

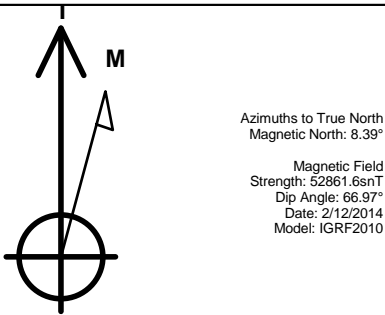
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Churchill 28J-343

Surface Location: Churchill 28J-HZ Pad Sec.28-T5N-R64W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4635.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1381537.71 3261964.79 40.376910 -104.559710  
RKB - 15' WELL @ 4650.0ft (RKB - 15')

WELLBORE TARGET DETAILS

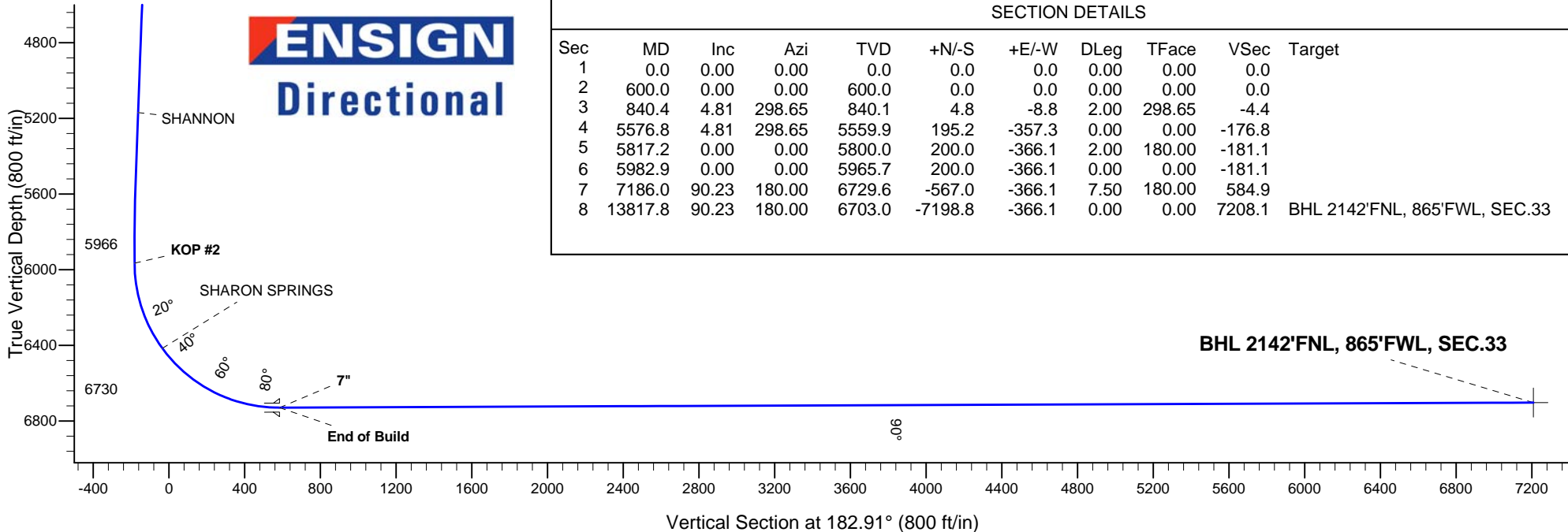
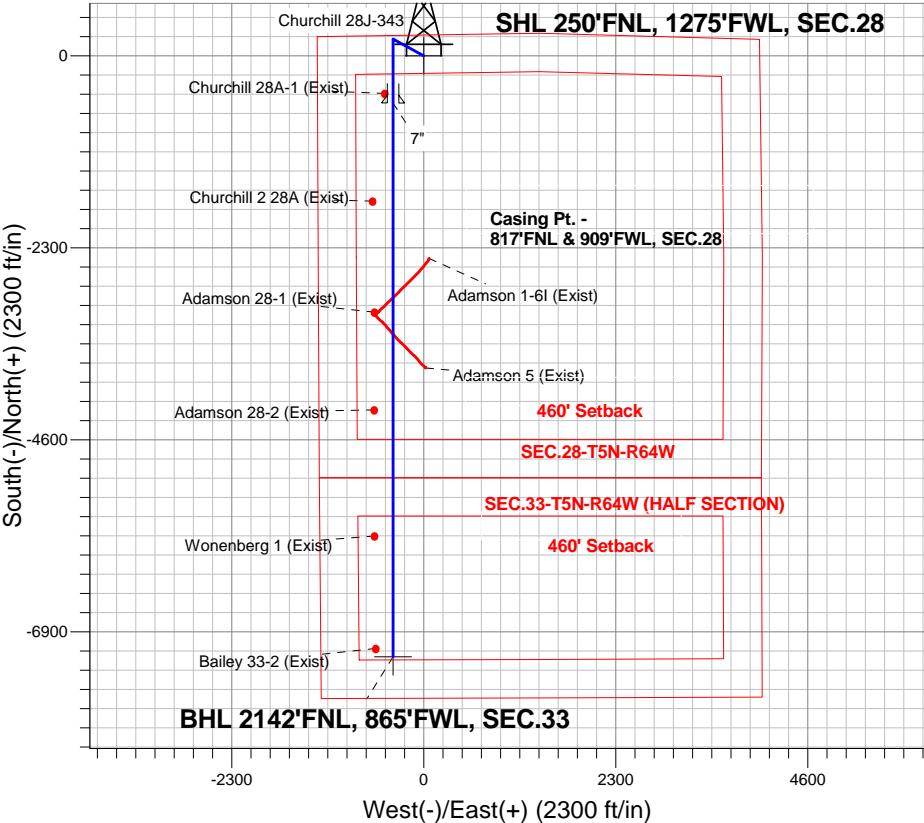
Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1275'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2142'FNL, 865'FWL, SEC.33	6703.0	-7198.8	-366.1	Point



ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP #1
5965.7	5982.9	KOP #2
6729.6	7186.0	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W  
Churchill 28J-343  
Plan #2 (2-11-14)  
9:22, February 12 2014





## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28J-343**

**Wellbore #1**

**Plan: Plan #2 (2-11-14)**

## **Standard Planning Report**

**12 February, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (2-11-14)		

<b>Project</b>	SEC.28-T5N-R64W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

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

Well	Churchill 28J-343					
Well Position	+N-S	3.6 ft	Northing:	1,381,537.71 ft	Latitude:	40.376910
	+E-W	61.3 ft	Easting:	3,261,964.79 ft	Longitude:	-104.559710
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,635.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/12/2014	8.39	66.97	52,862

<b>Design</b>	Plan #2 (2-11-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	182.91

<b>Plan Sections</b>										
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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
840.4	4.81	298.65	840.1	4.8	-8.8	2.00	2.00	0.00	298.65	
5,576.8	4.81	298.65	5,559.9	195.2	-357.3	0.00	0.00	0.00	0.00	
5,817.2	0.00	0.00	5,800.0	200.0	-366.1	2.00	-2.00	0.00	180.00	
5,982.9	0.00	0.00	5,965.7	200.0	-366.1	0.00	0.00	0.00	0.00	
7,186.0	90.23	180.00	6,729.6	-567.0	-366.1	7.50	7.50	0.00	180.00	
13,817.8	90.23	180.00	6,703.0	-7,198.8	-366.1	0.00	0.00	0.00	0.00	BHL 2142°FNL, 865

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (2-11-14)		

## 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
<b>SHL 250'FNL, 1275'FWL, SEC.28</b>									
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
<b>KOP #1</b>									
700.0	2.00	298.65	700.0	0.8	-1.5	-0.8	2.00	2.00	0.00
800.0	4.00	298.65	799.8	3.3	-6.1	-3.0	2.00	2.00	0.00
840.4	4.81	298.65	840.1	4.8	-8.8	-4.4	2.00	2.00	0.00
900.0	4.81	298.65	899.5	7.2	-13.2	-6.5	0.00	0.00	0.00
1,000.0	4.81	298.65	999.2	11.2	-20.6	-10.2	0.00	0.00	0.00
1,100.0	4.81	298.65	1,098.8	15.3	-27.9	-13.8	0.00	0.00	0.00
1,200.0	4.81	298.65	1,198.5	19.3	-35.3	-17.5	0.00	0.00	0.00
1,300.0	4.81	298.65	1,298.1	23.3	-42.7	-21.1	0.00	0.00	0.00
1,400.0	4.81	298.65	1,397.7	27.3	-50.0	-24.7	0.00	0.00	0.00
1,500.0	4.81	298.65	1,497.4	31.3	-57.4	-28.4	0.00	0.00	0.00
1,600.0	4.81	298.65	1,597.0	35.4	-64.7	-32.0	0.00	0.00	0.00
1,700.0	4.81	298.65	1,696.7	39.4	-72.1	-35.7	0.00	0.00	0.00
1,800.0	4.81	298.65	1,796.3	43.4	-79.4	-39.3	0.00	0.00	0.00
1,900.0	4.81	298.65	1,896.0	47.4	-86.8	-42.9	0.00	0.00	0.00
2,000.0	4.81	298.65	1,995.6	51.4	-94.1	-46.6	0.00	0.00	0.00
2,100.0	4.81	298.65	2,095.3	55.5	-101.5	-50.2	0.00	0.00	0.00
2,200.0	4.81	298.65	2,194.9	59.5	-108.9	-53.9	0.00	0.00	0.00
2,300.0	4.81	298.65	2,294.6	63.5	-116.2	-57.5	0.00	0.00	0.00
2,400.0	4.81	298.65	2,394.2	67.5	-123.6	-61.1	0.00	0.00	0.00
2,500.0	4.81	298.65	2,493.9	71.5	-130.9	-64.8	0.00	0.00	0.00
2,600.0	4.81	298.65	2,593.5	75.5	-138.3	-68.4	0.00	0.00	0.00
2,700.0	4.81	298.65	2,693.2	79.6	-145.6	-72.1	0.00	0.00	0.00
2,800.0	4.81	298.65	2,792.8	83.6	-153.0	-75.7	0.00	0.00	0.00
2,900.0	4.81	298.65	2,892.5	87.6	-160.3	-79.3	0.00	0.00	0.00
3,000.0	4.81	298.65	2,992.1	91.6	-167.7	-83.0	0.00	0.00	0.00
3,100.0	4.81	298.65	3,091.8	95.6	-175.1	-86.6	0.00	0.00	0.00
3,200.0	4.81	298.65	3,191.4	99.7	-182.4	-90.3	0.00	0.00	0.00
3,300.0	4.81	298.65	3,291.1	103.7	-189.8	-93.9	0.00	0.00	0.00
3,400.0	4.81	298.65	3,390.7	107.7	-197.1	-97.5	0.00	0.00	0.00
3,500.0	4.81	298.65	3,490.4	111.7	-204.5	-101.2	0.00	0.00	0.00
3,559.9	4.81	298.65	3,550.0	114.1	-208.9	-103.4	0.00	0.00	0.00
<b>PARKMAN</b>									
3,600.0	4.81	298.65	3,590.0	115.7	-211.8	-104.8	0.00	0.00	0.00
3,700.0	4.81	298.65	3,689.7	119.7	-219.2	-108.5	0.00	0.00	0.00
3,800.0	4.81	298.65	3,789.3	123.8	-226.6	-112.1	0.00	0.00	0.00
3,900.0	4.81	298.65	3,889.0	127.8	-233.9	-115.7	0.00	0.00	0.00
4,000.0	4.81	298.65	3,988.6	131.8	-241.3	-119.4	0.00	0.00	0.00
4,100.0	4.81	298.65	4,088.2	135.8	-248.6	-123.0	0.00	0.00	0.00
4,177.0	4.81	298.65	4,165.0	138.9	-254.3	-125.8	0.00	0.00	0.00
<b>SUSSEX</b>									
4,200.0	4.81	298.65	4,187.9	139.8	-256.0	-126.7	0.00	0.00	0.00
4,300.0	4.81	298.65	4,287.5	143.9	-263.3	-130.3	0.00	0.00	0.00
4,400.0	4.81	298.65	4,387.2	147.9	-270.7	-133.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (2-11-14)		

## 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	4.81	298.65	4,486.8	151.9	-278.0	-137.6	0.00	0.00	0.00
4,600.0	4.81	298.65	4,586.5	155.9	-285.4	-141.2	0.00	0.00	0.00
4,700.0	4.81	298.65	4,686.1	159.9	-292.8	-144.9	0.00	0.00	0.00
4,800.0	4.81	298.65	4,785.8	163.9	-300.1	-148.5	0.00	0.00	0.00
4,900.0	4.81	298.65	4,885.4	168.0	-307.5	-152.1	0.00	0.00	0.00
5,000.0	4.81	298.65	4,985.1	172.0	-314.8	-155.8	0.00	0.00	0.00
5,100.0	4.81	298.65	5,084.7	176.0	-322.2	-159.4	0.00	0.00	0.00
5,185.6	4.81	298.65	5,170.0	179.4	-328.5	-162.5	0.00	0.00	0.00
<b>SHANNON</b>									
5,200.0	4.81	298.65	5,184.4	180.0	-329.5	-163.1	0.00	0.00	0.00
5,300.0	4.81	298.65	5,284.0	184.0	-336.9	-166.7	0.00	0.00	0.00
5,400.0	4.81	298.65	5,383.7	188.1	-344.2	-170.3	0.00	0.00	0.00
5,500.0	4.81	298.65	5,483.3	192.1	-351.6	-174.0	0.00	0.00	0.00
5,576.8	4.81	298.65	5,559.9	195.2	-357.3	-176.8	0.00	0.00	0.00
5,600.0	4.34	298.65	5,583.0	196.1	-358.9	-177.6	2.00	-2.00	0.00
5,700.0	2.34	298.65	5,682.8	198.9	-364.0	-180.1	2.00	-2.00	0.00
5,800.0	0.34	298.65	5,782.8	200.0	-366.1	-181.1	2.00	-2.00	0.00
5,817.2	0.00	0.00	5,800.0	200.0	-366.1	-181.1	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,882.8	200.0	-366.1	-181.1	0.00	0.00	0.00
5,982.9	0.00	0.00	5,965.7	200.0	-366.1	-181.1	0.00	0.00	0.00
<b>KOP #2</b>									
6,000.0	1.28	180.00	5,982.8	199.8	-366.1	-181.0	7.49	7.49	0.00
6,100.0	8.78	180.00	6,082.3	191.0	-366.1	-172.2	7.50	7.50	0.00
6,200.0	16.28	180.00	6,179.9	169.4	-366.1	-150.6	7.50	7.50	0.00
6,300.0	23.78	180.00	6,273.7	135.1	-366.1	-116.4	7.50	7.50	0.00
6,400.0	31.28	180.00	6,362.4	88.9	-366.1	-70.2	7.50	7.50	0.00
6,464.5	36.12	180.00	6,416.0	53.2	-366.1	-34.5	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,500.0	38.78	180.00	6,444.2	31.6	-366.1	-12.9	7.50	7.50	0.00
6,600.0	46.28	180.00	6,517.8	-36.0	-366.1	54.5	7.50	7.50	0.00
6,700.0	53.78	180.00	6,582.0	-112.6	-366.1	131.0	7.50	7.50	0.00
6,800.0	61.28	180.00	6,635.7	-196.9	-366.1	215.2	7.50	7.50	0.00
6,900.0	68.78	180.00	6,677.8	-287.5	-366.1	305.7	7.50	7.50	0.00
7,000.0	76.28	180.00	6,707.8	-382.8	-366.1	400.9	7.50	7.50	0.00
7,100.0	83.78	180.00	6,725.1	-481.2	-366.1	499.2	7.50	7.50	0.00
7,186.0	90.23	180.00	6,729.6	-567.0	-366.1	584.9	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,200.0	90.23	180.00	6,729.6	-581.0	-366.1	598.9	0.00	0.00	0.00
7,300.0	90.23	180.00	6,729.2	-681.0	-366.1	698.7	0.00	0.00	0.00
7,400.0	90.23	180.00	6,728.8	-781.0	-366.1	798.6	0.00	0.00	0.00
7,500.0	90.23	180.00	6,728.4	-881.0	-366.1	898.5	0.00	0.00	0.00
7,600.0	90.23	180.00	6,728.0	-981.0	-366.1	998.4	0.00	0.00	0.00
7,700.0	90.23	180.00	6,727.6	-1,081.0	-366.1	1,098.2	0.00	0.00	0.00
7,800.0	90.23	180.00	6,727.2	-1,181.0	-366.1	1,198.1	0.00	0.00	0.00
7,900.0	90.23	180.00	6,726.8	-1,281.0	-366.1	1,298.0	0.00	0.00	0.00
8,000.0	90.23	180.00	6,726.4	-1,381.0	-366.1	1,397.8	0.00	0.00	0.00
8,100.0	90.23	180.00	6,726.0	-1,481.0	-366.1	1,497.7	0.00	0.00	0.00
8,200.0	90.23	180.00	6,725.6	-1,581.0	-366.1	1,597.6	0.00	0.00	0.00
8,300.0	90.23	180.00	6,725.1	-1,681.0	-366.1	1,697.4	0.00	0.00	0.00
8,400.0	90.23	180.00	6,724.7	-1,781.0	-366.1	1,797.3	0.00	0.00	0.00
8,500.0	90.23	180.00	6,724.3	-1,881.0	-366.1	1,897.2	0.00	0.00	0.00
8,600.0	90.23	180.00	6,723.9	-1,981.0	-366.1	1,997.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (2-11-14)		

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	90.23	180.00	6,723.5	-2,081.0	-366.1	2,096.9	0.00	0.00	0.00
8,800.0	90.23	180.00	6,723.1	-2,181.0	-366.1	2,196.8	0.00	0.00	0.00
8,900.0	90.23	180.00	6,722.7	-2,281.0	-366.1	2,296.7	0.00	0.00	0.00
9,000.0	90.23	180.00	6,722.3	-2,381.0	-366.1	2,396.5	0.00	0.00	0.00
9,100.0	90.23	180.00	6,721.9	-2,481.0	-366.1	2,496.4	0.00	0.00	0.00
9,200.0	90.23	180.00	6,721.5	-2,581.0	-366.1	2,596.3	0.00	0.00	0.00
9,300.0	90.23	180.00	6,721.1	-2,681.0	-366.1	2,696.1	0.00	0.00	0.00
9,400.0	90.23	180.00	6,720.7	-2,781.0	-366.1	2,796.0	0.00	0.00	0.00
9,500.0	90.23	180.00	6,720.3	-2,881.0	-366.1	2,895.9	0.00	0.00	0.00
9,600.0	90.23	180.00	6,719.9	-2,981.0	-366.1	2,995.8	0.00	0.00	0.00
9,700.0	90.23	180.00	6,719.5	-3,081.0	-366.1	3,095.6	0.00	0.00	0.00
9,800.0	90.23	180.00	6,719.1	-3,181.0	-366.1	3,195.5	0.00	0.00	0.00
9,900.0	90.23	180.00	6,718.7	-3,281.0	-366.1	3,295.4	0.00	0.00	0.00
10,000.0	90.23	180.00	6,718.3	-3,381.0	-366.1	3,395.2	0.00	0.00	0.00
10,100.0	90.23	180.00	6,717.9	-3,481.0	-366.1	3,495.1	0.00	0.00	0.00
10,200.0	90.23	180.00	6,717.5	-3,581.0	-366.1	3,595.0	0.00	0.00	0.00
10,300.0	90.23	180.00	6,717.1	-3,681.0	-366.1	3,694.8	0.00	0.00	0.00
10,400.0	90.23	180.00	6,716.7	-3,781.0	-366.1	3,794.7	0.00	0.00	0.00
10,500.0	90.23	180.00	6,716.3	-3,881.0	-366.1	3,894.6	0.00	0.00	0.00
10,600.0	90.23	180.00	6,715.9	-3,981.0	-366.1	3,994.5	0.00	0.00	0.00
10,700.0	90.23	180.00	6,715.5	-4,081.0	-366.1	4,094.3	0.00	0.00	0.00
10,800.0	90.23	180.00	6,715.1	-4,181.0	-366.1	4,194.2	0.00	0.00	0.00
10,900.0	90.23	180.00	6,714.7	-4,281.0	-366.1	4,294.1	0.00	0.00	0.00
11,000.0	90.23	180.00	6,714.3	-4,381.0	-366.1	4,393.9	0.00	0.00	0.00
11,100.0	90.23	180.00	6,713.9	-4,481.0	-366.1	4,493.8	0.00	0.00	0.00
11,200.0	90.23	180.00	6,713.5	-4,581.0	-366.1	4,593.7	0.00	0.00	0.00
11,300.0	90.23	180.00	6,713.1	-4,681.0	-366.1	4,693.5	0.00	0.00	0.00
11,400.0	90.23	180.00	6,712.7	-4,781.0	-366.1	4,793.4	0.00	0.00	0.00
11,500.0	90.23	180.00	6,712.3	-4,881.0	-366.1	4,893.3	0.00	0.00	0.00
11,600.0	90.23	180.00	6,711.9	-4,981.0	-366.1	4,993.2	0.00	0.00	0.00
11,700.0	90.23	180.00	6,711.5	-5,081.0	-366.1	5,093.0	0.00	0.00	0.00
11,800.0	90.23	180.00	6,711.1	-5,181.0	-366.1	5,192.9	0.00	0.00	0.00
11,900.0	90.23	180.00	6,710.7	-5,281.0	-366.1	5,292.8	0.00	0.00	0.00
12,000.0	90.23	180.00	6,710.3	-5,381.0	-366.1	5,392.6	0.00	0.00	0.00
12,100.0	90.23	180.00	6,709.9	-5,481.0	-366.1	5,492.5	0.00	0.00	0.00
12,200.0	90.23	180.00	6,709.5	-5,581.0	-366.1	5,592.4	0.00	0.00	0.00
12,300.0	90.23	180.00	6,709.1	-5,681.0	-366.1	5,692.2	0.00	0.00	0.00
12,400.0	90.23	180.00	6,708.7	-5,781.0	-366.1	5,792.1	0.00	0.00	0.00
12,500.0	90.23	180.00	6,708.3	-5,881.0	-366.1	5,892.0	0.00	0.00	0.00
12,600.0	90.23	180.00	6,707.9	-5,981.0	-366.1	5,991.9	0.00	0.00	0.00
12,700.0	90.23	180.00	6,707.5	-6,081.0	-366.1	6,091.7	0.00	0.00	0.00
12,800.0	90.23	180.00	6,707.1	-6,181.0	-366.1	6,191.6	0.00	0.00	0.00
12,900.0	90.23	180.00	6,706.7	-6,281.0	-366.1	6,291.5	0.00	0.00	0.00
13,000.0	90.23	180.00	6,706.3	-6,381.0	-366.1	6,391.3	0.00	0.00	0.00
13,100.0	90.23	180.00	6,705.9	-6,481.0	-366.1	6,491.2	0.00	0.00	0.00
13,200.0	90.23	180.00	6,705.5	-6,581.0	-366.1	6,591.1	0.00	0.00	0.00
13,300.0	90.23	180.00	6,705.1	-6,681.0	-366.1	6,691.0	0.00	0.00	0.00
13,400.0	90.23	180.00	6,704.7	-6,781.0	-366.1	6,790.8	0.00	0.00	0.00
13,500.0	90.23	180.00	6,704.3	-6,881.0	-366.1	6,890.7	0.00	0.00	0.00
13,600.0	90.23	180.00	6,703.9	-6,981.0	-366.1	6,990.6	0.00	0.00	0.00
13,700.0	90.23	180.00	6,703.5	-7,081.0	-366.1	7,090.4	0.00	0.00	0.00
13,800.0	90.23	180.00	6,703.1	-7,181.0	-366.1	7,190.3	0.00	0.00	0.00
13,817.8	90.23	180.00	6,703.0	-7,198.8	-366.1	7,208.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (2-11-14)		

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 2142'FNL, 865'FWL, SEC.33									

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude
	- Shape								Longitude
BHL 2142'FNL, 865'F <sup>1</sup>	- plan hits target center	0.00	0.00	6,703.0	-7,198.8	-366.1	1,374,335.79	3,261,675.05	40.357150
	- Point								-104.561024
SHL 250'FNL, 1275'F <sup>1</sup>	- plan hits target center	0.00	0.00	1.0	0.0	0.0	1,381,537.72	3,261,964.79	40.376910
	- Point								-104.559710

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,186.0	6,729.6	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,559.9	3,550.0	PARKMAN			
4,177.0	4,165.0	SUSSEX			
5,185.6	5,170.0	SHANNON			
6,464.5	6,416.0	SHARON SPRINGS			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
600.0	600.0	0.0	0.0	KOP #1
5,982.9	5,965.7	200.0	-366.1	KOP #2
7,186.0	6,729.6	-567.0	-366.1	End of Build



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28J-343**

**Wellbore #1**

**Plan #2 (2-11-14)**

## **Anticollision Report**

**12 February, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #2 (2-11-14)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 2/12/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	13,817.8	Plan #2 (2-11-14) (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 28E-203 - Wellbore #1 - Plan #1 (1-22-14)	200.0	200.0	61.4	60.7	91.063	CC, ES
Churchill 28E-203 - Wellbore #1 - Plan #1 (1-22-14)	13,817.8	13,837.3	793.8	515.0	2.847	SF
Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)	400.0	400.0	30.9	29.3	19.616	CC, ES
Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)	13,817.8	13,939.5	470.0	197.1	1.722	SF
Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)	600.0	599.0	58.5	56.0	23.686	CC, ES
Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)	13,817.8	13,537.8	587.5	310.9	2.124	SF
Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)	600.0	598.0	89.2	86.7	36.126	CC, ES
Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)	13,817.8	13,895.2	813.0	535.8	2.933	SF
Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)	600.0	599.0	30.6	28.2	12.407	CC
Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)	13,817.8	13,887.9	224.0	-29.6	0.883	Level 1, ES, SF
Churchill 28M-343 - Wellbore #1 - Plan #2 (2-11-14)	600.0	598.0	119.8	117.3	48.545	CC, ES
Churchill 28M-343 - Wellbore #1 - Plan #2 (2-11-14)	1,200.0	1,186.7	162.2	157.2	31.841	SF
Churchill 28M-443 - Wellbore #1 - Plan #1 (1-22-14)	400.0	397.0	150.5	148.9	96.037	CC, ES
Churchill 28M-443 - Wellbore #1 - Plan #1 (1-22-14)	900.0	866.2	203.4	199.6	54.264	SF
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W						
Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #1	9,047.5	6,834.8	429.8	180.8	1.726	CC, ES, SF
Adamson 28-1 (Exist) - Wellbore #1 - Wellbore #1	9,690.1	6,742.6	221.9	25.6	1.131	Level 2, CC, ES, SF
Adamson 28-2 (Exist) - Wellbore #1 - Wellbore #1	10,859.6	6,738.9	227.5	9.3	1.043	Level 2, CC, ES, SF
Adamson 5 (Exist) - Wellbore #1 - Wellbore #1	10,358.0	6,828.4	392.5	101.7	1.350	Level 3, CC, ES, SF
Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1	13,719.4	6,765.4	208.0	-65.0	0.762	Level 1, CC, ES, SF
Churchill 2 28A (Exist) - Wellbore #1 - Wellbore #1	8,360.4	6,731.9	244.1	72.4	1.422	Level 3, CC, ES, SF
Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore #1	7,070.3	6,722.3	99.2	-52.7	0.653	Level 1, CC, ES, SF
Wonenberg 1 (Exist) - Wellbore #1 - Wellbore #1	12,371.5	6,757.8	221.9	-25.3	0.898	Level 1, CC, ES, SF

<b>Offset Design</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (1-22-14)											<b>Offset Site Error:</b>	0.0ft
<b>Survey Program:</b>	0-MWD											<b>Offset Well Error:</b>	0.0ft
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)	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	-93.40	-3.6	-61.3	61.4				
100.0	100.0	100.0	100.0	0.1	0.1	-93.40	-3.6	-61.3	61.4	61.2	0.22	273.189	
200.0	200.0	200.0	200.0	0.3	0.3	-93.40	-3.6	-61.3	61.4	60.7	0.67	91.063	CC, ES
300.0	300.0	297.9	297.9	0.6	0.6	-93.04	-3.3	-62.9	63.1	62.0	1.11	56.709	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (1-22-14)												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)		
400.0	400.0	395.6	395.5	0.8	0.8	-92.06	-2.4	-67.9	68.1	66.5	1.56	43.680	
500.0	500.0	492.9	492.3	1.0	1.0	-90.72	-1.0	-76.0	76.4	74.4	2.02	37.777	
600.0	600.0	589.4	588.2	1.2	1.3	-89.27	1.1	-87.3	88.1	85.6	2.51	35.088	
700.0	700.0	685.4	683.0	1.5	1.6	-26.85	3.7	-101.6	101.6	98.7	2.91	34.911	
800.0	799.8	780.8	776.9	1.7	2.0	-26.54	6.9	-119.0	115.3	111.9	3.36	34.351	
840.4	840.1	819.3	814.5	1.8	2.1	-26.56	8.3	-126.9	120.8	117.3	3.54	34.138	
900.0	899.5	877.1	870.9	1.9	2.4	-26.69	10.6	-139.5	129.5	125.7	3.82	33.862	
1,000.0	999.2	976.0	967.3	2.2	2.8	-26.87	14.6	-161.3	144.3	140.0	4.30	33.522	
1,100.0	1,098.8	1,074.9	1,063.7	2.4	3.3	-27.01	18.6	-183.0	159.0	154.3	4.79	33.208	
1,200.0	1,198.5	1,173.8	1,160.0	2.7	3.8	-27.12	22.6	-204.8	173.8	168.5	5.28	32.916	
1,300.0	1,298.1	1,272.7	1,256.4	2.9	4.2	-27.22	26.5	-226.6	188.6	182.8	5.77	32.656	
1,400.0	1,397.7	1,371.6	1,352.8	3.2	4.7	-27.31	30.5	-248.3	203.4	197.1	6.27	32.412	
1,500.0	1,497.4	1,470.5	1,449.2	3.4	5.2	-27.38	34.5	-270.1	218.1	211.3	6.78	32.192	
1,600.0	1,597.0	1,569.4	1,545.6	3.7	5.7	-27.45	38.5	-291.8	232.9	225.6	7.28	31.995	
1,700.0	1,696.7	1,668.3	1,642.0	4.0	6.1	-27.50	42.4	-313.6	247.7	239.9	7.78	31.816	
1,800.0	1,796.3	1,767.2	1,738.4	4.2	6.6	-27.55	46.4	-335.4	262.4	254.1	8.29	31.654	
1,900.0	1,896.0	1,866.1	1,834.8	4.5	7.1	-27.60	50.4	-357.1	277.2	268.4	8.80	31.506	
2,000.0	1,995.6	1,965.0	1,931.2	4.8	7.6	-27.64	54.4	-378.9	292.0	282.7	9.31	31.371	
2,100.0	2,095.3	2,063.9	2,027.6	5.0	8.1	-27.67	58.3	-400.7	306.7	296.9	9.82	31.248	
2,200.0	2,194.9	2,162.8	2,124.0	5.3	8.6	-27.71	62.3	-422.4	321.5	311.2	10.33	31.134	
2,300.0	2,294.6	2,261.8	2,220.4	5.6	9.0	-27.74	66.3	-444.2	336.3	325.4	10.84	31.030	
2,400.0	2,394.2	2,360.7	2,316.8	5.8	9.5	-27.76	70.3	-466.0	351.1	339.7	11.35	30.933	
2,500.0	2,493.9	2,459.6	2,413.2	6.1	10.0	-27.79	74.2	-487.7	365.8	354.0	11.86	30.844	
2,600.0	2,593.5	2,558.5	2,509.6	6.4	10.5	-27.81	78.2	-509.5	380.6	368.2	12.37	30.761	
2,700.0	2,693.2	2,657.4	2,606.0	6.7	11.0	-27.83	82.2	-531.3	395.4	382.5	12.89	30.684	
2,800.0	2,792.8	2,756.3	2,702.4	6.9	11.5	-27.85	86.2	-553.0	410.1	396.7	13.40	30.612	
2,900.0	2,892.5	2,855.2	2,798.8	7.2	11.9	-27.87	90.1	-574.8	424.9	411.0	13.91	30.545	
3,000.0	2,992.1	2,954.1	2,895.2	7.5	12.4	-27.89	94.1	-596.6	439.7	425.3	14.42	30.481	
3,100.0	3,091.8	3,053.0	2,991.6	7.7	12.9	-27.91	98.1	-618.3	454.5	439.5	14.94	30.422	
3,200.0	3,191.4	3,151.9	3,088.0	8.0	13.4	-27.92	102.0	-640.1	469.2	453.8	15.45	30.366	
3,300.0	3,291.1	3,250.8	3,184.4	8.3	13.9	-27.94	106.0	-661.9	484.0	468.0	15.97	30.314	
3,400.0	3,390.7	3,349.7	3,280.8	8.6	14.4	-27.95	110.0	-683.6	498.8	482.3	16.48	30.264	
3,500.0	3,490.4	3,448.6	3,377.2	8.8	14.8	-27.96	114.0	-705.4	513.5	496.5	16.99	30.218	
3,600.0	3,590.0	3,547.5	3,473.6	9.1	15.3	-27.98	117.9	-727.2	528.3	510.8	17.51	30.173	
3,700.0	3,689.7	3,646.4	3,570.0	9.4	15.8	-27.99	121.9	-748.9	543.1	525.1	18.02	30.131	
3,800.0	3,789.3	3,745.3	3,666.4	9.6	16.3	-28.00	125.9	-770.7	557.9	539.3	18.54	30.091	
3,900.0	3,889.0	3,844.2	3,762.8	9.9	16.8	-28.01	129.9	-792.4	572.6	553.6	19.05	30.053	
4,000.0	3,988.6	3,943.1	3,859.1	10.2	17.3	-28.02	133.8	-814.2	587.4	567.8	19.57	30.017	
4,100.0	4,088.2	4,042.0	3,955.5	10.5	17.8	-28.03	137.8	-836.0	602.2	582.1	20.08	29.983	
4,200.0	4,187.9	4,140.9	4,051.9	10.7	18.2	-28.03	141.8	-857.7	616.9	596.3	20.60	29.950	
4,300.0	4,287.5	4,239.8	4,148.3	11.0	18.7	-28.04	145.8	-879.5	631.7	610.6	21.11	29.919	
4,400.0	4,387.2	4,338.7	4,244.7	11.3	19.2	-28.05	149.7	-901.3	646.5	624.9	21.63	29.889	
4,500.0	4,486.8	4,437.6	4,341.1	11.6	19.7	-28.06	153.7	-923.0	661.3	639.1	22.15	29.860	
4,600.0	4,586.5	4,536.5	4,437.5	11.8	20.2	-28.07	157.7	-944.8	676.0	653.4	22.66	29.832	
4,700.0	4,686.1	4,635.4	4,533.9	12.1	20.7	-28.07	161.7	-966.6	690.8	667.6	23.18	29.806	
4,800.0	4,785.8	4,734.3	4,630.3	12.4	21.2	-28.08	165.6	-988.3	705.6	681.9	23.69	29.781	
4,900.0	4,885.4	4,833.2	4,726.7	12.6	21.6	-28.09	169.6	-1,010.1	720.3	696.1	24.21	29.756	
5,000.0	4,985.1	4,932.1	4,823.1	12.9	22.1	-28.09	173.6	-1,031.9	735.1	710.4	24.72	29.733	
5,100.0	5,084.7	5,031.0	4,919.5	13.2	22.6	-28.10	177.6	-1,053.6	749.9	724.6	25.24	29.710	
5,200.0	5,184.4	5,129.9	5,015.9	13.5	23.1	-28.10	181.5	-1,075.4	764.7	738.9	25.76	29.689	
5,300.0	5,284.0	5,248.8	5,132.0	13.7	23.6	-28.12	186.1	-1,100.6	778.7	752.4	26.30	29.613	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (1-22-14)													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
5,400.0	5,383.7	5,385.0	5,266.0	14.0	24.0	-28.22		190.4	-1,124.1	788.6	761.8	26.84	29.380	
5,500.0	5,483.3	5,522.1	5,402.1	14.3	24.3	-28.39		193.6	-1,141.3	793.9	766.5	27.37	29.004	
5,576.8	5,559.9	5,627.8	5,507.3	14.5	24.5	-28.58		195.2	-1,150.2	794.7	766.9	27.77	28.621	
5,600.0	5,583.0	5,659.6	5,539.1	14.6	24.6	-28.64		195.5	-1,152.1	794.5	766.6	27.86	28.513	
5,700.0	5,682.8	5,797.0	5,676.4	14.7	24.8	-28.84		196.3	-1,156.5	792.5	764.3	28.22	28.080	
5,800.0	5,782.8	5,903.4	5,782.8	14.9	24.9	-28.91		196.4	-1,156.6	790.5	762.0	28.49	27.747	
5,817.2	5,800.0	5,920.6	5,800.0	14.9	24.9	-90.26		196.4	-1,156.6	790.5	762.0	28.53	27.704	
5,900.0	5,882.8	6,003.4	5,882.8	15.1	25.0	-90.26		196.4	-1,156.6	790.5	761.7	28.83	27.421	
5,982.9	5,965.7	6,085.6	5,964.9	15.2	25.1	-90.56		192.2	-1,156.6	790.5	761.4	29.14	27.127	
6,000.0	5,982.8	6,102.4	5,981.6	15.3	25.1	89.31		190.3	-1,156.6	790.5	761.3	29.21	27.068	
6,050.0	6,032.7	6,151.4	6,029.9	15.3	25.1	88.94		182.6	-1,156.6	790.6	761.2	29.37	26.920	
6,100.0	6,082.3	6,200.0	6,077.3	15.4	25.1	88.58		171.9	-1,156.6	790.7	761.2	29.51	26.798	
6,150.0	6,131.4	6,248.4	6,123.7	15.4	25.2	88.22		158.3	-1,156.6	790.9	761.2	29.62	26.699	
6,200.0	6,179.9	6,296.5	6,168.9	15.5	25.2	87.87		141.9	-1,156.6	791.0	761.3	29.72	26.620	
6,250.0	6,227.4	6,344.2	6,212.7	15.5	25.2	87.53		122.8	-1,156.6	791.2	761.4	29.79	26.556	
6,300.0	6,273.7	6,391.8	6,255.0	15.5	25.2	87.20		101.2	-1,156.6	791.4	761.6	29.87	26.500	
6,350.0	6,318.8	6,439.0	6,295.6	15.6	25.2	86.89		77.1	-1,156.6	791.7	761.7	29.94	26.446	
6,400.0	6,362.4	6,486.1	6,334.5	15.6	25.2	86.58		50.6	-1,156.6	791.9	761.9	30.01	26.385	
6,450.0	6,404.2	6,532.9	6,371.6	15.6	25.2	86.29		22.0	-1,156.6	792.1	762.0	30.11	26.311	
6,500.0	6,444.2	6,579.5	6,406.6	15.6	25.3	86.02		-8.7	-1,156.6	792.4	762.2	30.23	26.214	
6,550.0	6,482.1	6,625.9	6,439.6	15.7	25.3	85.77		-41.4	-1,156.6	792.7	762.3	30.40	26.076	
6,600.0	6,517.8	6,672.1	6,470.4	15.7	25.3	85.53		-75.9	-1,156.6	792.9	762.3	30.60	25.909	
6,650.0	6,551.2	6,718.2	6,499.0	15.8	25.4	85.30		-112.0	-1,156.6	793.2	762.3	30.87	25.691	
6,700.0	6,582.0	6,764.1	6,525.2	15.9	25.4	85.10		-149.7	-1,156.6	793.4	762.2	31.21	25.421	
6,750.0	6,610.2	6,809.9	6,549.1	16.0	25.5	84.92		-188.7	-1,156.6	793.6	762.0	31.62	25.095	
6,800.0	6,635.7	6,855.6	6,570.6	16.2	25.6	84.76		-229.0	-1,156.6	793.8	761.7	32.12	24.712	
6,850.0	6,658.2	6,900.0	6,589.1	16.5	25.7	84.62		-269.4	-1,156.6	794.0	761.3	32.70	24.281	
6,900.0	6,677.8	6,946.7	6,606.0	16.8	25.8	84.49		-312.9	-1,156.6	794.1	760.8	33.39	23.786	
6,950.0	6,694.4	6,992.1	6,619.8	17.1	25.9	84.39		-356.1	-1,156.6	794.3	760.1	34.16	23.253	
7,000.0	6,707.8	7,037.4	6,631.1	17.5	26.1	84.32		-400.0	-1,156.6	794.4	759.4	35.02	22.686	
7,050.0	6,718.1	7,082.7	6,639.7	18.0	26.3	84.26		-444.5	-1,156.6	794.5	758.5	35.96	22.094	
7,100.0	6,725.1	7,128.0	6,645.7	18.5	26.5	84.23		-489.4	-1,156.6	794.5	757.5	36.98	21.486	
7,150.0	6,728.9	7,173.3	6,649.0	19.0	26.8	84.22		-534.5	-1,156.6	794.5	756.5	38.07	20.872	
7,186.0	6,729.6	7,205.8	6,649.7	19.4	27.0	84.22		-567.1	-1,156.6	794.5	755.6	38.88	20.433	
7,200.0	6,729.6	7,219.6	6,649.6	19.6	27.1	84.23		-580.8	-1,156.6	794.5	755.3	39.21	20.263	
7,300.0	6,729.2	7,319.6	6,649.3	20.8	27.8	84.23		-680.8	-1,156.6	794.5	752.9	41.64	19.078	
7,400.0	6,728.8	7,419.6	6,649.0	22.1	28.6	84.24		-780.8	-1,156.6	794.5	750.2	44.27	17.946	
7,500.0	6,728.4	7,519.6	6,648.7	23.5	29.6	84.25		-880.8	-1,156.6	794.5	747.4	47.06	16.881	
7,600.0	6,728.0	7,619.6	6,648.4	25.0	30.7	84.26		-980.8	-1,156.6	794.5	744.5	49.99	15.891	
7,700.0	6,727.6	7,719.6	6,648.2	26.5	31.9	84.26		-1,080.8	-1,156.6	794.5	741.4	53.04	14.979	
7,800.0	6,727.2	7,819.6	6,647.9	28.1	33.1	84.27		-1,180.8	-1,156.6	794.4	738.3	56.18	14.142	
7,900.0	6,726.8	7,919.6	6,647.6	29.7	34.5	84.28		-1,280.8	-1,156.6	794.4	735.0	59.40	13.375	
8,000.0	6,726.4	8,019.6	6,647.3	31.3	35.9	84.29		-1,380.8	-1,156.6	794.4	731.7	62.68	12.674	
8,100.0	6,726.0	8,119.6	6,647.0	33.0	37.3	84.29		-1,480.8	-1,156.6	794.4	728.4	66.03	12.031	
8,200.0	6,725.6	8,219.6	6,646.7	34.7	38.8	84.30		-1,580.8	-1,156.6	794.4	725.0	69.42	11.443	
8,300.0	6,725.1	8,319.6	6,646.4	36.4	40.3	84.31		-1,680.8	-1,156.6	794.4	721.5	72.86	10.903	
8,400.0	6,724.7	8,419.6	6,646.1	38.2	41.9	84.32		-1,780.8	-1,156.6	794.4	718.0	76.34	10.406	
8,500.0	6,724.3	8,519.6	6,645.8	39.9	43.5	84.32		-1,880.8	-1,156.6	794.4	714.5	79.84	9.949	
8,600.0	6,723.9	8,619.6	6,645.5	41.7	45.1	84.33		-1,980.8	-1,156.6	794.4	711.0	83.38	9.527	
8,700.0	6,723.5	8,719.6	6,645.2	43.5	46.8	84.34		-2,080.8	-1,156.6	794.4	707.4	86.94	9.137	
8,800.0	6,723.1	8,819.6	6,644.9	45.3	48.5	84.35		-2,180.8	-1,156.6	794.3	703.8	90.52	8.775	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (1-22-14)											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)			
8,900.0	6,722.7	8,919.6	6,644.6	47.1	50.1	84.35	-2,280.8	-1,156.6	794.3	700.2	94.12	8.439			
9,000.0	6,722.3	9,019.6	6,644.3	48.9	51.8	84.36	-2,380.8	-1,156.6	794.3	696.6	97.74	8.127			
9,100.0	6,721.9	9,119.6	6,644.0	50.7	53.6	84.37	-2,480.8	-1,156.6	794.3	692.9	101.37	7.835			
9,200.0	6,721.5	9,219.6	6,643.7	52.6	55.3	84.38	-2,580.8	-1,156.6	794.3	689.3	105.02	7.563			
9,300.0	6,721.1	9,319.6	6,643.4	54.4	57.1	84.38	-2,680.8	-1,156.6	794.3	685.6	108.68	7.308			
9,400.0	6,720.7	9,419.6	6,643.1	56.2	58.8	84.39	-2,780.8	-1,156.6	794.3	681.9	112.35	7.070			
9,500.0	6,720.3	9,519.6	6,642.8	58.1	60.6	84.40	-2,880.8	-1,156.6	794.3	678.2	116.03	6.845			
9,600.0	6,719.9	9,619.6	6,642.5	59.9	62.4	84.41	-2,980.8	-1,156.6	794.3	674.5	119.72	6.634			
9,700.0	6,719.5	9,719.6	6,642.2	61.8	64.1	84.41	-3,080.8	-1,156.6	794.3	670.8	123.42	6.435			
9,800.0	6,719.1	9,819.6	6,641.9	63.7	65.9	84.42	-3,180.8	-1,156.6	794.2	667.1	127.13	6.248			
9,900.0	6,718.7	9,919.6	6,641.6	65.5	67.7	84.43	-3,280.8	-1,156.6	794.2	663.4	130.84	6.070			
10,000.0	6,718.3	10,019.6	6,641.3	67.4	69.5	84.44	-3,380.8	-1,156.6	794.2	659.7	134.56	5.902			
10,100.0	6,717.9	10,119.6	6,641.0	69.3	71.4	84.44	-3,480.8	-1,156.6	794.2	655.9	138.29	5.743			
10,200.0	6,717.5	10,219.6	6,640.7	71.1	73.2	84.45	-3,580.8	-1,156.6	794.2	652.2	142.02	5.592			
10,300.0	6,717.1	10,319.6	6,640.4	73.0	75.0	84.46	-3,680.8	-1,156.6	794.2	648.4	145.75	5.449			
10,400.0	6,716.7	10,419.6	6,640.1	74.9	76.8	84.47	-3,780.8	-1,156.6	794.2	644.7	149.49	5.312			
10,500.0	6,716.3	10,519.6	6,639.8	76.8	78.7	84.47	-3,880.8	-1,156.6	794.2	640.9	153.24	5.183			
10,600.0	6,715.9	10,619.6	6,639.5	78.6	80.5	84.48	-3,980.8	-1,156.6	794.2	637.2	156.99	5.059			
10,700.0	6,715.5	10,719.6	6,639.3	80.5	82.3	84.49	-4,080.8	-1,156.6	794.2	633.4	160.74	4.941			
10,800.0	6,715.1	10,819.6	6,639.0	82.4	84.2	84.50	-4,180.8	-1,156.6	794.1	629.6	164.50	4.828			
10,900.0	6,714.7	10,919.6	6,638.7	84.3	86.0	84.50	-4,280.8	-1,156.6	794.1	625.9	168.26	4.720			
11,000.0	6,714.3	11,019.6	6,638.4	86.2	87.9	84.51	-4,380.8	-1,156.6	794.1	622.1	172.02	4.616			
11,100.0	6,713.9	11,119.6	6,638.1	88.1	89.7	84.52	-4,480.8	-1,156.6	794.1	618.3	175.79	4.517			
11,200.0	6,713.5	11,219.6	6,637.8	90.0	91.6	84.53	-4,580.8	-1,156.6	794.1	614.5	179.56	4.423			
11,300.0	6,713.1	11,319.6	6,637.5	91.9	93.5	84.53	-4,680.8	-1,156.6	794.1	610.8	183.33	4.332			
11,400.0	6,712.7	11,419.6	6,637.2	93.7	95.3	84.54	-4,780.8	-1,156.6	794.1	607.0	187.10	4.244			
11,500.0	6,712.3	11,519.6	6,636.9	95.6	97.2	84.55	-4,880.8	-1,156.6	794.1	603.2	190.88	4.160			
11,600.0	6,711.9	11,619.6	6,636.6	97.5	99.0	84.56	-4,980.8	-1,156.6	794.1	599.4	194.65	4.079			
11,700.0	6,711.5	11,719.6	6,636.3	99.4	100.9	84.56	-5,080.8	-1,156.6	794.1	595.6	198.43	4.002			
11,800.0	6,711.1	11,819.6	6,636.0	101.3	102.8	84.57	-5,180.8	-1,156.6	794.0	591.8	202.21	3.927			
11,900.0	6,710.7	11,919.6	6,635.7	103.2	104.7	84.58	-5,280.8	-1,156.6	794.0	588.0	206.00	3.855			
12,000.0	6,710.3	12,019.6	6,635.4	105.1	106.5	84.59	-5,380.8	-1,156.6	794.0	584.2	209.78	3.785			
12,100.0	6,709.9	12,119.6	6,635.1	107.0	108.4	84.59	-5,480.8	-1,156.6	794.0	580.4	213.57	3.718			
12,200.0	6,709.5	12,219.6	6,634.8	108.9	110.3	84.60	-5,580.8	-1,156.6	794.0	576.6	217.36	3.653			
12,300.0	6,709.1	12,319.6	6,634.5	110.8	112.2	84.61	-5,680.8	-1,156.6	794.0	572.8	221.15	3.590			
12,400.0	6,708.7	12,419.6	6,634.2	112.7	114.0	84.62	-5,780.8	-1,156.6	794.0	569.0	224.94	3.530			
12,500.0	6,708.3	12,519.6	6,633.9	114.6	115.9	84.62	-5,880.8	-1,156.6	794.0	565.2	228.73	3.471			
12,600.0	6,707.9	12,619.6	6,633.6	116.5	117.8	84.63	-5,980.8	-1,156.6	794.0	561.4	232.53	3.415			
12,700.0	6,707.5	12,719.6	6,633.3	118.4	119.7	84.64	-6,080.8	-1,156.6	794.0	557.6	236.32	3.360			
12,800.0	6,707.1	12,819.6	6,633.0	120.3	121.6	84.65	-6,180.8	-1,156.6	793.9	553.8	240.12	3.306			
12,900.0	6,706.7	12,919.6	6,632.7	122.2	123.5	84.65	-6,280.8	-1,156.6	793.9	550.0	243.92	3.255			
13,000.0	6,706.3	13,019.6	6,632.4	124.1	125.3	84.66	-6,380.8	-1,156.6	793.9	546.2	247.71	3.205			
13,100.0	6,705.9	13,119.6	6,632.1	126.1	127.2	84.67	-6,480.8	-1,156.6	793.9	542.4	251.51	3.157			
13,200.0	6,705.5	13,219.6	6,631.8	128.0	129.1	84.68	-6,580.8	-1,156.6	793.9	538.6	255.31	3.110			
13,300.0	6,705.1	13,319.6	6,631.5	129.9	131.0	84.68	-6,680.8	-1,156.6	793.9	534.8	259.11	3.064			
13,400.0	6,704.7	13,419.6	6,631.2	131.8	132.9	84.69	-6,780.8	-1,156.6	793.9	531.0	262.92	3.020			
13,500.0	6,704.3	13,519.6	6,630.9	133.7	134.8	84.70	-6,880.8	-1,156.6	793.9	527.2	266.72	2.976			
13,600.0	6,703.9	13,619.6	6,630.6	135.6	136.7	84.71	-6,980.8	-1,156.6	793.9	523.3	270.52	2.935			
13,700.0	6,703.5	13,719.6	6,630.4	137.5	138.6	84.71	-7,080.8	-1,156.6	793.9	519.5	274.33	2.894			
13,800.0	6,703.1	13,819.6	6,630.1	139.4	140.5	84.72	-7,180.8	-1,156.6	793.8	515.7	278.13	2.854			
13,817.8	6,703.0	13,837.3	6,630.0	139.7	140.8	84.72	-7,198.5	-1,156.6	793.8	515.0	278.81	2.847 SF			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-96.78	-3.6	-30.6	30.9					
100.0	100.0	100.0	100.0	0.1	0.1	-96.78	-3.6	-30.6	30.9	30.6	0.22	137.315		
200.0	200.0	200.0	200.0	0.3	0.3	-96.78	-3.6	-30.6	30.9	30.2	0.67	45.772		
300.0	300.0	300.0	300.0	0.6	0.6	-96.78	-3.6	-30.6	30.9	29.7	1.12	27.463		
400.0	400.0	400.0	400.0	0.8	0.8	-96.78	-3.6	-30.6	30.9	29.3	1.57	19.616 CC, ES		
500.0	500.0	499.0	498.9	1.0	1.0	-95.70	-3.2	-32.3	32.5	30.5	2.01	16.141		
600.0	600.0	597.7	597.5	1.2	1.2	-93.04	-2.0	-37.3	37.4	34.9	2.45	15.239		
700.0	700.0	696.1	695.6	1.5	1.5	-29.54	0.1	-45.5	44.2	41.3	2.88	15.312		
800.0	799.8	794.3	793.0	1.7	1.7	-28.87	3.0	-56.9	51.2	47.9	3.32	15.443		
840.4	840.1	833.9	832.2	1.8	1.8	-28.89	4.4	-62.4	54.2	50.7	3.50	15.492		
900.0	899.5	892.7	890.3	1.9	2.0	-28.95	6.6	-71.5	59.0	55.2	3.77	15.639		
1,000.0	999.2	992.4	988.7	2.2	2.4	-28.97	10.5	-87.0	67.2	63.0	4.23	15.885		
1,100.0	1,098.8	1,092.1	1,087.1	2.4	2.7	-28.99	14.4	-102.5	75.5	70.8	4.70	16.058		
1,200.0	1,198.5	1,191.7	1,185.4	2.7	3.1	-29.01	18.4	-118.0	83.7	78.6	5.17	16.182		
1,300.0	1,298.1	1,291.4	1,283.8	2.9	3.4	-29.02	22.3	-133.5	92.0	86.3	5.65	16.273		
1,400.0	1,397.7	1,391.0	1,382.2	3.2	3.8	-29.03	26.2	-149.0	100.2	94.1	6.13	16.341		
1,500.0	1,497.4	1,490.7	1,480.5	3.4	4.1	-29.04	30.1	-164.5	108.5	101.9	6.62	16.393		
1,600.0	1,597.0	1,590.4	1,578.9	3.7	4.5	-29.05	34.0	-180.1	116.8	109.7	7.11	16.433		
1,700.0	1,696.7	1,690.0	1,677.3	4.0	4.9	-29.06	37.9	-195.6	125.0	117.4	7.59	16.465		
1,800.0	1,796.3	1,789.7	1,775.6	4.2	5.2	-29.07	41.8	-211.1	133.3	125.2	8.08	16.489		
1,900.0	1,896.0	1,889.3	1,874.0	4.5	5.6	-29.07	45.7	-226.6	141.5	133.0	8.57	16.509		
2,000.0	1,995.6	1,989.0	1,972.4	4.8	6.0	-29.08	49.6	-242.1	149.8	140.7	9.06	16.525		
2,100.0	2,095.3	2,088.6	2,070.7	5.0	6.4	-29.08	53.5	-257.6	158.0	148.5	9.56	16.539		
2,200.0	2,194.9	2,188.3	2,169.1	5.3	6.7	-29.08	57.4	-273.1	166.3	156.2	10.05	16.549		
2,300.0	2,294.6	2,288.0	2,267.5	5.6	7.1	-29.09	61.3	-288.6	174.6	164.0	10.54	16.558		
2,400.0	2,394.2	2,387.6	2,365.8	5.8	7.5	-29.09	65.2	-304.1	182.8	171.8	11.04	16.565		
2,500.0	2,493.9	2,487.3	2,464.2	6.1	7.9	-29.09	69.1	-319.7	191.1	179.5	11.53	16.571		
2,600.0	2,593.5	2,586.9	2,562.6	6.4	8.2	-29.10	73.0	-335.2	199.3	187.3	12.02	16.576		
2,700.0	2,693.2	2,686.6	2,660.9	6.7	8.6	-29.10	76.9	-350.7	207.6	195.1	12.52	16.580		
2,800.0	2,792.8	2,786.3	2,759.3	6.9	9.0	-29.10	80.8	-366.2	215.8	202.8	13.01	16.584		
2,900.0	2,892.5	2,885.9	2,857.7	7.2	9.4	-29.10	84.8	-381.7	224.1	210.6	13.51	16.587		
3,000.0	2,992.1	2,985.6	2,956.0	7.5	9.7	-29.11	88.7	-397.2	232.3	218.3	14.01	16.589		
3,100.0	3,091.8	3,085.2	3,054.4	7.7	10.1	-29.11	92.6	-412.7	240.6	226.1	14.50	16.591		
3,200.0	3,191.4	3,184.9	3,152.8	8.0	10.5	-29.11	96.5	-428.2	248.9	233.9	15.00	16.593		
3,300.0	3,291.1	3,284.6	3,251.1	8.3	10.9	-29.11	100.4	-443.7	257.1	241.6	15.49	16.594		
3,400.0	3,390.7	3,384.2	3,349.5	8.6	11.3	-29.11	104.3	-459.3	265.4	249.4	15.99	16.595		
3,500.0	3,490.4	3,483.9	3,447.9	8.8	11.6	-29.11	108.2	-474.8	273.6	257.1	16.49	16.596		
3,600.0	3,590.0	3,583.5	3,546.2	9.1	12.0	-29.11	112.1	-490.3	281.9	264.9	16.98	16.596		
3,700.0	3,689.7	3,683.2	3,644.6	9.4	12.4	-29.12	116.0	-505.8	290.1	272.7	17.48	16.597		
3,800.0	3,789.3	3,782.8	3,743.0	9.6	12.8	-29.12	119.9	-521.3	298.4	280.4	17.98	16.597		
3,900.0	3,889.0	3,882.5	3,841.3	9.9	13.1	-29.12	123.8	-536.8	306.6	288.2	18.48	16.598		
4,000.0	3,988.6	3,982.2	3,939.7	10.2	13.5	-29.12	127.7	-552.3	314.9	295.9	18.97	16.598		
4,100.0	4,088.2	4,081.8	4,038.1	10.5	13.9	-29.12	131.6	-567.8	323.2	303.7	19.47	16.598		
4,200.0	4,187.9	4,181.5	4,136.4	10.7	14.3	-29.12	135.5	-583.3	331.4	311.4	19.97	16.598		
4,300.0	4,287.5	4,281.1	4,234.8	11.0	14.7	-29.12	139.4	-598.9	339.7	319.2	20.46	16.598		
4,400.0	4,387.2	4,380.8	4,333.2	11.3	15.0	-29.12	143.3	-614.4	347.9	327.0	20.96	16.598		
4,500.0	4,486.8	4,480.5	4,431.5	11.6	15.4	-29.12	147.2	-629.9	356.2	334.7	21.46	16.598		
4,600.0	4,586.5	4,580.1	4,529.9	11.8	15.8	-29.12	151.1	-645.4	364.4	342.5	21.96	16.597		
4,700.0	4,686.1	4,679.8	4,628.3	12.1	16.2	-29.13	155.1	-660.9	372.7	350.2	22.46	16.597		
4,800.0	4,785.8	4,779.4	4,726.6	12.4	16.6	-29.13	159.0	-676.4	380.9	358.0	22.95	16.597		
4,900.0	4,885.4	4,879.1	4,825.0	12.6	16.9	-29.13	162.9	-691.9	389.2	365.8	23.45	16.596		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)													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
5,000.0	4,985.1	4,978.7	4,923.4	12.9	17.3	-29.13	-29.13	166.8	-707.4	397.5	373.5	23.95	16.596	
5,100.0	5,084.7	5,078.4	5,021.7	13.2	17.7	-29.13	-29.13	170.7	-722.9	405.7	381.3	24.45	16.596	
5,200.0	5,184.4	5,178.1	5,120.1	13.5	18.1	-29.13	-29.13	174.6	-738.4	414.0	389.0	24.94	16.595	
5,300.0	5,284.0	5,277.7	5,218.5	13.7	18.4	-29.13	-29.13	178.5	-754.0	422.2	396.8	25.44	16.595	
5,400.0	5,383.7	5,377.4	5,316.8	14.0	18.8	-29.13	-29.13	182.4	-769.5	430.5	404.5	25.94	16.595	
5,500.0	5,483.3	5,477.0	5,415.2	14.3	19.2	-29.13	-29.13	186.3	-785.0	438.7	412.3	26.44	16.594	
5,576.8	5,559.9	5,562.7	5,499.8	14.5	19.5	-29.15	-29.15	189.5	-797.7	444.6	417.7	26.83	16.570	
5,600.0	5,583.0	5,589.9	5,526.8	14.6	19.6	-29.18	-29.18	190.4	-801.3	446.0	419.0	26.94	16.556	
5,700.0	5,682.8	5,707.6	5,643.7	14.7	19.8	-29.24	-29.24	193.6	-813.8	451.5	424.2	27.32	16.526	
5,800.0	5,782.8	5,825.5	5,761.4	14.9	20.1	-29.20	-29.20	195.5	-821.7	456.2	428.5	27.65	16.499	
5,817.2	5,800.0	5,845.9	5,781.8	14.9	20.1	-90.53	-90.53	195.8	-822.6	456.9	429.2	27.70	16.494	
5,900.0	5,882.8	5,943.8	5,879.6	15.1	20.2	-90.46	-90.46	196.3	-824.9	458.8	430.8	28.01	16.379	
5,982.9	5,965.7	6,029.8	5,965.7	15.2	20.3	-90.45	-90.45	196.4	-824.9	458.9	430.5	28.33	16.197	
6,000.0	5,982.8	6,046.9	5,982.8	15.3	20.4	89.57	89.57	196.4	-824.9	458.9	430.5	28.39	16.162	
6,050.0	6,032.7	6,096.8	6,032.7	15.3	20.4	89.91	89.91	196.4	-824.9	458.8	430.3	28.53	16.083	
6,057.6	6,040.2	6,104.4	6,040.2	15.3	20.4	90.00	90.00	196.4	-824.9	458.8	430.3	28.55	16.074	
6,100.0	6,082.3	6,146.7	6,082.5	15.4	20.5	90.54	90.54	195.4	-824.9	458.9	430.2	28.63	16.030	
6,150.0	6,131.4	6,196.9	6,132.5	15.4	20.5	91.17	91.17	191.2	-824.9	458.9	430.2	28.69	15.995	
6,200.0	6,179.9	6,247.4	6,182.5	15.5	20.6	91.80	91.80	183.6	-824.9	459.1	430.3	28.74	15.972	
6,250.0	6,227.4	6,298.3	6,232.2	15.5	20.6	92.43	92.43	172.7	-824.9	459.3	430.5	28.78	15.957	
6,300.0	6,273.7	6,349.5	6,281.4	15.5	20.7	93.05	93.05	158.5	-824.9	459.5	430.7	28.81	15.947	
6,350.0	6,318.8	6,401.1	6,329.8	15.6	20.7	93.65	93.65	140.8	-824.9	459.8	430.9	28.85	15.937	
6,400.0	6,362.4	6,453.1	6,377.3	15.6	20.7	94.24	94.24	119.7	-824.9	460.1	431.2	28.90	15.922	
6,450.0	6,404.2	6,505.3	6,423.5	15.6	20.7	94.82	94.82	95.3	-824.9	460.5	431.5	28.97	15.896	
6,500.0	6,444.2	6,558.0	6,468.2	15.6	20.7	95.37	95.37	67.6	-824.9	460.9	431.8	29.07	15.855	
6,550.0	6,482.1	6,610.9	6,511.2	15.7	20.8	95.90	95.90	36.6	-824.9	461.3	432.1	29.21	15.794	
6,600.0	6,517.8	6,664.2	6,552.2	15.7	20.8	96.40	96.40	2.6	-824.9	461.7	432.3	29.40	15.706	
6,650.0	6,551.2	6,717.8	6,590.9	15.8	20.8	96.88	96.88	-34.5	-824.9	462.2	432.6	29.63	15.598	
6,700.0	6,582.0	6,771.8	6,627.2	15.9	20.9	97.32	97.32	-74.4	-824.9	462.6	432.7	29.95	15.447	
6,750.0	6,610.2	6,826.0	6,660.6	16.0	21.0	97.74	97.74	-117.0	-824.9	463.1	432.7	30.33	15.267	
6,800.0	6,635.7	6,880.4	6,691.2	16.2	21.0	98.11	98.11	-162.1	-824.9	463.5	432.7	30.79	15.053	
6,850.0	6,658.2	6,935.2	6,718.5	16.5	21.2	98.45	98.45	-209.5	-824.9	463.9	432.6	31.33	14.807	
6,900.0	6,677.8	6,990.1	6,742.5	16.8	21.3	98.75	98.75	-258.9	-824.9	464.3	432.3	31.95	14.531	
6,950.0	6,694.4	7,045.2	6,763.0	17.1	21.5	99.01	99.01	-310.1	-824.9	464.6	431.9	32.65	14.227	
7,000.0	6,707.8	7,100.5	6,779.7	17.5	21.8	99.23	99.23	-362.8	-824.9	464.9	431.4	33.44	13.901	
7,050.0	6,718.1	7,156.0	6,792.6	18.0	22.1	99.41	99.41	-416.7	-824.9	465.1	430.8	34.31	13.556	
7,100.0	6,725.1	7,211.5	6,801.6	18.5	22.4	99.54	99.54	-471.5	-824.9	465.3	430.0	35.25	13.200	
7,150.0	6,728.9	7,263.2	6,807.2	19.0	22.8	99.71	99.71	-522.8	-824.9	465.5	429.3	36.21	12.857	
7,186.0	6,729.6	7,299.0	6,810.9	19.4	23.1	100.04	100.04	-558.5	-824.9	466.1	429.2	36.87	12.639	
7,200.0	6,729.6	7,313.8	6,812.4	19.6	23.2	100.23	100.23	-573.2	-824.9	466.3	429.1	37.18	12.544	
7,300.0	6,729.2	7,421.8	6,817.5	20.8	24.2	100.90	100.90	-681.0	-824.9	467.3	427.7	39.55	11.813	
7,400.0	6,728.8	7,522.0	6,817.3	22.1	25.3	100.92	100.92	-781.2	-824.9	467.3	425.1	42.16	11.083	
7,500.0	6,728.4	7,622.0	6,817.1	23.5	26.5	100.95	100.95	-881.2	-824.9	467.3	422.4	44.93	10.402	
7,600.0	6,728.0	7,722.0	6,816.9	25.0	27.8	100.97	100.97	-981.2	-824.9	467.4	419.6	47.83	9.771	
7,700.0	6,727.6	7,822.0	6,816.7	26.5	29.1	101.00	101.00	-1,081.2	-824.9	467.4	416.6	50.85	9.192	
7,800.0	6,727.2	7,922.0	6,816.6	28.1	30.6	101.02	101.02	-1,181.2	-824.9	467.5	413.5	53.97	8.662	
7,900.0	6,726.8	8,022.0	6,816.4	29.7	32.0	101.05	101.05	-1,281.2	-824.9	467.5	410.3	57.16	8.179	
8,000.0	6,726.4	8,122.0	6,816.2	31.3	33.6	101.08	101.08	-1,381.2	-824.9	467.5	407.1	60.42	7.738	
8,100.0	6,726.0	8,222.0	6,816.0	33.0	35.1	101.10	101.10	-1,481.2	-824.9	467.6	403.8	63.74	7.336	
8,200.0	6,725.6	8,322.0	6,815.8	34.7	36.7	101.13	101.13	-1,581.2	-824.9	467.6	400.5	67.10	6.969	
8,300.0	6,725.1	8,422.0	6,815.6	36.4	38.4	101.15	101.15	-1,681.2	-824.9	467.7	397.2	70.51	6.633	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)												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)			
8,400.0	6,724.7	8,522.0	6,815.4	38.2	40.0	101.18	-1,781.2	-824.9	467.7	393.8	73.95	6.325	
8,500.0	6,724.3	8,622.0	6,815.2	39.9	41.7	101.20	-1,881.2	-824.9	467.7	390.3	77.42	6.042	
8,600.0	6,723.9	8,722.0	6,815.0	41.7	43.4	101.23	-1,981.2	-824.9	467.8	386.9	80.92	5.781	
8,700.0	6,723.5	8,822.0	6,814.8	43.5	45.1	101.25	-2,081.2	-824.9	467.8	383.4	84.44	5.540	
8,800.0	6,723.1	8,922.0	6,814.6	45.3	46.9	101.28	-2,181.2	-824.9	467.9	379.9	87.98	5.318	
8,900.0	6,722.7	9,022.0	6,814.4	47.1	48.6	101.30	-2,281.2	-824.9	467.9	376.4	91.54	5.111	
9,000.0	6,722.3	9,122.0	6,814.2	48.9	50.4	101.33	-2,381.2	-824.9	468.0	372.8	95.12	4.920	
9,100.0	6,721.9	9,222.0	6,814.1	50.7	52.1	101.35	-2,481.2	-824.9	468.0	369.3	98.71	4.741	
9,200.0	6,721.5	9,322.0	6,813.9	52.6	53.9	101.38	-2,581.2	-824.9	468.0	365.7	102.31	4.575	
9,300.0	6,721.1	9,422.0	6,813.7	54.4	55.7	101.40	-2,681.2	-824.9	468.1	362.2	105.92	4.419	
9,400.0	6,720.7	9,522.0	6,813.5	56.2	57.5	101.43	-2,781.2	-824.9	468.1	358.6	109.55	4.273	
9,500.0	6,720.3	9,622.0	6,813.3	58.1	59.3	101.45	-2,881.2	-824.9	468.2	355.0	113.18	4.137	
9,600.0	6,719.9	9,722.0	6,813.1	59.9	61.1	101.48	-2,981.2	-824.9	468.2	351.4	116.82	4.008	
9,700.0	6,719.5	9,822.0	6,812.9	61.8	63.0	101.50	-3,081.2	-824.9	468.2	347.8	120.46	3.887	
9,800.0	6,719.1	9,922.0	6,812.7	63.7	64.8	101.53	-3,181.2	-824.9	468.3	344.2	124.12	3.773	
9,900.0	6,718.7	10,022.0	6,812.5	65.5	66.6	101.55	-3,281.2	-824.9	468.3	340.5	127.78	3.665	
10,000.0	6,718.3	10,122.0	6,812.3	67.4	68.4	101.58	-3,381.2	-824.9	468.4	336.9	131.44	3.563	
10,100.0	6,717.9	10,222.0	6,812.1	69.3	70.3	101.60	-3,481.2	-824.9	468.4	333.3	135.11	3.467	
10,200.0	6,717.5	10,322.0	6,811.9	71.1	72.1	101.63	-3,581.2	-824.9	468.5	329.7	138.79	3.375	
10,300.0	6,717.1	10,422.0	6,811.8	73.0	74.0	101.65	-3,681.2	-824.9	468.5	326.0	142.47	3.288	
10,400.0	6,716.7	10,522.0	6,811.6	74.9	75.8	101.68	-3,781.2	-824.9	468.5	322.4	146.15	3.206	
10,500.0	6,716.3	10,622.0	6,811.4	76.8	77.7	101.70	-3,881.2	-824.9	468.6	318.7	149.83	3.127	
10,600.0	6,715.9	10,722.0	6,811.2	78.6	79.5	101.73	-3,981.2	-824.9	468.6	315.1	153.52	3.052	
10,700.0	6,715.5	10,822.0	6,811.0	80.5	81.4	101.75	-4,081.2	-824.9	468.7	311.5	157.21	2.981	
10,800.0	6,715.1	10,922.0	6,810.8	82.4	83.3	101.78	-4,181.2	-824.9	468.7	307.8	160.91	2.913	
10,900.0	6,714.7	11,022.0	6,810.6	84.3	85.1	101.80	-4,281.2	-824.9	468.8	304.1	164.60	2.848	
11,000.0	6,714.3	11,122.0	6,810.4	86.2	87.0	101.83	-4,381.2	-824.9	468.8	300.5	168.30	2.785	
11,100.0	6,713.9	11,222.0	6,810.2	88.1	88.9	101.85	-4,481.2	-824.9	468.8	296.8	172.00	2.726	
11,200.0	6,713.5	11,322.0	6,810.0	90.0	90.8	101.88	-4,581.2	-824.9	468.9	293.2	175.71	2.669	
11,300.0	6,713.1	11,422.0	6,809.8	91.9	92.6	101.90	-4,681.2	-824.9	468.9	289.5	179.41	2.614	
11,400.0	6,712.7	11,522.0	6,809.6	93.7	94.5	101.93	-4,781.2	-824.9	469.0	285.8	183.12	2.561	
11,500.0	6,712.3	11,622.0	6,809.4	95.6	96.4	101.95	-4,881.2	-824.9	469.0	282.2	186.82	2.510	
11,600.0	6,711.9	11,722.0	6,809.3	97.5	98.3	101.98	-4,981.2	-824.9	469.1	278.5	190.53	2.462	
11,700.0	6,711.5	11,822.0	6,809.1	99.4	100.1	102.00	-5,081.2	-824.9	469.1	274.9	194.24	2.415	
11,800.0	6,711.1	11,922.0	6,808.9	101.3	102.0	102.03	-5,181.2	-824.9	469.1	271.2	197.95	2.370	
11,900.0	6,710.7	12,022.0	6,808.7	103.2	103.9	102.05	-5,281.2	-824.9	469.2	267.5	201.67	2.327	
12,000.0	6,710.3	12,122.0	6,808.5	105.1	105.8	102.08	-5,381.2	-824.9	469.2	263.8	205.38	2.285	
12,100.0	6,709.9	12,222.0	6,808.3	107.0	107.7	102.10	-5,481.2	-824.9	469.3	260.2	209.09	2.244	
12,200.0	6,709.5	12,322.0	6,808.1	108.9	109.6	102.13	-5,581.2	-824.9	469.3	256.5	212.81	2.205	
12,300.0	6,709.1	12,422.0	6,807.9	110.8	111.5	102.15	-5,681.2	-824.9	469.4	252.8	216.52	2.168	
12,400.0	6,708.7	12,522.0	6,807.7	112.7	113.4	102.18	-5,781.2	-824.9	469.4	249.2	220.24	2.131	
12,500.0	6,708.3	12,622.0	6,807.5	114.6	115.2	102.20	-5,881.2	-824.9	469.4	245.5	223.95	2.096	
12,600.0	6,707.9	12,722.0	6,807.3	116.5	117.1	102.23	-5,981.2	-824.9	469.5	241.8	227.67	2.062	
12,700.0	6,707.5	12,822.0	6,807.1	118.4	119.0	102.25	-6,081.2	-824.9	469.5	238.2	231.39	2.029	
12,800.0	6,707.1	12,922.0	6,807.0	120.3	120.9	102.28	-6,181.2	-824.9	469.6	234.5	235.10	1.997	
12,900.0	6,706.7	13,022.0	6,806.8	122.2	122.8	102.30	-6,281.2	-824.9	469.6	230.8	238.82	1.966	
13,000.0	6,706.3	13,122.0	6,806.6	124.1	124.7	102.33	-6,381.2	-824.9	469.7	227.1	242.54	1.936	
13,100.0	6,705.9	13,222.0	6,806.4	126.1	126.6	102.35	-6,481.2	-824.9	469.7	223.5	246.26	1.907	
13,200.0	6,705.5	13,322.0	6,806.2	128.0	128.5	102.38	-6,581.2	-824.9	469.8	219.8	249.98	1.879	
13,300.0	6,705.1	13,422.0	6,806.0	129.9	130.4	102.40	-6,681.2	-824.9	469.8	216.1	253.69	1.852	
13,400.0	6,704.7	13,522.0	6,805.8	131.8	132.3	102.43	-6,781.2	-824.9	469.8	212.4	257.41	1.825	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (1-22-14)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	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	
13,500.0	6,704.3	13,622.0	6,805.6	133.7	134.2	102.45	-6,881.2	-824.9	469.9	208.8	261.13	1.799		
13,600.0	6,703.9	13,722.0	6,805.4	135.6	136.1	102.48	-6,981.2	-824.9	469.9	205.1	264.85	1.774		
13,700.0	6,703.5	13,822.0	6,805.2	137.5	138.0	102.50	-7,081.2	-824.9	470.0	201.4	268.57	1.750		
13,800.0	6,703.1	13,922.0	6,805.0	139.4	139.9	102.53	-7,181.2	-824.9	470.0	197.7	272.29	1.726		
13,817.8	6,703.0	13,939.5	6,805.0	139.7	140.2	102.53	-7,198.7	-824.9	470.0	197.1	272.94	1.722 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	58.5	58.5					
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	58.5	58.5	58.3	0.22	261.619		
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	58.5	58.5	57.8	0.67	87.061		
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	58.5	58.5	57.4	1.12	52.167		
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	58.5	58.5	56.9	1.57	37.241		
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	58.5	58.5	56.5	2.02	28.956		
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	58.5	58.5	56.0	2.47	23.686	CC, ES	
700.0	700.0	699.0	699.0	1.5	1.5	152.14	0.0	58.5	60.0	57.1	2.91	20.609		
800.0	799.8	798.8	798.8	1.7	1.7	154.26	0.0	58.5	64.7	61.4	3.35	19.301		
840.4	840.1	839.1	839.1	1.8	1.8	155.38	0.0	58.5	67.5	64.0	3.53	19.124		
900.0	899.5	898.5	898.5	1.9	1.9	157.03	0.0	58.5	72.1	68.3	3.79	19.004		
1,000.0	999.2	998.2	998.2	2.2	2.1	159.38	0.0	58.5	79.9	75.7	4.24	18.851		
1,100.0	1,098.8	1,097.8	1,097.8	2.4	2.4	161.30	0.0	58.5	87.8	83.1	4.68	18.741		
1,200.0	1,198.5	1,197.5	1,197.5	2.7	2.6	162.91	0.0	58.5	95.8	90.6	5.13	18.661		
1,300.0	1,298.1	1,297.1	1,297.1	2.9	2.8	164.27	0.0	58.5	103.8	98.2	5.58	18.601		
1,400.0	1,397.7	1,396.7	1,396.7	3.2	3.0	165.43	0.0	58.5	111.9	105.9	6.03	18.556		
1,500.0	1,497.4	1,496.4	1,496.4	3.4	3.3	166.44	0.0	58.5	120.0	113.6	6.48	18.521		
1,600.0	1,597.0	1,596.0	1,596.0	3.7	3.5	167.32	0.0	58.5	128.2	121.3	6.93	18.494		
1,700.0	1,696.7	1,695.7	1,695.7	4.0	3.7	168.09	0.0	58.5	136.4	129.0	7.38	18.472		
1,800.0	1,796.3	1,795.3	1,795.3	4.2	3.9	168.78	0.0	58.5	144.6	136.8	7.84	18.454		
1,900.0	1,896.0	1,895.0	1,895.0	4.5	4.1	169.39	0.0	58.5	152.8	144.6	8.29	18.440		
2,000.0	1,995.6	1,994.6	1,994.6	4.8	4.4	169.94	0.0	58.5	161.1	152.3	8.74	18.429		
2,100.0	2,095.3	2,094.3	2,094.3	5.0	4.6	170.43	0.0	58.5	169.3	160.2	9.19	18.419		
2,200.0	2,194.9	2,193.9	2,193.9	5.3	4.8	170.88	0.0	58.5	177.6	168.0	9.65	18.412		
2,300.0	2,294.6	2,293.6	2,293.6	5.6	5.0	171.29	0.0	58.5	185.9	175.8	10.10	18.405		
2,400.0	2,394.2	2,393.2	2,393.2	5.8	5.3	171.67	0.0	58.5	194.2	183.6	10.55	18.400		
2,500.0	2,493.9	2,492.9	2,492.9	6.1	5.5	172.01	0.0	58.5	202.5	191.5	11.01	18.395		
2,600.0	2,593.5	2,592.5	2,592.5	6.4	5.7	172.33	0.0	58.5	210.8	199.3	11.46	18.391		
2,700.0	2,693.2	2,692.2	2,692.2	6.7	5.9	172.62	0.0	58.5	219.1	207.2	11.92	18.388		
2,800.0	2,792.8	2,791.8	2,791.8	6.9	6.2	172.89	0.0	58.5	227.4	215.0	12.37	18.385		
2,900.0	2,892.5	2,891.5	2,891.5	7.2	6.4	173.14	0.0	58.5	235.7	222.9	12.82	18.383		
3,000.0	2,992.1	2,991.1	2,991.1	7.5	6.6	173.38	0.0	58.5	244.1	230.8	13.28	18.380		
3,100.0	3,091.8	3,084.2	3,084.2	7.7	6.8	173.45	0.1	59.7	253.6	239.9	13.71	18.498		
3,200.0	3,191.4	3,176.0	3,175.9	8.0	7.0	173.22	0.5	63.9	265.9	251.8	14.13	18.824		
3,300.0	3,291.1	3,267.5	3,267.1	8.3	7.2	172.74	1.2	70.9	281.1	266.5	14.54	19.324		
3,400.0	3,390.7	3,366.1	3,365.3	8.6	7.4	172.15	2.0	79.9	297.5	282.5	14.98	19.865		
3,500.0	3,490.4	3,464.7	3,463.5	8.8	7.6	171.62	2.9	88.9	314.0	298.6	15.41	20.375		
3,600.0	3,590.0	3,563.3	3,561.6	9.1	7.8	171.14	3.7	97.9	330.5	314.6	15.85	20.856		
3,700.0	3,689.7	3,661.9	3,659.8	9.4	8.1	170.71	4.6	106.8	347.0	330.7	16.28	21.311		
3,800.0	3,789.3	3,760.5	3,758.0	9.6	8.3	170.32	5.4	115.8	363.5	346.8	16.72	21.740		
3,900.0	3,889.0	3,859.1	3,856.2	9.9	8.5	169.96	6.3	124.8	380.1	362.9	17.16	22.147		
4,000.0	3,988.6	3,957.7	3,954.4	10.2	8.7	169.63	7.1	133.8	396.6	379.0	17.60	22.532		
4,100.0	4,088.2	4,056.3	4,052.6	10.5	9.0	169.33	8.0	142.8	413.2	395.2	18.05	22.897		
4,200.0	4,187.9	4,154.8	4,150.7	10.7	9.2	169.05	8.8	151.7	429.8	411.3	18.49	23.243		
4,300.0	4,287.5	4,253.4	4,248.9	11.0	9.5	168.80	9.6	160.7	446.4	427.4	18.94	23.573		
4,400.0	4,387.2	4,352.0	4,347.1	11.3	9.7	168.56	10.5	169.7	463.0	443.6	19.38	23.887		
4,500.0	4,486.8	4,450.6	4,445.3	11.6	9.9	168.33	11.3	178.7	479.6	459.8	19.83	24.185		
4,600.0	4,586.5	4,549.2	4,543.5	11.8	10.2	168.13	12.2	187.7	496.2	475.9	20.28	24.470		
4,700.0	4,686.1	4,647.8	4,641.6	12.1	10.4	167.93	13.0	196.6	512.8	492.1	20.73	24.742		
4,800.0	4,785.8	4,746.8	4,740.2	12.4	10.7	167.75	13.9	205.7	529.4	508.3	21.18	25.001		
4,900.0	4,885.4	4,866.6	4,859.7	12.6	10.9	167.65	14.7	214.0	544.1	522.4	21.65	25.133		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
5,000.0	4,985.1	4,987.5	4,980.6	12.9	11.2	167.74	15.0	217.3	554.9	532.7	22.11	25.099	
5,100.0	5,084.7	5,090.7	5,083.7	13.2	11.4	167.93	15.0	217.4	563.1	540.6	22.54	24.980	
5,200.0	5,184.4	5,190.3	5,183.4	13.5	11.6	168.10	15.0	217.4	571.3	548.3	22.99	24.850	
5,300.0	5,284.0	5,290.0	5,283.0	13.7	11.8	168.27	15.0	217.4	579.5	556.1	23.44	24.722	
5,400.0	5,383.7	5,389.6	5,382.7	14.0	12.0	168.44	15.0	217.4	587.7	563.8	23.89	24.599	
5,500.0	5,483.3	5,489.3	5,482.3	14.3	12.2	168.60	15.0	217.4	595.9	571.6	24.34	24.481	
5,576.8	5,559.9	5,565.8	5,558.9	14.5	12.4	168.72	15.0	217.4	602.2	577.6	24.69	24.393	
5,600.0	5,583.0	5,588.9	5,582.0	14.6	12.4	168.76	15.0	217.4	604.1	579.3	24.80	24.362	
5,700.0	5,682.8	5,688.7	5,681.8	14.7	12.6	168.89	15.0	217.4	609.8	584.6	25.21	24.185	
5,800.0	5,782.8	5,788.7	5,781.8	14.9	12.9	168.94	15.0	217.4	612.1	586.5	25.60	23.907	
5,817.2	5,800.0	5,805.9	5,799.0	14.9	12.9	107.59	15.0	217.4	612.1	586.5	25.67	23.848	
5,900.0	5,882.8	5,888.7	5,881.8	15.1	13.1	107.59	15.0	217.4	612.1	586.1	26.01	23.535	
5,982.9	5,965.7	5,955.9	5,948.9	15.2	13.2	107.83	12.3	217.4	613.2	586.9	26.30	23.315	
6,000.0	5,982.8	5,969.5	5,962.4	15.3	13.2	-72.04	11.0	217.4	613.6	587.2	26.35	23.288	
6,050.0	6,032.7	6,009.4	6,002.0	15.3	13.3	-71.70	5.9	217.4	614.7	588.3	26.48	23.217	
6,100.0	6,082.3	6,050.0	6,041.9	15.4	13.4	-71.42	-1.4	217.4	615.7	589.1	26.59	23.157	
6,150.0	6,131.4	6,088.8	6,079.7	15.4	13.4	-71.21	-10.3	217.4	616.4	589.7	26.68	23.105	
6,200.0	6,179.9	6,128.5	6,117.7	15.5	13.5	-71.06	-21.4	217.4	616.9	590.2	26.76	23.055	
6,250.0	6,227.4	6,168.0	6,155.1	15.5	13.6	-70.97	-34.5	217.4	617.3	590.4	26.83	23.005	
6,300.0	6,273.7	6,207.6	6,191.7	15.5	13.7	-70.94	-49.4	217.4	617.3	590.4	26.90	22.949	
6,350.0	6,318.8	6,250.0	6,230.1	15.6	13.8	-70.99	-67.5	217.4	617.2	590.2	26.98	22.877	
6,400.0	6,362.4	6,286.8	6,262.4	15.6	13.8	-71.08	-84.9	217.4	616.8	589.8	27.06	22.794	
6,450.0	6,404.2	6,326.4	6,296.4	15.6	13.9	-71.25	-105.4	217.4	616.3	589.1	27.17	22.681	
6,500.0	6,444.2	6,366.1	6,329.2	15.6	14.1	-71.48	-127.7	217.4	615.5	588.2	27.31	22.537	
6,550.0	6,482.1	6,405.9	6,361.0	15.7	14.2	-71.77	-151.6	217.4	614.5	587.0	27.49	22.356	
6,600.0	6,517.8	6,450.0	6,394.6	15.7	14.3	-72.15	-180.1	217.4	613.3	585.6	27.73	22.117	
6,650.0	6,551.2	6,485.8	6,420.7	15.8	14.5	-72.53	-204.6	217.4	612.0	584.0	28.01	21.852	
6,700.0	6,582.0	6,526.0	6,448.6	15.9	14.7	-73.01	-233.6	217.4	610.5	582.1	28.36	21.525	
6,750.0	6,610.2	6,566.3	6,475.0	16.0	14.9	-73.54	-264.1	217.4	608.8	580.0	28.79	21.146	
6,800.0	6,635.7	6,606.9	6,499.9	16.2	15.1	-74.13	-296.1	217.4	607.0	577.7	29.30	20.719	
6,850.0	6,658.2	6,650.0	6,524.5	16.5	15.4	-74.82	-331.5	217.4	605.2	575.2	29.91	20.233	
6,900.0	6,677.8	6,688.6	6,544.8	16.8	15.7	-75.50	-364.4	217.4	603.2	572.6	30.57	19.729	
6,950.0	6,694.4	6,729.9	6,564.6	17.1	16.1	-76.26	-400.6	217.4	601.2	569.8	31.34	19.180	
7,000.0	6,707.8	6,771.5	6,582.5	17.5	16.4	-77.08	-438.1	217.4	599.2	567.0	32.20	18.608	
7,050.0	6,718.1	6,813.5	6,598.5	18.0	16.8	-77.95	-476.9	217.4	597.1	564.0	33.14	18.021	
7,100.0	6,725.1	6,855.8	6,612.5	18.5	17.3	-78.87	-516.8	217.4	595.2	561.0	34.15	17.428	
7,150.0	6,728.9	6,900.0	6,624.7	19.0	17.8	-79.86	-559.3	217.4	593.2	558.0	35.26	16.826	
7,186.0	6,729.6	6,929.4	6,631.5	19.4	18.1	-80.56	-588.0	217.4	591.9	555.8	36.07	16.412	
7,200.0	6,729.6	6,941.6	6,633.9	19.6	18.2	-80.80	-599.9	217.4	591.4	555.0	36.39	16.250	
7,300.0	6,729.2	7,030.2	6,646.2	20.8	19.3	-82.00	-687.6	217.4	589.3	550.4	38.85	15.169	
7,400.0	6,728.8	7,123.5	6,648.6	22.1	20.6	-82.27	-780.8	217.4	588.9	547.4	41.46	14.204	
7,500.0	6,728.4	7,223.5	6,648.3	23.5	22.0	-82.29	-880.8	217.4	588.8	544.5	44.29	13.295	
7,600.0	6,728.0	7,323.5	6,648.1	25.0	23.5	-82.30	-980.8	217.4	588.8	541.6	47.26	12.459	
7,700.0	6,727.6	7,423.5	6,647.9	26.5	25.0	-82.32	-1,080.8	217.4	588.8	538.4	50.35	11.695	
7,800.0	6,727.2	7,523.5	6,647.6	28.1	26.6	-82.34	-1,180.8	217.4	588.8	535.2	53.53	11.000	
7,900.0	6,726.8	7,623.5	6,647.4	29.7	28.3	-82.35	-1,280.8	217.4	588.7	532.0	56.78	10.368	
8,000.0	6,726.4	7,723.5	6,647.2	31.3	29.9	-82.37	-1,380.8	217.4	588.7	528.6	60.11	9.794	
8,100.0	6,726.0	7,823.5	6,647.0	33.0	31.6	-82.39	-1,480.8	217.4	588.7	525.2	63.49	9.273	
8,200.0	6,725.6	7,923.5	6,646.7	34.7	33.3	-82.40	-1,580.8	217.4	588.7	521.8	66.91	8.797	
8,300.0	6,725.1	8,023.5	6,646.5	36.4	35.1	-82.42	-1,680.8	217.4	588.7	518.3	70.38	8.364	
8,400.0	6,724.7	8,123.5	6,646.3	38.2	36.8	-82.44	-1,780.8	217.4	588.6	514.7	73.88	7.967	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)											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)				
8,500.0	6,724.3	8,223.5	6,646.1	39.9	38.6	-82.45	-1,880.8	217.4	588.6	511.2	77.41	7.603			
8,600.0	6,723.9	8,323.5	6,645.8	41.7	40.4	-82.47	-1,980.8	217.4	588.6	507.6	80.97	7.269			
8,700.0	6,723.5	8,423.5	6,645.6	43.5	42.2	-82.49	-2,080.8	217.4	588.6	504.0	84.55	6.961			
8,800.0	6,723.1	8,523.5	6,645.4	45.3	44.0	-82.51	-2,180.8	217.4	588.5	500.4	88.15	6.676			
8,900.0	6,722.7	8,623.5	6,645.2	47.1	45.8	-82.52	-2,280.8	217.4	588.5	496.7	91.77	6.413			
9,000.0	6,722.3	8,723.5	6,644.9	48.9	47.7	-82.54	-2,380.8	217.4	588.5	493.1	95.41	6.168			
9,100.0	6,721.9	8,823.5	6,644.7	50.7	49.5	-82.56	-2,480.8	217.4	588.5	489.4	99.05	5.941			
9,200.0	6,721.5	8,923.5	6,644.5	52.6	51.3	-82.57	-2,580.8	217.4	588.4	485.7	102.71	5.729			
9,300.0	6,721.1	9,023.5	6,644.2	54.4	53.2	-82.59	-2,680.8	217.4	588.4	482.0	106.39	5.531			
9,400.0	6,720.7	9,123.5	6,644.0	56.2	55.0	-82.61	-2,780.8	217.4	588.4	478.3	110.07	5.346			
9,500.0	6,720.3	9,223.5	6,643.8	58.1	56.9	-82.62	-2,880.8	217.4	588.4	474.6	113.76	5.172			
9,600.0	6,719.9	9,323.5	6,643.6	59.9	58.8	-82.64	-2,980.8	217.4	588.4	470.9	117.46	5.009			
9,700.0	6,719.5	9,423.5	6,643.3	61.8	60.6	-82.66	-3,080.8	217.4	588.3	467.2	121.17	4.856			
9,800.0	6,719.1	9,523.5	6,643.1	63.7	62.5	-82.67	-3,180.8	217.4	588.3	463.4	124.88	4.711			
9,900.0	6,718.7	9,623.5	6,642.9	65.5	64.4	-82.69	-3,280.8	217.4	588.3	459.7	128.60	4.575			
10,000.0	6,718.3	9,723.5	6,642.7	67.4	66.2	-82.71	-3,380.8	217.4	588.3	455.9	132.33	4.446			
10,100.0	6,717.9	9,823.5	6,642.4	69.3	68.1	-82.72	-3,480.8	217.4	588.2	452.2	136.06	4.323			
10,200.0	6,717.5	9,923.5	6,642.2	71.1	70.0	-82.74	-3,580.8	217.4	588.2	448.4	139.80	4.208			
10,300.0	6,717.1	10,023.5	6,642.0	73.0	71.9	-82.76	-3,680.8	217.4	588.2	444.7	143.54	4.098			
10,400.0	6,716.7	10,123.5	6,641.7	74.9	73.7	-82.77	-3,780.8	217.4	588.2	440.9	147.28	3.994			
10,500.0	6,716.3	10,223.5	6,641.5	76.8	75.6	-82.79	-3,880.8	217.4	588.2	437.1	151.03	3.894			
10,600.0	6,715.9	10,323.5	6,641.3	78.6	77.5	-82.81	-3,980.8	217.4	588.1	433.3	154.79	3.800			
10,700.0	6,715.5	10,423.5	6,641.1	80.5	79.4	-82.83	-4,080.8	217.4	588.1	429.6	158.54	3.709			
10,800.0	6,715.1	10,523.5	6,640.8	82.4	81.3	-82.84	-4,180.8	217.4	588.1	425.8	162.30	3.623			
10,900.0	6,714.7	10,623.5	6,640.6	84.3	83.2	-82.86	-4,280.8	217.4	588.1	422.0	166.07	3.541			
11,000.0	6,714.3	10,723.5	6,640.4	86.2	85.1	-82.88	-4,380.8	217.4	588.0	418.2	169.83	3.463			
11,100.0	6,713.9	10,823.5	6,640.2	88.1	87.0	-82.89	-4,480.8	217.4	588.0	414.4	173.60	3.387			
11,200.0	6,713.5	10,923.5	6,639.9	90.0	88.9	-82.91	-4,580.8	217.4	588.0	410.6	177.37	3.315			
11,300.0	6,713.1	11,023.5	6,639.7	91.9	90.8	-82.93	-4,680.8	217.4	588.0	406.8	181.15	3.246			
11,400.0	6,712.7	11,123.5	6,639.5	93.7	92.7	-82.94	-4,780.8	217.4	588.0	403.0	184.92	3.180			
11,500.0	6,712.3	11,223.5	6,639.3	95.6	94.6	-82.96	-4,880.8	217.4	587.9	399.2	188.70	3.116			
11,600.0	6,711.9	11,323.5	6,639.0	97.5	96.5	-82.98	-4,980.8	217.4	587.9	395.4	192.48	3.054			
11,700.0	6,711.5	11,423.5	6,638.8	99.4	98.4	-82.99	-5,080.8	217.4	587.9	391.6	196.26	2.995			
11,800.0	6,711.1	11,523.5	6,638.6	101.3	100.3	-83.01	-5,180.8	217.4	587.9	387.8	200.05	2.939			
11,900.0	6,710.7	11,623.5	6,638.3	103.2	102.2	-83.03	-5,280.8	217.4	587.9	384.0	203.83	2.884			
12,000.0	6,710.3	11,723.5	6,638.1	105.1	104.1	-83.05	-5,380.8	217.4	587.8	380.2	207.62	2.831			
12,100.0	6,709.9	11,823.5	6,637.9	107.0	106.0	-83.06	-5,480.8	217.4	587.8	376.4	211.41	2.780			
12,200.0	6,709.5	11,923.5	6,637.7	108.9	107.9	-83.08	-5,580.8	217.4	587.8	372.6	215.20	2.731			
12,300.0	6,709.1	12,023.5	6,637.4	110.8	109.8	-83.10	-5,680.8	217.4	587.8	368.8	218.99	2.684			
12,400.0	6,708.7	12,123.5	6,637.2	112.7	111.7	-83.11	-5,780.8	217.4	587.8	365.0	222.78	2.638			
12,500.0	6,708.3	12,223.5	6,637.0	114.6	113.6	-83.13	-5,880.8	217.4	587.7	361.2	226.58	2.594			
12,600.0	6,707.9	12,323.5	6,636.8	116.5	115.5	-83.15	-5,980.8	217.4	587.7	357.3	230.37	2.551			
12,700.0	6,707.5	12,423.5	6,636.5	118.4	117.4	-83.16	-6,080.8	217.4	587.7	353.5	234.17	2.510			
12,800.0	6,707.1	12,523.5	6,636.3	120.3	119.3	-83.18	-6,180.8	217.4	587.7	349.7	237.96	2.470			
12,900.0	6,706.7	12,623.5	6,636.1	122.2	121.2	-83.20	-6,280.8	217.4	587.6	345.9	241.76	2.431			
13,000.0	6,706.3	12,723.5	6,635.8	124.1	123.1	-83.21	-6,380.8	217.4	587.6	342.1	245.56	2.393			
13,100.0	6,705.9	12,823.5	6,635.6	126.1	125.0	-83.23	-6,480.8	217.4	587.6	338.2	249.36	2.356			
13,200.0	6,705.5	12,923.5	6,635.4	128.0	126.9	-83.25	-6,580.8	217.4	587.6	334.4	253.17	2.321			
13,300.0	6,705.1	13,023.5	6,635.2	129.9	128.8	-83.26	-6,680.8	217.4	587.6	330.6	256.97	2.287			
13,400.0	6,704.7	13,123.5	6,634.9	131.8	130.8	-83.28	-6,780.8	217.4	587.5	326.8	260.77	2.253			
13,500.0	6,704.3	13,223.5	6,634.7	133.7	132.7	-83.30	-6,880.8	217.4	587.5	322.9	264.58	2.221			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #2 (2-11-14)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
Reference	Offset	Semi Major Axis		Distance									Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,600.0	6,703.9	13,323.5	6,634.5	135.6	134.6	-83.32	-6,980.8	217.4	587.5	319.1	268.38	2.189		
13,700.0	6,703.5	13,423.5	6,634.3	137.5	136.5	-83.33	-7,080.8	217.4	587.5	315.3	272.19	2.158		
13,800.0	6,703.1	13,523.5	6,634.0	139.4	138.4	-83.35	-7,180.8	217.4	587.5	311.5	276.00	2.129		
13,814.2	6,703.0	13,537.7	6,634.0	139.7	138.7	-83.35	-7,195.0	217.4	587.5	310.9	276.54	2.124		
13,817.8	6,703.0	13,537.8	6,634.0	139.7	138.7	-83.35	-7,195.1	217.4	587.5	310.9	276.61	2.124 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	89.2	89.2					
100.0	100.0	98.0	98.0	0.1	0.1	90.01	0.0	89.2	89.2	88.9	0.22	400.668		
200.0	200.0	198.0	198.0	0.3	0.3	90.01	0.0	89.2	89.2	88.5	0.67	133.110		
300.0	300.0	298.0	298.0	0.6	0.6	90.01	0.0	89.2	89.2	88.0	1.12	79.652		
400.0	400.0	398.0	398.0	0.8	0.8	90.01	0.0	89.2	89.2	87.6	1.57	56.829		
500.0	500.0	498.0	498.0	1.0	1.0	90.01	0.0	89.2	89.2	87.1	2.02	44.172		
600.0	600.0	598.0	598.0	1.2	1.2	90.01	0.0	89.2	89.2	86.7	2.47	36.126 CC, ES		
700.0	700.0	698.0	698.0	1.5	1.5	151.87	0.0	89.2	90.7	87.8	2.91	31.151		
800.0	799.8	797.8	797.8	1.7	1.7	153.31	0.0	89.2	95.3	92.0	3.35	28.452		
840.4	840.1	838.1	838.1	1.8	1.8	154.10	0.0	89.2	98.1	94.6	3.53	27.805		
900.0	899.5	897.5	897.5	1.9	1.9	155.32	0.0	89.2	102.6	98.9	3.79	27.067		
1,000.0	999.2	997.2	997.2	2.2	2.1	157.14	0.0	89.2	110.3	106.1	4.24	26.039		
1,100.0	1,098.8	1,096.8	1,096.8	2.4	2.4	158.72	0.0	89.2	118.1	113.4	4.68	25.214		
1,200.0	1,198.5	1,196.5	1,196.5	2.7	2.6	160.10	0.0	89.2	125.9	120.8	5.13	24.541		
1,300.0	1,298.1	1,296.1	1,296.1	2.9	2.8	161.32	0.0	89.2	133.9	128.3	5.58	23.982		
1,400.0	1,397.7	1,395.7	1,395.7	3.2	3.0	162.40	0.0	89.2	141.8	135.8	6.03	23.513		
1,500.0	1,497.4	1,495.4	1,495.4	3.4	3.2	163.37	0.0	89.2	149.8	143.4	6.48	23.113		
1,600.0	1,597.0	1,591.3	1,591.3	3.7	3.5	163.86	0.7	90.4	159.0	152.1	6.92	22.974		
1,700.0	1,696.7	1,686.6	1,686.4	4.0	3.7	163.56	3.0	94.4	170.6	163.3	7.36	23.196		
1,800.0	1,796.3	1,781.1	1,780.7	4.2	3.9	162.64	6.8	101.1	184.7	176.9	7.79	23.701		
1,900.0	1,896.0	1,879.5	1,878.6	4.5	4.1	161.48	11.7	109.7	200.3	192.1	8.24	24.296		
2,000.0	1,995.6	1,978.2	1,976.8	4.8	4.3	160.48	16.6	118.3	215.9	207.2	8.70	24.830		
2,100.0	2,095.3	2,076.9	2,075.0	5.0	4.6	159.61	21.5	126.9	231.6	222.5	9.15	25.308		
2,200.0	2,194.9	2,175.6	2,173.2	5.3	4.8	158.86	26.4	135.5	247.4	237.7	9.61	25.738		
2,300.0	2,294.6	2,274.3	2,271.4	5.6	5.1	158.19	31.3	144.1	263.1	253.1	10.07	26.124		
2,400.0	2,394.2	2,373.0	2,369.6	5.8	5.3	157.60	36.2	152.7	278.9	268.4	10.54	26.475		
2,500.0	2,493.9	2,471.8	2,467.8	6.1	5.6	157.08	41.1	161.3	294.7	283.7	11.00	26.795		
2,600.0	2,593.5	2,570.5	2,566.0	6.4	5.8	156.61	46.0	169.9	310.6	299.1	11.47	27.086		
2,700.0	2,693.2	2,669.2	2,664.2	6.7	6.1	156.18	50.9	178.4	326.5	314.5	11.94	27.353		
2,800.0	2,792.8	2,767.9	2,762.5	6.9	6.4	155.79	55.7	187.0	342.3	329.9	12.40	27.599		
2,900.0	2,892.5	2,866.6	2,860.7	7.2	6.6	155.44	60.6	195.6	358.2	345.4	12.87	27.825		
3,000.0	2,992.1	2,965.3	2,958.9	7.5	6.9	155.12	65.5	204.2	374.2	360.8	13.35	28.034		
3,100.0	3,091.8	3,064.0	3,057.1	7.7	7.2	154.82	70.4	212.8	390.1	376.3	13.82	28.229		
3,200.0	3,191.4	3,162.7	3,155.3	8.0	7.4	154.55	75.3	221.4	406.0	391.7	14.29	28.409		
3,300.0	3,291.1	3,261.4	3,253.5	8.3	7.7	154.29	80.2	230.0	421.9	407.2	14.76	28.577		
3,400.0	3,390.7	3,360.1	3,351.7	8.6	8.0	154.06	85.1	238.6	437.9	422.6	15.24	28.734		
3,500.0	3,490.4	3,458.8	3,449.9	8.8	8.3	153.84	90.0	247.2	453.8	438.1	15.71	28.881		
3,600.0	3,590.0	3,557.5	3,548.1	9.1	8.5	153.64	94.9	255.8	469.8	453.6	16.19	29.019		
3,700.0	3,689.7	3,656.2	3,646.3	9.4	8.8	153.45	99.8	264.4	485.8	469.1	16.66	29.149		
3,800.0	3,789.3	3,754.9	3,744.5	9.6	9.1	153.27	104.7	273.0	501.7	484.6	17.14	29.271		
3,900.0	3,889.0	3,853.6	3,842.7	9.9	9.4	153.10	109.6	281.6	517.7	500.1	17.62	29.386		
4,000.0	3,988.6	3,952.3	3,941.0	10.2	9.6	152.95	114.5	290.2	533.7	515.6	18.09	29.494		
4,100.0	4,088.2	4,051.0	4,039.2	10.5	9.9	152.80	119.4	298.8	549.6	531.1	18.57	29.597		
4,200.0	4,187.9	4,149.7	4,137.4	10.7	10.2	152.66	124.3	307.4	565.6	546.6	19.05	29.694		
4,300.0	4,287.5	4,248.5	4,235.6	11.0	10.5	152.53	129.2	316.0	581.6	562.1	19.53	29.786		
4,400.0	4,387.2	4,347.2	4,333.8	11.3	10.8	152.41	134.1	324.5	597.6	577.6	20.00	29.874		
4,500.0	4,486.8	4,445.9	4,432.0	11.6	11.0	152.29	139.0	333.1	613.6	593.1	20.48	29.957		
4,600.0	4,586.5	4,544.6	4,530.2	11.8	11.3	152.18	143.9	341.7	629.6	608.6	20.96	30.036		
4,700.0	4,686.1	4,643.3	4,628.4	12.1	11.6	152.07	148.8	350.3	645.6	624.1	21.44	30.112		
4,800.0	4,785.8	4,742.0	4,726.6	12.4	11.9	151.97	153.7	358.9	661.6	639.7	21.92	30.184		
4,900.0	4,885.4	4,840.7	4,824.8	12.6	12.2	151.87	158.6	367.5	677.6	655.2	22.40	30.252		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)													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
5,000.0	4,985.1	4,939.4	4,923.0	12.9	12.5	151.78	151.78	163.5	376.1	693.6	670.7	22.88	30.318	
5,100.0	5,084.7	5,038.1	5,021.3	13.2	12.7	151.69	151.69	168.3	384.7	709.6	686.2	23.36	30.381	
5,200.0	5,184.4	5,136.8	5,119.5	13.5	13.0	151.61	151.61	173.2	393.3	725.6	701.8	23.84	30.441	
5,300.0	5,284.0	5,235.5	5,217.7	13.7	13.3	151.53	151.53	178.1	401.9	741.6	717.3	24.32	30.499	
5,400.0	5,383.7	5,334.2	5,315.9	14.0	13.6	151.45	151.45	183.0	410.5	757.6	732.8	24.80	30.554	
5,500.0	5,483.3	5,432.9	5,414.1	14.3	13.9	151.38	151.38	187.9	419.1	773.6	748.3	25.28	30.607	
5,576.8	5,559.9	5,508.7	5,489.5	14.5	14.1	151.32	151.32	191.7	425.7	785.9	760.3	25.64	30.646	
5,600.0	5,583.0	5,531.6	5,512.3	14.6	14.1	151.34	151.34	192.8	427.7	789.5	763.8	25.76	30.650	
5,700.0	5,682.8	5,662.3	5,642.5	14.7	14.4	151.35	151.35	197.8	436.5	801.4	775.2	26.24	30.543	
5,800.0	5,782.8	5,794.4	5,774.5	14.9	14.7	151.35	151.35	199.9	440.2	806.2	779.6	26.66	30.243	
5,817.2	5,800.0	5,817.2	5,797.4	14.9	14.7	90.00	90.00	200.0	440.3	806.4	779.6	26.73	30.169	
5,900.0	5,882.8	5,900.6	5,880.8	15.1	14.9	90.00	90.00	200.0	440.3	806.4	779.3	27.04	29.820	
5,982.9	5,965.7	5,983.5	5,963.7	15.2	15.0	90.00	90.00	200.0	440.3	806.4	779.0	27.38	29.453	
5,986.4	5,969.2	5,987.0	5,967.2	15.2	15.0	-90.00	-90.00	200.0	440.3	806.4	779.0	27.39	29.439	
6,000.0	5,982.8	6,000.6	5,980.8	15.3	15.0	-90.01	-90.01	200.0	440.3	806.4	778.9	27.44	29.382	
6,050.0	6,032.7	6,050.5	6,030.7	15.3	15.1	-90.21	-90.21	200.0	440.3	806.4	778.7	27.62	29.193	
6,100.0	6,082.3	6,100.5	6,080.7	15.4	15.2	-90.57	-90.57	199.1	440.3	806.4	778.6	27.78	29.032	
6,150.0	6,131.4	6,151.0	6,131.0	15.4	15.3	-90.94	-90.94	195.0	440.3	806.5	778.6	27.90	28.911	
6,200.0	6,179.9	6,201.7	6,181.2	15.5	15.3	-91.30	-91.30	187.5	440.3	806.6	778.6	27.99	28.816	
6,250.0	6,227.4	6,252.9	6,231.1	15.5	15.4	-91.67	-91.67	176.6	440.3	806.7	778.6	28.07	28.742	
6,300.0	6,273.7	6,304.4	6,280.6	15.5	15.4	-92.02	-92.02	162.3	440.3	806.9	778.7	28.13	28.683	
6,350.0	6,318.8	6,356.3	6,329.3	15.6	15.5	-92.37	-92.37	144.6	440.3	807.1	778.9	28.19	28.631	
6,400.0	6,362.4	6,408.5	6,377.1	15.6	15.5	-92.71	-92.71	123.4	440.3	807.3	779.0	28.25	28.575	
6,450.0	6,404.2	6,461.1	6,423.6	15.6	15.5	-93.04	-93.04	98.9	440.3	807.5	779.2	28.33	28.507	
6,500.0	6,444.2	6,514.0	6,468.5	15.6	15.5	-93.35	-93.35	71.0	440.3	807.8	779.3	28.43	28.414	
6,550.0	6,482.1	6,567.3	6,511.8	15.7	15.6	-93.65	-93.65	39.8	440.3	808.0	779.4	28.57	28.286	
6,600.0	6,517.8	6,620.9	6,552.9	15.7	15.6	-93.94	-93.94	5.5	440.3	808.3	779.5	28.75	28.109	
6,650.0	6,551.2	6,674.8	6,591.8	15.8	15.7	-94.21	-94.21	-31.8	440.3	808.5	779.5	29.00	27.881	
6,700.0	6,582.0	6,729.0	6,628.2	15.9	15.7	-94.46	-94.46	-72.0	440.3	808.8	779.5	29.32	27.582	
6,750.0	6,610.2	6,783.5	6,661.8	16.0	15.8	-94.69	-94.69	-114.9	440.3	809.1	779.3	29.73	27.216	
6,800.0	6,635.7	6,838.3	6,692.4	16.2	16.0	-94.89	-94.89	-160.3	440.3	809.3	779.1	30.22	26.778	
6,850.0	6,658.2	6,893.3	6,719.7	16.5	16.2	-95.08	-95.08	-208.0	440.3	809.5	778.7	30.82	26.271	
6,900.0	6,677.8	6,948.5	6,743.6	16.8	16.5	-95.24	-95.24	-257.8	440.3	809.7	778.2	31.51	25.700	
6,950.0	6,694.4	7,003.9	6,764.0	17.1	16.9	-95.38	-95.38	-309.3	440.3	809.9	777.6	32.30	25.072	
7,000.0	6,707.8	7,059.5	6,780.6	17.5	17.3	-95.49	-95.49	-362.3	440.3	810.1	776.9	33.20	24.399	
7,050.0	6,718.1	7,115.2	6,793.3	18.0	17.8	-95.57	-95.57	-416.5	440.3	810.2	776.0	34.19	23.696	
7,100.0	6,725.1	7,170.9	6,802.1	18.5	18.4	-95.63	-95.63	-471.6	440.3	810.3	775.0	35.27	22.976	
7,150.0	6,728.9	7,222.2	6,807.5	19.0	18.9	-95.73	-95.73	-522.6	440.3	810.4	774.0	36.37	22.281	
7,186.0	6,729.6	7,258.1	6,811.3	19.4	19.3	-95.92	-95.92	-558.3	440.3	810.7	773.6	37.18	21.804	
7,200.0	6,729.6	7,273.2	6,812.8	19.6	19.5	-96.03	-96.03	-573.2	440.3	810.9	773.4	37.52	21.611	
7,300.0	6,729.2	7,381.3	6,817.5	20.8	20.8	-96.39	-96.39	-681.2	440.3	811.4	771.3	40.08	20.244	
7,400.0	6,728.8	7,481.3	6,817.3	22.1	22.1	-96.41	-96.41	-781.2	440.3	811.4	768.7	42.77	18.974	
7,500.0	6,728.4	7,581.3	6,817.1	23.5	23.5	-96.42	-96.42	-881.2	440.3	811.4	765.8	45.61	17.793	
7,600.0	6,728.0	7,681.3	6,816.9	25.0	25.0	-96.44	-96.44	-981.2	440.3	811.5	762.9	48.58	16.704	
7,700.0	6,727.6	7,781.3	6,816.7	26.5	26.5	-96.45	-96.45	-1,081.2	440.3	811.5	759.8	51.67	15.707	
7,800.0	6,727.2	7,881.3	6,816.5	28.1	28.1	-96.47	-96.47	-1,181.2	440.3	811.5	756.7	54.84	14.797	
7,900.0	6,726.8	7,981.3	6,816.4	29.7	29.7	-96.48	-96.48	-1,281.2	440.3	811.5	753.4	58.10	13.968	
8,000.0	6,726.4	8,081.3	6,816.2	31.3	31.3	-96.50	-96.50	-1,381.2	440.3	811.6	750.1	61.42	13.213	
8,100.0	6,726.0	8,181.3	6,816.0	33.0	33.0	-96.51	-96.51	-1,481.2	440.3	811.6	746.8	64.80	12.525	
8,200.0	6,725.6	8,281.3	6,815.8	34.7	34.7	-96.52	-96.52	-1,581.2	440.3	811.6	743.4	68.22	11.897	
8,300.0	6,725.1	8,381.3	6,815.6	36.4	36.4	-96.54	-96.54	-1,681.2	440.3	811.6	740.0	71.68	11.323	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)											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)				
8,400.0	6,724.7	8,481.3	6,815.4	38.2	38.2	-96.55	-1,781.2	440.3	811.7	736.5	75.18	10.797			
8,500.0	6,724.3	8,581.3	6,815.2	39.9	39.9	-96.57	-1,881.2	440.3	811.7	733.0	78.70	10.313			
8,600.0	6,723.9	8,681.3	6,815.0	41.7	41.7	-96.58	-1,981.2	440.3	811.7	729.5	82.25	9.868			
8,700.0	6,723.5	8,781.3	6,814.8	43.5	43.5	-96.60	-2,081.2	440.3	811.7	725.9	85.83	9.458			
8,800.0	6,723.1	8,881.3	6,814.6	45.3	45.3	-96.61	-2,181.2	440.3	811.8	722.3	89.42	9.078			
8,900.0	6,722.7	8,981.3	6,814.4	47.1	47.1	-96.63	-2,281.2	440.3	811.8	718.7	93.03	8.726			
9,000.0	6,722.3	9,081.3	6,814.2	48.9	48.9	-96.64	-2,381.2	440.3	811.8	715.1	96.66	8.398			
9,100.0	6,721.9	9,181.3	6,814.1	50.7	50.7	-96.66	-2,481.2	440.3	811.8	711.5	100.30	8.094			
9,200.0	6,721.5	9,281.3	6,813.9	52.6	52.6	-96.67	-2,581.2	440.3	811.9	707.9	103.96	7.809			
9,300.0	6,721.1	9,381.3	6,813.7	54.4	54.4	-96.69	-2,681.2	440.3	811.9	704.3	107.62	7.544			
9,400.0	6,720.7	9,481.3	6,813.5	56.2	56.2	-96.70	-2,781.2	440.3	811.9	700.6	111.30	7.295			
9,500.0	6,720.3	9,581.3	6,813.3	58.1	58.1	-96.72	-2,881.2	440.3	811.9	696.9	114.98	7.061			
9,600.0	6,719.9	9,681.3	6,813.1	59.9	59.9	-96.73	-2,981.2	440.3	812.0	693.3	118.67	6.842			
9,700.0	6,719.5	9,781.3	6,812.9	61.8	61.8	-96.75	-3,081.2	440.3	812.0	689.6	122.37	6.635			
9,800.0	6,719.1	9,881.3	6,812.7	63.7	63.6	-96.76	-3,181.2	440.3	812.0	685.9	126.08	6.440			
9,900.0	6,718.7	9,981.3	6,812.5	65.5	65.5	-96.77	-3,281.2	440.3	812.0	682.2	129.79	6.256			
10,000.0	6,718.3	10,081.3	6,812.3	67.4	67.4	-96.79	-3,381.2	440.3	812.1	678.5	133.51	6.082			
10,100.0	6,717.9	10,181.3	6,812.1	69.3	69.2	-96.80	-3,481.2	440.3	812.1	674.8	137.24	5.917			
10,200.0	6,717.5	10,281.3	6,811.9	71.1	71.1	-96.82	-3,581.2	440.3	812.1	671.1	140.96	5.761			
10,300.0	6,717.1	10,381.3	6,811.7	73.0	73.0	-96.83	-3,681.2	440.3	812.1	667.4	144.70	5.613			
10,400.0	6,716.7	10,481.3	6,811.6	74.9	74.9	-96.85	-3,781.2	440.3	812.2	663.7	148.43	5.472			
10,500.0	6,716.3	10,581.3	6,811.4	76.8	76.7	-96.86	-3,881.2	440.3	812.2	660.0	152.17	5.337			
10,600.0	6,715.9	10,681.3	6,811.2	78.6	78.6	-96.88	-3,981.2	440.3	812.2	656.3	155.92	5.209			
10,700.0	6,715.5	10,781.3	6,811.0	80.5	80.5	-96.89	-4,081.2	440.3	812.2	652.6	159.66	5.087			
10,800.0	6,715.1	10,881.3	6,810.8	82.4	82.4	-96.91	-4,181.2	440.3	812.3	648.8	163.41	4.971			
10,900.0	6,714.7	10,981.3	6,810.6	84.3	84.3	-96.92	-4,281.2	440.3	812.3	645.1	167.16	4.859			
11,000.0	6,714.3	11,081.3	6,810.4	86.2	86.2	-96.94	-4,381.2	440.3	812.3	641.4	170.92	4.753			
11,100.0	6,713.9	11,181.3	6,810.2	88.1	88.1	-96.95	-4,481.2	440.3	812.3	637.7	174.67	4.651			
11,200.0	6,713.5	11,281.3	6,810.0	90.0	89.9	-96.97	-4,581.2	440.3	812.4	633.9	178.43	4.553			
11,300.0	6,713.1	11,381.3	6,809.8	91.9	91.8	-96.98	-4,681.2	440.3	812.4	630.2	182.19	4.459			
11,400.0	6,712.7	11,481.3	6,809.6	93.7	93.7	-96.99	-4,781.2	440.3	812.4	626.4	185.96	4.369			
11,500.0	6,712.3	11,581.3	6,809.4	95.6	95.6	-97.01	-4,881.2	440.3	812.4	622.7	189.72	4.282			
11,600.0	6,711.9	11,681.3	6,809.3	97.5	97.5	-97.02	-4,981.2	440.3	812.5	619.0	193.49	4.199			
11,700.0	6,711.5	11,781.3	6,809.1	99.4	99.4	-97.04	-5,081.2	440.3	812.5	615.2	197.26	4.119			
11,800.0	6,711.1	11,881.3	6,808.9	101.3	101.3	-97.05	-5,181.2	440.3	812.5	611.5	201.03	4.042			
11,900.0	6,710.7	11,981.3	6,808.7	103.2	103.2	-97.07	-5,281.2	440.3	812.5	607.7	204.80	3.967			
12,000.0	6,710.3	12,081.3	6,808.5	105.1	105.1	-97.08	-5,381.2	440.3	812.6	604.0	208.57	3.896			
12,100.0	6,709.9	12,181.3	6,808.3	107.0	107.0	-97.10	-5,481.2	440.3	812.6	600.2	212.34	3.827			
12,200.0	6,709.5	12,281.3	6,808.1	108.9	108.9	-97.11	-5,581.2	440.3	812.6	596.5	216.12	3.760			
12,300.0	6,709.1	12,381.3	6,807.9	110.8	110.8	-97.13	-5,681.2	440.3	812.6	592.7	219.89	3.696			
12,400.0	6,708.7	12,481.3	6,807.7	112.7	112.7	-97.14	-5,781.2	440.3	812.7	589.0	223.67	3.633			
12,500.0	6,708.3	12,581.3	6,807.5	114.6	114.6	-97.16	-5,881.2	440.3	812.7	585.2	227.44	3.573			
12,600.0	6,707.9	12,681.3	6,807.3	116.5	116.5	-97.17	-5,981.2	440.3	812.7	581.5	231.22	3.515			
12,700.0	6,707.5	12,781.3	6,807.1	118.4	118.4	-97.18	-6,081.2	440.3	812.7	577.7	235.00	3.458			
12,800.0	6,707.1	12,881.3	6,806.9	120.3	120.3	-97.20	-6,181.2	440.3	812.8	574.0	238.78	3.404			
12,900.0	6,706.7	12,981.3	6,806.8	122.2	122.2	-97.21	-6,281.2	440.3	812.8	570.2	242.56	3.351			
13,000.0	6,706.3	13,081.3	6,806.6	124.1	124.1	-97.23	-6,381.2	440.3	812.8	566.5	246.34	3.300			
13,100.0	6,705.9	13,181.3	6,806.4	126.1	126.0	-97.24	-6,481.2	440.3	812.8	562.7	250.12	3.250			
13,200.0	6,705.5	13,281.3	6,806.2	128.0	127.9	-97.26	-6,581.2	440.3	812.9	559.0	253.91	3.201			
13,300.0	6,705.1	13,381.3	6,806.0	129.9	129.9	-97.27	-6,681.2	440.3	812.9	555.2	257.69	3.155			
13,400.0	6,704.7	13,481.3	6,805.8	131.8	131.8	-97.29	-6,781.2	440.3	812.9	551.5	261.47	3.109			

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-423 - Wellbore #1 - Plan #2 (2-11-14)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	0.0 ft
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,500.0	6,704.3	13,581.3	6,805.6	133.7	133.7	-97.30	-6,881.2	440.3	813.0	547.7	265.26	3.065		
13,600.0	6,703.9	13,681.3	6,805.4	135.6	135.6	-97.32	-6,981.2	440.3	813.0	543.9	269.04	3.022		
13,700.0	6,703.5	13,781.3	6,805.2	137.5	137.5	-97.33	-7,081.2	440.3	813.0	540.2	272.82	2.980		
13,800.0	6,703.1	13,881.3	6,805.0	139.4	139.4	-97.35	-7,181.2	440.3	813.0	536.4	276.61	2.939		
13,803.9	6,703.1	13,885.1	6,805.0	139.5	139.5	-97.35	-7,185.0	440.3	813.0	536.3	276.76	2.938		
13,817.8	6,703.0	13,895.2	6,805.0	139.7	139.7	-97.35	-7,195.1	440.3	813.0	535.8	277.21	2.933 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	30.6	30.7					
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	30.6	30.6	30.4	0.22	137.039		
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	30.6	30.6	30.0	0.67	45.604		
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	30.6	30.6	29.5	1.12	27.326		
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	30.6	30.6	29.1	1.57	19.507		
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	30.6	30.6	28.6	2.02	15.167		
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	30.6	30.6	28.2	2.47	12.407 CC		
700.0	700.0	699.0	699.0	1.5	1.5	152.83	0.0	30.6	32.2	29.3	2.91	11.048		
800.0	799.8	798.8	798.8	1.7	1.7	156.50	0.0	30.6	36.9	33.6	3.35	11.012		
840.4	840.1	839.6	839.6	1.8	1.8	158.03	0.2	30.5	39.6	36.0	3.53	11.212		
900.0	899.5	899.7	899.7	1.9	1.9	159.33	1.2	29.4	43.1	39.3	3.79	11.371		
1,000.0	999.2	1,000.6	1,000.5	2.2	2.1	159.13	4.9	25.8	46.8	42.6	4.23	11.081		
1,100.0	1,098.8	1,100.6	1,100.2	2.4	2.4	158.22	9.3	21.4	49.8	45.1	4.67	10.648		
1,200.0	1,198.5	1,200.5	1,200.0	2.7	2.6	157.40	13.8	17.0	52.7	47.6	5.13	10.281		
1,300.0	1,298.1	1,300.5	1,299.7	2.9	2.8	156.67	18.2	12.7	55.6	50.0	5.58	9.967		
1,400.0	1,397.7	1,400.4	1,399.5	3.2	3.1	156.02	22.6	8.3	58.6	52.5	6.04	9.697		
1,500.0	1,497.4	1,500.4	1,499.3	3.4	3.3	155.43	27.0	3.9	61.5	55.0	6.50	9.461		
1,600.0	1,597.0	1,600.3	1,599.0	3.7	3.5	154.89	31.4	-0.4	64.5	57.5	6.97	9.254		
1,700.0	1,696.7	1,700.3	1,698.8	4.0	3.8	154.40	35.8	-4.8	67.5	60.0	7.44	9.071		
1,800.0	1,796.3	1,800.3	1,798.6	4.2	4.0	153.95	40.2	-9.2	70.4	62.5	7.91	8.908		
1,900.0	1,896.0	1,900.2	1,898.3	4.5	4.3	153.54	44.6	-13.5	73.4	65.0	8.38	8.763		
2,000.0	1,995.6	2,000.2	1,998.1	4.8	4.5	153.16	49.1	-17.9	76.4	67.5	8.85	8.631		
2,100.0	2,095.3	2,100.1	2,097.8	5.0	4.8	152.80	53.5	-22.2	79.4	70.0	9.32	8.513		
2,200.0	2,194.9	2,200.1	2,197.6	5.3	5.0	152.48	57.9	-26.6	82.3	72.5	9.80	8.405		
2,300.0	2,294.6	2,300.0	2,297.4	5.6	5.3	152.17	62.3	-31.0	85.3	75.1	10.27	8.306		
2,400.0	2,394.2	2,400.0	2,397.1	5.8	5.5	151.89	66.7	-35.3	88.3	77.6	10.75	8.216		
2,500.0	2,493.9	2,499.9	2,496.9	6.1	5.8	151.63	71.1	-39.7	91.3	80.1	11.23	8.133		
2,600.0	2,593.5	2,599.9	2,596.6	6.4	6.0	151.38	75.5	-44.1	94.3	82.6	11.70	8.057		
2,700.0	2,693.2	2,699.8	2,696.4	6.7	6.3	151.15	79.9	-48.4	97.3	85.1	12.18	7.986		
2,800.0	2,792.8	2,799.8	2,796.2	6.9	6.5	150.93	84.4	-52.8	100.3	87.6	12.66	7.921		
2,900.0	2,892.5	2,899.8	2,895.9	7.2	6.8	150.72	88.8	-57.2	103.3	90.1	13.14	7.860		
3,000.0	2,992.1	2,999.7	2,995.7	7.5	7.0	150.53	93.2	-61.5	106.3	92.7	13.62	7.803		
3,100.0	3,091.8	3,099.7	3,095.5	7.7	7.2	150.34	97.6	-65.9	109.3	95.2	14.10	7.750		
3,200.0	3,191.4	3,199.6	3,195.2	8.0	7.5	150.17	102.0	-70.3	112.3	97.7	14.58	7.700		
3,300.0	3,291.1	3,299.6	3,295.0	8.3	7.7	150.00	106.4	-74.6	115.3	100.2	15.06	7.654		
3,400.0	3,390.7	3,399.5	3,394.7	8.6	8.0	149.85	110.8	-79.0	118.3	102.7	15.54	7.610		
3,500.0	3,490.4	3,499.5	3,494.5	8.8	8.2	149.70	115.2	-83.4	121.3	105.3	16.02	7.568		
3,600.0	3,590.0	3,599.4	3,594.3	9.1	8.5	149.56	119.6	-87.7	124.3	107.8	16.51	7.529		
3,700.0	3,689.7	3,699.4	3,694.0	9.4	8.7	149.42	124.1	-92.1	127.3	110.3	16.99	7.493		
3,800.0	3,789.3	3,799.3	3,793.8	9.6	9.0	149.29	128.5	-96.5	130.3	112.8	17.47	7.458		
3,900.0	3,889.0	3,899.3	3,893.5	9.9	9.2	149.17	132.9	-100.8	133.3	115.3	17.95	7.425		
4,000.0	3,988.6	3,999.3	3,993.3	10.2	9.5	149.05	137.3	-105.2	136.3	117.9	18.44	7.393		
4,100.0	4,088.2	4,099.2	4,093.1	10.5	9.7	148.94	141.7	-109.6	139.3	120.4	18.92	7.364		
4,200.0	4,187.9	4,199.2	4,192.8	10.7	10.0	148.83	146.1	-113.9	142.3	122.9	19.40	7.335		
4,300.0	4,287.5	4,299.1	4,292.6	11.0	10.2	148.73	150.5	-118.3	145.3	125.4	19.88	7.308		
4,400.0	4,387.2	4,399.1	4,392.4	11.3	10.5	148.63	154.9	-122.7	148.3	128.0	20.37	7.282		
4,500.0	4,486.8	4,499.0	4,492.1	11.6	10.7	148.54	159.4	-127.0	151.3	130.5	20.85	7.258		
4,600.0	4,586.5	4,599.0	4,591.9	11.8	11.0	148.45	163.8	-131.4	154.3	133.0	21.34	7.234		
4,700.0	4,686.1	4,698.9	4,691.6	12.1	11.2	148.36	168.2	-135.8	157.4	135.5	21.82	7.212		
4,800.0	4,785.8	4,798.9	4,791.4	12.4	11.5	148.27	172.6	-140.1	160.4	138.1	22.30	7.190		
4,900.0	4,885.4	4,898.8	4,891.2	12.6	11.8	148.19	177.0	-144.5	163.4	140.6	22.79	7.170		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)													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
5,000.0	4,985.1	4,998.8	4,990.9	12.9	12.0	148.11	148.11	181.4	-148.8	166.4	143.1	23.27	7.150	
5,100.0	5,084.7	5,098.8	5,090.7	13.2	12.3	148.04	148.04	185.8	-153.2	169.4	145.6	23.76	7.131	
5,200.0	5,184.4	5,198.7	5,190.4	13.5	12.5	147.96	147.96	190.2	-157.6	172.4	148.2	24.24	7.112	
5,300.0	5,284.0	5,298.7	5,290.2	13.7	12.8	147.89	147.89	194.7	-161.9	175.4	150.7	24.72	7.095	
5,400.0	5,383.7	5,395.9	5,387.3	14.0	13.0	148.01	148.01	198.4	-165.7	178.9	153.8	25.18	7.108	
5,500.0	5,483.3	5,491.7	5,483.1	14.3	13.1	148.82	148.82	200.0	-167.2	184.6	159.0	25.55	7.224	
5,576.8	5,559.9	5,567.5	5,558.9	14.5	13.3	149.81	149.81	200.0	-167.2	190.1	164.3	25.84	7.358	
5,600.0	5,583.0	5,590.6	5,582.0	14.6	13.3	150.10	150.10	200.0	-167.2	191.7	165.8	25.92	7.396	
5,700.0	5,682.8	5,690.4	5,681.8	14.7	13.5	151.00	151.00	200.0	-167.2	196.8	170.5	26.27	7.490	
5,800.0	5,782.8	5,790.4	5,781.8	14.9	13.7	151.34	151.34	200.0	-167.2	198.8	172.2	26.62	7.469	
5,817.2	5,800.0	5,807.6	5,799.0	14.9	13.8	90.00	90.00	200.0	-167.2	198.9	172.2	26.68	7.454	
5,900.0	5,882.8	5,890.4	5,881.8	15.1	13.9	90.00	90.00	200.0	-167.2	198.9	171.9	27.01	7.363	
5,982.9	5,965.7	5,973.3	5,964.7	15.2	14.1	90.00	90.00	200.0	-167.2	198.9	171.5	27.35	7.271	
5,983.1	5,965.8	5,973.5	5,964.8	15.2	14.1	90.00	90.00	200.0	-167.2	198.9	171.5	27.35	7.271	
6,000.0	5,982.8	5,990.4	5,981.8	15.3	14.1	-90.06	-90.06	200.0	-167.2	198.9	171.5	27.42	7.253	
6,050.0	6,032.7	6,040.3	6,031.7	15.3	14.2	-90.84	-90.84	200.0	-167.2	198.9	171.3	27.63	7.198	
6,100.0	6,082.3	6,090.4	6,081.7	15.4	14.3	-92.30	-92.30	199.1	-167.2	199.0	171.2	27.85	7.147	
6,150.0	6,131.4	6,140.8	6,132.0	15.4	14.4	-93.77	-93.77	194.9	-167.2	199.3	171.3	28.02	7.112	
6,200.0	6,179.9	6,191.6	6,182.2	15.5	14.4	-95.23	-95.23	187.4	-167.2	199.7	171.5	28.17	7.090	
6,250.0	6,227.4	6,242.7	6,232.1	15.5	14.5	-96.66	-96.66	176.4	-167.2	200.2	172.0	28.28	7.081	
6,300.0	6,273.7	6,294.2	6,281.6	15.5	14.5	-98.06	-98.06	162.0	-167.2	200.9	172.5	28.36	7.083	
6,350.0	6,318.8	6,346.1	6,330.2	15.6	14.6	-99.43	-99.43	144.2	-167.2	201.6	173.2	28.42	7.095	
6,400.0	6,362.4	6,398.3	6,377.9	15.6	14.6	-100.74	-100.74	123.0	-167.2	202.5	174.0	28.45	7.115	
6,450.0	6,404.2	6,450.8	6,424.4	15.6	14.6	-102.01	-102.01	98.4	-167.2	203.4	174.9	28.48	7.141	
6,500.0	6,444.2	6,503.7	6,469.3	15.6	14.7	-103.21	-103.21	70.5	-167.2	204.3	175.8	28.50	7.168	
6,550.0	6,482.1	6,557.0	6,512.4	15.7	14.7	-104.35	-104.35	39.3	-167.2	205.3	176.8	28.54	7.194	
6,600.0	6,517.8	6,610.5	6,553.5	15.7	14.7	-105.42	-105.42	5.0	-167.2	206.3	177.7	28.60	7.214	
6,650.0	6,551.2	6,664.4	6,592.4	15.8	14.8	-106.42	-106.42	-32.3	-167.2	207.4	178.7	28.71	7.222	
6,700.0	6,582.0	6,718.6	6,628.7	15.9	14.9	-107.34	-107.34	-72.5	-167.2	208.4	179.5	28.88	7.216	
6,750.0	6,610.2	6,773.0	6,662.2	16.0	15.0	-108.18	-108.18	-115.4	-167.2	209.4	180.2	29.12	7.189	
6,800.0	6,635.7	6,827.7	6,692.7	16.2	15.2	-108.93	-108.93	-160.8	-167.2	210.3	180.8	29.46	7.139	
6,850.0	6,658.2	6,882.7	6,720.0	16.5	15.5	-109.59	-109.59	-208.5	-167.2	211.1	181.2	29.90	7.062	
6,900.0	6,677.8	6,937.8	6,743.8	16.8	15.9	-110.17	-110.17	-258.2	-167.2	211.9	181.4	30.45	6.958	
6,950.0	6,694.4	6,993.1	6,764.1	17.1	16.3	-110.65	-110.65	-309.7	-167.2	212.5	181.4	31.13	6.828	
7,000.0	6,707.8	7,048.6	6,780.7	17.5	16.7	-111.05	-111.05	-362.6	-167.2	213.1	181.2	31.93	6.674	
7,050.0	6,718.1	7,104.2	6,793.4	18.0	17.3	-111.34	-111.34	-416.7	-167.2	213.5	180.7	32.86	6.498	
7,100.0	6,725.1	7,159.9	6,802.1	18.5	17.8	-111.55	-111.55	-471.7	-167.2	213.8	179.9	33.91	6.306	
7,150.0	6,728.9	7,211.2	6,807.6	19.0	18.4	-111.90	-111.90	-522.7	-167.2	214.4	179.4	34.98	6.128	
7,186.0	6,729.6	7,247.1	6,811.3	19.4	18.8	-112.57	-112.57	-558.4	-167.2	215.6	179.8	35.72	6.034	
7,200.0	6,729.6	7,262.1	6,812.8	19.6	19.0	-112.94	-112.94	-573.3	-167.2	216.1	180.1	35.99	6.005	
7,300.0	6,729.2	7,370.1	6,817.5	20.8	20.3	-114.19	-114.19	-681.2	-167.2	218.0	179.9	38.17	5.712	
7,400.0	6,728.8	7,470.1	6,817.3	22.1	21.7	-114.24	-114.24	-781.2	-167.2	218.1	177.4	40.66	5.364	
7,500.0	6,728.4	7,570.1	6,817.1	23.5	23.1	-114.29	-114.29	-881.2	-167.2	218.2	174.9	43.30	5.040	
7,600.0	6,728.0	7,670.1	6,816.9	25.0	24.6	-114.34	-114.34	-981.2	-167.2	218.3	172.2	46.05	4.740	
7,700.0	6,727.6	7,770.1	6,816.7	26.5	26.1	-114.39	-114.39	-1,081.2	-167.2	218.4	169.5	48.90	4.466	
7,800.0	6,727.2	7,870.1	6,816.6	28.1	27.7	-114.44	-114.44	-1,181.2	-167.2	218.5	166.6	51.84	4.214	
7,900.0	6,726.8	7,970.1	6,816.4	29.7	29.3	-114.49	-114.49	-1,281.2	-167.2	218.5	163.7	54.84	3.985	
8,000.0	6,726.4	8,070.1	6,816.2	31.3	31.0	-114.54	-114.54	-1,381.2	-167.2	218.6	160.7	57.90	3.776	
8,100.0	6,726.0	8,170.1	6,816.0	33.0	32.7	-114.59	-114.59	-1,481.2	-167.2	218.7	157.7	61.01	3.585	
8,200.0	6,725.6	8,270.1	6,815.8	34.7	34.4	-114.64	-114.64	-1,581.2	-167.2	218.8	154.6	64.16	3.410	
8,300.0	6,725.1	8,370.1	6,815.6	36.4	36.2	-114.69	-114.69	-1,681.2	-167.2	218.9	151.5	67.35	3.250	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,400.0	6,724.7	8,470.1	6,815.4	38.2	37.9	-114.74	-1,781.2	-167.2	219.0	148.4	70.57	3.103		
8,500.0	6,724.3	8,570.1	6,815.2	39.9	39.7	-114.79	-1,881.2	-167.2	219.1	145.3	73.81	2.968		
8,600.0	6,723.9	8,670.1	6,815.0	41.7	41.5	-114.84	-1,981.2	-167.2	219.2	142.1	77.08	2.843		
8,700.0	6,723.5	8,770.1	6,814.8	43.5	43.3	-114.89	-2,081.2	-167.2	219.2	138.9	80.36	2.728		
8,800.0	6,723.1	8,870.1	6,814.6	45.3	45.1	-114.94	-2,181.2	-167.2	219.3	135.7	83.66	2.622		
8,900.0	6,722.7	8,970.1	6,814.4	47.1	46.9	-114.99	-2,281.2	-167.2	219.4	132.4	86.98	2.523		
9,000.0	6,722.3	9,070.1	6,814.2	48.9	48.7	-115.04	-2,381.2	-167.2	219.5	129.2	90.31	2.431		
9,100.0	6,721.9	9,170.1	6,814.1	50.7	50.5	-115.09	-2,481.2	-167.2	219.6	125.9	93.65	2.345		
9,200.0	6,721.5	9,270.1	6,813.9	52.6	52.4	-115.14	-2,581.2	-167.2	219.7	122.7	96.99	2.265		
9,300.0	6,721.1	9,370.1	6,813.7	54.4	54.2	-115.19	-2,681.2	-167.2	219.8	119.4	100.35	2.190		
9,400.0	6,720.7	9,470.1	6,813.5	56.2	56.1	-115.24	-2,781.2	-167.2	219.9	116.1	103.71	2.120		
9,500.0	6,720.3	9,570.1	6,813.3	58.1	57.9	-115.29	-2,881.2	-167.2	219.9	112.9	107.08	2.054		
9,600.0	6,719.9	9,670.1	6,813.1	59.9	59.8	-115.34	-2,981.2	-167.2	220.0	109.6	110.46	1.992		
9,700.0	6,719.5	9,770.1	6,812.9	61.8	61.6	-115.39	-3,081.2	-167.2	220.1	106.3	113.84	1.934		
9,800.0	6,719.1	9,870.1	6,812.7	63.7	63.5	-115.44	-3,181.2	-167.2	220.2	103.0	117.23	1.879		
9,900.0	6,718.7	9,970.1	6,812.5	65.5	65.4	-115.49	-3,281.2	-167.2	220.3	99.7	120.61	1.827		
10,000.0	6,718.3	10,070.1	6,812.3	67.4	67.2	-115.53	-3,381.2	-167.2	220.4	96.4	124.01	1.777		
10,100.0	6,717.9	10,170.1	6,812.1	69.3	69.1	-115.58	-3,481.2	-167.2	220.5	93.1	127.40	1.731		
10,200.0	6,717.5	10,270.1	6,811.9	71.1	71.0	-115.63	-3,581.2	-167.2	220.6	89.8	130.80	1.686		
10,300.0	6,717.1	10,370.1	6,811.8	73.0	72.9	-115.68	-3,681.2	-167.2	220.7	86.5	134.19	1.644		
10,400.0	6,716.7	10,470.1	6,811.6	74.9	74.7	-115.73	-3,781.2	-167.2	220.8	83.2	137.59	1.604		
10,500.0	6,716.3	10,570.1	6,811.4	76.8	76.6	-115.78	-3,881.2	-167.2	220.9	79.9	140.99	1.566		
10,600.0	6,715.9	10,670.1	6,811.2	78.6	78.5	-115.83	-3,981.2	-167.2	220.9	76.5	144.40	1.530		
10,700.0	6,715.5	10,770.1	6,811.0	80.5	80.4	-115.88	-4,081.2	-167.2	221.0	73.2	147.80	1.496 Level 3		
10,800.0	6,715.1	10,870.1	6,810.8	82.4	82.3	-115.93	-4,181.2	-167.2	221.1	69.9	151.20	1.462 Level 3		
10,900.0	6,714.7	10,970.1	6,810.6	84.3	84.2	-115.97	-4,281.2	-167.2	221.2	66.6	154.61	1.431 Level 3		
11,000.0	6,714.3	11,070.1	6,810.4	86.2	86.0	-116.02	-4,381.2	-167.2	221.3	63.3	158.01	1.401 Level 3		
11,100.0	6,713.9	11,170.1	6,810.2	88.1	87.9	-116.07	-4,481.2	-167.2	221.4	60.0	161.41	1.372 Level 3		
11,200.0	6,713.5	11,270.1	6,810.0	90.0	89.8	-116.12	-4,581.2	-167.2	221.5	56.7	164.82	1.344 Level 3		
11,300.0	6,713.1	11,370.1	6,809.8	91.9	91.7	-116.17	-4,681.2	-167.2	221.6	53.4	168.22	1.317 Level 3		
11,400.0	6,712.7	11,470.1	6,809.6	93.7	93.6	-116.22	-4,781.2	-167.2	221.7	50.1	171.62	1.292 Level 3		
11,500.0	6,712.3	11,570.1	6,809.4	95.6	95.5	-116.27	-4,881.2	-167.2	221.8	46.7	175.03	1.267 Level 3		
11,600.0	6,711.9	11,670.1	6,809.3	97.5	97.4	-116.32	-4,981.2	-167.2	221.9	43.4	178.43	1.243 Level 2		
11,700.0	6,711.5	11,770.1	6,809.1	99.4	99.3	-116.36	-5,081.2	-167.2	222.0	40.1	181.83	1.221 Level 2		
11,800.0	6,711.1	11,870.1	6,808.9	101.3	101.2	-116.41	-5,181.2	-167.2	222.1	36.8	185.23	1.199 Level 2		
11,900.0	6,710.7	11,970.1	6,808.7	103.2	103.1	-116.46	-5,281.2	-167.2	222.1	33.5	188.63	1.178 Level 2		
12,000.0	6,710.3	12,070.1	6,808.5	105.1	105.0	-116.51	-5,381.2	-167.2	222.2	30.2	192.03	1.157 Level 2		
12,100.0	6,709.9	12,170.1	6,808.3	107.0	106.9	-116.56	-5,481.2	-167.2	222.3	26.9	195.42	1.138 Level 2		
12,200.0	6,709.5	12,270.1	6,808.1	108.9	108.8	-116.61	-5,581.2	-167.2	222.4	23.6	198.82	1.119 Level 2		
12,300.0	6,709.1	12,370.1	6,807.9	110.8	110.7	-116.65	-5,681.2	-167.2	222.5	20.3	202.21	1.100 Level 2		
12,400.0	6,708.7	12,470.1	6,807.7	112.7	112.6	-116.70	-5,781.2	-167.2	222.6	17.0	205.60	1.083 Level 2		
12,500.0	6,708.3	12,570.1	6,807.5	114.6	114.5	-116.75	-5,881.2	-167.2	222.7	13.7	209.00	1.066 Level 2		
12,600.0	6,707.9	12,670.1	6,807.3	116.5	116.4	-116.80	-5,981.2	-167.2	222.8	10.4	212.39	1.049 Level 2		
12,700.0	6,707.5	12,770.1	6,807.1	118.4	118.3	-116.85	-6,081.2	-167.2	222.9	7.1	215.77	1.033 Level 2		
12,800.0	6,707.1	12,870.1	6,807.0	120.3	120.2	-116.89	-6,181.2	-167.2	223.0	3.8	219.16	1.017 Level 2		
12,900.0	6,706.7	12,970.1	6,806.8	122.2	122.1	-116.94	-6,281.2	-167.2	223.1	0.5	222.55	1.002 Level 2		
13,000.0	6,706.3	13,070.1	6,806.6	124.1	124.1	-116.99	-6,381.2	-167.2	223.2	-2.8	225.93	0.988 Level 1		
13,100.0	6,705.9	13,170.1	6,806.4	126.1	126.0	-117.04	-6,481.2	-167.2	223.3	-6.0	229.31	0.974 Level 1		
13,200.0	6,705.5	13,270.1	6,806.2	128.0	127.9	-117.09	-6,581.2	-167.2	223.4	-9.3	232.69	0.960 Level 1		
13,300.0	6,705.1	13,370.1	6,806.0	129.9	129.8	-117.13	-6,681.2	-167.2	223.5	-12.6	236.07	0.947 Level 1		
13,400.0	6,704.7	13,470.1	6,805.8	131.8	131.7	-117.18	-6,781.2	-167.2	223.6	-15.9	239.45	0.934 Level 1		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (1-22-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance				Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)		Minimum Separation (ft)	Separation Factor
13,500.0	6,704.3	13,570.1	6,805.6	133.7	133.6	-117.23	-6,881.2	-167.2	223.7	-19.2	242.82	0.921	Level 1
13,600.0	6,703.9	13,670.1	6,805.4	135.6	135.5	-117.28	-6,981.2	-167.2	223.8	-22.4	246.20	0.909	Level 1
13,700.0	6,703.5	13,770.1	6,805.2	137.5	137.4	-117.32	-7,081.2	-167.2	223.8	-25.7	249.57	0.897	Level 1
13,800.0	6,703.1	13,870.1	6,805.0	139.4	139.3	-117.37	-7,181.2	-167.2	223.9	-29.0	252.94	0.885	Level 1
13,817.8	6,703.0	13,887.9	6,805.0	139.7	139.7	-117.38	-7,198.9	-167.2	224.0	-29.6	253.53	0.883	Level 1, ES, SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-343 - Wellbore #1 - Plan #2 (2-11-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	119.8	119.8					
100.0	100.0	98.0	98.0	0.1	0.1	90.00	0.0	119.8	119.8	119.6	0.22	538.397		
200.0	200.0	198.0	198.0	0.3	0.3	90.00	0.0	119.8	119.8	119.1	0.67	178.867		
300.0	300.0	298.0	298.0	0.6	0.6	90.00	0.0	119.8	119.8	118.7	1.12	107.033		
400.0	400.0	398.0	398.0	0.8	0.8	90.00	0.0	119.8	119.8	118.2	1.57	76.364		
500.0	500.0	498.0	498.0	1.0	1.0	90.00	0.0	119.8	119.8	117.8	2.02	59.357		
600.0	600.0	598.0	598.0	1.2	1.2	90.00	0.0	119.8	119.8	117.3	2.47	48.545 CC, ES		
700.0	700.0	698.0	698.0	1.5	1.5	151.73	0.0	119.8	121.3	118.4	2.91	41.677		
800.0	799.8	797.8	797.8	1.7	1.7	152.82	0.0	119.8	126.0	122.6	3.35	37.593		
840.4	840.1	838.1	838.1	1.8	1.8	153.42	0.0	119.8	128.7	125.2	3.53	36.481		
900.0	899.5	897.5	897.5	1.9	1.9	154.38	0.0	119.8	133.2	129.4	3.79	35.131		
1,000.0	999.2	997.2	997.2	2.2	2.1	155.86	0.0	119.8	140.8	136.6	4.24	33.239		
1,100.0	1,098.8	1,092.3	1,092.3	2.4	2.3	156.92	0.4	121.2	150.0	145.3	4.67	32.134		
1,200.0	1,198.5	1,186.7	1,186.6	2.7	2.5	157.44	1.6	125.7	162.2	157.2	5.10	31.841 SF		
1,300.0	1,298.1	1,280.4	1,279.9	2.9	2.7	157.52	3.6	133.0	177.5	172.0	5.53	32.123		
1,400.0	1,397.7	1,373.1	1,372.0	3.2	3.0	157.26	6.3	143.2	195.8	189.9	5.96	32.846		
1,500.0	1,497.4	1,464.6	1,462.6	3.4	3.2	156.76	9.8	156.1	217.1	210.7	6.40	33.909		
1,600.0	1,597.0	1,555.1	1,551.6	3.7	3.5	156.10	13.9	171.6	241.2	234.4	6.85	35.228		
1,700.0	1,696.7	1,651.7	1,646.5	4.0	3.8	155.42	18.7	189.4	266.7	259.4	7.30	36.522		
1,800.0	1,796.3	1,748.4	1,741.3	4.2	4.1	154.86	23.5	207.3	292.3	284.5	7.76	37.657		
1,900.0	1,896.0	1,845.0	1,836.2	4.5	4.5	154.39	28.4	225.2	317.8	309.6	8.22	38.648		
2,000.0	1,995.6	1,941.7	1,931.1	4.8	4.8	153.98	33.2	243.0	343.4	334.7	8.69	39.510		
2,100.0	2,095.3	2,038.3	2,025.9	5.0	5.2	153.64	38.0	260.9	369.0	359.9	9.16	40.278		
2,200.0	2,194.9	2,135.0	2,120.8	5.3	5.6	153.34	42.8	278.8	394.6	385.0	9.64	40.959		
2,300.0	2,294.6	2,231.6	2,215.6	5.6	5.9	153.07	47.6	296.6	420.3	410.1	10.11	41.568		
2,400.0	2,394.2	2,328.3	2,310.5	5.8	6.3	152.84	52.4	314.5	445.9	435.3	10.59	42.114		
2,500.0	2,493.9	2,424.9	2,405.3	6.1	6.7	152.63	57.2	332.4	471.5	460.5	11.07	42.608		
2,600.0	2,593.5	2,521.5	2,500.2	6.4	7.1	152.44	62.0	350.2	497.2	485.6	11.55	43.055		
2,700.0	2,693.2	2,618.2	2,595.1	6.7	7.5	152.27	66.8	368.1	522.8	510.8	12.03	43.462		
2,800.0	2,792.8	2,714.8	2,689.9	6.9	7.9	152.12	71.6	386.0	548.5	535.9	12.51	43.834		
2,900.0	2,892.5	2,811.5	2,784.8	7.2	8.3	151.98	76.4	403.8	574.1	561.1	13.00	44.175		
3,000.0	2,992.1	2,908.1	2,879.6	7.5	8.7	151.85	81.2	421.7	599.8	586.3	13.48	44.489		
3,100.0	3,091.8	3,004.8	2,974.5	7.7	9.1	151.74	86.0	439.6	625.4	611.4	13.97	44.778		
3,200.0	3,191.4	3,101.4	3,069.3	8.0	9.5	151.63	90.8	457.4	651.1	636.6	14.45	45.046		
3,300.0	3,291.1	3,198.1	3,164.2	8.3	9.9	151.53	95.7	475.3	676.7	661.8	14.94	45.294		
3,400.0	3,390.7	3,294.7	3,259.1	8.6	10.3	151.44	100.5	493.2	702.4	687.0	15.43	45.525		
3,500.0	3,490.4	3,391.3	3,353.9	8.8	10.7	151.35	105.3	511.0	728.1	712.1	15.92	45.740		
3,600.0	3,590.0	3,488.0	3,448.8	9.1	11.1	151.27	110.1	528.9	753.7	737.3	16.41	45.941		
3,700.0	3,689.7	3,584.6	3,543.6	9.4	11.5	151.20	114.9	546.8	779.4	762.5	16.90	46.129		
3,800.0	3,789.3	3,681.3	3,638.5	9.6	11.9	151.13	119.7	564.6	805.1	787.7	17.39	46.305		
3,900.0	3,889.0	3,777.9	3,733.4	9.9	12.3	151.06	124.5	582.5	830.7	812.9	17.88	46.471		
4,000.0	3,988.6	3,874.6	3,828.2	10.2	12.7	151.00	129.3	600.4	856.4	838.0	18.37	46.627		
4,100.0	4,088.2	3,971.2	3,923.1	10.5	13.1	150.94	134.1	618.2	882.1	863.2	18.86	46.774		
4,200.0	4,187.9	4,067.9	4,017.9	10.7	13.5	150.89	138.9	636.1	907.7	888.4	19.35	46.913		
4,300.0	4,287.5	4,164.5	4,112.8	11.0	13.9	150.83	143.7	654.0	933.4	913.6	19.84	47.044		
4,400.0	4,387.2	4,261.2	4,207.6	11.3	14.4	150.78	148.5	671.8	959.1	938.8	20.33	47.168		
4,500.0	4,486.8	4,357.8	4,302.5	11.6	14.8	150.74	153.3	689.7	984.8	963.9	20.83	47.286		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28M-443 - Wellbore #1 - Plan #1 (1-22-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	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	90.01	90.01	0.0	150.5	150.5				
100.0	100.0	97.0	97.0	0.1	0.1	90.01	90.01	0.0	150.5	150.5	150.2	0.22	679.552	
200.0	200.0	197.0	197.0	0.3	0.3	90.01	90.01	0.0	150.5	150.5	149.8	0.67	225.380	
300.0	300.0	297.0	297.0	0.6	0.6	90.01	90.01	0.0	150.5	150.5	149.3	1.12	134.684	
400.0	400.0	397.0	397.0	0.8	0.8	90.01	90.01	0.0	150.5	150.5	148.9	1.57	96.037 CC, ES	
500.0	500.0	492.2	492.2	1.0	1.0	89.90	89.90	0.3	151.9	152.0	150.0	2.00	76.118	
600.0	600.0	587.1	587.0	1.2	1.2	89.57	89.57	1.2	156.4	156.8	154.3	2.43	64.598	
700.0	700.0	681.4	680.9	1.5	1.4	150.60	150.60	2.7	164.0	166.3	163.4	2.87	58.040	
800.0	799.8	774.6	773.5	1.7	1.7	150.59	150.59	4.8	174.4	182.1	178.8	3.31	55.059	
840.4	840.1	811.8	810.4	1.8	1.8	150.65	150.65	5.8	179.4	190.2	186.7	3.49	54.544	
900.0	899.5	866.2	864.2	1.9	1.9	150.84	150.84	7.4	187.6	203.4	199.6	3.75	54.264 SF	
1,000.0	999.2	956.5	953.0	2.2	2.2	151.00	151.00	10.5	203.3	228.0	223.8	4.19	54.377	
1,100.0	1,098.8	1,050.2	1,044.8	2.4	2.6	151.03	151.03	14.2	221.9	255.0	250.3	4.65	54.817	
1,200.0	1,198.5	1,146.5	1,139.0	2.7	3.0	151.05	151.05	18.1	241.1	282.1	277.0	5.11	55.248	
1,300.0	1,298.1	1,242.7	1,233.2	2.9	3.4	151.06	151.06	21.9	260.4	309.3	303.7	5.57	55.539	
1,400.0	1,397.7	1,338.9	1,327.4	3.2	3.8	151.07	151.07	25.7	279.6	336.5	330.4	6.04	55.745	
1,500.0	1,497.4	1,435.2	1,421.7	3.4	4.2	151.08	151.08	29.6	298.9	363.6	357.1	6.51	55.855	
1,600.0	1,597.0	1,531.4	1,515.9	3.7	4.6	151.08	151.08	33.4	318.1	390.8	383.8	6.98	55.954	
1,700.0	1,696.7	1,627.7	1,610.1	4.0	5.0	151.09	151.09	37.3	337.4	417.9	410.5	7.46	56.011	
1,800.0	1,796.3	1,723.9	1,704.3	4.2	5.5	151.10	151.10	41.1	356.7	445.1	437.2	7.94	56.046	
1,900.0	1,896.0	1,820.1	1,798.5	4.5	5.9	151.10	151.10	44.9	375.9	472.3	463.8	8.42	56.064	
2,000.0	1,995.6	1,916.4	1,892.7	4.8	6.3	151.10	151.10	48.8	395.2	499.4	490.5	8.91	56.071	
2,100.0	2,095.3	2,012.6	1,987.0	5.0	6.7	151.11	151.11	52.6	414.4	526.6	517.2	9.39	56.069	
2,200.0	2,194.9	2,108.9	2,081.2	5.3	7.2	151.11	151.11	56.4	433.7	553.7	543.9	9.88	56.061	
2,300.0	2,294.6	2,205.1	2,175.4	5.6	7.6	151.12	151.12	60.3	452.9	580.9	570.5	10.36	56.048	
2,400.0	2,394.2	2,301.4	2,269.6	5.8	8.0	151.12	151.12	64.1	472.2	608.1	597.2	10.85	56.033	
2,500.0	2,493.9	2,397.6	2,363.8	6.1	8.5	151.12	151.12	68.0	491.4	635.2	623.9	11.34	56.015	
2,600.0	2,593.5	2,493.8	2,458.0	6.4	8.9	151.12	151.12	71.8	510.7	662.4	650.5	11.83	55.995	
2,700.0	2,693.2	2,590.1	2,552.3	6.7	9.3	151.13	151.13	75.6	530.0	689.5	677.2	12.32	55.974	
2,800.0	2,792.8	2,686.3	2,646.5	6.9	9.7	151.13	151.13	79.5	549.2	716.7	703.9	12.81	55.953	
2,900.0	2,892.5	2,782.6	2,740.7	7.2	10.2	151.13	151.13	83.3	568.5	743.9	730.6	13.30	55.931	
3,000.0	2,992.1	2,878.8	2,834.9	7.5	10.6	151.13	151.13	87.1	587.7	771.0	757.2	13.79	55.909	
3,100.0	3,091.8	2,975.0	2,929.1	7.7	11.0	151.13	151.13	91.0	607.0	798.2	783.9	14.28	55.888	
3,200.0	3,191.4	3,071.3	3,023.4	8.0	11.5	151.14	151.14	94.8	626.2	825.3	810.6	14.77	55.866	
3,300.0	3,291.1	3,167.5	3,117.6	8.3	11.9	151.14	151.14	98.7	645.5	852.5	837.2	15.27	55.844	
3,400.0	3,390.7	3,263.8	3,211.8	8.6	12.3	151.14	151.14	102.5	664.7	879.7	863.9	15.76	55.823	
3,500.0	3,490.4	3,360.0	3,306.0	8.8	12.8	151.14	151.14	106.3	684.0	906.8	890.6	16.25	55.802	
3,600.0	3,590.0	3,456.2	3,400.2	9.1	13.2	151.14	151.14	110.2	703.2	934.0	917.2	16.74	55.782	
3,700.0	3,689.7	3,552.5	3,494.4	9.4	13.6	151.14	151.14	114.0	722.5	961.1	943.9	17.24	55.762	
3,800.0	3,789.3	3,648.7	3,588.7	9.6	14.1	151.14	151.14	117.9	741.8	988.3	970.6	17.73	55.742	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 629-UNKNOWN													<b>Offset Well Error:</b>	0.0 ft
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #														
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
8,200.0	6,725.6	6,848.5	6,761.0	34.7	211.6	-92.11	-2,428.4	63.6	950.2	717.1	233.05	4.077		
8,300.0	6,725.1	6,847.0	6,759.4	36.4	211.5	-91.90	-2,428.4	63.6	862.2	627.3	234.89	3.671		
8,400.0	6,724.7	6,845.4	6,757.9	38.2	211.5	-91.69	-2,428.4	63.6	777.1	540.4	236.74	3.282		
8,500.0	6,724.3	6,843.8	6,756.3	39.9	211.5	-91.48	-2,428.4	63.6	696.0	457.4	238.61	2.917		
8,600.0	6,723.9	6,842.2	6,754.7	41.7	211.5	-91.27	-2,428.4	63.6	620.4	379.9	240.49	2.580		
8,700.0	6,723.5	6,840.6	6,753.0	43.5	211.5	-91.05	-2,428.5	63.7	552.7	310.3	242.38	2.280		
8,800.0	6,723.1	6,838.9	6,751.4	45.3	211.4	-90.83	-2,428.5	63.7	495.9	251.7	244.27	2.030		
8,900.0	6,722.7	6,837.3	6,749.7	47.1	211.4	-90.61	-2,428.5	63.7	454.4	208.2	246.18	1.846		
9,000.0	6,722.3	6,835.6	6,748.1	48.9	211.4	-90.39	-2,428.5	63.7	432.4	184.3	248.09	1.743		
9,047.5	6,722.1	6,834.8	6,747.2	49.8	211.4	-90.28	-2,428.5	63.7	429.8	180.8	249.00	1.726 CC, ES, SF		
9,100.0	6,721.9	6,833.9	6,746.4	50.7	211.4	-90.16	-2,428.6	63.7	433.0	183.0	250.00	1.732		
9,200.0	6,721.5	6,832.2	6,744.7	52.6	211.4	-89.93	-2,428.6	63.7	456.0	204.1	251.92	1.810		
9,300.0	6,721.1	6,830.5	6,742.9	54.4	211.3	-89.70	-2,428.6	63.7	498.4	244.6	253.83	1.964		
9,400.0	6,720.7	6,828.7	6,741.2	56.2	211.3	-89.47	-2,428.6	63.7	555.8	300.0	255.75	2.173		
9,500.0	6,720.3	6,827.0	6,739.4	58.1	211.3	-89.24	-2,428.6	63.7	624.0	366.3	257.68	2.422		
9,600.0	6,719.9	6,825.2	6,737.6	59.9	211.3	-89.00	-2,428.7	63.7	699.9	440.3	259.60	2.696		
9,700.0	6,719.5	6,823.4	6,735.8	61.8	211.2	-88.76	-2,428.7	63.7	781.2	519.7	261.52	2.987		
9,800.0	6,719.1	6,821.6	6,734.0	63.7	211.2	-88.52	-2,428.7	63.7	866.5	603.0	263.44	3.289		
9,900.0	6,718.7	6,819.7	6,732.2	65.5	211.2	-88.27	-2,428.7	63.8	954.6	689.2	265.36	3.597		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 28-1 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 6990-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
8,800.0	6,723.1	6,746.1	6,746.1	45.3	134.9	90.92	90.92	-3,071.1	-588.0	917.3	737.5	179.83	5.101	
8,900.0	6,722.7	6,745.7	6,745.7	47.1	134.9	90.82	90.82	-3,071.1	-588.0	820.7	639.0	181.65	4.518	
9,000.0	6,722.3	6,745.3	6,745.3	48.9	134.9	90.72	90.72	-3,071.1	-588.0	724.9	541.4	183.47	3.951	
9,100.0	6,721.9	6,744.9	6,744.9	50.7	134.9	90.61	90.61	-3,071.1	-588.0	630.4	445.1	185.30	3.402	
9,200.0	6,721.5	6,744.5	6,744.5	52.6	134.9	90.51	90.51	-3,071.1	-588.0	538.0	350.9	187.14	2.875	
9,300.0	6,721.1	6,744.1	6,744.1	54.4	134.9	90.40	90.40	-3,071.1	-588.0	448.8	259.8	188.98	2.375	
9,400.0	6,720.7	6,743.7	6,743.7	56.2	134.9	90.30	90.30	-3,071.1	-588.0	365.2	174.4	190.83	1.914	
9,500.0	6,720.3	6,743.3	6,743.3	58.1	134.9	90.20	90.20	-3,071.1	-588.0	292.2	99.5	192.68	1.516	
9,600.0	6,719.9	6,742.9	6,742.9	59.9	134.9	90.09	90.09	-3,071.1	-588.0	239.5	44.9	194.53	1.231 Level 2	
9,690.1	6,719.6	6,742.6	6,742.6	61.6	134.9	90.00	90.00	-3,071.1	-588.0	221.9	25.6	196.21	1.131 Level 2, CC, ES, SF	
9,700.0	6,719.5	6,742.5	6,742.5	61.8	134.9	89.99	89.99	-3,071.1	-588.0	222.1	25.7	196.39	1.131 Level 2	
9,800.0	6,719.1	6,742.1	6,742.1	63.7	134.8	89.89	89.89	-3,071.1	-588.0	247.6	49.3	198.25	1.249 Level 2	
9,900.0	6,718.7	6,741.7	6,741.7	65.5	134.8	89.78	89.78	-3,071.1	-588.0	305.4	105.3	200.11	1.526	
10,000.0	6,718.3	6,741.3	6,741.3	67.4	134.8	89.68	89.68	-3,071.1	-588.0	381.1	179.1	201.98	1.887	
10,100.0	6,717.9	6,740.9	6,740.9	69.3	134.8	89.58	89.58	-3,071.1	-588.0	466.1	262.2	203.85	2.286	
10,200.0	6,717.5	6,740.5	6,740.5	71.1	134.8	89.47	89.47	-3,071.1	-588.0	556.1	350.3	205.71	2.703	
10,300.0	6,717.1	6,740.1	6,740.1	73.0	134.8	89.37	89.37	-3,071.1	-588.0	649.0	441.4	207.58	3.126	
10,400.0	6,716.7	6,739.7	6,739.7	74.9	134.8	89.26	89.26	-3,071.1	-588.0	743.7	534.3	209.46	3.551	
10,500.0	6,716.3	6,739.3	6,739.3	76.8	134.8	89.16	89.16	-3,071.1	-588.0	839.7	628.4	211.33	3.973	
10,600.0	6,715.9	6,738.9	6,738.9	78.6	134.8	89.06	89.06	-3,071.1	-588.0	936.5	723.3	213.20	4.393	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 28-2 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7011-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
9,900.0	6,718.7	6,742.7	6,742.7	65.5	134.9	90.97	90.97	-4,240.6	-593.6	986.1	786.1	200.08	4.929	
10,000.0	6,718.3	6,742.3	6,742.3	67.4	134.8	90.87	90.87	-4,240.6	-593.6	889.1	687.2	201.96	4.403	
10,100.0	6,717.9	6,741.9	6,741.9	69.3	134.8	90.77	90.77	-4,240.6	-593.6	792.9	589.1	203.83	3.890	
10,200.0	6,717.5	6,741.5	6,741.5	71.1	134.8	90.67	90.67	-4,240.6	-593.6	697.7	492.0	205.71	3.392	
10,300.0	6,717.1	6,741.1	6,741.1	73.0	134.8	90.57	90.57	-4,240.6	-593.6	604.0	396.4	207.58	2.910	
10,400.0	6,716.7	6,740.7	6,740.7	74.9	134.8	90.46	90.46	-4,240.6	-593.6	512.8	303.3	209.46	2.448	
10,500.0	6,716.3	6,740.3	6,740.3	76.8	134.8	90.36	90.36	-4,240.6	-593.6	425.5	214.1	211.34	2.013	
10,600.0	6,715.9	6,739.9	6,739.9	78.6	134.8	90.26	90.26	-4,240.6	-593.6	345.1	131.9	213.22	1.619	
10,700.0	6,715.5	6,739.5	6,739.5	80.5	134.8	90.16	90.16	-4,240.6	-593.6	277.8	62.7	215.11	1.292 Level 3	
10,800.0	6,715.1	6,739.1	6,739.1	82.4	134.8	90.06	90.06	-4,240.6	-593.6	235.1	18.1	216.99	1.084 Level 2	
10,859.6	6,714.9	6,738.9	6,738.9	83.5	134.8	90.00	90.00	-4,240.6	-593.6	227.5	9.3	218.11	1.043 Level 2, CC, ES, SF	
10,900.0	6,714.7	6,738.7	6,738.7	84.3	134.8	89.96	89.96	-4,240.6	-593.6	231.0	12.1	218.87	1.056 Level 2	
11,000.0	6,714.3	6,738.3	6,738.3	86.2	134.8	89.86	89.86	-4,240.6	-593.6	267.3	46.6	220.76	1.211 Level 2	
11,100.0	6,713.9	6,737.9	6,737.9	88.1	134.8	89.76	89.76	-4,240.6	-593.6	331.0	108.3	222.65	1.487 Level 3	
11,200.0	6,713.5	6,737.5	6,737.5	90.0	134.8	89.66	89.66	-4,240.6	-593.6	409.4	184.9	224.53	1.823	
11,300.0	6,713.1	6,737.1	6,737.1	91.9	134.7	89.55	89.55	-4,240.6	-593.6	495.7	269.3	226.42	2.189	
11,400.0	6,712.7	6,736.7	6,736.7	93.7	134.7	89.45	89.45	-4,240.6	-593.6	586.3	358.0	228.30	2.568	
11,500.0	6,712.3	6,736.3	6,736.3	95.6	134.7	89.35	89.35	-4,240.6	-593.6	679.6	449.4	230.19	2.952	
11,600.0	6,711.9	6,735.9	6,735.9	97.5	134.7	89.25	89.25	-4,240.6	-593.6	774.6	542.5	232.08	3.338	
11,700.0	6,711.5	6,735.5	6,735.5	99.4	134.7	89.15	89.15	-4,240.6	-593.6	870.7	636.7	233.97	3.721	
11,800.0	6,711.1	6,735.1	6,735.1	101.3	134.7	89.05	89.05	-4,240.6	-593.6	967.5	731.7	235.85	4.102	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 580-UNKNOWN												<b>Offset Well Error:</b>	0.0 ft
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 5 (Exist) - Wellbore #1 - Wellbore #1													
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
9,500.0	6,720.3	6,827.4	6,740.0	58.1	228.1	-89.88	-3,739.0	26.4	943.5	668.7	274.79	3.433	
9,600.0	6,719.9	6,827.5	6,740.2	59.9	228.1	-89.90	-3,739.0	26.4	853.5	576.9	276.64	3.085	
9,700.0	6,719.5	6,827.6	6,740.3	61.8	228.1	-89.91	-3,739.0	26.4	766.1	487.6	278.49	2.751	
9,800.0	6,719.1	6,827.7	6,740.4	63.7	228.1	-89.93	-3,739.0	26.4	682.2	401.8	280.35	2.433	
9,900.0	6,718.7	6,827.9	6,740.5	65.5	228.1	-89.95	-3,739.0	26.4	603.1	320.9	282.22	2.137	
10,000.0	6,718.3	6,828.0	6,740.7	67.4	228.1	-89.97	-3,739.0	26.4	531.2	247.1	284.08	1.870	
10,100.0	6,717.9	6,828.1	6,740.8	69.3	228.1	-89.98	-3,739.0	26.4	469.6	183.7	285.95	1.642	
10,200.0	6,717.5	6,828.2	6,740.9	71.1	228.1	-90.00	-3,739.0	26.4	423.1	135.2	287.82	1.470	Level 3
10,300.0	6,717.1	6,828.3	6,741.0	73.0	228.1	-90.02	-3,739.0	26.4	396.7	107.0	289.69	1.369	Level 3
10,358.0	6,716.9	6,828.4	6,741.1	74.1	228.1	-90.03	-3,739.0	26.4	392.5	101.7	290.78	1.350	Level 3, CC, ES, SF
10,400.0	6,716.7	6,828.5	6,741.1	74.9	228.1	-90.04	-3,739.0	26.4	394.7	103.1	291.57	1.354	Level 3
10,500.0	6,716.3	6,828.6	6,741.2	76.8	228.1	-90.05	-3,739.0	26.4	417.4	123.9	293.45	1.422	Level 3
10,600.0	6,715.9	6,828.7	6,741.4	78.6	228.1	-90.07	-3,739.0	26.4	461.1	165.8	295.32	1.561	
10,700.0	6,715.5	6,828.8	6,741.5	80.5	228.1	-90.08	-3,739.0	26.4	520.6	223.4	297.21	1.752	
10,800.0	6,715.1	6,828.9	6,741.6	82.4	228.1	-90.10	-3,739.0	26.4	591.1	292.0	299.09	1.976	
10,900.0	6,714.7	6,829.0	6,741.7	84.3	228.1	-90.12	-3,739.0	26.4	669.2	368.2	300.97	2.223	
11,000.0	6,714.3	6,829.1	6,741.8	86.2	228.1	-90.13	-3,739.0	26.4	752.5	449.6	302.86	2.485	
11,100.0	6,713.9	6,829.2	6,741.9	88.1	228.1	-90.15	-3,739.0	26.4	839.4	534.7	304.74	2.755	
11,200.0	6,713.5	6,829.3	6,742.0	90.0	228.1	-90.16	-3,739.0	26.4	929.0	622.4	306.63	3.030	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7002-UNKNOWN													<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,800.0	6,707.1	6,769.1	6,769.1	120.3	135.4	91.02	91.02	-7,100.4	-574.1	942.6	687.1	255.53	3.689	
12,900.0	6,706.7	6,768.7	6,768.7	122.2	135.4	90.91	90.91	-7,100.4	-574.1	845.4	588.0	257.43	3.284	
13,000.0	6,706.3	6,768.3	6,768.3	124.1	135.4	90.80	90.80	-7,100.4	-574.1	748.9	489.5	259.34	2.888	
13,100.0	6,705.9	6,767.9	6,767.9	126.1	135.4	90.68	90.68	-7,100.4	-574.1	653.4	392.2	261.25	2.501	
13,200.0	6,705.5	6,767.5	6,767.5	128.0	135.3	90.57	90.57	-7,100.4	-574.1	559.5	296.4	263.16	2.126	
13,300.0	6,705.1	6,767.1	6,767.1	129.9	135.3	90.46	90.46	-7,100.4	-574.1	468.2	203.1	265.06	1.766	
13,400.0	6,704.7	6,766.7	6,766.7	131.8	135.3	90.35	90.35	-7,100.4	-574.1	381.2	114.2	266.97	1.428	Level 3
13,500.0	6,704.3	6,766.3	6,766.3	133.7	135.3	90.24	90.24	-7,100.4	-574.1	302.3	33.5	268.87	1.124	Level 2
13,600.0	6,703.9	6,765.9	6,765.9	135.6	135.3	90.13	90.13	-7,100.4	-574.1	239.9	-30.9	270.78	0.886	Level 1
13,700.0	6,703.5	6,765.5	6,765.5	137.5	135.3	90.02	90.02	-7,100.4	-574.1	208.9	-63.8	272.68	0.766	Level 1
13,719.4	6,703.4	6,765.4	6,765.4	137.9	135.3	90.00	90.00	-7,100.4	-574.1	208.0	-65.0	273.05	0.762	Level 1, CC, ES, SF
13,800.0	6,703.1	6,765.1	6,765.1	139.4	135.3	89.91	89.91	-7,100.4	-574.1	223.1	-51.5	274.59	0.812	Level 1
13,817.8	6,703.0	6,765.0	6,765.0	139.7	135.3	89.89	89.89	-7,100.4	-574.1	230.1	-44.8	274.92	0.837	Level 1

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2 28A (Exist) - Wellbore #1 - Wellbore								Offset Site Error:		0.0 ft	
Survey Program: 6950-UNKNOWN										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis		Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
7,400.0	6,728.8	6,735.8	6,735.8	22.1	134.7	90.90	-1,741.4	-610.2	990.9	834.8	156.13	6.347	
7,500.0	6,728.4	6,735.4	6,735.4	23.5	134.7	90.81	-1,741.4	-610.2	894.3	736.8	157.56	5.676	
7,600.0	6,728.0	6,735.0	6,735.0	25.0	134.7	90.72	-1,741.4	-610.2	798.6	639.5	159.06	5.021	
7,700.0	6,727.6	6,734.6	6,734.6	26.5	134.7	90.62	-1,741.4	-610.2	704.0	543.4	160.61	4.384	
7,800.0	6,727.2	6,734.2	6,734.2	28.1	134.7	90.53	-1,741.4	-610.2	611.2	449.0	162.21	3.768	
7,900.0	6,726.8	6,733.8	6,733.8	29.7	134.7	90.43	-1,741.4	-610.2	521.1	357.3	163.84	3.180	
8,000.0	6,726.4	6,733.4	6,733.4	31.3	134.7	90.34	-1,741.4	-610.2	435.3	269.8	165.51	2.630	
8,100.0	6,726.0	6,733.0	6,733.0	33.0	134.7	90.25	-1,741.4	-610.2	356.9	189.7	167.20	2.135	
8,200.0	6,725.6	6,732.6	6,732.6	34.7	134.7	90.15	-1,741.4	-610.2	292.1	123.2	168.92	1.729	
8,300.0	6,725.1	6,732.1	6,732.1	36.4	134.6	90.06	-1,741.4	-610.2	251.5	80.8	170.66	1.474 Level 3	
8,360.4	6,724.9	6,731.9	6,731.9	37.5	134.6	90.00	-1,741.4	-610.2	244.1	72.4	171.72	1.422 Level 3, CC, ES, SF	
8,400.0	6,724.7	6,731.7	6,731.7	38.2	134.6	89.96	-1,741.4	-610.2	247.3	74.9	172.41	1.434 Level 3	
8,500.0	6,724.3	6,731.3	6,731.3	39.9	134.6	89.87	-1,741.4	-610.2	281.2	107.0	174.18	1.615	
8,600.0	6,723.9	6,730.9	6,730.9	41.7	134.6	89.77	-1,741.4	-610.2	342.1	166.1	175.96	1.944	
8,700.0	6,723.5	6,730.5	6,730.5	43.5	134.6	89.68	-1,741.4	-610.2	418.3	240.5	177.76	2.353	
8,800.0	6,723.1	6,730.1	6,730.1	45.3	134.6	89.59	-1,741.4	-610.2	502.8	323.3	179.56	2.800	
8,900.0	6,722.7	6,729.7	6,729.7	47.1	134.6	89.49	-1,741.4	-610.2	592.3	410.9	181.37	3.266	
9,000.0	6,722.3	6,729.3	6,729.3	48.9	134.6	89.40	-1,741.4	-610.2	684.6	501.4	183.18	3.737	
9,100.0	6,721.9	6,728.9	6,728.9	50.7	134.6	89.30	-1,741.4	-610.2	778.9	593.9	185.01	4.210	
9,200.0	6,721.5	6,728.5	6,728.5	52.6	134.6	89.21	-1,741.4	-610.2	874.4	687.5	186.84	4.680	
9,300.0	6,721.1	6,728.1	6,728.1	54.4	134.6	89.11	-1,741.4	-610.2	970.8	782.1	188.67	5.145	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore													Offset Site Error:	0.0 ft
Survey Program: 6950-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-134.15	-451.7	-465.3	648.5	648.5	0.02	N/A		
100.0	100.0	101.0	101.0	0.1	2.0	-134.15	-451.7	-465.3	648.5	646.4	2.13	304.099		
200.0	200.0	201.0	201.0	0.3	4.0	-134.15	-451.7	-465.3	648.5	644.2	4.36	148.833		
300.0	300.0	301.0	301.0	0.6	6.0	-134.15	-451.7	-465.3	648.5	641.9	6.58	98.527		
400.0	400.0	401.0	401.0	0.8	8.0	-134.15	-451.7	-465.3	648.5	639.7	8.81	73.638		
500.0	500.0	501.0	501.0	1.0	10.0	-134.15	-451.7	-465.3	648.5	637.5	11.03	58.787		
600.0	600.0	601.0	601.0	1.2	12.0	-134.15	-451.7	-465.3	648.5	635.3	13.26	48.921		
700.0	700.0	701.0	701.0	1.5	14.0	-72.96	-451.7	-465.3	648.0	632.5	15.47	41.878		
800.0	799.8	800.8	800.8	1.7	16.0	-73.43	-451.7	-465.3	646.5	628.8	17.69	36.553		
840.4	840.1	841.1	841.1	1.8	16.8	-73.71	-451.7	-465.3	645.6	627.0	18.58	34.743		
900.0	899.5	900.5	900.5	1.9	18.0	-74.13	-451.7	-465.3	644.2	624.3	19.91	32.358		
1,000.0	999.2	1,000.2	1,000.2	2.2	20.0	-74.85	-451.7	-465.3	642.0	619.8	22.14	28.992		
1,100.0	1,098.8	1,099.8	1,099.8	2.4	22.0	-75.57	-451.7	-465.3	639.8	615.4	24.38	26.241		
1,200.0	1,198.5	1,199.5	1,199.5	2.7	24.0	-76.30	-451.7	-465.3	637.8	611.2	26.63	23.951		
1,300.0	1,298.1	1,299.1	1,299.1	2.9	26.0	-77.03	-451.7	-465.3	635.8	607.0	28.88	22.019		
1,400.0	1,397.7	1,398.7	1,398.7	3.2	28.0	-77.77	-451.7	-465.3	634.0	602.9	31.13	20.367		
1,500.0	1,497.4	1,498.4	1,498.4	3.4	30.0	-78.51	-451.7	-465.3	632.3	598.9	33.38	18.939		
1,600.0	1,597.0	1,598.0	1,598.0	3.7	32.0	-79.25	-451.7	-465.3	630.7	595.0	35.64	17.695		
1,700.0	1,696.7	1,697.7	1,697.7	4.0	34.0	-80.00	-451.7	-465.3	629.1	591.2	37.90	16.600		
1,800.0	1,796.3	1,797.3	1,797.3	4.2	35.9	-80.75	-451.7	-465.3	627.7	587.6	40.16	15.631		
1,900.0	1,896.0	1,897.0	1,897.0	4.5	37.9	-81.50	-451.7	-465.3	626.4	584.0	42.42	14.767		
2,000.0	1,995.6	1,996.6	1,996.6	4.8	39.9	-82.26	-451.7	-465.3	625.2	580.6	44.68	13.993		
2,100.0	2,095.3	2,096.3	2,096.3	5.0	41.9	-83.02	-451.7	-465.3	624.2	577.2	46.95	13.296		
2,200.0	2,194.9	2,195.9	2,195.9	5.3	43.9	-83.78	-451.7	-465.3	623.2	574.0	49.21	12.665		
2,300.0	2,294.6	2,295.6	2,295.6	5.6	45.9	-84.55	-451.7	-465.3	622.4	570.9	51.47	12.091		
2,400.0	2,394.2	2,395.2	2,395.2	5.8	47.9	-85.31	-451.7	-465.3	621.6	567.9	53.74	11.567		
2,500.0	2,493.9	2,494.9	2,494.9	6.1	49.9	-86.08	-451.7	-465.3	621.0	565.0	56.00	11.088		
2,600.0	2,593.5	2,594.5	2,594.5	6.4	51.9	-86.85	-451.7	-465.3	620.5	562.2	58.27	10.648		
2,700.0	2,693.2	2,694.2	2,694.2	6.7	53.9	-87.62	-451.7	-465.3	620.1	559.5	60.53	10.243		
2,800.0	2,792.8	2,793.8	2,793.8	6.9	55.9	-88.39	-451.7	-465.3	619.8	557.0	62.80	9.869		
2,900.0	2,892.5	2,893.5	2,893.5	7.2	57.9	-89.17	-451.7	-465.3	619.6	554.5	65.07	9.522		
3,000.0	2,992.1	2,993.1	2,993.1	7.5	59.9	-89.94	-451.7	-465.3	619.5	552.2	67.33	9.201		
3,007.9	3,000.0	3,001.0	3,001.0	7.5	60.0	-90.00	-451.7	-465.3	619.5	552.0	67.51	9.176		
3,100.0	3,091.8	3,092.8	3,092.8	7.7	61.9	-90.71	-451.7	-465.3	619.6	550.0	69.60	8.902		
3,200.0	3,191.4	3,192.4	3,192.4	8.0	63.8	-91.48	-451.7	-465.3	619.7	547.9	71.86	8.624		
3,300.0	3,291.1	3,292.1	3,292.1	8.3	65.8	-92.25	-451.7	-465.3	620.0	545.9	74.13	8.364		
3,400.0	3,390.7	3,391.7	3,391.7	8.6	67.8	-93.03	-451.7	-465.3	620.4	544.0	76.39	8.121		
3,500.0	3,490.4	3,491.4	3,491.4	8.8	69.8	-93.80	-451.7	-465.3	620.9	542.2	78.66	7.893		
3,600.0	3,590.0	3,591.0	3,591.0	9.1	71.8	-94.56	-451.7	-465.3	621.5	540.6	80.92	7.680		
3,700.0	3,689.7	3,690.7	3,690.7	9.4	73.8	-95.33	-451.7	-465.3	622.2	539.0	83.19	7.480		
3,800.0	3,789.3	3,790.3	3,790.3	9.6	75.8	-96.10	-451.7	-465.3	623.1	537.6	85.45	7.292		
3,900.0	3,889.0	3,890.0	3,890.0	9.9	77.8	-96.86	-451.7	-465.3	624.0	536.3	87.71	7.114		
4,000.0	3,988.6	3,989.6	3,989.6	10.2	79.8	-97.62	-451.7	-465.3	625.1	535.1	89.98	6.947		
4,100.0	4,088.2	4,089.2	4,089.2	10.5	81.8	-98.38	-451.7	-465.3	626.2	534.0	92.24	6.789		
4,200.0	4,187.9	4,188.9	4,188.9	10.7	83.8	-99.13	-451.7	-465.3	627.5	533.0	94.50	6.640		
4,300.0	4,287.5	4,288.5	4,288.5	11.0	85.8	-99.88	-451.7	-465.3	628.9	532.2	96.76	6.500		
4,400.0	4,387.2	4,388.2	4,388.2	11.3	87.8	-100.63	-451.7	-465.3	630.4	531.4	99.02	6.366		
4,500.0	4,486.8	4,487.8	4,487.8	11.6	89.8	-101.37	-451.7	-465.3	632.0	530.7	101.28	6.240		
4,600.0	4,586.5	4,587.5	4,587.5	11.8	91.7	-102.11	-451.7	-465.3	633.7	530.2	103.54	6.121		
4,700.0	4,686.1	4,687.1	4,687.1	12.1	93.7	-102.85	-451.7	-465.3	635.5	529.7	105.80	6.007		
4,800.0	4,785.8	4,786.8	4,786.8	12.4	95.7	-103.58	-451.7	-465.3	637.5	529.4	108.05	5.900		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore													Offset Site Error:	0.0 ft
Survey Program: 6950-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
4,900.0	4,885.4	4,886.4	4,886.4	12.6	97.7	-104.31		-451.7	-465.3	639.5	529.2	110.31	5.797	
5,000.0	4,985.1	4,986.1	4,986.1	12.9	99.7	-105.03		-451.7	-465.3	641.6	529.1	112.56	5.700	
5,100.0	5,084.7	5,085.7	5,085.7	13.2	101.7	-105.75		-451.7	-465.3	643.9	529.0	114.82	5.608	
5,200.0	5,184.4	5,185.4	5,185.4	13.5	103.7	-106.46		-451.7	-465.3	646.2	529.1	117.07	5.520	
5,300.0	5,284.0	5,285.0	5,285.0	13.7	105.7	-107.17		-451.7	-465.3	648.6	529.3	119.32	5.436	
5,400.0	5,383.7	5,384.7	5,384.7	14.0	107.7	-107.87		-451.7	-465.3	651.2	529.6	121.57	5.356	
5,500.0	5,483.3	5,484.3	5,484.3	14.3	109.7	-108.57		-451.7	-465.3	653.8	530.0	123.82	5.280	
5,576.8	5,559.9	5,560.9	5,560.9	14.5	111.2	-109.10		-451.7	-465.3	655.9	530.3	125.55	5.224	
5,600.0	5,583.0	5,584.0	5,584.0	14.6	111.7	-109.27		-451.7	-465.3	656.5	530.4	126.07	5.207	
5,700.0	5,682.8	5,683.8	5,683.8	14.7	113.7	-109.78		-451.7	-465.3	658.4	530.2	128.27	5.133	
5,800.0	5,782.8	5,783.8	5,783.8	14.9	115.7	-109.99		-451.7	-465.3	659.2	528.8	130.44	5.054	
5,817.2	5,800.0	5,801.0	5,801.0	14.9	116.0	-171.35		-451.7	-465.3	659.2	528.4	130.81	5.040	
5,900.0	5,882.8	5,883.8	5,883.8	15.1	117.7	-171.35		-451.7	-465.3	659.2	526.6	132.60	4.972	
5,982.9	5,965.7	5,966.7	5,966.7	15.2	119.3	-171.35		-451.7	-465.3	659.2	524.8	134.42	4.904	
6,000.0	5,982.8	5,983.8	5,983.8	15.3	119.7	8.66		-451.7	-465.3	659.1	524.3	134.75	4.891	
6,050.0	6,032.7	6,033.7	6,033.7	15.3	120.7	8.73		-451.7	-465.3	656.3	521.0	135.34	4.850	
6,100.0	6,082.3	6,083.3	6,083.3	15.4	121.7	8.88		-451.7	-465.3	650.4	515.0	135.35	4.805	
6,150.0	6,131.4	6,132.4	6,132.4	15.4	122.6	9.11		-451.7	-465.3	641.3	506.5	134.77	4.758	
6,200.0	6,179.9	6,180.9	6,180.9	15.5	123.6	9.45		-451.7	-465.3	629.0	495.4	133.61	4.707	
6,250.0	6,227.4	6,228.4	6,228.4	15.5	124.6	9.89		-451.7	-465.3	613.6	481.7	131.87	4.653	
6,300.0	6,273.7	6,274.7	6,274.7	15.5	125.5	10.47		-451.7	-465.3	595.2	465.6	129.57	4.594	
6,350.0	6,318.8	6,319.8	6,319.8	15.6	126.4	11.19		-451.7	-465.3	573.9	447.2	126.72	4.529	
6,400.0	6,362.4	6,363.4	6,363.4	15.6	127.3	12.12		-451.7	-465.3	549.7	426.3	123.37	4.456	
6,450.0	6,404.2	6,405.2	6,405.2	15.6	128.1	13.28		-451.7	-465.3	522.8	403.2	119.61	4.371	
6,500.0	6,444.2	6,445.2	6,445.2	15.6	128.9	14.75		-451.7	-465.3	493.4	377.9	115.54	4.270	
6,550.0	6,482.1	6,483.1	6,483.1	15.7	129.7	16.63		-451.7	-465.3	461.5	350.2	111.38	4.144	
6,600.0	6,517.8	6,518.8	6,518.8	15.7	130.4	19.05		-451.7	-465.3	427.4	320.0	107.45	3.978	
6,650.0	6,551.2	6,552.2	6,552.2	15.8	131.0	22.19		-451.7	-465.3	391.3	287.0	104.29	3.752	
6,700.0	6,582.0	6,583.0	6,583.0	15.9	131.7	26.33		-451.7	-465.3	353.4	250.6	102.78	3.438	
6,750.0	6,610.2	6,611.2	6,611.2	16.0	132.2	31.81		-451.7	-465.3	314.0	209.9	104.12	3.016	
6,800.0	6,635.7	6,636.7	6,636.7	16.2	132.7	39.01		-451.7	-465.3	273.5	163.9	109.56	2.496	
6,850.0	6,658.2	6,659.2	6,659.2	16.5	133.2	48.18		-451.7	-465.3	232.5	113.1	119.44	1.947	
6,900.0	6,677.8	6,678.8	6,678.8	16.8	133.6	59.06		-451.7	-465.3	191.9	60.1	131.80	1.456 Level 3	
6,950.0	6,694.4	6,695.4	6,695.4	17.1	133.9	70.48		-451.7	-465.3	153.5	10.8	142.69	1.076 Level 2	
7,000.0	6,707.8	6,708.8	6,708.8	17.5	134.2	80.64		-451.7	-465.3	120.8	-28.3	149.14	0.810 Level 1	
7,050.0	6,718.1	6,719.1	6,719.1	18.0	134.4	88.00		-451.7	-465.3	101.2	-50.3	151.52	0.668 Level 1	
7,070.3	6,721.3	6,722.3	6,722.3	18.2	134.4	90.00		-451.7	-465.3	99.2	-52.7	151.86	0.653 Level 1, CC, ES, SF	
7,100.0	6,725.1	6,726.1	6,726.1	18.5	134.5	91.84		-451.7	-465.3	103.5	-48.7	152.14	0.680 Level 1	
7,150.0	6,728.9	6,729.9	6,729.9	19.0	134.6	91.97		-451.7	-465.3	127.0	-25.7	152.75	0.831 Level 1	
7,186.0	6,729.6	6,730.6	6,730.6	19.4	134.6	89.73		-451.7	-465.3	152.1	-1.2	153.30	0.992 Level 1	
7,200.0	6,729.6	6,730.6	6,730.6	19.6	134.6	89.70		-451.7	-465.3	163.0	9.5	153.47	1.062 Level 2	
7,300.0	6,729.2	6,730.2	6,730.2	20.8	134.6	89.47		-451.7	-465.3	249.8	95.1	154.71	1.615	
7,400.0	6,728.8	6,729.8	6,729.8	22.1	134.6	89.24		-451.7	-465.3	343.9	187.9	156.05	2.204	
7,500.0	6,728.4	6,729.4	6,729.4	23.5	134.6	89.00		-451.7	-465.3	440.6	283.1	157.47	2.798	
7,600.0	6,728.0	6,729.0	6,729.0	25.0	134.6	88.77		-451.7	-465.3	538.5	379.5	158.96	3.388	
7,700.0	6,727.6	6,728.6	6,728.6	26.5	134.6	88.54		-451.7	-465.3	637.1	476.6	160.49	3.969	
7,800.0	6,727.2	6,728.2	6,728.2	28.1	134.6	88.31		-451.7	-465.3	736.0	573.9	162.07	4.541	
7,900.0	6,726.8	6,727.8	6,727.8	29.7	134.6	88.08		-451.7	-465.3	835.2	671.5	163.69	5.102	
8,000.0	6,726.4	6,727.4	6,727.4	31.3	134.5	87.85		-451.7	-465.3	934.6	769.2	165.33	5.653	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg 1 (Exist) - Wellbore #1 - Wellbore #										Offset Site Error:		0.0 ft			
Survey Program: 6998-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)						
11,400.0	6,712.7	6,761.7	6,761.7	93.7	135.2	91.01	-5,752.4	-588.0	996.5	767.7	228.75	4.356					
11,500.0	6,712.3	6,761.3	6,761.3	95.6	135.2	90.90	-5,752.4	-588.0	899.3	668.6	230.65	3.899					
11,600.0	6,711.9	6,760.9	6,760.9	97.5	135.2	90.80	-5,752.4	-588.0	802.7	570.2	232.55	3.452					
11,700.0	6,711.5	6,760.5	6,760.5	99.4	135.2	90.70	-5,752.4	-588.0	707.2	472.7	234.45	3.016					
11,800.0	6,711.1	6,760.1	6,760.1	101.3	135.2	90.59	-5,752.4	-588.0	613.0	376.7	236.34	2.594					
11,900.0	6,710.7	6,759.7	6,759.7	103.2	135.2	90.49	-5,752.4	-588.0	521.1	282.8	238.24	2.187					
12,000.0	6,710.3	6,759.3	6,759.3	105.1	135.2	90.38	-5,752.4	-588.0	432.7	192.6	240.14	1.802					
12,100.0	6,709.9	6,758.9	6,758.9	107.0	135.2	90.28	-5,752.4	-588.0	350.6	108.6	242.04	1.449	Level 3				
12,200.0	6,709.5	6,758.5	6,758.5	108.9	135.2	90.18	-5,752.4	-588.0	280.4	36.5	243.94	1.150	Level 2				
12,300.0	6,709.1	6,758.1	6,758.1	110.8	135.2	90.07	-5,752.4	-588.0	233.1	-12.7	245.84	0.948	Level 1				
12,371.5	6,708.8	6,757.8	6,757.8	112.2	135.2	90.00	-5,752.4	-588.0	221.9	-25.3	247.19	0.898	Level 1, CC, ES, SF				
12,400.0	6,708.7	6,757.7	6,757.7	112.7	135.2	89.97	-5,752.4	-588.0	223.7	-24.0	247.73	0.903	Level 1				
12,500.0	6,708.3	6,757.3	6,757.3	114.6	135.1	89.87	-5,752.4	-588.0	256.5	6.8	249.63	1.027	Level 2				
12,600.0	6,707.9	6,756.9	6,756.9	116.5	135.1	89.76	-5,752.4	-588.0	318.6	67.0	251.53	1.266	Level 3				
12,700.0	6,707.5	6,756.5	6,756.5	118.4	135.1	89.66	-5,752.4	-588.0	396.5	143.0	253.43	1.564					
12,800.0	6,707.1	6,756.1	6,756.1	120.3	135.1	89.56	-5,752.4	-588.0	482.6	227.3	255.32	1.890					
12,900.0	6,706.7	6,755.7	6,755.7	122.2	135.1	89.45	-5,752.4	-588.0	573.2	316.0	257.22	2.229					
13,000.0	6,706.3	6,755.3	6,755.3	124.1	135.1	89.35	-5,752.4	-588.0	666.6	407.4	259.12	2.572					
13,100.0	6,705.9	6,754.9	6,754.9	126.1	135.1	89.24	-5,752.4	-588.0	761.6	500.6	261.01	2.918					
13,200.0	6,705.5	6,754.5	6,754.5	128.0	135.1	89.14	-5,752.4	-588.0	857.7	594.8	262.91	3.263					
13,300.0	6,705.1	6,754.1	6,754.1	129.9	135.1	89.04	-5,752.4	-588.0	954.7	689.9	264.80	3.605					



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-343
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-343	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (2-11-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4650.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-343

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.61°



Coordinates are relative to: Churchill 28J-343  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.61°

