	90.58	90.00	6,655.1	-409.4	7,261.2	7,271.5	0.00	0.00	0.00
14,000.0	90.58	90.00	6,654.1	-409.4	7,361.2	7,371.5	0.00	0.00	0.00
14,100.0	90.58	90.00	6,653.1	-409.4	7,461.2	7,471.4	0.00	0.00	0.00
14,200.0	90.58	90.00	6,652.1	-409.4	7,561.2	7,571.3	0.00	0.00	0.00
14,300.0	90.58	90.00	6,651.1	-409.4	7,661.1	7,671.2	0.00	0.00	0.00
14,400.0	90.58	90.00	6,650.0	-409.4	7,761.1	7,771.1	0.00	0.00	0.00
14,500.0	90.58	90.00	6,649.0	-409.4	7,861.1	7,871.1	0.00	0.00	0.00
14,600.0	90.58	90.00	6,648.0	-409.4	7,961.1	7,971.0	0.00	0.00	0.00
14,700.0	90.58	90.00	6,647.0	-409.4	8,061.1	8,070.9	0.00	0.00	0.00
14,800.0	90.58	90.00	6,646.0	-409.4	8,161.1	8,170.8	0.00	0.00	0.00
14,900.0	90.58	90.00	6,645.0	-409.4	8,261.1	8,270.8	0.00	0.00	0.00
15,000.0	90.58	90.00	6,644.0	-409.4	8,361.1	8,370.7	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-202
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

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)
15,100.0	90.58	90.00	6,643.0	-409.4	8,461.1	8,470.6	0.00	0.00	0.00
15,200.0	90.58	90.00	6,641.9	-409.4	8,561.1	8,570.5	0.00	0.00	0.00
15,300.0	90.58	90.00	6,640.9	-409.4	8,661.1	8,670.4	0.00	0.00	0.00
15,400.0	90.58	90.00	6,639.9	-409.4	8,761.1	8,770.4	0.00	0.00	0.00
15,500.0	90.58	90.00	6,638.9	-409.4	8,861.1	8,870.3	0.00	0.00	0.00
15,600.0	90.58	90.00	6,637.9	-409.4	8,961.1	8,970.2	0.00	0.00	0.00
15,700.0	90.58	90.00	6,636.9	-409.4	9,061.1	9,070.1	0.00	0.00	0.00
15,800.0	90.58	90.00	6,635.9	-409.4	9,161.1	9,170.0	0.00	0.00	0.00
15,900.0	90.58	90.00	6,634.9	-409.4	9,261.1	9,270.0	0.00	0.00	0.00
16,000.0	90.58	90.00	6,633.8	-409.4	9,361.1	9,369.9	0.00	0.00	0.00
16,100.0	90.58	90.00	6,632.8	-409.4	9,461.1	9,469.8	0.00	0.00	0.00
16,200.0	90.58	90.00	6,631.8	-409.4	9,561.1	9,569.7	0.00	0.00	0.00
16,300.0	90.58	90.00	6,630.8	-409.4	9,661.0	9,669.6	0.00	0.00	0.00
16,400.0	90.58	90.00	6,629.8	-409.4	9,761.0	9,769.6	0.00	0.00	0.00
16,500.0	90.58	90.00	6,628.8	-409.4	9,861.0	9,869.5	0.00	0.00	0.00
16,600.0	90.58	90.00	6,627.8	-409.4	9,961.0	9,969.4	0.00	0.00	0.00
16,700.0	90.58	90.00	6,626.8	-409.4	10,061.0	10,069.3	0.00	0.00	0.00
16,800.0	90.58	90.00	6,625.7	-409.4	10,161.0	10,169.2	0.00	0.00	0.00
16,900.0	90.58	90.00	6,624.7	-409.4	10,261.0	10,269.2	0.00	0.00	0.00
17,000.0	90.58	90.00	6,623.7	-409.4	10,361.0	10,369.1	0.00	0.00	0.00
17,100.0	90.58	90.00	6,622.7	-409.4	10,461.0	10,469.0	0.00	0.00	0.00
17,200.0	90.58	90.00	6,621.7	-409.4	10,561.0	10,568.9	0.00	0.00	0.00
17,269.2	90.58	90.00	6,621.0	-409.4	10,630.1	10,638.0	0.00	0.00	0.00

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 (19N-20 - hit/miss target - Shape - plan misses target center by 5609.3ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E) - Rectangle (sides W100.0 H10,071.6 D0.0)	0.00	0.00	1.0	-409.4	5,594.3	1,385,856.98	3,258,554.50	40.388865	-104.571788
SHL 689°FNL & 2372°FE - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,386,209.08	3,252,956.54	40.389990	-104.591870
BHL 1176°FNL & 2306°FI - plan hits target center - Point	0.00	0.00	6,621.0	-409.4	10,630.1	1,385,908.59	3,263,589.87	40.388860	-104.553710

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,197.0	6,723.0	7"	7	7-1/2	

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-202
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-14-15)		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,564.8	3,550.0	Parkman		0.00	
4,322.1	4,300.0	Sussex		0.00	
4,524.0	4,500.0	Shannon		0.00	
6,467.9	6,407.0	Sharon Springs		0.00	
6,719.4	6,583.0	Niobrara A		0.00	
6,944.1	6,684.0	Niobrara B		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP #1
5,989.2	5,959.0	-409.4	-213.2	KOP #2
7,197.0	6,723.0	-409.4	558.5	End of Build



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19N-202

Wellbore #1

Plan #3 (7-14-15)

Anticollision Report

15 July, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #3 (7-14-15)		
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	7/14/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,269.2	Plan #3 (7-14-15) (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						
Klein (Existing) Sec.19-T5N-R64W						
Lucille 1-6I (Existi.) - Wellbore #1 - Wellbore #1	11,617.1	6,784.8	199.0	42.6	1.272	Level 3, CC, ES, SF
Lucille 20-1 (Exist.) - Wellbore #1 - Wellbore #1	10,992.7	6,679.5	500.2	364.2	3.680	CC
Lucille 20-1 (Exist.) - Wellbore #1 - Wellbore #1	11,000.0	6,679.5	500.2	364.1	3.675	ES, SF
Paige 1 (D&A) (Exist.) - Wellbore #1 - Wellbore #1	8,358.4	6,685.2	453.1	267.9	2.446	CC, ES
Paige 1 (D&A) (Exist.) - Wellbore #1 - Wellbore #1	8,400.0	6,684.8	455.1	268.6	2.441	SF
Pigeon 1 (Exist.) - Wellbore #1 - Wellbore #1	9,686.9	6,663.0	479.8	379.8	4.797	CC
Pigeon 1 (Exist.) - Wellbore #1 - Wellbore #1	9,700.0	6,663.4	480.0	379.6	4.781	ES
Pigeon 1 (Exist.) - Wellbore #1 - Wellbore #1	9,800.0	6,666.2	492.9	389.8	4.778	SF
Pigeon 1-6B (Exist.) - Wellbore #1 - Wellbore #1	9,029.4	6,805.0	194.8	109.5	2.283	CC, ES, SF
Pigeon 5-JAN (Exist.) - Wellbore #1 - Wellbore #1	10,336.2	6,669.0	200.1	82.5	1.702	CC, ES, SF
Seth 1 (Exist.) - Wellbore #1 - Wellbore #1	7,114.2	6,697.8	554.2	520.1	16.276	CC, ES
Seth 1 (Exist.) - Wellbore #1 - Wellbore #1	7,300.0	6,700.3	584.2	546.2	15.390	SF
Klein 19MN-HZ Pad Sec.19-T5N-R64W						
Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)	1,200.0	1,200.0	30.6	25.5	5.927	CC
Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)	1,300.0	1,299.7	31.1	25.5	5.533	ES
Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)	17,269.2	17,258.8	746.9	146.3	1.244	Level 2, SF
Klein 19M-402 - Wellbore #1 - Plan #3 (7-13-15)	1,000.0	1,000.0	58.5	54.2	13.698	CC
Klein 19M-402 - Wellbore #1 - Plan #3 (7-13-15)	1,100.0	1,099.7	58.7	54.0	12.442	ES
Klein 19M-402 - Wellbore #1 - Plan #3 (7-13-15)	1,500.0	1,497.5	67.1	60.6	10.289	SF
Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)	1,500.0	1,500.0	30.6	24.1	4.701	CC
Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)	17,269.2	17,329.0	341.8	-241.6	0.586	Level 1, ES, SF
Klein 19O-HZ Pad Sec.19-T5N-R64W						
Klein 19N-302 - Wellbore #1 - Plan #2 (4-16-15)	6,181.5	6,259.5	296.4	266.6	9.945	CC
Klein 19N-302 - Wellbore #1 - Plan #2 (4-16-15)	13,800.0	13,931.3	304.9	-89.4	0.773	Level 1, ES, SF

Offset Design	Klein (Existing) Sec.19-T5N-R64W - Lucille 1-6I (Existi.) - Wellbore #1 - Wellbore #1										Offset Site Error:	0.0 ft
Survey Program:	641-NS-GYRO-MS										Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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
10,700.0	6,687.5	6,783.7	6,657.3	116.2	15.7	90.33	-608.3	4,978.4	938.4	807.6	130.83	7.173
10,800.0	6,686.5	6,783.8	6,657.5	119.0	15.7	90.36	-608.3	4,978.4	841.0	707.4	133.62	6.294

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lucille 1-6I (Existi.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 641-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,900.0	6,685.5	6,783.9	6,657.6	121.8	15.7	90.40	-608.3	4,978.4	744.2	607.8	136.40	5.456		
11,000.0	6,684.5	6,784.0	6,657.7	124.6	15.7	90.43	-608.3	4,978.4	648.4	509.2	139.19	4.658		
11,100.0	6,683.4	6,784.2	6,657.8	127.3	15.7	90.47	-608.3	4,978.4	554.1	412.1	141.98	3.902		
11,200.0	6,682.4	6,784.3	6,658.0	130.1	15.7	90.50	-608.3	4,978.4	462.1	317.4	144.76	3.192		
11,300.0	6,681.4	6,784.4	6,658.1	132.9	15.7	90.54	-608.3	4,978.4	374.4	226.8	147.55	2.537		
11,400.0	6,680.4	6,784.6	6,658.2	135.7	15.7	90.58	-608.3	4,978.4	294.5	144.1	150.34	1.959		
11,500.0	6,679.4	6,784.7	6,658.4	138.5	15.7	90.62	-608.3	4,978.4	230.9	77.7	153.13	1.508		
11,600.0	6,678.4	6,784.8	6,658.5	141.3	15.7	90.65	-608.3	4,978.4	199.7	43.8	155.93	1.281	Level 3	
11,617.1	6,678.2	6,784.8	6,658.5	141.8	15.7	90.66	-608.3	4,978.4	199.0	42.6	156.40	1.272	Level 3, CC, ES, SF	
11,700.0	6,677.4	6,785.0	6,658.6	144.1	15.7	90.69	-608.3	4,978.4	215.5	56.8	158.72	1.358	Level 3	
11,800.0	6,676.4	6,785.1	6,658.8	146.9	15.7	90.73	-608.3	4,978.4	270.3	108.7	161.51	1.673		
11,900.0	6,675.4	6,785.2	6,658.9	149.7	15.7	90.78	-608.3	4,978.4	345.9	181.6	164.30	2.105		
12,000.0	6,674.3	6,785.4	6,659.1	152.5	15.7	90.82	-608.3	4,978.4	431.5	264.4	167.09	2.582		
12,100.0	6,673.3	6,785.5	6,659.2	155.3	15.7	90.86	-608.3	4,978.4	522.3	352.4	169.89	3.074		
12,200.0	6,672.3	6,785.7	6,659.3	158.1	15.7	90.90	-608.3	4,978.4	615.9	443.2	172.68	3.567		
12,300.0	6,671.3	6,785.8	6,659.5	160.9	15.7	90.95	-608.3	4,978.4	711.3	535.8	175.47	4.054		
12,400.0	6,670.3	6,786.0	6,659.7	163.7	15.7	90.99	-608.3	4,978.4	807.8	629.5	178.27	4.531		
12,500.0	6,669.3	6,786.1	6,659.8	166.5	15.7	91.04	-608.3	4,978.4	905.0	724.0	181.06	4.999		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lucille 20-1 (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	
10,200.0	6,692.6	6,676.6	6,675.0	102.3	11.6	-91.32	90.7	4,354.1	937.3	823.5	113.85	8.233	
10,300.0	6,691.5	6,676.9	6,675.4	105.1	11.6	-91.36	90.7	4,354.1	854.4	737.8	116.62	7.326	
10,400.0	6,690.5	6,677.3	6,675.7	107.8	11.6	-91.40	90.6	4,354.1	775.5	656.1	119.40	6.495	
10,500.0	6,689.5	6,677.7	6,676.1	110.6	11.6	-91.44	90.6	4,354.1	702.1	579.9	122.19	5.746	
10,600.0	6,688.5	6,678.0	6,676.5	113.4	11.6	-91.48	90.6	4,354.1	635.9	510.9	124.97	5.089	
10,700.0	6,687.5	6,678.4	6,676.8	116.2	11.6	-91.53	90.6	4,354.2	579.5	451.8	127.75	4.536	
10,800.0	6,686.5	6,678.8	6,677.2	119.0	11.7	-91.57	90.6	4,354.2	536.0	405.5	130.54	4.106	
10,900.0	6,685.5	6,679.1	6,677.6	121.8	11.7	-91.61	90.6	4,354.2	508.7	375.4	133.32	3.815	
10,992.7	6,684.5	6,679.5	6,677.9	124.4	11.7	-91.65	90.6	4,354.2	500.2	364.2	135.90	3.680 CC	
11,000.0	6,684.5	6,679.5	6,677.9	124.6	11.7	-91.65	90.6	4,354.2	500.2	364.1	136.11	3.675 ES, SF	
11,100.0	6,683.4	6,679.9	6,678.3	127.3	11.7	-91.69	90.6	4,354.2	511.5	372.6	138.89	3.683	
11,200.0	6,682.4	6,680.2	6,678.7	130.1	11.7	-91.74	90.6	4,354.2	541.4	399.7	141.68	3.821	
11,300.0	6,681.4	6,680.6	6,679.1	132.9	11.7	-91.78	90.6	4,354.2	587.0	442.5	144.47	4.063	
11,400.0	6,680.4	6,681.0	6,679.4	135.7	11.7	-91.82	90.5	4,354.2	645.0	497.8	147.26	4.380	
11,500.0	6,679.4	6,681.3	6,679.8	138.5	11.7	-91.86	90.5	4,354.2	712.4	562.3	150.05	4.748	
11,600.0	6,678.4	6,681.7	6,680.2	141.3	11.7	-91.90	90.5	4,354.2	786.7	633.9	152.84	5.148	
11,700.0	6,677.4	6,682.1	6,680.5	144.1	11.7	-91.95	90.5	4,354.2	866.3	710.6	155.63	5.566	
11,800.0	6,676.4	6,682.5	6,680.9	146.9	11.7	-91.99	90.5	4,354.2	949.7	791.3	158.42	5.995	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Paige 1 (D&A) (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7003-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,500.0	6,719.9	6,693.9	6,693.9	29.6	133.9	-91.10	43.8	1,719.8	970.6	807.4	163.22	5.947		
7,600.0	6,718.9	6,692.9	6,692.9	32.0	133.9	-90.97	43.8	1,719.8	883.4	717.8	165.65	5.333		
7,700.0	6,717.9	6,691.9	6,691.9	34.5	133.8	-90.84	43.8	1,719.8	799.2	631.1	168.14	4.753		
7,800.0	6,716.9	6,690.9	6,690.9	37.0	133.8	-90.71	43.8	1,719.8	719.1	548.4	170.67	4.213		
7,900.0	6,715.8	6,689.8	6,689.8	39.6	133.8	-90.59	43.8	1,719.8	644.5	471.3	173.24	3.721		
8,000.0	6,714.8	6,688.8	6,688.8	42.2	133.8	-90.46	43.8	1,719.8	577.7	401.9	175.83	3.286		
8,100.0	6,713.8	6,687.8	6,687.8	44.8	133.8	-90.33	43.8	1,719.8	521.6	343.2	178.45	2.923		
8,200.0	6,712.8	6,686.8	6,686.8	47.5	133.7	-90.20	43.8	1,719.8	480.0	298.9	181.09	2.651		
8,300.0	6,711.8	6,685.8	6,685.8	50.2	133.7	-90.07	43.8	1,719.8	456.9	273.2	183.74	2.487		
8,358.4	6,711.2	6,685.2	6,685.2	51.7	133.7	-90.00	43.8	1,719.8	453.1	267.9	185.29	2.446 CC, ES		
8,400.0	6,710.8	6,684.8	6,684.8	52.8	133.7	-89.95	43.8	1,719.8	455.1	268.6	186.40	2.441 SF		
8,500.0	6,709.8	6,683.8	6,683.8	55.5	133.7	-89.82	43.8	1,719.8	474.8	285.7	189.08	2.511		
8,600.0	6,708.8	6,682.8	6,682.8	58.2	133.7	-89.69	43.8	1,719.8	513.5	321.8	191.77	2.678		
8,700.0	6,707.7	6,681.7	6,681.7	61.0	133.6	-89.56	43.8	1,719.8	567.5	373.0	194.46	2.918		
8,800.0	6,706.7	6,680.7	6,680.7	63.7	133.6	-89.43	43.8	1,719.8	632.7	435.6	197.16	3.209		
8,900.0	6,705.7	6,679.7	6,679.7	66.4	133.6	-89.31	43.8	1,719.8	706.2	506.3	199.87	3.533		
9,000.0	6,704.7	6,678.7	6,678.7	69.1	133.6	-89.18	43.8	1,719.8	785.5	582.9	202.58	3.877		
9,100.0	6,703.7	6,677.7	6,677.7	71.9	133.6	-89.05	43.8	1,719.8	869.1	663.8	205.30	4.233		
9,200.0	6,702.7	6,676.7	6,676.7	74.6	133.5	-88.92	43.8	1,719.8	955.8	747.8	208.02	4.595		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Pigeon 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		
8,900.0	6,705.7	6,639.6	6,638.8	66.4	12.1	-85.23	69.3	3,047.2	921.3	843.3	78.05	11.804		
9,000.0	6,704.7	6,642.7	6,641.9	69.1	12.1	-85.60	69.4	3,047.3	837.6	756.8	80.84	10.362		
9,100.0	6,703.7	6,645.8	6,645.0	71.9	12.1	-85.97	69.6	3,047.4	757.9	674.2	83.62	9.063		
9,200.0	6,702.7	6,648.8	6,648.0	74.6	12.1	-86.33	69.7	3,047.6	683.4	597.0	86.41	7.909		
9,300.0	6,701.7	6,651.8	6,651.0	77.4	12.1	-86.69	69.8	3,047.7	616.3	527.0	89.20	6.908		
9,400.0	6,700.7	6,654.8	6,654.0	80.1	12.1	-87.04	69.9	3,047.8	559.0	467.0	92.00	6.076		
9,500.0	6,699.6	6,657.7	6,656.9	82.9	12.1	-87.39	70.0	3,047.9	514.9	420.1	94.79	5.432		
9,600.0	6,698.6	6,660.6	6,659.8	85.7	12.1	-87.73	70.1	3,048.0	487.6	390.0	97.59	4.997		
9,686.9	6,697.8	6,663.0	6,662.2	88.1	12.1	-88.03	70.1	3,048.1	479.8	379.8	100.02	4.797 CC		
9,700.0	6,697.6	6,663.4	6,662.6	88.4	12.1	-88.07	70.2	3,048.1	480.0	379.6	100.38	4.781 ES		
9,800.0	6,696.6	6,666.2	6,665.4	91.2	12.1	-88.40	70.3	3,048.2	492.9	389.8	103.18	4.778 SF		
9,900.0	6,695.6	6,669.0	6,668.1	94.0	12.1	-88.73	70.4	3,048.3	525.0	419.0	105.97	4.954		
10,000.0	6,694.6	6,671.7	6,670.9	96.7	12.1	-89.06	70.4	3,048.5	572.8	464.1	108.77	5.267		
10,100.0	6,693.6	6,674.4	6,673.6	99.5	12.1	-89.38	70.5	3,048.6	633.0	521.5	111.56	5.674		
10,200.0	6,692.6	6,677.0	6,676.2	102.3	12.1	-89.70	70.6	3,048.7	702.3	588.0	114.35	6.142		
10,300.0	6,691.5	6,679.7	6,678.8	105.1	12.1	-90.01	70.7	3,048.8	778.3	661.2	117.14	6.644		
10,400.0	6,690.5	6,682.3	6,681.4	107.8	12.2	-90.32	70.8	3,048.8	859.3	739.3	119.93	7.165		
10,500.0	6,689.5	6,684.8	6,684.0	110.6	12.2	-90.62	70.9	3,048.9	943.8	821.1	122.71	7.691		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Pigeon 1-6B (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 487-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						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		
8,100.0	6,713.8	6,807.4	6,684.4	44.8	16.3	89.70	-604.2	2,390.8	949.6	889.4	60.18	15.779		
8,200.0	6,712.8	6,807.0	6,684.0	47.5	16.3	89.59	-604.2	2,390.8	852.0	789.1	62.84	13.558		
8,300.0	6,711.8	6,806.7	6,683.6	50.2	16.3	89.48	-604.2	2,390.8	755.0	689.4	65.52	11.523		
8,400.0	6,710.8	6,805.0	6,682.0	52.8	16.3	88.99	-604.2	2,390.8	658.8	590.6	68.22	9.658		
8,500.0	6,709.8	6,805.0	6,682.0	55.5	16.3	88.99	-604.2	2,390.8	564.1	493.2	70.92	7.954		
8,600.0	6,708.8	6,805.0	6,682.0	58.2	16.3	88.99	-604.2	2,390.8	471.5	397.9	73.62	6.404		
8,700.0	6,707.7	6,805.0	6,682.0	61.0	16.3	88.99	-604.2	2,390.8	382.7	306.3	76.34	5.013		
8,800.0	6,706.7	6,805.0	6,682.0	63.7	16.3	88.99	-604.2	2,390.8	301.0	221.9	79.07	3.806		
8,900.0	6,705.7	6,805.0	6,682.0	66.4	16.3	88.99	-604.2	2,390.8	233.9	152.1	81.80	2.859		
9,000.0	6,704.7	6,805.0	6,682.0	69.1	16.3	88.99	-604.2	2,390.8	197.0	112.5	84.54	2.331		
9,029.4	6,704.4	6,805.0	6,682.0	70.0	16.3	88.99	-604.2	2,390.8	194.8	109.5	85.35	2.283 CC, ES, SF		
9,100.0	6,703.7	6,803.6	6,680.6	71.9	16.3	88.57	-604.1	2,390.8	207.2	119.9	87.29	2.374		
9,200.0	6,702.7	6,803.2	6,680.2	74.6	16.3	88.46	-604.1	2,390.8	259.0	168.9	90.04	2.876		
9,300.0	6,701.7	6,802.8	6,679.8	77.4	16.3	88.35	-604.1	2,390.8	333.4	240.7	92.79	3.593		
9,400.0	6,700.7	6,802.4	6,679.4	80.1	16.3	88.24	-604.1	2,390.7	418.7	323.2	95.55	4.382		
9,500.0	6,699.6	6,802.1	6,679.0	82.9	16.3	88.12	-604.1	2,390.7	509.3	411.0	98.31	5.181		
9,600.0	6,698.6	6,801.7	6,678.7	85.7	16.3	88.01	-604.1	2,390.7	603.0	501.9	101.07	5.966		
9,700.0	6,697.6	6,801.3	6,678.3	88.4	16.3	87.90	-604.1	2,390.7	698.3	594.5	103.83	6.726		
9,800.0	6,696.6	6,800.9	6,677.9	91.2	16.3	87.79	-604.1	2,390.7	794.9	688.3	106.60	7.457		
9,900.0	6,695.6	6,800.5	6,677.5	94.0	16.3	87.68	-604.1	2,390.7	892.1	782.8	109.36	8.158		
10,000.0	6,694.6	6,800.1	6,677.1	96.7	16.3	87.56	-604.0	2,390.7	990.0	877.8	112.13	8.829		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Pigeon 5-JAN (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	
9,400.0	6,700.7	6,659.6	6,658.3	80.1	11.6	86.31	-609.3	3,697.3	957.3	865.8	91.51	10.462	
9,500.0	6,699.6	6,660.6	6,659.3	82.9	11.6	86.60	-609.3	3,697.4	859.8	765.5	94.29	9.119	
9,600.0	6,698.6	6,661.6	6,660.3	85.7	11.6	86.89	-609.3	3,697.4	762.9	665.8	97.07	7.859	
9,700.0	6,697.6	6,662.6	6,661.3	88.4	11.6	87.17	-609.3	3,697.4	666.9	567.1	99.86	6.679	
9,800.0	6,696.6	6,663.6	6,662.3	91.2	11.6	87.46	-609.4	3,697.4	572.3	469.7	102.64	5.576	
9,900.0	6,695.6	6,664.6	6,663.3	94.0	11.6	87.75	-609.4	3,697.4	479.9	374.5	105.43	4.552	
10,000.0	6,694.6	6,665.6	6,664.3	96.7	11.6	88.04	-609.4	3,697.5	391.2	283.0	108.22	3.615	
10,100.0	6,693.6	6,666.6	6,665.3	99.5	11.6	88.33	-609.4	3,697.5	309.6	198.6	111.01	2.789	
10,200.0	6,692.6	6,667.6	6,666.3	102.3	11.6	88.62	-609.4	3,697.5	242.1	128.3	113.80	2.127	
10,300.0	6,691.5	6,668.6	6,667.4	105.1	11.6	88.90	-609.4	3,697.5	203.4	86.8	116.59	1.744	
10,336.2	6,691.2	6,669.0	6,667.7	106.1	11.6	89.01	-609.4	3,697.5	200.1	82.5	117.60	1.702 CC, ES, SF	
10,400.0	6,690.5	6,669.6	6,668.4	107.8	11.6	89.19	-609.5	3,697.5	210.0	90.7	119.38	1.759	
10,500.0	6,689.5	6,670.6	6,669.4	110.6	11.6	89.48	-609.5	3,697.6	258.6	136.4	122.16	2.117	
10,600.0	6,688.5	6,671.7	6,670.4	113.4	11.6	89.77	-609.5	3,697.6	331.1	206.1	124.95	2.650	
10,700.0	6,687.5	6,672.7	6,671.4	116.2	11.6	90.05	-609.5	3,697.6	415.2	287.4	127.73	3.250	
10,800.0	6,686.5	6,673.7	6,672.4	119.0	11.6	90.34	-609.5	3,697.6	505.1	374.6	130.52	3.870	
10,900.0	6,685.5	6,674.7	6,673.4	121.8	11.6	90.63	-609.5	3,697.6	598.2	464.9	133.30	4.488	
11,000.0	6,684.5	6,675.7	6,674.4	124.6	11.6	90.91	-609.6	3,697.7	693.3	557.2	136.08	5.095	
11,100.0	6,683.4	6,676.7	6,675.4	127.3	11.6	91.20	-609.6	3,697.7	789.5	650.7	138.85	5.686	
11,200.0	6,682.4	6,677.7	6,676.4	130.1	11.6	91.49	-609.6	3,697.7	886.6	745.0	141.63	6.260	
11,300.0	6,681.4	6,678.7	6,677.4	132.9	11.6	91.77	-609.6	3,697.7	984.3	839.9	144.40	6.817	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Seth 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	
0.0	0.0	0.0	0.0	0.0	0.0	74.70	149.4	546.0	566.2				
100.0	100.0	82.9	82.9	0.1	0.1	74.73	149.1	546.3	566.3	566.1	0.22	2,544.413	
200.0	200.0	186.1	186.1	0.3	0.4	74.83	148.2	546.9	566.6	566.0	0.69	824.422	
300.0	300.0	287.8	287.7	0.6	0.6	74.96	147.0	547.0	566.4	565.3	1.17	485.089	
400.0	400.0	389.4	389.4	0.8	0.9	75.09	145.6	546.9	566.0	564.3	1.65	343.443	
466.5	466.5	452.6	452.5	0.9	1.0	75.17	144.8	546.9	565.8	563.8	1.96	289.322	
500.0	500.0	483.9	483.9	1.0	1.1	75.21	144.5	547.1	565.8	563.7	2.11	268.296	
600.0	600.0	583.0	582.9	1.2	1.4	75.35	143.2	547.9	566.4	563.8	2.59	218.892	
700.0	700.0	686.9	686.8	1.5	1.6	75.57	141.2	548.7	566.6	563.5	3.08	183.693	
742.1	742.1	728.2	728.1	1.6	1.7	75.66	140.3	548.9	566.6	563.3	3.29	172.356	
800.0	800.0	783.4	783.3	1.7	1.9	75.76	139.4	549.3	566.7	563.1	3.56	159.128	
900.0	900.0	888.5	888.4	1.9	2.1	75.94	137.7	549.9	566.9	562.8	4.06	139.724	
991.4	991.4	977.5	977.4	2.1	2.4	76.11	136.0	550.0	566.6	562.1	4.49	126.058	
1,000.0	1,000.0	985.8	985.7	2.1	2.4	76.13	135.9	550.1	566.6	562.1	4.54	124.922	
1,100.0	1,100.0	1,091.4	1,091.2	2.4	2.7	76.31	134.0	550.2	566.3	561.3	5.03	112.603	
1,200.0	1,200.0	1,186.7	1,186.5	2.6	2.9	76.46	132.4	550.0	565.7	560.2	5.50	102.926	
1,300.0	1,300.0	1,292.2	1,292.0	2.8	3.2	76.57	131.3	549.8	565.3	559.3	5.97	94.734	
1,400.0	1,400.0	1,386.5	1,386.4	3.0	3.4	76.64	130.5	549.3	564.6	558.2	6.41	88.090	
1,500.0	1,500.0	1,488.5	1,488.4	3.3	3.6	76.73	129.6	549.4	564.5	557.6	6.90	81.861	
1,534.2	1,534.2	1,522.6	1,522.4	3.3	3.7	-130.75	129.1	549.3	564.4	557.3	7.05	80.023	
1,600.0	1,600.0	1,586.8	1,586.7	3.5	3.9	-130.75	128.5	549.3	564.7	557.4	7.35	76.832	
1,700.0	1,700.0	1,693.6	1,693.4	3.6	4.1	-130.89	127.8	548.8	565.8	558.1	7.77	72.811	
1,800.0	1,799.9	1,788.3	1,788.1	3.8	4.4	-131.11	126.8	548.2	567.8	559.6	8.17	69.521	
1,900.0	1,899.7	1,895.0	1,894.8	4.0	4.6	-131.47	125.5	547.5	570.9	562.3	8.60	66.390	
2,000.0	1,999.4	1,990.2	1,990.0	4.2	4.8	-131.88	124.1	546.6	574.9	565.9	9.01	63.793	
2,100.0	2,098.9	2,094.1	2,093.8	4.4	5.1	-132.39	122.0	546.0	580.3	570.8	9.47	61.262	
2,200.0	2,198.3	2,195.7	2,195.4	4.6	5.4	-132.97	119.5	544.9	586.2	576.3	9.93	59.039	
2,295.7	2,293.1	2,291.5	2,291.2	4.9	5.6	-133.67	117.7	543.4	592.9	582.6	10.35	57.294	
2,300.0	2,297.4	2,295.8	2,295.5	4.9	5.6	-133.71	117.6	543.3	593.2	582.9	10.37	57.217	
2,400.0	2,396.4	2,395.8	2,395.4	5.1	5.8	-134.56	115.9	541.7	600.8	590.0	10.82	55.526	
2,500.0	2,495.5	2,499.4	2,499.0	5.4	6.0	-135.39	113.8	539.6	608.1	596.9	11.29	53.846	
2,600.0	2,594.5	2,590.9	2,590.5	5.7	6.2	-136.17	112.7	537.8	615.9	604.1	11.71	52.583	
2,700.0	2,693.6	2,690.2	2,689.8	6.0	6.4	-137.04	112.1	536.4	624.4	612.2	12.15	51.388	
2,800.0	2,792.6	2,785.8	2,785.4	6.2	6.6	-137.85	111.5	535.2	633.2	620.7	12.58	50.351	
2,900.0	2,891.6	2,887.6	2,887.1	6.5	6.8	-138.72	111.4	533.9	642.4	629.4	13.00	49.433	
3,000.0	2,990.7	2,987.1	2,986.6	6.8	7.0	-139.53	110.9	532.5	651.4	637.9	13.45	48.447	
3,100.0	3,089.7	3,080.8	3,080.4	7.2	7.2	-140.23	110.1	531.6	660.9	646.9	13.92	47.464	
3,200.0	3,188.7	3,180.7	3,180.2	7.5	7.4	-140.98	109.7	531.0	670.9	656.5	14.39	46.620	
3,300.0	3,287.8	3,285.4	3,284.9	7.8	7.6	-141.77	109.4	529.8	680.6	665.8	14.85	45.827	
3,400.0	3,386.8	3,388.8	3,388.4	8.1	7.9	-142.47	108.1	528.2	689.6	674.3	15.35	44.930	
3,500.0	3,485.9	3,495.6	3,495.0	8.4	8.1	-143.17	106.4	525.7	697.9	682.1	15.86	44.014	
3,600.0	3,584.9	3,598.2	3,597.6	8.7	8.4	-143.83	104.4	522.6	705.5	689.2	16.35	43.142	
3,700.0	3,683.9	3,691.0	3,690.3	9.1	8.6	-144.39	102.5	520.1	713.4	696.6	16.84	42.377	
3,800.0	3,783.0	3,789.5	3,788.8	9.4	8.8	-145.01	101.2	517.7	722.0	704.7	17.32	41.690	
3,900.0	3,882.0	3,892.0	3,891.3	9.7	9.1	-145.67	100.0	514.9	730.5	712.7	17.81	41.025	
4,000.0	3,981.0	3,984.1	3,983.3	10.0	9.3	-146.23	98.8	512.7	739.3	721.0	18.28	40.447	
4,100.0	4,080.1	4,077.2	4,076.5	10.4	9.5	-146.79	98.1	511.2	749.1	730.3	18.75	39.948	
4,200.0	4,179.1	4,178.6	4,177.8	10.7	9.8	-147.39	97.6	509.9	759.3	740.1	19.23	39.483	
4,300.0	4,278.2	4,275.9	4,275.1	11.0	10.0	-147.96	97.1	508.3	769.4	749.7	19.71	39.041	
4,400.0	4,377.2	4,379.0	4,378.2	11.4	10.2	-148.49	95.9	507.2	779.7	759.5	20.22	38.559	
4,500.0	4,476.2	4,474.1	4,473.3	11.7	10.5	-148.97	94.8	505.8	789.7	769.0	20.71	38.136	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Seth 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	
4,600.0	4,575.3	4,576.2	4,575.3	12.0	10.7	-149.51	94.2	504.5	800.3	779.1	21.20	37.748	
4,700.0	4,674.3	4,674.2	4,673.3	12.4	10.9	-150.04	93.8	502.7	810.5	788.8	21.66	37.418	
4,800.0	4,773.3	4,773.8	4,773.0	12.7	11.2	-150.60	93.8	500.8	821.0	798.9	22.11	37.124	
4,900.0	4,872.4	4,866.5	4,865.6	13.1	11.3	-151.08	93.6	499.4	831.7	809.1	22.55	36.888	
5,000.0	4,971.4	4,962.6	4,961.7	13.4	11.5	-151.57	94.0	498.5	843.3	820.4	22.95	36.747	
5,032.4	5,003.5	4,995.0	4,994.1	13.5	11.5	-151.75	94.3	498.1	847.1	824.0	23.07	36.711	
5,100.0	5,070.6	5,061.2	5,060.2	13.7	11.6	-152.16	95.0	497.2	854.3	831.0	23.33	36.614	
5,200.0	5,170.1	5,158.8	5,157.9	13.9	11.7	-152.66	96.3	495.9	862.7	839.0	23.66	36.454	
5,300.0	5,269.9	5,256.0	5,255.1	14.1	11.8	-153.09	98.7	494.1	868.2	844.3	23.95	36.243	
5,400.0	5,369.8	5,354.0	5,352.9	14.3	11.9	-153.51	102.7	491.5	870.9	846.7	24.21	35.975	
5,430.2	5,400.0	5,383.9	5,382.7	14.4	12.0	53.88	104.1	490.6	871.2	845.3	25.86	33.691	
5,500.0	5,469.8	5,457.6	5,456.3	14.5	12.1	53.59	107.9	488.0	871.3	845.3	26.07	33.424	
5,583.4	5,553.2	5,540.6	5,539.2	14.6	12.2	53.25	111.9	484.8	871.2	844.9	26.31	33.107	
5,600.0	5,569.8	5,556.0	5,554.5	14.6	12.2	53.19	112.7	484.3	871.2	844.8	26.36	33.049	
5,700.0	5,669.8	5,650.2	5,648.6	14.8	12.3	52.86	117.0	481.6	871.7	845.1	26.64	32.721	
5,800.0	5,769.8	5,751.9	5,750.2	14.9	12.4	52.57	121.0	479.8	872.6	845.7	26.93	32.408	
5,900.0	5,869.8	5,850.4	5,848.7	15.1	12.5	52.41	123.3	478.6	873.1	845.9	27.20	32.102	
5,989.2	5,959.1	5,934.0	5,932.3	15.2	12.6	52.32	125.0	478.6	874.2	846.8	27.42	31.883	
6,000.0	5,969.8	5,944.6	5,942.8	15.3	12.6	-37.69	125.2	478.6	874.3	848.5	25.86	33.808	
6,050.0	6,019.8	5,993.6	5,991.9	15.3	12.6	-37.90	126.5	478.6	873.2	847.4	25.87	33.749	
6,100.0	6,069.4	6,047.8	6,046.0	15.4	12.7	-38.40	127.9	478.4	869.5	843.7	25.83	33.659	
6,150.0	6,118.6	6,100.0	6,098.2	15.4	12.7	-39.17	129.1	478.0	863.0	837.3	25.73	33.544	
6,200.0	6,167.2	6,146.7	6,144.9	15.5	12.8	-40.16	130.1	477.7	854.0	828.4	25.56	33.408	
6,250.0	6,214.8	6,191.0	6,189.2	15.5	12.8	-41.39	131.1	477.5	842.8	817.5	25.36	33.239	
6,300.0	6,261.3	6,235.2	6,233.4	15.5	12.8	-42.90	132.1	477.5	829.6	804.5	25.13	33.015	
6,350.0	6,306.6	6,278.3	6,276.4	15.6	12.9	-44.73	133.4	477.5	814.5	789.5	24.91	32.700	
6,400.0	6,350.3	6,322.6	6,320.8	15.6	12.9	-46.94	134.9	477.3	797.5	772.8	24.74	32.240	
6,450.0	6,392.4	6,367.9	6,366.0	15.6	13.0	-49.60	136.3	477.1	778.8	754.1	24.66	31.581	
6,500.0	6,432.6	6,409.7	6,407.7	15.6	13.0	-52.55	137.6	476.6	758.5	733.8	24.70	30.710	
6,550.0	6,470.8	6,445.9	6,443.9	15.6	13.1	-55.65	138.7	476.3	737.1	712.2	24.87	29.641	
6,600.0	6,506.8	6,480.2	6,478.2	15.6	13.1	-59.02	139.7	476.2	715.1	689.9	25.20	28.375	
6,650.0	6,540.5	6,513.0	6,511.0	15.7	13.1	-62.62	140.6	476.1	692.7	667.0	25.71	26.949	
6,700.0	6,571.6	6,544.3	6,542.3	15.7	13.2	-66.42	141.5	476.1	670.4	644.1	26.37	25.427	
6,750.0	6,600.2	6,573.2	6,571.2	15.8	13.2	-70.26	142.2	476.3	648.6	621.4	27.15	23.885	
6,800.0	6,626.0	6,599.6	6,597.6	16.1	13.2	-74.03	142.8	476.4	627.7	599.7	28.03	22.396	
6,850.0	6,648.9	6,624.1	6,622.0	16.6	13.2	-77.68	143.3	476.6	608.4	579.4	28.96	21.008	
6,900.0	6,668.9	6,645.3	6,643.2	17.3	13.3	-80.98	143.7	476.7	591.1	561.2	29.91	19.765	
6,950.0	6,685.8	6,663.1	6,661.1	18.0	13.3	-83.82	144.1	476.7	576.6	545.7	30.86	18.685	
7,000.0	6,699.7	6,677.6	6,675.5	18.9	13.3	-86.11	144.4	476.8	565.3	533.5	31.81	17.770	
7,050.0	6,710.3	6,688.6	6,686.6	19.8	13.3	-87.80	144.6	476.8	557.7	525.0	32.78	17.017	
7,100.0	6,717.8	6,696.3	6,694.3	20.7	13.3	-88.84	144.7	476.7	554.3	520.6	33.76	16.420	
7,114.2	6,719.3	6,697.8	6,695.8	21.0	13.3	-89.01	144.7	476.7	554.2	520.1	34.05	16.276 CC, ES	
7,150.0	6,722.0	6,700.6	6,698.5	21.7	13.3	-89.21	144.8	476.7	555.3	520.5	34.77	15.971	
7,197.0	6,723.0	6,701.5	6,699.5	22.7	13.3	-88.94	144.8	476.7	560.2	524.5	35.73	15.679	
7,200.0	6,722.9	6,701.5	6,699.5	22.7	13.3	-88.93	144.8	476.7	560.7	524.9	35.79	15.664	
7,300.0	6,721.9	6,700.3	6,698.2	24.9	13.3	-88.81	144.8	476.7	584.2	546.2	37.96	15.390 SF	
7,400.0	6,720.9	6,699.1	6,697.1	27.2	13.3	-88.69	144.7	476.7	623.1	582.8	40.24	15.483	
7,500.0	6,719.9	6,698.0	6,696.0	29.6	13.3	-88.57	144.7	476.7	674.6	632.0	42.62	15.831	
7,600.0	6,718.9	6,696.9	6,694.9	32.0	13.3	-88.46	144.7	476.7	736.2	691.2	45.06	16.339	
7,700.0	6,717.9	6,695.8	6,693.8	34.5	13.3	-88.35	144.7	476.8	805.6	758.0	47.56	16.939	
7,800.0	6,716.9	6,694.7	6,692.7	37.0	13.3	-88.24	144.7	476.8	880.9	830.8	50.10	17.581	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design												Klein (Existing) Sec.19-T5N-R64W - Seth 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor							
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)								
7,900.0	6,715.8	6,693.7	6,691.7	39.6	13.3	-88.13	144.6	476.8	960.6	908.0	52.68	18.235							

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	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)	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	-89.99	0.0	-30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-30.6	30.6	30.4	0.22	136.328	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-30.6	30.6	30.0	0.67	45.443	
300.0	300.0	300.0	300.0	0.6	0.6	-89.99	0.0	-30.6	30.6	29.5	1.12	27.266	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-30.6	30.6	29.1	1.57	19.475	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-30.6	30.6	28.6	2.02	15.148	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-30.6	30.6	28.2	2.47	12.393	
700.0	700.0	700.0	700.0	1.5	1.5	-89.99	0.0	-30.6	30.6	27.7	2.92	10.487	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-30.6	30.6	27.3	3.37	9.089	
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-30.6	30.6	26.8	3.82	8.019	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-30.6	30.6	26.4	4.27	7.175	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.99	0.0	-30.6	30.6	25.9	4.72	6.492	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.99	0.0	-30.6	30.6	25.5	5.17	5.927 CC	
1,300.0	1,300.0	1,299.7	1,299.7	2.8	2.8	-88.59	0.8	-31.1	31.1	25.5	5.62	5.533 ES	
1,400.0	1,400.0	1,399.4	1,399.4	3.0	3.0	-84.64	3.0	-32.3	32.5	26.4	6.06	5.358	
1,500.0	1,500.0	1,498.9	1,498.8	3.3	3.3	-78.81	6.8	-34.4	35.1	28.6	6.51	5.398	
1,600.0	1,600.0	1,598.3	1,598.0	3.5	3.5	81.62	12.1	-37.4	39.2	32.3	6.93	5.660	
1,700.0	1,700.0	1,697.2	1,696.6	3.6	3.7	91.36	18.8	-41.1	45.3	38.0	7.32	6.189	
1,800.0	1,799.9	1,795.7	1,794.6	3.8	3.9	101.12	27.0	-45.7	54.3	46.6	7.73	7.032	
1,900.0	1,899.7	1,894.3	1,892.7	4.0	4.2	109.66	36.3	-50.9	66.3	58.2	8.14	8.146	
2,000.0	1,999.4	1,992.9	1,990.7	4.2	4.4	116.62	45.7	-56.1	80.2	71.6	8.56	9.366	
2,100.0	2,098.9	2,091.3	2,088.5	4.4	4.7	122.32	55.1	-61.3	95.8	86.8	8.98	10.660	
2,200.0	2,198.3	2,189.4	2,186.0	4.6	5.0	127.08	64.4	-66.5	113.1	103.7	9.41	12.015	
2,295.7	2,293.1	2,282.9	2,279.0	4.9	5.2	130.93	73.3	-71.5	131.3	121.5	9.83	13.354	
2,300.0	2,297.4	2,287.2	2,283.2	4.9	5.2	131.10	73.7	-71.7	132.2	122.3	9.85	13.416	
2,400.0	2,396.4	2,384.8	2,380.2	5.1	5.5	134.42	82.9	-76.9	152.3	142.0	10.30	14.780	
2,500.0	2,495.5	2,482.4	2,477.3	5.4	5.8	136.97	92.2	-82.0	172.8	162.0	10.76	16.055	
2,600.0	2,594.5	2,580.0	2,574.3	5.7	6.0	138.98	101.5	-87.2	193.5	182.3	11.22	17.241	
2,700.0	2,693.6	2,677.7	2,671.4	6.0	6.3	140.59	110.8	-92.4	214.5	202.8	11.69	18.343	
2,800.0	2,792.6	2,775.3	2,768.4	6.2	6.6	141.92	120.0	-97.6	235.5	223.4	12.16	19.364	
2,900.0	2,891.6	2,872.9	2,865.4	6.5	6.9	143.04	129.3	-102.7	256.7	244.1	12.64	20.312	
3,000.0	2,990.7	2,970.5	2,962.5	6.8	7.1	143.98	138.6	-107.9	277.9	264.8	13.12	21.192	
3,100.0	3,089.7	3,068.1	3,059.5	7.2	7.4	144.79	147.9	-113.1	299.3	285.7	13.60	22.011	
3,200.0	3,188.7	3,165.8	3,156.6	7.5	7.7	145.49	157.1	-118.2	320.6	306.5	14.08	22.774	
3,300.0	3,287.8	3,263.4	3,253.6	7.8	8.0	146.10	166.4	-123.4	342.0	327.5	14.56	23.485	
3,400.0	3,386.8	3,361.0	3,350.7	8.1	8.3	146.64	175.7	-128.6	363.4	348.4	15.05	24.150	
3,500.0	3,485.9	3,458.6	3,447.7	8.4	8.5	147.12	185.0	-133.8	384.9	369.4	15.54	24.772	
3,600.0	3,584.9	3,556.3	3,544.7	8.7	8.8	147.55	194.2	-138.9	406.4	390.4	16.03	25.355	
3,700.0	3,683.9	3,653.9	3,641.8	9.1	9.1	147.94	203.5	-144.1	427.9	411.4	16.52	25.903	
3,800.0	3,783.0	3,751.5	3,738.8	9.4	9.4	148.29	212.8	-149.3	449.4	432.4	17.01	26.418	
3,900.0	3,882.0	3,849.1	3,835.9	9.7	9.7	148.61	222.1	-154.4	470.9	453.4	17.51	26.903	
4,000.0	3,981.0	3,946.7	3,932.9	10.0	10.0	148.90	231.3	-159.6	492.5	474.5	18.00	27.360	
4,100.0	4,080.1	4,044.4	4,030.0	10.4	10.2	149.17	240.6	-164.8	514.1	495.6	18.50	27.792	
4,200.0	4,179.1	4,142.0	4,127.0	10.7	10.5	149.41	249.9	-170.0	535.6	516.6	18.99	28.200	
4,300.0	4,278.2	4,239.6	4,224.0	11.0	10.8	149.64	259.2	-175.1	557.2	537.7	19.49	28.587	
4,400.0	4,377.2	4,337.2	4,321.1	11.4	11.1	149.84	268.4	-180.3	578.8	558.8	19.99	28.954	
4,500.0	4,476.2	4,434.9	4,418.1	11.7	11.4	150.04	277.7	-185.5	600.4	579.9	20.49	29.302	
4,600.0	4,575.3	4,532.5	4,515.2	12.0	11.7	150.22	287.0	-190.6	622.0	601.0	20.99	29.633	
4,700.0	4,674.3	4,630.1	4,612.2	12.4	12.0	150.39	296.3	-195.8	643.6	622.1	21.49	29.948	
4,800.0	4,773.3	4,727.7	4,709.3	12.7	12.3	150.54	305.5	-201.0	665.2	643.2	21.99	30.248	
4,900.0	4,872.4	4,825.3	4,806.3	13.1	12.5	150.69	314.8	-206.1	686.8	664.3	22.49	30.534	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)													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 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	4,971.4	4,927.2	4,907.5	13.4	12.8	150.84	324.4	-211.5	708.4	685.4	23.00	30.801		
5,032.4	5,003.5	4,967.7	4,947.9	13.5	12.9	150.91	327.8	-213.4	715.0	691.8	23.17	30.861		
5,100.0	5,070.6	5,053.3	5,033.3	13.7	13.1	151.22	333.3	-216.4	726.8	703.3	23.53	30.883		
5,200.0	5,170.1	5,181.4	5,161.3	13.9	13.4	151.63	337.3	-218.7	738.6	714.5	24.01	30.758		
5,300.0	5,269.9	5,290.0	5,269.9	14.1	13.5	151.93	337.5	-218.8	744.3	719.8	24.44	30.458		
5,400.0	5,369.8	5,390.0	5,369.8	14.3	13.7	152.05	337.5	-218.8	746.7	721.9	24.84	30.057		
5,430.2	5,400.0	5,420.1	5,400.0	14.4	13.8	-0.43	337.5	-218.8	746.9	719.7	27.17	27.485		
5,500.0	5,469.8	5,490.0	5,469.8	14.5	13.9	-0.43	337.5	-218.8	746.9	719.5	27.43	27.230		
5,600.0	5,569.8	5,590.0	5,569.8	14.6	14.1	-0.43	337.5	-218.8	746.9	719.1	27.78	26.881		
5,700.0	5,669.8	5,690.0	5,669.8	14.8	14.3	-0.43	337.5	-218.8	746.9	718.7	28.14	26.538		
5,800.0	5,769.8	5,790.0	5,769.8	14.9	14.5	-0.43	337.5	-218.8	746.9	718.4	28.51	26.201		
5,900.0	5,869.8	5,890.0	5,869.8	15.1	14.7	-0.43	337.5	-218.8	746.9	718.0	28.87	25.871		
5,989.2	5,959.1	5,979.2	5,959.1	15.2	14.9	-0.43	337.5	-218.8	746.9	717.7	29.20	25.582		
6,000.0	5,969.8	5,990.1	5,969.9	15.3	14.9	-90.43	337.5	-218.7	746.9	719.7	27.23	27.429		
6,050.0	6,019.8	6,040.4	6,020.2	15.3	14.9	-90.43	337.5	-216.3	746.9	719.5	27.39	27.264		
6,100.0	6,069.4	6,090.8	6,070.2	15.4	15.0	-90.42	337.5	-210.7	746.9	719.3	27.53	27.125		
6,150.0	6,118.6	6,141.2	6,119.8	15.4	15.1	-90.42	337.5	-201.7	746.9	719.2	27.65	27.008		
6,200.0	6,167.2	6,191.5	6,168.6	15.5	15.1	-90.41	337.5	-189.5	746.9	719.1	27.76	26.908		
6,250.0	6,214.8	6,241.9	6,216.6	15.5	15.2	-90.40	337.5	-174.1	746.9	719.0	27.85	26.818		
6,300.0	6,261.3	6,292.2	6,263.4	15.5	15.2	-90.39	337.5	-155.6	746.9	718.9	27.94	26.729		
6,350.0	6,306.6	6,342.5	6,308.8	15.6	15.2	-90.38	337.5	-134.0	746.9	718.8	28.05	26.628		
6,400.0	6,350.3	6,392.9	6,352.8	15.6	15.2	-90.37	337.5	-109.5	746.9	718.7	28.18	26.504		
6,450.0	6,392.4	6,443.2	6,395.0	15.6	15.3	-90.35	337.5	-82.2	746.9	718.5	28.35	26.341		
6,500.0	6,432.6	6,493.5	6,435.3	15.6	15.3	-90.34	337.5	-52.1	746.9	718.3	28.59	26.123		
6,550.0	6,470.8	6,543.7	6,473.6	15.6	15.3	-90.32	337.5	-19.5	746.9	718.0	28.91	25.834		
6,600.0	6,506.8	6,594.0	6,509.6	15.6	15.4	-90.30	337.5	15.5	746.9	717.5	29.33	25.460		
6,650.0	6,540.5	6,644.3	6,543.2	15.7	15.4	-90.28	337.5	52.9	746.9	717.0	29.88	24.993		
6,700.0	6,571.6	6,694.5	6,574.3	15.7	15.7	-90.26	337.5	92.3	746.9	716.3	30.57	24.430		
6,750.0	6,600.2	6,744.7	6,602.7	15.8	16.2	-90.23	337.5	133.7	746.9	715.4	31.42	23.772		
6,800.0	6,626.0	6,794.9	6,628.3	16.1	16.7	-90.21	337.5	176.8	746.9	714.4	32.43	23.032		
6,850.0	6,648.9	6,845.0	6,651.1	16.6	17.3	-90.18	337.5	221.5	746.9	713.3	33.61	22.224		
6,900.0	6,668.9	6,895.2	6,670.8	17.3	18.0	-90.16	337.5	267.6	746.9	711.9	34.95	21.369		
6,950.0	6,685.8	6,945.3	6,687.5	18.0	18.8	-90.13	337.5	314.9	746.9	710.4	36.46	20.487		
7,000.0	6,699.7	6,995.4	6,701.0	18.9	19.6	-90.10	337.5	363.1	746.9	708.8	38.11	19.600		
7,050.0	6,710.3	7,045.5	6,711.3	19.8	20.5	-90.08	337.5	412.1	746.9	707.0	39.89	18.724		
7,100.0	6,717.8	7,095.5	6,718.4	20.7	21.4	-90.05	337.5	461.6	746.9	705.1	41.78	17.875		
7,150.0	6,722.0	7,145.6	6,722.3	21.7	22.4	-90.02	337.5	511.5	746.9	703.1	43.77	17.064		
7,197.0	6,723.0	7,192.5	6,722.9	22.7	23.4	-90.00	337.5	558.5	746.9	701.2	45.70	16.344		
7,200.0	6,722.9	7,195.6	6,722.9	22.7	23.5	-90.00	337.5	561.5	746.9	701.0	45.82	16.298		
7,300.0	6,721.9	7,295.6	6,721.9	24.9	25.6	-90.00	337.5	661.5	746.9	696.7	50.15	14.893		
7,400.0	6,720.9	7,395.6	6,720.8	27.2	27.9	-90.00	337.5	761.5	746.9	692.2	54.71	13.652		
7,500.0	6,719.9	7,495.6	6,719.8	29.6	30.2	-90.00	337.5	861.5	746.9	687.4	59.45	12.563		
7,600.0	6,718.9	7,595.6	6,718.8	32.0	32.7	-90.00	337.5	961.5	746.9	682.5	64.33	11.610		
7,700.0	6,717.9	7,695.6	6,717.8	34.5	35.1	-90.00	337.5	1,061.5	746.9	677.5	69.32	10.773		
7,800.0	6,716.9	7,795.6	6,716.8	37.0	37.7	-90.00	337.5	1,161.5	746.9	672.5	74.41	10.038		
7,900.0	6,715.8	7,895.6	6,715.8	39.6	40.2	-90.00	337.5	1,261.5	746.9	667.3	79.56	9.387		
8,000.0	6,714.8	7,995.6	6,714.8	42.2	42.8	-90.00	337.5	1,361.5	746.9	662.1	84.78	8.810		
8,100.0	6,713.8	8,095.6	6,713.8	44.8	45.5	-90.00	337.5	1,461.5	746.9	656.8	90.04	8.295		
8,200.0	6,712.8	8,195.6	6,712.7	47.5	48.1	-90.00	337.5	1,561.5	746.9	651.5	95.34	7.833		
8,300.0	6,711.8	8,295.6	6,711.7	50.2	50.8	-90.00	337.5	1,661.5	746.9	646.2	100.68	7.418		
8,400.0	6,710.8	8,395.6	6,710.7	52.8	53.4	-90.00	337.5	1,761.5	746.9	640.8	106.05	7.043		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)													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	
8,500.0	6,709.8	8,495.6	6,709.7	55.5	56.1	-90.00	337.5	1,861.4	746.9	635.4	111.44	6.702		
8,600.0	6,708.8	8,595.6	6,708.7	58.2	58.8	-90.00	337.5	1,961.4	746.9	630.0	116.85	6.391		
8,700.0	6,707.7	8,695.6	6,707.7	61.0	61.5	-90.00	337.5	2,061.4	746.9	624.6	122.28	6.108		
8,800.0	6,706.7	8,795.6	6,706.7	63.7	64.2	-90.00	337.5	2,161.4	746.9	619.1	127.73	5.847		
8,900.0	6,705.7	8,895.6	6,705.7	66.4	67.0	-90.00	337.5	2,261.4	746.9	613.7	133.19	5.607		
9,000.0	6,704.7	8,895.6	6,704.6	69.1	69.7	-90.00	337.5	2,361.4	746.9	608.2	138.67	5.386		
9,100.0	6,703.7	9,095.6	6,703.6	71.9	72.4	-90.00	337.5	2,461.4	746.9	602.7	144.15	5.181		
9,200.0	6,702.7	9,195.6	6,702.6	74.6	75.2	-90.00	337.5	2,561.4	746.9	597.2	149.65	4.991		
9,300.0	6,701.7	9,295.6	6,701.6	77.4	77.9	-90.00	337.5	2,661.4	746.9	591.7	155.15	4.814		
9,400.0	6,700.7	9,395.6	6,700.6	80.1	80.7	-90.00	337.5	2,761.4	746.9	586.2	160.67	4.648		
9,500.0	6,699.6	9,495.6	6,699.6	82.9	83.4	-90.00	337.5	2,861.4	746.9	580.7	166.19	4.494		
9,600.0	6,698.6	9,595.6	6,698.6	85.7	86.2	-90.00	337.5	2,961.4	746.9	575.1	171.71	4.349		
9,700.0	6,697.6	9,695.6	6,697.6	88.4	89.0	-90.00	337.5	3,061.4	746.9	569.6	177.24	4.214		
9,800.0	6,696.6	9,795.6	6,696.5	91.2	91.7	-90.00	337.5	3,161.4	746.9	564.1	182.78	4.086		
9,900.0	6,695.6	9,895.6	6,695.5	94.0	94.5	-90.00	337.5	3,261.4	746.9	558.5	188.32	3.966		
10,000.0	6,694.6	9,995.6	6,694.5	96.7	97.3	-90.00	337.5	3,361.4	746.9	553.0	193.87	3.852		
10,100.0	6,693.6	10,095.6	6,693.5	99.5	100.0	-90.00	337.5	3,461.4	746.9	547.4	199.42	3.745		
10,200.0	6,692.6	10,195.6	6,692.5	102.3	102.8	-90.00	337.5	3,561.4	746.9	541.9	204.97	3.644		
10,300.0	6,691.5	10,295.6	6,691.5	105.1	105.6	-90.00	337.5	3,661.4	746.9	536.3	210.53	3.547		
10,400.0	6,690.5	10,395.6	6,690.5	107.8	108.4	-90.00	337.5	3,761.4	746.9	530.8	216.09	3.456		
10,500.0	6,689.5	10,495.6	6,689.5	110.6	111.1	-90.00	337.5	3,861.3	746.9	525.2	221.66	3.369		
10,600.0	6,688.5	10,595.6	6,688.5	113.4	113.9	-90.00	337.5	3,961.3	746.9	519.6	227.22	3.287		
10,700.0	6,687.5	10,695.6	6,687.4	116.2	116.7	-90.00	337.5	4,061.3	746.9	514.1	232.79	3.208		
10,800.0	6,686.5	10,795.6	6,686.4	119.0	119.5	-90.00	337.5	4,161.3	746.9	508.5	238.36	3.133		
10,900.0	6,685.5	10,895.6	6,685.4	121.8	122.3	-90.00	337.5	4,261.3	746.9	502.9	243.94	3.062		
11,000.0	6,684.5	10,995.6	6,684.4	124.6	125.1	-90.00	337.5	4,361.3	746.9	497.3	249.51	2.993		
11,100.0	6,683.4	11,095.6	6,683.4	127.3	127.9	-90.00	337.5	4,461.3	746.9	491.8	255.09	2.928		
11,200.0	6,682.4	11,195.6	6,682.4	130.1	130.6	-90.00	337.5	4,561.3	746.9	486.2	260.67	2.865		
11,300.0	6,681.4	11,295.6	6,681.4	132.9	133.4	-90.00	337.5	4,661.3	746.9	480.6	266.25	2.805		
11,400.0	6,680.4	11,395.6	6,680.4	135.7	136.2	-90.00	337.5	4,761.3	746.8	475.0	271.83	2.747		
11,500.0	6,679.4	11,495.6	6,679.3	138.5	139.0	-90.00	337.5	4,861.3	746.8	469.4	277.42	2.692		
11,600.0	6,678.4	11,595.6	6,678.3	141.3	141.8	-90.00	337.5	4,961.3	746.8	463.8	283.00	2.639		
11,700.0	6,677.4	11,695.6	6,677.3	144.1	144.6	-90.00	337.5	5,061.3	746.8	458.3	288.59	2.588		
11,800.0	6,676.4	11,795.6	6,676.3	146.9	147.4	-90.00	337.5	5,161.3	746.8	452.7	294.18	2.539		
11,900.0	6,675.4	11,895.6	6,675.3	149.7	150.2	-90.00	337.5	5,261.3	746.8	447.1	299.77	2.491		
12,000.0	6,674.3	11,995.6	6,674.3	152.5	153.0	-90.00	337.5	5,361.3	746.8	441.5	305.36	2.446		
12,100.0	6,673.3	12,095.6	6,673.3	155.3	155.8	-90.00	337.5	5,461.3	746.8	435.9	310.95	2.402		
12,200.0	6,672.3	12,195.6	6,672.3	158.1	158.6	-90.00	337.5	5,561.3	746.8	430.3	316.54	2.359		
12,300.0	6,671.3	12,295.6	6,671.2	160.9	161.4	-90.00	337.5	5,661.3	746.8	424.7	322.13	2.318		
12,400.0	6,670.3	12,395.6	6,670.2	163.7	164.2	-90.00	337.5	5,761.2	746.8	419.1	327.73	2.279		
12,500.0	6,669.3	12,495.6	6,669.2	166.5	166.9	-90.00	337.5	5,861.2	746.8	413.5	333.32	2.241		
12,600.0	6,668.3	12,595.6	6,668.2	169.3	169.7	-90.00	337.5	5,961.2	746.8	407.9	338.92	2.204		
12,700.0	6,667.3	12,695.6	6,667.2	172.1	172.5	-90.00	337.5	6,061.2	746.8	402.3	344.51	2.168		
12,800.0	6,666.2	12,795.6	6,666.2	174.8	175.3	-90.00	337.5	6,161.2	746.8	396.7	350.11	2.133		
12,900.0	6,665.2	12,895.6	6,665.2	177.6	178.1	-90.00	337.5	6,261.2	746.8	391.1	355.71	2.100		
13,000.0	6,664.2	12,995.6	6,664.2	180.4	180.9	-90.00	337.5	6,361.2	746.8	385.5	361.31	2.067		
13,100.0	6,663.2	13,095.6	6,663.1	183.2	183.7	-90.00	337.5	6,461.2	746.8	379.9	366.91	2.036		
13,200.0	6,662.2	13,195.6	6,662.1	186.0	186.5	-90.00	337.5	6,561.2	746.8	374.3	372.51	2.005		
13,300.0	6,661.2	13,295.6	6,661.1	188.8	189.3	-90.00	337.5	6,661.2	746.8	368.7	378.11	1.975		
13,400.0	6,660.2	13,395.6	6,660.1	191.6	192.1	-90.00	337.5	6,761.2	746.8	363.1	383.71	1.946		
13,500.0	6,659.2	13,495.6	6,659.1	194.4	194.9	-90.00	337.5	6,861.2	746.8	357.5	389.31	1.918		

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 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19M-232 - Wellbore #1 - Plan #3 (7-14-15)													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	6,658.1	13,595.6	6,658.1	197.2	197.7	-90.00	337.5	6,961.2	746.8	351.9	394.91	1.891		
13,700.0	6,657.1	13,695.6	6,657.1	200.0	200.5	-90.00	337.5	7,061.2	746.8	346.3	400.51	1.865		
13,800.0	6,656.1	13,795.6	6,656.1	202.8	203.3	-90.00	337.5	7,161.2	746.8	340.7	406.12	1.839		
13,900.0	6,655.1	13,895.6	6,655.0	205.7	206.1	-90.00	337.5	7,261.2	746.8	335.1	411.72	1.814		
14,000.0	6,654.1	13,995.6	6,654.0	208.5	208.9	-90.00	337.5	7,361.2	746.8	329.5	417.32	1.790		
14,100.0	6,653.1	14,095.6	6,653.0	211.3	211.7	-90.00	337.5	7,461.2	746.8	323.9	422.93	1.766		
14,200.0	6,652.1	14,195.6	6,652.0	214.1	214.5	-90.00	337.5	7,561.2	746.8	318.3	428.53	1.743		
14,300.0	6,651.1	14,295.6	6,651.0	216.9	217.3	-90.00	337.5	7,661.2	746.8	312.7	434.14	1.720		
14,400.0	6,650.0	14,395.6	6,650.0	219.7	220.1	-90.00	337.5	7,761.1	746.8	307.1	439.74	1.698		
14,500.0	6,649.0	14,495.6	6,649.0	222.5	222.9	-90.00	337.5	7,861.1	746.8	301.5	445.35	1.677		
14,600.0	6,648.0	14,595.6	6,648.0	225.3	225.7	-90.00	337.5	7,961.1	746.8	295.9	450.95	1.656		
14,700.0	6,647.0	14,695.6	6,646.9	228.1	228.5	-90.00	337.5	8,061.1	746.8	290.3	456.56	1.636		
14,800.0	6,646.0	14,795.6	6,645.9	230.9	231.4	-90.00	337.5	8,161.1	746.8	284.7	462.17	1.616		
14,900.0	6,645.0	14,895.6	6,644.9	233.7	234.2	-90.00	337.5	8,261.1	746.8	279.1	467.77	1.597		
15,000.0	6,644.0	14,995.6	6,643.9	236.5	237.0	-90.00	337.5	8,361.1	746.8	273.5	473.38	1.578		
15,100.0	6,643.0	15,095.6	6,642.9	239.3	239.8	-90.00	337.5	8,461.1	746.8	267.9	478.99	1.559		
15,200.0	6,641.9	15,195.6	6,641.9	242.1	242.6	-90.00	337.5	8,561.1	746.8	262.2	484.60	1.541		
15,300.0	6,640.9	15,295.6	6,640.9	244.9	245.4	-90.00	337.5	8,661.1	746.8	256.6	490.20	1.524		
15,400.0	6,639.9	15,395.6	6,639.9	247.7	248.2	-90.00	337.5	8,761.1	746.8	251.0	495.81	1.506		
15,500.0	6,638.9	15,495.6	6,638.8	250.5	251.0	-90.00	337.5	8,861.1	746.8	245.4	501.42	1.489 Level 3		
15,600.0	6,637.9	15,595.6	6,637.8	253.3	253.8	-90.00	337.5	8,961.1	746.8	239.8	507.03	1.473 Level 3		
15,700.0	6,636.9	15,695.6	6,636.8	256.1	256.6	-90.00	337.5	9,061.1	746.8	234.2	512.64	1.457 Level 3		
15,800.0	6,635.9	15,795.6	6,635.8	258.9	259.4	-90.00	337.5	9,161.1	746.8	228.6	518.25	1.441 Level 3		
15,900.0	6,634.9	15,895.6	6,634.8	261.7	262.2	-90.00	337.5	9,261.1	746.8	223.0	523.86	1.426 Level 3		
16,000.0	6,633.8	15,995.6	6,633.8	264.5	265.0	-90.00	337.5	9,361.1	746.8	217.4	529.47	1.411 Level 3		
16,100.0	6,632.8	16,095.6	6,632.8	267.3	267.8	-90.00	337.5	9,461.1	746.8	211.8	535.08	1.396 Level 3		
16,200.0	6,631.8	16,195.6	6,631.8	270.1	270.6	-90.00	337.5	9,561.1	746.8	206.2	540.69	1.381 Level 3		
16,300.0	6,630.8	16,295.6	6,630.8	272.9	273.4	-90.00	337.5	9,661.0	746.8	200.5	546.30	1.367 Level 3		
16,400.0	6,629.8	16,395.6	6,629.7	275.7	276.2	-90.00	337.5	9,761.0	746.8	194.9	551.91	1.353 Level 3		
16,500.0	6,628.8	16,495.6	6,628.7	278.5	279.0	-90.00	337.5	9,861.0	746.8	189.3	557.52	1.340 Level 3		
16,600.0	6,627.8	16,595.6	6,627.7	281.4	281.8	-90.00	337.5	9,961.0	746.8	183.7	563.13	1.326 Level 3		
16,700.0	6,626.8	16,695.6	6,626.7	284.2	284.6	-90.00	337.5	10,061.0	746.8	178.1	568.74	1.313 Level 3		
16,800.0	6,625.7	16,795.6	6,625.7	287.0	287.4	-90.00	337.5	10,161.0	746.8	172.5	574.35	1.300 Level 3		
16,900.0	6,624.7	16,895.6	6,624.7	289.8	290.2	-90.00	337.5	10,261.0	746.8	166.9	579.96	1.288 Level 3		
17,000.0	6,623.7	16,995.6	6,623.7	292.6	293.0	-90.00	337.5	10,361.0	746.8	161.3	585.57	1.275 Level 3		
17,100.0	6,622.7	17,095.6	6,622.7	295.4	295.9	-90.00	337.5	10,461.0	746.8	155.7	591.18	1.263 Level 3		
17,200.0	6,621.7	17,195.6	6,621.6	298.2	298.7	-90.00	337.5	10,561.0	746.8	150.0	596.79	1.251 Level 3		
17,249.0	6,621.2	17,244.6	6,621.1	299.6	300.0	-90.00	337.5	10,610.0	746.8	147.3	599.54	1.246 Level 2		
17,269.2	6,621.0	17,258.8	6,621.0	300.1	300.4	-90.00	337.5	10,624.3	746.9	146.3	600.51	1.244 Level 2, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19M-402 - Wellbore #1 - Plan #3 (7-13-15)												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	-58.5	58.5				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-58.5	58.5	58.3	0.22	260.263	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-58.5	58.5	57.8	0.67	86.754	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-58.5	58.5	57.4	1.12	52.053	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-58.5	58.5	56.9	1.57	37.180	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-58.5	58.5	56.5	2.02	28.918	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-58.5	58.5	56.0	2.47	23.660	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-58.5	58.5	55.6	2.92	20.020	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-58.5	58.5	55.1	3.37	17.351	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-58.5	58.5	54.7	3.82	15.310	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-58.5	58.5	54.2	4.27	13.698 CC	
1,100.0	1,100.0	1,099.7	1,099.7	2.4	2.4	-89.18	0.8	-58.7	58.7	54.0	4.72	12.442 ES	
1,200.0	1,200.0	1,199.4	1,199.4	2.6	2.6	-86.75	3.4	-59.3	59.4	54.3	5.17	11.503	
1,300.0	1,300.0	1,299.0	1,298.9	2.8	2.8	-82.85	7.6	-60.4	60.8	55.2	5.61	10.837	
1,400.0	1,400.0	1,398.4	1,398.1	3.0	3.0	-77.73	13.4	-61.8	63.3	57.2	6.07	10.434	
1,500.0	1,500.0	1,497.5	1,496.9	3.3	3.3	-71.78	21.0	-63.7	67.1	60.6	6.52	10.289 SF	
1,600.0	1,600.0	1,596.3	1,595.2	3.5	3.5	87.66	30.1	-65.9	72.6	65.6	6.95	10.450	
1,700.0	1,700.0	1,694.5	1,692.8	3.6	3.8	95.57	40.8	-68.6	80.4	73.0	7.35	10.933	
1,800.0	1,799.9	1,792.0	1,789.5	3.8	4.0	103.60	53.1	-71.6	91.3	83.5	7.76	11.754	
1,900.0	1,899.7	1,888.7	1,885.1	4.0	4.3	111.05	66.8	-75.0	105.7	97.5	8.18	12.924	
2,000.0	1,999.4	1,985.6	1,980.8	4.2	4.6	117.57	81.7	-78.6	123.5	115.0	8.60	14.370	
2,100.0	2,098.9	2,082.7	2,076.7	4.4	4.9	122.99	96.8	-82.4	143.7	134.6	9.02	15.930	
2,200.0	2,198.3	2,179.4	2,172.2	4.6	5.2	127.50	111.8	-86.1	165.8	156.4	9.44	17.561	
2,295.7	2,293.1	2,271.6	2,263.1	4.9	5.5	131.13	126.1	-89.6	188.8	179.0	9.85	19.166	
2,300.0	2,297.4	2,275.7	2,267.2	4.9	5.5	131.29	126.8	-89.7	189.9	180.0	9.87	19.239	
2,400.0	2,396.4	2,371.8	2,362.1	5.1	5.8	134.53	141.7	-93.4	215.2	204.9	10.31	20.867	
2,500.0	2,495.5	2,467.9	2,456.9	5.4	6.1	137.09	156.6	-97.1	241.0	230.3	10.76	22.394	
2,600.0	2,594.5	2,564.0	2,551.8	5.7	6.5	139.15	171.5	-100.8	267.2	256.0	11.22	23.820	
2,700.0	2,693.6	2,660.1	2,646.7	6.0	6.8	140.85	186.4	-104.5	293.7	282.0	11.68	25.146	
2,800.0	2,792.6	2,756.3	2,741.5	6.2	7.1	142.26	201.4	-108.1	320.3	308.2	12.14	26.379	
2,900.0	2,891.6	2,852.4	2,836.4	6.5	7.4	143.46	216.3	-111.8	347.1	334.5	12.61	27.525	
3,000.0	2,990.7	2,948.5	2,931.3	6.8	7.8	144.49	231.2	-115.5	374.1	361.0	13.08	28.591	
3,100.0	3,089.7	3,044.6	3,026.1	7.2	8.1	145.38	246.1	-119.2	401.1	387.5	13.56	29.584	
3,200.0	3,188.7	3,140.7	3,121.0	7.5	8.5	146.16	261.0	-122.8	428.2	414.2	14.04	30.509	
3,300.0	3,287.8	3,236.8	3,215.9	7.8	8.8	146.84	275.9	-126.5	455.4	440.9	14.52	31.373	
3,400.0	3,386.8	3,332.9	3,310.8	8.1	9.1	147.45	290.9	-130.2	482.6	467.6	15.00	32.181	
3,500.0	3,485.9	3,429.0	3,405.6	8.4	9.5	148.00	305.8	-133.9	509.9	494.4	15.48	32.937	
3,600.0	3,584.9	3,525.1	3,500.5	8.7	9.8	148.48	320.7	-137.5	537.2	521.2	15.97	33.646	
3,700.0	3,683.9	3,621.2	3,595.4	9.1	10.2	148.93	335.6	-141.2	564.5	548.1	16.45	34.312	
3,800.0	3,783.0	3,717.3	3,690.2	9.4	10.5	149.33	350.5	-144.9	591.9	575.0	16.94	34.938	
3,900.0	3,882.0	3,813.4	3,785.1	9.7	10.9	149.69	365.4	-148.6	619.3	601.9	17.43	35.528	
4,000.0	3,981.0	3,909.5	3,880.0	10.0	11.2	150.03	380.4	-152.2	646.7	628.8	17.92	36.085	
4,100.0	4,080.1	4,005.6	3,974.8	10.4	11.5	150.33	395.3	-155.9	674.1	655.7	18.41	36.610	
4,200.0	4,179.1	4,101.7	4,069.7	10.7	11.9	150.62	410.2	-159.6	701.6	682.7	18.91	37.107	
4,300.0	4,278.2	4,197.8	4,164.6	11.0	12.2	150.88	425.1	-163.3	729.1	709.7	19.40	37.578	
4,400.0	4,377.2	4,293.9	4,259.4	11.4	12.6	151.12	440.0	-166.9	756.5	736.6	19.90	38.024	
4,500.0	4,476.2	4,390.0	4,354.3	11.7	12.9	151.35	454.9	-170.6	784.0	763.6	20.39	38.448	
4,600.0	4,575.3	4,486.1	4,449.2	12.0	13.3	151.56	469.9	-174.3	811.5	790.6	20.89	38.850	
4,700.0	4,674.3	4,582.2	4,544.0	12.4	13.6	151.75	484.8	-178.0	839.0	817.7	21.39	39.233	
4,800.0	4,773.3	4,678.3	4,638.9	12.7	14.0	151.94	499.7	-181.7	866.6	844.7	21.88	39.598	
4,900.0	4,872.4	4,774.4	4,733.8	13.1	14.3	152.11	514.6	-185.3	894.1	871.7	22.38	39.946	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19M-402 - Wellbore #1 - Plan #3 (7-13-15)												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	4,971.4	4,870.5	4,828.6	13.4	14.7	152.27	529.5	-189.0	921.6	898.7	22.88	40.278	
5,032.4	5,003.5	4,901.6	4,859.3	13.5	14.8	152.32	534.3	-190.2	930.5	907.5	23.04	40.382	
5,100.0	5,070.6	4,966.8	4,923.7	13.7	15.0	152.57	544.5	-192.7	948.5	925.1	23.43	40.486	
5,200.0	5,170.1	5,063.9	5,019.5	13.9	15.4	152.83	559.5	-196.4	972.5	948.5	23.96	40.596	
5,300.0	5,269.9	5,161.6	5,116.0	14.1	15.8	152.96	574.7	-200.1	993.5	969.0	24.46	40.621	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)											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			
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	30.6	30.6						
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	30.6	30.6	30.4	0.22	136.328			
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	30.6	30.6	30.0	0.67	45.443			
300.0	300.0	300.0	300.0	0.6	0.6	90.01	0.0	30.6	30.6	29.5	1.12	27.266			
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	30.6	30.6	29.1	1.57	19.475			
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	30.6	30.6	28.6	2.02	15.148			
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	30.6	30.6	28.2	2.47	12.393			
700.0	700.0	700.0	700.0	1.5	1.5	90.01	0.0	30.6	30.6	27.7	2.92	10.487			
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	30.6	30.6	27.3	3.37	9.089			
900.0	900.0	900.0	900.0	1.9	1.9	90.01	0.0	30.6	30.6	26.8	3.82	8.019			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.01	0.0	30.6	30.6	26.4	4.27	7.175			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	90.01	0.0	30.6	30.6	25.9	4.72	6.492			
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	90.01	0.0	30.6	30.6	25.5	5.17	5.927			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	90.01	0.0	30.6	30.6	25.0	5.62	5.453			
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	90.01	0.0	30.6	30.6	24.6	6.07	5.049			
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	90.01	0.0	30.6	30.6	24.1	6.52	4.701 CC			
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-118.93	0.0	30.6	31.1	24.1	6.94	4.475			
1,700.0	1,700.0	1,700.0	1,700.0	3.6	3.7	-122.97	0.0	30.6	32.4	25.1	7.34	4.415			
1,800.0	1,799.9	1,799.9	1,799.9	3.8	3.9	-128.95	0.0	30.6	35.0	27.2	7.74	4.517			
1,900.0	1,899.7	1,899.7	1,899.7	4.0	4.2	-135.89	0.0	30.6	39.1	31.0	8.15	4.799			
2,000.0	1,999.4	1,999.4	1,999.4	4.2	4.4	-142.81	0.0	30.6	45.1	36.5	8.56	5.267			
2,100.0	2,098.9	2,098.9	2,098.9	4.4	4.6	-149.03	0.0	30.6	53.0	44.1	8.97	5.915			
2,200.0	2,198.3	2,198.3	2,198.3	4.6	4.8	-154.28	0.0	30.6	63.0	53.6	9.38	6.722			
2,295.7	2,293.1	2,293.1	2,293.1	4.9	5.0	-158.40	0.0	30.6	74.4	64.7	9.77	7.622			
2,300.0	2,297.4	2,297.4	2,297.4	4.9	5.1	-158.57	0.0	30.6	75.0	65.2	9.79	7.665			
2,400.0	2,396.4	2,396.4	2,396.4	5.1	5.3	-161.86	0.0	30.6	88.1	77.8	10.21	8.623			
2,500.0	2,495.5	2,495.5	2,495.5	5.4	5.5	-164.29	0.0	30.6	101.3	90.7	10.64	9.521			
2,600.0	2,594.5	2,596.2	2,596.2	5.7	5.7	-166.40	-0.2	29.9	114.0	103.0	11.06	10.311			
2,700.0	2,693.6	2,697.2	2,697.2	6.0	5.9	-168.53	-1.0	27.4	125.4	113.9	11.46	10.941			
2,800.0	2,792.6	2,798.5	2,798.3	6.2	6.1	-170.74	-2.4	23.2	135.5	123.6	11.87	11.414			
2,900.0	2,891.6	2,899.9	2,899.6	6.5	6.3	-173.07	-4.2	17.4	144.3	132.0	12.28	11.750			
3,000.0	2,990.7	3,001.4	3,000.8	6.8	6.5	-175.56	-6.7	9.8	152.0	139.3	12.71	11.966			
3,100.0	3,089.7	3,103.0	3,101.9	7.2	6.7	-178.25	-9.6	0.4	158.7	145.6	13.14	12.080			
3,200.0	3,188.7	3,204.6	3,202.8	7.5	7.0	178.85	-13.2	-10.6	164.4	150.8	13.58	12.106			
3,300.0	3,287.8	3,305.1	3,302.4	7.8	7.2	175.78	-17.1	-22.9	169.5	155.5	14.04	12.073			
3,400.0	3,386.8	3,404.5	3,401.1	8.1	7.4	172.88	-21.1	-35.4	174.9	160.4	14.51	12.053			
3,500.0	3,485.9	3,504.0	3,499.7	8.4	7.7	170.16	-25.0	-47.8	180.7	165.7	15.00	12.049			
3,600.0	3,584.9	3,603.5	3,598.3	8.7	7.9	167.61	-29.0	-60.3	187.0	171.5	15.50	12.058			
3,700.0	3,683.9	3,702.9	3,696.9	9.1	8.2	165.23	-33.0	-72.7	193.5	177.5	16.02	12.078			
3,800.0	3,783.0	3,802.4	3,795.5	9.4	8.5	163.00	-37.0	-85.1	200.4	183.9	16.55	12.106			
3,900.0	3,882.0	3,901.9	3,894.1	9.7	8.7	160.93	-40.9	-97.6	207.6	190.5	17.10	12.139			
4,000.0	3,981.0	4,001.3	3,992.7	10.0	9.0	159.00	-44.9	-110.0	215.0	197.3	17.65	12.177			
4,100.0	4,080.1	4,100.8	4,091.3	10.4	9.3	157.19	-48.9	-122.5	222.6	204.4	18.22	12.218			
4,200.0	4,179.1	4,200.3	4,189.9	10.7	9.6	155.51	-52.8	-134.9	230.5	211.7	18.80	12.262			
4,300.0	4,278.2	4,299.8	4,288.5	11.0	9.9	153.94	-56.8	-147.3	238.5	219.1	19.38	12.307			
4,400.0	4,377.2	4,399.2	4,387.1	11.4	10.2	152.47	-60.8	-159.8	246.7	226.7	19.97	12.353			
4,500.0	4,476.2	4,498.7	4,485.8	11.7	10.5	151.10	-64.7	-172.2	255.0	234.5	20.57	12.400			
4,600.0	4,575.3	4,598.2	4,584.4	12.0	10.8	149.81	-68.7	-184.6	263.5	242.4	21.17	12.447			
4,700.0	4,674.3	4,696.3	4,681.7	12.4	11.0	148.74	-72.5	-196.4	272.3	250.5	21.75	12.518			
4,800.0	4,773.3	4,793.5	4,778.5	12.7	11.3	148.35	-75.2	-205.1	281.9	259.6	22.26	12.664			
4,900.0	4,872.4	4,890.7	4,875.5	13.1	11.5	148.62	-77.0	-210.7	292.2	269.5	22.71	12.866			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)													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)			
5,000.0	4,971.4	4,987.4	4,972.2	13.4	11.7	149.47	-77.8	-213.1	303.5	280.4	23.13	13.122		
5,032.4	5,003.5	5,018.7	5,003.5	13.5	11.7	149.86	-77.9	-213.3	307.3	284.1	23.25	13.217		
5,100.0	5,070.6	5,085.8	5,070.6	13.7	11.8	150.72	-77.9	-213.3	314.8	291.2	23.53	13.379		
5,200.0	5,170.1	5,185.3	5,170.1	13.9	12.0	151.64	-77.9	-213.3	323.3	299.4	23.92	13.518		
5,300.0	5,269.9	5,285.1	5,269.9	14.1	12.2	152.22	-77.9	-213.3	328.9	304.6	24.30	13.535		
5,400.0	5,369.8	5,385.1	5,369.8	14.3	12.4	152.46	-77.9	-213.3	331.4	306.7	24.67	13.435		
5,430.2	5,400.0	5,415.2	5,400.0	14.4	12.5	-0.01	-77.9	-213.3	331.5	306.0	25.49	13.004		
5,500.0	5,469.8	5,485.1	5,469.8	14.5	12.6	-0.01	-77.9	-213.3	331.5	305.7	25.76	12.869		
5,600.0	5,569.8	5,585.1	5,569.8	14.6	12.8	-0.01	-77.9	-213.3	331.5	305.4	26.13	12.685		
5,700.0	5,669.8	5,685.1	5,669.8	14.8	13.0	-0.01	-77.9	-213.3	331.5	305.0	26.51	12.504		
5,800.0	5,769.8	5,785.1	5,769.8	14.9	13.2	-0.01	-77.9	-213.3	331.5	304.6	26.89	12.328		
5,900.0	5,869.8	5,885.1	5,869.8	15.1	13.4	-0.01	-77.9	-213.3	331.5	304.2	27.27	12.156		
5,989.2	5,959.1	5,974.3	5,959.1	15.2	13.6	-0.01	-77.9	-213.3	331.5	303.9	27.61	12.005		
6,000.0	5,969.8	5,985.1	5,969.8	15.3	13.7	-90.02	-77.9	-213.3	331.5	304.5	27.01	12.274		
6,050.0	6,019.8	6,035.0	6,019.8	15.3	13.8	-90.43	-77.9	-213.3	331.5	304.3	27.21	12.183		
6,100.0	6,069.4	6,085.0	6,069.8	15.4	13.9	-91.27	-77.9	-212.5	331.6	304.2	27.41	12.097		
6,150.0	6,118.6	6,135.4	6,120.0	15.4	13.9	-92.14	-77.9	-208.7	331.7	304.2	27.58	12.028		
6,200.0	6,167.2	6,186.1	6,170.2	15.5	14.0	-93.00	-77.9	-201.5	332.0	304.2	27.72	11.976		
6,250.0	6,214.8	6,237.2	6,220.2	15.5	14.0	-93.85	-77.9	-190.9	332.3	304.4	27.84	11.936		
6,300.0	6,261.3	6,288.7	6,269.7	15.5	14.1	-94.69	-77.9	-176.9	332.6	304.7	27.94	11.906		
6,350.0	6,306.6	6,340.4	6,318.4	15.6	14.1	-95.51	-77.9	-159.4	333.1	305.0	28.03	11.883		
6,400.0	6,350.3	6,392.6	6,366.2	15.6	14.2	-96.30	-77.9	-138.6	333.5	305.4	28.12	11.860		
6,450.0	6,392.4	6,445.1	6,412.7	15.6	14.2	-97.07	-77.9	-114.3	334.1	305.8	28.24	11.831		
6,500.0	6,432.6	6,497.9	6,457.8	15.6	14.3	-97.81	-77.9	-86.8	334.6	306.2	28.38	11.789		
6,550.0	6,470.8	6,551.0	6,501.0	15.6	14.4	-98.51	-77.9	-56.0	335.2	306.6	28.59	11.724		
6,600.0	6,506.8	6,604.5	6,542.3	15.6	14.5	-99.17	-77.9	-22.0	335.8	306.9	28.89	11.626		
6,650.0	6,540.5	6,658.3	6,581.4	15.7	14.7	-99.79	-77.9	15.0	336.4	307.2	29.29	11.488		
6,700.0	6,571.6	6,712.3	6,617.9	15.7	15.0	-100.37	-77.9	54.8	337.0	307.2	29.82	11.302		
6,750.0	6,600.2	6,766.7	6,651.7	15.8	15.4	-100.90	-77.9	97.4	337.6	307.1	30.51	11.066		
6,800.0	6,626.0	6,821.3	6,682.5	16.1	15.9	-101.38	-77.9	142.4	338.2	306.8	31.37	10.780		
6,850.0	6,648.9	6,876.1	6,710.1	16.6	16.4	-101.81	-77.9	189.8	338.7	306.3	32.42	10.448		
6,900.0	6,668.9	6,931.1	6,734.3	17.3	17.1	-102.18	-77.9	239.2	339.2	305.5	33.65	10.078		
6,950.0	6,685.8	6,986.3	6,755.0	18.0	17.8	-102.50	-77.9	290.3	339.6	304.5	35.08	9.681		
7,000.0	6,699.7	7,041.7	6,771.9	18.9	18.7	-102.76	-77.9	343.0	339.9	303.2	36.68	9.267		
7,050.0	6,710.3	7,097.2	6,785.1	19.8	19.6	-102.96	-77.9	396.9	340.2	301.7	38.45	8.847		
7,100.0	6,717.8	7,152.8	6,794.3	20.7	20.7	-103.09	-77.9	451.7	340.4	300.0	40.37	8.432		
7,150.0	6,722.0	7,208.4	6,799.5	21.7	21.8	-103.17	-77.9	507.1	340.5	298.1	42.41	8.029		
7,197.0	6,723.0	7,260.5	6,800.6	22.7	22.8	-103.19	-77.9	559.2	340.5	296.1	44.41	7.667		
7,200.0	6,722.9	7,263.6	6,800.6	22.7	22.9	-103.19	-77.9	562.3	340.5	296.0	44.53	7.646		
7,300.0	6,721.9	7,363.6	6,799.7	24.9	25.0	-103.20	-77.9	662.3	340.5	291.8	48.74	6.986		
7,400.0	6,720.9	7,463.6	6,798.7	27.2	27.3	-103.21	-77.9	762.2	340.5	287.3	53.17	6.404		
7,500.0	6,719.9	7,563.6	6,797.7	29.6	29.6	-103.22	-77.9	862.2	340.5	282.7	57.78	5.893		
7,600.0	6,718.9	7,663.6	6,796.8	32.0	32.1	-103.22	-77.8	962.2	340.5	278.0	62.53	5.446		
7,700.0	6,717.9	7,763.6	6,795.8	34.5	34.5	-103.23	-77.8	1,062.2	340.6	273.2	67.39	5.053		
7,800.0	6,716.9	7,863.6	6,794.9	37.0	37.1	-103.24	-77.8	1,162.2	340.6	268.2	72.34	4.708		
7,900.0	6,715.8	7,963.6	6,793.9	39.6	39.6	-103.25	-77.8	1,262.2	340.6	263.2	77.36	4.403		
8,000.0	6,714.8	8,063.6	6,792.9	42.2	42.2	-103.26	-77.8	1,362.2	340.6	258.2	82.43	4.132		
8,100.0	6,713.8	8,163.6	6,792.0	44.8	44.9	-103.27	-77.8	1,462.2	340.6	253.0	87.56	3.890		
8,200.0	6,712.8	8,263.6	6,791.0	47.5	47.5	-103.28	-77.8	1,562.2	340.6	247.9	92.72	3.674		
8,300.0	6,711.8	8,363.6	6,790.1	50.2	50.2	-103.28	-77.8	1,662.2	340.6	242.7	97.92	3.479		
8,400.0	6,710.8	8,463.6	6,789.1	52.8	52.8	-103.29	-77.8	1,762.2	340.6	237.5	103.14	3.303		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)											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			
8,500.0	6,709.8	8,563.6	6,788.1	55.5	55.5	-103.30	-77.8	1,862.2	340.7	232.3	108.39	3.143			
8,600.0	6,708.8	8,663.6	6,787.2	58.2	58.2	-103.31	-77.8	1,962.2	340.7	227.0	113.66	2.997			
8,700.0	6,707.7	8,763.6	6,786.2	61.0	61.0	-103.32	-77.8	2,062.2	340.7	221.7	118.95	2.864			
8,800.0	6,706.7	8,863.6	6,785.3	63.7	63.7	-103.33	-77.8	2,162.2	340.7	216.4	124.26	2.742			
8,900.0	6,705.7	8,963.6	6,784.3	66.4	66.4	-103.34	-77.8	2,262.2	340.7	211.1	129.57	2.629			
9,000.0	6,704.7	9,063.6	6,783.3	69.1	69.1	-103.34	-77.8	2,362.2	340.7	205.8	134.90	2.526			
9,100.0	6,703.7	9,163.6	6,782.4	71.9	71.9	-103.35	-77.8	2,462.2	340.7	200.5	140.24	2.430			
9,200.0	6,702.7	9,263.6	6,781.4	74.6	74.6	-103.36	-77.8	2,562.2	340.7	195.1	145.59	2.340			
9,300.0	6,701.7	9,363.6	6,780.5	77.4	77.4	-103.37	-77.8	2,662.2	340.7	189.8	150.95	2.257			
9,400.0	6,700.7	9,463.6	6,779.5	80.1	80.1	-103.38	-77.8	2,762.2	340.8	184.4	156.32	2.180			
9,500.0	6,699.6	9,563.6	6,778.5	82.9	82.9	-103.39	-77.8	2,862.2	340.8	179.1	161.69	2.108			
9,600.0	6,698.6	9,663.6	6,777.6	85.7	85.6	-103.40	-77.8	2,962.1	340.8	173.7	167.07	2.040			
9,700.0	6,697.6	9,763.6	6,776.6	88.4	88.4	-103.40	-77.8	3,062.1	340.8	168.3	172.45	1.976			
9,800.0	6,696.6	9,863.6	6,775.7	91.2	91.2	-103.41	-77.8	3,162.1	340.8	163.0	177.84	1.916			
9,900.0	6,695.6	9,963.6	6,774.7	94.0	93.9	-103.42	-77.8	3,262.1	340.8	157.6	183.23	1.860			
10,000.0	6,694.6	10,063.6	6,773.7	96.7	96.7	-103.43	-77.8	3,362.1	340.8	152.2	188.63	1.807			
10,100.0	6,693.6	10,163.6	6,772.8	99.5	99.5	-103.44	-77.8	3,462.1	340.8	146.8	194.03	1.757			
10,200.0	6,692.6	10,263.6	6,771.8	102.3	102.3	-103.45	-77.8	3,562.1	340.9	141.4	199.43	1.709			
10,300.0	6,691.5	10,363.6	6,770.9	105.1	105.0	-103.46	-77.8	3,662.1	340.9	136.0	204.84	1.664			
10,400.0	6,690.5	10,463.6	6,769.9	107.8	107.8	-103.46	-77.8	3,762.1	340.9	130.6	210.24	1.621			
10,500.0	6,689.5	10,563.6	6,768.9	110.6	110.6	-103.47	-77.8	3,862.1	340.9	125.2	215.66	1.581			
10,600.0	6,688.5	10,663.6	6,768.0	113.4	113.4	-103.48	-77.8	3,962.1	340.9	119.8	221.07	1.542			
10,700.0	6,687.5	10,763.6	6,767.0	116.2	116.2	-103.49	-77.8	4,062.1	340.9	114.4	226.49	1.505			
10,800.0	6,686.5	10,863.6	6,766.1	119.0	119.0	-103.50	-77.8	4,162.1	340.9	109.0	231.90	1.470	Level 3		
10,900.0	6,685.5	10,963.6	6,765.1	121.8	121.7	-103.51	-77.8	4,262.1	340.9	103.6	237.32	1.437	Level 3		
11,000.0	6,684.5	11,063.6	6,764.1	124.6	124.5	-103.52	-77.8	4,362.1	341.0	98.2	242.75	1.405	Level 3		
11,100.0	6,683.4	11,163.6	6,763.2	127.3	127.3	-103.52	-77.8	4,462.1	341.0	92.8	248.17	1.374	Level 3		
11,200.0	6,682.4	11,263.6	6,762.2	130.1	130.1	-103.53	-77.8	4,562.1	341.0	87.4	253.59	1.345	Level 3		
11,300.0	6,681.4	11,363.6	6,761.3	132.9	132.9	-103.54	-77.8	4,662.1	341.0	82.0	259.02	1.316	Level 3		
11,400.0	6,680.4	11,463.6	6,760.3	135.7	135.7	-103.55	-77.8	4,762.1	341.0	76.6	264.44	1.290	Level 3		
11,500.0	6,679.4	11,563.6	6,759.3	138.5	138.5	-103.56	-77.8	4,862.1	341.0	71.1	269.87	1.264	Level 3		
11,600.0	6,678.4	11,663.6	6,758.4	141.3	141.3	-103.57	-77.8	4,962.1	341.0	65.7	275.30	1.239	Level 2		
11,700.0	6,677.4	11,763.6	6,757.4	144.1	144.1	-103.58	-77.8	5,062.1	341.0	60.3	280.73	1.215	Level 2		
11,800.0	6,676.4	11,863.6	6,756.5	146.9	146.9	-103.58	-77.8	5,162.0	341.1	54.9	286.16	1.192	Level 2		
11,900.0	6,675.4	11,963.6	6,755.5	149.7	149.7	-103.59	-77.8	5,262.0	341.1	49.5	291.59	1.170	Level 2		
12,000.0	6,674.3	12,063.6	6,754.5	152.5	152.4	-103.60	-77.8	5,362.0	341.1	44.1	297.02	1.148	Level 2		
12,100.0	6,673.3	12,163.6	6,753.6	155.3	155.2	-103.61	-77.8	5,462.0	341.1	38.6	302.46	1.128	Level 2		
12,200.0	6,672.3	12,263.6	6,752.6	158.1	158.0	-103.62	-77.8	5,562.0	341.1	33.2	307.89	1.108	Level 2		
12,300.0	6,671.3	12,363.6	6,751.7	160.9	160.8	-103.63	-77.8	5,662.0	341.1	27.8	313.32	1.089	Level 2		
12,400.0	6,670.3	12,463.6	6,750.7	163.7	163.6	-103.64	-77.8	5,762.0	341.1	22.4	318.76	1.070	Level 2		
12,500.0	6,669.3	12,563.6	6,749.7	166.5	166.4	-103.64	-77.8	5,862.0	341.1	17.0	324.19	1.052	Level 2		
12,600.0	6,668.3	12,663.6	6,748.8	169.3	169.2	-103.65	-77.8	5,962.0	341.2	11.5	329.63	1.035	Level 2		
12,700.0	6,667.3	12,763.6	6,747.8	172.1	172.0	-103.66	-77.8	6,062.0	341.2	6.1	335.06	1.018	Level 2		
12,800.0	6,666.2	12,863.6	6,746.9	174.8	174.8	-103.67	-77.8	6,162.0	341.2	0.7	340.50	1.002	Level 2		
12,900.0	6,665.2	12,963.6	6,745.9	177.6	177.6	-103.68	-77.8	6,262.0	341.2	-4.7	345.93	0.986	Level 1		
13,000.0	6,664.2	13,063.6	6,744.9	180.4	180.4	-103.69	-77.8	6,362.0	341.2	-10.2	351.37	0.971	Level 1		
13,100.0	6,663.2	13,163.6	6,744.0	183.2	183.2	-103.70	-77.8	6,462.0	341.2	-15.6	356.81	0.956	Level 1		
13,200.0	6,662.2	13,263.6	6,743.0	186.0	186.0	-103.70	-77.8	6,562.0	341.2	-21.0	362.24	0.942	Level 1		
13,300.0	6,661.2	13,363.6	6,742.1	188.8	188.8	-103.71	-77.8	6,662.0	341.2	-26.4	367.68	0.928	Level 1		
13,400.0	6,660.2	13,463.6	6,741.1	191.6	191.6	-103.72	-77.8	6,762.0	341.3	-31.9	373.12	0.915	Level 1		
13,500.0	6,659.2	13,563.6	6,740.1	194.4	194.4	-103.73	-77.8	6,862.0	341.3	-37.3	378.56	0.902	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 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19MN-HZ Pad Sec.19-T5N-R64W - Klein 19N-312 - Wellbore #1 - Plan #3 (7-14-15)													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		
13,600.0	6,658.1	13,663.6	6,739.2	197.2	197.2	-103.74	-77.8	6,962.0	341.3	-42.7	383.99	0.889	Level 1	
13,700.0	6,657.1	13,763.6	6,738.2	200.0	200.0	-103.75	-77.8	7,062.0	341.3	-48.1	389.43	0.876	Level 1	
13,800.0	6,656.1	13,863.6	6,737.3	202.8	202.8	-103.75	-77.8	7,162.0	341.3	-53.6	394.87	0.864	Level 1	
13,900.0	6,655.1	13,963.6	6,736.3	205.7	205.6	-103.76	-77.8	7,261.9	341.3	-59.0	400.31	0.853	Level 1	
14,000.0	6,654.1	14,063.6	6,735.3	208.5	208.4	-103.77	-77.8	7,361.9	341.3	-64.4	405.74	0.841	Level 1	
14,100.0	6,653.1	14,163.6	6,734.4	211.3	211.2	-103.78	-77.8	7,461.9	341.3	-69.8	411.18	0.830	Level 1	
14,200.0	6,652.1	14,263.6	6,733.4	214.1	214.0	-103.79	-77.8	7,561.9	341.4	-75.3	416.62	0.819	Level 1	
14,300.0	6,651.1	14,363.6	6,732.5	216.9	216.8	-103.80	-77.8	7,661.9	341.4	-80.7	422.06	0.809	Level 1	
14,400.0	6,650.0	14,463.6	6,731.5	219.7	219.6	-103.81	-77.8	7,761.9	341.4	-86.1	427.49	0.799	Level 1	
14,500.0	6,649.0	14,563.6	6,730.5	222.5	222.4	-103.81	-77.8	7,861.9	341.4	-91.5	432.93	0.789	Level 1	
14,600.0	6,648.0	14,663.6	6,729.6	225.3	225.2	-103.82	-77.8	7,961.9	341.4	-97.0	438.37	0.779	Level 1	
14,700.0	6,647.0	14,763.6	6,728.6	228.1	228.0	-103.83	-77.8	8,061.9	341.4	-102.4	443.81	0.769	Level 1	
14,800.0	6,646.0	14,863.6	6,727.7	230.9	230.8	-103.84	-77.8	8,161.9	341.4	-107.8	449.24	0.760	Level 1	
14,900.0	6,645.0	14,963.6	6,726.7	233.7	233.6	-103.85	-77.8	8,261.9	341.4	-113.2	454.68	0.751	Level 1	
15,000.0	6,644.0	15,063.6	6,725.7	236.5	236.5	-103.86	-77.8	8,361.9	341.5	-118.7	460.12	0.742	Level 1	
15,100.0	6,643.0	15,163.6	6,724.8	239.3	239.3	-103.87	-77.8	8,461.9	341.5	-124.1	465.55	0.733	Level 1	
15,200.0	6,641.9	15,263.6	6,723.8	242.1	242.1	-103.87	-77.8	8,561.9	341.5	-129.5	470.99	0.725	Level 1	
15,300.0	6,640.9	15,363.6	6,722.9	244.9	244.9	-103.88	-77.8	8,661.9	341.5	-134.9	476.43	0.717	Level 1	
15,400.0	6,639.9	15,463.6	6,721.9	247.7	247.7	-103.89	-77.8	8,761.9	341.5	-140.4	481.86	0.709	Level 1	
15,500.0	6,638.9	15,563.6	6,720.9	250.5	250.5	-103.90	-77.8	8,861.9	341.5	-145.8	487.30	0.701	Level 1	
15,600.0	6,637.9	15,663.6	6,720.0	253.3	253.3	-103.91	-77.8	8,961.9	341.5	-151.2	492.74	0.693	Level 1	
15,700.0	6,636.9	15,763.6	6,719.0	256.1	256.1	-103.92	-77.8	9,061.9	341.5	-156.6	498.17	0.686	Level 1	
15,800.0	6,635.9	15,863.6	6,718.1	258.9	258.9	-103.93	-77.8	9,161.9	341.6	-162.1	503.61	0.678	Level 1	
15,900.0	6,634.9	15,963.6	6,717.1	261.7	261.7	-103.93	-77.8	9,261.9	341.6	-167.5	509.05	0.671	Level 1	
16,000.0	6,633.8	16,063.6	6,716.1	264.5	264.5	-103.94	-77.8	9,361.9	341.6	-172.9	514.48	0.664	Level 1	
16,100.0	6,632.8	16,163.6	6,715.2	267.3	267.3	-103.95	-77.8	9,461.8	341.6	-178.3	519.92	0.657	Level 1	
16,200.0	6,631.8	16,263.6	6,714.2	270.1	270.1	-103.96	-77.8	9,561.8	341.6	-183.7	525.35	0.650	Level 1	
16,300.0	6,630.8	16,363.6	6,713.3	272.9	272.9	-103.97	-77.8	9,661.8	341.6	-189.2	530.79	0.644	Level 1	
16,400.0	6,629.8	16,463.6	6,712.3	275.7	275.7	-103.98	-77.8	9,761.8	341.6	-194.6	536.22	0.637	Level 1	
16,500.0	6,628.8	16,563.6	6,711.3	278.5	278.5	-103.99	-77.8	9,861.8	341.6	-200.0	541.66	0.631	Level 1	
16,600.0	6,627.8	16,663.6	6,710.4	281.4	281.3	-103.99	-77.8	9,961.8	341.7	-205.4	547.09	0.625	Level 1	
16,700.0	6,626.8	16,763.6	6,709.4	284.2	284.1	-104.00	-77.8	10,061.8	341.7	-210.9	552.52	0.618	Level 1	
16,800.0	6,625.7	16,863.6	6,708.5	287.0	286.9	-104.01	-77.8	10,161.8	341.7	-216.3	557.96	0.612	Level 1	
16,900.0	6,624.7	16,963.6	6,707.5	289.8	289.7	-104.02	-77.8	10,261.8	341.7	-221.7	563.39	0.607	Level 1	
17,000.0	6,623.7	17,063.6	6,706.5	292.6	292.5	-104.03	-77.8	10,361.8	341.7	-227.1	568.83	0.601	Level 1	
17,100.0	6,622.7	17,163.6	6,705.6	295.4	295.4	-104.04	-77.8	10,461.8	341.7	-232.5	574.26	0.595	Level 1	
17,200.0	6,621.7	17,263.6	6,704.6	298.2	298.2	-104.04	-77.8	10,561.8	341.7	-238.0	579.69	0.590	Level 1	
17,238.8	6,621.3	17,302.3	6,704.3	299.3	299.2	-104.05	-77.8	10,600.6	341.7	-240.1	581.80	0.587	Level 1	
17,269.2	6,621.0	17,329.0	6,704.0	300.1	300.0	-104.05	-77.8	10,627.2	341.8	-241.6	583.35	0.586	Level 1, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #2 (4-16-15)												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)		
3,400.0	3,386.8	3,663.0	3,602.2	8.1	13.1	-31.65	-1,143.3	-46.8	984.4	967.9	16.49	59.704	
3,500.0	3,485.9	3,757.2	3,693.9	8.4	13.6	-31.71	-1,122.9	-53.9	950.9	933.9	17.00	55.925	
3,600.0	3,584.9	3,851.4	3,785.6	8.7	14.0	-31.77	-1,102.5	-61.0	917.4	899.9	17.52	52.363	
3,700.0	3,683.9	3,945.6	3,877.3	9.1	14.5	-31.84	-1,082.1	-68.2	883.9	865.8	18.04	49.001	
3,800.0	3,783.0	4,039.8	3,969.0	9.4	14.9	-31.92	-1,061.6	-75.3	850.4	831.8	18.56	45.823	
3,900.0	3,882.0	4,134.1	4,060.7	9.7	15.4	-32.00	-1,041.2	-82.4	816.9	797.8	19.08	42.817	
4,000.0	3,981.0	4,228.3	4,152.4	10.0	15.8	-32.09	-1,020.8	-89.6	783.4	763.8	19.60	39.967	
4,100.0	4,080.1	4,322.5	4,244.1	10.4	16.3	-32.18	-1,000.3	-96.7	749.9	729.7	20.12	37.264	
4,200.0	4,179.1	4,416.7	4,335.8	10.7	16.7	-32.29	-979.9	-103.8	716.4	695.7	20.65	34.697	
4,300.0	4,278.2	4,510.9	4,427.5	11.0	17.2	-32.41	-959.5	-110.9	682.9	661.7	21.17	32.256	
4,400.0	4,377.2	4,605.1	4,519.2	11.4	17.6	-32.53	-939.1	-118.1	649.4	627.7	21.69	29.932	
4,500.0	4,476.2	4,699.3	4,610.9	11.7	18.1	-32.68	-918.6	-125.2	615.9	593.6	22.22	27.718	
4,600.0	4,575.3	4,793.5	4,702.6	12.0	18.5	-32.83	-898.2	-132.3	582.4	559.6	22.74	25.605	
4,700.0	4,674.3	4,887.8	4,794.3	12.4	19.0	-33.01	-877.8	-139.5	548.9	525.6	23.27	23.588	
4,800.0	4,773.3	4,982.0	4,886.0	12.7	19.4	-33.21	-857.4	-146.6	515.4	491.6	23.80	21.660	
4,900.0	4,872.4	5,076.2	4,977.7	13.1	19.9	-33.44	-836.9	-153.7	481.9	457.6	24.32	19.816	
5,000.0	4,971.4	5,170.4	5,069.4	13.4	20.3	-33.70	-816.5	-160.8	448.5	423.6	24.85	18.050	
5,032.4	5,003.5	5,200.9	5,099.0	13.5	20.5	-33.80	-809.9	-163.1	437.7	412.6	25.02	17.495	
5,100.0	5,070.6	5,264.8	5,161.3	13.7	20.8	-33.68	-796.0	-168.0	415.6	390.2	25.44	16.339	
5,200.0	5,170.1	5,358.7	5,252.7	13.9	21.2	-33.33	-775.7	-175.1	385.5	359.4	26.02	14.814	
5,300.0	5,269.9	5,444.5	5,336.5	14.1	21.6	-32.81	-758.6	-181.1	359.8	333.3	26.52	13.569	
5,400.0	5,369.8	5,532.1	5,422.7	14.3	21.8	-32.15	-743.6	-186.3	339.9	312.9	26.97	12.601	
5,430.2	5,400.0	5,558.8	5,449.0	14.4	21.9	175.59	-739.5	-187.7	335.0	299.9	35.11	9.540	
5,500.0	5,469.8	5,621.0	5,510.5	14.5	22.1	176.00	-730.9	-190.7	325.1	289.7	35.40	9.184	
5,600.0	5,569.8	5,710.6	5,599.5	14.6	22.3	176.52	-720.7	-194.3	313.5	277.7	35.77	8.764	
5,700.0	5,669.8	5,800.0	5,688.5	14.8	22.5	176.93	-713.1	-196.9	304.9	268.8	36.11	8.443	
5,800.0	5,769.8	5,891.5	5,779.9	14.9	22.7	177.22	-708.1	-198.7	299.4	262.9	36.43	8.218	
5,900.0	5,869.8	5,982.4	5,870.7	15.1	22.8	177.35	-705.9	-199.5	296.9	260.1	36.71	8.086	
5,946.5	5,916.3	6,026.0	5,914.3	15.2	22.8	177.35	-705.7	-199.5	296.7	259.9	36.84	8.053	
5,989.2	5,959.1	6,068.8	5,957.1	15.2	22.9	177.35	-705.7	-199.5	296.7	259.7	36.96	8.027	
6,000.0	5,969.8	6,079.5	5,967.8	15.3	22.9	87.37	-705.7	-199.5	296.7	267.5	29.16	10.175	
6,050.0	6,019.8	6,129.5	6,017.8	15.3	23.0	87.83	-705.7	-199.5	296.6	267.2	29.35	10.105	
6,100.0	6,069.4	6,178.7	6,067.0	15.4	23.0	88.65	-705.7	-198.2	296.5	266.9	29.54	10.035	
6,150.0	6,118.6	6,228.2	6,116.3	15.4	23.1	89.48	-705.7	-193.6	296.4	266.7	29.71	9.977	
6,181.5	6,149.3	6,259.5	6,147.3	15.5	23.1	90.00	-705.7	-189.1	296.4	266.6	29.80	9.945 CC	
6,200.0	6,167.2	6,278.0	6,165.5	15.5	23.1	90.31	-705.7	-185.9	296.4	266.5	29.85	9.929	
6,250.0	6,214.8	6,328.1	6,214.3	15.5	23.1	91.15	-705.7	-174.9	296.4	266.5	29.98	9.889	
6,300.0	6,261.3	6,378.4	6,262.6	15.5	23.1	91.98	-705.7	-160.6	296.6	266.5	30.09	9.857	
6,350.0	6,306.6	6,429.1	6,310.1	15.6	23.1	92.80	-705.7	-143.1	296.7	266.5	30.19	9.829	
6,400.0	6,350.3	6,480.0	6,356.6	15.6	23.1	93.62	-705.7	-122.3	297.0	266.7	30.29	9.803	
6,450.0	6,392.4	6,531.2	6,401.8	15.6	23.1	94.42	-705.7	-98.3	297.3	266.9	30.41	9.774	
6,500.0	6,432.6	6,582.8	6,445.6	15.6	23.0	95.20	-705.7	-71.2	297.6	267.0	30.56	9.737	
6,550.0	6,470.8	6,634.6	6,487.7	15.6	23.0	95.96	-705.7	-41.1	298.0	267.2	30.76	9.687	
6,600.0	6,506.8	6,686.7	6,527.9	15.6	23.0	96.69	-705.7	-7.9	298.4	267.4	31.03	9.617	
6,650.0	6,540.5	6,739.0	6,565.9	15.7	22.9	97.39	-705.7	28.1	298.9	267.5	31.39	9.522	
6,700.0	6,571.6	6,791.7	6,601.6	15.7	22.9	98.07	-705.7	66.9	299.4	267.5	31.86	9.396	
6,750.0	6,600.2	6,844.6	6,634.6	15.8	22.9	98.70	-705.7	108.2	299.8	267.4	32.46	9.236	
6,800.0	6,626.0	6,897.8	6,664.9	16.1	22.9	99.30	-705.7	151.9	300.3	267.1	33.22	9.042	
6,850.0	6,648.9	6,951.2	6,692.1	16.6	22.9	99.85	-705.7	197.8	300.8	266.7	34.14	8.813	
6,900.0	6,668.9	7,004.9	6,716.2	17.3	22.9	100.36	-705.7	245.7	301.3	266.1	35.23	8.552	
6,950.0	6,685.8	7,058.7	6,736.9	18.0	22.9	100.82	-705.7	295.4	301.8	265.3	36.50	8.267	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #2 (4-16-15)												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	
7,000.0	6,699.7	7,112.7	6,754.1	18.9	23.0	101.23	-705.7	346.6	302.2	264.2	37.94	7.964	
7,050.0	6,710.3	7,167.0	6,767.7	19.8	23.1	101.59	-705.7	399.1	302.6	263.0	39.54	7.652	
7,100.0	6,717.8	7,221.3	6,777.6	20.7	23.4	101.90	-705.7	452.6	302.9	261.6	41.29	7.337	
7,150.0	6,722.0	7,275.8	6,783.7	21.7	23.9	102.16	-705.7	506.7	303.2	260.0	43.16	7.025	
7,197.0	6,723.0	7,327.1	6,785.8	22.7	24.6	102.34	-705.7	557.9	303.4	258.4	45.01	6.741	
7,200.0	6,722.9	7,330.4	6,785.8	22.7	24.6	102.35	-705.7	561.2	303.4	258.3	45.13	6.723	
7,300.0	6,721.9	7,431.3	6,785.0	24.9	26.3	102.38	-705.7	662.1	303.4	254.2	49.20	6.167	
7,400.0	6,720.9	7,531.3	6,784.1	27.2	28.3	102.40	-705.7	762.1	303.5	250.0	53.50	5.672	
7,500.0	6,719.9	7,631.3	6,783.2	29.6	30.4	102.42	-705.7	862.1	303.5	245.5	58.00	5.232	
7,600.0	6,718.9	7,731.3	6,782.3	32.0	32.7	102.44	-705.7	962.1	303.5	240.8	62.66	4.844	
7,700.0	6,717.9	7,831.3	6,781.4	34.5	35.0	102.46	-705.7	1,062.1	303.5	236.1	67.44	4.500	
7,800.0	6,716.9	7,931.3	6,780.5	37.0	37.5	102.48	-705.7	1,162.1	303.5	231.2	72.33	4.197	
7,900.0	6,715.8	8,031.3	6,779.5	39.6	39.9	102.50	-705.7	1,262.1	303.6	226.3	77.29	3.927	
8,000.0	6,714.8	8,131.3	6,778.6	42.2	42.4	102.52	-705.7	1,362.1	303.6	221.3	82.33	3.688	
8,100.0	6,713.8	8,231.3	6,777.7	44.8	45.0	102.54	-705.7	1,462.1	303.6	216.2	87.41	3.473	
8,200.0	6,712.8	8,331.3	6,776.8	47.5	47.5	102.56	-705.7	1,562.1	303.6	211.1	92.54	3.281	
8,300.0	6,711.8	8,431.3	6,775.9	50.2	50.1	102.58	-705.7	1,662.1	303.7	205.9	97.71	3.108	
8,400.0	6,710.8	8,531.3	6,775.0	52.8	52.8	102.60	-705.7	1,762.1	303.7	200.8	102.92	2.951	
8,500.0	6,709.8	8,631.3	6,774.1	55.5	55.4	102.62	-705.7	1,862.1	303.7	195.6	108.15	2.808	
8,600.0	6,708.8	8,731.3	6,773.2	58.2	58.0	102.64	-705.7	1,962.0	303.7	190.3	113.40	2.678	
8,700.0	6,707.7	8,831.3	6,772.3	61.0	60.7	102.66	-705.7	2,062.0	303.7	185.1	118.67	2.560	
8,800.0	6,706.7	8,931.3	6,771.4	63.7	63.4	102.67	-705.7	2,162.0	303.8	179.8	123.97	2.450	
8,900.0	6,705.7	9,031.3	6,770.5	66.4	66.1	102.69	-705.7	2,262.0	303.8	174.5	129.27	2.350	
9,000.0	6,704.7	9,131.3	6,769.6	69.1	68.8	102.71	-705.7	2,362.0	303.8	169.2	134.59	2.257	
9,100.0	6,703.7	9,231.3	6,768.7	71.9	71.5	102.73	-705.7	2,462.0	303.8	163.9	139.93	2.171	
9,200.0	6,702.7	9,331.3	6,767.7	74.6	74.2	102.75	-705.7	2,562.0	303.9	158.6	145.27	2.092	
9,300.0	6,701.7	9,431.3	6,766.8	77.4	76.9	102.77	-705.7	2,662.0	303.9	153.3	150.62	2.018	
9,400.0	6,700.7	9,531.3	6,765.9	80.1	79.6	102.79	-705.7	2,762.0	303.9	147.9	155.98	1.948	
9,500.0	6,699.6	9,631.3	6,765.0	82.9	82.4	102.81	-705.7	2,862.0	303.9	142.6	161.35	1.884	
9,600.0	6,698.6	9,731.3	6,764.1	85.7	85.1	102.83	-705.7	2,962.0	304.0	137.2	166.73	1.823	
9,700.0	6,697.6	9,831.3	6,763.2	88.4	87.8	102.85	-705.7	3,062.0	304.0	131.9	172.11	1.766	
9,800.0	6,696.6	9,931.3	6,762.3	91.2	90.6	102.87	-705.7	3,162.0	304.0	126.5	177.49	1.713	
9,900.0	6,695.6	10,031.3	6,761.4	94.0	93.3	102.89	-705.7	3,262.0	304.0	121.1	182.88	1.662	
10,000.0	6,694.6	10,131.3	6,760.5	96.7	96.1	102.91	-705.7	3,362.0	304.0	115.8	188.28	1.615	
10,100.0	6,693.6	10,231.3	6,759.6	99.5	98.9	102.93	-705.7	3,462.0	304.1	110.4	193.68	1.570	
10,200.0	6,692.6	10,331.3	6,758.7	102.3	101.6	102.94	-705.7	3,562.0	304.1	105.0	199.08	1.527	
10,300.0	6,691.5	10,431.3	6,757.8	105.1	104.4	102.96	-705.7	3,662.0	304.1	99.6	204.49	1.487 Level 3	
10,400.0	6,690.5	10,531.3	6,756.9	107.8	107.1	102.98	-705.7	3,762.0	304.1	94.2	209.89	1.449 Level 3	
10,500.0	6,689.5	10,631.3	6,756.0	110.6	109.9	103.00	-705.7	3,862.0	304.2	88.9	215.30	1.413 Level 3	
10,600.0	6,688.5	10,731.3	6,755.0	113.4	112.7	103.02	-705.7	3,962.0	304.2	83.5	220.72	1.378 Level 3	
10,700.0	6,687.5	10,831.3	6,754.1	116.2	115.4	103.04	-705.7	4,062.0	304.2	78.1	226.13	1.345 Level 3	
10,800.0	6,686.5	10,931.3	6,753.2	119.0	118.2	103.06	-705.7	4,162.0	304.2	72.7	231.55	1.314 Level 3	
10,900.0	6,685.5	11,031.3	6,752.3	121.8	121.0	103.08	-705.7	4,262.0	304.2	67.3	236.97	1.284 Level 3	
11,000.0	6,684.5	11,131.3	6,751.4	124.6	123.8	103.10	-705.7	4,361.9	304.3	61.9	242.39	1.255 Level 3	
11,100.0	6,683.4	11,231.3	6,750.5	127.3	126.5	103.12	-705.7	4,461.9	304.3	56.5	247.81	1.228 Level 2	
11,200.0	6,682.4	11,331.3	6,749.6	130.1	129.3	103.14	-705.7	4,561.9	304.3	51.1	253.23	1.202 Level 2	
11,300.0	6,681.4	11,431.3	6,748.7	132.9	132.1	103.16	-705.7	4,661.9	304.3	45.7	258.65	1.177 Level 2	
11,400.0	6,680.4	11,531.3	6,747.8	135.7	134.9	103.18	-705.7	4,761.9	304.4	40.3	264.08	1.153 Level 2	
11,500.0	6,679.4	11,631.3	6,746.9	138.5	137.7	103.19	-705.7	4,861.9	304.4	34.9	269.50	1.129 Level 2	
11,600.0	6,678.4	11,731.3	6,746.0	141.3	140.4	103.21	-705.7	4,961.9	304.4	29.5	274.93	1.107 Level 2	
11,700.0	6,677.4	11,831.3	6,745.1	144.1	143.2	103.23	-705.7	5,061.9	304.4	24.1	280.36	1.086 Level 2	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #2 (4-16-15)													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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
11,800.0	6,676.4	11,931.3	6,744.2	146.9	146.0	103.25	-705.7	5,161.9	304.5	18.7	285.78	1.065	Level 2	
11,900.0	6,675.4	12,031.3	6,743.2	149.7	148.8	103.27	-705.7	5,261.9	304.5	13.3	291.21	1.046	Level 2	
12,000.0	6,674.3	12,131.3	6,742.3	152.5	151.6	103.29	-705.7	5,361.9	304.5	7.9	296.64	1.027	Level 2	
12,100.0	6,673.3	12,231.3	6,741.4	155.3	154.4	103.31	-705.7	5,461.9	304.5	2.5	302.07	1.008	Level 2	
12,200.0	6,672.3	12,331.3	6,740.5	158.1	157.2	103.33	-705.7	5,561.9	304.6	-2.9	307.50	0.990	Level 1	
12,300.0	6,671.3	12,431.3	6,739.6	160.9	159.9	103.35	-705.7	5,661.9	304.6	-8.4	312.93	0.973	Level 1	
12,400.0	6,670.3	12,531.3	6,738.7	163.7	162.7	103.37	-705.7	5,761.9	304.6	-13.8	318.36	0.957	Level 1	
12,500.0	6,669.3	12,631.3	6,737.8	166.5	165.5	103.39	-705.7	5,861.9	304.6	-19.2	323.79	0.941	Level 1	
12,600.0	6,668.3	12,731.3	6,736.9	169.3	168.3	103.41	-705.7	5,961.9	304.6	-24.6	329.22	0.925	Level 1	
12,700.0	6,667.3	12,831.3	6,736.0	172.1	171.1	103.42	-705.7	6,061.9	304.7	-30.0	334.65	0.910	Level 1	
12,800.0	6,666.2	12,931.3	6,735.1	174.8	173.9	103.44	-705.7	6,161.9	304.7	-35.4	340.07	0.896	Level 1	
12,900.0	6,665.2	13,031.3	6,734.2	177.6	176.7	103.46	-705.7	6,261.9	304.7	-40.8	345.50	0.882	Level 1	
13,000.0	6,664.2	13,131.3	6,733.3	180.4	179.5	103.48	-705.7	6,361.9	304.7	-46.2	350.93	0.868	Level 1	
13,100.0	6,663.2	13,231.3	6,732.4	183.2	182.3	103.50	-705.7	6,461.9	304.8	-51.6	356.36	0.855	Level 1	
13,200.0	6,662.2	13,331.3	6,731.4	186.0	185.1	103.52	-705.7	6,561.9	304.8	-57.0	361.79	0.842	Level 1	
13,300.0	6,661.2	13,431.3	6,730.5	188.8	187.9	103.54	-705.7	6,661.9	304.8	-62.4	367.22	0.830	Level 1	
13,400.0	6,660.2	13,531.3	6,729.6	191.6	190.7	103.56	-705.7	6,761.8	304.8	-67.8	372.65	0.818	Level 1	
13,500.0	6,659.2	13,631.3	6,728.7	194.4	193.5	103.58	-705.7	6,861.8	304.9	-73.2	378.08	0.806	Level 1	
13,600.0	6,658.1	13,731.3	6,727.8	197.2	196.2	103.60	-705.7	6,961.8	304.9	-78.6	383.51	0.795	Level 1	
13,700.0	6,657.1	13,831.3	6,726.9	200.0	199.0	103.62	-705.7	7,061.8	304.9	-84.0	388.93	0.784	Level 1	
13,800.0	6,656.1	13,931.3	6,726.0	202.8	201.8	103.64	-705.7	7,161.8	304.9	-89.4	394.36	0.773	Level 1, ES, SF	
13,900.0	6,655.1	13,931.5	6,726.0	205.7	201.8	103.64	-705.7	7,162.1	320.9	-76.2	397.10	0.808	Level 1	
14,000.0	6,654.1	13,931.5	6,726.0	208.5	201.8	103.64	-705.7	7,162.1	364.6	-35.2	399.83	0.912	Level 1	
14,100.0	6,653.1	13,931.5	6,726.0	211.3	201.8	103.64	-705.7	7,162.1	427.7	25.1	402.56	1.062	Level 2	
14,200.0	6,652.1	13,931.5	6,726.0	214.1	201.8	103.64	-705.7	7,162.1	502.8	97.6	405.29	1.241	Level 2	
14,300.0	6,651.1	13,931.5	6,726.0	216.9	201.8	103.64	-705.7	7,162.1	585.5	177.5	408.02	1.435	Level 3	
14,400.0	6,650.0	13,931.5	6,726.0	219.7	201.8	103.64	-705.7	7,162.1	672.9	262.1	410.75	1.638		
14,500.0	6,649.0	13,931.5	6,726.0	222.5	201.8	103.64	-705.7	7,162.1	763.4	349.9	413.48	1.846		
14,600.0	6,648.0	13,931.5	6,726.0	225.3	201.8	103.64	-705.7	7,162.1	856.0	439.8	416.21	2.057		
14,700.0	6,647.0	13,931.5	6,726.0	228.1	201.8	103.64	-705.7	7,162.1	950.1	531.2	418.94	2.268		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
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Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	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 (7-14-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4641.0ft (RKB - 13')

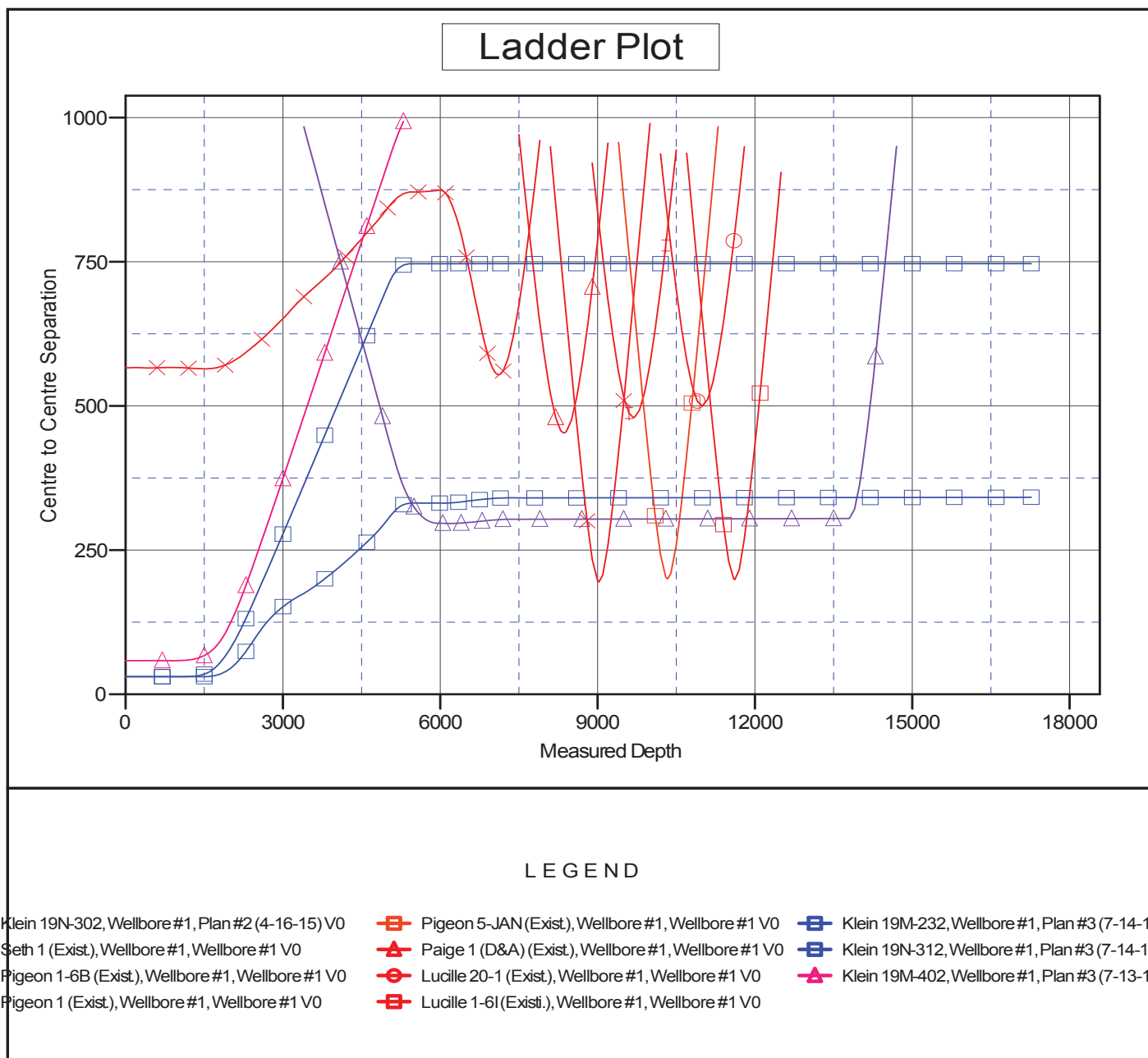
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Klein 19N-202

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-202
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4641.0ft (RKB - 13')
Reference Site:	Klein 19MN-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4641.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-202	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
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Reference Depths are relative to WELL @ 4641.0ft (RKB - 13')

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Central Meridian is -105.500000

Coordinates are relative to: Klein 19N-202

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