

PETROLEUM DEVELOPMENT CORP Weld County CO

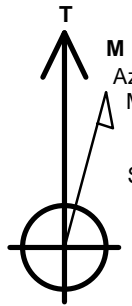
Well Name: **Churchill 28M-343**

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	1381538.98	3262084.58	40.376910	-104.559280	
Original Well Elev WELL @ 4648.0ft (Original Well Elev)						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1395'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2138'FNL, 2055'FWL, SEC.33	6690.0	-7195.1	702.3	Point

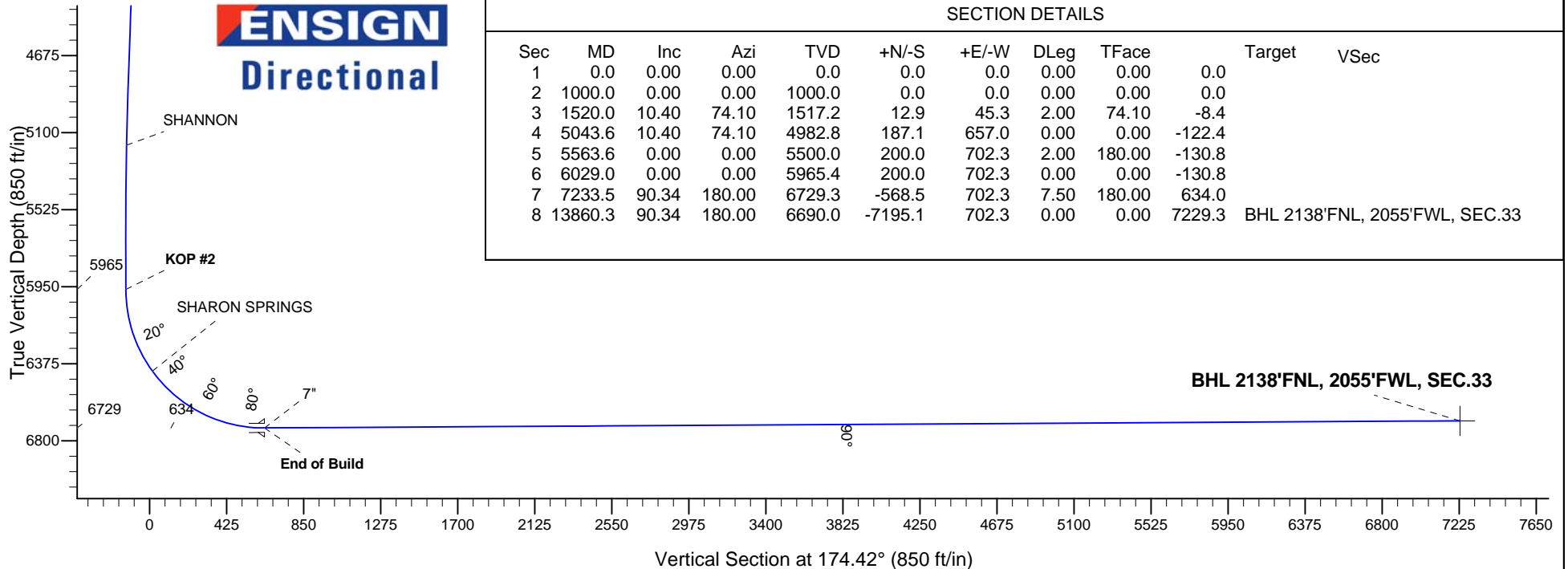
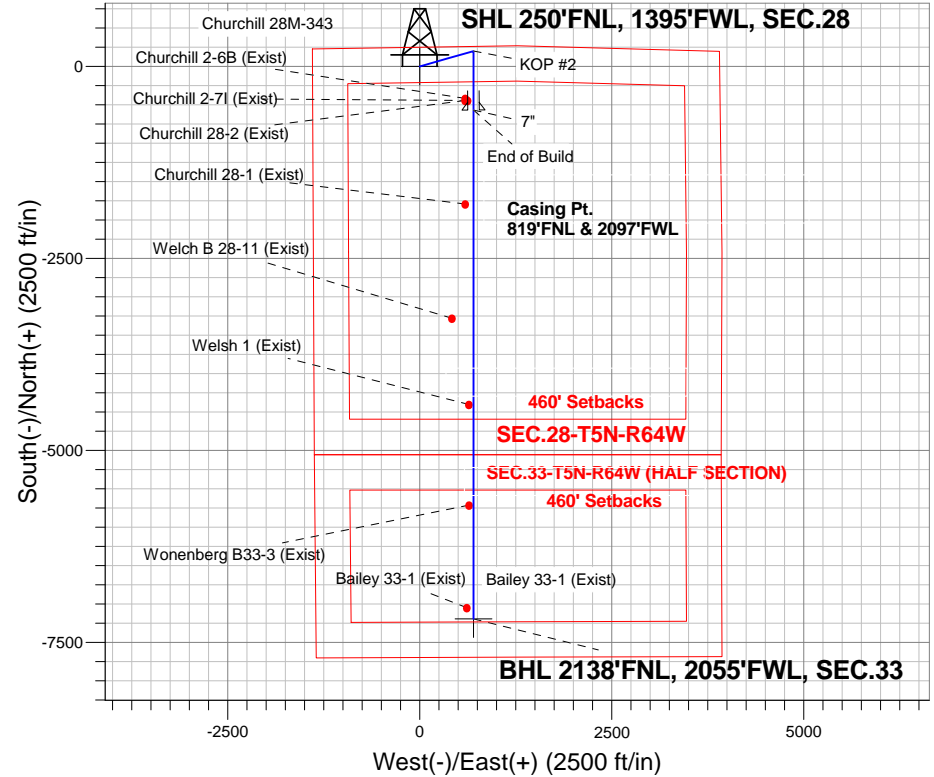


Azimuths to True North
 Magnetic North: 8.41°
 Magnetic Field
 Strength: 52874.4snT
 Dip Angle: 66.98°
 Date: 12/30/2013
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
5965.4	6029.0	KOP #2
6729.3	7233.5	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W
 Churchill 28M-343
 Plan #1 (12-30-13)
 14:46, January 08 2014





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

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

Churchill 28M-343

Wellbore #1

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

Standard Planning Report

08 January, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28M-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28M-343	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 28M-343					
Well Position	+N-S	3.6 ft	Northing:	1,381,538.98 ft	Latitude:	40.376910
	+E-W	181.1 ft	Easting:	3,262,084.58 ft	Longitude:	-104.559280
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	174.42

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,520.0	10.40	74.10	1,517.2	12.9	45.3	2.00	2.00	0.00	74.10	
5,043.6	10.40	74.10	4,982.8	187.1	657.0	0.00	0.00	0.00	0.00	
5,563.6	0.00	0.00	5,500.0	200.0	702.3	2.00	-2.00	0.00	180.00	
6,029.0	0.00	0.00	5,965.4	200.0	702.3	0.00	0.00	0.00	0.00	
7,233.5	90.34	180.00	6,729.3	-568.5	702.3	7.50	7.50	0.00	180.00	
13,860.3	90.34	180.00	6,690.0	-7,195.1	702.3	0.00	0.00	0.00	0.00	BHL 2138°FNL, 205

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28M-343
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Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28M-343	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, 1395'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
KOP #1									
1,100.0	2.00	74.10	1,100.0	0.5	1.7	-0.3	2.00	2.00	0.00
1,200.0	4.00	74.10	1,199.8	1.9	6.7	-1.3	2.00	2.00	0.00
1,300.0	6.00	74.10	1,299.5	4.3	15.1	-2.8	2.00	2.00	0.00
1,400.0	8.00	74.10	1,398.7	7.6	26.8	-5.0	2.00	2.00	0.00
1,500.0	10.00	74.10	1,497.5	11.9	41.9	-7.8	2.00	2.00	0.00
1,520.0	10.40	74.10	1,517.2	12.9	45.3	-8.4	2.00	2.00	0.00
1,600.0	10.40	74.10	1,595.8	16.8	59.2	-11.0	0.00	0.00	0.00
1,700.0	10.40	74.10	1,694.2	21.8	76.5	-14.3	0.00	0.00	0.00
1,800.0	10.40	74.10	1,792.5	26.7	93.9	-17.5	0.00	0.00	0.00
1,900.0	10.40	74.10	1,890.9	31.7	111.2	-20.7	0.00	0.00	0.00
2,000.0	10.40	74.10	1,989.3	36.6	128.6	-24.0	0.00	0.00	0.00
2,100.0	10.40	74.10	2,087.6	41.6	146.0	-27.2	0.00	0.00	0.00
2,200.0	10.40	74.10	2,186.0	46.5	163.3	-30.4	0.00	0.00	0.00
2,300.0	10.40	74.10	2,284.3	51.5	180.7	-33.7	0.00	0.00	0.00
2,400.0	10.40	74.10	2,382.7	56.4	198.1	-36.9	0.00	0.00	0.00
2,500.0	10.40	74.10	2,481.0	61.3	215.4	-40.1	0.00	0.00	0.00
2,600.0	10.40	74.10	2,579.4	66.3	232.8	-43.4	0.00	0.00	0.00
2,700.0	10.40	74.10	2,677.8	71.2	250.1	-46.6	0.00	0.00	0.00
2,800.0	10.40	74.10	2,776.1	76.2	267.5	-49.8	0.00	0.00	0.00
2,900.0	10.40	74.10	2,874.5	81.1	284.9	-53.1	0.00	0.00	0.00
3,000.0	10.40	74.10	2,972.8	86.1	302.2	-56.3	0.00	0.00	0.00
3,100.0	10.40	74.10	3,071.2	91.0	319.6	-59.5	0.00	0.00	0.00
3,200.0	10.40	74.10	3,169.5	96.0	337.0	-62.8	0.00	0.00	0.00
3,300.0	10.40	74.10	3,267.9	100.9	354.3	-66.0	0.00	0.00	0.00
3,400.0	10.40	74.10	3,366.3	105.8	371.7	-69.2	0.00	0.00	0.00
3,500.0	10.40	74.10	3,464.6	110.8	389.0	-72.5	0.00	0.00	0.00
3,586.8	10.40	74.10	3,550.0	115.1	404.1	-75.3	0.00	0.00	0.00
PARKMAN									
3,600.0	10.40	74.10	3,563.0	115.7	406.4	-75.7	0.00	0.00	0.00
3,700.0	10.40	74.10	3,661.3	120.7	423.8	-78.9	0.00	0.00	0.00
3,800.0	10.40	74.10	3,759.7	125.6	441.1	-82.2	0.00	0.00	0.00
3,900.0	10.40	74.10	3,858.0	130.6	458.5	-85.4	0.00	0.00	0.00
4,000.0	10.40	74.10	3,956.4	135.5	475.9	-88.6	0.00	0.00	0.00
4,100.0	10.40	74.10	4,054.8	140.5	493.2	-91.9	0.00	0.00	0.00
4,200.0	10.40	74.10	4,153.1	145.4	510.6	-95.1	0.00	0.00	0.00
4,212.1	10.40	74.10	4,165.0	146.0	512.7	-95.5	0.00	0.00	0.00
SUSSEX									
4,300.0	10.40	74.10	4,251.5	150.3	527.9	-98.3	0.00	0.00	0.00
4,400.0	10.40	74.10	4,349.8	155.3	545.3	-101.6	0.00	0.00	0.00

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Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28M-343	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	10.40	74.10	4,448.2	160.2	562.7	-104.8	0.00	0.00	0.00
4,600.0	10.40	74.10	4,546.5	165.2	580.0	-108.0	0.00	0.00	0.00
4,700.0	10.40	74.10	4,644.9	170.1	597.4	-111.3	0.00	0.00	0.00
4,800.0	10.40	74.10	4,743.3	175.1	614.8	-114.5	0.00	0.00	0.00
4,900.0	10.40	74.10	4,841.6	180.0	632.1	-117.7	0.00	0.00	0.00
5,000.0	10.40	74.10	4,940.0	185.0	649.5	-121.0	0.00	0.00	0.00
5,043.6	10.40	74.10	4,982.8	187.1	657.0	-122.4	0.00	0.00	0.00
5,100.0	9.27	74.10	5,038.4	189.7	666.3	-124.1	2.00	-2.00	0.00
5,200.0	7.27	74.10	5,137.4	193.7	680.2	-126.7	2.00	-2.00	0.00
5,232.9	6.61	74.10	5,170.0	194.8	684.0	-127.4	2.00	-2.00	0.00
SHANNON									
5,300.0	5.27	74.10	5,236.8	196.7	690.7	-128.7	2.00	-2.00	0.00
5,400.0	3.27	74.10	5,336.5	198.7	697.8	-130.0	2.00	-2.00	0.00
5,500.0	1.27	74.10	5,436.4	199.8	701.6	-130.7	2.00	-2.00	0.00
5,563.6	0.00	0.00	5,500.0	200.0	702.3	-130.8	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,536.4	200.0	702.3	-130.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,636.4	200.0	702.3	-130.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,736.4	200.0	702.3	-130.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,836.4	200.0	702.3	-130.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,936.4	200.0	702.3	-130.8	0.00	0.00	0.00
6,029.0	0.00	0.00	5,965.4	200.0	702.3	-130.8	0.00	0.00	0.00
KOP #2									
6,100.0	5.33	180.00	6,036.3	196.7	702.3	-127.5	7.50	7.50	0.00
6,200.0	12.83	180.00	6,135.0	180.9	702.3	-111.9	7.50	7.50	0.00
6,300.0	20.33	180.00	6,230.8	152.4	702.3	-83.5	7.50	7.50	0.00
6,400.0	27.83	180.00	6,322.0	111.7	702.3	-42.9	7.50	7.50	0.00
6,500.0	35.33	180.00	6,407.1	59.3	702.3	9.2	7.50	7.50	0.00
6,510.9	36.15	180.00	6,416.0	53.0	702.3	15.5	7.50	7.50	0.00
SHARON SPRINGS									
6,600.0	42.83	180.00	6,484.7	-3.7	702.3	71.9	7.50	7.50	0.00
6,700.0	50.33	180.00	6,553.4	-76.2	702.3	144.1	7.50	7.50	0.00
6,800.0	57.83	180.00	6,612.0	-157.1	702.3	224.6	7.50	7.50	0.00
6,900.0	65.33	180.00	6,659.6	-245.0	702.3	312.1	7.50	7.50	0.00
7,000.0	72.83	180.00	6,695.3	-338.4	702.3	405.0	7.50	7.50	0.00
7,100.0	80.33	180.00	6,718.5	-435.6	702.3	501.7	7.50	7.50	0.00
7,200.0	87.83	180.00	6,728.8	-535.0	702.3	600.7	7.50	7.50	0.00
7,233.5	90.34	180.00	6,729.3	-568.5	702.3	634.0	7.50	7.50	0.00
End of Build - 7"									
7,300.0	90.34	180.00	6,728.9	-635.0	702.3	700.2	0.00	0.00	0.00
7,400.0	90.34	180.00	6,728.3	-735.0	702.3	799.7	0.00	0.00	0.00
7,500.0	90.34	180.00	6,727.7	-835.0	702.3	899.2	0.00	0.00	0.00
7,600.0	90.34	180.00	6,727.1	-934.9	702.3	998.8	0.00	0.00	0.00
7,700.0	90.34	180.00	6,726.6	-1,034.9	702.3	1,098.3	0.00	0.00	0.00
7,800.0	90.34	180.00	6,726.0	-1,134.9	702.3	1,197.8	0.00	0.00	0.00
7,900.0	90.34	180.00	6,725.4	-1,234.9	702.3	1,297.3	0.00	0.00	0.00
8,000.0	90.34	180.00	6,724.8	-1,334.9	702.3	1,396.9	0.00	0.00	0.00
8,100.0	90.34	180.00	6,724.2	-1,434.9	702.3	1,496.4	0.00	0.00	0.00
8,200.0	90.34	180.00	6,723.6	-1,534.9	702.3	1,595.9	0.00	0.00	0.00
8,300.0	90.34	180.00	6,723.0	-1,634.9	702.3	1,695.4	0.00	0.00	0.00
8,400.0	90.34	180.00	6,722.4	-1,734.9	702.3	1,795.0	0.00	0.00	0.00
8,500.0	90.34	180.00	6,721.8	-1,834.9	702.3	1,894.5	0.00	0.00	0.00
8,600.0	90.34	180.00	6,721.2	-1,934.9	702.3	1,994.0	0.00	0.00	0.00

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Well:	Churchill 28M-343	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)
8,700.0	90.34	180.00	6,720.6	-2,034.9	702.3	2,093.5	0.00	0.00	0.00
8,800.0	90.34	180.00	6,720.0	-2,134.9	702.3	2,193.1	0.00	0.00	0.00
8,900.0	90.34	180.00	6,719.4	-2,234.9	702.3	2,292.6	0.00	0.00	0.00
9,000.0	90.34	180.00	6,718.8	-2,334.9	702.3	2,392.1	0.00	0.00	0.00
9,100.0	90.34	180.00	6,718.2	-2,434.9	702.3	2,491.6	0.00	0.00	0.00
9,200.0	90.34	180.00	6,717.7	-2,534.9	702.3	2,591.2	0.00	0.00	0.00
9,300.0	90.34	180.00	6,717.1	-2,634.9	702.3	2,690.7	0.00	0.00	0.00
9,400.0	90.34	180.00	6,716.5	-2,734.9	702.3	2,790.2	0.00	0.00	0.00
9,500.0	90.34	180.00	6,715.9	-2,834.9	702.3	2,889.7	0.00	0.00	0.00
9,600.0	90.34	180.00	6,715.3	-2,934.9	702.3	2,989.3	0.00	0.00	0.00
9,700.0	90.34	180.00	6,714.7	-3,034.9	702.3	3,088.8	0.00	0.00	0.00
9,800.0	90.34	180.00	6,714.1	-3,134.9	702.3	3,188.3	0.00	0.00	0.00
9,900.0	90.34	180.00	6,713.5	-3,234.9	702.3	3,287.8	0.00	0.00	0.00
10,000.0	90.34	180.00	6,712.9	-3,334.9	702.3	3,387.4	0.00	0.00	0.00
10,100.0	90.34	180.00	6,712.3	-3,434.9	702.3	3,486.9	0.00	0.00	0.00
10,200.0	90.34	180.00	6,711.7	-3,534.9	702.3	3,586.4	0.00	0.00	0.00
10,300.0	90.34	180.00	6,711.1	-3,634.9	702.3	3,685.9	0.00	0.00	0.00
10,400.0	90.34	180.00	6,710.5	-3,734.9	702.3	3,785.5	0.00	0.00	0.00
10,500.0	90.34	180.00	6,709.9	-3,834.9	702.3	3,885.0	0.00	0.00	0.00
10,600.0	90.34	180.00	6,709.3	-3,934.9	702.3	3,984.5	0.00	0.00	0.00
10,700.0	90.34	180.00	6,708.8	-4,034.9	702.3	4,084.0	0.00	0.00	0.00
10,800.0	90.34	180.00	6,708.2	-4,134.9	702.3	4,183.6	0.00	0.00	0.00
10,900.0	90.34	180.00	6,707.6	-4,234.9	702.3	4,283.1	0.00	0.00	0.00
11,000.0	90.34	180.00	6,707.0	-4,334.9	702.3	4,382.6	0.00	0.00	0.00
11,100.0	90.34	180.00	6,706.4	-4,434.9	702.3	4,482.1	0.00	0.00	0.00
11,200.0	90.34	180.00	6,705.8	-4,534.9	702.3	4,581.7	0.00	0.00	0.00
11,300.0	90.34	180.00	6,705.2	-4,634.9	702.3	4,681.2	0.00	0.00	0.00
11,400.0	90.34	180.00	6,704.6	-4,734.9	702.3	4,780.7	0.00	0.00	0.00
11,500.0	90.34	180.00	6,704.0	-4,834.9	702.3	4,880.2	0.00	0.00	0.00
11,600.0	90.34	180.00	6,703.4	-4,934.9	702.3	4,979.8	0.00	0.00	0.00
11,700.0	90.34	180.00	6,702.8	-5,034.9	702.3	5,079.3	0.00	0.00	0.00
11,800.0	90.34	180.00	6,702.2	-5,134.9	702.3	5,178.8	0.00	0.00	0.00
11,900.0	90.34	180.00	6,701.6	-5,234.9	702.3	5,278.3	0.00	0.00	0.00
12,000.0	90.34	180.00	6,701.0	-5,334.9	702.3	5,377.9	0.00	0.00	0.00
12,100.0	90.34	180.00	6,700.4	-5,434.9	702.3	5,477.4	0.00	0.00	0.00
12,200.0	90.34	180.00	6,699.9	-5,534.9	702.3	5,576.9	0.00	0.00	0.00
12,300.0	90.34	180.00	6,699.3	-5,634.9	702.3	5,676.4	0.00	0.00	0.00
12,400.0	90.34	180.00	6,698.7	-5,734.9	702.3	5,776.0	0.00	0.00	0.00
12,500.0	90.34	180.00	6,698.1	-5,834.9	702.3	5,875.5	0.00	0.00	0.00
12,600.0	90.34	180.00	6,697.5	-5,934.9	702.3	5,975.0	0.00	0.00	0.00
12,700.0	90.34	180.00	6,696.9	-6,034.9	702.3	6,074.5	0.00	0.00	0.00
12,800.0	90.34	180.00	6,696.3	-6,134.9	702.3	6,174.1	0.00	0.00	0.00
12,900.0	90.34	180.00	6,695.7	-6,234.9	702.3	6,273.6	0.00	0.00	0.00
13,000.0	90.34	180.00	6,695.1	-6,334.9	702.3	6,373.1	0.00	0.00	0.00
13,100.0	90.34	180.00	6,694.5	-6,434.9	702.3	6,472.6	0.00	0.00	0.00
13,200.0	90.34	180.00	6,693.9	-6,534.9	702.3	6,572.2	0.00	0.00	0.00
13,300.0	90.34	180.00	6,693.3	-6,634.8	702.3	6,671.7	0.00	0.00	0.00
13,400.0	90.34	180.00	6,692.7	-6,734.8	702.3	6,771.2	0.00	0.00	0.00
13,500.0	90.34	180.00	6,692.1	-6,834.8	702.3	6,870.7	0.00	0.00	0.00
13,600.0	90.34	180.00	6,691.5	-6,934.8	702.3	6,970.3	0.00	0.00	0.00
13,700.0	90.34	180.00	6,691.0	-7,034.8	702.3	7,069.8	0.00	0.00	0.00
13,800.0	90.34	180.00	6,690.4	-7,134.8	702.3	7,169.3	0.00	0.00	0.00
13,860.3	90.34	180.00	6,690.0	-7,195.1	702.3	7,229.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28M-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28M-343	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)
BHL 2138'FNL, 2055'FWL, SEC.33									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,233.5	6,729.3	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,586.8	3,550.0	PARKMAN				
4,212.1	4,165.0	SUSSEX				
5,232.9	5,170.0	SHANNON				
6,510.9	6,416.0	SHARON SPRINGS				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,029.0	5,965.4	200.0	702.3	KOP #2
7,233.5	6,729.3	-568.5	702.3	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

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

Churchill 28M-343

Wellbore #1

Plan #1 (12-30-13)

Anticollision Report

08 January, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	13,860.3	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)	Distance 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)	1,000.0	1,001.0	61.3	57.0	14.346	CC, ES
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	13,860.3	13,727.2	660.2	382.2	2.375	SF
Churchill 28J-423 - Wellbore #1 - Plan #1 (12-30-13)	1,000.0	1,000.0	30.6	26.4	7.177	CC, ES
Churchill 28J-423 - Wellbore #1 - Plan #1 (12-30-13)	13,860.3	13,900.2	348.4	81.4	1.305	Level 3, SF
Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)	400.0	399.0	30.6	29.1	19.507	CC, ES
Churchill 28M-443 - Wellbore #1 - Plan #1 (12-30-13)	13,860.3	13,973.0	351.4	87.2	1.330	Level 3, SF
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W						
Bailey 33-1 (Exist) - Wellbore #1 - Wellbore #1	13,710.9	6,729.9	89.2	-182.1	0.329	Level 1, CC, ES, SF
Churchill 2-6B (Exist) - Wellbore #1 - Wellbore #1	7,079.4	6,695.7	108.9	-42.4	0.720	Level 1, CC, ES, SF
Churchill 2-7I (Exist) - Wellbore #1 - Wellbore #1	7,109.0	6,700.9	78.2	-73.5	0.516	Level 1, CC, ES, SF
Churchill 28-1 (Exist) - Wellbore #1 - Wellbore #1	8,457.5	6,724.1	108.8	-63.7	0.631	Level 1, CC, ES, SF
Churchill 28-2 (Exist) - Wellbore #1 - Wellbore #1	7,109.0	6,700.9	108.9	-42.8	0.718	Level 1, CC, ES, SF
Welch B 28-11 (Exist) - Wellbore #1 - Wellbore #1	9,943.9	6,706.2	281.6	82.2	1.412	Level 3, CC, ES, SF
Welsh 1 (Exist) - Wellbore #1 - Wellbore #1	11,066.0	6,706.6	61.4	-159.1	0.278	Level 1, CC, ES, SF
Wonenberg B33-3 (Exist) - Wellbore #1 - Wellbore #1	12,377.5	6,714.8	58.6	-187.0	0.239	Level 1, 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	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-61.3	61.3	61.3	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-61.3	61.3	61.1	0.23	270.009	
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-61.3	61.3	60.6	0.68	90.601	
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-61.3	61.3	60.2	1.13	54.433	
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-61.3	61.3	59.7	1.58	38.903	
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-61.3	61.3	59.3	2.03	30.267	
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-61.3	61.3	58.8	2.47	24.769	
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	0.0	-61.3	61.3	58.4	2.92	20.962	
800.0	800.0	801.0	801.0	1.7	1.7	-90.00	0.0	-61.3	61.3	57.9	3.37	18.169	
900.0	900.0	901.0	901.0	1.9	1.9	-90.00	0.0	-61.3	61.3	57.5	3.82	16.032	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.00	0.0	-61.3	61.3	57.0	4.27	14.346	CC, ES

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	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
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	-164.53		0.0	-61.3	63.0	58.3	4.71	13.367	
1,200.0	1,199.8	1,200.8	1,200.8	2.6	2.6	-165.68		0.0	-61.3	68.0	62.9	5.14	13.239	
1,300.0	1,299.5	1,300.5	1,300.5	2.8	2.8	-167.26		0.0	-61.3	76.5	70.9	5.56	13.750	
1,400.0	1,398.7	1,399.7	1,399.7	3.0	3.0	-168.95		0.0	-61.3	88.4	82.5	5.99	14.772	
1,500.0	1,497.5	1,498.5	1,498.5	3.3	3.3	-170.56		0.0	-61.3	103.8	97.4	6.41	16.211	
1,600.0	1,595.8	1,596.8	1,596.8	3.6	3.5	-171.94		0.0	-61.3	121.6	114.8	6.84	17.775	
1,700.0	1,694.2	1,695.2	1,695.2	3.9	3.7	-172.98		0.0	-61.3	139.5	132.2	7.29	19.143	
1,800.0	1,792.5	1,793.5	1,793.5	4.3	3.9	-173.78		0.0	-61.3	157.5	149.7	7.74	20.348	
1,900.0	1,890.9	1,891.9	1,891.9	4.6	4.1	-174.42		0.0	-61.3	175.4	167.2	8.19	21.416	
2,000.0	1,989.3	1,990.3	1,990.3	5.0	4.4	-174.94		0.0	-61.3	193.4	184.8	8.65	22.366	
2,100.0	2,087.6	2,088.6	2,088.6	5.4	4.6	-175.37		0.0	-61.3	211.4	202.3	9.11	23.217	
2,200.0	2,186.0	2,187.0	2,187.0	5.7	4.8	-175.73		0.0	-61.3	229.4	219.8	9.56	23.983	
2,300.0	2,284.3	2,285.3	2,285.3	6.1	5.0	-176.04		0.0	-61.3	247.4	237.4	10.03	24.675	
2,400.0	2,382.7	2,383.7	2,383.7	6.5	5.2	-176.31		0.0	-61.3	265.4	254.9	10.49	25.303	
2,500.0	2,481.0	2,482.0	2,482.0	6.9	5.5	-176.55		0.0	-61.3	283.4	272.5	10.95	25.876	
2,600.0	2,579.4	2,586.3	2,586.3	7.3	5.7	-176.58		1.1	-60.7	300.7	289.2	11.43	26.308	
2,700.0	2,677.8	2,692.5	2,692.4	7.7	5.9	-176.06		5.7	-58.3	315.6	303.7	11.91	26.506	
2,800.0	2,776.1	2,798.7	2,798.2	8.0	6.2	-175.07		13.7	-54.0	328.2	315.8	12.39	26.496	
2,900.0	2,874.5	2,897.9	2,896.8	8.4	6.4	-173.99		22.7	-49.3	339.9	327.0	12.86	26.425	
3,000.0	2,972.8	2,997.0	2,995.4	8.8	6.6	-172.99		31.6	-44.6	351.7	338.4	13.34	26.355	
3,100.0	3,071.2	3,096.1	3,094.0	9.2	6.9	-172.05		40.6	-39.8	363.6	349.8	13.83	26.286	
3,200.0	3,169.5	3,195.2	3,192.6	9.6	7.1	-171.17		49.5	-35.1	375.6	361.3	14.33	26.218	
3,300.0	3,267.9	3,294.3	3,291.2	10.0	7.3	-170.35		58.4	-30.4	387.7	372.8	14.82	26.149	
3,400.0	3,366.3	3,393.5	3,389.8	10.4	7.6	-169.58		67.4	-25.6	399.8	384.5	15.33	26.081	
3,500.0	3,464.6	3,492.6	3,488.4	10.8	7.8	-168.85		76.3	-20.9	412.0	396.2	15.84	26.014	
3,600.0	3,563.0	3,591.7	3,587.0	11.2	8.1	-168.16		85.2	-16.2	424.3	407.9	16.35	25.948	
3,700.0	3,661.3	3,690.8	3,685.6	11.6	8.3	-167.51		94.2	-11.4	436.6	419.8	16.87	25.882	
3,800.0	3,759.7	3,789.9	3,784.2	12.0	8.6	-166.90		103.1	-6.7	449.0	431.6	17.39	25.818	
3,900.0	3,858.0	3,889.0	3,882.8	12.4	8.9	-166.32		112.0	-2.0	461.5	443.5	17.92	25.754	
4,000.0	3,956.4	3,988.2	3,981.4	12.9	9.1	-165.77		121.0	2.8	473.9	455.5	18.45	25.692	
4,100.0	4,054.8	4,087.3	4,080.0	13.3	9.4	-165.25		129.9	7.5	486.4	467.5	18.98	25.630	
4,200.0	4,153.1	4,186.4	4,178.6	13.7	9.6	-164.75		138.8	12.2	499.0	479.5	19.52	25.570	
4,300.0	4,251.5	4,285.5	4,277.2	14.1	9.9	-164.28		147.8	17.0	511.6	491.5	20.05	25.511	
4,400.0	4,349.8	4,384.6	4,375.8	14.5	10.2	-163.83		156.7	21.7	524.2	503.6	20.59	25.454	
4,500.0	4,448.2	4,483.8	4,474.4	14.9	10.4	-163.41		165.6	26.4	536.9	515.7	21.14	25.398	
4,600.0	4,546.5	4,582.9	4,573.0	15.3	10.7	-163.00		174.6	31.2	549.6	527.9	21.68	25.343	
4,700.0	4,644.9	4,682.0	4,671.6	15.7	11.0	-162.61		183.5	35.9	562.3	540.0	22.23	25.289	
4,800.0	4,743.3	4,776.0	4,765.2	16.1	11.2	-162.31		191.5	40.1	575.3	552.5	22.75	25.289	
4,900.0	4,841.6	4,866.8	4,855.8	16.5	11.4	-162.27		196.8	42.9	589.6	566.4	23.20	25.410	
5,000.0	4,940.0	4,957.1	4,946.1	16.9	11.6	-162.48		199.6	44.4	605.3	581.7	23.63	25.621	
5,100.0	5,038.4	5,050.5	5,039.4	17.3	11.7	-162.95		200.0	44.6	621.8	597.7	24.05	25.852	
5,200.0	5,137.4	5,149.4	5,138.4	17.6	11.9	-163.41		200.0	44.6	635.6	611.1	24.47	25.971	
5,300.0	5,236.8	5,248.8	5,237.8	17.8	12.1	-163.75		200.0	44.6	646.1	621.2	24.88	25.967	
5,400.0	5,336.5	5,348.6	5,337.5	18.0	12.3	-163.97		200.0	44.6	653.2	628.0	25.26	25.859	
5,500.0	5,436.4	5,448.5	5,437.4	18.1	12.5	-164.08		200.0	44.6	657.0	631.4	25.61	25.651	
5,600.0	5,536.4	5,548.5	5,537.4	18.3	12.8	-90.00		200.0	44.6	657.7	631.7	25.97	25.327	
5,700.0	5,636.4	5,648.5	5,637.4	18.4	13.0	-90.00		200.0	44.6	657.7	631.3	26.37	24.942	
5,800.0	5,736.4	5,748.5	5,737.4	18.6	13.2	-90.00		200.0	44.6	657.7	630.9	26.77	24.567	
5,900.0	5,836.4	5,848.5	5,837.4	18.7	13.4	-90.00		200.0	44.6	657.7	630.5	27.18	24.202	
5,949.3	5,885.7	5,897.8	5,886.7	18.8	13.5	-90.00		200.0	44.6	657.7	630.3	27.38	24.026	
6,000.0	5,936.4	5,948.4	5,937.3	18.9	13.6	-90.16		198.2	44.6	657.7	630.2	27.54	23.881	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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						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)			
6,100.0	6,036.3	6,047.0	6,035.0	19.0	13.7	88.98	185.2	44.6	657.8	630.0	27.77	23.690		
6,200.0	6,135.0	6,144.3	6,128.9	19.1	13.8	88.09	160.0	44.6	658.1	630.2	27.90	23.589		
6,300.0	6,230.8	6,240.5	6,217.9	19.1	13.8	87.24	123.7	44.6	658.5	630.5	27.99	23.529		
6,400.0	6,322.0	6,335.5	6,300.6	19.2	13.9	86.43	77.1	44.6	659.0	630.9	28.09	23.459		
6,500.0	6,407.1	6,429.5	6,376.2	19.2	13.9	85.69	21.3	44.6	659.6	631.3	28.28	23.322		
6,600.0	6,484.7	6,522.7	6,443.7	19.3	14.0	85.02	-42.8	44.6	660.2	631.6	28.62	23.065		
6,700.0	6,553.4	6,615.1	6,502.5	19.4	14.4	84.44	-114.0	44.6	660.8	631.7	29.18	22.647		
6,800.0	6,612.0	6,706.8	6,552.0	19.5	14.8	83.94	-191.3	44.6	661.4	631.4	30.00	22.051		
6,900.0	6,659.6	6,800.0	6,592.4	19.8	15.5	83.53	-275.1	44.6	661.9	630.8	31.11	21.275		
7,000.0	6,695.3	6,889.0	6,621.1	20.3	16.2	83.24	-359.3	44.6	662.3	629.8	32.51	20.375		
7,100.0	6,718.5	6,979.5	6,640.2	20.9	17.1	83.04	-447.8	44.6	662.6	628.4	34.19	19.379		
7,200.0	6,728.8	7,070.0	6,648.6	21.7	18.1	82.96	-537.7	44.6	662.7	626.6	36.12	18.347		
7,300.0	6,728.9	7,167.0	6,648.9	22.7	19.3	82.98	-634.8	44.6	662.7	624.3	38.43	17.243		
7,400.0	6,728.3	7,267.0	6,648.7	23.8	20.6	83.01	-734.8	44.6	662.6	621.6	41.02	16.153		
7,500.0	6,727.7	7,367.0	6,648.4	25.0	22.0	83.04	-834.8	44.6	662.6	618.8	43.79	15.130		
7,600.0	6,727.1	7,467.0	6,648.2	26.3	23.5	83.07	-934.8	44.6	662.6	615.8	46.71	14.183		
7,700.0	6,726.6	7,567.0	6,648.0	27.7	25.0	83.10	-1,034.8	44.6	662.5	612.8	49.76	13.315		
7,800.0	6,726.0	7,667.0	6,647.8	29.1	26.6	83.13	-1,134.8	44.6	662.5	609.6	52.90	12.523		
7,900.0	6,725.4	7,767.0	6,647.5	30.6	28.3	83.16	-1,234.8	44.6	662.4	606.3	56.13	11.802		
8,000.0	6,724.8	7,867.0	6,647.3	32.1	29.9	83.20	-1,334.8	44.6	662.4	602.9	59.43	11.146		
8,100.0	6,724.2	7,967.0	6,647.1	33.7	31.6	83.23	-1,434.8	44.6	662.3	599.5	62.79	10.549		
8,200.0	6,723.6	8,067.0	6,646.8	35.3	33.4	83.26	-1,534.8	44.6	662.3	596.1	66.20	10.005		
8,300.0	6,723.0	8,167.0	6,646.6	37.0	35.1	83.29	-1,634.8	44.6	662.2	592.6	69.65	9.508		
8,400.0	6,722.4	8,267.0	6,646.4	38.7	36.9	83.32	-1,734.8	44.6	662.2	589.1	73.14	9.054		
8,500.0	6,721.8	8,367.0	6,646.2	40.3	38.6	83.35	-1,834.8	44.6	662.2	585.5	76.66	8.637		
8,600.0	6,721.2	8,467.0	6,645.9	42.1	40.4	83.38	-1,934.8	44.6	662.1	581.9	80.22	8.254		
8,700.0	6,720.6	8,567.0	6,645.7	43.8	42.2	83.42	-2,034.8	44.6	662.1	578.3	83.79	7.902		
8,800.0	6,720.0	8,667.0	6,645.5	45.5	44.0	83.45	-2,134.8	44.6	662.0	574.6	87.39	7.576		
8,900.0	6,719.4	8,767.0	6,645.3	47.3	45.9	83.48	-2,234.8	44.6	662.0	571.0	91.00	7.274		
9,000.0	6,718.8	8,867.0	6,645.0	49.1	47.7	83.51	-2,334.8	44.6	662.0	567.3	94.64	6.995		
9,100.0	6,718.2	8,967.0	6,644.8	50.8	49.5	83.54	-2,434.8	44.6	661.9	563.6	98.28	6.735		
9,200.0	6,717.7	9,067.0	6,644.6	52.6	51.4	83.57	-2,534.8	44.6	661.9	559.9	101.95	6.492		
9,300.0	6,717.1	9,167.0	6,644.3	54.4	53.2	83.61	-2,634.8	44.6	661.8	556.2	105.62	6.266		
9,400.0	6,716.5	9,267.0	6,644.1	56.2	55.1	83.64	-2,734.8	44.6	661.8	552.5	109.30	6.055		
9,500.0	6,715.9	9,367.0	6,643.9	58.1	56.9	83.67	-2,834.7	44.6	661.7	548.7	113.00	5.856		
9,600.0	6,715.3	9,467.0	6,643.7	59.9	58.8	83.70	-2,934.7	44.6	661.7	545.0	116.70	5.670		
9,700.0	6,714.7	9,567.0	6,643.4	61.7	60.6	83.73	-3,034.7	44.6	661.7	541.3	120.41	5.495		
9,800.0	6,714.1	9,667.0	6,643.2	63.5	62.5	83.76	-3,134.7	44.6	661.6	537.5	124.13	5.330		
9,900.0	6,713.5	9,767.0	6,643.0	65.4	64.4	83.79	-3,234.7	44.6	661.6	533.7	127.86	5.174		
10,000.0	6,712.9	9,867.0	6,642.8	67.2	66.2	83.83	-3,334.7	44.6	661.5	530.0	131.59	5.027		
10,100.0	6,712.3	9,967.0	6,642.5	69.1	68.1	83.86	-3,434.7	44.6	661.5	526.2	135.33	4.888		
10,200.0	6,711.7	10,067.0	6,642.3	70.9	70.0	83.89	-3,534.7	44.6	661.5	522.4	139.07	4.756		
10,300.0	6,711.1	10,167.0	6,642.1	72.8	71.9	83.92	-3,634.7	44.6	661.4	518.6	142.82	4.631		
10,400.0	6,710.5	10,267.0	6,641.9	74.6	73.8	83.95	-3,734.7	44.6	661.4	514.8	146.57	4.512		
10,500.0	6,709.9	10,367.0	6,641.6	76.5	75.6	83.98	-3,834.7	44.6	661.4	511.0	150.33	4.399		
10,600.0	6,709.3	10,467.0	6,641.4	78.4	77.5	84.02	-3,934.7	44.6	661.3	507.2	154.09	4.292		
10,700.0	6,708.8	10,567.0	6,641.2	80.2	79.4	84.05	-4,034.7	44.6	661.3	503.4	157.86	4.189		
10,800.0	6,708.2	10,667.0	6,640.9	82.1	81.3	84.08	-4,134.7	44.6	661.2	499.6	161.63	4.091		
10,900.0	6,707.6	10,767.0	6,640.7	84.0	83.2	84.11	-4,234.7	44.6	661.2	495.8	165.40	3.998		
11,000.0	6,707.0	10,867.0	6,640.5	85.8	85.1	84.14	-4,334.7	44.6	661.2	492.0	169.17	3.908		
11,100.0	6,706.4	10,967.0	6,640.3	87.7	87.0	84.17	-4,434.7	44.6	661.1	488.2	172.95	3.823		

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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								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)					
11,200.0	6,705.8	11,067.0	6,640.0	89.6	88.9	84.21	-4,534.7	44.6	661.1	484.4	176.73	3.741				
11,300.0	6,705.2	11,167.0	6,639.8	91.5	90.8	84.24	-4,634.7	44.6	661.1	480.5	180.51	3.662				
11,400.0	6,704.6	11,267.0	6,639.6	93.4	92.7	84.27	-4,734.7	44.6	661.0	476.7	184.30	3.587				
11,500.0	6,704.0	11,367.0	6,639.4	95.2	94.6	84.30	-4,834.7	44.6	661.0	472.9	188.09	3.514				
11,600.0	6,703.4	11,467.0	6,639.1	97.1	96.5	84.33	-4,934.7	44.6	660.9	469.1	191.88	3.445				
11,700.0	6,702.8	11,567.0	6,638.9	99.0	98.4	84.36	-5,034.7	44.6	660.9	465.2	195.67	3.378				
11,800.0	6,702.2	11,667.0	6,638.7	100.9	100.3	84.39	-5,134.7	44.6	660.9	461.4	199.46	3.313				
11,900.0	6,701.6	11,767.0	6,638.4	102.8	102.2	84.43	-5,234.7	44.6	660.8	457.6	203.26	3.251				
12,000.0	6,701.0	11,867.0	6,638.2	104.7	104.1	84.46	-5,334.7	44.6	660.8	453.7	207.06	3.191				
12,100.0	6,700.4	11,967.0	6,638.0	106.6	106.0	84.49	-5,434.7	44.6	660.8	449.9	210.86	3.134				
12,200.0	6,699.9	12,067.0	6,637.8	108.5	107.9	84.52	-5,534.7	44.6	660.7	446.1	214.66	3.078				
12,300.0	6,699.3	12,167.0	6,637.5	110.3	109.8	84.55	-5,634.7	44.6	660.7	442.2	218.46	3.024				
12,400.0	6,698.7	12,267.0	6,637.3	112.2	111.7	84.58	-5,734.7	44.6	660.7	438.4	222.27	2.972				
12,500.0	6,698.1	12,367.0	6,637.1	114.1	113.6	84.62	-5,834.7	44.6	660.6	434.6	226.07	2.922				
12,600.0	6,697.5	12,467.0	6,636.9	116.0	115.5	84.65	-5,934.7	44.6	660.6	430.7	229.88	2.874				
12,700.0	6,696.9	12,567.0	6,636.6	117.9	117.4	84.68	-6,034.7	44.6	660.6	426.9	233.69	2.827				
12,800.0	6,696.3	12,667.0	6,636.4	119.8	119.3	84.71	-6,134.7	44.6	660.5	423.0	237.50	2.781				
12,900.0	6,695.7	12,767.0	6,636.2	121.7	121.2	84.74	-6,234.7	44.6	660.5	419.2	241.31	2.737				
13,000.0	6,695.1	12,867.0	6,636.0	123.6	123.1	84.77	-6,334.7	44.6	660.5	415.3	245.12	2.694				
13,100.0	6,694.5	12,966.9	6,635.7	125.5	125.0	84.81	-6,434.7	44.6	660.4	411.5	248.93	2.653				
13,200.0	6,693.9	13,066.9	6,635.5	127.4	126.9	84.84	-6,534.7	44.6	660.4	407.6	252.75	2.613				
13,300.0	6,693.3	13,166.9	6,635.3	129.3	128.9	84.87	-6,634.7	44.6	660.4	403.8	256.56	2.574				
13,400.0	6,692.7	13,266.9	6,635.0	131.2	130.8	84.90	-6,734.7	44.6	660.3	399.9	260.38	2.536				
13,500.0	6,692.1	13,366.9	6,634.8	133.1	132.7	84.93	-6,834.7	44.6	660.3	396.1	264.20	2.499				
13,600.0	6,691.5	13,466.9	6,634.6	135.0	134.6	84.96	-6,934.7	44.6	660.3	392.2	268.01	2.464				
13,700.0	6,691.0	13,566.9	6,634.4	136.9	136.5	85.00	-7,034.7	44.6	660.2	388.4	271.83	2.429				
13,800.0	6,690.4	13,666.9	6,634.1	138.8	138.4	85.03	-7,134.7	44.6	660.2	384.5	275.65	2.395				
13,860.3	6,690.0	13,727.2	6,634.0	140.0	139.6	85.05	-7,195.0	44.6	660.2	382.2	277.96	2.375 SF				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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-423 - 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)	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	-90.02	-90.02	0.0	-30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	-90.02	-90.02	0.0	-30.6	30.6	30.4	0.22	136.355	
200.0	200.0	200.0	200.0	0.3	0.3	-90.02	-90.02	0.0	-30.6	30.6	30.0	0.67	45.452	
300.0	300.0	300.0	300.0	0.6	0.6	-90.02	-90.02	0.0	-30.6	30.6	29.5	1.12	27.271	
400.0	400.0	400.0	400.0	0.8	0.8	-90.02	-90.02	0.0	-30.6	30.6	29.1	1.57	19.479	
500.0	500.0	500.0	500.0	1.0	1.0	-90.02	-90.02	0.0	-30.6	30.6	28.6	2.02	15.151	
600.0	600.0	600.0	600.0	1.2	1.2	-90.02	-90.02	0.0	-30.6	30.6	28.2	2.47	12.396	
700.0	700.0	700.0	700.0	1.5	1.5	-90.02	-90.02	0.0	-30.6	30.6	27.7	2.92	10.489	
800.0	800.0	800.0	800.0	1.7	1.7	-90.02	-90.02	0.0	-30.6	30.6	27.3	3.37	9.090	
900.0	900.0	900.0	900.0	1.9	1.9	-90.02	-90.02	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	-90.02	-90.02	0.0	-30.6	30.6	26.4	4.27	7.177 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-164.96	-164.96	0.0	-30.6	32.3	27.6	4.71	6.865	
1,200.0	1,199.8	1,199.8	1,199.8	2.6	2.6	-167.02	-167.02	0.0	-30.6	37.4	32.3	5.14	7.283	
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	-169.43	-169.43	0.0	-30.6	45.9	40.4	5.56	8.260	
1,400.0	1,398.7	1,398.7	1,398.7	3.0	3.0	-171.60	-171.60	0.0	-30.6	58.0	52.0	5.98	9.687	
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	-173.35	-173.35	0.0	-30.6	73.5	67.1	6.40	11.477	
1,600.0	1,595.8	1,595.8	1,595.8	3.6	3.5	-174.38	-174.38	0.7	-29.1	89.8	82.9	6.83	13.137	
1,700.0	1,694.2	1,701.3	1,701.1	3.9	3.7	-174.57	-174.57	3.1	-24.3	102.8	95.5	7.27	14.138	
1,800.0	1,792.5	1,804.6	1,804.0	4.3	3.9	-174.20	-174.20	7.2	-16.2	112.3	104.6	7.72	14.560	
1,900.0	1,890.9	1,905.0	1,903.8	4.6	4.2	-173.57	-173.57	12.2	-6.1	119.6	111.5	8.17	14.647	
2,000.0	1,989.3	2,004.7	2,002.9	5.0	4.4	-173.01	-173.01	17.1	4.0	126.8	118.2	8.62	14.709	
2,100.0	2,087.6	2,104.5	2,102.0	5.4	4.7	-172.51	-172.51	22.1	14.1	134.1	125.0	9.09	14.756	
2,200.0	2,186.0	2,204.2	2,201.1	5.7	4.9	-172.06	-172.06	27.1	24.2	141.3	131.8	9.55	14.792	
2,300.0	2,284.3	2,303.9	2,300.2	6.1	5.2	-171.66	-171.66	32.1	34.2	148.6	138.6	10.03	14.820	
2,400.0	2,382.7	2,403.7	2,399.3	6.5	5.4	-171.29	-171.29	37.1	44.3	155.9	145.4	10.50	14.840	
2,500.0	2,481.0	2,503.4	2,498.4	6.9	5.7	-170.96	-170.96	42.1	54.4	163.1	152.1	10.98	14.854	
2,600.0	2,579.4	2,603.1	2,597.5	7.3	6.0	-170.65	-170.65	47.1	64.4	170.4	158.9	11.46	14.863	
2,700.0	2,677.8	2,702.9	2,696.6	7.7	6.3	-170.37	-170.37	52.0	74.5	177.7	165.7	11.95	14.869	
2,800.0	2,776.1	2,802.6	2,795.7	8.0	6.5	-170.11	-170.11	57.0	84.6	185.0	172.5	12.44	14.871	
2,900.0	2,874.5	2,902.3	2,894.8	8.4	6.8	-169.87	-169.87	62.0	94.7	192.3	179.3	12.93	14.871	
3,000.0	2,972.8	3,002.1	2,993.9	8.8	7.1	-169.65	-169.65	67.0	104.7	199.5	186.1	13.42	14.869	
3,100.0	3,071.2	3,101.8	3,093.0	9.2	7.4	-169.45	-169.45	72.0	114.8	206.8	192.9	13.91	14.865	
3,200.0	3,169.5	3,201.5	3,192.1	9.6	7.7	-169.25	-169.25	77.0	124.9	214.1	199.7	14.41	14.860	
3,300.0	3,267.9	3,301.3	3,291.2	10.0	8.0	-169.08	-169.08	81.9	134.9	221.4	206.5	14.91	14.854	
3,400.0	3,366.3	3,401.0	3,390.2	10.4	8.3	-168.91	-168.91	86.9	145.0	228.7	213.3	15.40	14.848	
3,500.0	3,464.6	3,500.7	3,489.3	10.8	8.6	-168.75	-168.75	91.9	155.1	236.0	220.1	15.90	14.840	
3,600.0	3,563.0	3,600.4	3,588.4	11.2	8.8	-168.60	-168.60	96.9	165.2	243.3	226.9	16.41	14.832	
3,700.0	3,661.3	3,700.2	3,687.5	11.6	9.1	-168.46	-168.46	101.9	175.2	250.6	233.7	16.91	14.823	
3,800.0	3,759.7	3,799.9	3,786.6	12.0	9.4	-168.33	-168.33	106.9	185.3	257.9	240.5	17.41	14.815	
3,900.0	3,858.0	3,899.6	3,885.7	12.4	9.7	-168.21	-168.21	111.8	195.4	265.2	247.3	17.91	14.806	
4,000.0	3,956.4	3,999.4	3,984.8	12.9	10.0	-168.09	-168.09	116.8	205.4	272.6	254.1	18.42	14.797	
4,100.0	4,054.8	4,099.1	4,083.9	13.3	10.3	-167.98	-167.98	121.8	215.5	279.9	260.9	18.93	14.787	
4,200.0	4,153.1	4,198.8	4,183.0	13.7	10.6	-167.87	-167.87	126.8	225.6	287.2	267.7	19.43	14.778	
4,300.0	4,251.5	4,298.6	4,282.1	14.1	10.9	-167.77	-167.77	131.8	235.7	294.5	274.5	19.94	14.769	
4,400.0	4,349.8	4,398.3	4,381.2	14.5	11.2	-167.68	-167.68	136.8	245.7	301.8	281.3	20.45	14.760	
4,500.0	4,448.2	4,498.0	4,480.3	14.9	11.5	-167.58	-167.58	141.8	255.8	309.1	288.2	20.96	14.751	
4,600.0	4,546.5	4,597.8	4,579.4	15.3	11.8	-167.50	-167.50	146.7	265.9	316.4	295.0	21.46	14.742	
4,700.0	4,644.9	4,697.5	4,678.5	15.7	12.1	-167.41	-167.41	151.7	275.9	323.7	301.8	21.97	14.733	
4,800.0	4,743.3	4,797.2	4,777.6	16.1	12.4	-167.34	-167.34	156.7	286.0	331.0	308.6	22.48	14.724	
4,900.0	4,841.6	4,896.9	4,876.7	16.5	12.7	-167.26	-167.26	161.7	296.1	338.4	315.4	22.99	14.715	
5,000.0	4,940.0	4,996.7	4,975.8	16.9	13.0	-167.19	-167.19	166.7	306.2	345.7	322.2	23.51	14.706	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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-423 - 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	5,038.4	5,096.4	5,074.9	17.3	13.3	-167.11	171.7	316.2	352.5	328.4	24.03	14.669		
5,200.0	5,137.4	5,196.4	5,174.2	17.6	13.6	-166.93	176.7	326.3	356.2	331.6	24.52	14.527		
5,300.0	5,236.8	5,296.3	5,273.5	17.8	13.9	-166.61	181.7	336.4	356.5	331.5	24.98	14.268		
5,400.0	5,336.5	5,396.2	5,372.8	18.0	14.2	-166.13	186.6	346.5	353.4	328.0	25.43	13.898		
5,500.0	5,436.4	5,496.0	5,471.9	18.1	14.5	-165.49	191.6	356.6	347.0	321.1	25.85	13.423		
5,600.0	5,536.4	5,586.3	5,561.8	18.3	14.7	-90.75	195.6	364.6	338.7	312.5	26.23	12.913		
5,700.0	5,636.4	5,676.6	5,651.9	18.4	14.9	-90.29	198.3	370.0	332.7	306.0	26.63	12.493		
5,800.0	5,736.4	5,767.1	5,742.3	18.6	15.1	-90.05	199.7	372.9	329.4	302.4	27.00	12.202		
5,891.5	5,827.9	5,852.7	5,827.9	18.7	15.2	-90.00	200.0	373.5	328.9	301.5	27.33	12.033		
5,900.0	5,836.4	5,861.2	5,836.4	18.7	15.2	-90.00	200.0	373.5	328.9	301.5	27.36	12.019		
6,000.0	5,936.4	5,961.2	5,936.4	18.9	15.4	-90.00	200.0	373.5	328.9	301.1	27.75	11.851		
6,042.8	5,979.2	6,004.0	5,979.2	18.9	15.5	90.15	200.0	373.5	328.9	300.9	27.92	11.779		
6,100.0	6,036.3	6,061.1	6,036.3	19.0	15.6	90.57	200.0	373.5	328.9	300.7	28.16	11.677		
6,200.0	6,135.0	6,161.6	6,136.6	19.1	15.7	92.34	194.3	373.5	329.1	300.6	28.57	11.519		
6,300.0	6,230.8	6,263.6	6,236.7	19.1	15.8	94.08	175.2	373.5	329.7	300.8	28.86	11.422		
6,400.0	6,322.0	6,367.0	6,334.7	19.2	15.9	95.75	142.4	373.5	330.5	301.5	29.05	11.376		
6,500.0	6,407.1	6,471.8	6,428.5	19.2	16.0	97.33	96.0	373.5	331.6	302.4	29.19	11.360		
6,600.0	6,484.7	6,577.9	6,516.2	19.3	16.0	98.78	36.4	373.5	332.8	303.4	29.35	11.338		
6,700.0	6,553.4	6,685.3	6,595.7	19.4	16.1	100.07	-35.8	373.5	334.0	304.4	29.66	11.262		
6,800.0	6,612.0	6,793.9	6,664.9	19.5	16.3	101.17	-119.3	373.5	335.2	305.0	30.22	11.091		
6,900.0	6,659.6	6,903.5	6,722.1	19.8	16.7	102.07	-212.6	373.5	336.3	305.1	31.19	10.783		
7,000.0	6,695.3	7,013.9	6,765.6	20.3	17.3	102.75	-314.0	373.5	337.2	304.5	32.63	10.333		
7,100.0	6,718.5	7,124.9	6,794.2	20.9	18.2	103.19	-421.2	373.5	337.8	303.2	34.56	9.772		
7,200.0	6,728.8	7,231.3	6,808.0	21.7	19.2	103.58	-526.6	373.5	338.4	301.5	36.88	9.173		
7,300.0	6,728.9	7,336.5	6,816.6	22.7	20.4	104.92	-631.4	373.5	340.4	301.1	39.27	8.668		
7,400.0	6,728.3	7,440.2	6,817.4	23.8	21.7	105.15	-735.1	373.5	340.7	298.9	41.81	8.148		
7,500.0	6,727.7	7,540.2	6,817.2	25.0	23.1	105.22	-835.1	373.5	340.8	296.3	44.49	7.659		
7,600.0	6,727.1	7,640.2	6,817.0	26.3	24.5	105.28	-935.1	373.5	340.9	293.6	47.32	7.205		
7,700.0	6,726.6	7,740.2	6,816.8	27.7	26.0	105.35	-1,035.1	373.5	341.0	290.8	50.25	6.786		
7,800.0	6,726.0	7,840.2	6,816.6	29.1	27.5	105.41	-1,135.1	373.5	341.1	287.8	53.29	6.402		
7,900.0	6,725.4	7,940.2	6,816.4	30.6	29.1	105.48	-1,235.1	373.5	341.2	284.8	56.40	6.050		
8,000.0	6,724.8	8,040.2	6,816.3	32.1	30.7	105.54	-1,335.1	373.5	341.3	281.8	59.58	5.729		
8,100.0	6,724.2	8,140.2	6,816.1	33.7	32.4	105.61	-1,435.1	373.5	341.4	278.6	62.82	5.436		
8,200.0	6,723.6	8,240.2	6,815.9	35.3	34.1	105.67	-1,535.1	373.5	341.6	275.5	66.10	5.167		
8,300.0	6,723.0	8,340.2	6,815.7	37.0	35.8	105.74	-1,635.1	373.5	341.7	272.2	69.43	4.921		
8,400.0	6,722.4	8,440.2	6,815.5	38.7	37.5	105.80	-1,735.1	373.5	341.8	269.0	72.79	4.695		
8,500.0	6,721.8	8,540.2	6,815.3	40.3	39.2	105.87	-1,835.1	373.5	341.9	265.7	76.18	4.488		
8,600.0	6,721.2	8,640.2	6,815.1	42.1	41.0	105.93	-1,935.1	373.5	342.0	262.4	79.60	4.296		
8,700.0	6,720.6	8,740.2	6,814.9	43.8	42.8	106.00	-2,035.1	373.5	342.1	259.1	83.04	4.120		
8,800.0	6,720.0	8,840.2	6,814.7	45.5	44.6	106.06	-2,135.1	373.5	342.2	255.7	86.50	3.956		
8,900.0	6,719.4	8,940.2	6,814.5	47.3	46.4	106.13	-2,235.1	373.5	342.3	252.3	89.98	3.805		
9,000.0	6,718.8	9,040.2	6,814.3	49.1	48.2	106.19	-2,335.1	373.5	342.4	249.0	93.47	3.664		
9,100.0	6,718.2	9,140.2	6,814.1	50.8	50.0	106.26	-2,435.1	373.5	342.6	245.6	96.97	3.532		
9,200.0	6,717.7	9,240.2	6,813.9	52.6	51.8	106.32	-2,535.1	373.5	342.7	242.2	100.49	3.410		
9,300.0	6,717.1	9,340.2	6,813.8	54.4	53.6	106.38	-2,635.1	373.5	342.8	238.8	104.01	3.295		
9,400.0	6,716.5	9,440.2	6,813.6	56.2	55.5	106.45	-2,735.1	373.5	342.9	235.3	107.55	3.188		
9,500.0	6,715.9	9,540.2	6,813.4	58.1	57.3	106.51	-2,835.1	373.5	343.0	231.9	111.09	3.088		
9,600.0	6,715.3	9,640.2	6,813.2	59.9	59.2	106.58	-2,935.1	373.5	343.1	228.5	114.64	2.993		
9,700.0	6,714.7	9,740.2	6,813.0	61.7	61.0	106.64	-3,035.1	373.5	343.2	225.0	118.19	2.904		
9,800.0	6,714.1	9,840.2	6,812.8	63.5	62.9	106.71	-3,135.1	373.5	343.3	221.6	121.75	2.820		
9,900.0	6,713.5	9,940.2	6,812.6	65.4	64.7	106.77	-3,235.1	373.5	343.5	218.1	125.32	2.741		

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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-423 - 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		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)				Between Centres (ft)	Between Ellipses (ft)
10,000.0	6,712.9	10,040.2	6,812.4	67.2	66.6	106.83	-3,335.1	373.5	343.6	214.7	128.89	2.666	
10,100.0	6,712.3	10,140.2	6,812.2	69.1	68.5	106.90	-3,435.1	373.5	343.7	211.2	132.46	2.595	
10,200.0	6,711.7	10,240.2	6,812.0	70.9	70.3	106.96	-3,535.1	373.5	343.8	207.8	136.03	2.527	
10,300.0	6,711.1	10,340.2	6,811.8	72.8	72.2	107.03	-3,635.1	373.5	343.9	204.3	139.61	2.463	
10,400.0	6,710.5	10,440.2	6,811.6	74.6	74.1	107.09	-3,735.1	373.5	344.0	200.9	143.19	2.403	
10,500.0	6,709.9	10,540.2	6,811.5	76.5	75.9	107.15	-3,835.1	373.5	344.2	197.4	146.77	2.345	
10,600.0	6,709.3	10,640.2	6,811.3	78.4	77.8	107.22	-3,935.1	373.5	344.3	193.9	150.36	2.290	
10,700.0	6,708.8	10,740.2	6,811.1	80.2	79.7	107.28	-4,035.1	373.5	344.4	190.5	153.94	2.237	
10,800.0	6,708.2	10,840.2	6,810.9	82.1	81.6	107.35	-4,135.1	373.5	344.5	187.0	157.53	2.187	
10,900.0	6,707.6	10,940.2	6,810.7	84.0	83.5	107.41	-4,235.1	373.5	344.6	183.5	161.11	2.139	
11,000.0	6,707.0	11,040.2	6,810.5	85.8	85.4	107.47	-4,335.1	373.5	344.8	180.1	164.70	2.093	
11,100.0	6,706.4	11,140.2	6,810.3	87.7	87.2	107.54	-4,435.1	373.5	344.9	176.6	168.29	2.049	
11,200.0	6,705.8	11,240.2	6,810.1	89.6	89.1	107.60	-4,535.1	373.5	345.0	173.1	171.88	2.007	
11,300.0	6,705.2	11,340.2	6,809.9	91.5	91.0	107.66	-4,635.1	373.5	345.1	169.7	175.46	1.967	
11,400.0	6,704.6	11,440.2	6,809.7	93.4	92.9	107.73	-4,735.1	373.5	345.2	166.2	179.05	1.928	
11,500.0	6,704.0	11,540.2	6,809.5	95.2	94.8	107.79	-4,835.1	373.5	345.4	162.7	182.64	1.891	
11,600.0	6,703.4	11,640.2	6,809.3	97.1	96.7	107.85	-4,935.1	373.5	345.5	159.3	186.23	1.855	
11,700.0	6,702.8	11,740.1	6,809.1	99.0	98.6	107.92	-5,035.1	373.5	345.6	155.8	189.81	1.821	
11,800.0	6,702.2	11,840.1	6,809.0	100.9	100.5	107.98	-5,135.1	373.5	345.7	152.3	193.40	1.788	
11,900.0	6,701.6	11,940.1	6,808.8	102.8	102.4	108.04	-5,235.1	373.5	345.9	148.9	196.98	1.756	
12,000.0	6,701.0	12,040.1	6,808.6	104.7	104.3	108.11	-5,335.1	373.5	346.0	145.4	200.57	1.725	
12,100.0	6,700.4	12,140.1	6,808.4	106.6	106.2	108.17	-5,435.1	373.5	346.1	142.0	204.15	1.695	
12,200.0	6,699.9	12,240.1	6,808.2	108.5	108.1	108.23	-5,535.1	373.5	346.2	138.5	207.73	1.667	
12,300.0	6,699.3	12,340.1	6,808.0	110.3	110.0	108.30	-5,635.1	373.5	346.4	135.0	211.32	1.639	
12,400.0	6,698.7	12,440.1	6,807.8	112.2	111.9	108.36	-5,735.1	373.5	346.5	131.6	214.90	1.612	
12,500.0	6,698.1	12,540.1	6,807.6	114.1	113.8	108.42	-5,835.1	373.5	346.6	128.1	218.48	1.587	
12,600.0	6,697.5	12,640.1	6,807.4	116.0	115.7	108.49	-5,935.1	373.5	346.7	124.7	222.05	1.562	
12,700.0	6,696.9	12,740.1	6,807.2	117.9	117.6	108.55	-6,035.1	373.5	346.9	121.2	225.63	1.537	
12,800.0	6,696.3	12,840.1	6,807.0	119.8	119.5	108.61	-6,135.1	373.5	347.0	117.8	229.20	1.514	
12,900.0	6,695.7	12,940.1	6,806.8	121.7	121.4	108.67	-6,235.1	373.5	347.1	114.4	232.78	1.491 Level 3	
13,000.0	6,695.1	13,040.1	6,806.7	123.6	123.3	108.74	-6,335.1	373.5	347.3	110.9	236.35	1.469 Level 3	
13,100.0	6,694.5	13,140.1	6,806.5	125.5	125.2	108.80	-6,435.1	373.5	347.4	107.5	239.92	1.448 Level 3	
13,200.0	6,693.9	13,240.1	6,806.3	127.4	127.1	108.86	-6,535.1	373.5	347.5	104.0	243.49	1.427 Level 3	
13,300.0	6,693.3	13,340.1	6,806.1	129.3	129.0	108.92	-6,635.1	373.5	347.6	100.6	247.06	1.407 Level 3	
13,400.0	6,692.7	13,440.1	6,805.9	131.2	130.9	108.99	-6,735.1	373.5	347.8	97.2	250.62	1.388 Level 3	
13,500.0	6,692.1	13,540.1	6,805.7	133.1	132.8	109.05	-6,835.1	373.5	347.9	93.7	254.19	1.369 Level 3	
13,600.0	6,691.5	13,640.1	6,805.5	135.0	134.7	109.11	-6,935.1	373.5	348.0	90.3	257.75	1.350 Level 3	
13,700.0	6,691.0	13,740.1	6,805.3	136.9	136.6	109.17	-7,035.1	373.5	348.2	86.9	261.31	1.332 Level 3	
13,800.0	6,690.4	13,840.1	6,805.1	138.8	138.5	109.24	-7,135.1	373.5	348.3	83.4	264.87	1.315 Level 3	
13,860.3	6,690.0	13,900.2	6,805.0	140.0	139.7	109.27	-7,195.1	373.5	348.4	81.4	267.01	1.305 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	Offset	Semi Major Axis (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	90.03	90.03	0.0	30.6	30.7				
100.0	100.0	99.0	99.0	0.1	0.1	90.03	90.03	0.0	30.6	30.6	30.4	0.22	137.039	
200.0	200.0	199.0	199.0	0.3	0.3	90.03	90.03	0.0	30.6	30.6	30.0	0.67	45.604	
300.0	300.0	299.0	299.0	0.6	0.6	90.03	90.03	0.0	30.6	30.6	29.5	1.12	27.326	
400.0	400.0	399.0	399.0	0.8	0.8	90.03	90.03	0.0	30.6	30.6	29.1	1.57	19.507 CC, ES	
500.0	500.0	497.9	497.9	1.0	1.0	89.45	89.45	0.3	32.3	32.3	30.3	2.01	16.078	
600.0	600.0	596.6	596.5	1.2	1.2	88.00	88.00	1.3	37.3	37.4	34.9	2.45	15.257	
700.0	700.0	694.9	694.3	1.5	1.4	86.30	86.30	2.9	45.5	45.8	42.9	2.91	15.770	
800.0	800.0	792.4	791.2	1.7	1.7	84.76	84.76	5.2	57.0	57.7	54.3	3.39	17.025	
900.0	900.0	889.0	886.6	1.9	2.0	83.52	83.52	8.1	71.5	73.0	69.1	3.91	18.678	
1,000.0	1,000.0	984.5	980.5	2.1	2.3	82.57	82.57	11.6	88.9	91.6	87.1	4.46	20.522	
1,100.0	1,100.0	1,082.6	1,076.5	2.4	2.7	7.84	7.84	15.5	108.6	110.2	105.5	4.70	23.436	
1,200.0	1,199.8	1,181.5	1,173.3	2.6	3.1	7.60	7.60	19.5	128.3	125.5	120.4	5.14	24.415	
1,300.0	1,299.5	1,280.7	1,270.5	2.8	3.5	7.60	7.60	23.4	148.2	137.3	131.8	5.59	24.587	
1,400.0	1,398.7	1,380.4	1,368.0	3.0	4.0	7.79	7.79	27.4	168.1	145.7	139.7	6.04	24.132	
1,500.0	1,497.5	1,480.3	1,465.8	3.3	4.4	8.15	8.15	31.4	188.1	150.7	144.2	6.49	23.207	
1,600.0	1,595.8	1,580.2	1,563.6	3.6	4.8	8.63	8.63	35.4	208.1	153.3	146.3	6.98	21.975	
1,700.0	1,694.2	1,680.2	1,661.5	3.9	5.3	9.10	9.10	39.3	228.1	155.9	148.4	7.47	20.868	
1,800.0	1,792.5	1,780.1	1,759.4	4.3	5.7	9.55	9.55	43.3	248.1	158.4	150.5	7.97	19.884	
1,900.0	1,890.9	1,880.1	1,857.2	4.6	6.2	9.99	9.99	47.3	268.1	161.0	152.5	8.47	19.006	
2,000.0	1,989.3	1,980.1	1,955.1	5.0	6.6	10.42	10.42	51.3	288.1	163.6	154.6	8.98	18.217	
2,100.0	2,087.6	2,080.0	2,052.9	5.4	7.0	10.83	10.83	55.3	308.1	166.2	156.7	9.49	17.507	
2,200.0	2,186.0	2,180.0	2,150.8	5.7	7.5	11.23	11.23	59.3	328.1	168.8	158.8	10.01	16.863	
2,300.0	2,284.3	2,279.9	2,248.6	6.1	7.9	11.62	11.62	63.3	348.1	171.4	160.8	10.53	16.278	
2,400.0	2,382.7	2,379.9	2,346.5	6.5	8.4	11.99	11.99	67.3	368.1	174.0	162.9	11.05	15.743	
2,500.0	2,481.0	2,479.8	2,444.4	6.9	8.8	12.36	12.36	71.2	388.1	176.6	165.0	11.58	15.254	
2,600.0	2,579.4	2,579.8	2,542.2	7.3	9.3	12.71	12.71	75.2	408.1	179.2	167.1	12.11	14.804	
2,700.0	2,677.8	2,679.8	2,640.1	7.7	9.7	13.05	13.05	79.2	428.1	181.9	169.2	12.64	14.389	
2,800.0	2,776.1	2,779.7	2,737.9	8.0	10.2	13.39	13.39	83.2	448.1	184.5	171.3	13.17	14.005	
2,900.0	2,874.5	2,879.7	2,835.8	8.4	10.6	13.71	13.71	87.2	468.1	187.2	173.4	13.71	13.649	
3,000.0	2,972.8	2,979.6	2,933.6	8.8	11.1	14.03	14.03	91.2	488.1	189.8	175.6	14.25	13.319	
3,100.0	3,071.2	3,079.6	3,031.5	9.2	11.5	14.34	14.34	95.2	508.1	192.5	177.7	14.79	13.010	
3,200.0	3,169.5	3,179.6	3,129.4	9.6	12.0	14.63	14.63	99.1	528.1	195.1	179.8	15.34	12.722	
3,300.0	3,267.9	3,279.5	3,227.2	10.0	12.4	14.92	14.92	103.1	548.1	197.8	181.9	15.88	12.452	
3,400.0	3,366.3	3,379.5	3,325.1	10.4	12.9	15.21	15.21	107.1	568.1	200.5	184.0	16.43	12.199	
3,500.0	3,464.6	3,479.4	3,422.9	10.8	13.3	15.48	15.48	111.1	588.1	203.2	186.2	16.98	11.961	
3,600.0	3,563.0	3,579.4	3,520.8	11.2	13.8	15.75	15.75	115.1	608.1	205.8	188.3	17.54	11.737	
3,700.0	3,661.3	3,679.4	3,618.6	11.6	14.2	16.01	16.01	119.1	628.1	208.5	190.4	18.09	11.526	
3,800.0	3,759.7	3,779.3	3,716.5	12.0	14.7	16.27	16.27	123.1	648.1	211.2	192.6	18.65	11.326	
3,900.0	3,858.0	3,879.3	3,814.4	12.4	15.1	16.51	16.51	127.0	668.1	213.9	194.7	19.21	11.137	
4,000.0	3,956.4	3,979.2	3,912.2	12.9	15.6	16.76	16.76	131.0	688.1	216.6	196.8	19.77	10.959	
4,100.0	4,054.8	4,079.2	4,010.1	13.3	16.0	16.99	16.99	135.0	708.1	219.3	199.0	20.33	10.789	
4,200.0	4,153.1	4,179.2	4,107.9	13.7	16.5	17.22	17.22	139.0	728.1	222.0	201.1	20.89	10.628	
4,300.0	4,251.5	4,279.1	4,205.8	14.1	16.9	17.45	17.45	143.0	748.1	224.7	203.3	21.46	10.474	
4,400.0	4,349.8	4,379.1	4,303.6	14.5	17.4	17.67	17.67	147.0	768.1	227.5	205.4	22.02	10.328	
4,500.0	4,448.2	4,479.0	4,401.5	14.9	17.8	17.88	17.88	151.0	788.1	230.2	207.6	22.59	10.189	
4,600.0	4,546.5	4,579.0	4,499.4	15.3	18.3	18.09	18.09	155.0	808.1	232.9	209.7	23.16	10.056	
4,700.0	4,644.9	4,679.0	4,597.2	15.7	18.7	18.29	18.29	158.9	828.1	235.6	211.9	23.73	9.929	
4,800.0	4,743.3	4,778.9	4,695.1	16.1	19.2	18.49	18.49	162.9	848.1	238.3	214.0	24.30	9.807	
4,900.0	4,841.6	4,878.9	4,792.9	16.5	19.6	18.69	18.69	166.9	868.1	241.1	216.2	24.88	9.691	
5,000.0	4,940.0	4,978.8	4,890.8	16.9	20.1	18.88	18.88	170.9	888.1	243.8	218.4	25.45	9.580	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	5,038.4	5,078.8	4,988.6	17.3	20.5	19.04	174.9	908.1	247.1	221.1	26.01	9.499	
5,200.0	5,137.4	5,178.6	5,086.3	17.6	21.0	18.98	178.9	928.0	253.3	226.8	26.48	9.566	
5,300.0	5,236.8	5,278.1	5,183.8	17.8	21.4	18.71	182.8	947.9	262.8	236.0	26.88	9.777	
5,400.0	5,336.5	5,377.2	5,280.8	18.0	21.9	18.25	186.8	967.8	275.7	248.5	27.22	10.127	
5,500.0	5,436.4	5,482.8	5,384.3	18.1	22.3	17.62	190.8	988.1	291.1	263.6	27.50	10.586	
5,600.0	5,536.4	5,592.8	5,492.9	18.3	22.6	91.08	194.3	1,005.4	306.1	278.4	27.75	11.031	
5,700.0	5,636.4	5,703.9	5,603.1	18.4	22.9	90.55	197.0	1,018.8	318.2	290.1	28.09	11.325	
5,800.0	5,736.4	5,815.9	5,714.7	18.6	23.1	90.21	198.8	1,028.1	326.4	298.0	28.45	11.475	
5,900.0	5,836.4	5,928.5	5,827.2	18.7	23.3	90.03	199.8	1,033.1	330.8	302.0	28.80	11.485	
6,000.0	5,936.4	6,036.7	5,935.4	18.9	23.4	90.00	200.0	1,034.0	331.6	302.5	29.17	11.369	
6,042.9	5,979.3	6,079.6	5,978.3	18.9	23.5	-90.14	200.0	1,034.0	331.6	302.3	29.30	11.320	
6,100.0	6,036.3	6,136.6	6,035.3	19.0	23.5	-90.56	200.0	1,034.0	331.7	302.2	29.44	11.265	
6,200.0	6,135.0	6,237.1	6,135.6	19.1	23.6	-92.34	194.4	1,034.0	331.9	302.4	29.50	11.251	
6,300.0	6,230.8	6,339.1	6,235.7	19.1	23.7	-94.08	175.5	1,034.0	332.5	303.0	29.53	11.260	
6,400.0	6,322.0	6,442.5	6,333.8	19.2	23.7	-95.77	142.8	1,034.0	333.3	303.8	29.58	11.271	
6,500.0	6,407.1	6,547.4	6,427.7	19.2	23.8	-97.35	96.5	1,034.0	334.4	304.7	29.70	11.261	
6,600.0	6,484.7	6,653.6	6,515.5	19.3	23.8	-98.80	36.9	1,034.0	335.6	305.7	29.95	11.207	
6,700.0	6,553.4	6,761.1	6,595.1	19.4	23.9	-100.10	-35.2	1,034.0	336.9	306.5	30.36	11.095	
6,800.0	6,612.0	6,869.8	6,664.5	19.5	24.0	-101.21	-118.8	1,034.0	338.1	307.1	31.00	10.909	
6,900.0	6,659.6	6,979.5	6,721.9	19.8	24.2	-102.12	-212.2	1,034.0	339.2	307.4	31.86	10.646	
7,000.0	6,695.3	7,090.0	6,765.5	20.3	24.5	-102.80	-313.7	1,034.0	340.1	307.1	32.99	10.310	
7,100.0	6,718.5	7,201.2	6,794.2	20.9	25.0	-103.25	-421.0	1,034.0	340.7	306.3	34.38	9.911	
7,200.0	6,728.8	7,307.7	6,808.0	21.7	25.7	-103.63	-526.5	1,034.0	341.3	305.4	35.94	9.498	
7,300.0	6,728.9	7,412.9	6,816.6	22.7	26.5	-104.96	-631.4	1,034.0	343.3	305.6	37.74	9.096	
7,400.0	6,728.3	7,516.7	6,817.4	23.8	27.4	-105.19	-735.1	1,034.0	343.7	303.5	40.15	8.558	
7,500.0	6,727.7	7,616.7	6,817.2	25.0	28.4	-105.26	-835.1	1,034.0	343.8	301.0	42.75	8.042	
7,600.0	6,727.1	7,716.7	6,817.0	26.3	29.5	-105.32	-935.1	1,034.0	343.9	298.4	45.49	7.559	
7,700.0	6,726.6	7,816.7	6,816.8	27.7	30.7	-105.39	-1,035.1	1,034.0	344.0	295.6	48.37	7.112	
7,800.0	6,726.0	7,916.7	6,816.6	29.1	32.0	-105.45	-1,135.1	1,034.0	344.1	292.7	51.35	6.701	
7,900.0	6,725.4	8,016.7	6,816.4	30.6	33.4	-105.52	-1,235.1	1,034.0	344.2	289.8	54.41	6.325	
8,000.0	6,724.8	8,116.7	6,816.2	32.1	34.8	-105.58	-1,335.1	1,034.0	344.3	286.7	57.55	5.982	
8,100.0	6,724.2	8,216.7	6,816.1	33.7	36.2	-105.64	-1,435.1	1,034.0	344.4	283.6	60.76	5.668	
8,200.0	6,723.6	8,316.7	6,815.9	35.3	37.7	-105.71	-1,535.1	1,034.0	344.5	280.5	64.01	5.382	
8,300.0	6,723.0	8,416.7	6,815.7	37.0	39.3	-105.77	-1,635.1	1,034.0	344.6	277.3	67.31	5.120	
8,400.0	6,722.4	8,516.7	6,815.5	38.7	40.9	-105.84	-1,735.1	1,034.0	344.7	274.1	70.65	4.880	
8,500.0	6,721.8	8,616.7	6,815.3	40.3	42.5	-105.90	-1,835.1	1,034.0	344.8	270.8	74.02	4.659	
8,600.0	6,721.2	8,716.7	6,815.1	42.1	44.1	-105.96	-1,935.1	1,034.0	344.9	267.5	77.41	4.456	
8,700.0	6,720.6	8,816.7	6,814.9	43.8	45.7	-106.03	-2,035.1	1,034.0	345.1	264.2	80.83	4.269	
8,800.0	6,720.0	8,916.7	6,814.7	45.5	47.4	-106.09	-2,135.1	1,034.0	345.2	260.9	84.27	4.096	
8,900.0	6,719.4	9,016.7	6,814.5	47.3	49.1	-106.16	-2,235.1	1,034.0	345.3	257.5	87.73	3.936	
9,000.0	6,718.8	9,116.7	6,814.3	49.1	50.8	-106.22	-2,335.1	1,034.0	345.4	254.2	91.21	3.787	
9,100.0	6,718.2	9,216.7	6,814.1	50.8	52.5	-106.28	-2,435.1	1,034.0	345.5	250.8	94.70	3.648	
9,200.0	6,717.7	9,316.7	6,813.9	52.6	54.3	-106.35	-2,535.1	1,034.0	345.6	247.4	98.20	3.520	
9,300.0	6,717.1	9,416.7	6,813.7	54.4	56.0	-106.41	-2,635.1	1,034.0	345.7	244.0	101.71	3.399	
9,400.0	6,716.5	9,516.7	6,813.6	56.2	57.8	-106.48	-2,735.1	1,034.0	345.8	240.6	105.23	3.287	
9,500.0	6,715.9	9,616.7	6,813.4	58.1	59.5	-106.54	-2,835.1	1,034.0	346.0	237.2	108.76	3.181	
9,600.0	6,715.3	9,716.7	6,813.2	59.9	61.3	-106.60	-2,935.1	1,034.0	346.1	233.8	112.30	3.082	
9,700.0	6,714.7	9,816.7	6,813.0	61.7	63.1	-106.67	-3,035.1	1,034.0	346.2	230.3	115.84	2.989	
9,800.0	6,714.1	9,916.7	6,812.8	63.5	64.9	-106.73	-3,135.1	1,034.0	346.3	226.9	119.39	2.901	
9,900.0	6,713.5	10,016.7	6,812.6	65.4	66.7	-106.79	-3,235.1	1,034.0	346.4	223.5	122.94	2.818	
10,000.0	6,712.9	10,116.7	6,812.4	67.2	68.5	-106.86	-3,335.1	1,034.0	346.5	220.0	126.50	2.739	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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		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 (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
10,100.0	6,712.3	10,216.7	6,812.2	69.1	70.3	-106.92	-3,435.1	1,034.0	346.7	216.6	130.06	2.665	
10,200.0	6,711.7	10,316.7	6,812.0	70.9	72.2	-106.99	-3,535.1	1,034.0	346.8	213.1	133.62	2.595	
10,300.0	6,711.1	10,416.7	6,811.8	72.8	74.0	-107.05	-3,635.1	1,034.0	346.9	209.7	137.19	2.529	
10,400.0	6,710.5	10,516.7	6,811.6	74.6	75.8	-107.11	-3,735.1	1,034.0	347.0	206.2	140.76	2.465	
10,500.0	6,709.9	10,616.7	6,811.4	76.5	77.6	-107.18	-3,835.1	1,034.0	347.1	202.8	144.33	2.405	
10,600.0	6,709.3	10,716.7	6,811.3	78.4	79.5	-107.24	-3,935.1	1,034.0	347.2	199.3	147.90	2.348	
10,700.0	6,708.8	10,816.7	6,811.1	80.2	81.3	-107.30	-4,035.1	1,034.0	347.4	195.9	151.47	2.293	
10,800.0	6,708.2	10,916.7	6,810.9	82.1	83.2	-107.36	-4,135.1	1,034.0	347.5	192.4	155.05	2.241	
10,900.0	6,707.6	11,016.7	6,810.7	84.0	85.0	-107.43	-4,235.1	1,034.0	347.6	189.0	158.62	2.191	
11,000.0	6,707.0	11,116.7	6,810.5	85.8	86.9	-107.49	-4,335.1	1,034.0	347.7	185.5	162.20	2.144	
11,100.0	6,706.4	11,216.7	6,810.3	87.7	88.7	-107.55	-4,435.1	1,034.0	347.8	182.1	165.78	2.098	
11,200.0	6,705.8	11,316.7	6,810.1	89.6	90.6	-107.62	-4,535.1	1,034.0	348.0	178.6	169.36	2.055	
11,300.0	6,705.2	11,416.6	6,809.9	91.5	92.4	-107.68	-4,635.1	1,034.0	348.1	175.1	172.93	2.013	
11,400.0	6,704.6	11,516.6	6,809.7	93.4	94.3	-107.74	-4,735.1	1,034.0	348.2	171.7	176.51	1.973	
11,500.0	6,704.0	11,616.6	6,809.5	95.2	96.2	-107.81	-4,835.1	1,034.0	348.3	168.2	180.09	1.934	
11,600.0	6,703.4	11,716.6	6,809.3	97.1	98.0	-107.87	-4,935.1	1,034.0	348.5	164.8	183.67	1.897	
11,700.0	6,702.8	11,816.6	6,809.1	99.0	99.9	-107.93	-5,035.1	1,034.0	348.6	161.3	187.24	1.862	
11,800.0	6,702.2	11,916.6	6,808.9	100.9	101.8	-107.99	-5,135.1	1,034.0	348.7	157.9	190.82	1.827	
11,900.0	6,701.6	12,016.6	6,808.8	102.8	103.7	-108.06	-5,235.1	1,034.0	348.8	154.4	194.40	1.794	
12,000.0	6,701.0	12,116.6	6,808.6	104.7	105.5	-108.12	-5,335.1	1,034.0	348.9	151.0	197.97	1.763	
12,100.0	6,700.4	12,216.6	6,808.4	106.6	107.4	-108.18	-5,435.1	1,034.0	349.1	147.5	201.54	1.732	
12,200.0	6,699.9	12,316.6	6,808.2	108.5	109.3	-108.25	-5,535.1	1,034.0	349.2	144.1	205.12	1.702	
12,300.0	6,699.3	12,416.6	6,808.0	110.3	111.2	-108.31	-5,635.1	1,034.0	349.3	140.6	208.69	1.674	
12,400.0	6,698.7	12,516.6	6,807.8	112.2	113.0	-108.37	-5,735.1	1,034.0	349.4	137.2	212.26	1.646	
12,500.0	6,698.1	12,616.6	6,807.6	114.1	114.9	-108.43	-5,835.1	1,034.0	349.6	133.7	215.83	1.620	
12,600.0	6,697.5	12,716.6	6,807.4	116.0	116.8	-108.49	-5,935.1	1,034.0	349.7	130.3	219.40	1.594	
12,700.0	6,696.9	12,816.6	6,807.2	117.9	118.7	-108.56	-6,035.1	1,034.0	349.8	126.9	222.97	1.569	
12,800.0	6,696.3	12,916.6	6,807.0	119.8	120.6	-108.62	-6,135.1	1,034.0	350.0	123.4	226.53	1.545	
12,900.0	6,695.7	13,016.6	6,806.8	121.7	122.5	-108.68	-6,235.1	1,034.0	350.1	120.0	230.10	1.521	
13,000.0	6,695.1	13,116.6	6,806.6	123.6	124.3	-108.74	-6,335.1	1,034.0	350.2	116.6	233.66	1.499 Level 3	
13,100.0	6,694.5	13,216.6	6,806.5	125.5	126.2	-108.81	-6,435.1	1,034.0	350.3	113.1	237.22	1.477 Level 3	
13,200.0	6,693.9	13,316.6	6,806.3	127.4	128.1	-108.87	-6,535.1	1,034.0	350.5	109.7	240.78	1.456 Level 3	
13,300.0	6,693.3	13,416.6	6,806.1	129.3	130.0	-108.93	-6,635.1	1,034.0	350.6	106.3	244.34	1.435 Level 3	
13,400.0	6,692.7	13,516.6	6,805.9	131.2	131.9	-108.99	-6,735.1	1,034.0	350.7	102.8	247.89	1.415 Level 3	
13,500.0	6,692.1	13,616.6	6,805.7	133.1	133.8	-109.05	-6,835.1	1,034.0	350.9	99.4	251.45	1.395 Level 3	
13,600.0	6,691.5	13,716.6	6,805.5	135.0	135.7	-109.12	-6,935.1	1,034.0	351.0	96.0	255.00	1.376 Level 3	
13,700.0	6,691.0	13,816.6	6,805.3	136.9	137.6	-109.18	-7,035.1	1,034.0	351.1	92.6	258.55	1.358 Level 3	
13,800.0	6,690.4	13,916.6	6,805.1	138.8	139.5	-109.24	-7,135.1	1,034.0	351.3	89.2	262.10	1.340 Level 3	
13,828.7	6,690.2	13,945.3	6,805.1	139.4	140.0	-109.26	-7,163.8	1,034.0	351.3	88.2	263.12	1.335 Level 3	
13,860.3	6,690.0	13,973.0	6,805.0	140.0	140.6	-109.27	-7,191.4	1,034.0	351.4	87.2	264.17	1.330 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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								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)				
0.0	0.0	39.0	39.0	0.0	0.8	175.03	-7,045.7	613.1	7,072.4	7,071.6	0.78	9,064.833			
100.0	100.0	139.0	139.0	0.1	2.8	175.03	-7,045.7	613.1	7,072.4	7,069.5	2.89	2,445.006			
200.0	200.0	239.0	239.0	0.3	4.8	175.03	-7,045.7	613.1	7,072.4	7,067.3	5.12	1,382.040			
300.0	300.0	339.0	339.0	0.6	6.8	175.03	-7,045.7	613.1	7,072.4	7,065.0	7.34	963.262			
400.0	400.0	439.0	439.0	0.8	8.8	175.03	-7,045.7	613.1	7,072.4	7,062.8	9.57	739.257			
500.0	500.0	539.0	539.0	1.0	10.8	175.03	-7,045.7	613.1	7,072.4	7,060.6	11.79	599.779			
600.0	600.0	639.0	639.0	1.2	12.8	175.03	-7,045.7	613.1	7,072.4	7,058.4	14.02	504.579			
700.0	700.0	739.0	739.0	1.5	14.8	175.03	-7,045.7	613.1	7,072.4	7,056.1	16.24	435.460			
800.0	800.0	839.0	839.0	1.7	16.8	175.03	-7,045.7	613.1	7,072.4	7,053.9	18.47	382.996			
900.0	900.0	939.0	939.0	1.9	18.8	175.03	-7,045.7	613.1	7,072.4	7,051.7	20.69	341.814			
1,000.0	1,000.0	1,039.0	1,039.0	2.1	20.8	175.03	-7,045.7	613.1	7,072.4	7,049.5	22.92	308.629			
1,100.0	1,100.0	1,139.0	1,139.0	2.4	22.8	100.93	-7,045.7	613.1	7,072.7	7,047.6	25.13	281.443			
1,200.0	1,199.8	1,238.8	1,238.8	2.6	24.8	100.95	-7,045.7	613.1	7,073.7	7,046.4	27.34	258.752			
1,300.0	1,299.5	1,338.5	1,338.5	2.8	26.8	100.99	-7,045.7	613.1	7,075.4	7,045.8	29.55	239.426			
1,400.0	1,398.7	1,437.7	1,437.7	3.0	28.8	101.04	-7,045.7	613.1	7,077.7	7,045.9	31.78	222.740			
1,500.0	1,497.5	1,536.5	1,536.5	3.3	30.7	101.10	-7,045.7	613.1	7,080.7	7,046.7	34.02	208.154			
1,600.0	1,595.8	1,634.8	1,634.8	3.6	32.7	101.23	-7,045.7	613.1	7,084.3	7,048.0	36.29	195.236			
1,700.0	1,694.2	1,733.2	1,733.2	3.9	34.7	101.37	-7,045.7	613.1	7,087.9	7,049.3	38.57	183.744			
1,800.0	1,792.5	1,831.5	1,831.5	4.3	36.6	101.51	-7,045.7	613.1	7,091.5	7,050.6	40.88	173.482			
1,900.0	1,890.9	1,929.9	1,929.9	4.6	38.6	101.65	-7,045.7	613.1	7,095.2	7,052.0	43.19	164.273			
2,000.0	1,989.3	2,028.3	2,028.3	5.0	40.6	101.79	-7,045.7	613.1	7,098.9	7,053.4	45.51	155.972			
2,100.0	2,087.6	2,126.6	2,126.6	5.4	42.5	101.93	-7,045.7	613.1	7,102.7	7,054.9	47.84	148.458			
2,200.0	2,186.0	2,225.0	2,225.0	5.7	44.5	102.07	-7,045.7	613.1	7,106.5	7,056.3	50.18	141.626			
2,300.0	2,284.3	2,323.3	2,323.3	6.1	46.5	102.21	-7,045.7	613.1	7,110.4	7,057.8	52.52	135.392			
2,400.0	2,382.7	2,421.7	2,421.7	6.5	48.4	102.35	-7,045.7	613.1	7,114.3	7,059.4	54.86	129.681			
2,500.0	2,481.0	2,520.0	2,520.0	6.9	50.4	102.49	-7,045.7	613.1	7,118.2	7,061.0	57.21	124.433			
2,600.0	2,579.4	2,618.4	2,618.4	7.3	52.4	102.63	-7,045.7	613.1	7,122.2	7,062.6	59.55	119.594			
2,700.0	2,677.8	2,716.8	2,716.8	7.7	54.3	102.77	-7,045.7	613.1	7,126.2	7,064.3	61.90	115.120			
2,800.0	2,776.1	2,815.1	2,815.1	8.0	56.3	102.91	-7,045.7	613.1	7,130.3	7,066.1	64.25	110.970			
2,900.0	2,874.5	2,913.5	2,913.5	8.4	58.3	103.05	-7,045.7	613.1	7,134.4	7,067.8	66.61	107.112			
3,000.0	2,972.8	3,011.8	3,011.8	8.8	60.2	103.19	-7,045.7	613.1	7,138.6	7,069.6	68.96	103.516			
3,100.0	3,071.2	3,110.2	3,110.2	9.2	62.2	103.33	-7,045.7	613.1	7,142.8	7,071.5	71.32	100.157			
3,200.0	3,169.5	3,208.5	3,208.5	9.6	64.2	103.46	-7,045.7	613.1	7,147.0	7,073.4	73.67	97.012			
3,300.0	3,267.9	3,306.9	3,306.9	10.0	66.1	103.60	-7,045.7	613.1	7,151.3	7,075.3	76.03	94.061			
3,400.0	3,366.3	3,405.3	3,405.3	10.4	68.1	103.74	-7,045.7	613.1	7,155.7	7,077.3	78.39	91.288			
3,500.0	3,464.6	3,503.6	3,503.6	10.8	70.1	103.88	-7,045.7	613.1	7,160.0	7,079.3	80.74	88.677			
3,600.0	3,563.0	3,602.0	3,602.0	11.2	72.0	104.02	-7,045.7	613.1	7,164.5	7,081.4	83.10	86.215			
3,700.0	3,661.3	3,700.3	3,700.3	11.6	74.0	104.16	-7,045.7	613.1	7,168.9	7,083.5	85.46	83.888			
3,800.0	3,759.7	3,798.7	3,798.7	12.0	76.0	104.29	-7,045.7	613.1	7,173.4	7,085.6	87.82	81.687			
3,900.0	3,858.0	3,897.0	3,897.0	12.4	77.9	104.43	-7,045.7	613.1	7,178.0	7,087.8	90.17	79.601			
4,000.0	3,956.4	3,995.4	3,995.4	12.9	79.9	104.57	-7,045.7	613.1	7,182.6	7,090.0	92.53	77.622			
4,100.0	4,054.8	4,093.8	4,093.8	13.3	81.9	104.70	-7,045.7	613.1	7,187.2	7,092.3	94.89	75.742			
4,200.0	4,153.1	4,192.1	4,192.1	13.7	83.8	104.84	-7,045.7	613.1	7,191.9	7,094.6	97.25	73.953			
4,300.0	4,251.5	4,290.5	4,290.5	14.1	85.8	104.98	-7,045.7	613.1	7,196.6	7,097.0	99.61	72.249			
4,400.0	4,349.8	4,388.8	4,388.8	14.5	87.8	105.12	-7,045.7	613.1	7,201.4	7,099.4	101.97	70.625			
4,500.0	4,448.2	4,487.2	4,487.2	14.9	89.7	105.25	-7,045.7	613.1	7,206.2	7,101.8	104.32	69.075			
4,600.0	4,546.5	4,585.5	4,585.5	15.3	91.7	105.39	-7,045.7	613.1	7,211.0	7,104.3	106.68	67.593			
4,700.0	4,644.9	4,683.9	4,683.9	15.7	93.7	105.52	-7,045.7	613.1	7,215.9	7,106.8	109.04	66.176			
4,800.0	4,743.3	4,782.3	4,782.3	16.1	95.6	105.66	-7,045.7	613.1	7,220.8	7,109.4	111.40	64.820			
4,900.0	4,841.6	4,880.6	4,880.6	16.5	97.6	105.80	-7,045.7	613.1	7,225.8	7,112.0	113.76	63.520			
5,000.0	4,940.0	4,979.0	4,979.0	16.9	99.6	105.93	-7,045.7	613.1	7,230.8	7,114.7	116.11	62.274			

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,038.4	5,077.4	5,077.4	17.3	101.5	106.11	-7,045.7	613.1	7,235.7	7,117.2	118.46	61.080		
5,200.0	5,137.4	5,176.4	5,176.4	17.6	103.5	106.30	-7,045.7	613.1	7,239.7	7,119.0	120.73	59.964		
5,300.0	5,236.8	5,275.8	5,275.8	17.8	105.5	106.44	-7,045.7	613.1	7,242.8	7,119.9	122.97	58.897		
5,400.0	5,336.5	5,375.5	5,375.5	18.0	107.5	106.54	-7,045.7	613.1	7,245.0	7,119.8	125.18	57.877		
5,500.0	5,436.4	5,475.4	5,475.4	18.1	109.5	106.59	-7,045.7	613.1	7,246.1	7,118.7	127.34	56.902		
5,600.0	5,536.4	5,575.4	5,575.4	18.3	111.5	-179.29	-7,045.7	613.1	7,246.3	7,116.8	129.47	55.967		
5,700.0	5,636.4	5,675.4	5,675.4	18.4	113.5	-179.29	-7,045.7	613.1	7,246.3	7,114.7	131.62	55.054		
5,800.0	5,736.4	5,775.4	5,775.4	18.6	115.5	-179.29	-7,045.7	613.1	7,246.3	7,112.5	133.77	54.170		
5,900.0	5,836.4	5,875.4	5,875.4	18.7	117.5	-179.29	-7,045.7	613.1	7,246.3	7,110.4	135.92	53.313		
6,000.0	5,936.4	5,975.4	5,975.4	18.9	119.5	-179.29	-7,045.7	613.1	7,246.3	7,108.2	138.07	52.483		
6,100.0	6,036.3	6,075.3	6,075.3	19.0	121.5	0.71	-7,045.7	613.1	7,243.0	7,103.4	139.57	51.895		
6,200.0	6,135.0	6,174.0	6,174.0	19.1	123.5	0.73	-7,045.7	613.1	7,227.2	7,088.5	138.71	52.102		
6,300.0	6,230.8	6,269.8	6,269.8	19.1	125.4	0.76	-7,045.7	613.1	7,198.7	7,063.4	135.35	53.186		
6,400.0	6,322.0	6,361.0	6,361.0	19.2	127.2	0.81	-7,045.7	613.1	7,158.0	7,028.5	129.46	55.290		
6,500.0	6,407.1	6,446.1	6,446.1	19.2	128.9	0.88	-7,045.7	613.1	7,105.6	6,984.5	121.10	58.675		
6,600.0	6,484.7	6,523.7	6,523.7	19.3	130.5	0.99	-7,045.7	613.1	7,042.7	6,932.3	110.39	63.798		
6,700.0	6,553.4	6,592.4	6,592.4	19.4	131.8	1.15	-7,045.7	613.1	6,970.1	6,872.6	97.53	71.464		
6,800.0	6,612.0	6,651.0	6,651.0	19.5	133.0	1.39	-7,045.7	613.1	6,889.2	6,806.4	82.82	83.182		
6,900.0	6,659.6	6,698.6	6,698.6	19.8	134.0	1.80	-7,045.7	613.1	6,801.3	6,734.6	66.66	102.033		
7,000.0	6,695.3	6,734.3	6,734.3	20.3	134.7	2.58	-7,045.7	613.1	6,708.0	6,658.3	49.66	135.089		
7,100.0	6,718.5	6,757.5	6,757.5	20.9	135.1	4.59	-7,045.7	613.1	6,610.8	6,577.0	33.77	195.733		
7,200.0	6,728.8	6,767.8	6,767.8	21.7	135.4	19.85	-7,045.7	613.1	6,511.4	6,456.1	55.26	117.841		
7,300.0	6,728.9	6,767.9	6,767.9	22.7	135.4	113.10	-7,045.7	613.1	6,411.4	6,267.4	143.97	44.534		
7,400.0	6,728.3	6,767.3	6,767.3	23.8	135.3	112.78	-7,045.7	613.1	6,311.4	6,165.9	145.49	43.381		
7,500.0	6,727.7	6,766.7	6,766.7	25.0	135.3	112.45	-7,045.7	613.1	6,211.4	6,064.3	147.09	42.229		
7,600.0	6,727.1	6,766.1	6,766.1	26.3	135.3	112.13	-7,045.7	613.1	6,111.4	5,962.7	148.76	41.082		
7,700.0	6,726.6	6,765.6	6,765.6	27.7	135.3	111.80	-7,045.7	613.1	6,011.5	5,861.0	150.49	39.946		
7,800.0	6,726.0	6,765.0	6,765.0	29.1	135.3	111.47	-7,045.7	613.1	5,911.5	5,759.2	152.27	38.823		
7,900.0	6,725.4	6,764.4	6,764.4	30.6	135.3	111.14	-7,045.7	613.1	5,811.5	5,657.4	154.09	37.716		
8,000.0	6,724.8	6,763.8	6,763.8	32.1	135.3	110.81	-7,045.7	613.1	5,711.5	5,555.6	155.94	36.626		
8,100.0	6,724.2	6,763.2	6,763.2	33.7	135.3	110.47	-7,045.7	613.1	5,611.5	5,453.7	157.83	35.555		
8,200.0	6,723.6	6,762.6	6,762.6	35.3	135.3	110.14	-7,045.7	613.1	5,511.5	5,351.8	159.74	34.503		
8,300.0	6,723.0	6,762.0	6,762.0	37.0	135.2	109.80	-7,045.7	613.1	5,411.5	5,249.9	161.68	33.472		
8,400.0	6,722.4	6,761.4	6,761.4	38.7	135.2	109.46	-7,045.7	613.1	5,311.6	5,147.9	163.63	32.460		
8,500.0	6,721.8	6,760.8	6,760.8	40.3	135.2	109.12	-7,045.7	613.1	5,211.6	5,046.0	165.61	31.470		
8,600.0	6,721.2	6,760.2	6,760.2	42.1	135.2	108.78	-7,045.7	613.1	5,111.6	4,944.0	167.59	30.500		
8,700.0	6,720.6	6,759.6	6,759.6	43.8	135.2	108.44	-7,045.7	613.1	5,011.6	4,842.0	169.60	29.550		
8,800.0	6,720.0	6,759.0	6,759.0	45.5	135.2	108.09	-7,045.7	613.1	4,911.6	4,740.0	171.61	28.620		
8,900.0	6,719.4	6,758.4	6,758.4	47.3	135.2	107.75	-7,045.7	613.1	4,811.6	4,638.0	173.64	27.711		
9,000.0	6,718.8	6,757.8	6,757.8	49.1	135.2	107.40	-7,045.7	613.1	4,711.7	4,536.0	175.67	26.821		
9,100.0	6,718.2	6,757.2	6,757.2	50.8	135.1	107.06	-7,045.7	613.1	4,611.7	4,434.0	177.72	25.950		
9,200.0	6,717.7	6,756.7	6,756.7	52.6	135.1	106.71	-7,045.7	613.1	4,511.7	4,331.9	179.77	25.097		
9,300.0	6,717.1	6,756.1	6,756.1	54.4	135.1	106.36	-7,045.7	613.1	4,411.7	4,229.9	181.82	24.264		
9,400.0	6,716.5	6,755.5	6,755.5	56.2	135.1	106.00	-7,045.7	613.1	4,311.8	4,127.9	183.89	23.448		
9,500.0	6,715.9	6,754.9	6,754.9	58.1	135.1	105.65	-7,045.7	613.1	4,211.8	4,025.8	185.95	22.649		
9,600.0	6,715.3	6,754.3	6,754.3	59.9	135.1	105.30	-7,045.7	613.1	4,111.8	3,923.8	188.03	21.868		
9,700.0	6,714.7	6,753.7	6,753.7	61.7	135.1	104.94	-7,045.7	613.1	4,011.8	3,821.7	190.10	21.104		
9,800.0	6,714.1	6,753.1	6,753.1	63.5	135.1	104.59	-7,045.7	613.1	3,911.9	3,719.7	192.18	20.355		
9,900.0	6,713.5	6,752.5	6,752.5	65.4	135.1	104.23	-7,045.7	613.1	3,811.9	3,617.6	194.26	19.623		
10,000.0	6,712.9	6,751.9	6,751.9	67.2	135.0	103.87	-7,045.7	613.1	3,711.9	3,515.6	196.34	18.905		
10,100.0	6,712.3	6,751.3	6,751.3	69.1	135.0	103.51	-7,045.7	613.1	3,611.9	3,413.5	198.43	18.203		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	6,711.7	6,750.7	6,750.7	70.9	135.0	103.15		-7,045.7	613.1	3,512.0	3,311.5	200.51	17.515	
10,300.0	6,711.1	6,750.1	6,750.1	72.8	135.0	102.79		-7,045.7	613.1	3,412.0	3,209.4	202.59	16.842	
10,400.0	6,710.5	6,749.5	6,749.5	74.6	135.0	102.42		-7,045.7	613.1	3,312.0	3,107.4	204.68	16.182	
10,500.0	6,709.9	6,748.9	6,748.9	76.5	135.0	102.06		-7,045.7	613.1	3,212.1	3,005.3	206.76	15.535	
10,600.0	6,709.3	6,748.3	6,748.3	78.4	135.0	101.69		-7,045.7	613.1	3,112.1	2,903.3	208.85	14.902	
10,700.0	6,708.8	6,747.8	6,747.8	80.2	135.0	101.33		-7,045.7	613.1	3,012.2	2,801.2	210.93	14.281	
10,800.0	6,708.2	6,747.2	6,747.2	82.1	134.9	100.96		-7,045.7	613.1	2,912.2	2,699.2	213.01	13.672	
10,900.0	6,707.6	6,746.6	6,746.6	84.0	134.9	100.59		-7,045.7	613.1	2,812.3	2,597.2	215.09	13.075	
11,000.0	6,707.0	6,746.0	6,746.0	85.8	134.9	100.22		-7,045.7	613.1	2,712.3	2,495.2	217.16	12.490	
11,100.0	6,706.4	6,745.4	6,745.4	87.7	134.9	99.85		-7,045.7	613.1	2,612.4	2,393.1	219.23	11.916	
11,200.0	6,705.8	6,744.8	6,744.8	89.6	134.9	99.48		-7,045.7	613.1	2,512.4	2,291.1	221.30	11.353	
11,300.0	6,705.2	6,744.2	6,744.2	91.5	134.9	99.11		-7,045.7	613.1	2,412.5	2,189.1	223.37	10.801	
11,400.0	6,704.6	6,743.6	6,743.6	93.4	134.9	98.74		-7,045.7	613.1	2,312.6	2,087.2	225.43	10.259	
11,500.0	6,704.0	6,743.0	6,743.0	95.2	134.9	98.37		-7,045.7	613.1	2,212.7	1,985.2	227.49	9.726	
11,600.0	6,703.4	6,742.4	6,742.4	97.1	134.8	97.99		-7,045.7	613.1	2,112.8	1,883.2	229.54	9.204	
11,700.0	6,702.8	6,741.8	6,741.8	99.0	134.8	97.62		-7,045.7	613.1	2,012.8	1,781.3	231.59	8.691	
11,800.0	6,702.2	6,741.2	6,741.2	100.9	134.8	97.25		-7,045.7	613.1	1,913.0	1,679.3	233.63	8.188	
11,900.0	6,701.6	6,740.6	6,740.6	102.8	134.8	96.87		-7,045.7	613.1	1,813.1	1,577.4	235.67	7.693	
12,000.0	6,701.0	6,740.0	6,740.0	104.7	134.8	96.49		-7,045.7	613.1	1,713.2	1,475.5	237.70	7.207	
12,100.0	6,700.4	6,739.4	6,739.4	106.6	134.8	96.12		-7,045.7	613.1	1,613.3	1,373.6	239.73	6.730	
12,200.0	6,699.9	6,738.9	6,738.9	108.5	134.8	95.74		-7,045.7	613.1	1,513.5	1,271.8	241.75	6.261	
12,300.0	6,699.3	6,738.3	6,738.3	110.3	134.8	95.36		-7,045.7	613.1	1,413.7	1,169.9	243.76	5.800	
12,400.0	6,698.7	6,737.7	6,737.7	112.2	134.8	94.98		-7,045.7	613.1	1,313.9	1,068.1	245.76	5.346	
12,500.0	6,698.1	6,737.1	6,737.1	114.1	134.7	94.61		-7,045.7	613.1	1,214.2	966.4	247.76	4.901	
12,600.0	6,697.5	6,736.5	6,736.5	116.0	134.7	94.23		-7,045.7	613.1	1,114.5	864.7	249.75	4.462	
12,700.0	6,696.9	6,735.9	6,735.9	117.9	134.7	93.85		-7,045.7	613.1	1,014.8	763.1	251.74	4.031	
12,800.0	6,696.3	6,735.3	6,735.3	119.8	134.7	93.47		-7,045.7	613.1	915.2	661.5	253.71	3.607	
12,900.0	6,695.7	6,734.7	6,734.7	121.7	134.7	93.09		-7,045.7	613.1	815.8	560.1	255.68	3.191	
13,000.0	6,695.1	6,734.1	6,734.1	123.6	134.7	92.71		-7,045.7	613.1	716.5	458.8	257.63	2.781	
13,100.0	6,694.5	6,733.5	6,733.5	125.5	134.7	92.33		-7,045.7	613.1	617.4	357.8	259.58	2.378	
13,200.0	6,693.9	6,732.9	6,732.9	127.4	134.7	91.95		-7,045.7	613.1	518.6	257.1	261.52	1.983	
13,300.0	6,693.3	6,732.3	6,732.3	129.3	134.6	91.57		-7,045.7	613.1	420.5	157.0	263.45	1.596	
13,400.0	6,692.7	6,731.7	6,731.7	131.2	134.6	91.19		-7,045.7	613.1	323.4	58.1	265.37	1.219 Level 2	
13,500.0	6,692.1	6,731.1	6,731.1	133.1	134.6	90.80		-7,045.7	613.1	229.0	-38.3	267.28	0.857 Level 1	
13,600.0	6,691.5	6,730.5	6,730.5	135.0	134.6	90.42		-7,045.7	613.1	142.3	-126.9	269.18	0.529 Level 1	
13,700.0	6,691.0	6,730.0	6,730.0	136.9	134.6	90.04		-7,045.7	613.1	89.9	-181.2	271.07	0.331 Level 1	
13,710.9	6,690.9	6,729.9	6,729.9	137.1	134.6	90.00		-7,045.7	613.1	89.2	-182.1	271.27	0.329 Level 1, CC, ES, SF	
13,800.0	6,690.4	6,729.4	6,729.4	138.8	134.6	89.66		-7,045.7	613.1	126.1	-146.9	272.94	0.462 Level 1	
13,860.3	6,690.0	6,729.0	6,729.0	140.0	134.6	89.43		-7,045.7	613.1	174.0	-100.1	274.07	0.635 Level 1	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	124.98	124.98	-415.3	593.5	724.6				
100.0	100.0	81.0	81.0	0.1	1.6	124.98	124.98	-415.3	593.5	724.3	722.6	1.73	418.075	
200.0	200.0	181.0	181.0	0.3	3.6	124.98	124.98	-415.3	593.5	724.3	720.4	3.96	183.039	
300.0	300.0	281.0	281.0	0.6	5.6	124.98	124.98	-415.3	593.5	724.3	718.2	6.18	117.168	
400.0	400.0	381.0	381.0	0.8	7.6	124.98	124.98	-415.3	593.5	724.3	715.9	8.41	86.161	
500.0	500.0	481.0	481.0	1.0	9.6	124.98	124.98	-415.3	593.5	724.3	713.7	10.63	68.131	
600.0	600.0	581.0	581.0	1.2	11.6	124.98	124.98	-415.3	593.5	724.3	711.5	12.86	56.341	
700.0	700.0	681.0	681.0	1.5	13.6	124.98	124.98	-415.3	593.5	724.3	709.3	15.08	48.030	
800.0	800.0	781.0	781.0	1.7	15.6	124.98	124.98	-415.3	593.5	724.3	707.0	17.31	41.855	
900.0	900.0	881.0	881.0	1.9	17.6	124.98	124.98	-415.3	593.5	724.3	704.8	19.53	37.088	
1,000.0	1,000.0	981.0	981.0	2.1	19.6	124.98	124.98	-415.3	593.5	724.3	702.6	21.76	33.295	
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	51.00	51.00	-415.3	593.5	723.2	699.3	23.96	30.180	
1,200.0	1,199.8	1,180.8	1,180.8	2.6	23.6	51.38	51.38	-415.3	593.5	720.0	693.8	26.15	27.530	
1,300.0	1,299.5	1,280.5	1,280.5	2.8	25.6	52.01	52.01	-415.3	593.5	714.5	686.2	28.33	25.224	
1,400.0	1,398.7	1,379.7	1,379.7	3.0	27.6	52.90	52.90	-415.3	593.5	707.1	676.6	30.50	23.186	
1,500.0	1,497.5	1,478.5	1,478.5	3.3	29.6	54.07	54.07	-415.3	593.5	697.7	665.0	32.66	21.360	
1,600.0	1,595.8	1,576.8	1,576.8	3.6	31.5	55.31	55.31	-415.3	593.5	687.2	652.3	34.90	19.692	
1,700.0	1,694.2	1,675.2	1,675.2	3.9	33.5	56.55	56.55	-415.3	593.5	677.0	639.8	37.16	18.216	
1,800.0	1,792.5	1,773.5	1,773.5	4.3	35.5	57.83	57.83	-415.3	593.5	667.1	627.6	39.45	16.911	
1,900.0	1,890.9	1,871.9	1,871.9	4.6	37.4	59.14	59.14	-415.3	593.5	657.5	615.8	41.74	15.751	
2,000.0	1,989.3	1,970.3	1,970.3	5.0	39.4	60.50	60.50	-415.3	593.5	648.3	604.3	44.06	14.716	
2,100.0	2,087.6	2,068.6	2,068.6	5.4	41.4	61.89	61.89	-415.3	593.5	639.5	593.1	46.38	13.788	
2,200.0	2,186.0	2,167.0	2,167.0	5.7	43.3	63.31	63.31	-415.3	593.5	631.1	582.4	48.72	12.954	
2,300.0	2,284.3	2,265.3	2,265.3	6.1	45.3	64.78	64.78	-415.3	593.5	623.1	572.0	51.07	12.201	
2,400.0	2,382.7	2,363.7	2,363.7	6.5	47.3	66.28	66.28	-415.3	593.5	615.5	562.1	53.43	11.521	
2,500.0	2,481.0	2,462.0	2,462.0	6.9	49.2	67.81	67.81	-415.3	593.5	608.4	552.6	55.79	10.904	
2,600.0	2,579.4	2,560.4	2,560.4	7.3	51.2	69.38	69.38	-415.3	593.5	601.7	543.5	58.17	10.344	
2,700.0	2,677.8	2,658.8	2,658.8	7.7	53.2	70.98	70.98	-415.3	593.5	595.5	534.9	60.55	9.835	
2,800.0	2,776.1	2,757.1	2,757.1	8.0	55.1	72.62	72.62	-415.3	593.5	589.8	526.8	62.93	9.371	
2,900.0	2,874.5	2,855.5	2,855.5	8.4	57.1	74.28	74.28	-415.3	593.5	584.5	519.2	65.32	8.948	
3,000.0	2,972.8	2,953.8	2,953.8	8.8	59.1	75.97	75.97	-415.3	593.5	579.8	512.1	67.72	8.562	
3,100.0	3,071.2	3,052.2	3,052.2	9.2	61.0	77.69	77.69	-415.3	593.5	575.6	505.5	70.11	8.210	
3,200.0	3,169.5	3,150.5	3,150.5	9.6	63.0	79.42	79.42	-415.3	593.5	572.0	499.5	72.51	7.888	
3,300.0	3,267.9	3,248.9	3,248.9	10.0	65.0	81.18	81.18	-415.3	593.5	568.9	494.0	74.91	7.595	
3,400.0	3,366.3	3,347.3	3,347.3	10.4	66.9	82.96	82.96	-415.3	593.5	566.4	489.1	77.31	7.327	
3,500.0	3,464.6	3,445.6	3,445.6	10.8	68.9	84.75	84.75	-415.3	593.5	564.4	484.7	79.70	7.082	
3,600.0	3,563.0	3,544.0	3,544.0	11.2	70.9	86.55	86.55	-415.3	593.5	563.0	480.9	82.09	6.859	
3,700.0	3,661.3	3,642.3	3,642.3	11.6	72.8	88.35	88.35	-415.3	593.5	562.2	477.7	84.47	6.655	
3,790.9	3,750.7	3,731.7	3,731.7	12.0	74.6	90.00	90.00	-415.3	593.5	562.0	475.3	86.64	6.486	
3,800.0	3,759.7	3,740.7	3,740.7	12.0	74.8	90.16	90.16	-415.3	593.5	562.0	475.1	86.85	6.470	
3,900.0	3,858.0	3,839.0	3,839.0	12.4	76.8	91.97	91.97	-415.3	593.5	562.3	473.1	89.23	6.302	
4,000.0	3,956.4	3,937.4	3,937.4	12.9	78.7	93.78	93.78	-415.3	593.5	563.2	471.6	91.59	6.149	
4,100.0	4,054.8	4,035.8	4,035.8	13.3	80.7	95.58	95.58	-415.3	593.5	564.7	470.8	93.95	6.011	
4,200.0	4,153.1	4,134.1	4,134.1	13.7	82.7	97.37	97.37	-415.3	593.5	566.8	470.5	96.29	5.886	
4,300.0	4,251.5	4,232.5	4,232.5	14.1	84.6	99.14	99.14	-415.3	593.5	569.4	470.8	98.63	5.774	
4,400.0	4,349.8	4,330.8	4,330.8	14.5	86.6	100.89	100.89	-415.3	593.5	572.6	471.7	100.95	5.672	
4,500.0	4,448.2	4,429.2	4,429.2	14.9	88.6	102.63	102.63	-415.3	593.5	576.4	473.1	103.26	5.581	
4,600.0	4,546.5	4,527.5	4,527.5	15.3	90.6	104.34	104.34	-415.3	593.5	580.6	475.1	105.57	5.500	
4,700.0	4,644.9	4,625.9	4,625.9	15.7	92.5	106.03	106.03	-415.3	593.5	585.4	477.6	107.86	5.428	
4,800.0	4,743.3	4,724.3	4,724.3	16.1	94.5	107.68	107.68	-415.3	593.5	590.8	480.6	110.14	5.364	
4,900.0	4,841.6	4,822.6	4,822.6	16.5	96.5	109.31	109.31	-415.3	593.5	596.6	484.2	112.41	5.307	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,940.0	4,921.0	4,921.0	16.9	98.4	110.91		-415.3	593.5	602.9	488.2	114.66	5.258	
5,100.0	5,038.4	5,019.4	5,019.4	17.3	100.4	112.49		-415.3	593.5	609.4	492.5	116.93	5.212	
5,200.0	5,137.4	5,118.4	5,118.4	17.6	102.4	113.83		-415.3	593.5	615.1	496.0	119.15	5.163	
5,300.0	5,236.8	5,217.8	5,217.8	17.8	104.4	114.83		-415.3	593.5	619.7	498.3	121.36	5.106	
5,400.0	5,336.5	5,317.5	5,317.5	18.0	106.3	115.51		-415.3	593.5	622.8	499.3	123.54	5.041	
5,500.0	5,436.4	5,417.4	5,417.4	18.1	108.3	115.86		-415.3	593.5	624.6	498.9	125.70	4.969	
5,600.0	5,536.4	5,517.4	5,517.4	18.3	110.3	-169.97		-415.3	593.5	624.9	497.0	127.83	4.888	
5,700.0	5,636.4	5,617.4	5,617.4	18.4	112.3	-169.97		-415.3	593.5	624.9	494.9	129.98	4.807	
5,800.0	5,736.4	5,717.4	5,717.4	18.6	114.3	-169.97		-415.3	593.5	624.9	492.7	132.13	4.729	
5,900.0	5,836.4	5,817.4	5,817.4	18.7	116.3	-169.97		-415.3	593.5	624.9	490.6	134.29	4.653	
6,000.0	5,936.4	5,917.4	5,917.4	18.9	118.3	-169.97		-415.3	593.5	624.9	488.4	136.44	4.580	
6,100.0	6,036.3	6,017.3	6,017.3	19.0	120.3	10.13		-415.3	593.5	621.6	483.7	137.95	4.506	
6,200.0	6,135.0	6,116.0	6,116.0	19.1	122.3	10.61		-415.3	593.5	606.1	468.9	137.19	4.418	
6,300.0	6,230.8	6,211.8	6,211.8	19.1	124.2	11.56		-415.3	593.5	578.1	444.0	134.07	4.312	
6,400.0	6,322.0	6,303.0	6,303.0	19.2	126.1	13.15		-415.3	593.5	538.1	409.4	128.72	4.180	
6,500.0	6,407.1	6,388.1	6,388.1	19.2	127.8	15.70		-415.3	593.5	487.0	365.4	121.55	4.006	
6,600.0	6,484.7	6,465.7	6,465.7	19.3	129.3	19.83		-415.3	593.5	425.8	312.1	113.71	3.745	
6,700.0	6,553.4	6,534.4	6,534.4	19.4	130.7	26.70		-415.3	593.5	356.1	248.0	108.17	3.292	
6,800.0	6,612.0	6,593.0	6,593.0	19.5	131.9	38.37		-415.3	593.5	280.2	168.6	111.61	2.510	
6,900.0	6,659.6	6,640.6	6,640.6	19.8	132.8	56.86		-415.3	593.5	202.1	72.7	129.43	1.561	
7,000.0	6,695.3	6,676.3	6,676.3	20.3	133.5	78.21		-415.3	593.5	133.3	-13.9	147.17	0.906	Level 1
7,079.4	6,714.7	6,695.7	6,695.7	20.8	133.9	90.00		-415.3	593.5	108.9	-42.4	151.28	0.720	Level 1, CC, ES, SF
7,100.0	6,718.5	6,699.5	6,699.5	20.9	134.0	91.79		-415.3	593.5	110.7	-40.8	151.52	0.731	Level 1
7,200.0	6,728.8	6,709.8	6,709.8	21.7	134.2	92.39		-415.3	593.5	161.8	9.0	152.76	1.059	Level 2
7,300.0	6,728.9	6,709.9	6,709.9	22.7	134.2	89.31		-415.3	593.5	245.1	91.2	153.94	1.592	
7,400.0	6,728.3	6,709.3	6,709.3	23.8	134.2	89.00		-415.3	593.5	337.7	182.5	155.18	2.176	
7,500.0	6,727.7	6,708.7	6,708.7	25.0	134.2	88.69		-415.3	593.5	433.5	277.0	156.51	2.770	
7,600.0	6,727.1	6,708.1	6,708.1	26.3	134.2	88.38		-415.3	593.5	530.9	373.0	157.92	3.362	
7,700.0	6,726.6	6,707.6	6,707.6	27.7	134.2	88.07		-415.3	593.5	629.1	469.8	159.38	3.947	
7,800.0	6,726.0	6,707.0	6,707.0	29.1	134.1	87.75		-415.3	593.5	727.8	566.9	160.88	4.524	
7,900.0	6,725.4	6,706.4	6,706.4	30.6	134.1	87.44		-415.3	593.5	826.8	664.4	162.43	5.090	
8,000.0	6,724.8	6,705.8	6,705.8	32.1	134.1	87.13		-415.3	593.5	926.1	762.0	164.01	5.646	
8,100.0	6,724.2	6,705.2	6,705.2	33.7	134.1	86.82		-415.3	593.5	1,025.4	859.8	165.61	6.192	
8,200.0	6,723.6	6,704.6	6,704.6	35.3	134.1	86.51		-415.3	593.5	1,124.9	957.7	167.23	6.727	
8,300.0	6,723.0	6,704.0	6,704.0	37.0	134.1	86.20		-415.3	593.5	1,224.5	1,055.6	168.87	7.251	
8,400.0	6,722.4	6,703.4	6,703.4	38.7	134.1	85.89		-415.3	593.5	1,324.1	1,153.6	170.53	7.765	
8,500.0	6,721.8	6,702.8	6,702.8	40.3	134.1	85.57		-415.3	593.5	1,423.8	1,251.6	172.19	8.269	
8,600.0	6,721.2	6,702.2	6,702.2	42.1	134.0	85.26		-415.3	593.5	1,523.5	1,349.7	173.87	8.763	
8,700.0	6,720.6	6,701.6	6,701.6	43.8	134.0	84.95		-415.3	593.5	1,623.3	1,447.7	175.55	9.247	
8,800.0	6,720.0	6,701.0	6,701.0	45.5	134.0	84.64		-415.3	593.5	1,723.1	1,545.8	177.23	9.722	
8,900.0	6,719.4	6,700.4	6,700.4	47.3	134.0	84.34		-415.3	593.5	1,822.9	1,644.0	178.92	10.188	
9,000.0	6,718.8	6,699.8	6,699.8	49.1	134.0	84.03		-415.3	593.5	1,922.7	1,742.1	180.61	10.646	
9,100.0	6,718.2	6,699.2	6,699.2	50.8	134.0	83.72		-415.3	593.5	2,022.5	1,840.2	182.30	11.094	
9,200.0	6,717.7	6,698.7	6,698.7	52.6	134.0	83.41		-415.3	593.5	2,122.4	1,938.4	183.99	11.535	
9,300.0	6,717.1	6,698.1	6,698.1	54.4	134.0	83.10		-415.3	593.5	2,222.3	2,036.6	185.69	11.968	
9,400.0	6,716.5	6,697.5	6,697.5	56.2	133.9	82.79		-415.3	593.5	2,322.2	2,134.8	187.38	12.393	
9,500.0	6,715.9	6,696.9	6,696.9	58.1	133.9	82.49		-415.3	593.5	2,422.1	2,233.0	189.07	12.811	
9,600.0	6,715.3	6,696.3	6,696.3	59.9	133.9	82.18		-415.3	593.5	2,522.0	2,331.2	190.75	13.221	
9,700.0	6,714.7	6,695.7	6,695.7	61.7	133.9	81.87		-415.3	593.5	2,621.9	2,429.4	192.43	13.625	
9,800.0	6,714.1	6,695.1	6,695.1	63.5	133.9	81.57		-415.3	593.5	2,721.8	2,527.7	194.11	14.022	
9,900.0	6,713.5	6,694.5	6,694.5	65.4	133.9	81.26		-415.3	593.5	2,821.7	2,625.9	195.79	14.412	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,712.9	6,693.9	6,693.9	67.2	133.9	80.96		-415.3	593.5	2,921.6	2,724.2	197.46	14.796	
10,100.0	6,712.3	6,693.3	6,693.3	69.1	133.9	80.65		-415.3	593.5	3,021.6	2,822.4	199.13	15.174	
10,200.0	6,711.7	6,692.7	6,692.7	70.9	133.9	80.35		-415.3	593.5	3,121.5	2,920.7	200.79	15.546	
10,300.0	6,711.1	6,692.1	6,692.1	72.8	133.8	80.05		-415.3	593.5	3,221.4	3,019.0	202.44	15.913	
10,400.0	6,710.5	6,691.5	6,691.5	74.6	133.8	79.74		-415.3	593.5	3,321.4	3,117.3	204.09	16.274	
10,500.0	6,709.9	6,690.9	6,690.9	76.5	133.8	79.44		-415.3	593.5	3,421.3	3,215.6	205.74	16.630	
10,600.0	6,709.3	6,690.3	6,690.3	78.4	133.8	79.14		-415.3	593.5	3,521.3	3,313.9	207.38	16.980	
10,700.0	6,708.8	6,689.8	6,689.8	80.2	133.8	78.84		-415.3	593.5	3,621.2	3,412.2	209.01	17.326	
10,800.0	6,708.2	6,689.2	6,689.2	82.1	133.8	78.54		-415.3	593.5	3,721.2	3,510.5	210.63	17.667	
10,900.0	6,707.6	6,688.6	6,688.6	84.0	133.8	78.24		-415.3	593.5	3,821.1	3,608.9	212.25	18.003	
11,000.0	6,707.0	6,688.0	6,688.0	85.8	133.8	77.94		-415.3	593.5	3,921.1	3,707.2	213.86	18.335	
11,100.0	6,706.4	6,687.4	6,687.4	87.7	133.7	77.64		-415.3	593.5	4,021.1	3,805.6	215.47	18.662	
11,200.0	6,705.8	6,686.8	6,686.8	89.6	133.7	77.34		-415.3	593.5	4,121.0	3,903.9	217.07	18.985	
11,300.0	6,705.2	6,686.2	6,686.2	91.5	133.7	77.05		-415.3	593.5	4,221.0	4,002.3	218.66	19.304	
11,400.0	6,704.6	6,685.6	6,685.6	93.4	133.7	76.75		-415.3	593.5	4,320.9	4,100.7	220.24	19.619	
11,500.0	6,704.0	6,685.0	6,685.0	95.2	133.7	76.45		-415.3	593.5	4,420.9	4,199.1	221.82	19.931	
11,600.0	6,703.4	6,684.4	6,684.4	97.1	133.7	76.16		-415.3	593.5	4,520.9	4,297.5	223.38	20.238	
11,700.0	6,702.8	6,683.8	6,683.8	99.0	133.7	75.87		-415.3	593.5	4,620.9	4,395.9	224.94	20.542	
11,800.0	6,702.2	6,683.2	6,683.2	100.9	133.7	75.57		-415.3	593.5	4,720.8	4,494.3	226.49	20.843	
11,900.0	6,701.6	6,682.6	6,682.6	102.8	133.7	75.28		-415.3	593.5	4,820.8	4,592.8	228.04	21.140	
12,000.0	6,701.0	6,682.0	6,682.0	104.7	133.6	74.99		-415.3	593.5	4,920.8	4,691.2	229.57	21.434	
12,100.0	6,700.4	6,681.4	6,681.4	106.6	133.6	74.70		-415.3	593.5	5,020.7	4,789.6	231.10	21.725	
12,200.0	6,699.9	6,680.9	6,680.9	108.5	133.6	74.41		-415.3	593.5	5,120.7	4,888.1	232.62	22.013	
12,300.0	6,699.3	6,680.3	6,680.3	110.3	133.6	74.12		-415.3	593.5	5,220.7	4,986.6	234.13	22.298	
12,400.0	6,698.7	6,679.7	6,679.7	112.2	133.6	73.83		-415.3	593.5	5,320.7	5,085.0	235.64	22.580	
12,500.0	6,698.1	6,679.1	6,679.1	114.1	133.6	73.54		-415.3	593.5	5,420.6	5,183.5	237.13	22.859	
12,600.0	6,697.5	6,678.5	6,678.5	116.0	133.6	73.25		-415.3	593.5	5,520.6	5,282.0	238.62	23.136	
12,700.0	6,696.9	6,677.9	6,677.9	117.9	133.6	72.97		-415.3	593.5	5,620.6	5,380.5	240.09	23.410	
12,800.0	6,696.3	6,677.3	6,677.3	119.8	133.5	72.68		-415.3	593.5	5,720.6	5,479.0	241.56	23.682	
12,900.0	6,695.7	6,676.7	6,676.7	121.7	133.5	72.40		-415.3	593.5	5,820.6	5,577.5	243.02	23.951	
13,000.0	6,695.1	6,676.1	6,676.1	123.6	133.5	72.12		-415.3	593.5	5,920.5	5,676.1	244.47	24.217	
13,100.0	6,694.5	6,675.5	6,675.5	125.5	133.5	71.83		-415.3	593.5	6,020.5	5,774.6	245.92	24.482	
13,200.0	6,693.9	6,674.9	6,674.9	127.4	133.5	71.55		-415.3	593.5	6,120.5	5,873.2	247.35	24.744	
13,300.0	6,693.3	6,674.3	6,674.3	129.3	133.5	71.27		-415.3	593.5	6,220.5	5,971.7	248.78	25.004	
13,400.0	6,692.7	6,673.7	6,673.7	131.2	133.5	70.99		-415.3	593.5	6,320.5	6,070.3	250.19	25.262	
13,500.0	6,692.1	6,673.1	6,673.1	133.1	133.5	70.71		-415.3	593.5	6,420.5	6,168.9	251.60	25.518	
13,600.0	6,691.5	6,672.5	6,672.5	135.0	133.5	70.43		-415.3	593.5	6,520.4	6,267.4	253.00	25.773	
13,700.0	6,691.0	6,672.0	6,672.0	136.9	133.4	70.16		-415.3	593.5	6,620.4	6,366.0	254.39	26.025	
13,800.0	6,690.4	6,671.4	6,671.4	138.8	133.4	69.88		-415.3	593.5	6,720.4	6,464.6	255.77	26.275	
13,860.3	6,690.0	6,671.0	6,671.0	140.0	133.4	69.72		-415.3	593.5	6,780.7	6,524.1	256.60	26.425	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	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	-444.5	624.1	766.4				
100.0	100.0	81.0	81.0	0.1	1.6	125.46	125.46	-444.5	624.1	766.2	764.5	1.73	442.232	
200.0	200.0	181.0	181.0	0.3	3.6	125.46	125.46	-444.5	624.1	766.2	762.2	3.96	193.615	
300.0	300.0	281.0	281.0	0.6	5.6	125.46	125.46	-444.5	624.1	766.2	760.0	6.18	123.939	
400.0	400.0	381.0	381.0	0.8	7.6	125.46	125.46	-444.5	624.1	766.2	757.8	8.41	91.140	
500.0	500.0	481.0	481.0	1.0	9.6	125.46	125.46	-444.5	624.1	766.2	755.6	10.63	72.068	
600.0	600.0	581.0	581.0	1.2	11.6	125.46	125.46	-444.5	624.1	766.2	753.3	12.86	59.597	
700.0	700.0	681.0	681.0	1.5	13.6	125.46	125.46	-444.5	624.1	766.2	751.1	15.08	50.805	
800.0	800.0	781.0	781.0	1.7	15.6	125.46	125.46	-444.5	624.1	766.2	748.9	17.31	44.274	
900.0	900.0	881.0	881.0	1.9	17.6	125.46	125.46	-444.5	624.1	766.2	746.7	19.53	39.231	
1,000.0	1,000.0	981.0	981.0	2.1	19.6	125.46	125.46	-444.5	624.1	766.2	744.4	21.76	35.219	
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	51.47	51.47	-444.5	624.1	765.1	741.1	23.96	31.927	
1,200.0	1,199.8	1,180.8	1,180.8	2.6	23.6	51.83	51.83	-444.5	624.1	761.9	735.7	26.15	29.132	
1,300.0	1,299.5	1,280.5	1,280.5	2.8	25.6	52.43	52.43	-444.5	624.1	756.5	728.2	28.33	26.704	
1,400.0	1,398.7	1,379.7	1,379.7	3.0	27.6	53.29	53.29	-444.5	624.1	749.1	718.6	30.50	24.562	
1,500.0	1,497.5	1,478.5	1,478.5	3.3	29.6	54.40	54.40	-444.5	624.1	739.8	707.1	32.67	22.646	
1,600.0	1,595.8	1,576.8	1,576.8	3.6	31.5	55.57	55.57	-444.5	624.1	729.4	694.5	34.90	20.899	
1,700.0	1,694.2	1,675.2	1,675.2	3.9	33.5	56.74	56.74	-444.5	624.1	719.2	682.0	37.17	19.351	
1,800.0	1,792.5	1,773.5	1,773.5	4.3	35.5	57.95	57.95	-444.5	624.1	709.3	669.9	39.45	17.982	
1,900.0	1,890.9	1,871.9	1,871.9	4.6	37.4	59.19	59.19	-444.5	624.1	699.8	658.1	41.75	16.764	
2,000.0	1,989.3	1,970.3	1,970.3	5.0	39.4	60.46	60.46	-444.5	624.1	690.6	646.6	44.06	15.676	
2,100.0	2,087.6	2,068.6	2,068.6	5.4	41.4	61.76	61.76	-444.5	624.1	681.8	635.4	46.38	14.700	
2,200.0	2,186.0	2,167.0	2,167.0	5.7	43.3	63.10	63.10	-444.5	624.1	673.3	624.6	48.72	13.822	
2,300.0	2,284.3	2,265.3	2,265.3	6.1	45.3	64.47	64.47	-444.5	624.1	665.3	614.2	51.06	13.029	
2,400.0	2,382.7	2,363.7	2,363.7	6.5	47.3	65.87	65.87	-444.5	624.1	657.6	604.1	53.42	12.310	
2,500.0	2,481.0	2,462.0	2,462.0	6.9	49.2	67.30	67.30	-444.5	624.1	650.3	594.5	55.78	11.658	
2,600.0	2,579.4	2,560.4	2,560.4	7.3	51.2	68.76	68.76	-444.5	624.1	643.4	585.3	58.15	11.065	
2,700.0	2,677.8	2,658.8	2,658.8	7.7	53.2	70.25	70.25	-444.5	624.1	637.0	576.5	60.53	10.525	
2,800.0	2,776.1	2,757.1	2,757.1	8.0	55.1	71.77	71.77	-444.5	624.1	631.1	568.2	62.91	10.031	
2,900.0	2,874.5	2,855.5	2,855.5	8.4	57.1	73.32	73.32	-444.5	624.1	625.6	560.3	65.30	9.580	
3,000.0	2,972.8	2,953.8	2,953.8	8.8	59.1	74.89	74.89	-444.5	624.1	620.5	552.9	67.69	9.168	
3,100.0	3,071.2	3,052.2	3,052.2	9.2	61.0	76.49	76.49	-444.5	624.1	616.0	545.9	70.08	8.790	
3,200.0	3,169.5	3,150.5	3,150.5	9.6	63.0	78.10	78.10	-444.5	624.1	612.0	539.5	72.48	8.443	
3,300.0	3,267.9	3,248.9	3,248.9	10.0	65.0	79.74	79.74	-444.5	624.1	608.4	533.6	74.88	8.126	
3,400.0	3,366.3	3,347.3	3,347.3	10.4	66.9	81.40	81.40	-444.5	624.1	605.4	528.2	77.28	7.835	
3,500.0	3,464.6	3,445.6	3,445.6	10.8	68.9	83.06	83.06	-444.5	624.1	603.0	523.3	79.67	7.568	
3,600.0	3,563.0	3,544.0	3,544.0	11.2	70.9	84.75	84.75	-444.5	624.1	601.0	518.9	82.07	7.324	
3,700.0	3,661.3	3,642.3	3,642.3	11.6	72.8	86.44	86.44	-444.5	624.1	599.6	515.1	84.46	7.100	
3,800.0	3,759.7	3,740.7	3,740.7	12.0	74.8	88.13	88.13	-444.5	624.1	598.7	511.9	86.84	6.894	
3,900.0	3,858.0	3,839.0	3,839.0	12.4	76.8	89.83	89.83	-444.5	624.1	598.4	509.2	89.22	6.707	
3,909.9	3,867.8	3,848.8	3,848.8	12.5	77.0	90.00	90.00	-444.5	624.1	598.4	508.9	89.46	6.689	
4,000.0	3,956.4	3,937.4	3,937.4	12.9	78.7	91.53	91.53	-444.5	624.1	598.6	507.0	91.60	6.535	
4,100.0	4,054.8	4,035.8	4,035.8	13.3	80.7	93.23	93.23	-444.5	624.1	599.4	505.4	93.96	6.379	
4,200.0	4,153.1	4,134.1	4,134.1	13.7	82.7	94.92	94.92	-444.5	624.1	600.7	504.4	96.32	6.236	
4,300.0	4,251.5	4,232.5	4,232.5	14.1	84.6	96.60	96.60	-444.5	624.1	602.5	503.9	98.67	6.106	
4,400.0	4,349.8	4,330.8	4,330.8	14.5	86.6	98.27	98.27	-444.5	624.1	604.9	503.9	101.01	5.988	
4,500.0	4,448.2	4,429.2	4,429.2	14.9	88.6	99.93	99.93	-444.5	624.1	607.8	504.5	103.35	5.881	
4,600.0	4,546.5	4,527.5	4,527.5	15.3	90.6	101.57	101.57	-444.5	624.1	611.2	505.6	105.67	5.784	
4,700.0	4,644.9	4,625.9	4,625.9	15.7	92.5	103.19	103.19	-444.5	624.1	615.2	507.2	107.98	5.697	
4,800.0	4,743.3	4,724.3	4,724.3	16.1	94.5	104.79	104.79	-444.5	624.1	619.6	509.3	110.28	5.619	
4,900.0	4,841.6	4,822.6	4,822.6	16.5	96.5	106.37	106.37	-444.5	624.1	624.5	512.0	112.57	5.548	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,940.0	4,921.0	4,921.0	16.9	98.4	107.92		-444.5	624.1	629.9	515.1	114.85	5.485	
5,100.0	5,038.4	5,019.4	5,019.4	17.3	100.4	109.46		-444.5	624.1	635.6	518.5	117.12	5.427	
5,200.0	5,137.4	5,118.4	5,118.4	17.6	102.4	110.76		-444.5	624.1	640.6	521.3	119.34	5.368	
5,300.0	5,236.8	5,217.8	5,217.8	17.8	104.4	111.74		-444.5	624.1	644.6	523.0	121.55	5.303	
5,400.0	5,336.5	5,317.5	5,317.5	18.0	106.3	112.40		-444.5	624.1	647.4	523.7	123.73	5.232	
5,500.0	5,436.4	5,417.4	5,417.4	18.1	108.3	112.75		-444.5	624.1	648.9	523.0	125.88	5.155	
5,600.0	5,536.4	5,517.4	5,517.4	18.3	110.3	-173.08		-444.5	624.1	649.2	521.2	128.01	5.071	
5,700.0	5,636.4	5,617.4	5,617.4	18.4	112.3	-173.08		-444.5	624.1	649.2	519.0	130.16	4.987	
5,800.0	5,736.4	5,717.4	5,717.4	18.6	114.3	-173.08		-444.5	624.1	649.2	516.9	132.31	4.906	
5,900.0	5,836.4	5,817.4	5,817.4	18.7	116.3	-173.08		-444.5	624.1	649.2	514.7	134.47	4.828	
6,000.0	5,936.4	5,917.4	5,917.4	18.9	118.3	-173.08		-444.5	624.1	649.2	512.6	136.62	4.752	
6,100.0	6,036.3	6,017.3	6,017.3	19.0	120.3	6.98		-444.5	624.1	645.9	507.8	138.12	4.676	
6,200.0	6,135.0	6,116.0	6,116.0	19.1	122.3	7.31		-444.5	624.1	630.3	493.0	137.32	4.590	
6,300.0	6,230.8	6,211.8	6,211.8	19.1	124.2	7.95		-444.5	624.1	602.0	467.9	134.10	4.489	
6,400.0	6,322.0	6,303.0	6,303.0	19.2	126.1	9.04		-444.5	624.1	561.6	433.1	128.49	4.371	
6,500.0	6,407.1	6,388.1	6,388.1	19.2	127.8	10.77		-444.5	624.1	509.8	389.1	120.74	4.223	
6,600.0	6,484.7	6,465.7	6,465.7	19.3	129.3	13.60		-444.5	624.1	447.7	336.2	111.48	4.016	
6,700.0	6,553.4	6,534.4	6,534.4	19.4	130.7	18.40		-444.5	624.1	376.4	274.0	102.48	3.673	
6,800.0	6,612.0	6,593.0	6,593.0	19.5	131.9	27.07		-444.5	624.1	297.8	198.7	99.05	3.006	
6,900.0	6,659.6	6,640.6	6,640.6	19.8	132.8	43.21		-444.5	624.1	214.2	101.8	112.44	1.905	
7,000.0	6,695.3	6,676.3	6,676.3	20.3	133.5	68.17		-444.5	624.1	131.8	-8.5	140.32	0.939 Level 1	
7,100.0	6,718.5	6,699.5	6,699.5	20.9	134.0	88.90		-444.5	624.1	78.7	-72.8	151.49	0.520 Level 1	
7,109.0	6,719.9	6,700.9	6,700.9	21.0	134.0	90.00		-444.5	624.1	78.2	-73.5	151.67	0.516 Level 1, CC, ES, SF	
7,200.0	6,728.8	6,709.8	6,709.8	21.7	134.2	92.51		-444.5	624.1	119.6	-33.1	152.75	0.783 Level 1	
7,300.0	6,728.9	6,709.9	6,709.9	22.7	134.2	89.17		-444.5	624.1	205.9	52.0	153.93	1.338 Level 3	
7,400.0	6,728.3	6,709.3	6,709.3	23.8	134.2	88.74		-444.5	624.1	300.8	145.7	155.16	1.939	
7,500.0	6,727.7	6,708.7	6,708.7	25.0	134.2	88.30		-444.5	624.1	398.2	241.8	156.47	2.545	
7,600.0	6,727.1	6,708.1	6,708.1	26.3	134.2	87.87		-444.5	624.1	496.7	338.8	157.85	3.147	
7,700.0	6,726.6	6,707.6	6,707.6	27.7	134.2	87.43		-444.5	624.1	595.6	436.4	159.28	3.740	
7,800.0	6,726.0	6,707.0	6,707.0	29.1	134.1	87.00		-444.5	624.1	694.9	534.1	160.76	4.323	
7,900.0	6,725.4	6,706.4	6,706.4	30.6	134.1	86.57		-444.5	624.1	794.3	632.1	162.26	4.895	
8,000.0	6,724.8	6,705.8	6,705.8	32.1	134.1	86.13		-444.5	624.1	893.9	730.1	163.80	5.457	
8,100.0	6,724.2	6,705.2	6,705.2	33.7	134.1	85.70		-444.5	624.1	993.6	828.2	165.36	6.009	
8,200.0	6,723.6	6,704.6	6,704.6	35.3	134.1	85.27		-444.5	624.1	1,093.3	926.3	166.93	6.549	
8,300.0	6,723.0	6,704.0	6,704.0	37.0	134.1	84.84		-444.5	624.1	1,193.0	1,024.5	168.51	7.080	
8,400.0	6,722.4	6,703.4	6,703.4	38.7	134.1	84.41		-444.5	624.1	1,292.8	1,122.7	170.10	7.600	
8,500.0	6,721.8	6,702.8	6,702.8	40.3	134.1	83.98		-444.5	624.1	1,392.7	1,221.0	171.70	8.111	
8,600.0	6,721.2	6,702.2	6,702.2	42.1	134.0	83.55		-444.5	624.1	1,492.5	1,319.2	173.30	8.612	
8,700.0	6,720.6	6,701.6	6,701.6	43.8	134.0	83.12		-444.5	624.1	1,592.4	1,417.5	174.90	9.104	
8,800.0	6,720.0	6,701.0	6,701.0	45.5	134.0	82.69		-444.5	624.1	1,692.3	1,515.8	176.51	9.588	
8,900.0	6,719.4	6,700.4	6,700.4	47.3	134.0	82.26		-444.5	624.1	1,792.2	1,614.1	178.11	10.062	
9,000.0	6,718.8	6,699.8	6,699.8	49.1	134.0	81.84		-444.5	624.1	1,892.1	1,712.4	179.70	10.529	
9,100.0	6,718.2	6,699.2	6,699.2	50.8	134.0	81.41		-444.5	624.1	1,992.0	1,810.7	181.29	10.988	
9,200.0	6,717.7	6,698.7	6,698.7	52.6	134.0	80.99		-444.5	624.1	2,091.9	1,909.0	182.88	11.439	
9,300.0	6,717.1	6,698.1	6,698.1	54.4	134.0	80.56		-444.5	624.1	2,191.9	2,007.4	184.46	11.883	
9,400.0	6,716.5	6,697.5	6,697.5	56.2	133.9	80.14		-444.5	624.1	2,291.8	2,105.8	186.03	12.319	
9,500.0	6,715.9	6,696.9	6,696.9	58.1	133.9	79.72		-444.5	624.1	2,391.7	2,204.1	187.60	12.749	
9,600.0	6,715.3	6,696.3	6,696.3	59.9	133.9	79.30		-444.5	624.1	2,491.7	2,302.5	189.15	13.173	
9,700.0	6,714.7	6,695.7	6,695.7	61.7	133.9	78.88		-444.5	624.1	2,591.6	2,400.9	190.70	13.590	
9,800.0	6,714.1	6,695.1	6,695.1	63.5	133.9	78.46		-444.5	624.1	2,691.6	2,499.3	192.24	14.001	
9,900.0	6,713.5	6,694.5	6,694.5	65.4	133.9	78.05		-444.5	624.1	2,791.5	2,597.8	193.77	14.407	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,712.9	6,693.9	6,693.9	67.2	133.9	77.63		-444.5	624.1	2,891.5	2,696.2	195.28	14.807	
10,100.0	6,712.3	6,693.3	6,693.3	69.1	133.9	77.22		-444.5	624.1	2,991.5	2,794.7	196.79	15.201	
10,200.0	6,711.7	6,692.7	6,692.7	70.9	133.9	76.80		-444.5	624.1	3,091.4	2,893.1	198.29	15.591	
10,300.0	6,711.1	6,692.1	6,692.1	72.8	133.8	76.39		-444.5	624.1	3,191.4	2,991.6	199.77	15.975	
10,400.0	6,710.5	6,691.5	6,691.5	74.6	133.8	75.98		-444.5	624.1	3,291.4	3,090.1	201.25	16.355	
10,500.0	6,709.9	6,690.9	6,690.9	76.5	133.8	75.57		-444.5	624.1	3,391.3	3,188.6	202.71	16.730	
10,600.0	6,709.3	6,690.3	6,690.3	78.4	133.8	75.17		-444.5	624.1	3,491.3	3,287.2	204.16	17.101	
10,700.0	6,708.8	6,689.8	6,689.8	80.2	133.8	74.76		-444.5	624.1	3,591.3	3,385.7	205.59	17.468	
10,800.0	6,708.2	6,689.2	6,689.2	82.1	133.8	74.36		-444.5	624.1	3,691.3	3,484.2	207.02	17.831	
10,900.0	6,707.6	6,688.6	6,688.6	84.0	133.8	73.95		-444.5	624.1	3,791.2	3,582.8	208.43	18.189	
11,000.0	6,707.0	6,688.0	6,688.0	85.8	133.8	73.55		-444.5	624.1	3,891.2	3,681.4	209.83	18.545	
11,100.0	6,706.4	6,687.4	6,687.4	87.7	133.7	73.15		-444.5	624.1	3,991.2	3,780.0	211.22	18.896	
11,200.0	6,705.8	6,686.8	6,686.8	89.6	133.7	72.76		-444.5	624.1	4,091.2	3,878.6	212.59	19.244	
11,300.0	6,705.2	6,686.2	6,686.2	91.5	133.7	72.36		-444.5	624.1	4,191.2	3,977.2	213.95	19.589	
11,400.0	6,704.6	6,685.6	6,685.6	93.4	133.7	71.97		-444.5	624.1	4,291.1	4,075.8	215.30	19.931	
11,500.0	6,704.0	6,685.0	6,685.0	95.2	133.7	71.58		-444.5	624.1	4,391.1	4,174.5	216.64	20.269	
11,600.0	6,703.4	6,684.4	6,684.4	97.1	133.7	71.18		-444.5	624.1	4,491.1	4,273.1	217.96	20.605	
11,700.0	6,702.8	6,683.8	6,683.8	99.0	133.7	70.80		-444.5	624.1	4,591.1	4,371.8	219.27	20.938	
11,800.0	6,702.2	6,683.2	6,683.2	100.9	133.7	70.41		-444.5	624.1	4,691.1	4,470.5	220.56	21.268	
11,900.0	6,701.6	6,682.6	6,682.6	102.8	133.7	70.02		-444.5	624.1	4,791.0	4,569.2	221.85	21.596	
12,000.0	6,701.0	6,682.0	6,682.0	104.7	133.6	69.64		-444.5	624.1	4,891.0	4,667.9	223.12	21.921	
12,100.0	6,700.4	6,681.4	6,681.4	106.6	133.6	69.26		-444.5	624.1	4,991.0	4,766.6	224.37	22.244	
12,200.0	6,699.9	6,680.9	6,680.9	108.5	133.6	68.88		-444.5	624.1	5,091.0	4,865.4	225.62	22.565	
12,300.0	6,699.3	6,680.3	6,680.3	110.3	133.6	68.50		-444.5	624.1	5,191.0	4,964.1	226.85	22.883	
12,400.0	6,698.7	6,679.7	6,679.7	112.2	133.6	68.13		-444.5	624.1	5,291.0	5,062.9	228.06	23.200	
12,500.0	6,698.1	6,679.1	6,679.1	114.1	133.6	67.75		-444.5	624.1	5,391.0	5,161.7	229.27	23.514	
12,600.0	6,697.5	6,678.5	6,678.5	116.0	133.6	67.38		-444.5	624.1	5,491.0	5,260.5	230.46	23.826	
12,700.0	6,696.9	6,677.9	6,677.9	117.9	133.6	67.01		-444.5	624.1	5,590.9	5,359.3	231.64	24.137	
12,800.0	6,696.3	6,677.3	6,677.3	119.8	133.5	66.65		-444.5	624.1	5,690.9	5,458.1	232.80	24.445	
12,900.0	6,695.7	6,676.7	6,676.7	121.7	133.5	66.28		-444.5	624.1	5,790.9	5,557.0	233.95	24.752	
13,000.0	6,695.1	6,676.1	6,676.1	123.6	133.5	65.92		-444.5	624.1	5,890.9	5,655.8	235.09	25.058	
13,100.0	6,694.5	6,675.5	6,675.5	125.5	133.5	65.56		-444.5	624.1	5,990.9	5,754.7	236.22	25.362	
13,200.0	6,693.9	6,674.9	6,674.9	127.4	133.5	65.20		-444.5	624.1	6,090.9	5,853.6	237.33	25.664	
13,300.0	6,693.3	6,674.3	6,674.3	129.3	133.5	64.84		-444.5	624.1	6,190.9	5,952.4	238.44	25.965	
13,400.0	6,692.7	6,673.7	6,673.7	131.2	133.5	64.48		-444.5	624.1	6,290.9	6,051.3	239.52	26.264	
13,500.0	6,692.1	6,673.1	6,673.1	133.1	133.5	64.13		-444.5	624.1	6,390.9	6,150.3	240.60	26.562	
13,600.0	6,691.5	6,672.5	6,672.5	135.0	133.5	63.78		-444.5	624.1	6,490.9	6,249.2	241.66	26.859	
13,700.0	6,691.0	6,672.0	6,672.0	136.9	133.4	63.43		-444.5	624.1	6,590.8	6,348.1	242.72	27.154	
13,800.0	6,690.4	6,671.4	6,671.4	138.8	133.4	63.09		-444.5	624.1	6,690.8	6,447.1	243.76	27.449	
13,860.3	6,690.0	6,671.0	6,671.0	140.0	133.4	62.88		-444.5	624.1	6,751.1	6,506.7	244.38	27.626	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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 (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	2.0	2.0	0.0	0.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,888.1	0.04	N/A	
100.0	100.0	102.0	102.0	0.1	2.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,886.0	2.15	877.135	
200.0	200.0	202.0	202.0	0.3	4.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,883.7	4.38	431.336	
300.0	300.0	302.0	302.0	0.6	6.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,881.5	6.60	285.985	
400.0	400.0	402.0	402.0	0.8	8.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,879.3	8.83	213.904	
500.0	500.0	502.0	502.0	1.0	10.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,877.1	11.05	170.844	
600.0	600.0	602.0	602.0	1.2	12.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,874.8	13.28	142.215	
700.0	700.0	702.0	702.0	1.5	14.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,872.6	15.50	121.804	
800.0	800.0	802.0	802.0	1.7	16.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,870.4	17.73	106.517	
900.0	900.0	902.0	902.0	1.9	18.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,868.2	19.95	94.639	
1,000.0	1,000.0	1,002.0	1,002.0	2.1	20.0	161.68	161.68	-1,792.4	593.5	1,888.1	1,865.9	22.18	85.144	
1,100.0	1,100.0	1,102.0	1,102.0	2.4	22.0	87.63	87.63	-1,792.4	593.5	1,888.0	1,863.6	24.39	77.408	
1,200.0	1,199.8	1,201.8	1,201.8	2.6	24.0	87.79	87.79	-1,792.4	593.5	1,887.8	1,861.2	26.60	70.972	
1,300.0	1,299.5	1,301.5	1,301.5	2.8	26.0	88.06	88.06	-1,792.4	593.5	1,887.5	1,858.7	28.82	65.503	
1,400.0	1,398.7	1,400.7	1,400.7	3.0	28.0	88.44	88.44	-1,792.4	593.5	1,887.1	1,856.1	31.04	60.787	
1,500.0	1,497.5	1,499.5	1,499.5	3.3	30.0	88.91	88.91	-1,792.4	593.5	1,886.8	1,853.5	33.29	56.670	
1,600.0	1,595.8	1,597.8	1,597.8	3.6	32.0	89.45	89.45	-1,792.4	593.5	1,886.5	1,850.9	35.57	53.040	
1,700.0	1,694.2	1,696.2	1,696.2	3.9	33.9	89.99	89.99	-1,792.4	593.5	1,886.4	1,848.6	37.86	49.826	
1,701.9	1,696.0	1,698.0	1,698.0	3.9	34.0	90.00	90.00	-1,792.4	593.5	1,886.4	1,848.5	37.90	49.769	
1,800.0	1,792.5	1,794.5	1,794.5	4.3	35.9	90.53	90.53	-1,792.4	593.5	1,886.5	1,846.3	40.17	46.965	
1,900.0	1,890.9	1,892.9	1,892.9	4.6	37.9	91.07	91.07	-1,792.4	593.5	1,886.8	1,844.3	42.49	44.408	
2,000.0	1,989.3	1,991.3	1,991.3	5.0	39.8	91.61	91.61	-1,792.4	593.5	1,887.2	1,842.4	44.81	42.111	
2,100.0	2,087.6	2,089.6	2,089.6	5.4	41.8	92.15	92.15	-1,792.4	593.5	1,887.8	1,840.6	47.15	40.038	
2,200.0	2,186.0	2,188.0	2,188.0	5.7	43.8	92.68	92.68	-1,792.4	593.5	1,888.6	1,839.1	49.49	38.160	
2,300.0	2,284.3	2,286.3	2,286.3	6.1	45.7	93.22	93.22	-1,792.4	593.5	1,889.5	1,837.7	51.83	36.453	
2,400.0	2,382.7	2,384.7	2,384.7	6.5	47.7	93.76	93.76	-1,792.4	593.5	1,890.6	1,836.4	54.18	34.893	
2,500.0	2,481.0	2,483.0	2,483.0	6.9	49.7	94.30	94.30	-1,792.4	593.5	1,891.9	1,835.4	56.53	33.465	
2,600.0	2,579.4	2,581.4	2,581.4	7.3	51.6	94.83	94.83	-1,792.4	593.5	1,893.4	1,834.5	58.89	32.153	
2,700.0	2,677.8	2,679.8	2,679.8	7.7	53.6	95.37	95.37	-1,792.4	593.5	1,895.0	1,833.8	61.24	30.943	
2,800.0	2,776.1	2,778.1	2,778.1	8.0	55.6	95.90	95.90	-1,792.4	593.5	1,896.8	1,833.2	63.60	29.825	
2,900.0	2,874.5	2,876.5	2,876.5	8.4	57.5	96.43	96.43	-1,792.4	593.5	1,898.8	1,832.8	65.95	28.790	
3,000.0	2,972.8	2,974.8	2,974.8	8.8	59.5	96.97	96.97	-1,792.4	593.5	1,900.9	1,832.6	68.31	27.827	
3,100.0	3,071.2	3,073.2	3,073.2	9.2	61.5	97.50	97.50	-1,792.4	593.5	1,903.2	1,832.6	70.67	26.932	
3,200.0	3,169.5	3,171.5	3,171.5	9.6	63.4	98.03	98.03	-1,792.4	593.5	1,905.7	1,832.7	73.03	26.096	
3,300.0	3,267.9	3,269.9	3,269.9	10.0	65.4	98.55	98.55	-1,792.4	593.5	1,908.3	1,833.0	75.38	25.315	
3,400.0	3,366.3	3,368.3	3,368.3	10.4	67.4	99.08	99.08	-1,792.4	593.5	1,911.2	1,833.4	77.74	24.584	
3,500.0	3,464.6	3,466.6	3,466.6	10.8	69.3	99.61	99.61	-1,792.4	593.5	1,914.1	1,834.0	80.10	23.898	
3,600.0	3,563.0	3,565.0	3,565.0	11.2	71.3	100.13	100.13	-1,792.4	593.5	1,917.3	1,834.8	82.45	23.253	
3,700.0	3,661.3	3,663.3	3,663.3	11.6	73.3	100.65	100.65	-1,792.4	593.5	1,920.6	1,835.8	84.81	22.647	
3,800.0	3,759.7	3,761.7	3,761.7	12.0	75.2	101.17	101.17	-1,792.4	593.5	1,924.1	1,836.9	87.16	22.075	
3,900.0	3,858.0	3,860.0	3,860.0	12.4	77.2	101.69	101.69	-1,792.4	593.5	1,927.7	1,838.2	89.51	21.535	
4,000.0	3,956.4	3,958.4	3,958.4	12.9	79.2	102.21	102.21	-1,792.4	593.5	1,931.5	1,839.6	91.87	21.025	
4,100.0	4,054.8	4,056.8	4,056.8	13.3	81.1	102.72	102.72	-1,792.4	593.5	1,935.5	1,841.2	94.22	20.543	
4,200.0	4,153.1	4,155.1	4,155.1	13.7	83.1	103.23	103.23	-1,792.4	593.5	1,939.6	1,843.0	96.57	20.085	
4,300.0	4,251.5	4,253.5	4,253.5	14.1	85.1	103.74	103.74	-1,792.4	593.5	1,943.8	1,844.9	98.91	19.652	
4,400.0	4,349.8	4,351.8	4,351.8	14.5	87.0	104.25	104.25	-1,792.4	593.5	1,948.3	1,847.0	101.26	19.240	
4,500.0	4,448.2	4,450.2	4,450.2	14.9	89.0	104.76	104.76	-1,792.4	593.5	1,952.9	1,849.3	103.61	18.849	
4,600.0	4,546.5	4,548.5	4,548.5	15.3	91.0	105.26	105.26	-1,792.4	593.5	1,957.6	1,851.7	105.95	18.477	
4,700.0	4,644.9	4,646.9	4,646.9	15.7	92.9	105.76	105.76	-1,792.4	593.5	1,962.5	1,854.2	108.29	18.123	
4,800.0	4,743.3	4,745.3	4,745.3	16.1	94.9	106.26	106.26	-1,792.4	593.5	1,967.6	1,857.0	110.63	17.785	
4,900.0	4,841.6	4,843.6	4,843.6	16.5	96.9	106.75	106.75	-1,792.4	593.5	1,972.8	1,859.8	112.97	17.463	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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
5,000.0	4,940.0	4,942.0	4,942.0	16.9	98.8	107.25		-1,792.4	593.5	1,978.1	1,862.8	115.30	17.156	
5,100.0	5,038.4	5,040.4	5,040.4	17.3	100.8	107.78		-1,792.4	593.5	1,983.5	1,865.9	117.64	16.861	
5,200.0	5,137.4	5,139.4	5,139.4	17.6	102.8	108.26		-1,792.4	593.5	1,988.0	1,868.1	119.90	16.580	
5,300.0	5,236.8	5,238.8	5,238.8	17.8	104.8	108.62		-1,792.4	593.5	1,991.5	1,869.3	122.13	16.305	
5,400.0	5,336.5	5,338.5	5,338.5	18.0	106.8	108.87		-1,792.4	593.5	1,993.9	1,869.5	124.33	16.036	
5,500.0	5,436.4	5,438.4	5,438.4	18.1	108.8	109.00		-1,792.4	593.5	1,995.1	1,868.6	126.50	15.772	
5,600.0	5,536.4	5,538.4	5,538.4	18.3	110.8	-176.87		-1,792.4	593.5	1,995.4	1,866.7	128.63	15.513	
5,700.0	5,636.4	5,638.4	5,638.4	18.4	112.8	-176.87		-1,792.4	593.5	1,995.4	1,864.6	130.78	15.258	
5,800.0	5,736.4	5,738.4	5,738.4	18.6	114.8	-176.87		-1,792.4	593.5	1,995.4	1,862.4	132.93	15.011	
5,900.0	5,836.4	5,838.4	5,838.4	18.7	116.8	-176.87		-1,792.4	593.5	1,995.4	1,860.3	135.08	14.772	
6,000.0	5,936.4	5,938.4	5,938.4	18.9	118.8	-176.87		-1,792.4	593.5	1,995.4	1,858.1	137.23	14.541	
6,100.0	6,036.3	6,038.3	6,038.3	19.0	120.8	3.15		-1,792.4	593.5	1,992.1	1,853.3	138.73	14.359	
6,200.0	6,135.0	6,137.0	6,137.0	19.1	122.7	3.24		-1,792.4	593.5	1,976.3	1,838.4	137.89	14.332	
6,300.0	6,230.8	6,232.8	6,232.8	19.1	124.7	3.41		-1,792.4	593.5	1,947.9	1,813.3	134.58	14.474	
6,400.0	6,322.0	6,324.0	6,324.0	19.2	126.5	3.70		-1,792.4	593.5	1,907.2	1,778.4	128.77	14.811	
6,500.0	6,407.1	6,409.1	6,409.1	19.2	128.2	4.12		-1,792.4	593.5	1,854.9	1,734.4	120.53	15.390	
6,600.0	6,484.7	6,486.7	6,486.7	19.3	129.7	4.74		-1,792.4	593.5	1,792.1	1,682.0	110.03	16.287	
6,700.0	6,553.4	6,555.4	6,555.4	19.4	131.1	5.67		-1,792.4	593.5	1,719.6	1,622.1	97.56	17.626	
6,800.0	6,612.0	6,614.0	6,614.0	19.5	132.3	7.12		-1,792.4	593.5	1,638.9	1,555.2	83.70	19.581	
6,900.0	6,659.6	6,661.6	6,661.6	19.8	133.2	9.56		-1,792.4	593.5	1,551.2	1,481.4	69.78	22.231	
7,000.0	6,695.3	6,697.3	6,697.3	20.3	133.9	14.22		-1,792.4	593.5	1,458.1	1,397.9	60.24	24.206	
7,100.0	6,718.5	6,720.5	6,720.5	20.9	134.4	25.51		-1,792.4	593.5	1,361.2	1,289.8	71.42	19.059	
7,200.0	6,728.8	6,730.8	6,730.8	21.7	134.6	66.33		-1,792.4	593.5	1,262.1	1,122.3	139.83	9.026	
7,300.0	6,728.9	6,730.9	6,730.9	22.7	134.6	93.61		-1,792.4	593.5	1,162.6	1,008.3	154.25	7.537	
7,400.0	6,728.3	6,730.3	6,730.3	23.8	134.6	93.30		-1,792.4	593.5	1,063.0	907.5	155.56	6.834	
7,500.0	6,727.7	6,729.7	6,729.7	25.0	134.6	92.99		-1,792.4	593.5	963.6	806.7	156.95	6.140	
7,600.0	6,727.1	6,729.1	6,729.1	26.3	134.6	92.68		-1,792.4	593.5	864.3	705.9	158.42	5.456	
7,700.0	6,726.6	6,728.6	6,728.6	27.7	134.6	92.37		-1,792.4	593.5	765.2	605.3	159.94	4.784	
7,800.0	6,726.0	6,728.0	6,728.0	29.1	134.6	92.05		-1,792.4	593.5	666.4	504.9	161.51	4.126	
7,900.0	6,725.4	6,727.4	6,727.4	30.6	134.5	91.74		-1,792.4	593.5	568.0	404.9	163.12	3.482	
8,000.0	6,724.8	6,726.8	6,726.8	32.1	134.5	91.43		-1,792.4	593.5	470.2	305.5	164.76	2.854	
8,100.0	6,724.2	6,726.2	6,726.2	33.7	134.5	91.12		-1,792.4	593.5	373.7	207.2	166.43	2.245	
8,200.0	6,723.6	6,725.6	6,725.6	35.3	134.5	90.80		-1,792.4	593.5	279.5	111.4	168.12	1.663	
8,300.0	6,723.0	6,725.0	6,725.0	37.0	134.5	90.49		-1,792.4	593.5	191.4	21.6	169.83	1.127 Level 2	
8,400.0	6,722.4	6,724.4	6,724.4	38.7	134.5	90.18		-1,792.4	593.5	123.1	-48.5	171.55	0.717 Level 1	
8,457.5	6,722.1	6,724.1	6,724.1	39.6	134.5	90.00		-1,792.4	593.5	108.8	-63.7	172.55	0.631 Level 1, CC, ES, SF	
8,500.0	6,721.8	6,723.8	6,723.8	40.3	134.5	89.87		-1,792.4	593.5	116.8	-56.5	173.29	0.674 Level 1	
8,600.0	6,721.2	6,723.2	6,723.2	42.1	134.5	89.55		-1,792.4	593.5	179.3	4.3	175.04	1.025 Level 2	
8,700.0	6,720.6	6,722.6	6,722.6	43.8	134.5	89.24		-1,792.4	593.5	265.8	89.0	176.79	1.504	
8,800.0	6,720.0	6,722.0	6,722.0	45.5	134.4	88.93		-1,792.4	593.5	359.4	180.9	178.55	2.013	
8,900.0	6,719.4	6,721.4	6,721.4	47.3	134.4	88.62		-1,792.4	593.5	455.7	275.4	180.31	2.527	
9,000.0	6,718.8	6,720.8	6,720.8	49.1	134.4	88.31		-1,792.4	593.5	553.3	371.3	182.08	3.039	
9,100.0	6,718.2	6,720.2	6,720.2	50.8	134.4	87.99		-1,792.4	593.5	651.7	467.8	183.85	3.545	
9,200.0	6,717.7	6,719.7	6,719.7	52.6	134.4	87.68		-1,792.4	593.5	750.5	564.8	185.62	4.043	
9,300.0	6,717.1	6,719.1	6,719.1	54.4	134.4	87.37		-1,792.4	593.5	849.5	662.1	187.39	4.533	
9,400.0	6,716.5	6,718.5	6,718.5	56.2	134.4	87.06		-1,792.4	593.5	948.8	759.6	189.16	5.016	
9,500.0	6,715.9	6,717.9	6,717.9	58.1	134.4	86.75		-1,792.4	593.5	1,048.2	857.3	190.93	5.490	
9,600.0	6,715.3	6,717.3	6,717.3	59.9	134.3	86.43		-1,792.4	593.5	1,147.7	955.0	192.69	5.956	
9,700.0	6,714.7	6,716.7	6,716.7	61.7	134.3	86.12		-1,792.4	593.5	1,247.3	1,052.8	194.46	6.414	
9,800.0	6,714.1	6,716.1	6,716.1	63.5	134.3	85.81		-1,792.4	593.5	1,346.9	1,150.7	196.22	6.864	
9,900.0	6,713.5	6,715.5	6,715.5	65.4	134.3	85.50		-1,792.4	593.5	1,446.6	1,248.6	197.98	7.307	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)						
10,000.0	6,712.9	6,714.9	6,714.9	67.2	134.3	85.19	-1,792.4	593.5	1,546.3	1,346.6	199.74	7.742					
10,100.0	6,712.3	6,714.3	6,714.3	69.1	134.3	84.88	-1,792.4	593.5	1,646.1	1,444.6	201.49	8.170					
10,200.0	6,711.7	6,713.7	6,713.7	70.9	134.3	84.57	-1,792.4	593.5	1,745.9	1,542.7	203.24	8.590					
10,300.0	6,711.1	6,713.1	6,713.1	72.8	134.3	84.26	-1,792.4	593.5	1,845.7	1,640.7	204.98	9.004					
10,400.0	6,710.5	6,712.5	6,712.5	74.6	134.3	83.95	-1,792.4	593.5	1,945.5	1,738.8	206.72	9.412					
10,500.0	6,709.9	6,711.9	6,711.9	76.5	134.2	83.64	-1,792.4	593.5	2,045.4	1,836.9	208.45	9.812					
10,600.0	6,709.3	6,711.3	6,711.3	78.4	134.2	83.34	-1,792.4	593.5	2,145.3	1,935.1	210.18	10.207					
10,700.0	6,708.8	6,710.8	6,710.8	80.2	134.2	83.03	-1,792.4	593.5	2,245.1	2,033.2	211.90	10.595					
10,800.0	6,708.2	6,710.2	6,710.2	82.1	134.2	82.72	-1,792.4	593.5	2,345.0	2,131.4	213.62	10.978					
10,900.0	6,707.6	6,709.6	6,709.6	84.0	134.2	82.41	-1,792.4	593.5	2,444.9	2,229.6	215.33	11.354					
11,000.0	6,707.0	6,709.0	6,709.0	85.8	134.2	82.11	-1,792.4	593.5	2,544.8	2,327.8	217.03	11.726					
11,100.0	6,706.4	6,708.4	6,708.4	87.7	134.2	81.80	-1,792.4	593.5	2,644.7	2,426.0	218.73	12.091					
11,200.0	6,705.8	6,707.8	6,707.8	89.6	134.2	81.49	-1,792.4	593.5	2,744.6	2,524.2	220.42	12.452					
11,300.0	6,705.2	6,707.2	6,707.2	91.5	134.1	81.19	-1,792.4	593.5	2,844.6	2,622.5	222.10	12.808					
11,400.0	6,704.6	6,706.6	6,706.6	93.4	134.1	80.88	-1,792.4	593.5	2,944.5	2,720.7	223.78	13.158					
11,500.0	6,704.0	6,706.0	6,706.0	95.2	134.1	80.58	-1,792.4	593.5	3,044.4	2,819.0	225.45	13.504					
11,600.0	6,703.4	6,705.4	6,705.4	97.1	134.1	80.28	-1,792.4	593.5	3,144.4	2,917.3	227.11	13.845					
11,700.0	6,702.8	6,704.8	6,704.8	99.0	134.1	79.97	-1,792.4	593.5	3,244.3	3,015.5	228.76	14.182					
11,800.0	6,702.2	6,704.2	6,704.2	100.9	134.1	79.67	-1,792.4	593.5	3,344.2	3,113.8	230.41	14.514					
11,900.0	6,701.6	6,703.6	6,703.6	102.8	134.1	79.37	-1,792.4	593.5	3,444.2	3,212.1	232.05	14.843					
12,000.0	6,701.0	6,703.0	6,703.0	104.7	134.1	79.07	-1,792.4	593.5	3,544.1	3,310.5	233.68	15.167					
12,100.0	6,700.4	6,702.4	6,702.4	106.6	134.0	78.77	-1,792.4	593.5	3,644.1	3,408.8	235.30	15.487					
12,200.0	6,699.9	6,701.9	6,701.9	108.5	134.0	78.47	-1,792.4	593.5	3,744.0	3,507.1	236.92	15.803					
12,300.0	6,699.3	6,701.3	6,701.3	110.3	134.0	78.17	-1,792.4	593.5	3,844.0	3,605.5	238.52	16.116					
12,400.0	6,698.7	6,700.7	6,700.7	112.2	134.0	77.87	-1,792.4	593.5	3,944.0	3,703.8	240.12	16.425					
12,500.0	6,698.1	6,700.1	6,700.1	114.1	134.0	77.57	-1,792.4	593.5	4,043.9	3,802.2	241.71	16.730					
12,600.0	6,697.5	6,699.5	6,699.5	116.0	134.0	77.27	-1,792.4	593.5	4,143.9	3,900.6	243.29	17.033					
12,700.0	6,696.9	6,698.9	6,698.9	117.9	134.0	76.97	-1,792.4	593.5	4,243.9	3,999.0	244.87	17.331					
12,800.0	6,696.3	6,698.3	6,698.3	119.8	134.0	76.68	-1,792.4	593.5	4,343.8	4,097.4	246.43	17.627					
12,900.0	6,695.7	6,697.7	6,697.7	121.7	134.0	76.38	-1,792.4	593.5	4,443.8	4,195.8	247.99	17.920					
13,000.0	6,695.1	6,697.1	6,697.1	123.6	133.9	76.09	-1,792.4	593.5	4,543.8	4,294.2	249.53	18.209					
13,100.0	6,694.5	6,696.5	6,696.5	125.5	133.9	75.79	-1,792.4	593.5	4,643.7	4,392.7	251.07	18.496					
13,200.0	6,693.9	6,695.9	6,695.9	127.4	133.9	75.50	-1,792.4	593.5	4,743.7	4,491.1	252.60	18.779					
13,300.0	6,693.3	6,695.3	6,695.3	129.3	133.9	75.21	-1,792.4	593.5	4,843.7	4,589.6	254.12	19.061					
13,400.0	6,692.7	6,694.7	6,694.7	131.2	133.9	74.92	-1,792.4	593.5	4,943.6	4,688.0	255.63	19.339					
13,500.0	6,692.1	6,694.1	6,694.1	133.1	133.9	74.63	-1,792.4	593.5	5,043.6	4,786.5	257.13	19.615					
13,600.0	6,691.5	6,693.5	6,693.5	135.0	133.9	74.34	-1,792.4	593.5	5,143.6	4,885.0	258.63	19.888					
13,700.0	6,691.0	6,693.0	6,693.0	136.9	133.9	74.05	-1,792.4	593.5	5,243.6	4,983.5	260.11	20.159					
13,800.0	6,690.4	6,692.4	6,692.4	138.8	133.8	73.76	-1,792.4	593.5	5,343.5	5,082.0	261.59	20.427					
13,860.3	6,690.0	6,692.0	6,692.0	140.0	133.8	73.58	-1,792.4	593.5	5,403.8	5,141.3	262.47	20.588					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	0.0	0.0	0.0	0.0	126.83	-444.5	593.5	741.7					
100.0	100.0	81.0	81.0	0.1	1.6	126.83	-444.5	593.5	741.4	739.7	1.73	427.942		
200.0	200.0	181.0	181.0	0.3	3.6	126.83	-444.5	593.5	741.4	737.5	3.96	187.359		
300.0	300.0	281.0	281.0	0.6	5.6	126.83	-444.5	593.5	741.4	735.3	6.18	119.934		
400.0	400.0	381.0	381.0	0.8	7.6	126.83	-444.5	593.5	741.4	733.0	8.41	88.195		
500.0	500.0	481.0	481.0	1.0	9.6	126.83	-444.5	593.5	741.4	730.8	10.63	69.739		
600.0	600.0	581.0	581.0	1.2	11.6	126.83	-444.5	593.5	741.4	728.6	12.86	57.671		
700.0	700.0	681.0	681.0	1.5	13.6	126.83	-444.5	593.5	741.4	726.4	15.08	49.164		
800.0	800.0	781.0	781.0	1.7	15.6	126.83	-444.5	593.5	741.4	724.1	17.31	42.843		
900.0	900.0	881.0	881.0	1.9	17.6	126.83	-444.5	593.5	741.4	721.9	19.53	37.963		
1,000.0	1,000.0	981.0	981.0	2.1	19.6	126.83	-444.5	593.5	741.4	719.7	21.76	34.081		
1,100.0	1,100.0	1,081.0	1,081.0	2.4	21.6	52.85	-444.5	593.5	740.4	716.4	23.96	30.895		
1,200.0	1,199.8	1,180.8	1,180.8	2.6	23.6	53.22	-444.5	593.5	737.2	711.1	26.15	28.188		
1,300.0	1,299.5	1,280.5	1,280.5	2.8	25.6	53.85	-444.5	593.5	732.0	703.7	28.33	25.837		
1,400.0	1,398.7	1,379.7	1,379.7	3.0	27.6	54.74	-444.5	593.5	724.9	694.4	30.51	23.761		
1,500.0	1,497.5	1,478.5	1,478.5	3.3	29.6	55.91	-444.5	593.5	715.9	683.2	32.68	21.906		
1,600.0	1,595.8	1,576.8	1,576.8	3.6	31.5	57.14	-444.5	593.5	705.9	671.0	34.92	20.215		
1,700.0	1,694.2	1,675.2	1,675.2	3.9	33.5	58.37	-444.5	593.5	696.1	659.0	37.19	18.720		
1,800.0	1,792.5	1,773.5	1,773.5	4.3	35.5	59.64	-444.5	593.5	686.7	647.3	39.47	17.397		
1,900.0	1,890.9	1,871.9	1,871.9	4.6	37.4	60.94	-444.5	593.5	677.7	635.9	41.78	16.221		
2,000.0	1,989.3	1,970.3	1,970.3	5.0	39.4	62.27	-444.5	593.5	669.0	624.9	44.09	15.172		
2,100.0	2,087.6	2,068.6	2,068.6	5.4	41.4	63.64	-444.5	593.5	660.7	614.2	46.42	14.232		
2,200.0	2,186.0	2,167.0	2,167.0	5.7	43.3	65.04	-444.5	593.5	652.7	604.0	48.76	13.387		
2,300.0	2,284.3	2,265.3	2,265.3	6.1	45.3	66.47	-444.5	593.5	645.2	594.1	51.11	12.624		
2,400.0	2,382.7	2,363.7	2,363.7	6.5	47.3	67.94	-444.5	593.5	638.1	584.7	53.47	11.935		
2,500.0	2,481.0	2,462.0	2,462.0	6.9	49.2	69.43	-444.5	593.5	631.5	575.6	55.83	11.310		
2,600.0	2,579.4	2,560.4	2,560.4	7.3	51.2	70.96	-444.5	593.5	625.3	567.1	58.21	10.742		
2,700.0	2,677.8	2,658.8	2,658.8	7.7	53.2	72.52	-444.5	593.5	619.5	558.9	60.59	10.225		
2,800.0	2,776.1	2,757.1	2,757.1	8.0	55.1	74.10	-444.5	593.5	614.3	551.3	62.97	9.755		
2,900.0	2,874.5	2,855.5	2,855.5	8.4	57.1	75.70	-444.5	593.5	609.5	544.1	65.36	9.325		
3,000.0	2,972.8	2,953.8	2,953.8	8.8	59.1	77.33	-444.5	593.5	605.2	537.4	67.75	8.933		
3,100.0	3,071.2	3,052.2	3,052.2	9.2	61.0	78.99	-444.5	593.5	601.4	531.3	70.14	8.574		
3,200.0	3,169.5	3,150.5	3,150.5	9.6	63.0	80.66	-444.5	593.5	598.2	525.7	72.54	8.247		
3,300.0	3,267.9	3,248.9	3,248.9	10.0	65.0	82.34	-444.5	593.5	595.5	520.6	74.93	7.947		
3,400.0	3,366.3	3,347.3	3,347.3	10.4	66.9	84.04	-444.5	593.5	593.3	516.0	77.32	7.673		
3,500.0	3,464.6	3,445.6	3,445.6	10.8	68.9	85.75	-444.5	593.5	591.7	512.0	79.71	7.423		
3,600.0	3,563.0	3,544.0	3,544.0	11.2	70.9	87.47	-444.5	593.5	590.6	508.5	82.10	7.194		
3,700.0	3,661.3	3,642.3	3,642.3	11.6	72.8	89.20	-444.5	593.5	590.1	505.6	84.48	6.985		
3,746.7	3,707.2	3,688.2	3,688.2	11.8	73.8	90.00	-444.5	593.5	590.0	504.4	85.59	6.893		
3,800.0	3,759.7	3,740.7	3,740.7	12.0	74.8	90.92	-444.5	593.5	590.1	503.2	86.86	6.794		
3,900.0	3,858.0	3,839.0	3,839.0	12.4	76.8	92.64	-444.5	593.5	590.6	501.4	89.22	6.620		
4,000.0	3,956.4	3,937.4	3,937.4	12.9	78.7	94.36	-444.5	593.5	591.8	500.2	91.59	6.461		
4,100.0	4,054.8	4,035.8	4,035.8	13.3	80.7	96.07	-444.5	593.5	593.4	499.5	93.94	6.317		
4,200.0	4,153.1	4,134.1	4,134.1	13.7	82.7	97.77	-444.5	593.5	595.6	499.4	96.28	6.186		
4,300.0	4,251.5	4,232.5	4,232.5	14.1	84.6	99.45	-444.5	593.5	598.4	499.8	98.62	6.068		
4,400.0	4,349.8	4,330.8	4,330.8	14.5	86.6	101.12	-444.5	593.5	601.7	500.7	100.94	5.960		
4,500.0	4,448.2	4,429.2	4,429.2	14.9	88.6	102.77	-444.5	593.5	605.5	502.2	103.26	5.864		
4,600.0	4,546.5	4,527.5	4,527.5	15.3	90.6	104.40	-444.5	593.5	609.8	504.2	105.56	5.776		
4,700.0	4,644.9	4,625.9	4,625.9	15.7	92.5	106.01	-444.5	593.5	614.6	506.7	107.86	5.698		
4,800.0	4,743.3	4,724.3	4,724.3	16.1	94.5	107.59	-444.5	593.5	619.9	509.7	110.14	5.628		
4,900.0	4,841.6	4,822.6	4,822.6	16.5	96.5	109.14	-444.5	593.5	625.7	513.2	112.42	5.566		

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	4,940.0	4,921.0	4,921.0	16.9	98.4	110.67		-444.5	593.5	631.9	517.2	114.68	5.510	
5,100.0	5,038.4	5,019.4	5,019.4	17.3	100.4	112.18		-444.5	593.5	638.4	521.4	116.95	5.459	
5,200.0	5,137.4	5,118.4	5,118.4	17.6	102.4	113.46		-444.5	593.5	644.0	524.8	119.17	5.404	
5,300.0	5,236.8	5,217.8	5,217.8	17.8	104.4	114.42		-444.5	593.5	648.5	527.1	121.38	5.342	
5,400.0	5,336.5	5,317.5	5,317.5	18.0	106.3	115.08		-444.5	593.5	651.6	528.0	123.57	5.273	
5,500.0	5,436.4	5,417.4	5,417.4	18.1	108.3	115.42		-444.5	593.5	653.3	527.5	125.73	5.196	
5,600.0	5,536.4	5,517.4	5,517.4	18.3	110.3	-170.41		-444.5	593.5	653.6	525.7	127.86	5.112	
5,700.0	5,636.4	5,617.4	5,617.4	18.4	112.3	-170.41		-444.5	593.5	653.6	523.6	130.01	5.027	
5,800.0	5,736.4	5,717.4	5,717.4	18.6	114.3	-170.41		-444.5	593.5	653.6	521.4	132.16	4.945	
5,900.0	5,836.4	5,817.4	5,817.4	18.7	116.3	-170.41		-444.5	593.5	653.6	519.3	134.31	4.866	
6,000.0	5,936.4	5,917.4	5,917.4	18.9	118.3	-170.41		-444.5	593.5	653.6	517.1	136.47	4.789	
6,100.0	6,036.3	6,017.3	6,017.3	19.0	120.3	9.68		-444.5	593.5	650.3	512.4	137.98	4.713	
6,200.0	6,135.0	6,116.0	6,116.0	19.1	122.3	10.12		-444.5	593.5	634.8	497.6	137.21	4.626	
6,300.0	6,230.8	6,211.8	6,211.8	19.1	124.2	11.01		-444.5	593.5	606.7	472.7	134.07	4.525	
6,400.0	6,322.0	6,303.0	6,303.0	19.2	126.1	12.48		-444.5	593.5	566.7	438.0	128.67	4.404	
6,500.0	6,407.1	6,388.1	6,388.1	19.2	127.8	14.83		-444.5	593.5	515.4	394.0	121.39	4.246	
6,600.0	6,484.7	6,465.7	6,465.7	19.3	129.3	18.61		-444.5	593.5	454.0	340.8	113.22	4.010	
6,700.0	6,553.4	6,534.4	6,534.4	19.4	130.7	24.85		-444.5	593.5	384.0	277.2	106.79	3.596	
6,800.0	6,612.0	6,593.0	6,593.0	19.5	131.9	35.43		-444.5	593.5	307.2	199.0	108.28	2.837	
6,900.0	6,659.6	6,640.6	6,640.6	19.8	132.8	52.59		-444.5	593.5	227.2	102.7	124.54	1.824	
7,000.0	6,695.3	6,676.3	6,676.3	20.3	133.5	73.95		-444.5	593.5	152.0	7.3	144.73	1.050	Level 2
7,100.0	6,718.5	6,699.5	6,699.5	20.9	134.0	89.21		-444.5	593.5	109.2	-42.3	151.51	0.721	Level 1
7,109.0	6,719.9	6,700.9	6,700.9	21.0	134.0	90.00		-444.5	593.5	108.9	-42.8	151.67	0.718	Level 1, CC, ES, SF
7,200.0	6,728.8	6,709.8	6,709.8	21.7	134.2	91.81		-444.5	593.5	141.6	-11.2	152.79	0.927	Level 1
7,300.0	6,728.9	6,709.9	6,709.9	22.7	134.2	89.41		-444.5	593.5	219.4	65.5	153.94	1.425	Level 3
7,400.0	6,728.3	6,709.3	6,709.3	23.8	134.2	89.09		-444.5	593.5	310.2	155.0	155.19	1.999	
7,500.0	6,727.7	6,708.7	6,708.7	25.0	134.2	88.78		-444.5	593.5	405.4	248.9	156.52	2.590	
7,600.0	6,727.1	6,708.1	6,708.1	26.3	134.2	88.47		-444.5	593.5	502.4	344.5	157.93	3.181	
7,700.0	6,726.6	6,707.6	6,707.6	27.7	134.2	88.16		-444.5	593.5	600.4	441.1	159.39	3.767	
7,800.0	6,726.0	6,707.0	6,707.0	29.1	134.1	87.84		-444.5	593.5	699.0	538.1	160.90	4.345	
7,900.0	6,725.4	6,706.4	6,706.4	30.6	134.1	87.53		-444.5	593.5	798.0	635.5	162.44	4.912	
8,000.0	6,724.8	6,705.8	6,705.8	32.1	134.1	87.22		-444.5	593.5	897.1	733.1	164.02	5.470	
8,100.0	6,724.2	6,705.2	6,705.2	33.7	134.1	86.91		-444.5	593.5	996.5	830.8	165.63	6.016	
8,200.0	6,723.6	6,704.6	6,704.6	35.3	134.1	86.60		-444.5	593.5	1,095.9	928.7	167.25	6.552	
8,300.0	6,723.0	6,704.0	6,704.0	37.0	134.1	86.29		-444.5	593.5	1,195.5	1,026.6	168.89	7.078	
8,400.0	6,722.4	6,703.4	6,703.4	38.7	134.1	85.98		-444.5	593.5	1,295.1	1,124.5	170.55	7.594	
8,500.0	6,721.8	6,702.8	6,702.8	40.3	134.1	85.67		-444.5	593.5	1,394.7	1,222.5	172.22	8.099	
8,600.0	6,721.2	6,702.2	6,702.2	42.1	134.0	85.35		-444.5	593.5	1,494.4	1,320.6	173.89	8.594	
8,700.0	6,720.6	6,701.6	6,701.6	43.8	134.0	85.04		-444.5	593.5	1,594.2	1,418.6	175.57	9.080	
8,800.0	6,720.0	6,701.0	6,701.0	45.5	134.0	84.73		-444.5	593.5	1,694.0	1,516.7	177.26	9.556	
8,900.0	6,719.4	6,700.4	6,700.4	47.3	134.0	84.43		-444.5	593.5	1,793.8	1,614.8	178.95	10.024	
9,000.0	6,718.8	6,699.8	6,699.8	49.1	134.0	84.12		-444.5	593.5	1,893.6	1,713.0	180.64	10.483	
9,100.0	6,718.2	6,699.2	6,699.2	50.8	134.0	83.81		-444.5	593.5	1,993.4	1,811.1	182.34	10.933	
9,200.0	6,717.7	6,698.7	6,698.7	52.6	134.0	83.50		-444.5	593.5	2,093.3	1,909.3	184.03	11.375	
9,300.0	6,717.1	6,698.1	6,698.1	54.4	134.0	83.19		-444.5	593.5	2,193.2	2,007.4	185.72	11.809	
9,400.0	6,716.5	6,697.5	6,697.5	56.2	133.9	82.88		-444.5	593.5	2,293.1	2,105.6	187.42	12.235	
9,500.0	6,715.9	6,696.9	6,696.9	58.1	133.9	82.58		-444.5	593.5	2,392.9	2,203.8	189.11	12.654	
9,600.0	6,715.3	6,696.3	6,696.3	59.9	133.9	82.27		-444.5	593.5	2,492.8	2,302.0	190.79	13.066	
9,700.0	6,714.7	6,695.7	6,695.7	61.7	133.9	81.96		-444.5	593.5	2,592.7	2,400.3	192.48	13.470	
9,800.0	6,714.1	6,695.1	6,695.1	63.5	133.9	81.66		-444.5	593.5	2,692.7	2,498.5	194.16	13.868	
9,900.0	6,713.5	6,694.5	6,694.5	65.4	133.9	81.35		-444.5	593.5	2,792.6	2,596.7	195.84	14.260	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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
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	6,712.9	6,693.9	6,693.9	67.2	133.9	81.05		-444.5	593.5	2,892.5	2,695.0	197.51	14.645	
10,100.0	6,712.3	6,693.3	6,693.3	69.1	133.9	80.74		-444.5	593.5	2,992.4	2,793.3	199.18	15.024	
10,200.0	6,711.7	6,692.7	6,692.7	70.9	133.9	80.44		-444.5	593.5	3,092.4	2,891.5	200.84	15.397	
10,300.0	6,711.1	6,692.1	6,692.1	72.8	133.8	80.13		-444.5	593.5	3,192.3	2,989.8	202.50	15.765	
10,400.0	6,710.5	6,691.5	6,691.5	74.6	133.8	79.83		-444.5	593.5	3,292.2	3,088.1	204.15	16.127	
10,500.0	6,709.9	6,690.9	6,690.9	76.5	133.8	79.53		-444.5	593.5	3,392.2	3,186.4	205.80	16.483	
10,600.0	6,709.3	6,690.3	6,690.3	78.4	133.8	79.23		-444.5	593.5	3,492.1	3,284.7	207.44	16.835	
10,700.0	6,708.8	6,689.8	6,689.8	80.2	133.8	78.93		-444.5	593.5	3,592.1	3,383.0	209.07	17.181	
10,800.0	6,708.2	6,689.2	6,689.2	82.1	133.8	78.63		-444.5	593.5	3,692.0	3,481.3	210.70	17.523	
10,900.0	6,707.6	6,688.6	6,688.6	84.0	133.8	78.33		-444.5	593.5	3,792.0	3,579.7	212.32	17.860	
11,000.0	6,707.0	6,688.0	6,688.0	85.8	133.8	78.03		-444.5	593.5	3,892.0	3,678.0	213.93	18.192	
11,100.0	6,706.4	6,687.4	6,687.4	87.7	133.7	77.73		-444.5	593.5	3,991.9	3,776.4	215.54	18.521	
11,200.0	6,705.8	6,686.8	6,686.8	89.6	133.7	77.43		-444.5	593.5	4,091.9	3,874.7	217.14	18.845	
11,300.0	6,705.2	6,686.2	6,686.2	91.5	133.7	77.13		-444.5	593.5	4,191.8	3,973.1	218.73	19.164	
11,400.0	6,704.6	6,685.6	6,685.6	93.4	133.7	76.84		-444.5	593.5	4,291.8	4,071.5	220.32	19.480	
11,500.0	6,704.0	6,685.0	6,685.0	95.2	133.7	76.54		-444.5	593.5	4,391.8	4,169.9	221.89	19.792	
11,600.0	6,703.4	6,684.4	6,684.4	97.1	133.7	76.25		-444.5	593.5	4,491.7	4,268.3	223.46	20.101	
11,700.0	6,702.8	6,683.8	6,683.8	99.0	133.7	75.95		-444.5	593.5	4,591.7	4,366.7	225.02	20.405	
11,800.0	6,702.2	6,683.2	6,683.2	100.9	133.7	75.66		-444.5	593.5	4,691.7	4,465.1	226.58	20.707	
11,900.0	6,701.6	6,682.6	6,682.6	102.8	133.7	75.36		-444.5	593.5	4,791.7	4,563.5	228.12	21.005	
12,000.0	6,701.0	6,682.0	6,682.0	104.7	133.6	75.07		-444.5	593.5	4,891.6	4,662.0	229.66	21.299	
12,100.0	6,700.4	6,681.4	6,681.4	106.6	133.6	74.78		-444.5	593.5	4,991.6	4,760.4	231.19	21.591	
12,200.0	6,699.9	6,680.9	6,680.9	108.5	133.6	74.49		-444.5	593.5	5,091.6	4,858.9	232.71	21.879	
12,300.0	6,699.3	6,680.3	6,680.3	110.3	133.6	74.20		-444.5	593.5	5,191.6	4,957.3	234.23	22.165	
12,400.0	6,698.7	6,679.7	6,679.7	112.2	133.6	73.91		-444.5	593.5	5,291.5	5,055.8	235.73	22.447	
12,500.0	6,698.1	6,679.1	6,679.1	114.1	133.6	73.62		-444.5	593.5	5,391.5	5,154.3	237.23	22.727	
12,600.0	6,697.5	6,678.5	6,678.5	116.0	133.6	73.34		-444.5	593.5	5,491.5	5,252.8	238.72	23.004	
12,700.0	6,696.9	6,677.9	6,677.9	117.9	133.6	73.05		-444.5	593.5	5,591.5	5,351.3	240.19	23.279	
12,800.0	6,696.3	6,677.3	6,677.3	119.8	133.5	72.77		-444.5	593.5	5,691.4	5,449.8	241.67	23.551	
12,900.0	6,695.7	6,676.7	6,676.7	121.7	133.5	72.48		-444.5	593.5	5,791.4	5,548.3	243.13	23.820	
13,000.0	6,695.1	6,676.1	6,676.1	123.6	133.5	72.20		-444.5	593.5	5,891.4	5,646.8	244.58	24.088	
13,100.0	6,694.5	6,675.5	6,675.5	125.5	133.5	71.92		-444.5	593.5	5,991.4	5,745.4	246.03	24.353	
13,200.0	6,693.9	6,674.9	6,674.9	127.4	133.5	71.63		-444.5	593.5	6,091.4	5,843.9	247.46	24.615	
13,300.0	6,693.3	6,674.3	6,674.3	129.3	133.5	71.35		-444.5	593.5	6,191.4	5,942.5	248.89	24.876	
13,400.0	6,692.7	6,673.7	6,673.7	131.2	133.5	71.07		-444.5	593.5	6,291.3	6,041.0	250.31	25.134	
13,500.0	6,692.1	6,673.1	6,673.1	133.1	133.5	70.79		-444.5	593.5	6,391.3	6,139.6	251.72	25.391	
13,600.0	6,691.5	6,672.5	6,672.5	135.0	133.5	70.52		-444.5	593.5	6,491.3	6,238.2	253.12	25.645	
13,700.0	6,691.0	6,672.0	6,672.0	136.9	133.4	70.24		-444.5	593.5	6,591.3	6,336.8	254.51	25.898	
13,800.0	6,690.4	6,671.4	6,671.4	138.8	133.4	69.96		-444.5	593.5	6,691.3	6,435.4	255.89	26.149	
13,860.3	6,690.0	6,671.0	6,671.0	140.0	133.4	69.80		-444.5	593.5	6,751.5	6,494.8	256.72	26.299	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	0.0	0.0	0.0	0.0	172.69	-3,278.8	420.8	3,305.7				
100.0	100.0	93.0	93.0	0.1	1.9	172.69	-3,278.8	420.8	3,305.7	3,303.7	1.97	1,675.814	
200.0	200.0	193.0	193.0	0.3	3.9	172.69	-3,278.8	420.8	3,305.7	3,301.5	4.20	787.564	
300.0	300.0	293.0	293.0	0.6	5.9	172.69	-3,278.8	420.8	3,305.7	3,299.3	6.42	514.734	
400.0	400.0	393.0	393.0	0.8	7.9	172.69	-3,278.8	420.8	3,305.7	3,297.0	8.65	382.298	
500.0	500.0	493.0	493.0	1.0	9.9	172.69	-3,278.8	420.8	3,305.7	3,294.8	10.87	304.064	
600.0	600.0	593.0	593.0	1.2	11.9	172.69	-3,278.8	420.8	3,305.7	3,292.6	13.10	252.411	
700.0	700.0	693.0	693.0	1.5	13.9	172.69	-3,278.8	420.8	3,305.7	3,290.4	15.32	215.759	
800.0	800.0	793.0	793.0	1.7	15.9	172.69	-3,278.8	420.8	3,305.7	3,288.1	17.55	188.401	
900.0	900.0	893.0	893.0	1.9	17.9	172.69	-3,278.8	420.8	3,305.7	3,285.9	19.77	167.201	
1,000.0	1,000.0	993.0	993.0	2.1	19.9	172.69	-3,278.8	420.8	3,305.7	3,283.7	22.00	150.289	
1,100.0	1,100.0	1,093.0	1,093.0	2.4	21.9	98.61	-3,278.8	420.8	3,305.9	3,281.7	24.21	136.551	
1,200.0	1,199.8	1,192.8	1,192.8	2.6	23.9	98.68	-3,278.8	420.8	3,306.7	3,280.3	26.42	125.167	
1,300.0	1,299.5	1,292.5	1,292.5	2.8	25.8	98.80	-3,278.8	420.8	3,308.1	3,279.4	28.63	115.531	
1,400.0	1,398.7	1,391.7	1,391.7	3.0	27.8	98.97	-3,278.8	420.8	3,310.0	3,279.1	30.86	107.258	
1,500.0	1,497.5	1,490.5	1,490.5	3.3	29.8	99.19	-3,278.8	420.8	3,312.5	3,279.3	33.10	100.064	
1,600.0	1,595.8	1,588.8	1,588.8	3.6	31.8	99.48	-3,278.8	420.8	3,315.4	3,280.0	35.37	93.726	
1,700.0	1,694.2	1,687.2	1,687.2	3.9	33.7	99.78	-3,278.8	420.8	3,318.5	3,280.8	37.66	88.111	
1,800.0	1,792.5	1,785.5	1,785.5	4.3	35.7	100.08	-3,278.8	420.8	3,321.6	3,281.7	39.97	83.112	
1,900.0	1,890.9	1,883.9	1,883.9	4.6	37.7	100.38	-3,278.8	420.8	3,324.9	3,282.6	42.28	78.640	
2,000.0	1,889.3	1,882.3	1,882.3	5.0	39.6	100.69	-3,278.8	420.8	3,328.3	3,283.7	44.60	74.620	
2,100.0	2,087.6	2,080.6	2,080.6	5.4	41.6	100.99	-3,278.8	420.8	3,331.7	3,284.8	46.93	70.990	
2,200.0	2,186.0	2,179.0	2,179.0	5.7	43.6	101.28	-3,278.8	420.8	3,335.3	3,286.0	49.27	67.699	
2,300.0	2,284.3	2,277.3	2,277.3	6.1	45.5	101.58	-3,278.8	420.8	3,338.9	3,287.3	51.60	64.702	
2,400.0	2,382.7	2,375.7	2,375.7	6.5	47.5	101.88	-3,278.8	420.8	3,342.6	3,288.7	53.95	61.963	
2,500.0	2,481.0	2,474.0	2,474.0	6.9	49.5	102.18	-3,278.8	420.8	3,346.4	3,290.2	56.29	59.450	
2,600.0	2,579.4	2,572.4	2,572.4	7.3	51.4	102.48	-3,278.8	420.8	3,350.4	3,291.7	58.64	57.138	
2,700.0	2,677.8	2,670.8	2,670.8	7.7	53.4	102.77	-3,278.8	420.8	3,354.4	3,293.4	60.98	55.004	
2,800.0	2,776.1	2,769.1	2,769.1	8.0	55.4	103.07	-3,278.8	420.8	3,358.5	3,295.1	63.33	53.029	
2,900.0	2,874.5	2,867.5	2,867.5	8.4	57.3	103.36	-3,278.8	420.8	3,362.7	3,297.0	65.68	51.196	
3,000.0	2,972.8	2,965.8	2,965.8	8.8	59.3	103.66	-3,278.8	420.8	3,366.9	3,298.9	68.03	49.490	
3,100.0	3,071.2	3,064.2	3,064.2	9.2	61.3	103.95	-3,278.8	420.8	3,371.3	3,300.9	70.38	47.899	
3,200.0	3,169.5	3,162.5	3,162.5	9.6	63.3	104.24	-3,278.8	420.8	3,375.8	3,303.1	72.74	46.412	
3,300.0	3,267.9	3,260.9	3,260.9	10.0	65.2	104.54	-3,278.8	420.8	3,380.3	3,305.3	75.09	45.019	
3,400.0	3,366.3	3,359.3	3,359.3	10.4	67.2	104.83	-3,278.8	420.8	3,385.0	3,307.6	77.44	43.712	
3,500.0	3,464.6	3,457.6	3,457.6	10.8	69.2	105.12	-3,278.8	420.8	3,389.7	3,309.9	79.79	42.483	
3,600.0	3,563.0	3,556.0	3,556.0	11.2	71.1	105.41	-3,278.8	420.8	3,394.6	3,312.4	82.14	41.326	
3,700.0	3,661.3	3,654.3	3,654.3	11.6	73.1	105.70	-3,278.8	420.8	3,399.5	3,315.0	84.49	40.234	
3,800.0	3,759.7	3,752.7	3,752.7	12.0	75.1	105.99	-3,278.8	420.8	3,404.5	3,317.6	86.84	39.203	
3,900.0	3,858.0	3,851.0	3,851.0	12.4	77.0	106.27	-3,278.8	420.8	3,409.6	3,320.4	89.19	38.227	
4,000.0	3,956.4	3,949.4	3,949.4	12.9	79.0	106.56	-3,278.8	420.8	3,414.7	3,323.2	91.54	37.302	
4,100.0	4,054.8	4,047.8	4,047.8	13.3	81.0	106.84	-3,278.8	420.8	3,420.0	3,326.1	93.89	36.425	
4,200.0	4,153.1	4,146.1	4,146.1	13.7	82.9	107.13	-3,278.8	420.8	3,425.4	3,329.1	96.24	35.592	
4,300.0	4,251.5	4,244.5	4,244.5	14.1	84.9	107.41	-3,278.8	420.8	3,430.8	3,332.2	98.59	34.800	
4,400.0	4,349.8	4,342.8	4,342.8	14.5	86.9	107.70	-3,278.8	420.8	3,436.3	3,335.4	100.93	34.045	
4,500.0	4,448.2	4,441.2	4,441.2	14.9	88.8	107.98	-3,278.8	420.8	3,441.9	3,338.7	103.28	33.326	
4,600.0	4,546.5	4,539.5	4,539.5	15.3	90.8	108.26	-3,278.8	420.8	3,447.6	3,342.0	105.63	32.640	
4,700.0	4,644.9	4,637.9	4,637.9	15.7	92.8	108.54	-3,278.8	420.8	3,453.4	3,345.5	107.97	31.985	
4,800.0	4,743.3	4,736.3	4,736.3	16.1	94.7	108.82	-3,278.8	420.8	3,459.3	3,349.0	110.32	31.358	
4,900.0	4,841.6	4,834.6	4,834.6	16.5	96.7	109.10	-3,278.8	420.8	3,465.3	3,352.6	112.66	30.759	
5,000.0	4,940.0	4,933.0	4,933.0	16.9	98.7	109.37	-3,278.8	420.8	3,471.3	3,356.3	115.00	30.185	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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		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 (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
5,100.0	5,038.4	5,031.4	5,031.4	17.3	100.6	109.70	-3,278.8	420.8	3,477.2	3,359.9	117.35	29.632			
5,200.0	5,137.4	5,130.4	5,130.4	17.6	102.6	110.02	-3,278.8	420.8	3,482.2	3,362.5	119.62	29.109			
5,300.0	5,236.8	5,229.8	5,229.8	17.8	104.6	110.26	-3,278.8	420.8	3,485.9	3,364.1	121.87	28.604			
5,400.0	5,336.5	5,329.5	5,329.5	18.0	106.6	110.42	-3,278.8	420.8	3,488.5	3,364.5	124.08	28.116			
5,500.0	5,436.4	5,429.4	5,429.4	18.1	108.6	110.51	-3,278.8	420.8	3,489.9	3,363.7	126.24	27.644			
5,600.0	5,536.4	5,529.4	5,529.4	18.3	110.6	-175.37	-3,278.8	420.8	3,490.2	3,361.8	128.38	27.187			
5,700.0	5,636.4	5,629.4	5,629.4	18.4	112.6	-175.37	-3,278.8	420.8	3,490.2	3,359.6	130.52	26.740			
5,800.0	5,736.4	5,729.4	5,729.4	18.6	114.6	-175.37	-3,278.8	420.8	3,490.2	3,357.5	132.67	26.306			
5,900.0	5,836.4	5,829.4	5,829.4	18.7	116.6	-175.37	-3,278.8	420.8	3,490.2	3,355.3	134.83	25.887			
6,000.0	5,936.4	5,929.4	5,929.4	18.9	118.6	-175.37	-3,278.8	420.8	3,490.2	3,353.2	136.98	25.480			
6,100.0	6,036.3	6,029.3	6,029.3	19.0	120.6	4.65	-3,278.8	420.8	3,486.9	3,348.4	138.48	25.179			
6,200.0	6,135.0	6,128.0	6,128.0	19.1	122.6	4.77	-3,278.8	420.8	3,471.2	3,333.5	137.66	25.216			
6,300.0	6,230.8	6,223.8	6,223.8	19.1	124.5	5.00	-3,278.8	420.8	3,442.8	3,308.4	134.37	25.621			
6,400.0	6,322.0	6,315.0	6,315.0	19.2	126.3	5.36	-3,278.8	420.8	3,402.1	3,273.5	128.61	26.452			
6,500.0	6,407.1	6,400.1	6,400.1	19.2	128.0	5.90	-3,278.8	420.8	3,350.0	3,229.5	120.47	27.808			
6,600.0	6,484.7	6,477.7	6,477.7	19.3	129.6	6.69	-3,278.8	420.8	3,287.2	3,177.1	110.13	29.849			
6,700.0	6,553.4	6,546.4	6,546.4	19.4	130.9	7.84	-3,278.8	420.8	3,214.9	3,117.0	97.95	32.820			
6,800.0	6,612.0	6,605.0	6,605.0	19.5	132.1	9.61	-3,278.8	420.8	3,134.3	3,049.6	84.69	37.009			
6,900.0	6,659.6	6,652.6	6,652.6	19.8	133.1	12.53	-3,278.8	420.8	3,046.8	2,974.7	72.14	42.235			
7,000.0	6,695.3	6,688.3	6,688.3	20.3	133.8	17.97	-3,278.8	420.8	2,953.9	2,888.1	65.75	44.923			
7,100.0	6,718.5	6,711.5	6,711.5	20.9	134.2	30.51	-3,278.8	420.8	2,857.1	2,775.5	81.59	35.020			
7,200.0	6,728.8	6,721.8	6,721.8	21.7	134.4	69.71	-3,278.8	420.8	2,758.2	2,615.2	143.07	19.280			
7,300.0	6,728.9	6,721.9	6,721.9	22.7	134.4	93.19	-3,278.8	420.8	2,658.8	2,504.7	154.12	17.251			
7,400.0	6,728.3	6,721.3	6,721.3	23.8	134.4	93.07	-3,278.8	420.8	2,559.4	2,404.0	155.40	16.469			
7,500.0	6,727.7	6,720.7	6,720.7	25.0	134.4	92.95	-3,278.8	420.8	2,460.0	2,303.2	156.78	15.691			
7,600.0	6,727.1	6,720.1	6,720.1	26.3	134.4	92.83	-3,278.8	420.8	2,360.7	2,202.5	158.22	14.920			
7,700.0	6,726.6	6,719.6	6,719.6	27.7	134.4	92.71	-3,278.8	420.8	2,261.4	2,101.7	159.73	14.157			
7,800.0	6,726.0	6,719.0	6,719.0	29.1	134.4	92.59	-3,278.8	420.8	2,162.3	2,001.0	161.30	13.406			
7,900.0	6,725.4	6,718.4	6,718.4	30.6	134.4	92.47	-3,278.8	420.8	2,063.1	1,900.2	162.90	12.665			
8,000.0	6,724.8	6,717.8	6,717.8	32.1	134.4	92.35	-3,278.8	420.8	1,964.1	1,799.6	164.54	11.937			
8,100.0	6,724.2	6,717.2	6,717.2	33.7	134.3	92.23	-3,278.8	420.8	1,865.2	1,699.0	166.21	11.222			
8,200.0	6,723.6	6,716.6	6,716.6	35.3	134.3	92.10	-3,278.8	420.8	1,766.4	1,598.5	167.91	10.520			
8,300.0	6,723.0	6,716.0	6,716.0	37.0	134.3	91.98	-3,278.8	420.8	1,667.8	1,498.2	169.62	9.832			
8,400.0	6,722.4	6,715.4	6,715.4	38.7	134.3	91.86	-3,278.8	420.8	1,569.3	1,398.0	171.36	9.158			
8,500.0	6,721.8	6,714.8	6,714.8	40.3	134.3	91.74	-3,278.8	420.8	1,471.1	1,297.9	173.11	8.498			
8,600.0	6,721.2	6,714.2	6,714.2	42.1	134.3	91.62	-3,278.8	420.8	1,373.0	1,198.2	174.88	7.851			
8,700.0	6,720.6	6,713.6	6,713.6	43.8	134.3	91.50	-3,278.8	420.8	1,275.3	1,098.7	176.66	7.219			
8,800.0	6,720.0	6,713.0	6,713.0	45.5	134.3	91.38	-3,278.8	420.8	1,178.0	999.6	178.45	6.601			
8,900.0	6,719.4	6,712.4	6,712.4	47.3	134.2	91.26	-3,278.8	420.8	1,081.2	900.9	180.25	5.998			
9,000.0	6,718.8	6,711.8	6,711.8	49.1	134.2	91.14	-3,278.8	420.8	985.0	802.9	182.06	5.410			
9,100.0	6,718.2	6,711.2	6,711.2	50.8	134.2	91.02	-3,278.8	420.8	889.6	705.7	183.87	4.838			
9,200.0	6,717.7	6,710.7	6,710.7	52.6	134.2	90.90	-3,278.8	420.8	795.4	609.7	185.69	4.283			
9,300.0	6,717.1	6,710.1	6,710.1	54.4	134.2	90.78	-3,278.8	420.8	702.7	515.2	187.52	3.748			
9,400.0	6,716.5	6,709.5	6,709.5	56.2	134.2	90.66	-3,278.8	420.8	612.4	423.1	189.35	3.234			
9,500.0	6,715.9	6,708.9	6,708.9	58.1	134.2	90.54	-3,278.8	420.8	525.6	334.4	191.19	2.749			
9,600.0	6,715.3	6,708.3	6,708.3	59.9	134.2	90.42	-3,278.8	420.8	444.4	251.4	193.03	2.302			
9,700.0	6,714.7	6,707.7	6,707.7	61.7	134.2	90.29	-3,278.8	420.8	372.5	177.6	194.87	1.911			
9,800.0	6,714.1	6,707.1	6,707.1	63.5	134.1	90.17	-3,278.8	420.8	316.2	119.5	196.72	1.607			
9,900.0	6,713.5	6,706.5	6,706.5	65.4	134.1	90.05	-3,278.8	420.8	285.0	86.4	198.57	1.435 Level 3			
9,943.9	6,713.2	6,706.2	6,706.2	66.2	134.1	90.00	-3,278.8	420.8	281.6	82.2	199.38	1.412 Level 3, CC, ES, SF			
10,000.0	6,712.9	6,705.9	6,705.9	67.2	134.1	89.93	-3,278.8	420.8	287.1	86.7	200.42	1.432 Level 3			

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,712.3	6,705.3	6,705.3	69.1	134.1	89.81	89.81	-3,278.8	420.8	321.9	119.7	202.27	1.592	
10,200.0	6,711.7	6,704.7	6,704.7	70.9	134.1	89.69	89.69	-3,278.8	420.8	380.6	176.5	204.13	1.865	
10,300.0	6,711.1	6,704.1	6,704.1	72.8	134.1	89.57	89.57	-3,278.8	420.8	454.0	248.0	205.99	2.204	
10,400.0	6,710.5	6,703.5	6,703.5	74.6	134.1	89.45	89.45	-3,278.8	420.8	536.0	328.2	207.84	2.579	
10,500.0	6,709.9	6,702.9	6,702.9	76.5	134.1	89.33	89.33	-3,278.8	420.8	623.3	413.6	209.70	2.972	
10,600.0	6,709.3	6,702.3	6,702.3	78.4	134.0	89.21	89.21	-3,278.8	420.8	714.0	502.4	211.56	3.375	
10,700.0	6,708.8	6,701.8	6,701.8	80.2	134.0	89.09	89.09	-3,278.8	420.8	806.8	593.4	213.43	3.780	
10,800.0	6,708.2	6,701.2	6,701.2	82.1	134.0	88.97	88.97	-3,278.8	420.8	901.2	685.9	215.29	4.186	
10,900.0	6,707.6	6,700.6	6,700.6	84.0	134.0	88.85	88.85	-3,278.8	420.8	996.7	779.5	217.15	4.590	
11,000.0	6,707.0	6,700.0	6,700.0	85.8	134.0	88.72	88.72	-3,278.8	420.8	1,093.0	874.0	219.01	4.990	
11,100.0	6,706.4	6,699.4	6,699.4	87.7	134.0	88.60	88.60	-3,278.8	420.8	1,189.9	969.0	220.88	5.387	
11,200.0	6,705.8	6,698.8	6,698.8	89.6	134.0	88.48	88.48	-3,278.8	420.8	1,287.3	1,064.5	222.74	5.779	
11,300.0	6,705.2	6,698.2	6,698.2	91.5	134.0	88.36	88.36	-3,278.8	420.8	1,385.0	1,160.4	224.61	6.166	
11,400.0	6,704.6	6,697.6	6,697.6	93.4	134.0	88.24	88.24	-3,278.8	420.8	1,483.1	1,256.6	226.47	6.549	
11,500.0	6,704.0	6,697.0	6,697.0	95.2	133.9	88.12	88.12	-3,278.8	420.8	1,581.4	1,353.0	228.33	6.926	
11,600.0	6,703.4	6,696.4	6,696.4	97.1	133.9	88.00	88.00	-3,278.8	420.8	1,679.9	1,449.7	230.20	7.297	
11,700.0	6,702.8	6,695.8	6,695.8	99.0	133.9	87.88	87.88	-3,278.8	420.8	1,778.5	1,546.5	232.06	7.664	
11,800.0	6,702.2	6,695.2	6,695.2	100.9	133.9	87.76	87.76	-3,278.8	420.8	1,877.3	1,643.4	233.92	8.025	
11,900.0	6,701.6	6,694.6	6,694.6	102.8	133.9	87.64	87.64	-3,278.8	420.8	1,976.2	1,740.5	235.79	8.381	
12,000.0	6,701.0	6,694.0	6,694.0	104.7	133.9	87.52	87.52	-3,278.8	420.8	2,075.3	1,837.6	237.65	8.732	
12,100.0	6,700.4	6,693.4	6,693.4	106.6	133.9	87.40	87.40	-3,278.8	420.8	2,174.4	1,934.9	239.51	9.078	
12,200.0	6,699.9	6,692.9	6,692.9	108.5	133.9	87.28	87.28	-3,278.8	420.8	2,273.6	2,032.2	241.37	9.419	
12,300.0	6,699.3	6,692.3	6,692.3	110.3	133.8	87.16	87.16	-3,278.8	420.8	2,372.8	2,129.6	243.23	9.755	
12,400.0	6,698.7	6,691.7	6,691.7	112.2	133.8	87.04	87.04	-3,278.8	420.8	2,472.2	2,227.1	245.09	10.087	
12,500.0	6,698.1	6,691.1	6,691.1	114.1	133.8	86.92	86.92	-3,278.8	420.8	2,571.5	2,324.6	246.95	10.413	
12,600.0	6,697.5	6,690.5	6,690.5	116.0	133.8	86.80	86.80	-3,278.8	420.8	2,671.0	2,422.1	248.81	10.735	
12,700.0	6,696.9	6,689.9	6,689.9	117.9	133.8	86.68	86.68	-3,278.8	420.8	2,770.4	2,519.7	250.67	11.052	
12,800.0	6,696.3	6,689.3	6,689.3	119.8	133.8	86.56	86.56	-3,278.8	420.8	2,869.9	2,617.4	252.53	11.365	
12,900.0	6,695.7	6,688.7	6,688.7	121.7	133.8	86.43	86.43	-3,278.8	420.8	2,969.4	2,715.1	254.38	11.673	
13,000.0	6,695.1	6,688.1	6,688.1	123.6	133.8	86.31	86.31	-3,278.8	420.8	3,069.0	2,812.8	256.24	11.977	
13,100.0	6,694.5	6,687.5	6,687.5	125.5	133.8	86.19	86.19	-3,278.8	420.8	3,168.6	2,910.5	258.09	12.277	
13,200.0	6,693.9	6,686.9	6,686.9	127.4	133.7	86.07	86.07	-3,278.8	420.8	3,268.2	3,008.3	259.94	12.573	
13,300.0	6,693.3	6,686.3	6,686.3	129.3	133.7	85.95	85.95	-3,278.8	420.8	3,367.8	3,106.1	261.79	12.864	
13,400.0	6,692.7	6,685.7	6,685.7	131.2	133.7	85.83	85.83	-3,278.8	420.8	3,467.5	3,203.9	263.64	13.152	
13,500.0	6,692.1	6,685.1	6,685.1	133.1	133.7	85.71	85.71	-3,278.8	420.8	3,567.2	3,301.7	265.49	13.436	
13,600.0	6,691.5	6,684.5	6,684.5	135.0	133.7	85.59	85.59	-3,278.8	420.8	3,666.9	3,399.5	267.34	13.716	
13,700.0	6,691.0	6,684.0	6,684.0	136.9	133.7	85.47	85.47	-3,278.8	420.8	3,766.6	3,497.4	269.19	13.992	
13,800.0	6,690.4	6,683.4	6,683.4	138.8	133.7	85.35	85.35	-3,278.8	420.8	3,866.3	3,595.3	271.03	14.265	
13,860.3	6,690.0	6,683.0	6,683.0	140.0	133.7	85.28	85.28	-3,278.8	420.8	3,926.4	3,654.3	272.15	14.428	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	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	171.71	171.71	-4,400.9	640.9	4,447.3				
100.0	100.0	100.0	100.0	0.1	2.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,445.2	2.11	2,105.144	
200.0	200.0	200.0	200.0	0.3	4.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,442.9	4.34	1,025.348	
300.0	300.0	300.0	300.0	0.6	6.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,440.7	6.56	677.722	
400.0	400.0	400.0	400.0	0.8	8.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,438.5	8.79	506.129	
500.0	500.0	500.0	500.0	1.0	10.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,436.3	11.01	403.872	
600.0	600.0	600.0	600.0	1.2	12.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,434.0	13.24	335.989	
700.0	700.0	700.0	700.0	1.5	14.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,431.8	15.46	287.642	
800.0	800.0	800.0	800.0	1.7	16.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,429.6	17.69	251.459	
900.0	900.0	900.0	900.0	1.9	18.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,427.4	19.91	223.362	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	20.0	171.71	171.71	-4,400.9	640.9	4,447.3	4,425.2	22.14	200.912	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	22.0	97.63	97.63	-4,400.9	640.9	4,447.5	4,423.2	24.35	182.646	
1,200.0	1,199.8	1,199.8	1,199.8	2.6	24.0	97.68	97.68	-4,400.9	640.9	4,448.2	4,421.7	26.56	167.485	
1,300.0	1,299.5	1,299.5	1,299.5	2.8	26.0	97.77	97.77	-4,400.9	640.9	4,449.4	4,420.6	28.77	154.632	
1,400.0	1,398.7	1,398.7	1,398.7	3.0	28.0	97.89	97.89	-4,400.9	640.9	4,451.1	4,420.1	31.00	143.577	
1,500.0	1,497.5	1,497.5	1,497.5	3.3	29.9	98.04	98.04	-4,400.9	640.9	4,453.3	4,420.0	33.25	133.947	
1,600.0	1,595.8	1,595.8	1,595.8	3.6	31.9	98.26	98.26	-4,400.9	640.9	4,455.8	4,420.3	35.52	125.455	
1,700.0	1,694.2	1,694.2	1,694.2	3.9	33.9	98.48	98.48	-4,400.9	640.9	4,458.5	4,420.7	37.81	117.926	
1,800.0	1,792.5	1,792.5	1,792.5	4.3	35.9	98.71	98.71	-4,400.9	640.9	4,461.3	4,421.1	40.11	111.219	
1,900.0	1,890.9	1,890.9	1,890.9	4.6	37.8	98.93	98.93	-4,400.9	640.9	4,464.1	4,421.6	42.43	105.215	
2,000.0	1,889.3	1,889.3	1,889.3	5.0	39.8	99.16	99.16	-4,400.9	640.9	4,467.0	4,422.2	44.75	99.815	
2,100.0	2,087.6	2,087.6	2,087.6	5.4	41.8	99.38	99.38	-4,400.9	640.9	4,469.9	4,422.8	47.08	94.936	
2,200.0	2,186.0	2,186.0	2,186.0	5.7	43.7	99.61	99.61	-4,400.9	640.9	4,472.9	4,423.5	49.42	90.509	
2,300.0	2,284.3	2,284.3	2,284.3	6.1	45.7	99.83	99.83	-4,400.9	640.9	4,476.0	4,424.3	51.76	86.476	
2,400.0	2,382.7	2,382.7	2,382.7	6.5	47.7	100.06	100.06	-4,400.9	640.9	4,479.2	4,425.1	54.10	82.788	
2,500.0	2,481.0	2,481.0	2,481.0	6.9	49.6	100.28	100.28	-4,400.9	640.9	4,482.4	4,426.0	56.45	79.403	
2,600.0	2,579.4	2,579.4	2,579.4	7.3	51.6	100.50	100.50	-4,400.9	640.9	4,485.8	4,427.0	58.80	76.287	
2,700.0	2,677.8	2,677.8	2,677.8	7.7	53.6	100.73	100.73	-4,400.9	640.9	4,489.1	4,428.0	61.15	73.409	
2,800.0	2,776.1	2,776.1	2,776.1	8.0	55.5	100.95	100.95	-4,400.9	640.9	4,492.6	4,429.1	63.51	70.744	
2,900.0	2,874.5	2,874.5	2,874.5	8.4	57.5	101.17	101.17	-4,400.9	640.9	4,496.1	4,430.2	65.86	68.269	
3,000.0	2,972.8	2,972.8	2,972.8	8.8	59.5	101.39	101.39	-4,400.9	640.9	4,499.7	4,431.5	68.21	65.964	
3,100.0	3,071.2	3,071.2	3,071.2	9.2	61.4	101.61	101.61	-4,400.9	640.9	4,503.3	4,432.8	70.57	63.814	
3,200.0	3,169.5	3,169.5	3,169.5	9.6	63.4	101.84	101.84	-4,400.9	640.9	4,507.1	4,434.2	72.93	61.803	
3,300.0	3,267.9	3,267.9	3,267.9	10.0	65.4	102.06	102.06	-4,400.9	640.9	4,510.9	4,435.6	75.28	59.919	
3,400.0	3,366.3	3,366.3	3,366.3	10.4	67.3	102.28	102.28	-4,400.9	640.9	4,514.7	4,437.1	77.64	58.150	
3,500.0	3,464.6	3,464.6	3,464.6	10.8	69.3	102.50	102.50	-4,400.9	640.9	4,518.7	4,438.7	80.00	56.485	
3,600.0	3,563.0	3,563.0	3,563.0	11.2	71.3	102.72	102.72	-4,400.9	640.9	4,522.7	4,440.3	82.36	54.917	
3,700.0	3,661.3	3,661.3	3,661.3	11.6	73.2	102.94	102.94	-4,400.9	640.9	4,526.7	4,442.0	84.71	53.436	
3,800.0	3,759.7	3,759.7	3,759.7	12.0	75.2	103.16	103.16	-4,400.9	640.9	4,530.9	4,443.8	87.07	52.037	
3,900.0	3,858.0	3,858.0	3,858.0	12.4	77.2	103.37	103.37	-4,400.9	640.9	4,535.1	4,445.7	89.43	50.712	
4,000.0	3,956.4	3,956.4	3,956.4	12.9	79.1	103.59	103.59	-4,400.9	640.9	4,539.4	4,447.6	91.79	49.456	
4,100.0	4,054.8	4,054.8	4,054.8	13.3	81.1	103.81	103.81	-4,400.9	640.9	4,543.7	4,449.6	94.14	48.264	
4,200.0	4,153.1	4,153.1	4,153.1	13.7	83.1	104.03	104.03	-4,400.9	640.9	4,548.1	4,451.6	96.50	47.131	
4,300.0	4,251.5	4,251.5	4,251.5	14.1	85.0	104.25	104.25	-4,400.9	640.9	4,552.6	4,453.7	98.86	46.053	
4,400.0	4,349.8	4,349.8	4,349.8	14.5	87.0	104.46	104.46	-4,400.9	640.9	4,557.2	4,455.9	101.21	45.026	
4,500.0	4,448.2	4,448.2	4,448.2	14.9	89.0	104.68	104.68	-4,400.9	640.9	4,561.8	4,458.2	103.57	44.046	
4,600.0	4,546.5	4,546.5	4,546.5	15.3	90.9	104.89	104.89	-4,400.9	640.9	4,566.4	4,460.5	105.92	43.110	
4,700.0	4,644.9	4,644.9	4,644.9	15.7	92.9	105.11	105.11	-4,400.9	640.9	4,571.2	4,462.9	108.28	42.217	
4,800.0	4,743.3	4,743.3	4,743.3	16.1	94.9	105.32	105.32	-4,400.9	640.9	4,576.0	4,465.4	110.63	41.362	
4,900.0	4,841.6	4,841.6	4,841.6	16.5	96.8	105.54	105.54	-4,400.9	640.9	4,580.9	4,467.9	112.99	40.543	
5,000.0	4,940.0	4,940.0	4,940.0	16.9	98.8	105.75	105.75	-4,400.9	640.9	4,585.8	4,470.5	115.34	39.758	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,038.4	5,038.4	5,038.4	17.3	100.8	106.01		-4,400.9	640.9	4,590.7	4,473.0	117.69	39.007	
5,200.0	5,137.4	5,137.4	5,137.4	17.6	102.7	106.26		-4,400.9	640.9	4,594.7	4,474.8	119.96	38.303	
5,300.0	5,236.8	5,236.8	5,236.8	17.8	104.7	106.45		-4,400.9	640.9	4,597.8	4,475.6	122.19	37.627	
5,400.0	5,336.5	5,336.5	5,336.5	18.0	106.7	106.58		-4,400.9	640.9	4,599.9	4,475.5	124.40	36.978	
5,500.0	5,436.4	5,436.4	5,436.4	18.1	108.7	106.65		-4,400.9	640.9	4,601.1	4,474.5	126.56	36.355	
5,600.0	5,536.4	5,536.4	5,536.4	18.3	110.7	-179.24		-4,400.9	640.9	4,601.3	4,472.6	128.69	35.754	
5,700.0	5,636.4	5,636.4	5,636.4	18.4	112.7	-179.24		-4,400.9	640.9	4,601.3	4,470.4	130.84	35.167	
5,800.0	5,736.4	5,736.4	5,736.4	18.6	114.7	-179.24		-4,400.9	640.9	4,601.3	4,468.3	132.99	34.599	
5,900.0	5,836.4	5,836.4	5,836.4	18.7	116.7	-179.24		-4,400.9	640.9	4,601.3	4,466.1	135.14	34.049	
6,000.0	5,936.4	5,936.4	5,936.4	18.9	118.7	-179.24		-4,400.9	640.9	4,601.3	4,464.0	137.29	33.515	
6,100.0	6,036.3	6,036.3	6,036.3	19.0	120.7	0.77		-4,400.9	640.9	4,598.0	4,459.2	138.79	33.128	
6,200.0	6,135.0	6,135.0	6,135.0	19.1	122.7	0.79		-4,400.9	640.9	4,582.2	4,444.3	137.95	33.216	
6,300.0	6,230.8	6,230.8	6,230.8	19.1	124.6	0.82		-4,400.9	640.9	4,553.7	4,419.1	134.62	33.827	
6,400.0	6,322.0	6,322.0	6,322.0	19.2	126.4	0.88		-4,400.9	640.9	4,512.9	4,384.2	128.77	35.046	
6,500.0	6,407.1	6,407.1	6,407.1	19.2	128.1	0.97		-4,400.9	640.9	4,460.6	4,340.2	120.46	37.029	
6,600.0	6,484.7	6,484.7	6,484.7	19.3	129.7	1.09		-4,400.9	640.9	4,397.6	4,287.8	109.82	40.045	
6,700.0	6,553.4	6,553.4	6,553.4	19.4	131.1	1.27		-4,400.9	640.9	4,325.1	4,228.0	97.04	44.571	
6,800.0	6,612.0	6,612.0	6,612.0	19.5	132.2	1.56		-4,400.9	640.9	4,244.2	4,161.7	82.42	51.497	
6,900.0	6,659.6	6,659.6	6,659.6	19.8	133.2	2.03		-4,400.9	640.9	4,156.3	4,089.9	66.36	62.629	
7,000.0	6,695.3	6,695.3	6,695.3	20.3	133.9	2.93		-4,400.9	640.9	4,063.0	4,013.4	49.54	82.016	
7,100.0	6,718.5	6,718.5	6,718.5	20.9	134.4	5.26		-4,400.9	640.9	3,965.8	3,931.4	34.32	115.555	
7,200.0	6,728.8	6,728.8	6,728.8	21.7	134.6	22.71		-4,400.9	640.9	3,866.4	3,804.8	61.54	62.825	
7,300.0	6,728.9	6,728.9	6,728.9	22.7	134.6	110.00		-4,400.9	640.9	3,766.4	3,620.3	146.11	25.777	
7,400.0	6,728.3	6,728.3	6,728.3	23.8	134.6	109.51		-4,400.9	640.9	3,666.4	3,518.7	147.75	24.815	
7,500.0	6,727.7	6,727.7	6,727.7	25.0	134.6	109.02		-4,400.9	640.9	3,566.4	3,417.0	149.47	23.861	
7,600.0	6,727.1	6,727.1	6,727.1	26.3	134.5	108.52		-4,400.9	640.9	3,466.5	3,315.2	151.25	22.919	
7,700.0	6,726.6	6,726.6	6,726.6	27.7	134.5	108.02		-4,400.9	640.9	3,366.5	3,213.4	153.09	21.990	
7,800.0	6,726.0	6,726.0	6,726.0	29.1	134.5	107.52		-4,400.9	640.9	3,266.5	3,111.5	154.98	21.078	
7,900.0	6,725.4	6,725.4	6,725.4	30.6	134.5	107.02		-4,400.9	640.9	3,166.5	3,009.6	156.90	20.182	
8,000.0	6,724.8	6,724.8	6,724.8	32.1	134.5	106.51		-4,400.9	640.9	3,066.5	2,907.7	158.85	19.304	
8,100.0	6,724.2	6,724.2	6,724.2	33.7	134.5	106.00		-4,400.9	640.9	2,966.6	2,805.7	160.84	18.445	
8,200.0	6,723.6	6,723.6	6,723.6	35.3	134.5	105.49		-4,400.9	640.9	2,866.6	2,703.7	162.84	17.604	
8,300.0	6,723.0	6,723.0	6,723.0	37.0	134.5	104.97		-4,400.9	640.9	2,766.6	2,601.7	164.86	16.781	
8,400.0	6,722.4	6,722.4	6,722.4	38.7	134.4	104.45		-4,400.9	640.9	2,666.6	2,499.7	166.90	15.978	
8,500.0	6,721.8	6,721.8	6,721.8	40.3	134.4	103.93		-4,400.9	640.9	2,566.7	2,397.7	168.95	15.192	
8,600.0	6,721.2	6,721.2	6,721.2	42.1	134.4	103.41		-4,400.9	640.9	2,466.7	2,295.7	171.00	14.425	
8,700.0	6,720.6	6,720.6	6,720.6	43.8	134.4	102.88		-4,400.9	640.9	2,366.7	2,193.7	173.07	13.675	
8,800.0	6,720.0	6,720.0	6,720.0	45.5	134.4	102.36		-4,400.9	640.9	2,266.8	2,091.6	175.14	12.943	
8,900.0	6,719.4	6,719.4	6,719.4	47.3	134.4	101.83		-4,400.9	640.9	2,166.8	1,989.6	177.21	12.227	
9,000.0	6,718.8	6,718.8	6,718.8	49.1	134.4	101.29		-4,400.9	640.9	2,066.8	1,887.6	179.28	11.529	
9,100.0	6,718.2	6,718.2	6,718.2	50.8	134.4	100.76		-4,400.9	640.9	1,966.9	1,785.5	181.35	10.846	
9,200.0	6,717.7	6,717.7	6,717.7	52.6	134.4	100.22		-4,400.9	640.9	1,866.9	1,683.5	183.43	10.178	
9,300.0	6,717.1	6,717.1	6,717.1	54.4	134.3	99.69		-4,400.9	640.9	1,767.0	1,581.5	185.49	9.526	
9,400.0	6,716.5	6,716.5	6,716.5	56.2	134.3	99.15		-4,400.9	640.9	1,667.1	1,479.5	187.56	8.888	
9,500.0	6,715.9	6,715.9	6,715.9	58.1	134.3	98.61		-4,400.9	640.9	1,567.1	1,377.5	189.62	8.265	
9,600.0	6,715.3	6,715.3	6,715.3	59.9	134.3	98.07		-4,400.9	640.9	1,467.2	1,275.6	191.67	7.655	
9,700.0	6,714.7	6,714.7	6,714.7	61.7	134.3	97.52		-4,400.9	640.9	1,367.3	1,173.6	193.72	7.058	
9,800.0	6,714.1	6,714.1	6,714.1	63.5	134.3	96.98		-4,400.9	640.9	1,267.4	1,071.7	195.75	6.475	
9,900.0	6,713.5	6,713.5	6,713.5	65.4	134.3	96.43		-4,400.9	640.9	1,167.6	969.8	197.78	5.903	
10,000.0	6,712.9	6,712.9	6,712.9	67.2	134.3	95.88		-4,400.9	640.9	1,067.7	867.9	199.80	5.344	
10,100.0	6,712.3	6,712.3	6,712.3	69.1	134.2	95.33		-4,400.9	640.9	967.9	766.1	201.81	4.796	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	6,711.7	6,711.7	6,711.7	70.9	134.2	94.79	94.79	-4,400.9	640.9	868.1	664.3	203.80	4.260	
10,300.0	6,711.1	6,711.1	6,711.1	72.8	134.2	94.23	94.23	-4,400.9	640.9	768.4	562.6	205.79	3.734	
10,400.0	6,710.5	6,710.5	6,710.5	74.6	134.2	93.68	93.68	-4,400.9	640.9	668.8	461.0	207.76	3.219	
10,500.0	6,709.9	6,709.9	6,709.9	76.5	134.2	93.13	93.13	-4,400.9	640.9	569.3	359.6	209.72	2.715	
10,600.0	6,709.3	6,709.3	6,709.3	78.4	134.2	92.58	92.58	-4,400.9	640.9	470.0	258.3	211.66	2.221	
10,700.0	6,708.8	6,708.8	6,708.8	80.2	134.2	92.03	92.03	-4,400.9	640.9	371.1	157.5	213.58	1.737	
10,800.0	6,708.2	6,708.2	6,708.2	82.1	134.2	91.47	91.47	-4,400.9	640.9	273.0	57.5	215.50	1.267	Level 3
10,900.0	6,707.6	6,707.6	6,707.6	84.0	134.2	90.92	90.92	-4,400.9	640.9	177.0	-40.4	217.39	0.814	Level 1
11,000.0	6,707.0	6,707.0	6,707.0	85.8	134.1	90.37	90.37	-4,400.9	640.9	90.1	-129.2	219.27	0.411	Level 1
11,066.0	6,706.6	6,706.6	6,706.6	87.1	134.1	90.00	90.00	-4,400.9	640.9	61.4	-159.1	220.50	0.278	Level 1, CC, ES, SF
11,100.0	6,706.4	6,706.4	6,706.4	87.7	134.1	89.81	89.81	-4,400.9	640.9	70.2	-150.9	221.13	0.317	Level 1
11,200.0	6,705.8	6,705.8	6,705.8	89.6	134.1	89.26	89.26	-4,400.9	640.9	147.4	-75.6	222.97	0.661	Level 1
11,300.0	6,705.2	6,705.2	6,705.2	91.5	134.1	88.70	88.70	-4,400.9	640.9	241.9	17.2	224.79	1.076	Level 2
11,400.0	6,704.6	6,704.6	6,704.6	93.4	134.1	88.15	88.15	-4,400.9	640.9	339.6	113.0	226.60	1.499	Level 3
11,500.0	6,704.0	6,704.0	6,704.0	95.2	134.1	87.60	87.60	-4,400.9	640.9	438.3	210.0	228.38	1.919	
11,600.0	6,703.4	6,703.4	6,703.4	97.1	134.1	87.04	87.04	-4,400.9	640.9	537.5	307.4	230.14	2.336	
11,700.0	6,702.8	6,702.8	6,702.8	99.0	134.1	86.49	86.49	-4,400.9	640.9	637.0	405.1	231.89	2.747	
11,800.0	6,702.2	6,702.2	6,702.2	100.9	134.0	85.94	85.94	-4,400.9	640.9	736.6	503.0	233.61	3.153	
11,900.0	6,701.6	6,701.6	6,701.6	102.8	134.0	85.39	85.39	-4,400.9	640.9	836.3	601.0	235.31	3.554	
12,000.0	6,701.0	6,701.0	6,701.0	104.7	134.0	84.84	84.84	-4,400.9	640.9	936.0	699.0	236.99	3.950	
12,100.0	6,700.4	6,700.4	6,700.4	106.6	134.0	84.29	84.29	-4,400.9	640.9	1,035.8	797.2	238.65	4.340	
12,200.0	6,699.9	6,699.9	6,699.9	108.5	134.0	83.74	83.74	-4,400.9	640.9	1,135.7	895.4	240.29	4.726	
12,300.0	6,699.3	6,699.3	6,699.3	110.3	134.0	83.20	83.20	-4,400.9	640.9	1,235.5	993.6	241.90	5.108	
12,400.0	6,698.7	6,698.7	6,698.7	112.2	134.0	82.65	82.65	-4,400.9	640.9	1,335.4	1,091.9	243.49	5.484	
12,500.0	6,698.1	6,698.1	6,698.1	114.1	134.0	82.11	82.11	-4,400.9	640.9	1,435.3	1,190.3	245.06	5.857	
12,600.0	6,697.5	6,697.5	6,697.5	116.0	133.9	81.57	81.57	-4,400.9	640.9	1,535.2	1,288.6	246.60	6.226	
12,700.0	6,696.9	6,696.9	6,696.9	117.9	133.9	81.02	81.02	-4,400.9	640.9	1,635.2	1,387.0	248.12	6.590	
12,800.0	6,696.3	6,696.3	6,696.3	119.8	133.9	80.48	80.48	-4,400.9	640.9	1,735.1	1,485.5	249.62	6.951	
12,900.0	6,695.7	6,695.7	6,695.7	121.7	133.9	79.95	79.95	-4,400.9	640.9	1,835.0	1,583.9	251.10	7.308	
13,000.0	6,695.1	6,695.1	6,695.1	123.6	133.9	79.41	79.41	-4,400.9	640.9	1,935.0	1,682.4	252.55	7.662	
13,100.0	6,694.5	6,694.5	6,694.5	125.5	133.9	78.88	78.88	-4,400.9	640.9	2,034.9	1,780.9	253.97	8.012	
13,200.0	6,693.9	6,693.9	6,693.9	127.4	133.9	78.34	78.34	-4,400.9	640.9	2,134.9	1,879.5	255.37	8.360	
13,300.0	6,693.3	6,693.3	6,693.3	129.3	133.9	77.81	77.81	-4,400.9	640.9	2,234.8	1,978.1	256.75	8.704	
13,400.0	6,692.7	6,692.7	6,692.7	131.2	133.9	77.29	77.29	-4,400.9	640.9	2,334.8	2,076.7	258.11	9.046	
13,500.0	6,692.1	6,692.1	6,692.1	133.1	133.8	76.76	76.76	-4,400.9	640.9	2,434.8	2,175.3	259.44	9.385	
13,600.0	6,691.5	6,691.5	6,691.5	135.0	133.8	76.24	76.24	-4,400.9	640.9	2,534.7	2,274.0	260.74	9.721	
13,700.0	6,691.0	6,691.0	6,691.0	136.9	133.8	75.71	75.71	-4,400.9	640.9	2,634.7	2,372.7	262.03	10.055	
13,800.0	6,690.4	6,690.4	6,690.4	138.8	133.8	75.20	75.20	-4,400.9	640.9	2,734.7	2,471.4	263.28	10.387	
13,860.3	6,690.0	6,690.0	6,690.0	140.0	133.8	74.88	74.88	-4,400.9	640.9	2,794.9	2,530.9	264.03	10.586	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	16.0	16.0	0.0	0.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,748.2	0.32	N/A	
100.0	100.0	116.0	116.0	0.1	2.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,746.1	2.43	2,363.142	
200.0	200.0	216.0	216.0	0.3	4.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,743.9	4.66	1,234.294	
300.0	300.0	316.0	316.0	0.6	6.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,741.7	6.88	835.287	
400.0	400.0	416.0	416.0	0.8	8.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,739.4	9.11	631.230	
500.0	500.0	516.0	516.0	1.0	10.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,737.2	11.33	507.300	
600.0	600.0	616.0	616.0	1.2	12.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,735.0	13.56	424.046	
700.0	700.0	716.0	716.0	1.5	14.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,732.8	15.78	364.266	
800.0	800.0	816.0	816.0	1.7	16.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,730.5	18.01	319.258	
900.0	900.0	916.0	916.0	1.9	18.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,728.3	20.23	284.149	
1,000.0	1,000.0	1,016.0	1,016.0	2.1	20.3	173.57	173.57	-5,712.4	643.8	5,748.5	5,726.1	22.46	255.997	
1,100.0	1,100.0	1,116.0	1,116.0	2.4	22.3	99.48	99.48	-5,712.4	643.8	5,748.8	5,724.1	24.67	233.026	
1,200.0	1,199.8	1,215.8	1,215.8	2.6	24.3	99.51	99.51	-5,712.4	643.8	5,749.7	5,722.8	26.88	213.916	
1,300.0	1,299.5	1,315.5	1,315.5	2.8	26.3	99.57	99.57	-5,712.4	643.8	5,751.1	5,722.0	29.09	197.683	
1,400.0	1,398.7	1,414.7	1,414.7	3.0	28.3	99.65	99.65	-5,712.4	643.8	5,753.2	5,721.9	31.32	183.700	
1,500.0	1,497.5	1,513.5	1,513.5	3.3	30.3	99.75	99.75	-5,712.4	643.8	5,755.9	5,722.3	33.56	171.501	
1,600.0	1,595.8	1,611.8	1,611.8	3.6	32.2	99.91	99.91	-5,712.4	643.8	5,759.0	5,723.1	35.83	160.723	
1,700.0	1,694.2	1,710.2	1,710.2	3.9	34.2	100.08	100.08	-5,712.4	643.8	5,762.2	5,724.0	38.12	151.154	
1,800.0	1,792.5	1,808.5	1,808.5	4.3	36.2	100.25	100.25	-5,712.4	643.8	5,765.4	5,725.0	40.42	142.620	
1,900.0	1,890.9	1,906.9	1,906.9	4.6	38.1	100.43	100.43	-5,712.4	643.8	5,768.7	5,725.9	42.74	134.972	
2,000.0	1,889.3	2,005.3	2,005.3	5.0	40.1	100.60	100.60	-5,712.4	643.8	5,772.0	5,727.0	45.06	128.088	
2,100.0	2,087.6	2,103.6	2,103.6	5.4	42.1	100.78	100.78	-5,712.4	643.8	5,775.4	5,728.0	47.39	121.862	
2,200.0	2,186.0	2,202.0	2,202.0	5.7	44.0	100.95	100.95	-5,712.4	643.8	5,778.9	5,729.2	49.73	116.208	
2,300.0	2,284.3	2,300.3	2,300.3	6.1	46.0	101.12	101.12	-5,712.4	643.8	5,782.4	5,730.3	52.07	111.053	
2,400.0	2,382.7	2,398.7	2,398.7	6.5	48.0	101.29	101.29	-5,712.4	643.8	5,786.0	5,731.6	54.41	106.336	
2,500.0	2,481.0	2,497.0	2,497.0	6.9	49.9	101.47	101.47	-5,712.4	643.8	5,789.6	5,732.8	56.76	102.004	
2,600.0	2,579.4	2,595.4	2,595.4	7.3	51.9	101.64	101.64	-5,712.4	643.8	5,793.3	5,734.2	59.11	98.013	
2,700.0	2,677.8	2,693.8	2,693.8	7.7	53.9	101.81	101.81	-5,712.4	643.8	5,797.0	5,735.5	61.46	94.325	
2,800.0	2,776.1	2,792.1	2,792.1	8.0	55.8	101.98	101.98	-5,712.4	643.8	5,800.8	5,737.0	63.81	90.907	
2,900.0	2,874.5	2,890.5	2,890.5	8.4	57.8	102.15	102.15	-5,712.4	643.8	5,804.6	5,738.4	66.16	87.732	
3,000.0	2,972.8	2,988.8	2,988.8	8.8	59.8	102.33	102.33	-5,712.4	643.8	5,808.5	5,740.0	68.52	84.773	
3,100.0	3,071.2	3,087.2	3,087.2	9.2	61.7	102.50	102.50	-5,712.4	643.8	5,812.4	5,741.6	70.87	82.012	
3,200.0	3,169.5	3,185.5	3,185.5	9.6	63.7	102.67	102.67	-5,712.4	643.8	5,816.4	5,743.2	73.23	79.428	
3,300.0	3,267.9	3,283.9	3,283.9	10.0	65.7	102.84	102.84	-5,712.4	643.8	5,820.5	5,744.9	75.59	77.005	
3,400.0	3,366.3	3,382.3	3,382.3	10.4	67.6	103.01	103.01	-5,712.4	643.8	5,824.6	5,746.6	77.94	74.728	
3,500.0	3,464.6	3,480.6	3,480.6	10.8	69.6	103.18	103.18	-5,712.4	643.8	5,828.7	5,748.4	80.30	72.586	
3,600.0	3,563.0	3,579.0	3,579.0	11.2	71.6	103.35	103.35	-5,712.4	643.8	5,832.9	5,750.3	82.66	70.567	
3,700.0	3,661.3	3,677.3	3,677.3	11.6	73.5	103.52	103.52	-5,712.4	643.8	5,837.2	5,752.2	85.02	68.659	
3,800.0	3,759.7	3,775.7	3,775.7	12.0	75.5	103.69	103.69	-5,712.4	643.8	5,841.5	5,754.1	87.37	66.856	
3,900.0	3,858.0	3,874.0	3,874.0	12.4	77.5	103.86	103.86	-5,712.4	643.8	5,845.9	5,756.1	89.73	65.147	
4,000.0	3,956.4	3,972.4	3,972.4	12.9	79.4	104.03	104.03	-5,712.4	643.8	5,850.3	5,758.2	92.09	63.527	
4,100.0	4,054.8	4,070.8	4,070.8	13.3	81.4	104.19	104.19	-5,712.4	643.8	5,854.8	5,760.3	94.45	61.988	
4,200.0	4,153.1	4,169.1	4,169.1	13.7	83.4	104.36	104.36	-5,712.4	643.8	5,859.3	5,762.5	96.81	60.525	
4,300.0	4,251.5	4,267.5	4,267.5	14.1	85.3	104.53	104.53	-5,712.4	643.8	5,863.9	5,764.7	99.17	59.132	
4,400.0	4,349.8	4,365.8	4,365.8	14.5	87.3	104.70	104.70	-5,712.4	643.8	5,868.5	5,767.0	101.52	57.805	
4,500.0	4,448.2	4,464.2	4,464.2	14.9	89.3	104.87	104.87	-5,712.4	643.8	5,873.2	5,769.3	103.88	56.538	
4,600.0	4,546.5	4,562.5	4,562.5	15.3	91.3	105.03	105.03	-5,712.4	643.8	5,877.9	5,771.7	106.24	55.328	
4,700.0	4,644.9	4,660.9	4,660.9	15.7	93.2	105.20	105.20	-5,712.4	643.8	5,882.7	5,774.1	108.59	54.171	
4,800.0	4,743.3	4,759.3	4,759.3	16.1	95.2	105.37	105.37	-5,712.4	643.8	5,887.5	5,776.6	110.95	53.064	
4,900.0	4,841.6	4,857.6	4,857.6	16.5	97.2	105.54	105.54	-5,712.4	643.8	5,892.4	5,779.1	113.31	52.003	
5,000.0	4,940.0	4,956.0	4,956.0	16.9	99.1	105.70	105.70	-5,712.4	643.8	5,897.3	5,781.7	115.66	50.987	

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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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	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	5,038.4	5,054.4	5,054.4	17.3	101.1	105.91	-5,712.4	643.8	5,902.2	5,784.2	118.01	50.013		
5,200.0	5,137.4	5,153.4	5,153.4	17.6	103.1	106.12	-5,712.4	643.8	5,906.2	5,785.9	120.28	49.102		
5,300.0	5,236.8	5,252.8	5,252.8	17.8	105.1	106.28	-5,712.4	643.8	5,909.2	5,786.7	122.52	48.230		
5,400.0	5,336.5	5,352.5	5,352.5	18.0	107.0	106.39	-5,712.4	643.8	5,911.3	5,786.6	124.72	47.395		
5,500.0	5,436.4	5,452.4	5,452.4	18.1	109.0	106.45	-5,712.4	643.8	5,912.5	5,785.6	126.89	46.596		
5,600.0	5,536.4	5,552.4	5,552.4	18.3	111.0	-179.43	-5,712.4	643.8	5,912.7	5,783.6	129.02	45.827		
5,700.0	5,636.4	5,652.4	5,652.4	18.4	113.0	-179.43	-5,712.4	643.8	5,912.7	5,781.5	131.17	45.077		
5,800.0	5,736.4	5,752.4	5,752.4	18.6	115.0	-179.43	-5,712.4	643.8	5,912.7	5,779.3	133.32	44.351		
5,900.0	5,836.4	5,852.4	5,852.4	18.7	117.0	-179.43	-5,712.4	643.8	5,912.7	5,777.2	135.46	43.647		
6,000.0	5,936.4	5,952.4	5,952.4	18.9	119.0	-179.43	-5,712.4	643.8	5,912.7	5,775.0	137.62	42.965		
6,100.0	6,036.3	6,052.3	6,052.3	19.0	121.0	0.57	-5,712.4	643.8	5,909.4	5,770.2	139.12	42.477		
6,200.0	6,135.0	6,151.0	6,151.0	19.1	123.0	0.58	-5,712.4	643.8	5,893.6	5,755.3	138.27	42.624		
6,300.0	6,230.8	6,246.8	6,246.8	19.1	124.9	0.61	-5,712.4	643.8	5,865.1	5,730.2	134.92	43.470		
6,400.0	6,322.0	6,338.0	6,338.0	19.2	126.8	0.65	-5,712.4	643.8	5,824.3	5,695.3	129.06	45.129		
6,500.0	6,407.1	6,423.1	6,423.1	19.2	128.5	0.71	-5,712.4	643.8	5,772.0	5,651.3	120.73	47.810		
6,600.0	6,484.7	6,500.7	6,500.7	19.3	130.0	0.80	-5,712.4	643.8	5,709.0	5,599.0	110.05	51.875		
6,700.0	6,553.4	6,569.4	6,569.4	19.4	131.4	0.93	-5,712.4	643.8	5,636.5	5,539.2	97.23	57.968		
6,800.0	6,612.0	6,628.0	6,628.0	19.5	132.6	1.13	-5,712.4	643.8	5,555.5	5,473.0	82.56	67.290		
6,900.0	6,659.6	6,675.6	6,675.6	19.8	133.5	1.47	-5,712.4	643.8	5,467.7	5,401.2	66.43	82.312		
7,000.0	6,695.3	6,711.3	6,711.3	20.3	134.2	2.11	-5,712.4	643.8	5,374.3	5,324.9	49.39	108.815		
7,100.0	6,718.5	6,734.5	6,734.5	20.9	134.7	3.78	-5,712.4	643.8	5,277.1	5,244.2	32.97	160.082		
7,200.0	6,728.8	6,744.8	6,744.8	21.7	134.9	16.60	-5,712.4	643.8	5,177.7	5,130.2	47.58	108.817		
7,300.0	6,728.9	6,744.9	6,744.9	22.7	134.9	117.22	-5,712.4	643.8	5,077.8	4,938.7	139.09	36.507		
7,400.0	6,728.3	6,744.3	6,744.3	23.8	134.9	116.76	-5,712.4	643.8	4,977.8	4,837.0	140.80	35.355		
7,500.0	6,727.7	6,743.7	6,743.7	25.0	134.9	116.30	-5,712.4	643.8	4,877.8	4,735.2	142.58	34.211		
7,600.0	6,727.1	6,743.1	6,743.1	26.3	134.9	115.83	-5,712.4	643.8	4,777.8	4,633.4	144.43	33.080		
7,700.0	6,726.6	6,742.6	6,742.6	27.7	134.9	115.36	-5,712.4	643.8	4,677.8	4,531.5	146.34	31.965		
7,800.0	6,726.0	6,742.0	6,742.0	29.1	134.8	114.88	-5,712.4	643.8	4,577.8	4,429.5	148.30	30.868		
7,900.0	6,725.4	6,741.4	6,741.4	30.6	134.8	114.40	-5,712.4	643.8	4,477.8	4,327.5	150.30	29.792		
8,000.0	6,724.8	6,740.8	6,740.8	32.1	134.8	113.92	-5,712.4	643.8	4,377.8	4,225.5	152.34	28.737		
8,100.0	6,724.2	6,740.2	6,740.2	33.7	134.8	113.43	-5,712.4	643.8	4,277.8	4,123.4	154.41	27.705		
8,200.0	6,723.6	6,739.6	6,739.6	35.3	134.8	112.94	-5,712.4	643.8	4,177.8	4,021.3	156.50	26.695		
8,300.0	6,723.0	6,739.0	6,739.0	37.0	134.8	112.45	-5,712.4	643.8	4,077.9	3,919.2	158.62	25.708		
8,400.0	6,722.4	6,738.4	6,738.4	38.7	134.8	111.95	-5,712.4	643.8	3,977.9	3,817.1	160.76	24.744		
8,500.0	6,721.8	6,737.8	6,737.8	40.3	134.8	111.45	-5,712.4	643.8	3,877.9	3,715.0	162.92	23.803		
8,600.0	6,721.2	6,737.2	6,737.2	42.1	134.7	110.94	-5,712.4	643.8	3,777.9	3,612.8	165.09	22.884		
8,700.0	6,720.6	6,736.6	6,736.6	43.8	134.7	110.44	-5,712.4	643.8	3,677.9	3,510.6	167.27	21.988		
8,800.0	6,720.0	6,736.0	6,736.0	45.5	134.7	109.92	-5,712.4	643.8	3,577.9	3,408.5	169.47	21.113		
8,900.0	6,719.4	6,735.4	6,735.4	47.3	134.7	109.41	-5,712.4	643.8	3,477.9	3,306.3	171.67	20.259		
9,000.0	6,718.8	6,734.8	6,734.8	49.1	134.7	108.89	-5,712.4	643.8	3,378.0	3,204.1	173.88	19.427		
9,100.0	6,718.2	6,734.2	6,734.2	50.8	134.7	108.37	-5,712.4	643.8	3,278.0	3,101.9	176.10	18.614		
9,200.0	6,717.7	6,733.7	6,733.7	52.6	134.7	107.85	-5,712.4	643.8	3,178.0	2,999.7	178.32	17.822		
9,300.0	6,717.1	6,733.1	6,733.1	54.4	134.7	107.32	-5,712.4	643.8	3,078.0	2,897.5	180.55	17.048		
9,400.0	6,716.5	6,732.5	6,732.5	56.2	134.6	106.79	-5,712.4	643.8	2,978.0	2,795.3	182.78	16.293		
9,500.0	6,715.9	6,731.9	6,731.9	58.1	134.6	106.25	-5,712.4	643.8	2,878.1	2,693.0	185.01	15.556		
9,600.0	6,715.3	6,731.3	6,731.3	59.9	134.6	105.72	-5,712.4	643.8	2,778.1	2,590.8	187.24	14.837		
9,700.0	6,714.7	6,730.7	6,730.7	61.7	134.6	105.18	-5,712.4	643.8	2,678.1	2,488.6	189.47	14.135		
9,800.0	6,714.1	6,730.1	6,730.1	63.5	134.6	104.64	-5,712.4	643.8	2,578.1	2,386.4	191.69	13.449		
9,900.0	6,713.5	6,729.5	6,729.5	65.4	134.6	104.09	-5,712.4	643.8	2,478.2	2,284.2	193.92	12.779		
10,000.0	6,712.9	6,728.9	6,728.9	67.2	134.6	103.54	-5,712.4	643.8	2,378.2	2,182.0	196.14	12.125		
10,100.0	6,712.3	6,728.3	6,728.3	69.1	134.6	102.99	-5,712.4	643.8	2,278.2	2,079.9	198.35	11.486		

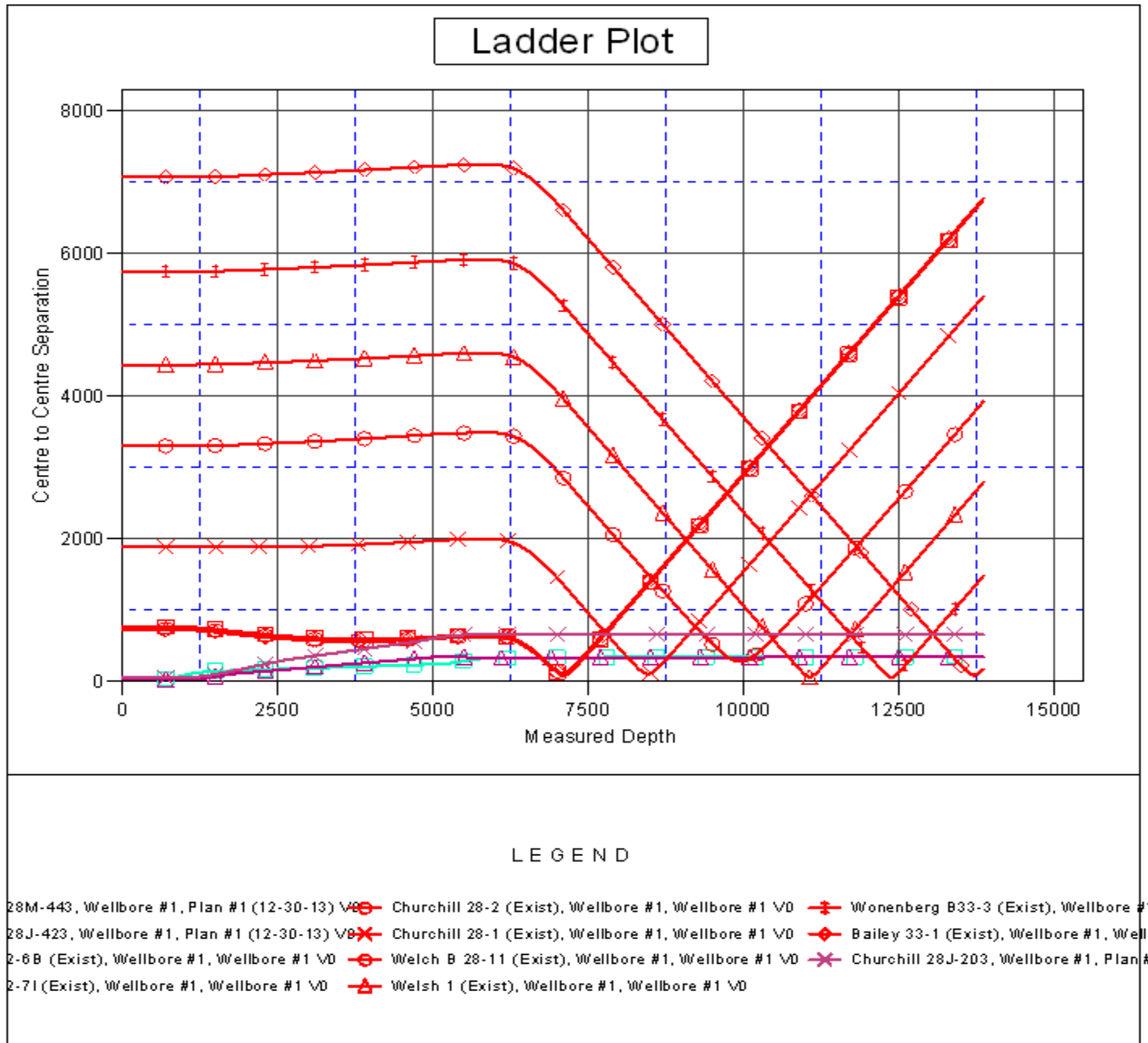
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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		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	6,711.7	6,727.7	6,727.7	70.9	134.6	102.44	-5,712.4	643.8	2,178.3	1,977.7	200.56	10.861		
10,300.0	6,711.1	6,727.1	6,727.1	72.8	134.5	101.89	-5,712.4	643.8	2,078.3	1,875.5	202.76	10.250		
10,400.0	6,710.5	6,726.5	6,726.5	74.6	134.5	101.33	-5,712.4	643.8	1,978.3	1,773.4	204.96	9.652		
10,500.0	6,709.9	6,725.9	6,725.9	76.5	134.5	100.77	-5,712.4	643.8	1,878.4	1,671.2	207.14	9.068		
10,600.0	6,709.3	6,725.3	6,725.3	78.4	134.5	100.21	-5,712.4	643.8	1,778.4	1,569.1	209.32	8.496		
10,700.0	6,708.8	6,724.8	6,724.8	80.2	134.5	99.65	-5,712.4	643.8	1,678.5	1,467.0	211.49	7.937		
10,800.0	6,708.2	6,724.2	6,724.2	82.1	134.5	99.08	-5,712.4	643.8	1,578.6	1,364.9	213.64	7.389		
10,900.0	6,707.6	6,723.6	6,723.6	84.0	134.5	98.51	-5,712.4	643.8	1,478.6	1,262.9	215.78	6.852		
11,000.0	6,707.0	6,723.0	6,723.0	85.8	134.5	97.95	-5,712.4	643.8	1,378.7	1,160.8	217.91	6.327		
11,100.0	6,706.4	6,722.4	6,722.4	87.7	134.4	97.38	-5,712.4	643.8	1,278.8	1,058.8	220.03	5.812		
11,200.0	6,705.8	6,721.8	6,721.8	89.6	134.4	96.80	-5,712.4	643.8	1,178.9	956.8	222.13	5.307		
11,300.0	6,705.2	6,721.2	6,721.2	91.5	134.4	96.23	-5,712.4	643.8	1,079.1	854.9	224.22	4.813		
11,400.0	6,704.6	6,720.6	6,720.6	93.4	134.4	95.66	-5,712.4	643.8	979.2	753.0	226.29	4.327		
11,500.0	6,704.0	6,720.0	6,720.0	95.2	134.4	95.08	-5,712.4	643.8	879.4	651.1	228.34	3.851		
11,600.0	6,703.4	6,719.4	6,719.4	97.1	134.4	94.50	-5,712.4	643.8	779.7	549.3	230.38	3.384		
11,700.0	6,702.8	6,718.8	6,718.8	99.0	134.4	93.93	-5,712.4	643.8	680.0	447.6	232.40	2.926		
11,800.0	6,702.2	6,718.2	6,718.2	100.9	134.4	93.35	-5,712.4	643.8	580.5	346.1	234.40	2.476		
11,900.0	6,701.6	6,717.6	6,717.6	102.8	134.4	92.77	-5,712.4	643.8	481.1	244.7	236.38	2.035		
12,000.0	6,701.0	6,717.0	6,717.0	104.7	134.3	92.19	-5,712.4	643.8	382.0	143.7	238.34	1.603		
12,100.0	6,700.4	6,716.4	6,716.4	106.6	134.3	91.61	-5,712.4	643.8	283.6	43.3	240.28	1.180 Level 2		
12,200.0	6,699.9	6,715.9	6,715.9	108.5	134.3	91.03	-5,712.4	643.8	186.9	-55.3	242.20	0.772 Level 1		
12,300.0	6,699.3	6,715.3	6,715.3	110.3	134.3	90.45	-5,712.4	643.8	97.1	-146.9	244.10	0.398 Level 1		
12,377.5	6,698.8	6,714.8	6,714.8	111.8	134.3	90.00	-5,712.4	643.8	58.6	-187.0	245.55	0.239 Level 1, CC, ES, SF		
12,400.0	6,698.7	6,714.7	6,714.7	112.2	134.3	89.87	-5,712.4	643.8	62.7	-183.2	245.97	0.255 Level 1		
12,500.0	6,698.1	6,714.1	6,714.1	114.1	134.3	89.29	-5,712.4	643.8	135.8	-112.1	247.82	0.548 Level 1		
12,600.0	6,697.5	6,713.5	6,713.5	116.0	134.3	88.71	-5,712.4	643.8	230.1	-19.6	249.65	0.922 Level 1		
12,700.0	6,696.9	6,712.9	6,712.9	117.9	134.3	88.13	-5,712.4	643.8	327.8	76.3	251.45	1.303 Level 3		
12,800.0	6,696.3	6,712.3	6,712.3	119.8	134.2	87.55	-5,712.4	643.8	426.5	173.3	253.23	1.684		
12,900.0	6,695.7	6,711.7	6,711.7	121.7	134.2	86.97	-5,712.4	643.8	525.8	270.8	254.99	2.062		
13,000.0	6,695.1	6,711.1	6,711.1	123.6	134.2	86.39	-5,712.4	643.8	625.2	368.5	256.72	2.435		
13,100.0	6,694.5	6,710.5	6,710.5	125.5	134.2	85.81	-5,712.4	643.8	724.8	466.4	258.42	2.805		
13,200.0	6,693.9	6,709.9	6,709.9	127.4	134.2	85.24	-5,712.4	643.8	824.6	564.5	260.10	3.170		
13,300.0	6,693.3	6,709.3	6,709.3	129.3	134.2	84.66	-5,712.4	643.8	924.3	662.6	261.75	3.531		
13,400.0	6,692.7	6,708.7	6,708.7	131.2	134.2	84.09	-5,712.4	643.8	1,024.1	760.8	263.38	3.889		
13,500.0	6,692.1	6,708.1	6,708.1	133.1	134.2	83.51	-5,712.4	643.8	1,124.0	859.0	264.98	4.242		
13,600.0	6,691.5	6,707.5	6,707.5	135.0	134.2	82.94	-5,712.4	643.8	1,223.9	957.3	266.55	4.592		
13,700.0	6,691.0	6,707.0	6,707.0	136.9	134.1	82.37	-5,712.4	643.8	1,323.8	1,055.7	268.09	4.938		
13,800.0	6,690.4	6,706.4	6,706.4	138.8	134.1	81.80	-5,712.4	643.8	1,423.7	1,154.1	269.61	5.280		
13,860.3	6,690.0	6,706.0	6,706.0	140.0	134.1	81.46	-5,712.4	643.8	1,483.9	1,213.4	270.51	5.485		

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Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4648.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28M-343	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 (Original Well Elev) Coordinates are relative to: Churchill 28M-343
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 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 28M-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4648.0ft (Original Well Elev)
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