

PETROLEUM DEVELOPMENT CORP Weld County CO

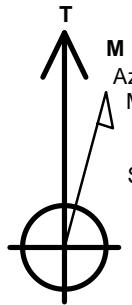
Well Name: **Churchill 28J-423**

Surface Location: Churchill 28J-HZ Pad Sec.28-T5N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4633.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381538.65	3262053.94	40.376910	-104.559390	
RKB - 15' WELL @ 4648.0ft (RKB - 15')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1365'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2139'FNL, 1725'FWL, SEC.33	6805.0	-7195.1	404.1	Point



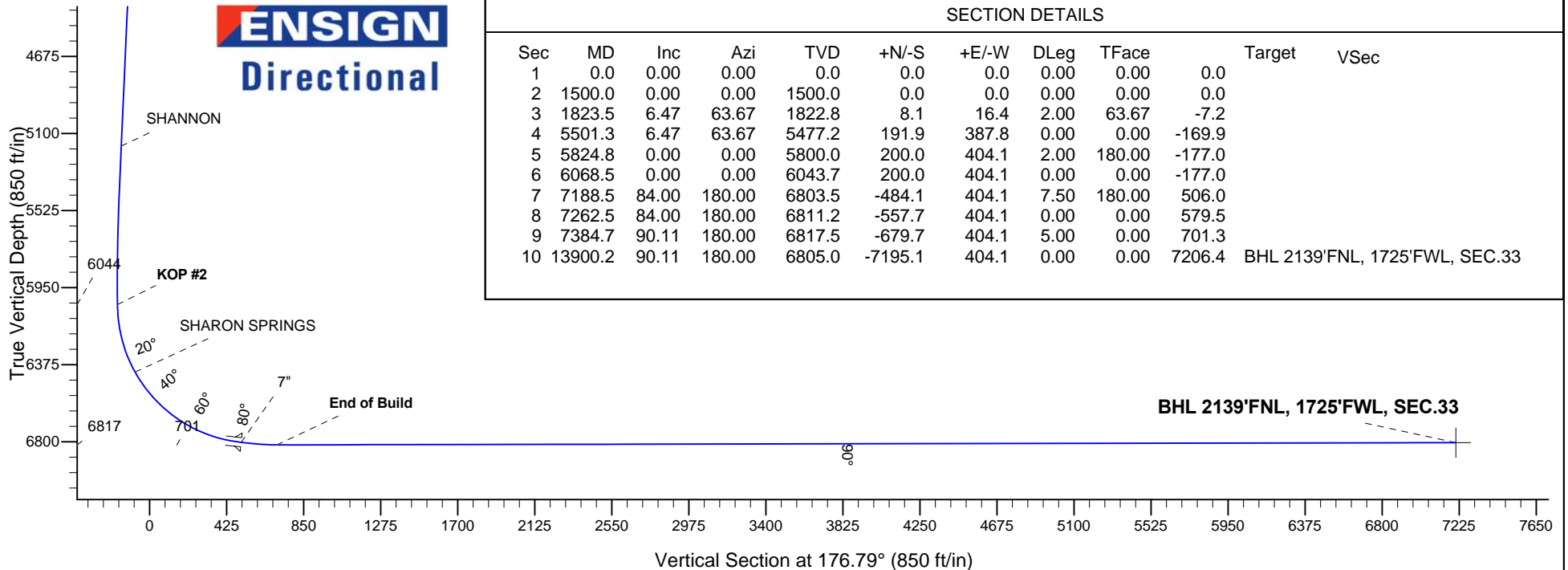
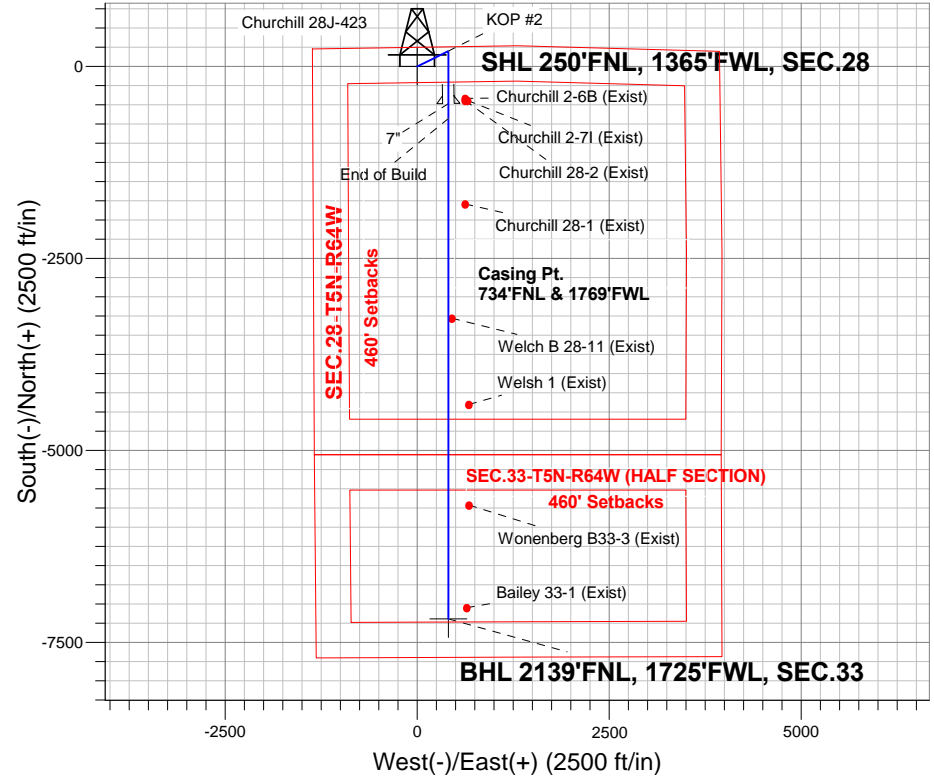
Azimuths to True North
Magnetic North: 8.41°

Magnetic Field
Strength: 52874.4snT
Dip Angle: 66.98°
Date: 12/30/2013
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6043.7	6068.5	KOP #2
6817.5	7384.7	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W
Churchill 28J-423
Plan #1 (12-30-13)
7:27, January 09 2014





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

Churchill 28J-HZ Pad Sec.28-T5N-R64W

Churchill 28J-423

Wellbore #1

Plan: Plan #1 (12-30-13)

Standard Planning Report

09 January, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-423
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Project	SEC.28-T5N-R64W, Weld County, Colorado		
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 Churchill 28J-HZ Pad Sec.28-T5N-R64W					
Site Position:		Northing:	1,381,533.43ft	Latitude:	40.376900
From:	Lat/Long	Easting:	3,261,903.54ft	Longitude:	-104.559930
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.61 °

Well	Churchill 28J-423					
Well Position	+N/-S	3.6 ft	Northing:	1,381,538.65 ft	Latitude:	40.376910
	+E/-W	150.5 ft	Easting:	3,262,053.94 ft	Longitude:	-104.559390
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,633.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/30/2013	8.41	66.98	52,874

Design	Plan #1 (12-30-13)			
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	176.79

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,823.5	6.47	63.67	1,822.8	8.1	16.4	2.00	2.00	0.00	63.67	
5,501.3	6.47	63.67	5,477.2	191.9	387.8	0.00	0.00	0.00	0.00	
5,824.8	0.00	0.00	5,800.0	200.0	404.1	2.00	-2.00	0.00	180.00	
6,068.5	0.00	0.00	6,043.7	200.0	404.1	0.00	0.00	0.00	0.00	
7,188.5	84.00	180.00	6,803.5	-484.1	404.1	7.50	7.50	0.00	180.00	
7,262.5	84.00	180.00	6,811.2	-557.7	404.1	0.00	0.00	0.00	0.00	
7,384.7	90.11	180.00	6,817.5	-679.7	404.1	5.00	5.00	0.00	0.00	
13,900.2	90.11	180.00	6,805.0	-7,195.1	404.1	0.00	0.00	0.00	0.00	BHL 2139'FNL, 172

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-423
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 250'FNL, 1365'FWL, SEC.28									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,600.0	2.00	63.67	1,600.0	0.8	1.6	-0.7	2.00	2.00	0.00
1,700.0	4.00	63.67	1,699.8	3.1	6.3	-2.7	2.00	2.00	0.00
1,800.0	6.00	63.67	1,799.5	7.0	14.1	-6.2	2.00	2.00	0.00
1,823.5	6.47	63.67	1,822.8	8.1	16.4	-7.2	2.00	2.00	0.00
1,900.0	6.47	63.67	1,898.8	11.9	24.1	-10.5	0.00	0.00	0.00
2,000.0	6.47	63.67	1,998.2	16.9	34.2	-15.0	0.00	0.00	0.00
2,100.0	6.47	63.67	2,097.6	21.9	44.3	-19.4	0.00	0.00	0.00
2,200.0	6.47	63.67	2,196.9	26.9	54.4	-23.8	0.00	0.00	0.00
2,300.0	6.47	63.67	2,296.3	31.9	64.5	-28.2	0.00	0.00	0.00
2,400.0	6.47	63.67	2,395.6	36.9	74.6	-32.7	0.00	0.00	0.00
2,500.0	6.47	63.67	2,495.0	41.9	84.7	-37.1	0.00	0.00	0.00
2,600.0	6.47	63.67	2,594.4	46.9	94.8	-41.5	0.00	0.00	0.00
2,700.0	6.47	63.67	2,693.7	51.9	104.9	-45.9	0.00	0.00	0.00
2,800.0	6.47	63.67	2,793.1	56.9	115.0	-50.4	0.00	0.00	0.00
2,900.0	6.47	63.67	2,892.5	61.9	125.1	-54.8	0.00	0.00	0.00
3,000.0	6.47	63.67	2,991.8	66.9	135.2	-59.2	0.00	0.00	0.00
3,100.0	6.47	63.67	3,091.2	71.9	145.3	-63.6	0.00	0.00	0.00
3,200.0	6.47	63.67	3,190.5	76.9	155.4	-68.1	0.00	0.00	0.00
3,300.0	6.47	63.67	3,289.9	81.9	165.5	-72.5	0.00	0.00	0.00
3,400.0	6.47	63.67	3,389.3	86.9	175.6	-76.9	0.00	0.00	0.00
3,500.0	6.47	63.67	3,488.6	91.9	185.7	-81.3	0.00	0.00	0.00
3,561.8	6.47	63.67	3,550.0	95.0	191.9	-84.1	0.00	0.00	0.00
PARKMAN									
3,600.0	6.47	63.67	3,588.0	96.9	195.8	-85.8	0.00	0.00	0.00
3,700.0	6.47	63.67	3,687.4	101.9	205.9	-90.2	0.00	0.00	0.00
3,800.0	6.47	63.67	3,786.7	106.9	216.0	-94.6	0.00	0.00	0.00
3,900.0	6.47	63.67	3,886.1	111.9	226.1	-99.0	0.00	0.00	0.00
4,000.0	6.47	63.67	3,985.5	116.9	236.1	-103.4	0.00	0.00	0.00
4,100.0	6.47	63.67	4,084.8	121.9	246.2	-107.9	0.00	0.00	0.00
4,180.7	6.47	63.67	4,165.0	125.9	254.4	-111.4	0.00	0.00	0.00
SUSSEX									
4,200.0	6.47	63.67	4,184.2	126.9	256.3	-112.3	0.00	0.00	0.00
4,300.0	6.47	63.67	4,283.5	131.9	266.4	-116.7	0.00	0.00	0.00
4,400.0	6.47	63.67	4,382.9	136.9	276.5	-121.1	0.00	0.00	0.00

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Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.0	6.47	63.67	4,482.3	141.9	286.6	-125.6	0.00	0.00	0.00
4,600.0	6.47	63.67	4,581.6	146.9	296.7	-130.0	0.00	0.00	0.00
4,700.0	6.47	63.67	4,681.0	151.9	306.8	-134.4	0.00	0.00	0.00
4,800.0	6.47	63.67	4,780.4	156.9	316.9	-138.8	0.00	0.00	0.00
4,900.0	6.47	63.67	4,879.7	161.9	327.0	-143.3	0.00	0.00	0.00
5,000.0	6.47	63.67	4,979.1	166.9	337.1	-147.7	0.00	0.00	0.00
5,100.0	6.47	63.67	5,078.4	171.9	347.2	-152.1	0.00	0.00	0.00
5,192.1	6.47	63.67	5,170.0	176.5	356.5	-156.2	0.00	0.00	0.00
SHANNON									
5,200.0	6.47	63.67	5,177.8	176.8	357.3	-156.5	0.00	0.00	0.00
5,300.0	6.47	63.67	5,277.2	181.8	367.4	-161.0	0.00	0.00	0.00
5,400.0	6.47	63.67	5,376.5	186.8	377.5	-165.4	0.00	0.00	0.00
5,500.0	6.47	63.67	5,475.9	191.8	387.6	-169.8	0.00	0.00	0.00
5,501.3	6.47	63.67	5,477.2	191.9	387.8	-169.9	0.00	0.00	0.00
5,600.0	4.50	63.67	5,575.4	196.1	396.2	-173.6	2.00	-2.00	0.00
5,700.0	2.50	63.67	5,675.2	198.8	401.7	-176.0	2.00	-2.00	0.00
5,800.0	0.50	63.67	5,775.2	200.0	404.0	-177.0	2.00	-2.00	0.00
5,824.8	0.00	0.00	5,800.0	200.0	404.1	-177.0	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,875.2	200.0	404.1	-177.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,975.2	200.0	404.1	-177.0	0.00	0.00	0.00
6,068.5	0.00	0.00	6,043.7	200.0	404.1	-177.0	0.00	0.00	0.00
KOP #2									
6,100.0	2.36	180.00	6,075.2	199.4	404.1	-176.4	7.49	7.49	0.00
6,200.0	9.86	180.00	6,174.6	188.7	404.1	-165.8	7.50	7.50	0.00
6,300.0	17.36	180.00	6,271.7	165.2	404.1	-142.3	7.50	7.50	0.00
6,400.0	24.86	180.00	6,364.9	129.2	404.1	-106.3	7.50	7.50	0.00
6,457.4	29.16	180.00	6,416.0	103.2	404.1	-80.3	7.50	7.50	0.00
SHARON SPRINGS									
6,500.0	32.36	180.00	6,452.6	81.4	404.1	-58.6	7.50	7.50	0.00
6,600.0	39.86	180.00	6,533.4	22.5	404.1	0.2	7.50	7.50	0.00
6,700.0	47.36	180.00	6,605.7	-46.5	404.1	69.0	7.50	7.50	0.00
6,800.0	54.86	180.00	6,668.5	-124.2	404.1	146.7	7.50	7.50	0.00
6,900.0	62.36	180.00	6,720.5	-209.5	404.1	231.9	7.50	7.50	0.00
7,000.0	69.86	180.00	6,761.0	-300.9	404.1	323.1	7.50	7.50	0.00
7,100.0	77.36	180.00	6,789.2	-396.8	404.1	418.8	7.50	7.50	0.00
7,188.5	84.00	180.00	6,803.5	-484.1	404.1	506.0	7.50	7.50	0.00
7"									
7,200.0	84.00	180.00	6,804.7	-495.5	404.1	517.4	0.02	0.02	0.00
7,262.5	84.00	180.00	6,811.2	-557.7	404.1	579.5	0.00	0.00	0.00
7,300.0	85.87	180.00	6,814.5	-595.0	404.1	616.7	5.00	5.00	0.00
7,384.7	90.11	180.00	6,817.5	-679.6	404.1	701.2	5.00	5.00	0.00
End of Build									
7,400.0	90.11	180.00	6,817.5	-694.9	404.1	716.5	0.01	0.01	0.00
7,500.0	90.11	180.00	6,817.3	-794.9	404.1	816.3	0.00	0.00	0.00
7,600.0	90.11	180.00	6,817.1	-894.9	404.1	916.2	0.00	0.00	0.00
7,700.0	90.11	180.00	6,816.9	-994.9	404.1	1,016.0	0.00	0.00	0.00
7,800.0	90.11	180.00	6,816.7	-1,094.9	404.1	1,115.9	0.00	0.00	0.00
7,900.0	90.11	180.00	6,816.5	-1,194.9	404.1	1,215.7	0.00	0.00	0.00
8,000.0	90.11	180.00	6,816.3	-1,294.9	404.1	1,315.6	0.00	0.00	0.00
8,100.0	90.11	180.00	6,816.1	-1,394.9	404.1	1,415.4	0.00	0.00	0.00
8,200.0	90.11	180.00	6,815.9	-1,494.9	404.1	1,515.2	0.00	0.00	0.00
8,300.0	90.11	180.00	6,815.8	-1,594.9	404.1	1,615.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-423
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,400.0	90.11	180.00	6,815.6	-1,694.9	404.1	1,714.9	0.00	0.00	0.00
8,500.0	90.11	180.00	6,815.4	-1,794.9	404.1	1,814.8	0.00	0.00	0.00
8,600.0	90.11	180.00	6,815.2	-1,894.9	404.1	1,914.6	0.00	0.00	0.00
8,700.0	90.11	180.00	6,815.0	-1,994.9	404.1	2,014.5	0.00	0.00	0.00
8,800.0	90.11	180.00	6,814.8	-2,094.9	404.1	2,114.3	0.00	0.00	0.00
8,900.0	90.11	180.00	6,814.6	-2,194.9	404.1	2,214.1	0.00	0.00	0.00
9,000.0	90.11	180.00	6,814.4	-2,294.9	404.1	2,314.0	0.00	0.00	0.00
9,100.0	90.11	180.00	6,814.2	-2,394.9	404.1	2,413.8	0.00	0.00	0.00
9,200.0	90.11	180.00	6,814.0	-2,494.9	404.1	2,513.7	0.00	0.00	0.00
9,300.0	90.11	180.00	6,813.8	-2,594.9	404.1	2,613.5	0.00	0.00	0.00
9,400.0	90.11	180.00	6,813.6	-2,694.9	404.1	2,713.3	0.00	0.00	0.00
9,500.0	90.11	180.00	6,813.4	-2,794.9	404.1	2,813.2	0.00	0.00	0.00
9,600.0	90.11	180.00	6,813.3	-2,894.9	404.1	2,913.0	0.00	0.00	0.00
9,700.0	90.11	180.00	6,813.1	-2,994.9	404.1	3,012.9	0.00	0.00	0.00
9,800.0	90.11	180.00	6,812.9	-3,094.9	404.1	3,112.7	0.00	0.00	0.00
9,900.0	90.11	180.00	6,812.7	-3,194.9	404.1	3,212.6	0.00	0.00	0.00
10,000.0	90.11	180.00	6,812.5	-3,294.9	404.1	3,312.4	0.00	0.00	0.00
10,100.0	90.11	180.00	6,812.3	-3,394.9	404.1	3,412.2	0.00	0.00	0.00
10,200.0	90.11	180.00	6,812.1	-3,494.9	404.1	3,512.1	0.00	0.00	0.00
10,300.0	90.11	180.00	6,811.9	-3,594.9	404.1	3,611.9	0.00	0.00	0.00
10,400.0	90.11	180.00	6,811.7	-3,694.9	404.1	3,711.8	0.00	0.00	0.00
10,500.0	90.11	180.00	6,811.5	-3,794.9	404.1	3,811.6	0.00	0.00	0.00
10,600.0	90.11	180.00	6,811.3	-3,894.9	404.1	3,911.5	0.00	0.00	0.00
10,700.0	90.11	180.00	6,811.1	-3,994.9	404.1	4,011.3	0.00	0.00	0.00
10,800.0	90.11	180.00	6,811.0	-4,094.9	404.1	4,111.1	0.00	0.00	0.00
10,900.0	90.11	180.00	6,810.8	-4,194.9	404.1	4,211.0	0.00	0.00	0.00
11,000.0	90.11	180.00	6,810.6	-4,294.9	404.1	4,310.8	0.00	0.00	0.00
11,100.0	90.11	180.00	6,810.4	-4,394.9	404.1	4,410.7	0.00	0.00	0.00
11,200.0	90.11	180.00	6,810.2	-4,494.9	404.1	4,510.5	0.00	0.00	0.00
11,300.0	90.11	180.00	6,810.0	-4,594.9	404.1	4,610.4	0.00	0.00	0.00
11,400.0	90.11	180.00	6,809.8	-4,694.9	404.1	4,710.2	0.00	0.00	0.00
11,500.0	90.11	180.00	6,809.6	-4,794.9	404.1	4,810.0	0.00	0.00	0.00
11,600.0	90.11	180.00	6,809.4	-4,894.9	404.1	4,909.9	0.00	0.00	0.00
11,700.0	90.11	180.00	6,809.2	-4,994.9	404.1	5,009.7	0.00	0.00	0.00
11,800.0	90.11	180.00	6,809.0	-5,094.9	404.1	5,109.6	0.00	0.00	0.00
11,900.0	90.11	180.00	6,808.8	-5,194.9	404.1	5,209.4	0.00	0.00	0.00
12,000.0	90.11	180.00	6,808.6	-5,294.9	404.1	5,309.3	0.00	0.00	0.00
12,100.0	90.11	180.00	6,808.5	-5,394.9	404.1	5,409.1	0.00	0.00	0.00
12,200.0	90.11	180.00	6,808.3	-5,494.9	404.1	5,508.9	0.00	0.00	0.00
12,300.0	90.11	180.00	6,808.1	-5,594.9	404.1	5,608.8	0.00	0.00	0.00
12,400.0	90.11	180.00	6,807.9	-5,694.9	404.1	5,708.6	0.00	0.00	0.00
12,500.0	90.11	180.00	6,807.7	-5,794.9	404.1	5,808.5	0.00	0.00	0.00
12,600.0	90.11	180.00	6,807.5	-5,894.9	404.1	5,908.3	0.00	0.00	0.00
12,700.0	90.11	180.00	6,807.3	-5,994.9	404.1	6,008.1	0.00	0.00	0.00
12,800.0	90.11	180.00	6,807.1	-6,094.9	404.1	6,108.0	0.00	0.00	0.00
12,900.0	90.11	180.00	6,806.9	-6,194.9	404.1	6,207.8	0.00	0.00	0.00
13,000.0	90.11	180.00	6,806.7	-6,294.9	404.1	6,307.7	0.00	0.00	0.00
13,100.0	90.11	180.00	6,806.5	-6,394.9	404.1	6,407.5	0.00	0.00	0.00
13,200.0	90.11	180.00	6,806.3	-6,494.9	404.1	6,507.4	0.00	0.00	0.00
13,300.0	90.11	180.00	6,806.2	-6,594.9	404.1	6,607.2	0.00	0.00	0.00
13,400.0	90.11	180.00	6,806.0	-6,694.9	404.1	6,707.0	0.00	0.00	0.00
13,500.0	90.11	180.00	6,805.8	-6,794.9	404.1	6,806.9	0.00	0.00	0.00
13,600.0	90.11	180.00	6,805.6	-6,894.9	404.1	6,906.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-423
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,700.0	90.11	180.00	6,805.4	-6,994.9	404.1	7,006.6	0.00	0.00	0.00
13,800.0	90.11	180.00	6,805.2	-7,094.9	404.1	7,106.4	0.00	0.00	0.00
13,900.0	90.11	180.00	6,805.0	-7,194.9	404.1	7,206.3	0.00	0.00	0.00
13,900.2	90.11	180.00	6,805.0	-7,195.1	404.1	7,206.4	0.00	0.00	0.00
BHL 2139'FNL, 1725'FWL, SEC.33									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,188.5	6,803.5	7"	7	7-1/2

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,561.8	3,550.0	PARKMAN			
4,180.7	4,165.0	SUSSEX			
5,192.1	5,170.0	SHANNON			
6,457.4	6,416.0	SHARON SPRINGS			

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,500.0	1,500.0	0.0	0.0	KOP #1	
6,068.5	6,043.7	200.0	404.1	KOP #2	
7,384.7	6,817.5	-679.6	404.1	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

Churchill 28J-HZ Pad Sec.28-T5N-R64W

Churchill 28J-423

Wellbore #1

Plan #1 (12-30-13)

Anticollision Report

09 January, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (12-30-13)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	1/6/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,900.2	Plan #1 (12-30-13) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Churchill 28J-HZ Pad Sec.28-T5N-R64W						
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	1,500.0	1,501.0	30.6	24.1	4.700	CC, ES
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	13,900.2	13,727.0	371.1	119.6	1.476	Level 3, SF
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	766.3	767.3	58.5	55.3	18.157	CC
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	800.0	801.0	58.5	55.1	17.343	ES
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	13,900.2	13,884.0	660.5	381.4	2.367	SF
Churchill 28M-343 - Wellbore #1 - Plan #1 (12-30-13)	1,000.0	1,000.0	30.6	26.4	7.177	CC, ES
Churchill 28M-343 - Wellbore #1 - Plan #1 (12-30-13)	13,900.2	13,859.6	348.4	81.4	1.305	Level 3, SF
Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)	400.0	399.0	61.3	59.7	39.014	CC, ES
Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)	13,900.2	13,973.0	660.5	381.4	2.366	SF
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W						
Bailey 33-1 (Exist) - Wellbore #1 - Wellbore #1	13,750.8	6,844.3	239.7	-33.9	0.876	Level 1, CC, ES, SF
Churchill 2-6B (Exist) - Wellbore #1 - Wellbore #1	7,118.9	6,774.1	220.0	67.4	1.441	Level 3, CC, ES, SF
Churchill 2-7I (Exist) - Wellbore #1 - Wellbore #1	7,148.6	6,779.5	250.6	97.6	1.638	CC, ES, SF
Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #1	8,497.4	6,817.4	220.0	45.7	1.262	Level 3, CC
Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #1	8,500.0	6,817.4	220.0	45.6	1.262	Level 3, ES, SF
Churchill 28-2 (Exist) - Wellbore #1 - Wellbore #1	7,148.6	6,779.5	220.0	67.0	1.438	Level 3, CC, ES, SF
Welch B 28-11 (Exist) - Wellbore #1 - Wellbore #1	9,983.9	6,805.5	47.3	-154.0	0.235	Level 1, CC, ES, SF
Welsh 1 (Exist) - Wellbore #1 - Wellbore #1	11,105.9	6,810.4	267.5	44.9	1.202	Level 2, CC, ES, SF
Wonenberg B33-3 (Exist) - Wellbore #1 - Wellbore #1	12,417.4	6,823.8	270.3	22.5	1.091	Level 2, CC, ES, SF

Offset Design												
Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)												
Survey Program: 0-MWD												
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
0.0	0.0	1.0	1.0	0.0	0.0	-89.98	0.0	-30.6	30.6	30.6	0.00	N/A
100.0	100.0	101.0	101.0	0.1	0.1	-89.98	0.0	-30.6	30.6	30.4	0.23	135.005
200.0	200.0	201.0	201.0	0.3	0.3	-89.98	0.0	-30.6	30.6	30.0	0.68	45.301
300.0	300.0	301.0	301.0	0.6	0.6	-89.98	0.0	-30.6	30.6	29.5	1.13	27.216
400.0	400.0	401.0	401.0	0.8	0.8	-89.98	0.0	-30.6	30.6	29.1	1.58	19.451
500.0	500.0	501.0	501.0	1.0	1.0	-89.98	0.0	-30.6	30.6	28.6	2.03	15.134
600.0	600.0	601.0	601.0	1.2	1.2	-89.98	0.0	-30.6	30.6	28.2	2.47	12.385

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													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	
700.0	700.0	701.0	701.0	1.5	1.5	-89.98	0.0	-30.6	30.6	27.7	2.92	10.481		
800.0	800.0	801.0	801.0	1.7	1.7	-89.98	0.0	-30.6	30.6	27.3	3.37	9.084		
900.0	900.0	901.0	901.0	1.9	1.9	-89.98	0.0	-30.6	30.6	26.8	3.82	8.016		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-89.98	0.0	-30.6	30.6	26.4	4.27	7.173		
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-89.98	0.0	-30.6	30.6	25.9	4.72	6.490		
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	-89.98	0.0	-30.6	30.6	25.5	5.17	5.926		
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-89.98	0.0	-30.6	30.6	25.0	5.62	5.452		
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-89.98	0.0	-30.6	30.6	24.6	6.07	5.048		
1,500.0	1,500.0	1,501.0	1,501.0	3.3	3.3	-89.98	0.0	-30.6	30.6	24.1	6.52	4.700 CC, ES		
1,600.0	1,600.0	1,601.0	1,601.0	3.5	3.5	-155.02	0.0	-30.6	32.2	25.3	6.96	4.630		
1,700.0	1,699.8	1,700.8	1,700.8	3.7	3.7	-158.40	0.0	-30.6	37.0	29.6	7.39	5.014		
1,800.0	1,799.5	1,800.5	1,800.5	3.9	3.9	-162.42	0.0	-30.6	45.3	37.4	7.81	5.798		
1,900.0	1,898.8	1,899.8	1,899.8	4.1	4.2	-165.86	0.0	-30.6	56.0	47.8	8.24	6.801		
2,000.0	1,998.2	1,999.2	1,999.2	4.4	4.4	-168.21	0.0	-30.6	67.0	58.3	8.67	7.724		
2,100.0	2,097.6	2,098.6	2,098.6	4.6	4.6	-169.90	0.0	-30.6	78.1	68.9	9.11	8.564		
2,200.0	2,196.9	2,197.9	2,197.9	4.9	4.8	-171.17	0.0	-30.6	89.2	79.6	9.56	9.331		
2,300.0	2,296.3	2,297.3	2,297.3	5.2	5.1	-172.16	0.0	-30.6	100.3	90.3	10.00	10.031		
2,400.0	2,395.6	2,396.6	2,396.6	5.4	5.3	-172.95	0.0	-30.6	111.5	101.1	10.45	10.673		
2,500.0	2,495.0	2,496.0	2,496.0	5.7	5.5	-173.59	0.0	-30.6	122.7	111.8	10.89	11.262		
2,600.0	2,594.4	2,598.8	2,598.8	6.0	5.7	-173.66	1.5	-29.9	132.7	121.3	11.35	11.692		
2,700.0	2,693.7	2,702.1	2,701.9	6.3	6.0	-172.70	6.3	-27.3	140.0	128.2	11.80	11.866		
2,800.0	2,793.1	2,805.1	2,804.6	6.5	6.2	-170.82	14.3	-23.1	144.8	132.6	12.25	11.818		
2,900.0	2,892.5	2,904.9	2,903.8	6.8	6.4	-168.74	23.3	-18.3	148.8	136.1	12.71	11.709		
3,000.0	2,991.8	3,004.7	3,003.1	7.1	6.6	-166.77	32.3	-13.5	153.0	139.8	13.17	11.616		
3,100.0	3,091.2	3,104.5	3,102.3	7.4	6.9	-164.91	41.3	-8.8	157.4	143.7	13.64	11.537		
3,200.0	3,190.5	3,204.3	3,201.6	7.7	7.1	-163.15	50.3	-4.0	161.9	147.8	14.12	11.468		
3,300.0	3,289.9	3,304.0	3,300.9	8.0	7.4	-161.49	59.3	0.8	166.5	151.9	14.60	11.409		
3,400.0	3,389.3	3,403.8	3,400.1	8.3	7.6	-159.92	68.3	5.5	171.3	156.3	15.09	11.357		
3,500.0	3,488.6	3,503.6	3,499.4	8.6	7.9	-158.43	77.3	10.3	176.3	160.7	15.58	11.312		
3,600.0	3,588.0	3,603.4	3,598.6	8.8	8.1	-157.03	86.3	15.0	181.3	165.2	16.08	11.273		
3,700.0	3,687.4	3,703.1	3,697.9	9.1	8.4	-155.70	95.3	19.8	186.4	169.8	16.59	11.239		
3,800.0	3,786.7	3,802.9	3,797.1	9.4	8.6	-154.44	104.3	24.6	191.6	174.5	17.10	11.209		
3,900.0	3,886.1	3,902.7	3,896.4	9.7	8.9	-153.25	113.3	29.3	196.9	179.3	17.61	11.182		
4,000.0	3,985.5	4,002.5	3,995.7	10.0	9.2	-152.13	122.3	34.1	202.3	184.2	18.13	11.159		
4,100.0	4,084.8	4,102.3	4,094.9	10.3	9.4	-151.06	131.3	38.9	207.8	189.1	18.66	11.139		
4,200.0	4,184.2	4,202.0	4,194.2	10.6	9.7	-150.05	140.3	43.6	213.3	194.2	19.18	11.121		
4,300.0	4,283.5	4,301.8	4,293.4	10.9	9.9	-149.08	149.3	48.4	218.9	199.2	19.72	11.105		
4,400.0	4,382.9	4,401.6	4,392.7	11.2	10.2	-148.17	158.2	53.1	224.6	204.3	20.25	11.091		
4,500.0	4,482.3	4,501.4	4,491.9	11.5	10.5	-147.30	167.2	57.9	230.3	209.5	20.79	11.078		
4,600.0	4,581.6	4,601.1	4,591.2	11.8	10.7	-146.48	176.2	62.7	236.1	214.7	21.33	11.067		
4,700.0	4,681.0	4,700.9	4,690.5	12.1	11.0	-145.69	185.2	67.4	241.9	220.0	21.87	11.058		
4,800.0	4,780.4	4,798.4	4,787.5	12.4	11.3	-145.20	193.0	71.6	248.1	225.7	22.38	11.087		
4,900.0	4,879.7	4,895.2	4,884.2	12.7	11.4	-145.43	197.9	74.2	255.5	232.6	22.81	11.198		
5,000.0	4,979.1	4,991.8	4,980.7	13.0	11.6	-146.31	200.0	75.2	264.0	240.8	23.21	11.375		
5,100.0	5,078.4	5,090.5	5,079.4	13.3	11.8	-147.59	200.0	75.3	273.4	249.8	23.60	11.587		
5,200.0	5,177.8	5,189.9	5,178.8	13.6	12.0	-148.81	200.0	75.3	283.0	259.0	24.01	11.787		
5,300.0	5,277.2	5,289.2	5,278.2	13.9	12.2	-149.95	200.0	75.3	292.7	268.3	24.43	11.982		
5,400.0	5,376.5	5,388.6	5,377.5	14.2	12.4	-151.02	200.0	75.3	302.6	277.7	24.85	12.174		
5,500.0	5,475.9	5,488.0	5,476.9	14.5	12.6	-152.02	200.0	75.3	312.5	287.2	25.27	12.363		
5,600.0	5,575.4	5,587.5	5,576.4	14.8	12.8	-152.90	200.0	75.3	321.0	295.3	25.70	12.489		
5,700.0	5,675.2	5,687.3	5,676.2	15.0	13.1	-153.43	200.0	75.3	326.4	300.3	26.09	12.512		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,800.0	5,775.2	5,787.3	5,776.2	15.1	13.3	-153.66	200.0	75.3	328.8	302.3	26.46	12.426		
5,900.0	5,875.2	5,887.3	5,876.2	15.3	13.5	-90.00	200.0	75.3	328.9	302.0	26.85	12.248		
5,933.1	5,908.3	5,920.4	5,909.3	15.4	13.5	-90.07	199.6	75.3	328.9	301.9	26.97	12.193		
6,000.0	5,975.2	5,986.8	5,975.6	15.5	13.6	-90.94	194.6	75.3	328.9	301.7	27.17	12.107		
6,100.0	6,075.2	6,083.6	6,070.6	15.7	13.7	86.10	177.1	75.3	329.7	302.3	27.35	12.052		
6,200.0	6,174.6	6,177.5	6,160.1	15.8	13.8	82.72	148.8	75.3	331.6	304.2	27.44	12.088		
6,300.0	6,271.7	6,269.4	6,243.7	15.9	13.8	79.53	110.6	75.3	334.6	307.1	27.49	12.174		
6,400.0	6,364.9	6,359.5	6,320.5	15.9	13.9	76.58	63.8	75.3	338.4	310.8	27.54	12.288		
6,500.0	6,452.6	6,450.0	6,391.7	16.0	14.0	73.85	7.9	75.3	342.6	315.0	27.62	12.404		
6,600.0	6,533.4	6,535.0	6,452.0	16.0	14.1	71.53	-51.9	75.3	347.1	319.3	27.77	12.499		
6,700.0	6,605.7	6,620.9	6,505.9	16.1	14.4	69.48	-118.7	75.3	351.5	323.4	28.03	12.541		
6,800.0	6,668.5	6,705.8	6,551.5	16.3	14.8	67.75	-190.4	75.3	355.6	327.2	28.42	12.509		
6,900.0	6,720.5	6,790.0	6,588.5	16.6	15.4	66.36	-265.9	75.3	359.2	330.2	29.02	12.377		
7,000.0	6,761.0	6,873.5	6,616.8	17.2	16.1	65.30	-344.4	75.3	362.1	332.2	29.85	12.130		
7,100.0	6,789.2	6,956.6	6,636.3	17.9	16.8	64.58	-425.2	75.3	364.2	333.2	30.94	11.769		
7,200.0	6,804.7	7,039.5	6,646.9	18.9	17.7	64.18	-507.3	75.3	365.4	333.0	32.35	11.295		
7,300.0	6,814.5	7,126.9	6,649.0	20.0	18.8	63.20	-594.6	75.3	368.6	334.6	34.03	10.833		
7,400.0	6,817.5	7,226.8	6,648.7	21.2	20.1	62.70	-694.5	75.3	370.1	334.1	36.02	10.275		
7,500.0	6,817.3	7,326.8	6,648.5	22.5	21.4	62.70	-794.5	75.3	370.1	331.6	38.47	9.619		
7,600.0	6,817.1	7,426.8	6,648.3	23.9	22.9	62.69	-894.5	75.3	370.1	329.0	41.08	9.010		
7,700.0	6,816.9	7,526.8	6,648.1	25.4	24.4	62.69	-994.5	75.3	370.1	326.3	43.80	8.449		
7,800.0	6,816.7	7,626.8	6,647.8	26.9	26.0	62.68	-1,094.5	75.3	370.1	323.5	46.63	7.938		
7,900.0	6,816.5	7,726.8	6,647.6	28.5	27.6	62.68	-1,194.5	75.3	370.2	320.6	49.54	7.472		
8,000.0	6,816.3	7,826.8	6,647.4	30.1	29.3	62.67	-1,294.5	75.3	370.2	317.7	52.52	7.049		
8,100.0	6,816.1	7,926.8	6,647.2	31.7	31.0	62.67	-1,394.5	75.3	370.2	314.6	55.55	6.664		
8,200.0	6,815.9	8,026.8	6,646.9	33.4	32.7	62.66	-1,494.5	75.3	370.2	311.6	58.64	6.314		
8,300.0	6,815.8	8,126.8	6,646.7	35.1	34.4	62.66	-1,594.5	75.3	370.2	308.5	61.76	5.994		
8,400.0	6,815.6	8,226.8	6,646.5	36.8	36.1	62.65	-1,694.5	75.3	370.2	305.3	64.92	5.703		
8,500.0	6,815.4	8,326.8	6,646.3	38.5	37.9	62.65	-1,794.5	75.3	370.2	302.1	68.11	5.436		
8,600.0	6,815.2	8,426.8	6,646.0	40.3	39.7	62.64	-1,894.5	75.3	370.3	298.9	71.33	5.191		
8,700.0	6,815.0	8,526.8	6,645.8	42.1	41.5	62.64	-1,994.5	75.3	370.3	295.7	74.57	4.965		
8,800.0	6,814.8	8,626.8	6,645.6	43.8	43.3	62.63	-2,094.5	75.3	370.3	292.5	77.83	4.758		
8,900.0	6,814.6	8,726.8	6,645.3	45.6	45.1	62.63	-2,194.5	75.3	370.3	289.2	81.11	4.566		
9,000.0	6,814.4	8,826.8	6,645.1	47.4	46.9	62.62	-2,294.5	75.3	370.3	285.9	84.40	4.388		
9,100.0	6,814.2	8,926.8	6,644.9	49.3	48.8	62.62	-2,394.5	75.3	370.3	282.6	87.71	4.222		
9,200.0	6,814.0	9,026.8	6,644.7	51.1	50.6	62.61	-2,494.5	75.3	370.4	279.3	91.03	4.069		
9,300.0	6,813.8	9,126.8	6,644.4	52.9	52.5	62.61	-2,594.5	75.3	370.4	276.0	94.36	3.925		
9,400.0	6,813.6	9,226.8	6,644.2	54.7	54.3	62.60	-2,694.5	75.3	370.4	272.7	97.70	3.791		
9,500.0	6,813.4	9,326.8	6,644.0	56.6	56.2	62.60	-2,794.5	75.3	370.4	269.4	101.05	3.666		
9,600.0	6,813.3	9,426.8	6,643.8	58.4	58.0	62.60	-2,894.5	75.3	370.4	266.0	104.40	3.548		
9,700.0	6,813.1	9,526.8	6,643.5	60.3	59.9	62.59	-2,994.5	75.3	370.4	262.7	107.77	3.437		
9,800.0	6,812.9	9,626.8	6,643.3	62.1	61.7	62.59	-3,094.5	75.3	370.5	259.3	111.14	3.333		
9,900.0	6,812.7	9,726.8	6,643.1	64.0	63.6	62.58	-3,194.5	75.3	370.5	256.0	114.51	3.235		
10,000.0	6,812.5	9,826.8	6,642.9	65.8	65.5	62.58	-3,294.5	75.3	370.5	252.6	117.89	3.143		
10,100.0	6,812.3	9,926.8	6,642.6	67.7	67.4	62.57	-3,394.5	75.3	370.5	249.2	121.28	3.055		
10,200.0	6,812.1	10,026.8	6,642.4	69.6	69.2	62.57	-3,494.5	75.3	370.5	245.9	124.67	2.972		
10,300.0	6,811.9	10,126.8	6,642.2	71.4	71.1	62.56	-3,594.5	75.3	370.5	242.5	128.07	2.893		
10,400.0	6,811.7	10,226.8	6,641.9	73.3	73.0	62.56	-3,694.5	75.3	370.6	239.1	131.46	2.819		
10,500.0	6,811.5	10,326.8	6,641.7	75.2	74.9	62.55	-3,794.5	75.3	370.6	235.7	134.87	2.748		
10,600.0	6,811.3	10,426.8	6,641.5	77.1	76.8	62.55	-3,894.5	75.3	370.6	232.3	138.27	2.680		
10,700.0	6,811.1	10,526.8	6,641.3	78.9	78.7	62.54	-3,994.5	75.3	370.6	228.9	141.68	2.616		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,800.0	6,811.0	10,626.8	6,641.0	80.8	80.6	62.54	-4,094.5	75.3	370.6	225.5	145.09	2.554	
10,900.0	6,810.8	10,726.8	6,640.8	82.7	82.4	62.53	-4,194.5	75.3	370.6	222.1	148.50	2.496	
11,000.0	6,810.6	10,826.8	6,640.6	84.6	84.3	62.53	-4,294.5	75.3	370.7	218.7	151.92	2.440	
11,100.0	6,810.4	10,926.8	6,640.4	86.5	86.2	62.52	-4,394.5	75.3	370.7	215.3	155.33	2.386	
11,200.0	6,810.2	11,026.8	6,640.1	88.4	88.1	62.52	-4,494.5	75.3	370.7	211.9	158.75	2.335	
11,300.0	6,810.0	11,126.8	6,639.9	90.3	90.0	62.51	-4,594.5	75.3	370.7	208.5	162.17	2.286	
11,400.0	6,809.8	11,226.8	6,639.7	92.1	91.9	62.51	-4,694.5	75.3	370.7	205.1	165.60	2.239	
11,500.0	6,809.6	11,326.8	6,639.4	94.0	93.8	62.50	-4,794.5	75.3	370.7	201.7	169.02	2.193	
11,600.0	6,809.4	11,426.8	6,639.2	95.9	95.7	62.50	-4,894.5	75.3	370.7	198.3	172.45	2.150	
11,700.0	6,809.2	11,526.8	6,639.0	97.8	97.6	62.49	-4,994.5	75.3	370.8	194.9	175.88	2.108	
11,800.0	6,809.0	11,626.8	6,638.8	99.7	99.5	62.49	-5,094.5	75.3	370.8	191.5	179.30	2.068	
11,900.0	6,808.8	11,726.8	6,638.5	101.6	101.4	62.48	-5,194.5	75.3	370.8	188.1	182.73	2.029	
12,000.0	6,808.6	11,826.8	6,638.3	103.5	103.3	62.48	-5,294.5	75.3	370.8	184.6	186.16	1.992	
12,100.0	6,808.5	11,926.8	6,638.1	105.4	105.2	62.48	-5,394.5	75.3	370.8	181.2	189.60	1.956	
12,200.0	6,808.3	12,026.8	6,637.9	107.3	107.1	62.47	-5,494.5	75.3	370.8	177.8	193.03	1.921	
12,300.0	6,808.1	12,126.8	6,637.6	109.2	109.0	62.47	-5,594.5	75.3	370.9	174.4	196.46	1.888	
12,400.0	6,807.9	12,226.8	6,637.4	111.1	110.9	62.46	-5,694.5	75.3	370.9	171.0	199.90	1.855	
12,500.0	6,807.7	12,326.8	6,637.2	113.0	112.8	62.46	-5,794.5	75.3	370.9	167.6	203.33	1.824	
12,600.0	6,807.5	12,426.8	6,637.0	114.9	114.7	62.45	-5,894.5	75.3	370.9	164.1	206.77	1.794	
12,700.0	6,807.3	12,526.8	6,636.7	116.8	116.6	62.45	-5,994.5	75.3	370.9	160.7	210.21	1.765	
12,800.0	6,807.1	12,626.8	6,636.5	118.7	118.5	62.44	-6,094.5	75.3	370.9	157.3	213.64	1.736	
12,900.0	6,806.9	12,726.8	6,636.3	120.6	120.5	62.44	-6,194.5	75.3	371.0	153.9	217.08	1.709	
13,000.0	6,806.7	12,826.8	6,636.0	122.5	122.4	62.43	-6,294.5	75.3	371.0	150.5	220.52	1.682	
13,100.0	6,806.5	12,926.8	6,635.8	124.4	124.3	62.43	-6,394.5	75.3	371.0	147.0	223.96	1.656	
13,200.0	6,806.3	13,026.8	6,635.6	126.3	126.2	62.42	-6,494.5	75.3	371.0	143.6	227.40	1.632	
13,300.0	6,806.2	13,126.8	6,635.4	128.2	128.1	62.42	-6,594.5	75.3	371.0	140.2	230.84	1.607	
13,400.0	6,806.0	13,226.8	6,635.1	130.1	130.0	62.41	-6,694.5	75.3	371.0	136.8	234.28	1.584	
13,500.0	6,805.8	13,326.8	6,634.9	132.1	131.9	62.41	-6,794.5	75.3	371.1	133.3	237.72	1.561	
13,600.0	6,805.6	13,426.8	6,634.7	134.0	133.8	62.40	-6,894.5	75.3	371.1	129.9	241.16	1.539	
13,700.0	6,805.4	13,526.8	6,634.5	135.9	135.7	62.40	-6,994.5	75.3	371.1	126.5	244.60	1.517	
13,800.0	6,805.2	13,626.8	6,634.2	137.8	137.6	62.39	-7,094.5	75.3	371.1	123.1	248.05	1.496 Level 3	
13,900.0	6,805.0	13,726.8	6,634.0	139.7	139.5	62.39	-7,194.5	75.3	371.1	119.6	251.49	1.476 Level 3	
13,900.2	6,805.0	13,727.0	6,634.0	139.7	139.5	62.39	-7,194.7	75.3	371.1	119.6	251.50	1.476 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-89.99	-89.99	0.0	-58.5	58.5	58.5	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-89.99	-89.99	0.0	-58.5	58.5	58.3	0.23	257.736	
200.0	200.0	201.0	201.0	0.3	0.3	-89.99	-89.99	0.0	-58.5	58.5	57.8	0.68	86.483	
300.0	300.0	301.0	301.0	0.6	0.6	-89.99	-89.99	0.0	-58.5	58.5	57.4	1.13	51.959	
400.0	400.0	401.0	401.0	0.8	0.8	-89.99	-89.99	0.0	-58.5	58.5	56.9	1.58	37.135	
500.0	500.0	501.0	501.0	1.0	1.0	-89.99	-89.99	0.0	-58.5	58.5	56.5	2.03	28.892	
600.0	600.0	601.0	601.0	1.2	1.2	-89.99	-89.99	0.0	-58.5	58.5	56.0	2.47	23.643	
700.0	700.0	701.0	701.0	1.5	1.5	-89.99	-89.99	0.0	-58.5	58.5	55.6	2.92	20.009	
766.3	766.3	767.3	767.3	1.6	1.6	-89.99	-89.99	0.0	-58.5	58.5	55.3	3.22	18.157 CC	
800.0	800.0	801.0	801.0	1.7	1.7	-89.99	-89.99	0.0	-58.5	58.5	55.1	3.37	17.343 ES	
900.0	900.0	900.0	900.0	1.9	1.9	-88.80	-88.80	1.2	-59.7	59.8	55.9	3.82	15.653	
1,000.0	1,000.0	998.2	998.0	2.1	2.1	-85.64	-85.64	4.8	-63.3	63.5	59.3	4.26	14.911	
1,100.0	1,100.0	1,098.0	1,097.6	2.4	2.4	-82.23	-82.23	9.2	-67.6	68.3	63.6	4.71	14.503	
1,200.0	1,200.0	1,197.8	1,197.2	2.6	2.6	-79.27	-79.27	13.6	-72.0	73.4	68.2	5.17	14.195	
1,300.0	1,300.0	1,297.6	1,296.9	2.8	2.8	-76.70	-76.70	18.0	-76.4	78.6	72.9	5.63	13.959	
1,400.0	1,400.0	1,397.4	1,396.5	3.0	3.1	-74.46	-74.46	22.5	-80.7	83.9	77.8	6.09	13.776	
1,500.0	1,500.0	1,497.2	1,496.1	3.3	3.3	-72.48	-72.48	26.9	-85.1	89.3	82.8	6.55	13.633	
1,600.0	1,600.0	1,597.0	1,595.6	3.5	3.5	-135.05	-135.05	31.3	-89.4	96.1	89.2	6.94	13.856	
1,700.0	1,699.8	1,696.5	1,695.0	3.7	3.8	-135.41	-135.41	35.7	-93.8	105.4	98.0	7.37	14.299	
1,800.0	1,799.5	1,795.8	1,794.1	3.9	4.0	-136.86	-136.86	40.0	-98.1	117.1	109.3	7.80	15.018	
1,900.0	1,898.8	1,894.7	1,892.9	4.1	4.3	-138.86	-138.86	44.4	-102.4	130.8	122.6	8.24	15.871	
2,000.0	1,998.2	1,993.7	1,991.6	4.4	4.5	-140.54	-140.54	48.8	-106.8	144.7	136.0	8.69	16.645	
2,100.0	2,097.6	2,092.6	2,090.4	4.6	4.7	-141.92	-141.92	53.1	-111.1	158.7	149.5	9.15	17.346	
2,200.0	2,196.9	2,191.6	2,189.1	4.9	5.0	-143.08	-143.08	57.5	-115.4	172.7	163.1	9.61	17.982	
2,300.0	2,296.3	2,290.5	2,287.9	5.2	5.2	-144.06	-144.06	61.9	-119.7	186.9	176.8	10.07	18.560	
2,400.0	2,395.6	2,389.5	2,386.7	5.4	5.5	-144.91	-144.91	66.2	-124.0	201.0	190.5	10.53	19.088	
2,500.0	2,495.0	2,488.4	2,485.4	5.7	5.7	-145.64	-145.64	70.6	-128.4	215.2	204.2	11.00	19.571	
2,600.0	2,594.4	2,587.4	2,584.2	6.0	6.0	-146.29	-146.29	75.0	-132.7	229.5	218.0	11.46	20.014	
2,700.0	2,693.7	2,686.3	2,682.9	6.3	6.2	-146.86	-146.86	79.4	-137.0	243.7	231.8	11.93	20.423	
2,800.0	2,793.1	2,785.3	2,781.7	6.5	6.5	-147.36	-147.36	83.7	-141.3	258.0	245.6	12.40	20.800	
2,900.0	2,892.5	2,884.2	2,880.5	6.8	6.7	-147.81	-147.81	88.1	-145.7	272.3	259.4	12.88	21.148	
3,000.0	2,991.8	2,983.2	2,979.2	7.1	7.0	-148.22	-148.22	92.5	-150.0	286.6	273.3	13.35	21.472	
3,100.0	3,091.2	3,082.1	3,078.0	7.4	7.2	-148.59	-148.59	96.8	-154.3	300.9	287.1	13.82	21.773	
3,200.0	3,190.5	3,181.1	3,176.7	7.7	7.5	-148.92	-148.92	101.2	-158.6	315.3	301.0	14.30	22.054	
3,300.0	3,289.9	3,280.0	3,275.5	8.0	7.7	-149.23	-149.23	105.6	-162.9	329.6	314.8	14.77	22.316	
3,400.0	3,389.3	3,379.0	3,374.3	8.3	7.9	-149.51	-149.51	109.9	-167.3	344.0	328.7	15.25	22.562	
3,500.0	3,488.6	3,478.0	3,473.0	8.6	8.2	-149.77	-149.77	114.3	-171.6	358.3	342.6	15.72	22.792	
3,600.0	3,588.0	3,576.9	3,571.8	8.8	8.4	-150.01	-150.01	118.7	-175.9	372.7	356.5	16.20	23.008	
3,700.0	3,687.4	3,675.9	3,670.5	9.1	8.7	-150.23	-150.23	123.0	-180.2	387.1	370.4	16.68	23.212	
3,800.0	3,786.7	3,774.8	3,769.3	9.4	8.9	-150.43	-150.43	127.4	-184.5	401.4	384.3	17.15	23.404	
3,900.0	3,886.1	3,873.8	3,868.1	9.7	9.2	-150.62	-150.62	131.8	-188.9	415.8	398.2	17.63	23.585	
4,000.0	3,985.5	3,972.7	3,966.8	10.0	9.4	-150.80	-150.80	136.1	-193.2	430.2	412.1	18.11	23.757	
4,100.0	4,084.8	4,071.7	4,065.6	10.3	9.7	-150.97	-150.97	140.5	-197.5	444.6	426.0	18.59	23.919	
4,200.0	4,184.2	4,170.6	4,164.3	10.6	9.9	-151.12	-151.12	144.9	-201.8	459.0	439.9	19.07	24.073	
4,300.0	4,283.5	4,269.6	4,263.1	10.9	10.2	-151.27	-151.27	149.2	-206.2	473.4	453.9	19.55	24.219	
4,400.0	4,382.9	4,368.5	4,361.9	11.2	10.4	-151.41	-151.41	153.6	-210.5	487.8	467.8	20.03	24.359	
4,500.0	4,482.3	4,467.5	4,460.6	11.5	10.7	-151.54	-151.54	158.0	-214.8	502.2	481.7	20.51	24.491	
4,600.0	4,581.6	4,566.4	4,559.4	11.8	10.9	-151.66	-151.66	162.3	-219.1	516.6	495.6	20.99	24.617	
4,700.0	4,681.0	4,665.4	4,658.1	12.1	11.2	-151.77	-151.77	166.7	-223.4	531.0	509.6	21.47	24.737	
4,800.0	4,780.4	4,764.3	4,756.9	12.4	11.4	-151.88	-151.88	171.1	-227.8	545.4	523.5	21.95	24.852	
4,900.0	4,879.7	4,863.3	4,855.7	12.7	11.7	-151.99	-151.99	175.4	-232.1	559.8	537.4	22.43	24.962	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,979.1	4,962.2	4,954.4	13.0	11.9	-152.09		179.8	-236.4	574.3	551.4	22.91	25.067	
5,100.0	5,078.4	5,061.2	5,053.2	13.3	12.2	-152.18		184.2	-240.7	588.7	565.3	23.39	25.168	
5,200.0	5,177.8	5,160.1	5,151.9	13.6	12.4	-152.27		188.6	-245.1	603.1	579.2	23.87	25.264	
5,300.0	5,277.2	5,259.1	5,250.7	13.9	12.7	-152.36		192.9	-249.4	617.5	593.2	24.35	25.357	
5,400.0	5,376.5	5,363.2	5,354.6	14.2	12.9	-152.45		197.4	-253.8	631.8	607.0	24.84	25.439	
5,500.0	5,475.9	5,481.1	5,472.5	14.5	13.1	-152.78		199.9	-256.3	644.0	618.7	25.30	25.457	
5,600.0	5,575.4	5,585.1	5,576.4	14.8	13.3	-153.25		200.0	-256.4	652.6	626.9	25.75	25.347	
5,700.0	5,675.2	5,684.9	5,676.2	15.0	13.5	-153.54		200.0	-256.4	658.1	631.9	26.16	25.156	
5,800.0	5,775.2	5,784.8	5,776.2	15.1	13.7	-153.66		200.0	-256.4	660.4	633.9	26.55	24.876	
5,900.0	5,875.2	5,884.8	5,876.2	15.3	13.9	-90.00		200.0	-256.4	660.5	633.6	26.94	24.519	
6,000.0	5,975.2	5,984.8	5,976.2	15.5	14.1	-90.00		200.0	-256.4	660.5	633.1	27.35	24.149	
6,056.1	6,031.3	6,040.9	6,032.3	15.6	14.2	90.06		200.0	-256.4	660.5	632.9	27.58	23.948	
6,100.0	6,075.2	6,084.8	6,076.2	15.7	14.3	90.00		199.3	-256.4	660.5	632.8	27.75	23.805	
6,200.0	6,174.6	6,184.8	6,175.5	15.8	14.4	89.99		188.6	-256.4	660.5	632.5	28.00	23.587	
6,300.0	6,271.7	6,284.8	6,272.6	15.9	14.5	89.97		164.9	-256.4	660.5	632.3	28.17	23.451	
6,400.0	6,364.9	6,384.7	6,365.7	15.9	14.6	89.96		128.8	-256.4	660.5	632.2	28.28	23.355	
6,500.0	6,452.6	6,484.7	6,453.3	16.0	14.6	89.95		80.9	-256.4	660.5	632.1	28.41	23.245	
6,600.0	6,533.4	6,584.6	6,534.0	16.0	14.7	89.95		22.0	-256.4	660.5	631.9	28.65	23.057	
6,700.0	6,605.7	6,684.5	6,606.2	16.1	14.8	89.94		-46.9	-256.4	660.5	631.4	29.06	22.726	
6,800.0	6,668.5	6,784.4	6,668.8	16.3	15.0	89.93		-124.7	-256.4	660.5	630.8	29.74	22.207	
6,900.0	6,720.5	6,884.3	6,720.7	16.6	15.5	89.92		-209.9	-256.4	660.5	629.8	30.75	21.481	
7,000.0	6,761.0	6,984.2	6,761.1	17.2	16.2	89.92		-301.2	-256.4	660.5	628.4	32.11	20.570	
7,100.0	6,789.2	7,084.1	6,789.2	17.9	17.1	89.92		-397.0	-256.4	660.5	626.7	33.82	19.527	
7,200.0	6,804.7	7,184.0	6,804.7	18.9	18.1	89.91		-495.6	-256.4	660.5	624.6	35.86	18.421	
7,300.0	6,814.5	7,283.9	6,814.6	20.0	19.2	89.91		-595.1	-256.4	660.5	622.3	38.16	17.307	
7,400.0	6,817.5	7,383.8	6,817.5	21.2	20.5	89.91		-694.9	-256.4	660.5	619.8	40.69	16.234	
7,500.0	6,817.3	7,483.8	6,817.3	22.5	21.9	89.91		-794.9	-256.4	660.5	617.1	43.41	15.217	
7,600.0	6,817.1	7,583.8	6,817.1	23.9	23.3	89.91		-894.9	-256.4	660.5	614.2	46.28	14.272	
7,700.0	6,816.9	7,683.8	6,816.9	25.4	24.8	89.91		-994.9	-256.4	660.5	611.2	49.28	13.402	
7,800.0	6,816.7	7,783.8	6,816.7	26.9	26.3	89.91		-1,094.9	-256.4	660.5	608.1	52.40	12.605	
7,900.0	6,816.5	7,883.8	6,816.5	28.5	27.9	89.91		-1,194.9	-256.4	660.5	604.9	55.61	11.878	
8,000.0	6,816.3	7,983.8	6,816.3	30.1	29.6	89.91		-1,294.9	-256.4	660.5	601.6	58.89	11.216	
8,100.0	6,816.1	8,083.8	6,816.1	31.7	31.2	89.91		-1,394.9	-256.4	660.5	598.3	62.23	10.613	
8,200.0	6,815.9	8,183.8	6,816.0	33.4	32.9	89.91		-1,494.9	-256.4	660.5	594.9	65.63	10.063	
8,300.0	6,815.8	8,283.8	6,815.8	35.1	34.7	89.91		-1,594.9	-256.4	660.5	591.4	69.08	9.561	
8,400.0	6,815.6	8,383.8	6,815.6	36.8	36.4	89.91		-1,694.9	-256.4	660.5	587.9	72.57	9.102	
8,500.0	6,815.4	8,483.8	6,815.4	38.5	38.1	89.91		-1,794.9	-256.4	660.5	584.4	76.09	8.681	
8,600.0	6,815.2	8,583.8	6,815.2	40.3	39.9	89.91		-1,894.9	-256.4	660.5	580.9	79.64	8.294	
8,700.0	6,815.0	8,683.8	6,815.0	42.1	41.7	89.91		-1,994.9	-256.4	660.5	577.3	83.22	7.937	
8,800.0	6,814.8	8,783.8	6,814.8	43.8	43.5	89.91		-2,094.9	-256.4	660.5	573.7	86.82	7.608	
8,900.0	6,814.6	8,883.8	6,814.6	45.6	45.3	89.91		-2,194.9	-256.4	660.5	570.1	90.43	7.304	
9,000.0	6,814.4	8,983.8	6,814.4	47.4	47.1	89.91		-2,294.9	-256.4	660.5	566.4	94.07	7.021	
9,100.0	6,814.2	9,083.8	6,814.2	49.3	48.9	89.91		-2,394.9	-256.4	660.5	562.8	97.72	6.759	
9,200.0	6,814.0	9,183.8	6,814.0	51.1	50.8	89.91		-2,494.9	-256.4	660.5	559.1	101.39	6.514	
9,300.0	6,813.8	9,283.8	6,813.8	52.9	52.6	89.91		-2,594.9	-256.4	660.5	555.4	105.07	6.286	
9,400.0	6,813.6	9,383.8	6,813.6	54.7	54.5	89.91		-2,694.9	-256.4	660.5	551.7	108.76	6.073	
9,500.0	6,813.4	9,483.8	6,813.5	56.6	56.3	89.91		-2,794.9	-256.4	660.5	548.0	112.46	5.873	
9,600.0	6,813.3	9,583.8	6,813.3	58.4	58.2	89.91		-2,894.9	-256.4	660.5	544.3	116.17	5.686	
9,700.0	6,813.1	9,683.8	6,813.1	60.3	60.0	89.91		-2,994.9	-256.4	660.5	540.6	119.89	5.509	
9,800.0	6,812.9	9,783.8	6,812.9	62.1	61.9	89.91		-3,094.9	-256.4	660.5	536.9	123.61	5.343	
9,900.0	6,812.7	9,883.8	6,812.7	64.0	63.7	89.91		-3,194.9	-256.4	660.5	533.2	127.35	5.187	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)					
10,000.0	6,812.5	9,983.8	6,812.5	65.8	65.6	89.91	-3,294.9	-256.4	660.5	529.4	131.09	5.039	
10,100.0	6,812.3	10,083.8	6,812.3	67.7	67.5	89.91	-3,394.9	-256.4	660.5	525.7	134.83	4.899	
10,200.0	6,812.1	10,183.8	6,812.1	69.6	69.4	89.91	-3,494.9	-256.4	660.5	521.9	138.58	4.766	
10,300.0	6,811.9	10,283.8	6,811.9	71.4	71.2	89.91	-3,594.9	-256.4	660.5	518.2	142.33	4.640	
10,400.0	6,811.7	10,383.8	6,811.7	73.3	73.1	89.91	-3,694.9	-256.4	660.5	514.4	146.09	4.521	
10,500.0	6,811.5	10,483.8	6,811.5	75.2	75.0	89.91	-3,794.9	-256.4	660.5	510.6	149.86	4.408	
10,600.0	6,811.3	10,583.8	6,811.3	77.1	76.9	89.91	-3,894.9	-256.4	660.5	506.9	153.63	4.299	
10,700.0	6,811.1	10,683.8	6,811.2	78.9	78.8	89.91	-3,994.9	-256.4	660.5	503.1	157.40	4.196	
10,800.0	6,811.0	10,783.8	6,811.0	80.8	80.6	89.91	-4,094.9	-256.4	660.5	499.3	161.17	4.098	
10,900.0	6,810.8	10,883.8	6,810.8	82.7	82.5	89.91	-4,194.9	-256.4	660.5	495.6	164.95	4.004	
11,000.0	6,810.6	10,983.8	6,810.6	84.6	84.4	89.91	-4,294.9	-256.4	660.5	491.8	168.73	3.915	
11,100.0	6,810.4	11,083.8	6,810.4	86.5	86.3	89.91	-4,394.9	-256.4	660.5	488.0	172.51	3.829	
11,200.0	6,810.2	11,183.8	6,810.2	88.4	88.2	89.91	-4,494.9	-256.4	660.5	484.2	176.30	3.746	
11,300.0	6,810.0	11,283.8	6,810.0	90.3	90.1	89.91	-4,594.9	-256.4	660.5	480.4	180.09	3.668	
11,400.0	6,809.8	11,383.8	6,809.8	92.1	92.0	89.91	-4,694.9	-256.4	660.5	476.6	183.88	3.592	
11,500.0	6,809.6	11,483.8	6,809.6	94.0	93.9	89.91	-4,794.9	-256.4	660.5	472.8	187.67	3.519	
11,600.0	6,809.4	11,583.8	6,809.4	95.9	95.8	89.91	-4,894.9	-256.4	660.5	469.0	191.46	3.450	
11,700.0	6,809.2	11,683.8	6,809.2	97.8	97.7	89.91	-4,994.9	-256.4	660.5	465.2	195.26	3.383	
11,800.0	6,809.0	11,783.8	6,809.0	99.7	99.6	89.91	-5,094.9	-256.4	660.5	461.4	199.06	3.318	
11,900.0	6,808.8	11,883.8	6,808.8	101.6	101.5	89.91	-5,194.9	-256.4	660.5	457.6	202.86	3.256	
12,000.0	6,808.6	11,983.8	6,808.7	103.5	103.4	89.91	-5,294.9	-256.4	660.5	453.8	206.66	3.196	
12,100.0	6,808.5	12,083.8	6,808.5	105.4	105.3	89.91	-5,394.9	-256.4	660.5	450.0	210.46	3.138	
12,200.0	6,808.3	12,183.8	6,808.3	107.3	107.2	89.91	-5,494.9	-256.4	660.5	446.2	214.26	3.083	
12,300.0	6,808.1	12,283.8	6,808.1	109.2	109.1	89.91	-5,594.9	-256.4	660.5	442.4	218.07	3.029	
12,400.0	6,807.9	12,383.8	6,807.9	111.1	111.0	89.91	-5,694.9	-256.4	660.5	438.6	221.88	2.977	
12,500.0	6,807.7	12,483.8	6,807.7	113.0	112.9	89.91	-5,794.9	-256.4	660.5	434.8	225.69	2.927	
12,600.0	6,807.5	12,583.8	6,807.5	114.9	114.8	89.91	-5,894.9	-256.4	660.5	431.0	229.49	2.878	
12,700.0	6,807.3	12,683.8	6,807.3	116.8	116.7	89.91	-5,994.9	-256.4	660.5	427.2	233.30	2.831	
12,800.0	6,807.1	12,783.8	6,807.1	118.7	118.6	89.91	-6,094.9	-256.4	660.5	423.4	237.12	2.786	
12,900.0	6,806.9	12,883.8	6,806.9	120.6	120.5	89.91	-6,194.9	-256.4	660.5	419.6	240.93	2.741	
13,000.0	6,806.7	12,983.8	6,806.7	122.5	122.4	89.91	-6,294.9	-256.4	660.5	415.8	244.74	2.699	
13,100.0	6,806.5	13,083.8	6,806.5	124.4	124.3	89.91	-6,394.9	-256.4	660.5	411.9	248.55	2.657	
13,200.0	6,806.3	13,183.8	6,806.4	126.3	126.2	89.91	-6,494.9	-256.4	660.5	408.1	252.37	2.617	
13,300.0	6,806.2	13,283.8	6,806.2	128.2	128.1	89.91	-6,594.9	-256.4	660.5	404.3	256.18	2.578	
13,400.0	6,806.0	13,383.8	6,806.0	130.1	130.0	89.91	-6,694.9	-256.4	660.5	400.5	260.00	2.540	
13,500.0	6,805.8	13,483.8	6,805.8	132.1	131.9	89.91	-6,794.9	-256.4	660.5	396.7	263.82	2.504	
13,600.0	6,805.6	13,583.8	6,805.6	134.0	133.9	89.91	-6,894.9	-256.4	660.5	392.9	267.64	2.468	
13,700.0	6,805.4	13,683.8	6,805.4	135.9	135.8	89.91	-6,994.9	-256.4	660.5	389.0	271.45	2.433	
13,800.0	6,805.2	13,783.8	6,805.2	137.8	137.7	89.91	-7,094.9	-256.4	660.5	385.2	275.27	2.399	
13,900.0	6,805.0	13,883.8	6,805.0	139.7	139.6	89.91	-7,194.9	-256.4	660.5	381.4	279.09	2.367	
13,900.2	6,805.0	13,884.0	6,805.0	139.7	139.6	89.91	-7,195.1	-256.4	660.5	381.4	279.10	2.367 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-343 - Wellbore #1 - Plan #1 (12-30-13)												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
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	89.98	0.0	30.6	30.6	30.4	0.22	136.355	
200.0	200.0	200.0	200.0	0.3	0.3	89.98	0.0	30.6	30.6	30.0	0.67	45.452	
300.0	300.0	300.0	300.0	0.6	0.6	89.98	0.0	30.6	30.6	29.5	1.12	27.271	
400.0	400.0	400.0	400.0	0.8	0.8	89.98	0.0	30.6	30.6	29.1	1.57	19.479	
500.0	500.0	500.0	500.0	1.0	1.0	89.98	0.0	30.6	30.6	28.6	2.02	15.151	
600.0	600.0	600.0	600.0	1.2	1.2	89.98	0.0	30.6	30.6	28.2	2.47	12.396	
700.0	700.0	700.0	700.0	1.5	1.5	89.98	0.0	30.6	30.6	27.7	2.92	10.489	
800.0	800.0	800.0	800.0	1.7	1.7	89.98	0.0	30.6	30.6	27.3	3.37	9.090	
900.0	900.0	900.0	900.0	1.9	1.9	89.98	0.0	30.6	30.6	26.8	3.82	8.021	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.98	0.0	30.6	30.6	26.4	4.27	7.177 CC, ES	
1,100.0	1,100.0	1,098.9	1,098.9	2.4	2.3	89.16	0.5	32.3	32.3	27.6	4.71	6.862	
1,200.0	1,200.0	1,197.6	1,197.5	2.6	2.6	87.12	1.9	37.2	37.3	32.2	5.14	7.259	
1,300.0	1,300.0	1,295.9	1,295.4	2.8	2.8	84.72	4.2	45.3	45.8	40.2	5.59	8.190	
1,400.0	1,400.0	1,393.4	1,392.2	3.0	3.0	82.55	7.4	56.6	57.6	51.6	6.05	9.529	
1,500.0	1,500.0	1,490.1	1,487.7	3.3	3.3	80.81	11.5	70.9	72.8	66.3	6.52	11.165	
1,600.0	1,600.0	1,588.0	1,584.0	3.5	3.6	16.05	16.3	87.7	89.0	82.1	6.89	12.916	
1,700.0	1,699.8	1,687.1	1,681.5	3.7	3.9	15.79	21.2	104.9	102.0	94.7	7.31	13.947	
1,800.0	1,799.5	1,786.6	1,779.4	3.9	4.2	16.09	26.1	122.2	111.6	103.9	7.74	14.429	
1,900.0	1,898.8	1,886.4	1,877.5	4.1	4.6	16.70	31.0	139.5	118.9	110.8	8.18	14.538	
2,000.0	1,998.2	1,986.1	1,975.6	4.4	4.9	17.27	35.9	156.8	126.2	117.5	8.64	14.606	
2,100.0	2,097.6	2,085.8	2,073.7	4.6	5.3	17.77	40.9	174.2	133.4	124.3	9.10	14.660	
2,200.0	2,196.9	2,185.6	2,171.8	4.9	5.7	18.23	45.8	191.5	140.7	131.1	9.57	14.702	
2,300.0	2,296.3	2,285.3	2,269.9	5.2	6.1	18.63	50.7	208.8	147.9	137.9	10.04	14.735	
2,400.0	2,395.6	2,385.0	2,367.9	5.4	6.4	19.00	55.7	226.1	155.2	144.7	10.51	14.760	
2,500.0	2,495.0	2,484.7	2,466.0	5.7	6.8	19.34	60.6	243.4	162.4	151.5	10.99	14.778	
2,600.0	2,594.4	2,584.5	2,564.1	6.0	7.2	19.65	65.5	260.7	169.7	158.2	11.47	14.791	
2,700.0	2,693.7	2,684.2	2,662.2	6.3	7.6	19.93	70.5	278.0	177.0	165.0	11.96	14.801	
2,800.0	2,793.1	2,783.9	2,760.3	6.5	8.0	20.19	75.4	295.4	184.3	171.8	12.45	14.806	
2,900.0	2,892.5	2,883.7	2,858.4	6.8	8.4	20.43	80.3	312.7	191.6	178.6	12.94	14.810	
3,000.0	2,991.8	2,983.4	2,956.5	7.1	8.8	20.66	85.3	330.0	198.9	185.4	13.43	14.810	
3,100.0	3,091.2	3,083.1	3,054.6	7.4	9.2	20.86	90.2	347.3	206.2	192.2	13.92	14.809	
3,200.0	3,190.5	3,182.9	3,152.7	7.7	9.6	21.06	95.1	364.6	213.4	199.0	14.42	14.807	
3,300.0	3,289.9	3,282.6	3,250.8	8.0	10.0	21.24	100.0	381.9	220.7	205.8	14.91	14.803	
3,400.0	3,389.3	3,382.3	3,348.9	8.3	10.4	21.41	105.0	399.3	228.0	212.6	15.41	14.798	
3,500.0	3,488.6	3,482.1	3,447.0	8.6	10.8	21.57	109.9	416.6	235.3	219.4	15.91	14.792	
3,600.0	3,588.0	3,581.8	3,545.1	8.8	11.2	21.71	114.8	433.9	242.6	226.2	16.41	14.786	
3,700.0	3,687.4	3,681.5	3,643.2	9.1	11.6	21.85	119.8	451.2	249.9	233.0	16.91	14.779	
3,800.0	3,786.7	3,781.2	3,741.2	9.4	12.0	21.99	124.7	468.5	257.3	239.8	17.41	14.772	
3,900.0	3,886.1	3,881.0	3,839.3	9.7	12.4	22.11	129.6	485.8	264.6	246.6	17.92	14.765	
4,000.0	3,985.5	3,980.7	3,937.4	10.0	12.8	22.23	134.6	503.2	271.9	253.4	18.42	14.757	
4,100.0	4,084.8	4,080.4	4,035.5	10.3	13.2	22.34	139.5	520.5	279.2	260.2	18.93	14.749	
4,200.0	4,184.2	4,180.2	4,133.6	10.6	13.6	22.45	144.4	537.8	286.5	267.1	19.43	14.741	
4,300.0	4,283.5	4,279.9	4,231.7	10.9	14.0	22.55	149.4	555.1	293.8	273.9	19.94	14.733	
4,400.0	4,382.9	4,379.6	4,329.8	11.2	14.4	22.65	154.3	572.4	301.1	280.7	20.45	14.725	
4,500.0	4,482.3	4,479.4	4,427.9	11.5	14.8	22.74	159.2	589.7	308.4	287.5	20.96	14.717	
4,600.0	4,581.6	4,579.1	4,526.0	11.8	15.2	22.82	164.2	607.1	315.7	294.3	21.47	14.709	
4,700.0	4,681.0	4,678.8	4,624.1	12.1	15.6	22.91	169.1	624.4	323.1	301.1	21.97	14.701	
4,800.0	4,780.4	4,778.6	4,722.2	12.4	16.0	22.99	174.0	641.7	330.4	307.9	22.48	14.693	
4,900.0	4,879.7	4,878.3	4,820.3	12.7	16.4	23.06	178.9	659.0	337.7	314.7	22.99	14.685	
5,000.0	4,979.1	4,978.0	4,918.4	13.0	16.8	23.14	183.9	676.3	345.0	321.5	23.51	14.678	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-343 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,078.4	5,082.4	5,021.1	13.3	17.2	23.22	189.0	694.2	352.1	328.1	24.02	14.658		
5,200.0	5,177.8	5,196.0	5,133.4	13.6	17.5	23.43	193.6	710.3	356.2	331.6	24.52	14.525		
5,300.0	5,277.2	5,309.8	5,246.5	13.9	17.8	23.81	196.9	722.2	356.4	331.4	25.02	14.245		
5,400.0	5,376.5	5,423.3	5,359.8	14.2	18.0	24.35	199.1	729.7	352.7	327.2	25.51	13.827		
5,500.0	5,475.9	5,536.3	5,472.7	14.5	18.2	25.10	200.0	732.8	345.3	319.3	26.01	13.277		
5,600.0	5,575.4	5,639.0	5,575.4	14.8	18.3	25.73	200.0	733.0	336.8	310.3	26.45	12.734		
5,700.0	5,675.2	5,738.8	5,675.2	15.0	18.5	26.14	200.0	733.0	331.3	304.5	26.82	12.352		
5,800.0	5,775.2	5,838.8	5,775.2	15.1	18.6	26.32	200.0	733.0	329.0	301.8	27.15	12.117		
5,849.3	5,824.5	5,888.1	5,824.5	15.2	18.7	26.35	200.0	733.0	328.7	301.3	27.33	12.027		
5,900.0	5,875.2	5,938.8	5,875.2	15.3	18.8	90.00	200.0	733.0	328.9	301.3	27.51	11.955		
5,965.2	5,940.4	6,004.0	5,940.4	15.4	18.9	90.00	200.0	733.0	328.9	301.1	27.76	11.845		
6,000.0	5,975.2	6,038.8	5,975.2	15.5	18.9	90.01	199.9	733.0	328.9	301.0	27.90	11.787		
6,100.0	6,075.2	6,138.1	6,074.2	15.7	19.0	-88.75	192.2	733.0	328.9	300.6	28.33	11.610		
6,200.0	6,174.6	6,236.1	6,169.9	15.8	19.1	-87.02	172.1	733.0	329.3	300.6	28.69	11.478		
6,300.0	6,271.7	6,332.8	6,261.3	15.9	19.1	-85.34	140.4	733.0	330.0	301.0	28.94	11.401		
6,400.0	6,364.9	6,428.4	6,346.9	15.9	19.2	-83.76	97.9	733.0	330.8	301.7	29.11	11.366		
6,500.0	6,452.6	6,523.1	6,425.7	16.0	19.2	-82.30	45.7	733.0	331.9	302.6	29.24	11.351		
6,600.0	6,533.4	6,616.8	6,496.9	16.0	19.3	-80.97	-15.2	733.0	333.0	303.6	29.40	11.325		
6,700.0	6,605.7	6,709.7	6,559.6	16.1	19.4	-79.79	-83.8	733.0	334.2	304.5	29.71	11.247		
6,800.0	6,668.5	6,802.0	6,613.1	16.3	19.5	-78.79	-158.9	733.0	335.3	305.0	30.25	11.085		
6,900.0	6,720.5	6,893.8	6,657.0	16.6	19.8	-77.96	-239.4	733.0	336.3	305.1	31.11	10.808		
7,000.0	6,761.0	6,985.1	6,690.7	17.2	20.2	-77.33	-324.1	733.0	337.1	304.7	32.37	10.412		
7,100.0	6,789.2	7,076.0	6,714.1	17.9	20.7	-76.89	-412.0	733.0	337.7	303.6	34.05	9.918		
7,200.0	6,804.7	7,166.8	6,726.8	18.9	21.4	-76.64	-501.8	733.0	338.0	301.9	36.08	9.369		
7,300.0	6,814.5	7,259.5	6,729.2	20.0	22.3	-75.49	-594.5	733.0	339.8	301.6	38.20	8.894		
7,400.0	6,817.5	7,359.5	6,728.6	21.2	23.3	-74.87	-694.4	733.0	340.7	299.9	40.77	8.356		
7,500.0	6,817.3	7,459.5	6,728.0	22.5	24.5	-74.81	-794.4	733.0	340.8	297.4	43.38	7.855		
7,600.0	6,817.1	7,559.5	6,727.4	23.9	25.7	-74.74	-894.4	733.0	340.9	294.7	46.15	7.386		
7,700.0	6,816.9	7,659.5	6,726.8	25.4	27.1	-74.68	-994.4	733.0	341.0	291.9	49.04	6.953		
7,800.0	6,816.7	7,759.5	6,726.2	26.9	28.5	-74.61	-1,094.4	733.0	341.1	289.0	52.04	6.555		
7,900.0	6,816.5	7,859.5	6,725.6	28.5	30.0	-74.55	-1,194.4	733.0	341.2	286.1	55.12	6.190		
8,000.0	6,816.3	7,959.5	6,725.0	30.1	31.5	-74.48	-1,294.4	733.0	341.3	283.0	58.27	5.857		
8,100.0	6,816.1	8,059.5	6,724.4	31.7	33.1	-74.42	-1,394.4	733.0	341.4	279.9	61.49	5.552		
8,200.0	6,815.9	8,159.5	6,723.8	33.4	34.7	-74.35	-1,494.4	733.0	341.5	276.8	64.76	5.274		
8,300.0	6,815.8	8,259.5	6,723.2	35.1	36.3	-74.29	-1,594.4	733.0	341.6	273.6	68.07	5.019		
8,400.0	6,815.6	8,359.5	6,722.6	36.8	38.0	-74.22	-1,694.4	733.0	341.7	270.3	71.42	4.785		
8,500.0	6,815.4	8,459.4	6,722.0	38.5	39.7	-74.16	-1,794.4	733.0	341.8	267.0	74.80	4.570		
8,600.0	6,815.2	8,559.4	6,721.5	40.3	41.4	-74.09	-1,894.4	733.0	341.9	263.7	78.20	4.373		
8,700.0	6,815.0	8,659.4	6,720.9	42.1	43.1	-74.03	-1,994.4	733.0	342.1	260.4	81.63	4.190		
8,800.0	6,814.8	8,759.4	6,720.3	43.8	44.8	-73.96	-2,094.4	733.0	342.2	257.1	85.09	4.021		
8,900.0	6,814.6	8,859.4	6,719.7	45.6	46.6	-73.90	-2,194.4	733.0	342.3	253.7	88.56	3.865		
9,000.0	6,814.4	8,959.4	6,719.1	47.4	48.3	-73.83	-2,294.4	733.0	342.4	250.4	92.04	3.720		
9,100.0	6,814.2	9,059.4	6,718.5	49.3	50.1	-73.77	-2,394.4	733.0	342.5	247.0	95.54	3.585		
9,200.0	6,814.0	9,159.4	6,717.9	51.1	51.9	-73.71	-2,494.4	733.0	342.6	243.6	99.05	3.459		
9,300.0	6,813.8	9,259.4	6,717.3	52.9	53.7	-73.64	-2,594.4	733.0	342.7	240.2	102.57	3.341		
9,400.0	6,813.6	9,359.4	6,716.7	54.7	55.5	-73.58	-2,694.4	733.0	342.8	236.7	106.10	3.231		
9,500.0	6,813.4	9,459.4	6,716.1	56.6	57.3	-73.51	-2,794.3	733.0	343.0	233.3	109.64	3.128		
9,600.0	6,813.3	9,559.4	6,715.5	58.4	59.1	-73.45	-2,894.3	733.0	343.1	229.9	113.19	3.031		
9,700.0	6,813.1	9,659.4	6,714.9	60.3	61.0	-73.38	-2,994.3	733.0	343.2	226.4	116.74	2.940		
9,800.0	6,812.9	9,759.4	6,714.3	62.1	62.8	-73.32	-3,094.3	733.0	343.3	223.0	120.30	2.854		
9,900.0	6,812.7	9,859.4	6,713.7	64.0	64.6	-73.26	-3,194.3	733.0	343.4	219.6	123.86	2.773		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-343 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,812.5	9,959.4	6,713.1	65.8	66.5	-73.19	-3,294.3	733.0	343.5	216.1	127.43	2.696	
10,100.0	6,812.3	10,059.4	6,712.6	67.7	68.3	-73.13	-3,394.3	733.0	343.6	212.6	131.00	2.623	
10,200.0	6,812.1	10,159.4	6,712.0	69.6	70.2	-73.06	-3,494.3	733.0	343.8	209.2	134.57	2.555	
10,300.0	6,811.9	10,259.4	6,711.4	71.4	72.0	-73.00	-3,594.3	733.0	343.9	205.7	138.15	2.489	
10,400.0	6,811.7	10,359.4	6,710.8	73.3	73.9	-72.94	-3,694.3	733.0	344.0	202.3	141.73	2.427	
10,500.0	6,811.5	10,459.4	6,710.2	75.2	75.7	-72.87	-3,794.3	733.0	344.1	198.8	145.31	2.368	
10,600.0	6,811.3	10,559.4	6,709.6	77.1	77.6	-72.81	-3,894.3	733.0	344.2	195.3	148.89	2.312	
10,700.0	6,811.1	10,659.4	6,709.0	78.9	79.5	-72.74	-3,994.3	733.0	344.4	191.9	152.48	2.258	
10,800.0	6,811.0	10,759.4	6,708.4	80.8	81.3	-72.68	-4,094.3	733.0	344.5	188.4	156.06	2.207	
10,900.0	6,810.8	10,859.4	6,707.8	82.7	83.2	-72.62	-4,194.3	733.0	344.6	184.9	159.65	2.158	
11,000.0	6,810.6	10,959.4	6,707.2	84.6	85.1	-72.55	-4,294.3	733.0	344.7	181.5	163.23	2.112	
11,100.0	6,810.4	11,059.4	6,706.6	86.5	87.0	-72.49	-4,394.3	733.0	344.8	178.0	166.82	2.067	
11,200.0	6,810.2	11,159.4	6,706.0	88.4	88.8	-72.43	-4,494.3	733.0	345.0	174.5	170.41	2.024	
11,300.0	6,810.0	11,259.4	6,705.4	90.3	90.7	-72.36	-4,594.3	733.0	345.1	171.1	174.00	1.983	
11,400.0	6,809.8	11,359.4	6,704.8	92.1	92.6	-72.30	-4,694.3	733.0	345.2	167.6	177.58	1.944	
11,500.0	6,809.6	11,459.4	6,704.2	94.0	94.5	-72.24	-4,794.3	733.0	345.3	164.2	181.17	1.906	
11,600.0	6,809.4	11,559.4	6,703.7	95.9	96.4	-72.17	-4,894.3	733.0	345.4	160.7	184.76	1.870	
11,700.0	6,809.2	11,659.4	6,703.1	97.8	98.2	-72.11	-4,994.3	733.0	345.6	157.2	188.34	1.835	
11,800.0	6,809.0	11,759.4	6,702.5	99.7	100.1	-72.04	-5,094.3	733.0	345.7	153.8	191.93	1.801	
11,900.0	6,808.8	11,859.4	6,701.9	101.6	102.0	-71.98	-5,194.3	733.0	345.8	150.3	195.52	1.769	
12,000.0	6,808.6	11,959.4	6,701.3	103.5	103.9	-71.92	-5,294.3	733.0	345.9	146.8	199.10	1.738	
12,100.0	6,808.5	12,059.4	6,700.7	105.4	105.8	-71.86	-5,394.3	733.0	346.1	143.4	202.68	1.707	
12,200.0	6,808.3	12,159.4	6,700.1	107.3	107.7	-71.79	-5,494.3	733.0	346.2	139.9	206.27	1.678	
12,300.0	6,808.1	12,259.4	6,699.5	109.2	109.6	-71.73	-5,594.3	733.0	346.3	136.5	209.85	1.650	
12,400.0	6,807.9	12,359.4	6,698.9	111.1	111.5	-71.67	-5,694.3	733.0	346.4	133.0	213.43	1.623	
12,500.0	6,807.7	12,459.4	6,698.3	113.0	113.4	-71.60	-5,794.3	733.0	346.6	129.6	217.01	1.597	
12,600.0	6,807.5	12,559.4	6,697.7	114.9	115.3	-71.54	-5,894.3	733.0	346.7	126.1	220.59	1.572	
12,700.0	6,807.3	12,659.4	6,697.1	116.8	117.2	-71.48	-5,994.3	733.0	346.8	122.7	224.17	1.547	
12,800.0	6,807.1	12,759.4	6,696.5	118.7	119.1	-71.41	-6,094.3	733.0	346.9	119.2	227.74	1.523	
12,900.0	6,806.9	12,859.4	6,695.9	120.6	120.9	-71.35	-6,194.3	733.0	347.1	115.8	231.31	1.500	
13,000.0	6,806.7	12,959.4	6,695.3	122.5	122.8	-71.29	-6,294.3	733.0	347.2	112.3	234.89	1.478 Level 3	
13,100.0	6,806.5	13,059.4	6,694.8	124.4	124.7	-71.23	-6,394.3	733.0	347.3	108.9	238.46	1.457 Level 3	
13,200.0	6,806.3	13,159.4	6,694.2	126.3	126.6	-71.16	-6,494.3	733.0	347.5	105.4	242.03	1.436 Level 3	
13,300.0	6,806.2	13,259.4	6,693.6	128.2	128.5	-71.10	-6,594.3	733.0	347.6	102.0	245.60	1.415 Level 3	
13,400.0	6,806.0	13,359.4	6,693.0	130.1	130.4	-71.04	-6,694.2	733.0	347.7	98.6	249.16	1.396 Level 3	
13,500.0	6,805.8	13,459.4	6,692.4	132.1	132.3	-70.98	-6,794.2	733.0	347.9	95.1	252.73	1.376 Level 3	
13,600.0	6,805.6	13,559.4	6,691.8	134.0	134.2	-70.91	-6,894.2	733.0	348.0	91.7	256.29	1.358 Level 3	
13,700.0	6,805.4	13,659.4	6,691.2	135.9	136.2	-70.85	-6,994.2	733.0	348.1	88.3	259.85	1.340 Level 3	
13,800.0	6,805.2	13,759.4	6,690.6	137.8	138.1	-70.79	-7,094.2	733.0	348.2	84.8	263.41	1.322 Level 3	
13,900.0	6,805.0	13,859.4	6,690.0	139.7	140.0	-70.73	-7,194.2	733.0	348.4	81.4	266.97	1.305 Level 3	
13,900.2	6,805.0	13,859.6	6,690.0	139.7	140.0	-70.73	-7,194.4	733.0	348.4	81.4	266.97	1.305 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	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	90.01	0.0	61.3	61.3				
100.0	100.0	99.0	99.0	0.1	0.1	90.01	90.01	0.0	61.3	61.3	61.1	0.22	274.077	
200.0	200.0	199.0	199.0	0.3	0.3	90.01	90.01	0.0	61.3	61.3	60.6	0.67	91.207	
300.0	300.0	299.0	299.0	0.6	0.6	90.01	90.01	0.0	61.3	61.3	60.2	1.12	54.651	
400.0	400.0	399.0	399.0	0.8	0.8	90.01	90.01	0.0	61.3	61.3	59.7	1.57	39.014 CC, ES	
500.0	500.0	496.9	496.9	1.0	1.0	89.72	89.72	0.3	62.9	62.9	60.9	2.01	31.354	
600.0	600.0	594.6	594.5	1.2	1.2	88.91	88.91	1.3	67.8	67.9	65.5	2.45	27.783	
700.0	700.0	691.8	691.3	1.5	1.4	87.81	87.81	2.9	75.9	76.3	73.4	2.90	26.321	
800.0	800.0	788.4	787.2	1.7	1.7	86.63	86.63	5.1	87.1	88.0	84.6	3.37	26.086	
900.0	900.0	884.1	881.8	1.9	2.0	85.50	85.50	8.0	101.3	103.1	99.2	3.88	26.586	
1,000.0	1,000.0	978.7	974.8	2.1	2.3	84.51	84.51	11.4	118.4	121.4	117.0	4.41	27.520	
1,100.0	1,100.0	1,076.2	1,070.2	2.4	2.7	83.68	83.68	15.3	137.9	141.7	136.7	4.99	28.411	
1,200.0	1,200.0	1,174.1	1,166.0	2.6	3.1	83.06	83.06	19.2	157.5	162.0	156.5	5.58	29.046	
1,300.0	1,300.0	1,272.0	1,261.9	2.8	3.5	82.58	82.58	23.1	177.1	182.4	176.2	6.18	29.508	
1,400.0	1,400.0	1,369.9	1,357.7	3.0	3.9	82.19	82.19	27.0	196.7	202.8	196.0	6.79	29.854	
1,500.0	1,500.0	1,467.8	1,453.5	3.3	4.3	81.87	81.87	30.9	216.3	223.1	215.7	7.41	30.121	
1,600.0	1,600.0	1,566.0	1,549.7	3.5	4.8	17.95	17.95	34.8	235.9	241.9	234.8	7.03	34.410	
1,700.0	1,699.8	1,664.8	1,646.4	3.7	5.2	17.98	17.98	38.7	255.7	257.3	249.9	7.49	34.366	
1,800.0	1,799.5	1,764.0	1,743.6	3.9	5.6	18.25	18.25	42.7	275.5	269.5	261.6	7.95	33.908	
1,900.0	1,898.8	1,863.5	1,841.0	4.1	6.1	18.71	18.71	46.7	295.4	279.4	271.0	8.42	33.181	
2,000.0	1,998.2	1,963.0	1,938.4	4.4	6.5	19.17	19.17	50.6	315.3	289.2	280.3	8.90	32.496	
2,100.0	2,097.6	2,062.5	2,035.8	4.6	7.0	19.59	19.59	54.6	335.2	299.0	289.7	9.38	31.870	
2,200.0	2,196.9	2,162.0	2,133.2	4.9	7.4	19.98	19.98	58.6	355.1	308.9	299.0	9.87	31.295	
2,300.0	2,296.3	2,261.5	2,230.6	5.2	7.8	20.35	20.35	62.5	375.0	318.7	308.4	10.36	30.765	
2,400.0	2,395.6	2,361.0	2,328.0	5.4	8.3	20.70	20.70	66.5	395.0	328.6	317.7	10.85	30.277	
2,500.0	2,495.0	2,460.4	2,425.4	5.7	8.7	21.03	21.03	70.5	414.9	338.5	327.1	11.35	29.824	
2,600.0	2,594.4	2,559.9	2,522.8	6.0	9.2	21.34	21.34	74.4	434.8	348.3	336.5	11.85	29.404	
2,700.0	2,693.7	2,659.4	2,620.2	6.3	9.6	21.63	21.63	78.4	454.7	358.2	345.9	12.35	29.014	
2,800.0	2,793.1	2,758.9	2,717.6	6.5	10.1	21.91	21.91	82.4	474.6	368.1	355.3	12.85	28.650	
2,900.0	2,892.5	2,858.4	2,815.0	6.8	10.5	22.17	22.17	86.3	494.5	378.0	364.7	13.35	28.309	
3,000.0	2,991.8	2,957.9	2,912.4	7.1	11.0	22.42	22.42	90.3	514.4	388.0	374.1	13.86	27.991	
3,100.0	3,091.2	3,057.4	3,009.8	7.4	11.4	22.65	22.65	94.3	534.3	397.9	383.5	14.37	27.692	
3,200.0	3,190.5	3,156.9	3,107.2	7.7	11.9	22.88	22.88	98.2	554.2	407.8	392.9	14.88	27.412	
3,300.0	3,289.9	3,256.4	3,204.6	8.0	12.3	23.09	23.09	102.2	574.1	417.8	402.4	15.39	27.148	
3,400.0	3,389.3	3,355.9	3,302.0	8.3	12.8	23.30	23.30	106.2	594.0	427.7	411.8	15.90	26.899	
3,500.0	3,488.6	3,455.4	3,399.4	8.6	13.2	23.49	23.49	110.2	613.9	437.6	421.2	16.41	26.664	
3,600.0	3,588.0	3,554.9	3,496.8	8.8	13.6	23.68	23.68	114.1	633.8	447.6	430.7	16.93	26.441	
3,700.0	3,687.4	3,654.4	3,594.2	9.1	14.1	23.86	23.86	118.1	653.7	457.6	440.1	17.44	26.231	
3,800.0	3,786.7	3,753.9	3,691.6	9.4	14.5	24.03	24.03	122.1	673.6	467.5	449.6	17.96	26.031	
3,900.0	3,886.1	3,853.4	3,789.0	9.7	15.0	24.19	24.19	126.0	693.5	477.5	459.0	18.48	25.841	
4,000.0	3,985.5	3,952.8	3,886.4	10.0	15.4	24.35	24.35	130.0	713.4	487.4	468.4	19.00	25.661	
4,100.0	4,084.8	4,052.3	3,983.8	10.3	15.9	24.50	24.50	134.0	733.3	497.4	477.9	19.51	25.489	
4,200.0	4,184.2	4,151.8	4,081.2	10.6	16.3	24.64	24.64	137.9	753.3	507.4	487.4	20.03	25.326	
4,300.0	4,283.5	4,251.3	4,178.6	10.9	16.8	24.78	24.78	141.9	773.2	517.4	496.8	20.56	25.170	
4,400.0	4,382.9	4,350.8	4,276.0	11.2	17.2	24.91	24.91	145.9	793.1	527.3	506.3	21.08	25.021	
4,500.0	4,482.3	4,450.3	4,373.4	11.5	17.7	25.04	25.04	149.8	813.0	537.3	515.7	21.60	24.878	
4,600.0	4,581.6	4,549.8	4,470.8	11.8	18.1	25.17	25.17	153.8	832.9	547.3	525.2	22.12	24.742	
4,700.0	4,681.0	4,649.3	4,568.2	12.1	18.6	25.29	25.29	157.8	852.8	557.3	534.7	22.64	24.611	
4,800.0	4,780.4	4,748.8	4,665.6	12.4	19.0	25.40	25.40	161.7	872.7	567.3	544.1	23.17	24.486	
4,900.0	4,879.7	4,848.3	4,763.0	12.7	19.5	25.51	25.51	165.7	892.6	577.3	553.6	23.69	24.366	
5,000.0	4,979.1	4,947.8	4,860.4	13.0	19.9	25.62	25.62	169.7	912.5	587.3	563.1	24.22	24.251	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,100.0	5,078.4	5,047.3	4,957.8	13.3	20.4	25.73	173.6	932.4	597.3	572.5	24.74	24.140			
5,200.0	5,177.8	5,146.8	5,055.2	13.6	20.8	25.83	177.6	952.3	607.3	582.0	25.27	24.034			
5,300.0	5,277.2	5,246.3	5,152.6	13.9	21.3	25.92	181.6	972.2	617.3	591.5	25.79	23.931			
5,400.0	5,376.5	5,345.8	5,250.0	14.2	21.7	26.02	185.5	992.1	627.3	601.0	26.32	23.832			
5,500.0	5,475.9	5,454.3	5,356.3	14.5	22.2	26.12	189.8	1,013.6	637.1	610.2	26.86	23.716			
5,600.0	5,575.4	5,582.0	5,482.2	14.8	22.6	26.30	194.0	1,034.6	645.0	617.6	27.35	23.581			
5,700.0	5,675.2	5,710.3	5,609.4	15.0	22.9	26.39	197.1	1,050.1	651.7	623.9	27.75	23.485			
5,800.0	5,775.2	5,838.9	5,737.7	15.1	23.1	26.40	199.1	1,060.1	657.1	629.0	28.08	23.398			
5,900.0	5,875.2	5,968.0	5,866.7	15.3	23.3	90.00	200.0	1,064.4	660.3	631.9	28.46	23.206			
6,000.0	5,975.2	6,075.5	5,974.2	15.5	23.4	90.00	200.0	1,064.6	660.5	631.7	28.84	22.903			
6,056.6	6,031.8	6,132.1	6,030.8	15.6	23.5	-90.06	200.0	1,064.6	660.5	631.5	29.04	22.743			
6,100.0	6,075.2	6,175.5	6,074.2	15.7	23.6	-90.00	199.4	1,064.6	660.5	631.3	29.20	22.619			
6,200.0	6,174.6	6,275.5	6,173.6	15.8	23.6	-90.01	188.9	1,064.6	660.5	631.0	29.45	22.425			
6,300.0	6,271.7	6,375.6	6,270.8	15.9	23.7	-90.02	165.5	1,064.6	660.5	630.9	29.62	22.299			
6,400.0	6,364.9	6,475.6	6,364.1	15.9	23.7	-90.04	129.6	1,064.6	660.5	630.8	29.74	22.208			
6,500.0	6,452.6	6,575.7	6,451.9	16.0	23.8	-90.05	81.8	1,064.6	660.5	630.6	29.88	22.105			
6,600.0	6,533.4	6,675.7	6,532.8	16.0	23.8	-90.05	23.0	1,064.6	660.5	630.4	30.11	21.936			
6,700.0	6,605.7	6,775.8	6,605.2	16.1	23.9	-90.06	-46.0	1,064.6	660.5	630.0	30.51	21.646			
6,800.0	6,668.5	6,875.9	6,668.1	16.3	24.0	-90.07	-123.8	1,064.6	660.5	629.3	31.17	21.191			
6,900.0	6,720.5	6,976.0	6,720.3	16.6	24.2	-90.08	-209.1	1,064.6	660.5	628.4	32.13	20.555			
7,000.0	6,761.0	7,076.2	6,760.8	17.2	24.5	-90.08	-300.6	1,064.6	660.5	627.1	33.44	19.751			
7,100.0	6,789.2	7,176.3	6,789.1	17.9	24.9	-90.08	-396.6	1,064.6	660.5	625.4	35.09	18.821			
7,200.0	6,804.7	7,276.4	6,804.7	18.9	25.5	-90.09	-495.4	1,064.6	660.5	623.4	37.05	17.825			
7,300.0	6,814.5	7,376.4	6,814.5	20.0	26.2	-90.09	-594.9	1,064.6	660.5	621.2	39.29	16.810			
7,400.0	6,817.5	7,476.5	6,817.5	21.2	27.0	-90.09	-694.9	1,064.6	660.5	618.8	41.75	15.822			
7,500.0	6,817.3	7,576.5	6,817.3	22.5	28.0	-90.09	-794.9	1,064.6	660.5	616.1	44.40	14.876			
7,600.0	6,817.1	7,676.5	6,817.1	23.9	29.1	-90.09	-894.9	1,064.6	660.5	613.3	47.21	13.991			
7,700.0	6,816.9	7,776.5	6,816.9	25.4	30.3	-90.09	-994.9	1,064.6	660.5	610.3	50.16	13.169			
7,800.0	6,816.7	7,876.5	6,816.7	26.9	31.5	-90.09	-1,094.9	1,064.6	660.5	607.3	53.22	12.411			
7,900.0	6,816.5	7,976.5	6,816.5	28.5	32.8	-90.09	-1,194.9	1,064.6	660.5	604.1	56.38	11.716			
8,000.0	6,816.3	8,076.5	6,816.3	30.1	34.2	-90.09	-1,294.9	1,064.6	660.5	600.9	59.61	11.080			
8,100.0	6,816.1	8,176.5	6,816.1	31.7	35.6	-90.09	-1,394.9	1,064.6	660.5	597.6	62.92	10.497			
8,200.0	6,815.9	8,276.5	6,815.9	33.4	37.1	-90.09	-1,494.9	1,064.6	660.5	594.2	66.28	9.965			
8,300.0	6,815.8	8,376.5	6,815.7	35.1	38.7	-90.09	-1,594.9	1,064.6	660.5	590.8	69.70	9.477			
8,400.0	6,815.6	8,476.5	6,815.6	36.8	40.2	-90.09	-1,694.9	1,064.6	660.5	587.3	73.15	9.029			
8,500.0	6,815.4	8,576.5	6,815.4	38.5	41.8	-90.09	-1,794.9	1,064.6	660.5	583.9	76.64	8.618			
8,600.0	6,815.2	8,676.5	6,815.2	40.3	43.4	-90.09	-1,894.9	1,064.6	660.5	580.3	80.17	8.239			
8,700.0	6,815.0	8,776.5	6,815.0	42.1	45.1	-90.09	-1,994.9	1,064.6	660.5	576.8	83.72	7.889			
8,800.0	6,814.8	8,876.5	6,814.8	43.8	46.7	-90.09	-2,094.9	1,064.6	660.5	573.2	87.30	7.566			
8,900.0	6,814.6	8,976.5	6,814.6	45.6	48.4	-90.09	-2,194.9	1,064.6	660.5	569.6	90.90	7.266			
9,000.0	6,814.4	9,076.5	6,814.4	47.4	50.1	-90.09	-2,294.9	1,064.6	660.5	566.0	94.51	6.988			
9,100.0	6,814.2	9,176.5	6,814.2	49.3	51.8	-90.09	-2,394.9	1,064.6	660.5	562.3	98.15	6.730			
9,200.0	6,814.0	9,276.5	6,814.0	51.1	53.6	-90.09	-2,494.9	1,064.6	660.5	558.7	101.80	6.488			
9,300.0	6,813.8	9,376.5	6,813.8	52.9	55.3	-90.09	-2,594.9	1,064.6	660.5	555.0	105.46	6.263			
9,400.0	6,813.6	9,476.5	6,813.6	54.7	57.1	-90.09	-2,694.9	1,064.6	660.5	551.4	109.14	6.052			
9,500.0	6,813.4	9,576.5	6,813.4	56.6	58.8	-90.09	-2,794.9	1,064.6	660.5	547.7	112.83	5.854			
9,600.0	6,813.3	9,676.5	6,813.2	58.4	60.6	-90.09	-2,894.9	1,064.6	660.5	544.0	116.52	5.668			
9,700.0	6,813.1	9,776.5	6,813.1	60.3	62.4	-90.09	-2,994.9	1,064.6	660.5	540.3	120.23	5.494			
9,800.0	6,812.9	9,876.5	6,812.9	62.1	64.2	-90.09	-3,094.9	1,064.6	660.5	536.6	123.94	5.329			
9,900.0	6,812.7	9,976.5	6,812.7	64.0	66.0	-90.09	-3,194.9	1,064.6	660.5	532.8	127.66	5.174			
10,000.0	6,812.5	10,076.5	6,812.5	65.8	67.8	-90.09	-3,294.9	1,064.6	660.5	529.1	131.39	5.027			

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,812.3	10,176.5	6,812.3	67.7	69.6	-90.09	-90.09	-3,394.9	1,064.6	660.5	525.4	135.13	4.888	
10,200.0	6,812.1	10,276.5	6,812.1	69.6	71.4	-90.09	-90.09	-3,494.9	1,064.6	660.5	521.6	138.87	4.756	
10,300.0	6,811.9	10,376.5	6,811.9	71.4	73.2	-90.09	-90.09	-3,594.9	1,064.6	660.5	517.9	142.62	4.631	
10,400.0	6,811.7	10,476.5	6,811.7	73.3	75.1	-90.09	-90.09	-3,694.9	1,064.6	660.5	514.1	146.37	4.513	
10,500.0	6,811.5	10,576.5	6,811.5	75.2	76.9	-90.09	-90.09	-3,794.9	1,064.6	660.5	510.4	150.12	4.400	
10,600.0	6,811.3	10,676.5	6,811.3	77.1	78.7	-90.09	-90.09	-3,894.9	1,064.6	660.5	506.6	153.88	4.292	
10,700.0	6,811.1	10,776.5	6,811.1	78.9	80.6	-90.09	-90.09	-3,994.9	1,064.6	660.5	502.9	157.65	4.190	
10,800.0	6,811.0	10,876.5	6,810.9	80.8	82.4	-90.09	-90.09	-4,094.9	1,064.6	660.5	499.1	161.41	4.092	
10,900.0	6,810.8	10,976.5	6,810.8	82.7	84.3	-90.09	-90.09	-4,194.9	1,064.6	660.5	495.3	165.19	3.999	
11,000.0	6,810.6	11,076.5	6,810.6	84.6	86.1	-90.09	-90.09	-4,294.9	1,064.6	660.5	491.5	168.96	3.909	
11,100.0	6,810.4	11,176.5	6,810.4	86.5	88.0	-90.09	-90.09	-4,394.9	1,064.6	660.5	487.8	172.74	3.824	
11,200.0	6,810.2	11,276.5	6,810.2	88.4	89.8	-90.09	-90.09	-4,494.9	1,064.6	660.5	484.0	176.52	3.742	
11,300.0	6,810.0	11,376.5	6,810.0	90.3	91.7	-90.09	-90.09	-4,594.9	1,064.6	660.5	480.2	180.30	3.663	
11,400.0	6,809.8	11,476.5	6,809.8	92.1	93.6	-90.09	-90.09	-4,694.9	1,064.6	660.5	476.4	184.08	3.588	
11,500.0	6,809.6	11,576.5	6,809.6	94.0	95.4	-90.09	-90.09	-4,794.9	1,064.6	660.5	472.6	187.87	3.516	
11,600.0	6,809.4	11,676.5	6,809.4	95.9	97.3	-90.09	-90.09	-4,894.9	1,064.6	660.5	468.8	191.66	3.446	
11,700.0	6,809.2	11,776.5	6,809.2	97.8	99.2	-90.09	-90.09	-4,994.9	1,064.6	660.5	465.0	195.45	3.379	
11,800.0	6,809.0	11,876.5	6,809.0	99.7	101.0	-90.09	-90.09	-5,094.9	1,064.6	660.5	461.3	199.25	3.315	
11,900.0	6,808.8	11,976.5	6,808.8	101.6	102.9	-90.09	-90.09	-5,194.9	1,064.6	660.5	457.5	203.04	3.253	
12,000.0	6,808.6	12,076.5	6,808.6	103.5	104.8	-90.09	-90.09	-5,294.9	1,064.6	660.5	453.7	206.84	3.193	
12,100.0	6,808.5	12,176.5	6,808.4	105.4	106.6	-90.09	-90.09	-5,394.9	1,064.6	660.5	449.9	210.64	3.136	
12,200.0	6,808.3	12,276.5	6,808.3	107.3	108.5	-90.09	-90.09	-5,494.9	1,064.6	660.5	446.1	214.44	3.080	
12,300.0	6,808.1	12,376.5	6,808.1	109.2	110.4	-90.09	-90.09	-5,594.9	1,064.6	660.5	442.3	218.24	3.026	
12,400.0	6,807.9	12,476.5	6,807.9	111.1	112.3	-90.09	-90.09	-5,694.9	1,064.6	660.5	438.5	222.04	2.975	
12,500.0	6,807.7	12,576.5	6,807.7	113.0	114.2	-90.09	-90.09	-5,794.9	1,064.6	660.5	434.6	225.85	2.925	
12,600.0	6,807.5	12,676.5	6,807.5	114.9	116.0	-90.09	-90.09	-5,894.9	1,064.6	660.5	430.8	229.65	2.876	
12,700.0	6,807.3	12,776.5	6,807.3	116.8	117.9	-90.09	-90.09	-5,994.9	1,064.6	660.5	427.0	233.46	2.829	
12,800.0	6,807.1	12,876.5	6,807.1	118.7	119.8	-90.09	-90.09	-6,094.9	1,064.6	660.5	423.2	237.27	2.784	
12,900.0	6,806.9	12,976.5	6,806.9	120.6	121.7	-90.09	-90.09	-6,194.9	1,064.6	660.5	419.4	241.08	2.740	
13,000.0	6,806.7	13,076.5	6,806.7	122.5	123.6	-90.09	-90.09	-6,294.9	1,064.6	660.5	415.6	244.89	2.697	
13,100.0	6,806.5	13,176.5	6,806.5	124.4	125.5	-90.09	-90.09	-6,394.9	1,064.6	660.5	411.8	248.70	2.656	
13,200.0	6,806.3	13,276.5	6,806.3	126.3	127.4	-90.09	-90.09	-6,494.9	1,064.6	660.5	408.0	252.51	2.616	
13,300.0	6,806.2	13,376.5	6,806.1	128.2	129.3	-90.09	-90.09	-6,594.9	1,064.6	660.5	404.2	256.32	2.577	
13,400.0	6,806.0	13,476.5	6,806.0	130.1	131.2	-90.09	-90.09	-6,694.9	1,064.6	660.5	400.4	260.14	2.539	
13,500.0	6,805.8	13,576.5	6,805.8	132.1	133.0	-90.09	-90.09	-6,794.9	1,064.6	660.5	396.5	263.95	2.502	
13,600.0	6,805.6	13,676.5	6,805.6	134.0	134.9	-90.09	-90.09	-6,894.9	1,064.6	660.5	392.7	267.77	2.467	
13,700.0	6,805.4	13,776.5	6,805.4	135.9	136.8	-90.09	-90.09	-6,994.9	1,064.6	660.5	388.9	271.58	2.432	
13,800.0	6,805.2	13,876.5	6,805.2	137.8	138.7	-90.09	-90.09	-7,094.9	1,064.6	660.5	385.1	275.40	2.398	
13,859.9	6,805.1	13,936.4	6,805.1	138.9	139.9	-90.09	-90.09	-7,154.8	1,064.6	660.5	382.8	277.69	2.379	
13,900.0	6,805.0	13,973.0	6,805.0	139.7	140.6	-90.09	-90.09	-7,191.4	1,064.6	660.5	381.4	279.15	2.366	
13,900.2	6,805.0	13,973.0	6,805.0	139.7	140.6	-90.09	-90.09	-7,191.4	1,064.6	660.5	381.4	279.16	2.366 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-1 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	39.0	39.0	0.0	0.8	174.78	-7,045.7	643.8	7,075.1	7,074.3	0.78	9,068.313			
100.0	100.0	139.0	139.0	0.1	2.8	174.78	-7,045.7	643.8	7,075.1	7,072.2	2.89	2,445.944			
200.0	200.0	239.0	239.0	0.3	4.8	174.78	-7,045.7	643.8	7,075.1	7,070.0	5.12	1,382.571			
300.0	300.0	339.0	339.0	0.6	6.8	174.78	-7,045.7	643.8	7,075.1	7,067.7	7.34	963.632			
400.0	400.0	439.0	439.0	0.8	8.8	174.78	-7,045.7	643.8	7,075.1	7,065.5	9.57	739.541			
500.0	500.0	539.0	539.0	1.0	10.8	174.78	-7,045.7	643.8	7,075.1	7,063.3	11.79	600.009			
600.0	600.0	639.0	639.0	1.2	12.8	174.78	-7,045.7	643.8	7,075.1	7,061.1	14.02	504.772			
700.0	700.0	739.0	739.0	1.5	14.8	174.78	-7,045.7	643.8	7,075.1	7,058.8	16.24	435.627			
800.0	800.0	839.0	839.0	1.7	16.8	174.78	-7,045.7	643.8	7,075.1	7,056.6	18.47	383.143			
900.0	900.0	939.0	939.0	1.9	18.8	174.78	-7,045.7	643.8	7,075.1	7,054.4	20.69	341.946			
1,000.0	1,000.0	1,039.0	1,039.0	2.1	20.8	174.78	-7,045.7	643.8	7,075.1	7,052.2	22.92	308.748			
1,100.0	1,100.0	1,139.0	1,139.0	2.4	22.8	174.78	-7,045.7	643.8	7,075.1	7,049.9	25.14	281.425			
1,200.0	1,200.0	1,239.0	1,239.0	2.6	24.8	174.78	-7,045.7	643.8	7,075.1	7,047.7	27.36	258.545			
1,300.0	1,300.0	1,339.0	1,339.0	2.8	26.8	174.78	-7,045.7	643.8	7,075.1	7,045.5	29.59	239.106			
1,400.0	1,400.0	1,439.0	1,439.0	3.0	28.8	174.78	-7,045.7	643.8	7,075.1	7,043.3	31.81	222.386			
1,500.0	1,500.0	1,539.0	1,539.0	3.3	30.8	174.78	-7,045.7	643.8	7,075.1	7,041.0	34.04	207.851			
1,600.0	1,600.0	1,639.0	1,639.0	3.5	32.8	111.11	-7,045.7	643.8	7,075.7	7,039.5	36.25	195.172			
1,700.0	1,699.8	1,738.8	1,738.8	3.7	34.8	111.12	-7,045.7	643.8	7,077.6	7,039.1	38.46	184.044			
1,800.0	1,799.5	1,838.5	1,838.5	3.9	36.8	111.12	-7,045.7	643.8	7,080.8	7,040.1	40.65	174.169			
1,900.0	1,898.8	1,937.8	1,937.8	4.1	38.8	111.19	-7,045.7	643.8	7,084.8	7,041.9	42.87	165.266			
2,000.0	1,998.2	2,037.2	2,037.2	4.4	40.7	111.27	-7,045.7	643.8	7,088.9	7,043.8	45.10	157.194			
2,100.0	2,097.6	2,136.6	2,136.6	4.6	42.7	111.36	-7,045.7	643.8	7,093.0	7,045.7	47.33	149.861			
2,200.0	2,196.9	2,235.9	2,235.9	4.9	44.7	111.44	-7,045.7	643.8	7,097.2	7,047.6	49.57	143.172			
2,300.0	2,296.3	2,335.3	2,335.3	5.2	46.7	111.53	-7,045.7	643.8	7,101.3	7,049.5	51.82	137.050			
2,400.0	2,395.6	2,434.6	2,434.6	5.4	48.7	111.61	-7,045.7	643.8	7,105.5	7,051.4	54.06	131.426			
2,500.0	2,495.0	2,534.0	2,534.0	5.7	50.7	111.69	-7,045.7	643.8	7,109.7	7,053.3	56.32	126.243			
2,600.0	2,594.4	2,633.4	2,633.4	6.0	52.7	111.78	-7,045.7	643.8	7,113.9	7,055.3	58.57	121.453			
2,700.0	2,693.7	2,732.7	2,732.7	6.3	54.7	111.86	-7,045.7	643.8	7,118.1	7,057.2	60.83	117.014			
2,800.0	2,793.1	2,832.1	2,832.1	6.5	56.6	111.95	-7,045.7	643.8	7,122.3	7,059.2	63.09	112.888			
2,900.0	2,892.5	2,931.5	2,931.5	6.8	58.6	112.03	-7,045.7	643.8	7,126.5	7,061.2	65.35	109.045			
3,000.0	2,991.8	3,030.8	3,030.8	7.1	60.6	112.11	-7,045.7	643.8	7,130.8	7,063.2	67.62	105.457			
3,100.0	3,091.2	3,130.2	3,130.2	7.4	62.6	112.20	-7,045.7	643.8	7,135.1	7,065.2	69.88	102.099			
3,200.0	3,190.5	3,229.5	3,229.5	7.7	64.6	112.28	-7,045.7	643.8	7,139.4	7,067.2	72.15	98.950			
3,300.0	3,289.9	3,328.9	3,328.9	8.0	66.6	112.36	-7,045.7	643.8	7,143.7	7,069.2	74.42	95.992			
3,400.0	3,389.3	3,428.3	3,428.3	8.3	68.6	112.45	-7,045.7	643.8	7,148.0	7,071.3	76.69	93.208			
3,500.0	3,488.6	3,527.6	3,527.6	8.6	70.6	112.53	-7,045.7	643.8	7,152.3	7,073.3	78.96	90.583			
3,600.0	3,588.0	3,627.0	3,627.0	8.8	72.5	112.61	-7,045.7	643.8	7,156.7	7,075.4	81.23	88.104			
3,700.0	3,687.4	3,726.4	3,726.4	9.1	74.5	112.69	-7,045.7	643.8	7,161.0	7,077.5	83.50	85.759			
3,800.0	3,786.7	3,825.7	3,825.7	9.4	76.5	112.78	-7,045.7	643.8	7,165.4	7,079.6	85.77	83.538			
3,900.0	3,886.1	3,925.1	3,925.1	9.7	78.5	112.86	-7,045.7	643.8	7,169.8	7,081.7	88.05	81.432			
4,000.0	3,985.5	4,024.5	4,024.5	10.0	80.5	112.94	-7,045.7	643.8	7,174.2	7,083.9	90.32	79.431			
4,100.0	4,084.8	4,123.8	4,123.8	10.3	82.5	113.02	-7,045.7	643.8	7,178.6	7,086.0	92.59	77.528			
4,200.0	4,184.2	4,223.2	4,223.2	10.6	84.5	113.11	-7,045.7	643.8	7,183.1	7,088.2	94.87	75.716			
4,300.0	4,283.5	4,322.5	4,322.5	10.9	86.5	113.19	-7,045.7	643.8	7,187.5	7,090.4	97.14	73.989			
4,400.0	4,382.9	4,421.9	4,421.9	11.2	88.4	113.27	-7,045.7	643.8	7,192.0	7,092.6	99.42	72.341			
4,500.0	4,482.3	4,521.3	4,521.3	11.5	90.4	113.35	-7,045.7	643.8	7,196.5	7,094.8	101.69	70.767			
4,600.0	4,581.6	4,620.6	4,620.6	11.8	92.4	113.44	-7,045.7	643.8	7,201.0	7,097.0	103.97	69.261			
4,700.0	4,681.0	4,720.0	4,720.0	12.1	94.4	113.52	-7,045.7	643.8	7,205.5	7,099.2	106.24	67.820			
4,800.0	4,780.4	4,819.4	4,819.4	12.4	96.4	113.60	-7,045.7	643.8	7,210.0	7,101.5	108.52	66.439			
4,900.0	4,879.7	4,918.7	4,918.7	12.7	98.4	113.68	-7,045.7	643.8	7,214.5	7,103.8	110.80	65.116			
5,000.0	4,979.1	5,018.1	5,018.1	13.0	100.4	113.76	-7,045.7	643.8	7,219.1	7,106.0	113.07	63.845			

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,078.4	5,117.4	5,117.4	13.3	102.3	113.84		-7,045.7	643.8	7,223.7	7,108.3	115.35	62.625	
5,200.0	5,177.8	5,216.8	5,216.8	13.6	104.3	113.92		-7,045.7	643.8	7,228.3	7,110.6	117.62	61.452	
5,300.0	5,277.2	5,316.2	5,316.2	13.9	106.3	114.01		-7,045.7	643.8	7,232.9	7,113.0	119.90	60.324	
5,400.0	5,376.5	5,415.5	5,415.5	14.2	108.3	114.09		-7,045.7	643.8	7,237.5	7,115.3	122.18	59.237	
5,500.0	5,475.9	5,514.9	5,514.9	14.5	110.3	114.17		-7,045.7	643.8	7,242.1	7,117.7	124.45	58.191	
5,600.0	5,575.4	5,614.4	5,614.4	14.8	112.3	114.31		-7,045.7	643.8	7,246.1	7,119.3	126.75	57.168	
5,700.0	5,675.2	5,714.2	5,714.2	15.0	114.3	114.40		-7,045.7	643.8	7,248.6	7,119.6	128.97	56.203	
5,800.0	5,775.2	5,814.2	5,814.2	15.1	116.3	114.44		-7,045.7	643.8	7,249.7	7,118.5	131.15	55.277	
5,900.0	5,875.2	5,914.2	5,914.2	15.3	118.3	114.44		-7,045.7	643.8	7,249.7	7,116.4	133.32	54.380	
6,000.0	5,975.2	6,014.2	6,014.2	15.5	120.3	114.44		-7,045.7	643.8	7,249.7	7,114.2	135.50	53.502	
6,100.0	6,075.2	6,114.2	6,114.2	15.7	122.3	114.44		-7,045.7	643.8	7,249.1	7,111.5	137.56	52.698	
6,200.0	6,174.6	6,213.6	6,213.6	15.8	124.3	114.44		-7,045.7	643.8	7,238.4	7,100.7	137.73	52.554	
6,300.0	6,271.7	6,310.7	6,310.7	15.9	126.2	114.44		-7,045.7	643.8	7,214.9	7,079.5	135.46	53.263	
6,400.0	6,364.9	6,403.9	6,403.9	15.9	128.1	114.44		-7,045.7	643.8	7,179.0	7,048.3	130.69	54.930	
6,500.0	6,452.6	6,491.6	6,491.6	16.0	129.8	114.44		-7,045.7	643.8	7,131.1	7,007.7	123.46	57.762	
6,600.0	6,533.4	6,572.4	6,572.4	16.0	131.4	114.44		-7,045.7	643.8	7,072.3	6,958.4	113.85	62.117	
6,700.0	6,605.7	6,644.7	6,644.7	16.1	132.9	114.44		-7,045.7	643.8	7,003.4	6,901.3	102.07	68.614	
6,800.0	6,668.5	6,707.5	6,707.5	16.3	134.1	114.44		-7,045.7	643.8	6,925.7	6,837.3	88.40	78.348	
6,900.0	6,720.5	6,759.5	6,759.5	16.6	135.2	114.44		-7,045.7	643.8	6,840.4	6,767.1	73.32	93.295	
7,000.0	6,761.0	6,800.0	6,800.0	17.2	136.0	114.44		-7,045.7	643.8	6,749.1	6,691.2	57.86	116.647	
7,100.0	6,789.2	6,828.2	6,828.2	17.9	136.6	114.44		-7,045.7	643.8	6,653.3	6,607.3	45.94	144.821	
7,200.0	6,804.7	6,843.7	6,843.7	18.9	136.9	114.44		-7,045.7	643.8	6,554.6	6,497.0	57.63	113.746	
7,300.0	6,814.5	6,853.5	6,853.5	20.0	137.1	114.44		-7,045.7	643.8	6,455.2	6,379.3	75.89	85.060	
7,400.0	6,817.5	6,856.5	6,856.5	21.2	137.1	114.44		-7,045.7	643.8	6,355.3	6,198.1	157.24	40.418	
7,500.0	6,817.3	6,856.3	6,856.3	22.5	137.1	114.44		-7,045.7	643.8	6,255.4	6,096.8	158.59	39.443	
7,600.0	6,817.1	6,856.1	6,856.1	23.9	137.1	114.44		-7,045.7	643.8	6,155.5	5,995.4	160.03	38.465	
7,700.0	6,816.9	6,855.9	6,855.9	25.4	137.1	114.44		-7,045.7	643.8	6,055.6	5,894.0	161.53	37.488	
7,800.0	6,816.7	6,855.7	6,855.7	26.9	137.1	114.44		-7,045.7	643.8	5,955.6	5,792.5	163.09	36.518	
7,900.0	6,816.5	6,855.5	6,855.5	28.5	137.1	114.44		-7,045.7	643.8	5,855.7	5,691.0	164.69	35.556	
8,000.0	6,816.3	6,855.3	6,855.3	30.1	137.1	114.44		-7,045.7	643.8	5,755.8	5,589.5	166.33	34.604	
8,100.0	6,816.1	6,855.1	6,855.1	31.7	137.1	114.44		-7,045.7	643.8	5,655.9	5,487.9	168.01	33.665	
8,200.0	6,815.9	6,854.9	6,854.9	33.4	137.1	114.44		-7,045.7	643.8	5,556.0	5,386.3	169.71	32.738	
8,300.0	6,815.8	6,854.8	6,854.8	35.1	137.1	114.44		-7,045.7	643.8	5,456.1	5,284.6	171.43	31.826	
8,400.0	6,815.6	6,854.6	6,854.6	36.8	137.1	114.44		-7,045.7	643.8	5,356.2	5,183.0	173.18	30.929	
8,500.0	6,815.4	6,854.4	6,854.4	38.5	137.1	114.44		-7,045.7	643.8	5,256.3	5,081.3	174.94	30.047	
8,600.0	6,815.2	6,854.2	6,854.2	40.3	137.1	114.44		-7,045.7	643.8	5,156.4	4,979.7	176.71	29.179	
8,700.0	6,815.0	6,854.0	6,854.0	42.1	137.1	114.44		-7,045.7	643.8	5,056.5	4,878.0	178.50	28.327	
8,800.0	6,814.8	6,853.8	6,853.8	43.8	137.1	114.44		-7,045.7	643.8	4,956.6	4,776.3	180.30	27.490	
8,900.0	6,814.6	6,853.6	6,853.6	45.6	137.1	114.44		-7,045.7	643.8	4,856.7	4,674.6	182.11	26.669	
9,000.0	6,814.4	6,853.4	6,853.4	47.4	137.1	114.44		-7,045.7	643.8	4,756.9	4,572.9	183.93	25.862	
9,100.0	6,814.2	6,853.2	6,853.2	49.3	137.1	114.44		-7,045.7	643.8	4,657.0	4,471.2	185.76	25.070	
9,200.0	6,814.0	6,853.0	6,853.0	51.1	137.1	114.44		-7,045.7	643.8	4,557.1	4,369.5	187.59	24.292	
9,300.0	6,813.8	6,852.8	6,852.8	52.9	137.1	114.44		-7,045.7	643.8	4,457.3	4,267.8	189.44	23.529	
9,400.0	6,813.6	6,852.6	6,852.6	54.7	137.1	114.44		-7,045.7	643.8	4,357.4	4,166.1	191.28	22.780	
9,500.0	6,813.4	6,852.4	6,852.4	56.6	137.0	114.44		-7,045.7	643.8	4,257.6	4,064.4	193.13	22.045	
9,600.0	6,813.3	6,852.3	6,852.3	58.4	137.0	114.44		-7,045.7	643.8	4,157.7	3,962.7	194.99	21.323	
9,700.0	6,813.1	6,852.1	6,852.1	60.3	137.0	114.44		-7,045.7	643.8	4,057.9	3,861.0	196.85	20.614	
9,800.0	6,812.9	6,851.9	6,851.9	62.1	137.0	114.44		-7,045.7	643.8	3,958.1	3,759.4	198.71	19.919	
9,900.0	6,812.7	6,851.7	6,851.7	64.0	137.0	114.44		-7,045.7	643.8	3,858.3	3,657.7	200.58	19.236	
10,000.0	6,812.5	6,851.5	6,851.5	65.8	137.0	114.44		-7,045.7	643.8	3,758.5	3,556.0	202.45	18.565	
10,100.0	6,812.3	6,851.3	6,851.3	67.7	137.0	114.44		-7,045.7	643.8	3,658.7	3,454.3	204.32	17.906	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
10,200.0	6,812.1	6,851.1	6,851.1	69.6	137.0	-91.63	-7,045.7	643.8	3,558.9	3,352.7	206.20	17.260		
10,300.0	6,811.9	6,850.9	6,850.9	71.4	137.0	-91.58	-7,045.7	643.8	3,459.1	3,251.0	208.08	16.624		
10,400.0	6,811.7	6,850.7	6,850.7	73.3	137.0	-91.54	-7,045.7	643.8	3,359.4	3,149.4	209.96	16.000		
10,500.0	6,811.5	6,850.5	6,850.5	75.2	137.0	-91.49	-7,045.7	643.8	3,259.6	3,047.8	211.84	15.387		
10,600.0	6,811.3	6,850.3	6,850.3	77.1	137.0	-91.45	-7,045.7	643.8	3,159.9	2,946.2	213.72	14.785		
10,700.0	6,811.1	6,850.1	6,850.1	78.9	137.0	-91.40	-7,045.7	643.8	3,060.2	2,844.6	215.61	14.193		
10,800.0	6,811.0	6,850.0	6,850.0	80.8	137.0	-91.35	-7,045.7	643.8	2,960.5	2,743.0	217.50	13.612		
10,900.0	6,810.8	6,849.8	6,849.8	82.7	137.0	-91.31	-7,045.7	643.8	2,860.9	2,641.5	219.39	13.040		
11,000.0	6,810.6	6,849.6	6,849.6	84.6	137.0	-91.26	-7,045.7	643.8	2,761.2	2,540.0	221.28	12.479		
11,100.0	6,810.4	6,849.4	6,849.4	86.5	137.0	-91.22	-7,045.7	643.8	2,661.6	2,438.5	223.17	11.926		
11,200.0	6,810.2	6,849.2	6,849.2	88.4	137.0	-91.17	-7,045.7	643.8	2,562.0	2,337.0	225.06	11.384		
11,300.0	6,810.0	6,849.0	6,849.0	90.3	137.0	-91.12	-7,045.7	643.8	2,462.5	2,235.5	226.96	10.850		
11,400.0	6,809.8	6,848.8	6,848.8	92.1	137.0	-91.08	-7,045.7	643.8	2,363.0	2,134.1	228.85	10.325		
11,500.0	6,809.6	6,848.6	6,848.6	94.0	137.0	-91.03	-7,045.7	643.8	2,263.5	2,032.8	230.75	9.810		
11,600.0	6,809.4	6,848.4	6,848.4	95.9	137.0	-90.99	-7,045.7	643.8	2,164.1	1,931.5	232.65	9.302		
11,700.0	6,809.2	6,848.2	6,848.2	97.8	137.0	-90.94	-7,045.7	643.8	2,064.8	1,830.2	234.54	8.803		
11,800.0	6,809.0	6,848.0	6,848.0	99.7	137.0	-90.90	-7,045.7	643.8	1,965.5	1,729.0	236.44	8.313		
11,900.0	6,808.8	6,847.8	6,847.8	101.6	137.0	-90.85	-7,045.7	643.8	1,866.3	1,627.9	238.34	7.830		
12,000.0	6,808.6	6,847.6	6,847.6	103.5	137.0	-90.80	-7,045.7	643.8	1,767.1	1,526.9	240.24	7.356		
12,100.0	6,808.5	6,847.5	6,847.5	105.4	136.9	-90.76	-7,045.7	643.8	1,668.1	1,426.0	242.14	6.889		
12,200.0	6,808.3	6,847.3	6,847.3	107.3	136.9	-90.71	-7,045.7	643.8	1,569.2	1,325.2	244.04	6.430		
12,300.0	6,808.1	6,847.1	6,847.1	109.2	136.9	-90.67	-7,045.7	643.8	1,470.5	1,224.5	245.95	5.979		
12,400.0	6,807.9	6,846.9	6,846.9	111.1	136.9	-90.62	-7,045.7	643.8	1,371.9	1,124.1	247.85	5.535		
12,500.0	6,807.7	6,846.7	6,846.7	113.0	136.9	-90.57	-7,045.7	643.8	1,273.6	1,023.8	249.75	5.099		
12,600.0	6,807.5	6,846.5	6,846.5	114.9	136.9	-90.53	-7,045.7	643.8	1,175.5	923.9	251.65	4.671		
12,700.0	6,807.3	6,846.3	6,846.3	116.8	136.9	-90.48	-7,045.7	643.8	1,077.8	824.2	253.56	4.251		
12,800.0	6,807.1	6,846.1	6,846.1	118.7	136.9	-90.44	-7,045.7	643.8	980.6	725.1	255.46	3.838		
12,900.0	6,806.9	6,845.9	6,845.9	120.6	136.9	-90.39	-7,045.7	643.8	883.9	626.6	257.37	3.435		
13,000.0	6,806.7	6,845.7	6,845.7	122.5	136.9	-90.34	-7,045.7	643.8	788.1	528.9	259.27	3.040		
13,100.0	6,806.5	6,845.5	6,845.5	124.4	136.9	-90.30	-7,045.7	643.8	693.5	432.4	261.18	2.655		
13,200.0	6,806.3	6,845.3	6,845.3	126.3	136.9	-90.25	-7,045.7	643.8	600.7	337.6	263.08	2.283		
13,300.0	6,806.2	6,845.2	6,845.2	128.2	136.9	-90.21	-7,045.7	643.8	510.6	245.6	264.99	1.927		
13,400.0	6,806.0	6,845.0	6,845.0	130.1	136.9	-90.16	-7,045.7	643.8	424.9	158.0	266.89	1.592		
13,500.0	6,805.8	6,844.8	6,844.8	132.1	136.9	-90.12	-7,045.7	643.8	346.9	78.1	268.80	1.291 Level 3		
13,600.0	6,805.6	6,844.6	6,844.6	134.0	136.9	-90.07	-7,045.7	643.8	283.2	12.5	270.71	1.046 Level 2		
13,700.0	6,805.4	6,844.4	6,844.4	135.9	136.9	-90.02	-7,045.7	643.8	245.0	-27.6	272.61	0.899 Level 1		
13,750.8	6,805.3	6,844.3	6,844.3	136.8	136.9	-90.00	-7,045.7	643.8	239.7	-33.9	273.58	0.876 Level 1, CC, ES, SF		
13,800.0	6,805.2	6,844.2	6,844.2	137.8	136.9	-89.98	-7,045.7	643.8	244.7	-29.8	274.52	0.891 Level 1		
13,900.0	6,805.0	6,844.0	6,844.0	139.7	136.9	-89.93	-7,045.7	643.8	282.3	5.9	276.43	1.021 Level 2		
13,900.2	6,805.0	6,844.0	6,844.0	139.7	136.9	-89.93	-7,045.7	643.8	282.4	6.0	276.43	1.022 Level 2		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-6B (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	123.64	123.64	-415.3	624.1	749.9				
100.0	100.0	81.0	81.0	0.1	1.6	123.64	123.64	-415.3	624.1	749.7	747.9	1.73	432.684	
200.0	200.0	181.0	181.0	0.3	3.6	123.64	123.64	-415.3	624.1	749.7	745.7	3.96	189.435	
300.0	300.0	281.0	281.0	0.6	5.6	123.64	123.64	-415.3	624.1	749.7	743.5	6.18	121.263	
400.0	400.0	381.0	381.0	0.8	7.6	123.64	123.64	-415.3	624.1	749.7	741.3	8.41	89.172	
500.0	500.0	481.0	481.0	1.0	9.6	123.64	123.64	-415.3	624.1	749.7	739.0	10.63	70.512	
600.0	600.0	581.0	581.0	1.2	11.6	123.64	123.64	-415.3	624.1	749.7	736.8	12.86	58.310	
700.0	700.0	681.0	681.0	1.5	13.6	123.64	123.64	-415.3	624.1	749.7	734.6	15.08	49.708	
800.0	800.0	781.0	781.0	1.7	15.6	123.64	123.64	-415.3	624.1	749.7	732.4	17.31	43.318	
900.0	900.0	881.0	881.0	1.9	17.6	123.64	123.64	-415.3	624.1	749.7	730.1	19.53	38.384	
1,000.0	1,000.0	981.0	981.0	2.1	19.6	123.64	123.64	-415.3	624.1	749.7	727.9	21.76	34.458	
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	123.64	123.64	-415.3	624.1	749.7	725.7	23.98	31.262	
1,200.0	1,200.0	1,181.0	1,181.0	2.6	23.6	123.64	123.64	-415.3	624.1	749.7	723.5	26.20	28.608	
1,300.0	1,300.0	1,281.0	1,281.0	2.8	25.6	123.64	123.64	-415.3	624.1	749.7	721.2	28.43	26.369	
1,400.0	1,400.0	1,381.0	1,381.0	3.0	27.6	123.64	123.64	-415.3	624.1	749.7	719.0	30.65	24.455	
1,500.0	1,500.0	1,481.0	1,481.0	3.3	29.6	123.64	123.64	-415.3	624.1	749.7	716.8	32.88	22.800	
1,600.0	1,600.0	1,581.0	1,581.0	3.5	31.6	60.10	60.10	-415.3	624.1	748.8	713.7	35.09	21.339	
1,700.0	1,699.8	1,680.8	1,680.8	3.7	33.6	60.50	60.50	-415.3	624.1	746.2	708.9	37.28	20.014	
1,800.0	1,799.5	1,780.5	1,780.5	3.9	35.6	61.15	61.15	-415.3	624.1	741.9	702.5	39.46	18.800	
1,900.0	1,898.8	1,879.8	1,879.8	4.1	37.6	61.93	61.93	-415.3	624.1	736.6	694.9	41.67	17.676	
2,000.0	1,998.2	1,979.2	1,979.2	4.4	39.6	62.71	62.71	-415.3	624.1	731.3	687.4	43.89	16.661	
2,100.0	2,097.6	2,078.6	2,078.6	4.6	41.6	63.49	63.49	-415.3	624.1	726.2	680.1	46.12	15.744	
2,200.0	2,196.9	2,177.9	2,177.9	4.9	43.6	64.29	64.29	-415.3	624.1	721.2	672.9	48.36	14.913	
2,300.0	2,296.3	2,277.3	2,277.3	5.2	45.5	65.10	65.10	-415.3	624.1	716.4	665.8	50.61	14.156	
2,400.0	2,395.6	2,376.6	2,376.6	5.4	47.5	65.92	65.92	-415.3	624.1	711.7	658.8	52.85	13.465	
2,500.0	2,495.0	2,476.0	2,476.0	5.7	49.5	66.75	66.75	-415.3	624.1	707.1	652.0	55.11	12.832	
2,600.0	2,594.4	2,575.4	2,575.4	6.0	51.5	67.59	67.59	-415.3	624.1	702.7	645.4	57.37	12.250	
2,700.0	2,693.7	2,674.7	2,674.7	6.3	53.5	68.44	68.44	-415.3	624.1	698.5	638.9	59.63	11.714	
2,800.0	2,793.1	2,774.1	2,774.1	6.5	55.5	69.30	69.30	-415.3	624.1	694.4	632.5	61.89	11.219	
2,900.0	2,892.5	2,873.5	2,873.5	6.8	57.5	70.17	70.17	-415.3	624.1	690.5	626.3	64.16	10.761	
3,000.0	2,991.8	2,972.8	2,972.8	7.1	59.5	71.05	71.05	-415.3	624.1	686.7	620.3	66.44	10.337	
3,100.0	3,091.2	3,072.2	3,072.2	7.4	61.4	71.93	71.93	-415.3	624.1	683.1	614.4	68.71	9.942	
3,200.0	3,190.5	3,171.5	3,171.5	7.7	63.4	72.83	72.83	-415.3	624.1	679.7	608.7	70.99	9.575	
3,300.0	3,289.9	3,270.9	3,270.9	8.0	65.4	73.74	73.74	-415.3	624.1	676.4	603.2	73.27	9.232	
3,400.0	3,389.3	3,370.3	3,370.3	8.3	67.4	74.65	74.65	-415.3	624.1	673.3	597.8	75.55	8.912	
3,500.0	3,488.6	3,469.6	3,469.6	8.6	69.4	75.58	75.58	-415.3	624.1	670.4	592.6	77.84	8.613	
3,600.0	3,588.0	3,569.0	3,569.0	8.8	71.4	76.51	76.51	-415.3	624.1	667.7	587.6	80.12	8.333	
3,700.0	3,687.4	3,668.4	3,668.4	9.1	73.4	77.45	77.45	-415.3	624.1	665.1	582.7	82.41	8.071	
3,800.0	3,786.7	3,767.7	3,767.7	9.4	75.4	78.39	78.39	-415.3	624.1	662.8	578.1	84.70	7.825	
3,900.0	3,886.1	3,867.1	3,867.1	9.7	77.3	79.34	79.34	-415.3	624.1	660.6	573.6	86.99	7.594	
4,000.0	3,985.5	3,966.5	3,966.5	10.0	79.3	80.30	80.30	-415.3	624.1	658.6	569.3	89.28	7.376	
4,100.0	4,084.8	4,065.8	4,065.8	10.3	81.3	81.26	81.26	-415.3	624.1	656.8	565.2	91.57	7.172	
4,200.0	4,184.2	4,165.2	4,165.2	10.6	83.3	82.23	82.23	-415.3	624.1	655.1	561.3	93.87	6.979	
4,300.0	4,283.5	4,264.5	4,264.5	10.9	85.3	83.20	83.20	-415.3	624.1	653.7	557.5	96.16	6.798	
4,400.0	4,382.9	4,363.9	4,363.9	11.2	87.3	84.18	84.18	-415.3	624.1	652.4	554.0	98.45	6.627	
4,500.0	4,482.3	4,463.3	4,463.3	11.5	89.3	85.16	85.16	-415.3	624.1	651.4	550.6	100.75	6.466	
4,600.0	4,581.6	4,562.6	4,562.6	11.8	91.3	86.14	86.14	-415.3	624.1	650.5	547.5	103.04	6.313	
4,700.0	4,681.0	4,662.0	4,662.0	12.1	93.2	87.13	87.13	-415.3	624.1	649.9	544.5	105.34	6.169	
4,800.0	4,780.4	4,761.4	4,761.4	12.4	95.2	88.11	88.11	-415.3	624.1	649.4	541.8	107.63	6.034	
4,900.0	4,879.7	4,860.7	4,860.7	12.7	97.2	89.10	89.10	-415.3	624.1	649.1	539.2	109.92	5.905	
4,991.0	4,970.1	4,951.1	4,951.1	13.0	99.0	90.00	90.00	-415.3	624.1	649.0	537.0	112.01	5.795	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-6B (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,000.0	4,979.1	4,960.1	4,960.1	13.0	99.2	90.09	-415.3	624.1	649.0	536.8	112.21	5.784		
5,100.0	5,078.4	5,059.4	5,059.4	13.3	101.2	91.08	-415.3	624.1	649.2	534.7	114.50	5.669		
5,200.0	5,177.8	5,158.8	5,158.8	13.6	103.2	92.07	-415.3	624.1	649.5	532.7	116.79	5.561		
5,300.0	5,277.2	5,258.2	5,258.2	13.9	105.2	93.05	-415.3	624.1	650.0	530.9	119.08	5.458		
5,400.0	5,376.5	5,357.5	5,357.5	14.2	107.2	94.04	-415.3	624.1	650.7	529.3	121.37	5.361		
5,500.0	5,475.9	5,456.9	5,456.9	14.5	109.1	95.02	-415.3	624.1	651.6	527.9	123.66	5.269		
5,600.0	5,575.4	5,556.4	5,556.4	14.8	111.1	95.87	-415.3	624.1	652.5	526.6	125.90	5.182		
5,700.0	5,675.2	5,656.2	5,656.2	15.0	113.1	96.41	-415.3	624.1	653.1	525.0	128.09	5.099		
5,800.0	5,775.2	5,756.2	5,756.2	15.1	115.1	96.65	-415.3	624.1	653.4	523.2	130.26	5.016		
5,900.0	5,875.2	5,856.2	5,856.2	15.3	117.1	160.33	-415.3	624.1	653.4	521.0	132.42	4.934		
6,000.0	5,975.2	5,956.2	5,956.2	15.5	119.1	160.33	-415.3	624.1	653.4	518.8	134.61	4.854		
6,100.0	6,075.2	6,056.2	6,056.2	15.7	121.1	-19.71	-415.3	624.1	652.8	516.2	136.68	4.776		
6,200.0	6,174.6	6,155.6	6,155.6	15.8	123.1	-20.29	-415.3	624.1	642.8	505.7	137.11	4.689		
6,300.0	6,271.7	6,252.7	6,252.7	15.9	125.1	-21.66	-415.3	624.1	620.8	485.3	135.47	4.583		
6,400.0	6,364.9	6,345.9	6,345.9	15.9	126.9	-24.00	-415.3	624.1	587.3	455.2	132.04	4.448		
6,500.0	6,452.6	6,433.6	6,433.6	16.0	128.7	-27.67	-415.3	624.1	543.2	415.6	127.57	4.258		
6,600.0	6,533.4	6,514.4	6,514.4	16.0	130.3	-33.21	-415.3	624.1	489.9	366.3	123.68	3.961		
6,700.0	6,605.7	6,586.7	6,586.7	16.1	131.7	-41.36	-415.3	624.1	429.5	306.2	123.26	3.484		
6,800.0	6,668.5	6,649.5	6,649.5	16.3	133.0	-52.71	-415.3	624.1	364.9	235.6	129.30	2.822		
6,900.0	6,720.5	6,701.5	6,701.5	16.6	134.0	-66.54	-415.3	624.1	301.2	161.0	140.23	2.148		
7,000.0	6,761.0	6,742.0	6,742.0	17.2	134.8	-79.85	-415.3	624.1	248.0	99.0	148.98	1.664		
7,100.0	6,789.2	6,770.2	6,770.2	17.9	135.4	-88.94	-415.3	624.1	220.8	68.4	152.34	1.449	Level 3	
7,118.9	6,793.1	6,774.1	6,774.1	18.1	135.5	-90.00	-415.3	624.1	220.0	67.4	152.63	1.441	Level 3, CC, ES, SF	
7,200.0	6,804.7	6,785.7	6,785.7	18.9	135.7	-92.18	-415.3	624.1	234.2	80.6	153.54	1.525		
7,300.0	6,814.5	6,795.5	6,795.5	20.0	135.9	-93.36	-415.3	624.1	284.1	129.4	154.70	1.836		
7,400.0	6,817.5	6,798.5	6,798.5	21.2	136.0	-89.86	-415.3	624.1	355.8	199.5	156.35	2.276		
7,500.0	6,817.3	6,798.3	6,798.3	22.5	136.0	-89.81	-415.3	624.1	438.8	281.1	157.70	2.782		
7,600.0	6,817.1	6,798.1	6,798.1	23.9	136.0	-89.76	-415.3	624.1	527.7	368.5	159.13	3.316		
7,700.0	6,816.9	6,797.9	6,797.9	25.4	136.0	-89.71	-415.3	624.1	620.0	459.3	160.63	3.860		
7,800.0	6,816.7	6,797.7	6,797.7	26.9	136.0	-89.66	-415.3	624.1	714.4	552.2	162.18	4.405		
7,900.0	6,816.5	6,797.5	6,797.5	28.5	136.0	-89.61	-415.3	624.1	810.1	646.3	163.78	4.946		
8,000.0	6,816.3	6,797.3	6,797.3	30.1	135.9	-89.56	-415.3	624.1	906.7	741.3	165.42	5.482		
8,100.0	6,816.1	6,797.1	6,797.1	31.7	135.9	-89.51	-415.3	624.1	1,004.0	836.9	167.08	6.009		
8,200.0	6,815.9	6,796.9	6,796.9	33.4	135.9	-89.46	-415.3	624.1	1,101.8	933.0	168.78	6.528		
8,300.0	6,815.8	6,796.8	6,796.8	35.1	135.9	-89.41	-415.3	624.1	1,200.0	1,029.5	170.50	7.038		
8,400.0	6,815.6	6,796.6	6,796.6	36.8	135.9	-89.36	-415.3	624.1	1,298.4	1,126.2	172.23	7.539		
8,500.0	6,815.4	6,796.4	6,796.4	38.5	135.9	-89.31	-415.3	624.1	1,397.1	1,223.1	173.99	8.030		
8,600.0	6,815.2	6,796.2	6,796.2	40.3	135.9	-89.26	-415.3	624.1	1,495.9	1,320.1	175.76	8.511		
8,700.0	6,815.0	6,796.0	6,796.0	42.1	135.9	-89.21	-415.3	624.1	1,594.9	1,417.3	177.54	8.983		
8,800.0	6,814.8	6,795.8	6,795.8	43.8	135.9	-89.16	-415.3	624.1	1,694.0	1,514.6	179.34	9.446		
8,900.0	6,814.6	6,795.6	6,795.6	45.6	135.9	-89.11	-415.3	624.1	1,793.2	1,612.0	181.14	9.899		
9,000.0	6,814.4	6,795.4	6,795.4	47.4	135.9	-89.06	-415.3	624.1	1,892.5	1,709.5	182.95	10.344		
9,100.0	6,814.2	6,795.2	6,795.2	49.3	135.9	-89.01	-415.3	624.1	1,991.8	1,807.0	184.77	10.780		
9,200.0	6,814.0	6,795.0	6,795.0	51.1	135.9	-88.96	-415.3	624.1	2,091.2	1,904.6	186.60	11.207		
9,300.0	6,813.8	6,794.8	6,794.8	52.9	135.9	-88.91	-415.3	624.1	2,190.7	2,002.3	188.43	11.626		
9,400.0	6,813.6	6,794.6	6,794.6	54.7	135.9	-88.86	-415.3	624.1	2,290.2	2,099.9	190.27	12.037		
9,500.0	6,813.4	6,794.4	6,794.4	56.6	135.9	-88.81	-415.3	624.1	2,389.8	2,197.7	192.11	12.439		
9,600.0	6,813.3	6,794.3	6,794.3	58.4	135.9	-88.76	-415.3	624.1	2,489.4	2,295.4	193.96	12.834		
9,700.0	6,813.1	6,794.1	6,794.1	60.3	135.9	-88.71	-415.3	624.1	2,589.0	2,393.2	195.81	13.222		
9,800.0	6,812.9	6,793.9	6,793.9	62.1	135.9	-88.66	-415.3	624.1	2,688.6	2,491.0	197.67	13.602		
9,900.0	6,812.7	6,793.7	6,793.7	64.0	135.9	-88.61	-415.3	624.1	2,788.3	2,588.8	199.53	13.975		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-6B (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	6,812.5	6,793.5	6,793.5	65.8	135.9	-88.56	-415.3	624.1	2,888.0	2,686.6	201.39	14.340		
10,100.0	6,812.3	6,793.3	6,793.3	67.7	135.9	-88.51	-415.3	624.1	2,987.7	2,784.5	203.25	14.700		
10,200.0	6,812.1	6,793.1	6,793.1	69.6	135.9	-88.46	-415.3	624.1	3,087.5	2,882.4	205.12	15.052		
10,300.0	6,811.9	6,792.9	6,792.9	71.4	135.9	-88.41	-415.3	624.1	3,187.2	2,980.2	206.99	15.398		
10,400.0	6,811.7	6,792.7	6,792.7	73.3	135.9	-88.36	-415.3	624.1	3,287.0	3,078.1	208.86	15.738		
10,500.0	6,811.5	6,792.5	6,792.5	75.2	135.9	-88.31	-415.3	624.1	3,386.8	3,176.0	210.73	16.071		
10,600.0	6,811.3	6,792.3	6,792.3	77.1	135.8	-88.26	-415.3	624.1	3,486.6	3,274.0	212.61	16.399		
10,700.0	6,811.1	6,792.1	6,792.1	78.9	135.8	-88.21	-415.3	624.1	3,586.4	3,371.9	214.49	16.721		
10,800.0	6,811.0	6,792.0	6,792.0	80.8	135.8	-88.16	-415.3	624.1	3,686.2	3,469.8	216.36	17.037		
10,900.0	6,810.8	6,791.8	6,791.8	82.7	135.8	-88.11	-415.3	624.1	3,786.0	3,567.8	218.24	17.348		
11,000.0	6,810.6	6,791.6	6,791.6	84.6	135.8	-88.06	-415.3	624.1	3,885.9	3,665.7	220.12	17.653		
11,100.0	6,810.4	6,791.4	6,791.4	86.5	135.8	-88.01	-415.3	624.1	3,985.7	3,763.7	222.00	17.953		
11,200.0	6,810.2	6,791.2	6,791.2	88.4	135.8	-87.96	-415.3	624.1	4,085.6	3,861.7	223.89	18.248		
11,300.0	6,810.0	6,791.0	6,791.0	90.3	135.8	-87.91	-415.3	624.1	4,185.4	3,959.6	225.77	18.538		
11,400.0	6,809.8	6,790.8	6,790.8	92.1	135.8	-87.86	-415.3	624.1	4,285.3	4,057.6	227.65	18.824		
11,500.0	6,809.6	6,790.6	6,790.6	94.0	135.8	-87.81	-415.3	624.1	4,385.1	4,155.6	229.54	19.104		
11,600.0	6,809.4	6,790.4	6,790.4	95.9	135.8	-87.76	-415.3	624.1	4,485.0	4,253.6	231.43	19.380		
11,700.0	6,809.2	6,790.2	6,790.2	97.8	135.8	-87.71	-415.3	624.1	4,584.9	4,351.6	233.31	19.651		
11,800.0	6,809.0	6,790.0	6,790.0	99.7	135.8	-87.66	-415.3	624.1	4,684.8	4,449.6	235.20	19.918		
11,900.0	6,808.8	6,789.8	6,789.8	101.6	135.8	-87.61	-415.3	624.1	4,784.7	4,547.6	237.09	20.181		
12,000.0	6,808.6	6,789.6	6,789.6	103.5	135.8	-87.56	-415.3	624.1	4,884.6	4,645.6	238.97	20.440		
12,100.0	6,808.5	6,789.5	6,789.5	105.4	135.8	-87.51	-415.3	624.1	4,984.5	4,743.6	240.86	20.694		
12,200.0	6,808.3	6,789.3	6,789.3	107.3	135.8	-87.46	-415.3	624.1	5,084.4	4,841.6	242.75	20.945		
12,300.0	6,808.1	6,789.1	6,789.1	109.2	135.8	-87.41	-415.3	624.1	5,184.3	4,939.7	244.64	21.191		
12,400.0	6,807.9	6,788.9	6,788.9	111.1	135.8	-87.36	-415.3	624.1	5,284.2	5,037.7	246.53	21.434		
12,500.0	6,807.7	6,788.7	6,788.7	113.0	135.8	-87.31	-415.3	624.1	5,384.1	5,135.7	248.42	21.673		
12,600.0	6,807.5	6,788.5	6,788.5	114.9	135.8	-87.26	-415.3	624.1	5,484.0	5,233.7	250.31	21.909		
12,700.0	6,807.3	6,788.3	6,788.3	116.8	135.8	-87.21	-415.3	624.1	5,584.0	5,331.8	252.20	22.141		
12,800.0	6,807.1	6,788.1	6,788.1	118.7	135.8	-87.16	-415.3	624.1	5,683.9	5,429.8	254.09	22.369		
12,900.0	6,806.9	6,787.9	6,787.9	120.6	135.8	-87.11	-415.3	624.1	5,783.8	5,527.8	255.98	22.594		
13,000.0	6,806.7	6,787.7	6,787.7	122.5	135.8	-87.06	-415.3	624.1	5,883.7	5,625.9	257.88	22.816		
13,100.0	6,806.5	6,787.5	6,787.5	124.4	135.8	-87.01	-415.3	624.1	5,983.7	5,723.9	259.77	23.035		
13,200.0	6,806.3	6,787.3	6,787.3	126.3	135.7	-86.96	-415.3	624.1	6,083.6	5,821.9	261.66	23.250		
13,300.0	6,806.2	6,787.2	6,787.2	128.2	135.7	-86.91	-415.3	624.1	6,183.5	5,920.0	263.55	23.463		
13,400.0	6,806.0	6,787.0	6,787.0	130.1	135.7	-86.86	-415.3	624.1	6,283.5	6,018.0	265.44	23.672		
13,500.0	6,805.8	6,786.8	6,786.8	132.1	135.7	-86.81	-415.3	624.1	6,383.4	6,116.1	267.33	23.878		
13,600.0	6,805.6	6,786.6	6,786.6	134.0	135.7	-86.76	-415.3	624.1	6,483.4	6,214.1	269.22	24.082		
13,700.0	6,805.4	6,786.4	6,786.4	135.9	135.7	-86.71	-415.3	624.1	6,583.3	6,312.2	271.11	24.282		
13,800.0	6,805.2	6,786.2	6,786.2	137.8	135.7	-86.66	-415.3	624.1	6,683.2	6,410.2	273.01	24.480		
13,900.0	6,805.0	6,786.0	6,786.0	139.7	135.7	-86.61	-415.3	624.1	6,783.2	6,508.3	274.90	24.675		
13,900.2	6,805.0	6,786.0	6,786.0	139.7	135.7	-86.61	-415.3	624.1	6,783.4	6,508.5	274.90	24.676		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-7I (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	124.17	124.17	-444.5	654.8	791.6				
100.0	100.0	81.0	81.0	0.1	1.6	124.17	124.17	-444.5	654.8	791.4	789.6	1.73	456.753	
200.0	200.0	181.0	181.0	0.3	3.6	124.17	124.17	-444.5	654.8	791.4	787.4	3.96	199.973	
300.0	300.0	281.0	281.0	0.6	5.6	124.17	124.17	-444.5	654.8	791.4	785.2	6.18	128.008	
400.0	400.0	381.0	381.0	0.8	7.6	124.17	124.17	-444.5	654.8	791.4	783.0	8.41	94.133	
500.0	500.0	481.0	481.0	1.0	9.6	124.17	124.17	-444.5	654.8	791.4	780.7	10.63	74.435	
600.0	600.0	581.0	581.0	1.2	11.6	124.17	124.17	-444.5	654.8	791.4	778.5	12.86	61.554	
700.0	700.0	681.0	681.0	1.5	13.6	124.17	124.17	-444.5	654.8	791.4	776.3	15.08	52.474	
800.0	800.0	781.0	781.0	1.7	15.6	124.17	124.17	-444.5	654.8	791.4	774.1	17.31	45.728	
900.0	900.0	881.0	881.0	1.9	17.6	124.17	124.17	-444.5	654.8	791.4	771.8	19.53	40.519	
1,000.0	1,000.0	981.0	981.0	2.1	19.6	124.17	124.17	-444.5	654.8	791.4	769.6	21.76	36.375	
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	124.17	124.17	-444.5	654.8	791.4	767.4	23.98	33.001	
1,200.0	1,200.0	1,181.0	1,181.0	2.6	23.6	124.17	124.17	-444.5	654.8	791.4	765.2	26.20	30.199	
1,300.0	1,300.0	1,281.0	1,281.0	2.8	25.6	124.17	124.17	-444.5	654.8	791.4	762.9	28.43	27.836	
1,400.0	1,400.0	1,381.0	1,381.0	3.0	27.6	124.17	124.17	-444.5	654.8	791.4	760.7	30.65	25.816	
1,500.0	1,500.0	1,481.0	1,481.0	3.3	29.6	124.17	124.17	-444.5	654.8	791.4	758.5	32.88	24.069	
1,600.0	1,600.0	1,581.0	1,581.0	3.5	31.6	60.63	60.63	-444.5	654.8	790.5	755.4	35.09	22.527	
1,700.0	1,699.8	1,680.8	1,680.8	3.7	33.6	61.00	61.00	-444.5	654.8	787.9	750.7	37.28	21.134	
1,800.0	1,799.5	1,780.5	1,780.5	3.9	35.6	61.63	61.63	-444.5	654.8	783.8	744.3	39.47	19.859	
1,900.0	1,898.8	1,879.8	1,879.8	4.1	37.6	62.37	62.37	-444.5	654.8	778.5	736.8	41.67	18.681	
2,000.0	1,998.2	1,979.2	1,979.2	4.4	39.6	63.11	63.11	-444.5	654.8	773.3	729.4	43.90	17.616	
2,100.0	2,097.6	2,078.6	2,078.6	4.6	41.6	63.85	63.85	-444.5	654.8	768.2	722.1	46.13	16.655	
2,200.0	2,196.9	2,177.9	2,177.9	4.9	43.6	64.61	64.61	-444.5	654.8	763.3	715.0	48.36	15.783	
2,300.0	2,296.3	2,277.3	2,277.3	5.2	45.5	65.37	65.37	-444.5	654.8	758.5	707.9	50.61	14.989	
2,400.0	2,395.6	2,376.6	2,376.6	5.4	47.5	66.15	66.15	-444.5	654.8	753.9	701.0	52.86	14.263	
2,500.0	2,495.0	2,476.0	2,476.0	5.7	49.5	66.93	66.93	-444.5	654.8	749.4	694.3	55.11	13.598	
2,600.0	2,594.4	2,575.4	2,575.4	6.0	51.5	67.72	67.72	-444.5	654.8	745.0	687.6	57.37	12.987	
2,700.0	2,693.7	2,674.7	2,674.7	6.3	53.5	68.53	68.53	-444.5	654.8	740.8	681.1	59.63	12.423	
2,800.0	2,793.1	2,774.1	2,774.1	6.5	55.5	69.34	69.34	-444.5	654.8	736.7	674.8	61.89	11.903	
2,900.0	2,892.5	2,873.5	2,873.5	6.8	57.5	70.16	70.16	-444.5	654.8	732.8	668.6	64.16	11.421	
3,000.0	2,991.8	2,972.8	2,972.8	7.1	59.5	70.99	70.99	-444.5	654.8	729.0	662.6	66.43	10.973	
3,100.0	3,091.2	3,072.2	3,072.2	7.4	61.4	71.82	71.82	-444.5	654.8	725.4	656.7	68.71	10.558	
3,200.0	3,190.5	3,171.5	3,171.5	7.7	63.4	72.67	72.67	-444.5	654.8	721.9	651.0	70.99	10.170	
3,300.0	3,289.9	3,270.9	3,270.9	8.0	65.4	73.52	73.52	-444.5	654.8	718.6	645.4	73.27	9.809	
3,400.0	3,389.3	3,370.3	3,370.3	8.3	67.4	74.38	74.38	-444.5	654.8	715.5	640.0	75.55	9.471	
3,500.0	3,488.6	3,469.6	3,469.6	8.6	69.4	75.25	75.25	-444.5	654.8	712.5	634.7	77.83	9.155	
3,600.0	3,588.0	3,569.0	3,569.0	8.8	71.4	76.12	76.12	-444.5	654.8	709.7	629.6	80.12	8.859	
3,700.0	3,687.4	3,668.4	3,668.4	9.1	73.4	77.00	77.00	-444.5	654.8	707.1	624.7	82.40	8.581	
3,800.0	3,786.7	3,767.7	3,767.7	9.4	75.4	77.89	77.89	-444.5	654.8	704.6	619.9	84.69	8.320	
3,900.0	3,886.1	3,867.1	3,867.1	9.7	77.3	78.78	78.78	-444.5	654.8	702.4	615.4	86.98	8.075	
4,000.0	3,985.5	3,966.5	3,966.5	10.0	79.3	79.68	79.68	-444.5	654.8	700.2	611.0	89.27	7.844	
4,100.0	4,084.8	4,065.8	4,065.8	10.3	81.3	80.59	80.59	-444.5	654.8	698.3	606.7	91.57	7.626	
4,200.0	4,184.2	4,165.2	4,165.2	10.6	83.3	81.49	81.49	-444.5	654.8	696.5	602.7	93.86	7.421	
4,300.0	4,283.5	4,264.5	4,264.5	10.9	85.3	82.41	82.41	-444.5	654.8	694.9	598.8	96.15	7.227	
4,400.0	4,382.9	4,363.9	4,363.9	11.2	87.3	83.32	83.32	-444.5	654.8	693.5	595.1	98.45	7.045	
4,500.0	4,482.3	4,463.3	4,463.3	11.5	89.3	84.25	84.25	-444.5	654.8	692.3	591.6	100.74	6.872	
4,600.0	4,581.6	4,562.6	4,562.6	11.8	91.3	85.17	85.17	-444.5	654.8	691.3	588.2	103.03	6.709	
4,700.0	4,681.0	4,662.0	4,662.0	12.1	93.2	86.09	86.09	-444.5	654.8	690.4	585.1	105.33	6.555	
4,800.0	4,780.4	4,761.4	4,761.4	12.4	95.2	87.02	87.02	-444.5	654.8	689.7	582.1	107.62	6.409	
4,900.0	4,879.7	4,860.7	4,860.7	12.7	97.2	87.95	87.95	-444.5	654.8	689.2	579.3	109.92	6.270	
5,000.0	4,979.1	4,960.1	4,960.1	13.0	99.2	88.88	88.88	-444.5	654.8	688.9	576.7	112.21	6.139	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-7I (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,078.4	5,059.4	5,059.4	13.3	101.2	89.81	-444.5	654.8	688.8	574.3	114.50	6.015		
5,120.0	5,098.3	5,079.3	5,079.3	13.4	101.6	90.00	-444.5	654.8	688.8	573.8	114.96	5.991		
5,200.0	5,177.8	5,158.8	5,158.8	13.6	103.2	90.75	-444.5	654.8	688.8	572.0	116.79	5.898		
5,300.0	5,277.2	5,258.2	5,258.2	13.9	105.2	91.68	-444.5	654.8	689.1	570.0	119.08	5.786		
5,400.0	5,376.5	5,357.5	5,357.5	14.2	107.2	92.61	-444.5	654.8	689.5	568.1	121.37	5.681		
5,500.0	5,475.9	5,456.9	5,456.9	14.5	109.1	93.53	-444.5	654.8	690.1	566.4	123.66	5.581		
5,600.0	5,575.4	5,556.4	5,556.4	14.8	111.1	94.34	-444.5	654.8	690.8	564.8	125.91	5.486		
5,700.0	5,675.2	5,656.2	5,656.2	15.0	113.1	94.85	-444.5	654.8	691.2	563.1	128.10	5.396		
5,800.0	5,775.2	5,756.2	5,756.2	15.1	115.1	95.07	-444.5	654.8	691.5	561.2	130.27	5.308		
5,900.0	5,875.2	5,856.2	5,856.2	15.3	117.1	158.75	-444.5	654.8	691.5	559.1	132.43	5.221		
6,000.0	5,975.2	5,956.2	5,956.2	15.5	119.1	158.75	-444.5	654.8	691.5	556.9	134.61	5.137		
6,100.0	6,075.2	6,056.2	6,056.2	15.7	121.1	-21.29	-444.5	654.8	690.9	554.2	136.69	5.054		
6,200.0	6,174.6	6,155.6	6,155.6	15.8	123.1	-21.89	-444.5	654.8	681.0	543.8	137.15	4.965		
6,300.0	6,271.7	6,252.7	6,252.7	15.9	125.1	-23.30	-444.5	654.8	659.2	523.6	135.60	4.861		
6,400.0	6,364.9	6,345.9	6,345.9	15.9	126.9	-25.71	-444.5	654.8	626.0	493.7	132.33	4.731		
6,500.0	6,452.6	6,433.6	6,433.6	16.0	128.7	-29.44	-444.5	654.8	582.5	454.4	128.14	4.546		
6,600.0	6,533.4	6,514.4	6,514.4	16.0	130.3	-34.97	-444.5	654.8	529.9	405.3	124.63	4.252		
6,700.0	6,605.7	6,586.7	6,586.7	16.1	131.7	-42.91	-444.5	654.8	470.3	345.9	124.48	3.779		
6,800.0	6,668.5	6,649.5	6,649.5	16.3	133.0	-53.67	-444.5	654.8	406.7	276.5	130.18	3.124		
6,900.0	6,720.5	6,701.5	6,701.5	16.6	134.0	-66.50	-444.5	654.8	343.5	203.3	140.20	2.450		
7,000.0	6,761.0	6,742.0	6,742.0	17.2	134.8	-78.84	-444.5	654.8	288.8	140.3	148.57	1.944		
7,100.0	6,789.2	6,770.2	6,770.2	17.9	135.4	-87.62	-444.5	654.8	255.1	102.9	152.26	1.676		
7,148.6	6,798.5	6,779.5	6,779.5	18.4	135.6	-90.00	-444.5	654.8	250.6	97.6	153.03	1.638 CC, ES, SF		
7,200.0	6,804.7	6,785.7	6,785.7	18.9	135.7	-91.22	-444.5	654.8	255.8	102.2	153.63	1.665		
7,300.0	6,814.5	6,795.5	6,795.5	20.0	135.9	-92.47	-444.5	654.8	292.4	137.5	154.84	1.888		
7,400.0	6,817.5	6,798.5	6,798.5	21.2	136.0	-89.89	-444.5	654.8	354.3	198.0	156.35	2.266		
7,500.0	6,817.3	6,798.3	6,798.3	22.5	136.0	-89.85	-444.5	654.8	430.9	273.2	157.70	2.732		
7,600.0	6,817.1	6,798.1	6,798.1	23.9	136.0	-89.80	-444.5	654.8	515.5	356.4	159.13	3.240		
7,700.0	6,816.9	6,797.9	6,797.9	25.4	136.0	-89.76	-444.5	654.8	604.9	444.2	160.63	3.766		
7,800.0	6,816.7	6,797.7	6,797.7	26.9	136.0	-89.71	-444.5	654.8	697.1	534.9	162.18	4.298		
7,900.0	6,816.5	6,797.5	6,797.5	28.5	136.0	-89.67	-444.5	654.8	791.2	627.4	163.78	4.831		
8,000.0	6,816.3	6,797.3	6,797.3	30.1	135.9	-89.63	-444.5	654.8	886.6	721.2	165.41	5.360		
8,100.0	6,816.1	6,797.1	6,797.1	31.7	135.9	-89.58	-444.5	654.8	983.0	815.9	167.08	5.883		
8,200.0	6,815.9	6,796.9	6,796.9	33.4	135.9	-89.54	-444.5	654.8	1,080.0	911.2	168.78	6.399		
8,300.0	6,815.8	6,796.8	6,796.8	35.1	135.9	-89.50	-444.5	654.8	1,177.5	1,007.0	170.50	6.906		
8,400.0	6,815.6	6,796.6	6,796.6	36.8	135.9	-89.45	-444.5	654.8	1,275.3	1,103.1	172.23	7.405		
8,500.0	6,815.4	6,796.4	6,796.4	38.5	135.9	-89.41	-444.5	654.8	1,373.5	1,199.5	173.99	7.894		
8,600.0	6,815.2	6,796.2	6,796.2	40.3	135.9	-89.36	-444.5	654.8	1,472.0	1,296.2	175.76	8.375		
8,700.0	6,815.0	6,796.0	6,796.0	42.1	135.9	-89.32	-444.5	654.8	1,570.6	1,393.1	177.54	8.846		
8,800.0	6,814.8	6,795.8	6,795.8	43.8	135.9	-89.28	-444.5	654.8	1,669.4	1,490.1	179.34	9.309		
8,900.0	6,814.6	6,795.6	6,795.6	45.6	135.9	-89.23	-444.5	654.8	1,768.3	1,587.2	181.14	9.762		
9,000.0	6,814.4	6,795.4	6,795.4	47.4	135.9	-89.19	-444.5	654.8	1,867.4	1,684.4	182.95	10.207		
9,100.0	6,814.2	6,795.2	6,795.2	49.3	135.9	-89.14	-444.5	654.8	1,966.5	1,781.7	184.78	10.643		
9,200.0	6,814.0	6,795.0	6,795.0	51.1	135.9	-89.10	-444.5	654.8	2,065.7	1,879.1	186.60	11.070		
9,300.0	6,813.8	6,794.8	6,794.8	52.9	135.9	-89.06	-444.5	654.8	2,165.0	1,976.6	188.44	11.489		
9,400.0	6,813.6	6,794.6	6,794.6	54.7	135.9	-89.01	-444.5	654.8	2,264.4	2,074.1	190.28	11.901		
9,500.0	6,813.4	6,794.4	6,794.4	56.6	135.9	-88.97	-444.5	654.8	2,363.8	2,171.7	192.12	12.304		
9,600.0	6,813.3	6,794.3	6,794.3	58.4	135.9	-88.92	-444.5	654.8	2,463.3	2,269.3	193.97	12.699		
9,700.0	6,813.1	6,794.1	6,794.1	60.3	135.9	-88.88	-444.5	654.8	2,562.8	2,366.9	195.82	13.087		
9,800.0	6,812.9	6,793.9	6,793.9	62.1	135.9	-88.84	-444.5	654.8	2,662.3	2,464.6	197.68	13.468		
9,900.0	6,812.7	6,793.7	6,793.7	64.0	135.9	-88.79	-444.5	654.8	2,761.9	2,562.3	199.54	13.841		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2-7I (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft		
Survey Program: 7600-UNKNOWN														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)								
10,000.0	6,812.5	6,793.5	6,793.5	65.8	135.9	-88.75	-444.5	654.8	2,861.5	2,660.1	201.40	14.208				
10,100.0	6,812.3	6,793.3	6,793.3	67.7	135.9	-88.71	-444.5	654.8	2,961.1	2,757.8	203.27	14.568				
10,200.0	6,812.1	6,793.1	6,793.1	69.6	135.9	-88.66	-444.5	654.8	3,060.8	2,855.6	205.13	14.921				
10,300.0	6,811.9	6,792.9	6,792.9	71.4	135.9	-88.62	-444.5	654.8	3,160.4	2,953.4	207.00	15.267				
10,400.0	6,811.7	6,792.7	6,792.7	73.3	135.9	-88.57	-444.5	654.8	3,260.1	3,051.2	208.88	15.608				
10,500.0	6,811.5	6,792.5	6,792.5	75.2	135.9	-88.53	-444.5	654.8	3,359.8	3,149.1	210.75	15.942				
10,600.0	6,811.3	6,792.3	6,792.3	77.1	135.8	-88.49	-444.5	654.8	3,459.6	3,246.9	212.63	16.271				
10,700.0	6,811.1	6,792.1	6,792.1	78.9	135.8	-88.44	-444.5	654.8	3,559.3	3,344.8	214.50	16.593				
10,800.0	6,811.0	6,792.0	6,792.0	80.8	135.8	-88.40	-444.5	654.8	3,659.1	3,442.7	216.38	16.910				
10,900.0	6,810.8	6,791.8	6,791.8	82.7	135.8	-88.35	-444.5	654.8	3,758.8	3,540.6	218.26	17.222				
11,000.0	6,810.6	6,791.6	6,791.6	84.6	135.8	-88.31	-444.5	654.8	3,858.6	3,638.5	220.15	17.528				
11,100.0	6,810.4	6,791.4	6,791.4	86.5	135.8	-88.27	-444.5	654.8	3,958.4	3,736.4	222.03	17.828				
11,200.0	6,810.2	6,791.2	6,791.2	88.4	135.8	-88.22	-444.5	654.8	4,058.2	3,834.3	223.91	18.124				
11,300.0	6,810.0	6,791.0	6,791.0	90.3	135.8	-88.18	-444.5	654.8	4,158.0	3,932.2	225.80	18.415				
11,400.0	6,809.8	6,790.8	6,790.8	92.1	135.8	-88.14	-444.5	654.8	4,257.9	4,030.2	227.68	18.701				
11,500.0	6,809.6	6,790.6	6,790.6	94.0	135.8	-88.09	-444.5	654.8	4,357.7	4,128.1	229.57	18.982				
11,600.0	6,809.4	6,790.4	6,790.4	95.9	135.8	-88.05	-444.5	654.8	4,457.5	4,226.1	231.46	19.258				
11,700.0	6,809.2	6,790.2	6,790.2	97.8	135.8	-88.00	-444.5	654.8	4,557.4	4,324.0	233.35	19.530				
11,800.0	6,809.0	6,790.0	6,790.0	99.7	135.8	-87.96	-444.5	654.8	4,657.2	4,422.0	235.24	19.798				
11,900.0	6,808.8	6,789.8	6,789.8	101.6	135.8	-87.92	-444.5	654.8	4,757.1	4,520.0	237.13	20.061				
12,000.0	6,808.6	6,789.6	6,789.6	103.5	135.8	-87.87	-444.5	654.8	4,856.9	4,617.9	239.02	20.321				
12,100.0	6,808.5	6,789.5	6,789.5	105.4	135.8	-87.83	-444.5	654.8	4,956.8	4,715.9	240.91	20.576				
12,200.0	6,808.3	6,789.3	6,789.3	107.3	135.8	-87.78	-444.5	654.8	5,056.7	4,813.9	242.80	20.827				
12,300.0	6,808.1	6,789.1	6,789.1	109.2	135.8	-87.74	-444.5	654.8	5,156.6	4,911.9	244.69	21.074				
12,400.0	6,807.9	6,788.9	6,788.9	111.1	135.8	-87.70	-444.5	654.8	5,256.4	5,009.9	246.58	21.317				
12,500.0	6,807.7	6,788.7	6,788.7	113.0	135.8	-87.65	-444.5	654.8	5,356.3	5,107.9	248.47	21.557				
12,600.0	6,807.5	6,788.5	6,788.5	114.9	135.8	-87.61	-444.5	654.8	5,456.2	5,205.9	250.37	21.793				
12,700.0	6,807.3	6,788.3	6,788.3	116.8	135.8	-87.57	-444.5	654.8	5,556.1	5,303.9	252.26	22.025				
12,800.0	6,807.1	6,788.1	6,788.1	118.7	135.8	-87.52	-444.5	654.8	5,656.0	5,401.9	254.15	22.254				
12,900.0	6,806.9	6,787.9	6,787.9	120.6	135.8	-87.48	-444.5	654.8	5,755.9	5,499.9	256.05	22.480				
13,000.0	6,806.7	6,787.7	6,787.7	122.5	135.8	-87.43	-444.5	654.8	5,855.8	5,597.9	257.94	22.702				
13,100.0	6,806.5	6,787.5	6,787.5	124.4	135.8	-87.39	-444.5	654.8	5,955.7	5,695.9	259.84	22.921				
13,200.0	6,806.3	6,787.3	6,787.3	126.3	135.7	-87.35	-444.5	654.8	6,055.7	5,793.9	261.73	23.137				
13,300.0	6,806.2	6,787.2	6,787.2	128.2	135.7	-87.30	-444.5	654.8	6,155.6	5,891.9	263.62	23.350				
13,400.0	6,806.0	6,787.0	6,787.0	130.1	135.7	-87.26	-444.5	654.8	6,255.5	5,990.0	265.52	23.560				
13,500.0	6,805.8	6,786.8	6,786.8	132.1	135.7	-87.22	-444.5	654.8	6,355.4	6,088.0	267.41	23.766				
13,600.0	6,805.6	6,786.6	6,786.6	134.0	135.7	-87.17	-444.5	654.8	6,455.3	6,186.0	269.31	23.970				
13,700.0	6,805.4	6,786.4	6,786.4	135.9	135.7	-87.13	-444.5	654.8	6,555.3	6,284.1	271.20	24.171				
13,800.0	6,805.2	6,786.2	6,786.2	137.8	135.7	-87.08	-444.5	654.8	6,655.2	6,382.1	273.10	24.369				
13,900.0	6,805.0	6,786.0	6,786.0	139.7	135.7	-87.04	-444.5	654.8	6,755.1	6,480.1	274.99	24.565				
13,900.2	6,805.0	6,786.0	6,786.0	139.7	135.7	-87.04	-444.5	654.8	6,755.3	6,480.3	275.00	24.565				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													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	2.0	2.0	0.0	0.0	160.80	-1,792.4	624.1	1,898.0	1,897.9	0.04	N/A		
100.0	100.0	102.0	102.0	0.1	2.0	160.80	-1,792.4	624.1	1,898.0	1,895.8	2.15	881.711		
200.0	200.0	202.0	202.0	0.3	4.0	160.80	-1,792.4	624.1	1,898.0	1,893.6	4.38	433.586		
300.0	300.0	302.0	302.0	0.6	6.0	160.80	-1,792.4	624.1	1,898.0	1,891.4	6.60	287.477		
400.0	400.0	402.0	402.0	0.8	8.0	160.80	-1,792.4	624.1	1,898.0	1,889.1	8.83	215.020		
500.0	500.0	502.0	502.0	1.0	10.0	160.80	-1,792.4	624.1	1,898.0	1,886.9	11.05	171.735		
600.0	600.0	602.0	602.0	1.2	12.0	160.80	-1,792.4	624.1	1,898.0	1,884.7	13.28	142.957		
700.0	700.0	702.0	702.0	1.5	14.0	160.80	-1,792.4	624.1	1,898.0	1,882.5	15.50	122.439		
800.0	800.0	802.0	802.0	1.7	16.0	160.80	-1,792.4	624.1	1,898.0	1,880.2	17.73	107.072		
900.0	900.0	902.0	902.0	1.9	18.0	160.80	-1,792.4	624.1	1,898.0	1,878.0	19.95	95.132		
1,000.0	1,000.0	1,002.0	1,002.0	2.1	20.0	160.80	-1,792.4	624.1	1,898.0	1,875.8	22.18	85.588		
1,100.0	1,100.0	1,102.0	1,102.0	2.4	22.0	160.80	-1,792.4	624.1	1,898.0	1,873.6	24.40	77.784		
1,200.0	1,200.0	1,202.0	1,202.0	2.6	24.0	160.80	-1,792.4	624.1	1,898.0	1,871.3	26.62	71.285		
1,300.0	1,300.0	1,302.0	1,302.0	2.8	26.0	160.80	-1,792.4	624.1	1,898.0	1,869.1	28.85	65.788		
1,400.0	1,400.0	1,402.0	1,402.0	3.0	28.0	160.80	-1,792.4	624.1	1,898.0	1,866.9	31.07	61.078		
1,500.0	1,500.0	1,502.0	1,502.0	3.3	30.0	160.80	-1,792.4	624.1	1,898.0	1,864.7	33.30	56.997		
1,600.0	1,600.0	1,602.0	1,602.0	3.5	32.0	97.18	-1,792.4	624.1	1,898.2	1,862.7	35.52	53.445		
1,700.0	1,699.8	1,701.8	1,701.8	3.7	34.0	97.32	-1,792.4	624.1	1,898.8	1,861.1	37.73	50.332		
1,800.0	1,799.5	1,801.5	1,801.5	3.9	36.0	97.56	-1,792.4	624.1	1,900.0	1,860.0	39.94	47.572		
1,900.0	1,898.8	1,900.8	1,900.8	4.1	38.0	97.89	-1,792.4	624.1	1,901.5	1,859.3	42.16	45.102		
2,000.0	1,998.2	2,000.2	2,000.2	4.4	40.0	98.22	-1,792.4	624.1	1,903.1	1,858.7	44.39	42.872		
2,100.0	2,097.6	2,099.6	2,099.6	4.6	42.0	98.55	-1,792.4	624.1	1,904.7	1,858.1	46.63	40.850		
2,200.0	2,196.9	2,198.9	2,198.9	4.9	44.0	98.89	-1,792.4	624.1	1,906.4	1,857.6	48.87	39.010		
2,300.0	2,296.3	2,298.3	2,298.3	5.2	46.0	99.22	-1,792.4	624.1	1,908.2	1,857.1	51.12	37.328		
2,400.0	2,395.6	2,397.6	2,397.6	5.4	48.0	99.55	-1,792.4	624.1	1,910.1	1,856.7	53.37	35.787		
2,500.0	2,495.0	2,497.0	2,497.0	5.7	49.9	99.88	-1,792.4	624.1	1,912.0	1,856.4	55.63	34.369		
2,600.0	2,594.4	2,596.4	2,596.4	6.0	51.9	100.21	-1,792.4	624.1	1,914.0	1,856.1	57.89	33.061		
2,700.0	2,693.7	2,695.7	2,695.7	6.3	53.9	100.54	-1,792.4	624.1	1,916.0	1,855.8	60.15	31.851		
2,800.0	2,793.1	2,795.1	2,795.1	6.5	55.9	100.87	-1,792.4	624.1	1,918.1	1,855.7	62.42	30.729		
2,900.0	2,892.5	2,894.5	2,894.5	6.8	57.9	101.20	-1,792.4	624.1	1,920.3	1,855.6	64.69	29.685		
3,000.0	2,991.8	2,993.8	2,993.8	7.1	59.9	101.52	-1,792.4	624.1	1,922.5	1,855.6	66.96	28.713		
3,100.0	3,091.2	3,093.2	3,093.2	7.4	61.9	101.85	-1,792.4	624.1	1,924.8	1,855.6	69.23	27.804		
3,200.0	3,190.5	3,192.5	3,192.5	7.7	63.9	102.18	-1,792.4	624.1	1,927.2	1,855.7	71.50	26.954		
3,300.0	3,289.9	3,291.9	3,291.9	8.0	65.8	102.50	-1,792.4	624.1	1,929.6	1,855.8	73.77	26.156		
3,400.0	3,389.3	3,391.3	3,391.3	8.3	67.8	102.83	-1,792.4	624.1	1,932.1	1,856.0	76.05	25.407		
3,500.0	3,488.6	3,490.6	3,490.6	8.6	69.8	103.15	-1,792.4	624.1	1,934.6	1,856.3	78.32	24.701		
3,600.0	3,588.0	3,590.0	3,590.0	8.8	71.8	103.47	-1,792.4	624.1	1,937.2	1,856.6	80.60	24.036		
3,700.0	3,687.4	3,689.4	3,689.4	9.1	73.8	103.79	-1,792.4	624.1	1,939.9	1,857.0	82.87	23.408		
3,800.0	3,786.7	3,788.7	3,788.7	9.4	75.8	104.11	-1,792.4	624.1	1,942.6	1,857.5	85.15	22.815		
3,900.0	3,886.1	3,888.1	3,888.1	9.7	77.8	104.43	-1,792.4	624.1	1,945.4	1,858.0	87.43	22.252		
4,000.0	3,985.5	3,987.5	3,987.5	10.0	79.7	104.75	-1,792.4	624.1	1,948.3	1,858.6	89.70	21.719		
4,100.0	4,084.8	4,086.8	4,086.8	10.3	81.7	105.07	-1,792.4	624.1	1,951.2	1,859.2	91.98	21.213		
4,200.0	4,184.2	4,186.2	4,186.2	10.6	83.7	105.39	-1,792.4	624.1	1,954.2	1,859.9	94.26	20.733		
4,300.0	4,283.5	4,285.5	4,285.5	10.9	85.7	105.71	-1,792.4	624.1	1,957.2	1,860.7	96.53	20.275		
4,400.0	4,382.9	4,384.9	4,384.9	11.2	87.7	106.02	-1,792.4	624.1	1,960.3	1,861.5	98.81	19.839		
4,500.0	4,482.3	4,484.3	4,484.3	11.5	89.7	106.33	-1,792.4	624.1	1,963.5	1,862.4	101.09	19.423		
4,600.0	4,581.6	4,583.6	4,583.6	11.8	91.7	106.65	-1,792.4	624.1	1,966.7	1,863.3	103.37	19.026		
4,700.0	4,681.0	4,683.0	4,683.0	12.1	93.7	106.96	-1,792.4	624.1	1,970.0	1,864.3	105.64	18.647		
4,800.0	4,780.4	4,782.4	4,782.4	12.4	95.6	107.27	-1,792.4	624.1	1,973.3	1,865.4	107.92	18.285		
4,900.0	4,879.7	4,881.7	4,881.7	12.7	97.6	107.58	-1,792.4	624.1	1,976.7	1,866.5	110.20	17.938		
5,000.0	4,979.1	4,981.1	4,981.1	13.0	99.6	107.89	-1,792.4	624.1	1,980.2	1,867.7	112.47	17.605		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,078.4	5,080.4	5,080.4	13.3	101.6	108.20		-1,792.4	624.1	1,983.7	1,868.9	114.75	17.287	
5,200.0	5,177.8	5,179.8	5,179.8	13.6	103.6	108.50		-1,792.4	624.1	1,987.2	1,870.2	117.03	16.981	
5,300.0	5,277.2	5,279.2	5,279.2	13.9	105.6	108.81		-1,792.4	624.1	1,990.9	1,871.6	119.30	16.687	
5,400.0	5,376.5	5,378.5	5,378.5	14.2	107.6	109.12		-1,792.4	624.1	1,994.5	1,873.0	121.58	16.405	
5,500.0	5,475.9	5,477.9	5,477.9	14.5	109.6	109.42		-1,792.4	624.1	1,998.3	1,874.4	123.85	16.134	
5,600.0	5,575.4	5,577.4	5,577.4	14.8	111.5	109.74		-1,792.4	624.1	2,001.5	1,875.4	126.13	15.869	
5,700.0	5,675.2	5,677.2	5,677.2	15.0	113.5	109.94		-1,792.4	624.1	2,003.6	1,875.2	128.34	15.612	
5,800.0	5,775.2	5,777.2	5,777.2	15.1	115.5	110.03		-1,792.4	624.1	2,004.5	1,874.0	130.51	15.359	
5,900.0	5,875.2	5,877.2	5,877.2	15.3	117.5	173.70		-1,792.4	624.1	2,004.5	1,871.8	132.68	15.108	
6,000.0	5,975.2	5,977.2	5,977.2	15.5	119.5	173.70		-1,792.4	624.1	2,004.5	1,869.6	134.86	14.863	
6,100.0	6,075.2	6,077.2	6,077.2	15.7	121.5	-6.31		-1,792.4	624.1	2,003.9	1,866.9	136.92	14.636	
6,200.0	6,174.6	6,176.6	6,176.6	15.8	123.5	-6.43		-1,792.4	624.1	1,993.3	1,856.2	137.13	14.536	
6,300.0	6,271.7	6,273.7	6,273.7	15.9	125.5	-6.72		-1,792.4	624.1	1,969.9	1,835.0	134.93	14.599	
6,400.0	6,364.9	6,366.9	6,366.9	15.9	127.3	-7.19		-1,792.4	624.1	1,934.2	1,803.9	130.31	14.843	
6,500.0	6,452.6	6,454.6	6,454.6	16.0	129.1	-7.91		-1,792.4	624.1	1,886.6	1,763.3	123.33	15.298	
6,600.0	6,533.4	6,535.4	6,535.4	16.0	130.7	-8.98		-1,792.4	624.1	1,828.2	1,714.0	114.20	16.009	
6,700.0	6,605.7	6,607.7	6,607.7	16.1	132.2	-10.54		-1,792.4	624.1	1,759.7	1,656.4	103.36	17.025	
6,800.0	6,668.5	6,670.5	6,670.5	16.3	133.4	-12.91		-1,792.4	624.1	1,682.6	1,590.8	91.77	18.335	
6,900.0	6,720.5	6,722.5	6,722.5	16.6	134.5	-16.68		-1,792.4	624.1	1,598.1	1,516.4	81.71	19.557	
7,000.0	6,761.0	6,763.0	6,763.0	17.2	135.3	-23.19		-1,792.4	624.1	1,507.6	1,428.6	79.04	19.074	
7,100.0	6,789.2	6,791.2	6,791.2	17.9	135.8	-35.77		-1,792.4	624.1	1,412.9	1,317.4	95.49	14.796	
7,200.0	6,804.7	6,806.7	6,806.7	18.9	136.1	-58.36		-1,792.4	624.1	1,315.4	1,182.9	132.54	9.925	
7,300.0	6,814.5	6,816.5	6,816.5	20.0	136.3	-68.61		-1,792.4	624.1	1,217.4	1,072.0	145.46	8.370	
7,400.0	6,817.5	6,819.5	6,819.5	21.2	136.4	-90.55		-1,792.4	624.1	1,119.3	962.6	156.75	7.141	
7,500.0	6,817.3	6,819.3	6,819.3	22.5	136.4	-90.50		-1,792.4	624.1	1,021.4	863.3	158.10	6.461	
7,600.0	6,817.1	6,819.1	6,819.1	23.9	136.4	-90.45		-1,792.4	624.1	924.0	764.5	159.53	5.792	
7,700.0	6,816.9	6,818.9	6,818.9	25.4	136.4	-90.40		-1,792.4	624.1	827.3	666.2	161.03	5.137	
7,800.0	6,816.7	6,818.7	6,818.7	26.9	136.4	-90.35		-1,792.4	624.1	731.3	568.8	162.58	4.498	
7,900.0	6,816.5	6,818.5	6,818.5	28.5	136.4	-90.30		-1,792.4	624.1	636.7	472.5	164.18	3.878	
8,000.0	6,816.3	6,818.3	6,818.3	30.1	136.4	-90.25		-1,792.4	624.1	544.0	378.1	165.82	3.280	
8,100.0	6,816.1	6,818.1	6,818.1	31.7	136.4	-90.20		-1,792.4	624.1	454.3	286.8	167.49	2.712	
8,200.0	6,815.9	6,817.9	6,817.9	33.4	136.4	-90.15		-1,792.4	624.1	370.0	200.8	169.19	2.187	
8,300.0	6,815.8	6,817.8	6,817.8	35.1	136.4	-90.10		-1,792.4	624.1	295.6	124.7	170.91	1.730	
8,400.0	6,815.6	6,817.6	6,817.6	36.8	136.4	-90.05		-1,792.4	624.1	240.7	68.0	172.65	1.394 Level 3	
8,497.4	6,815.4	6,817.4	6,817.4	38.5	136.3	-90.00		-1,792.4	624.1	220.0	45.7	174.36	1.262 Level 3, CC	
8,500.0	6,815.4	6,817.4	6,817.4	38.5	136.3	-90.00		-1,792.4	624.1	220.0	45.6	174.40	1.262 Level 3, ES, SF	
8,600.0	6,815.2	6,817.2	6,817.2	40.3	136.3	-89.95		-1,792.4	624.1	242.8	66.6	176.18	1.378 Level 3	
8,700.0	6,815.0	6,817.0	6,817.0	42.1	136.3	-89.90		-1,792.4	624.1	299.1	121.1	177.96	1.680	
8,800.0	6,814.8	6,816.8	6,816.8	43.8	136.3	-89.85		-1,792.4	624.1	374.1	194.3	179.76	2.081	
8,900.0	6,814.6	6,816.6	6,816.6	45.6	136.3	-89.80		-1,792.4	624.1	458.7	277.2	181.56	2.527	
9,000.0	6,814.4	6,816.4	6,816.4	47.4	136.3	-89.75		-1,792.4	624.1	548.6	365.2	183.38	2.992	
9,100.0	6,814.2	6,816.2	6,816.2	49.3	136.3	-89.70		-1,792.4	624.1	641.5	456.3	185.20	3.464	
9,200.0	6,814.0	6,816.0	6,816.0	51.1	136.3	-89.65		-1,792.4	624.1	736.2	549.2	187.03	3.936	
9,300.0	6,813.8	6,815.8	6,815.8	52.9	136.3	-89.60		-1,792.4	624.1	832.2	643.3	188.86	4.406	
9,400.0	6,813.6	6,815.6	6,815.6	54.7	136.3	-89.55		-1,792.4	624.1	929.0	738.3	190.70	4.871	
9,500.0	6,813.4	6,815.4	6,815.4	56.6	136.3	-89.50		-1,792.4	624.1	1,026.4	833.8	192.55	5.331	
9,600.0	6,813.3	6,815.3	6,815.3	58.4	136.3	-89.45		-1,792.4	624.1	1,124.3	929.9	194.40	5.783	
9,700.0	6,813.1	6,815.1	6,815.1	60.3	136.3	-89.40		-1,792.4	624.1	1,222.5	1,026.2	196.25	6.229	
9,800.0	6,812.9	6,814.9	6,814.9	62.1	136.3	-89.35		-1,792.4	624.1	1,321.0	1,122.9	198.11	6.668	
9,900.0	6,812.7	6,814.7	6,814.7	64.0	136.3	-89.30		-1,792.4	624.1	1,419.7	1,219.7	199.97	7.099	
10,000.0	6,812.5	6,814.5	6,814.5	65.8	136.3	-89.25		-1,792.4	624.1	1,518.6	1,316.7	201.84	7.524	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #								Offset Site Error:		0.0 ft	
Survey Program: 7600-UNKNOWN										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation		Separation Factor
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,100.0	6,812.3	6,814.3	6,814.3	67.7	136.3	-89.20	-1,792.4	624.1	1,617.6	1,413.9	203.70	7.941	
10,200.0	6,812.1	6,814.1	6,814.1	69.6	136.3	-89.15	-1,792.4	624.1	1,716.7	1,511.1	205.57	8.351	
10,300.0	6,811.9	6,813.9	6,813.9	71.4	136.3	-89.10	-1,792.4	624.1	1,815.9	1,608.5	207.45	8.754	
10,400.0	6,811.7	6,813.7	6,813.7	73.3	136.3	-89.05	-1,792.4	624.1	1,915.2	1,705.9	209.32	9.150	
10,500.0	6,811.5	6,813.5	6,813.5	75.2	136.3	-89.00	-1,792.4	624.1	2,014.6	1,803.4	211.19	9.539	
10,600.0	6,811.3	6,813.3	6,813.3	77.1	136.3	-88.95	-1,792.4	624.1	2,114.0	1,900.9	213.07	9.922	
10,700.0	6,811.1	6,813.1	6,813.1	78.9	136.3	-88.90	-1,792.4	624.1	2,213.5	1,998.5	214.95	10.298	
10,800.0	6,811.0	6,813.0	6,813.0	80.8	136.3	-88.85	-1,792.4	624.1	2,313.0	2,096.2	216.83	10.667	
10,900.0	6,810.8	6,812.8	6,812.8	82.7	136.3	-88.80	-1,792.4	624.1	2,412.6	2,193.9	218.71	11.031	
11,000.0	6,810.6	6,812.6	6,812.6	84.6	136.3	-88.75	-1,792.4	624.1	2,512.2	2,291.6	220.60	11.388	
11,100.0	6,810.4	6,812.4	6,812.4	86.5	136.2	-88.70	-1,792.4	624.1	2,611.8	2,389.3	222.48	11.740	
11,200.0	6,810.2	6,812.2	6,812.2	88.4	136.2	-88.65	-1,792.4	624.1	2,711.5	2,487.1	224.37	12.085	
11,300.0	6,810.0	6,812.0	6,812.0	90.3	136.2	-88.60	-1,792.4	624.1	2,811.2	2,584.9	226.25	12.425	
11,400.0	6,809.8	6,811.8	6,811.8	92.1	136.2	-88.55	-1,792.4	624.1	2,910.9	2,682.7	228.14	12.759	
11,500.0	6,809.6	6,811.6	6,811.6	94.0	136.2	-88.50	-1,792.4	624.1	3,010.6	2,780.6	230.03	13.088	
11,600.0	6,809.4	6,811.4	6,811.4	95.9	136.2	-88.45	-1,792.4	624.1	3,110.3	2,878.4	231.92	13.411	
11,700.0	6,809.2	6,811.2	6,811.2	97.8	136.2	-88.40	-1,792.4	624.1	3,210.1	2,976.3	233.81	13.730	
11,800.0	6,809.0	6,811.0	6,811.0	99.7	136.2	-88.35	-1,792.4	624.1	3,309.9	3,074.2	235.70	14.043	
11,900.0	6,808.8	6,810.8	6,810.8	101.6	136.2	-88.30	-1,792.4	624.1	3,409.6	3,172.1	237.59	14.351	
12,000.0	6,808.6	6,810.6	6,810.6	103.5	136.2	-88.25	-1,792.4	624.1	3,509.4	3,270.0	239.48	14.655	
12,100.0	6,808.5	6,810.5	6,810.5	105.4	136.2	-88.20	-1,792.4	624.1	3,609.2	3,367.9	241.37	14.953	
12,200.0	6,808.3	6,810.3	6,810.3	107.3	136.2	-88.15	-1,792.4	624.1	3,709.1	3,465.8	243.26	15.247	
12,300.0	6,808.1	6,810.1	6,810.1	109.2	136.2	-88.10	-1,792.4	624.1	3,808.9	3,563.7	245.15	15.537	
12,400.0	6,807.9	6,809.9	6,809.9	111.1	136.2	-88.05	-1,792.4	624.1	3,908.7	3,661.7	247.05	15.822	
12,500.0	6,807.7	6,809.7	6,809.7	113.0	136.2	-88.00	-1,792.4	624.1	4,008.6	3,759.6	248.94	16.103	
12,600.0	6,807.5	6,809.5	6,809.5	114.9	136.2	-87.95	-1,792.4	624.1	4,108.4	3,857.6	250.83	16.379	
12,700.0	6,807.3	6,809.3	6,809.3	116.8	136.2	-87.90	-1,792.4	624.1	4,208.3	3,955.6	252.73	16.652	
12,800.0	6,807.1	6,809.1	6,809.1	118.7	136.2	-87.85	-1,792.4	624.1	4,308.2	4,053.5	254.62	16.920	
12,900.0	6,806.9	6,808.9	6,808.9	120.6	136.2	-87.80	-1,792.4	624.1	4,408.0	4,151.5	256.51	17.184	
13,000.0	6,806.7	6,808.7	6,808.7	122.5	136.2	-87.75	-1,792.4	624.1	4,507.9	4,249.5	258.41	17.445	
13,100.0	6,806.5	6,808.5	6,808.5	124.4	136.2	-87.70	-1,792.4	624.1	4,607.8	4,347.5	260.30	17.702	
13,200.0	6,806.3	6,808.3	6,808.3	126.3	136.2	-87.65	-1,792.4	624.1	4,707.7	4,445.5	262.20	17.955	
13,300.0	6,806.2	6,808.2	6,808.2	128.2	136.2	-87.60	-1,792.4	624.1	4,807.6	4,543.5	264.09	18.204	
13,400.0	6,806.0	6,808.0	6,808.0	130.1	136.2	-87.55	-1,792.4	624.1	4,907.5	4,641.5	265.99	18.450	
13,500.0	6,805.8	6,807.8	6,807.8	132.1	136.2	-87.50	-1,792.4	624.1	5,007.4	4,739.5	267.88	18.692	
13,600.0	6,805.6	6,807.6	6,807.6	134.0	136.2	-87.45	-1,792.4	624.1	5,107.3	4,837.5	269.78	18.931	
13,700.0	6,805.4	6,807.4	6,807.4	135.9	136.1	-87.40	-1,792.4	624.1	5,207.2	4,935.5	271.67	19.167	
13,800.0	6,805.2	6,807.2	6,807.2	137.8	136.1	-87.35	-1,792.4	624.1	5,307.1	5,033.5	273.57	19.400	
13,900.0	6,805.0	6,807.0	6,807.0	139.7	136.1	-87.30	-1,792.4	624.1	5,407.0	5,131.5	275.46	19.629	
13,900.2	6,805.0	6,807.0	6,807.0	139.7	136.1	-87.30	-1,792.4	624.1	5,407.2	5,131.7	275.47	19.629	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-2 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	125.46	125.46	-444.4	624.1	766.4				
100.0	100.0	81.0	81.0	0.1	1.6	125.46	125.46	-444.4	624.1	766.2	764.5	1.73	442.225	
200.0	200.0	181.0	181.0	0.3	3.6	125.46	125.46	-444.4	624.1	766.2	762.2	3.96	193.612	
300.0	300.0	281.0	281.0	0.6	5.6	125.46	125.46	-444.4	624.1	766.2	760.0	6.18	123.937	
400.0	400.0	381.0	381.0	0.8	7.6	125.46	125.46	-444.4	624.1	766.2	757.8	8.41	91.139	
500.0	500.0	481.0	481.0	1.0	9.6	125.46	125.46	-444.4	624.1	766.2	755.6	10.63	72.067	
600.0	600.0	581.0	581.0	1.2	11.6	125.46	125.46	-444.4	624.1	766.2	753.3	12.86	59.596	
700.0	700.0	681.0	681.0	1.5	13.6	125.46	125.46	-444.4	624.1	766.2	751.1	15.08	50.804	
800.0	800.0	781.0	781.0	1.7	15.6	125.46	125.46	-444.4	624.1	766.2	748.9	17.31	44.273	
900.0	900.0	881.0	881.0	1.9	17.6	125.46	125.46	-444.4	624.1	766.2	746.7	19.53	39.230	
1,000.0	1,000.0	981.0	981.0	2.1	19.6	125.46	125.46	-444.4	624.1	766.2	744.4	21.76	35.218	
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	125.46	125.46	-444.4	624.1	766.2	742.2	23.98	31.951	
1,200.0	1,200.0	1,181.0	1,181.0	2.6	23.6	125.46	125.46	-444.4	624.1	766.2	740.0	26.20	29.238	
1,300.0	1,300.0	1,281.0	1,281.0	2.8	25.6	125.46	125.46	-444.4	624.1	766.2	737.8	28.43	26.950	
1,400.0	1,400.0	1,381.0	1,381.0	3.0	27.6	125.46	125.46	-444.4	624.1	766.2	735.5	30.65	24.994	
1,500.0	1,500.0	1,481.0	1,481.0	3.3	29.6	125.46	125.46	-444.4	624.1	766.2	733.3	32.88	23.303	
1,600.0	1,600.0	1,581.0	1,581.0	3.5	31.6	61.92	61.92	-444.4	624.1	765.4	730.3	35.09	21.811	
1,700.0	1,699.8	1,680.8	1,680.8	3.7	33.6	62.31	62.31	-444.4	624.1	762.9	725.6	37.29	20.462	
1,800.0	1,799.5	1,780.5	1,780.5	3.9	35.6	62.96	62.96	-444.4	624.1	758.9	719.4	39.47	19.227	
1,900.0	1,898.8	1,879.8	1,879.8	4.1	37.6	63.73	63.73	-444.4	624.1	753.9	712.2	41.68	18.087	
2,000.0	1,998.2	1,979.2	1,979.2	4.4	39.6	64.50	64.50	-444.4	624.1	748.9	705.0	43.90	17.058	
2,100.0	2,097.6	2,078.6	2,078.6	4.6	41.6	65.28	65.28	-444.4	624.1	744.1	698.0	46.13	16.129	
2,200.0	2,196.9	2,177.9	2,177.9	4.9	43.6	66.07	66.07	-444.4	624.1	739.4	691.1	48.37	15.286	
2,300.0	2,296.3	2,277.3	2,277.3	5.2	45.5	66.87	66.87	-444.4	624.1	734.9	684.3	50.62	14.519	
2,400.0	2,395.6	2,376.6	2,376.6	5.4	47.5	67.68	67.68	-444.4	624.1	730.5	677.7	52.87	13.819	
2,500.0	2,495.0	2,476.0	2,476.0	5.7	49.5	68.49	68.49	-444.4	624.1	726.3	671.2	55.12	13.177	
2,600.0	2,594.4	2,575.4	2,575.4	6.0	51.5	69.32	69.32	-444.4	624.1	722.2	664.9	57.38	12.587	
2,700.0	2,693.7	2,674.7	2,674.7	6.3	53.5	70.16	70.16	-444.4	624.1	718.3	658.7	59.64	12.044	
2,800.0	2,793.1	2,774.1	2,774.1	6.5	55.5	71.00	71.00	-444.4	624.1	714.5	652.6	61.91	11.542	
2,900.0	2,892.5	2,873.5	2,873.5	6.8	57.5	71.86	71.86	-444.4	624.1	710.9	646.8	64.18	11.077	
3,000.0	2,991.8	2,972.8	2,972.8	7.1	59.5	72.72	72.72	-444.4	624.1	707.5	641.0	66.45	10.646	
3,100.0	3,091.2	3,072.2	3,072.2	7.4	61.4	73.59	73.59	-444.4	624.1	704.2	635.5	68.73	10.246	
3,200.0	3,190.5	3,171.5	3,171.5	7.7	63.4	74.47	74.47	-444.4	624.1	701.1	630.1	71.01	9.873	
3,300.0	3,289.9	3,270.9	3,270.9	8.0	65.4	75.35	75.35	-444.4	624.1	698.1	624.8	73.29	9.526	
3,400.0	3,389.3	3,370.3	3,370.3	8.3	67.4	76.24	76.24	-444.4	624.1	695.4	619.8	75.57	9.201	
3,500.0	3,488.6	3,469.6	3,469.6	8.6	69.4	77.14	77.14	-444.4	624.1	692.7	614.9	77.85	8.898	
3,600.0	3,588.0	3,569.0	3,569.0	8.8	71.4	78.05	78.05	-444.4	624.1	690.3	610.2	80.14	8.614	
3,700.0	3,687.4	3,668.4	3,668.4	9.1	73.4	78.96	78.96	-444.4	624.1	688.0	605.6	82.43	8.347	
3,800.0	3,786.7	3,767.7	3,767.7	9.4	75.4	79.88	79.88	-444.4	624.1	686.0	601.2	84.72	8.097	
3,900.0	3,886.1	3,867.1	3,867.1	9.7	77.3	80.80	80.80	-444.4	624.1	684.1	597.1	87.01	7.862	
4,000.0	3,985.5	3,966.5	3,966.5	10.0	79.3	81.73	81.73	-444.4	624.1	682.3	593.0	89.30	7.641	
4,100.0	4,084.8	4,065.8	4,065.8	10.3	81.3	82.67	82.67	-444.4	624.1	680.8	589.2	91.59	7.433	
4,200.0	4,184.2	4,165.2	4,165.2	10.6	83.3	83.60	83.60	-444.4	624.1	679.4	585.6	93.88	7.237	
4,300.0	4,283.5	4,264.5	4,264.5	10.9	85.3	84.54	84.54	-444.4	624.1	678.3	582.1	96.17	7.053	
4,400.0	4,382.9	4,363.9	4,363.9	11.2	87.3	85.48	85.48	-444.4	624.1	677.3	578.8	98.47	6.878	
4,500.0	4,482.3	4,463.3	4,463.3	11.5	89.3	86.43	86.43	-444.4	624.1	676.5	575.7	100.76	6.714	
4,600.0	4,581.6	4,562.6	4,562.6	11.8	91.3	87.38	87.38	-444.4	624.1	675.9	572.8	103.05	6.559	
4,700.0	4,681.0	4,662.0	4,662.0	12.1	93.2	88.33	88.33	-444.4	624.1	675.5	570.1	105.34	6.412	
4,800.0	4,780.4	4,761.4	4,761.4	12.4	95.2	89.28	89.28	-444.4	624.1	675.2	567.6	107.64	6.273	
4,876.2	4,856.1	4,837.1	4,837.1	12.6	96.7	90.00	90.00	-444.4	624.1	675.2	565.8	109.38	6.173	
4,900.0	4,879.7	4,860.7	4,860.7	12.7	97.2	90.23	90.23	-444.4	624.1	675.2	565.2	109.93	6.142	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-2 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,979.1	4,960.1	4,960.1	13.0	99.2	91.18		-444.4	624.1	675.3	563.1	112.22	6.018	
5,100.0	5,078.4	5,059.4	5,059.4	13.3	101.2	92.13		-444.4	624.1	675.6	561.1	114.51	5.900	
5,200.0	5,177.8	5,158.8	5,158.8	13.6	103.2	93.07		-444.4	624.1	676.1	559.4	116.79	5.789	
5,300.0	5,277.2	5,258.2	5,258.2	13.9	105.2	94.02		-444.4	624.1	676.8	557.8	119.08	5.684	
5,400.0	5,376.5	5,357.5	5,357.5	14.2	107.2	94.96		-444.4	624.1	677.7	556.4	121.37	5.584	
5,500.0	5,475.9	5,456.9	5,456.9	14.5	109.1	95.91		-444.4	624.1	678.8	555.2	123.65	5.490	
5,600.0	5,575.4	5,556.4	5,556.4	14.8	111.1	96.73		-444.4	624.1	679.9	554.0	125.90	5.400	
5,700.0	5,675.2	5,656.2	5,656.2	15.0	113.1	97.25		-444.4	624.1	680.6	552.5	128.09	5.314	
5,800.0	5,775.2	5,756.2	5,756.2	15.1	115.1	97.47		-444.4	624.1	680.9	550.7	130.26	5.228	
5,900.0	5,875.2	5,856.2	5,856.2	15.3	117.1	161.15		-444.4	624.1	681.0	548.5	132.42	5.142	
6,000.0	5,975.2	5,956.2	5,956.2	15.5	119.1	161.15		-444.4	624.1	681.0	546.4	134.60	5.059	
6,100.0	6,075.2	6,056.2	6,056.2	15.7	121.1	-18.88		-444.4	624.1	680.3	543.7	136.67	4.978	
6,200.0	6,174.6	6,155.6	6,155.6	15.8	123.1	-19.43		-444.4	624.1	670.3	533.2	137.08	4.890	
6,300.0	6,271.7	6,252.7	6,252.7	15.9	125.1	-20.71		-444.4	624.1	648.1	512.7	135.39	4.787	
6,400.0	6,364.9	6,345.9	6,345.9	15.9	126.9	-22.91		-444.4	624.1	614.4	482.5	131.86	4.660	
6,500.0	6,452.6	6,433.6	6,433.6	16.0	128.7	-26.35		-444.4	624.1	570.0	442.8	127.15	4.483	
6,600.0	6,533.4	6,514.4	6,514.4	16.0	130.3	-31.54		-444.4	624.1	516.1	393.4	122.79	4.203	
6,700.0	6,605.7	6,586.7	6,586.7	16.1	131.7	-39.22		-444.4	624.1	454.7	333.2	121.57	3.741	
6,800.0	6,668.5	6,649.5	6,649.5	16.3	133.0	-50.05		-444.4	624.1	388.5	261.7	126.78	3.064	
6,900.0	6,720.5	6,701.5	6,701.5	16.6	134.0	-63.65		-444.4	624.1	321.8	184.0	137.88	2.334	
7,000.0	6,761.0	6,742.0	6,742.0	17.2	134.8	-77.34		-444.4	624.1	262.7	114.8	147.88	1.776	
7,100.0	6,789.2	6,770.2	6,770.2	17.9	135.4	-87.29		-444.4	624.1	225.1	72.9	152.23	1.479	Level 3
7,148.6	6,798.5	6,779.5	6,779.5	18.4	135.6	-90.00		-444.4	624.1	220.0	67.0	153.03	1.438	Level 3, CC, ES, SF
7,200.0	6,804.7	6,785.7	6,785.7	18.9	135.7	-91.39		-444.4	624.1	225.8	72.2	153.61	1.470	Level 3
7,300.0	6,814.5	6,795.5	6,795.5	20.0	135.9	-92.82		-444.4	624.1	266.6	111.8	154.79	1.722	
7,400.0	6,817.5	6,798.5	6,798.5	21.2	136.0	-89.87		-444.4	624.1	333.4	177.0	156.35	2.132	
7,500.0	6,817.3	6,798.3	6,798.3	22.5	136.0	-89.82		-444.4	624.1	413.8	256.1	157.70	2.624	
7,600.0	6,817.1	6,798.1	6,798.1	23.9	136.0	-89.77		-444.4	624.1	501.3	342.2	159.13	3.150	
7,700.0	6,816.9	6,797.9	6,797.9	25.4	136.0	-89.72		-444.4	624.1	592.8	432.2	160.63	3.691	
7,800.0	6,816.7	6,797.7	6,797.7	26.9	136.0	-89.67		-444.4	624.1	686.7	524.5	162.18	4.234	
7,900.0	6,816.5	6,797.5	6,797.5	28.5	136.0	-89.62		-444.4	624.1	782.1	618.3	163.78	4.775	
8,000.0	6,816.3	6,797.3	6,797.3	30.1	135.9	-89.57		-444.4	624.1	878.5	713.1	165.42	5.311	
8,100.0	6,816.1	6,797.1	6,797.1	31.7	135.9	-89.52		-444.4	624.1	975.6	808.5	167.08	5.839	
8,200.0	6,815.9	6,796.9	6,796.9	33.4	135.9	-89.47		-444.4	624.1	1,073.3	904.5	168.78	6.359	
8,300.0	6,815.8	6,796.8	6,796.8	35.1	135.9	-89.42		-444.4	624.1	1,171.3	1,000.8	170.50	6.870	
8,400.0	6,815.6	6,796.6	6,796.6	36.8	135.9	-89.37		-444.4	624.1	1,269.7	1,097.5	172.23	7.372	
8,500.0	6,815.4	6,796.4	6,796.4	38.5	135.9	-89.32		-444.4	624.1	1,368.3	1,194.3	173.99	7.864	
8,600.0	6,815.2	6,796.2	6,796.2	40.3	135.9	-89.27		-444.4	624.1	1,467.1	1,291.3	175.76	8.347	
8,700.0	6,815.0	6,796.0	6,796.0	42.1	135.9	-89.22		-444.4	624.1	1,566.0	1,388.5	177.54	8.821	
8,800.0	6,814.8	6,795.8	6,795.8	43.8	135.9	-89.17		-444.4	624.1	1,665.1	1,485.7	179.34	9.285	
8,900.0	6,814.6	6,795.6	6,795.6	45.6	135.9	-89.12		-444.4	624.1	1,764.3	1,583.1	181.14	9.740	
9,000.0	6,814.4	6,795.4	6,795.4	47.4	135.9	-89.07		-444.4	624.1	1,863.5	1,680.6	182.95	10.186	
9,100.0	6,814.2	6,795.2	6,795.2	49.3	135.9	-89.02		-444.4	624.1	1,962.9	1,778.1	184.77	10.623	
9,200.0	6,814.0	6,795.0	6,795.0	51.1	135.9	-88.97		-444.4	624.1	2,062.3	1,875.7	186.60	11.052	
9,300.0	6,813.8	6,794.8	6,794.8	52.9	135.9	-88.92		-444.4	624.1	2,161.7	1,973.3	188.43	11.472	
9,400.0	6,813.6	6,794.6	6,794.6	54.7	135.9	-88.87		-444.4	624.1	2,261.2	2,070.9	190.27	11.884	
9,500.0	6,813.4	6,794.4	6,794.4	56.6	135.9	-88.82		-444.4	624.1	2,360.8	2,168.6	192.11	12.288	
9,600.0	6,813.3	6,794.3	6,794.3	58.4	135.9	-88.77		-444.4	624.1	2,460.3	2,266.4	193.96	12.685	
9,700.0	6,813.1	6,794.1	6,794.1	60.3	135.9	-88.72		-444.4	624.1	2,560.0	2,364.1	195.81	13.073	
9,800.0	6,812.9	6,793.9	6,793.9	62.1	135.9	-88.68		-444.4	624.1	2,659.6	2,461.9	197.67	13.455	
9,900.0	6,812.7	6,793.7	6,793.7	64.0	135.9	-88.63		-444.4	624.1	2,759.3	2,559.7	199.53	13.829	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28-2 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,812.5	6,793.5	6,793.5	65.8	135.9	-88.58	-88.58	-444.4	624.1	2,859.0	2,657.6	201.39	14.196	
10,100.0	6,812.3	6,793.3	6,793.3	67.7	135.9	-88.53	-88.53	-444.4	624.1	2,958.7	2,755.4	203.26	14.556	
10,200.0	6,812.1	6,793.1	6,793.1	69.6	135.9	-88.48	-88.48	-444.4	624.1	3,058.4	2,853.3	205.12	14.910	
10,300.0	6,811.9	6,792.9	6,792.9	71.4	135.9	-88.43	-88.43	-444.4	624.1	3,158.2	2,951.2	206.99	15.257	
10,400.0	6,811.7	6,792.7	6,792.7	73.3	135.9	-88.38	-88.38	-444.4	624.1	3,257.9	3,049.1	208.86	15.598	
10,500.0	6,811.5	6,792.5	6,792.5	75.2	135.9	-88.33	-88.33	-444.4	624.1	3,357.7	3,147.0	210.74	15.933	
10,600.0	6,811.3	6,792.3	6,792.3	77.1	135.8	-88.28	-88.28	-444.4	624.1	3,457.5	3,244.9	212.61	16.262	
10,700.0	6,811.1	6,792.1	6,792.1	78.9	135.8	-88.23	-88.23	-444.4	624.1	3,557.3	3,342.8	214.49	16.585	
10,800.0	6,811.0	6,792.0	6,792.0	80.8	135.8	-88.18	-88.18	-444.4	624.1	3,657.1	3,440.7	216.36	16.902	
10,900.0	6,810.8	6,791.8	6,791.8	82.7	135.8	-88.13	-88.13	-444.4	624.1	3,756.9	3,538.7	218.24	17.214	
11,000.0	6,810.6	6,791.6	6,791.6	84.6	135.8	-88.08	-88.08	-444.4	624.1	3,856.8	3,636.6	220.12	17.521	
11,100.0	6,810.4	6,791.4	6,791.4	86.5	135.8	-88.03	-88.03	-444.4	624.1	3,956.6	3,734.6	222.01	17.822	
11,200.0	6,810.2	6,791.2	6,791.2	88.4	135.8	-87.98	-87.98	-444.4	624.1	4,056.5	3,832.6	223.89	18.118	
11,300.0	6,810.0	6,791.0	6,791.0	90.3	135.8	-87.93	-87.93	-444.4	624.1	4,156.3	3,930.5	225.77	18.409	
11,400.0	6,809.8	6,790.8	6,790.8	92.1	135.8	-87.88	-87.88	-444.4	624.1	4,256.2	4,028.5	227.66	18.696	
11,500.0	6,809.6	6,790.6	6,790.6	94.0	135.8	-87.83	-87.83	-444.4	624.1	4,356.0	4,126.5	229.54	18.977	
11,600.0	6,809.4	6,790.4	6,790.4	95.9	135.8	-87.78	-87.78	-444.4	624.1	4,455.9	4,224.5	231.43	19.254	
11,700.0	6,809.2	6,790.2	6,790.2	97.8	135.8	-87.73	-87.73	-444.4	624.1	4,555.8	4,322.5	233.31	19.526	
11,800.0	6,809.0	6,790.0	6,790.0	99.7	135.8	-87.68	-87.68	-444.4	624.1	4,655.7	4,420.5	235.20	19.794	
11,900.0	6,808.8	6,789.8	6,789.8	101.6	135.8	-87.63	-87.63	-444.4	624.1	4,755.6	4,518.5	237.09	20.058	
12,000.0	6,808.6	6,789.6	6,789.6	103.5	135.8	-87.58	-87.58	-444.4	624.1	4,855.5	4,616.5	238.98	20.318	
12,100.0	6,808.5	6,789.5	6,789.5	105.4	135.8	-87.53	-87.53	-444.4	624.1	4,955.4	4,714.5	240.87	20.573	
12,200.0	6,808.3	6,789.3	6,789.3	107.3	135.8	-87.48	-87.48	-444.4	624.1	5,055.3	4,812.5	242.75	20.825	
12,300.0	6,808.1	6,789.1	6,789.1	109.2	135.8	-87.43	-87.43	-444.4	624.1	5,155.2	4,910.5	244.64	21.072	
12,400.0	6,807.9	6,788.9	6,788.9	111.1	135.8	-87.38	-87.38	-444.4	624.1	5,255.1	5,008.6	246.53	21.316	
12,500.0	6,807.7	6,788.7	6,788.7	113.0	135.8	-87.33	-87.33	-444.4	624.1	5,355.0	5,106.6	248.42	21.556	
12,600.0	6,807.5	6,788.5	6,788.5	114.9	135.8	-87.28	-87.28	-444.4	624.1	5,454.9	5,204.6	250.31	21.792	
12,700.0	6,807.3	6,788.3	6,788.3	116.8	135.8	-87.23	-87.23	-444.4	624.1	5,554.8	5,302.6	252.20	22.025	
12,800.0	6,807.1	6,788.1	6,788.1	118.7	135.8	-87.18	-87.18	-444.4	624.1	5,654.8	5,400.7	254.10	22.254	
12,900.0	6,806.9	6,787.9	6,787.9	120.6	135.8	-87.13	-87.13	-444.4	624.1	5,754.7	5,498.7	255.99	22.480	
13,000.0	6,806.7	6,787.7	6,787.7	122.5	135.8	-87.08	-87.08	-444.4	624.1	5,854.6	5,596.7	257.88	22.703	
13,100.0	6,806.5	6,787.5	6,787.5	124.4	135.8	-87.03	-87.03	-444.4	624.1	5,954.5	5,694.8	259.77	22.922	
13,200.0	6,806.3	6,787.3	6,787.3	126.3	135.7	-86.98	-86.98	-444.4	624.1	6,054.5	5,792.8	261.66	23.139	
13,300.0	6,806.2	6,787.2	6,787.2	128.2	135.7	-86.93	-86.93	-444.4	624.1	6,154.4	5,890.9	263.55	23.352	
13,400.0	6,806.0	6,787.0	6,787.0	130.1	135.7	-86.88	-86.88	-444.4	624.1	6,254.3	5,988.9	265.44	23.562	
13,500.0	6,805.8	6,786.8	6,786.8	132.1	135.7	-86.83	-86.83	-444.4	624.1	6,354.3	6,087.0	267.33	23.769	
13,600.0	6,805.6	6,786.6	6,786.6	134.0	135.7	-86.78	-86.78	-444.4	624.1	6,454.2	6,185.0	269.23	23.973	
13,700.0	6,805.4	6,786.4	6,786.4	135.9	135.7	-86.73	-86.73	-444.4	624.1	6,554.2	6,283.1	271.12	24.175	
13,800.0	6,805.2	6,786.2	6,786.2	137.8	135.7	-86.68	-86.68	-444.4	624.1	6,654.1	6,381.1	273.01	24.373	
13,900.0	6,805.0	6,786.0	6,786.0	139.7	135.7	-86.63	-86.63	-444.4	624.1	6,754.1	6,479.2	274.90	24.569	
13,900.2	6,805.0	6,786.0	6,786.0	139.7	135.7	-86.63	-86.63	-444.4	624.1	6,754.2	6,479.3	274.90	24.569	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welch B 28-11 (Exist) - Wellbore #1 - Wellbore												Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	172.16	-3,278.8	451.4	3,309.7				
100.0	100.0	93.0	93.0	0.1	1.9	172.16	-3,278.8	451.4	3,309.7	3,307.7	1.97	1,677.858	
200.0	200.0	193.0	193.0	0.3	3.9	172.16	-3,278.8	451.4	3,309.7	3,305.5	4.20	788.525	
300.0	300.0	293.0	293.0	0.6	5.9	172.16	-3,278.8	451.4	3,309.7	3,303.3	6.42	515.362	
400.0	400.0	393.0	393.0	0.8	7.9	172.16	-3,278.8	451.4	3,309.7	3,301.1	8.65	382.764	
500.0	500.0	493.0	493.0	1.0	9.9	172.16	-3,278.8	451.4	3,309.7	3,298.8	10.87	304.435	
600.0	600.0	593.0	593.0	1.2	11.9	172.16	-3,278.8	451.4	3,309.7	3,296.6	13.10	252.719	
700.0	700.0	693.0	693.0	1.5	13.9	172.16	-3,278.8	451.4	3,309.7	3,294.4	15.32	216.022	
800.0	800.0	793.0	793.0	1.7	15.9	172.16	-3,278.8	451.4	3,309.7	3,292.2	17.55	188.631	
900.0	900.0	893.0	893.0	1.9	17.9	172.16	-3,278.8	451.4	3,309.7	3,289.9	19.77	167.405	
1,000.0	1,000.0	993.0	993.0	2.1	19.9	172.16	-3,278.8	451.4	3,309.7	3,287.7	22.00	150.472	
1,100.0	1,100.0	1,093.0	1,093.0	2.4	21.9	172.16	-3,278.8	451.4	3,309.7	3,285.5	24.22	136.651	
1,200.0	1,200.0	1,193.0	1,193.0	2.6	23.9	172.16	-3,278.8	451.4	3,309.7	3,283.3	26.44	125.155	
1,300.0	1,300.0	1,293.0	1,293.0	2.8	25.9	172.16	-3,278.8	451.4	3,309.7	3,281.0	28.67	115.443	
1,400.0	1,400.0	1,393.0	1,393.0	3.0	27.9	172.16	-3,278.8	451.4	3,309.7	3,278.8	30.89	107.129	
1,500.0	1,500.0	1,493.0	1,493.0	3.3	29.9	172.16	-3,278.8	451.4	3,309.7	3,276.6	33.12	99.933	
1,600.0	1,600.0	1,593.0	1,593.0	3.5	31.9	108.51	-3,278.8	451.4	3,310.3	3,274.9	35.33	93.684	
1,700.0	1,699.8	1,692.8	1,692.8	3.7	33.9	108.56	-3,278.8	451.4	3,311.9	3,274.4	37.54	88.227	
1,800.0	1,799.5	1,792.5	1,792.5	3.9	35.8	108.65	-3,278.8	451.4	3,314.7	3,275.0	39.74	83.408	
1,900.0	1,898.8	1,891.8	1,891.8	4.1	37.8	108.82	-3,278.8	451.4	3,318.3	3,276.4	41.96	79.088	
2,000.0	1,998.2	1,991.2	1,991.2	4.4	39.8	109.00	-3,278.8	451.4	3,322.0	3,277.8	44.19	75.184	
2,100.0	2,097.6	2,090.6	2,090.6	4.6	41.8	109.19	-3,278.8	451.4	3,325.7	3,279.3	46.42	71.644	
2,200.0	2,196.9	2,189.9	2,189.9	4.9	43.8	109.37	-3,278.8	451.4	3,329.4	3,280.8	48.66	68.422	
2,300.0	2,296.3	2,289.3	2,289.3	5.2	45.8	109.55	-3,278.8	451.4	3,333.2	3,282.3	50.91	65.478	
2,400.0	2,395.6	2,388.6	2,388.6	5.4	47.8	109.73	-3,278.8	451.4	3,337.0	3,283.9	53.16	62.779	
2,500.0	2,495.0	2,488.0	2,488.0	5.7	49.8	109.91	-3,278.8	451.4	3,340.9	3,285.5	55.41	60.295	
2,600.0	2,594.4	2,587.4	2,587.4	6.0	51.7	110.09	-3,278.8	451.4	3,344.8	3,287.1	57.66	58.003	
2,700.0	2,693.7	2,686.7	2,686.7	6.3	53.7	110.27	-3,278.8	451.4	3,348.7	3,288.7	59.92	55.882	
2,800.0	2,793.1	2,786.1	2,786.1	6.5	55.7	110.45	-3,278.8	451.4	3,352.6	3,290.4	62.18	53.914	
2,900.0	2,892.5	2,885.5	2,885.5	6.8	57.7	110.63	-3,278.8	451.4	3,356.6	3,292.1	64.45	52.083	
3,000.0	2,991.8	2,984.8	2,984.8	7.1	59.7	110.81	-3,278.8	451.4	3,360.6	3,293.9	66.71	50.375	
3,100.0	3,091.2	3,084.2	3,084.2	7.4	61.7	110.99	-3,278.8	451.4	3,364.6	3,295.7	68.98	48.779	
3,200.0	3,190.5	3,183.5	3,183.5	7.7	63.7	111.17	-3,278.8	451.4	3,368.7	3,297.5	71.24	47.284	
3,300.0	3,289.9	3,282.9	3,282.9	8.0	65.7	111.34	-3,278.8	451.4	3,372.8	3,299.3	73.51	45.881	
3,400.0	3,389.3	3,382.3	3,382.3	8.3	67.6	111.52	-3,278.8	451.4	3,377.0	3,301.2	75.78	44.562	
3,500.0	3,488.6	3,481.6	3,481.6	8.6	69.6	111.70	-3,278.8	451.4	3,381.1	3,303.1	78.05	43.320	
3,600.0	3,588.0	3,581.0	3,581.0	8.8	71.6	111.87	-3,278.8	451.4	3,385.3	3,305.0	80.32	42.147	
3,700.0	3,687.4	3,680.4	3,680.4	9.1	73.6	112.05	-3,278.8	451.4	3,389.6	3,307.0	82.59	41.040	
3,800.0	3,786.7	3,779.7	3,779.7	9.4	75.6	112.22	-3,278.8	451.4	3,393.8	3,309.0	84.86	39.992	
3,900.0	3,886.1	3,879.1	3,879.1	9.7	77.6	112.40	-3,278.8	451.4	3,398.1	3,311.0	87.14	38.998	
4,000.0	3,985.5	3,978.5	3,978.5	10.0	79.6	112.57	-3,278.8	451.4	3,402.5	3,313.1	89.41	38.056	
4,100.0	4,084.8	4,077.8	4,077.8	10.3	81.6	112.75	-3,278.8	451.4	3,406.8	3,315.2	91.68	37.160	
4,200.0	4,184.2	4,177.2	4,177.2	10.6	83.5	112.92	-3,278.8	451.4	3,411.2	3,317.3	93.95	36.308	
4,300.0	4,283.5	4,276.5	4,276.5	10.9	85.5	113.09	-3,278.8	451.4	3,415.7	3,319.4	96.23	35.496	
4,400.0	4,382.9	4,375.9	4,375.9	11.2	87.5	113.27	-3,278.8	451.4	3,420.1	3,321.6	98.50	34.722	
4,500.0	4,482.3	4,475.3	4,475.3	11.5	89.5	113.44	-3,278.8	451.4	3,424.6	3,323.8	100.77	33.984	
4,600.0	4,581.6	4,574.6	4,574.6	11.8	91.5	113.61	-3,278.8	451.4	3,429.1	3,326.1	103.05	33.278	
4,700.0	4,681.0	4,674.0	4,674.0	12.1	93.5	113.78	-3,278.8	451.4	3,433.7	3,328.4	105.32	32.603	
4,800.0	4,780.4	4,773.4	4,773.4	12.4	95.5	113.95	-3,278.8	451.4	3,438.3	3,330.7	107.59	31.957	
4,900.0	4,879.7	4,872.7	4,872.7	12.7	97.5	114.12	-3,278.8	451.4	3,442.9	3,333.0	109.87	31.337	
5,000.0	4,979.1	4,972.1	4,972.1	13.0	99.4	114.29	-3,278.8	451.4	3,447.5	3,335.4	112.14	30.744	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welch B 28-11 (Exist) - Wellbore #1 - Wellbore													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,078.4	5,071.4	5,071.4	13.3	101.4	114.46		-3,278.8	451.4	3,452.2	3,337.8	114.41	30.174	
5,200.0	5,177.8	5,170.8	5,170.8	13.6	103.4	114.63		-3,278.8	451.4	3,456.9	3,340.2	116.68	29.626	
5,300.0	5,277.2	5,270.2	5,270.2	13.9	105.4	114.80		-3,278.8	451.4	3,461.6	3,342.7	118.96	29.100	
5,400.0	5,376.5	5,369.5	5,369.5	14.2	107.4	114.97		-3,278.8	451.4	3,466.4	3,345.2	121.23	28.594	
5,500.0	5,475.9	5,468.9	5,468.9	14.5	109.4	115.14		-3,278.8	451.4	3,471.2	3,347.7	123.50	28.106	
5,600.0	5,575.4	5,568.4	5,568.4	14.8	111.4	115.35		-3,278.8	451.4	3,475.3	3,349.5	125.80	27.626	
5,700.0	5,675.2	5,668.2	5,668.2	15.0	113.4	115.49		-3,278.8	451.4	3,477.9	3,349.9	128.02	27.166	
5,800.0	5,775.2	5,768.2	5,768.2	15.1	115.4	115.55		-3,278.8	451.4	3,479.1	3,348.9	130.20	26.720	
5,900.0	5,875.2	5,868.2	5,868.2	15.3	117.4	179.22		-3,278.8	451.4	3,479.1	3,346.7	132.37	26.283	
6,000.0	5,975.2	5,968.2	5,968.2	15.5	119.4	179.22		-3,278.8	451.4	3,479.1	3,344.5	134.56	25.856	
6,100.0	6,075.2	6,068.2	6,068.2	15.7	121.4	-0.78		-3,278.8	451.4	3,478.5	3,341.8	136.61	25.463	
6,200.0	6,174.6	6,167.6	6,167.6	15.8	123.4	-0.79		-3,278.8	451.4	3,467.8	3,331.0	136.80	25.350	
6,300.0	6,271.7	6,264.7	6,264.7	15.9	125.3	-0.82		-3,278.8	451.4	3,444.3	3,309.8	134.55	25.599	
6,400.0	6,364.9	6,357.9	6,357.9	15.9	127.2	-0.88		-3,278.8	451.4	3,408.3	3,278.5	129.82	26.255	
6,500.0	6,452.6	6,445.6	6,445.6	16.0	128.9	-0.95		-3,278.8	451.4	3,360.5	3,237.8	122.63	27.404	
6,600.0	6,533.4	6,526.4	6,526.4	16.0	130.5	-1.07		-3,278.8	451.4	3,301.6	3,188.5	113.07	29.200	
6,700.0	6,605.7	6,598.7	6,598.7	16.1	132.0	-1.24		-3,278.8	451.4	3,232.7	3,131.4	101.31	31.909	
6,800.0	6,668.5	6,661.5	6,661.5	16.3	133.2	-1.49		-3,278.8	451.4	3,154.9	3,067.3	87.61	36.012	
6,900.0	6,720.5	6,713.5	6,713.5	16.6	134.3	-1.90		-3,278.8	451.4	3,069.6	2,997.3	72.32	42.446	
7,000.0	6,761.0	6,754.0	6,754.0	17.2	135.1	-2.64		-3,278.8	451.4	2,978.3	2,922.3	55.98	53.199	
7,100.0	6,789.2	6,782.2	6,782.2	17.9	135.6	-4.29		-3,278.8	451.4	2,882.4	2,842.4	39.96	72.130	
7,200.0	6,804.7	6,797.7	6,797.7	18.9	136.0	-9.24		-3,278.8	451.4	2,783.7	2,748.7	35.01	79.504	
7,300.0	6,814.5	6,807.5	6,807.5	20.0	136.2	-13.76		-3,278.8	451.4	2,684.2	2,640.3	43.85	61.209	
7,400.0	6,817.5	6,810.5	6,810.5	21.2	136.2	-95.99		-3,278.8	451.4	2,584.3	2,428.7	155.61	16.607	
7,500.0	6,817.3	6,810.3	6,810.3	22.5	136.2	-95.76		-3,278.8	451.4	2,484.3	2,327.3	157.02	15.821	
7,600.0	6,817.1	6,810.1	6,810.1	23.9	136.2	-95.53		-3,278.8	451.4	2,384.3	2,225.8	158.51	15.042	
7,700.0	6,816.9	6,809.9	6,809.9	25.4	136.2	-95.30		-3,278.8	451.4	2,284.3	2,124.3	160.07	14.271	
7,800.0	6,816.7	6,809.7	6,809.7	26.9	136.2	-95.06		-3,278.8	451.4	2,184.4	2,022.7	161.68	13.511	
7,900.0	6,816.5	6,809.5	6,809.5	28.5	136.2	-94.83		-3,278.8	451.4	2,084.4	1,921.1	163.33	12.762	
8,000.0	6,816.3	6,809.3	6,809.3	30.1	136.2	-94.60		-3,278.8	451.4	1,984.4	1,819.4	165.02	12.025	
8,100.0	6,816.1	6,809.1	6,809.1	31.7	136.2	-94.37		-3,278.8	451.4	1,884.4	1,717.7	166.74	11.302	
8,200.0	6,815.9	6,808.9	6,808.9	33.4	136.2	-94.14		-3,278.8	451.4	1,784.5	1,616.0	168.48	10.591	
8,300.0	6,815.8	6,808.8	6,808.8	35.1	136.2	-93.91		-3,278.8	451.4	1,684.5	1,514.3	170.25	9.894	
8,400.0	6,815.6	6,808.6	6,808.6	36.8	136.2	-93.68		-3,278.8	451.4	1,584.6	1,412.5	172.04	9.211	
8,500.0	6,815.4	6,808.4	6,808.4	38.5	136.2	-93.45		-3,278.8	451.4	1,484.6	1,310.8	173.84	8.540	
8,600.0	6,815.2	6,808.2	6,808.2	40.3	136.2	-93.21		-3,278.8	451.4	1,384.7	1,209.0	175.65	7.883	
8,700.0	6,815.0	6,808.0	6,808.0	42.1	136.2	-92.98		-3,278.8	451.4	1,284.7	1,107.2	177.48	7.239	
8,800.0	6,814.8	6,807.8	6,807.8	43.8	136.2	-92.75		-3,278.8	451.4	1,184.8	1,005.5	179.31	6.608	
8,900.0	6,814.6	6,807.6	6,807.6	45.6	136.2	-92.52		-3,278.8	451.4	1,084.9	903.7	181.15	5.989	
9,000.0	6,814.4	6,807.4	6,807.4	47.4	136.1	-92.29		-3,278.8	451.4	985.0	802.0	183.00	5.382	
9,100.0	6,814.2	6,807.2	6,807.2	49.3	136.1	-92.05		-3,278.8	451.4	885.1	700.3	184.85	4.788	
9,200.0	6,814.0	6,807.0	6,807.0	51.1	136.1	-91.82		-3,278.8	451.4	785.3	598.6	186.71	4.206	
9,300.0	6,813.8	6,806.8	6,806.8	52.9	136.1	-91.59		-3,278.8	451.4	685.5	496.9	188.57	3.635	
9,400.0	6,813.6	6,806.6	6,806.6	54.7	136.1	-91.36		-3,278.8	451.4	585.8	395.3	190.44	3.076	
9,500.0	6,813.4	6,806.4	6,806.4	56.6	136.1	-91.12		-3,278.8	451.4	486.2	293.9	192.30	2.528	
9,600.0	6,813.3	6,806.3	6,806.3	58.4	136.1	-90.89		-3,278.8	451.4	386.8	192.6	194.17	1.992	
9,700.0	6,813.1	6,806.1	6,806.1	60.3	136.1	-90.66		-3,278.8	451.4	287.8	91.7	196.04	1.468 Level 3	
9,800.0	6,812.9	6,805.9	6,805.9	62.1	136.1	-90.43		-3,278.8	451.4	189.8	-8.1	197.91	0.959 Level 1	
9,900.0	6,812.7	6,805.7	6,805.7	64.0	136.1	-90.19		-3,278.8	451.4	96.3	-103.5	199.79	0.482 Level 1	
9,983.9	6,812.5	6,805.5	6,805.5	65.5	136.1	-90.00		-3,278.8	451.4	47.3	-154.0	201.36	0.235 Level 1, CC, ES, SF	
10,000.0	6,812.5	6,805.5	6,805.5	65.8	136.1	-89.96		-3,278.8	451.4	50.0	-151.7	201.66	0.248 Level 1	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welch B 28-11 (Exist) - Wellbore #1 - Wellbore													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													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	
10,100.0	6,812.3	6,805.3	6,805.3	67.7	136.1	-89.73	-3,278.8	451.4	125.4	-78.1	203.53	0.616	Level 1	
10,200.0	6,812.1	6,805.1	6,805.1	69.6	136.1	-89.50	-3,278.8	451.4	221.3	15.9	205.40	1.077	Level 2	
10,300.0	6,811.9	6,804.9	6,804.9	71.4	136.1	-89.26	-3,278.8	451.4	319.7	112.4	207.27	1.542		
10,400.0	6,811.7	6,804.7	6,804.7	73.3	136.1	-89.03	-3,278.8	451.4	418.8	209.7	209.14	2.003		
10,500.0	6,811.5	6,804.5	6,804.5	75.2	136.1	-88.80	-3,278.8	451.4	518.3	307.3	211.01	2.456		
10,600.0	6,811.3	6,804.3	6,804.3	77.1	136.1	-88.57	-3,278.8	451.4	618.0	405.1	212.87	2.903		
10,700.0	6,811.1	6,804.1	6,804.1	78.9	136.1	-88.34	-3,278.8	451.4	717.7	503.0	214.74	3.342		
10,800.0	6,811.0	6,804.0	6,804.0	80.8	136.1	-88.10	-3,278.8	451.4	817.5	600.9	216.60	3.774		
10,900.0	6,810.8	6,803.8	6,803.8	82.7	136.1	-87.87	-3,278.8	451.4	917.4	698.9	218.46	4.199		
11,000.0	6,810.6	6,803.6	6,803.6	84.6	136.1	-87.64	-3,278.8	451.4	1,017.2	796.9	220.32	4.617		
11,100.0	6,810.4	6,803.4	6,803.4	86.5	136.1	-87.41	-3,278.8	451.4	1,117.1	895.0	222.17	5.028		
11,200.0	6,810.2	6,803.2	6,803.2	88.4	136.1	-87.17	-3,278.8	451.4	1,217.1	993.0	224.02	5.433		
11,300.0	6,810.0	6,803.0	6,803.0	90.3	136.1	-86.94	-3,278.8	451.4	1,317.0	1,091.1	225.87	5.831		
11,400.0	6,809.8	6,802.8	6,802.8	92.1	136.1	-86.71	-3,278.8	451.4	1,416.9	1,189.2	227.72	6.222		
11,500.0	6,809.6	6,802.6	6,802.6	94.0	136.1	-86.48	-3,278.8	451.4	1,516.9	1,287.3	229.56	6.608		
11,600.0	6,809.4	6,802.4	6,802.4	95.9	136.0	-86.25	-3,278.8	451.4	1,616.8	1,385.4	231.40	6.987		
11,700.0	6,809.2	6,802.2	6,802.2	97.8	136.0	-86.02	-3,278.8	451.4	1,716.8	1,483.6	233.24	7.361		
11,800.0	6,809.0	6,802.0	6,802.0	99.7	136.0	-85.78	-3,278.8	451.4	1,816.8	1,581.7	235.07	7.729		
11,900.0	6,808.8	6,801.8	6,801.8	101.6	136.0	-85.55	-3,278.8	451.4	1,916.7	1,679.8	236.90	8.091		
12,000.0	6,808.6	6,801.6	6,801.6	103.5	136.0	-85.32	-3,278.8	451.4	2,016.7	1,778.0	238.72	8.448		
12,100.0	6,808.5	6,801.5	6,801.5	105.4	136.0	-85.09	-3,278.8	451.4	2,116.7	1,876.1	240.54	8.800		
12,200.0	6,808.3	6,801.3	6,801.3	107.3	136.0	-84.86	-3,278.8	451.4	2,216.6	1,974.3	242.36	9.146		
12,300.0	6,808.1	6,801.1	6,801.1	109.2	136.0	-84.63	-3,278.8	451.4	2,316.6	2,072.4	244.17	9.488		
12,400.0	6,807.9	6,800.9	6,800.9	111.1	136.0	-84.40	-3,278.8	451.4	2,416.6	2,170.6	245.98	9.824		
12,500.0	6,807.7	6,800.7	6,800.7	113.0	136.0	-84.17	-3,278.8	451.4	2,516.6	2,268.8	247.79	10.156		
12,600.0	6,807.5	6,800.5	6,800.5	114.9	136.0	-83.94	-3,278.8	451.4	2,616.6	2,367.0	249.59	10.484		
12,700.0	6,807.3	6,800.3	6,800.3	116.8	136.0	-83.71	-3,278.8	451.4	2,716.6	2,465.2	251.38	10.806		
12,800.0	6,807.1	6,800.1	6,800.1	118.7	136.0	-83.48	-3,278.8	451.4	2,816.5	2,563.4	253.17	11.125		
12,900.0	6,806.9	6,799.9	6,799.9	120.6	136.0	-83.25	-3,278.8	451.4	2,916.5	2,661.6	254.96	11.439		
13,000.0	6,806.7	6,799.7	6,799.7	122.5	136.0	-83.02	-3,278.8	451.4	3,016.5	2,759.8	256.74	11.749		
13,100.0	6,806.5	6,799.5	6,799.5	124.4	136.0	-82.79	-3,278.8	451.4	3,116.5	2,858.0	258.52	12.055		
13,200.0	6,806.3	6,799.3	6,799.3	126.3	136.0	-82.56	-3,278.8	451.4	3,216.5	2,956.2	260.29	12.357		
13,300.0	6,806.2	6,799.2	6,799.2	128.2	136.0	-82.34	-3,278.8	451.4	3,316.5	3,054.4	262.06	12.655		
13,400.0	6,806.0	6,799.0	6,799.0	130.1	136.0	-82.11	-3,278.8	451.4	3,416.5	3,152.6	263.82	12.950		
13,500.0	6,805.8	6,798.8	6,798.8	132.1	136.0	-81.88	-3,278.8	451.4	3,516.5	3,250.9	265.58	13.241		
13,600.0	6,805.6	6,798.6	6,798.6	134.0	136.0	-81.65	-3,278.8	451.4	3,616.4	3,349.1	267.33	13.528		
13,700.0	6,805.4	6,798.4	6,798.4	135.9	136.0	-81.42	-3,278.8	451.4	3,716.4	3,447.4	269.08	13.812		
13,800.0	6,805.2	6,798.2	6,798.2	137.8	136.0	-81.20	-3,278.8	451.4	3,816.4	3,545.6	270.82	14.092		
13,900.0	6,805.0	6,798.0	6,798.0	139.7	136.0	-80.97	-3,278.8	451.4	3,916.4	3,643.9	272.55	14.369		
13,900.2	6,805.0	6,798.0	6,798.0	139.7	136.0	-80.97	-3,278.8	451.4	3,916.6	3,644.1	272.56	14.370		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welsh 1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	171.32	171.32	-4,400.8	671.6	4,451.8				
100.0	100.0	100.0	100.0	0.1	2.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,449.7	2.11	2,107.280	
200.0	200.0	200.0	200.0	0.3	4.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,447.5	4.34	1,026.388	
300.0	300.0	300.0	300.0	0.6	6.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,445.2	6.56	678.410	
400.0	400.0	400.0	400.0	0.8	8.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,443.0	8.79	506.642	
500.0	500.0	500.0	500.0	1.0	10.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,440.8	11.01	404.281	
600.0	600.0	600.0	600.0	1.2	12.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,438.6	13.24	336.330	
700.0	700.0	700.0	700.0	1.5	14.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,436.3	15.46	287.934	
800.0	800.0	800.0	800.0	1.7	16.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,434.1	17.69	251.714	
900.0	900.0	900.0	900.0	1.9	18.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,431.9	19.91	223.588	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	20.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,429.7	22.14	201.116	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	22.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,427.4	24.36	182.749	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	24.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,425.2	26.58	167.455	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	26.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,423.0	28.81	154.524	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	28.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,420.8	31.03	143.447	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	30.0	171.32	171.32	-4,400.8	671.6	4,451.8	4,418.5	33.26	133.851	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	32.0	107.67	107.67	-4,400.8	671.6	4,452.3	4,416.9	35.47	125.507	
1,700.0	1,699.8	1,699.8	1,699.8	3.7	34.0	107.70	107.70	-4,400.8	671.6	4,453.9	4,416.2	37.68	118.205	
1,800.0	1,799.5	1,799.5	1,799.5	3.9	36.0	107.76	107.76	-4,400.8	671.6	4,456.6	4,416.7	39.88	111.742	
1,900.0	1,898.8	1,898.8	1,898.8	4.1	38.0	107.88	107.88	-4,400.8	671.6	4,460.0	4,417.9	42.10	105.939	
2,000.0	1,998.2	1,998.2	1,998.2	4.4	40.0	108.01	108.01	-4,400.8	671.6	4,463.5	4,419.2	44.33	100.692	
2,100.0	2,097.6	2,097.6	2,097.6	4.6	42.0	108.15	108.15	-4,400.8	671.6	4,467.0	4,420.5	46.56	95.934	
2,200.0	2,196.9	2,196.9	2,196.9	4.9	43.9	108.29	108.29	-4,400.8	671.6	4,470.6	4,421.8	48.80	91.601	
2,300.0	2,296.3	2,296.3	2,296.3	5.2	45.9	108.42	108.42	-4,400.8	671.6	4,474.1	4,423.1	51.05	87.641	
2,400.0	2,395.6	2,395.6	2,395.6	5.4	47.9	108.56	108.56	-4,400.8	671.6	4,477.7	4,424.4	53.30	84.008	
2,500.0	2,495.0	2,495.0	2,495.0	5.7	49.9	108.69	108.69	-4,400.8	671.6	4,481.4	4,425.8	55.56	80.665	
2,600.0	2,594.4	2,594.4	2,594.4	6.0	51.9	108.83	108.83	-4,400.8	671.6	4,485.0	4,427.2	57.81	77.578	
2,700.0	2,693.7	2,693.7	2,693.7	6.3	53.9	108.97	108.97	-4,400.8	671.6	4,488.7	4,428.6	60.07	74.721	
2,800.0	2,793.1	2,793.1	2,793.1	6.5	55.9	109.10	109.10	-4,400.8	671.6	4,492.4	4,430.0	62.33	72.069	
2,900.0	2,892.5	2,892.5	2,892.5	6.8	57.8	109.24	109.24	-4,400.8	671.6	4,496.1	4,431.5	64.60	69.601	
3,000.0	2,991.8	2,991.8	2,991.8	7.1	59.8	109.37	109.37	-4,400.8	671.6	4,499.8	4,433.0	66.86	67.298	
3,100.0	3,091.2	3,091.2	3,091.2	7.4	61.8	109.50	109.50	-4,400.8	671.6	4,503.6	4,434.5	69.13	65.145	
3,200.0	3,190.5	3,190.5	3,190.5	7.7	63.8	109.64	109.64	-4,400.8	671.6	4,507.4	4,436.0	71.40	63.129	
3,300.0	3,289.9	3,289.9	3,289.9	8.0	65.8	109.77	109.77	-4,400.8	671.6	4,511.2	4,437.5	73.67	61.236	
3,400.0	3,389.3	3,389.3	3,389.3	8.3	67.8	109.91	109.91	-4,400.8	671.6	4,515.1	4,439.1	75.94	59.455	
3,500.0	3,488.6	3,488.6	3,488.6	8.6	69.8	110.04	110.04	-4,400.8	671.6	4,518.9	4,440.7	78.21	57.778	
3,600.0	3,588.0	3,588.0	3,588.0	8.8	71.8	110.17	110.17	-4,400.8	671.6	4,522.8	4,442.3	80.48	56.195	
3,700.0	3,687.4	3,687.4	3,687.4	9.1	73.7	110.31	110.31	-4,400.8	671.6	4,526.8	4,444.0	82.76	54.699	
3,800.0	3,786.7	3,786.7	3,786.7	9.4	75.7	110.44	110.44	-4,400.8	671.6	4,530.7	4,445.7	85.03	53.283	
3,900.0	3,886.1	3,886.1	3,886.1	9.7	77.7	110.57	110.57	-4,400.8	671.6	4,534.7	4,447.4	87.30	51.941	
4,000.0	3,985.5	3,985.5	3,985.5	10.0	79.7	110.70	110.70	-4,400.8	671.6	4,538.7	4,449.1	89.58	50.666	
4,100.0	4,084.8	4,084.8	4,084.8	10.3	81.7	110.84	110.84	-4,400.8	671.6	4,542.7	4,450.8	91.85	49.455	
4,200.0	4,184.2	4,184.2	4,184.2	10.6	83.7	110.97	110.97	-4,400.8	671.6	4,546.7	4,452.6	94.13	48.303	
4,300.0	4,283.5	4,283.5	4,283.5	10.9	85.7	111.10	111.10	-4,400.8	671.6	4,550.8	4,454.4	96.41	47.205	
4,400.0	4,382.9	4,382.9	4,382.9	11.2	87.7	111.23	111.23	-4,400.8	671.6	4,554.9	4,456.2	98.68	46.158	
4,500.0	4,482.3	4,482.3	4,482.3	11.5	89.6	111.36	111.36	-4,400.8	671.6	4,559.0	4,458.0	100.96	45.158	
4,600.0	4,581.6	4,581.6	4,581.6	11.8	91.6	111.49	111.49	-4,400.8	671.6	4,563.1	4,459.9	103.23	44.202	
4,700.0	4,681.0	4,681.0	4,681.0	12.1	93.6	111.63	111.63	-4,400.8	671.6	4,567.3	4,461.8	105.51	43.288	
4,800.0	4,780.4	4,780.4	4,780.4	12.4	95.6	111.76	111.76	-4,400.8	671.6	4,571.5	4,463.7	107.79	42.413	
4,900.0	4,879.7	4,879.7	4,879.7	12.7	97.6	111.89	111.89	-4,400.8	671.6	4,575.7	4,465.6	110.06	41.574	
5,000.0	4,979.1	4,979.1	4,979.1	13.0	99.6	112.02	112.02	-4,400.8	671.6	4,579.9	4,467.6	112.34	40.769	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welsh 1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance										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		
5,100.0	5,078.4	5,078.4	5,078.4	13.3	101.6	112.15	-4,400.8	671.6	4,584.2	4,469.6	114.62	39.996		
5,200.0	5,177.8	5,177.8	5,177.8	13.6	103.6	112.28	-4,400.8	671.6	4,588.5	4,471.6	116.89	39.254		
5,300.0	5,277.2	5,277.2	5,277.2	13.9	105.5	112.40	-4,400.8	671.6	4,592.8	4,473.6	119.17	38.540		
5,400.0	5,376.5	5,376.5	5,376.5	14.2	107.5	112.53	-4,400.8	671.6	4,597.1	4,475.7	121.45	37.853		
5,500.0	5,475.9	5,475.9	5,475.9	14.5	109.5	112.66	-4,400.8	671.6	4,601.5	4,477.7	123.72	37.192		
5,600.0	5,575.4	5,575.4	5,575.4	14.8	111.5	112.84	-4,400.8	671.6	4,605.2	4,479.2	126.01	36.546		
5,700.0	5,675.2	5,675.2	5,675.2	15.0	113.5	112.95	-4,400.8	671.6	4,607.6	4,479.3	128.23	35.932		
5,800.0	5,775.2	5,775.2	5,775.2	15.1	115.5	113.00	-4,400.8	671.6	4,608.6	4,478.2	130.41	35.340		
5,900.0	5,875.2	5,875.2	5,875.2	15.3	117.5	1176.67	-4,400.8	671.6	4,608.6	4,476.0	132.57	34.763		
6,000.0	5,975.2	5,975.2	5,975.2	15.5	119.5	1176.67	-4,400.8	671.6	4,608.6	4,473.9	134.76	34.199		
6,100.0	6,075.2	6,075.2	6,075.2	15.7	121.5	-3.33	-4,400.8	671.6	4,608.0	4,471.2	136.81	33.681		
6,200.0	6,174.6	6,174.6	6,174.6	15.8	123.5	-3.39	-4,400.8	671.6	4,597.4	4,460.3	137.00	33.556		
6,300.0	6,271.7	6,271.7	6,271.7	15.9	125.4	-3.51	-4,400.8	671.6	4,573.9	4,439.1	134.76	33.940		
6,400.0	6,364.9	6,364.9	6,364.9	15.9	127.3	-3.72	-4,400.8	671.6	4,538.0	4,407.9	130.06	34.893		
6,500.0	6,452.6	6,452.6	6,452.6	16.0	129.1	-4.04	-4,400.8	671.6	4,490.2	4,367.3	122.91	36.533		
6,600.0	6,533.4	6,533.4	6,533.4	16.0	130.7	-4.50	-4,400.8	671.6	4,431.4	4,318.0	113.44	39.064		
6,700.0	6,605.7	6,605.7	6,605.7	16.1	132.1	-5.18	-4,400.8	671.6	4,362.6	4,260.7	101.88	42.822		
6,800.0	6,668.5	6,668.5	6,668.5	16.3	133.4	-6.20	-4,400.8	671.6	4,285.0	4,196.3	88.63	48.347		
6,900.0	6,720.5	6,720.5	6,720.5	16.6	134.4	-7.83	-4,400.8	671.6	4,199.8	4,125.3	74.51	56.365		
7,000.0	6,761.0	6,761.0	6,761.0	17.2	135.2	-10.73	-4,400.8	671.6	4,108.7	4,046.9	61.73	66.554		
7,100.0	6,789.2	6,789.2	6,789.2	17.9	135.8	-16.98	-4,400.8	671.6	4,013.0	3,954.4	58.62	68.452		
7,200.0	6,804.7	6,804.7	6,804.7	18.9	136.1	-33.23	-4,400.8	671.6	3,914.5	3,826.2	88.27	44.349		
7,300.0	6,814.5	6,814.5	6,814.5	20.0	136.3	-44.32	-4,400.8	671.6	3,815.2	3,704.3	110.91	34.400		
7,400.0	6,817.5	6,817.5	6,817.5	21.2	136.3	-91.52	-4,400.8	671.6	3,715.6	3,558.9	156.64	23.721		
7,500.0	6,817.3	6,817.3	6,817.3	22.5	136.3	-91.48	-4,400.8	671.6	3,615.8	3,457.8	157.99	22.887		
7,600.0	6,817.1	6,817.1	6,817.1	23.9	136.3	-91.44	-4,400.8	671.6	3,516.1	3,356.7	159.42	22.055		
7,700.0	6,816.9	6,816.9	6,816.9	25.4	136.3	-91.40	-4,400.8	671.6	3,416.4	3,255.5	160.92	21.230		
7,800.0	6,816.7	6,816.7	6,816.7	26.9	136.3	-91.36	-4,400.8	671.6	3,316.7	3,154.2	162.48	20.413		
7,900.0	6,816.5	6,816.5	6,816.5	28.5	136.3	-91.32	-4,400.8	671.6	3,217.1	3,053.0	164.08	19.607		
8,000.0	6,816.3	6,816.3	6,816.3	30.1	136.3	-91.28	-4,400.8	671.6	3,117.4	2,951.7	165.72	18.812		
8,100.0	6,816.1	6,816.1	6,816.1	31.7	136.3	-91.24	-4,400.8	671.6	3,017.8	2,850.4	167.39	18.029		
8,200.0	6,815.9	6,815.9	6,815.9	33.4	136.3	-91.19	-4,400.8	671.6	2,918.2	2,749.1	169.09	17.259		
8,300.0	6,815.8	6,815.8	6,815.8	35.1	136.3	-91.15	-4,400.8	671.6	2,818.6	2,647.8	170.81	16.502		
8,400.0	6,815.6	6,815.6	6,815.6	36.8	136.3	-91.11	-4,400.8	671.6	2,719.1	2,546.6	172.55	15.758		
8,500.0	6,815.4	6,815.4	6,815.4	38.5	136.3	-91.07	-4,400.8	671.6	2,619.6	2,445.3	174.31	15.029		
8,600.0	6,815.2	6,815.2	6,815.2	40.3	136.3	-91.03	-4,400.8	671.6	2,520.2	2,344.1	176.08	14.312		
8,700.0	6,815.0	6,815.0	6,815.0	42.1	136.3	-90.99	-4,400.8	671.6	2,420.7	2,242.9	177.87	13.610		
8,800.0	6,814.8	6,814.8	6,814.8	43.8	136.3	-90.95	-4,400.8	671.6	2,321.4	2,141.7	179.67	12.920		
8,900.0	6,814.6	6,814.6	6,814.6	45.6	136.3	-90.91	-4,400.8	671.6	2,222.1	2,040.6	181.48	12.245		
9,000.0	6,814.4	6,814.4	6,814.4	47.4	136.3	-90.87	-4,400.8	671.6	2,122.8	1,939.5	183.29	11.582		
9,100.0	6,814.2	6,814.2	6,814.2	49.3	136.3	-90.82	-4,400.8	671.6	2,023.7	1,838.6	185.12	10.932		
9,200.0	6,814.0	6,814.0	6,814.0	51.1	136.3	-90.78	-4,400.8	671.6	1,924.6	1,737.7	186.95	10.295		
9,300.0	6,813.8	6,813.8	6,813.8	52.9	136.3	-90.74	-4,400.8	671.6	1,825.6	1,636.8	188.79	9.670		
9,400.0	6,813.6	6,813.6	6,813.6	54.7	136.3	-90.70	-4,400.8	671.6	1,726.8	1,536.1	190.63	9.058		
9,500.0	6,813.4	6,813.4	6,813.4	56.6	136.3	-90.66	-4,400.8	671.6	1,628.0	1,435.6	192.48	8.458		
9,600.0	6,813.3	6,813.3	6,813.3	58.4	136.3	-90.62	-4,400.8	671.6	1,529.5	1,335.2	194.33	7.871		
9,700.0	6,813.1	6,813.1	6,813.1	60.3	136.3	-90.58	-4,400.8	671.6	1,431.1	1,235.0	196.19	7.295		
9,800.0	6,812.9	6,812.9	6,812.9	62.1	136.3	-90.54	-4,400.8	671.6	1,333.0	1,135.0	198.05	6.731		
9,900.0	6,812.7	6,812.7	6,812.7	64.0	136.3	-90.50	-4,400.8	671.6	1,235.2	1,035.3	199.91	6.179		
10,000.0	6,812.5	6,812.5	6,812.5	65.8	136.2	-90.45	-4,400.8	671.6	1,137.8	936.0	201.78	5.639		
10,100.0	6,812.3	6,812.3	6,812.3	67.7	136.2	-90.41	-4,400.8	671.6	1,040.9	837.2	203.65	5.111		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Welsh 1 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,200.0	6,812.1	6,812.1	6,812.1	69.6	136.2	-90.37	-4,400.8	671.6	944.6	739.1	205.52	4.596		
10,300.0	6,811.9	6,811.9	6,811.9	71.4	136.2	-90.33	-4,400.8	671.6	849.2	641.8	207.40	4.094		
10,400.0	6,811.7	6,811.7	6,811.7	73.3	136.2	-90.29	-4,400.8	671.6	754.9	545.6	209.28	3.607		
10,500.0	6,811.5	6,811.5	6,811.5	75.2	136.2	-90.25	-4,400.8	671.6	662.3	451.2	211.15	3.137		
10,600.0	6,811.3	6,811.3	6,811.3	77.1	136.2	-90.21	-4,400.8	671.6	572.3	359.2	213.04	2.686		
10,700.0	6,811.1	6,811.1	6,811.1	78.9	136.2	-90.17	-4,400.8	671.6	486.1	271.2	214.92	2.262		
10,800.0	6,811.0	6,811.0	6,811.0	80.8	136.2	-90.13	-4,400.8	671.6	406.4	189.6	216.80	1.874		
10,900.0	6,810.8	6,810.8	6,810.8	82.7	136.2	-90.08	-4,400.8	671.6	337.6	118.9	218.69	1.544		
11,000.0	6,810.6	6,810.6	6,810.6	84.6	136.2	-90.04	-4,400.8	671.6	287.7	67.1	220.58	1.304 Level 3		
11,100.0	6,810.4	6,810.4	6,810.4	86.5	136.2	-90.00	-4,400.8	671.6	267.5	45.1	222.46	1.203 Level 2		
11,105.9	6,810.4	6,810.4	6,810.4	86.6	136.2	-90.00	-4,400.8	671.6	267.5	44.9	222.58	1.202 Level 2, CC, ES, SF		
11,200.0	6,810.2	6,810.2	6,810.2	88.4	136.2	-89.96	-4,400.8	671.6	283.5	59.2	224.35	1.264 Level 3		
11,300.0	6,810.0	6,810.0	6,810.0	90.3	136.2	-89.92	-4,400.8	671.6	330.5	104.2	226.25	1.461 Level 3		
11,400.0	6,809.8	6,809.8	6,809.8	92.1	136.2	-89.88	-4,400.8	671.6	397.5	169.4	228.14	1.742		
11,500.0	6,809.6	6,809.6	6,809.6	94.0	136.2	-89.84	-4,400.8	671.6	476.3	246.2	230.03	2.070		
11,600.0	6,809.4	6,809.4	6,809.4	95.9	136.2	-89.80	-4,400.8	671.6	561.8	329.9	231.92	2.422		
11,700.0	6,809.2	6,809.2	6,809.2	97.8	136.2	-89.76	-4,400.8	671.6	651.5	417.7	233.82	2.786		
11,800.0	6,809.0	6,809.0	6,809.0	99.7	136.2	-89.71	-4,400.8	671.6	743.8	508.1	235.71	3.156		
11,900.0	6,808.8	6,808.8	6,808.8	101.6	136.2	-89.67	-4,400.8	671.6	837.9	600.3	237.61	3.526		
12,000.0	6,808.6	6,808.6	6,808.6	103.5	136.2	-89.63	-4,400.8	671.6	933.2	693.7	239.51	3.896		
12,100.0	6,808.5	6,808.5	6,808.5	105.4	136.2	-89.59	-4,400.8	671.6	1,029.4	788.0	241.40	4.264		
12,200.0	6,808.3	6,808.3	6,808.3	107.3	136.2	-89.55	-4,400.8	671.6	1,126.3	883.0	243.30	4.629		
12,300.0	6,808.1	6,808.1	6,808.1	109.2	136.2	-89.51	-4,400.8	671.6	1,223.7	978.5	245.20	4.990		
12,400.0	6,807.9	6,807.9	6,807.9	111.1	136.2	-89.47	-4,400.8	671.6	1,321.4	1,074.3	247.10	5.348		
12,500.0	6,807.7	6,807.7	6,807.7	113.0	136.2	-89.43	-4,400.8	671.6	1,419.5	1,170.5	249.00	5.701		
12,600.0	6,807.5	6,807.5	6,807.5	114.9	136.1	-89.39	-4,400.8	671.6	1,517.8	1,266.9	250.90	6.050		
12,700.0	6,807.3	6,807.3	6,807.3	116.8	136.1	-89.34	-4,400.8	671.6	1,616.4	1,363.6	252.80	6.394		
12,800.0	6,807.1	6,807.1	6,807.1	118.7	136.1	-89.30	-4,400.8	671.6	1,715.1	1,460.4	254.70	6.734		
12,900.0	6,806.9	6,806.9	6,806.9	120.6	136.1	-89.26	-4,400.8	671.6	1,813.9	1,557.3	256.60	7.069		
13,000.0	6,806.7	6,806.7	6,806.7	122.5	136.1	-89.22	-4,400.8	671.6	1,912.9	1,654.4	258.50	7.400		
13,100.0	6,806.5	6,806.5	6,806.5	124.4	136.1	-89.18	-4,400.8	671.6	2,011.9	1,751.5	260.40	7.726		
13,200.0	6,806.3	6,806.3	6,806.3	126.3	136.1	-89.14	-4,400.8	671.6	2,111.1	1,848.8	262.30	8.048		
13,300.0	6,806.2	6,806.2	6,806.2	128.2	136.1	-89.10	-4,400.8	671.6	2,210.3	1,946.1	264.20	8.366		
13,400.0	6,806.0	6,806.0	6,806.0	130.1	136.1	-89.06	-4,400.8	671.6	2,309.6	2,043.5	266.11	8.679		
13,500.0	6,805.8	6,805.8	6,805.8	132.1	136.1	-89.02	-4,400.8	671.6	2,409.0	2,141.0	268.01	8.988		
13,600.0	6,805.6	6,805.6	6,805.6	134.0	136.1	-88.97	-4,400.8	671.6	2,508.4	2,238.5	269.91	9.293		
13,700.0	6,805.4	6,805.4	6,805.4	135.9	136.1	-88.93	-4,400.8	671.6	2,607.8	2,336.0	271.81	9.594		
13,800.0	6,805.2	6,805.2	6,805.2	137.8	136.1	-88.89	-4,400.8	671.6	2,707.3	2,433.6	273.72	9.891		
13,900.0	6,805.0	6,805.0	6,805.0	139.7	136.1	-88.85	-4,400.8	671.6	2,806.8	2,531.2	275.62	10.184		
13,900.2	6,805.0	6,805.0	6,805.0	139.7	136.1	-88.85	-4,400.8	671.6	2,807.0	2,531.4	275.62	10.184		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
0.0	0.0	16.0	16.0	0.0	0.3	173.27	-5,712.4	674.4	5,752.0	5,751.7	0.32	N/A	
100.0	100.0	116.0	116.0	0.1	2.3	173.27	-5,712.4	674.4	5,752.0	5,749.6	2.43	2,364.583	
200.0	200.0	216.0	216.0	0.3	4.3	173.27	-5,712.4	674.4	5,752.0	5,747.4	4.66	1,235.047	
300.0	300.0	316.0	316.0	0.6	6.3	173.27	-5,712.4	674.4	5,752.0	5,745.2	6.88	835.796	
400.0	400.0	416.0	416.0	0.8	8.3	173.27	-5,712.4	674.4	5,752.0	5,742.9	9.11	631.615	
500.0	500.0	516.0	516.0	1.0	10.3	173.27	-5,712.4	674.4	5,752.0	5,740.7	11.33	507.609	
600.0	600.0	616.0	616.0	1.2	12.3	173.27	-5,712.4	674.4	5,752.0	5,738.5	13.56	424.304	
700.0	700.0	716.0	716.0	1.5	14.3	173.27	-5,712.4	674.4	5,752.0	5,736.3	15.78	364.488	
800.0	800.0	816.0	816.0	1.7	16.3	173.27	-5,712.4	674.4	5,752.0	5,734.0	18.01	319.452	
900.0	900.0	916.0	916.0	1.9	18.3	173.27	-5,712.4	674.4	5,752.0	5,731.8	20.23	284.322	
1,000.0	1,000.0	1,016.0	1,016.0	2.1	20.3	173.27	-5,712.4	674.4	5,752.0	5,729.6	22.46	256.153	
1,100.0	1,100.0	1,116.0	1,116.0	2.4	22.3	173.27	-5,712.4	674.4	5,752.0	5,727.4	24.68	233.063	
1,200.0	1,200.0	1,216.0	1,216.0	2.6	24.3	173.27	-5,712.4	674.4	5,752.0	5,725.1	26.90	213.791	
1,300.0	1,300.0	1,316.0	1,316.0	2.8	26.3	173.27	-5,712.4	674.4	5,752.0	5,722.9	29.13	197.463	
1,400.0	1,400.0	1,416.0	1,416.0	3.0	28.3	173.27	-5,712.4	674.4	5,752.0	5,720.7	31.35	183.452	
1,500.0	1,500.0	1,516.0	1,516.0	3.3	30.3	173.27	-5,712.4	674.4	5,752.0	5,718.5	33.58	171.297	
1,600.0	1,600.0	1,616.0	1,616.0	3.5	32.3	109.60	-5,712.4	674.4	5,752.6	5,716.8	35.79	160.714	
1,700.0	1,699.8	1,715.8	1,715.8	3.7	34.3	109.62	-5,712.4	674.4	5,754.4	5,716.4	38.00	151.440	
1,800.0	1,799.5	1,815.5	1,815.5	3.9	36.3	109.65	-5,712.4	674.4	5,757.3	5,717.1	40.20	143.223	
1,900.0	1,898.8	1,914.8	1,914.8	4.1	38.3	109.73	-5,712.4	674.4	5,761.1	5,718.7	42.41	135.830	
2,000.0	1,998.2	2,014.2	2,014.2	4.4	40.3	109.84	-5,712.4	674.4	5,764.9	5,720.3	44.64	129.137	
2,100.0	2,097.6	2,113.6	2,113.6	4.6	42.3	109.94	-5,712.4	674.4	5,768.8	5,721.9	46.88	123.063	
2,200.0	2,196.9	2,212.9	2,212.9	4.9	44.3	110.05	-5,712.4	674.4	5,772.7	5,723.6	49.12	117.528	
2,300.0	2,296.3	2,312.3	2,312.3	5.2	46.2	110.15	-5,712.4	674.4	5,776.6	5,725.2	51.36	112.466	
2,400.0	2,395.6	2,411.6	2,411.6	5.4	48.2	110.26	-5,712.4	674.4	5,780.5	5,726.9	53.61	107.820	
2,500.0	2,495.0	2,511.0	2,511.0	5.7	50.2	110.36	-5,712.4	674.4	5,784.4	5,728.5	55.87	103.541	
2,600.0	2,594.4	2,610.4	2,610.4	6.0	52.2	110.46	-5,712.4	674.4	5,788.4	5,730.2	58.12	99.590	
2,700.0	2,693.7	2,709.7	2,709.7	6.3	54.2	110.57	-5,712.4	674.4	5,792.3	5,732.0	60.38	95.930	
2,800.0	2,793.1	2,809.1	2,809.1	6.5	56.2	110.67	-5,712.4	674.4	5,796.3	5,733.7	62.64	92.531	
2,900.0	2,892.5	2,908.5	2,908.5	6.8	58.2	110.78	-5,712.4	674.4	5,800.3	5,735.4	64.91	89.366	
3,000.0	2,991.8	3,007.8	3,007.8	7.1	60.2	110.88	-5,712.4	674.4	5,804.4	5,737.2	67.17	86.412	
3,100.0	3,091.2	3,107.2	3,107.2	7.4	62.1	110.98	-5,712.4	674.4	5,808.4	5,739.0	69.44	83.650	
3,200.0	3,190.5	3,206.5	3,206.5	7.7	64.1	111.08	-5,712.4	674.4	5,812.5	5,740.8	71.70	81.061	
3,300.0	3,289.9	3,305.9	3,305.9	8.0	66.1	111.19	-5,712.4	674.4	5,816.6	5,742.6	73.97	78.630	
3,400.0	3,389.3	3,405.3	3,405.3	8.3	68.1	111.29	-5,712.4	674.4	5,820.7	5,744.4	76.24	76.343	
3,500.0	3,488.6	3,504.6	3,504.6	8.6	70.1	111.39	-5,712.4	674.4	5,824.8	5,746.3	78.51	74.187	
3,600.0	3,588.0	3,604.0	3,604.0	8.8	72.1	111.50	-5,712.4	674.4	5,828.9	5,748.1	80.79	72.153	
3,700.0	3,687.4	3,703.4	3,703.4	9.1	74.1	111.60	-5,712.4	674.4	5,833.1	5,750.0	83.06	70.229	
3,800.0	3,786.7	3,802.7	3,802.7	9.4	76.1	111.70	-5,712.4	674.4	5,837.3	5,751.9	85.33	68.407	
3,900.0	3,886.1	3,902.1	3,902.1	9.7	78.0	111.80	-5,712.4	674.4	5,841.5	5,753.9	87.60	66.680	
4,000.0	3,985.5	4,001.5	4,001.5	10.0	80.0	111.90	-5,712.4	674.4	5,845.7	5,755.8	89.88	65.040	
4,100.0	4,084.8	4,100.8	4,100.8	10.3	82.0	112.01	-5,712.4	674.4	5,849.9	5,757.8	92.15	63.480	
4,200.0	4,184.2	4,200.2	4,200.2	10.6	84.0	112.11	-5,712.4	674.4	5,854.2	5,759.8	94.43	61.996	
4,300.0	4,283.5	4,299.5	4,299.5	10.9	86.0	112.21	-5,712.4	674.4	5,858.5	5,761.7	96.70	60.582	
4,400.0	4,382.9	4,398.9	4,398.9	11.2	88.0	112.31	-5,712.4	674.4	5,862.7	5,763.8	98.98	59.232	
4,500.0	4,482.3	4,498.3	4,498.3	11.5	90.0	112.41	-5,712.4	674.4	5,867.1	5,765.8	101.25	57.944	
4,600.0	4,581.6	4,597.6	4,597.6	11.8	92.0	112.51	-5,712.4	674.4	5,871.4	5,767.9	103.53	56.712	
4,700.0	4,681.0	4,697.0	4,697.0	12.1	93.9	112.61	-5,712.4	674.4	5,875.7	5,769.9	105.81	55.533	
4,800.0	4,780.4	4,796.4	4,796.4	12.4	95.9	112.72	-5,712.4	674.4	5,880.1	5,772.0	108.08	54.404	
4,900.0	4,879.7	4,895.7	4,895.7	12.7	97.9	112.82	-5,712.4	674.4	5,884.5	5,774.1	110.36	53.321	
5,000.0	4,979.1	4,995.1	4,995.1	13.0	99.9	112.92	-5,712.4	674.4	5,888.9	5,776.2	112.64	52.283	

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg B33-3 (Exist) - Wellbore #1 - Wellbo													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,078.4	5,094.4	5,094.4	13.3	101.9	113.02	-5,712.4	674.4	5,893.3	5,778.4	114.91	51.285		
5,200.0	5,177.8	5,193.8	5,193.8	13.6	103.9	113.12	-5,712.4	674.4	5,897.7	5,780.6	117.19	50.327		
5,300.0	5,277.2	5,293.2	5,293.2	13.9	105.9	113.22	-5,712.4	674.4	5,902.2	5,782.7	119.47	49.405		
5,400.0	5,376.5	5,392.5	5,392.5	14.2	107.9	113.32	-5,712.4	674.4	5,906.7	5,784.9	121.74	48.518		
5,500.0	5,475.9	5,491.9	5,491.9	14.5	109.8	113.42	-5,712.4	674.4	5,911.2	5,787.1	124.02	47.663		
5,600.0	5,575.4	5,591.4	5,591.4	14.8	111.8	113.57	-5,712.4	674.4	5,915.0	5,788.7	126.31	46.829		
5,700.0	5,675.2	5,691.2	5,691.2	15.0	113.8	113.67	-5,712.4	674.4	5,917.4	5,788.9	128.53	46.039		
5,800.0	5,775.2	5,791.2	5,791.2	15.1	115.8	113.71	-5,712.4	674.4	5,918.5	5,787.8	130.71	45.280		
5,900.0	5,875.2	5,891.2	5,891.2	15.3	117.8	113.78	-5,712.4	674.4	5,918.5	5,785.7	132.87	44.542		
6,000.0	5,975.2	5,991.2	5,991.2	15.5	119.8	113.88	-5,712.4	674.4	5,918.5	5,783.5	135.06	43.821		
6,100.0	6,075.2	6,091.2	6,091.2	15.7	121.8	-2.62	-5,712.4	674.4	5,917.9	5,780.8	137.12	43.160		
6,200.0	6,174.6	6,190.6	6,190.6	15.8	123.8	-2.66	-5,712.4	674.4	5,907.3	5,770.0	137.30	43.024		
6,300.0	6,271.7	6,287.7	6,287.7	15.9	125.8	-2.76	-5,712.4	674.4	5,883.8	5,748.7	135.04	43.569		
6,400.0	6,364.9	6,380.9	6,380.9	15.9	127.6	-2.92	-5,712.4	674.4	5,847.8	5,717.5	130.31	44.877		
6,500.0	6,452.6	6,468.6	6,468.6	16.0	129.4	-3.16	-5,712.4	674.4	5,800.0	5,676.9	123.12	47.109		
6,600.0	6,533.4	6,549.4	6,549.4	16.0	131.0	-3.51	-5,712.4	674.4	5,741.2	5,627.6	113.58	50.547		
6,700.0	6,605.7	6,621.7	6,621.7	16.1	132.4	-4.03	-5,712.4	674.4	5,672.4	5,570.4	101.90	55.664		
6,800.0	6,668.5	6,684.5	6,684.5	16.3	133.7	-4.80	-5,712.4	674.4	5,594.7	5,506.2	88.42	63.272		
6,900.0	6,720.5	6,736.5	6,736.5	16.6	134.7	-6.04	-5,712.4	674.4	5,509.5	5,435.7	73.77	74.689		
7,000.0	6,761.0	6,777.0	6,777.0	17.2	135.5	-8.25	-5,712.4	674.4	5,418.2	5,358.7	59.48	91.100		
7,100.0	6,789.2	6,805.2	6,805.2	17.9	136.1	-13.08	-5,712.4	674.4	5,322.5	5,270.7	51.71	102.922		
7,200.0	6,804.7	6,820.7	6,820.7	18.9	136.4	-26.37	-5,712.4	674.4	5,223.9	5,150.4	73.49	71.080		
7,300.0	6,814.5	6,830.5	6,830.5	20.0	136.6	-36.28	-5,712.4	674.4	5,124.5	5,029.2	95.26	53.796		
7,400.0	6,817.5	6,833.5	6,833.5	21.2	136.7	-92.04	-5,712.4	674.4	5,024.7	4,867.8	156.90	32.025		
7,500.0	6,817.3	6,833.3	6,833.3	22.5	136.7	-92.00	-5,712.4	674.4	4,924.9	4,766.6	158.25	31.120		
7,600.0	6,817.1	6,833.1	6,833.1	23.9	136.7	-91.96	-5,712.4	674.4	4,825.0	4,665.3	159.69	30.215		
7,700.0	6,816.9	6,832.9	6,832.9	25.4	136.7	-91.92	-5,712.4	674.4	4,725.2	4,564.0	161.19	29.314		
7,800.0	6,816.7	6,832.7	6,832.7	26.9	136.7	-91.88	-5,712.4	674.4	4,625.3	4,462.6	162.74	28.421		
7,900.0	6,816.5	6,832.5	6,832.5	28.5	136.7	-91.84	-5,712.4	674.4	4,525.5	4,361.2	164.35	27.536		
8,000.0	6,816.3	6,832.3	6,832.3	30.1	136.6	-91.80	-5,712.4	674.4	4,425.7	4,259.7	165.99	26.663		
8,100.0	6,816.1	6,832.1	6,832.1	31.7	136.6	-91.76	-5,712.4	674.4	4,325.9	4,158.2	167.66	25.802		
8,200.0	6,815.9	6,831.9	6,831.9	33.4	136.6	-91.72	-5,712.4	674.4	4,226.1	4,056.7	169.36	24.954		
8,300.0	6,815.8	6,831.8	6,831.8	35.1	136.6	-91.68	-5,712.4	674.4	4,126.3	3,955.2	171.08	24.119		
8,400.0	6,815.6	6,831.6	6,831.6	36.8	136.6	-91.63	-5,712.4	674.4	4,026.5	3,853.7	172.82	23.299		
8,500.0	6,815.4	6,831.4	6,831.4	38.5	136.6	-91.59	-5,712.4	674.4	3,926.7	3,752.2	174.58	22.492		
8,600.0	6,815.2	6,831.2	6,831.2	40.3	136.6	-91.55	-5,712.4	674.4	3,827.0	3,650.6	176.36	21.700		
8,700.0	6,815.0	6,831.0	6,831.0	42.1	136.6	-91.51	-5,712.4	674.4	3,727.2	3,549.1	178.14	20.923		
8,800.0	6,814.8	6,830.8	6,830.8	43.8	136.6	-91.47	-5,712.4	674.4	3,627.5	3,447.6	179.94	20.159		
8,900.0	6,814.6	6,830.6	6,830.6	45.6	136.6	-91.43	-5,712.4	674.4	3,527.8	3,346.1	181.75	19.410		
9,000.0	6,814.4	6,830.4	6,830.4	47.4	136.6	-91.39	-5,712.4	674.4	3,428.1	3,244.5	183.57	18.675		
9,100.0	6,814.2	6,830.2	6,830.2	49.3	136.6	-91.35	-5,712.4	674.4	3,328.4	3,143.0	185.39	17.953		
9,200.0	6,814.0	6,830.0	6,830.0	51.1	136.6	-91.31	-5,712.4	674.4	3,228.8	3,041.5	187.23	17.245		
9,300.0	6,813.8	6,829.8	6,829.8	52.9	136.6	-91.27	-5,712.4	674.4	3,129.1	2,940.1	189.06	16.551		
9,400.0	6,813.6	6,829.6	6,829.6	54.7	136.6	-91.23	-5,712.4	674.4	3,029.5	2,838.6	190.91	15.869		
9,500.0	6,813.4	6,829.4	6,829.4	56.6	136.6	-91.19	-5,712.4	674.4	2,929.9	2,737.2	192.76	15.200		
9,600.0	6,813.3	6,829.3	6,829.3	58.4	136.6	-91.15	-5,712.4	674.4	2,830.4	2,635.8	194.61	14.544		
9,700.0	6,813.1	6,829.1	6,829.1	60.3	136.6	-91.11	-5,712.4	674.4	2,730.8	2,534.4	196.47	13.900		
9,800.0	6,812.9	6,828.9	6,828.9	62.1	136.6	-91.07	-5,712.4	674.4	2,631.4	2,433.0	198.33	13.267		
9,900.0	6,812.7	6,828.7	6,828.7	64.0	136.6	-91.02	-5,712.4	674.4	2,531.9	2,331.7	200.20	12.647		
10,000.0	6,812.5	6,828.5	6,828.5	65.8	136.6	-90.98	-5,712.4	674.4	2,432.5	2,230.4	202.07	12.038		
10,100.0	6,812.3	6,828.3	6,828.3	67.7	136.6	-90.94	-5,712.4	674.4	2,333.1	2,129.2	203.94	11.441		

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 Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg B33-3 (Exist) - Wellbore #1 - Wellbo										Offset Site Error:		0.0 ft
Survey Program:		7600-UNKNOWN										Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,200.0	6,812.1	6,828.1	6,828.1		69.6	136.6	-90.90	-5,712.4	674.4	2,233.9	2,028.0	205.81	10.854	
10,300.0	6,811.9	6,827.9	6,827.9		71.4	136.6	-90.86	-5,712.4	674.4	2,134.6	1,926.9	207.69	10.278	
10,400.0	6,811.7	6,827.7	6,827.7		73.3	136.6	-90.82	-5,712.4	674.4	2,035.5	1,825.9	209.57	9.713	
10,500.0	6,811.5	6,827.5	6,827.5		75.2	136.6	-90.78	-5,712.4	674.4	1,936.4	1,725.0	211.45	9.158	
10,600.0	6,811.3	6,827.3	6,827.3		77.1	136.5	-90.74	-5,712.4	674.4	1,837.4	1,624.1	213.33	8.613	
10,700.0	6,811.1	6,827.1	6,827.1		78.9	136.5	-90.70	-5,712.4	674.4	1,738.6	1,523.4	215.21	8.078	
10,800.0	6,811.0	6,827.0	6,827.0		80.8	136.5	-90.66	-5,712.4	674.4	1,639.9	1,422.8	217.10	7.554	
10,900.0	6,810.8	6,826.8	6,826.8		82.7	136.5	-90.62	-5,712.4	674.4	1,541.3	1,322.3	218.99	7.038	
11,000.0	6,810.6	6,826.6	6,826.6		84.6	136.5	-90.58	-5,712.4	674.4	1,443.0	1,222.1	220.87	6.533	
11,100.0	6,810.4	6,826.4	6,826.4		86.5	136.5	-90.54	-5,712.4	674.4	1,344.9	1,122.1	222.76	6.037	
11,200.0	6,810.2	6,826.2	6,826.2		88.4	136.5	-90.50	-5,712.4	674.4	1,247.1	1,022.4	224.65	5.551	
11,300.0	6,810.0	6,826.0	6,826.0		90.3	136.5	-90.45	-5,712.4	674.4	1,149.7	923.1	226.55	5.075	
11,400.0	6,809.8	6,825.8	6,825.8		92.1	136.5	-90.41	-5,712.4	674.4	1,052.7	824.3	228.44	4.608	
11,500.0	6,809.6	6,825.6	6,825.6		94.0	136.5	-90.37	-5,712.4	674.4	956.4	726.1	230.33	4.152	
11,600.0	6,809.4	6,825.4	6,825.4		95.9	136.5	-90.33	-5,712.4	674.4	861.0	628.7	232.23	3.707	
11,700.0	6,809.2	6,825.2	6,825.2		97.8	136.5	-90.29	-5,712.4	674.4	766.7	532.5	234.12	3.275	
11,800.0	6,809.0	6,825.0	6,825.0		99.7	136.5	-90.25	-5,712.4	674.4	674.0	438.0	236.02	2.856	
11,900.0	6,808.8	6,824.8	6,824.8		101.6	136.5	-90.21	-5,712.4	674.4	583.8	345.9	237.92	2.454	
12,000.0	6,808.6	6,824.6	6,824.6		103.5	136.5	-90.17	-5,712.4	674.4	497.3	257.5	239.82	2.074	
12,100.0	6,808.5	6,824.5	6,824.5		105.4	136.5	-90.13	-5,712.4	674.4	416.9	175.2	241.72	1.725	
12,200.0	6,808.3	6,824.3	6,824.3		107.3	136.5	-90.09	-5,712.4	674.4	346.9	103.3	243.62	1.424	Level 3
12,300.0	6,808.1	6,824.1	6,824.1		109.2	136.5	-90.05	-5,712.4	674.4	294.7	49.2	245.51	1.200	Level 2
12,400.0	6,807.9	6,823.9	6,823.9		111.1	136.5	-90.01	-5,712.4	674.4	270.9	23.4	247.42	1.095	Level 2
12,417.4	6,807.8	6,823.8	6,823.8		111.4	136.5	-90.00	-5,712.4	674.4	270.3	22.5	247.75	1.091	Level 2, CC, ES, SF
12,500.0	6,807.7	6,823.7	6,823.7		113.0	136.5	-89.97	-5,712.4	674.4	282.6	33.3	249.32	1.134	Level 2
12,600.0	6,807.5	6,823.5	6,823.5		114.9	136.5	-89.93	-5,712.4	674.4	326.2	75.0	251.22	1.298	Level 3
12,700.0	6,807.3	6,823.3	6,823.3		116.8	136.5	-89.89	-5,712.4	674.4	391.0	137.9	253.12	1.545	
12,800.0	6,807.1	6,823.1	6,823.1		118.7	136.5	-89.84	-5,712.4	674.4	468.4	213.4	255.02	1.837	
12,900.0	6,806.9	6,822.9	6,822.9		120.6	136.5	-89.80	-5,712.4	674.4	553.1	296.2	256.92	2.153	
13,000.0	6,806.7	6,822.7	6,822.7		122.5	136.5	-89.76	-5,712.4	674.4	642.2	383.4	258.83	2.481	
13,100.0	6,806.5	6,822.5	6,822.5		124.4	136.5	-89.72	-5,712.4	674.4	734.1	473.4	260.73	2.816	
13,200.0	6,806.3	6,822.3	6,822.3		126.3	136.4	-89.68	-5,712.4	674.4	827.9	565.3	262.63	3.152	
13,300.0	6,806.2	6,822.2	6,822.2		128.2	136.4	-89.64	-5,712.4	674.4	923.0	658.5	264.54	3.489	
13,400.0	6,806.0	6,822.0	6,822.0		130.1	136.4	-89.60	-5,712.4	674.4	1,019.1	752.6	266.44	3.825	
13,500.0	6,805.8	6,821.8	6,821.8		132.1	136.4	-89.56	-5,712.4	674.4	1,115.8	847.4	268.35	4.158	
13,600.0	6,805.6	6,821.6	6,821.6		134.0	136.4	-89.52	-5,712.4	674.4	1,213.1	942.8	270.25	4.489	
13,700.0	6,805.4	6,821.4	6,821.4		135.9	136.4	-89.48	-5,712.4	674.4	1,310.7	1,038.6	272.15	4.816	
13,800.0	6,805.2	6,821.2	6,821.2		137.8	136.4	-89.44	-5,712.4	674.4	1,408.7	1,134.7	274.06	5.140	
13,900.0	6,805.0	6,821.0	6,821.0		139.7	136.4	-89.40	-5,712.4	674.4	1,507.0	1,231.0	275.96	5.461	
13,900.2	6,805.0	6,821.0	6,821.0		139.7	136.4	-89.40	-5,712.4	674.4	1,507.2	1,231.2	275.97	5.461	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4648.0ft (RKB - 15')

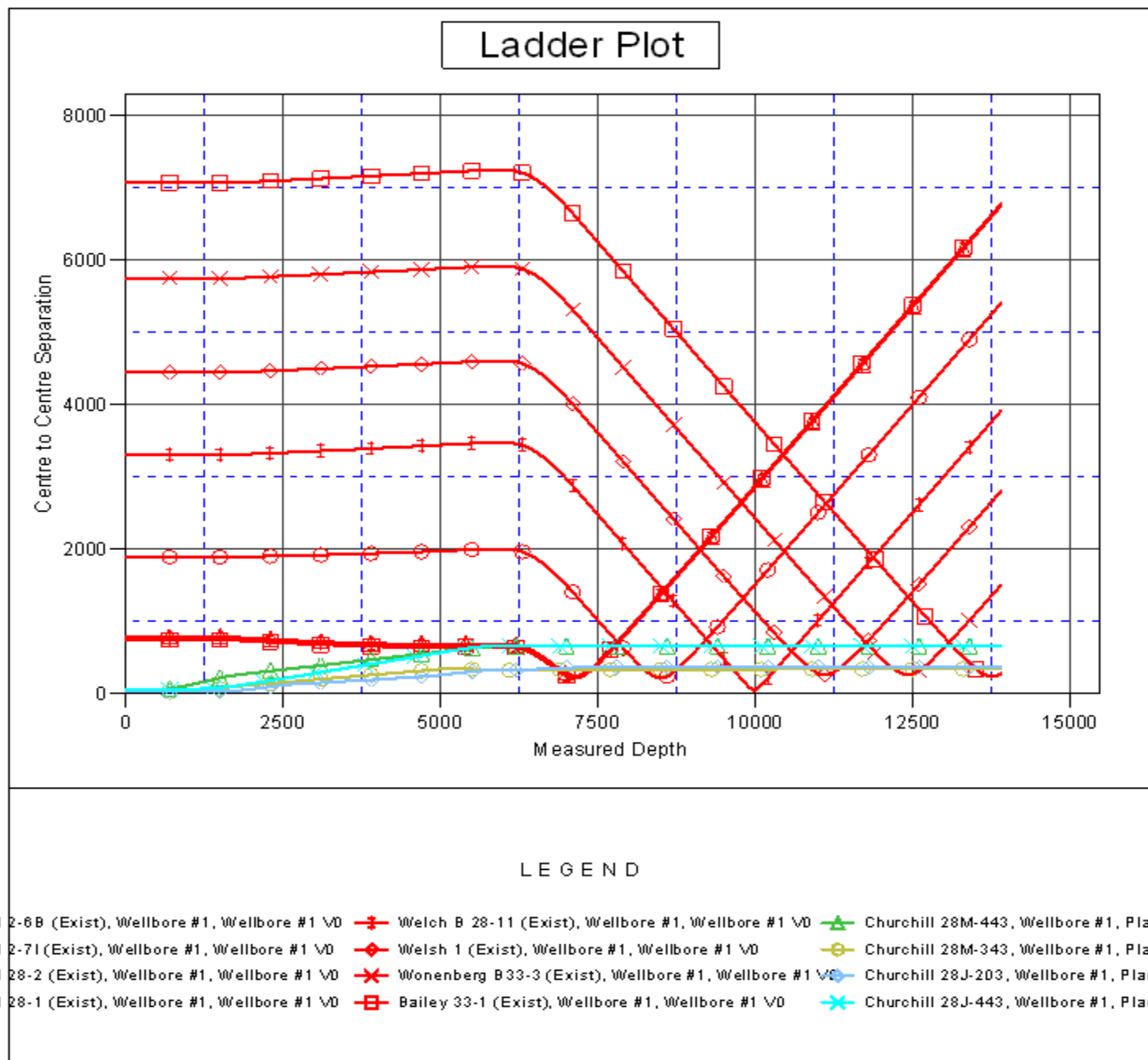
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-423

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.61°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-423
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-423	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4648.0ft (RKB - 15')
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-423
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.61°

