

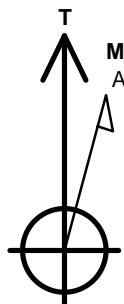
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Klein 190-232**

Surface Location: Klein 190-HZ Pad Sec.19-T5N-R64W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4626.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1384452.54 3253261.47 40.385160 -104.590840
 RKB - 13' WELL @ 4639.0ft (RKB - 13')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' N/S Hardline (19O-232)	1.0	-613.5	4992.0	Rectangle (Sides: L10642.0 W100.0)
SHL 2448'FNL & 2100'FEL, Sec.19	1.0	0.0	0.0	Point
BHL 2125'FSL & 2353'FEL, Sec.21	6630.0	-613.5	10313.4	Point

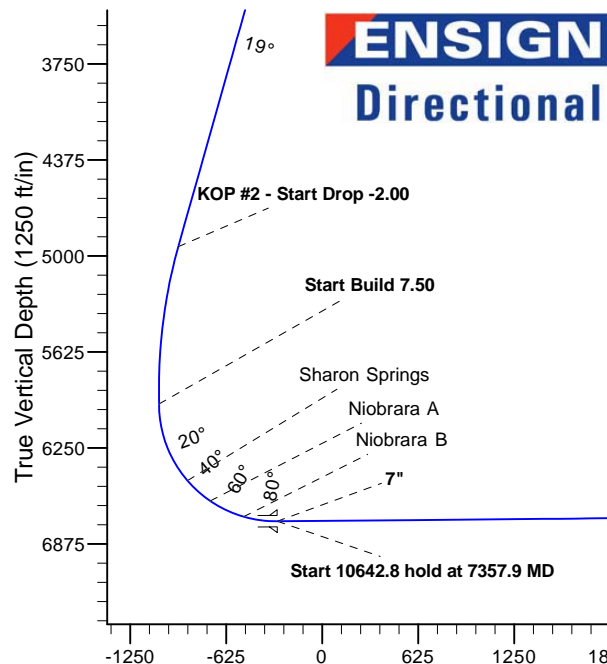
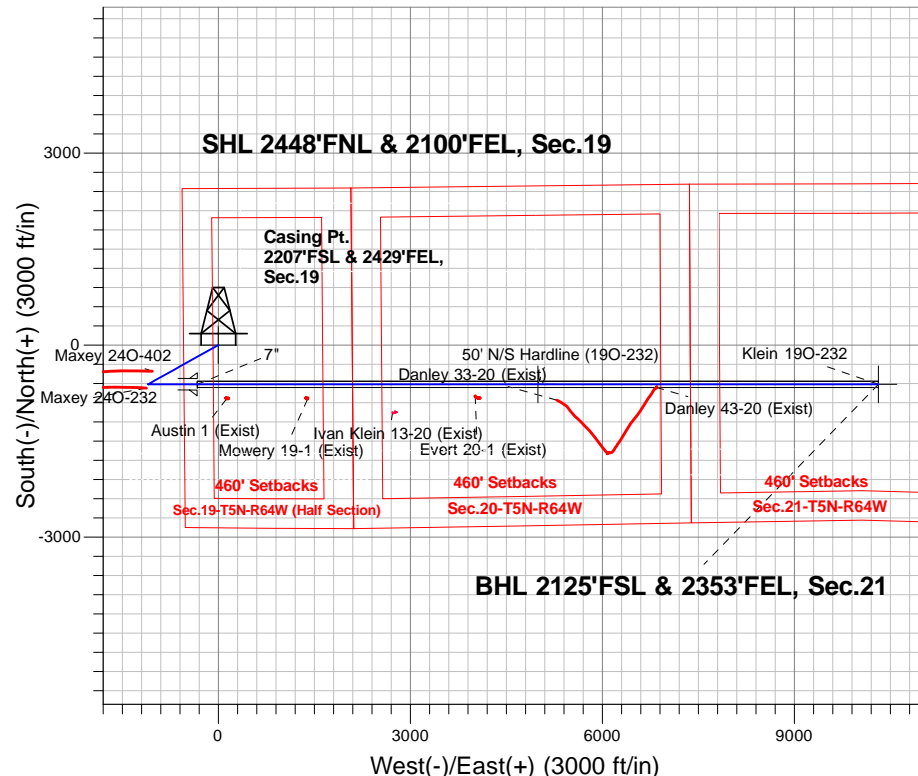


Azimuths to True North
 Magnetic North: 8.22°
 Magnetic Field
 Strength: 52713.0snT
 Dip Angle: 66.92°
 Date: 7/15/2015
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1 - Start Build 1.50
4940.1	5110.4	KOP #2 - Start Drop -2.00
5964.5	6150.9	Start Build 7.50
6728.4	7357.9	Start 10642.8 hold at 7357.9 MD
6630.0	18000.8	TD at 18000.8

Klein 190-HZ Pad Sec.19-T5N-R64W
 Klein 190-232
 Plan #4 (7-15-15)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	2234.6	18.52	240.85	2213.2	-96.3	-172.7	1.50	240.85	-166.7	
4	5110.4	18.52	240.85	4940.1	-541.3	-970.4	0.00	0.00	-936.6	
5	6036.3	0.00	0.00	5850.0	-613.5	-1100.0	2.00	180.00	-1061.6	
6	6150.9	0.00	0.00	5964.5	-613.5	-1100.0	0.00	0.00	-1061.6	
7	7357.9	90.53	90.00	6728.4	-613.5	-329.0	7.50	90.00	-292.0	
8	18000.8	90.53	90.00	6630.0	-613.5	10313.4	0.00	0.00	10331.6	BHL 2125'FSL & 2353'FEL, Sec.21

BHL 2125'FSL & 2353'FEL, Sec.21

TD at 18000.8

Vertical Section at 93.40° (1250 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19O-232

Wellbore #1

Plan: Plan #4 (7-15-15)

Standard Planning Report

29 July, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

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

Site	Klein 190-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 190-232		
Well Position	+N/-S	-91.1 ft	Northing:
	+E/-W	150.4 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 #4 (7-15-15)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	93.40

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	
2,234.6	18.52	240.85	2,213.2	-96.3	-172.7	1.50	1.50	0.00	240.85	
5,110.4	18.52	240.85	4,940.1	-541.3	-970.4	0.00	0.00	0.00	0.00	
6,036.3	0.00	0.00	5,850.0	-613.5	-1,100.0	2.00	-2.00	0.00	180.00	
6,150.9	0.00	0.00	5,964.5	-613.5	-1,100.0	0.00	0.00	0.00	0.00	
7,357.9	90.53	90.00	6,728.4	-613.5	-329.0	7.50	7.50	0.00	90.00	
18,000.8	90.53	90.00	6,630.0	-613.5	10,313.4	0.00	0.00	0.00	0.00	BHL 2125'FSL & 2353'

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
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 1.50									
1,100.0	1.50	240.85	1,100.0	-0.6	-1.1	-1.1	1.50	1.50	0.00
1,200.0	3.00	240.85	1,199.9	-2.5	-4.6	-4.4	1.50	1.50	0.00
1,300.0	4.50	240.85	1,299.7	-5.7	-10.3	-9.9	1.50	1.50	0.00
1,400.0	6.00	240.85	1,399.3	-10.2	-18.3	-17.6	1.50	1.50	0.00
1,500.0	7.50	240.85	1,498.6	-15.9	-28.5	-27.5	1.50	1.50	0.00
1,600.0	9.00	240.85	1,597.5	-22.9	-41.1	-39.6	1.50	1.50	0.00
1,700.0	10.50	240.85	1,696.1	-31.2	-55.9	-53.9	1.50	1.50	0.00
1,800.0	12.00	240.85	1,794.2	-40.7	-72.9	-70.4	1.50	1.50	0.00
1,900.0	13.50	240.85	1,891.7	-51.4	-92.2	-89.0	1.50	1.50	0.00
2,000.0	15.00	240.85	1,988.6	-63.4	-113.7	-109.7	1.50	1.50	0.00
2,100.0	16.50	240.85	2,084.9	-76.6	-137.4	-132.6	1.50	1.50	0.00
2,200.0	18.00	240.85	2,180.4	-91.1	-163.3	-157.6	1.50	1.50	0.00
2,234.6	18.52	240.85	2,213.2	-96.3	-172.7	-166.7	1.50	1.50	0.00
2,300.0	18.52	240.85	2,275.2	-106.5	-190.9	-184.2	0.00	0.00	0.00
2,400.0	18.52	240.85	2,370.1	-121.9	-218.6	-211.0	0.00	0.00	0.00
2,500.0	18.52	240.85	2,464.9	-137.4	-246.4	-237.8	0.00	0.00	0.00
2,600.0	18.52	240.85	2,559.7	-152.9	-274.1	-264.5	0.00	0.00	0.00
2,700.0	18.52	240.85	2,654.5	-168.3	-301.8	-291.3	0.00	0.00	0.00
2,800.0	18.52	240.85	2,749.3	-183.8	-329.6	-318.1	0.00	0.00	0.00
2,900.0	18.52	240.85	2,844.2	-199.3	-357.3	-344.8	0.00	0.00	0.00
3,000.0	18.52	240.85	2,939.0	-214.8	-385.1	-371.6	0.00	0.00	0.00
3,100.0	18.52	240.85	3,033.8	-230.2	-412.8	-398.4	0.00	0.00	0.00
3,200.0	18.52	240.85	3,128.6	-245.7	-440.5	-425.2	0.00	0.00	0.00
3,300.0	18.52	240.85	3,223.4	-261.2	-468.3	-451.9	0.00	0.00	0.00
3,400.0	18.52	240.85	3,318.3	-276.6	-496.0	-478.7	0.00	0.00	0.00
3,500.0	18.52	240.85	3,413.1	-292.1	-523.7	-505.5	0.00	0.00	0.00
3,600.0	18.52	240.85	3,507.9	-307.6	-551.5	-532.2	0.00	0.00	0.00
3,700.0	18.52	240.85	3,602.7	-323.1	-579.2	-559.0	0.00	0.00	0.00
3,800.0	18.52	240.85	3,697.6	-338.5	-607.0	-585.8	0.00	0.00	0.00
3,900.0	18.52	240.85	3,792.4	-354.0	-634.7	-612.6	0.00	0.00	0.00
4,000.0	18.52	240.85	3,887.2	-369.5	-662.4	-639.3	0.00	0.00	0.00
4,100.0	18.52	240.85	3,982.0	-384.9	-690.2	-666.1	0.00	0.00	0.00
4,200.0	18.52	240.85	4,076.8	-400.4	-717.9	-692.9	0.00	0.00	0.00
4,300.0	18.52	240.85	4,171.7	-415.9	-745.7	-719.6	0.00	0.00	0.00
4,400.0	18.52	240.85	4,266.5	-431.4	-773.4	-746.4	0.00	0.00	0.00
4,500.0	18.52	240.85	4,361.3	-446.8	-801.1	-773.2	0.00	0.00	0.00
4,600.0	18.52	240.85	4,456.1	-462.3	-828.9	-800.0	0.00	0.00	0.00
4,700.0	18.52	240.85	4,551.0	-477.8	-856.6	-826.7	0.00	0.00	0.00
4,800.0	18.52	240.85	4,645.8	-493.2	-884.3	-853.5	0.00	0.00	0.00
4,900.0	18.52	240.85	4,740.6	-508.7	-912.1	-880.3	0.00	0.00	0.00
5,000.0	18.52	240.85	4,835.4	-524.2	-939.8	-907.0	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	18.52	240.85	4,930.2	-539.6	-967.6	-933.8	0.00	0.00	0.00
5,110.4	18.52	240.85	4,940.1	-541.3	-970.5	-936.6	0.00	0.00	0.00
KOP #2 - Start Drop -2.00									
5,200.0	16.73	240.85	5,025.5	-554.5	-994.1	-959.5	2.00	-2.00	0.00
5,300.0	14.73	240.85	5,121.8	-567.7	-1,017.8	-982.3	2.00	-2.00	0.00
5,400.0	12.73	240.85	5,218.9	-579.2	-1,038.5	-1,002.3	2.00	-2.00	0.00
5,500.0	10.73	240.85	5,316.8	-589.1	-1,056.3	-1,019.4	2.00	-2.00	0.00
5,600.0	8.73	240.85	5,415.4	-597.4	-1,071.0	-1,033.7	2.00	-2.00	0.00
5,700.0	6.73	240.85	5,514.4	-603.9	-1,082.8	-1,045.0	2.00	-2.00	0.00
5,800.0	4.73	240.85	5,613.9	-608.8	-1,091.5	-1,053.4	2.00	-2.00	0.00
5,900.0	2.73	240.85	5,713.7	-611.9	-1,097.2	-1,058.9	2.00	-2.00	0.00
6,000.0	0.73	240.85	5,813.7	-613.4	-1,099.8	-1,061.4	2.00	-2.00	0.00
6,036.3	0.00	0.00	5,850.0	-613.5	-1,100.0	-1,061.6	2.00	-2.00	0.00
6,100.0	0.00	0.00	5,913.7	-613.5	-1,100.0	-1,061.6	0.00	0.00	0.00
6,150.9	0.00	0.00	5,964.6	-613.5	-1,100.0	-1,061.6	0.00	0.00	0.00
Start Build 7.50									
6,200.0	3.69	90.00	6,013.6	-613.5	-1,098.4	-1,060.1	7.51	7.51	0.00
6,300.0	11.19	90.00	6,112.7	-613.5	-1,085.5	-1,047.1	7.50	7.50	0.00
6,400.0	18.69	90.00	6,209.3	-613.5	-1,059.7	-1,021.4	7.50	7.50	0.00
6,500.0	26.19	90.00	6,301.6	-613.5	-1,021.6	-983.4	7.50	7.50	0.00
6,600.0	33.69	90.00	6,388.2	-613.5	-971.7	-933.6	7.50	7.50	0.00
6,700.0	41.19	90.00	6,467.6	-613.5	-911.0	-873.0	7.50	7.50	0.00
6,800.0	48.69	90.00	6,538.3	-613.5	-840.4	-802.5	7.50	7.50	0.00
6,900.0	56.18	90.00	6,599.3	-613.5	-761.2	-723.4	7.50	7.50	0.00
7,000.0	63.68	90.00	6,649.3	-613.5	-674.7	-637.1	7.50	7.50	0.00
7,100.0	71.18	90.00	6,687.7	-613.5	-582.4	-545.0	7.50	7.50	0.00
7,200.0	78.68	90.00	6,713.6	-613.5	-485.9	-448.7	7.50	7.50	0.00
7,300.0	86.18	90.00	6,726.8	-613.5	-386.9	-349.8	7.50	7.50	0.00
7,357.9	90.53	90.00	6,728.4	-613.5	-329.0	-292.0	7.50	7.50	0.00
Start 10642.8 hold at 7357.9 MD - 7"									
7,400.0	90.53	90.00	6,728.1	-613.5	-286.9	-250.0	0.01	0.01	0.00
7,500.0	90.53	90.00	6,727.1	-613.5	-186.9	-150.2	0.00	0.00	0.00
7,600.0	90.53	90.00	6,726.2	-613.5	-86.9	-50.3	0.00	0.00	0.00
7,700.0	90.53	90.00	6,725.3	-613.5	13.1	49.5	0.00	0.00	0.00
7,800.0	90.53	90.00	6,724.4	-613.5	113.1	149.3	0.00	0.00	0.00
7,900.0	90.53	90.00	6,723.4	-613.5	213.1	249.1	0.00	0.00	0.00
8,000.0	90.53	90.00	6,722.5	-613.5	313.0	348.9	0.00	0.00	0.00
8,100.0	90.53	90.00	6,721.6	-613.5	413.0	448.7	0.00	0.00	0.00
8,200.0	90.53	90.00	6,720.7	-613.5	513.0	548.6	0.00	0.00	0.00
8,300.0	90.53	90.00	6,719.7	-613.5	613.0	648.4	0.00	0.00	0.00
8,400.0	90.53	90.00	6,718.8	-613.5	713.0	748.2	0.00	0.00	0.00
8,500.0	90.53	90.00	6,717.9	-613.5	813.0	848.0	0.00	0.00	0.00
8,600.0	90.53	90.00	6,717.0	-613.5	913.0	947.8	0.00	0.00	0.00
8,700.0	90.53	90.00	6,716.0	-613.5	1,013.0	1,047.7	0.00	0.00	0.00
8,800.0	90.53	90.00	6,715.1	-613.5	1,113.0	1,147.5	0.00	0.00	0.00
8,900.0	90.53	90.00	6,714.2	-613.5	1,213.0	1,247.3	0.00	0.00	0.00
9,000.0	90.53	90.00	6,713.3	-613.5	1,313.0	1,347.1	0.00	0.00	0.00
9,100.0	90.53	90.00	6,712.3	-613.5	1,413.0	1,446.9	0.00	0.00	0.00
9,200.0	90.53	90.00	6,711.4	-613.5	1,513.0	1,546.8	0.00	0.00	0.00
9,300.0	90.53	90.00	6,710.5	-613.5	1,613.0	1,646.6	0.00	0.00	0.00
9,400.0	90.53	90.00	6,709.6	-613.5	1,713.0	1,746.4	0.00	0.00	0.00
9,500.0	90.53	90.00	6,708.6	-613.5	1,813.0	1,846.2	0.00	0.00	0.00
9,600.0	90.53	90.00	6,707.7	-613.5	1,913.0	1,946.0	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,700.0	90.53	90.00	6,706.8	-613.5	2,013.0	2,045.9	0.00	0.00	0.00
9,800.0	90.53	90.00	6,705.9	-613.5	2,113.0	2,145.7	0.00	0.00	0.00
9,900.0	90.53	90.00	6,704.9	-613.5	2,213.0	2,245.5	0.00	0.00	0.00
10,000.0	90.53	90.00	6,704.0	-613.5	2,313.0	2,345.3	0.00	0.00	0.00
10,100.0	90.53	90.00	6,703.1	-613.5	2,413.0	2,445.1	0.00	0.00	0.00
10,200.0	90.53	90.00	6,702.2	-613.5	2,513.0	2,545.0	0.00	0.00	0.00
10,300.0	90.53	90.00	6,701.2	-613.5	2,613.0	2,644.8	0.00	0.00	0.00
10,400.0	90.53	90.00	6,700.3	-613.5	2,712.9	2,744.6	0.00	0.00	0.00
10,500.0	90.53	90.00	6,699.4	-613.5	2,812.9	2,844.4	0.00	0.00	0.00
10,600.0	90.53	90.00	6,698.5	-613.5	2,912.9	2,944.2	0.00	0.00	0.00
10,700.0	90.53	90.00	6,697.5	-613.5	3,012.9	3,044.0	0.00	0.00	0.00
10,800.0	90.53	90.00	6,696.6	-613.5	3,112.9	3,143.9	0.00	0.00	0.00
10,900.0	90.53	90.00	6,695.7	-613.5	3,212.9	3,243.7	0.00	0.00	0.00
11,000.0	90.53	90.00	6,694.8	-613.5	3,312.9	3,343.5	0.00	0.00	0.00
11,100.0	90.53	90.00	6,693.8	-613.5	3,412.9	3,443.3	0.00	0.00	0.00
11,200.0	90.53	90.00	6,692.9	-613.5	3,512.9	3,543.1	0.00	0.00	0.00
11,300.0	90.53	90.00	6,692.0	-613.5	3,612.9	3,643.0	0.00	0.00	0.00
11,400.0	90.53	90.00	6,691.1	-613.5	3,712.9	3,742.8	0.00	0.00	0.00
11,500.0	90.53	90.00	6,690.1	-613.5	3,812.9	3,842.6	0.00	0.00	0.00
11,600.0	90.53	90.00	6,689.2	-613.5	3,912.9	3,942.4	0.00	0.00	0.00
11,700.0	90.53	90.00	6,688.3	-613.5	4,012.9	4,042.2	0.00	0.00	0.00
11,800.0	90.53	90.00	6,687.4	-613.5	4,112.9	4,142.1	0.00	0.00	0.00
11,900.0	90.53	90.00	6,686.4	-613.5	4,212.9	4,241.9	0.00	0.00	0.00
12,000.0	90.53	90.00	6,685.5	-613.5	4,312.9	4,341.7	0.00	0.00	0.00
12,100.0	90.53	90.00	6,684.6	-613.5	4,412.9	4,441.5	0.00	0.00	0.00
12,200.0	90.53	90.00	6,683.7	-613.5	4,512.9	4,541.3	0.00	0.00	0.00
12,300.0	90.53	90.00	6,682.7	-613.5	4,612.9	4,641.2	0.00	0.00	0.00
12,400.0	90.53	90.00	6,681.8	-613.5	4,712.9	4,741.0	0.00	0.00	0.00
12,500.0	90.53	90.00	6,680.9	-613.5	4,812.9	4,840.8	0.00	0.00	0.00
12,600.0	90.53	90.00	6,680.0	-613.5	4,912.9	4,940.6	0.00	0.00	0.00
12,700.0	90.53	90.00	6,679.0	-613.5	5,012.8	5,040.4	0.00	0.00	0.00
12,800.0	90.53	90.00	6,678.1	-613.5	5,112.8	5,140.3	0.00	0.00	0.00
12,900.0	90.53	90.00	6,677.2	-613.5	5,212.8	5,240.1	0.00	0.00	0.00
13,000.0	90.53	90.00	6,676.3	-613.5	5,312.8	5,339.9	0.00	0.00	0.00
13,100.0	90.53	90.00	6,675.3	-613.5	5,412.8	5,439.7	0.00	0.00	0.00
13,200.0	90.53	90.00	6,674.4	-613.5	5,512.8	5,539.5	0.00	0.00	0.00
13,300.0	90.53	90.00	6,673.5	-613.5	5,612.8	5,639.3	0.00	0.00	0.00
13,400.0	90.53	90.00	6,672.6	-613.5	5,712.8	5,739.2	0.00	0.00	0.00
13,500.0	90.53	90.00	6,671.6	-613.5	5,812.8	5,839.0	0.00	0.00	0.00
13,600.0	90.53	90.00	6,670.7	-613.5	5,912.8	5,938.8	0.00	0.00	0.00
13,700.0	90.53	90.00	6,669.8	-613.5	6,012.8	6,038.6	0.00	0.00	0.00
13,800.0	90.53	90.00	6,668.9	-613.5	6,112.8	6,138.4	0.00	0.00	0.00
13,900.0	90.53	90.00	6,667.9	-613.5	6,212.8	6,238.3	0.00	0.00	0.00
14,000.0	90.53	90.00	6,667.0	-613.5	6,312.8	6,338.1	0.00	0.00	0.00
14,100.0	90.53	90.00	6,666.1	-613.5	6,412.8	6,437.9	0.00	0.00	0.00
14,200.0	90.53	90.00	6,665.2	-613.5	6,512.8	6,537.7	0.00	0.00	0.00
14,300.0	90.53	90.00	6,664.2	-613.5	6,612.8	6,637.5	0.00	0.00	0.00
14,400.0	90.53	90.00	6,663.3	-613.5	6,712.8	6,737.4	0.00	0.00	0.00
14,500.0	90.53	90.00	6,662.4	-613.5	6,812.8	6,837.2	0.00	0.00	0.00
14,600.0	90.53	90.00	6,661.5	-613.5	6,912.8	6,937.0	0.00	0.00	0.00
14,700.0	90.53	90.00	6,660.5	-613.5	7,012.8	7,036.8	0.00	0.00	0.00
14,800.0	90.53	90.00	6,659.6	-613.5	7,112.8	7,136.6	0.00	0.00	0.00
14,900.0	90.53	90.00	6,658.7	-613.5	7,212.8	7,236.5	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,000.0	90.53	90.00	6,657.8	-613.5	7,312.8	7,336.3	0.00	0.00	0.00
15,100.0	90.53	90.00	6,656.8	-613.5	7,412.7	7,436.1	0.00	0.00	0.00
15,200.0	90.53	90.00	6,655.9	-613.5	7,512.7	7,535.9	0.00	0.00	0.00
15,300.0	90.53	90.00	6,655.0	-613.5	7,612.7	7,635.7	0.00	0.00	0.00
15,400.0	90.53	90.00	6,654.1	-613.5	7,712.7	7,735.6	0.00	0.00	0.00
15,500.0	90.53	90.00	6,653.1	-613.5	7,812.7	7,835.4	0.00	0.00	0.00
15,600.0	90.53	90.00	6,652.2	-613.5	7,912.7	7,935.2	0.00	0.00	0.00
15,700.0	90.53	90.00	6,651.3	-613.5	8,012.7	8,035.0	0.00	0.00	0.00
15,800.0	90.53	90.00	6,650.4	-613.5	8,112.7	8,134.8	0.00	0.00	0.00
15,900.0	90.53	90.00	6,649.4	-613.5	8,212.7	8,234.7	0.00	0.00	0.00
16,000.0	90.53	90.00	6,648.5	-613.5	8,312.7	8,334.5	0.00	0.00	0.00
16,100.0	90.53	90.00	6,647.6	-613.5	8,412.7	8,434.3	0.00	0.00	0.00
16,200.0	90.53	90.00	6,646.7	-613.5	8,512.7	8,534.1	0.00	0.00	0.00
16,300.0	90.53	90.00	6,645.7	-613.5	8,612.7	8,633.9	0.00	0.00	0.00
16,400.0	90.53	90.00	6,644.8	-613.5	8,712.7	8,733.7	0.00	0.00	0.00
16,500.0	90.53	90.00	6,643.9	-613.5	8,812.7	8,833.6	0.00	0.00	0.00
16,600.0	90.53	90.00	6,643.0	-613.5	8,912.7	8,933.4	0.00	0.00	0.00
16,700.0	90.53	90.00	6,642.0	-613.5	9,012.7	9,033.2	0.00	0.00	0.00
16,800.0	90.53	90.00	6,641.1	-613.5	9,112.7	9,133.0	0.00	0.00	0.00
16,900.0	90.53	90.00	6,640.2	-613.5	9,212.7	9,232.8	0.00	0.00	0.00
17,000.0	90.53	90.00	6,639.3	-613.5	9,312.7	9,332.7	0.00	0.00	0.00
17,100.0	90.53	90.00	6,638.3	-613.5	9,412.7	9,432.5	0.00	0.00	0.00
17,200.0	90.53	90.00	6,637.4	-613.5	9,512.7	9,532.3	0.00	0.00	0.00
17,300.0	90.53	90.00	6,636.5	-613.5	9,612.7	9,632.1	0.00	0.00	0.00
17,400.0	90.53	90.00	6,635.6	-613.5	9,712.6	9,731.9	0.00	0.00	0.00
17,500.0	90.53	90.00	6,634.6	-613.5	9,812.6	9,831.8	0.00	0.00	0.00
17,600.0	90.53	90.00	6,633.7	-613.5	9,912.6	9,931.6	0.00	0.00	0.00
17,700.0	90.53	90.00	6,632.8	-613.5	10,012.6	10,031.4	0.00	0.00	0.00
17,800.0	90.53	90.00	6,631.9	-613.5	10,112.6	10,131.2	0.00	0.00	0.00
17,900.0	90.53	90.00	6,630.9	-613.5	10,212.6	10,231.0	0.00	0.00	0.00
18,000.0	90.53	90.00	6,630.0	-613.5	10,312.6	10,330.9	0.00	0.00	0.00
18,000.8	90.53	90.00	6,630.0	-613.5	10,313.4	10,331.6	0.00	0.00	0.00
TD at 18000.8									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
50' N/S Hardline (190-2'	0.00	0.00	1.0	-613.5	4,992.0	1,383,890.28	3,258,259.29	40.383475	-104.572921
- hit/miss target									
- Shape									
- plan misses target center by 5029.6ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W100.0 H10,642.0 D0.0)									
SHL 2448'FNL & 2100'F	0.00	0.00	1.0	0.0	0.0	1,384,452.56	3,253,261.47	40.385160	-104.590840
- plan hits target center									
- Point									
BHL 2125'FSL & 2353'FI	0.00	0.00	6,630.0	-613.5	10,313.4	1,383,944.82	3,263,580.18	40.383470	-104.553820
- plan hits target center									
- Point									

Database:	US_EDM	Local Co-ordinate Reference:	Well Klein 190-232
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 190-HZ Pad Sec.19-T5N-R64W	North Reference:	True
Well:	Klein 190-232	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #4 (7-15-15)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,357.9	6,728.4	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,644.4	3,550.0	Parkman		0.00	
4,435.3	4,300.0	Sussex		0.00	
4,646.3	4,500.0	Shannon		0.00	
6,693.9	6,463.0	Sharon Springs		0.00	
6,894.2	6,596.0	Niobrara A		0.00	
7,134.3	6,698.0	Niobrara B		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 1.50	
5,110.4	4,940.1	-96.3	-172.7	KOP #2 - Start Drop -2.00	
6,150.9	5,964.5	-541.3	-970.4	Start Build 7.50	
7,357.9	6,728.4	-613.5	-1,100.0	Start 10642.8 hold at 7357.9 MD	
18,000.8	6,630.0	-613.5	-1,100.0	TD at 18000.8	



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T5N-R64W

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

Klein 19O-232

Wellbore #1

Plan #4 (7-15-15)

Anticollision Report

29 July, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #4 (7-15-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	7/29/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	18,000.8	Plan #4 (7-15-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Klein 190-HZ Pad Sec.19-T5N-R64W						
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	800.0	800.0	175.9	172.5	52.159	CC, ES
Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)	1,600.0	1,558.1	233.2	226.3	33.831	SF
Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)	1,351.4	1,343.1	160.2	154.5	27.954	CC
Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)	1,400.0	1,390.3	160.3	154.4	26.989	ES
Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)	1,900.0	1,866.1	191.7	183.2	22.399	SF
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	1,000.0	1,000.0	91.1	86.8	21.337	CC, ES
Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)	18,000.8	17,238.6	772.5	164.7	1.271	Level 3, SF
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	1,000.0	1,000.0	61.9	57.7	14.500	CC
Klein 19O-302 - Wellbore #1 - Plan #4 (7-15-15)	18,000.8	17,291.6	534.2	-67.7	0.888	Level 1, ES, SF
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	1,000.0	1,000.0	29.1	24.9	6.825	CC
Klein 19O-402 - Wellbore #1 - Plan #3 (7-15-15)	18,000.8	17,809.5	339.6	-142.5	0.704	Level 1, ES, SF
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	200.0	200.0	150.4	149.8	223.099	CC, ES
Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)	18,000.8	18,250.5	813.0	186.9	1.299	Level 3, SF
Klein 19P-312 - Wellbore #1 - Plan #3 (7-15-15)	400.0	400.0	153.2	151.7	97.392	CC
Klein 19P-312 - Wellbore #1 - Plan #3 (7-15-15)	18,000.8	18,159.5	566.7	-50.7	0.918	Level 1, ES, SF
Maxey 24O-HZ Pad Sec.24-T5N-R65W						
Maxey 24O-232 - Wellbore #1 - Wellbore #1	6,728.2	11,018.0	322.1	277.1	7.151	CC, ES
Maxey 24O-232 - Wellbore #1 - Wellbore #1	7,300.0	11,018.0	738.4	601.7	5.401	SF
Maxey 24O-402 - Wellbore #1 - Wellbore #1	6,850.0	11,254.0	457.4	377.0	5.687	SF
Maxey 24O-402 - Wellbore #1 - Wellbore #1	6,866.5	11,254.0	456.9	376.6	5.692	CC, ES
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W						
Austin 1 (Exist) - Wellbore #1 - Wellbore #1	7,812.1	6,708.8	222.9	176.5	4.807	CC, ES, SF
Danley 33-20 (Exist) - Wellbore #1 - Wellbore #1	13,011.8	6,850.7	266.8	79.8	1.427	Level 3, CC, ES, SF
Danley 43-20 (Exist) - Wellbore #1 - Wellbore #1	14,535.6	6,862.8	37.2	-193.4	0.161	Level 1, CC, ES, SF
Evert 20-1 (Exist) - Wellbore #1 - Wellbore #1	11,697.3	6,689.6	184.5	-48.0	0.794	Level 1, CC
Evert 20-1 (Exist) - Wellbore #1 - Wellbore #1	11,700.0	6,689.5	184.5	-48.0	0.793	Level 1, ES, SF
Ivan Klein 13-20 (Exist) - Wellbore #1 - Wellbore #1	10,405.5	6,700.0	440.1	328.3	3.938	CC, ES
Ivan Klein 13-20 (Exist) - Wellbore #1 - Wellbore #1	10,500.0	6,697.3	450.1	335.7	3.936	SF
Mowery 19-1 (Exist) - Wellbore #1 - Wellbore #1	9,077.4	6,695.8	229.5	153.2	3.009	CC, ES
Mowery 19-1 (Exist) - Wellbore #1 - Wellbore #1	9,100.0	6,695.8	230.6	153.7	3.001	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19N-302 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
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	-58.81	91.1	-150.4	175.9				
100.0	100.0	100.0	100.0	0.1	0.1	-58.81	91.1	-150.4	175.9	175.6	0.22	782.392	
200.0	200.0	200.0	200.0	0.3	0.3	-58.81	91.1	-150.4	175.9	175.2	0.67	260.797	
300.0	300.0	300.0	300.0	0.6	0.6	-58.81	91.1	-150.4	175.9	174.7	1.12	156.478	
400.0	400.0	400.0	400.0	0.8	0.8	-58.81	91.1	-150.4	175.9	174.3	1.57	111.770	
500.0	500.0	500.0	500.0	1.0	1.0	-58.81	91.1	-150.4	175.9	173.8	2.02	86.932	
600.0	600.0	600.0	600.0	1.2	1.2	-58.81	91.1	-150.4	175.9	173.4	2.47	71.127	
700.0	700.0	700.0	700.0	1.5	1.5	-58.81	91.1	-150.4	175.9	172.9	2.92	60.184	
800.0	800.0	800.0	800.0	1.7	1.7	-58.81	91.1	-150.4	175.9	172.5	3.37	52.159 CC, ES	
900.0	900.0	896.5	896.5	1.9	1.9	-58.57	92.2	-150.9	176.9	173.0	3.81	46.396	
1,000.0	1,000.0	992.8	992.7	2.1	2.1	-57.86	95.6	-152.2	179.9	175.6	4.25	42.302	
1,100.0	1,100.0	1,088.9	1,088.6	2.3	2.3	62.71	101.3	-154.3	184.4	179.7	4.67	39.454	
1,200.0	1,199.9	1,184.5	1,183.8	2.5	2.6	65.11	109.1	-157.4	189.9	184.9	5.08	37.386	
1,300.0	1,299.7	1,279.4	1,278.2	2.7	2.8	68.35	119.1	-161.2	197.1	191.6	5.50	35.815	
1,400.0	1,399.3	1,373.5	1,371.3	3.0	3.1	72.23	131.2	-165.8	206.3	200.3	5.94	34.715	
1,500.0	1,498.6	1,466.4	1,463.0	3.2	3.3	76.53	145.2	-171.2	218.1	211.7	6.40	34.063	
1,600.0	1,597.5	1,558.1	1,553.2	3.5	3.6	81.01	161.1	-177.3	233.2	226.3	6.89	33.831 SF	
1,700.0	1,696.1	1,649.5	1,642.6	3.8	4.0	85.51	178.9	-184.1	251.9	244.4	7.42	33.958	
1,800.0	1,794.2	1,744.7	1,735.5	4.1	4.3	90.05	198.1	-191.5	272.9	264.9	7.98	34.200	
1,900.0	1,891.7	1,839.3	1,827.8	4.5	4.7	94.34	217.1	-198.8	295.9	287.3	8.58	34.488	
2,000.0	1,988.6	1,933.1	1,919.5	4.9	5.1	98.36	236.0	-206.1	320.9	311.7	9.22	34.815	
2,100.0	2,084.9	2,026.3	2,010.4	5.4	5.5	102.12	254.8	-213.3	348.1	338.2	9.89	35.183	
2,200.0	2,180.4	2,118.6	2,100.6	5.9	5.8	105.61	273.4	-220.4	377.5	366.9	10.60	35.596	
2,234.6	2,213.2	2,150.4	2,131.6	6.1	6.0	106.76	279.8	-222.9	388.2	377.3	10.86	35.748	
2,300.0	2,275.2	2,210.3	2,190.1	6.5	6.2	109.10	291.9	-227.5	409.0	397.7	11.35	36.048	
2,400.0	2,370.1	2,301.9	2,279.5	7.1	6.6	112.26	310.4	-234.6	442.0	429.9	12.10	36.530	
2,500.0	2,464.9	2,393.5	2,369.0	7.7	7.0	114.99	328.8	-241.7	476.0	463.2	12.86	37.026	
2,600.0	2,559.7	2,485.1	2,458.4	8.3	7.4	117.38	347.3	-248.8	510.9	497.3	13.62	37.521	
2,700.0	2,654.5	2,576.7	2,547.9	8.9	7.8	119.47	365.8	-255.9	546.6	532.2	14.38	38.005	
2,800.0	2,749.3	2,668.4	2,637.4	9.5	8.2	121.31	384.2	-262.9	582.8	567.7	15.15	38.474	
2,900.0	2,844.2	2,760.0	2,726.8	10.2	8.6	122.94	402.7	-270.0	619.5	603.6	15.92	38.923	
3,000.0	2,939.0	2,851.6	2,816.3	10.8	9.0	124.39	421.2	-277.1	656.6	639.9	16.68	39.352	
3,100.0	3,033.8	2,943.2	2,905.7	11.5	9.5	125.69	439.6	-284.2	694.0	676.6	17.46	39.760	
3,200.0	3,128.6	3,034.8	2,995.2	12.1	9.9	126.86	458.1	-291.3	731.7	713.5	18.23	40.147	
3,300.0	3,223.4	3,126.4	3,084.6	12.8	10.3	127.91	476.6	-298.4	769.7	750.7	19.00	40.513	
3,400.0	3,318.3	3,218.0	3,174.1	13.4	10.7	128.87	495.0	-305.5	807.8	788.1	19.77	40.859	
3,500.0	3,413.1	3,309.6	3,263.5	14.1	11.1	129.74	513.5	-312.5	846.2	825.6	20.54	41.187	
3,600.0	3,507.9	3,401.3	3,353.0	14.7	11.5	130.54	532.0	-319.6	884.6	863.3	21.32	41.497	
3,700.0	3,602.7	3,492.9	3,442.4	15.4	11.9	131.27	550.4	-326.7	923.3	901.2	22.09	41.791	
3,800.0	3,697.6	3,584.5	3,531.9	16.1	12.4	131.95	568.9	-333.8	962.0	939.1	22.87	42.069	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 19N-432 - Wellbore #1 - Plan #3 (7-16-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+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	-68.82	58.3	-150.4	161.3				
100.0	100.0	100.0	100.0	0.1	0.1	-68.82	58.3	-150.4	161.3	161.1	0.22	717.781	
200.0	200.0	200.0	200.0	0.3	0.3	-68.82	58.3	-150.4	161.3	160.7	0.67	239.260	
300.0	300.0	300.0	300.0	0.6	0.6	-68.82	58.3	-150.4	161.3	160.2	1.12	143.556	
400.0	400.0	400.0	400.0	0.8	0.8	-68.82	58.3	-150.4	161.3	159.8	1.57	102.540	
500.0	500.0	500.0	500.0	1.0	1.0	-68.82	58.3	-150.4	161.3	159.3	2.02	79.753	
600.0	600.0	600.0	600.0	1.2	1.2	-68.82	58.3	-150.4	161.3	158.9	2.47	65.253	
700.0	700.0	700.0	700.0	1.5	1.5	-68.82	58.3	-150.4	161.3	158.4	2.92	55.214	
800.0	800.0	800.0	800.0	1.7	1.7	-68.82	58.3	-150.4	161.3	158.0	3.37	47.852	
900.0	900.0	900.0	900.0	1.9	1.9	-68.82	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	-68.82	58.3	-150.4	161.3	157.1	4.27	37.778	
1,100.0	1,100.0	1,097.9	1,097.9	2.3	2.4	50.88	59.0	-150.8	161.2	156.5	4.69	34.345	
1,200.0	1,199.9	1,195.6	1,195.6	2.5	2.6	52.51	61.2	-152.0	160.7	155.6	5.10	31.533	
1,300.0	1,299.7	1,293.1	1,293.0	2.7	2.8	55.24	64.9	-154.0	160.3	154.8	5.51	29.085	
1,351.4	1,350.9	1,343.1	1,342.9	2.8	2.9	57.07	67.3	-155.3	160.2	154.5	5.73	27.954 CC	
1,400.0	1,399.3	1,390.3	1,390.0	3.0	3.0	59.05	70.0	-156.8	160.3	154.4	5.94	26.989 ES	
1,500.0	1,498.6	1,486.9	1,486.3	3.2	3.2	63.87	76.5	-160.3	161.4	155.0	6.39	25.256	
1,600.0	1,597.5	1,582.9	1,581.9	3.5	3.5	69.54	84.3	-164.6	164.3	157.4	6.87	23.909	
1,700.0	1,696.1	1,678.2	1,676.6	3.8	3.7	75.83	93.5	-169.6	169.9	162.5	7.39	22.976	
1,800.0	1,794.2	1,772.6	1,770.3	4.1	4.0	82.42	104.0	-175.2	178.8	170.9	7.96	22.474	
1,900.0	1,891.7	1,866.1	1,862.8	4.5	4.2	88.94	115.7	-181.6	191.7	183.2	8.56	22.399 SF	
2,000.0	1,988.6	1,958.5	1,954.1	4.9	4.5	95.10	128.6	-188.6	209.0	199.8	9.20	22.715	
2,100.0	2,084.9	2,052.5	2,046.7	5.4	4.8	100.88	142.6	-196.2	230.2	220.3	9.87	23.313	
2,200.0	2,180.4	2,146.6	2,139.4	5.9	5.1	106.16	156.7	-203.8	254.4	243.8	10.57	24.069	
2,234.6	2,213.2	2,178.9	2,171.2	6.1	5.2	107.86	161.6	-206.5	263.5	252.6	10.81	24.361	
2,300.0	2,275.2	2,240.0	2,231.4	6.5	5.4	111.07	170.7	-211.4	281.4	270.1	11.28	24.941	
2,400.0	2,370.1	2,333.4	2,323.4	7.1	5.7	115.27	184.7	-219.0	310.1	298.2	11.99	25.866	
2,500.0	2,464.9	2,426.7	2,415.4	7.7	6.1	118.77	198.7	-226.6	340.3	327.6	12.70	26.798	
2,600.0	2,559.7	2,520.1	2,507.4	8.3	6.4	121.72	212.6	-234.2	371.4	358.0	13.40	27.708	
2,700.0	2,654.5	2,613.5	2,599.5	8.9	6.7	124.22	226.6	-241.7	403.3	389.2	14.11	28.583	
2,800.0	2,749.3	2,706.9	2,691.5	9.5	7.0	126.36	240.6	-249.3	435.8	421.0	14.82	29.414	
2,900.0	2,844.2	2,800.2	2,783.5	10.2	7.4	128.21	254.6	-256.9	468.8	453.3	15.52	30.198	
3,000.0	2,939.0	2,893.6	2,875.5	10.8	7.7	129.81	268.6	-264.5	502.2	485.9	16.23	30.934	
3,100.0	3,033.8	2,987.0	2,967.5	11.5	8.1	131.22	282.5	-272.1	535.9	518.9	16.94	31.625	
3,200.0	3,128.6	3,080.3	3,059.5	12.1	8.4	132.47	296.5	-279.7	569.8	552.1	17.66	32.272	
3,300.0	3,223.4	3,173.7	3,151.5	12.8	8.8	133.57	310.5	-287.3	604.0	585.6	18.37	32.877	
3,400.0	3,318.3	3,267.1	3,243.5	13.4	9.1	134.56	324.5	-294.8	638.3	619.2	19.09	33.444	
3,500.0	3,413.1	3,360.5	3,335.5	14.1	9.4	135.45	338.5	-302.4	672.8	653.0	19.80	33.975	
3,600.0	3,507.9	3,453.8	3,427.5	14.7	9.8	136.25	352.4	-310.0	707.4	686.9	20.52	34.473	
3,700.0	3,602.7	3,547.2	3,519.5	15.4	10.1	136.98	366.4	-317.6	742.1	720.9	21.24	34.940	
3,800.0	3,697.6	3,640.6	3,611.5	16.1	10.5	137.64	380.4	-325.2	777.0	755.0	21.96	35.379	
3,900.0	3,792.4	3,734.0	3,703.6	16.7	10.8	138.25	394.4	-332.8	811.9	789.2	22.68	35.792	
4,000.0	3,887.2	3,827.3	3,795.6	17.4	11.2	138.81	408.4	-340.3	846.9	823.5	23.41	36.182	
4,100.0	3,982.0	3,920.7	3,887.6	18.1	11.6	139.32	422.4	-347.9	881.9	857.8	24.13	36.549	
4,200.0	4,076.8	4,014.1	3,979.6	18.7	11.9	139.79	436.3	-355.5	917.0	892.2	24.86	36.895	
4,300.0	4,171.7	4,107.4	4,071.6	19.4	12.3	140.23	450.3	-363.1	952.2	926.6	25.58	37.223	
4,400.0	4,266.5	4,200.8	4,163.6	20.1	12.6	140.64	464.3	-370.7	987.4	961.1	26.31	37.533	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-212 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-1.75	91.1	-2.8	91.1				
100.0	100.0	100.0	100.0	0.1	0.1	-1.75	91.1	-2.8	91.1	90.9	0.22	405.401	
200.0	200.0	200.0	200.0	0.3	0.3	-1.75	91.1	-2.8	91.1	90.4	0.67	135.134	
300.0	300.0	300.0	300.0	0.6	0.6	-1.75	91.1	-2.8	91.1	90.0	1.12	81.080	
400.0	400.0	400.0	400.0	0.8	0.8	-1.75	91.1	-2.8	91.1	89.5	1.57	57.914	
500.0	500.0	500.0	500.0	1.0	1.0	-1.75	91.1	-2.8	91.1	89.1	2.02	45.045	
600.0	600.0	600.0	600.0	1.2	1.2	-1.75	91.1	-2.8	91.1	88.6	2.47	36.855	
700.0	700.0	700.0	700.0	1.5	1.5	-1.75	91.1	-2.8	91.1	88.2	2.92	31.185	
800.0	800.0	800.0	800.0	1.7	1.7	-1.75	91.1	-2.8	91.1	87.7	3.37	27.027	
900.0	900.0	900.0	900.0	1.9	1.9	-1.75	91.1	-2.8	91.1	87.3	3.82	23.847	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-1.75	91.1	-2.8	91.1	86.8	4.27	21.337 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	118.12	91.1	-2.8	91.7	87.0	4.70	19.518	
1,200.0	1,199.9	1,199.9	1,199.9	2.5	2.6	120.21	91.1	-2.8	93.6	88.5	5.12	18.307	
1,300.0	1,299.7	1,299.7	1,299.7	2.7	2.8	123.50	91.1	-2.8	97.1	91.6	5.54	17.529	
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	127.69	91.1	-2.8	102.4	96.5	5.97	17.153	
1,500.0	1,498.6	1,498.6	1,498.6	3.2	3.3	132.44	91.1	-2.8	110.1	103.6	6.41	17.160	
1,600.0	1,597.5	1,597.9	1,597.9	3.5	3.5	136.99	91.2	-3.6	120.1	113.2	6.85	17.537	
1,700.0	1,696.1	1,697.2	1,697.2	3.8	3.7	140.79	91.5	-6.1	132.4	125.1	7.28	18.190	
1,800.0	1,794.2	1,796.6	1,796.4	4.1	3.9	143.87	92.1	-10.4	146.8	139.1	7.72	19.019	
1,900.0	1,891.7	1,895.8	1,895.5	4.5	4.1	146.31	93.0	-16.3	163.1	155.0	8.17	19.971	
2,000.0	1,988.6	1,995.1	1,994.4	4.9	4.3	148.20	94.0	-24.0	181.3	172.7	8.63	21.001	
2,100.0	2,084.9	2,094.2	2,093.1	5.4	4.5	149.64	95.3	-33.3	201.2	192.1	9.11	22.074	
2,200.0	2,180.4	2,193.2	2,191.5	5.9	4.8	150.73	96.8	-44.3	222.7	213.1	9.61	23.163	
2,234.6	2,213.2	2,227.5	2,225.5	6.1	4.9	151.03	97.4	-48.5	230.5	220.7	9.79	23.540	
2,300.0	2,275.2	2,291.5	2,289.0	6.5	5.0	151.59	98.6	-56.7	245.4	235.3	10.16	24.156	
2,400.0	2,370.1	2,388.8	2,385.5	7.1	5.3	152.31	100.3	-69.3	268.2	257.5	10.73	24.993	
2,500.0	2,464.9	2,486.1	2,482.0	7.7	5.6	152.91	102.1	-81.9	291.0	279.7	11.32	25.721	
2,600.0	2,559.7	2,583.5	2,578.5	8.3	5.8	153.43	103.8	-94.4	313.9	302.0	11.91	26.361	
2,700.0	2,654.5	2,680.8	2,674.9	8.9	6.1	153.88	105.6	-107.0	336.8	324.3	12.51	26.926	
2,800.0	2,749.3	2,778.1	2,771.4	9.5	6.4	154.27	107.3	-119.6	359.6	346.5	13.11	27.427	
2,900.0	2,844.2	2,875.4	2,867.9	10.2	6.7	154.62	109.1	-132.2	382.5	368.8	13.72	27.873	
3,000.0	2,939.0	2,972.7	2,964.4	10.8	7.0	154.92	110.8	-144.7	405.5	391.1	14.34	28.273	
3,100.0	3,033.8	3,070.0	3,060.9	11.5	7.3	155.19	112.6	-157.3	428.4	413.4	14.96	28.632	
3,200.0	3,128.6	3,167.4	3,157.4	12.1	7.6	155.44	114.3	-169.9	451.3	435.7	15.59	28.957	
3,300.0	3,223.4	3,264.7	3,253.9	12.8	7.9	155.66	116.1	-182.5	474.3	458.0	16.21	29.251	
3,400.0	3,318.3	3,362.0	3,350.4	13.4	8.2	155.86	117.8	-195.0	497.2	480.4	16.84	29.518	
3,500.0	3,413.1	3,459.3	3,446.8	14.1	8.5	156.04	119.6	-207.6	520.1	502.7	17.48	29.762	
3,600.0	3,507.9	3,556.6	3,543.3	14.7	8.8	156.21	121.3	-220.2	543.1	525.0	18.11	29.985	
3,700.0	3,602.7	3,654.0	3,639.8	15.4	9.1	156.37	123.1	-232.8	566.1	547.3	18.75	30.191	
3,800.0	3,697.6	3,751.3	3,736.3	16.1	9.4	156.51	124.8	-245.4	589.0	569.6	19.39	30.380	
3,900.0	3,792.4	3,848.6	3,832.8	16.7	9.7	156.64	126.6	-257.9	612.0	592.0	20.03	30.554	
4,000.0	3,887.2	3,945.9	3,929.3	17.4	10.0	156.76	128.3	-270.5	635.0	614.3	20.67	30.716	
4,100.0	3,982.0	4,043.2	4,025.8	18.1	10.3	156.88	130.1	-283.1	657.9	636.6	21.32	30.865	
4,200.0	4,076.8	4,140.5	4,122.2	18.7	10.6	156.98	131.8	-295.7	680.9	658.9	21.96	31.005	
4,300.0	4,171.7	4,237.9	4,218.7	19.4	10.9	157.08	133.6	-308.2	703.9	681.3	22.61	31.135	
4,400.0	4,266.5	4,335.2	4,315.2	20.1	11.3	157.17	135.3	-320.8	726.8	703.6	23.25	31.256	
4,500.0	4,361.3	4,432.5	4,411.7	20.7	11.6	157.26	137.1	-333.4	749.8	725.9	23.90	31.370	
4,600.0	4,456.1	4,529.8	4,508.2	21.4	11.9	157.34	138.8	-346.0	772.8	748.3	24.55	31.476	
4,700.0	4,551.0	4,627.1	4,604.7	22.1	12.2	157.42	140.6	-358.5	795.8	770.6	25.20	31.577	
4,800.0	4,645.8	4,724.4	4,701.2	22.7	12.5	157.49	142.3	-371.1	818.8	792.9	25.85	31.671	
4,900.0	4,740.6	4,821.8	4,797.6	23.4	12.8	157.56	144.1	-383.7	841.8	815.3	26.50	31.759	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-212 - 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
5,000.0	4,835.4	4,919.1	4,894.1	24.1	13.1	157.63	145.8	-396.3	864.7	837.6	27.16	31.843	
5,100.0	4,930.2	5,016.4	4,990.6	24.7	13.5	157.69	147.6	-408.8	887.7	859.9	27.81	31.922	
5,110.4	4,940.1	5,026.5	5,000.6	24.8	13.5	157.69	147.7	-410.2	890.1	862.2	27.88	31.930	
5,200.0	5,025.5	5,114.0	5,087.4	25.3	13.8	157.86	149.3	-421.5	909.4	880.9	28.51	31.899	
5,300.0	5,121.8	5,212.3	5,184.8	25.8	14.1	157.94	151.1	-434.2	928.0	898.8	29.18	31.808	
5,400.0	5,218.9	5,311.0	5,282.7	26.1	14.4	157.92	152.8	-446.9	943.4	913.6	29.82	31.633	
5,500.0	5,316.8	5,410.2	5,381.1	26.5	14.8	157.80	154.6	-459.7	955.6	925.1	30.45	31.381	
5,600.0	5,415.4	5,500.0	5,470.1	26.8	15.0	157.63	156.2	-471.0	964.8	933.8	31.00	31.121	
5,700.0	5,514.4	5,586.8	5,556.5	27.0	15.2	157.51	157.4	-479.6	972.2	940.8	31.43	30.930	
5,800.0	5,613.9	5,671.9	5,641.4	27.3	15.4	157.44	158.2	-485.5	977.9	946.1	31.78	30.768	
5,900.0	5,713.7	5,757.1	5,726.5	27.4	15.5	157.42	158.7	-489.0	981.8	949.8	32.06	30.628	
6,000.0	5,813.7	5,844.3	5,813.7	27.5	15.7	157.45	158.8	-489.9	984.0	951.8	32.27	30.498	
6,036.3	5,850.0	5,880.6	5,850.0	27.6	15.7	38.31	158.8	-489.9	984.2	944.2	40.03	24.586	
6,100.0	5,913.7	5,944.3	5,913.7	27.6	15.8	38.31	158.8	-489.9	984.2	944.0	40.22	24.474	
6,150.9	5,964.5	5,995.1	5,964.5	27.7	15.9	38.31	158.8	-489.9	984.2	943.9	40.36	24.384	
6,200.0	6,013.6	6,027.9	5,997.3	27.7	16.0	-51.76	158.8	-489.6	983.6	950.9	32.69	30.086	
6,250.0	6,063.4	6,050.0	6,019.4	27.7	16.0	-51.90	158.8	-488.7	982.0	949.4	32.62	30.105	
6,300.0	6,112.7	6,083.5	6,052.8	27.7	16.0	-52.17	158.8	-486.1	979.5	946.9	32.54	30.105	
6,350.0	6,161.4	6,111.4	6,080.4	27.6	16.1	-52.52	158.8	-482.8	976.1	943.7	32.42	30.104	
6,400.0	6,209.3	6,150.0	6,118.6	27.5	16.1	-53.03	158.8	-476.6	972.0	939.7	32.33	30.063	
6,450.0	6,256.1	6,167.1	6,135.4	27.4	16.1	-53.48	158.8	-473.2	966.8	934.6	32.19	30.036	
6,500.0	6,301.6	6,200.0	6,167.4	27.3	16.1	-54.15	158.8	-465.7	961.0	928.9	32.11	29.929	
6,550.0	6,345.8	6,223.1	6,189.6	27.1	16.1	-54.81	158.8	-459.7	954.4	922.3	32.03	29.799	
6,600.0	6,388.2	6,250.0	6,215.3	27.0	16.1	-55.61	158.8	-451.7	947.0	915.0	32.00	29.590	
6,650.0	6,428.9	6,279.2	6,242.9	26.9	16.0	-56.53	158.8	-442.0	939.0	906.9	32.05	29.296	
6,700.0	6,467.6	6,300.0	6,262.3	26.7	16.0	-57.41	158.8	-434.5	930.4	898.3	32.13	28.954	
6,750.0	6,504.1	6,335.6	6,295.0	26.6	16.0	-58.64	158.8	-420.5	921.2	888.8	32.38	28.446	
6,800.0	6,538.3	6,364.0	6,320.6	26.5	16.0	-59.83	158.8	-408.2	911.5	878.8	32.69	27.881	
6,850.0	6,570.1	6,400.0	6,352.3	26.4	16.0	-61.30	158.8	-391.2	901.4	868.2	33.16	27.184	
6,900.0	6,599.3	6,421.0	6,370.5	26.3	15.9	-62.51	158.8	-380.7	890.9	857.3	33.62	26.497	
6,950.0	6,625.7	6,450.0	6,395.0	26.3	15.9	-64.00	158.8	-365.2	880.2	845.9	34.25	25.700	
7,000.0	6,649.3	6,478.5	6,418.6	26.3	15.9	-65.55	158.8	-349.2	869.3	834.3	34.97	24.859	
7,050.0	6,670.0	6,500.0	6,436.0	26.3	15.9	-66.96	158.8	-336.5	858.5	822.8	35.71	24.042	
7,100.0	6,687.7	6,536.6	6,464.7	26.4	15.9	-68.92	158.8	-313.8	847.6	810.9	36.68	23.109	
7,150.0	6,702.2	6,566.0	6,486.9	26.6	15.9	-70.71	158.8	-294.6	836.9	799.3	37.64	22.237	
7,200.0	6,713.6	6,600.0	6,511.7	26.8	16.0	-72.73	158.8	-271.4	826.6	787.9	38.69	21.366	
7,250.0	6,721.8	6,625.4	6,529.6	27.1	16.0	-74.46	158.8	-253.2	816.8	777.1	39.69	20.578	
7,300.0	6,726.8	6,650.0	6,546.3	27.4	16.1	-76.16	158.8	-235.2	807.5	766.8	40.69	19.846	
7,350.0	6,728.5	6,686.0	6,569.6	27.8	16.2	-78.37	158.8	-207.8	799.0	757.2	41.83	19.100	
7,357.9	6,728.4	6,690.9	6,572.7	27.9	16.2	-78.68	158.8	-204.0	797.7	755.7	42.00	18.993	
7,400.0	6,728.1	6,717.4	6,588.9	28.3	16.3	-79.86	158.8	-183.0	791.6	748.8	42.79	18.498	
7,500.0	6,727.1	6,786.5	6,627.7	29.4	16.7	-82.71	158.8	-125.9	781.1	736.2	44.90	17.396	
7,600.0	6,726.2	6,864.5	6,665.1	30.8	17.3	-85.49	158.8	-57.5	775.3	728.0	47.35	16.373	
7,700.0	6,725.3	6,951.1	6,698.2	32.4	18.2	-87.99	158.8	22.5	772.9	722.7	50.17	15.405	
7,800.0	6,724.4	7,045.4	6,723.6	34.1	19.4	-89.95	158.8	113.2	772.3	718.9	53.40	14.463	
7,803.4	6,724.3	7,048.7	6,724.3	34.2	19.5	-90.00	158.8	116.5	772.3	718.8	53.52	14.431	
7,900.0	6,723.4	7,145.1	6,738.2	36.1	21.0	-91.10	158.8	211.8	772.5	715.4	57.03	13.545	
8,000.0	6,722.5	7,246.6	6,740.4	38.2	22.9	-91.33	158.8	313.2	772.5	711.6	60.99	12.666	
8,100.0	6,721.6	7,346.6	6,739.4	40.3	24.9	-91.32	158.8	413.2	772.5	707.4	65.18	11.853	
8,200.0	6,720.7	7,446.6	6,738.4	42.6	27.0	-91.32	158.8	513.2	772.5	703.0	69.58	11.103	
8,300.0	6,719.7	7,546.6	6,737.4	44.9	29.3	-91.31	158.8	613.2	772.5	698.4	74.15	10.418	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19O-212 - Wellbore #1 - Plan #3 (7-15-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
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	6,718.8	7,646.6	6,736.4	47.3	31.6	-91.31	158.8	713.2	772.5	693.7	78.87	9.795		
8,500.0	6,717.9	7,746.6	6,735.4	49.7	34.0	-91.30	158.8	813.2	772.5	688.8	83.70	9.229		
8,600.0	6,717.0	7,846.6	6,734.4	52.2	36.5	-91.30	158.8	913.2	772.5	683.9	88.63	8.716		
8,700.0	6,716.0	7,946.6	6,733.4	54.7	39.0	-91.29	158.8	1,013.2	772.5	678.9	93.64	8.250		
8,800.0	6,715.1	8,046.6	6,732.4	57.2	41.5	-91.29	158.8	1,113.2	772.5	673.8	98.72	7.825		
8,900.0	6,714.2	8,146.6	6,731.4	59.7	44.1	-91.28	158.8	1,213.2	772.5	668.7	103.85	7.439		
9,000.0	6,713.3	8,246.6	6,730.5	62.3	46.7	-91.28	158.8	1,313.2	772.5	663.5	109.04	7.085		
9,100.0	6,712.3	8,346.6	6,729.5	64.9	49.4	-91.27	158.8	1,413.2	772.5	658.3	114.26	6.761		
9,200.0	6,711.4	8,446.6	6,728.5	67.5	52.0	-91.27	158.8	1,513.2	772.5	653.0	119.52	6.464		
9,300.0	6,710.5	8,546.6	6,727.5	70.2	54.7	-91.26	158.8	1,613.2	772.5	647.7	124.81	6.190		
9,400.0	6,709.6	8,646.6	6,726.5	72.8	57.4	-91.25	158.8	1,713.2	772.5	642.4	130.13	5.937		
9,500.0	6,708.6	8,746.6	6,725.5	75.5	60.0	-91.25	158.8	1,813.2	772.5	637.0	135.47	5.702		
9,600.0	6,707.7	8,846.6	6,724.5	78.1	62.7	-91.24	158.8	1,913.1	772.5	631.7	140.84	5.485		
9,700.0	6,706.8	8,946.6	6,723.5	80.8	65.5	-91.24	158.8	2,013.1	772.5	626.3	146.22	5.283		
9,800.0	6,705.9	9,046.6	6,722.5	83.5	68.2	-91.23	158.8	2,113.1	772.5	620.9	151.62	5.095		
9,900.0	6,704.9	9,146.6	6,721.5	86.2	70.9	-91.23	158.8	2,213.1	772.5	615.5	157.03	4.919		
10,000.0	6,704.0	9,246.6	6,720.5	88.9	73.6	-91.22	158.8	2,313.1	772.5	610.1	162.46	4.755		
10,100.0	6,703.1	9,346.6	6,719.5	91.6	76.4	-91.22	158.8	2,413.1	772.5	604.6	167.90	4.601		
10,200.0	6,702.2	9,446.6	6,718.5	94.3	79.1	-91.21	158.8	2,513.1	772.5	599.2	173.36	4.456		
10,300.0	6,701.2	9,546.6	6,717.5	97.0	81.9	-91.21	158.8	2,613.1	772.5	593.7	178.82	4.320		
10,400.0	6,700.3	9,646.6	6,716.5	99.7	84.6	-91.20	158.8	2,713.1	772.5	588.2	184.29	4.192		
10,500.0	6,699.4	9,746.6	6,715.5	102.5	87.4	-91.20	158.8	2,813.1	772.5	582.7	189.77	4.071		
10,600.0	6,698.5	9,846.6	6,714.5	105.2	90.1	-91.19	158.8	2,913.1	772.5	577.2	195.26	3.956		
10,700.0	6,697.5	9,946.6	6,713.5	107.9	92.9	-91.19	158.8	3,013.1	772.5	571.7	200.75	3.848		
10,800.0	6,696.6	10,046.6	6,712.5	110.7	95.6	-91.18	158.8	3,113.1	772.5	566.2	206.25	3.745		
10,900.0	6,695.7	10,146.6	6,711.6	113.4	98.4	-91.18	158.8	3,213.1	772.5	560.7	211.76	3.648		
11,000.0	6,694.8	10,246.6	6,710.6	116.1	101.2	-91.17	158.8	3,313.1	772.5	555.2	217.28	3.555		
11,100.0	6,693.8	10,346.6	6,709.6	118.9	104.0	-91.17	158.8	3,413.1	772.5	549.7	222.79	3.467		
11,200.0	6,692.9	10,446.6	6,708.6	121.6	106.7	-91.16	158.8	3,513.1	772.5	544.2	228.32	3.383		
11,300.0	6,692.0	10,546.6	6,707.6	124.4	109.5	-91.16	158.8	3,613.1	772.5	538.6	233.85	3.303		
11,400.0	6,691.1	10,646.6	6,706.6	127.2	112.3	-91.15	158.8	3,713.1	772.5	533.1	239.38	3.227		
11,500.0	6,690.1	10,746.6	6,705.6	129.9	115.1	-91.15	158.8	3,813.1	772.5	527.6	244.91	3.154		
11,600.0	6,689.2	10,846.6	6,704.6	132.7	117.8	-91.14	158.8	3,913.0	772.5	522.0	250.45	3.084		
11,700.0	6,688.3	10,946.6	6,703.6	135.4	120.6	-91.14	158.8	4,013.0	772.5	516.5	256.00	3.018		
11,800.0	6,687.4	11,046.6	6,702.6	138.2	123.4	-91.13	158.8	4,113.0	772.5	510.9	261.54	2.954		
11,900.0	6,686.4	11,146.6	6,701.6	141.0	126.2	-91.13	158.8	4,213.0	772.5	505.4	267.09	2.892		
12,000.0	6,685.5	11,246.6	6,700.6	143.7	129.0	-91.12	158.8	4,313.0	772.5	499.8	272.64	2.833		
12,100.0	6,684.6	11,346.6	6,699.6	146.5	131.8	-91.12	158.8	4,413.0	772.5	494.3	278.20	2.777		
12,200.0	6,683.7	11,446.6	6,698.6	149.3	134.5	-91.11	158.8	4,513.0	772.5	488.7	283.75	2.722		
12,300.0	6,682.7	11,546.6	6,697.6	152.0	137.3	-91.10	158.8	4,613.0	772.5	483.2	289.31	2.670		
12,400.0	6,681.8	11,646.6	6,696.6	154.8	140.1	-91.10	158.8	4,713.0	772.5	477.6	294.88	2.620		
12,500.0	6,680.9	11,746.6	6,695.6	157.6	142.9	-91.09	158.8	4,813.0	772.5	472.0	300.44	2.571		
12,600.0	6,680.0	11,846.6	6,694.6	160.4	145.7	-91.09	158.8	4,913.0	772.5	466.5	306.01	2.524		
12,700.0	6,679.0	11,946.6	6,693.6	163.2	148.5	-91.08	158.8	5,013.0	772.5	460.9	311.57	2.479		
12,800.0	6,678.1	12,046.6	6,692.7	165.9	151.3	-91.08	158.8	5,113.0	772.5	455.3	317.14	2.436		
12,900.0	6,677.2	12,146.6	6,691.7	168.7	154.1	-91.07	158.8	5,213.0	772.5	449.8	322.71	2.394		
13,000.0	6,676.3	12,246.6	6,690.7	171.5	156.9	-91.07	158.8	5,313.0	772.5	444.2	328.29	2.353		
13,100.0	6,675.3	12,346.6	6,689.7	174.3	159.7	-91.06	158.8	5,413.0	772.5	438.6	333.86	2.314		
13,200.0	6,674.4	12,446.6	6,688.7	177.1	162.5	-91.06	158.8	5,513.0	772.5	433.0	339.44	2.276		
13,300.0	6,673.5	12,546.6	6,687.7	179.8	165.3	-91.05	158.8	5,613.0	772.5	427.5	345.01	2.239		
13,400.0	6,672.6	12,646.6	6,686.7	182.6	168.0	-91.05	158.8	5,713.0	772.5	421.9	350.59	2.203		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-212 - 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			
13,500.0	6,671.6	12,746.6	6,685.7	185.4	170.8	-91.04	158.8	5,813.0	772.5	416.3	356.17	2.169			
13,600.0	6,670.7	12,846.6	6,684.7	188.2	173.6	-91.04	158.8	5,912.9	772.5	410.7	361.75	2.135			
13,700.0	6,669.8	12,946.6	6,683.7	191.0	176.4	-91.03	158.8	6,012.9	772.5	405.1	367.33	2.103			
13,800.0	6,668.9	13,046.6	6,682.7	193.8	179.2	-91.03	158.8	6,112.9	772.5	399.5	372.92	2.071			
13,900.0	6,667.9	13,146.6	6,681.7	196.5	182.0	-91.02	158.8	6,212.9	772.5	394.0	378.50	2.041			
14,000.0	6,667.0	13,246.6	6,680.7	199.3	184.8	-91.02	158.8	6,312.9	772.5	388.4	384.09	2.011			
14,100.0	6,666.1	13,346.6	6,679.7	202.1	187.6	-91.01	158.8	6,412.9	772.5	382.8	389.67	1.982			
14,200.0	6,665.2	13,446.6	6,678.7	204.9	190.4	-91.01	158.8	6,512.9	772.5	377.2	395.26	1.954			
14,300.0	6,664.2	13,546.6	6,677.7	207.7	193.2	-91.00	158.8	6,612.9	772.5	371.6	400.85	1.927			
14,400.0	6,663.3	13,646.6	6,676.7	210.5	196.0	-91.00	158.8	6,712.9	772.5	366.0	406.44	1.901			
14,500.0	6,662.4	13,746.6	6,675.7	213.3	198.8	-90.99	158.8	6,812.9	772.5	360.4	412.03	1.875			
14,600.0	6,661.5	13,846.6	6,674.7	216.1	201.6	-90.99	158.8	6,912.9	772.5	354.8	417.62	1.850			
14,700.0	6,660.5	13,946.6	6,673.7	218.9	204.4	-90.98	158.8	7,012.9	772.4	349.2	423.21	1.825			
14,800.0	6,659.6	14,046.6	6,672.8	221.7	207.2	-90.98	158.8	7,112.9	772.4	343.6	428.80	1.801			
14,900.0	6,658.7	14,146.6	6,671.8	224.5	210.0	-90.97	158.8	7,212.9	772.4	338.1	434.39	1.778			
15,000.0	6,657.8	14,246.6	6,670.8	227.2	212.8	-90.96	158.8	7,312.9	772.4	332.5	439.99	1.756			
15,100.0	6,656.8	14,346.6	6,669.8	230.0	215.6	-90.96	158.8	7,412.9	772.4	326.9	445.58	1.734			
15,200.0	6,655.9	14,446.6	6,668.8	232.8	218.4	-90.95	158.8	7,512.9	772.4	321.3	451.17	1.712			
15,300.0	6,655.0	14,546.6	6,667.8	235.6	221.2	-90.95	158.8	7,612.9	772.4	315.7	456.77	1.691			
15,400.0	6,654.1	14,646.6	6,666.8	238.4	224.0	-90.94	158.8	7,712.9	772.4	310.1	462.37	1.671			
15,500.0	6,653.1	14,746.6	6,665.8	241.2	226.8	-90.94	158.8	7,812.9	772.4	304.5	467.96	1.651			
15,600.0	6,652.2	14,846.6	6,664.8	244.0	229.6	-90.93	158.8	7,912.9	772.4	298.9	473.56	1.631			
15,700.0	6,651.3	14,946.6	6,663.8	246.8	232.4	-90.93	158.8	8,012.8	772.4	293.3	479.16	1.612			
15,800.0	6,650.4	15,046.6	6,662.8	249.6	235.2	-90.92	158.8	8,112.8	772.4	287.7	484.75	1.593			
15,900.0	6,649.4	15,146.6	6,661.8	252.4	238.0	-90.92	158.8	8,212.8	772.4	282.1	490.35	1.575			
16,000.0	6,648.5	15,246.6	6,660.8	255.2	240.8	-90.91	158.8	8,312.8	772.4	276.5	495.95	1.557			
16,100.0	6,647.6	15,346.6	6,659.8	258.0	243.6	-90.91	158.8	8,412.8	772.4	270.9	501.55	1.540			
16,200.0	6,646.7	15,446.6	6,658.8	260.8	246.4	-90.90	158.8	8,512.8	772.4	265.3	507.15	1.523			
16,300.0	6,645.7	15,546.6	6,657.8	263.6	249.2	-90.90	158.8	8,612.8	772.4	259.7	512.75	1.506			
16,400.0	6,644.8	15,646.6	6,656.8	266.4	252.0	-90.89	158.8	8,712.8	772.4	254.1	518.35	1.490 Level 3			
16,500.0	6,643.9	15,746.6	6,655.8	269.2	254.9	-90.89	158.8	8,812.8	772.4	248.5	523.95	1.474 Level 3			
16,600.0	6,643.0	15,846.6	6,654.8	272.0	257.7	-90.88	158.8	8,912.8	772.4	242.9	529.55	1.459 Level 3			
16,700.0	6,642.0	15,946.6	6,653.9	274.8	260.5	-90.88	158.8	9,012.8	772.4	237.3	535.16	1.443 Level 3			
16,800.0	6,641.1	16,046.6	6,652.9	277.6	263.3	-90.87	158.8	9,112.8	772.4	231.7	540.76	1.428 Level 3			
16,900.0	6,640.2	16,146.6	6,651.9	280.4	266.1	-90.87	158.8	9,212.8	772.4	226.1	546.36	1.414 Level 3			
17,000.0	6,639.3	16,246.6	6,650.9	283.2	268.9	-90.86	158.8	9,312.8	772.4	220.5	551.96	1.399 Level 3			
17,100.0	6,638.3	16,346.6	6,649.9	286.0	271.7	-90.86	158.8	9,412.8	772.4	214.9	557.57	1.385 Level 3			
17,200.0	6,637.4	16,446.6	6,648.9	288.8	274.5	-90.85	158.8	9,512.8	772.4	209.3	563.17	1.372 Level 3			
17,300.0	6,636.5	16,546.6	6,647.9	291.6	277.3	-90.85	158.8	9,612.8	772.4	203.6	568.77	1.358 Level 3			
17,400.0	6,635.6	16,646.6	6,646.9	294.4	280.1	-90.84	158.8	9,712.8	772.4	198.0	574.38	1.345 Level 3			
17,500.0	6,634.6	16,746.6	6,645.9	297.2	282.9	-90.84	158.8	9,812.8	772.4	192.4	579.98	1.332 Level 3			
17,600.0	6,633.7	16,846.6	6,644.9	300.0	285.7	-90.83	158.8	9,912.8	772.4	186.8	585.59	1.319 Level 3			
17,700.0	6,632.8	16,946.6	6,643.9	302.8	288.5	-90.83	158.8	10,012.7	772.4	181.2	591.19	1.307 Level 3			
17,800.0	6,631.9	17,046.6	6,642.9	305.6	291.3	-90.82	158.8	10,112.7	772.4	175.6	596.80	1.294 Level 3			
17,900.0	6,630.9	17,146.6	6,641.9	308.4	294.1	-90.81	158.8	10,212.7	772.4	170.0	602.40	1.282 Level 3			
17,969.1	6,630.3	17,215.7	6,641.2	310.3	296.0	-90.81	158.8	10,281.8	772.4	166.1	606.27	1.274 Level 3			
18,000.8	6,630.0	17,238.6	6,641.0	311.2	296.7	-90.81	158.8	10,304.7	772.5	164.7	607.81	1.271 Level 3, SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-302 - 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 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	0.01	61.9	0.0	61.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.01	61.9	0.0	61.9	61.7	0.22	275.507		
200.0	200.0	200.0	200.0	0.3	0.3	0.01	61.9	0.0	61.9	61.3	0.67	91.836		
300.0	300.0	300.0	300.0	0.6	0.6	0.01	61.9	0.0	61.9	60.8	1.12	55.101		
400.0	400.0	400.0	400.0	0.8	0.8	0.01	61.9	0.0	61.9	60.4	1.57	39.358		
500.0	500.0	500.0	500.0	1.0	1.0	0.01	61.9	0.0	61.9	59.9	2.02	30.612		
600.0	600.0	600.0	600.0	1.2	1.2	0.01	61.9	0.0	61.9	59.5	2.47	25.046		
700.0	700.0	700.0	700.0	1.5	1.5	0.01	61.9	0.0	61.9	59.0	2.92	21.193		
800.0	800.0	800.0	800.0	1.7	1.7	0.01	61.9	0.0	61.9	58.6	3.37	18.367		
900.0	900.0	900.0	900.0	1.9	1.9	0.01	61.9	0.0	61.9	58.1	3.82	16.206		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.01	61.9	0.0	61.9	57.7	4.27	14.500 CC		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	120.19	61.9	0.0	62.6	57.9	4.70	13.314		
1,200.0	1,199.9	1,199.9	1,199.9	2.5	2.6	123.17	61.9	0.0	64.6	59.5	5.12	12.637		
1,300.0	1,299.7	1,299.7	1,299.7	2.7	2.8	127.71	61.9	0.0	68.4	62.9	5.54	12.356		
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	133.21	61.9	0.0	74.4	68.4	5.97	12.463		
1,500.0	1,498.6	1,498.6	1,498.6	3.2	3.3	139.04	61.9	0.0	82.9	76.5	6.40	12.947		
1,600.0	1,597.5	1,597.5	1,597.5	3.5	3.5	144.65	61.9	0.0	94.3	87.4	6.84	13.782		
1,700.0	1,696.1	1,696.1	1,696.1	3.8	3.7	149.70	61.9	0.0	108.6	101.3	7.27	14.930		
1,800.0	1,794.2	1,794.2	1,794.2	4.1	3.9	154.05	61.9	0.0	125.8	118.1	7.70	16.345		
1,900.0	1,891.7	1,891.7	1,891.7	4.5	4.1	157.71	61.9	0.0	146.1	138.0	8.12	17.983		
2,000.0	1,988.6	1,988.6	1,988.6	4.9	4.4	160.75	61.9	0.0	169.2	160.6	8.54	19.803		
2,100.0	2,084.9	2,087.5	2,087.5	5.4	4.6	163.22	61.7	-0.6	194.5	185.6	8.95	21.735		
2,200.0	2,180.4	2,186.8	2,186.8	5.9	4.8	165.10	61.0	-2.9	221.1	211.8	9.34	23.668		
2,234.6	2,213.2	2,221.2	2,221.2	6.1	4.8	165.63	60.7	-4.1	230.6	221.1	9.48	24.326		
2,300.0	2,275.2	2,286.6	2,286.6	6.5	5.0	166.56	59.9	-6.9	248.3	238.5	9.77	25.413		
2,400.0	2,370.1	2,387.2	2,386.9	7.1	5.2	167.62	58.1	-12.5	274.2	264.0	10.23	26.808		
2,500.0	2,464.9	2,488.8	2,488.2	7.7	5.4	168.36	55.9	-19.9	298.6	287.9	10.70	27.908		
2,600.0	2,559.7	2,591.2	2,590.1	8.3	5.6	168.86	53.1	-29.2	321.5	310.3	11.18	28.742		
2,700.0	2,654.5	2,694.4	2,692.7	8.9	5.8	169.17	49.8	-40.2	342.7	331.1	11.68	29.337		
2,800.0	2,749.3	2,798.3	2,795.8	9.5	6.1	169.32	45.9	-53.2	362.4	350.2	12.19	29.717		
2,900.0	2,844.2	2,903.0	2,899.2	10.2	6.4	169.35	41.4	-68.0	380.4	367.6	12.72	29.904		
3,000.0	2,939.0	3,003.4	2,998.3	10.8	6.6	169.30	36.7	-83.5	397.1	383.9	13.25	29.975		
3,100.0	3,033.8	3,102.0	3,095.6	11.5	6.9	169.25	32.1	-98.8	413.8	400.0	13.78	30.027		
3,200.0	3,128.6	3,200.6	3,192.9	12.1	7.2	169.20	27.5	-114.1	430.5	416.2	14.32	30.064		
3,300.0	3,223.4	3,299.2	3,290.2	12.8	7.5	169.15	22.8	-129.4	447.2	432.3	14.86	30.087		
3,400.0	3,318.3	3,397.8	3,387.5	13.4	7.8	169.11	18.2	-144.7	463.9	448.5	15.41	30.100		
3,500.0	3,413.1	3,496.4	3,484.8	14.1	8.1	169.08	13.6	-160.0	480.6	464.6	15.96	30.104		
3,600.0	3,507.9	3,595.0	3,582.1	14.7	8.5	169.04	9.0	-175.3	497.3	480.7	16.52	30.102		
3,700.0	3,602.7	3,693.6	3,679.4	15.4	8.8	169.01	4.4	-190.5	513.9	496.9	17.08	30.093		
3,800.0	3,697.6	3,792.2	3,776.7	16.1	9.1	168.98	-0.3	-205.8	530.6	513.0	17.64	30.080		
3,900.0	3,792.4	3,890.8	3,874.0	16.7	9.4	168.95	-4.9	-221.1	547.3	529.1	18.21	30.063		
4,000.0	3,887.2	3,989.4	3,971.3	17.4	9.8	168.92	-9.5	-236.4	564.0	545.2	18.77	30.043		
4,100.0	3,982.0	4,088.0	4,068.6	18.1	10.1	168.89	-14.1	-251.7	580.7	561.4	19.34	30.021		
4,200.0	4,076.8	4,186.5	4,165.9	18.7	10.5	168.87	-18.7	-267.0	597.4	577.5	19.92	29.997		
4,300.0	4,171.7	4,285.1	4,263.2	19.4	10.8	168.85	-23.4	-282.3	614.1	593.6	20.49	29.971		
4,400.0	4,266.5	4,383.7	4,360.4	20.1	11.2	168.83	-28.0	-297.6	630.8	609.7	21.07	29.944		
4,500.0	4,361.3	4,482.3	4,457.7	20.7	11.5	168.81	-32.6	-312.9	647.5	625.8	21.64	29.916		
4,600.0	4,456.1	4,580.9	4,555.0	21.4	11.9	168.79	-37.2	-328.2	664.2	641.9	22.22	29.888		
4,700.0	4,551.0	4,679.5	4,652.3	22.1	12.2	168.77	-41.9	-343.5	680.9	658.1	22.80	29.859		
4,800.0	4,645.8	4,778.1	4,749.6	22.7	12.6	168.75	-46.5	-358.8	697.6	674.2	23.38	29.830		
4,900.0	4,740.6	4,876.7	4,846.9	23.4	12.9	168.73	-51.1	-374.1	714.2	690.3	23.97	29.800		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-302 - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,835.4	4,975.3	4,944.2	24.1	13.3	168.72	-55.7	-389.4	730.9	706.4	24.55	29.771			
5,100.0	4,930.2	5,073.9	5,041.5	24.7	13.7	168.70	-60.3	-404.7	747.6	722.5	25.14	29.742			
5,110.4	4,940.1	5,084.2	5,051.6	24.8	13.7	168.70	-60.8	-406.3	749.4	724.2	25.20	29.739			
5,200.0	5,025.5	5,172.7	5,139.0	25.3	14.0	168.72	-65.0	-420.0	763.0	737.2	25.79	29.579			
5,300.0	5,121.8	5,272.0	5,237.0	25.8	14.4	168.68	-69.6	-435.4	774.9	748.5	26.41	29.339			
5,400.0	5,218.9	5,371.6	5,335.3	26.1	14.7	168.58	-74.3	-450.9	783.5	756.5	27.00	29.017			
5,500.0	5,316.8	5,451.4	5,414.2	26.5	15.0	168.49	-77.7	-462.2	789.9	762.4	27.47	28.760			
5,600.0	5,415.4	5,531.1	5,493.3	26.8	15.2	168.43	-80.5	-471.4	795.4	767.6	27.87	28.539			
5,700.0	5,514.4	5,610.7	5,572.5	27.0	15.3	168.39	-82.6	-478.5	800.1	771.9	28.22	28.350			
5,800.0	5,613.9	5,700.0	5,661.6	27.3	15.5	168.36	-84.3	-484.0	804.0	775.4	28.54	28.174			
5,900.0	5,713.7	5,769.8	5,731.4	27.4	15.6	168.36	-85.0	-486.4	806.8	778.1	28.75	28.060			
6,000.0	5,813.7	5,852.1	5,813.7	27.5	15.8	168.38	-85.3	-487.2	808.8	779.9	28.94	27.947			
6,036.3	5,850.0	5,888.4	5,850.0	27.6	15.8	49.24	-85.3	-487.2	809.1	766.4	42.63	18.981			
6,100.0	5,913.7	5,952.1	5,913.7	27.6	15.9	49.24	-85.3	-487.2	809.1	766.3	42.79	18.906			
6,150.9	5,964.5	6,003.0	5,964.5	27.7	16.0	49.24	-85.3	-487.2	809.1	766.1	42.93	18.846			
6,200.0	6,013.6	6,052.1	6,013.6	27.7	16.1	-40.89	-85.3	-487.2	807.9	778.5	29.37	27.510			
6,250.0	6,063.4	6,083.5	6,045.1	27.7	16.2	-41.17	-85.3	-486.9	804.7	775.4	29.23	27.534			
6,300.0	6,112.7	6,111.2	6,072.8	27.7	16.2	-41.54	-85.3	-485.5	800.4	771.4	29.03	27.572			
6,350.0	6,161.4	6,139.0	6,100.5	27.6	16.2	-42.00	-85.3	-483.2	795.0	766.2	28.80	27.609			
6,400.0	6,209.3	6,166.8	6,128.0	27.5	16.2	-42.55	-85.3	-479.8	788.6	760.1	28.54	27.628			
6,450.0	6,256.1	6,200.0	6,160.8	27.4	16.3	-43.27	-85.3	-474.5	781.3	753.0	28.31	27.594			
6,500.0	6,301.6	6,222.5	6,182.9	27.3	16.3	-43.98	-85.3	-470.1	772.9	744.8	28.06	27.542			
6,550.0	6,345.8	6,250.0	6,209.6	27.1	16.3	-44.86	-85.3	-463.8	763.6	735.7	27.87	27.394			
6,600.0	6,388.2	6,278.4	6,237.1	27.0	16.2	-45.85	-85.3	-456.3	753.4	725.6	27.76	27.140			
6,650.0	6,428.9	6,300.0	6,257.7	26.9	16.2	-46.84	-85.3	-450.0	742.4	714.7	27.69	26.806			
6,700.0	6,467.6	6,334.6	6,290.4	26.7	16.2	-48.20	-85.3	-438.5	730.5	702.7	27.84	26.240			
6,750.0	6,504.1	6,362.9	6,316.6	26.6	16.2	-49.57	-85.3	-428.1	718.0	689.9	28.09	25.565			
6,800.0	6,538.3	6,400.0	6,350.5	26.5	16.2	-51.30	-85.3	-413.0	705.0	676.4	28.59	24.663			
6,850.0	6,570.1	6,419.6	6,368.1	26.4	16.2	-52.70	-85.3	-404.3	691.2	662.2	29.07	23.781			
6,900.0	6,599.3	6,450.0	6,394.9	26.3	16.1	-54.53	-85.3	-390.0	677.2	647.3	29.84	22.695			
6,950.0	6,625.7	6,476.9	6,418.2	26.3	16.1	-56.39	-85.3	-376.5	662.8	632.1	30.73	21.571			
7,000.0	6,649.3	6,500.0	6,437.7	26.3	16.1	-58.22	-85.3	-364.2	648.2	616.6	31.69	20.454			
7,050.0	6,670.0	6,534.8	6,466.5	26.3	16.1	-60.64	-85.3	-344.6	633.6	600.6	32.98	19.213			
7,100.0	6,687.7	6,564.0	6,489.9	26.4	16.1	-62.97	-85.3	-327.2	619.1	584.8	34.27	18.065			
7,150.0	6,702.2	6,600.0	6,517.8	26.6	16.1	-65.76	-85.3	-304.5	605.0	569.2	35.75	16.921			
7,200.0	6,713.6	6,623.2	6,535.2	26.8	16.1	-67.99	-85.3	-289.2	591.3	554.2	37.05	15.960			
7,250.0	6,721.8	6,650.0	6,554.8	27.1	16.1	-70.47	-85.3	-270.8	578.3	539.9	38.40	15.059			
7,300.0	6,726.8	6,683.4	6,578.2	27.4	16.2	-73.39	-85.3	-247.0	566.3	526.4	39.86	14.206			
7,350.0	6,728.5	6,714.1	6,598.8	27.8	16.2	-76.19	-85.3	-224.3	555.5	514.3	41.22	13.476			
7,357.9	6,728.4	6,719.0	6,602.0	27.9	16.2	-76.64	-85.3	-220.5	553.9	512.5	41.43	13.369			
7,400.0	6,728.1	6,745.8	6,619.1	28.3	16.3	-78.43	-85.3	-199.9	546.3	504.0	42.34	12.904			
7,500.0	6,727.1	6,816.1	6,660.4	29.4	16.6	-82.84	-85.3	-143.0	534.3	489.6	44.69	11.954			
7,600.0	6,726.2	6,896.3	6,700.8	30.8	17.1	-87.26	-85.3	-73.8	529.0	481.8	47.26	11.195			
7,665.9	6,725.6	6,954.6	6,725.6	31.8	17.7	-90.00	-85.3	-21.0	528.2	479.1	49.10	10.758			
7,700.0	6,725.3	6,986.4	6,737.4	32.4	18.0	-91.31	-85.3	8.5	528.4	478.3	50.08	10.550			
7,800.0	6,724.4	7,085.6	6,766.1	34.1	19.3	-94.50	-85.3	103.3	530.0	476.7	53.24	9.954			
7,900.0	6,723.4	7,191.3	6,782.9	36.1	21.0	-96.42	-85.3	207.7	531.6	474.8	56.83	9.355			
8,000.0	6,722.5	7,297.3	6,785.8	38.2	22.9	-96.83	-85.3	313.5	532.0	471.2	60.80	8.750			
8,100.0	6,721.6	7,397.3	6,785.0	40.3	24.9	-96.84	-85.3	413.5	532.0	467.1	64.96	8.190			
8,200.0	6,720.7	7,497.3	6,784.2	42.6	27.0	-96.86	-85.3	513.5	532.1	462.7	69.34	7.673			
8,300.0	6,719.7	7,597.3	6,783.4	44.9	29.3	-96.88	-85.3	613.5	532.1	458.2	73.89	7.201			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-302 - 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	Vertical	Measured Depth	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
8,400.0	6,718.8	7,697.3	6,782.7	47.3	31.6	-96.89	-85.3	713.5	532.1	453.5	78.57	6.772			
8,500.0	6,717.9	7,797.3	6,781.9	49.7	34.0	-96.91	-85.3	813.5	532.1	448.7	83.38	6.382			
8,600.0	6,717.0	7,897.3	6,781.1	52.2	36.5	-96.93	-85.3	913.5	532.1	443.9	88.27	6.028			
8,700.0	6,716.0	7,997.3	6,780.4	54.7	39.0	-96.94	-85.3	1,013.5	532.2	438.9	93.25	5.707			
8,800.0	6,715.1	8,097.3	6,779.6	57.2	41.6	-96.96	-85.3	1,113.5	532.2	433.9	98.29	5.414			
8,900.0	6,714.2	8,197.3	6,778.8	59.7	44.2	-96.98	-85.3	1,213.5	532.2	428.8	103.39	5.148			
9,000.0	6,713.3	8,297.3	6,778.1	62.3	46.8	-97.00	-85.3	1,313.5	532.2	423.7	108.53	4.904			
9,100.0	6,712.3	8,397.3	6,777.3	64.9	49.4	-97.01	-85.3	1,413.5	532.2	418.5	113.71	4.680			
9,200.0	6,711.4	8,497.3	6,776.5	67.5	52.0	-97.03	-85.3	1,513.5	532.2	413.3	118.93	4.475			
9,300.0	6,710.5	8,597.3	6,775.8	70.2	54.7	-97.05	-85.3	1,613.5	532.3	408.1	124.18	4.286			
9,400.0	6,709.6	8,697.3	6,775.0	72.8	57.4	-97.06	-85.3	1,713.5	532.3	402.8	129.46	4.112			
9,500.0	6,708.6	8,797.3	6,774.2	75.5	60.1	-97.08	-85.3	1,813.5	532.3	397.5	134.76	3.950			
9,600.0	6,707.7	8,897.3	6,773.5	78.1	62.8	-97.10	-85.3	1,913.5	532.3	392.2	140.08	3.800			
9,700.0	6,706.8	8,997.3	6,772.7	80.8	65.5	-97.11	-85.3	2,013.5	532.3	386.9	145.42	3.661			
9,800.0	6,705.9	9,097.3	6,771.9	83.5	68.2	-97.13	-85.3	2,113.5	532.4	381.6	150.78	3.531			
9,900.0	6,704.9	9,197.3	6,771.2	86.2	70.9	-97.15	-85.3	2,213.5	532.4	376.2	156.15	3.409			
10,000.0	6,704.0	9,297.3	6,770.4	88.9	73.7	-97.16	-85.3	2,313.5	532.4	370.9	161.53	3.296			
10,100.0	6,703.1	9,397.3	6,769.6	91.6	76.4	-97.18	-85.3	2,413.5	532.4	365.5	166.93	3.190			
10,200.0	6,702.2	9,497.3	6,768.9	94.3	79.2	-97.20	-85.3	2,513.5	532.4	360.1	172.34	3.090			
10,300.0	6,701.2	9,597.3	6,768.1	97.0	81.9	-97.21	-85.3	2,613.5	532.5	354.7	177.75	2.996			
10,400.0	6,700.3	9,697.3	6,767.3	99.7	84.7	-97.23	-85.3	2,713.5	532.5	349.3	183.18	2.907			
10,500.0	6,699.4	9,797.3	6,766.6	102.5	87.4	-97.25	-85.3	2,813.5	532.5	343.9	188.61	2.823			
10,600.0	6,698.5	9,897.3	6,765.8	105.2	90.2	-97.26	-85.3	2,913.5	532.5	338.5	194.05	2.744			
10,700.0	6,697.5	9,997.3	6,765.0	107.9	92.9	-97.28	-85.3	3,013.5	532.5	333.0	199.50	2.669			
10,800.0	6,696.6	10,097.3	6,764.2	110.7	95.7	-97.30	-85.3	3,113.4	532.6	327.6	204.95	2.598			
10,900.0	6,695.7	10,197.3	6,763.5	113.4	98.5	-97.31	-85.3	3,213.4	532.6	322.2	210.41	2.531			
11,000.0	6,694.8	10,297.3	6,762.7	116.1	101.2	-97.33	-85.3	3,313.4	532.6	316.7	215.87	2.467			
11,100.0	6,693.8	10,397.3	6,761.9	118.9	104.0	-97.35	-85.3	3,413.4	532.6	311.3	221.34	2.406			
11,200.0	6,692.9	10,497.3	6,761.2	121.6	106.8	-97.36	-85.3	3,513.4	532.6	305.8	226.81	2.348			
11,300.0	6,692.0	10,597.3	6,760.4	124.4	109.6	-97.38	-85.3	3,613.4	532.7	300.4	232.29	2.293			
11,400.0	6,691.1	10,697.3	6,759.6	127.2	112.3	-97.40	-85.3	3,713.4	532.7	294.9	237.77	2.240			
11,500.0	6,690.1	10,797.3	6,758.9	129.9	115.1	-97.41	-85.3	3,813.4	532.7	289.4	243.26	2.190			
11,600.0	6,689.2	10,897.3	6,758.1	132.7	117.9	-97.43	-85.3	3,913.4	532.7	284.0	248.74	2.142			
11,700.0	6,688.3	10,997.3	6,757.3	135.4	120.7	-97.45	-85.3	4,013.4	532.7	278.5	254.23	2.095			
11,800.0	6,687.4	11,097.3	6,756.6	138.2	123.5	-97.46	-85.3	4,113.4	532.8	273.0	259.73	2.051			
11,900.0	6,686.4	11,197.3	6,755.8	141.0	126.2	-97.48	-85.3	4,213.4	532.8	267.6	265.22	2.009			
12,000.0	6,685.5	11,297.3	6,755.0	143.7	129.0	-97.50	-85.3	4,313.4	532.8	262.1	270.72	1.968			
12,100.0	6,684.6	11,397.3	6,754.3	146.5	131.8	-97.51	-85.3	4,413.4	532.8	256.6	276.22	1.929			
12,200.0	6,683.7	11,497.3	6,753.5	149.3	134.6	-97.53	-85.3	4,513.4	532.8	251.1	281.72	1.891			
12,300.0	6,682.7	11,597.3	6,752.7	152.0	137.4	-97.55	-85.3	4,613.4	532.9	245.6	287.23	1.855			
12,400.0	6,681.8	11,697.3	6,752.0	154.8	140.2	-97.57	-85.3	4,713.4	532.9	240.2	292.73	1.820			
12,500.0	6,680.9	11,797.3	6,751.2	157.6	143.0	-97.58	-85.3	4,813.4	532.9	234.7	298.24	1.787			
12,600.0	6,680.0	11,897.3	6,750.4	160.4	145.8	-97.60	-85.3	4,913.4	532.9	229.2	303.75	1.755			
12,700.0	6,679.0	11,997.3	6,749.7	163.2	148.5	-97.62	-85.3	5,013.4	532.9	223.7	309.26	1.723			
12,800.0	6,678.1	12,097.3	6,748.9	165.9	151.3	-97.63	-85.3	5,113.4	533.0	218.2	314.77	1.693			
12,900.0	6,677.2	12,197.3	6,748.1	168.7	154.1	-97.65	-85.3	5,213.4	533.0	212.7	320.28	1.664			
13,000.0	6,676.3	12,297.3	6,747.4	171.5	156.9	-97.67	-85.3	5,313.4	533.0	207.2	325.80	1.636			
13,100.0	6,675.3	12,397.3	6,746.6	174.3	159.7	-97.68	-85.3	5,413.4	533.0	201.7	331.31	1.609			
13,200.0	6,674.4	12,497.3	6,745.8	177.1	162.5	-97.70	-85.3	5,513.4	533.1	196.2	336.83	1.583			
13,300.0	6,673.5	12,597.3	6,745.0	179.8	165.3	-97.72	-85.3	5,613.4	533.1	190.7	342.35	1.557			
13,400.0	6,672.6	12,697.3	6,744.3	182.6	168.1	-97.73	-85.3	5,713.4	533.1	185.2	347.86	1.532			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-302 - 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		
13,500.0	6,671.6	12,797.3	6,743.5	185.4	170.9	-97.75	-85.3	5,813.4	533.1	179.7	353.38	1.509		
13,600.0	6,670.7	12,897.3	6,742.7	188.2	173.7	-97.77	-85.3	5,913.4	533.1	174.2	358.90	1.485 Level 3		
13,700.0	6,669.8	12,997.3	6,742.0	191.0	176.5	-97.78	-85.3	6,013.4	533.2	168.7	364.42	1.463 Level 3		
13,800.0	6,668.9	13,097.3	6,741.2	193.8	179.3	-97.80	-85.3	6,113.4	533.2	163.2	369.94	1.441 Level 3		
13,900.0	6,667.9	13,197.3	6,740.4	196.5	182.1	-97.82	-85.3	6,213.4	533.2	157.7	375.46	1.420 Level 3		
14,000.0	6,667.0	13,297.3	6,739.7	199.3	184.9	-97.83	-85.3	6,313.4	533.2	152.2	380.99	1.400 Level 3		
14,100.0	6,666.1	13,397.3	6,738.9	202.1	187.7	-97.85	-85.3	6,413.3	533.2	146.7	386.51	1.380 Level 3		
14,200.0	6,665.2	13,497.3	6,738.1	204.9	190.5	-97.87	-85.3	6,513.3	533.3	141.2	392.03	1.360 Level 3		
14,300.0	6,664.2	13,597.3	6,737.4	207.7	193.3	-97.88	-85.3	6,613.3	533.3	135.7	397.55	1.341 Level 3		
14,400.0	6,663.3	13,697.3	6,736.6	210.5	196.1	-97.90	-85.3	6,713.3	533.3	130.2	403.08	1.323 Level 3		
14,500.0	6,662.4	13,797.3	6,735.8	213.3	198.9	-97.92	-85.3	6,813.3	533.3	124.7	408.60	1.305 Level 3		
14,600.0	6,661.5	13,897.3	6,735.1	216.1	201.7	-97.93	-85.3	6,913.3	533.4	119.2	414.13	1.288 Level 3		
14,700.0	6,660.5	13,997.3	6,734.3	218.9	204.5	-97.95	-85.3	7,013.3	533.4	113.7	419.65	1.271 Level 3		
14,800.0	6,659.6	14,097.3	6,733.5	221.7	207.3	-97.97	-85.3	7,113.3	533.4	108.2	425.18	1.255 Level 3		
14,900.0	6,658.7	14,197.3	6,732.8	224.5	210.1	-97.98	-85.3	7,213.3	533.4	102.7	430.70	1.238 Level 2		
15,000.0	6,657.8	14,297.3	6,732.0	227.2	212.9	-98.00	-85.3	7,313.3	533.4	97.2	436.23	1.223 Level 2		
15,100.0	6,656.8	14,397.3	6,731.2	230.0	215.7	-98.02	-85.3	7,413.3	533.5	91.7	441.75	1.208 Level 2		
15,200.0	6,655.9	14,497.3	6,730.5	232.8	218.5	-98.03	-85.3	7,513.3	533.5	86.2	447.28	1.193 Level 2		
15,300.0	6,655.0	14,597.3	6,729.7	235.6	221.3	-98.05	-85.3	7,613.3	533.5	80.7	452.80	1.178 Level 2		
15,400.0	6,654.1	14,697.3	6,728.9	238.4	224.1	-98.07	-85.3	7,713.3	533.5	75.2	458.33	1.164 Level 2		
15,500.0	6,653.1	14,797.3	6,728.2	241.2	226.9	-98.08	-85.3	7,813.3	533.5	69.7	463.85	1.150 Level 2		
15,600.0	6,652.2	14,897.3	6,727.4	244.0	229.7	-98.10	-85.3	7,913.3	533.6	64.2	469.38	1.137 Level 2		
15,700.0	6,651.3	14,997.3	6,726.6	246.8	232.5	-98.12	-85.3	8,013.3	533.6	58.7	474.91	1.124 Level 2		
15,800.0	6,650.4	15,097.3	6,725.9	249.6	235.3	-98.13	-85.3	8,113.3	533.6	53.2	480.43	1.111 Level 2		
15,900.0	6,649.4	15,197.3	6,725.1	252.4	238.1	-98.15	-85.3	8,213.3	533.6	47.7	485.96	1.098 Level 2		
16,000.0	6,648.5	15,297.3	6,724.3	255.2	240.9	-98.17	-85.3	8,313.3	533.7	42.2	491.48	1.086 Level 2		
16,100.0	6,647.6	15,397.3	6,723.5	258.0	243.7	-98.18	-85.3	8,413.3	533.7	36.7	497.01	1.074 Level 2		
16,200.0	6,646.7	15,497.3	6,722.8	260.8	246.5	-98.20	-85.3	8,513.3	533.7	31.2	502.54	1.062 Level 2		
16,300.0	6,645.7	15,597.3	6,722.0	263.6	249.3	-98.22	-85.3	8,613.3	533.7	25.7	508.06	1.051 Level 2		
16,400.0	6,644.8	15,697.3	6,721.2	266.4	252.1	-98.23	-85.3	8,713.3	533.8	20.2	513.59	1.039 Level 2		
16,500.0	6,643.9	15,797.3	6,720.5	269.2	254.9	-98.25	-85.3	8,813.3	533.8	14.7	519.11	1.028 Level 2		
16,600.0	6,643.0	15,897.3	6,719.7	272.0	257.7	-98.27	-85.3	8,913.3	533.8	9.2	524.64	1.017 Level 2		
16,700.0	6,642.0	15,997.3	6,718.9	274.8	260.5	-98.28	-85.3	9,013.3	533.8	3.7	530.16	1.007 Level 2		
16,800.0	6,641.1	16,097.3	6,718.2	277.6	263.3	-98.30	-85.3	9,113.3	533.8	-1.8	535.69	0.997 Level 1		
16,900.0	6,640.2	16,197.3	6,717.4	280.4	266.1	-98.32	-85.3	9,213.3	533.9	-7.4	541.21	0.986 Level 1		
17,000.0	6,639.3	16,297.3	6,716.6	283.2	268.9	-98.33	-85.3	9,313.3	533.9	-12.9	546.74	0.976 Level 1		
17,100.0	6,638.3	16,397.3	6,715.9	286.0	271.7	-98.35	-85.3	9,413.3	533.9	-18.4	552.26	0.967 Level 1		
17,200.0	6,637.4	16,497.3	6,715.1	288.8	274.5	-98.37	-85.3	9,513.3	533.9	-23.9	557.79	0.957 Level 1		
17,300.0	6,636.5	16,597.3	6,714.3	291.6	277.3	-98.38	-85.3	9,613.2	534.0	-29.4	563.31	0.948 Level 1		
17,400.0	6,635.6	16,697.3	6,713.6	294.4	280.1	-98.40	-85.3	9,713.2	534.0	-34.9	568.84	0.939 Level 1		
17,500.0	6,634.6	16,797.3	6,712.8	297.2	283.0	-98.42	-85.3	9,813.2	534.0	-40.4	574.36	0.930 Level 1		
17,600.0	6,633.7	16,897.3	6,712.0	300.0	285.8	-98.43	-85.3	9,913.2	534.0	-45.9	579.89	0.921 Level 1		
17,700.0	6,632.8	16,997.3	6,711.3	302.8	288.6	-98.45	-85.3	10,013.2	534.0	-51.4	585.41	0.912 Level 1		
17,800.0	6,631.9	17,097.3	6,710.5	305.6	291.4	-98.47	-85.3	10,113.2	534.1	-56.9	590.93	0.904 Level 1		
17,900.0	6,630.9	17,197.3	6,709.7	308.4	294.2	-98.48	-85.3	10,213.2	534.1	-62.4	596.46	0.895 Level 1		
17,958.3	6,630.4	17,255.5	6,709.3	310.0	295.8	-98.49	-85.3	10,271.5	534.1	-65.6	599.67	0.891 Level 1		
18,000.8	6,630.0	17,291.6	6,709.0	311.2	296.8	-98.50	-85.3	10,307.6	534.2	-67.7	601.85	0.888 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-402 - 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	0.00	29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	129.668	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.223	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.934	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	29.1	0.0	29.1	27.6	1.57	18.524	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	29.1	0.0	29.1	27.1	2.02	14.408	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	29.1	0.0	29.1	26.7	2.47	11.788	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	29.1	0.0	29.1	26.2	2.92	9.974	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	29.1	0.0	29.1	25.8	3.37	8.645	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	29.1	0.0	29.1	25.3	3.82	7.628	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	29.1	0.0	29.1	24.9	4.27	6.825 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	121.34	29.1	0.0	29.8	25.1	4.70	6.342	
1,200.0	1,199.9	1,199.9	1,199.9	2.5	2.6	127.32	29.1	0.0	32.0	26.9	5.11	6.261	
1,300.0	1,299.7	1,299.7	1,299.7	2.7	2.8	135.49	29.1	0.0	36.4	30.8	5.54	6.568	
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	143.92	29.1	0.0	43.4	37.4	5.96	7.275	
1,500.0	1,498.6	1,498.6	1,498.6	3.2	3.3	151.29	29.1	0.0	53.3	47.0	6.39	8.351	
1,600.0	1,597.5	1,599.0	1,599.0	3.5	3.5	156.73	28.6	-1.2	65.2	58.4	6.79	9.596	
1,700.0	1,696.1	1,699.9	1,699.8	3.8	3.7	160.34	27.0	-4.8	77.5	70.3	7.18	10.790	
1,800.0	1,794.2	1,801.1	1,800.8	4.1	3.9	162.81	24.2	-10.8	90.1	82.5	7.58	11.884	
1,900.0	1,891.7	1,902.6	1,901.9	4.5	4.1	164.55	20.3	-19.3	102.8	94.8	7.98	12.876	
2,000.0	1,988.6	2,004.5	2,003.0	4.9	4.3	165.80	15.3	-30.3	115.6	107.2	8.40	13.768	
2,100.0	2,084.9	2,106.8	2,104.2	5.4	4.6	166.70	9.2	-43.7	128.4	119.6	8.82	14.562	
2,200.0	2,180.4	2,209.4	2,205.3	5.9	4.8	167.35	1.8	-59.7	141.3	132.1	9.26	15.265	
2,234.6	2,213.2	2,244.9	2,240.2	6.1	5.0	167.52	-1.0	-65.9	145.8	136.4	9.41	15.484	
2,300.0	2,275.2	2,312.4	2,306.3	6.5	5.2	167.78	-6.6	-78.3	153.7	143.9	9.74	15.769	
2,400.0	2,370.1	2,416.1	2,407.3	7.1	5.5	167.89	-16.3	-99.4	163.6	153.3	10.27	15.930	
2,500.0	2,464.9	2,516.8	2,505.0	7.7	5.9	167.80	-26.5	-121.7	171.6	160.8	10.81	15.880	
2,600.0	2,559.7	2,616.4	2,601.7	8.3	6.3	167.72	-36.6	-143.8	179.6	168.2	11.36	15.813	
2,700.0	2,654.5	2,716.1	2,698.3	8.9	6.8	167.64	-46.7	-165.9	187.6	175.7	11.92	15.739	
2,800.0	2,749.3	2,815.8	2,795.0	9.5	7.2	167.57	-56.8	-188.0	195.6	183.1	12.49	15.660	
2,900.0	2,844.2	2,915.5	2,891.7	10.2	7.7	167.50	-66.9	-210.1	203.6	190.5	13.07	15.578	
3,000.0	2,939.0	3,015.2	2,988.3	10.8	8.1	167.44	-77.0	-232.3	211.5	197.9	13.65	15.495	
3,100.0	3,033.8	3,114.8	3,085.0	11.5	8.6	167.38	-87.1	-254.4	219.5	205.3	14.24	15.413	
3,200.0	3,128.6	3,214.5	3,181.7	12.1	9.1	167.33	-97.2	-276.5	227.5	212.7	14.84	15.332	
3,300.0	3,223.4	3,314.2	3,278.3	12.8	9.5	167.28	-107.4	-298.6	235.5	220.1	15.44	15.252	
3,400.0	3,318.3	3,413.9	3,375.0	13.4	10.0	167.23	-117.5	-320.7	243.5	227.4	16.05	15.174	
3,500.0	3,413.1	3,513.6	3,471.7	14.1	10.5	167.19	-127.6	-342.8	251.5	234.8	16.66	15.098	
3,600.0	3,507.9	3,613.2	3,568.4	14.7	11.0	167.15	-137.7	-364.9	259.5	242.2	17.27	15.024	
3,700.0	3,602.7	3,712.9	3,665.0	15.4	11.5	167.11	-147.8	-387.0	267.5	249.6	17.89	14.953	
3,800.0	3,697.6	3,812.6	3,761.7	16.1	12.0	167.08	-157.9	-409.2	275.4	256.9	18.51	14.884	
3,900.0	3,792.4	3,912.3	3,858.4	16.7	12.5	167.04	-168.0	-431.3	283.4	264.3	19.13	14.818	
4,000.0	3,887.2	4,012.0	3,955.0	17.4	13.0	167.01	-178.1	-453.4	291.4	271.7	19.75	14.754	
4,100.0	3,982.0	4,111.7	4,051.7	18.1	13.5	166.98	-188.2	-475.5	299.4	279.0	20.38	14.693	
4,200.0	4,076.8	4,211.3	4,148.4	18.7	14.0	166.95	-198.3	-497.6	307.4	286.4	21.01	14.634	
4,300.0	4,171.7	4,311.0	4,245.0	19.4	14.6	166.93	-208.4	-519.7	315.4	293.7	21.64	14.577	
4,400.0	4,266.5	4,410.7	4,341.7	20.1	15.1	166.90	-218.5	-541.8	323.4	301.1	22.27	14.522	
4,500.0	4,361.3	4,510.4	4,438.4	20.7	15.6	166.88	-228.7	-563.9	331.4	308.5	22.90	14.470	
4,600.0	4,456.1	4,610.1	4,535.1	21.4	16.1	166.85	-238.8	-586.0	339.3	315.8	23.53	14.419	
4,700.0	4,551.0	4,709.7	4,631.7	22.1	16.6	166.83	-248.9	-608.2	347.3	323.2	24.17	14.370	
4,800.0	4,645.8	4,809.4	4,728.4	22.7	17.1	166.81	-259.0	-630.3	355.3	330.5	24.81	14.323	
4,900.0	4,740.6	4,909.1	4,825.1	23.4	17.6	166.79	-269.1	-652.4	363.3	337.9	25.45	14.278	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-402 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,835.4	5,008.8	4,921.7	24.1	18.2	166.77	-279.2	-674.5	371.3	345.2	26.08	14.234	
5,100.0	4,930.2	5,108.5	5,018.4	24.7	18.7	166.75	-289.3	-696.6	379.3	352.6	26.72	14.192	
5,110.4	4,940.1	5,118.8	5,028.4	24.8	18.7	166.75	-290.4	-698.9	380.1	353.3	26.79	14.188	
5,200.0	5,025.5	5,208.2	5,115.2	25.3	19.2	166.71	-299.4	-718.7	385.9	358.5	27.42	14.075	
5,300.0	5,121.8	5,308.2	5,212.1	25.8	19.7	166.54	-309.6	-740.9	389.2	361.1	28.08	13.857	
5,400.0	5,218.9	5,407.2	5,308.1	26.1	20.2	166.25	-319.6	-762.9	389.1	360.3	28.73	13.540	
5,500.0	5,316.8	5,500.0	5,398.5	26.5	20.6	165.92	-328.3	-781.9	387.3	358.0	29.30	13.216	
5,600.0	5,415.4	5,584.4	5,481.3	26.8	20.9	165.64	-335.2	-796.9	385.0	355.2	29.77	12.933	
5,700.0	5,514.4	5,673.1	5,568.8	27.0	21.2	165.35	-341.3	-810.3	382.3	352.1	30.19	12.663	
5,800.0	5,613.9	5,761.9	5,656.8	27.3	21.4	165.07	-346.3	-821.2	379.2	348.6	30.55	12.411	
5,900.0	5,713.7	5,850.8	5,745.2	27.4	21.6	164.81	-350.1	-829.7	375.6	344.8	30.85	12.174	
6,000.0	5,813.7	5,939.8	5,833.9	27.5	21.8	164.56	-352.8	-835.6	371.6	340.5	31.10	11.951	
6,036.3	5,850.0	5,972.2	5,866.2	27.6	21.8	164.32	-353.6	-837.2	370.0	322.0	48.00	7.709	
6,100.0	5,913.7	6,028.9	5,923.0	27.6	21.9	164.20	-354.4	-839.1	367.8	319.7	48.13	7.642	
6,150.9	5,964.5	6,074.3	5,968.3	27.7	22.0	164.16	-354.8	-839.8	366.9	318.7	48.23	7.607	
6,200.0	6,013.6	6,119.6	6,013.6	27.7	22.0	164.09	-354.9	-840.0	365.6	334.1	31.51	11.604	
6,250.0	6,063.4	6,169.4	6,063.4	27.7	22.1	164.01	-354.9	-840.0	362.2	330.7	31.54	11.485	
6,300.0	6,112.7	6,218.7	6,112.7	27.7	22.2	163.94	-354.9	-840.0	356.6	324.9	31.69	11.252	
6,350.0	6,161.4	6,256.9	6,150.9	27.6	22.2	163.89	-354.9	-839.2	349.6	317.7	31.87	10.971	
6,400.0	6,209.3	6,300.0	6,193.9	27.5	22.2	163.84	-354.9	-836.1	342.3	310.1	32.15	10.644	
6,450.0	6,256.1	6,332.2	6,225.8	27.4	22.2	163.79	-354.9	-832.2	334.5	302.1	32.40	10.324	
6,500.0	6,301.6	6,370.3	6,263.4	27.3	22.2	163.74	-354.9	-825.8	326.6	293.8	32.83	9.949	
6,550.0	6,345.8	6,408.7	6,300.9	27.1	22.2	163.69	-354.9	-817.5	318.6	285.2	33.39	9.542	
6,600.0	6,388.2	6,450.0	6,340.7	27.0	22.1	163.64	-354.9	-806.5	310.6	276.5	34.14	9.098	
6,650.0	6,428.9	6,486.9	6,375.7	26.9	22.0	163.59	-354.9	-794.8	302.6	267.7	34.94	8.661	
6,700.0	6,467.6	6,526.7	6,412.7	26.7	22.0	163.54	-354.9	-780.4	294.9	259.0	35.93	8.207	
6,750.0	6,504.1	6,566.9	6,449.4	26.6	21.9	163.49	-354.9	-763.8	287.5	250.5	37.04	7.762	
6,800.0	6,538.3	6,607.8	6,485.7	26.5	21.8	163.44	-354.9	-745.0	280.7	242.4	38.24	7.338	
6,850.0	6,570.1	6,650.0	6,522.1	26.4	21.7	163.39	-354.9	-723.7	274.4	234.9	39.51	6.946	
6,900.0	6,599.3	6,691.5	6,556.7	26.3	21.6	163.34	-354.9	-700.7	269.0	228.3	40.74	6.603	
6,950.0	6,625.7	6,734.4	6,591.1	26.3	21.5	163.29	-354.9	-675.0	264.6	222.7	41.94	6.309	
7,000.0	6,649.3	6,778.2	6,624.6	26.3	21.4	163.24	-354.9	-646.9	261.3	218.3	43.04	6.071	
7,050.0	6,670.0	6,822.8	6,657.0	26.3	21.4	163.19	-354.9	-616.3	259.3	215.3	43.99	5.894	
7,097.7	6,686.9	6,866.3	6,686.9	26.4	21.3	163.14	-354.9	-584.7	258.7	213.9	44.73	5.782	
7,100.0	6,687.7	6,868.5	6,688.3	26.4	21.3	163.09	-354.9	-583.0	258.7	213.9	44.76	5.778	
7,150.0	6,702.2	6,915.2	6,718.3	26.6	21.3	163.04	-354.9	-547.2	259.5	214.1	45.34	5.523	
7,200.0	6,713.6	6,963.1	6,746.6	26.8	21.3	162.99	-354.9	-508.6	261.7	216.0	45.71	5.726	
7,250.0	6,721.8	7,012.2	6,773.1	27.1	21.3	162.94	-354.9	-467.2	265.5	219.5	45.91	5.782	
7,300.0	6,726.8	7,062.8	6,797.5	27.4	21.4	162.89	-354.9	-422.9	270.6	224.6	45.97	5.886	
7,350.0	6,728.5	7,114.9	6,819.6	27.8	21.6	162.84	-354.9	-375.8	277.0	231.0	45.93	6.030	
7,357.9	6,728.4	7,123.3	6,822.8	27.9	21.7	162.79	-354.9	-368.0	278.1	232.2	45.92	6.056	
7,400.0	6,728.1	7,169.1	6,839.0	28.3	21.9	162.74	-354.9	-325.2	284.1	238.1	45.95	6.182	
7,500.0	6,727.1	7,285.6	6,868.5	29.4	22.8	162.69	-354.9	-212.6	295.9	249.3	46.58	6.352	
7,600.0	6,726.2	7,409.2	6,880.7	30.8	24.2	162.64	-354.9	-89.7	301.3	252.7	48.58	6.201	
7,700.0	6,725.3	7,512.4	6,880.6	32.4	25.6	162.59	-354.9	13.5	301.7	250.2	51.47	5.861	
7,800.0	6,724.4	7,612.4	6,880.3	34.1	27.3	162.54	-354.9	113.5	302.0	247.4	54.60	5.531	
7,900.0	6,723.4	7,712.4	6,880.0	36.1	29.2	162.49	-354.9	213.5	302.3	244.4	57.96	5.216	
8,000.0	6,722.5	7,812.4	6,879.7	38.2	31.2	162.44	-354.9	313.5	302.7	241.1	61.52	4.920	
8,100.0	6,721.6	7,912.4	6,879.4	40.3	33.3	162.39	-354.9	413.5	303.0	237.8	65.23	4.645	
8,200.0	6,720.7	8,012.4	6,879.1	42.6	35.5	162.34	-354.9	513.5	303.3	234.2	69.07	4.391	
8,300.0	6,719.7	8,112.4	6,878.8	44.9	37.9	162.29	-354.9	613.5	303.6	230.6	73.02	4.158	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-402 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,718.8	8,212.4	6,878.5	47.3	40.2	-121.69	-354.9	713.5	304.0	226.9	77.06	3.945	
8,500.0	6,717.9	8,312.4	6,878.2	49.7	42.7	-121.79	-354.9	813.5	304.3	223.1	81.17	3.749	
8,600.0	6,717.0	8,412.4	6,877.9	52.2	45.1	-121.89	-354.9	913.5	304.6	219.3	85.34	3.569	
8,700.0	6,716.0	8,512.4	6,877.6	54.7	47.7	-121.99	-354.9	1,013.5	305.0	215.4	89.57	3.405	
8,800.0	6,715.1	8,612.4	6,877.3	57.2	50.2	-122.09	-354.9	1,113.5	305.3	211.5	93.83	3.254	
8,900.0	6,714.2	8,712.4	6,877.0	59.7	52.8	-122.19	-354.9	1,213.5	305.6	207.5	98.14	3.114	
9,000.0	6,713.3	8,812.4	6,876.7	62.3	55.4	-122.29	-354.9	1,313.5	306.0	203.5	102.47	2.986	
9,100.0	6,712.3	8,912.4	6,876.4	64.9	58.0	-122.39	-354.9	1,413.5	306.3	199.5	106.82	2.867	
9,200.0	6,711.4	9,012.4	6,876.1	67.5	60.6	-122.49	-354.9	1,513.5	306.6	195.4	111.20	2.758	
9,300.0	6,710.5	9,112.4	6,875.8	70.2	63.3	-122.58	-354.9	1,613.5	307.0	191.4	115.59	2.656	
9,400.0	6,709.6	9,212.4	6,875.5	72.8	65.9	-122.68	-354.9	1,713.5	307.3	187.3	120.00	2.561	
9,500.0	6,708.6	9,312.4	6,875.2	75.5	68.6	-122.78	-354.9	1,813.5	307.7	183.2	124.42	2.473	
9,600.0	6,707.7	9,412.4	6,874.9	78.1	71.3	-122.88	-354.9	1,913.5	308.0	179.2	128.84	2.390	
9,700.0	6,706.8	9,512.4	6,874.6	80.8	74.0	-122.98	-354.9	2,013.5	308.3	175.1	133.28	2.313	
9,800.0	6,705.9	9,612.4	6,874.3	83.5	76.7	-123.08	-354.9	2,113.5	308.7	171.0	137.72	2.241	
9,900.0	6,704.9	9,712.4	6,874.0	86.2	79.4	-123.17	-354.9	2,213.5	309.0	166.9	142.16	2.174	
10,000.0	6,704.0	9,812.4	6,873.7	88.9	82.1	-123.27	-354.9	2,313.5	309.4	162.8	146.61	2.110	
10,100.0	6,703.1	9,912.4	6,873.4	91.6	84.8	-123.37	-354.9	2,413.5	309.7	158.7	151.06	2.050	
10,200.0	6,702.2	10,012.4	6,873.1	94.3	87.6	-123.46	-354.9	2,513.5	310.1	154.6	155.51	1.994	
10,300.0	6,701.2	10,112.4	6,872.8	97.0	90.3	-123.56	-354.9	2,613.5	310.4	150.4	159.96	1.941	
10,400.0	6,700.3	10,212.4	6,872.5	99.7	93.0	-123.66	-354.9	2,713.5	310.8	146.3	164.41	1.890	
10,500.0	6,699.4	10,312.4	6,872.2	102.5	95.8	-123.75	-354.9	2,813.5	311.1	142.3	168.85	1.842	
10,600.0	6,698.5	10,412.4	6,871.9	105.2	98.5	-123.85	-354.9	2,913.5	311.5	138.2	173.30	1.797	
10,700.0	6,697.5	10,512.4	6,871.7	107.9	101.3	-123.95	-354.9	3,013.5	311.8	134.1	177.74	1.754	
10,800.0	6,696.6	10,612.4	6,871.4	110.7	104.0	-124.04	-354.9	3,113.4	312.2	130.0	182.18	1.713	
10,900.0	6,695.7	10,712.4	6,871.1	113.4	106.8	-124.14	-354.9	3,213.4	312.5	125.9	186.61	1.675	
11,000.0	6,694.8	10,812.4	6,870.8	116.1	109.5	-124.23	-354.9	3,313.4	312.9	121.8	191.04	1.638	
11,100.0	6,693.8	10,912.4	6,870.5	118.9	112.3	-124.33	-354.9	3,413.4	313.2	117.8	195.46	1.602	
11,200.0	6,692.9	11,012.4	6,870.2	121.6	115.0	-124.42	-354.9	3,513.4	313.6	113.7	199.88	1.569	
11,300.0	6,692.0	11,112.4	6,869.9	124.4	117.8	-124.52	-354.9	3,613.4	313.9	109.6	204.30	1.537	
11,400.0	6,691.1	11,212.4	6,869.6	127.2	120.6	-124.61	-354.9	3,713.4	314.3	105.6	208.71	1.506	
11,500.0	6,690.1	11,312.4	6,869.3	129.9	123.3	-124.71	-354.9	3,813.4	314.6	101.5	213.11	1.476 Level 3	
11,600.0	6,689.2	11,412.4	6,869.0	132.7	126.1	-124.80	-354.9	3,913.4	315.0	97.5	217.51	1.448 Level 3	
11,700.0	6,688.3	11,512.4	6,868.7	135.4	128.9	-124.89	-354.9	4,013.4	315.4	93.5	221.90	1.421 Level 3	
11,800.0	6,687.4	11,612.4	6,868.4	138.2	131.7	-124.99	-354.9	4,113.4	315.7	89.4	226.28	1.395 Level 3	
11,900.0	6,686.4	11,712.3	6,868.1	141.0	134.4	-125.08	-354.9	4,213.4	316.1	85.4	230.66	1.370 Level 3	
12,000.0	6,685.5	11,812.3	6,867.8	143.7	137.2	-125.17	-354.9	4,313.4	316.4	81.4	235.03	1.346 Level 3	
12,100.0	6,684.6	11,912.3	6,867.5	146.5	140.0	-125.27	-354.9	4,413.4	316.8	77.4	239.39	1.323 Level 3	
12,200.0	6,683.7	12,012.3	6,867.2	149.3	142.8	-125.36	-354.9	4,513.4	317.2	73.4	243.75	1.301 Level 3	
12,300.0	6,682.7	12,112.3	6,866.9	152.0	145.5	-125.45	-354.9	4,613.4	317.5	69.4	248.09	1.280 Level 3	
12,400.0	6,681.8	12,212.3	6,866.6	154.8	148.3	-125.54	-354.9	4,713.4	317.9	65.5	252.43	1.259 Level 3	
12,500.0	6,680.9	12,312.3	6,866.3	157.6	151.1	-125.64	-354.9	4,813.4	318.3	61.5	256.77	1.239 Level 2	
12,600.0	6,680.0	12,412.3	6,866.0	160.4	153.9	-125.73	-354.9	4,913.4	318.6	57.5	261.09	1.220 Level 2	
12,700.0	6,679.0	12,512.3	6,865.7	163.2	156.7	-125.82	-354.9	5,013.4	319.0	53.6	265.41	1.202 Level 2	
12,800.0	6,678.1	12,612.3	6,865.4	165.9	159.5	-125.91	-354.9	5,113.4	319.4	49.6	269.72	1.184 Level 2	
12,900.0	6,677.2	12,712.3	6,865.1	168.7	162.2	-126.00	-354.9	5,213.4	319.7	45.7	274.02	1.167 Level 2	
13,000.0	6,676.3	12,812.3	6,864.8	171.5	165.0	-126.09	-354.9	5,313.4	320.1	41.8	278.32	1.150 Level 2	
13,100.0	6,675.3	12,912.3	6,864.5	174.3	167.8	-126.18	-354.9	5,413.4	320.5	37.9	282.61	1.134 Level 2	
13,200.0	6,674.4	13,012.3	6,864.2	177.1	170.6	-126.27	-354.9	5,513.4	320.8	34.0	286.88	1.118 Level 2	
13,300.0	6,673.5	13,112.3	6,863.9	179.8	173.4	-126.36	-354.9	5,613.4	321.2	30.1	291.15	1.103 Level 2	
13,400.0	6,672.6	13,212.3	6,863.6	182.6	176.2	-126.45	-354.9	5,713.4	321.6	26.2	295.42	1.089 Level 2	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 190-402 - 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,500.0	6,671.6	13,312.3	6,863.3	185.4	179.0	-126.54	-354.9	5,813.4	322.0	22.3	299.67	1.074	Level 2	
13,600.0	6,670.7	13,412.3	6,863.0	188.2	181.8	-126.63	-354.9	5,913.4	322.3	18.4	303.91	1.061	Level 2	
13,700.0	6,669.8	13,512.3	6,862.7	191.0	184.6	-126.72	-354.9	6,013.4	322.7	14.6	308.15	1.047	Level 2	
13,800.0	6,668.9	13,612.3	6,862.5	193.8	187.4	-126.81	-354.9	6,113.4	323.1	10.7	312.38	1.034	Level 2	
13,900.0	6,667.9	13,712.3	6,862.2	196.5	190.1	-126.90	-354.9	6,213.4	323.5	6.9	316.60	1.022	Level 2	
14,000.0	6,667.0	13,812.3	6,861.9	199.3	192.9	-126.99	-354.9	6,313.4	323.8	3.0	320.81	1.009	Level 2	
14,100.0	6,666.1	13,912.3	6,861.6	202.1	195.7	-127.08	-354.9	6,413.4	324.2	-0.8	325.01	0.998	Level 1	
14,200.0	6,665.2	14,012.3	6,861.3	204.9	198.5	-127.17	-354.9	6,513.4	324.6	-4.6	329.21	0.986	Level 1	
14,300.0	6,664.2	14,112.3	6,861.0	207.7	201.3	-127.26	-354.9	6,613.4	325.0	-8.4	333.39	0.975	Level 1	
14,400.0	6,663.3	14,212.3	6,860.7	210.5	204.1	-127.34	-354.9	6,713.4	325.4	-12.2	337.57	0.964	Level 1	
14,500.0	6,662.4	14,312.3	6,860.4	213.3	206.9	-127.43	-354.9	6,813.4	325.7	-16.0	341.74	0.953	Level 1	
14,600.0	6,661.5	14,412.3	6,860.1	216.1	209.7	-127.52	-354.9	6,913.4	326.1	-19.8	345.90	0.943	Level 1	
14,700.0	6,660.5	14,512.3	6,859.8	218.9	212.5	-127.61	-354.9	7,013.4	326.5	-23.5	350.05	0.933	Level 1	
14,800.0	6,659.6	14,612.3	6,859.5	221.7	215.3	-127.69	-354.9	7,113.4	326.9	-27.3	354.19	0.923	Level 1	
14,900.0	6,658.7	14,712.3	6,859.2	224.5	218.1	-127.78	-354.9	7,213.3	327.3	-31.1	358.33	0.913	Level 1	
15,000.0	6,657.8	14,812.3	6,858.9	227.2	220.9	-127.87	-354.9	7,313.3	327.7	-34.8	362.45	0.904	Level 1	
15,100.0	6,656.8	14,912.3	6,858.6	230.0	223.7	-127.96	-354.9	7,413.3	328.0	-38.5	366.57	0.895	Level 1	
15,200.0	6,655.9	15,012.3	6,858.3	232.8	226.5	-128.04	-354.9	7,513.3	328.4	-42.2	370.68	0.886	Level 1	
15,300.0	6,655.0	15,112.3	6,858.0	235.6	229.3	-128.13	-354.9	7,613.3	328.8	-46.0	374.78	0.877	Level 1	
15,400.0	6,654.1	15,212.3	6,857.7	238.4	232.1	-128.21	-354.9	7,713.3	329.2	-49.7	378.87	0.869	Level 1	
15,500.0	6,653.1	15,312.3	6,857.4	241.2	234.9	-128.30	-354.9	7,813.3	329.6	-53.4	382.95	0.861	Level 1	
15,600.0	6,652.2	15,412.3	6,857.1	244.0	237.7	-128.39	-354.9	7,913.3	330.0	-57.0	387.02	0.853	Level 1	
15,700.0	6,651.3	15,512.3	6,856.8	246.8	240.5	-128.47	-354.9	8,013.3	330.4	-60.7	391.08	0.845	Level 1	
15,800.0	6,650.4	15,612.3	6,856.5	249.6	243.3	-128.56	-354.9	8,113.3	330.8	-64.4	395.14	0.837	Level 1	
15,900.0	6,649.4	15,712.3	6,856.2	252.4	246.1	-128.64	-354.9	8,213.3	331.2	-68.0	399.19	0.830	Level 1	
16,000.0	6,648.5	15,812.3	6,855.9	255.2	248.9	-128.73	-354.9	8,313.3	331.6	-71.7	403.22	0.822	Level 1	
16,100.0	6,647.6	15,912.3	6,855.6	258.0	251.7	-128.81	-354.9	8,413.3	331.9	-75.3	407.25	0.815	Level 1	
16,200.0	6,646.7	16,012.3	6,855.3	260.8	254.5	-128.89	-354.9	8,513.3	332.3	-78.9	411.27	0.808	Level 1	
16,300.0	6,645.7	16,112.3	6,855.0	263.6	257.3	-128.98	-354.9	8,613.3	332.7	-82.5	415.28	0.801	Level 1	
16,400.0	6,644.8	16,212.3	6,854.7	266.4	260.1	-129.06	-354.9	8,713.3	333.1	-86.2	419.29	0.795	Level 1	
16,500.0	6,643.9	16,312.3	6,854.4	269.2	262.9	-129.15	-354.9	8,813.3	333.5	-89.8	423.28	0.788	Level 1	
16,600.0	6,643.0	16,412.3	6,854.1	272.0	265.7	-129.23	-354.9	8,913.3	333.9	-93.3	427.27	0.782	Level 1	
16,700.0	6,642.0	16,512.3	6,853.8	274.8	268.5	-129.31	-354.9	9,013.3	334.3	-96.9	431.24	0.775	Level 1	
16,800.0	6,641.1	16,612.3	6,853.6	277.6	271.3	-129.40	-354.9	9,113.3	334.7	-100.5	435.21	0.769	Level 1	
16,900.0	6,640.2	16,712.3	6,853.3	280.4	274.1	-129.48	-354.9	9,213.3	335.1	-104.0	439.17	0.763	Level 1	
17,000.0	6,639.3	16,812.2	6,853.0	283.2	276.9	-129.56	-354.9	9,313.3	335.5	-107.6	443.12	0.757	Level 1	
17,100.0	6,638.3	16,912.2	6,852.7	286.0	279.7	-129.65	-354.9	9,413.3	335.9	-111.1	447.06	0.751	Level 1	
17,200.0	6,637.4	17,012.2	6,852.4	288.8	282.5	-129.73	-354.9	9,513.3	336.3	-114.7	450.99	0.746	Level 1	
17,300.0	6,636.5	17,112.2	6,852.1	291.6	285.3	-129.81	-354.9	9,613.3	336.7	-118.2	454.92	0.740	Level 1	
17,400.0	6,635.6	17,212.2	6,851.8	294.4	288.1	-129.89	-354.9	9,713.3	337.1	-121.7	458.83	0.735	Level 1	
17,500.0	6,634.6	17,312.2	6,851.5	297.2	290.9	-129.97	-354.9	9,813.3	337.5	-125.2	462.74	0.729	Level 1	
17,600.0	6,633.7	17,412.2	6,851.2	300.0	293.7	-130.06	-354.9	9,913.3	337.9	-128.7	466.63	0.724	Level 1	
17,700.0	6,632.8	17,512.2	6,850.9	302.8	296.5	-130.14	-354.9	10,013.3	338.3	-132.2	470.52	0.719	Level 1	
17,800.0	6,631.9	17,612.2	6,850.6	305.6	299.3	-130.22	-354.9	10,113.3	338.7	-135.7	474.40	0.714	Level 1	
17,900.0	6,630.9	17,712.2	6,850.3	308.4	302.1	-130.30	-354.9	10,213.3	339.1	-139.1	478.28	0.709	Level 1	
18,000.8	6,630.0	17,809.5	6,850.0	311.2	304.8	-130.38	-354.9	10,310.5	339.6	-142.5	482.11	0.704	Level 1, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-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 Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	0.0	-150.4	150.4				
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	0.0	-150.4	150.4	150.2	0.22	669.296	
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	0.0	-150.4	150.4	149.8	0.67	223.099 CC, ES	
300.0	300.0	297.4	297.3	0.6	0.5	-90.35	-0.9	-151.3	151.3	150.2	1.10	137.644	
400.0	400.0	394.6	394.5	0.8	0.7	-91.35	-3.6	-153.8	154.0	152.4	1.53	100.883	
500.0	500.0	491.6	491.3	1.0	1.0	-92.94	-8.1	-158.0	158.5	156.5	1.97	80.629	
600.0	600.0	588.2	587.5	1.2	1.2	-95.02	-14.4	-163.9	165.0	162.6	2.41	68.379	
700.0	700.0	684.3	683.0	1.5	1.5	-97.44	-22.4	-171.4	173.7	170.8	2.87	60.520	
800.0	800.0	779.8	777.5	1.7	1.8	-100.07	-32.0	-180.5	184.7	181.3	3.34	55.315	
900.0	900.0	874.5	871.0	1.9	2.1	-102.78	-43.3	-191.1	198.1	194.2	3.82	51.811	
1,000.0	1,000.0	968.5	963.3	2.1	2.5	-105.46	-56.2	-203.1	214.0	209.6	4.33	49.442	
1,100.0	1,100.0	1,061.7	1,054.4	2.3	2.9	11.11	-70.6	-216.7	231.1	226.3	4.82	47.975	
1,200.0	1,199.9	1,154.5	1,144.6	2.5	3.3	8.76	-86.5	-231.6	248.3	243.0	5.27	47.085	
1,300.0	1,299.7	1,246.9	1,233.8	2.7	3.8	6.58	-104.0	-248.0	265.5	259.8	5.74	46.265	
1,400.0	1,399.3	1,338.8	1,322.0	3.0	4.3	4.55	-122.9	-265.7	282.7	276.5	6.21	45.527	
1,500.0	1,498.6	1,430.8	1,409.7	3.2	4.9	2.63	-143.4	-284.9	299.8	293.1	6.69	44.833	
1,600.0	1,597.5	1,529.1	1,502.9	3.5	5.5	0.77	-165.9	-306.1	315.7	308.5	7.18	43.943	
1,700.0	1,696.1	1,627.7	1,596.5	3.8	6.1	-0.92	-188.5	-327.3	329.2	321.5	7.68	42.863	
1,800.0	1,794.2	1,726.7	1,690.5	4.1	6.8	-2.48	-211.2	-348.6	340.4	332.2	8.18	41.619	
1,900.0	1,891.7	1,825.9	1,784.6	4.5	7.4	-3.98	-234.0	-369.9	349.2	340.5	8.68	40.237	
2,000.0	1,988.6	1,925.2	1,879.0	4.9	8.0	-5.43	-256.8	-391.3	355.7	346.5	9.18	38.734	
2,100.0	2,084.9	2,024.7	1,973.4	5.4	8.7	-6.89	-279.6	-412.7	359.8	350.1	9.69	37.126	
2,200.0	2,180.4	2,124.3	2,067.9	5.9	9.3	-8.37	-302.4	-434.2	361.5	351.3	10.21	35.421	
2,234.6	2,213.2	2,158.7	2,100.6	6.1	9.5	-8.90	-310.3	-441.6	361.6	351.2	10.39	34.809	
2,300.0	2,275.2	2,223.8	2,162.4	6.5	10.0	-9.90	-325.2	-455.6	361.5	350.7	10.76	33.600	
2,327.7	2,301.5	2,251.4	2,188.5	6.6	10.1	-10.32	-331.6	-461.5	361.5	350.5	10.92	33.107	
2,400.0	2,370.1	2,323.3	2,256.9	7.1	10.6	-11.43	-348.1	-477.0	361.5	350.2	11.34	31.883	
2,500.0	2,464.9	2,422.9	2,351.3	7.7	11.3	-12.96	-370.9	-498.4	361.8	349.9	11.94	30.304	
2,600.0	2,559.7	2,522.4	2,445.8	8.3	11.9	-14.48	-393.7	-519.8	362.4	349.9	12.57	28.843	
2,700.0	2,654.5	2,621.9	2,540.3	8.9	12.6	-16.00	-416.5	-541.2	363.3	350.0	13.22	27.484	
2,800.0	2,749.3	2,721.4	2,634.8	9.5	13.2	-17.52	-439.4	-562.6	364.3	350.4	13.90	26.216	
2,900.0	2,844.2	2,821.0	2,729.3	10.2	13.9	-19.02	-462.2	-584.1	365.7	351.1	14.61	25.029	
3,000.0	2,939.0	2,920.5	2,823.7	10.8	14.5	-20.51	-485.0	-605.5	367.3	351.9	15.36	23.916	
3,100.0	3,033.8	3,020.0	2,918.2	11.5	15.2	-21.98	-507.8	-626.9	369.1	353.0	16.14	22.871	
3,200.0	3,128.6	3,119.5	3,012.7	12.1	15.8	-23.44	-530.7	-648.3	371.2	354.3	16.96	21.888	
3,300.0	3,223.4	3,219.1	3,107.2	12.8	16.5	-24.89	-553.5	-669.7	373.6	355.7	17.82	20.966	
3,400.0	3,318.3	3,318.6	3,201.6	13.4	17.1	-26.31	-576.3	-691.1	376.1	357.4	18.71	20.099	
3,500.0	3,413.1	3,418.1	3,296.1	14.1	17.8	-27.72	-599.1	-712.6	378.9	359.3	19.65	19.286	
3,600.0	3,507.9	3,517.7	3,390.6	14.7	18.4	-29.10	-622.0	-734.0	382.0	361.3	20.62	18.524	
3,700.0	3,602.7	3,617.2	3,485.1	15.4	19.1	-30.46	-644.8	-755.4	385.2	363.6	21.63	17.810	
3,800.0	3,697.6	3,716.7	3,579.6	16.1	19.7	-31.80	-667.6	-776.8	388.7	366.0	22.67	17.142	
3,900.0	3,792.4	3,816.2	3,674.0	16.7	20.4	-33.11	-690.4	-798.2	392.3	368.6	23.75	16.518	
4,000.0	3,887.2	3,915.8	3,768.5	17.4	21.0	-34.40	-713.3	-819.6	396.2	371.4	24.86	15.935	
4,100.0	3,982.0	4,015.3	3,863.0	18.1	21.7	-35.67	-736.1	-841.0	400.3	374.3	26.01	15.391	
4,200.0	4,076.8	4,114.8	3,957.5	18.7	22.3	-36.90	-758.9	-862.5	404.6	377.4	27.18	14.884	
4,300.0	4,171.7	4,214.4	4,052.0	19.4	23.0	-38.11	-781.7	-883.9	409.0	380.6	28.38	14.411	
4,400.0	4,266.5	4,313.9	4,146.4	20.1	23.6	-39.30	-804.6	-905.3	413.6	384.0	29.61	13.971	
4,500.0	4,361.3	4,413.4	4,240.9	20.7	24.3	-40.46	-827.4	-926.7	418.4	387.6	30.86	13.560	
4,600.0	4,456.1	4,512.9	4,335.4	21.4	25.0	-41.59	-850.2	-948.1	423.4	391.3	32.13	13.178	
4,700.0	4,551.0	4,612.5	4,429.9	22.1	25.6	-42.70	-873.0	-969.5	428.5	395.1	33.42	12.822	
4,800.0	4,645.8	4,712.0	4,524.3	22.7	26.3	-43.77	-895.9	-991.0	433.8	399.1	34.74	12.490	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,740.6	4,811.5	4,618.8	23.4	26.9	-44.83	-918.7	-1,012.4	439.3	403.2	36.06	12.180	
5,000.0	4,835.4	4,911.1	4,713.3	24.1	27.6	-45.85	-941.5	-1,033.8	444.9	407.5	37.41	11.892	
5,100.0	4,930.2	5,010.6	4,807.8	24.7	28.2	-46.86	-964.3	-1,055.2	450.6	411.8	38.77	11.623	
5,110.4	4,940.1	5,020.9	4,817.6	24.8	28.3	-46.96	-966.7	-1,057.4	451.2	412.3	38.91	11.596	
5,200.0	5,025.5	5,110.1	4,902.3	25.3	28.9	-47.79	-987.2	-1,076.6	457.4	417.4	40.03	11.428	
5,300.0	5,121.8	5,209.6	4,996.7	25.8	29.5	-48.43	-1,010.0	-1,098.0	466.6	425.5	41.06	11.363	
5,400.0	5,218.9	5,308.9	5,091.0	26.1	30.2	-48.77	-1,032.8	-1,119.4	478.1	436.2	41.93	11.402	
5,500.0	5,316.8	5,408.0	5,185.0	26.5	30.8	-48.83	-1,055.5	-1,140.7	491.9	449.3	42.63	11.538	
5,600.0	5,415.4	5,506.6	5,278.6	26.8	31.5	-48.64	-1,078.1	-1,161.9	508.0	464.8	43.17	11.767	
5,700.0	5,514.4	5,604.7	5,371.7	27.0	32.1	-48.22	-1,100.6	-1,183.0	526.4	482.9	43.55	12.087	
5,800.0	5,613.9	5,702.1	5,464.2	27.3	32.8	-47.61	-1,122.9	-1,204.0	547.2	503.4	43.78	12.498	
5,900.0	5,713.7	5,798.8	5,556.0	27.4	33.4	-46.85	-1,145.1	-1,224.8	570.5	526.6	43.88	13.000	
6,000.0	5,813.7	5,894.6	5,646.9	27.5	34.0	-45.97	-1,167.1	-1,245.4	596.3	552.4	43.86	13.595	
6,036.3	5,850.0	5,929.1	5,679.7	27.6	34.3	-164.77	-1,175.0	-1,252.8	606.3	552.8	53.53	11.327	
6,100.0	5,913.7	5,989.5	5,737.1	27.6	34.7	-163.92	-1,188.8	-1,265.8	624.3	569.9	54.31	11.494	
6,150.9	5,964.5	6,037.8	5,782.9	27.7	35.0	-163.27	-1,199.9	-1,276.2	638.7	583.8	54.92	11.628	
6,200.0	6,013.6	6,090.3	5,832.8	27.7	35.3	106.45	-1,212.0	-1,287.1	653.0	609.1	43.92	14.869	
6,250.0	6,063.4	6,153.9	5,894.0	27.7	35.6	106.27	-1,226.8	-1,296.2	667.7	623.6	44.11	15.136	
6,300.0	6,112.7	6,219.0	5,957.2	27.7	35.8	106.00	-1,242.0	-1,300.0	682.1	637.8	44.28	15.402	
6,350.0	6,161.4	6,285.8	6,022.0	27.6	36.0	105.64	-1,257.7	-1,298.1	696.1	651.7	44.45	15.662	
6,400.0	6,209.3	6,354.0	6,087.8	27.5	36.1	105.20	-1,273.7	-1,290.2	709.7	665.1	44.60	15.912	
6,450.0	6,256.1	6,423.7	6,154.1	27.4	36.2	104.67	-1,289.7	-1,275.9	722.7	678.0	44.75	16.151	
6,500.0	6,301.6	6,494.7	6,220.0	27.3	36.2	104.07	-1,305.7	-1,255.0	735.1	690.2	44.90	16.372	
6,550.0	6,345.8	6,566.9	6,284.8	27.1	36.2	103.37	-1,321.5	-1,227.4	746.7	701.6	45.06	16.572	
6,600.0	6,388.2	6,640.0	6,347.6	27.0	36.1	102.60	-1,336.7	-1,193.2	757.4	712.2	45.24	16.744	
6,650.0	6,428.9	6,713.9	6,407.5	26.9	36.0	101.76	-1,351.3	-1,152.4	767.3	721.9	45.46	16.880	
6,700.0	6,467.6	6,788.3	6,463.6	26.7	35.8	100.84	-1,365.0	-1,105.7	776.3	730.5	45.73	16.975	
6,750.0	6,504.1	6,862.8	6,515.1	26.6	35.7	99.86	-1,377.5	-1,053.4	784.2	738.1	46.08	17.020	
6,800.0	6,538.3	6,937.2	6,561.4	26.5	35.5	98.81	-1,388.8	-996.3	791.2	744.6	46.52	17.008	
6,850.0	6,570.1	7,011.1	6,601.8	26.4	35.2	97.72	-1,398.7	-935.2	797.1	750.0	47.07	16.935	
6,900.0	6,599.3	7,084.3	6,636.0	26.3	35.0	96.59	-1,407.1	-871.0	802.0	754.3	47.74	16.800	
6,950.0	6,625.7	7,156.5	6,663.7	26.3	34.8	95.42	-1,413.9	-804.7	805.9	757.4	48.53	16.608	
7,000.0	6,649.3	7,227.5	6,684.9	26.3	34.6	94.23	-1,419.2	-737.2	808.9	759.4	49.44	16.360	
7,050.0	6,670.0	7,297.0	6,699.7	26.3	34.4	93.03	-1,422.9	-669.4	810.9	760.5	50.45	16.072	
7,100.0	6,687.7	7,364.9	6,708.3	26.4	34.2	91.83	-1,425.1	-602.1	812.1	760.5	51.57	15.747	
7,150.0	6,702.2	7,431.2	6,711.0	26.6	34.0	90.62	-1,425.9	-536.0	812.4	759.7	52.75	15.400	
7,186.5	6,710.9	7,468.0	6,710.8	26.8	33.9	89.99	-1,425.9	-499.2	812.4	758.8	53.53	15.176	
7,200.0	6,713.6	7,481.2	6,710.7	26.8	33.9	89.80	-1,425.9	-486.0	812.4	758.6	53.80	15.099	
7,250.0	6,721.8	7,530.4	6,710.3	27.1	33.8	89.19	-1,425.9	-436.7	812.4	757.5	54.91	14.797	
7,300.0	6,726.8	7,580.1	6,709.9	27.4	33.8	88.81	-1,425.9	-387.0	812.5	756.5	56.06	14.494	
7,350.0	6,728.5	7,630.1	6,709.6	27.8	33.7	88.67	-1,425.9	-337.1	812.6	755.3	57.30	14.181	
7,357.9	6,728.4	7,638.0	6,709.5	27.9	33.8	88.66	-1,425.9	-329.1	812.6	755.1	57.50	14.131	
7,400.0	6,728.1	7,680.1	6,709.2	28.3	33.8	88.67	-1,425.9	-287.1	812.6	753.9	58.63	13.859	
7,500.0	6,727.1	7,780.1	6,708.4	29.4	34.2	88.68	-1,425.9	-187.1	812.6	751.0	61.61	13.188	
7,600.0	6,726.2	7,880.1	6,707.7	30.8	35.1	88.69	-1,425.9	-87.1	812.6	747.6	64.95	12.511	
7,700.0	6,725.3	7,980.1	6,706.9	32.4	36.6	88.71	-1,425.9	12.9	812.6	744.0	68.58	11.848	
7,800.0	6,724.4	8,080.1	6,706.2	34.1	38.4	88.72	-1,425.9	112.9	812.6	740.1	72.47	11.213	
7,900.0	6,723.4	8,180.1	6,705.4	36.1	40.5	88.73	-1,425.9	212.9	812.6	736.0	76.57	10.611	
8,000.0	6,722.5	8,280.1	6,704.7	38.2	42.7	88.74	-1,425.9	312.9	812.6	731.7	80.86	10.049	
8,100.0	6,721.6	8,380.1	6,703.9	40.3	45.0	88.76	-1,425.9	412.9	812.6	727.3	85.31	9.525	
8,200.0	6,720.7	8,480.1	6,703.2	42.6	47.4	88.77	-1,425.9	512.9	812.6	722.7	89.88	9.040	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (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	6,719.7	8,580.1	6,702.4	44.9	49.8	88.78	-1,425.9	612.9	812.6	718.0	94.57	8.592	
8,400.0	6,718.8	8,680.1	6,701.7	47.3	52.2	88.79	-1,425.9	712.9	812.5	713.2	99.36	8.178	
8,500.0	6,717.9	8,780.1	6,700.9	49.7	54.7	88.80	-1,425.9	812.9	812.5	708.3	104.22	7.796	
8,600.0	6,717.0	8,880.1	6,700.2	52.2	57.2	88.82	-1,425.9	912.9	812.5	703.4	109.17	7.443	
8,700.0	6,716.0	8,980.1	6,699.4	54.7	59.7	88.83	-1,425.9	1,012.9	812.5	698.4	114.17	7.117	
8,800.0	6,715.1	9,080.1	6,698.7	57.2	62.3	88.84	-1,425.9	1,112.9	812.5	693.3	119.23	6.815	
8,900.0	6,714.2	9,180.1	6,697.9	59.7	64.9	88.85	-1,425.9	1,212.9	812.5	688.2	124.33	6.535	
9,000.0	6,713.3	9,280.1	6,697.2	62.3	67.5	88.87	-1,425.9	1,312.9	812.5	683.0	129.48	6.275	
9,100.0	6,712.3	9,380.1	6,696.4	64.9	70.1	88.88	-1,425.9	1,412.9	812.5	677.9	134.67	6.033	
9,200.0	6,711.4	9,480.1	6,695.7	67.5	72.7	88.89	-1,425.9	1,512.9	812.5	672.6	139.89	5.808	
9,300.0	6,710.5	9,580.1	6,694.9	70.2	75.3	88.90	-1,425.9	1,612.9	812.5	667.4	145.14	5.598	
9,400.0	6,709.6	9,680.1	6,694.2	72.8	78.0	88.92	-1,425.9	1,712.9	812.5	662.1	150.42	5.402	
9,500.0	6,708.6	9,780.1	6,693.4	75.5	80.6	88.93	-1,425.9	1,812.9	812.5	656.8	155.72	5.218	
9,600.0	6,707.7	9,880.1	6,692.7	78.1	83.3	88.94	-1,425.9	1,912.9	812.5	651.5	161.04	5.045	
9,700.0	6,706.8	9,980.1	6,691.9	80.8	86.0	88.95	-1,425.9	2,012.9	812.5	646.1	166.38	4.883	
9,800.0	6,705.9	10,080.1	6,691.2	83.5	88.7	88.97	-1,425.9	2,112.9	812.5	640.8	171.74	4.731	
9,900.0	6,704.9	10,180.1	6,690.5	86.2	91.3	88.98	-1,425.9	2,212.9	812.5	635.4	177.12	4.587	
10,000.0	6,704.0	10,280.1	6,689.7	88.9	94.0	88.99	-1,425.9	2,312.9	812.5	630.0	182.51	4.452	
10,100.0	6,703.1	10,380.1	6,689.0	91.6	96.7	89.00	-1,425.9	2,412.8	812.5	624.6	187.91	4.324	
10,200.0	6,702.2	10,480.1	6,688.2	94.3	99.4	89.02	-1,425.9	2,512.8	812.5	619.2	193.33	4.203	
10,300.0	6,701.2	10,580.1	6,687.5	97.0	102.2	89.03	-1,425.9	2,612.8	812.5	613.7	198.75	4.088	
10,400.0	6,700.3	10,680.1	6,686.7	99.7	104.9	89.04	-1,425.9	2,712.8	812.5	608.3	204.19	3.979	
10,500.0	6,699.4	10,780.1	6,686.0	102.5	107.6	89.05	-1,425.9	2,812.8	812.5	602.9	209.64	3.876	
10,600.0	6,698.5	10,880.1	6,685.2	105.2	110.3	89.07	-1,425.9	2,912.8	812.5	597.4	215.09	3.777	
10,700.0	6,697.5	10,980.1	6,684.5	107.9	113.0	89.08	-1,425.9	3,012.8	812.5	591.9	220.56	3.684	
10,800.0	6,696.6	11,080.1	6,683.7	110.7	115.8	89.09	-1,425.9	3,112.8	812.5	586.5	226.03	3.595	
10,900.0	6,695.7	11,180.1	6,683.0	113.4	118.5	89.10	-1,425.9	3,212.8	812.5	581.0	231.51	3.510	
11,000.0	6,694.8	11,280.1	6,682.2	116.1	121.2	89.12	-1,425.9	3,312.8	812.5	575.5	236.99	3.428	
11,100.0	6,693.8	11,380.1	6,681.5	118.9	124.0	89.13	-1,425.9	3,412.8	812.5	570.0	242.48	3.351	
11,200.0	6,692.9	11,480.1	6,680.7	121.6	126.7	89.14	-1,425.9	3,512.8	812.5	564.5	247.98	3.276	
11,300.0	6,692.0	11,580.1	6,680.0	124.4	129.5	89.15	-1,425.9	3,612.8	812.5	559.0	253.48	3.205	
11,400.0	6,691.1	11,680.1	6,679.2	127.2	132.2	89.16	-1,425.9	3,712.8	812.5	553.5	258.99	3.137	
11,500.0	6,690.1	11,780.1	6,678.5	129.9	135.0	89.18	-1,425.9	3,812.8	812.5	548.0	264.50	3.072	
11,600.0	6,689.2	11,880.1	6,677.7	132.7	137.7	89.19	-1,425.9	3,912.8	812.5	542.5	270.02	3.009	
11,700.0	6,688.3	11,980.1	6,677.0	135.4	140.5	89.20	-1,425.9	4,012.8	812.5	536.9	275.54	2.949	
11,800.0	6,687.4	12,080.1	6,676.2	138.2	143.2	89.21	-1,425.9	4,112.8	812.5	531.4	281.06	2.891	
11,900.0	6,686.4	12,180.1	6,675.5	141.0	146.0	89.23	-1,425.9	4,212.8	812.5	525.9	286.59	2.835	
12,000.0	6,685.5	12,280.1	6,674.7	143.7	148.8	89.24	-1,425.9	4,312.8	812.5	520.3	292.12	2.781	
12,100.0	6,684.6	12,380.1	6,674.0	146.5	151.5	89.25	-1,425.9	4,412.8	812.5	514.8	297.66	2.730	
12,200.0	6,683.7	12,480.1	6,673.2	149.3	154.3	89.26	-1,425.9	4,512.8	812.5	509.3	303.19	2.680	
12,300.0	6,682.7	12,580.1	6,672.5	152.0	157.1	89.28	-1,425.9	4,612.8	812.5	503.7	308.74	2.632	
12,400.0	6,681.8	12,680.1	6,671.7	154.8	159.8	89.29	-1,425.9	4,712.8	812.5	498.2	314.28	2.585	
12,500.0	6,680.9	12,780.1	6,671.0	157.6	162.6	89.30	-1,425.9	4,812.8	812.5	492.6	319.83	2.540	
12,600.0	6,680.0	12,880.1	6,670.2	160.4	165.4	89.31	-1,425.9	4,912.8	812.5	487.1	325.37	2.497	
12,700.0	6,679.0	12,980.1	6,669.5	163.2	168.1	89.33	-1,425.9	5,012.8	812.5	481.5	330.93	2.455	
12,800.0	6,678.1	13,080.1	6,668.7	165.9	170.9	89.34	-1,425.9	5,112.8	812.4	476.0	336.48	2.415	
12,900.0	6,677.2	13,180.1	6,668.0	168.7	173.7	89.35	-1,425.9	5,212.8	812.4	470.4	342.04	2.375	
13,000.0	6,676.3	13,280.1	6,667.2	171.5	176.5	89.36	-1,425.9	5,312.8	812.4	464.9	347.59	2.337	
13,100.0	6,675.3	13,380.1	6,666.5	174.3	179.2	89.38	-1,425.9	5,412.8	812.4	459.3	353.15	2.301	
13,200.0	6,674.4	13,480.1	6,665.7	177.1	182.0	89.39	-1,425.9	5,512.8	812.4	453.7	358.71	2.265	
13,300.0	6,673.5	13,580.1	6,665.0	179.8	184.8	89.40	-1,425.9	5,612.8	812.4	448.2	364.28	2.230	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 19O-HZ Pad Sec.19-T5N-R64W - Klein 19P-202 - Wellbore #1 - Plan #3 (7-15-15)											Offset Site Error:		0.0 ft
Survey Program:		0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
13,400.0	6,672.6	13,680.1	6,664.2	182.6	187.6	89.41	-1,425.9	5,712.8	812.4	442.6	369.84	2.197			
13,500.0	6,671.6	13,780.1	6,663.5	185.4	190.3	89.43	-1,425.9	5,812.7	812.4	437.0	375.41	2.164			
13,600.0	6,670.7	13,880.1	6,662.7	188.2	193.1	89.44	-1,425.9	5,912.7	812.4	431.5	380.98	2.133			
13,700.0	6,669.8	13,980.1	6,662.0	191.0	195.9	89.45	-1,425.9	6,012.7	812.4	425.9	386.55	2.102			
13,800.0	6,668.9	14,080.1	6,661.2	193.8	198.7	89.46	-1,425.9	6,112.7	812.4	420.3	392.12	2.072			
13,900.0	6,667.9	14,180.1	6,660.5	196.5	201.5	89.48	-1,425.9	6,212.7	812.4	414.7	397.69	2.043			
14,000.0	6,667.0	14,280.1	6,659.7	199.3	204.3	89.49	-1,425.9	6,312.7	812.4	409.2	403.26	2.015			
14,100.0	6,666.1	14,380.1	6,659.0	202.1	207.0	89.50	-1,425.9	6,412.7	812.4	403.6	408.84	1.987			
14,200.0	6,665.2	14,480.1	6,658.2	204.9	209.8	89.51	-1,425.9	6,512.7	812.4	398.0	414.41	1.960			
14,300.0	6,664.2	14,580.1	6,657.5	207.7	212.6	89.52	-1,425.9	6,612.7	812.4	392.4	419.99	1.934			
14,400.0	6,663.3	14,680.1	6,656.7	210.5	215.4	89.54	-1,425.9	6,712.7	812.4	386.9	425.57	1.909			
14,500.0	6,662.4	14,780.1	6,656.0	213.3	218.2	89.55	-1,425.9	6,812.7	812.4	381.3	431.15	1.884			
14,600.0	6,661.5	14,880.1	6,655.2	216.1	221.0	89.56	-1,425.9	6,912.7	812.4	375.7	436.73	1.860			
14,700.0	6,660.5	14,980.1	6,654.5	218.9	223.8	89.57	-1,425.9	7,012.7	812.4	370.1	442.31	1.837			
14,800.0	6,659.6	15,080.1	6,653.7	221.7	226.5	89.59	-1,425.9	7,112.7	812.4	364.5	447.89	1.814			
14,900.0	6,658.7	15,180.1	6,653.0	224.5	229.3	89.60	-1,425.9	7,212.7	812.4	359.0	453.48	1.792			
15,000.0	6,657.8	15,280.1	6,652.2	227.2	232.1	89.61	-1,425.9	7,312.7	812.4	353.4	459.06	1.770			
15,100.0	6,656.8	15,380.1	6,651.5	230.0	234.9	89.62	-1,425.9	7,412.7	812.4	347.8	464.65	1.748			
15,200.0	6,655.9	15,480.1	6,650.8	232.8	237.7	89.64	-1,425.9	7,512.7	812.4	342.2	470.23	1.728			
15,300.0	6,655.0	15,580.1	6,650.0	235.6	240.5	89.65	-1,425.9	7,612.7	812.4	336.6	475.82	1.707			
15,400.0	6,654.1	15,680.1	6,649.3	238.4	243.3	89.66	-1,425.9	7,712.7	812.4	331.0	481.41	1.688			
15,500.0	6,653.1	15,780.1	6,648.5	241.2	246.1	89.67	-1,425.9	7,812.7	812.4	325.4	486.99	1.668			
15,600.0	6,652.2	15,880.1	6,647.8	244.0	248.9	89.69	-1,425.9	7,912.7	812.4	319.8	492.58	1.649			
15,700.0	6,651.3	15,980.1	6,647.0	246.8	251.7	89.70	-1,425.9	8,012.7	812.4	314.3	498.17	1.631			
15,800.0	6,650.4	16,080.1	6,646.3	249.6	254.4	89.71	-1,425.9	8,112.7	812.4	308.7	503.76	1.613			
15,900.0	6,649.4	16,180.1	6,645.5	252.4	257.2	89.72	-1,425.9	8,212.7	812.4	303.1	509.35	1.595			
16,000.0	6,648.5	16,280.1	6,644.8	255.2	260.0	89.74	-1,425.9	8,312.7	812.4	297.5	514.94	1.578			
16,100.0	6,647.6	16,380.1	6,644.0	258.0	262.8	89.75	-1,425.9	8,412.7	812.4	291.9	520.54	1.561			
16,200.0	6,646.7	16,480.1	6,643.3	260.8	265.6	89.76	-1,425.9	8,512.7	812.4	286.3	526.13	1.544			
16,300.0	6,645.7	16,580.1	6,642.5	263.6	268.4	89.77	-1,425.9	8,612.7	812.4	280.7	531.72	1.528			
16,400.0	6,644.8	16,680.1	6,641.8	266.4	271.2	89.79	-1,425.9	8,712.7	812.4	275.1	537.31	1.512			
16,500.0	6,643.9	16,780.1	6,641.0	269.2	274.0	89.80	-1,425.9	8,812.7	812.4	269.5	542.91	1.496	Level 3		
16,532.4	6,643.6	16,812.5	6,640.8	270.1	274.9	89.80	-1,425.9	8,845.0	812.4	267.7	544.72	1.491	Level 3		
16,600.0	6,643.0	16,880.1	6,640.3	272.0	276.8	89.81	-1,425.9	8,912.7	812.4	263.9	548.50	1.481	Level 3		
16,700.0	6,642.0	16,980.1	6,639.5	274.8	279.6	89.82	-1,425.9	9,012.7	812.4	258.3	554.10	1.466	Level 3		
16,800.0	6,641.1	17,080.1	6,638.8	277.6	282.4	89.83	-1,425.9	9,112.7	812.4	252.7	559.69	1.452	Level 3		
16,900.0	6,640.2	17,180.1	6,638.0	280.4	285.2	89.85	-1,425.9	9,212.6	812.4	247.1	565.29	1.437	Level 3		
17,000.0	6,639.3	17,280.1	6,637.3	283.2	288.0	89.86	-1,425.9	9,312.6	812.4	241.5	570.89	1.423	Level 3		
17,100.0	6,638.3	17,380.1	6,636.5	286.0	290.8	89.87	-1,425.9	9,412.6	812.4	235.9	576.48	1.409	Level 3		
17,200.0	6,637.4	17,480.1	6,635.8	288.8	293.6	89.88	-1,425.9	9,512.6	812.4	230.3	582.08	1.396	Level 3		
17,300.0	6,636.5	17,580.1	6,635.0	291.6	296.4	89.90	-1,425.9	9,612.6	812.4	224.7	587.68	1.382	Level 3		
17,400.0	6,635.6	17,680.1	6,634.3	294.4	299.2	89.91	-1,425.9	9,712.6	812.4	219.1	593.27	1.369	Level 3		
17,500.0	6,634.6	17,780.1	6,633.5	297.2	302.0	89.92	-1,425.9	9,812.6	812.4	213.6	598.87	1.357	Level 3		
17,600.0	6,633.7	17,880.1	6,632.8	300.0	304.8	89.93	-1,425.9	9,912.6	812.4	208.0	604.47	1.344	Level 3		
17,700.0	6,632.8	17,980.1	6,632.0	302.8	307.6	89.95	-1,425.9	10,012.6	812.4	202.4	610.07	1.332	Level 3		
17,800.0	6,631.9	18,080.1	6,631.3	305.6	310.4	89.96	-1,425.9	10,112.6	812.4	196.8	615.67	1.320	Level 3		
17,900.0	6,630.9	18,180.1	6,630.5	308.4	313.2	89.97	-1,425.9	10,212.6	812.4	191.2	621.27	1.308	Level 3		
17,947.2	6,630.5	18,227.2	6,630.2	309.7	314.5	89.98	-1,425.9	10,259.8	812.4	188.5	623.91	1.302	Level 3		
18,000.8	6,630.0	18,250.5	6,630.0	311.2	315.1	89.98	-1,425.9	10,283.1	813.0	186.9	626.07	1.299	Level 3, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-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
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	-79.03	29.1	-150.4	153.2					
100.0	100.0	100.0	100.0	0.1	0.1	-79.03	29.1	-150.4	153.2	153.0	0.22	681.744		
200.0	200.0	200.0	200.0	0.3	0.3	-79.03	29.1	-150.4	153.2	152.6	0.67	227.248		
300.0	300.0	300.0	300.0	0.6	0.6	-79.03	29.1	-150.4	153.2	152.1	1.12	136.349		
400.0	400.0	400.0	400.0	0.8	0.8	-79.03	29.1	-150.4	153.2	151.7	1.57	97.392 CC		
500.0	500.0	497.8	497.8	1.0	1.0	-79.42	28.3	-151.3	153.9	151.9	2.00	77.101		
600.0	600.0	595.5	595.4	1.2	1.2	-80.57	25.6	-153.9	156.1	153.7	2.41	64.698		
700.0	700.0	693.0	692.7	1.5	1.4	-82.41	21.1	-158.3	159.8	157.0	2.84	56.273		
800.0	800.0	790.0	789.4	1.7	1.6	-84.82	14.9	-164.3	165.3	162.0	3.28	50.466		
900.0	900.0	886.6	885.3	1.9	1.9	-87.68	7.0	-172.0	172.8	169.1	3.72	46.456		
1,000.0	1,000.0	982.5	980.3	2.1	2.2	-90.83	-2.6	-181.3	182.4	178.3	4.17	43.732		
1,100.0	1,100.0	1,077.9	1,074.4	2.3	2.5	25.11	-13.9	-192.3	193.3	188.6	4.69	41.209		
1,200.0	1,199.9	1,173.0	1,167.7	2.5	2.8	22.11	-26.7	-204.8	204.2	199.1	5.15	39.677		
1,300.0	1,299.7	1,267.7	1,260.2	2.7	3.2	19.28	-41.2	-218.8	215.2	209.6	5.62	38.315		
1,400.0	1,399.3	1,362.0	1,351.8	3.0	3.7	16.59	-57.2	-234.4	226.3	220.2	6.10	37.110		
1,500.0	1,498.6	1,455.9	1,442.5	3.2	4.1	14.03	-74.8	-251.5	237.4	230.8	6.58	36.065		
1,600.0	1,597.5	1,554.5	1,537.3	3.5	4.7	11.57	-94.2	-270.4	247.6	240.5	7.08	34.963		
1,700.0	1,696.1	1,653.7	1,632.7	3.8	5.2	9.39	-113.7	-289.4	255.7	248.1	7.58	33.719		
1,800.0	1,794.2	1,753.1	1,728.3	4.1	5.7	7.43	-133.3	-308.4	261.5	253.5	8.08	32.364		
1,900.0	1,891.7	1,852.7	1,824.1	4.5	6.3	5.62	-152.9	-327.5	265.1	256.5	8.58	30.909		
2,000.0	1,988.6	1,952.4	1,919.9	4.9	6.9	3.90	-172.6	-346.6	266.2	257.2	9.07	29.364		
2,100.0	2,084.9	2,052.1	2,015.7	5.4	7.4	2.22	-192.2	-365.7	265.0	255.5	9.55	27.742		
2,200.0	2,180.4	2,151.7	2,111.5	5.9	8.0	0.54	-211.8	-384.7	261.5	251.4	10.04	26.051		
2,234.6	2,213.2	2,186.1	2,144.6	6.1	8.2	-0.06	-218.6	-391.3	259.7	249.5	10.20	25.451		
2,300.0	2,275.2	2,251.2	2,207.3	6.5	8.6	-1.21	-231.4	-403.8	256.1	245.5	10.54	24.284		
2,400.0	2,370.1	2,350.8	2,303.0	7.1	9.1	-3.03	-251.0	-422.9	250.7	239.7	11.07	22.651		
2,500.0	2,464.9	2,450.3	2,398.7	7.7	9.7	-4.92	-270.6	-441.9	245.7	234.1	11.60	21.176		
2,600.0	2,559.7	2,549.8	2,494.4	8.3	10.3	-6.89	-290.2	-461.0	240.9	228.8	12.15	19.832		
2,700.0	2,654.5	2,649.4	2,590.1	8.9	10.8	-8.94	-309.8	-480.0	236.4	223.7	12.71	18.598		
2,800.0	2,749.3	2,748.9	2,685.8	9.5	11.4	-11.07	-329.4	-499.1	232.3	219.0	13.31	17.455		
2,900.0	2,844.2	2,848.4	2,781.5	10.2	12.0	-13.26	-349.0	-518.1	228.5	214.5	13.94	16.390		
3,000.0	2,939.0	2,948.0	2,877.2	10.8	12.6	-15.53	-368.6	-537.2	225.0	210.4	14.62	15.390		
3,100.0	3,033.8	3,047.5	2,972.9	11.5	13.1	-17.87	-388.2	-556.3	221.9	206.5	15.36	14.450		
3,200.0	3,128.6	3,147.0	3,068.6	12.1	13.7	-20.26	-407.8	-575.3	219.2	203.0	16.16	13.562		
3,300.0	3,223.4	3,246.6	3,164.3	12.8	14.3	-22.72	-427.3	-594.4	216.8	199.8	17.04	12.726		
3,400.0	3,318.3	3,346.1	3,260.0	13.4	14.9	-25.22	-446.9	-613.4	214.9	196.9	18.00	11.940		
3,500.0	3,413.1	3,445.6	3,355.7	14.1	15.4	-27.76	-466.5	-632.5	213.4	194.4	19.05	11.204		
3,600.0	3,507.9	3,545.2	3,451.4	14.7	16.0	-30.33	-486.1	-651.5	212.3	192.1	20.18	10.520		
3,700.0	3,602.7	3,644.7	3,547.1	15.4	16.6	-32.92	-505.7	-670.6	211.7	190.3	21.41	9.889		
3,795.4	3,693.2	3,739.7	3,638.5	16.0	17.2	-35.40	-524.4	-688.8	211.5	188.8	22.65	9.335		
3,800.0	3,697.6	3,744.2	3,642.8	16.1	17.2	-35.52	-525.3	-689.6	211.5	188.8	22.72	9.310		
3,900.0	3,792.4	3,843.8	3,738.6	16.7	17.8	-38.12	-544.9	-708.7	211.7	187.6	24.10	8.783		
4,000.0	3,887.2	3,943.3	3,834.3	17.4	18.3	-40.71	-564.5	-727.8	212.4	186.8	25.57	8.308		
4,100.0	3,982.0	4,042.8	3,930.0	18.1	18.9	-43.28	-584.1	-746.8	213.5	186.4	27.09	7.881		
4,200.0	4,076.8	4,142.4	4,025.7	18.7	19.5	-45.82	-603.7	-765.9	215.1	186.4	28.67	7.500		
4,300.0	4,171.7	4,241.9	4,121.4	19.4	20.1	-48.31	-623.3	-784.9	217.0	186.7	30.30	7.162		
4,400.0	4,266.5	4,341.4	4,217.1	20.1	20.7	-50.76	-642.9	-804.0	219.4	187.4	31.96	6.864		
4,500.0	4,361.3	4,441.0	4,312.8	20.7	21.2	-53.15	-662.5	-823.0	222.1	188.5	33.65	6.602		
4,600.0	4,456.1	4,540.5	4,408.5	21.4	21.8	-55.48	-682.1	-842.1	225.3	189.9	35.35	6.373		
4,700.0	4,551.0	4,640.0	4,504.2	22.1	22.4	-57.74	-701.7	-861.2	228.8	191.7	37.06	6.173		
4,800.0	4,645.8	4,739.6	4,599.9	22.7	23.0	-59.93	-721.3	-880.2	232.7	193.9	38.78	6.000		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design		Klein 190-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
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
4,900.0	4,740.6	4,839.1	4,695.6	23.4	23.5	-62.05	-740.9	-899.3	236.8	196.4	40.49	5.850			
5,000.0	4,835.4	4,938.6	4,791.3	24.1	24.1	-64.09	-760.5	-918.3	241.3	199.2	42.18	5.721			
5,100.0	4,930.2	5,038.2	4,887.0	24.7	24.7	-66.06	-780.1	-937.4	246.1	202.3	43.87	5.610			
5,110.4	4,940.1	5,048.5	4,897.0	24.8	24.8	-66.25	-782.1	-939.4	246.7	202.6	44.05	5.600			
5,200.0	5,025.5	5,137.7	4,982.8	25.3	25.3	-67.74	-799.7	-956.4	251.7	206.4	45.38	5.547			
5,300.0	5,121.8	5,237.4	5,078.6	25.8	25.9	-68.68	-819.3	-975.5	258.8	212.2	46.55	5.560			
5,400.0	5,218.9	5,337.1	5,174.5	26.1	26.4	-68.90	-838.9	-994.6	267.1	219.6	47.46	5.628			
5,500.0	5,316.8	5,436.6	5,270.1	26.5	27.0	-68.46	-858.5	-1,013.7	276.7	228.6	48.13	5.749			
5,600.0	5,415.4	5,535.8	5,365.5	26.8	27.6	-67.45	-878.0	-1,032.7	287.6	239.1	48.56	5.923			
5,700.0	5,514.4	5,634.6	5,460.5	27.0	28.2	-65.94	-897.5	-1,051.6	300.1	251.4	48.76	6.155			
5,800.0	5,613.9	5,732.9	5,555.1	27.3	28.8	-64.03	-916.9	-1,070.4	314.4	265.6	48.73	6.452			
5,900.0	5,713.7	5,830.5	5,649.0	27.4	29.3	-61.82	-936.1	-1,089.1	330.7	282.2	48.48	6.820			
6,000.0	5,813.7	5,927.4	5,742.1	27.5	29.9	-59.41	-955.2	-1,107.6	349.3	301.2	48.04	7.270			
6,036.3	5,850.0	5,962.4	5,775.8	27.6	30.1	-177.64	-962.0	-1,114.3	356.6	312.4	44.27	8.056			
6,100.0	5,913.7	6,023.7	5,834.7	27.6	30.5	-175.87	-974.1	-1,126.1	370.1	324.6	45.43	8.145			
6,150.9	5,964.5	6,072.6	5,881.7	27.7	30.7	-174.53	-983.7	-1,135.4	381.0	334.7	46.32	8.225			
6,200.0	6,013.6	6,120.4	5,927.7	27.7	31.0	96.07	-993.1	-1,144.4	392.0	344.9	47.05	8.331			
6,250.0	6,063.4	6,171.4	5,977.2	27.7	31.2	96.78	-1,003.3	-1,151.6	403.4	356.5	46.87	8.607			
6,300.0	6,112.7	6,223.4	6,027.9	27.7	31.4	97.41	-1,013.7	-1,155.3	415.0	368.3	46.64	8.897			
6,350.0	6,161.4	6,276.2	6,079.7	27.6	31.5	97.98	-1,024.3	-1,155.6	426.7	380.3	46.39	9.198			
6,400.0	6,209.3	6,330.0	6,132.3	27.5	31.6	98.47	-1,035.1	-1,152.0	438.4	392.3	46.12	9.506			
6,450.0	6,256.1	6,384.8	6,185.5	27.4	31.7	98.90	-1,046.0	-1,144.6	450.0	404.2	45.83	9.820			
6,500.0	6,301.6	6,440.7	6,239.0	27.3	31.7	99.26	-1,057.0	-1,133.0	461.6	416.0	45.53	10.137			
6,550.0	6,345.8	6,497.7	6,292.5	27.1	31.8	99.56	-1,068.0	-1,117.1	472.8	427.6	45.23	10.454			
6,600.0	6,388.2	6,555.8	6,345.8	27.0	31.7	99.81	-1,079.0	-1,096.7	483.8	438.9	44.94	10.766			
6,650.0	6,428.9	6,614.9	6,398.3	26.9	31.7	100.00	-1,089.8	-1,071.8	494.4	449.8	44.67	11.069			
6,700.0	6,467.6	6,675.2	6,449.8	26.7	31.6	100.13	-1,100.4	-1,042.2	504.6	460.2	44.43	11.356			
6,750.0	6,504.1	6,736.6	6,499.6	26.6	31.5	100.21	-1,110.7	-1,007.9	514.2	469.9	44.25	11.620			
6,800.0	6,538.3	6,799.1	6,547.4	26.5	31.4	100.25	-1,120.6	-968.9	523.2	479.0	44.14	11.853			
6,850.0	6,570.1	6,862.5	6,592.6	26.4	31.2	100.23	-1,129.9	-925.4	531.5	487.4	44.12	12.045			
6,900.0	6,599.3	6,926.9	6,634.6	26.3	31.1	100.16	-1,138.6	-877.5	539.0	494.8	44.23	12.187			
6,950.0	6,625.7	6,992.0	6,673.0	26.3	30.9	100.04	-1,146.6	-825.5	545.7	501.3	44.47	12.271			
7,000.0	6,649.3	7,057.9	6,707.3	26.3	30.7	99.88	-1,153.7	-769.7	551.6	506.7	44.88	12.289			
7,050.0	6,670.0	7,124.3	6,736.9	26.3	30.5	99.67	-1,159.9	-710.6	556.5	511.0	45.48	12.237			
7,100.0	6,687.7	7,191.1	6,761.6	26.4	30.3	99.40	-1,165.1	-648.8	560.5	514.2	46.25	12.118			
7,150.0	6,702.2	7,258.1	6,780.9	26.6	30.1	99.10	-1,169.2	-584.8	563.4	516.2	47.22	11.933			
7,200.0	6,713.6	7,325.1	6,794.6	26.8	30.0	98.75	-1,172.1	-519.3	565.4	517.1	48.36	11.691			
7,250.0	6,721.8	7,392.0	6,802.7	27.1	29.8	98.35	-1,173.9	-452.9	566.4	516.7	49.66	11.405			
7,300.0	6,726.8	7,458.5	6,805.0	27.4	29.7	97.92	-1,174.5	-386.5	566.4	515.3	51.10	11.084			
7,350.0	6,728.5	7,508.7	6,804.6	27.8	29.7	97.72	-1,174.5	-336.3	566.1	513.7	52.41	10.801			
7,357.6	6,728.5	7,516.3	6,804.5	27.9	29.7	97.72	-1,174.5	-328.6	566.1	513.5	52.62	10.758			
7,357.9	6,728.4	7,516.7	6,804.5	27.9	29.7	97.72	-1,174.5	-328.3	566.1	513.5	52.63	10.756			
7,400.0	6,728.1	7,558.7	6,804.1	28.3	29.7	97.72	-1,174.5	-286.3	566.1	512.4	53.71	10.540			
7,500.0	6,727.1	7,658.7	6,803.2	29.4	30.0	97.73	-1,174.5	-186.3	566.1	509.6	56.55	10.011			
7,600.0	6,726.2	7,758.7	6,802.3	30.8	31.0	97.73	-1,174.5	-86.3	566.1	506.3	59.78	9.470			
7,700.0	6,725.3	7,858.7	6,801.5	32.4	32.5	97.73	-1,174.5	13.7	566.1	502.8	63.33	8.939			
7,800.0	6,724.4	7,958.7	6,800.6	34.1	34.4	97.74	-1,174.5	113.7	566.1	499.0	67.16	8.429			
7,900.0	6,723.4	8,058.7	6,799.7	36.1	36.5	97.74	-1,174.5	213.7	566.1	494.9	71.22	7.949			
8,000.0	6,722.5	8,158.7	6,798.8	38.2	38.8	97.74	-1,174.5	313.7	566.1	490.7	75.48	7.501			
8,100.0	6,721.6	8,258.7	6,797.9	40.3	41.1	97.75	-1,174.5	413.7	566.1	486.3	79.89	7.086			
8,200.0	6,720.7	8,358.7	6,797.0	42.6	43.4	97.75	-1,174.5	513.7	566.1	481.7	84.44	6.704			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-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
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	6,719.7	8,458.7	6,796.1	44.9	45.8	97.76	-1,174.5	613.7	566.2	477.0	89.11	6.353	
8,400.0	6,718.8	8,558.7	6,795.2	47.3	48.3	97.76	-1,174.5	713.7	566.2	472.3	93.88	6.031	
8,500.0	6,717.9	8,658.7	6,794.4	49.7	50.8	97.76	-1,174.5	813.7	566.2	467.4	98.73	5.734	
8,600.0	6,717.0	8,758.7	6,793.5	52.2	53.3	97.77	-1,174.5	913.7	566.2	462.5	103.65	5.462	
8,700.0	6,716.0	8,858.7	6,792.6	54.7	55.8	97.77	-1,174.5	1,013.7	566.2	457.5	108.64	5.211	
8,800.0	6,715.1	8,958.7	6,791.7	57.2	58.4	97.77	-1,174.5	1,113.7	566.2	452.5	113.68	4.980	
8,900.0	6,714.2	9,058.7	6,790.8	59.7	61.0	97.78	-1,174.5	1,213.7	566.2	447.4	118.77	4.767	
9,000.0	6,713.3	9,158.7	6,789.9	62.3	63.6	97.78	-1,174.5	1,313.7	566.2	442.3	123.90	4.570	
9,100.0	6,712.3	9,258.7	6,789.0	64.9	66.2	97.79	-1,174.5	1,413.7	566.2	437.1	129.07	4.387	
9,200.0	6,711.4	9,358.7	6,788.2	67.5	68.8	97.79	-1,174.5	1,513.7	566.2	431.9	134.26	4.217	
9,300.0	6,710.5	9,458.7	6,787.3	70.2	71.5	97.79	-1,174.5	1,613.7	566.2	426.7	139.49	4.059	
9,400.0	6,709.6	9,558.7	6,786.4	72.8	74.1	97.80	-1,174.5	1,713.7	566.2	421.5	144.74	3.912	
9,500.0	6,708.6	9,658.7	6,785.5	75.5	76.8	97.80	-1,174.5	1,813.7	566.2	416.2	150.02	3.774	
9,600.0	6,707.7	9,758.7	6,784.6	78.1	79.5	97.81	-1,174.5	1,913.7	566.2	410.9	155.32	3.646	
9,700.0	6,706.8	9,858.7	6,783.7	80.8	82.2	97.81	-1,174.5	2,013.7	566.2	405.6	160.63	3.525	
9,800.0	6,705.9	9,958.7	6,782.8	83.5	84.9	97.81	-1,174.5	2,113.7	566.2	400.3	165.96	3.412	
9,900.0	6,704.9	10,058.7	6,781.9	86.2	87.5	97.82	-1,174.5	2,213.6	566.2	394.9	171.31	3.305	
10,000.0	6,704.0	10,158.7	6,781.1	88.9	90.3	97.82	-1,174.5	2,313.6	566.3	389.6	176.67	3.205	
10,100.0	6,703.1	10,258.7	6,780.2	91.6	93.0	97.82	-1,174.5	2,413.6	566.3	384.2	182.04	3.111	
10,200.0	6,702.2	10,358.7	6,779.3	94.3	95.7	97.83	-1,174.5	2,513.6	566.3	378.8	187.43	3.021	
10,300.0	6,701.2	10,458.7	6,778.4	97.0	98.4	97.83	-1,174.5	2,613.6	566.3	373.4	192.82	2.937	
10,400.0	6,700.3	10,558.7	6,777.5	99.7	101.1	97.84	-1,174.5	2,713.6	566.3	368.1	198.22	2.857	
10,500.0	6,699.4	10,658.7	6,776.6	102.5	103.9	97.84	-1,174.5	2,813.6	566.3	362.6	203.64	2.781	
10,600.0	6,698.5	10,758.7	6,775.7	105.2	106.6	97.84	-1,174.5	2,913.6	566.3	357.2	209.06	2.709	
10,700.0	6,697.5	10,858.7	6,774.8	107.9	109.3	97.85	-1,174.5	3,013.6	566.3	351.8	214.49	2.640	
10,800.0	6,696.6	10,958.7	6,774.0	110.7	112.1	97.85	-1,174.5	3,113.6	566.3	346.4	219.92	2.575	
10,900.0	6,695.7	11,058.7	6,773.1	113.4	114.8	97.85	-1,174.5	3,213.6	566.3	340.9	225.37	2.513	
11,000.0	6,694.8	11,158.7	6,772.2	116.1	117.5	97.86	-1,174.5	3,313.6	566.3	335.5	230.81	2.454	
11,100.0	6,693.8	11,258.7	6,771.3	118.9	120.3	97.86	-1,174.5	3,413.6	566.3	330.0	236.27	2.397	
11,200.0	6,692.9	11,358.7	6,770.4	121.6	123.0	97.87	-1,174.5	3,513.6	566.3	324.6	241.73	2.343	
11,300.0	6,692.0	11,458.7	6,769.5	124.4	125.8	97.87	-1,174.5	3,613.6	566.3	319.1	247.19	2.291	
11,400.0	6,691.1	11,558.7	6,768.6	127.2	128.6	97.87	-1,174.5	3,713.6	566.3	313.7	252.66	2.241	
11,500.0	6,690.1	11,658.7	6,767.7	129.9	131.3	97.88	-1,174.5	3,813.6	566.3	308.2	258.13	2.194	
11,600.0	6,689.2	11,758.7	6,766.9	132.7	134.1	97.88	-1,174.5	3,913.6	566.3	302.7	263.61	2.148	
11,700.0	6,688.3	11,858.7	6,766.0	135.4	136.8	97.88	-1,174.5	4,013.6	566.4	297.3	269.09	2.105	
11,800.0	6,687.4	11,958.7	6,765.1	138.2	139.6	97.89	-1,174.5	4,113.6	566.4	291.8	274.57	2.063	
11,900.0	6,686.4	12,058.7	6,764.2	141.0	142.4	97.89	-1,174.5	4,213.6	566.4	286.3	280.06	2.022	
12,000.0	6,685.5	12,158.7	6,763.3	143.7	145.1	97.90	-1,174.5	4,313.6	566.4	280.8	285.55	1.983	
12,100.0	6,684.6	12,258.7	6,762.4	146.5	147.9	97.90	-1,174.5	4,413.6	566.4	275.3	291.04	1.946	
12,200.0	6,683.7	12,358.7	6,761.5	149.3	150.7	97.90	-1,174.5	4,513.6	566.4	269.8	296.54	1.910	
12,300.0	6,682.7	12,458.7	6,760.6	152.0	153.4	97.91	-1,174.5	4,613.6	566.4	264.4	302.04	1.875	
12,400.0	6,681.8	12,558.7	6,759.8	154.8	156.2	97.91	-1,174.5	4,713.5	566.4	258.9	307.54	1.842	
12,500.0	6,680.9	12,658.7	6,758.9	157.6	159.0	97.91	-1,174.5	4,813.5	566.4	253.4	313.04	1.809	
12,600.0	6,680.0	12,758.7	6,758.0	160.4	161.8	97.92	-1,174.5	4,913.5	566.4	247.9	318.54	1.778	
12,700.0	6,679.0	12,858.7	6,757.1	163.2	164.5	97.92	-1,174.5	5,013.5	566.4	242.4	324.05	1.748	
12,800.0	6,678.1	12,958.7	6,756.2	165.9	167.3	97.93	-1,174.5	5,113.5	566.4	236.9	329.56	1.719	
12,900.0	6,677.2	13,058.7	6,755.3	168.7	170.1	97.93	-1,174.5	5,213.5	566.4	231.3	335.07	1.690	
13,000.0	6,676.3	13,158.7	6,754.4	171.5	172.9	97.93	-1,174.5	5,313.5	566.4	225.8	340.58	1.663	
13,100.0	6,675.3	13,258.7	6,753.5	174.3	175.7	97.94	-1,174.5	5,413.5	566.4	220.3	346.10	1.637	
13,200.0	6,674.4	13,358.7	6,752.7	177.1	178.4	97.94	-1,174.5	5,513.5	566.4	214.8	351.61	1.611	
13,300.0	6,673.5	13,458.7	6,751.8	179.8	181.2	97.95	-1,174.5	5,613.5	566.4	209.3	357.13	1.586	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Klein 190-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 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	6,672.6	13,558.7	6,750.9	182.6	184.0	97.95	-1,174.5	5,713.5	566.4	203.8	362.65	1.562		
13,500.0	6,671.6	13,658.7	6,750.0	185.4	186.8	97.95	-1,174.5	5,813.5	566.5	198.3	368.17	1.539		
13,600.0	6,670.7	13,758.7	6,749.1	188.2	189.6	97.96	-1,174.5	5,913.5	566.5	192.8	373.69	1.516		
13,700.0	6,669.8	13,858.7	6,748.2	191.0	192.4	97.96	-1,174.5	6,013.5	566.5	187.3	379.21	1.494 Level 3		
13,800.0	6,668.9	13,958.7	6,747.3	193.8	195.1	97.96	-1,174.5	6,113.5	566.5	181.7	384.74	1.472 Level 3		
13,900.0	6,667.9	14,058.7	6,746.5	196.5	197.9	97.97	-1,174.5	6,213.5	566.5	176.2	390.26	1.452 Level 3		
14,000.0	6,667.0	14,158.7	6,745.6	199.3	200.7	97.97	-1,174.5	6,313.5	566.5	170.7	395.79	1.431 Level 3		
14,100.0	6,666.1	14,258.7	6,744.7	202.1	203.5	97.98	-1,174.5	6,413.5	566.5	165.2	401.32	1.412 Level 3		
14,200.0	6,665.2	14,358.7	6,743.8	204.9	206.3	97.98	-1,174.5	6,513.5	566.5	159.7	406.84	1.392 Level 3		
14,300.0	6,664.2	14,458.7	6,742.9	207.7	209.1	97.98	-1,174.5	6,613.5	566.5	154.1	412.37	1.374 Level 3		
14,400.0	6,663.3	14,558.7	6,742.0	210.5	211.9	97.99	-1,174.5	6,713.5	566.5	148.6	417.90	1.356 Level 3		
14,500.0	6,662.4	14,658.7	6,741.1	213.3	214.7	97.99	-1,174.5	6,813.5	566.5	143.1	423.43	1.338 Level 3		
14,600.0	6,661.5	14,758.7	6,740.2	216.1	217.4	97.99	-1,174.5	6,913.5	566.5	137.6	428.97	1.321 Level 3		
14,700.0	6,660.5	14,858.7	6,739.4	218.9	220.2	98.00	-1,174.5	7,013.5	566.5	132.0	434.50	1.304 Level 3		
14,800.0	6,659.6	14,958.7	6,738.5	221.7	223.0	98.00	-1,174.5	7,113.5	566.5	126.5	440.03	1.287 Level 3		
14,900.0	6,658.7	15,058.7	6,737.6	224.5	225.8	98.01	-1,174.5	7,213.5	566.5	121.0	445.57	1.272 Level 3		
15,000.0	6,657.8	15,158.7	6,736.7	227.2	228.6	98.01	-1,174.5	7,313.4	566.5	115.4	451.10	1.256 Level 3		
15,100.0	6,656.8	15,258.7	6,735.8	230.0	231.4	98.01	-1,174.5	7,413.4	566.5	109.9	456.63	1.241 Level 2		
15,200.0	6,655.9	15,358.7	6,734.9	232.8	234.2	98.02	-1,174.5	7,513.4	566.6	104.4	462.17	1.226 Level 2		
15,300.0	6,655.0	15,458.7	6,734.0	235.6	237.0	98.02	-1,174.5	7,613.4	566.6	98.9	467.71	1.211 Level 2		
15,400.0	6,654.1	15,558.7	6,733.1	238.4	239.8	98.02	-1,174.5	7,713.4	566.6	93.3	473.24	1.197 Level 2		
15,500.0	6,653.1	15,658.7	6,732.3	241.2	242.6	98.03	-1,174.5	7,813.4	566.6	87.8	478.78	1.183 Level 2		
15,600.0	6,652.2	15,758.7	6,731.4	244.0	245.4	98.03	-1,174.5	7,913.4	566.6	82.3	484.32	1.170 Level 2		
15,700.0	6,651.3	15,858.7	6,730.5	246.8	248.2	98.04	-1,174.5	8,013.4	566.6	76.7	489.86	1.157 Level 2		
15,800.0	6,650.4	15,958.7	6,729.6	249.6	251.0	98.04	-1,174.5	8,113.4	566.6	71.2	495.40	1.144 Level 2		
15,900.0	6,649.4	16,058.7	6,728.7	252.4	253.7	98.04	-1,174.5	8,213.4	566.6	65.7	500.94	1.131 Level 2		
16,000.0	6,648.5	16,158.7	6,727.8	255.2	256.5	98.05	-1,174.5	8,313.4	566.6	60.1	506.48	1.119 Level 2		
16,100.0	6,647.6	16,258.7	6,726.9	258.0	259.3	98.05	-1,174.5	8,413.4	566.6	54.6	512.02	1.107 Level 2		
16,200.0	6,646.7	16,358.7	6,726.0	260.8	262.1	98.05	-1,174.5	8,513.4	566.6	49.1	517.56	1.095 Level 2		
16,300.0	6,645.7	16,458.7	6,725.2	263.6	264.9	98.06	-1,174.5	8,613.4	566.6	43.5	523.10	1.083 Level 2		
16,400.0	6,644.8	16,558.7	6,724.3	266.4	267.7	98.06	-1,174.5	8,713.4	566.6	38.0	528.64	1.072 Level 2		
16,500.0	6,643.9	16,658.7	6,723.4	269.2	270.5	98.07	-1,174.5	8,813.4	566.6	32.4	534.18	1.061 Level 2		
16,600.0	6,643.0	16,758.7	6,722.5	272.0	273.3	98.07	-1,174.5	8,913.4	566.6	26.9	539.73	1.050 Level 2		
16,700.0	6,642.0	16,858.7	6,721.6	274.8	276.1	98.07	-1,174.5	9,013.4	566.6	21.4	545.27	1.039 Level 2		
16,800.0	6,641.1	16,958.7	6,720.7	277.6	278.9	98.08	-1,174.5	9,113.4	566.6	15.8	550.81	1.029 Level 2		
16,900.0	6,640.2	17,058.7	6,719.8	280.4	281.7	98.08	-1,174.5	9,213.4	566.7	10.3	556.35	1.019 Level 2		
17,000.0	6,639.3	17,158.7	6,718.9	283.2	284.5	98.08	-1,174.5	9,313.4	566.7	4.8	561.90	1.008 Level 2		
17,100.0	6,638.3	17,258.7	6,718.1	286.0	287.3	98.09	-1,174.5	9,413.4	566.7	-0.8	567.44	0.999 Level 1		
17,200.0	6,637.4	17,358.7	6,717.2	288.8	290.1	98.09	-1,174.5	9,513.4	566.7	-6.3	572.99	0.989 Level 1		
17,300.0	6,636.5	17,458.7	6,716.3	291.6	292.9	98.10	-1,174.5	9,613.4	566.7	-11.9	578.53	0.980 Level 1		
17,400.0	6,635.6	17,558.7	6,715.4	294.4	295.7	98.10	-1,174.5	9,713.4	566.7	-17.4	584.08	0.970 Level 1		
17,500.0	6,634.6	17,658.7	6,714.5	297.2	298.5	98.10	-1,174.5	9,813.3	566.7	-22.9	589.62	0.961 Level 1		
17,600.0	6,633.7	17,758.7	6,713.6	300.0	301.3	98.11	-1,174.5	9,913.3	566.7	-28.5	595.17	0.952 Level 1		
17,700.0	6,632.8	17,858.7	6,712.7	302.8	304.1	98.11	-1,174.5	10,013.3	566.7	-34.0	600.71	0.943 Level 1		
17,800.0	6,631.9	17,958.7	6,711.9	305.6	306.9	98.12	-1,174.5	10,113.3	566.7	-39.5	606.26	0.935 Level 1		
17,900.0	6,630.9	18,058.7	6,711.0	308.4	309.7	98.12	-1,174.5	10,213.3	566.7	-45.1	611.80	0.926 Level 1		
18,000.8	6,630.0	18,159.5	6,710.1	311.2	312.5	98.12	-1,174.5	10,314.1	566.7	-50.7	617.39	0.918 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:		0.0 ft
Survey Program: 146-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5,900.0	5,713.7	11,018.0	6,717.7	27.4	125.1	-84.00	-671.9	-1,122.6	994.1	852.2	141.88	7.006			
6,000.0	5,813.7	11,018.0	6,717.7	27.5	125.1	-47.12	-671.9	-1,122.6	894.2	749.8	144.44	6.191			
6,036.3	5,850.0	11,018.0	6,717.7	27.6	125.1	-158.81	-671.9	-1,122.6	858.0	788.6	69.38	12.366			
6,100.0	5,913.7	11,018.0	6,717.7	27.6	125.1	-158.81	-671.9	-1,122.6	794.5	725.0	69.45	11.440			
6,150.9	5,964.5	11,018.0	6,717.7	27.7	125.1	-158.81	-671.9	-1,122.6	743.8	674.3	69.50	10.701			
6,200.0	6,013.6	11,018.0	6,717.7	27.7	125.1	139.61	-671.9	-1,122.6	694.9	596.3	98.66	7.044			
6,250.0	6,063.4	11,018.0	6,717.7	27.7	125.1	152.45	-671.9	-1,122.6	645.6	570.0	75.57	8.543			
6,300.0	6,112.7	11,018.0	6,717.7	27.7	125.1	158.92	-671.9	-1,122.6	597.0	533.4	63.59	9.388			
6,350.0	6,161.4	11,018.0	6,717.7	27.6	125.1	162.67	-671.9	-1,122.6	549.5	492.8	56.73	9.687			
6,400.0	6,209.3	11,018.0	6,717.7	27.5	125.1	165.05	-671.9	-1,122.6	503.8	451.3	52.50	9.596			
6,450.0	6,256.1	11,018.0	6,717.7	27.4	125.1	166.65	-671.9	-1,122.6	460.5	410.7	49.77	9.252			
6,500.0	6,301.6	11,018.0	6,717.7	27.3	125.1	167.75	-671.9	-1,122.6	420.6	372.6	47.97	8.767			
6,550.0	6,345.8	11,018.0	6,717.7	27.1	125.1	168.52	-671.9	-1,122.6	385.3	338.5	46.77	8.238			
6,600.0	6,388.2	11,018.0	6,717.7	27.0	125.1	169.04	-671.9	-1,122.6	356.3	310.3	45.98	7.750			
6,650.0	6,428.9	11,018.0	6,717.7	26.9	125.1	169.37	-671.9	-1,122.6	335.3	289.8	45.46	7.374			
6,700.0	6,467.6	11,018.0	6,717.7	26.7	125.1	169.53	-671.9	-1,122.6	323.9	278.7	45.15	7.173			
6,728.2	6,488.4	11,018.0	6,717.7	26.6	125.1	169.56	-671.9	-1,122.6	322.1	277.1	45.05	7.151	CC, ES		
6,750.0	6,504.1	11,018.0	6,717.7	26.6	125.1	169.54	-671.9	-1,122.6	323.2	278.2	45.00	7.182			
6,800.0	6,538.3	11,018.0	6,717.7	26.5	125.1	169.40	-671.9	-1,122.6	333.3	288.3	44.99	7.408			
6,850.0	6,570.1	11,018.0	6,717.7	26.4	125.1	169.10	-671.9	-1,122.6	353.2	308.0	45.14	7.824			
6,900.0	6,599.3	11,018.0	6,717.7	26.3	125.1	168.60	-671.9	-1,122.6	381.3	335.8	45.52	8.376			
6,950.0	6,625.7	11,018.0	6,717.7	26.3	125.1	167.87	-671.9	-1,122.6	415.8	369.6	46.25	8.991			
7,000.0	6,649.3	11,018.0	6,717.7	26.3	125.1	166.81	-671.9	-1,122.6	455.2	407.6	47.58	9.567			
7,050.0	6,670.0	11,018.0	6,717.7	26.3	125.1	165.28	-671.9	-1,122.6	498.1	448.2	49.93	9.976			
7,100.0	6,687.7	11,018.0	6,717.7	26.4	125.1	163.03	-671.9	-1,122.6	543.6	489.6	54.00	10.068			
7,150.0	6,702.2	11,018.0	6,717.7	26.6	125.1	159.50	-671.9	-1,122.6	590.9	530.0	60.94	9.696			
7,200.0	6,713.6	11,018.0	6,717.7	26.8	125.1	153.50	-671.9	-1,122.6	639.4	566.2	73.18	8.737			
7,250.0	6,721.8	11,018.0	6,717.7	27.1	125.1	141.84	-671.9	-1,122.6	688.7	592.3	96.33	7.149			
7,300.0	6,726.8	11,018.0	6,717.7	27.4	125.1	115.54	-671.9	-1,122.6	738.4	601.7	136.70	5.401	SF		
7,350.0	6,728.5	11,018.0	6,717.7	27.8	125.1	69.44	-671.9	-1,122.6	788.2	644.7	143.54	5.491			
7,357.9	6,728.4	11,018.0	6,717.7	27.9	125.1	62.73	-671.9	-1,122.6	796.1	658.9	137.17	5.804			
7,400.0	6,728.1	11,018.0	6,717.7	28.3	125.1	62.73	-671.9	-1,122.6	838.0	700.4	137.65	6.088			
7,500.0	6,727.1	11,018.0	6,717.7	29.4	125.1	62.73	-671.9	-1,122.6	937.8	798.8	138.92	6.750			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 140-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,150.9	5,964.5	11,192.2	6,921.6	27.7	126.1	2.07	-407.8	-1,092.6	967.2	931.9	35.35	27.360		
6,200.0	6,013.6	11,194.0	6,921.6	27.7	126.2	-103.66	-407.9	-1,090.8	919.3	769.6	149.72	6.140		
6,250.0	6,063.4	11,199.5	6,921.6	27.7	126.3	-116.23	-408.0	-1,085.3	870.8	729.5	141.31	6.162		
6,300.0	6,112.7	11,207.5	6,921.5	27.7	126.5	-125.52	-408.2	-1,077.3	822.9	691.8	131.02	6.280		
6,350.0	6,161.4	11,218.6	6,921.5	27.6	126.9	-132.07	-408.5	-1,066.2	775.7	653.9	121.84	6.367		
6,400.0	6,209.3	11,232.9	6,921.5	27.5	127.3	-136.67	-408.9	-1,051.9	729.5	615.0	114.53	6.369		
6,450.0	6,256.1	11,250.3	6,921.4	27.4	127.7	-139.88	-409.4	-1,034.5	684.5	575.4	109.05	6.277		
6,500.0	6,301.6	11,254.0	6,921.4	27.3	127.8	-143.57	-409.5	-1,030.8	641.1	539.0	102.10	6.279		
6,550.0	6,345.8	11,254.0	6,921.4	27.1	127.8	-146.61	-409.5	-1,030.8	600.3	504.3	96.00	6.253		
6,600.0	6,388.2	11,254.0	6,921.4	27.0	127.8	-148.89	-409.5	-1,030.8	562.8	471.5	91.22	6.169		
6,650.0	6,428.9	11,254.0	6,921.4	26.9	127.8	-150.59	-409.5	-1,030.8	529.4	441.9	87.52	6.049		
6,700.0	6,467.6	11,254.0	6,921.4	26.7	127.8	-151.83	-409.5	-1,030.8	501.2	416.5	84.71	5.916		
6,750.0	6,504.1	11,254.0	6,921.4	26.6	127.8	-152.69	-409.5	-1,030.8	479.1	396.5	82.64	5.798		
6,800.0	6,538.3	11,254.0	6,921.4	26.5	127.8	-153.22	-409.5	-1,030.8	464.3	383.0	81.23	5.715		
6,850.0	6,570.1	11,254.0	6,921.4	26.4	127.8	-153.46	-409.5	-1,030.8	457.4	377.0	80.42	5.687 SF		
6,866.5	6,580.0	11,254.0	6,921.4	26.4	127.8	-153.48	-409.5	-1,030.8	456.9	376.6	80.28	5.692 CC, ES		
6,900.0	6,599.3	11,254.0	6,921.4	26.3	127.8	-153.41	-409.5	-1,030.8	458.8	378.6	80.18	5.722		
6,950.0	6,625.7	11,254.0	6,921.4	26.3	127.8	-153.08	-409.5	-1,030.8	468.5	387.9	80.53	5.817		
7,000.0	6,649.3	11,254.0	6,921.4	26.3	127.8	-152.44	-409.5	-1,030.8	485.9	404.3	81.51	5.961		
7,050.0	6,670.0	11,254.0	6,921.4	26.3	127.8	-151.46	-409.5	-1,030.8	510.1	426.9	83.22	6.130		
7,100.0	6,687.7	11,254.0	6,921.4	26.4	127.8	-150.07	-409.5	-1,030.8	540.2	454.4	85.77	6.298		
7,150.0	6,702.2	11,254.0	6,921.4	26.6	127.8	-148.19	-409.5	-1,030.8	575.1	485.7	89.35	6.437		
7,200.0	6,713.6	11,254.0	6,921.4	26.8	127.8	-145.67	-409.5	-1,030.8	613.8	519.7	94.18	6.518		
7,250.0	6,721.8	11,254.0	6,921.4	27.1	127.8	-142.31	-409.5	-1,030.8	655.6	555.0	100.59	6.518		
7,300.0	6,726.8	11,254.0	6,921.4	27.4	127.8	-137.80	-409.5	-1,030.8	699.7	590.8	108.93	6.424		
7,350.0	6,728.5	11,254.0	6,921.4	27.8	127.8	-131.68	-409.5	-1,030.8	745.5	626.0	119.50	6.239		
7,357.9	6,728.4	11,254.0	6,921.4	27.9	127.8	-130.53	-409.5	-1,030.8	752.9	631.5	121.38	6.203		
7,400.0	6,728.1	11,254.0	6,921.4	28.3	127.8	-130.53	-409.5	-1,030.8	792.4	670.5	121.82	6.505		
7,500.0	6,727.1	11,254.0	6,921.4	29.4	127.8	-130.53	-409.5	-1,030.8	887.1	764.1	122.96	7.215		
7,600.0	6,726.2	11,254.0	6,921.4	30.8	127.8	-130.53	-409.5	-1,030.8	982.9	858.6	124.24	7.911		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Austin 1 (Exist) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	171.68	-837.9	122.6	846.9				
100.0	100.0	92.7	92.7	0.1	0.1	171.61	-837.5	123.4	846.5	846.3	0.24	3,587.937	
200.0	200.0	193.3	193.2	0.3	0.4	171.51	-836.5	124.9	845.8	845.1	0.71	1,186.055	
278.9	278.9	266.0	265.9	0.5	0.6	171.46	-836.1	125.5	845.5	844.4	1.07	791.261	
300.0	300.0	285.2	285.2	0.6	0.6	171.45	-836.1	125.7	845.5	844.3	1.16	727.227	
400.0	400.0	377.7	377.7	0.8	0.8	171.36	-836.5	127.1	846.2	844.6	1.60	530.516	
500.0	500.0	482.2	482.2	1.0	1.1	171.27	-837.3	128.6	847.2	845.1	2.06	410.305	
600.0	600.0	584.0	583.9	1.2	1.3	171.19	-837.6	129.9	847.6	845.0	2.55	332.486	
700.0	700.0	680.5	680.4	1.5	1.6	171.11	-837.9	131.1	848.1	845.1	3.02	280.530	
800.0	800.0	784.1	784.1	1.7	1.8	171.00	-838.3	132.7	848.8	845.3	3.52	241.220	
900.0	900.0	879.1	879.0	1.9	2.1	170.93	-838.7	134.0	849.3	845.3	3.99	212.874	
1,000.0	1,000.0	983.2	983.1	2.1	2.4	170.81	-839.3	135.7	850.2	845.7	4.48	189.564	
1,100.0	1,100.0	1,084.1	1,084.0	2.3	2.6	-70.21	-839.4	137.1	850.1	845.1	4.96	171.487	
1,200.0	1,199.9	1,179.2	1,179.0	2.5	2.9	-70.52	-839.8	138.2	849.4	844.0	5.39	157.459	
1,300.0	1,299.7	1,283.9	1,283.7	2.7	3.1	-71.06	-840.4	139.4	848.0	842.1	5.87	144.526	
1,400.0	1,399.3	1,379.5	1,379.4	3.0	3.4	-71.71	-840.7	140.3	845.5	839.2	6.33	133.493	
1,500.0	1,498.6	1,484.1	1,483.9	3.2	3.7	-72.64	-841.1	141.8	842.6	835.7	6.84	123.166	
1,600.0	1,597.5	1,580.7	1,580.5	3.5	3.9	-73.67	-841.1	142.9	838.6	831.3	7.35	114.109	
1,700.0	1,696.1	1,677.3	1,677.2	3.8	4.2	-74.86	-841.5	143.8	834.6	826.7	7.89	105.768	
1,800.0	1,794.2	1,782.2	1,782.0	4.1	4.4	-76.36	-841.7	144.9	830.1	821.6	8.48	97.893	
1,900.0	1,891.7	1,877.7	1,877.5	4.5	4.6	-77.93	-841.3	145.8	825.0	815.9	9.09	90.798	
2,000.0	1,988.6	1,971.5	1,971.4	4.9	4.9	-79.66	-841.2	147.0	820.4	810.6	9.75	84.136	
2,100.0	2,084.9	2,065.3	2,065.1	5.4	5.1	-81.55	-841.5	148.3	816.5	806.0	10.47	77.953	
2,200.0	2,180.4	2,164.1	2,163.9	5.9	5.4	-83.75	-841.6	150.1	813.3	802.0	11.26	72.209	
2,234.6	2,213.2	2,199.3	2,199.1	6.1	5.5	-84.58	-841.4	150.6	812.2	800.7	11.55	70.317	
2,300.0	2,275.2	2,260.7	2,260.5	6.5	5.6	-86.02	-841.1	151.6	810.6	798.5	12.09	67.049	
2,400.0	2,370.1	2,357.0	2,356.8	7.1	5.9	-88.30	-840.5	153.2	809.1	796.2	12.92	62.619	
2,500.0	2,464.9	2,456.6	2,456.4	7.7	6.1	-90.60	-839.9	153.9	808.5	794.8	13.74	58.837	
2,535.3	2,498.4	2,492.0	2,491.7	7.9	6.2	-91.42	-839.5	154.1	808.5	794.5	14.03	57.632	
2,600.0	2,559.7	2,550.4	2,550.1	8.3	6.3	-92.77	-838.9	154.4	808.8	794.3	14.54	55.611	
2,700.0	2,654.5	2,642.3	2,642.0	8.9	6.5	-94.88	-838.4	154.9	810.9	795.5	15.36	52.790	
2,800.0	2,749.3	2,736.9	2,736.6	9.5	6.7	-97.07	-837.6	155.8	814.3	798.1	16.19	50.283	
2,900.0	2,844.2	2,830.8	2,830.6	10.2	6.9	-99.22	-836.9	156.8	819.1	802.1	17.02	48.119	
3,000.0	2,939.0	2,927.6	2,927.3	10.8	7.2	-101.41	-836.2	157.8	825.1	807.3	17.84	46.250	
3,100.0	3,033.8	3,028.2	3,028.0	11.5	7.4	-103.67	-834.7	158.5	831.8	813.2	18.62	44.672	
3,200.0	3,128.6	3,123.5	3,123.2	12.1	7.5	-105.77	-833.2	158.8	839.2	819.9	19.35	43.377	
3,300.0	3,223.4	3,214.5	3,214.2	12.8	7.7	-107.71	-832.3	158.9	848.3	828.2	20.05	42.301	
3,400.0	3,318.3	3,316.4	3,316.1	13.4	7.8	-109.82	-831.1	158.6	857.9	837.2	20.72	41.400	
3,500.0	3,413.1	3,404.0	3,403.6	14.1	7.9	-111.58	-830.3	158.3	868.9	847.5	21.35	40.695	
3,600.0	3,507.9	3,507.1	3,506.8	14.7	8.0	-113.58	-829.7	157.6	880.7	858.7	21.93	40.160	
3,700.0	3,602.7	3,601.6	3,601.2	15.4	8.1	-115.36	-829.0	156.6	893.1	870.6	22.47	39.750	
3,800.0	3,697.6	3,696.6	3,696.2	16.1	8.1	-117.11	-828.1	155.7	906.4	883.4	23.01	39.395	
3,900.0	3,792.4	3,787.4	3,787.0	16.7	8.2	-118.75	-827.4	155.0	920.8	897.2	23.55	39.096	
4,000.0	3,887.2	3,888.4	3,888.1	17.4	8.3	-120.51	-826.5	154.2	936.0	911.9	24.08	38.876	
4,100.0	3,982.0	3,989.3	3,988.9	18.1	8.4	-122.20	-825.5	152.7	951.3	926.8	24.57	38.719	
4,200.0	4,076.8	4,082.8	4,082.4	18.7	8.5	-123.69	-825.0	150.9	967.2	942.1	25.04	38.625	
4,300.0	4,171.7	4,174.8	4,174.4	19.4	8.5	-125.08	-825.0	149.1	983.9	958.5	25.49	38.598	
6,800.0	6,538.3	6,516.5	6,515.3	26.5	11.8	18.84	-833.2	123.8	989.0	964.0	25.02	39.529	
6,850.0	6,570.1	6,548.5	6,547.3	26.4	11.9	21.05	-833.8	124.1	951.8	927.1	24.62	38.665	
6,900.0	6,599.3	6,577.9	6,576.7	26.3	11.9	23.79	-834.2	124.3	912.6	888.1	24.50	37.256	
6,950.0	6,625.7	6,604.6	6,603.4	26.3	12.0	27.19	-834.7	124.4	871.8	847.0	24.77	35.192	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design													Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Austin 1 (Exist) - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	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)						
7,000.0	6,649.3	6,628.5	6,627.3	26.3	12.0	31.44	-835.1	124.6	829.5	803.9	25.57	32.445					
7,050.0	6,670.0	6,649.5	6,648.3	26.3	12.0	36.74	-835.4	124.7	786.0	759.0	26.97	29.139					
7,100.0	6,687.7	6,667.5	6,666.3	26.4	12.1	43.27	-835.7	124.9	741.4	712.4	29.01	25.559					
7,150.0	6,702.2	6,682.4	6,681.2	26.6	12.1	51.14	-835.9	125.0	696.1	664.6	31.53	22.076					
7,200.0	6,713.6	6,694.1	6,692.9	26.8	12.1	60.21	-836.1	125.0	650.3	616.1	34.20	19.017					
7,250.0	6,721.8	6,702.6	6,701.4	27.1	12.1	69.95	-836.3	125.1	604.3	567.8	36.52	16.550					
7,300.0	6,726.8	6,707.9	6,706.7	27.4	12.1	79.55	-836.4	125.1	558.5	520.3	38.11	14.654					
7,350.0	6,728.5	6,710.0	6,708.7	27.8	12.1	88.13	-836.4	125.1	513.1	474.1	38.93	13.178					
7,357.9	6,728.4	6,710.0	6,708.8	27.9	12.1	89.36	-836.4	125.1	505.9	466.9	39.01	12.970					
7,400.0	6,728.1	6,709.9	6,708.7	28.3	12.1	89.34	-836.4	125.1	468.5	429.0	39.52	11.854					
7,500.0	6,727.1	6,709.6	6,708.4	29.4	12.1	89.27	-836.4	125.1	383.5	342.6	40.91	9.376					
7,600.0	6,726.2	6,709.4	6,708.2	30.8	12.1	89.20	-836.4	125.1	307.7	265.2	42.49	7.242					
7,700.0	6,725.3	6,709.1	6,707.9	32.4	12.1	89.14	-836.4	125.1	249.5	205.3	44.23	5.641					
7,800.0	6,724.4	6,708.9	6,707.6	34.1	12.1	89.07	-836.4	125.1	223.2	177.1	46.13	4.840					
7,812.1	6,724.2	6,708.8	6,707.6	34.4	12.1	89.07	-836.4	125.1	222.9	176.5	46.37	4.807 CC, ES, SF					
7,900.0	6,723.4	6,708.6	6,707.4	36.1	12.1	89.01	-836.4	125.1	239.6	191.5	48.14	4.978					
8,000.0	6,722.5	6,708.3	6,707.1	38.2	12.1	88.94	-836.4	125.1	291.5	241.3	50.25	5.802					
8,100.0	6,721.6	6,708.1	6,706.9	40.3	12.1	88.88	-836.4	125.1	364.1	311.6	52.45	6.942					
8,200.0	6,720.7	6,707.8	6,706.6	42.6	12.1	88.81	-836.4	125.1	447.4	392.7	54.71	8.176					
8,300.0	6,719.7	6,707.6	6,706.4	44.9	12.1	88.75	-836.4	125.1	536.4	479.3	57.04	9.403					
8,400.0	6,718.8	6,707.3	6,706.1	47.3	12.1	88.68	-836.4	125.1	628.7	569.3	59.43	10.580					
8,500.0	6,717.9	6,707.1	6,705.9	49.7	12.1	88.62	-836.4	125.1	723.1	661.2	61.85	11.691					
8,600.0	6,717.0	6,706.8	6,705.6	52.2	12.1	88.55	-836.3	125.1	818.8	754.5	64.32	12.731					
8,700.0	6,716.0	6,706.6	6,705.4	54.7	12.1	88.49	-836.3	125.1	915.4	848.6	66.81	13.701					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Danley 33-20 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
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
12,100.0	6,684.6	6,974.5	6,834.1	146.5	17.0	117.99	-872.8	5,309.1	941.9	796.7	145.22	6.486	
12,200.0	6,683.7	6,960.9	6,820.6	149.3	17.0	115.56	-873.6	5,310.8	847.3	696.9	150.49	5.630	
12,300.0	6,682.7	6,947.3	6,807.2	152.0	17.0	113.04	-874.3	5,312.5	754.0	598.2	155.72	4.842	
12,400.0	6,681.8	6,933.8	6,793.7	154.8	16.9	110.44	-875.1	5,314.2	662.2	501.4	160.84	4.117	
12,500.0	6,680.9	6,920.2	6,780.3	157.6	16.9	107.76	-875.9	5,316.0	572.9	407.1	165.80	3.455	
12,600.0	6,680.0	6,906.6	6,766.8	160.4	16.8	105.02	-876.6	5,317.7	487.4	316.9	170.57	2.858	
12,700.0	6,679.0	6,893.0	6,753.4	163.2	16.8	102.23	-877.4	5,319.4	408.1	233.1	175.07	2.331	
12,800.0	6,678.1	6,879.4	6,739.9	165.9	16.8	99.38	-878.2	5,321.1	339.4	160.1	179.26	1.893	
12,900.0	6,677.2	6,865.8	6,726.5	168.7	16.7	96.51	-879.0	5,322.8	288.8	105.7	183.11	1.577	
13,000.0	6,676.3	6,852.3	6,713.0	171.5	16.7	93.63	-879.7	5,324.6	267.0	80.4	186.57	1.431	Level 3
13,011.8	6,676.1	6,850.7	6,711.4	171.8	16.7	93.29	-879.8	5,324.8	266.8	79.8	186.95	1.427	Level 3, CC, ES, SF
13,100.0	6,675.3	6,838.7	6,699.6	174.3	16.7	90.74	-880.5	5,326.3	280.7	91.1	189.60	1.480	Level 3
13,200.0	6,674.4	6,825.1	6,686.1	177.1	16.6	87.86	-881.3	5,328.0	325.5	133.3	192.20	1.693	
13,300.0	6,673.5	6,811.5	6,672.7	179.8	16.6	85.01	-882.0	5,329.7	390.8	196.4	194.35	2.011	
13,400.0	6,672.6	6,797.9	6,659.2	182.6	16.6	82.20	-882.8	5,331.4	468.1	272.0	196.06	2.387	
13,500.0	6,671.6	6,784.3	6,645.8	185.4	16.5	79.45	-883.6	5,333.2	552.4	355.0	197.34	2.799	
13,600.0	6,670.7	6,770.8	6,632.3	188.2	16.5	76.76	-884.4	5,334.9	640.9	442.7	198.20	3.234	
13,700.0	6,669.8	6,757.2	6,618.9	191.0	16.4	74.14	-885.1	5,336.6	732.2	533.5	198.67	3.685	
13,800.0	6,668.9	6,743.6	6,605.4	193.8	16.4	71.60	-885.9	5,338.3	825.2	626.4	198.79	4.151	
13,900.0	6,667.9	6,730.0	6,592.0	196.5	16.4	69.15	-886.7	5,340.0	919.5	720.9	198.59	4.630	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Danley 43-20 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 453-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
13,600.0	6,670.7	6,886.9	6,705.5	188.2	18.5	121.87	-651.1	6,848.0	936.1	758.8	177.22	5.282		
13,700.0	6,669.8	6,884.3	6,702.8	191.0	18.5	118.92	-651.1	6,848.0	836.2	651.7	184.47	4.533		
13,800.0	6,668.9	6,881.6	6,700.2	193.8	18.5	115.80	-651.0	6,848.1	736.3	544.7	191.66	3.842		
13,900.0	6,667.9	6,879.0	6,697.6	196.5	18.5	112.51	-651.0	6,848.1	636.5	437.8	198.68	3.204		
14,000.0	6,667.0	6,876.4	6,695.0	199.3	18.5	109.08	-651.0	6,848.2	536.7	331.4	205.39	2.613		
14,100.0	6,666.1	6,873.9	6,692.4	202.1	18.5	105.51	-650.9	6,848.2	437.1	225.4	211.66	2.065		
14,200.0	6,665.2	6,871.3	6,689.9	204.9	18.5	101.82	-650.9	6,848.3	337.6	120.2	217.35	1.553		
14,300.0	6,664.2	6,868.8	6,687.3	207.7	18.5	98.04	-650.8	6,848.3	238.5	16.1	222.33	1.073	Level 2	
14,400.0	6,663.3	6,866.2	6,684.8	210.5	18.5	94.20	-650.8	6,848.3	140.6	-85.9	226.48	0.621	Level 1	
14,500.0	6,662.4	6,863.7	6,682.3	213.3	18.5	90.34	-650.7	6,848.4	51.5	-178.2	229.72	0.224	Level 1	
14,535.6	6,662.1	6,862.8	6,681.4	214.3	18.5	88.96	-650.7	6,848.4	37.2	-193.4	230.64	0.161	Level 1, CC, ES, SF	
14,600.0	6,661.5	6,861.2	6,679.8	216.1	18.5	86.48	-650.7	6,848.4	74.3	-157.7	232.00	0.320	Level 1	
14,700.0	6,660.5	6,858.7	6,677.3	218.9	18.5	82.67	-650.6	6,848.5	168.5	-64.8	233.31	0.722	Level 1	
14,800.0	6,659.6	6,856.2	6,674.8	221.7	18.5	78.94	-650.6	6,848.5	266.9	33.2	233.69	1.142	Level 2	
14,900.0	6,658.7	6,853.8	6,672.3	224.5	18.5	75.31	-650.5	6,848.5	366.2	133.0	233.20	1.570		
15,000.0	6,657.8	6,851.3	6,669.9	227.2	18.5	71.81	-650.5	6,848.6	465.7	233.8	231.93	2.008		
15,100.0	6,656.8	6,848.9	6,667.5	230.0	18.5	68.45	-650.5	6,848.6	565.4	335.4	229.99	2.458		
15,200.0	6,655.9	6,846.5	6,665.0	232.8	18.5	65.25	-650.4	6,848.6	665.2	437.7	227.51	2.924		
15,300.0	6,655.0	6,844.1	6,662.6	235.6	18.5	62.22	-650.4	6,848.7	765.0	540.5	224.59	3.406		
15,400.0	6,654.1	6,841.7	6,660.2	238.4	18.5	59.36	-650.3	6,848.7	864.9	643.6	221.34	3.908		
15,500.0	6,653.1	6,839.3	6,657.9	241.2	18.5	56.66	-650.3	6,848.8	964.8	746.9	217.87	4.428		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Evert 20-1 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
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
10,800.0	6,696.6	6,700.0	6,698.0	110.7	97.5	94.56	-797.7	4,010.0	915.8	708.5	207.34	4.417	
10,900.0	6,695.7	6,700.0	6,698.0	113.4	97.5	94.56	-797.7	4,010.0	818.1	608.1	210.08	3.894	
11,000.0	6,694.8	6,700.0	6,698.0	116.1	97.5	94.56	-797.7	4,010.0	721.1	508.3	212.82	3.388	
11,100.0	6,693.8	6,700.0	6,698.0	118.9	97.5	94.56	-797.7	4,010.0	624.9	409.4	215.56	2.899	
11,200.0	6,692.9	6,700.0	6,698.0	121.6	97.5	94.56	-797.7	4,010.0	530.2	311.9	218.30	2.429	
11,300.0	6,692.0	6,700.0	6,698.0	124.4	97.5	94.56	-797.7	4,010.0	437.9	216.8	221.05	1.981	
11,400.0	6,691.1	6,700.0	6,698.0	127.2	97.5	94.56	-797.7	4,010.0	349.8	126.0	223.80	1.563	
11,500.0	6,690.1	6,695.4	6,693.4	129.9	97.4	93.14	-797.8	4,010.1	270.0	43.2	226.83	1.191	Level 2
11,600.0	6,689.2	6,692.5	6,690.5	132.7	97.3	92.24	-797.9	4,010.2	208.5	-21.2	229.69	0.908	Level 1
11,697.3	6,688.3	6,689.6	6,687.6	135.4	97.2	91.33	-797.9	4,010.3	184.5	-48.0	232.44	0.794	Level 1, CC
11,700.0	6,688.3	6,689.5	6,687.5	135.4	97.2	91.31	-797.9	4,010.3	184.5	-48.0	232.51	0.793	Level 1, ES, SF
11,800.0	6,687.4	6,686.4	6,684.4	138.2	97.1	90.34	-798.0	4,010.3	211.1	-24.2	235.28	0.897	Level 1
11,900.0	6,686.4	6,683.2	6,681.2	141.0	97.1	89.35	-798.1	4,010.4	274.0	36.0	237.98	1.151	Level 2
12,000.0	6,685.5	6,679.9	6,677.9	143.7	97.0	88.32	-798.2	4,010.5	354.3	113.7	240.60	1.473	Level 3
12,100.0	6,684.6	6,676.4	6,674.5	146.5	96.9	87.26	-798.2	4,010.6	442.7	199.6	243.14	1.821	
12,200.0	6,683.7	6,672.9	6,670.9	149.3	96.8	86.16	-798.3	4,010.6	535.2	289.6	245.59	2.179	
12,300.0	6,682.7	6,669.2	6,667.2	152.0	96.7	85.03	-798.4	4,010.7	630.0	382.0	247.94	2.541	
12,400.0	6,681.8	6,665.4	6,663.4	154.8	96.6	83.86	-798.5	4,010.8	726.1	476.0	250.16	2.903	
12,500.0	6,680.9	6,661.4	6,659.4	157.6	96.5	82.65	-798.6	4,010.9	823.2	570.9	252.26	3.263	
12,600.0	6,680.0	6,657.3	6,655.3	160.4	96.4	81.41	-798.7	4,011.0	920.8	666.6	254.20	3.622	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Ivan Klein 13-20 (Exist) - Wellbore #1 - Wellbore												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,600.0	6,707.7	6,700.0	6,698.3	78.1	12.0	91.70	-1,053.4	2,718.5	917.8	827.8	90.01	10.197	
9,700.0	6,706.8	6,700.0	6,698.3	80.8	12.0	91.70	-1,053.4	2,718.5	831.5	738.8	92.69	8.971	
9,800.0	6,705.9	6,700.0	6,698.3	83.5	12.0	91.70	-1,053.4	2,718.5	748.5	653.1	95.37	7.848	
9,900.0	6,704.9	6,700.0	6,698.3	86.2	12.0	91.70	-1,053.4	2,718.5	670.2	572.1	98.06	6.835	
10,000.0	6,704.0	6,700.0	6,698.3	88.9	12.0	91.70	-1,053.4	2,718.5	598.4	497.6	100.75	5.939	
10,100.0	6,703.1	6,700.0	6,698.3	91.6	12.0	91.70	-1,053.4	2,718.5	535.7	432.2	103.46	5.178	
10,200.0	6,702.2	6,700.0	6,698.3	94.3	12.0	91.70	-1,053.4	2,718.5	485.7	379.5	106.17	4.574	
10,300.0	6,701.2	6,700.0	6,698.3	97.0	12.0	91.70	-1,053.4	2,718.5	452.5	343.6	108.88	4.156	
10,400.0	6,700.3	6,700.0	6,698.3	99.7	12.0	91.70	-1,053.4	2,718.5	440.1	328.5	111.61	3.943	
10,405.5	6,700.3	6,700.0	6,698.3	99.9	12.0	91.70	-1,053.4	2,718.5	440.1	328.3	111.75	3.938 CC, ES	
10,500.0	6,699.4	6,697.3	6,695.6	102.5	12.0	91.34	-1,053.5	2,718.5	450.1	335.7	114.35	3.936 SF	
10,600.0	6,698.5	6,696.2	6,694.5	105.2	12.0	91.20	-1,053.5	2,718.5	481.1	364.0	117.09	4.109	
10,700.0	6,697.5	6,695.1	6,693.3	107.9	12.0	91.05	-1,053.5	2,718.5	529.5	409.7	119.83	4.419	
10,800.0	6,696.6	6,693.9	6,692.2	110.7	12.0	90.90	-1,053.5	2,718.5	591.0	468.4	122.58	4.821	
10,900.0	6,695.7	6,692.6	6,690.9	113.4	12.0	90.74	-1,053.6	2,718.5	661.9	536.6	125.33	5.282	
11,000.0	6,694.8	6,691.3	6,689.6	116.1	12.0	90.57	-1,053.6	2,718.5	739.6	611.6	128.08	5.775	
11,100.0	6,693.8	6,690.0	6,688.3	118.9	12.0	90.39	-1,053.6	2,718.5	822.2	691.3	130.83	6.284	
11,200.0	6,692.9	6,688.5	6,686.8	121.6	12.0	90.20	-1,053.7	2,718.6	908.2	774.6	133.59	6.799	
11,300.0	6,692.0	6,687.0	6,685.3	124.4	12.0	90.01	-1,053.7	2,718.6	996.9	860.5	136.34	7.311	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 19O-232
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 19O-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

Offset Design Schneider 19Q-HZ Pad (Existing) Sec.19-T5N-R64W - Mowery 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)			
8,200.0	6,720.7	6,698.3	6,697.5	42.6	11.9	90.00	-843.0	1,390.4	906.9	852.5	54.48	16.649		
8,300.0	6,719.7	6,698.0	6,697.3	44.9	11.9	89.93	-843.0	1,390.4	810.6	753.8	56.81	14.269		
8,400.0	6,718.8	6,697.7	6,697.0	47.3	11.9	89.86	-843.0	1,390.4	715.2	656.0	59.19	12.084		
8,500.0	6,717.9	6,697.4	6,696.7	49.7	11.9	89.79	-843.0	1,390.4	621.4	559.7	61.62	10.084		
8,600.0	6,717.0	6,697.2	6,696.4	52.2	11.9	89.72	-843.0	1,390.4	529.7	465.6	64.09	8.266		
8,700.0	6,716.0	6,696.9	6,696.2	54.7	11.9	89.66	-843.0	1,390.4	441.7	375.1	66.59	6.634		
8,800.0	6,715.1	6,696.6	6,695.9	57.2	11.9	89.59	-843.0	1,390.4	360.0	290.9	69.11	5.209		
8,900.0	6,714.2	6,696.3	6,695.6	59.7	11.9	89.52	-843.0	1,390.4	290.1	218.4	71.67	4.047		
9,000.0	6,713.3	6,696.1	6,695.3	62.3	11.9	89.45	-843.0	1,390.4	242.2	167.9	74.24	3.262		
9,077.4	6,712.5	6,695.8	6,695.1	64.3	11.9	89.40	-843.0	1,390.4	229.5	153.2	76.25	3.009 CC, ES		
9,100.0	6,712.3	6,695.8	6,695.1	64.9	11.9	89.38	-843.0	1,390.4	230.6	153.7	76.84	3.001 SF		
9,200.0	6,711.4	6,695.5	6,694.8	67.5	11.9	89.31	-843.0	1,390.4	260.1	180.7	79.45	3.274		
9,300.0	6,710.5	6,695.2	6,694.5	70.2	11.9	89.24	-842.9	1,390.4	319.7	237.6	82.08	3.895		
9,400.0	6,709.6	6,695.0	6,694.2	72.8	11.9	89.17	-842.9	1,390.4	395.8	311.1	84.72	4.673		
9,500.0	6,708.6	6,694.7	6,694.0	75.5	11.9	89.10	-842.9	1,390.4	480.8	393.5	87.37	5.504		
9,600.0	6,707.7	6,694.4	6,693.7	78.1	11.9	89.04	-842.9	1,390.4	570.7	480.7	90.03	6.339		
9,700.0	6,706.8	6,694.1	6,693.4	80.8	11.9	88.97	-842.9	1,390.4	663.5	570.8	92.70	7.157		
9,800.0	6,705.9	6,693.9	6,693.1	83.5	11.9	88.90	-842.9	1,390.4	758.1	662.7	95.38	7.948		
9,900.0	6,704.9	6,693.6	6,692.9	86.2	11.9	88.83	-842.9	1,390.4	854.0	755.9	98.07	8.707		
10,000.0	6,704.0	6,693.3	6,692.6	88.9	11.9	88.76	-842.9	1,390.4	950.7	849.9	100.77	9.434		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Klein 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

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

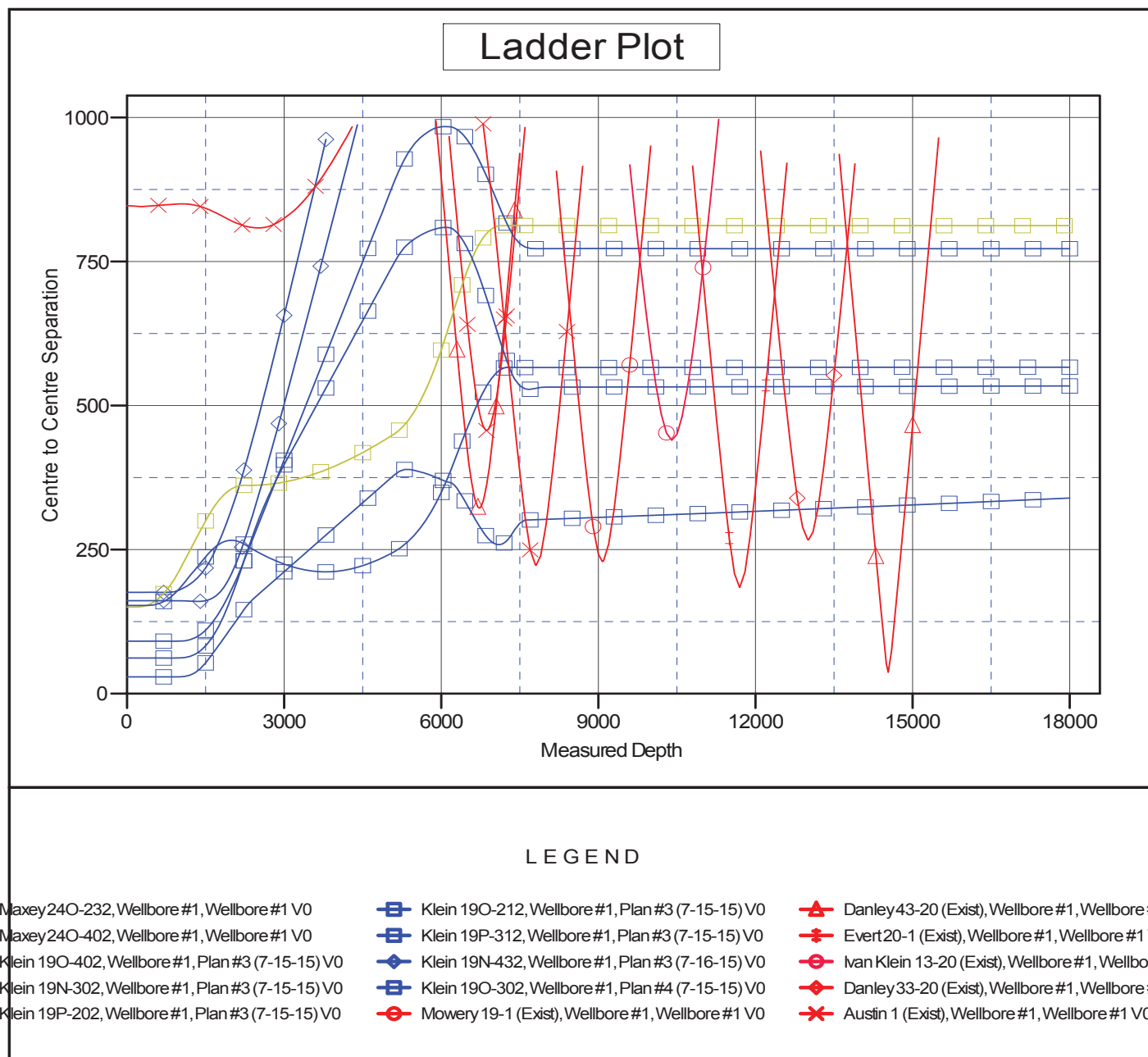
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Klein 190-232

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 190-232
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4639.0ft (RKB - 13')
Reference Site:	Klein 190-HZ Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4639.0ft (RKB - 13')
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Klein 190-232	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 #4 (7-15-15)	Offset TVD Reference:	Offset Datum

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

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Klein 190-232

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

