

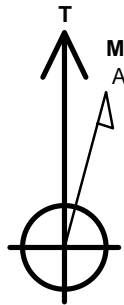
PETROLEUM DEVELOPMENT CORP Weld County CO

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

Surface Location: Klein 19O-HZ Pad Sec.19-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4626.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1384509.28 3253110.45 40.385320 -104.591380
 RKB - 13' WELL @ 4639.0ft (RKB - 13')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' N/S Hardline (19N-432)	1.0	632.5	5437.7	Rectangle (Sides: L10028.9 W100.0)
SHL 2389'FNL & 2251'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 1833'FNL & 2353'FEL, Sec.21	6850.0	632.5	10452.1	Point



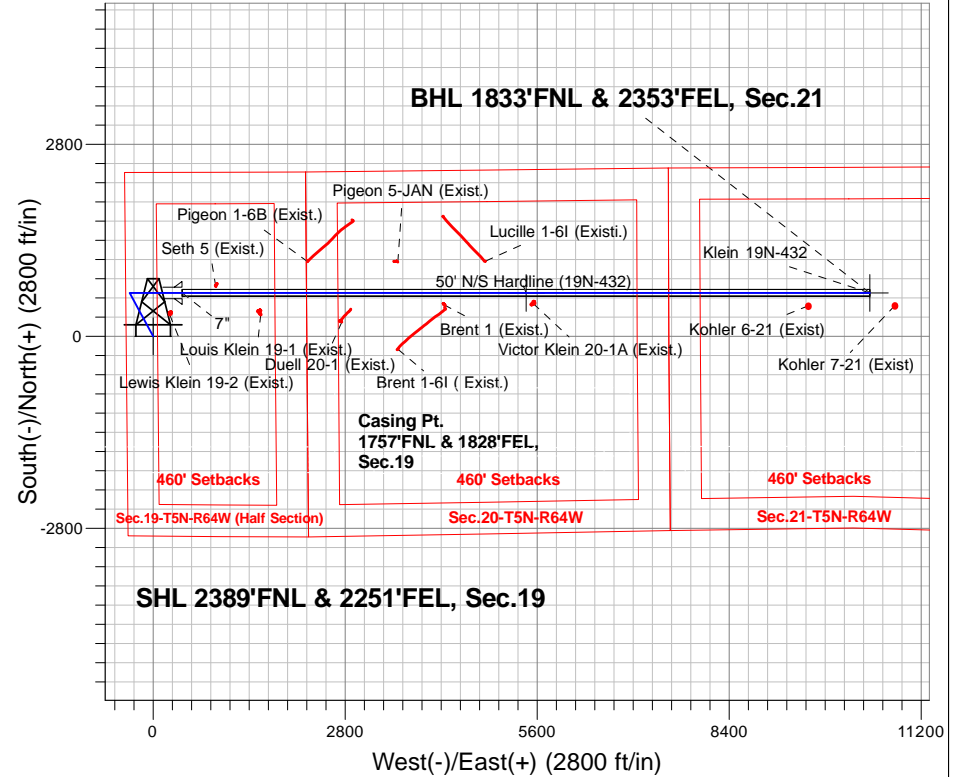
Azimuths to True North
 Magnetic North: 8.22°
 Magnetic Field
 Strength: 52713.1snT
 Dip Angle: 66.92°
 Date: 7/15/2015
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1 - Start Build 1.00
5412.0	5467.8	KOP #2 - Start Drop -2.00
6117.6	6175.7	Start Build 7.50
6881.5	7378.1	Start 10029.0 hold at 7378.1 MD
6850.0	17407.1	TD at 17407.1

Klein 19O-HZ Pad Sec.19-T5N-R64W
 Klein 19N-432
 Plan #3 (7-16-15)

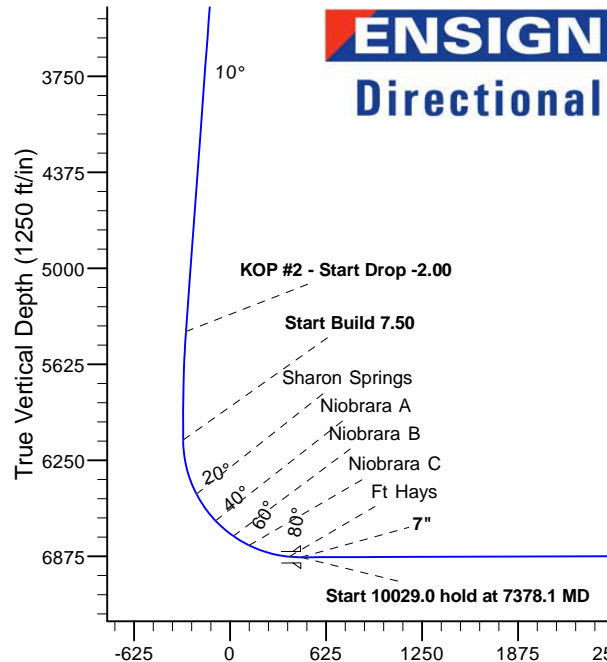
South(-)/North(+) (2800 ft/in)



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

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1980.7	9.81	331.52	1975.9	73.6	-39.9	1.00	331.52	-35.4	
4	5467.8	9.81	331.52	5412.0	595.7	-323.1	0.00	0.00	-286.6	
5	5958.1	0.00	0.00	5900.0	632.5	-343.1	2.00	180.00	-304.3	
6	6175.7	0.00	0.00	6117.6	632.5	-343.1	0.00	0.00	-304.3	
7	7378.1	90.18	90.00	6881.5	632.5	423.2	7.50	90.00	460.7	
8	17407.1	90.18	90.00	6850.0	632.5	10452.1	0.00	0.00	10471.3	BHL 1833'FNL & 2353'FEL, Sec.21



Vertical Section at 86.54° (1250 ft/in)

BHL 1833'FNL & 2353'FEL, Sec.21

TD at 17407.1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19N-432

Wellbore #1

Plan: Plan #3 (7-16-15)

Standard Planning Report

29 July, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

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

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

Well	Klein 19N-432		
Well Position	+N/-S	-32.8 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/15/2015	8.22	66.92	52,713

Design	Plan #3 (7-16-15)			
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	86.54

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,980.7	9.81	331.52	1,975.9	73.6	-39.9	1.00	1.00	0.00	331.52	
5,467.8	9.81	331.52	5,412.0	595.7	-323.1	0.00	0.00	0.00	0.00	
5,958.1	0.00	0.00	5,900.0	632.5	-343.1	2.00	-2.00	0.00	180.00	
6,175.7	0.00	0.00	6,117.6	632.5	-343.1	0.00	0.00	0.00	0.00	
7,378.1	90.18	90.00	6,881.5	632.5	423.2	7.50	7.50	0.00	90.00	
17,407.1	90.18	90.00	6,850.0	632.5	10,452.1	0.00	0.00	0.00	0.00	BHL 1833'FNL & 235°

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

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
KOP #1 - Start Build 1.00									
1,100.0	1.00	331.52	1,100.0	0.8	-0.4	-0.4	1.00	1.00	0.00
1,200.0	2.00	331.52	1,200.0	3.1	-1.7	-1.5	1.00	1.00	0.00
1,300.0	3.00	331.52	1,299.9	6.9	-3.7	-3.3	1.00	1.00	0.00
1,400.0	4.00	331.52	1,399.7	12.3	-6.7	-5.9	1.00	1.00	0.00
1,500.0	5.00	331.52	1,499.4	19.2	-10.4	-9.2	1.00	1.00	0.00
1,600.0	6.00	331.52	1,598.9	27.6	-15.0	-13.3	1.00	1.00	0.00
1,700.0	7.00	331.52	1,698.3	37.5	-20.4	-18.1	1.00	1.00	0.00
1,800.0	8.00	331.52	1,797.4	49.0	-26.6	-23.6	1.00	1.00	0.00
1,900.0	9.00	331.52	1,896.3	62.0	-33.6	-29.8	1.00	1.00	0.00
1,980.7	9.81	331.52	1,975.9	73.6	-39.9	-35.4	1.00	1.00	0.00
2,000.0	9.81	331.52	1,994.9	76.5	-41.5	-36.8	0.00	0.00	0.00
2,100.0	9.81	331.52	2,093.5	91.5	-49.6	-44.0	0.00	0.00	0.00
2,200.0	9.81	331.52	2,192.0	106.4	-57.7	-51.2	0.00	0.00	0.00
2,300.0	9.81	331.52	2,290.6	121.4	-65.9	-58.4	0.00	0.00	0.00
2,400.0	9.81	331.52	2,389.1	136.4	-74.0	-65.6	0.00	0.00	0.00
2,500.0	9.81	331.52	2,487.6	151.3	-82.1	-72.8	0.00	0.00	0.00
2,600.0	9.81	331.52	2,586.2	166.3	-90.2	-80.0	0.00	0.00	0.00
2,700.0	9.81	331.52	2,684.7	181.3	-98.3	-87.2	0.00	0.00	0.00
2,800.0	9.81	331.52	2,783.2	196.3	-106.5	-94.4	0.00	0.00	0.00
2,900.0	9.81	331.52	2,881.8	211.2	-114.6	-101.6	0.00	0.00	0.00
3,000.0	9.81	331.52	2,980.3	226.2	-122.7	-108.8	0.00	0.00	0.00
3,100.0	9.81	331.52	3,078.9	241.2	-130.8	-116.0	0.00	0.00	0.00
3,200.0	9.81	331.52	3,177.4	256.2	-139.0	-123.2	0.00	0.00	0.00
3,300.0	9.81	331.52	3,275.9	271.1	-147.1	-130.4	0.00	0.00	0.00
3,400.0	9.81	331.52	3,374.5	286.1	-155.2	-137.6	0.00	0.00	0.00
3,500.0	9.81	331.52	3,473.0	301.1	-163.3	-144.8	0.00	0.00	0.00
3,600.0	9.81	331.52	3,571.6	316.0	-171.4	-152.0	0.00	0.00	0.00
3,700.0	9.81	331.52	3,670.1	331.0	-179.6	-159.2	0.00	0.00	0.00
3,800.0	9.81	331.52	3,768.6	346.0	-187.7	-166.4	0.00	0.00	0.00
3,900.0	9.81	331.52	3,867.2	361.0	-195.8	-173.6	0.00	0.00	0.00
4,000.0	9.81	331.52	3,965.7	375.9	-203.9	-180.8	0.00	0.00	0.00
4,100.0	9.81	331.52	4,064.2	390.9	-212.0	-188.1	0.00	0.00	0.00
4,200.0	9.81	331.52	4,162.8	405.9	-220.2	-195.3	0.00	0.00	0.00
4,300.0	9.81	331.52	4,261.3	420.8	-228.3	-202.5	0.00	0.00	0.00
4,400.0	9.81	331.52	4,359.9	435.8	-236.4	-209.7	0.00	0.00	0.00
4,500.0	9.81	331.52	4,458.4	450.8	-244.5	-216.9	0.00	0.00	0.00
4,600.0	9.81	331.52	4,556.9	465.8	-252.7	-224.1	0.00	0.00	0.00
4,700.0	9.81	331.52	4,655.5	480.7	-260.8	-231.3	0.00	0.00	0.00
4,800.0	9.81	331.52	4,754.0	495.7	-268.9	-238.5	0.00	0.00	0.00
4,900.0	9.81	331.52	4,852.6	510.7	-277.0	-245.7	0.00	0.00	0.00
5,000.0	9.81	331.52	4,951.1	525.7	-285.1	-252.9	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	9.81	331.52	5,049.6	540.6	-293.3	-260.1	0.00	0.00	0.00
5,200.0	9.81	331.52	5,148.2	555.6	-301.4	-267.3	0.00	0.00	0.00
5,300.0	9.81	331.52	5,246.7	570.6	-309.5	-274.5	0.00	0.00	0.00
5,400.0	9.81	331.52	5,345.3	585.5	-317.6	-281.7	0.00	0.00	0.00
5,467.8	9.81	331.52	5,412.1	595.7	-323.1	-286.6	0.00	0.00	0.00
KOP #2 - Start Drop -2.00									
5,500.0	9.16	331.52	5,443.8	600.4	-325.7	-288.8	2.00	-2.00	0.00
5,600.0	7.16	331.52	5,542.8	612.8	-332.4	-294.8	2.00	-2.00	0.00
5,700.0	5.16	331.52	5,642.2	622.3	-337.6	-299.4	2.00	-2.00	0.00
5,800.0	3.16	331.52	5,741.9	628.7	-341.0	-302.4	2.00	-2.00	0.00
5,900.0	1.16	331.52	5,841.9	632.0	-342.8	-304.0	2.00	-2.00	0.00
5,958.1	0.00	0.00	5,900.0	632.5	-343.1	-304.3	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,941.9	632.5	-343.1	-304.3	0.00	0.00	0.00
6,100.0	0.00	0.00	6,041.9	632.5	-343.1	-304.3	0.00	0.00	0.00
6,175.7	0.00	0.00	6,117.6	632.5	-343.1	-304.3	0.00	0.00	0.00
Start Build 7.50									
6,200.0	1.82	90.00	6,141.9	632.5	-342.7	-303.9	7.50	7.50	0.00
6,300.0	9.32	90.00	6,241.3	632.5	-333.0	-294.2	7.50	7.50	0.00
6,400.0	16.82	90.00	6,338.7	632.5	-310.4	-271.6	7.50	7.50	0.00
6,500.0	24.32	90.00	6,432.2	632.5	-275.3	-236.6	7.50	7.50	0.00
6,600.0	31.82	90.00	6,520.4	632.5	-228.3	-189.6	7.50	7.50	0.00
6,700.0	39.32	90.00	6,601.7	632.5	-170.1	-131.6	7.50	7.50	0.00
6,800.0	46.82	90.00	6,674.7	632.5	-101.9	-63.5	7.50	7.50	0.00
6,900.0	54.32	90.00	6,738.1	632.5	-24.7	13.5	7.50	7.50	0.00
7,000.0	61.82	90.00	6,791.0	632.5	60.1	98.2	7.50	7.50	0.00
7,100.0	69.32	90.00	6,832.3	632.5	151.1	189.0	7.50	7.50	0.00
7,200.0	76.82	90.00	6,861.4	632.5	246.7	284.4	7.50	7.50	0.00
7,300.0	84.32	90.00	6,877.8	632.5	345.3	382.8	7.50	7.50	0.00
7,378.1	90.18	90.00	6,881.5	632.5	423.2	460.7	7.50	7.50	0.00
Start 10029.0 hold at 7378.1 MD - 7"									
7,400.0	90.18	90.00	6,881.4	632.5	445.1	482.5	0.00	0.00	0.00
7,500.0	90.18	90.00	6,881.1	632.5	545.1	582.4	0.00	0.00	0.00
7,600.0	90.18	90.00	6,880.8	632.5	645.1	682.2	0.00	0.00	0.00
7,700.0	90.18	90.00	6,880.5	632.5	745.1	782.0	0.00	0.00	0.00
7,800.0	90.18	90.00	6,880.2	632.5	845.1	881.8	0.00	0.00	0.00
7,900.0	90.18	90.00	6,879.9	632.5	945.1	981.6	0.00	0.00	0.00
8,000.0	90.18	90.00	6,879.6	632.5	1,045.1	1,081.4	0.00	0.00	0.00
8,100.0	90.18	90.00	6,879.2	632.5	1,145.1	1,181.3	0.00	0.00	0.00
8,200.0	90.18	90.00	6,878.9	632.5	1,245.1	1,281.1	0.00	0.00	0.00
8,300.0	90.18	90.00	6,878.6	632.5	1,345.1	1,380.9	0.00	0.00	0.00
8,400.0	90.18	90.00	6,878.3	632.5	1,445.1	1,480.7	0.00	0.00	0.00
8,500.0	90.18	90.00	6,878.0	632.5	1,545.1	1,580.5	0.00	0.00	0.00
8,600.0	90.18	90.00	6,877.7	632.5	1,645.1	1,680.3	0.00	0.00	0.00
8,700.0	90.18	90.00	6,877.4	632.5	1,745.1	1,780.2	0.00	0.00	0.00
8,800.0	90.18	90.00	6,877.0	632.5	1,845.1	1,880.0	0.00	0.00	0.00
8,900.0	90.18	90.00	6,876.7	632.5	1,945.1	1,979.8	0.00	0.00	0.00
9,000.0	90.18	90.00	6,876.4	632.5	2,045.1	2,079.6	0.00	0.00	0.00
9,100.0	90.18	90.00	6,876.1	632.5	2,145.1	2,179.4	0.00	0.00	0.00
9,200.0	90.18	90.00	6,875.8	632.5	2,245.1	2,279.2	0.00	0.00	0.00
9,300.0	90.18	90.00	6,875.5	632.5	2,345.1	2,379.1	0.00	0.00	0.00
9,400.0	90.18	90.00	6,875.2	632.5	2,445.1	2,478.9	0.00	0.00	0.00
9,500.0	90.18	90.00	6,874.8	632.5	2,545.1	2,578.7	0.00	0.00	0.00
9,600.0	90.18	90.00	6,874.5	632.5	2,645.1	2,678.5	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

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)
9,700.0	90.18	90.00	6,874.2	632.5	2,745.1	2,778.3	0.00	0.00	0.00
9,800.0	90.18	90.00	6,873.9	632.5	2,845.1	2,878.1	0.00	0.00	0.00
9,900.0	90.18	90.00	6,873.6	632.5	2,945.1	2,978.0	0.00	0.00	0.00
10,000.0	90.18	90.00	6,873.3	632.5	3,045.1	3,077.8	0.00	0.00	0.00
10,100.0	90.18	90.00	6,873.0	632.5	3,145.1	3,177.6	0.00	0.00	0.00
10,200.0	90.18	90.00	6,872.6	632.5	3,245.1	3,277.4	0.00	0.00	0.00
10,300.0	90.18	90.00	6,872.3	632.5	3,345.1	3,377.2	0.00	0.00	0.00
10,400.0	90.18	90.00	6,872.0	632.5	3,445.1	3,477.0	0.00	0.00	0.00
10,500.0	90.18	90.00	6,871.7	632.5	3,545.1	3,576.9	0.00	0.00	0.00
10,600.0	90.18	90.00	6,871.4	632.5	3,645.1	3,676.7	0.00	0.00	0.00
10,700.0	90.18	90.00	6,871.1	632.5	3,745.1	3,776.5	0.00	0.00	0.00
10,800.0	90.18	90.00	6,870.8	632.5	3,845.1	3,876.3	0.00	0.00	0.00
10,900.0	90.18	90.00	6,870.4	632.5	3,945.1	3,976.1	0.00	0.00	0.00
11,000.0	90.18	90.00	6,870.1	632.5	4,045.1	4,075.9	0.00	0.00	0.00
11,100.0	90.18	90.00	6,869.8	632.5	4,145.1	4,175.8	0.00	0.00	0.00
11,200.0	90.18	90.00	6,869.5	632.5	4,245.1	4,275.6	0.00	0.00	0.00
11,300.0	90.18	90.00	6,869.2	632.5	4,345.1	4,375.4	0.00	0.00	0.00
11,400.0	90.18	90.00	6,868.9	632.5	4,445.1	4,475.2	0.00	0.00	0.00
11,500.0	90.18	90.00	6,868.6	632.5	4,545.1	4,575.0	0.00	0.00	0.00
11,600.0	90.18	90.00	6,868.2	632.5	4,645.1	4,674.8	0.00	0.00	0.00
11,700.0	90.18	90.00	6,867.9	632.5	4,745.1	4,774.7	0.00	0.00	0.00
11,800.0	90.18	90.00	6,867.6	632.5	4,845.1	4,874.5	0.00	0.00	0.00
11,900.0	90.18	90.00	6,867.3	632.5	4,945.1	4,974.3	0.00	0.00	0.00
12,000.0	90.18	90.00	6,867.0	632.5	5,045.1	5,074.1	0.00	0.00	0.00
12,100.0	90.18	90.00	6,866.7	632.5	5,145.1	5,173.9	0.00	0.00	0.00
12,200.0	90.18	90.00	6,866.4	632.5	5,245.1	5,273.7	0.00	0.00	0.00
12,300.0	90.18	90.00	6,866.0	632.5	5,345.1	5,373.6	0.00	0.00	0.00
12,400.0	90.18	90.00	6,865.7	632.5	5,445.1	5,473.4	0.00	0.00	0.00
12,500.0	90.18	90.00	6,865.4	632.5	5,545.1	5,573.2	0.00	0.00	0.00
12,600.0	90.18	90.00	6,865.1	632.5	5,645.1	5,673.0	0.00	0.00	0.00
12,700.0	90.18	90.00	6,864.8	632.5	5,745.1	5,772.8	0.00	0.00	0.00
12,800.0	90.18	90.00	6,864.5	632.5	5,845.1	5,872.7	0.00	0.00	0.00
12,900.0	90.18	90.00	6,864.2	632.5	5,945.1	5,972.5	0.00	0.00	0.00
13,000.0	90.18	90.00	6,863.8	632.5	6,045.1	6,072.3	0.00	0.00	0.00
13,100.0	90.18	90.00	6,863.5	632.5	6,145.1	6,172.1	0.00	0.00	0.00
13,200.0	90.18	90.00	6,863.2	632.5	6,245.1	6,271.9	0.00	0.00	0.00
13,300.0	90.18	90.00	6,862.9	632.5	6,345.1	6,371.7	0.00	0.00	0.00
13,400.0	90.18	90.00	6,862.6	632.5	6,445.1	6,471.6	0.00	0.00	0.00
13,500.0	90.18	90.00	6,862.3	632.5	6,545.1	6,571.4	0.00	0.00	0.00
13,600.0	90.18	90.00	6,862.0	632.5	6,645.1	6,671.2	0.00	0.00	0.00
13,700.0	90.18	90.00	6,861.6	632.5	6,745.1	6,771.0	0.00	0.00	0.00
13,800.0	90.18	90.00	6,861.3	632.5	6,845.1	6,870.8	0.00	0.00	0.00
13,900.0	90.18	90.00	6,861.0	632.5	6,945.1	6,970.6	0.00	0.00	0.00
14,000.0	90.18	90.00	6,860.7	632.5	7,045.1	7,070.5	0.00	0.00	0.00
14,100.0	90.18	90.00	6,860.4	632.5	7,145.1	7,170.3	0.00	0.00	0.00
14,200.0	90.18	90.00	6,860.1	632.5	7,245.1	7,270.1	0.00	0.00	0.00
14,300.0	90.18	90.00	6,859.8	632.5	7,345.1	7,369.9	0.00	0.00	0.00
14,400.0	90.18	90.00	6,859.4	632.5	7,445.1	7,469.7	0.00	0.00	0.00
14,500.0	90.18	90.00	6,859.1	632.5	7,545.1	7,569.5	0.00	0.00	0.00
14,600.0	90.18	90.00	6,858.8	632.5	7,645.1	7,669.4	0.00	0.00	0.00
14,700.0	90.18	90.00	6,858.5	632.5	7,745.1	7,769.2	0.00	0.00	0.00
14,800.0	90.18	90.00	6,858.2	632.5	7,845.1	7,869.0	0.00	0.00	0.00
14,900.0	90.18	90.00	6,857.9	632.5	7,945.1	7,968.8	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

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)	
15,000.0	90.18	90.00	6,857.6	632.5	8,045.1	8,068.6	0.00	0.00	0.00	
15,100.0	90.18	90.00	6,857.2	632.5	8,145.1	8,168.4	0.00	0.00	0.00	
15,200.0	90.18	90.00	6,856.9	632.5	8,245.1	8,268.3	0.00	0.00	0.00	
15,300.0	90.18	90.00	6,856.6	632.5	8,345.1	8,368.1	0.00	0.00	0.00	
15,400.0	90.18	90.00	6,856.3	632.5	8,445.1	8,467.9	0.00	0.00	0.00	
15,500.0	90.18	90.00	6,856.0	632.5	8,545.1	8,567.7	0.00	0.00	0.00	
15,600.0	90.18	90.00	6,855.7	632.5	8,645.1	8,667.5	0.00	0.00	0.00	
15,700.0	90.18	90.00	6,855.4	632.5	8,745.1	8,767.3	0.00	0.00	0.00	
15,800.0	90.18	90.00	6,855.0	632.5	8,845.1	8,867.2	0.00	0.00	0.00	
15,900.0	90.18	90.00	6,854.7	632.5	8,945.1	8,967.0	0.00	0.00	0.00	
16,000.0	90.18	90.00	6,854.4	632.5	9,045.1	9,066.8	0.00	0.00	0.00	
16,100.0	90.18	90.00	6,854.1	632.5	9,145.1	9,166.6	0.00	0.00	0.00	
16,200.0	90.18	90.00	6,853.8	632.5	9,245.1	9,266.4	0.00	0.00	0.00	
16,300.0	90.18	90.00	6,853.5	632.5	9,345.1	9,366.2	0.00	0.00	0.00	
16,400.0	90.18	90.00	6,853.2	632.5	9,445.1	9,466.1	0.00	0.00	0.00	
16,500.0	90.18	90.00	6,852.8	632.5	9,545.1	9,565.9	0.00	0.00	0.00	
16,600.0	90.18	90.00	6,852.5	632.5	9,645.1	9,665.7	0.00	0.00	0.00	
16,700.0	90.18	90.00	6,852.2	632.5	9,745.1	9,765.5	0.00	0.00	0.00	
16,800.0	90.18	90.00	6,851.9	632.5	9,845.1	9,865.3	0.00	0.00	0.00	
16,900.0	90.18	90.00	6,851.6	632.5	9,945.1	9,965.1	0.00	0.00	0.00	
17,000.0	90.18	90.00	6,851.3	632.5	10,045.1	10,065.0	0.00	0.00	0.00	
17,100.0	90.18	90.00	6,851.0	632.5	10,145.1	10,164.8	0.00	0.00	0.00	
17,200.0	90.18	90.00	6,850.7	632.5	10,245.1	10,264.6	0.00	0.00	0.00	
17,300.0	90.18	90.00	6,850.3	632.5	10,345.1	10,364.4	0.00	0.00	0.00	
17,400.0	90.18	90.00	6,850.0	632.5	10,445.1	10,464.2	0.00	0.00	0.00	
17,407.1	90.18	90.00	6,850.0	632.5	10,452.1	10,471.3	0.00	0.00	0.00	
TD at 17407.1										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
SHL 2389'FNL & 2251'F	0.00	0.00	1.0	0.0	0.0	1,384,509.30	3,253,110.45	40.385320	-104.591380	
- plan hits target center										
- Point										
50' N/S Hardline (19N-4'	0.00	0.00	1.0	632.5	5,437.6	1,385,197.44	3,258,541.11	40.387055	-104.571861	
- plan misses target center by 5474.3ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)										
- Rectangle (sides W100.0 H10,028.9 D0.0)										
BHL 1833'FNL & 2353'F	0.00	0.00	6,850.0	632.5	10,452.1	1,385,248.80	3,263,555.13	40.387050	-104.553860	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,378.1	6,881.5	7"	7	7-1/2	

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 19N-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Project:	SEC.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 19N-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (7-16-15)		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,578.1	3,550.0	Parkman		0.00	
4,339.2	4,300.0	Sussex		0.00	
4,542.2	4,500.0	Shannon		0.00	
6,543.1	6,471.0	Sharon Springs		0.00	
6,756.5	6,644.0	Niobrara A		0.00	
6,910.2	6,744.0	Niobrara B		0.00	
7,028.6	6,804.0	Niobrara C		0.00	
7,302.4	6,878.0	Ft Hays		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1 - Start Build 1.00
5,467.8	5,412.0	73.6	-39.9	KOP #2 - Start Drop -2.00
6,175.7	6,117.6	595.7	-323.1	Start Build 7.50
7,378.1	6,881.5	632.5	-343.1	Start 10029.0 hold at 7378.1 MD
17,407.1	6,850.0	632.5	-343.1	TD at 17407.1



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19N-432

Wellbore #1

Plan #3 (7-16-15)

Anticollision Report

29 July, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #3 (7-16-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 7/29/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,407.1	Plan #3 (7-16-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.21-T5N-R64W						
Kohler 6-21 (Exist.) - Wellbore #1 - Wellbore #1	16,510.1	6,826.8	189.8	-219.4	0.464	Level 1, CC, ES, SF
Kohler 7-21 (Exist.) - Wellbore #1 - Wellbore #1	17,407.1	6,822.0	407.9	-26.4	0.939	Level 1, CC, ES, SF
Klein (Existing) Sec.19-T5N-R64W						
Brent 1 (Exist.) - Wellbore #1 - Wellbore #1	11,194.2	6,848.5	164.9	28.9	1.213	Level 2, CC
Brent 1 (Exist.) - Wellbore #1 - Wellbore #1	11,200.0	6,848.6	165.0	28.9	1.212	Level 2, ES, SF
Brent 1-6I (Exist.) - Wellbore #1 - Wellbore #1	10,525.3	6,993.0	824.7	547.3	2.973	CC, ES
Brent 1-6I (Exist.) - Wellbore #1 - Wellbore #1	10,600.0	6,994.3	828.1	548.7	2.964	SF
Duell 20-1 (Exist.) - Wellbore #1 - Wellbore #1	9,705.3	6,867.0	424.7	328.5	4.412	CC, ES
Duell 20-1 (Exist.) - Wellbore #1 - Wellbore #1	9,800.0	6,866.7	435.2	336.3	4.401	SF
Lewis Klein 19-2 (Exist.) - Wellbore #1 - Wellbore #1	7,195.6	6,833.9	307.1	275.5	9.716	CC
Lewis Klein 19-2 (Exist.) - Wellbore #1 - Wellbore #1	7,200.0	6,834.9	307.2	275.5	9.694	ES
Lewis Klein 19-2 (Exist.) - Wellbore #1 - Wellbore #1	7,250.0	6,843.8	311.7	279.1	9.570	SF
Louis Klein 19-1 (Exist.) - Wellbore #1 - Wellbore #1	8,519.0	6,852.5	311.4	248.5	4.947	CC, ES
Louis Klein 19-1 (Exist.) - Wellbore #1 - Wellbore #1	8,600.0	6,854.9	321.8	256.6	4.940	SF
Lucille 1-6I (Exist.) - Wellbore #1 - Wellbore #1	11,799.8	6,968.6	462.5	306.7	2.969	CC
Lucille 1-6I (Exist.) - Wellbore #1 - Wellbore #1	11,800.0	6,968.6	462.5	306.7	2.969	ES, SF
Pigeon 1-6B (Exist.) - Wellbore #1 - Wellbore #1	9,210.4	6,999.2	459.2	374.2	5.406	CC, ES
Pigeon 1-6B (Exist.) - Wellbore #1 - Wellbore #1	9,300.0	6,999.3	467.8	380.5	5.354	SF
Pigeon 5-JAN (Exist.) - Wellbore #1 - Wellbore #1	10,519.5	6,864.3	455.6	338.5	3.893	CC, ES
Pigeon 5-JAN (Exist.) - Wellbore #1 - Wellbore #1	10,600.0	6,865.5	462.6	343.4	3.880	SF
Seth 5 (Exist.) - Wellbore #1 - Wellbore #1	7,865.6	6,868.6	97.6	51.5	2.118	CC, ES, SF
Victor Klein 20-1A (Exist.) - Wellbore #1 - Wellbore #1	12,479.3	6,848.8	164.6	-7.7	0.955	Level 1, CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Klein 19O-HZ Pad Sec.19-T5N-R64W						
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	800.0	800.0	32.8	29.4	9.724	CC
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	17,407.1	17,353.6	333.6	-212.1	0.611	Level 1, ES, SF
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	1,000.0	1,000.0	151.2	147.0	35.416	CC
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	17,407.1	17,233.5	571.5	16.3	1.029	Level 2, ES, SF
Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)	1,343.1	1,351.4	160.2	154.5	27.954	CC
Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)	1,400.0	1,409.2	160.3	154.4	26.808	ES
Klein 19O-232 - Wellbore #1 - Plan #4 (7-15-15)	1,800.0	1,807.1	180.8	172.8	22.589	SF
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	1,000.0	1,000.0	150.5	146.2	35.236	CC
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	1,100.0	1,100.0	150.9	146.2	31.979	ES
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	17,407.1	17,284.7	788.7	203.5	1.348	Level 3, SF
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	1,000.0	1,000.0	153.2	149.0	35.881	CC, ES
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	2,300.0	2,307.1	232.3	222.2	22.843	SF
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	200.0	200.0	58.3	57.6	86.469	CC, ES
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	800.0	788.7	97.4	94.1	29.208	SF
Klein 19P-312 - Wellbore #1 - Plan #3 (7-15-15)	400.0	400.0	29.1	27.6	18.521	CC, ES
Klein 19P-312 - Wellbore #1 - Plan #3 (7-15-15)	700.0	697.8	38.4	35.6	13.476	SF

Offset Design Existing Wells Sec.21-T5N-R64W - Kohler 6-21 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error: 0.0 ft	
Survey Program: 6989-UNKNOWN													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
15,600.0	6,855.7	6,829.7	6,829.7	247.2	136.6	90.86	442.7	9,555.2	929.7	546.0	383.71	2.423		
15,700.0	6,855.4	6,829.4	6,829.4	250.0	136.6	90.77	442.7	9,555.2	832.0	445.5	386.51	2.153		
15,800.0	6,855.0	6,829.0	6,829.0	252.8	136.6	90.67	442.7	9,555.2	735.0	345.7	389.31	1.888		
15,900.0	6,854.7	6,828.7	6,828.7	255.6	136.6	90.58	442.7	9,555.2	638.9	246.8	392.11	1.630		
16,000.0	6,854.4	6,828.4	6,828.4	258.4	136.6	90.48	442.7	9,555.2	544.3	149.4	394.91	1.378	Level 3	
16,100.0	6,854.1	6,828.1	6,828.1	261.2	136.6	90.39	442.7	9,555.2	451.9	54.2	397.71	1.136	Level 2	
16,200.0	6,853.8	6,827.8	6,827.8	264.0	136.6	90.29	442.7	9,555.2	363.6	-36.9	400.51	0.908	Level 1	
16,300.0	6,853.5	6,827.5	6,827.5	266.8	136.5	90.20	442.7	9,555.2	283.1	-120.2	403.31	0.702	Level 1	
16,400.0	6,853.2	6,827.2	6,827.2	269.6	136.5	90.10	442.7	9,555.2	219.4	-186.7	406.10	0.540	Level 1	
16,500.0	6,852.8	6,826.8	6,826.8	272.4	136.5	90.01	442.7	9,555.2	190.1	-218.8	408.90	0.465	Level 1	
16,510.1	6,852.8	6,826.8	6,826.8	272.7	136.5	90.00	442.7	9,555.2	189.8	-219.4	409.18	0.464	Level 1, CC, ES, SF	
16,600.0	6,852.5	6,826.5	6,826.5	275.2	136.5	89.91	442.7	9,555.2	210.0	-201.7	411.69	0.510	Level 1	
16,700.0	6,852.2	6,826.2	6,826.2	278.0	136.5	89.82	442.7	9,555.2	268.5	-146.0	414.49	0.648	Level 1	
16,800.0	6,851.9	6,825.9	6,825.9	280.8	136.5	89.73	442.7	9,555.2	346.5	-70.8	417.28	0.830	Level 1	
16,900.0	6,851.6	6,825.6	6,825.6	283.6	136.5	89.63	442.7	9,555.2	433.6	13.6	420.07	1.032	Level 2	
17,000.0	6,851.3	6,825.3	6,825.3	286.4	136.5	89.54	442.7	9,555.2	525.4	102.5	422.86	1.242	Level 2	
17,100.0	6,851.0	6,825.0	6,825.0	289.2	136.5	89.44	442.7	9,555.2	619.7	194.0	425.65	1.456	Level 3	
17,200.0	6,850.7	6,824.7	6,824.7	292.1	136.5	89.35	442.7	9,555.2	715.5	287.1	428.44	1.670		
17,300.0	6,850.3	6,824.3	6,824.3	294.9	136.5	89.25	442.7	9,555.2	812.4	381.1	431.23	1.884		
17,407.1	6,850.0	6,824.0	6,824.0	297.9	136.5	89.15	442.7	9,555.2	916.8	482.6	434.21	2.111		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.21-T5N-R64W - Kohler 7-21 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6950-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
16,800.0	6,851.9	6,823.9	6,823.9	280.8	136.5	90.96	450.5	10,817.2	989.0	571.7	417.23	2.370	
16,900.0	6,851.6	6,823.6	6,823.6	283.6	136.5	90.86	450.5	10,817.2	890.9	470.8	420.03	2.121	
17,000.0	6,851.3	6,823.3	6,823.3	286.4	136.5	90.76	450.5	10,817.2	793.2	370.4	422.84	1.876	
17,100.0	6,851.0	6,823.0	6,823.0	289.2	136.5	90.66	450.5	10,817.2	696.3	270.6	425.64	1.636	
17,200.0	6,850.7	6,822.7	6,822.7	292.1	136.5	90.57	450.5	10,817.2	600.3	171.9	428.45	1.401 Level 3	
17,300.0	6,850.3	6,822.3	6,822.3	294.9	136.4	90.47	450.5	10,817.2	505.9	74.7	431.25	1.173 Level 2	
17,407.1	6,850.0	6,822.0	6,822.0	297.9	136.4	90.36	450.5	10,817.2	407.9	-26.4	434.25	0.939 Level 1, CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Brent 1 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	6,872.3	6,832.0	6,830.4	99.2	12.2	81.99	468.3	4,239.0	909.2	799.1	110.08	8.260	
10,400.0	6,872.0	6,833.9	6,832.3	102.0	12.2	82.63	468.3	4,239.0	811.1	698.1	113.00	7.178	
10,500.0	6,871.7	6,835.7	6,834.1	104.8	12.2	83.26	468.2	4,239.1	713.5	597.5	115.92	6.155	
10,600.0	6,871.4	6,837.6	6,835.9	107.5	12.2	83.90	468.1	4,239.1	616.6	497.8	118.84	5.189	
10,700.0	6,871.1	6,839.4	6,837.8	110.3	12.3	84.53	468.0	4,239.2	521.0	399.2	121.75	4.279	
10,800.0	6,870.8	6,841.2	6,839.6	113.1	12.3	85.17	468.0	4,239.2	427.3	302.6	124.65	3.428	
10,900.0	6,870.4	6,843.1	6,841.5	115.9	12.3	85.81	467.9	4,239.2	337.3	209.7	127.55	2.644	
11,000.0	6,870.1	6,844.9	6,843.3	118.6	12.3	86.45	467.8	4,239.3	254.8	124.4	130.43	1.954	
11,100.0	6,869.8	6,846.8	6,845.1	121.4	12.3	87.09	467.7	4,239.3	190.0	56.7	133.31	1.425	Level 3
11,194.2	6,869.5	6,848.5	6,846.9	124.0	12.3	87.69	467.7	4,239.3	164.9	28.9	136.01	1.213	Level 2, CC
11,200.0	6,869.5	6,848.6	6,847.0	124.2	12.3	87.73	467.7	4,239.4	165.0	28.9	136.18	1.212	Level 2, ES, SF
11,300.0	6,869.2	6,850.4	6,848.8	127.0	12.3	88.36	467.6	4,239.4	195.9	56.9	139.03	1.409	Level 3
11,400.0	6,868.9	6,852.3	6,850.6	129.8	12.3	89.00	467.5	4,239.4	263.7	121.8	141.87	1.859	
11,500.0	6,868.6	6,854.1	6,852.5	132.5	12.3	89.64	467.5	4,239.5	347.4	202.7	144.70	2.401	
11,600.0	6,868.2	6,856.0	6,854.3	135.3	12.3	90.28	467.4	4,239.5	437.9	290.4	147.51	2.969	
11,700.0	6,867.9	6,857.8	6,856.2	138.1	12.3	90.92	467.3	4,239.5	531.9	381.6	150.30	3.539	
11,800.0	6,867.6	6,859.6	6,858.0	140.9	12.3	91.55	467.2	4,239.6	627.7	474.6	153.08	4.101	
11,900.0	6,867.3	6,861.5	6,859.8	143.7	12.3	92.19	467.2	4,239.6	724.7	568.8	155.84	4.650	
12,000.0	6,867.0	6,863.3	6,861.7	146.5	12.3	92.82	467.1	4,239.7	822.3	663.8	158.58	5.186	
12,100.0	6,866.7	6,865.2	6,863.5	149.3	12.3	93.46	467.0	4,239.7	920.5	759.2	161.30	5.707	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Brent 1-6l (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 647-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,873.3	6,984.7	6,848.9	90.9	187.0	89.54	-192.3	3,570.2	977.8	714.4	263.32	3.713	
10,100.0	6,873.0	6,986.3	6,850.5	93.7	187.0	89.64	-192.3	3,570.3	927.9	661.9	266.00	3.488	
10,200.0	6,872.6	6,987.9	6,852.1	96.5	187.0	89.75	-192.3	3,570.3	886.5	617.9	268.69	3.300	
10,300.0	6,872.3	6,989.4	6,853.7	99.2	187.0	89.86	-192.2	3,570.3	854.9	583.6	271.37	3.150	
10,400.0	6,872.0	6,991.0	6,855.2	102.0	187.0	89.97	-192.2	3,570.4	834.2	560.1	274.06	3.044	
10,500.0	6,871.7	6,992.6	6,856.9	104.8	186.9	90.09	-192.2	3,570.4	825.1	548.4	276.75	2.982	
10,525.3	6,871.6	6,993.0	6,857.3	105.5	186.9	90.11	-192.2	3,570.4	824.7	547.3	277.43	2.973 CC, ES	
10,600.0	6,871.4	6,994.3	6,858.5	107.5	186.9	90.20	-192.2	3,570.4	828.1	548.7	279.43	2.964 SF	
10,700.0	6,871.1	6,995.9	6,860.1	110.3	186.9	90.31	-192.2	3,570.5	843.0	560.9	282.12	2.988	
10,800.0	6,870.8	6,997.5	6,861.7	113.1	186.9	90.43	-192.2	3,570.5	869.3	584.5	284.81	3.052	
10,900.0	6,870.4	6,999.2	6,863.4	115.9	186.9	90.54	-192.2	3,570.5	905.9	618.4	287.49	3.151	
11,000.0	6,870.1	7,000.9	6,865.1	118.6	186.8	90.66	-192.2	3,570.6	951.6	661.4	290.18	3.279	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Duell 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		
8,800.0	6,877.0	6,869.5	6,857.0	58.2	13.7	90.11	207.7	2,750.4	1,000.0	928.4	71.60	13.965		
8,900.0	6,876.7	6,869.2	6,856.7	60.9	13.7	90.07	207.7	2,750.4	910.4	836.1	74.30	12.254		
9,000.0	6,876.4	6,869.0	6,856.5	63.6	13.7	90.04	207.7	2,750.4	823.3	746.3	77.00	10.692		
9,100.0	6,876.1	6,868.7	6,856.2	66.3	13.7	90.00	207.7	2,750.4	739.4	659.7	79.71	9.276		
9,200.0	6,875.8	6,868.4	6,855.9	69.0	13.7	89.96	207.8	2,750.4	660.1	577.6	82.43	8.007		
9,300.0	6,875.5	6,868.1	6,855.6	71.7	13.7	89.92	207.8	2,750.4	587.1	501.9	85.16	6.894		
9,400.0	6,875.2	6,867.8	6,855.3	74.5	13.7	89.89	207.8	2,750.4	523.1	435.2	87.89	5.951		
9,500.0	6,874.8	6,867.6	6,855.1	77.2	13.7	89.85	207.8	2,750.4	471.7	381.1	90.63	5.205		
9,600.0	6,874.5	6,867.3	6,854.8	79.9	13.7	89.81	207.8	2,750.4	437.6	344.2	93.37	4.686		
9,700.0	6,874.2	6,867.0	6,854.5	82.7	13.7	89.77	207.8	2,750.4	424.8	328.7	96.12	4.419		
9,705.3	6,874.2	6,867.0	6,854.5	82.8	13.7	89.77	207.8	2,750.4	424.7	328.5	96.27	4.412 CC, ES		
9,800.0	6,873.9	6,866.7	6,854.2	85.4	13.7	89.74	207.8	2,750.4	435.2	336.3	98.87	4.401 SF		
9,900.0	6,873.6	6,866.4	6,854.0	88.2	13.7	89.70	207.8	2,750.4	467.2	365.6	101.63	4.598		
10,000.0	6,873.3	6,866.2	6,853.7	90.9	13.7	89.66	207.8	2,750.4	517.0	412.6	104.38	4.953		
10,100.0	6,873.0	6,865.9	6,853.4	93.7	13.7	89.62	207.8	2,750.4	579.8	472.7	107.14	5.412		
10,200.0	6,872.6	6,865.6	6,853.1	96.5	13.7	89.59	207.8	2,750.4	652.0	542.1	109.91	5.933		
10,300.0	6,872.3	6,865.3	6,852.8	99.2	13.7	89.55	207.8	2,750.4	730.8	618.1	112.67	6.486		
10,400.0	6,872.0	6,865.1	6,852.6	102.0	13.7	89.51	207.8	2,750.4	814.3	698.8	115.44	7.054		
10,500.0	6,871.7	6,864.8	6,852.3	104.8	13.7	89.47	207.8	2,750.4	901.1	782.9	118.21	7.623		
10,600.0	6,871.4	6,864.5	6,852.0	107.5	13.7	89.43	207.8	2,750.4	990.4	869.4	120.98	8.186		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lewis Klein 19-2 (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	38.00	335.2	261.9	425.6				
100.0	100.0	85.8	85.8	0.1	0.1	38.03	335.0	262.1	425.3	425.1	0.23	1,878.955	
200.0	200.0	188.1	188.1	0.3	0.3	38.12	334.5	262.4	425.2	424.5	0.69	620.355	
300.0	300.0	288.9	288.9	0.6	0.6	38.17	333.8	262.3	424.5	423.4	1.15	370.347	
400.0	400.0	388.6	388.6	0.8	0.8	38.16	333.3	261.9	423.9	422.3	1.57	270.064	
500.0	500.0	487.3	487.3	1.0	0.9	38.09	333.2	261.2	423.4	421.4	1.95	216.625	
600.0	600.0	588.7	588.7	1.2	1.1	38.01	333.2	260.5	423.0	420.6	2.38	177.917	
700.0	700.0	688.9	688.9	1.5	1.4	37.98	332.9	259.8	422.3	419.4	2.85	148.279	
800.0	800.0	787.0	787.0	1.7	1.6	37.93	332.7	259.3	421.8	418.5	3.29	128.172	
900.0	900.0	887.6	887.6	1.9	1.8	37.90	332.6	258.9	421.5	417.8	3.71	113.594	
955.3	955.3	941.3	941.3	2.0	1.9	37.94	332.3	259.1	421.4	417.5	3.91	107.716	
1,000.0	1,000.0	984.2	984.2	2.1	1.9	37.97	332.3	259.3	421.5	417.4	4.07	103.609	
1,100.0	1,100.0	1,085.6	1,085.6	2.4	2.1	66.58	332.5	259.7	421.5	417.1	4.41	95.616	
1,200.0	1,200.0	1,186.2	1,186.2	2.6	2.2	66.91	332.5	259.6	420.5	415.7	4.78	87.910	
1,300.0	1,299.9	1,283.5	1,283.5	2.8	2.3	67.51	332.4	260.1	419.0	413.9	5.13	81.650	
1,400.0	1,399.7	1,384.7	1,384.7	3.0	2.5	68.28	333.0	260.2	417.2	411.7	5.48	76.083	
1,500.0	1,499.4	1,487.4	1,487.4	3.3	2.6	69.30	333.1	259.9	414.2	408.3	5.90	70.174	
1,600.0	1,598.9	1,586.4	1,586.4	3.5	2.8	70.61	332.5	259.7	410.4	404.1	6.35	64.619	
1,700.0	1,698.3	1,684.8	1,684.7	3.8	3.0	72.20	332.1	259.9	406.6	399.8	6.80	59.796	
1,800.0	1,797.4	1,782.9	1,782.8	4.0	3.2	73.94	332.2	259.8	402.8	395.5	7.23	55.674	
1,900.0	1,896.3	1,880.3	1,880.2	4.3	3.3	75.76	333.5	259.0	399.2	391.5	7.66	52.098	
1,980.7	1,975.9	1,959.0	1,959.0	4.6	3.5	77.40	334.7	258.6	396.6	388.6	8.02	49.443	
2,000.0	1,994.9	1,977.8	1,977.8	4.6	3.5	77.81	335.1	258.5	396.1	387.9	8.11	48.837	
2,100.0	2,093.5	2,073.9	2,073.9	4.9	3.6	79.92	337.0	258.2	393.8	385.2	8.57	45.931	
2,200.0	2,192.0	2,172.5	2,172.4	5.3	3.8	82.08	339.3	258.4	392.6	383.6	9.06	43.349	
2,300.0	2,290.6	2,271.6	2,271.5	5.6	3.9	84.29	341.4	258.5	391.9	382.4	9.56	41.004	
2,400.0	2,389.1	2,372.3	2,372.1	6.0	4.1	86.61	343.0	258.8	391.7	381.6	10.08	38.864	
2,477.0	2,464.9	2,449.2	2,449.1	6.2	4.3	88.43	343.8	258.8	391.5	381.1	10.49	37.339	
2,500.0	2,487.6	2,472.1	2,472.0	6.3	4.3	88.98	344.0	258.8	391.6	380.9	10.61	36.909	
2,600.0	2,586.2	2,570.6	2,570.4	6.7	4.5	91.40	344.4	259.0	392.0	380.9	11.13	35.233	
2,700.0	2,684.7	2,666.8	2,666.7	7.0	4.6	93.81	344.5	259.7	393.5	381.9	11.63	33.826	
2,800.0	2,783.2	2,767.3	2,767.1	7.4	4.8	96.23	345.2	260.4	396.0	383.8	12.16	32.561	
2,900.0	2,881.8	2,867.0	2,866.8	7.7	5.0	98.61	345.7	260.5	398.5	385.8	12.69	31.413	
3,000.0	2,980.3	2,965.3	2,965.1	8.1	5.1	101.03	345.4	260.9	401.7	388.5	13.18	30.476	
3,100.0	3,078.9	3,064.9	3,064.7	8.5	5.3	103.44	345.1	261.3	405.6	392.0	13.67	29.674	
3,200.0	3,177.4	3,162.8	3,162.6	8.8	5.5	105.75	344.8	261.3	410.0	395.8	14.16	28.955	
3,300.0	3,275.9	3,262.2	3,262.1	9.2	5.6	108.00	344.9	261.5	415.2	400.6	14.65	28.336	
3,400.0	3,374.5	3,360.8	3,360.7	9.6	5.8	110.18	344.8	261.4	420.7	405.6	15.14	27.787	
3,500.0	3,473.0	3,459.9	3,459.7	10.0	6.0	112.25	345.3	261.3	426.9	411.3	15.63	27.308	
3,600.0	3,571.6	3,561.5	3,561.3	10.3	6.2	114.24	346.3	260.8	433.3	417.1	16.13	26.856	
3,700.0	3,670.1	3,661.2	3,661.0	10.7	6.4	116.13	347.2	259.6	439.5	422.9	16.62	26.436	
3,800.0	3,768.6	3,760.5	3,760.3	11.1	6.6	117.95	348.2	258.5	446.2	429.1	17.11	26.075	
3,900.0	3,867.2	3,859.3	3,859.1	11.5	6.7	119.82	348.3	257.1	453.2	435.6	17.58	25.780	
4,000.0	3,965.7	3,954.7	3,954.5	11.9	6.9	121.70	347.4	256.1	460.9	442.9	18.01	25.589	
4,100.0	4,064.2	4,052.3	4,052.1	12.2	7.1	123.55	346.5	255.7	469.9	451.4	18.44	25.485	
4,200.0	4,162.8	4,154.1	4,153.9	12.6	7.2	125.35	345.9	254.9	478.9	460.0	18.88	25.369	
4,300.0	4,261.3	4,252.2	4,252.0	13.0	7.4	127.08	345.1	253.6	487.9	468.5	19.31	25.263	
4,400.0	4,359.9	4,347.7	4,347.5	13.4	7.6	128.77	343.6	252.8	497.8	478.1	19.73	25.233	
4,500.0	4,458.4	4,448.0	4,447.7	13.8	7.8	130.44	342.2	252.2	508.5	488.3	20.15	25.236	
4,600.0	4,556.9	4,548.8	4,548.5	14.1	8.0	131.98	341.7	251.0	518.7	498.1	20.58	25.199	
4,700.0	4,655.5	4,645.4	4,645.1	14.5	8.2	133.37	341.3	250.0	529.5	508.5	21.02	25.186	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Lewis Klein 19-2 (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		
4,800.0	4,754.0	4,745.3	4,745.0	14.9	8.4	134.76	340.9	249.2	540.8	519.3	21.46	25.195		
4,900.0	4,852.6	4,846.3	4,846.0	15.3	8.6	136.14	340.3	247.7	551.7	529.8	21.90	25.190		
5,000.0	4,951.1	4,942.3	4,942.0	15.7	8.8	137.47	339.0	246.1	563.1	540.7	22.33	25.216		
5,100.0	5,049.6	5,039.8	5,039.5	16.1	9.0	138.77	337.6	245.0	575.3	552.5	22.75	25.283		
5,200.0	5,148.2	5,140.8	5,140.4	16.4	9.2	140.00	336.9	243.6	587.3	564.1	23.19	25.324		
5,300.0	5,246.7	5,237.2	5,236.8	16.8	9.4	141.16	335.8	242.2	599.6	576.0	23.62	25.386		
5,400.0	5,345.3	5,333.8	5,333.4	17.2	9.6	142.25	334.8	241.3	612.6	588.5	24.04	25.482		
5,467.8	5,412.0	5,400.4	5,400.0	17.5	9.7	142.90	334.9	241.1	621.6	597.2	24.32	25.558		
5,500.0	5,443.8	5,432.8	5,432.5	17.6	9.8	143.23	335.1	241.0	625.7	601.3	24.45	25.595		
5,600.0	5,542.8	5,533.7	5,533.3	17.8	10.0	144.03	336.4	241.0	636.6	611.8	24.81	25.663		
5,700.0	5,642.2	5,631.3	5,630.9	18.1	10.1	144.57	337.8	240.9	644.6	619.5	25.15	25.635		
5,800.0	5,741.9	5,725.7	5,725.3	18.3	10.2	144.87	338.9	241.6	650.7	625.3	25.45	25.569		
5,900.0	5,841.9	5,827.5	5,827.1	18.4	10.4	144.92	340.7	242.7	654.0	628.2	25.74	25.408		
5,958.1	5,900.0	5,884.5	5,884.1	18.5	10.5	116.37	341.7	243.4	654.6	626.9	27.68	23.651		
6,000.0	5,941.9	5,924.9	5,924.5	18.6	10.5	116.30	342.4	243.9	654.7	626.9	27.79	23.559		
6,100.0	6,041.9	6,020.9	6,020.4	18.7	10.7	116.11	343.9	245.5	655.6	627.5	28.08	23.345		
6,175.7	6,117.6	6,094.9	6,094.4	18.9	10.8	116.00	344.7	246.9	656.5	628.2	28.31	23.195		
6,200.0	6,141.9	6,118.7	6,118.3	18.9	10.8	25.99	344.8	247.4	656.5	629.9	26.64	24.643		
6,250.0	6,191.8	6,167.7	6,167.2	18.9	10.9	26.15	344.8	248.2	654.4	627.8	26.61	24.591		
6,300.0	6,241.3	6,216.7	6,216.2	19.0	10.9	26.58	344.3	248.9	649.4	623.0	26.47	24.532		
6,350.0	6,290.4	6,265.9	6,265.3	19.0	11.0	27.26	343.7	249.5	641.6	615.4	26.23	24.456		
6,400.0	6,338.7	6,314.1	6,313.6	19.0	11.1	28.20	343.0	250.1	630.9	605.0	25.90	24.358		
6,450.0	6,386.0	6,360.9	6,360.4	19.0	11.2	29.44	342.2	250.6	617.6	592.1	25.49	24.226		
6,500.0	6,432.2	6,406.7	6,406.1	19.0	11.2	31.01	341.2	251.1	601.7	576.7	25.02	24.046		
6,550.0	6,477.1	6,451.9	6,451.3	19.0	11.3	32.98	339.9	251.4	583.4	558.9	24.53	23.784		
6,600.0	6,520.4	6,495.5	6,494.9	18.9	11.4	35.38	338.6	251.7	562.9	538.8	24.05	23.403		
6,650.0	6,562.0	6,540.5	6,539.9	18.9	11.5	38.40	337.2	251.7	540.2	516.5	23.66	22.829		
6,700.0	6,601.7	6,583.3	6,582.6	18.9	11.5	42.02	335.8	251.4	515.5	492.1	23.43	21.999		
6,750.0	6,639.3	6,622.5	6,621.8	18.8	11.6	46.20	334.5	250.8	489.3	465.9	23.45	20.868		
6,800.0	6,674.7	6,658.5	6,657.8	18.8	11.7	50.92	333.2	250.2	462.1	438.3	23.77	19.439		
6,850.0	6,707.7	6,691.5	6,690.8	18.8	11.7	56.16	332.0	249.4	434.4	410.0	24.43	17.782		
6,900.0	6,738.1	6,720.2	6,719.5	18.7	11.8	61.58	331.0	248.6	407.0	381.6	25.35	16.056		
6,950.0	6,765.9	6,745.7	6,744.9	18.7	11.8	67.05	329.9	247.9	380.8	354.4	26.44	14.401		
7,000.0	6,791.0	6,768.5	6,767.7	18.7	11.9	72.35	328.8	247.3	356.8	329.2	27.61	12.926		
7,050.0	6,813.1	6,788.5	6,787.6	18.7	11.9	77.22	327.9	246.7	336.2	307.5	28.73	11.701		
7,100.0	6,832.3	6,806.1	6,805.2	18.7	12.0	81.47	327.0	246.3	320.3	290.5	29.79	10.752		
7,150.0	6,848.4	6,822.0	6,821.1	19.2	12.0	85.04	326.2	245.9	310.2	279.5	30.77	10.082		
7,195.6	6,860.4	6,833.9	6,833.0	19.9	12.0	87.42	325.7	245.7	307.1	275.5	31.61	9.716 CC		
7,200.0	6,861.4	6,834.9	6,834.0	20.0	12.0	87.60	325.6	245.7	307.2	275.5	31.69	9.694 ES		
7,250.0	6,871.2	6,843.8	6,842.9	20.8	12.0	88.90	325.2	245.5	311.7	279.1	32.57	9.570 SF		
7,300.0	6,877.8	6,849.5	6,848.6	21.7	12.0	89.03	325.0	245.4	323.7	290.2	33.45	9.678		
7,350.0	6,881.1	6,852.0	6,851.1	22.6	12.0	87.96	324.9	245.4	342.5	308.2	34.31	9.984		
7,378.1	6,881.5	6,851.9	6,851.0	23.2	12.0	86.82	324.9	245.4	355.7	321.0	34.77	10.232		
7,400.0	6,881.4	6,851.5	6,850.5	23.6	12.0	86.74	324.9	245.4	367.2	332.0	35.18	10.436		
7,500.0	6,881.1	6,849.4	6,848.5	25.6	12.0	86.36	325.0	245.4	429.8	392.7	37.18	11.561		
7,600.0	6,880.8	6,847.4	6,846.5	27.8	12.0	85.98	325.1	245.4	504.7	465.4	39.31	12.838		
7,700.0	6,880.5	6,845.4	6,844.4	30.1	12.0	85.61	325.2	245.5	587.0	545.5	41.54	14.130		
7,800.0	6,880.2	6,843.3	6,842.4	32.4	12.0	85.23	325.2	245.5	674.2	630.3	43.86	15.371		
7,900.0	6,879.9	6,841.3	6,840.4	34.9	12.0	84.85	325.3	245.5	764.5	718.2	46.24	16.532		
8,000.0	6,879.6	6,839.3	6,838.3	37.3	12.0	84.47	325.4	245.6	856.9	808.3	48.67	17.606		
8,100.0	6,879.2	6,837.2	6,836.3	39.9	12.0	84.09	325.5	245.6	950.9	899.8	51.14	18.594		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Louis Klein 19-1 (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)			
7,600.0	6,880.8	6,825.1	6,823.3	27.8	12.5	82.90	322.3	1,563.2	969.9	930.4	39.51	24.551		
7,700.0	6,880.5	6,828.1	6,826.3	30.1	12.5	83.45	322.2	1,563.3	875.8	834.0	41.84	20.935		
7,800.0	6,880.2	6,831.0	6,829.3	32.4	12.5	83.99	322.0	1,563.4	783.2	739.0	44.25	17.700		
7,900.0	6,879.9	6,834.0	6,832.2	34.9	12.5	84.54	321.9	1,563.5	692.6	645.9	46.73	14.822		
8,000.0	6,879.6	6,837.0	6,835.2	37.3	12.6	85.09	321.8	1,563.6	605.0	555.8	49.27	12.281		
8,100.0	6,879.2	6,840.0	6,838.2	39.9	12.6	85.64	321.7	1,563.6	521.9	470.0	51.84	10.066		
8,200.0	6,878.9	6,843.0	6,841.2	42.4	12.6	86.18	321.6	1,563.7	445.7	391.2	54.46	8.184		
8,300.0	6,878.6	6,846.0	6,844.2	45.0	12.6	86.73	321.5	1,563.8	380.6	323.5	57.10	6.667		
8,400.0	6,878.3	6,849.0	6,847.2	47.6	12.6	87.28	321.4	1,563.9	333.3	273.6	59.76	5.578		
8,500.0	6,878.0	6,851.9	6,850.1	50.2	12.6	87.83	321.3	1,564.0	312.0	249.6	62.44	4.997		
8,519.0	6,877.9	6,852.5	6,850.7	50.7	12.6	87.93	321.3	1,564.1	311.4	248.5	62.95	4.947 CC, ES		
8,600.0	6,877.7	6,854.9	6,853.1	52.9	12.6	88.38	321.2	1,564.1	321.8	256.6	65.13	4.940 SF		
8,700.0	6,877.4	6,857.9	6,856.1	55.5	12.6	88.93	321.1	1,564.2	360.2	292.3	67.84	5.309		
8,800.0	6,877.0	6,860.9	6,859.1	58.2	12.6	89.48	321.0	1,564.3	419.4	348.8	70.55	5.945		
8,900.0	6,876.7	6,863.9	6,862.1	60.9	12.6	90.02	320.9	1,564.4	492.0	418.7	73.27	6.715		
9,000.0	6,876.4	6,866.9	6,865.0	63.6	12.6	90.57	320.8	1,564.5	572.9	496.9	75.99	7.539		
9,100.0	6,876.1	6,869.9	6,868.0	66.3	12.6	91.12	320.7	1,564.6	659.0	580.3	78.71	8.372		
9,200.0	6,875.8	6,872.8	6,871.0	69.0	12.6	91.67	320.5	1,564.7	748.6	667.2	81.44	9.192		
9,300.0	6,875.5	6,875.8	6,874.0	71.7	12.6	92.21	320.4	1,564.8	840.5	756.4	84.16	9.987		
9,400.0	6,875.2	6,878.8	6,877.0	74.5	12.6	92.76	320.3	1,564.9	934.1	847.2	86.88	10.752		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
11,000.0	6,870.1	6,958.8	6,832.5	118.6	15.9	-88.13	1,094.8	4,844.7	923.8	790.4	133.44	6.923		
11,100.0	6,869.8	6,960.1	6,833.7	121.4	15.9	-88.28	1,094.9	4,844.7	838.7	702.5	136.23	6.157		
11,200.0	6,869.5	6,961.0	6,834.6	124.2	15.9	-88.39	1,094.9	4,844.7	757.3	618.3	139.02	5.448		
11,300.0	6,869.2	6,962.5	6,836.2	127.0	15.9	-88.58	1,094.9	4,844.8	680.9	539.1	141.82	4.801		
11,400.0	6,868.9	6,963.7	6,837.4	129.8	15.9	-88.73	1,094.9	4,844.8	611.3	466.7	144.61	4.227		
11,500.0	6,868.6	6,964.9	6,838.6	132.5	15.9	-88.88	1,094.9	4,844.8	551.1	403.7	147.41	3.739		
11,600.0	6,868.2	6,966.1	6,839.8	135.3	15.9	-89.03	1,094.9	4,844.8	503.8	353.6	150.20	3.354		
11,700.0	6,867.9	6,967.4	6,841.0	138.1	15.9	-89.18	1,094.9	4,844.8	473.1	320.1	153.00	3.092		
11,799.8	6,867.6	6,968.6	6,842.2	140.9	15.9	-89.33	1,094.9	4,844.9	462.5	306.7	155.79	2.969 CC		
11,800.0	6,867.6	6,968.6	6,842.2	140.9	15.9	-89.33	1,094.9	4,844.9	462.5	306.7	155.79	2.969 ES, SF		
11,900.0	6,867.3	6,969.8	6,843.4	143.7	15.9	-89.48	1,095.0	4,844.9	473.2	314.6	158.59	2.984		
12,000.0	6,867.0	6,971.0	6,844.7	146.5	15.9	-89.64	1,095.0	4,844.9	504.0	342.6	161.38	3.123		
12,100.0	6,866.7	6,972.3	6,845.9	149.3	15.9	-89.79	1,095.0	4,844.9	551.4	387.2	164.18	3.358		
12,200.0	6,866.4	6,973.5	6,847.2	152.1	15.9	-89.94	1,095.0	4,844.9	611.6	444.6	166.97	3.663		
12,300.0	6,866.0	6,974.8	6,848.4	154.9	15.9	-90.10	1,095.0	4,845.0	681.3	511.5	169.77	4.013		
12,400.0	6,865.7	6,976.0	6,849.6	157.6	15.9	-90.25	1,095.0	4,845.0	757.7	585.2	172.56	4.391		
12,500.0	6,865.4	6,977.3	6,850.9	160.4	15.9	-90.41	1,095.1	4,845.0	839.1	663.8	175.35	4.785		
12,600.0	6,865.1	6,978.5	6,852.2	163.2	15.9	-90.56	1,095.1	4,845.0	924.2	746.1	178.15	5.188		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	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		
8,400.0	6,878.3	6,998.4	6,875.3	47.6	16.7	-92.06	1,091.4	2,255.6	931.5	868.3	63.19	14.742		
8,500.0	6,878.0	6,998.5	6,875.4	50.2	16.7	-92.07	1,091.4	2,255.6	845.9	780.1	65.82	12.851		
8,600.0	6,877.7	6,998.6	6,875.5	52.9	16.7	-92.09	1,091.4	2,255.6	763.9	695.4	68.48	11.155		
8,700.0	6,877.4	6,998.7	6,875.6	55.5	16.7	-92.10	1,091.4	2,255.6	686.6	615.4	71.14	9.650		
8,800.0	6,877.0	6,998.8	6,875.7	58.2	16.7	-92.11	1,091.4	2,255.6	615.9	542.0	73.83	8.342		
8,900.0	6,876.7	6,998.9	6,875.8	60.9	16.7	-92.12	1,091.4	2,255.6	554.3	477.8	76.52	7.244		
9,000.0	6,876.4	6,999.0	6,875.9	63.6	16.7	-92.14	1,091.4	2,255.6	505.1	425.9	79.22	6.376		
9,100.0	6,876.1	6,999.1	6,876.0	66.3	16.7	-92.15	1,091.4	2,255.6	472.3	390.3	81.93	5.764		
9,200.0	6,875.8	6,999.2	6,876.1	69.0	16.7	-92.16	1,091.3	2,255.6	459.3	374.7	84.65	5.426		
9,210.4	6,875.8	6,999.2	6,876.1	69.3	16.7	-92.16	1,091.3	2,255.6	459.2	374.2	84.94	5.406 CC, ES		
9,300.0	6,875.5	6,999.3	6,876.2	71.7	16.7	-92.17	1,091.3	2,255.6	467.8	380.5	87.38	5.354 SF		
9,400.0	6,875.2	6,999.4	6,876.3	74.5	16.7	-92.19	1,091.3	2,255.6	496.8	406.7	90.11	5.513		
9,500.0	6,874.8	6,999.5	6,876.4	77.2	16.7	-92.20	1,091.3	2,255.6	542.9	450.0	92.85	5.847		
9,600.0	6,874.5	6,999.6	6,876.5	79.9	16.7	-92.21	1,091.3	2,255.6	602.2	506.6	95.59	6.300		
9,700.0	6,874.2	6,999.7	6,876.6	82.7	16.7	-92.23	1,091.3	2,255.6	671.2	572.9	98.34	6.826		
9,800.0	6,873.9	6,999.8	6,876.7	85.4	16.7	-92.24	1,091.3	2,255.6	747.3	646.2	101.09	7.393		
9,900.0	6,873.6	6,999.9	6,876.8	88.2	16.7	-92.25	1,091.3	2,255.6	828.5	724.6	103.84	7.978		
10,000.0	6,873.3	7,000.0	6,876.9	90.9	16.7	-92.26	1,091.3	2,255.6	913.4	806.8	106.60	8.568		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	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	
9,700.0	6,874.2	6,852.4	6,851.0	82.7	11.9	-89.67	1,088.2	3,564.5	937.6	843.2	94.42	9.930	
9,800.0	6,873.9	6,853.9	6,852.5	85.4	11.9	-89.86	1,088.2	3,564.5	851.6	754.4	97.17	8.764	
9,900.0	6,873.6	6,853.3	6,854.0	88.2	11.9	-90.04	1,088.1	3,564.5	768.9	669.0	99.92	7.696	
10,000.0	6,873.3	6,856.8	6,855.4	90.9	11.9	-90.22	1,088.1	3,564.6	690.9	588.3	102.68	6.729	
10,100.0	6,873.0	6,858.2	6,856.9	93.7	11.9	-90.41	1,088.1	3,564.6	619.3	513.8	105.43	5.874	
10,200.0	6,872.6	6,859.7	6,858.3	96.5	11.9	-90.59	1,088.1	3,564.6	556.4	448.2	108.19	5.143	
10,300.0	6,872.3	6,861.1	6,859.8	99.2	11.9	-90.77	1,088.0	3,564.6	505.7	394.7	110.96	4.558	
10,400.0	6,872.0	6,862.6	6,861.2	102.0	11.9	-90.95	1,088.0	3,564.7	471.0	357.3	113.72	4.142	
10,500.0	6,871.7	6,864.0	6,862.7	104.8	11.9	-91.14	1,088.0	3,564.7	456.0	339.5	116.48	3.915	
10,519.5	6,871.6	6,864.3	6,863.0	105.3	11.9	-91.17	1,088.0	3,564.7	455.6	338.5	117.02	3.893 CC, ES	
10,600.0	6,871.4	6,865.5	6,864.1	107.5	11.9	-91.32	1,087.9	3,564.7	462.6	343.4	119.24	3.880 SF	
10,700.0	6,871.1	6,866.9	6,865.6	110.3	11.9	-91.50	1,087.9	3,564.7	490.0	368.0	122.01	4.016	
10,800.0	6,870.8	6,868.4	6,867.0	113.1	11.9	-91.69	1,087.9	3,564.8	535.0	410.2	124.77	4.288	
10,900.0	6,870.4	6,869.9	6,868.5	115.9	11.9	-91.87	1,087.8	3,564.8	593.5	466.0	127.53	4.654	
11,000.0	6,870.1	6,871.3	6,869.9	118.6	11.9	-92.05	1,087.8	3,564.8	662.1	531.8	130.30	5.081	
11,100.0	6,869.8	6,872.8	6,871.4	121.4	11.9	-92.23	1,087.8	3,564.8	737.8	604.8	133.06	5.545	
11,200.0	6,869.5	6,874.2	6,872.9	124.2	11.9	-92.42	1,087.8	3,564.9	818.8	683.0	135.82	6.029	
11,300.0	6,869.2	6,875.7	6,874.3	127.0	11.9	-92.60	1,087.7	3,564.9	903.6	765.0	138.58	6.520	
11,400.0	6,868.9	6,877.1	6,875.8	129.8	11.9	-92.78	1,087.7	3,564.9	991.3	849.9	141.34	7.013	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Seth 5 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
6,850.0	6,707.7	6,681.6	6,680.8	18.8	12.0	-9.31	735.2	907.1	977.0	956.3	20.67	47.275	
6,900.0	6,738.1	6,708.6	6,707.7	18.7	12.1	-10.39	734.5	907.6	938.0	918.5	19.54	48.015	
6,950.0	6,765.9	6,737.2	6,736.3	18.7	12.1	-11.81	733.7	908.2	897.2	878.7	18.50	48.503	
7,000.0	6,791.0	6,763.1	6,762.2	18.7	12.2	-13.68	733.0	908.7	854.6	837.0	17.63	48.471	
7,050.0	6,813.1	6,786.1	6,785.2	18.7	12.2	-16.17	732.3	909.1	810.5	793.4	17.09	47.418	
7,100.0	6,832.3	6,806.1	6,805.2	18.7	12.3	-19.58	731.8	909.5	765.0	747.9	17.12	44.675	
7,150.0	6,848.4	6,823.2	6,822.2	19.2	12.3	-24.40	731.3	909.9	718.4	700.3	18.08	39.737	
7,200.0	6,861.4	6,837.1	6,836.2	20.0	12.4	-31.40	730.9	910.1	670.8	650.4	20.39	32.894	
7,250.0	6,871.2	6,847.8	6,846.9	20.8	12.4	-41.77	730.6	910.3	622.5	598.1	24.41	25.504	
7,300.0	6,877.8	6,855.4	6,854.4	21.7	12.4	-56.74	730.4	910.5	573.7	544.0	29.73	19.293	
7,350.0	6,881.1	6,859.7	6,858.7	22.6	12.4	-75.83	730.3	910.6	524.7	490.4	34.24	15.325	
7,378.1	6,881.5	6,860.6	6,859.7	23.2	12.4	-86.91	730.2	910.6	497.1	461.8	35.34	14.066	
7,400.0	6,881.4	6,861.0	6,860.1	23.6	12.4	-87.12	730.2	910.6	475.6	439.9	35.76	13.300	
7,500.0	6,881.1	6,862.6	6,861.7	25.6	12.4	-88.08	730.2	910.6	378.3	340.6	37.78	10.013	
7,600.0	6,880.8	6,864.3	6,863.3	27.8	12.4	-89.04	730.1	910.7	282.9	243.0	39.93	7.084	
7,700.0	6,880.5	6,865.9	6,865.0	30.1	12.4	-90.00	730.1	910.7	192.2	150.0	42.19	4.556	
7,800.0	6,880.2	6,867.6	6,866.6	32.4	12.4	-90.96	730.0	910.7	117.6	73.0	44.51	2.641	
7,865.6	6,880.0	6,868.6	6,867.7	34.0	12.4	-91.60	730.0	910.7	97.6	51.5	46.07	2.118	CC, ES, SF
7,900.0	6,879.9	6,869.2	6,868.3	34.9	12.4	-91.93	730.0	910.8	103.5	56.6	46.89	2.206	
8,000.0	6,879.6	6,870.9	6,869.9	37.3	12.4	-92.89	730.0	910.8	166.1	116.8	49.31	3.368	
8,100.0	6,879.2	6,872.5	6,871.5	39.9	12.4	-93.85	729.9	910.8	253.9	202.1	51.76	4.905	
8,200.0	6,878.9	6,874.1	6,873.2	42.4	12.4	-94.82	729.9	910.8	348.3	294.1	54.23	6.423	
8,300.0	6,878.6	6,875.8	6,874.8	45.0	12.4	-95.78	729.8	910.9	445.2	388.5	56.71	7.850	
8,400.0	6,878.3	6,877.4	6,876.5	47.6	12.4	-96.73	729.8	910.9	543.2	484.0	59.19	9.177	
8,500.0	6,878.0	6,879.1	6,878.1	50.2	12.4	-97.69	729.7	910.9	641.8	580.1	61.66	10.408	
8,600.0	6,877.7	6,880.7	6,879.7	52.9	12.4	-98.64	729.7	911.0	740.8	676.6	64.13	11.550	
8,700.0	6,877.4	6,882.3	6,881.4	55.5	12.4	-99.59	729.6	911.0	840.0	773.4	66.59	12.614	
8,800.0	6,877.0	6,884.0	6,883.0	58.2	12.5	-100.53	729.6	911.0	939.4	870.3	69.03	13.608	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein (Existing) Sec.19-T5N-R64W - Victor Klein 20-1A (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	
11,500.0	6,868.6	6,827.9	6,826.6	132.5	12.5	83.47	467.6	5,523.9	992.8	848.9	143.91	6.899	
11,600.0	6,868.2	6,830.1	6,828.7	135.3	12.5	84.20	467.6	5,523.9	894.3	747.5	146.89	6.089	
11,700.0	6,867.9	6,832.2	6,830.9	138.1	12.5	84.93	467.7	5,524.0	796.3	646.4	149.85	5.314	
11,800.0	6,867.6	6,834.3	6,833.0	140.9	12.5	85.67	467.7	5,524.0	698.8	546.0	152.81	4.573	
11,900.0	6,867.3	6,836.4	6,835.1	143.7	12.5	86.40	467.7	5,524.1	602.1	446.3	155.74	3.866	
12,000.0	6,867.0	6,838.6	6,837.2	146.5	12.5	87.14	467.7	5,524.1	506.6	348.0	158.66	3.193	
12,100.0	6,866.7	6,840.7	6,839.4	149.3	12.6	87.88	467.8	5,524.2	413.4	251.8	161.55	2.559	
12,200.0	6,866.4	6,842.8	6,841.5	152.1	12.6	88.62	467.8	5,524.2	324.1	159.7	164.43	1.971	
12,300.0	6,866.0	6,845.0	6,843.6	154.9	12.6	89.36	467.8	5,524.3	243.4	76.1	167.28	1.455	Level 3
12,400.0	6,865.7	6,847.1	6,845.8	157.6	12.6	90.10	467.8	5,524.3	182.7	12.6	170.10	1.074	Level 2
12,479.3	6,865.5	6,848.8	6,847.4	159.9	12.6	90.68	467.9	5,524.4	164.6	-7.7	172.33	0.955	Level 1, CC, ES, SF
12,500.0	6,865.4	6,849.2	6,847.9	160.4	12.6	90.84	467.9	5,524.4	165.9	-7.0	172.90	0.960	Level 1
12,600.0	6,865.1	6,851.3	6,850.0	163.2	12.6	91.58	467.9	5,524.4	204.2	28.5	175.68	1.162	Level 2
12,700.0	6,864.8	6,853.5	6,852.1	166.0	12.6	92.32	467.9	5,524.5	275.3	96.9	178.42	1.543	
12,800.0	6,864.5	6,855.6	6,854.3	168.8	12.6	93.06	467.9	5,524.5	360.5	179.3	181.14	1.990	
12,900.0	6,864.2	6,857.7	6,856.4	171.6	12.6	93.79	468.0	5,524.6	451.7	267.9	183.82	2.457	
13,000.0	6,863.8	6,859.9	6,858.5	174.4	12.6	94.53	468.0	5,524.7	546.0	359.6	186.48	2.928	
13,100.0	6,863.5	6,862.0	6,860.6	177.2	12.6	95.27	468.0	5,524.7	642.1	453.0	189.10	3.395	
13,200.0	6,863.2	6,864.1	6,862.8	180.0	12.6	96.00	468.0	5,524.8	739.2	547.5	191.68	3.856	
13,300.0	6,862.9	6,866.2	6,864.9	182.8	12.6	96.74	468.1	5,524.8	836.9	642.7	194.23	4.309	
13,400.0	6,862.6	6,868.4	6,867.0	185.6	12.6	97.47	468.1	5,524.9	935.1	738.4	196.75	4.753	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	32.8	0.0	32.8				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	32.8	0.0	32.8	32.6	0.22	145.858	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	32.8	0.0	32.8	32.1	0.67	48.619	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	32.8	0.0	32.8	31.7	1.12	29.172	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	32.8	0.0	32.8	31.2	1.57	20.837	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	32.8	0.0	32.8	30.8	2.02	16.206	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	32.8	0.0	32.8	30.3	2.47	13.260	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	32.8	0.0	32.8	29.9	2.92	11.220	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	32.8	0.0	32.8	29.4	3.37	9.724 CC	
900.0	900.0	899.2	899.2	1.9	1.9	-0.78	34.0	-0.5	34.0	30.2	3.82	8.904	
1,000.0	1,000.0	998.2	998.1	2.1	2.1	-2.81	37.6	-1.8	37.7	33.4	4.27	8.831	
1,100.0	1,100.0	1,097.1	1,096.8	2.4	2.4	23.48	43.6	-4.1	43.1	38.4	4.71	9.137	
1,200.0	1,200.0	1,195.7	1,195.0	2.6	2.6	21.79	51.9	-7.3	49.4	44.3	5.16	9.573	
1,300.0	1,299.9	1,294.1	1,292.7	2.8	2.8	20.51	62.6	-11.4	56.7	51.0	5.61	10.096	
1,400.0	1,399.7	1,392.3	1,389.9	3.0	3.1	19.55	75.6	-16.4	64.8	58.7	6.06	10.683	
1,500.0	1,499.4	1,490.1	1,486.4	3.3	3.4	18.84	90.8	-22.3	73.8	67.3	6.52	11.314	
1,600.0	1,598.9	1,587.7	1,582.1	3.5	3.7	18.33	108.3	-29.0	83.7	76.7	6.99	11.977	
1,700.0	1,698.3	1,686.2	1,678.3	3.8	4.1	18.00	128.0	-36.5	94.0	86.5	7.46	12.603	
1,800.0	1,797.4	1,785.8	1,775.6	4.0	4.5	18.00	148.0	-44.2	102.9	95.0	7.94	12.969	
1,900.0	1,896.3	1,885.5	1,872.9	4.3	4.9	18.29	168.1	-51.9	110.2	101.8	8.43	13.079	
1,980.7	1,975.9	1,966.1	1,951.6	4.6	5.2	18.70	184.4	-58.2	114.9	106.1	8.83	13.011	
2,000.0	1,994.9	1,985.3	1,970.4	4.6	5.3	18.81	188.3	-59.7	115.9	106.9	8.93	12.977	
2,100.0	2,093.5	2,085.2	2,067.9	4.9	5.7	19.39	208.4	-67.4	121.0	111.6	9.45	12.806	
2,200.0	2,192.0	2,185.0	2,165.4	5.3	6.1	19.92	228.5	-75.1	126.2	116.2	9.98	12.644	
2,300.0	2,290.6	2,284.9	2,262.9	5.6	6.6	20.41	248.6	-82.8	131.3	120.8	10.51	12.492	
2,400.0	2,389.1	2,384.8	2,360.4	6.0	7.0	20.87	268.8	-90.6	136.5	125.4	11.05	12.349	
2,500.0	2,487.6	2,484.6	2,457.9	6.3	7.4	21.29	288.9	-98.3	141.7	130.1	11.60	12.214	
2,600.0	2,586.2	2,584.5	2,555.5	6.7	7.9	21.68	309.0	-106.0	146.8	134.7	12.15	12.087	
2,700.0	2,684.7	2,684.3	2,653.0	7.0	8.3	22.04	329.2	-113.7	152.0	139.3	12.70	11.968	
2,800.0	2,783.2	2,784.2	2,750.5	7.4	8.7	22.38	349.3	-121.5	157.2	144.0	13.26	11.855	
2,900.0	2,881.8	2,884.1	2,848.0	7.7	9.2	22.70	369.4	-129.2	162.4	148.6	13.82	11.749	
3,000.0	2,980.3	2,983.9	2,945.5	8.1	9.6	23.00	389.6	-136.9	167.6	153.2	14.39	11.648	
3,100.0	3,078.9	3,083.8	3,043.0	8.5	10.1	23.28	409.7	-144.6	172.8	157.9	14.96	11.554	
3,200.0	3,177.4	3,183.6	3,140.5	8.8	10.5	23.54	429.8	-152.4	178.0	162.5	15.53	11.464	
3,300.0	3,275.9	3,283.5	3,238.0	9.2	11.0	23.79	449.9	-160.1	183.3	167.2	16.10	11.379	
3,400.0	3,374.5	3,383.4	3,335.5	9.6	11.4	24.02	470.1	-167.8	188.5	171.8	16.68	11.299	
3,500.0	3,473.0	3,483.2	3,433.0	10.0	11.9	24.25	490.2	-175.5	193.7	176.4	17.26	11.222	
3,600.0	3,571.6	3,583.1	3,530.5	10.3	12.3	24.46	510.3	-183.3	198.9	181.1	17.84	11.150	
3,700.0	3,670.1	3,683.0	3,628.0	10.7	12.8	24.66	530.5	-191.0	204.1	185.7	18.42	11.081	
3,800.0	3,768.6	3,782.8	3,725.5	11.1	13.3	24.85	550.6	-198.7	209.4	190.4	19.01	11.015	
3,900.0	3,867.2	3,882.7	3,823.0	11.5	13.7	25.03	570.7	-206.4	214.6	195.0	19.59	10.953	
4,000.0	3,965.7	3,982.5	3,920.5	11.9	14.2	25.20	590.8	-214.2	219.8	199.7	20.18	10.893	
4,100.0	4,064.2	4,082.4	4,018.0	12.2	14.6	25.36	611.0	-221.9	225.1	204.3	20.77	10.836	
4,200.0	4,162.8	4,182.3	4,115.5	12.6	15.1	25.52	631.1	-229.6	230.3	209.0	21.36	10.782	
4,300.0	4,261.3	4,282.1	4,213.1	13.0	15.5	25.67	651.2	-237.3	235.6	213.6	21.95	10.730	
4,400.0	4,359.9	4,382.0	4,310.6	13.4	16.0	25.81	671.4	-245.1	240.8	218.2	22.54	10.681	
4,500.0	4,458.4	4,481.8	4,408.1	13.8	16.4	25.95	691.5	-252.8	246.0	222.9	23.14	10.633	
4,600.0	4,556.9	4,581.7	4,505.6	14.1	16.9	26.08	711.6	-260.5	251.3	227.5	23.73	10.588	
4,700.0	4,655.5	4,681.6	4,603.1	14.5	17.4	26.21	731.7	-268.2	256.5	232.2	24.33	10.544	
4,800.0	4,754.0	4,781.4	4,700.6	14.9	17.8	26.33	751.9	-276.0	261.8	236.8	24.93	10.502	
4,900.0	4,852.6	4,881.3	4,798.1	15.3	18.3	26.44	772.0	-283.7	267.0	241.5	25.52	10.462	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,951.1	4,981.1	4,895.6	15.7	18.7	26.55	26.55	792.1	-291.4	272.3	246.1	26.12	10.423	
5,100.0	5,049.6	5,081.0	4,993.1	16.1	19.2	26.66	26.66	812.3	-299.1	277.5	250.8	26.72	10.386	
5,200.0	5,148.2	5,180.9	5,090.6	16.4	19.6	26.77	26.77	832.4	-306.9	282.8	255.4	27.32	10.350	
5,300.0	5,246.7	5,280.7	5,188.1	16.8	20.1	26.86	26.86	852.5	-314.6	288.0	260.1	27.92	10.316	
5,400.0	5,345.3	5,381.0	5,286.1	17.2	20.6	26.96	26.96	872.7	-322.4	293.3	264.7	28.52	10.282	
5,467.8	5,412.0	5,456.0	5,359.5	17.5	20.8	27.10	27.10	886.8	-327.8	295.9	267.0	28.92	10.233	
5,500.0	5,443.8	5,491.7	5,394.6	17.6	20.9	27.20	27.20	892.9	-330.1	296.7	267.6	29.09	10.198	
5,600.0	5,542.8	5,602.5	5,504.0	17.8	21.3	27.47	27.47	909.2	-336.3	298.9	269.3	29.57	10.110	
5,700.0	5,642.2	5,713.4	5,614.1	18.1	21.5	27.68	27.68	921.5	-341.1	300.6	270.6	29.97	10.029	
5,800.0	5,741.9	5,824.3	5,724.6	18.3	21.8	27.81	27.81	929.9	-344.3	301.7	271.4	30.31	9.954	
5,900.0	5,841.9	5,935.3	5,835.5	18.4	21.9	27.88	27.88	934.2	-345.9	302.3	271.7	30.58	9.886	
5,958.1	5,900.0	5,999.8	5,900.0	18.5	22.0	-0.59	-0.59	934.9	-346.2	302.4	263.7	38.71	7.813	
6,000.0	5,941.9	6,041.7	5,941.9	18.6	22.1	-0.59	-0.59	934.9	-346.2	302.4	263.6	38.82	7.790	
6,100.0	6,041.9	6,141.7	6,041.9	18.7	22.2	-0.54	-0.54	934.9	-345.9	302.4	263.3	39.10	7.735	
6,149.0	6,090.8	6,190.7	6,090.8	18.8	22.2	0.00	0.00	934.9	-343.1	302.4	263.2	39.16	7.722	
6,175.7	6,117.6	6,217.2	6,117.2	18.9	22.3	0.54	0.54	934.9	-340.3	302.4	263.2	39.15	7.723	
6,200.0	6,141.9	6,241.2	6,140.9	18.9	22.3	-88.89	-88.89	934.9	-336.9	302.4	270.6	31.80	9.511	
6,250.0	6,191.8	6,290.3	6,189.1	18.9	22.3	-87.73	-87.73	934.9	-327.7	302.6	270.5	32.11	9.426	
6,300.0	6,241.3	6,338.9	6,236.2	19.0	22.3	-86.59	-86.59	934.9	-315.6	302.9	270.5	32.38	9.356	
6,350.0	6,290.4	6,387.2	6,282.1	19.0	22.3	-85.46	-85.46	934.9	-300.6	303.3	270.7	32.61	9.301	
6,400.0	6,338.7	6,435.2	6,326.7	19.0	22.3	-84.36	-84.36	934.9	-282.8	303.9	271.1	32.81	9.260	
6,450.0	6,386.0	6,482.8	6,369.7	19.0	22.3	-83.29	-83.29	934.9	-262.5	304.5	271.5	32.98	9.234	
6,500.0	6,432.2	6,530.1	6,411.1	19.0	22.2	-82.26	-82.26	934.9	-239.7	305.2	272.1	33.11	9.219	
6,550.0	6,477.1	6,577.1	6,450.8	19.0	22.2	-81.26	-81.26	934.9	-214.5	306.0	272.8	33.21	9.213	
6,600.0	6,520.4	6,623.8	6,488.7	18.9	22.2	-80.30	-80.30	934.9	-187.1	306.8	273.5	33.30	9.212	
6,650.0	6,562.0	6,670.2	6,524.6	18.9	22.1	-79.39	-79.39	934.9	-157.7	307.7	274.3	33.40	9.213	
6,700.0	6,601.7	6,716.4	6,558.4	18.9	22.1	-78.53	-78.53	934.9	-126.3	308.6	275.1	33.51	9.210	
6,750.0	6,639.3	6,762.4	6,590.2	18.8	22.1	-77.72	-77.72	934.9	-93.0	309.5	275.9	33.65	9.198	
6,800.0	6,674.7	6,808.1	6,619.7	18.8	22.1	-76.96	-76.96	934.9	-58.1	310.4	276.6	33.85	9.170	
6,850.0	6,707.7	6,853.7	6,647.0	18.8	22.0	-76.26	-76.26	934.9	-21.7	311.3	277.2	34.14	9.121	
6,900.0	6,738.1	6,900.0	6,672.5	18.7	22.0	-75.60	-75.60	934.9	17.0	312.2	277.7	34.53	9.043	
6,950.0	6,765.9	6,944.2	6,694.6	18.7	22.0	-75.02	-75.02	934.9	55.3	313.1	278.0	35.04	8.935	
7,000.0	6,791.0	6,989.3	6,714.8	18.7	22.0	-74.49	-74.49	934.9	95.6	313.8	278.2	35.69	8.795	
7,050.0	6,813.1	7,034.2	6,732.5	18.7	22.0	-74.02	-74.02	934.9	136.8	314.6	278.1	36.51	8.616	
7,100.0	6,832.3	7,079.0	6,747.7	18.7	22.0	-73.61	-73.61	934.9	178.9	315.2	277.7	37.46	8.414	
7,150.0	6,848.4	7,123.7	6,760.4	19.2	22.1	-73.26	-73.26	934.9	221.8	315.8	277.2	38.59	8.183	
7,200.0	6,861.4	7,168.3	6,770.6	20.0	22.3	-72.97	-72.97	934.9	265.2	316.2	276.4	39.88	7.931	
7,250.0	6,871.2	7,212.8	6,778.2	20.8	22.6	-72.75	-72.75	934.9	309.1	316.6	275.3	41.31	7.664	
7,300.0	6,877.8	7,257.3	6,783.3	21.7	23.1	-72.59	-72.59	934.9	353.3	316.9	274.0	42.88	7.390	
7,350.0	6,881.1	7,301.8	6,785.8	22.6	23.8	-72.50	-72.50	934.9	397.7	317.1	272.5	44.58	7.112	
7,378.1	6,881.5	7,327.7	6,786.0	23.2	24.2	-72.47	-72.47	934.9	423.6	317.1	271.5	45.60	6.955	
7,378.8	6,881.5	7,327.7	6,786.0	23.2	24.2	-72.47	-72.47	934.9	423.6	317.1	271.5	45.61	6.953	
7,400.0	6,881.4	7,348.5	6,785.8	23.6	24.6	-72.45	-72.45	934.9	444.4	317.1	270.7	46.39	6.837	
7,500.0	6,881.1	7,448.5	6,785.1	25.6	26.5	-72.38	-72.38	934.9	544.4	317.3	267.0	50.24	6.315	
7,600.0	6,880.8	7,548.5	6,784.3	27.8	28.6	-72.30	-72.30	934.9	644.4	317.4	263.1	54.34	5.842	
7,700.0	6,880.5	7,648.5	6,783.5	30.1	30.8	-72.22	-72.22	934.9	744.4	317.5	258.9	58.64	5.416	
7,800.0	6,880.2	7,748.5	6,782.8	32.4	33.1	-72.14	-72.14	934.9	844.4	317.7	254.6	63.09	5.035	
7,900.0	6,879.9	7,848.5	6,782.0	34.9	35.5	-72.06	-72.06	934.9	944.4	317.8	250.1	67.68	4.696	
8,000.0	6,879.6	7,948.5	6,781.2	37.3	37.9	-71.99	-71.99	934.9	1,044.4	318.0	245.6	72.36	4.394	
8,100.0	6,879.2	8,048.5	6,780.5	39.9	40.4	-71.91	-71.91	934.9	1,144.4	318.1	241.0	77.13	4.124	
8,200.0	6,878.9	8,148.5	6,779.7	42.4	42.9	-71.83	-71.83	934.9	1,244.4	318.2	236.3	81.97	3.882	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,300.0	6,878.6	8,248.5	6,778.9	45.0	45.5	-71.75	934.9	1,344.4	318.4	231.5	86.86	3.666	
8,400.0	6,878.3	8,348.5	6,778.2	47.6	48.1	-71.68	934.9	1,444.4	318.5	226.7	91.80	3.470	
8,500.0	6,878.0	8,448.5	6,777.4	50.2	50.7	-71.60	934.9	1,544.4	318.7	221.9	96.77	3.293	
8,600.0	6,877.7	8,548.5	6,776.6	52.9	53.3	-71.52	934.9	1,644.4	318.8	217.0	101.77	3.133	
8,700.0	6,877.4	8,648.5	6,775.8	55.5	56.0	-71.44	934.9	1,744.4	319.0	212.2	106.80	2.986	
8,800.0	6,877.0	8,748.5	6,775.1	58.2	58.6	-71.37	934.9	1,844.4	319.1	207.2	111.86	2.853	
8,900.0	6,876.7	8,848.5	6,774.3	60.9	61.3	-71.29	934.9	1,944.4	319.3	202.3	116.93	2.730	
9,000.0	6,876.4	8,948.5	6,773.5	63.6	64.0	-71.21	934.9	2,044.3	319.4	197.4	122.02	2.618	
9,100.0	6,876.1	9,048.5	6,772.8	66.3	66.7	-71.13	934.9	2,144.3	319.5	192.4	127.12	2.514	
9,200.0	6,875.8	9,148.5	6,772.0	69.0	69.4	-71.06	934.9	2,244.3	319.7	187.5	132.23	2.418	
9,300.0	6,875.5	9,248.5	6,771.2	71.7	72.1	-70.98	934.9	2,344.3	319.8	182.5	137.35	2.329	
9,400.0	6,875.2	9,348.5	6,770.5	74.5	74.8	-70.90	934.9	2,444.3	320.0	177.5	142.47	2.246	
9,500.0	6,874.8	9,448.5	6,769.7	77.2	77.5	-70.83	934.9	2,544.3	320.1	172.5	147.61	2.169	
9,600.0	6,874.5	9,548.5	6,768.9	79.9	80.3	-70.75	934.9	2,644.3	320.3	167.5	152.75	2.097	
9,700.0	6,874.2	9,648.5	6,768.2	82.7	83.0	-70.67	934.9	2,744.3	320.4	162.5	157.89	2.029	
9,800.0	6,873.9	9,748.5	6,767.4	85.4	85.7	-70.60	934.9	2,844.3	320.6	157.5	163.04	1.966	
9,900.0	6,873.6	9,848.5	6,766.6	88.2	88.5	-70.52	934.9	2,944.3	320.7	152.5	168.19	1.907	
10,000.0	6,873.3	9,948.5	6,765.9	90.9	91.2	-70.44	934.9	3,044.3	320.9	147.5	173.34	1.851	
10,100.0	6,873.0	10,048.5	6,765.1	93.7	94.0	-70.37	934.9	3,144.3	321.0	142.5	178.49	1.799	
10,200.0	6,872.6	10,148.5	6,764.3	96.5	96.7	-70.29	934.9	3,244.3	321.2	137.5	183.65	1.749	
10,300.0	6,872.3	10,248.5	6,763.6	99.2	99.5	-70.22	934.9	3,344.3	321.3	132.5	188.80	1.702	
10,400.0	6,872.0	10,348.5	6,762.8	102.0	102.3	-70.14	934.9	3,444.3	321.5	127.5	193.95	1.658	
10,500.0	6,871.7	10,448.5	6,762.0	104.8	105.0	-70.06	934.9	3,544.3	321.7	122.5	199.11	1.615	
10,600.0	6,871.4	10,548.5	6,761.3	107.5	107.8	-69.99	934.9	3,644.3	321.8	117.5	204.26	1.575	
10,700.0	6,871.1	10,648.5	6,760.5	110.3	110.6	-69.91	934.9	3,744.3	322.0	112.6	209.41	1.537	
10,800.0	6,870.8	10,748.5	6,759.7	113.1	113.3	-69.84	934.9	3,844.3	322.1	107.6	214.56	1.501	
10,900.0	6,870.4	10,848.5	6,759.0	115.9	116.1	-69.76	934.9	3,944.3	322.3	102.6	219.71	1.467 Level 3	
11,000.0	6,870.1	10,948.5	6,758.2	118.6	118.9	-69.68	934.9	4,044.3	322.4	97.6	224.85	1.434 Level 3	
11,100.0	6,869.8	11,048.5	6,757.4	121.4	121.6	-69.61	934.9	4,144.3	322.6	92.6	230.00	1.403 Level 3	
11,200.0	6,869.5	11,148.5	6,756.7	124.2	124.4	-69.53	934.9	4,244.3	322.7	87.6	235.14	1.373 Level 3	
11,300.0	6,869.2	11,248.5	6,755.9	127.0	127.2	-69.46	934.9	4,344.3	322.9	82.6	240.28	1.344 Level 3	
11,400.0	6,868.9	11,348.5	6,755.1	129.8	130.0	-69.38	934.9	4,444.3	323.1	77.7	245.41	1.316 Level 3	
11,500.0	6,868.6	11,448.5	6,754.3	132.5	132.8	-69.31	934.9	4,544.2	323.2	72.7	250.54	1.290 Level 3	
11,600.0	6,868.2	11,548.5	6,753.6	135.3	135.5	-69.23	934.9	4,644.2	323.4	67.7	255.67	1.265 Level 3	
11,700.0	6,867.9	11,648.5	6,752.8	138.1	138.3	-69.16	934.9	4,744.2	323.6	62.8	260.80	1.241 Level 2	
11,800.0	6,867.6	11,748.5	6,752.0	140.9	141.1	-69.08	934.9	4,844.2	323.7	57.8	265.92	1.217 Level 2	
11,900.0	6,867.3	11,848.5	6,751.3	143.7	143.9	-69.01	934.9	4,944.2	323.9	52.8	271.04	1.195 Level 2	
12,000.0	6,867.0	11,948.5	6,750.5	146.5	146.7	-68.93	934.9	5,044.2	324.0	47.9	276.16	1.173 Level 2	
12,100.0	6,866.7	12,048.5	6,749.7	149.3	149.5	-68.86	934.9	5,144.2	324.2	42.9	281.27	1.153 Level 2	
12,200.0	6,866.4	12,148.5	6,749.0	152.1	152.3	-68.78	934.9	5,244.2	324.4	38.0	286.38	1.133 Level 2	
12,300.0	6,866.0	12,248.5	6,748.2	154.9	155.0	-68.71	934.9	5,344.2	324.5	33.0	291.48	1.113 Level 2	
12,400.0	6,865.7	12,348.5	6,747.4	157.6	157.8	-68.63	934.9	5,444.2	324.7	28.1	296.58	1.095 Level 2	
12,500.0	6,865.4	12,448.5	6,746.7	160.4	160.6	-68.56	934.9	5,544.2	324.9	23.2	301.68	1.077 Level 2	
12,600.0	6,865.1	12,548.5	6,745.9	163.2	163.4	-68.48	934.9	5,644.2	325.0	18.3	306.77	1.060 Level 2	
12,700.0	6,864.8	12,648.5	6,745.1	166.0	166.2	-68.41	934.9	5,744.2	325.2	13.3	311.86	1.043 Level 2	
12,800.0	6,864.5	12,748.5	6,744.4	168.8	169.0	-68.34	934.9	5,844.2	325.4	8.4	316.94	1.027 Level 2	
12,900.0	6,864.2	12,848.5	6,743.6	171.6	171.8	-68.26	934.9	5,944.2	325.5	3.5	322.02	1.011 Level 2	
13,000.0	6,863.8	12,948.5	6,742.8	174.4	174.6	-68.19	934.9	6,044.2	325.7	-1.4	327.10	0.996 Level 1	
13,100.0	6,863.5	13,048.5	6,742.1	177.2	177.4	-68.11	934.9	6,144.2	325.9	-6.3	332.17	0.981 Level 1	
13,200.0	6,863.2	13,148.5	6,741.3	180.0	180.2	-68.04	934.9	6,244.2	326.0	-11.2	337.23	0.967 Level 1	
13,300.0	6,862.9	13,248.5	6,740.5	182.8	183.0	-67.97	934.9	6,344.2	326.2	-16.1	342.29	0.953 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-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,400.0	6,862.6	13,348.5	6,739.8	185.6	185.8	-67.89		934.9	6,444.2	326.4	-21.0	347.35	0.940	Level 1
13,500.0	6,862.3	13,448.5	6,739.0	188.4	188.6	-67.82		934.9	6,544.2	326.5	-25.9	352.40	0.927	Level 1
13,600.0	6,862.0	13,548.5	6,738.2	191.2	191.4	-67.74		934.9	6,644.2	326.7	-30.7	357.45	0.914	Level 1
13,700.0	6,861.6	13,648.5	6,737.5	194.0	194.1	-67.67		934.9	6,744.2	326.9	-35.6	362.49	0.902	Level 1
13,800.0	6,861.3	13,748.5	6,736.7	196.8	196.9	-67.60		934.9	6,844.2	327.1	-40.5	367.53	0.890	Level 1
13,900.0	6,861.0	13,848.5	6,735.9	199.6	199.7	-67.52		934.9	6,944.2	327.2	-45.3	372.56	0.878	Level 1
14,000.0	6,860.7	13,948.5	6,735.1	202.4	202.5	-67.45		934.9	7,044.1	327.4	-50.2	377.59	0.867	Level 1
14,100.0	6,860.4	14,048.5	6,734.4	205.2	205.3	-67.38		934.9	7,144.1	327.6	-55.0	382.61	0.856	Level 1
14,200.0	6,860.1	14,148.5	6,733.6	208.0	208.1	-67.30		934.9	7,244.1	327.8	-59.9	387.63	0.846	Level 1
14,300.0	6,859.8	14,248.5	6,732.8	210.8	210.9	-67.23		934.9	7,344.1	327.9	-64.7	392.65	0.835	Level 1
14,400.0	6,859.4	14,348.5	6,732.1	213.6	213.7	-67.16		934.9	7,444.1	328.1	-69.5	397.66	0.825	Level 1
14,500.0	6,859.1	14,448.4	6,731.3	216.4	216.5	-67.08		934.9	7,544.1	328.3	-74.4	402.66	0.815	Level 1
14,600.0	6,858.8	14,548.4	6,730.5	219.2	219.3	-67.01		934.9	7,644.1	328.5	-79.2	407.66	0.806	Level 1
14,700.0	6,858.5	14,648.4	6,729.8	222.0	222.1	-66.94		934.9	7,744.1	328.6	-84.0	412.65	0.796	Level 1
14,800.0	6,858.2	14,748.4	6,729.0	224.8	224.9	-66.87		934.9	7,844.1	328.8	-88.8	417.64	0.787	Level 1
14,900.0	6,857.9	14,848.4	6,728.2	227.6	227.7	-66.79		934.9	7,944.1	329.0	-93.6	422.62	0.778	Level 1
15,000.0	6,857.6	14,948.4	6,727.5	230.4	230.5	-66.72		934.9	8,044.1	329.2	-98.4	427.60	0.770	Level 1
15,100.0	6,857.2	15,048.4	6,726.7	233.2	233.3	-66.65		934.9	8,144.1	329.4	-103.2	432.57	0.761	Level 1
15,200.0	6,856.9	15,148.4	6,725.9	236.0	236.1	-66.58		934.9	8,244.1	329.5	-108.0	437.54	0.753	Level 1
15,300.0	6,856.6	15,248.4	6,725.2	238.8	238.9	-66.50		934.9	8,344.1	329.7	-112.8	442.50	0.745	Level 1
15,400.0	6,856.3	15,348.4	6,724.4	241.6	241.7	-66.43		934.9	8,444.1	329.9	-117.6	447.46	0.737	Level 1
15,500.0	6,856.0	15,448.4	6,723.6	244.4	244.5	-66.36		934.9	8,544.1	330.1	-122.3	452.41	0.730	Level 1
15,600.0	6,855.7	15,548.4	6,722.9	247.2	247.3	-66.29		934.9	8,644.1	330.3	-127.1	457.36	0.722	Level 1
15,700.0	6,855.4	15,648.4	6,722.1	250.0	250.1	-66.21		934.9	8,744.1	330.4	-131.9	462.30	0.715	Level 1
15,800.0	6,855.0	15,748.4	6,721.3	252.8	252.9	-66.14		934.9	8,844.1	330.6	-136.6	467.23	0.708	Level 1
15,900.0	6,854.7	15,848.4	6,720.6	255.6	255.7	-66.07		934.9	8,944.1	330.8	-141.4	472.16	0.701	Level 1
16,000.0	6,854.4	15,948.4	6,719.8	258.4	258.5	-66.00		934.9	9,044.1	331.0	-146.1	477.09	0.694	Level 1
16,100.0	6,854.1	16,048.4	6,719.0	261.2	261.3	-65.93		934.9	9,144.1	331.2	-150.8	482.01	0.687	Level 1
16,200.0	6,853.8	16,148.4	6,718.3	264.0	264.1	-65.86		934.9	9,244.1	331.4	-155.6	486.92	0.681	Level 1
16,300.0	6,853.5	16,248.4	6,717.5	266.8	266.9	-65.78		934.9	9,344.1	331.6	-160.3	491.83	0.674	Level 1
16,400.0	6,853.2	16,348.4	6,716.7	269.6	269.7	-65.71		934.9	9,444.1	331.7	-165.0	496.73	0.668	Level 1
16,500.0	6,852.8	16,448.4	6,716.0	272.4	272.6	-65.64		934.9	9,544.0	331.9	-169.7	501.63	0.662	Level 1
16,600.0	6,852.5	16,548.4	6,715.2	275.2	275.4	-65.57		934.9	9,644.0	332.1	-174.4	506.52	0.656	Level 1
16,700.0	6,852.2	16,648.4	6,714.4	278.0	278.2	-65.50		934.9	9,744.0	332.3	-179.1	511.41	0.650	Level 1
16,800.0	6,851.9	16,748.4	6,713.6	280.8	281.0	-65.43		934.9	9,844.0	332.5	-183.8	516.29	0.644	Level 1
16,900.0	6,851.6	16,848.4	6,712.9	283.6	283.8	-65.36		934.9	9,944.0	332.7	-188.5	521.17	0.638	Level 1
17,000.0	6,851.3	16,948.4	6,712.1	286.4	286.6	-65.29		934.9	10,044.0	332.9	-193.2	526.04	0.633	Level 1
17,100.0	6,851.0	17,048.4	6,711.3	289.2	289.4	-65.21		934.9	10,144.0	333.1	-197.8	530.90	0.627	Level 1
17,200.0	6,850.7	17,148.4	6,710.6	292.1	292.2	-65.14		934.9	10,244.0	333.2	-202.5	535.76	0.622	Level 1
17,300.0	6,850.3	17,248.4	6,709.8	294.9	295.0	-65.07		934.9	10,344.0	333.4	-207.2	540.61	0.617	Level 1
17,407.1	6,850.0	17,353.6	6,709.0	297.9	297.9	-65.00		934.9	10,449.2	333.6	-212.1	545.76	0.611	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	77.48	32.8	147.6	151.2				
100.0	100.0	100.0	100.0	0.1	0.1	77.48	32.8	147.6	151.2	151.0	0.22	672.901	
200.0	200.0	200.0	200.0	0.3	0.3	77.48	32.8	147.6	151.2	150.6	0.67	224.300	
300.0	300.0	300.0	300.0	0.6	0.6	77.48	32.8	147.6	151.2	150.1	1.12	134.580	
400.0	400.0	400.0	400.0	0.8	0.8	77.48	32.8	147.6	151.2	149.7	1.57	96.129	
500.0	500.0	500.0	500.0	1.0	1.0	77.48	32.8	147.6	151.2	149.2	2.02	74.767	
600.0	600.0	600.0	600.0	1.2	1.2	77.48	32.8	147.6	151.2	148.8	2.47	61.173	
700.0	700.0	700.0	700.0	1.5	1.5	77.48	32.8	147.6	151.2	148.3	2.92	51.762	
800.0	800.0	800.0	800.0	1.7	1.7	77.48	32.8	147.6	151.2	147.9	3.37	44.860	
900.0	900.0	900.0	900.0	1.9	1.9	77.48	32.8	147.6	151.2	147.4	3.82	39.582	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	77.48	32.8	147.6	151.2	147.0	4.27	35.416 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	106.27	32.8	147.6	151.5	146.8	4.72	32.108	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	107.21	32.8	147.6	152.2	147.1	5.16	29.482	
1,300.0	1,299.9	1,299.9	1,299.9	2.8	2.8	108.75	32.8	147.6	153.6	148.0	5.61	27.373	
1,400.0	1,399.7	1,399.7	1,399.7	3.0	3.0	110.86	32.8	147.6	155.7	149.6	6.06	25.683	
1,500.0	1,499.4	1,499.4	1,499.4	3.3	3.3	113.47	32.8	147.6	158.6	152.1	6.51	24.350	
1,600.0	1,598.9	1,601.7	1,601.7	3.5	3.5	116.56	32.9	146.8	161.8	154.9	6.97	23.231	
1,700.0	1,698.3	1,704.1	1,704.1	3.8	3.7	119.99	33.3	144.0	164.6	157.2	7.41	22.200	
1,800.0	1,797.4	1,806.5	1,806.3	4.0	3.9	123.77	33.9	139.5	167.0	159.2	7.87	21.233	
1,900.0	1,896.3	1,908.7	1,908.4	4.3	4.1	127.90	34.8	133.2	169.5	161.2	8.33	20.354	
1,980.7	1,975.9	1,991.2	1,990.6	4.6	4.3	131.50	35.7	126.8	171.6	162.9	8.70	19.728	
2,000.0	1,994.9	2,010.9	2,010.2	4.6	4.3	132.39	35.9	125.1	172.1	163.3	8.79	19.584	
2,100.0	2,093.5	2,113.0	2,111.8	4.9	4.6	136.96	37.3	115.2	174.4	165.2	9.26	18.844	
2,200.0	2,192.0	2,215.1	2,213.2	5.3	4.8	141.52	38.9	103.5	176.1	166.4	9.72	18.108	
2,300.0	2,290.6	2,315.1	2,312.4	5.6	5.1	146.04	40.7	90.7	177.5	167.3	10.19	17.421	
2,400.0	2,389.1	2,414.1	2,410.6	6.0	5.4	150.42	42.5	77.9	179.8	169.2	10.65	16.888	
2,500.0	2,487.6	2,513.1	2,508.8	6.3	5.6	154.67	44.3	65.1	183.2	172.1	11.12	16.485	
2,600.0	2,586.2	2,612.2	2,606.9	6.7	5.9	158.75	46.0	52.3	187.6	176.0	11.59	16.189	
2,700.0	2,684.7	2,711.2	2,705.1	7.0	6.2	162.62	47.8	39.5	192.9	180.9	12.07	15.979	
2,800.0	2,783.2	2,810.2	2,803.3	7.4	6.5	166.28	49.6	26.7	199.1	186.5	12.57	15.838	
2,900.0	2,881.8	2,909.2	2,901.4	7.7	6.8	169.70	51.4	13.9	206.0	192.9	13.08	15.750	
3,000.0	2,980.3	3,008.2	2,999.6	8.1	7.1	172.90	53.2	1.1	213.6	200.0	13.61	15.703	
3,100.0	3,078.9	3,107.2	3,097.8	8.5	7.4	175.87	54.9	-11.7	221.9	207.7	14.14	15.689	
3,200.0	3,177.4	3,206.3	3,195.9	8.8	7.7	178.62	56.7	-24.5	230.7	216.0	14.69	15.699	
3,300.0	3,275.9	3,305.3	3,294.1	9.2	8.0	-178.83	58.5	-37.3	240.0	224.7	15.26	15.728	
3,400.0	3,374.5	3,404.3	3,392.3	9.6	8.3	-176.48	60.3	-50.1	249.7	233.9	15.83	15.771	
3,500.0	3,473.0	3,503.3	3,490.4	10.0	8.6	-174.30	62.1	-62.9	259.8	243.4	16.42	15.825	
3,600.0	3,571.6	3,602.3	3,588.6	10.3	8.9	-172.29	63.8	-75.7	270.3	253.3	17.01	15.887	
3,700.0	3,670.1	3,701.3	3,686.8	10.7	9.2	-170.43	65.6	-88.5	281.1	263.5	17.62	15.955	
3,800.0	3,768.6	3,800.3	3,784.9	11.1	9.5	-168.70	67.4	-101.3	292.1	273.9	18.23	16.026	
3,900.0	3,867.2	3,899.4	3,883.1	11.5	9.9	-167.11	69.2	-114.1	303.4	284.6	18.85	16.101	
4,000.0	3,965.7	3,998.4	3,981.3	11.9	10.2	-165.62	71.0	-126.9	314.9	295.5	19.47	16.178	
4,100.0	4,064.2	4,097.4	4,079.5	12.2	10.5	-164.25	72.7	-139.6	326.6	306.6	20.09	16.255	
4,200.0	4,162.8	4,196.4	4,177.6	12.6	10.8	-162.96	74.5	-152.4	338.5	317.8	20.73	16.333	
4,300.0	4,261.3	4,295.4	4,275.8	13.0	11.1	-161.77	76.3	-165.2	350.6	329.2	21.36	16.411	
4,400.0	4,359.9	4,394.4	4,374.0	13.4	11.4	-160.65	78.1	-178.0	362.7	340.7	22.00	16.489	
4,500.0	4,458.4	4,493.4	4,472.1	13.8	11.8	-159.61	79.9	-190.8	375.0	352.4	22.64	16.565	
4,600.0	4,556.9	4,592.5	4,570.3	14.1	12.1	-158.63	81.6	-203.6	387.5	364.2	23.28	16.641	
4,700.0	4,655.5	4,691.5	4,668.5	14.5	12.4	-157.72	83.4	-216.4	400.0	376.1	23.93	16.715	
4,800.0	4,754.0	4,790.5	4,766.6	14.9	12.7	-156.86	85.2	-229.2	412.6	388.0	24.58	16.788	
4,900.0	4,852.6	4,889.5	4,864.8	15.3	13.1	-156.05	87.0	-242.0	425.3	400.1	25.23	16.860	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design												Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)		Offset Site Error:		0.0 ft
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
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	4,951.1	4,988.5	4,963.0	15.7	13.4	-155.29	88.8	-254.8	438.1	412.2	25.88	16.930				
5,100.0	5,049.6	5,087.5	5,061.1	16.1	13.7	-154.57	90.5	-267.6	451.0	424.4	26.53	16.999				
5,200.0	5,148.2	5,186.6	5,159.3	16.4	14.0	-153.89	92.3	-280.4	463.9	436.7	27.18	17.066				
5,300.0	5,246.7	5,285.6	5,257.5	16.8	14.3	-153.24	94.1	-293.2	476.9	449.0	27.84	17.131				
5,400.0	5,345.3	5,384.6	5,355.6	17.2	14.7	-152.64	95.9	-306.0	489.9	461.4	28.49	17.195				
5,467.8	5,412.0	5,451.7	5,422.2	17.5	14.9	-152.24	97.1	-314.7	498.8	469.8	28.94	17.237				
5,500.0	5,443.8	5,482.9	5,453.1	17.6	15.0	-152.11	97.6	-318.6	502.9	473.7	29.14	17.258				
5,600.0	5,542.8	5,579.6	5,549.4	17.8	15.2	-151.81	99.0	-328.6	513.9	484.2	29.65	17.333				
5,700.0	5,642.2	5,676.7	5,646.2	18.1	15.4	-151.68	100.0	-335.4	522.3	492.3	30.07	17.369				
5,800.0	5,741.9	5,774.0	5,743.4	18.3	15.6	-151.72	100.5	-338.9	528.2	497.8	30.42	17.363				
5,900.0	5,841.9	5,872.5	5,841.9	18.4	15.7	-151.88	100.5	-339.5	531.4	500.7	30.71	17.307				
5,958.1	5,900.0	5,930.6	5,900.0	18.5	15.8	179.61	100.5	-339.5	532.0	501.3	30.68	17.338				
6,000.0	5,941.9	5,972.5	5,941.9	18.6	15.9	179.61	100.5	-339.5	532.0	501.1	30.83	17.255				
6,026.8	5,968.6	5,999.2	5,968.6	18.6	15.9	179.61	100.5	-339.5	532.0	501.0	30.93	17.201				
6,100.0	6,041.9	6,072.0	6,041.3	18.7	16.0	179.31	100.5	-336.7	532.0	500.8	31.20	17.052				
6,175.7	6,117.6	6,146.0	6,114.6	18.9	16.1	178.26	100.5	-326.9	532.2	500.7	31.51	16.888				
6,200.0	6,141.9	6,169.3	6,137.5	18.9	16.1	87.80	100.5	-322.4	532.4	500.9	31.42	16.944				
6,250.0	6,191.8	6,216.9	6,183.7	18.9	16.1	86.85	100.5	-310.9	532.8	501.4	31.40	16.970				
6,300.0	6,241.3	6,264.1	6,228.7	19.0	16.0	85.93	100.5	-296.7	533.3	502.0	31.34	17.016				
6,350.0	6,290.4	6,310.7	6,272.2	19.0	16.0	85.03	100.5	-280.0	534.0	502.8	31.27	17.076				
6,400.0	6,338.7	6,357.0	6,314.3	19.0	16.0	84.15	100.5	-260.9	534.8	503.6	31.19	17.148				
6,450.0	6,386.0	6,402.8	6,354.7	19.0	16.0	83.30	100.5	-239.4	535.7	504.6	31.10	17.226				
6,500.0	6,432.2	6,450.0	6,395.0	19.0	15.9	82.46	100.5	-214.8	536.7	505.7	31.01	17.304				
6,550.0	6,477.1	6,493.2	6,430.5	19.0	15.9	81.70	100.5	-190.1	537.7	506.8	30.95	17.371				
6,600.0	6,520.4	6,537.9	6,465.7	18.9	15.9	80.95	100.5	-162.6	538.8	507.9	30.92	17.424				
6,650.0	6,562.0	6,582.3	6,498.9	18.9	15.9	80.24	100.5	-133.2	539.9	509.0	30.94	17.452				
6,700.0	6,601.7	6,626.4	6,530.2	18.9	16.0	79.58	100.5	-102.1	541.0	510.0	31.01	17.448				
6,750.0	6,639.3	6,670.2	6,559.5	18.8	16.1	78.95	100.5	-69.6	542.1	511.0	31.15	17.403				
6,800.0	6,674.7	6,713.7	6,586.7	18.8	16.3	78.36	100.5	-35.5	543.2	511.9	31.39	17.308				
6,850.0	6,707.7	6,757.1	6,611.8	18.8	16.5	77.83	100.5	-0.2	544.3	512.6	31.72	17.159				
6,900.0	6,738.1	6,800.0	6,634.7	18.7	16.7	77.34	100.5	36.1	545.3	513.2	32.17	16.952				
6,950.0	6,765.9	6,843.2	6,655.5	18.7	17.1	76.89	100.5	73.9	546.3	513.5	32.76	16.677				
7,000.0	6,791.0	6,885.9	6,674.1	18.7	17.5	76.50	100.5	112.4	547.1	513.7	33.47	16.346				
7,050.0	6,813.1	6,928.6	6,690.4	18.7	17.9	76.16	100.5	151.8	547.9	513.6	34.33	15.962				
7,100.0	6,832.3	6,971.1	6,704.5	18.7	18.4	75.86	100.5	191.9	548.6	513.3	35.31	15.535				
7,150.0	6,848.4	7,013.5	6,716.3	19.2	19.0	75.62	100.5	232.7	549.2	512.8	36.43	15.074				
7,200.0	6,861.4	7,055.9	6,725.8	20.0	19.6	75.43	100.5	274.0	549.6	512.0	37.68	14.587				
7,250.0	6,871.2	7,100.0	6,733.2	20.8	20.3	75.29	100.5	317.4	550.0	510.9	39.07	14.077				
7,300.0	6,877.8	7,140.4	6,737.8	21.7	21.0	75.21	100.5	357.6	550.2	509.7	40.52	13.579				
7,350.0	6,881.1	7,182.6	6,740.4	22.6	21.7	75.17	100.5	399.7	550.3	508.2	42.08	13.077				
7,378.1	6,881.5	7,206.4	6,740.8	23.2	22.1	75.18	100.5	423.4	550.3	507.3	42.99	12.800				
7,382.2	6,881.5	7,209.8	6,740.8	23.2	22.2	75.18	100.5	426.9	550.3	507.1	43.13	12.759				
7,400.0	6,881.4	7,226.7	6,740.6	23.6	22.5	75.17	100.5	443.7	550.3	506.5	43.77	12.573				
7,500.0	6,881.1	7,326.7	6,739.6	25.6	24.5	75.10	100.5	543.7	550.5	502.8	47.63	11.557				
7,600.0	6,880.8	7,426.7	6,738.6	27.8	26.6	75.03	100.5	643.7	550.6	498.9	51.76	10.638				
7,700.0	6,880.5	7,526.7	6,737.6	30.1	28.8	74.97	100.5	743.7	550.8	494.7	56.11	9.816				
7,800.0	6,880.2	7,626.7	6,736.6	32.4	31.1	74.90	100.5	843.7	551.0	490.3	60.63	9.087				
7,900.0	6,879.9	7,726.7	6,735.6	34.9	33.5	74.83	100.5	943.7	551.2	485.9	65.29	8.442				
8,000.0	6,879.6	7,826.7	6,734.6	37.3	36.0	74.76	100.5	1,043.7	551.3	481.3	70.05	7.870				
8,100.0	6,879.2	7,926.7	6,733.6	39.9	38.5	74.69	100.5	1,143.7	551.5	476.6	74.90	7.363				
8,200.0	6,878.9	8,026.7	6,732.6	42.4	41.0	74.62	100.5	1,243.7	551.7	471.9	79.82	6.912				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,300.0	6,878.6	8,126.7	6,731.6	45.0	43.6	74.56	100.5	1,343.7	551.9	467.1	84.79	6.508	
8,400.0	6,878.3	8,226.7	6,730.7	47.6	46.2	74.49	100.5	1,443.7	552.1	462.2	89.81	6.147	
8,500.0	6,878.0	8,326.7	6,729.7	50.2	48.8	74.42	100.5	1,543.7	552.2	457.4	94.87	5.821	
8,600.0	6,877.7	8,426.7	6,728.7	52.9	51.5	74.35	100.5	1,643.7	552.4	452.5	99.96	5.526	
8,700.0	6,877.4	8,526.7	6,727.7	55.5	54.1	74.28	100.5	1,743.7	552.6	447.5	105.08	5.259	
8,800.0	6,877.0	8,626.6	6,726.7	58.2	56.8	74.22	100.5	1,843.6	552.8	442.6	110.22	5.015	
8,900.0	6,876.7	8,726.6	6,725.7	60.9	59.5	74.15	100.5	1,943.6	553.0	437.6	115.38	4.792	
9,000.0	6,876.4	8,826.6	6,724.7	63.6	62.2	74.08	100.5	2,043.6	553.2	432.6	120.56	4.588	
9,100.0	6,876.1	8,926.6	6,723.7	66.3	64.9	74.01	100.5	2,143.6	553.3	427.6	125.75	4.400	
9,200.0	6,875.8	9,026.6	6,722.7	69.0	67.6	73.94	100.5	2,243.6	553.5	422.6	130.95	4.227	
9,300.0	6,875.5	9,126.6	6,721.7	71.7	70.4	73.88	100.5	2,343.6	553.7	417.6	136.16	4.067	
9,400.0	6,875.2	9,226.6	6,720.7	74.5	73.1	73.81	100.5	2,443.6	553.9	412.5	141.38	3.918	
9,500.0	6,874.8	9,326.6	6,719.7	77.2	75.8	73.74	100.5	2,543.6	554.1	407.5	146.61	3.780	
9,600.0	6,874.5	9,426.6	6,718.7	79.9	78.6	73.67	100.6	2,643.6	554.3	402.5	151.84	3.651	
9,700.0	6,874.2	9,526.6	6,717.7	82.7	81.3	73.61	100.6	2,743.6	554.5	397.4	157.08	3.530	
9,800.0	6,873.9	9,626.6	6,716.7	85.4	84.1	73.54	100.6	2,843.6	554.7	392.4	162.32	3.417	
9,900.0	6,873.6	9,726.6	6,715.7	88.2	86.8	73.47	100.6	2,943.6	554.9	387.3	167.56	3.311	
10,000.0	6,873.3	9,826.6	6,714.7	90.9	89.6	73.40	100.6	3,043.6	555.1	382.3	172.81	3.212	
10,100.0	6,873.0	9,926.6	6,713.7	93.7	92.3	73.34	100.6	3,143.6	555.3	377.2	178.06	3.118	
10,200.0	6,872.6	10,026.6	6,712.7	96.5	95.1	73.27	100.6	3,243.5	555.5	372.1	183.31	3.030	
10,300.0	6,872.3	10,126.6	6,711.8	99.2	97.9	73.20	100.6	3,343.5	555.6	367.1	188.56	2.947	
10,400.0	6,872.0	10,226.6	6,710.8	102.0	100.6	73.13	100.6	3,443.5	555.8	362.0	193.81	2.868	
10,500.0	6,871.7	10,326.6	6,709.8	104.8	103.4	73.07	100.6	3,543.5	556.0	357.0	199.07	2.793	
10,600.0	6,871.4	10,426.6	6,708.8	107.5	106.2	73.00	100.6	3,643.5	556.2	351.9	204.32	2.722	
10,700.0	6,871.1	10,526.6	6,707.8	110.3	108.9	72.93	100.6	3,743.5	556.4	346.9	209.57	2.655	
10,800.0	6,870.8	10,626.6	6,706.8	113.1	111.7	72.87	100.6	3,843.5	556.6	341.8	214.82	2.591	
10,900.0	6,870.4	10,726.6	6,705.8	115.9	114.5	72.80	100.6	3,943.5	556.8	336.8	220.07	2.530	
11,000.0	6,870.1	10,826.6	6,704.8	118.6	117.3	72.73	100.6	4,043.5	557.0	331.7	225.32	2.472	
11,100.0	6,869.8	10,926.6	6,703.8	121.4	120.1	72.67	100.6	4,143.5	557.2	326.7	230.57	2.417	
11,200.0	6,869.5	11,026.6	6,702.8	124.2	122.8	72.60	100.6	4,243.5	557.4	321.6	235.82	2.364	
11,300.0	6,869.2	11,126.6	6,701.8	127.0	125.6	72.53	100.6	4,343.5	557.6	316.6	241.07	2.313	
11,400.0	6,868.9	11,226.6	6,700.8	129.8	128.4	72.47	100.6	4,443.5	557.8	311.5	246.31	2.265	
11,500.0	6,868.6	11,326.6	6,699.8	132.5	131.2	72.40	100.6	4,543.5	558.1	306.5	251.55	2.218	
11,600.0	6,868.2	11,426.6	6,698.8	135.3	134.0	72.33	100.6	4,643.4	558.3	301.5	256.79	2.174	
11,700.0	6,867.9	11,526.6	6,697.8	138.1	136.8	72.27	100.6	4,743.4	558.5	296.4	262.03	2.131	
11,800.0	6,867.6	11,626.6	6,696.8	140.9	139.6	72.20	100.6	4,843.4	558.7	291.4	267.26	2.090	
11,900.0	6,867.3	11,726.6	6,695.8	143.7	142.4	72.13	100.6	4,943.4	558.9	286.4	272.50	2.051	
12,000.0	6,867.0	11,826.6	6,694.8	146.5	145.1	72.07	100.6	5,043.4	559.1	281.4	277.73	2.013	
12,100.0	6,866.7	11,926.6	6,693.8	149.3	147.9	72.00	100.6	5,143.4	559.3	276.3	282.95	1.977	
12,200.0	6,866.4	12,026.6	6,692.9	152.1	150.7	71.93	100.6	5,243.4	559.5	271.3	288.18	1.942	
12,300.0	6,866.0	12,126.6	6,691.9	154.9	153.5	71.87	100.6	5,343.4	559.7	266.3	293.40	1.908	
12,400.0	6,865.7	12,226.6	6,690.9	157.6	156.3	71.80	100.6	5,443.4	559.9	261.3	298.62	1.875	
12,500.0	6,865.4	12,326.6	6,689.9	160.4	159.1	71.74	100.6	5,543.4	560.1	256.3	303.84	1.844	
12,600.0	6,865.1	12,426.6	6,688.9	163.2	161.9	71.67	100.6	5,643.4	560.4	251.3	309.05	1.813	
12,700.0	6,864.8	12,526.6	6,687.9	166.0	164.7	71.60	100.6	5,743.4	560.6	246.3	314.26	1.784	
12,800.0	6,864.5	12,626.6	6,686.9	168.8	167.5	71.54	100.6	5,843.4	560.8	241.3	319.47	1.755	
12,900.0	6,864.2	12,726.6	6,685.9	171.6	170.3	71.47	100.6	5,943.3	561.0	236.3	324.67	1.728	
13,000.0	6,863.8	12,826.6	6,684.9	174.4	173.1	71.41	100.6	6,043.3	561.2	231.3	329.87	1.701	
13,100.0	6,863.5	12,926.6	6,683.9	177.2	175.9	71.34	100.6	6,143.3	561.4	226.4	335.07	1.676	
13,200.0	6,863.2	13,026.6	6,682.9	180.0	178.7	71.27	100.6	6,243.3	561.7	221.4	340.26	1.651	
13,300.0	6,862.9	13,126.6	6,681.9	182.8	181.5	71.21	100.6	6,343.3	561.9	216.4	345.45	1.626	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,400.0	6,862.6	13,226.5	6,680.9	185.6	184.3	71.14	100.6	6,443.3	562.1	211.5	350.64	1.603		
13,500.0	6,862.3	13,326.5	6,679.9	188.4	187.1	71.08	100.6	6,543.3	562.3	206.5	355.82	1.580		
13,600.0	6,862.0	13,426.5	6,678.9	191.2	189.9	71.01	100.6	6,643.3	562.5	201.5	361.00	1.558		
13,700.0	6,861.6	13,526.5	6,677.9	194.0	192.7	70.95	100.6	6,743.3	562.8	196.6	366.17	1.537		
13,800.0	6,861.3	13,626.5	6,676.9	196.8	195.5	70.88	100.6	6,843.3	563.0	191.6	371.35	1.516		
13,900.0	6,861.0	13,726.5	6,675.9	199.6	198.3	70.81	100.6	6,943.3	563.2	186.7	376.51	1.496	Level 3	
14,000.0	6,860.7	13,826.5	6,674.9	202.4	201.1	70.75	100.6	7,043.3	563.4	181.7	381.68	1.476	Level 3	
14,100.0	6,860.4	13,926.5	6,673.9	205.2	203.9	70.68	100.6	7,143.3	563.6	176.8	386.84	1.457	Level 3	
14,200.0	6,860.1	14,026.5	6,673.0	208.0	206.7	70.62	100.6	7,243.3	563.9	171.9	392.00	1.438	Level 3	
14,300.0	6,859.8	14,126.5	6,672.0	210.8	209.5	70.55	100.6	7,343.2	564.1	166.9	397.15	1.420	Level 3	
14,400.0	6,859.4	14,226.5	6,671.0	213.6	212.3	70.49	100.6	7,443.2	564.3	162.0	402.30	1.403	Level 3	
14,500.0	6,859.1	14,326.5	6,670.0	216.4	215.1	70.42	100.6	7,543.2	564.5	157.1	407.44	1.386	Level 3	
14,600.0	6,858.8	14,426.5	6,669.0	219.2	217.9	70.36	100.6	7,643.2	564.8	152.2	412.59	1.369	Level 3	
14,700.0	6,858.5	14,526.5	6,668.0	222.0	220.7	70.29	100.6	7,743.2	565.0	147.3	417.72	1.353	Level 3	
14,800.0	6,858.2	14,626.5	6,667.0	224.8	223.5	70.23	100.6	7,843.2	565.2	142.4	422.86	1.337	Level 3	
14,900.0	6,857.9	14,726.5	6,666.0	227.6	226.3	70.16	100.6	7,943.2	565.5	137.5	427.99	1.321	Level 3	
15,000.0	6,857.6	14,826.5	6,665.0	230.4	229.1	70.10	100.6	8,043.2	565.7	132.6	433.11	1.306	Level 3	
15,100.0	6,857.2	14,926.5	6,664.0	233.2	231.9	70.03	100.6	8,143.2	565.9	127.7	438.23	1.291	Level 3	
15,200.0	6,856.9	15,026.5	6,663.0	236.0	234.7	69.97	100.6	8,243.2	566.2	122.8	443.35	1.277	Level 3	
15,300.0	6,856.6	15,126.5	6,662.0	238.8	237.5	69.90	100.6	8,343.2	566.4	117.9	448.46	1.263	Level 3	
15,400.0	6,856.3	15,226.5	6,661.0	241.6	240.3	69.84	100.6	8,443.2	566.6	113.1	453.57	1.249	Level 2	
15,500.0	6,856.0	15,326.5	6,660.0	244.4	243.1	69.77	100.6	8,543.2	566.9	108.2	458.68	1.236	Level 2	
15,600.0	6,855.7	15,426.5	6,659.0	247.2	245.9	69.71	100.6	8,643.2	567.1	103.3	463.78	1.223	Level 2	
15,700.0	6,855.4	15,526.5	6,658.0	250.0	248.7	69.65	100.6	8,743.1	567.3	98.5	468.88	1.210	Level 2	
15,800.0	6,855.0	15,626.5	6,657.0	252.8	251.5	69.58	100.6	8,843.1	567.6	93.6	473.97	1.197	Level 2	
15,900.0	6,854.7	15,726.5	6,656.0	255.6	254.3	69.52	100.6	8,943.1	567.8	88.7	479.06	1.185	Level 2	
16,000.0	6,854.4	15,826.5	6,655.0	258.4	257.1	69.45	100.6	9,043.1	568.0	83.9	484.14	1.173	Level 2	
16,100.0	6,854.1	15,926.5	6,654.1	261.2	259.9	69.39	100.6	9,143.1	568.3	79.1	489.22	1.162	Level 2	
16,200.0	6,853.8	16,026.5	6,653.1	264.0	262.7	69.32	100.6	9,243.1	568.5	74.2	494.30	1.150	Level 2	
16,300.0	6,853.5	16,126.5	6,652.1	266.8	265.5	69.26	100.6	9,343.1	568.8	69.4	499.37	1.139	Level 2	
16,400.0	6,853.2	16,226.5	6,651.1	269.6	268.3	69.20	100.6	9,443.1	569.0	64.6	504.43	1.128	Level 2	
16,500.0	6,852.8	16,326.5	6,650.1	272.4	271.1	69.13	100.6	9,543.1	569.2	59.7	509.50	1.117	Level 2	
16,600.0	6,852.5	16,426.5	6,649.1	275.2	273.9	69.07	100.6	9,643.1	569.5	54.9	514.55	1.107	Level 2	
16,700.0	6,852.2	16,526.5	6,648.1	278.0	276.7	69.00	100.6	9,743.1	569.7	50.1	519.61	1.096	Level 2	
16,800.0	6,851.9	16,626.5	6,647.1	280.8	279.5	68.94	100.6	9,843.1	570.0	45.3	524.66	1.086	Level 2	
16,900.0	6,851.6	16,726.5	6,646.1	283.6	282.3	68.88	100.6	9,943.1	570.2	40.5	529.70	1.076	Level 2	
17,000.0	6,851.3	16,826.5	6,645.1	286.4	285.1	68.81	100.6	10,043.1	570.5	35.7	534.74	1.067	Level 2	
17,100.0	6,851.0	16,926.5	6,644.1	289.2	287.9	68.75	100.6	10,143.0	570.7	30.9	539.78	1.057	Level 2	
17,200.0	6,850.7	17,026.5	6,643.1	292.1	290.7	68.68	100.6	10,243.0	571.0	26.1	544.81	1.048	Level 2	
17,300.0	6,850.3	17,126.5	6,642.1	294.9	293.5	68.62	100.6	10,343.0	571.2	21.4	549.84	1.039	Level 2	
17,407.1	6,850.0	17,233.5	6,641.1	297.9	296.5	68.55	100.6	10,450.1	571.5	16.3	555.21	1.029	Level 2, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	111.18	-58.3	150.4	161.3				
100.0	100.0	100.0	100.0	0.1	0.1	111.18	-58.3	150.4	161.3	161.1	0.22	717.781	
200.0	200.0	200.0	200.0	0.3	0.3	111.18	-58.3	150.4	161.3	160.7	0.67	239.260	
300.0	300.0	300.0	300.0	0.6	0.6	111.18	-58.3	150.4	161.3	160.2	1.12	143.556	
400.0	400.0	400.0	400.0	0.8	0.8	111.18	-58.3	150.4	161.3	159.8	1.57	102.540	
500.0	500.0	500.0	500.0	1.0	1.0	111.18	-58.3	150.4	161.3	159.3	2.02	79.753	
600.0	600.0	600.0	600.0	1.2	1.2	111.18	-58.3	150.4	161.3	158.9	2.47	65.253	
700.0	700.0	700.0	700.0	1.5	1.5	111.18	-58.3	150.4	161.3	158.4	2.92	55.214	
800.0	800.0	800.0	800.0	1.7	1.7	111.18	-58.3	150.4	161.3	158.0	3.37	47.852	
900.0	900.0	900.0	900.0	1.9	1.9	111.18	-58.3	150.4	161.3	157.5	3.82	42.222	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	111.18	-58.3	150.4	161.3	157.1	4.27	37.778	
1,100.0	1,100.0	1,102.7	1,102.7	2.4	2.3	140.24	-59.0	149.2	161.1	156.4	4.70	34.271	
1,200.0	1,200.0	1,205.3	1,205.2	2.6	2.5	142.00	-61.0	145.6	160.7	155.6	5.12	31.403	
1,300.0	1,299.9	1,307.5	1,307.2	2.8	2.7	144.93	-64.3	139.6	160.3	154.7	5.54	28.918	
1,343.1	1,342.9	1,351.4	1,350.9	2.9	2.8	146.56	-66.2	136.3	160.2	154.5	5.73	27.954 CC	
1,400.0	1,399.7	1,409.2	1,408.4	3.0	3.0	149.01	-69.0	131.3	160.3	154.4	5.98	26.808 ES	
1,500.0	1,499.4	1,510.1	1,508.6	3.3	3.2	154.16	-74.9	120.7	161.6	155.2	6.44	25.092	
1,600.0	1,598.9	1,610.2	1,607.6	3.5	3.5	160.20	-82.0	108.0	164.9	158.0	6.93	23.800	
1,700.0	1,698.3	1,709.2	1,705.2	3.8	3.8	166.85	-90.3	93.1	171.0	163.6	7.45	22.961	
1,800.0	1,797.4	1,807.1	1,801.1	4.0	4.1	173.77	-99.7	76.2	180.8	172.8	8.00	22.589 SF	
1,900.0	1,896.3	1,903.7	1,895.3	4.3	4.5	-179.42	-110.1	57.5	194.8	186.2	8.59	22.669	
1,980.7	1,975.9	1,980.6	1,969.9	4.6	4.8	-174.20	-119.3	41.1	209.3	200.2	9.09	23.028	
2,000.0	1,994.9	1,998.8	1,987.5	4.6	4.9	-173.01	-121.5	37.0	213.2	203.9	9.21	23.145	
2,100.0	2,093.5	2,092.6	2,077.8	4.9	5.3	-167.17	-133.9	14.9	234.9	225.1	9.87	23.802	
2,200.0	2,192.0	2,185.0	2,166.1	5.3	5.8	-161.89	-147.1	-8.8	259.5	249.0	10.55	24.594	
2,300.0	2,290.6	2,277.3	2,253.7	5.6	6.3	-157.13	-161.2	-34.2	286.8	275.5	11.25	25.488	
2,400.0	2,389.1	2,370.7	2,342.2	6.0	6.9	-153.07	-175.7	-60.1	315.9	303.9	11.96	26.406	
2,500.0	2,487.6	2,464.1	2,430.8	6.3	7.4	-149.69	-190.1	-86.0	346.2	333.5	12.67	27.325	
2,600.0	2,586.2	2,557.4	2,519.3	6.7	8.0	-146.83	-204.6	-111.9	377.5	364.1	13.38	28.219	
2,700.0	2,684.7	2,650.8	2,607.9	7.0	8.6	-144.41	-219.0	-137.8	409.5	395.4	14.08	29.076	
2,800.0	2,783.2	2,744.2	2,696.4	7.4	9.2	-142.33	-233.5	-163.7	442.1	427.3	14.79	29.889	
2,900.0	2,881.8	2,837.5	2,784.9	7.7	9.8	-140.54	-247.9	-189.6	475.2	459.7	15.50	30.656	
3,000.0	2,980.3	2,930.9	2,873.5	8.1	10.4	-138.97	-262.4	-215.5	508.6	492.4	16.21	31.378	
3,100.0	3,078.9	3,024.3	2,962.0	8.5	11.0	-137.60	-276.8	-241.4	542.4	525.5	16.92	32.054	
3,200.0	3,177.4	3,117.7	3,050.6	8.8	11.6	-136.38	-291.3	-267.3	576.4	558.7	17.63	32.688	
3,300.0	3,275.9	3,211.0	3,139.1	9.2	12.2	-135.30	-305.7	-293.2	610.6	592.2	18.34	33.283	
3,400.0	3,374.5	3,304.4	3,227.6	9.6	12.8	-134.33	-320.1	-319.1	644.9	625.9	19.06	33.840	
3,500.0	3,473.0	3,397.8	3,316.2	10.0	13.4	-133.46	-334.6	-345.0	679.5	659.7	19.77	34.362	
3,600.0	3,571.6	3,491.2	3,404.7	10.3	14.0	-132.67	-349.0	-370.9	714.1	693.6	20.49	34.853	
3,700.0	3,670.1	3,584.5	3,493.2	10.7	14.6	-131.96	-363.5	-396.8	748.8	727.6	21.21	35.313	
3,800.0	3,768.6	3,677.9	3,581.8	11.1	15.3	-131.31	-377.9	-422.7	783.7	761.8	21.92	35.747	
3,900.0	3,867.2	3,771.3	3,670.3	11.5	15.9	-130.71	-392.4	-448.6	818.6	796.0	22.64	36.155	
4,000.0	3,965.7	3,864.6	3,758.9	11.9	16.5	-130.16	-406.8	-474.5	853.6	830.3	23.36	36.540	
4,100.0	4,064.2	3,958.0	3,847.4	12.2	17.1	-129.66	-421.3	-500.4	888.7	864.6	24.08	36.903	
4,200.0	4,162.8	4,051.4	3,935.9	12.6	17.7	-129.19	-435.7	-526.3	923.8	899.0	24.80	37.247	
4,300.0	4,261.3	4,144.8	4,024.5	13.0	18.3	-128.76	-450.2	-552.2	959.0	933.5	25.52	37.572	
4,400.0	4,359.9	4,238.1	4,113.0	13.4	19.0	-128.35	-464.6	-578.1	994.2	967.9	26.25	37.880	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	88.62	3.6	150.4	150.5				
100.0	100.0	100.0	100.0	0.1	0.1	88.62	3.6	150.4	150.5	150.3	0.22	669.489	
200.0	200.0	200.0	200.0	0.3	0.3	88.62	3.6	150.4	150.5	149.8	0.67	223.163	
300.0	300.0	300.0	300.0	0.6	0.6	88.62	3.6	150.4	150.5	149.4	1.12	133.898	
400.0	400.0	400.0	400.0	0.8	0.8	88.62	3.6	150.4	150.5	148.9	1.57	95.641	
500.0	500.0	500.0	500.0	1.0	1.0	88.62	3.6	150.4	150.5	148.5	2.02	74.388	
600.0	600.0	600.0	600.0	1.2	1.2	88.62	3.6	150.4	150.5	148.0	2.47	60.863	
700.0	700.0	700.0	700.0	1.5	1.5	88.62	3.6	150.4	150.5	147.6	2.92	51.499	
800.0	800.0	800.0	800.0	1.7	1.7	88.62	3.6	150.4	150.5	147.1	3.37	44.633	
900.0	900.0	900.0	900.0	1.9	1.9	88.62	3.6	150.4	150.5	146.7	3.82	39.382	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	88.62	3.6	150.4	150.5	146.2	4.27	35.236 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	117.39	3.6	150.4	150.9	146.2	4.72	31.979 ES	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	118.25	3.6	150.4	152.1	146.9	5.16	29.455	
1,300.0	1,299.9	1,299.9	1,299.9	2.8	2.8	119.66	3.6	150.4	154.2	148.6	5.61	27.488	
1,400.0	1,399.7	1,399.7	1,399.7	3.0	3.0	121.56	3.6	150.4	157.3	151.3	6.06	25.967	
1,500.0	1,499.4	1,499.4	1,499.4	3.3	3.3	123.89	3.6	150.4	161.6	155.1	6.51	24.820	
1,600.0	1,598.9	1,598.9	1,598.9	3.5	3.5	126.57	3.6	150.4	167.1	160.2	6.96	23.997	
1,700.0	1,698.3	1,698.3	1,698.3	3.8	3.7	129.50	3.6	150.4	174.1	166.7	7.42	23.460	
1,800.0	1,797.4	1,797.4	1,797.4	4.0	3.9	132.58	3.6	150.4	182.7	174.9	7.88	23.181	
1,900.0	1,896.3	1,896.3	1,896.3	4.3	4.1	135.72	3.6	150.4	193.1	184.8	8.35	23.137	
1,980.7	1,975.9	1,975.9	1,975.9	4.6	4.3	138.24	3.6	150.4	202.8	194.1	8.72	23.259	
2,000.0	1,994.9	1,994.9	1,994.9	4.6	4.4	138.85	3.6	150.4	205.3	196.5	8.81	23.300	
2,100.0	2,093.5	2,096.3	2,096.3	4.9	4.6	141.99	3.4	149.7	217.9	208.6	9.27	23.510	
2,200.0	2,192.0	2,197.8	2,197.8	5.3	4.8	145.09	2.6	147.2	229.8	220.1	9.70	23.674	
2,300.0	2,290.6	2,299.3	2,299.2	5.6	5.0	148.18	1.4	143.0	241.0	230.9	10.14	23.763	
2,400.0	2,389.1	2,400.8	2,400.5	6.0	5.2	151.29	-0.4	137.0	251.7	241.1	10.58	23.795	
2,500.0	2,487.6	2,502.1	2,501.5	6.3	5.4	154.45	-2.7	129.4	262.0	251.0	11.02	23.783	
2,600.0	2,586.2	2,603.3	2,602.2	6.7	5.6	157.66	-5.5	120.1	272.0	260.6	11.46	23.739	
2,700.0	2,684.7	2,704.2	2,702.4	7.0	5.9	160.94	-8.9	109.1	281.9	270.0	11.91	23.673	
2,800.0	2,783.2	2,804.8	2,802.2	7.4	6.1	164.28	-12.7	96.4	291.9	279.5	12.37	23.591	
2,900.0	2,881.8	2,905.0	2,901.3	7.7	6.4	167.68	-17.0	82.2	302.0	289.1	12.85	23.497	
3,000.0	2,980.3	3,003.4	2,998.4	8.1	6.6	171.01	-21.6	67.0	312.6	299.2	13.35	23.418	
3,100.0	3,078.9	3,101.2	3,094.9	8.5	6.9	174.11	-26.2	51.8	324.2	310.3	13.86	23.384	
3,200.0	3,177.4	3,199.0	3,191.4	8.8	7.2	176.99	-30.8	36.6	336.6	322.3	14.40	23.385	
3,300.0	3,275.9	3,296.8	3,287.9	9.2	7.5	179.67	-35.3	21.4	349.9	335.0	14.95	23.413	
3,400.0	3,374.5	3,394.6	3,384.4	9.6	7.8	-177.85	-39.9	6.3	363.9	348.4	15.51	23.463	
3,500.0	3,473.0	3,492.4	3,480.9	10.0	8.1	-175.55	-44.5	-8.9	378.6	362.5	16.09	23.528	
3,600.0	3,571.6	3,590.2	3,577.4	10.3	8.4	-173.42	-49.1	-24.1	393.8	377.1	16.68	23.606	
3,700.0	3,670.1	3,688.0	3,673.9	10.7	8.8	-171.45	-53.7	-39.2	409.5	392.2	17.28	23.693	
3,800.0	3,768.6	3,785.8	3,770.4	11.1	9.1	-169.63	-58.3	-54.4	425.6	407.8	17.89	23.787	
3,900.0	3,867.2	3,883.6	3,866.9	11.5	9.4	-167.93	-62.8	-69.6	442.2	423.7	18.51	23.886	
4,000.0	3,965.7	3,981.4	3,963.4	11.9	9.8	-166.36	-67.4	-84.8	459.1	440.0	19.14	23.989	
4,100.0	4,064.2	4,079.2	4,059.9	12.2	10.1	-164.90	-72.0	-99.9	476.3	456.5	19.77	24.095	
4,200.0	4,162.8	4,177.0	4,156.4	12.6	10.4	-163.54	-76.6	-115.1	493.8	473.4	20.40	24.202	
4,300.0	4,261.3	4,274.7	4,252.9	13.0	10.8	-162.28	-81.2	-130.3	511.6	490.5	21.04	24.309	
4,400.0	4,359.9	4,372.5	4,349.4	13.4	11.1	-161.10	-85.8	-145.4	529.6	507.9	21.69	24.417	
4,500.0	4,458.4	4,470.3	4,445.9	13.8	11.5	-159.99	-90.3	-160.6	547.7	525.4	22.33	24.524	
4,600.0	4,556.9	4,568.1	4,542.4	14.1	11.8	-158.96	-94.9	-175.8	566.1	543.1	22.98	24.631	
4,700.0	4,655.5	4,665.9	4,638.9	14.5	12.2	-157.99	-99.5	-191.0	584.7	561.0	23.64	24.736	
4,800.0	4,754.0	4,763.7	4,735.4	14.9	12.5	-157.08	-104.1	-206.1	603.4	579.1	24.29	24.840	
4,900.0	4,852.6	4,861.5	4,831.9	15.3	12.9	-156.22	-108.7	-221.3	622.2	597.3	24.95	24.942	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,951.1	4,959.3	4,928.4	15.7	13.2	-155.42	-113.3	-236.5	641.2	615.6	25.60	25.043	
5,100.0	5,049.6	5,057.1	5,024.9	16.1	13.6	-154.66	-117.8	-251.6	660.2	634.0	26.26	25.141	
5,200.0	5,148.2	5,154.9	5,121.4	16.4	13.9	-153.94	-122.4	-266.8	679.4	652.5	26.92	25.238	
5,300.0	5,246.7	5,252.7	5,217.9	16.8	14.3	-153.26	-127.0	-282.0	698.7	671.1	27.58	25.333	
5,400.0	5,345.3	5,350.5	5,314.4	17.2	14.7	-152.62	-131.6	-297.2	718.1	689.8	28.24	25.426	
5,467.8	5,412.0	5,420.1	5,383.2	17.5	14.9	-152.22	-134.7	-307.6	731.2	702.5	28.67	25.503	
5,500.0	5,443.8	5,454.1	5,416.8	17.6	15.0	-152.12	-136.1	-312.1	737.1	708.2	28.87	25.532	
5,600.0	5,542.8	5,560.4	5,522.4	17.8	15.2	-151.90	-139.7	-323.9	752.8	723.4	29.41	25.597	
5,700.0	5,642.2	5,667.7	5,629.4	18.1	15.5	-151.81	-142.1	-331.9	764.5	734.6	29.88	25.585	
5,800.0	5,741.9	5,775.6	5,737.2	18.3	15.7	-151.84	-143.4	-336.1	772.0	741.8	30.27	25.502	
5,900.0	5,841.9	5,880.3	5,841.9	18.4	15.8	-151.96	-143.6	-336.8	775.6	745.0	30.60	25.348	
5,958.1	5,900.0	5,938.4	5,900.0	18.5	15.9	179.53	-143.6	-336.8	776.1	745.3	30.76	25.228	
6,000.0	5,941.9	5,980.3	5,941.9	18.6	16.0	179.53	-143.6	-336.8	776.1	745.2	30.91	25.111	
6,058.6	6,000.5	6,038.9	6,000.5	18.7	16.1	179.53	-143.6	-336.8	776.1	745.0	31.12	24.941	
6,100.0	6,041.9	6,080.1	6,041.7	18.7	16.2	179.51	-143.6	-336.5	776.1	744.8	31.26	24.825	
6,175.7	6,117.6	6,154.7	6,116.1	18.9	16.2	179.10	-143.6	-331.0	776.1	744.6	31.52	24.620	
6,200.0	6,141.9	6,178.4	6,139.5	18.9	16.2	88.89	-143.6	-327.7	776.2	744.7	31.50	24.639	
6,250.0	6,191.8	6,226.9	6,187.2	18.9	16.3	88.44	-143.6	-318.7	776.3	744.8	31.55	24.605	
6,300.0	6,241.3	6,275.0	6,233.8	19.0	16.2	88.00	-143.6	-306.8	776.5	745.0	31.57	24.598	
6,350.0	6,290.4	6,322.8	6,279.2	19.0	16.2	87.58	-143.6	-292.2	776.7	745.2	31.56	24.614	
6,400.0	6,338.7	6,370.2	6,323.4	19.0	16.2	87.16	-143.6	-274.8	777.0	745.5	31.53	24.646	
6,450.0	6,386.0	6,417.4	6,366.1	19.0	16.2	86.76	-143.6	-254.9	777.3	745.8	31.48	24.689	
6,500.0	6,432.2	6,464.2	6,407.3	19.0	16.1	86.37	-143.6	-232.5	777.6	746.2	31.44	24.732	
6,550.0	6,477.1	6,510.8	6,446.7	19.0	16.1	86.00	-143.6	-207.9	778.0	746.6	31.41	24.767	
6,600.0	6,520.4	6,557.1	6,484.4	18.9	16.1	85.64	-143.6	-181.0	778.3	746.9	31.41	24.783	
6,650.0	6,562.0	6,603.2	6,520.2	18.9	16.1	85.30	-143.6	-152.0	778.7	747.2	31.44	24.767	
6,700.0	6,601.7	6,650.0	6,554.8	18.9	16.1	84.98	-143.6	-120.4	779.1	747.5	31.53	24.705	
6,750.0	6,639.3	6,694.6	6,585.8	18.8	16.2	84.69	-143.6	-88.3	779.4	747.7	31.71	24.582	
6,800.0	6,674.7	6,740.1	6,615.5	18.8	16.3	84.41	-143.6	-53.9	779.8	747.8	31.97	24.389	
6,850.0	6,707.7	6,785.3	6,642.9	18.8	16.5	84.15	-143.6	-17.9	780.1	747.8	32.35	24.116	
6,900.0	6,738.1	6,830.4	6,668.1	18.7	16.7	83.92	-143.6	19.5	780.4	747.6	32.85	23.759	
6,950.0	6,765.9	6,875.4	6,691.0	18.7	17.0	83.71	-143.6	58.2	780.8	747.3	33.48	23.318	
7,000.0	6,791.0	6,920.2	6,711.5	18.7	17.3	83.53	-143.6	98.1	781.0	746.8	34.26	22.797	
7,050.0	6,813.1	6,965.0	6,729.6	18.7	17.8	83.37	-143.6	139.0	781.3	746.1	35.18	22.206	
7,100.0	6,832.3	7,009.6	6,745.2	18.7	18.3	83.24	-143.6	180.8	781.5	745.2	36.25	21.556	
7,150.0	6,848.4	7,054.2	6,758.3	19.2	18.9	83.13	-143.6	223.4	781.7	744.2	37.46	20.865	
7,200.0	6,861.4	7,100.0	6,769.2	20.0	19.5	83.05	-143.6	267.9	781.8	743.0	38.83	20.135	
7,250.0	6,871.2	7,143.1	6,777.0	20.8	20.2	83.00	-143.6	310.3	781.9	741.6	40.28	19.412	
7,300.0	6,877.8	7,187.6	6,782.5	21.7	20.9	82.97	-143.6	354.4	781.9	740.1	41.85	18.682	
7,350.0	6,881.1	7,232.0	6,785.5	22.6	21.7	82.97	-143.6	398.7	781.9	738.4	43.52	17.967	
7,378.1	6,881.5	7,257.0	6,786.0	23.2	22.1	82.98	-143.6	423.7	781.9	737.4	44.48	17.577	
7,384.8	6,881.5	7,262.9	6,786.0	23.3	22.2	82.99	-143.6	429.6	781.9	737.2	44.72	17.484	
7,400.0	6,881.4	7,277.7	6,785.9	23.6	22.5	82.98	-143.6	444.4	781.9	736.6	45.29	17.266	
7,500.0	6,881.1	7,377.7	6,785.1	25.6	24.5	82.95	-143.6	544.4	782.0	732.7	49.26	15.875	
7,600.0	6,880.8	7,477.7	6,784.4	27.8	26.6	82.92	-143.6	644.4	782.0	728.5	53.50	14.616	
7,700.0	6,880.5	7,577.7	6,783.6	30.1	28.8	82.88	-143.5	744.4	782.1	724.1	57.98	13.489	
7,800.0	6,880.2	7,677.7	6,782.8	32.4	31.2	82.85	-143.5	844.4	782.1	719.5	62.62	12.489	
7,900.0	6,879.9	7,777.7	6,782.1	34.9	33.6	82.82	-143.5	944.4	782.2	714.8	67.41	11.603	
8,000.0	6,879.6	7,877.7	6,781.3	37.3	36.0	82.78	-143.5	1,044.4	782.2	709.9	72.31	10.817	
8,100.0	6,879.2	7,977.7	6,780.5	39.9	38.5	82.75	-143.5	1,144.4	782.3	705.0	77.30	10.120	
8,200.0	6,878.9	8,077.7	6,779.8	42.4	41.1	82.72	-143.5	1,244.4	782.3	700.0	82.37	9.498	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,300.0	6,878.6	8,177.7	6,779.0	45.0	43.6	82.68	-143.5	1,344.4	782.4	694.9	87.49	8.942		
8,400.0	6,878.3	8,277.7	6,778.2	47.6	46.3	82.65	-143.5	1,444.4	782.5	689.8	92.67	8.444		
8,500.0	6,878.0	8,377.7	6,777.5	50.2	48.9	82.62	-143.5	1,544.4	782.5	684.6	97.89	7.994		
8,600.0	6,877.7	8,477.7	6,776.7	52.9	51.5	82.59	-143.5	1,644.4	782.6	679.4	103.14	7.587		
8,700.0	6,877.4	8,577.7	6,775.9	55.5	54.2	82.55	-143.5	1,744.4	782.6	674.2	108.43	7.218		
8,800.0	6,877.0	8,677.7	6,775.1	58.2	56.9	82.52	-143.5	1,844.4	782.7	669.0	113.74	6.882		
8,900.0	6,876.7	8,777.7	6,774.4	60.9	59.6	82.49	-143.5	1,944.4	782.8	663.7	119.07	6.574		
9,000.0	6,876.4	8,877.7	6,773.6	63.6	62.3	82.45	-143.5	2,044.4	782.8	658.4	124.42	6.291		
9,100.0	6,876.1	8,977.7	6,772.8	66.3	65.0	82.42	-143.5	2,144.3	782.9	653.1	129.79	6.032		
9,200.0	6,875.8	9,077.7	6,772.1	69.0	67.7	82.39	-143.5	2,244.3	782.9	647.8	135.18	5.792		
9,300.0	6,875.5	9,177.7	6,771.3	71.7	70.4	82.36	-143.5	2,344.3	783.0	642.4	140.58	5.570		
9,400.0	6,875.2	9,277.7	6,770.5	74.5	73.1	82.32	-143.5	2,444.3	783.0	637.1	145.98	5.364		
9,500.0	6,874.8	9,377.7	6,769.8	77.2	75.9	82.29	-143.5	2,544.3	783.1	631.7	151.40	5.172		
9,600.0	6,874.5	9,477.7	6,769.0	79.9	78.6	82.26	-143.5	2,644.3	783.2	626.3	156.83	4.994		
9,700.0	6,874.2	9,577.7	6,768.2	82.7	81.4	82.22	-143.5	2,744.3	783.2	621.0	162.27	4.827		
9,800.0	6,873.9	9,677.7	6,767.5	85.4	84.1	82.19	-143.5	2,844.3	783.3	615.6	167.71	4.670		
9,900.0	6,873.6	9,777.7	6,766.7	88.2	86.9	82.16	-143.5	2,944.3	783.4	610.2	173.16	4.524		
10,000.0	6,873.3	9,877.7	6,765.9	90.9	89.6	82.12	-143.5	3,044.3	783.4	604.8	178.62	4.386		
10,100.0	6,873.0	9,977.7	6,765.2	93.7	92.4	82.09	-143.5	3,144.3	783.5	599.4	184.08	4.256		
10,200.0	6,872.6	10,077.7	6,764.4	96.5	95.2	82.06	-143.5	3,244.3	783.5	594.0	189.54	4.134		
10,300.0	6,872.3	10,177.7	6,763.6	99.2	97.9	82.03	-143.5	3,344.3	783.6	588.6	195.01	4.018		
10,400.0	6,872.0	10,277.7	6,762.9	102.0	100.7	81.99	-143.5	3,444.3	783.7	583.2	200.48	3.909		
10,500.0	6,871.7	10,377.7	6,762.1	104.8	103.5	81.96	-143.5	3,544.3	783.7	577.8	205.96	3.805		
10,600.0	6,871.4	10,477.7	6,761.3	107.5	106.2	81.93	-143.5	3,644.3	783.8	572.3	211.44	3.707		
10,700.0	6,871.1	10,577.7	6,760.6	110.3	109.0	81.89	-143.5	3,744.3	783.9	566.9	216.92	3.614		
10,800.0	6,870.8	10,677.7	6,759.8	113.1	111.8	81.86	-143.5	3,844.3	783.9	561.5	222.41	3.525		
10,900.0	6,870.4	10,777.7	6,759.0	115.9	114.6	81.83	-143.5	3,944.3	784.0	556.1	227.89	3.440		
11,000.0	6,870.1	10,877.7	6,758.3	118.6	117.3	81.80	-143.5	4,044.3	784.0	550.7	233.38	3.360		
11,100.0	6,869.8	10,977.7	6,757.5	121.4	120.1	81.76	-143.5	4,144.3	784.1	545.2	238.87	3.283		
11,200.0	6,869.5	11,077.7	6,756.7	124.2	122.9	81.73	-143.5	4,244.3	784.2	539.8	244.36	3.209		
11,300.0	6,869.2	11,177.7	6,756.0	127.0	125.7	81.70	-143.5	4,344.3	784.2	534.4	249.86	3.139		
11,400.0	6,868.9	11,277.7	6,755.2	129.8	128.5	81.67	-143.5	4,444.3	784.3	529.0	255.35	3.071		
11,500.0	6,868.6	11,377.7	6,754.4	132.5	131.3	81.63	-143.5	4,544.3	784.4	523.5	260.84	3.007		
11,600.0	6,868.2	11,477.7	6,753.6	135.3	134.1	81.60	-143.5	4,644.3	784.4	518.1	266.34	2.945		
11,700.0	6,867.9	11,577.7	6,752.9	138.1	136.8	81.57	-143.5	4,744.2	784.5	512.7	271.84	2.886		
11,800.0	6,867.6	11,677.7	6,752.1	140.9	139.6	81.53	-143.5	4,844.2	784.6	507.2	277.34	2.829		
11,900.0	6,867.3	11,777.7	6,751.3	143.7	142.4	81.50	-143.5	4,944.2	784.6	501.8	282.83	2.774		
12,000.0	6,867.0	11,877.7	6,750.6	146.5	145.2	81.47	-143.5	5,044.2	784.7	496.4	288.33	2.721		
12,100.0	6,866.7	11,977.7	6,749.8	149.3	148.0	81.44	-143.5	5,144.2	784.8	490.9	293.83	2.671		
12,200.0	6,866.4	12,077.7	6,749.0	152.1	150.8	81.40	-143.5	5,244.2	784.8	485.5	299.33	2.622		
12,300.0	6,866.0	12,177.7	6,748.3	154.9	153.6	81.37	-143.5	5,344.2	784.9	480.1	304.83	2.575		
12,400.0	6,865.7	12,277.7	6,747.5	157.6	156.4	81.34	-143.5	5,444.2	785.0	474.6	310.33	2.529		
12,500.0	6,865.4	12,377.7	6,746.7	160.4	159.2	81.30	-143.5	5,544.2	785.0	469.2	315.83	2.486		
12,600.0	6,865.1	12,477.7	6,746.0	163.2	162.0	81.27	-143.5	5,644.2	785.1	463.8	321.33	2.443		
12,700.0	6,864.8	12,577.7	6,745.2	166.0	164.8	81.24	-143.5	5,744.2	785.2	458.3	326.83	2.402		
12,800.0	6,864.5	12,677.7	6,744.4	168.8	167.6	81.21	-143.5	5,844.2	785.2	452.9	332.34	2.363		
12,900.0	6,864.2	12,777.7	6,743.7	171.6	170.4	81.17	-143.5	5,944.2	785.3	447.5	337.84	2.325		
13,000.0	6,863.8	12,877.7	6,742.9	174.4	173.1	81.14	-143.5	6,044.2	785.4	442.0	343.34	2.287		
13,100.0	6,863.5	12,977.7	6,742.1	177.2	175.9	81.11	-143.5	6,144.2	785.4	436.6	348.84	2.252		
13,200.0	6,863.2	13,077.7	6,741.4	180.0	178.7	81.08	-143.5	6,244.2	785.5	431.2	354.34	2.217		
13,300.0	6,862.9	13,177.7	6,740.6	182.8	181.5	81.04	-143.5	6,344.2	785.6	425.8	359.84	2.183		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,400.0	6,862.6	13,277.7	6,739.8	185.6	184.3	81.01	81.01	-143.5	6,444.2	785.7	420.3	365.33	2.151	
13,500.0	6,862.3	13,377.7	6,739.1	188.4	187.1	80.98	80.98	-143.5	6,544.2	785.7	414.9	370.83	2.119	
13,600.0	6,862.0	13,477.7	6,738.3	191.2	189.9	80.94	80.94	-143.5	6,644.2	785.8	409.5	376.33	2.088	
13,700.0	6,861.6	13,577.7	6,737.5	194.0	192.7	80.91	80.91	-143.5	6,744.2	785.9	404.0	381.83	2.058	
13,800.0	6,861.3	13,677.7	6,736.8	196.8	195.5	80.88	80.88	-143.5	6,844.2	785.9	398.6	387.33	2.029	
13,900.0	6,861.0	13,777.7	6,736.0	199.6	198.3	80.85	80.85	-143.5	6,944.2	786.0	393.2	392.82	2.001	
14,000.0	6,860.7	13,877.7	6,735.2	202.4	201.1	80.81	80.81	-143.5	7,044.2	786.1	387.8	398.32	1.973	
14,100.0	6,860.4	13,977.7	6,734.4	205.2	203.9	80.78	80.78	-143.5	7,144.2	786.2	382.3	403.82	1.947	
14,200.0	6,860.1	14,077.7	6,733.7	208.0	206.7	80.75	80.75	-143.5	7,244.1	786.2	376.9	409.31	1.921	
14,300.0	6,859.8	14,177.7	6,732.9	210.8	209.5	80.72	80.72	-143.5	7,344.1	786.3	371.5	414.81	1.896	
14,400.0	6,859.4	14,277.6	6,732.1	213.6	212.3	80.68	80.68	-143.5	7,444.1	786.4	366.1	420.30	1.871	
14,500.0	6,859.1	14,377.6	6,731.4	216.4	215.1	80.65	80.65	-143.5	7,544.1	786.4	360.6	425.79	1.847	
14,600.0	6,858.8	14,477.6	6,730.6	219.2	217.9	80.62	80.62	-143.5	7,644.1	786.5	355.2	431.29	1.824	
14,700.0	6,858.5	14,577.6	6,729.8	222.0	220.7	80.59	80.59	-143.5	7,744.1	786.6	349.8	436.78	1.801	
14,800.0	6,858.2	14,677.6	6,729.1	224.8	223.5	80.55	80.55	-143.5	7,844.1	786.7	344.4	442.27	1.779	
14,900.0	6,857.9	14,777.6	6,728.3	227.6	226.3	80.52	80.52	-143.5	7,944.1	786.7	339.0	447.76	1.757	
15,000.0	6,857.6	14,877.6	6,727.5	230.4	229.1	80.49	80.49	-143.5	8,044.1	786.8	333.6	453.25	1.736	
15,100.0	6,857.2	14,977.6	6,726.8	233.2	231.9	80.46	80.46	-143.5	8,144.1	786.9	328.1	458.74	1.715	
15,200.0	6,856.9	15,077.6	6,726.0	236.0	234.7	80.42	80.42	-143.5	8,244.1	787.0	322.7	464.23	1.695	
15,300.0	6,856.6	15,177.6	6,725.2	238.8	237.5	80.39	80.39	-143.5	8,344.1	787.0	317.3	469.72	1.676	
15,400.0	6,856.3	15,277.6	6,724.5	241.6	240.3	80.36	80.36	-143.5	8,444.1	787.1	311.9	475.20	1.656	
15,500.0	6,856.0	15,377.6	6,723.7	244.4	243.1	80.32	80.32	-143.5	8,544.1	787.2	306.5	480.69	1.638	
15,600.0	6,855.7	15,477.6	6,722.9	247.2	246.0	80.29	80.29	-143.5	8,644.1	787.3	301.1	486.18	1.619	
15,700.0	6,855.4	15,577.6	6,722.2	250.0	248.8	80.26	80.26	-143.5	8,744.1	787.3	295.7	491.66	1.601	
15,800.0	6,855.0	15,677.6	6,721.4	252.8	251.6	80.23	80.23	-143.5	8,844.1	787.4	290.3	497.14	1.584	
15,900.0	6,854.7	15,777.6	6,720.6	255.6	254.4	80.19	80.19	-143.5	8,944.1	787.5	284.9	502.63	1.567	
16,000.0	6,854.4	15,877.6	6,719.9	258.4	257.2	80.16	80.16	-143.5	9,044.1	787.6	279.5	508.11	1.550	
16,100.0	6,854.1	15,977.6	6,719.1	261.2	260.0	80.13	80.13	-143.5	9,144.1	787.6	274.1	513.59	1.534	
16,200.0	6,853.8	16,077.6	6,718.3	264.0	262.8	80.10	80.10	-143.5	9,244.1	787.7	268.7	519.07	1.518	
16,300.0	6,853.5	16,177.6	6,717.6	266.8	265.6	80.06	80.06	-143.5	9,344.1	787.8	263.3	524.55	1.502	
16,400.0	6,853.2	16,277.6	6,716.8	269.6	268.4	80.03	80.03	-143.5	9,444.1	787.9	257.9	530.03	1.486	Level 3
16,500.0	6,852.8	16,377.6	6,716.0	272.4	271.2	80.00	80.00	-143.5	9,544.1	788.0	252.5	535.50	1.471	Level 3
16,600.0	6,852.5	16,477.6	6,715.3	275.2	274.0	79.97	79.97	-143.5	9,644.1	788.0	247.1	540.98	1.457	Level 3
16,700.0	6,852.2	16,577.6	6,714.5	278.0	276.8	79.93	79.93	-143.5	9,744.0	788.1	241.7	546.45	1.442	Level 3
16,800.0	6,851.9	16,677.6	6,713.7	280.8	279.6	79.90	79.90	-143.5	9,844.0	788.2	236.3	551.93	1.428	Level 3
16,900.0	6,851.6	16,777.6	6,712.9	283.6	282.4	79.87	79.87	-143.5	9,944.0	788.3	230.9	557.40	1.414	Level 3
17,000.0	6,851.3	16,877.6	6,712.2	286.4	285.2	79.84	79.84	-143.5	10,044.0	788.4	225.5	562.87	1.401	Level 3
17,100.0	6,851.0	16,977.6	6,711.4	289.2	288.0	79.80	79.80	-143.5	10,144.0	788.4	220.1	568.34	1.387	Level 3
17,200.0	6,850.7	17,077.6	6,710.6	292.1	290.8	79.77	79.77	-143.5	10,244.0	788.5	214.7	573.81	1.374	Level 3
17,300.0	6,850.3	17,177.6	6,709.9	294.9	293.6	79.74	79.74	-143.5	10,344.0	788.6	209.3	579.28	1.361	Level 3
17,407.1	6,850.0	17,284.7	6,709.1	297.9	296.6	79.71	79.71	-143.5	10,451.1	788.7	203.5	585.14	1.348	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	100.96	-29.1	150.4	153.2				
100.0	100.0	100.0	100.0	0.1	0.1	100.96	-29.1	150.4	153.2	153.0	0.22	681.739	
200.0	200.0	200.0	200.0	0.3	0.3	100.96	-29.1	150.4	153.2	152.6	0.67	227.246	
300.0	300.0	300.0	300.0	0.6	0.6	100.96	-29.1	150.4	153.2	152.1	1.12	136.348	
400.0	400.0	400.0	400.0	0.8	0.8	100.96	-29.1	150.4	153.2	151.7	1.57	97.391	
500.0	500.0	500.0	500.0	1.0	1.0	100.96	-29.1	150.4	153.2	151.2	2.02	75.749	
600.0	600.0	600.0	600.0	1.2	1.2	100.96	-29.1	150.4	153.2	150.8	2.47	61.976	
700.0	700.0	700.0	700.0	1.5	1.5	100.96	-29.1	150.4	153.2	150.3	2.92	52.441	
800.0	800.0	800.0	800.0	1.7	1.7	100.96	-29.1	150.4	153.2	149.9	3.37	45.449	
900.0	900.0	900.0	900.0	1.9	1.9	100.96	-29.1	150.4	153.2	149.4	3.82	40.102	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	100.96	-29.1	150.4	153.2	149.0	4.27	35.881 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	129.69	-29.1	150.4	153.8	149.1	4.72	32.596	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	130.42	-29.1	150.4	155.5	150.3	5.16	30.109	
1,300.0	1,299.9	1,299.9	1,299.9	2.8	2.8	131.60	-29.1	150.4	158.3	152.7	5.61	28.226	
1,400.0	1,399.7	1,399.7	1,399.7	3.0	3.0	133.18	-29.1	150.4	162.5	156.4	6.06	26.823	
1,500.0	1,499.4	1,499.4	1,499.4	3.3	3.3	135.09	-29.1	150.4	167.9	161.4	6.51	25.815	
1,600.0	1,598.9	1,602.3	1,602.3	3.5	3.5	137.64	-29.7	149.2	173.9	167.0	6.94	25.055	
1,700.0	1,698.3	1,704.9	1,704.8	3.8	3.7	141.02	-31.4	145.4	179.7	172.3	7.36	24.414	
1,800.0	1,797.4	1,807.1	1,806.8	4.0	3.9	145.12	-34.3	139.2	185.8	178.0	7.79	23.861	
1,900.0	1,896.3	1,908.6	1,907.9	4.3	4.1	149.84	-38.2	130.6	192.7	184.5	8.22	23.452	
1,980.7	1,975.9	1,990.1	1,988.7	4.6	4.3	154.01	-42.2	121.9	199.4	190.8	8.57	23.254	
2,000.0	1,994.9	2,009.4	2,007.9	4.6	4.3	155.05	-43.2	119.6	201.1	192.5	8.66	23.217	
2,100.0	2,093.5	2,109.5	2,106.9	4.9	4.6	160.50	-49.3	106.3	210.5	201.4	9.14	23.041	
2,200.0	2,192.0	2,208.7	2,204.7	5.3	4.8	166.04	-56.4	90.8	220.8	211.1	9.64	22.912	
2,300.0	2,290.6	2,307.1	2,301.1	5.6	5.1	171.62	-64.5	73.2	232.3	222.2	10.17	22.843 SF	
2,400.0	2,389.1	2,404.4	2,396.0	6.0	5.5	177.17	-73.5	53.5	245.6	234.9	10.75	22.848	
2,500.0	2,487.6	2,500.6	2,489.3	6.3	5.9	-177.50	-83.1	32.3	260.9	249.5	11.37	22.945	
2,600.0	2,586.2	2,596.4	2,582.2	6.7	6.2	-172.75	-92.9	11.1	278.3	266.3	12.02	23.152	
2,700.0	2,684.7	2,692.3	2,675.2	7.0	6.7	-168.55	-102.6	-10.2	297.4	284.7	12.69	23.438	
2,800.0	2,783.2	2,788.1	2,768.1	7.4	7.1	-164.85	-112.3	-31.4	317.9	304.5	13.37	23.779	
2,900.0	2,881.8	2,884.0	2,861.1	7.7	7.5	-161.60	-122.0	-52.7	339.6	325.5	14.06	24.153	
3,000.0	2,980.3	2,979.8	2,954.0	8.1	7.9	-158.73	-131.7	-74.0	362.2	347.4	14.76	24.547	
3,100.0	3,078.9	3,075.6	3,047.0	8.5	8.4	-156.20	-141.5	-95.2	385.6	370.1	15.46	24.949	
3,200.0	3,177.4	3,171.5	3,139.9	8.8	8.9	-153.95	-151.2	-116.5	409.7	393.5	16.16	25.352	
3,300.0	3,275.9	3,267.3	3,232.9	9.2	9.3	-151.95	-160.9	-137.8	434.3	417.4	16.86	25.751	
3,400.0	3,374.5	3,363.2	3,325.8	9.6	9.8	-150.16	-170.6	-159.0	459.3	441.7	17.57	26.142	
3,500.0	3,473.0	3,459.0	3,418.8	10.0	10.3	-148.55	-180.3	-180.3	484.7	466.5	18.28	26.522	
3,600.0	3,571.6	3,554.9	3,511.7	10.3	10.7	-147.11	-190.1	-201.5	510.5	491.5	18.98	26.890	
3,700.0	3,670.1	3,650.7	3,604.7	10.7	11.2	-145.80	-199.8	-222.8	536.5	516.8	19.69	27.246	
3,800.0	3,768.6	3,746.6	3,697.7	11.1	11.7	-144.61	-209.5	-244.1	562.8	542.4	20.40	27.588	
3,900.0	3,867.2	3,842.4	3,790.6	11.5	12.2	-143.52	-219.2	-265.3	589.3	568.2	21.11	27.916	
4,000.0	3,965.7	3,938.3	3,883.6	11.9	12.7	-142.53	-228.9	-286.6	616.0	594.2	21.82	28.231	
4,100.0	4,064.2	4,034.1	3,976.5	12.2	13.1	-141.62	-238.6	-307.9	642.8	620.3	22.53	28.534	
4,200.0	4,162.8	4,130.0	4,069.5	12.6	13.6	-140.78	-248.4	-329.1	669.8	646.5	23.24	28.823	
4,300.0	4,261.3	4,225.8	4,162.4	13.0	14.1	-140.01	-258.1	-350.4	696.9	672.9	23.95	29.101	
4,400.0	4,359.9	4,321.6	4,255.4	13.4	14.6	-139.29	-267.8	-371.6	724.1	699.4	24.66	29.366	
4,500.0	4,458.4	4,417.5	4,348.3	13.8	15.1	-138.63	-277.5	-392.9	751.4	726.0	25.37	29.621	
4,600.0	4,556.9	4,513.3	4,441.3	14.1	15.6	-138.01	-287.2	-414.2	778.8	752.7	26.08	29.865	
4,700.0	4,655.5	4,609.2	4,534.2	14.5	16.1	-137.43	-297.0	-435.4	806.2	779.5	26.79	30.099	
4,800.0	4,754.0	4,705.0	4,627.2	14.9	16.6	-136.90	-306.7	-456.7	833.8	806.3	27.50	30.323	
4,900.0	4,852.6	4,800.9	4,720.1	15.3	17.1	-136.39	-316.4	-477.9	861.4	833.2	28.21	30.538	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.0	4,951.1	4,896.7	4,813.1	15.7	17.6	-135.92	-326.1	-499.2	889.0	860.1	28.92	30.744	
5,100.0	5,049.6	4,992.6	4,906.0	16.1	18.1	-135.47	-335.8	-520.5	916.8	887.1	29.63	30.942	
5,200.0	5,148.2	5,088.4	4,999.0	16.4	18.6	-135.06	-345.6	-541.7	944.5	914.2	30.34	31.132	
5,300.0	5,246.7	5,184.3	5,091.9	16.8	19.1	-134.66	-355.3	-563.0	972.3	941.3	31.05	31.315	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-58.3	0.0	58.3					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-58.3	0.0	58.3	58.1	0.22	259.408		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-58.3	0.0	58.3	57.6	0.67	86.469 CC, ES		
300.0	300.0	298.9	298.9	0.6	0.5	-179.15	-59.2	-0.9	59.3	58.2	1.10	53.751		
400.0	400.0	397.6	397.5	0.8	0.7	-176.77	-62.0	-3.5	62.2	60.6	1.53	40.575		
500.0	500.0	496.1	495.8	1.0	1.0	-173.29	-66.7	-7.8	67.3	65.3	1.97	34.060		
600.0	600.0	594.2	593.5	1.2	1.2	-169.23	-73.1	-13.9	74.7	72.3	2.42	30.835		
700.0	700.0	691.8	690.4	1.5	1.5	-165.11	-81.4	-21.6	84.7	81.9	2.88	29.459		
800.0	800.0	788.7	786.4	1.7	1.8	-161.26	-91.3	-31.0	97.4	94.1	3.33	29.208 SF		
900.0	900.0	884.9	881.2	1.9	2.2	-157.86	-103.0	-41.9	112.7	108.9	3.80	29.667		
1,000.0	1,000.0	980.2	974.7	2.1	2.5	-154.94	-116.2	-54.3	130.7	126.5	4.28	30.581		
1,100.0	1,100.0	1,074.4	1,066.8	2.4	3.0	-124.11	-131.0	-68.2	151.8	147.1	4.77	31.837		
1,200.0	1,200.0	1,167.4	1,157.1	2.6	3.4	-122.54	-147.2	-83.4	176.3	171.1	5.24	33.638		
1,300.0	1,299.9	1,259.1	1,245.5	2.8	3.9	-121.54	-164.7	-99.8	204.0	198.3	5.72	35.679		
1,400.0	1,399.7	1,349.1	1,331.9	3.0	4.4	-120.92	-183.4	-117.4	234.8	228.6	6.20	37.870		
1,500.0	1,499.4	1,438.6	1,417.1	3.3	4.9	-120.57	-203.5	-136.2	268.6	261.9	6.70	40.119		
1,600.0	1,598.9	1,532.2	1,505.9	3.5	5.5	-120.48	-224.9	-156.3	304.0	296.8	7.20	42.205		
1,700.0	1,698.3	1,625.4	1,594.3	3.8	6.1	-120.60	-246.3	-176.4	340.1	332.4	7.72	44.063		
1,800.0	1,797.4	1,718.2	1,682.4	4.0	6.7	-120.87	-267.6	-196.3	377.2	368.9	8.25	45.712		
1,900.0	1,896.3	1,810.6	1,770.2	4.3	7.3	-121.24	-288.8	-216.2	415.1	406.3	8.80	47.177		
1,980.7	1,975.9	1,884.9	1,840.7	4.6	7.8	-121.60	-305.8	-232.2	446.3	437.1	9.25	48.240		
2,000.0	1,994.9	1,902.6	1,857.5	4.6	7.9	-121.75	-309.9	-236.0	453.9	444.5	9.37	48.458		
2,100.0	2,093.5	1,994.5	1,944.7	4.9	8.5	-122.49	-330.9	-255.8	493.0	483.0	9.96	49.476		
2,200.0	2,192.0	2,086.3	2,031.9	5.3	9.1	-123.11	-352.0	-275.6	532.2	521.6	10.57	50.338		
2,300.0	2,290.6	2,178.2	2,119.1	5.6	9.7	-123.66	-373.1	-295.3	571.4	560.3	11.19	51.074		
2,400.0	2,389.1	2,270.0	2,206.3	6.0	10.3	-124.13	-394.1	-315.1	610.7	598.9	11.81	51.708		
2,500.0	2,487.6	2,361.9	2,293.5	6.3	10.9	-124.54	-415.2	-334.8	650.0	637.6	12.44	52.258		
2,600.0	2,586.2	2,453.7	2,380.7	6.7	11.5	-124.91	-436.3	-354.6	689.4	676.3	13.07	52.738		
2,700.0	2,684.7	2,545.6	2,467.9	7.0	12.1	-125.24	-457.3	-374.4	728.7	715.0	13.71	53.160		
2,800.0	2,783.2	2,637.5	2,555.0	7.4	12.7	-125.53	-478.4	-394.1	768.1	753.8	14.35	53.533		
2,900.0	2,881.8	2,729.3	2,642.2	7.7	13.3	-125.80	-499.5	-413.9	807.5	792.5	14.99	53.865		
3,000.0	2,980.3	2,821.2	2,729.4	8.1	13.9	-126.04	-520.5	-433.7	846.9	831.3	15.64	54.162		
3,100.0	3,078.9	2,913.0	2,816.6	8.5	14.5	-126.26	-541.6	-453.4	886.3	870.0	16.28	54.428		
3,200.0	3,177.4	3,004.9	2,903.8	8.8	15.1	-126.46	-562.7	-473.2	925.7	908.8	16.93	54.668		
3,300.0	3,275.9	3,096.7	2,991.0	9.2	15.7	-126.65	-583.7	-493.0	965.2	947.6	17.59	54.886		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-312 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error: 0.0 ft
Survey Program: 0-MWD													Offset Well Error: 0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-29.1	0.0	29.1	28.9	0.22	129.649	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.67	43.216	
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-29.1	0.0	29.1	28.0	1.12	25.930	
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-29.1	0.0	29.1	27.6	1.57	18.521 CC, ES	
500.0	500.0	499.4	499.4	1.0	1.0	-178.28	-30.1	-0.9	30.1	28.1	2.00	15.044	
600.0	600.0	598.7	598.6	1.2	1.2	-173.74	-32.8	-3.6	33.1	30.7	2.42	13.671	
700.0	700.0	697.8	697.5	1.5	1.4	-167.82	-37.5	-8.1	38.4	35.6	2.85	13.476 SF	
800.0	800.0	796.4	795.7	1.7	1.6	-161.92	-43.9	-14.3	46.4	43.1	3.29	14.098	
900.0	900.0	894.5	893.1	1.9	1.9	-156.83	-52.1	-22.3	57.0	53.3	3.73	15.279	
1,000.0	1,000.0	992.0	989.6	2.1	2.2	-152.75	-62.0	-31.9	70.5	66.3	4.19	16.829	
1,100.0	1,100.0	1,088.6	1,084.9	2.4	2.5	-121.45	-73.5	-43.2	87.0	82.4	4.65	18.711	
1,200.0	1,200.0	1,184.2	1,178.7	2.6	2.9	-119.99	-86.6	-55.9	107.0	101.9	5.11	20.934	
1,300.0	1,299.9	1,278.6	1,270.9	2.8	3.3	-119.35	-101.3	-70.1	130.2	124.6	5.58	23.348	
1,400.0	1,399.7	1,371.6	1,361.2	3.0	3.7	-119.18	-117.3	-85.7	156.5	150.5	6.05	25.881	
1,500.0	1,499.4	1,463.2	1,449.6	3.3	4.2	-119.28	-134.5	-102.5	186.0	179.5	6.53	28.479	
1,600.0	1,598.9	1,558.2	1,540.8	3.5	4.7	-119.63	-153.2	-120.7	217.4	210.3	7.03	30.917	
1,700.0	1,698.3	1,652.8	1,631.8	3.8	5.2	-120.17	-171.9	-138.8	249.6	242.0	7.54	33.115	
1,800.0	1,797.4	1,747.0	1,722.4	4.0	5.7	-120.83	-190.4	-156.8	282.7	274.6	8.06	35.074	
1,900.0	1,896.3	1,840.9	1,812.7	4.3	6.2	-121.57	-208.9	-174.8	316.7	308.1	8.60	36.830	
1,980.7	1,975.9	1,916.4	1,885.3	4.6	6.7	-122.20	-223.8	-189.3	344.9	335.8	9.05	38.118	
2,000.0	1,994.9	1,934.4	1,902.6	4.6	6.8	-122.41	-227.3	-192.7	351.7	342.5	9.16	38.395	
2,100.0	2,093.5	2,027.8	1,992.4	4.9	7.3	-123.38	-245.7	-210.6	387.0	377.3	9.75	39.712	
2,200.0	2,192.0	2,121.1	2,082.2	5.3	7.8	-124.19	-264.1	-228.5	422.5	412.1	10.34	40.850	
2,300.0	2,290.6	2,214.5	2,171.9	5.6	8.3	-124.88	-282.5	-246.3	458.0	447.0	10.95	41.838	
2,400.0	2,389.1	2,307.8	2,261.7	6.0	8.9	-125.46	-300.8	-264.2	493.5	482.0	11.56	42.702	
2,500.0	2,487.6	2,401.2	2,351.5	6.3	9.4	-125.97	-319.2	-282.1	529.1	516.9	12.17	43.463	
2,600.0	2,586.2	2,494.6	2,441.2	6.7	10.0	-126.41	-337.6	-300.0	564.7	551.9	12.79	44.137	
2,700.0	2,684.7	2,587.9	2,531.0	7.0	10.5	-126.81	-356.0	-317.8	600.4	587.0	13.42	44.737	
2,800.0	2,783.2	2,681.3	2,620.8	7.4	11.0	-127.15	-374.4	-335.7	636.0	622.0	14.05	45.274	
2,900.0	2,881.8	2,774.6	2,710.5	7.7	11.6	-127.46	-392.7	-353.6	671.7	657.0	14.68	45.758	
3,000.0	2,980.3	2,868.0	2,800.3	8.1	12.1	-127.74	-411.1	-371.4	707.4	692.1	15.31	46.195	
3,100.0	3,078.9	2,961.3	2,890.1	8.5	12.6	-128.00	-429.5	-389.3	743.1	727.2	15.95	46.591	
3,200.0	3,177.4	3,054.7	2,979.8	8.8	13.2	-128.22	-447.9	-407.2	778.9	762.3	16.59	46.952	
3,300.0	3,275.9	3,148.1	3,069.6	9.2	13.7	-128.43	-466.3	-425.1	814.6	797.4	17.23	47.282	
3,400.0	3,374.5	3,241.4	3,159.4	9.6	14.3	-128.63	-484.6	-442.9	850.3	832.5	17.87	47.585	
3,500.0	3,473.0	3,334.8	3,249.1	10.0	14.8	-128.80	-503.0	-460.8	886.1	867.6	18.51	47.864	
3,600.0	3,571.6	3,428.1	3,338.9	10.3	15.3	-128.96	-521.4	-478.7	921.9	902.7	19.16	48.121	
3,700.0	3,670.1	3,521.5	3,428.7	10.7	15.9	-129.11	-539.8	-496.6	957.6	937.8	19.80	48.359	
3,800.0	3,768.6	3,614.8	3,518.4	11.1	16.4	-129.25	-558.2	-514.4	993.4	972.9	20.45	48.580	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 19O-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 19N-432	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 (7-16-15)	Offset TVD Reference:	Offset Datum

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

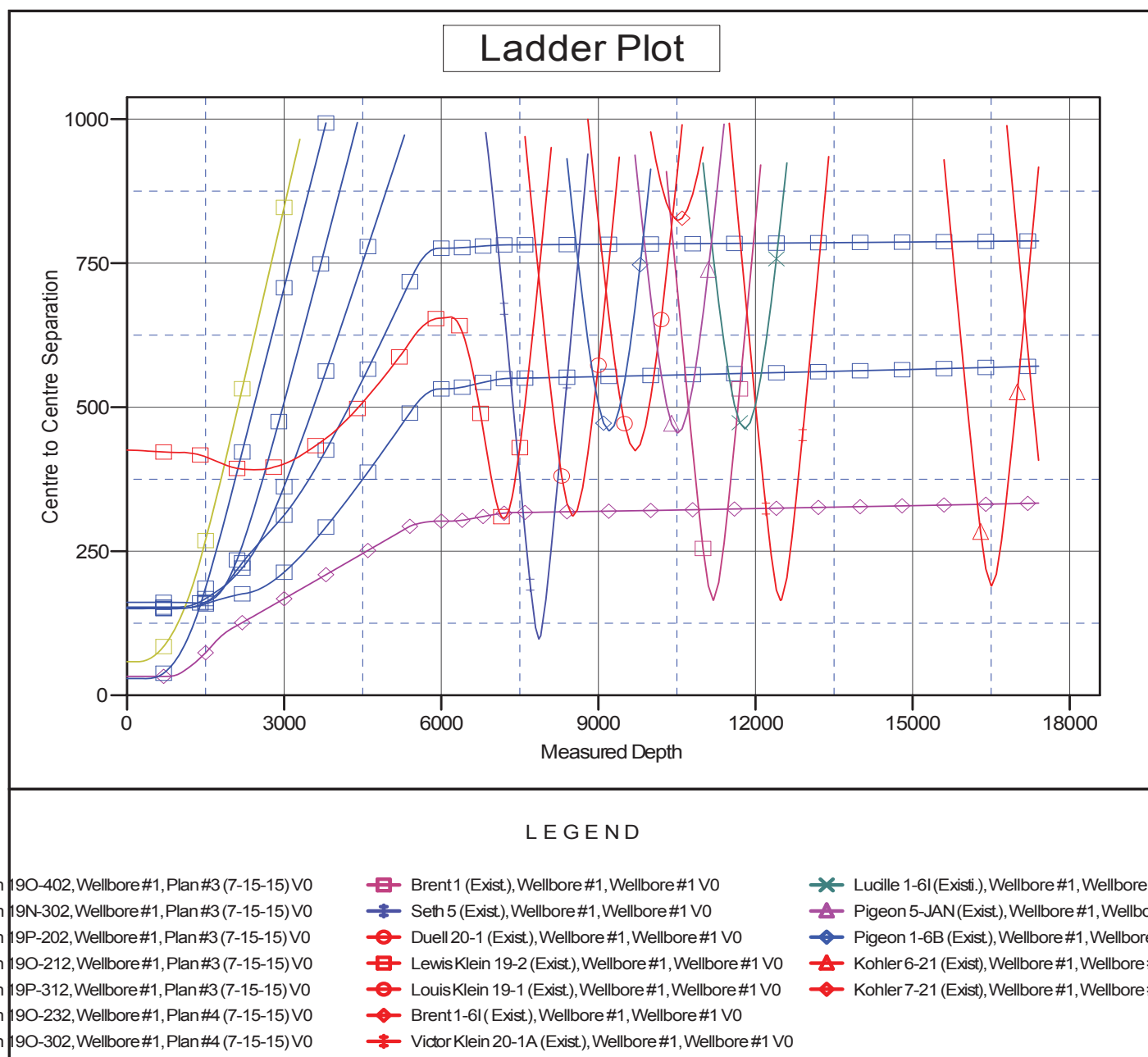
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Klein 19N-432

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19N-432
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