

# PETROLEUM DEVELOPMENT CORP Weld County CO

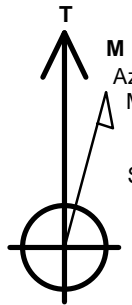
Well Name: **Churchill 28J-443**

Surface Location: Churchill 28J-HZ Pad Sec.28-T5N-R64W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4634.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381538.04	3261995.43	40.376910	-104.559600	
RKB - 15' WELL @ 4649.0ft (RKB - 15')						

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1305'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2141'FNL, 1065'FWL, SEC.33	6805.0	-7198.8	-197.9	Point

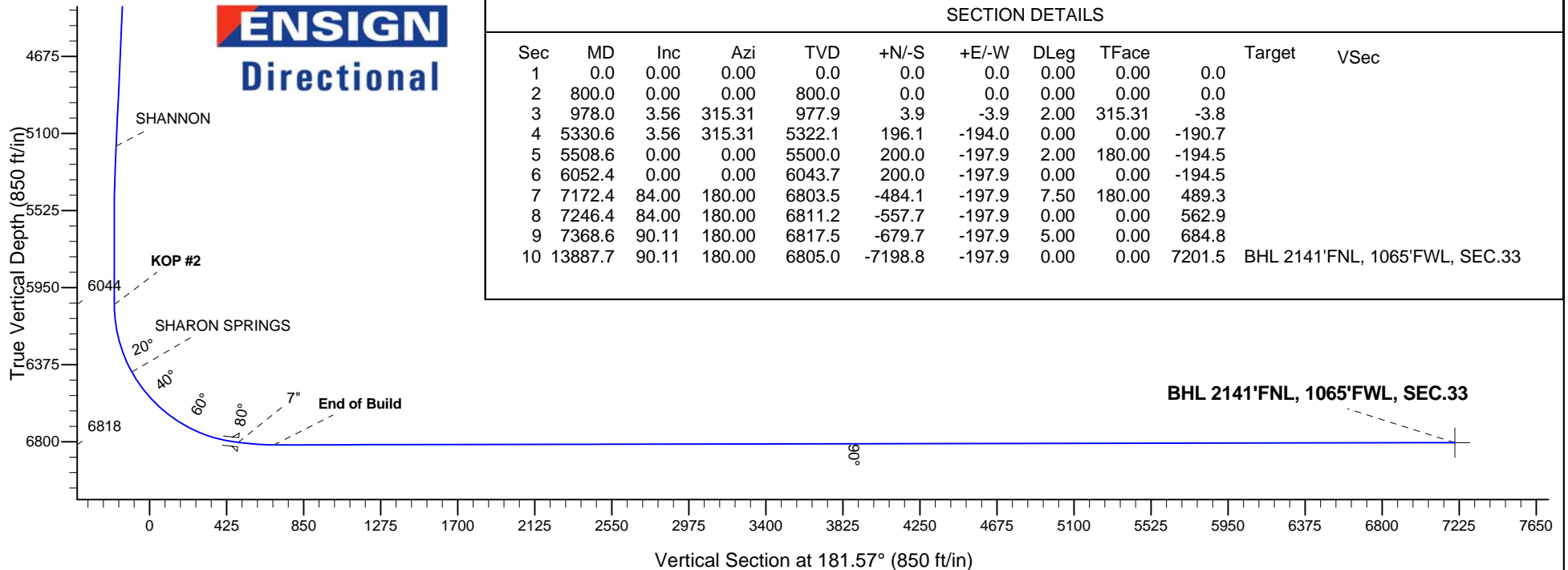
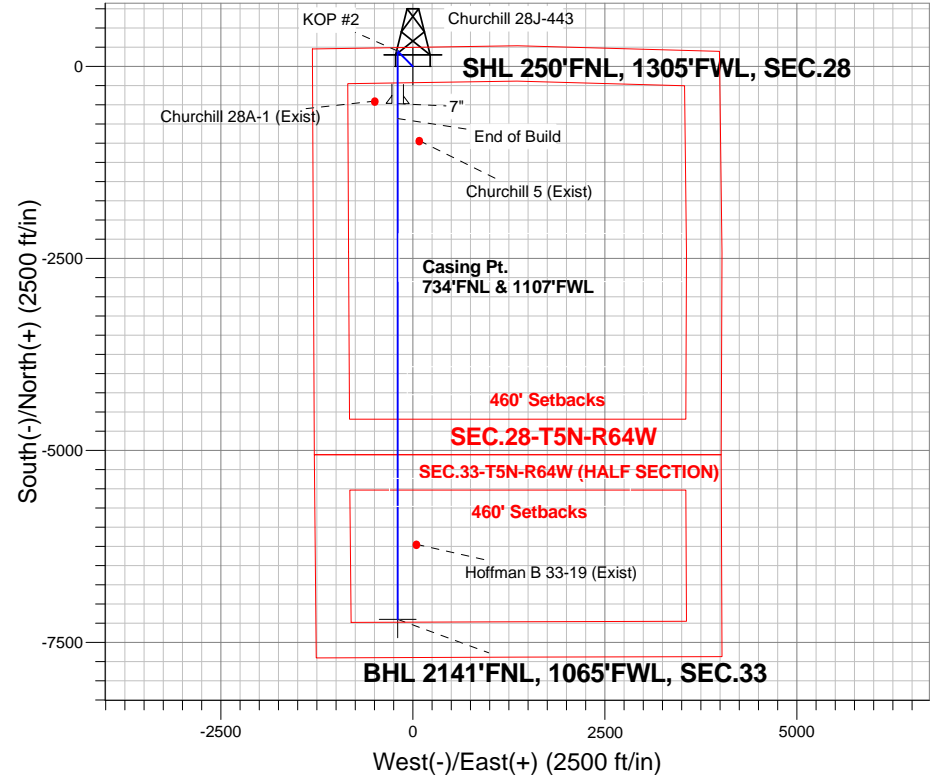


Azimuths to True North  
 Magnetic North: 8.41°  
 Magnetic Field  
 Strength: 52874.3snT  
 Dip Angle: 66.98°  
 Date: 12/30/2013  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP #1
6043.8	6052.4	KOP #2
6817.5	7368.6	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W  
 Churchill 28J-443  
 Plan #1 (12-30-13)  
 13:47, January 09 2014





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28J-443**

**Wellbore #1**

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

## **Standard Planning Report**

**09 January, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-443	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (12-30-13)		

<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-443					
Well Position	+N-S	3.6 ft	Northing:	1,381,538.04 ft	Latitude:	40.376910
	+E-W	91.9 ft	Easting:	3,261,995.43 ft	Longitude:	-104.559600
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,634.0 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	12/30/2013	8.41	66.98	52,874

<b>Design</b>	Plan #1 (12-30-13)			
<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	181.57

<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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
978.0	3.56	315.31	977.9	3.9	-3.9	2.00	2.00	0.00	315.31	
5,330.6	3.56	315.31	5,322.1	196.1	-194.0	0.00	0.00	0.00	0.00	
5,508.6	0.00	0.00	5,500.0	200.0	-197.9	2.00	-2.00	0.00	180.00	
6,052.4	0.00	0.00	6,043.7	200.0	-197.9	0.00	0.00	0.00	0.00	
7,172.4	84.00	180.00	6,803.5	-484.1	-197.9	7.50	7.50	0.00	180.00	
7,246.4	84.00	180.00	6,811.2	-557.7	-197.9	0.00	0.00	0.00	0.00	
7,368.6	90.11	180.00	6,817.5	-679.7	-197.9	5.00	5.00	0.00	0.00	
13,887.7	90.11	180.00	6,805.0	-7,198.8	-197.9	0.00	0.00	0.00	0.00	BHL 2141'FNL, 106

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-443	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (12-30-13)		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 250'FNL, 1305'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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
900.0	2.00	315.31	900.0	1.2	-1.2	-1.2	2.00	2.00	0.00
978.0	3.56	315.31	977.9	3.9	-3.9	-3.8	2.00	2.00	0.00
1,000.0	3.56	315.31	999.8	4.9	-4.8	-4.8	0.00	0.00	0.00
1,100.0	3.56	315.31	1,099.7	9.3	-9.2	-9.1	0.00	0.00	0.00
1,200.0	3.56	315.31	1,199.5	13.7	-13.6	-13.4	0.00	0.00	0.00
1,300.0	3.56	315.31	1,299.3	18.1	-18.0	-17.6	0.00	0.00	0.00
1,400.0	3.56	315.31	1,399.1	22.6	-22.3	-21.9	0.00	0.00	0.00
1,500.0	3.56	315.31	1,498.9	27.0	-26.7	-26.2	0.00	0.00	0.00
1,600.0	3.56	315.31	1,598.7	31.4	-31.1	-30.5	0.00	0.00	0.00
1,700.0	3.56	315.31	1,698.5	35.8	-35.4	-34.8	0.00	0.00	0.00
1,800.0	3.56	315.31	1,798.3	40.2	-39.8	-39.1	0.00	0.00	0.00
1,900.0	3.56	315.31	1,898.1	44.6	-44.2	-43.4	0.00	0.00	0.00
2,000.0	3.56	315.31	1,997.9	49.0	-48.5	-47.7	0.00	0.00	0.00
2,100.0	3.56	315.31	2,097.7	53.5	-52.9	-52.0	0.00	0.00	0.00
2,200.0	3.56	315.31	2,197.5	57.9	-57.3	-56.3	0.00	0.00	0.00
2,300.0	3.56	315.31	2,297.3	62.3	-61.6	-60.6	0.00	0.00	0.00
2,400.0	3.56	315.31	2,397.1	66.7	-66.0	-64.9	0.00	0.00	0.00
2,500.0	3.56	315.31	2,496.9	71.1	-70.4	-69.2	0.00	0.00	0.00
2,600.0	3.56	315.31	2,596.8	75.5	-74.7	-73.4	0.00	0.00	0.00
2,700.0	3.56	315.31	2,696.6	79.9	-79.1	-77.7	0.00	0.00	0.00
2,800.0	3.56	315.31	2,796.4	84.4	-83.5	-82.0	0.00	0.00	0.00
2,900.0	3.56	315.31	2,896.2	88.8	-87.8	-86.3	0.00	0.00	0.00
3,000.0	3.56	315.31	2,996.0	93.2	-92.2	-90.6	0.00	0.00	0.00
3,100.0	3.56	315.31	3,095.8	97.6	-96.6	-94.9	0.00	0.00	0.00
3,200.0	3.56	315.31	3,195.6	102.0	-100.9	-99.2	0.00	0.00	0.00
3,300.0	3.56	315.31	3,295.4	106.4	-105.3	-103.5	0.00	0.00	0.00
3,400.0	3.56	315.31	3,395.2	110.8	-109.7	-107.8	0.00	0.00	0.00
3,500.0	3.56	315.31	3,495.0	115.3	-114.0	-112.1	0.00	0.00	0.00
3,555.1	3.56	315.31	3,550.0	117.7	-116.4	-114.4	0.00	0.00	0.00
<b>PARKMAN</b>									
3,600.0	3.56	315.31	3,594.8	119.7	-118.4	-116.4	0.00	0.00	0.00
3,700.0	3.56	315.31	3,694.6	124.1	-122.8	-120.7	0.00	0.00	0.00
3,800.0	3.56	315.31	3,794.4	128.5	-127.1	-125.0	0.00	0.00	0.00
3,900.0	3.56	315.31	3,894.2	132.9	-131.5	-129.3	0.00	0.00	0.00
4,000.0	3.56	315.31	3,994.1	137.3	-135.9	-133.5	0.00	0.00	0.00
4,100.0	3.56	315.31	4,093.9	141.7	-140.2	-137.8	0.00	0.00	0.00
4,171.3	3.56	315.31	4,165.0	144.9	-143.4	-140.9	0.00	0.00	0.00
<b>SUSSEX</b>									
4,200.0	3.56	315.31	4,193.7	146.2	-144.6	-142.1	0.00	0.00	0.00
4,300.0	3.56	315.31	4,293.5	150.6	-149.0	-146.4	0.00	0.00	0.00
4,400.0	3.56	315.31	4,393.3	155.0	-153.3	-150.7	0.00	0.00	0.00

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<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-443	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (12-30-13)		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.0	3.56	315.31	4,493.1	159.4	-157.7	-155.0	0.00	0.00	0.00
4,600.0	3.56	315.31	4,592.9	163.8	-162.1	-159.3	0.00	0.00	0.00
4,700.0	3.56	315.31	4,692.7	168.2	-166.4	-163.6	0.00	0.00	0.00
4,800.0	3.56	315.31	4,792.5	172.6	-170.8	-167.9	0.00	0.00	0.00
4,900.0	3.56	315.31	4,892.3	177.1	-175.2	-172.2	0.00	0.00	0.00
5,000.0	3.56	315.31	4,992.1	181.5	-179.5	-176.5	0.00	0.00	0.00
5,100.0	3.56	315.31	5,091.9	185.9	-183.9	-180.8	0.00	0.00	0.00
5,178.2	3.56	315.31	5,170.0	189.3	-187.3	-184.1	0.00	0.00	0.00
<b>SHANNON</b>									
5,200.0	3.56	315.31	5,191.7	190.3	-188.3	-185.1	0.00	0.00	0.00
5,300.0	3.56	315.31	5,291.5	194.7	-192.7	-189.4	0.00	0.00	0.00
5,330.6	3.56	315.31	5,322.1	196.1	-194.0	-190.7	0.00	0.00	0.00
5,400.0	2.17	315.31	5,391.4	198.5	-196.4	-193.1	2.00	-2.00	0.00
5,500.0	0.17	315.31	5,491.4	200.0	-197.9	-194.5	2.00	-2.00	0.00
5,508.6	0.00	0.00	5,500.0	200.0	-197.9	-194.5	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,591.4	200.0	-197.9	-194.5	0.00	0.00	0.00
5,700.0	0.00	0.00	5,691.4	200.0	-197.9	-194.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,791.4	200.0	-197.9	-194.5	0.00	0.00	0.00
5,900.0	0.00	0.00	5,891.4	200.0	-197.9	-194.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,991.4	200.0	-197.9	-194.5	0.00	0.00	0.00
6,052.4	0.00	0.00	6,043.8	200.0	-197.9	-194.5	0.00	0.00	0.00
<b>KOP #2</b>									
6,100.0	3.57	180.00	6,091.3	198.5	-197.9	-193.0	7.50	7.50	0.00
6,200.0	11.07	180.00	6,190.5	185.8	-197.9	-180.3	7.50	7.50	0.00
6,300.0	18.57	180.00	6,287.1	160.2	-197.9	-154.7	7.50	7.50	0.00
6,400.0	26.07	180.00	6,379.5	122.3	-197.9	-116.8	7.50	7.50	0.00
6,441.2	29.16	180.00	6,416.0	103.2	-197.9	-97.7	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,500.0	33.57	180.00	6,466.2	72.6	-197.9	-67.1	7.50	7.50	0.00
6,600.0	41.07	180.00	6,545.7	12.0	-197.9	-6.5	7.50	7.50	0.00
6,700.0	48.57	180.00	6,616.5	-58.5	-197.9	63.9	7.50	7.50	0.00
6,800.0	56.07	180.00	6,677.6	-137.5	-197.9	142.9	7.50	7.50	0.00
6,900.0	63.57	180.00	6,727.9	-223.9	-197.9	229.3	7.50	7.50	0.00
7,000.0	71.07	180.00	6,766.4	-316.1	-197.9	321.5	7.50	7.50	0.00
7,100.0	78.57	180.00	6,792.5	-412.6	-197.9	417.9	7.50	7.50	0.00
7,172.4	84.00	180.00	6,803.5	-484.1	-197.9	489.4	7.50	7.50	0.00
<b>7"</b>									
7,200.0	84.00	180.00	6,806.4	-511.6	-197.9	516.8	0.00	0.00	0.00
7,246.4	84.00	180.00	6,811.2	-557.7	-197.9	562.9	0.00	0.00	0.00
7,300.0	86.68	180.00	6,815.6	-611.1	-197.9	616.3	5.00	5.00	0.00
7,368.6	90.11	180.00	6,817.5	-679.7	-197.9	684.9	5.00	5.00	0.00
<b>End of Build</b>									
7,400.0	90.11	180.00	6,817.5	-711.1	-197.9	716.3	0.00	0.00	0.00
7,500.0	90.11	180.00	6,817.3	-811.1	-197.9	816.2	0.00	0.00	0.00
7,600.0	90.11	180.00	6,817.1	-911.1	-197.9	916.2	0.00	0.00	0.00
7,700.0	90.11	180.00	6,816.9	-1,011.1	-197.9	1,016.1	0.00	0.00	0.00
7,800.0	90.11	180.00	6,816.7	-1,111.1	-197.9	1,116.1	0.00	0.00	0.00
7,900.0	90.11	180.00	6,816.5	-1,211.1	-197.9	1,216.1	0.00	0.00	0.00
8,000.0	90.11	180.00	6,816.3	-1,311.1	-197.9	1,316.0	0.00	0.00	0.00
8,100.0	90.11	180.00	6,816.1	-1,411.1	-197.9	1,416.0	0.00	0.00	0.00
8,200.0	90.11	180.00	6,815.9	-1,511.1	-197.9	1,516.0	0.00	0.00	0.00
8,300.0	90.11	180.00	6,815.7	-1,611.1	-197.9	1,615.9	0.00	0.00	0.00

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<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-443	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,400.0	90.11	180.00	6,815.5	-1,711.1	-197.9	1,715.9	0.00	0.00	0.00
8,500.0	90.11	180.00	6,815.3	-1,811.1	-197.9	1,815.8	0.00	0.00	0.00
8,600.0	90.11	180.00	6,815.2	-1,911.1	-197.9	1,915.8	0.00	0.00	0.00
8,700.0	90.11	180.00	6,815.0	-2,011.1	-197.9	2,015.8	0.00	0.00	0.00
8,800.0	90.11	180.00	6,814.8	-2,111.1	-197.9	2,115.7	0.00	0.00	0.00
8,900.0	90.11	180.00	6,814.6	-2,211.1	-197.9	2,215.7	0.00	0.00	0.00
9,000.0	90.11	180.00	6,814.4	-2,311.1	-197.9	2,315.7	0.00	0.00	0.00
9,100.0	90.11	180.00	6,814.2	-2,411.1	-197.9	2,415.6	0.00	0.00	0.00
9,200.0	90.11	180.00	6,814.0	-2,511.1	-197.9	2,515.6	0.00	0.00	0.00
9,300.0	90.11	180.00	6,813.8	-2,611.1	-197.9	2,615.5	0.00	0.00	0.00
9,400.0	90.11	180.00	6,813.6	-2,711.1	-197.9	2,715.5	0.00	0.00	0.00
9,500.0	90.11	180.00	6,813.4	-2,811.1	-197.9	2,815.5	0.00	0.00	0.00
9,600.0	90.11	180.00	6,813.2	-2,911.1	-197.9	2,915.4	0.00	0.00	0.00
9,700.0	90.11	180.00	6,813.0	-3,011.1	-197.9	3,015.4	0.00	0.00	0.00
9,800.0	90.11	180.00	6,812.8	-3,111.1	-197.9	3,115.3	0.00	0.00	0.00
9,900.0	90.11	180.00	6,812.7	-3,211.1	-197.9	3,215.3	0.00	0.00	0.00
10,000.0	90.11	180.00	6,812.5	-3,311.1	-197.9	3,315.3	0.00	0.00	0.00
10,100.0	90.11	180.00	6,812.3	-3,411.1	-197.9	3,415.2	0.00	0.00	0.00
10,200.0	90.11	180.00	6,812.1	-3,511.1	-197.9	3,515.2	0.00	0.00	0.00
10,300.0	90.11	180.00	6,811.9	-3,611.1	-197.9	3,615.2	0.00	0.00	0.00
10,400.0	90.11	180.00	6,811.7	-3,711.1	-197.9	3,715.1	0.00	0.00	0.00
10,500.0	90.11	180.00	6,811.5	-3,811.1	-197.9	3,815.1	0.00	0.00	0.00
10,600.0	90.11	180.00	6,811.3	-3,911.1	-197.9	3,915.0	0.00	0.00	0.00
10,700.0	90.11	180.00	6,811.1	-4,011.1	-197.9	4,015.0	0.00	0.00	0.00
10,800.0	90.11	180.00	6,810.9	-4,111.1	-197.9	4,115.0	0.00	0.00	0.00
10,900.0	90.11	180.00	6,810.7	-4,211.1	-197.9	4,214.9	0.00	0.00	0.00
11,000.0	90.11	180.00	6,810.5	-4,311.1	-197.9	4,314.9	0.00	0.00	0.00
11,100.0	90.11	180.00	6,810.4	-4,411.1	-197.9	4,414.9	0.00	0.00	0.00
11,200.0	90.11	180.00	6,810.2	-4,511.1	-197.9	4,514.8	0.00	0.00	0.00
11,300.0	90.11	180.00	6,810.0	-4,611.1	-197.9	4,614.8	0.00	0.00	0.00
11,400.0	90.11	180.00	6,809.8	-4,711.1	-197.9	4,714.7	0.00	0.00	0.00
11,500.0	90.11	180.00	6,809.6	-4,811.1	-197.9	4,814.7	0.00	0.00	0.00
11,600.0	90.11	180.00	6,809.4	-4,911.1	-197.9	4,914.7	0.00	0.00	0.00
11,700.0	90.11	180.00	6,809.2	-5,011.1	-197.9	5,014.6	0.00	0.00	0.00
11,800.0	90.11	180.00	6,809.0	-5,111.1	-197.9	5,114.6	0.00	0.00	0.00
11,900.0	90.11	180.00	6,808.8	-5,211.1	-197.9	5,214.6	0.00	0.00	0.00
12,000.0	90.11	180.00	6,808.6	-5,311.1	-197.9	5,314.5	0.00	0.00	0.00
12,100.0	90.11	180.00	6,808.4	-5,411.1	-197.9	5,414.5	0.00	0.00	0.00
12,200.0	90.11	180.00	6,808.2	-5,511.1	-197.9	5,514.4	0.00	0.00	0.00
12,300.0	90.11	180.00	6,808.0	-5,611.1	-197.9	5,614.4	0.00	0.00	0.00
12,400.0	90.11	180.00	6,807.9	-5,711.1	-197.9	5,714.4	0.00	0.00	0.00
12,500.0	90.11	180.00	6,807.7	-5,811.1	-197.9	5,814.3	0.00	0.00	0.00
12,600.0	90.11	180.00	6,807.5	-5,911.1	-197.9	5,914.3	0.00	0.00	0.00
12,700.0	90.11	180.00	6,807.3	-6,011.1	-197.9	6,014.2	0.00	0.00	0.00
12,800.0	90.11	180.00	6,807.1	-6,111.1	-197.9	6,114.2	0.00	0.00	0.00
12,900.0	90.11	180.00	6,806.9	-6,211.1	-197.9	6,214.2	0.00	0.00	0.00
13,000.0	90.11	180.00	6,806.7	-6,311.1	-197.9	6,314.1	0.00	0.00	0.00
13,100.0	90.11	180.00	6,806.5	-6,411.1	-197.9	6,414.1	0.00	0.00	0.00
13,200.0	90.11	180.00	6,806.3	-6,511.1	-197.9	6,514.1	0.00	0.00	0.00
13,300.0	90.11	180.00	6,806.1	-6,611.1	-197.9	6,614.0	0.00	0.00	0.00
13,400.0	90.11	180.00	6,805.9	-6,711.1	-197.9	6,714.0	0.00	0.00	0.00
13,500.0	90.11	180.00	6,805.7	-6,811.1	-197.9	6,813.9	0.00	0.00	0.00
13,600.0	90.11	180.00	6,805.6	-6,911.1	-197.9	6,913.9	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28J-443	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (12-30-13)		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
13,700.0	90.11	180.00	6,805.4	-7,011.1	-197.9	7,013.9	0.00	0.00	0.00
13,800.0	90.11	180.00	6,805.2	-7,111.1	-197.9	7,113.8	0.00	0.00	0.00
13,887.7	90.11	180.00	6,805.0	-7,198.8	-197.9	7,201.5	0.00	0.00	0.00
BHL 2141'FNL, 1065'FWL, SEC.33									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,172.4	6,803.5	7"	7	7-1/2

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,555.1	3,550.0	PARKMAN			
4,171.3	4,165.0	SUSSEX			
5,178.2	5,170.0	SHANNON			
6,441.2	6,416.0	SHARON SPRINGS			

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP #1
6,052.4	6,043.8	200.0	-197.9	KOP #2
7,368.6	6,817.5	-679.7	-197.9	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28J-443**

**Wellbore #1**

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

## **Anticollision Report**

**08 January, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

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

Survey Tool Program		Date	1/6/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,887.7	Plan #1 (12-30-13) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Churchill 28J-HZ Pad Sec.28-T5N-R64W						
Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)	166.3	167.3	92.0	91.5	175.205	CC
Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)	200.0	200.0	92.0	91.3	136.469	ES
Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)	13,888.1	13,837.4	1,004.9	728.5	3.635	SF
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	366.3	367.3	61.4	60.0	43.113	CC
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	400.0	400.0	61.4	59.8	39.032	ES
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	13,888.1	13,939.5	657.7	378.4	2.355	SF
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	800.0	800.0	27.9	24.5	8.264	CC, ES
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	13,888.1	13,727.3	373.2	120.2	1.475	Level 3, SF
Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)	566.3	567.3	30.6	28.3	13.191	CC
Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)	600.0	601.0	30.6	28.2	12.385	ES
Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)	13,888.1	13,829.1	344.6	75.6	1.281	Level 3, SF
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W						
Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore #1	7,139.8	6,801.7	298.1	144.6	1.942	CC, ES, SF
Churchill 5 (Exist) - Wellbore #1 - Wellbore #1	7,654.3	6,807.0	284.3	123.9	1.773	CC, ES, SF
Hoffman B 33-19 (Exist) - Wellbore #1 - Wellbore #1	12,911.3	6,848.9	245.3	-12.7	0.951	Level 1, CC, ES, SF

<b>Offset Design</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)												<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									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		
0.0	0.0	1.0	1.0	0.0	0.0	-92.27	-3.6	-91.9	92.0	92.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-92.27	-3.6	-91.9	92.0	91.8	0.23	405.331		
166.3	166.3	167.3	167.3	0.3	0.3	-92.27	-3.6	-91.9	92.0	91.5	0.53	175.205	CC	
200.0	200.0	200.0	200.0	0.3	0.3	-92.27	-3.6	-91.9	92.0	91.3	0.67	136.469	ES	
300.0	300.0	297.9	297.9	0.6	0.6	-92.04	-3.3	-93.6	93.7	92.6	1.11	84.243		
400.0	400.0	394.6	394.4	0.8	0.8	-91.43	-2.5	-98.4	98.7	97.1	1.56	63.420		
500.0	500.0	490.8	490.3	1.0	1.0	-90.53	-1.0	-106.5	107.0	105.0	2.01	53.146		
600.0	600.0	586.5	585.3	1.2	1.3	-89.49	1.0	-117.5	118.6	116.1	2.49	47.706		
700.0	700.0	681.2	678.9	1.5	1.6	-88.43	3.6	-131.6	133.5	130.5	2.98	44.849		
800.0	800.0	774.9	771.0	1.7	1.9	-87.42	6.7	-148.5	151.6	148.1	3.49	43.449		
900.0	900.0	868.9	862.9	1.9	2.3	-41.91	10.3	-168.3	171.6	167.8	3.84	44.696		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
1,000.0	999.8	967.2	958.7	2.1	2.8	-41.93	14.3	-190.0	190.1	185.8	4.30	44.204			
1,100.0	1,099.7	1,065.6	1,054.6	2.4	3.3	-42.30	18.2	-211.6	207.8	203.0	4.78	43.508			
1,200.0	1,199.5	1,164.0	1,150.5	2.6	3.7	-42.61	22.2	-233.3	225.5	220.2	5.26	42.883			
1,300.0	1,299.3	1,262.4	1,246.4	2.8	4.2	-42.88	26.1	-254.9	243.2	237.4	5.74	42.329			
1,400.0	1,399.1	1,360.9	1,342.3	3.1	4.7	-43.11	30.1	-276.6	260.9	254.6	6.24	41.831			
1,500.0	1,498.9	1,459.3	1,438.3	3.3	5.1	-43.32	34.0	-298.3	278.6	271.8	6.73	41.386			
1,600.0	1,598.7	1,557.7	1,534.2	3.5	5.6	-43.50	38.0	-319.9	296.3	289.0	7.23	40.987			
1,700.0	1,698.5	1,656.1	1,630.1	3.8	6.1	-43.65	41.9	-341.6	314.0	306.2	7.73	40.629			
1,800.0	1,798.3	1,754.5	1,726.0	4.0	6.6	-43.80	45.9	-363.2	331.7	323.5	8.23	40.306			
1,900.0	1,898.1	1,852.9	1,822.0	4.3	7.0	-43.92	49.9	-384.9	349.4	340.7	8.73	40.014			
2,000.0	1,997.9	1,951.4	1,917.9	4.5	7.5	-44.04	53.8	-406.5	367.1	357.9	9.24	39.747			
2,100.0	2,097.7	2,049.8	2,013.8	4.8	8.0	-44.14	57.8	-428.2	384.8	375.1	9.74	39.504			
2,200.0	2,197.5	2,148.2	2,109.7	5.0	8.5	-44.24	61.7	-449.9	402.5	392.3	10.25	39.282			
2,300.0	2,297.3	2,246.6	2,205.6	5.3	9.0	-44.33	65.7	-471.5	420.3	409.5	10.75	39.078			
2,400.0	2,397.1	2,345.0	2,301.6	5.5	9.4	-44.41	69.6	-493.2	438.0	426.7	11.26	38.889			
2,500.0	2,496.9	2,443.4	2,397.5	5.8	9.9	-44.48	73.6	-514.8	455.7	443.9	11.77	38.715			
2,600.0	2,596.8	2,541.9	2,493.4	6.0	10.4	-44.55	77.5	-536.5	473.4	461.1	12.28	38.554			
2,700.0	2,696.6	2,640.3	2,589.3	6.3	10.9	-44.61	81.5	-558.2	491.1	478.3	12.79	38.404			
2,800.0	2,796.4	2,738.7	2,685.3	6.5	11.4	-44.67	85.4	-579.8	508.9	495.6	13.30	38.264			
2,900.0	2,896.2	2,837.1	2,781.2	6.8	11.9	-44.73	89.4	-601.5	526.6	512.8	13.81	38.133			
3,000.0	2,996.0	2,935.5	2,877.1	7.0	12.3	-44.78	93.4	-623.1	544.3	530.0	14.32	38.011			
3,100.0	3,095.8	3,033.9	2,973.0	7.3	12.8	-44.82	97.3	-644.8	562.0	547.2	14.83	37.897			
3,200.0	3,195.6	3,132.3	3,068.9	7.5	13.3	-44.87	101.3	-666.4	579.7	564.4	15.34	37.789			
3,300.0	3,295.4	3,230.8	3,164.9	7.7	13.8	-44.91	105.2	-688.1	597.5	581.6	15.85	37.688			
3,400.0	3,395.2	3,329.2	3,260.8	8.0	14.3	-44.95	109.2	-709.8	615.2	598.8	16.36	37.592			
3,500.0	3,495.0	3,427.6	3,356.7	8.2	14.7	-44.99	113.1	-731.4	632.9	616.0	16.88	37.502			
3,600.0	3,594.8	3,526.0	3,452.6	8.5	15.2	-45.03	117.1	-753.1	650.6	633.2	17.39	37.416			
3,700.0	3,694.6	3,624.4	3,548.6	8.7	15.7	-45.06	121.0	-774.7	668.4	650.5	17.90	37.336			
3,800.0	3,794.4	3,722.8	3,644.5	9.0	16.2	-45.09	125.0	-796.4	686.1	667.7	18.41	37.259			
3,900.0	3,894.2	3,821.3	3,740.4	9.2	16.7	-45.12	128.9	-818.0	703.8	684.9	18.93	37.186			
4,000.0	3,994.1	3,919.7	3,836.3	9.5	17.2	-45.15	132.9	-839.7	721.5	702.1	19.44	37.116			
4,100.0	4,093.9	4,018.1	3,932.2	9.7	17.6	-45.18	136.9	-861.4	739.3	719.3	19.95	37.050			
4,200.0	4,193.7	4,116.5	4,028.2	10.0	18.1	-45.21	140.8	-883.0	757.0	736.5	20.47	36.987			
4,300.0	4,293.5	4,214.9	4,124.1	10.2	18.6	-45.23	144.8	-904.7	774.7	753.7	20.98	36.927			
4,400.0	4,393.3	4,313.3	4,220.0	10.5	19.1	-45.26	148.7	-926.3	792.4	770.9	21.49	36.870			
4,500.0	4,493.1	4,411.8	4,315.9	10.8	19.6	-45.28	152.7	-948.0	810.1	788.1	22.01	36.815			
4,600.0	4,592.9	4,510.2	4,411.8	11.0	20.1	-45.30	156.6	-969.7	827.9	805.4	22.52	36.762			
4,700.0	4,692.7	4,608.6	4,507.8	11.3	20.5	-45.32	160.6	-991.3	845.6	822.6	23.03	36.711			
4,800.0	4,792.5	4,707.0	4,603.7	11.5	21.0	-45.34	164.5	-1,013.0	863.3	839.8	23.55	36.663			
4,900.0	4,892.3	4,805.4	4,699.6	11.8	21.5	-45.36	168.5	-1,034.6	881.1	857.0	24.06	36.616			
5,000.0	4,992.1	4,903.8	4,795.5	12.0	22.0	-45.38	172.5	-1,056.3	898.8	874.2	24.58	36.572			
5,100.0	5,091.9	5,002.3	4,891.5	12.3	22.5	-45.40	176.4	-1,077.9	916.5	891.4	25.09	36.529			
5,200.0	5,191.7	5,100.7	4,987.4	12.5	23.0	-45.41	180.4	-1,099.6	934.2	908.6	25.60	36.487			
5,300.0	5,291.5	5,211.1	5,095.1	12.8	23.5	-45.44	184.8	-1,123.7	951.8	925.7	26.14	36.411			
5,400.0	5,391.4	5,358.5	5,239.9	13.0	23.9	-45.61	189.7	-1,150.6	966.4	939.7	26.66	36.243			
5,500.0	5,491.4	5,507.5	5,387.5	13.2	24.3	-45.69	193.3	-1,170.4	978.2	951.1	27.08	36.118			
5,600.0	5,591.4	5,657.8	5,537.3	13.3	24.6	-90.26	195.5	-1,182.7	986.4	958.8	27.52	35.837			
5,700.0	5,691.4	5,809.1	5,688.4	13.5	24.8	-90.21	196.4	-1,187.2	989.3	961.4	27.97	35.373			
5,800.0	5,791.4	5,913.0	5,792.4	13.7	24.9	-90.21	196.4	-1,187.2	989.4	961.0	28.35	34.902			
5,864.3	5,855.7	5,977.3	5,856.7	13.9	25.0	-90.21	196.4	-1,187.2	989.4	960.8	28.59	34.606			
5,900.0	5,891.4	6,013.0	5,892.3	13.9	25.0	-90.21	196.3	-1,187.2	989.4	960.6	28.72	34.445			

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
6,000.0	5,991.4	6,111.8	5,990.9	14.1	25.1	-90.63	189.1	-1,187.2	989.4	960.3	29.10	34.000	
6,100.0	6,091.3	6,207.6	6,084.7	14.3	25.1	88.32	170.0	-1,187.2	989.8	960.3	29.47	33.587	
6,200.0	6,190.5	6,300.0	6,172.2	14.5	25.2	87.22	140.6	-1,187.2	990.6	960.8	29.73	33.314	
6,300.0	6,287.1	6,392.1	6,255.3	14.5	25.2	86.15	101.0	-1,187.2	991.7	961.7	29.93	33.137	
6,400.0	6,379.5	6,481.7	6,331.0	14.6	25.2	85.16	53.2	-1,187.2	993.0	962.9	30.08	33.013	
6,500.0	6,466.2	6,569.7	6,399.4	14.7	25.3	84.24	-2.1	-1,187.2	994.5	964.2	30.25	32.878	
6,600.0	6,545.7	6,656.4	6,460.1	14.7	25.3	83.42	-63.9	-1,187.2	996.0	965.5	30.51	32.643	
6,700.0	6,616.5	6,742.0	6,512.8	14.8	25.4	82.70	-131.3	-1,187.2	997.5	966.6	30.94	32.238	
6,800.0	6,677.6	6,826.7	6,557.3	15.1	25.5	82.09	-203.4	-1,187.2	998.9	967.3	31.62	31.588	
6,900.0	6,727.9	6,910.7	6,593.2	15.6	25.7	81.60	-279.2	-1,187.2	1,000.1	967.5	32.61	30.668	
7,000.0	6,766.4	6,994.1	6,620.4	16.3	26.0	81.23	-358.1	-1,187.2	1,001.1	967.1	33.95	29.490	
7,100.0	6,792.5	7,077.2	6,638.8	17.2	26.3	80.99	-439.0	-1,187.2	1,001.7	966.1	35.64	28.110	
7,200.0	6,806.4	7,160.0	6,648.3	18.3	26.7	80.85	-521.2	-1,187.2	1,002.1	964.5	37.59	26.660	
7,300.0	6,815.6	7,249.4	6,649.5	19.4	27.3	80.43	-610.6	-1,187.2	1,003.4	963.6	39.80	25.210	
7,400.0	6,817.5	7,349.4	6,649.3	20.7	28.0	80.29	-710.6	-1,187.2	1,003.7	961.3	42.37	23.687	
7,500.0	6,817.3	7,449.4	6,649.0	22.1	28.9	80.29	-810.6	-1,187.2	1,003.7	958.7	45.03	22.289	
7,600.0	6,817.1	7,549.4	6,648.7	23.5	29.9	80.28	-910.6	-1,187.2	1,003.8	955.9	47.84	20.980	
7,700.0	6,816.9	7,649.4	6,648.4	25.0	31.0	80.28	-1,010.6	-1,187.2	1,003.8	953.0	50.78	19.766	
7,800.0	6,816.7	7,749.4	6,648.1	26.6	32.2	80.27	-1,110.6	-1,187.2	1,003.8	950.0	53.83	18.648	
7,900.0	6,816.5	7,849.4	6,647.8	28.2	33.5	80.27	-1,210.6	-1,187.2	1,003.8	946.8	56.96	17.622	
8,000.0	6,816.3	7,949.4	6,647.5	29.8	34.9	80.26	-1,310.6	-1,187.2	1,003.8	943.6	60.18	16.681	
8,100.0	6,816.1	8,049.4	6,647.2	31.5	36.3	80.25	-1,410.6	-1,187.2	1,003.8	940.4	63.45	15.820	
8,200.0	6,815.9	8,149.4	6,646.9	33.2	37.8	80.25	-1,510.6	-1,187.2	1,003.9	937.1	66.78	15.032	
8,300.0	6,815.7	8,249.4	6,646.6	34.9	39.3	80.24	-1,610.6	-1,187.2	1,003.9	933.7	70.16	14.308	
8,400.0	6,815.5	8,349.4	6,646.3	36.7	40.8	80.24	-1,710.6	-1,187.2	1,003.9	930.3	73.58	13.644	
8,500.0	6,815.3	8,449.4	6,646.0	38.4	42.4	80.23	-1,810.6	-1,187.2	1,003.9	926.9	77.03	13.033	
8,600.0	6,815.2	8,549.4	6,645.7	40.2	44.0	80.22	-1,910.6	-1,187.2	1,003.9	923.4	80.51	12.469	
8,700.0	6,815.0	8,649.4	6,645.4	42.0	45.6	80.22	-2,010.6	-1,187.2	1,003.9	919.9	84.03	11.948	
8,800.0	6,814.8	8,749.4	6,645.1	43.8	47.3	80.21	-2,110.6	-1,187.2	1,004.0	916.4	87.56	11.466	
8,900.0	6,814.6	8,849.4	6,644.8	45.6	49.0	80.21	-2,210.6	-1,187.2	1,004.0	912.9	91.11	11.019	
9,000.0	6,814.4	8,949.4	6,644.5	47.4	50.6	80.20	-2,310.6	-1,187.2	1,004.0	909.3	94.69	10.603	
9,100.0	6,814.2	9,049.4	6,644.2	49.2	52.4	80.19	-2,410.6	-1,187.2	1,004.0	905.7	98.28	10.216	
9,200.0	6,814.0	9,149.4	6,643.9	51.1	54.1	80.19	-2,510.6	-1,187.2	1,004.0	902.2	101.88	9.855	
9,300.0	6,813.8	9,249.4	6,643.6	52.9	55.8	80.18	-2,610.6	-1,187.2	1,004.1	898.6	105.50	9.517	
9,400.0	6,813.6	9,349.4	6,643.3	54.8	57.6	80.18	-2,710.6	-1,187.2	1,004.1	894.9	109.12	9.201	
9,500.0	6,813.4	9,449.4	6,643.0	56.6	59.3	80.17	-2,810.6	-1,187.2	1,004.1	891.3	112.76	8.904	
9,600.0	6,813.2	9,549.4	6,642.7	58.5	61.1	80.17	-2,910.6	-1,187.2	1,004.1	887.7	116.41	8.625	
9,700.0	6,813.0	9,649.4	6,642.4	60.3	62.9	80.16	-3,010.6	-1,187.2	1,004.1	884.1	120.07	8.363	
9,800.0	6,812.8	9,749.4	6,642.1	62.2	64.7	80.15	-3,110.6	-1,187.2	1,004.1	880.4	123.74	8.115	
9,900.0	6,812.7	9,849.4	6,641.8	64.0	66.5	80.15	-3,210.6	-1,187.2	1,004.2	876.8	127.41	7.881	
10,000.0	6,812.5	9,949.4	6,641.5	65.9	68.3	80.14	-3,310.6	-1,187.2	1,004.2	873.1	131.09	7.660	
10,100.0	6,812.3	10,049.4	6,641.2	67.8	70.1	80.14	-3,410.6	-1,187.2	1,004.2	869.4	134.78	7.451	
10,200.0	6,812.1	10,149.4	6,640.9	69.7	71.9	80.13	-3,510.6	-1,187.2	1,004.2	865.7	138.47	7.252	
10,300.0	6,811.9	10,249.4	6,640.6	71.5	73.7	80.12	-3,610.6	-1,187.2	1,004.2	862.1	142.16	7.064	
10,400.0	6,811.7	10,349.4	6,640.3	73.4	75.5	80.12	-3,710.6	-1,187.2	1,004.3	858.4	145.86	6.885	
10,500.0	6,811.5	10,449.4	6,640.1	75.3	77.4	80.11	-3,810.6	-1,187.2	1,004.3	854.7	149.57	6.714	
10,600.0	6,811.3	10,549.4	6,639.8	77.2	79.2	80.11	-3,910.6	-1,187.2	1,004.3	851.0	153.28	6.552	
10,700.0	6,811.1	10,649.4	6,639.5	79.1	81.0	80.10	-4,010.6	-1,187.2	1,004.3	847.3	156.99	6.397	
10,800.0	6,810.9	10,749.4	6,639.2	80.9	82.9	80.09	-4,110.6	-1,187.2	1,004.3	843.6	160.71	6.249	
10,900.0	6,810.7	10,849.4	6,638.9	82.8	84.7	80.09	-4,210.6	-1,187.2	1,004.3	839.9	164.43	6.108	
11,000.0	6,810.5	10,949.4	6,638.6	84.7	86.6	80.08	-4,310.6	-1,187.2	1,004.4	836.2	168.15	5.973	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
11,100.0	6,810.4	11,049.4	6,638.3	86.6	88.4	80.08	-4,410.6	-1,187.2	1,004.4	832.5	171.88	5.844		
11,200.0	6,810.2	11,149.4	6,638.0	88.5	90.3	80.07	-4,510.6	-1,187.2	1,004.4	828.8	175.61	5.720		
11,300.0	6,810.0	11,249.4	6,637.7	90.4	92.1	80.07	-4,610.6	-1,187.2	1,004.4	825.1	179.34	5.601		
11,400.0	6,809.8	11,349.4	6,637.4	92.3	94.0	80.06	-4,710.6	-1,187.2	1,004.4	821.4	183.07	5.487		
11,500.0	6,809.6	11,449.4	6,637.1	94.2	95.9	80.05	-4,810.6	-1,187.2	1,004.4	817.6	186.81	5.377		
11,600.0	6,809.4	11,549.4	6,636.8	96.1	97.7	80.05	-4,910.6	-1,187.2	1,004.5	813.9	190.55	5.272		
11,700.0	6,809.2	11,649.4	6,636.5	98.0	99.6	80.04	-5,010.6	-1,187.2	1,004.5	810.2	194.29	5.170		
11,800.0	6,809.0	11,749.4	6,636.2	99.9	101.5	80.04	-5,110.6	-1,187.2	1,004.5	806.5	198.03	5.073		
11,900.0	6,808.8	11,849.4	6,635.9	101.8	103.3	80.03	-5,210.6	-1,187.2	1,004.5	802.8	201.77	4.979		
12,000.0	6,808.6	11,949.4	6,635.6	103.7	105.2	80.02	-5,310.6	-1,187.2	1,004.5	799.0	205.51	4.888		
12,100.0	6,808.4	12,049.4	6,635.3	105.6	107.1	80.02	-5,410.6	-1,187.2	1,004.6	795.3	209.26	4.801		
12,200.0	6,808.2	12,149.4	6,635.0	107.5	109.0	80.01	-5,510.6	-1,187.2	1,004.6	791.6	213.01	4.716		
12,300.0	6,808.0	12,249.4	6,634.7	109.4	110.8	80.01	-5,610.6	-1,187.2	1,004.6	787.8	216.76	4.635		
12,400.0	6,807.9	12,349.4	6,634.4	111.3	112.7	80.00	-5,710.6	-1,187.2	1,004.6	784.1	220.51	4.556		
12,500.0	6,807.7	12,449.4	6,634.1	113.2	114.6	79.99	-5,810.6	-1,187.2	1,004.6	780.4	224.26	4.480		
12,600.0	6,807.5	12,549.4	6,633.8	115.1	116.5	79.99	-5,910.6	-1,187.2	1,004.6	776.6	228.01	4.406		
12,700.0	6,807.3	12,649.4	6,633.5	117.0	118.4	79.98	-6,010.6	-1,187.2	1,004.7	772.9	231.76	4.335		
12,800.0	6,807.1	12,749.4	6,633.2	118.9	120.2	79.98	-6,110.6	-1,187.2	1,004.7	769.2	235.52	4.266		
12,900.0	6,806.9	12,849.4	6,632.9	120.8	122.1	79.97	-6,210.6	-1,187.2	1,004.7	765.4	239.27	4.199		
13,000.0	6,806.7	12,949.4	6,632.6	122.7	124.0	79.97	-6,310.6	-1,187.2	1,004.7	761.7	243.03	4.134		
13,100.0	6,806.5	13,049.4	6,632.3	124.6	125.9	79.96	-6,410.6	-1,187.2	1,004.7	758.0	246.79	4.071		
13,200.0	6,806.3	13,149.4	6,632.0	126.5	127.8	79.95	-6,510.6	-1,187.2	1,004.8	754.2	250.55	4.010		
13,300.0	6,806.1	13,249.4	6,631.7	128.4	129.7	79.95	-6,610.6	-1,187.2	1,004.8	750.5	254.30	3.951		
13,400.0	6,805.9	13,349.4	6,631.4	130.3	131.6	79.94	-6,710.6	-1,187.2	1,004.8	746.7	258.06	3.894		
13,500.0	6,805.7	13,449.4	6,631.2	132.3	133.5	79.94	-6,810.6	-1,187.2	1,004.8	743.0	261.82	3.838		
13,600.0	6,805.6	13,549.4	6,630.9	134.2	135.4	79.93	-6,910.6	-1,187.2	1,004.8	739.2	265.58	3.783		
13,700.0	6,805.4	13,649.4	6,630.6	136.1	137.3	79.92	-7,010.6	-1,187.2	1,004.9	735.5	269.35	3.731		
13,800.0	6,805.2	13,749.4	6,630.3	138.0	139.1	79.92	-7,110.6	-1,187.2	1,004.9	731.8	273.11	3.679		
13,888.1	6,805.0	13,837.4	6,630.0	139.7	140.8	79.91	-7,198.6	-1,187.2	1,004.9	728.5	276.42	3.635 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-93.40	-3.6	-61.3	61.4	61.4	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-93.40	-3.6	-61.3	61.4	61.2	0.23	270.486		
200.0	200.0	201.0	201.0	0.3	0.3	-93.40	-3.6	-61.3	61.4	60.7	0.68	90.761		
300.0	300.0	301.0	301.0	0.6	0.6	-93.40	-3.6	-61.3	61.4	60.3	1.13	54.529		
366.3	366.3	367.3	367.3	0.7	0.7	-93.40	-3.6	-61.3	61.4	60.0	1.42	43.113 CC		
400.0	400.0	400.0	400.0	0.8	0.8	-93.40	-3.6	-61.3	61.4	59.8	1.57	39.032 ES		
500.0	500.0	498.9	498.9	1.0	1.0	-92.93	-3.2	-63.0	63.1	61.1	2.01	31.341		
600.0	600.0	596.7	596.5	1.2	1.2	-91.68	-2.0	-67.8	68.0	65.6	2.45	27.748		
700.0	700.0	693.9	693.4	1.5	1.4	-89.97	0.0	-75.9	76.3	73.4	2.90	26.296		
800.0	800.0	790.5	789.3	1.7	1.7	-88.13	2.8	-87.1	87.9	84.5	3.36	26.128		
900.0	900.0	887.3	885.0	1.9	2.0	-42.14	6.4	-101.3	101.5	97.7	3.79	26.774		
1,000.0	999.8	986.6	983.0	2.1	2.3	-42.21	10.3	-116.7	113.4	109.2	4.23	26.792		
1,100.0	1,099.7	1,086.0	1,081.1	2.4	2.7	-42.70	14.2	-132.2	124.6	119.9	4.69	26.558		
1,200.0	1,199.5	1,185.3	1,179.1	2.6	3.0	-43.11	18.1	-147.7	135.8	130.7	5.16	26.334		
1,300.0	1,299.3	1,284.7	1,277.2	2.8	3.4	-43.45	22.0	-163.1	147.0	141.4	5.63	26.123		
1,400.0	1,399.1	1,384.1	1,375.3	3.1	3.7	-43.75	25.9	-178.6	158.3	152.2	6.10	25.928		
1,500.0	1,498.9	1,483.4	1,473.4	3.3	4.1	-44.01	29.8	-194.1	169.5	162.9	6.58	25.750		
1,600.0	1,598.7	1,582.8	1,571.5	3.5	4.5	-44.23	33.7	-209.5	180.7	173.6	7.06	25.586		
1,700.0	1,698.5	1,682.2	1,669.5	3.8	4.8	-44.43	37.6	-225.0	191.9	184.4	7.55	25.436		
1,800.0	1,798.3	1,781.5	1,767.6	4.0	5.2	-44.61	41.5	-240.5	203.2	195.1	8.03	25.299		
1,900.0	1,898.1	1,880.9	1,865.7	4.3	5.6	-44.77	45.4	-255.9	214.4	205.9	8.52	25.173		
2,000.0	1,997.9	1,980.3	1,963.8	4.5	6.0	-44.91	49.3	-271.4	225.6	216.6	9.00	25.057		
2,100.0	2,097.7	2,079.6	2,061.8	4.8	6.3	-45.04	53.2	-286.9	236.9	227.4	9.49	24.950		
2,200.0	2,197.5	2,179.0	2,159.9	5.0	6.7	-45.16	57.0	-302.3	248.1	238.1	9.98	24.852		
2,300.0	2,297.3	2,278.4	2,258.0	5.3	7.1	-45.26	60.9	-317.8	259.3	248.8	10.47	24.760		
2,400.0	2,397.1	2,377.7	2,356.1	5.5	7.5	-45.36	64.8	-333.3	270.6	259.6	10.96	24.676		
2,500.0	2,496.9	2,477.1	2,454.2	5.8	7.8	-45.45	68.7	-348.7	281.8	270.3	11.46	24.597		
2,600.0	2,596.8	2,576.5	2,552.2	6.0	8.2	-45.54	72.6	-364.2	293.0	281.1	11.95	24.524		
2,700.0	2,696.6	2,675.8	2,650.3	6.3	8.6	-45.61	76.5	-379.6	304.3	291.8	12.44	24.455		
2,800.0	2,796.4	2,775.2	2,748.4	6.5	9.0	-45.69	80.4	-395.1	315.5	302.6	12.93	24.391		
2,900.0	2,896.2	2,874.6	2,846.5	6.8	9.3	-45.75	84.3	-410.6	326.7	313.3	13.43	24.332		
3,000.0	2,996.0	2,973.9	2,944.5	7.0	9.7	-45.82	88.2	-426.0	338.0	324.1	13.92	24.275		
3,100.0	3,095.8	3,073.3	3,042.6	7.3	10.1	-45.87	92.1	-441.5	349.2	334.8	14.42	24.222		
3,200.0	3,195.6	3,172.6	3,140.7	7.5	10.5	-45.93	96.0	-457.0	360.5	345.5	14.91	24.172		
3,300.0	3,295.4	3,272.0	3,238.8	7.7	10.8	-45.98	99.9	-472.4	371.7	356.3	15.41	24.125		
3,400.0	3,395.2	3,371.4	3,336.8	8.0	11.2	-46.03	103.8	-487.9	382.9	367.0	15.90	24.081		
3,500.0	3,495.0	3,470.7	3,434.9	8.2	11.6	-46.08	107.7	-503.4	394.2	377.8	16.40	24.038		
3,600.0	3,594.8	3,570.1	3,533.0	8.5	12.0	-46.12	111.6	-518.8	405.4	388.5	16.89	23.999		
3,700.0	3,694.6	3,669.5	3,631.1	8.7	12.3	-46.16	115.5	-534.3	416.7	399.3	17.39	23.961		
3,800.0	3,794.4	3,768.8	3,729.2	9.0	12.7	-46.20	119.4	-549.8	427.9	410.0	17.89	23.925		
3,900.0	3,894.2	3,868.2	3,827.2	9.2	13.1	-46.24	123.2	-565.2	439.1	420.8	18.38	23.890		
4,000.0	3,994.1	3,967.6	3,925.3	9.5	13.5	-46.27	127.1	-580.7	450.4	431.5	18.88	23.857		
4,100.0	4,093.9	4,066.9	4,023.4	9.7	13.8	-46.30	131.0	-596.2	461.6	442.2	19.37	23.826		
4,200.0	4,193.7	4,166.3	4,121.5	10.0	14.2	-46.34	134.9	-611.6	472.9	453.0	19.87	23.796		
4,300.0	4,293.5	4,265.7	4,219.5	10.2	14.6	-46.37	138.8	-627.1	484.1	463.7	20.37	23.768		
4,400.0	4,393.3	4,365.0	4,317.6	10.5	15.0	-46.39	142.7	-642.6	495.3	474.5	20.86	23.741		
4,500.0	4,493.1	4,464.4	4,415.7	10.8	15.4	-46.42	146.6	-658.0	506.6	485.2	21.36	23.715		
4,600.0	4,592.9	4,563.8	4,513.8	11.0	15.7	-46.45	150.5	-673.5	517.8	496.0	21.86	23.690		
4,700.0	4,692.7	4,663.1	4,611.9	11.3	16.1	-46.47	154.4	-689.0	529.1	506.7	22.36	23.666		
4,800.0	4,792.5	4,762.5	4,709.9	11.5	16.5	-46.50	158.3	-704.4	540.3	517.4	22.85	23.643		
4,900.0	4,892.3	4,861.9	4,808.0	11.8	16.9	-46.52	162.2	-719.9	551.5	528.2	23.35	23.620		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,000.0	4,992.1	4,961.2	4,906.1	12.0	17.2	-46.54	166.1	-735.3	562.8	538.9	23.85	23.599		
5,100.0	5,091.9	5,060.6	5,004.2	12.3	17.6	-46.56	170.0	-750.8	574.0	549.7	24.35	23.579		
5,200.0	5,191.7	5,160.0	5,102.2	12.5	18.0	-46.58	173.9	-766.3	585.3	560.4	24.84	23.559		
5,300.0	5,291.5	5,259.3	5,200.3	12.8	18.4	-46.60	177.8	-781.7	596.5	571.2	25.34	23.540		
5,400.0	5,391.4	5,358.6	5,298.3	13.0	18.8	-46.69	181.7	-797.2	608.3	582.5	25.80	23.577		
5,500.0	5,491.4	5,457.6	5,396.0	13.2	19.1	-46.63	185.5	-812.6	622.4	596.2	26.19	23.765		
5,600.0	5,591.4	5,571.1	5,508.1	13.3	19.5	-90.93	189.8	-829.5	637.3	610.7	26.62	23.942		
5,700.0	5,691.4	5,697.9	5,634.2	13.5	19.8	-90.59	193.3	-843.6	648.4	621.3	27.06	23.963		
5,800.0	5,791.4	5,825.9	5,761.8	13.7	20.1	-90.39	195.5	-852.3	655.2	627.7	27.48	23.842		
5,900.0	5,891.4	5,954.3	5,890.2	13.9	20.2	-90.32	196.4	-855.6	657.7	629.8	27.90	23.572		
6,000.0	5,991.4	6,056.5	5,992.4	14.1	20.4	-90.32	196.4	-855.6	657.7	629.4	28.29	23.246		
6,100.0	6,091.3	6,156.3	6,092.1	14.3	20.5	89.68	194.8	-855.6	657.7	629.1	28.66	22.948		
6,200.0	6,190.5	6,255.8	6,190.7	14.5	20.6	89.67	182.1	-855.6	657.7	628.8	28.90	22.762		
6,300.0	6,287.1	6,355.3	6,286.9	14.5	20.7	89.67	156.6	-855.6	657.7	628.7	29.05	22.645		
6,400.0	6,379.5	6,454.8	6,378.9	14.6	20.7	89.68	118.9	-855.6	657.7	628.6	29.16	22.558		
6,500.0	6,466.2	6,554.3	6,465.2	14.7	20.7	89.69	69.6	-855.6	657.7	628.4	29.30	22.451		
6,600.0	6,545.7	6,653.9	6,544.4	14.7	20.8	89.70	9.4	-855.6	657.7	628.2	29.54	22.263		
6,700.0	6,616.5	6,753.5	6,615.2	14.8	20.9	89.72	-60.6	-855.6	657.7	627.7	29.98	21.936		
6,800.0	6,677.6	6,853.1	6,676.2	15.1	21.0	89.75	-139.2	-855.6	657.7	627.0	30.69	21.430		
6,900.0	6,727.9	6,952.7	6,726.6	15.6	21.2	89.78	-225.1	-855.6	657.7	626.0	31.73	20.731		
7,000.0	6,766.4	7,052.4	6,765.4	16.3	21.6	89.81	-316.8	-855.6	657.7	624.6	33.11	19.862		
7,100.0	6,792.5	7,152.2	6,791.9	17.2	22.1	89.85	-412.9	-855.6	657.7	622.9	34.85	18.875		
7,200.0	6,806.4	7,252.0	6,806.0	18.3	22.7	89.88	-511.7	-855.6	657.7	620.8	36.90	17.827		
7,300.0	6,815.6	7,351.9	6,815.4	19.4	23.6	89.89	-611.2	-855.6	657.7	618.5	39.21	16.776		
7,400.0	6,817.5	7,451.9	6,817.5	20.7	24.5	89.91	-711.1	-855.6	657.7	616.0	41.72	15.766		
7,500.0	6,817.3	7,551.9	6,817.3	22.1	25.7	89.91	-811.1	-855.6	657.7	613.3	44.43	14.805		
7,600.0	6,817.1	7,651.9	6,817.1	23.5	26.9	89.91	-911.1	-855.6	657.7	610.4	47.29	13.909		
7,700.0	6,816.9	7,751.9	6,816.9	25.0	28.2	89.91	-1,011.1	-855.6	657.7	607.4	50.28	13.081		
7,800.0	6,816.7	7,851.9	6,816.7	26.6	29.6	89.91	-1,111.1	-855.6	657.7	604.3	53.38	12.321		
7,900.0	6,816.5	7,951.9	6,816.5	28.2	31.0	89.91	-1,211.1	-855.6	657.7	601.1	56.57	11.626		
8,000.0	6,816.3	8,051.9	6,816.3	29.8	32.5	89.91	-1,311.1	-855.6	657.7	597.9	59.84	10.991		
8,100.0	6,816.1	8,151.9	6,816.1	31.5	34.0	89.91	-1,411.1	-855.6	657.7	594.5	63.17	10.411		
8,200.0	6,815.9	8,251.9	6,815.9	33.2	35.6	89.91	-1,511.1	-855.6	657.7	591.1	66.56	9.881		
8,300.0	6,815.7	8,351.9	6,815.7	34.9	37.2	89.91	-1,611.1	-855.6	657.7	587.7	70.00	9.396		
8,400.0	6,815.5	8,451.9	6,815.5	36.7	38.9	89.91	-1,711.1	-855.6	657.7	584.2	73.47	8.952		
8,500.0	6,815.3	8,551.9	6,815.3	38.4	40.5	89.91	-1,811.1	-855.6	657.7	580.7	76.98	8.544		
8,600.0	6,815.2	8,651.9	6,815.2	40.2	42.2	89.91	-1,911.1	-855.6	657.7	577.2	80.52	8.168		
8,700.0	6,815.0	8,751.9	6,815.0	42.0	43.9	89.91	-2,011.1	-855.6	657.7	573.6	84.09	7.821		
8,800.0	6,814.8	8,851.9	6,814.8	43.8	45.6	89.91	-2,111.1	-855.6	657.7	570.0	87.68	7.501		
8,900.0	6,814.6	8,951.9	6,814.6	45.6	47.4	89.91	-2,211.1	-855.6	657.7	566.4	91.29	7.205		
9,000.0	6,814.4	9,051.9	6,814.4	47.4	49.1	89.91	-2,311.1	-855.6	657.7	562.8	94.92	6.929		
9,100.0	6,814.2	9,151.9	6,814.2	49.2	50.9	89.91	-2,411.1	-855.6	657.7	559.1	98.57	6.673		
9,200.0	6,814.0	9,251.9	6,814.0	51.1	52.7	89.91	-2,511.1	-855.6	657.7	555.5	102.22	6.434		
9,300.0	6,813.8	9,351.9	6,813.8	52.9	54.5	89.91	-2,611.1	-855.6	657.7	551.8	105.90	6.211		
9,400.0	6,813.6	9,451.9	6,813.6	54.8	56.2	89.91	-2,711.1	-855.6	657.7	548.1	109.58	6.002		
9,500.0	6,813.4	9,551.9	6,813.4	56.6	58.0	89.91	-2,811.1	-855.6	657.7	544.4	113.28	5.806		
9,600.0	6,813.2	9,651.9	6,813.2	58.5	59.9	89.91	-2,911.1	-855.6	657.7	540.7	116.98	5.622		
9,700.0	6,813.0	9,751.9	6,813.0	60.3	61.7	89.91	-3,011.1	-855.6	657.7	537.0	120.69	5.449		
9,800.0	6,812.8	9,851.9	6,812.8	62.2	63.5	89.91	-3,111.1	-855.6	657.7	533.3	124.41	5.287		
9,900.0	6,812.7	9,951.9	6,812.7	64.0	65.3	89.91	-3,211.1	-855.6	657.7	529.6	128.14	5.133		
10,000.0	6,812.5	10,051.9	6,812.5	65.9	67.2	89.91	-3,311.1	-855.6	657.7	525.8	131.87	4.987		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,812.3	10,151.9	6,812.3	67.8	69.0	89.91	89.91	-3,411.1	-855.6	657.7	522.1	135.62	4.850	
10,200.0	6,812.1	10,251.9	6,812.1	69.7	70.8	89.91	89.91	-3,511.1	-855.6	657.7	518.4	139.36	4.719	
10,300.0	6,811.9	10,351.9	6,811.9	71.5	72.7	89.91	89.91	-3,611.1	-855.6	657.7	514.6	143.11	4.596	
10,400.0	6,811.7	10,451.9	6,811.7	73.4	74.5	89.91	89.91	-3,711.1	-855.6	657.7	510.8	146.87	4.478	
10,500.0	6,811.5	10,551.9	6,811.5	75.3	76.4	89.91	89.91	-3,811.1	-855.6	657.7	507.1	150.63	4.366	
10,600.0	6,811.3	10,651.9	6,811.3	77.2	78.2	89.91	89.91	-3,911.1	-855.6	657.7	503.3	154.39	4.260	
10,700.0	6,811.1	10,751.9	6,811.1	79.1	80.1	89.91	89.91	-4,011.1	-855.6	657.7	499.6	158.16	4.159	
10,800.0	6,810.9	10,851.9	6,810.9	80.9	82.0	89.91	89.91	-4,111.1	-855.6	657.7	495.8	161.93	4.062	
10,900.0	6,810.7	10,951.9	6,810.7	82.8	83.8	89.91	89.91	-4,211.1	-855.6	657.7	492.0	165.70	3.969	
11,000.0	6,810.5	11,051.9	6,810.5	84.7	85.7	89.91	89.91	-4,311.1	-855.6	657.7	488.2	169.48	3.881	
11,100.0	6,810.4	11,151.9	6,810.4	86.6	87.6	89.91	89.91	-4,411.1	-855.6	657.7	484.4	173.26	3.796	
11,200.0	6,810.2	11,251.9	6,810.2	88.5	89.4	89.91	89.91	-4,511.1	-855.6	657.7	480.7	177.05	3.715	
11,300.0	6,810.0	11,351.9	6,810.0	90.4	91.3	89.91	89.91	-4,611.1	-855.6	657.7	476.9	180.83	3.637	
11,400.0	6,809.8	11,451.9	6,809.8	92.3	93.2	89.91	89.91	-4,711.1	-855.6	657.7	473.1	184.62	3.563	
11,500.0	6,809.6	11,551.9	6,809.6	94.2	95.1	89.91	89.91	-4,811.1	-855.6	657.7	469.3	188.41	3.491	
11,600.0	6,809.4	11,651.9	6,809.4	96.1	96.9	89.91	89.91	-4,911.1	-855.6	657.7	465.5	192.20	3.422	
11,700.0	6,809.2	11,751.9	6,809.2	98.0	98.8	89.91	89.91	-5,011.1	-855.6	657.7	461.7	195.99	3.356	
11,800.0	6,809.0	11,851.9	6,809.0	99.9	100.7	89.91	89.91	-5,111.1	-855.6	657.7	457.9	199.79	3.292	
11,900.0	6,808.8	11,951.9	6,808.8	101.8	102.6	89.91	89.91	-5,211.1	-855.6	657.7	454.1	203.59	3.231	
12,000.0	6,808.6	12,051.9	6,808.6	103.7	104.5	89.91	89.91	-5,311.1	-855.6	657.7	450.3	207.39	3.171	
12,100.0	6,808.4	12,151.9	6,808.4	105.6	106.4	89.91	89.91	-5,411.1	-855.6	657.7	446.5	211.19	3.114	
12,200.0	6,808.2	12,251.9	6,808.2	107.5	108.3	89.91	89.91	-5,511.1	-855.6	657.7	442.7	214.99	3.059	
12,300.0	6,808.0	12,351.9	6,808.0	109.4	110.1	89.91	89.91	-5,611.1	-855.6	657.7	438.9	218.79	3.006	
12,400.0	6,807.9	12,451.9	6,807.9	111.3	112.0	89.91	89.91	-5,711.1	-855.6	657.7	435.1	222.60	2.955	
12,500.0	6,807.7	12,551.9	6,807.7	113.2	113.9	89.91	89.91	-5,811.1	-855.6	657.7	431.3	226.41	2.905	
12,600.0	6,807.5	12,651.9	6,807.5	115.1	115.8	89.91	89.91	-5,911.1	-855.6	657.7	427.5	230.21	2.857	
12,700.0	6,807.3	12,751.9	6,807.3	117.0	117.7	89.91	89.91	-6,011.1	-855.6	657.7	423.7	234.02	2.810	
12,800.0	6,807.1	12,851.9	6,807.1	118.9	119.6	89.91	89.91	-6,111.1	-855.6	657.7	419.9	237.83	2.765	
12,900.0	6,806.9	12,951.9	6,806.9	120.8	121.5	89.91	89.91	-6,211.1	-855.6	657.7	416.1	241.64	2.722	
13,000.0	6,806.7	13,051.9	6,806.7	122.7	123.4	89.91	89.91	-6,311.1	-855.6	657.7	412.3	245.45	2.680	
13,100.0	6,806.5	13,151.9	6,806.5	124.6	125.3	89.91	89.91	-6,411.1	-855.6	657.7	408.4	249.27	2.639	
13,200.0	6,806.3	13,251.9	6,806.3	126.5	127.2	89.91	89.91	-6,511.1	-855.6	657.7	404.6	253.08	2.599	
13,300.0	6,806.1	13,351.9	6,806.1	128.4	129.1	89.91	89.91	-6,611.1	-855.6	657.7	400.8	256.89	2.560	
13,400.0	6,805.9	13,451.9	6,805.9	130.3	131.0	89.91	89.91	-6,711.1	-855.6	657.7	397.0	260.71	2.523	
13,500.0	6,805.7	13,551.9	6,805.7	132.3	132.9	89.91	89.91	-6,811.1	-855.6	657.7	393.2	264.52	2.486	
13,600.0	6,805.6	13,651.9	6,805.6	134.2	134.8	89.91	89.91	-6,911.1	-855.6	657.7	389.4	268.34	2.451	
13,700.0	6,805.4	13,751.9	6,805.4	136.1	136.7	89.91	89.91	-7,011.1	-855.6	657.7	385.6	272.16	2.417	
13,800.0	6,805.2	13,851.9	6,805.2	138.0	138.6	89.91	89.91	-7,111.1	-855.6	657.7	381.7	275.98	2.383	
13,853.0	6,805.1	13,904.9	6,805.1	139.0	139.6	89.91	89.91	-7,164.1	-855.6	657.7	379.7	278.00	2.366	
13,888.1	6,805.0	13,939.5	6,805.0	139.7	140.2	89.91	89.91	-7,198.7	-855.6	657.7	378.4	279.33	2.355 SF	

COMPASS 2003.21 Build 46



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,091.9	5,103.0	5,091.9	12.3	11.8	132.10		200.0	133.8	318.0	294.6	23.45	13.563	
5,200.0	5,191.7	5,202.8	5,191.7	12.5	12.0	132.91		200.0	133.8	322.2	298.3	23.89	13.486	
5,300.0	5,291.5	5,302.6	5,291.5	12.8	12.2	133.71		200.0	133.8	326.5	302.1	24.34	13.414	
5,400.0	5,391.4	5,402.5	5,391.4	13.0	12.5	134.42		200.0	133.8	330.2	305.4	24.77	13.330	
5,500.0	5,491.4	5,502.4	5,491.4	13.2	12.7	134.69		200.0	133.8	331.6	306.5	25.16	13.181	
5,600.0	5,591.4	5,602.4	5,591.4	13.3	12.9	90.00		200.0	133.8	331.6	306.1	25.56	12.975	
5,700.0	5,691.4	5,702.4	5,691.4	13.5	13.1	90.00		200.0	133.8	331.6	305.7	25.98	12.764	
5,800.0	5,791.4	5,802.4	5,791.4	13.7	13.3	90.00		200.0	133.8	331.6	305.2	26.40	12.560	
5,865.6	5,857.0	5,868.0	5,857.0	13.9	13.4	90.00		200.0	133.8	331.6	305.0	26.68	12.429	
5,900.0	5,891.4	5,902.4	5,891.4	13.9	13.5	90.00		200.0	133.8	331.6	304.8	26.83	12.363	
5,922.9	5,914.3	5,925.3	5,914.3	14.0	13.5	90.10		199.4	133.8	331.6	304.7	26.91	12.325	
6,000.0	5,991.4	6,001.8	5,990.4	14.1	13.6	91.26		192.7	133.8	331.7	304.6	27.16	12.212	
6,100.0	6,091.3	6,098.0	6,084.6	14.3	13.7	-85.62		173.5	133.8	332.7	305.2	27.42	12.133	
6,200.0	6,190.5	6,191.6	6,173.3	14.5	13.8	-82.32		143.6	133.8	334.8	307.2	27.55	12.150	
6,300.0	6,287.1	6,283.3	6,255.9	14.5	13.8	-79.21		104.0	133.8	337.8	310.2	27.62	12.229	
6,400.0	6,379.5	6,373.1	6,331.7	14.6	13.9	-76.33		55.9	133.8	341.6	313.9	27.66	12.348	
6,500.0	6,466.2	6,461.4	6,400.2	14.7	14.0	-73.73		0.2	133.8	345.8	318.1	27.71	12.478	
6,600.0	6,545.7	6,550.0	6,462.0	14.7	14.1	-71.40		-63.1	133.8	350.2	322.4	27.83	12.584	
6,700.0	6,616.5	6,634.2	6,513.6	14.8	14.5	-69.45		-129.6	133.8	354.5	326.4	28.07	12.630	
6,800.0	6,677.6	6,719.1	6,557.9	15.1	14.9	-67.80		-202.0	133.8	358.4	330.0	28.49	12.581	
6,900.0	6,727.9	6,800.0	6,592.4	15.6	15.5	-66.51		-275.1	133.8	361.9	332.8	29.14	12.418	
7,000.0	6,766.4	6,886.8	6,620.5	16.3	16.2	-65.48		-357.1	133.8	364.6	334.5	30.13	12.100	
7,100.0	6,792.5	6,969.9	6,638.6	17.2	17.0	-64.82		-438.3	133.8	366.5	335.1	31.42	11.664	
7,200.0	6,806.4	7,050.0	6,647.6	18.3	17.9	-64.45		-517.8	133.8	367.7	334.7	33.02	11.137	
7,300.0	6,815.6	7,143.0	6,648.9	19.4	19.0	-63.36		-610.7	133.8	371.2	336.3	34.84	10.654	
7,400.0	6,817.5	7,242.9	6,648.7	20.7	20.3	-63.03		-710.7	133.8	372.1	335.0	37.06	10.041	
7,500.0	6,817.3	7,342.9	6,648.5	22.1	21.7	-63.03		-810.7	133.8	372.1	332.6	39.56	9.406	
7,600.0	6,817.1	7,442.9	6,648.3	23.5	23.1	-63.02		-910.7	133.8	372.1	329.9	42.20	8.818	
7,700.0	6,816.9	7,542.9	6,648.0	25.0	24.7	-63.02		-1,010.7	133.8	372.2	327.2	44.96	8.277	
7,800.0	6,816.7	7,642.9	6,647.8	26.6	26.3	-63.01		-1,110.7	133.8	372.2	324.4	47.81	7.784	
7,900.0	6,816.5	7,742.9	6,647.6	28.2	27.9	-63.01		-1,210.7	133.8	372.2	321.4	50.75	7.334	
8,000.0	6,816.3	7,842.9	6,647.4	29.8	29.5	-63.00		-1,310.7	133.8	372.2	318.5	53.74	6.925	
8,100.0	6,816.1	7,942.9	6,647.1	31.5	31.2	-63.00		-1,410.7	133.8	372.2	315.4	56.80	6.553	
8,200.0	6,815.9	8,042.9	6,646.9	33.2	32.9	-62.99		-1,510.7	133.8	372.2	312.3	59.90	6.214	
8,300.0	6,815.7	8,142.9	6,646.7	34.9	34.7	-62.99		-1,610.7	133.8	372.2	309.2	63.04	5.905	
8,400.0	6,815.5	8,242.9	6,646.4	36.7	36.4	-62.98		-1,710.7	133.8	372.3	306.0	66.22	5.622	
8,500.0	6,815.3	8,342.9	6,646.2	38.4	38.2	-62.98		-1,810.7	133.8	372.3	302.9	69.42	5.362	
8,600.0	6,815.2	8,442.9	6,646.0	40.2	40.0	-62.98		-1,910.7	133.8	372.3	299.6	72.65	5.124	
8,700.0	6,815.0	8,542.9	6,645.8	42.0	41.8	-62.97		-2,010.7	133.8	372.3	296.4	75.91	4.905	
8,800.0	6,814.8	8,642.9	6,645.5	43.8	43.6	-62.97		-2,110.7	133.8	372.3	293.1	79.18	4.702	
8,900.0	6,814.6	8,742.9	6,645.3	45.6	45.4	-62.96		-2,210.7	133.8	372.3	289.9	82.47	4.515	
9,000.0	6,814.4	8,842.9	6,645.1	47.4	47.2	-62.96		-2,310.7	133.8	372.4	286.6	85.77	4.341	
9,100.0	6,814.2	8,942.9	6,644.9	49.2	49.1	-62.95		-2,410.7	133.8	372.4	283.3	89.09	4.180	
9,200.0	6,814.0	9,042.9	6,644.6	51.1	50.9	-62.95		-2,510.7	133.8	372.4	280.0	92.42	4.029	
9,300.0	6,813.8	9,142.9	6,644.4	52.9	52.8	-62.94		-2,610.7	133.8	372.4	276.6	95.77	3.889	
9,400.0	6,813.6	9,242.9	6,644.2	54.8	54.6	-62.94		-2,710.7	133.8	372.4	273.3	99.12	3.757	
9,500.0	6,813.4	9,342.9	6,643.9	56.6	56.5	-62.93		-2,810.7	133.8	372.4	270.0	102.48	3.634	
9,600.0	6,813.2	9,442.9	6,643.7	58.5	58.3	-62.93		-2,910.7	133.8	372.5	266.6	105.84	3.519	
9,700.0	6,813.0	9,542.9	6,643.5	60.3	60.2	-62.92		-3,010.7	133.8	372.5	263.3	109.22	3.410	
9,800.0	6,812.8	9,642.9	6,643.3	62.2	62.1	-62.92		-3,110.7	133.8	372.5	259.9	112.60	3.308	
9,900.0	6,812.7	9,742.9	6,643.0	64.0	63.9	-62.91		-3,210.7	133.8	372.5	256.5	115.98	3.212	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,812.5	9,842.9	6,642.8	65.9	65.8	-62.91	-3,310.7	133.8	372.5	253.1	119.38	3.121		
10,100.0	6,812.3	9,942.9	6,642.6	67.8	67.7	-62.90	-3,410.7	133.8	372.5	249.8	122.77	3.034		
10,200.0	6,812.1	10,042.9	6,642.4	69.7	69.5	-62.90	-3,510.7	133.8	372.5	246.4	126.17	2.953		
10,300.0	6,811.9	10,142.9	6,642.1	71.5	71.4	-62.89	-3,610.7	133.8	372.6	243.0	129.58	2.875		
10,400.0	6,811.7	10,242.9	6,641.9	73.4	73.3	-62.89	-3,710.7	133.8	372.6	239.6	132.99	2.802		
10,500.0	6,811.5	10,342.9	6,641.7	75.3	75.2	-62.88	-3,810.7	133.8	372.6	236.2	136.40	2.732		
10,600.0	6,811.3	10,442.9	6,641.5	77.2	77.1	-62.88	-3,910.7	133.8	372.6	232.8	139.81	2.665		
10,700.0	6,811.1	10,542.9	6,641.2	79.1	79.0	-62.87	-4,010.7	133.8	372.6	229.4	143.23	2.602		
10,800.0	6,810.9	10,642.9	6,641.0	80.9	80.9	-62.87	-4,110.7	133.8	372.6	226.0	146.65	2.541		
10,900.0	6,810.7	10,742.9	6,640.8	82.8	82.7	-62.87	-4,210.7	133.8	372.7	222.6	150.08	2.483		
11,000.0	6,810.5	10,842.9	6,640.5	84.7	84.6	-62.86	-4,310.7	133.8	372.7	219.2	153.50	2.428		
11,100.0	6,810.4	10,942.9	6,640.3	86.6	86.5	-62.86	-4,410.7	133.8	372.7	215.8	156.93	2.375		
11,200.0	6,810.2	11,042.9	6,640.1	88.5	88.4	-62.85	-4,510.7	133.8	372.7	212.3	160.36	2.324		
11,300.0	6,810.0	11,142.9	6,639.9	90.4	90.3	-62.85	-4,610.7	133.8	372.7	208.9	163.79	2.276		
11,400.0	6,809.8	11,242.9	6,639.6	92.3	92.2	-62.84	-4,710.7	133.8	372.7	205.5	167.23	2.229		
11,500.0	6,809.6	11,342.9	6,639.4	94.2	94.1	-62.84	-4,810.7	133.8	372.8	202.1	170.66	2.184		
11,600.0	6,809.4	11,442.9	6,639.2	96.1	96.0	-62.83	-4,910.7	133.8	372.8	198.7	174.10	2.141		
11,700.0	6,809.2	11,542.9	6,639.0	98.0	97.9	-62.83	-5,010.7	133.8	372.8	195.3	177.53	2.100		
11,800.0	6,809.0	11,642.9	6,638.7	99.9	99.8	-62.82	-5,110.7	133.8	372.8	191.8	180.97	2.060		
11,900.0	6,808.8	11,742.9	6,638.5	101.8	101.7	-62.82	-5,210.7	133.8	372.8	188.4	184.41	2.022		
12,000.0	6,808.6	11,842.9	6,638.3	103.7	103.6	-62.81	-5,310.7	133.8	372.8	185.0	187.86	1.985		
12,100.0	6,808.4	11,942.9	6,638.0	105.6	105.5	-62.81	-5,410.7	133.8	372.9	181.6	191.30	1.949		
12,200.0	6,808.2	12,042.9	6,637.8	107.5	107.4	-62.80	-5,510.7	133.8	372.9	178.1	194.74	1.915		
12,300.0	6,808.0	12,142.9	6,637.6	109.4	109.3	-62.80	-5,610.7	133.8	372.9	174.7	198.19	1.881		
12,400.0	6,807.9	12,242.9	6,637.4	111.3	111.2	-62.79	-5,710.7	133.8	372.9	171.3	201.63	1.849		
12,500.0	6,807.7	12,342.9	6,637.1	113.2	113.1	-62.79	-5,810.7	133.8	372.9	167.8	205.08	1.818		
12,600.0	6,807.5	12,442.9	6,636.9	115.1	115.0	-62.78	-5,910.7	133.8	372.9	164.4	208.52	1.788		
12,700.0	6,807.3	12,542.9	6,636.7	117.0	117.0	-62.78	-6,010.7	133.8	372.9	161.0	211.97	1.759		
12,800.0	6,807.1	12,642.9	6,636.5	118.9	118.9	-62.77	-6,110.7	133.8	373.0	157.5	215.42	1.731		
12,900.0	6,806.9	12,742.9	6,636.2	120.8	120.8	-62.77	-6,210.7	133.8	373.0	154.1	218.87	1.704		
13,000.0	6,806.7	12,842.9	6,636.0	122.7	122.7	-62.76	-6,310.7	133.8	373.0	150.7	222.32	1.678		
13,100.0	6,806.5	12,942.9	6,635.8	124.6	124.6	-62.76	-6,410.7	133.8	373.0	147.2	225.77	1.652		
13,200.0	6,806.3	13,042.9	6,635.6	126.5	126.5	-62.76	-6,510.7	133.8	373.0	143.8	229.22	1.627		
13,300.0	6,806.1	13,142.9	6,635.3	128.4	128.4	-62.75	-6,610.7	133.8	373.0	140.4	232.67	1.603		
13,400.0	6,805.9	13,242.9	6,635.1	130.3	130.3	-62.75	-6,710.7	133.8	373.1	136.9	236.12	1.580		
13,500.0	6,805.7	13,342.9	6,634.9	132.3	132.2	-62.74	-6,810.7	133.8	373.1	133.5	239.57	1.557		
13,600.0	6,805.6	13,442.9	6,634.6	134.2	134.1	-62.74	-6,910.7	133.8	373.1	130.1	243.02	1.535		
13,700.0	6,805.4	13,542.9	6,634.4	136.1	136.0	-62.73	-7,010.7	133.8	373.1	126.6	246.48	1.514		
13,800.0	6,805.2	13,642.9	6,634.2	138.0	137.9	-62.73	-7,110.7	133.8	373.1	123.2	249.93	1.493 Level 3		
13,851.1	6,805.1	13,694.0	6,634.1	139.0	138.9	-62.72	-7,161.8	133.8	373.1	121.4	251.69	1.482 Level 3		
13,888.1	6,805.0	13,727.3	6,634.0	139.7	139.6	-62.72	-7,195.1	133.8	373.2	120.2	252.91	1.475 Level 3, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-30.6	30.6	30.6	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-30.6	30.6	30.4	0.23	135.005		
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-30.6	30.6	30.0	0.68	45.301		
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	0.0	-30.6	30.6	29.5	1.13	27.216		
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	0.0	-30.6	30.6	29.1	1.58	19.451		
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	0.0	-30.6	30.6	28.6	2.03	15.134		
566.3	566.3	567.3	567.3	1.2	1.2	-90.00	0.0	-30.6	30.6	28.3	2.32	13.191 CC		
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	0.0	-30.6	30.6	28.2	2.47	12.385 ES		
700.0	700.0	700.0	700.0	1.5	1.5	-88.84	0.7	-32.3	32.3	29.4	2.91	11.078		
800.0	800.0	798.7	798.5	1.7	1.7	-86.02	2.6	-37.0	37.2	33.9	3.35	11.092		
900.0	900.0	897.1	896.6	1.9	1.9	-39.30	5.8	-44.9	44.1	40.4	3.79	11.660		
1,000.0	999.8	996.7	995.6	2.1	2.2	-39.55	9.8	-54.9	50.6	46.4	4.22	11.982		
1,100.0	1,099.7	1,096.5	1,094.8	2.4	2.4	-40.47	13.9	-65.0	56.3	51.6	4.67	12.054		
1,200.0	1,199.5	1,196.3	1,194.0	2.6	2.7	-41.22	17.9	-75.1	62.0	56.8	5.12	12.099		
1,300.0	1,299.3	1,296.2	1,293.3	2.8	3.0	-41.85	22.0	-85.2	67.7	62.1	5.58	12.128		
1,400.0	1,399.1	1,396.0	1,392.5	3.1	3.3	-42.38	26.0	-95.2	73.4	67.3	6.04	12.145		
1,500.0	1,498.9	1,495.9	1,491.8	3.3	3.5	-42.84	30.1	-105.3	79.1	72.6	6.51	12.154		
1,600.0	1,598.7	1,595.7	1,591.0	3.5	3.8	-43.23	34.2	-115.4	84.8	77.8	6.98	12.157		
1,700.0	1,698.5	1,695.5	1,690.3	3.8	4.1	-43.57	38.2	-125.4	90.5	83.1	7.45	12.157		
1,800.0	1,798.3	1,795.4	1,789.5	4.0	4.4	-43.87	42.3	-135.5	96.3	88.3	7.92	12.154		
1,900.0	1,898.1	1,895.2	1,888.7	4.3	4.7	-44.14	46.3	-145.6	102.0	93.6	8.39	12.149		
2,000.0	1,997.9	1,995.0	1,988.0	4.5	5.0	-44.38	50.4	-155.7	107.7	98.8	8.87	12.143		
2,100.0	2,097.7	2,094.9	2,087.2	4.8	5.3	-44.60	54.5	-165.7	113.4	104.1	9.35	12.137		
2,200.0	2,197.5	2,194.7	2,186.5	5.0	5.6	-44.79	58.5	-175.8	119.2	109.3	9.82	12.130		
2,300.0	2,297.3	2,294.5	2,285.7	5.3	5.9	-44.97	62.6	-185.9	124.9	114.6	10.30	12.122		
2,400.0	2,397.1	2,394.4	2,385.0	5.5	6.2	-45.13	66.6	-196.0	130.6	119.9	10.78	12.115		
2,500.0	2,496.9	2,494.2	2,484.2	5.8	6.5	-45.28	70.7	-206.0	136.4	125.1	11.26	12.107		
2,600.0	2,596.8	2,594.0	2,583.4	6.0	6.8	-45.41	74.8	-216.1	142.1	130.4	11.74	12.100		
2,700.0	2,696.6	2,693.9	2,682.7	6.3	7.1	-45.54	78.8	-226.2	147.8	135.6	12.23	12.093		
2,800.0	2,796.4	2,793.7	2,781.9	6.5	7.4	-45.65	82.9	-236.3	153.6	140.9	12.71	12.085		
2,900.0	2,896.2	2,893.5	2,881.2	6.8	7.7	-45.76	87.0	-246.3	159.3	146.1	13.19	12.078		
3,000.0	2,996.0	2,993.4	2,980.4	7.0	8.0	-45.86	91.0	-256.4	165.1	151.4	13.67	12.072		
3,100.0	3,095.8	3,093.2	3,079.6	7.3	8.3	-45.96	95.1	-266.5	170.8	156.6	14.16	12.065		
3,200.0	3,195.6	3,193.0	3,178.9	7.5	8.6	-46.04	99.1	-276.5	176.5	161.9	14.64	12.059		
3,300.0	3,295.4	3,292.9	3,278.1	7.7	8.9	-46.12	103.2	-286.6	182.3	167.1	15.12	12.052		
3,400.0	3,395.2	3,392.7	3,377.4	8.0	9.2	-46.20	107.3	-296.7	188.0	172.4	15.61	12.046		
3,500.0	3,495.0	3,492.5	3,476.6	8.2	9.5	-46.27	111.3	-306.8	193.7	177.7	16.09	12.041		
3,600.0	3,594.8	3,592.4	3,575.9	8.5	9.8	-46.34	115.4	-316.8	199.5	182.9	16.58	12.035		
3,700.0	3,694.6	3,692.2	3,675.1	8.7	10.1	-46.41	119.4	-326.9	205.2	188.2	17.06	12.030		
3,800.0	3,794.4	3,792.1	3,774.3	9.0	10.4	-46.47	123.5	-337.0	211.0	193.4	17.54	12.024		
3,900.0	3,894.2	3,891.9	3,873.6	9.2	10.7	-46.52	127.6	-347.1	216.7	198.7	18.03	12.019		
4,000.0	3,994.1	3,991.7	3,972.8	9.5	11.0	-46.58	131.6	-357.1	222.4	203.9	18.52	12.014		
4,100.0	4,093.9	4,091.6	4,072.1	9.7	11.3	-46.63	135.7	-367.2	228.2	209.2	19.00	12.010		
4,200.0	4,193.7	4,191.4	4,171.3	10.0	11.6	-46.68	139.7	-377.3	233.9	214.4	19.49	12.005		
4,300.0	4,293.5	4,291.2	4,270.6	10.2	11.9	-46.73	143.8	-387.4	239.7	219.7	19.97	12.001		
4,400.0	4,393.3	4,391.1	4,369.8	10.5	12.2	-46.77	147.9	-397.4	245.4	225.0	20.46	11.996		
4,500.0	4,493.1	4,490.9	4,469.0	10.8	12.5	-46.81	151.9	-407.5	251.2	230.2	20.94	11.992		
4,600.0	4,592.9	4,590.7	4,568.3	11.0	12.8	-46.86	156.0	-417.6	256.9	235.5	21.43	11.988		
4,700.0	4,692.7	4,690.6	4,667.5	11.3	13.1	-46.89	160.1	-427.6	262.6	240.7	21.91	11.985		
4,800.0	4,792.5	4,790.4	4,766.8	11.5	13.4	-46.93	164.1	-437.7	268.4	246.0	22.40	11.981		
4,900.0	4,892.3	4,890.2	4,866.0	11.8	13.7	-46.97	168.2	-447.8	274.1	251.2	22.89	11.977		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
5,000.0	4,992.1	4,990.1	4,965.3	12.0	14.0	-47.00	172.2	-457.9	279.9	256.5	23.37	11.974	
5,100.0	5,091.9	5,089.9	5,064.5	12.3	14.3	-47.03	176.3	-467.9	285.6	261.7	23.86	11.970	
5,200.0	5,191.7	5,189.7	5,163.7	12.5	14.6	-47.07	180.4	-478.0	291.3	267.0	24.35	11.967	
5,300.0	5,291.5	5,289.6	5,263.0	12.8	14.9	-47.10	184.4	-488.1	297.1	272.3	24.83	11.964	
5,400.0	5,391.4	5,389.4	5,362.2	13.0	15.2	-47.08	188.5	-498.2	303.4	278.1	25.29	11.999	
5,500.0	5,491.4	5,489.0	5,461.2	13.2	15.5	-46.67	192.5	-508.2	312.0	286.3	25.66	12.158	
5,600.0	5,591.4	5,596.7	5,568.4	13.3	15.8	-90.63	196.5	-518.0	321.1	295.0	26.05	12.325	
5,700.0	5,691.4	5,708.2	5,679.7	13.5	16.0	-90.17	199.1	-524.4	326.8	300.3	26.44	12.360	
5,800.0	5,791.4	5,820.0	5,791.5	13.7	16.2	-90.00	200.0	-526.7	328.8	302.0	26.83	12.257	
5,900.0	5,891.4	5,920.9	5,892.4	13.9	16.4	-90.00	200.0	-526.7	328.9	301.6	27.23	12.079	
5,961.5	5,952.9	5,982.5	5,953.9	14.1	16.5	-90.00	200.0	-526.7	328.9	301.4	27.48	11.969	
6,000.0	5,991.4	6,020.9	5,992.4	14.1	16.5	-90.08	199.5	-526.7	328.9	301.2	27.63	11.903	
6,100.0	6,091.3	6,120.0	6,090.9	14.3	16.6	88.45	189.7	-526.7	329.0	301.0	28.02	11.739	
6,200.0	6,190.5	6,217.7	6,186.0	14.5	16.7	86.70	167.6	-526.7	329.4	301.1	28.31	11.637	
6,300.0	6,287.1	6,314.2	6,276.4	14.5	16.8	85.03	134.0	-526.7	330.1	301.6	28.49	11.586	
6,400.0	6,379.5	6,409.6	6,360.9	14.6	16.8	83.45	89.8	-526.7	331.0	302.4	28.62	11.567	
6,500.0	6,466.2	6,504.0	6,438.5	14.7	16.9	81.99	36.1	-526.7	332.1	303.4	28.74	11.554	
6,600.0	6,545.7	6,597.6	6,508.2	14.7	17.0	80.68	-26.1	-526.7	333.3	304.3	28.95	11.513	
6,700.0	6,616.5	6,690.4	6,569.4	14.8	17.1	79.52	-95.8	-526.7	334.5	305.1	29.32	11.408	
6,800.0	6,677.6	6,782.5	6,621.3	15.1	17.3	78.54	-171.8	-526.7	335.6	305.6	29.94	11.207	
6,900.0	6,727.9	6,874.1	6,663.5	15.6	17.6	77.74	-253.0	-526.7	336.5	305.7	30.89	10.894	
7,000.0	6,766.4	6,965.2	6,695.6	16.3	18.1	77.13	-338.3	-526.7	337.3	305.1	32.21	10.472	
7,100.0	6,792.5	7,056.1	6,717.2	17.2	18.8	76.72	-426.5	-526.7	337.9	304.0	33.91	9.964	
7,200.0	6,806.4	7,146.8	6,728.2	18.3	19.7	76.44	-516.5	-526.7	338.3	302.4	35.92	9.419	
7,300.0	6,815.6	7,241.1	6,729.4	19.4	20.7	75.18	-610.8	-526.7	340.2	302.1	38.08	8.934	
7,400.0	6,817.5	7,341.0	6,729.0	20.7	21.9	74.79	-710.7	-526.7	340.8	300.2	40.61	8.392	
7,500.0	6,817.3	7,441.0	6,728.6	22.1	23.2	74.76	-810.7	-526.7	340.8	297.6	43.27	7.878	
7,600.0	6,817.1	7,541.0	6,728.2	23.5	24.6	74.72	-910.7	-526.7	340.9	294.8	46.07	7.399	
7,700.0	6,816.9	7,641.0	6,727.8	25.0	26.0	74.69	-1,010.7	-526.7	341.0	292.0	49.00	6.959	
7,800.0	6,816.7	7,741.0	6,727.4	26.6	27.5	74.65	-1,110.7	-526.7	341.0	289.0	52.02	6.555	
7,900.0	6,816.5	7,841.0	6,727.0	28.2	29.1	74.62	-1,210.7	-526.7	341.1	285.9	55.14	6.186	
8,000.0	6,816.3	7,941.0	6,726.6	29.8	30.7	74.59	-1,310.7	-526.7	341.1	282.8	58.32	5.849	
8,100.0	6,816.1	8,041.0	6,726.2	31.5	32.3	74.55	-1,410.7	-526.7	341.2	279.6	61.56	5.542	
8,200.0	6,815.9	8,141.0	6,725.8	33.2	34.0	74.52	-1,510.7	-526.7	341.2	276.4	64.85	5.262	
8,300.0	6,815.7	8,241.0	6,725.4	34.9	35.7	74.48	-1,610.7	-526.7	341.3	273.1	68.18	5.005	
8,400.0	6,815.5	8,341.0	6,725.0	36.7	37.4	74.45	-1,710.7	-526.7	341.3	269.8	71.55	4.770	
8,500.0	6,815.3	8,441.0	6,724.6	38.4	39.1	74.42	-1,810.7	-526.7	341.4	266.4	74.96	4.555	
8,600.0	6,815.2	8,541.0	6,724.2	40.2	40.9	74.38	-1,910.7	-526.7	341.5	263.1	78.39	4.356	
8,700.0	6,815.0	8,641.0	6,723.8	42.0	42.6	74.35	-2,010.7	-526.7	341.5	259.7	81.84	4.173	
8,800.0	6,814.8	8,741.0	6,723.4	43.8	44.4	74.32	-2,110.7	-526.7	341.6	256.3	85.31	4.004	
8,900.0	6,814.6	8,841.0	6,723.0	45.6	46.2	74.28	-2,210.7	-526.7	341.6	252.8	88.80	3.847	
9,000.0	6,814.4	8,941.0	6,722.6	47.4	48.0	74.25	-2,310.7	-526.7	341.7	249.4	92.31	3.701	
9,100.0	6,814.2	9,041.0	6,722.2	49.2	49.8	74.21	-2,410.7	-526.7	341.7	245.9	95.83	3.566	
9,200.0	6,814.0	9,141.0	6,721.8	51.1	51.6	74.18	-2,510.7	-526.7	341.8	242.4	99.37	3.440	
9,300.0	6,813.8	9,241.0	6,721.4	52.9	53.4	74.15	-2,610.7	-526.7	341.9	238.9	102.91	3.322	
9,400.0	6,813.6	9,341.0	6,721.0	54.8	55.3	74.11	-2,710.7	-526.7	341.9	235.4	106.47	3.211	
9,500.0	6,813.4	9,441.0	6,720.6	56.6	57.1	74.08	-2,810.7	-526.7	342.0	231.9	110.03	3.108	
9,600.0	6,813.2	9,541.0	6,720.2	58.5	58.9	74.04	-2,910.7	-526.7	342.0	228.4	113.60	3.011	
9,700.0	6,813.0	9,641.0	6,719.8	60.3	60.8	74.01	-3,010.7	-526.7	342.1	224.9	117.18	2.919	
9,800.0	6,812.8	9,741.0	6,719.4	62.2	62.6	73.98	-3,110.7	-526.7	342.1	221.4	120.77	2.833	
9,900.0	6,812.7	9,841.0	6,719.0	64.0	64.5	73.94	-3,210.7	-526.7	342.2	217.8	124.36	2.752	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,812.5	9,941.0	6,718.6	65.9	66.3	73.91	73.91	-3,310.7	-526.7	342.3	214.3	127.95	2.675	
10,100.0	6,812.3	10,041.0	6,718.2	67.8	68.2	73.88	73.88	-3,410.7	-526.7	342.3	210.8	131.55	2.602	
10,200.0	6,812.1	10,141.0	6,717.8	69.7	70.1	73.84	73.84	-3,510.7	-526.7	342.4	207.2	135.16	2.533	
10,300.0	6,811.9	10,241.0	6,717.4	71.5	71.9	73.81	73.81	-3,610.7	-526.7	342.4	203.7	138.77	2.468	
10,400.0	6,811.7	10,341.0	6,717.0	73.4	73.8	73.78	73.78	-3,710.7	-526.7	342.5	200.1	142.38	2.406	
10,500.0	6,811.5	10,441.0	6,716.6	75.3	75.7	73.74	73.74	-3,810.7	-526.7	342.6	196.6	145.99	2.346	
10,600.0	6,811.3	10,541.0	6,716.2	77.2	77.5	73.71	73.71	-3,910.7	-526.7	342.6	193.0	149.61	2.290	
10,700.0	6,811.1	10,641.0	6,715.8	79.1	79.4	73.67	73.67	-4,010.7	-526.7	342.7	189.4	153.23	2.236	
10,800.0	6,810.9	10,741.0	6,715.4	80.9	81.3	73.64	73.64	-4,110.7	-526.7	342.7	185.9	156.85	2.185	
10,900.0	6,810.7	10,841.0	6,715.0	82.8	83.2	73.61	73.61	-4,210.7	-526.7	342.8	182.3	160.47	2.136	
11,000.0	6,810.5	10,941.0	6,714.6	84.7	85.1	73.57	73.57	-4,310.7	-526.7	342.8	178.7	164.10	2.089	
11,100.0	6,810.4	11,041.0	6,714.2	86.6	86.9	73.54	73.54	-4,410.7	-526.7	342.9	175.2	167.73	2.044	
11,200.0	6,810.2	11,141.0	6,713.8	88.5	88.8	73.51	73.51	-4,510.7	-526.7	343.0	171.6	171.35	2.002	
11,300.0	6,810.0	11,241.0	6,713.4	90.4	90.7	73.47	73.47	-4,610.7	-526.7	343.0	168.0	174.98	1.960	
11,400.0	6,809.8	11,341.0	6,713.0	92.3	92.6	73.44	73.44	-4,710.7	-526.7	343.1	164.5	178.61	1.921	
11,500.0	6,809.6	11,441.0	6,712.6	94.2	94.5	73.41	73.41	-4,810.7	-526.7	343.1	160.9	182.24	1.883	
11,600.0	6,809.4	11,541.0	6,712.2	96.1	96.4	73.37	73.37	-4,910.7	-526.7	343.2	157.3	185.88	1.846	
11,700.0	6,809.2	11,641.0	6,711.8	98.0	98.3	73.34	73.34	-5,010.7	-526.7	343.3	153.8	189.51	1.811	
11,800.0	6,809.0	11,741.0	6,711.4	99.9	100.2	73.31	73.31	-5,110.7	-526.7	343.3	150.2	193.14	1.778	
11,900.0	6,808.8	11,841.0	6,711.0	101.8	102.1	73.27	73.27	-5,210.7	-526.7	343.4	146.6	196.78	1.745	
12,000.0	6,808.6	11,941.0	6,710.6	103.7	104.0	73.24	73.24	-5,310.7	-526.7	343.4	143.0	200.41	1.714	
12,100.0	6,808.4	12,041.0	6,710.2	105.6	105.9	73.21	73.21	-5,410.7	-526.7	343.5	139.5	204.05	1.683	
12,200.0	6,808.2	12,141.0	6,709.8	107.5	107.7	73.17	73.17	-5,510.7	-526.7	343.6	135.9	207.68	1.654	
12,300.0	6,808.0	12,241.0	6,709.4	109.4	109.6	73.14	73.14	-5,610.7	-526.7	343.6	132.3	211.32	1.626	
12,400.0	6,807.9	12,341.0	6,709.0	111.3	111.5	73.10	73.10	-5,710.7	-526.7	343.7	128.7	214.95	1.599	
12,500.0	6,807.7	12,441.0	6,708.6	113.2	113.4	73.07	73.07	-5,810.7	-526.7	343.8	125.2	218.59	1.573	
12,600.0	6,807.5	12,541.0	6,708.2	115.1	115.3	73.04	73.04	-5,910.7	-526.7	343.8	121.6	222.22	1.547	
12,700.0	6,807.3	12,641.0	6,707.8	117.0	117.2	73.00	73.00	-6,010.7	-526.7	343.9	118.0	225.86	1.523	
12,800.0	6,807.1	12,741.0	6,707.4	118.9	119.1	72.97	72.97	-6,110.7	-526.7	343.9	114.4	229.49	1.499 Level 3	
12,900.0	6,806.9	12,841.0	6,707.0	120.8	121.0	72.94	72.94	-6,210.7	-526.7	344.0	110.9	233.13	1.476 Level 3	
13,000.0	6,806.7	12,941.0	6,706.6	122.7	123.0	72.90	72.90	-6,310.7	-526.7	344.1	107.3	236.76	1.453 Level 3	
13,100.0	6,806.5	13,041.0	6,706.2	124.6	124.9	72.87	72.87	-6,410.7	-526.7	344.1	103.7	240.39	1.431 Level 3	
13,200.0	6,806.3	13,141.0	6,705.8	126.5	126.8	72.84	72.84	-6,510.7	-526.7	344.2	100.2	244.03	1.410 Level 3	
13,300.0	6,806.1	13,241.0	6,705.4	128.4	128.7	72.80	72.80	-6,610.7	-526.7	344.2	96.6	247.66	1.390 Level 3	
13,400.0	6,805.9	13,341.0	6,705.0	130.3	130.6	72.77	72.77	-6,710.7	-526.7	344.3	93.0	251.29	1.370 Level 3	
13,500.0	6,805.7	13,441.0	6,704.6	132.3	132.5	72.74	72.74	-6,810.7	-526.7	344.4	89.4	254.93	1.351 Level 3	
13,600.0	6,805.6	13,541.0	6,704.2	134.2	134.4	72.70	72.70	-6,910.7	-526.7	344.4	85.9	258.56	1.332 Level 3	
13,700.0	6,805.4	13,641.0	6,703.8	136.1	136.3	72.67	72.67	-7,010.7	-526.7	344.5	82.3	262.19	1.314 Level 3	
13,800.0	6,805.2	13,741.0	6,703.4	138.0	138.2	72.64	72.64	-7,110.7	-526.7	344.6	78.7	265.82	1.296 Level 3	
13,888.1	6,805.0	13,829.1	6,703.0	139.7	139.9	72.61	72.61	-7,198.7	-526.7	344.6	75.6	269.02	1.281 Level 3, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	2.0	2.0	0.0	0.0	-132.33	-451.7	-495.9	670.8	670.8	0.04	N/A		
100.0	100.0	102.0	102.0	0.1	2.0	-132.33	-451.7	-495.9	670.8	668.7	2.15	311.647		
200.0	200.0	202.0	202.0	0.3	4.0	-132.33	-451.7	-495.9	670.8	666.5	4.38	153.254		
300.0	300.0	302.0	302.0	0.6	6.0	-132.33	-451.7	-495.9	670.8	664.2	6.60	101.611		
400.0	400.0	402.0	402.0	0.8	8.0	-132.33	-451.7	-495.9	670.8	662.0	8.83	76.000		
500.0	500.0	502.0	502.0	1.0	10.0	-132.33	-451.7	-495.9	670.8	659.8	11.05	60.701		
600.0	600.0	602.0	602.0	1.2	12.0	-132.33	-451.7	-495.9	670.8	657.6	13.28	50.529		
700.0	700.0	702.0	702.0	1.5	14.0	-132.33	-451.7	-495.9	670.8	655.3	15.50	43.277		
800.0	800.0	802.0	802.0	1.7	16.0	-132.33	-451.7	-495.9	670.8	653.1	17.73	37.845		
900.0	900.0	902.0	902.0	1.9	18.0	-87.79	-451.7	-495.9	670.8	650.8	19.95	33.629		
1,000.0	999.8	1,001.8	1,001.8	2.1	20.0	-88.23	-451.7	-495.9	670.6	648.4	22.17	30.255		
1,100.0	1,099.7	1,101.7	1,101.7	2.4	22.0	-88.76	-451.7	-495.9	670.4	646.0	24.39	27.489		
1,200.0	1,199.5	1,201.5	1,201.5	2.6	24.0	-89.29	-451.7	-495.9	670.3	643.7	26.62	25.184		
1,300.0	1,299.3	1,301.3	1,301.3	2.8	26.0	-89.82	-451.7	-495.9	670.3	641.4	28.85	23.234		
1,334.7	1,333.9	1,335.9	1,335.9	2.9	26.7	-90.00	-451.7	-495.9	670.3	640.6	29.62	22.625		
1,400.0	1,399.1	1,401.1	1,401.1	3.1	28.0	-90.35	-451.7	-495.9	670.3	639.2	31.08	21.565		
1,500.0	1,498.9	1,500.9	1,500.9	3.3	30.0	-90.88	-451.7	-495.9	670.4	637.0	33.32	20.119		
1,600.0	1,598.7	1,600.7	1,600.7	3.5	32.0	-91.41	-451.7	-495.9	670.5	634.9	35.56	18.856		
1,700.0	1,698.5	1,700.5	1,700.5	3.8	34.0	-91.93	-451.7	-495.9	670.7	632.9	37.80	17.744		
1,800.0	1,798.3	1,800.3	1,800.3	4.0	36.0	-92.46	-451.7	-495.9	670.9	630.9	40.04	16.757		
1,900.0	1,898.1	1,900.1	1,900.1	4.3	38.0	-92.99	-451.7	-495.9	671.2	628.9	42.28	15.876		
2,000.0	1,997.9	1,999.9	1,999.9	4.5	40.0	-93.52	-451.7	-495.9	671.5	627.0	44.52	15.084		
2,100.0	2,097.7	2,099.7	2,099.7	4.8	42.0	-94.05	-451.7	-495.9	672.0	625.2	46.76	14.370		
2,200.0	2,197.5	2,199.5	2,199.5	5.0	44.0	-94.57	-451.7	-495.9	672.4	623.4	49.00	13.722		
2,300.0	2,297.3	2,299.3	2,299.3	5.3	46.0	-95.10	-451.7	-495.9	672.9	621.7	51.25	13.131		
2,400.0	2,397.1	2,399.1	2,399.1	5.5	48.0	-95.63	-451.7	-495.9	673.5	620.0	53.49	12.591		
2,500.0	2,496.9	2,498.9	2,498.9	5.8	50.0	-96.15	-451.7	-495.9	674.2	618.4	55.74	12.096		
2,600.0	2,596.8	2,598.8	2,598.8	6.0	52.0	-96.67	-451.7	-495.9	674.9	616.9	57.98	11.640		
2,700.0	2,696.6	2,698.6	2,698.6	6.3	54.0	-97.19	-451.7	-495.9	675.6	615.4	60.22	11.218		
2,800.0	2,796.4	2,798.4	2,798.4	6.5	56.0	-97.72	-451.7	-495.9	676.4	614.0	62.47	10.828		
2,900.0	2,896.2	2,898.2	2,898.2	6.8	58.0	-98.24	-451.7	-495.9	677.3	612.6	64.71	10.466		
3,000.0	2,996.0	2,998.0	2,998.0	7.0	60.0	-98.75	-451.7	-495.9	678.2	611.2	66.96	10.129		
3,100.0	3,095.8	3,097.8	3,097.8	7.3	62.0	-99.27	-451.7	-495.9	679.2	610.0	69.20	9.814		
3,200.0	3,195.6	3,197.6	3,197.6	7.5	64.0	-99.79	-451.7	-495.9	680.2	608.8	71.45	9.521		
3,300.0	3,295.4	3,297.4	3,297.4	7.7	65.9	-100.30	-451.7	-495.9	681.3	607.6	73.69	9.245		
3,400.0	3,395.2	3,397.2	3,397.2	8.0	67.9	-100.81	-451.7	-495.9	682.4	606.5	75.94	8.987		
3,500.0	3,495.0	3,497.0	3,497.0	8.2	69.9	-101.32	-451.7	-495.9	683.6	605.4	78.18	8.744		
3,600.0	3,594.8	3,596.8	3,596.8	8.5	71.9	-101.83	-451.7	-495.9	684.9	604.5	80.42	8.516		
3,700.0	3,694.6	3,696.6	3,696.6	8.7	73.9	-102.34	-451.7	-495.9	686.2	603.5	82.67	8.300		
3,800.0	3,794.4	3,796.4	3,796.4	9.0	75.9	-102.84	-451.7	-495.9	687.5	602.6	84.91	8.097		
3,900.0	3,894.2	3,896.2	3,896.2	9.2	77.9	-103.34	-451.7	-495.9	688.9	601.8	87.16	7.905		
4,000.0	3,994.1	3,996.1	3,996.1	9.5	79.9	-103.84	-451.7	-495.9	690.4	601.0	89.40	7.723		
4,100.0	4,093.9	4,095.9	4,095.9	9.7	81.9	-104.34	-451.7	-495.9	691.9	600.3	91.64	7.550		
4,200.0	4,193.7	4,195.7	4,195.7	10.0	83.9	-104.84	-451.7	-495.9	693.5	599.6	93.89	7.386		
4,300.0	4,293.5	4,295.5	4,295.5	10.2	85.9	-105.33	-451.7	-495.9	695.1	599.0	96.13	7.231		
4,400.0	4,393.3	4,395.3	4,395.3	10.5	87.9	-105.82	-451.7	-495.9	696.8	598.4	98.37	7.083		
4,500.0	4,493.1	4,495.1	4,495.1	10.8	89.9	-106.31	-451.7	-495.9	698.5	597.9	100.61	6.942		
4,600.0	4,592.9	4,594.9	4,594.9	11.0	91.9	-106.80	-451.7	-495.9	700.3	597.4	102.86	6.808		
4,700.0	4,692.7	4,694.7	4,694.7	11.3	93.9	-107.28	-451.7	-495.9	702.1	597.0	105.10	6.680		
4,800.0	4,792.5	4,794.5	4,794.5	11.5	95.9	-107.77	-451.7	-495.9	704.0	596.6	107.34	6.558		
4,900.0	4,892.3	4,894.3	4,894.3	11.8	97.9	-108.25	-451.7	-495.9	705.9	596.3	109.58	6.442		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<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: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,000.0	4,992.1	4,994.1	4,994.1	12.0	99.9	-108.72	-451.7	-495.9	707.9	596.0	111.82	6.330		
5,100.0	5,091.9	5,093.9	5,093.9	12.3	101.9	-109.20	-451.7	-495.9	709.9	595.8	114.07	6.223		
5,200.0	5,191.7	5,193.7	5,193.7	12.5	103.9	-109.67	-451.7	-495.9	712.0	595.6	116.31	6.121		
5,300.0	5,291.5	5,293.5	5,293.5	12.8	105.9	-110.14	-451.7	-495.9	714.1	595.5	118.55	6.024		
5,400.0	5,391.4	5,393.4	5,393.4	13.0	107.9	-110.56	-451.7	-495.9	715.9	595.2	120.78	5.928		
5,500.0	5,491.4	5,493.4	5,493.4	13.2	109.9	-110.73	-451.7	-495.9	716.7	593.7	122.95	5.829		
5,600.0	5,591.4	5,593.4	5,593.4	13.3	111.9	-155.42	-451.7	-495.9	716.7	591.5	125.14	5.727		
5,700.0	5,691.4	5,693.4	5,693.4	13.5	113.9	-155.42	-451.7	-495.9	716.7	589.3	127.34	5.628		
5,800.0	5,791.4	5,793.4	5,793.4	13.7	115.9	-155.42	-451.7	-495.9	716.7	587.1	129.54	5.532		
5,900.0	5,891.4	5,893.4	5,893.4	13.9	117.9	-155.42	-451.7	-495.9	716.7	584.9	131.75	5.440		
6,000.0	5,991.4	5,993.4	5,993.4	14.1	119.9	-155.42	-451.7	-495.9	716.7	582.7	133.96	5.350		
6,100.0	6,091.3	6,093.3	6,093.3	14.3	121.9	24.67	-451.7	-495.9	715.3	579.4	135.92	5.263		
6,200.0	6,190.5	6,192.5	6,192.5	14.5	123.8	25.47	-451.7	-495.9	703.8	567.6	136.18	5.168		
6,300.0	6,287.1	6,289.1	6,289.1	14.5	125.8	27.20	-451.7	-495.9	680.7	546.1	134.63	5.056		
6,400.0	6,379.5	6,381.5	6,381.5	14.6	127.6	30.03	-451.7	-495.9	646.8	515.1	131.70	4.911		
6,500.0	6,466.2	6,468.2	6,468.2	14.7	129.4	34.31	-451.7	-495.9	603.1	474.7	128.39	4.697		
6,600.0	6,545.7	6,547.7	6,547.7	14.7	131.0	40.45	-451.7	-495.9	551.3	424.8	126.50	4.358		
6,700.0	6,616.5	6,618.5	6,618.5	14.8	132.4	48.88	-451.7	-495.9	493.5	365.1	128.39	3.844		
6,800.0	6,677.6	6,679.6	6,679.6	15.1	133.6	59.53	-451.7	-495.9	433.1	298.0	135.10	3.206		
6,900.0	6,727.9	6,729.9	6,729.9	15.6	134.6	71.21	-451.7	-495.9	375.2	231.3	143.84	2.608		
7,000.0	6,766.4	6,768.4	6,768.4	16.3	135.4	81.61	-451.7	-495.9	327.5	177.4	150.12	2.181		
7,100.0	6,792.5	6,794.5	6,794.5	17.2	135.9	88.51	-451.7	-495.9	300.6	147.8	152.87	1.967		
7,139.8	6,799.7	6,801.7	6,801.7	17.6	136.0	90.00	-451.7	-495.9	298.1	144.6	153.47	1.942 CC, ES, SF		
7,200.0	6,806.4	6,808.4	6,808.4	18.3	136.2	91.20	-451.7	-495.9	304.0	149.8	154.19	1.972		
7,300.0	6,815.6	6,817.6	6,817.6	19.4	136.4	91.77	-451.7	-495.9	338.0	182.5	155.50	2.174		
7,400.0	6,817.5	6,819.5	6,819.5	20.7	136.4	89.90	-451.7	-495.9	395.1	238.2	156.91	2.518		
7,500.0	6,817.3	6,819.3	6,819.3	22.1	136.4	89.87	-451.7	-495.9	466.9	308.6	158.28	2.950		
7,600.0	6,817.1	6,819.1	6,819.1	23.5	136.4	89.83	-451.7	-495.9	547.6	387.9	159.73	3.428		
7,700.0	6,816.9	6,818.9	6,818.9	25.0	136.4	89.79	-451.7	-495.9	633.8	472.6	161.24	3.931		
7,800.0	6,816.7	6,818.7	6,818.7	26.6	136.4	89.76	-451.7	-495.9	723.6	560.8	162.81	4.444		
7,900.0	6,816.5	6,818.5	6,818.5	28.2	136.4	89.72	-451.7	-495.9	815.8	651.3	164.42	4.962		
8,000.0	6,816.3	6,818.3	6,818.3	29.8	136.4	89.68	-451.7	-495.9	909.6	743.5	166.06	5.477		
8,100.0	6,816.1	6,818.1	6,818.1	31.5	136.4	89.65	-451.7	-495.9	1,004.6	836.9	167.74	5.989		
8,200.0	6,815.9	6,817.9	6,817.9	33.2	136.4	89.61	-451.7	-495.9	1,100.5	931.0	169.44	6.495		
8,300.0	6,815.7	6,817.7	6,817.7	34.9	136.4	89.57	-451.7	-495.9	1,197.1	1,025.9	171.16	6.994		
8,400.0	6,815.5	6,817.5	6,817.5	36.7	136.4	89.54	-451.7	-495.9	1,294.1	1,121.2	172.90	7.485		
8,500.0	6,815.3	6,817.3	6,817.3	38.4	136.3	89.50	-451.7	-495.9	1,391.6	1,217.0	174.66	7.968		
8,600.0	6,815.2	6,817.2	6,817.2	40.2	136.3	89.46	-451.7	-495.9	1,489.5	1,313.0	176.44	8.442		
8,700.0	6,815.0	6,817.0	6,817.0	42.0	136.3	89.42	-451.7	-495.9	1,587.6	1,409.4	178.22	8.908		
8,800.0	6,814.8	6,816.8	6,816.8	43.8	136.3	89.39	-451.7	-495.9	1,685.9	1,505.9	180.02	9.365		
8,900.0	6,814.6	6,816.6	6,816.6	45.6	136.3	89.35	-451.7	-495.9	1,784.4	1,602.6	181.83	9.814		
9,000.0	6,814.4	6,816.4	6,816.4	47.4	136.3	89.31	-451.7	-495.9	1,883.1	1,699.4	183.64	10.254		
9,100.0	6,814.2	6,816.2	6,816.2	49.2	136.3	89.28	-451.7	-495.9	1,981.9	1,796.4	185.47	10.686		
9,200.0	6,814.0	6,816.0	6,816.0	51.1	136.3	89.24	-451.7	-495.9	2,080.8	1,893.5	187.30	11.110		
9,300.0	6,813.8	6,815.8	6,815.8	52.9	136.3	89.20	-451.7	-495.9	2,179.8	1,990.7	189.13	11.525		
9,400.0	6,813.6	6,815.6	6,815.6	54.8	136.3	89.17	-451.7	-495.9	2,278.9	2,087.9	190.97	11.933		
9,500.0	6,813.4	6,815.4	6,815.4	56.6	136.3	89.13	-451.7	-495.9	2,378.1	2,185.3	192.82	12.333		
9,600.0	6,813.2	6,815.2	6,815.2	58.5	136.3	89.09	-451.7	-495.9	2,477.3	2,282.7	194.67	12.726		
9,700.0	6,813.0	6,815.0	6,815.0	60.3	136.3	89.06	-451.7	-495.9	2,576.6	2,380.1	196.53	13.111		
9,800.0	6,812.8	6,814.8	6,814.8	62.2	136.3	89.02	-451.7	-495.9	2,676.0	2,477.6	198.38	13.489		
9,900.0	6,812.7	6,814.7	6,814.7	64.0	136.3	88.98	-451.7	-495.9	2,775.4	2,575.2	200.25	13.860		

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<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: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,812.5	6,814.5	6,814.5	65.9	136.3	88.94	88.94	-451.7	-495.9	2,874.8	2,672.7	202.11	14.224	
10,100.0	6,812.3	6,814.3	6,814.3	67.8	136.3	88.91	88.91	-451.7	-495.9	2,974.3	2,770.3	203.98	14.582	
10,200.0	6,812.1	6,814.1	6,814.1	69.7	136.3	88.87	88.87	-451.7	-495.9	3,073.8	2,868.0	205.85	14.933	
10,300.0	6,811.9	6,813.9	6,813.9	71.5	136.3	88.83	88.83	-451.7	-495.9	3,173.4	2,965.7	207.72	15.277	
10,400.0	6,811.7	6,813.7	6,813.7	73.4	136.3	88.80	88.80	-451.7	-495.9	3,272.9	3,063.4	209.59	15.616	
10,500.0	6,811.5	6,813.5	6,813.5	75.3	136.3	88.76	88.76	-451.7	-495.9	3,372.5	3,161.1	211.47	15.948	
10,600.0	6,811.3	6,813.3	6,813.3	77.2	136.3	88.72	88.72	-451.7	-495.9	3,472.2	3,258.8	213.34	16.275	
10,700.0	6,811.1	6,813.1	6,813.1	79.1	136.3	88.69	88.69	-451.7	-495.9	3,571.8	3,356.6	215.22	16.596	
10,800.0	6,810.9	6,812.9	6,812.9	80.9	136.3	88.65	88.65	-451.7	-495.9	3,671.5	3,454.4	217.10	16.911	
10,900.0	6,810.7	6,812.7	6,812.7	82.8	136.3	88.61	88.61	-451.7	-495.9	3,771.1	3,552.2	218.99	17.221	
11,000.0	6,810.5	6,812.5	6,812.5	84.7	136.3	88.58	88.58	-451.7	-495.9	3,870.8	3,650.0	220.87	17.525	
11,100.0	6,810.4	6,812.4	6,812.4	86.6	136.2	88.54	88.54	-451.7	-495.9	3,970.5	3,747.8	222.75	17.825	
11,200.0	6,810.2	6,812.2	6,812.2	88.5	136.2	88.50	88.50	-451.7	-495.9	4,070.3	3,845.6	224.64	18.119	
11,300.0	6,810.0	6,812.0	6,812.0	90.4	136.2	88.47	88.47	-451.7	-495.9	4,170.0	3,943.5	226.53	18.408	
11,400.0	6,809.8	6,811.8	6,811.8	92.3	136.2	88.43	88.43	-451.7	-495.9	4,269.8	4,041.3	228.41	18.693	
11,500.0	6,809.6	6,811.6	6,811.6	94.2	136.2	88.39	88.39	-451.7	-495.9	4,369.5	4,139.2	230.30	18.973	
11,600.0	6,809.4	6,811.4	6,811.4	96.1	136.2	88.35	88.35	-451.7	-495.9	4,469.3	4,237.1	232.19	19.248	
11,700.0	6,809.2	6,811.2	6,811.2	98.0	136.2	88.32	88.32	-451.7	-495.9	4,569.1	4,335.0	234.08	19.519	
11,800.0	6,809.0	6,811.0	6,811.0	99.9	136.2	88.28	88.28	-451.7	-495.9	4,668.9	4,432.9	235.97	19.786	
11,900.0	6,808.8	6,810.8	6,810.8	101.8	136.2	88.24	88.24	-451.7	-495.9	4,768.7	4,530.8	237.87	20.048	
12,000.0	6,808.6	6,810.6	6,810.6	103.7	136.2	88.21	88.21	-451.7	-495.9	4,868.5	4,628.7	239.76	20.306	
12,100.0	6,808.4	6,810.4	6,810.4	105.6	136.2	88.17	88.17	-451.7	-495.9	4,968.3	4,726.6	241.65	20.560	
12,200.0	6,808.2	6,810.2	6,810.2	107.5	136.2	88.13	88.13	-451.7	-495.9	5,068.1	4,824.6	243.54	20.810	
12,300.0	6,808.0	6,810.0	6,810.0	109.4	136.2	88.10	88.10	-451.7	-495.9	5,167.9	4,922.5	245.44	21.056	
12,400.0	6,807.9	6,809.9	6,809.9	111.3	136.2	88.06	88.06	-451.7	-495.9	5,267.8	5,020.4	247.33	21.298	
12,500.0	6,807.7	6,809.7	6,809.7	113.2	136.2	88.02	88.02	-451.7	-495.9	5,367.6	5,118.4	249.23	21.537	
12,600.0	6,807.5	6,809.5	6,809.5	115.1	136.2	87.99	87.99	-451.7	-495.9	5,467.5	5,216.4	251.12	21.772	
12,700.0	6,807.3	6,809.3	6,809.3	117.0	136.2	87.95	87.95	-451.7	-495.9	5,567.3	5,314.3	253.02	22.004	
12,800.0	6,807.1	6,809.1	6,809.1	118.9	136.2	87.91	87.91	-451.7	-495.9	5,667.2	5,412.3	254.91	22.232	
12,900.0	6,806.9	6,808.9	6,808.9	120.8	136.2	87.88	87.88	-451.7	-495.9	5,767.0	5,510.2	256.81	22.457	
13,000.0	6,806.7	6,808.7	6,808.7	122.7	136.2	87.84	87.84	-451.7	-495.9	5,866.9	5,608.2	258.70	22.678	
13,100.0	6,806.5	6,808.5	6,808.5	124.6	136.2	87.80	87.80	-451.7	-495.9	5,966.8	5,706.2	260.60	22.896	
13,200.0	6,806.3	6,808.3	6,808.3	126.5	136.2	87.77	87.77	-451.7	-495.9	6,066.7	5,804.2	262.50	23.111	
13,300.0	6,806.1	6,808.1	6,808.1	128.4	136.2	87.73	87.73	-451.7	-495.9	6,166.5	5,902.2	264.39	23.323	
13,400.0	6,805.9	6,807.9	6,807.9	130.3	136.2	87.69	87.69	-451.7	-495.9	6,266.4	6,000.1	266.29	23.532	
13,500.0	6,805.7	6,807.7	6,807.7	132.3	136.2	87.65	87.65	-451.7	-495.9	6,366.3	6,098.1	268.19	23.738	
13,600.0	6,805.6	6,807.6	6,807.6	134.2	136.2	87.62	87.62	-451.7	-495.9	6,466.2	6,196.1	270.09	23.941	
13,700.0	6,805.4	6,807.4	6,807.4	136.1	136.1	87.58	87.58	-451.7	-495.9	6,566.1	6,294.1	271.98	24.142	
13,800.0	6,805.2	6,807.2	6,807.2	138.0	136.1	87.54	87.54	-451.7	-495.9	6,666.0	6,392.1	273.88	24.339	
13,888.1	6,805.0	6,807.0	6,807.0	139.7	136.1	87.51	87.51	-451.7	-495.9	6,754.0	6,478.4	275.55	24.511	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	174.89		-965.4	86.4	969.3				
100.0	100.0	90.0	90.0	0.1	1.8	174.89		-965.4	86.4	969.3	967.4	1.91	506.791	
200.0	200.0	190.0	190.0	0.3	3.8	174.89		-965.4	86.4	969.3	965.1	4.14	234.276	
300.0	300.0	290.0	290.0	0.6	5.8	174.89		-965.4	86.4	969.3	962.9	6.36	152.352	
400.0	400.0	390.0	390.0	0.8	7.8	174.89		-965.4	86.4	969.3	960.7	8.59	112.879	
500.0	500.0	490.0	490.0	1.0	9.8	174.89		-965.4	86.4	969.3	958.5	10.81	89.651	
600.0	600.0	590.0	590.0	1.2	11.8	174.89		-965.4	86.4	969.3	956.2	13.04	74.352	
700.0	700.0	690.0	690.0	1.5	13.8	174.89		-965.4	86.4	969.3	954.0	15.26	63.513	
800.0	800.0	790.0	790.0	1.7	15.8	174.89		-965.4	86.4	969.3	951.8	17.49	55.432	
900.0	900.0	890.0	890.0	1.9	17.8	-140.47		-965.4	86.4	970.6	950.9	19.70	49.269	
1,000.0	999.8	989.8	989.8	2.1	19.8	-140.62		-965.4	86.4	974.6	952.7	21.90	44.499	
1,100.0	1,099.7	1,089.7	1,089.7	2.4	21.8	-140.85		-965.4	86.4	979.4	955.3	24.12	40.605	
1,200.0	1,199.5	1,189.5	1,189.5	2.6	23.8	-141.08		-965.4	86.4	984.2	957.9	26.34	37.364	
1,300.0	1,299.3	1,289.3	1,289.3	2.8	25.8	-141.31		-965.4	86.4	989.1	960.5	28.56	34.626	
1,400.0	1,399.1	1,389.1	1,389.1	3.1	27.8	-141.53		-965.4	86.4	993.9	963.2	30.79	32.282	
1,500.0	1,498.9	1,488.9	1,488.9	3.3	29.8	-141.75		-965.4	86.4	998.8	965.8	33.01	30.253	
1,600.0	1,598.7	1,588.7	1,588.7	3.5	31.8	-141.97		-965.4	86.4	1,003.7	968.5	35.24	28.481	
1,700.0	1,698.5	1,688.5	1,688.5	3.8	33.8	-142.19		-965.4	86.4	1,008.6	971.1	37.47	26.919	
1,800.0	1,798.3	1,788.3	1,788.3	4.0	35.8	-142.40		-965.4	86.4	1,013.5	973.8	39.70	25.532	
1,900.0	1,898.1	1,888.1	1,888.1	4.3	37.8	-142.62		-965.4	86.4	1,018.5	976.5	41.92	24.293	
2,000.0	1,997.9	1,987.9	1,987.9	4.5	39.8	-142.83		-965.4	86.4	1,023.4	979.2	44.15	23.179	
2,100.0	2,097.7	2,087.7	2,087.7	4.8	41.8	-143.04		-965.4	86.4	1,028.4	982.0	46.38	22.172	
2,200.0	2,197.5	2,187.5	2,187.5	5.0	43.8	-143.24		-965.4	86.4	1,033.3	984.7	48.61	21.258	
2,300.0	2,297.3	2,287.3	2,287.3	5.3	45.7	-143.45		-965.4	86.4	1,038.3	987.5	50.84	20.424	
2,400.0	2,397.1	2,387.1	2,387.1	5.5	47.7	-143.65		-965.4	86.4	1,043.3	990.2	53.07	19.660	
2,500.0	2,496.9	2,486.9	2,486.9	5.8	49.7	-143.85		-965.4	86.4	1,048.3	993.0	55.30	18.958	
2,600.0	2,596.8	2,586.8	2,586.8	6.0	51.7	-144.05		-965.4	86.4	1,053.3	995.8	57.52	18.311	
2,700.0	2,696.6	2,686.6	2,686.6	6.3	53.7	-144.25		-965.4	86.4	1,058.4	998.6	59.75	17.712	
2,800.0	2,796.4	2,786.4	2,786.4	6.5	55.7	-144.44		-965.4	86.4	1,063.4	1,001.4	61.98	17.157	
2,900.0	2,896.2	2,886.2	2,886.2	6.8	57.7	-144.64		-965.4	86.4	1,068.5	1,004.3	64.21	16.640	
3,000.0	2,996.0	2,986.0	2,986.0	7.0	59.7	-144.83		-965.4	86.4	1,073.6	1,007.1	66.44	16.158	
3,100.0	3,095.8	3,085.8	3,085.8	7.3	61.7	-145.02		-965.4	86.4	1,078.7	1,010.0	68.67	15.708	
3,200.0	3,195.6	3,185.6	3,185.6	7.5	63.7	-145.21		-965.4	86.4	1,083.7	1,012.9	70.90	15.286	
3,300.0	3,295.4	3,285.4	3,285.4	7.7	65.7	-145.39		-965.4	86.4	1,088.9	1,015.7	73.13	14.890	
3,400.0	3,395.2	3,385.2	3,385.2	8.0	67.7	-145.58		-965.4	86.4	1,094.0	1,018.6	75.36	14.518	
3,500.0	3,495.0	3,485.0	3,485.0	8.2	69.7	-145.76		-965.4	86.4	1,099.1	1,021.5	77.58	14.167	
3,600.0	3,594.8	3,584.8	3,584.8	8.5	71.7	-145.94		-965.4	86.4	1,104.3	1,024.4	79.81	13.836	
3,700.0	3,694.6	3,684.6	3,684.6	8.7	73.7	-146.12		-965.4	86.4	1,109.4	1,027.4	82.04	13.523	
3,800.0	3,794.4	3,784.4	3,784.4	9.0	75.7	-146.30		-965.4	86.4	1,114.6	1,030.3	84.27	13.226	
3,900.0	3,894.2	3,884.2	3,884.2	9.2	77.7	-146.48		-965.4	86.4	1,119.7	1,033.2	86.50	12.945	
4,000.0	3,994.1	3,984.1	3,984.1	9.5	79.7	-146.65		-965.4	86.4	1,124.9	1,036.2	88.73	12.679	
4,100.0	4,093.9	4,083.9	4,083.9	9.7	81.7	-146.82		-965.4	86.4	1,130.1	1,039.2	90.95	12.425	
4,200.0	4,193.7	4,183.7	4,183.7	10.0	83.7	-146.99		-965.4	86.4	1,135.3	1,042.1	93.18	12.184	
4,300.0	4,293.5	4,283.5	4,283.5	10.2	85.7	-147.16		-965.4	86.4	1,140.5	1,045.1	95.41	11.954	
4,400.0	4,393.3	4,383.3	4,383.3	10.5	87.7	-147.33		-965.4	86.4	1,145.8	1,048.1	97.64	11.735	
4,500.0	4,493.1	4,483.1	4,483.1	10.8	89.7	-147.50		-965.4	86.4	1,151.0	1,051.1	99.86	11.526	
4,600.0	4,592.9	4,582.9	4,582.9	11.0	91.7	-147.66		-965.4	86.4	1,156.2	1,054.2	102.09	11.326	
4,700.0	4,692.7	4,682.7	4,682.7	11.3	93.7	-147.83		-965.4	86.4	1,161.5	1,057.2	104.32	11.134	
4,800.0	4,792.5	4,782.5	4,782.5	11.5	95.7	-147.99		-965.4	86.4	1,166.8	1,060.2	106.55	10.951	
4,900.0	4,892.3	4,882.3	4,882.3	11.8	97.6	-148.15		-965.4	86.4	1,172.0	1,063.3	108.77	10.775	
5,000.0	4,992.1	4,982.1	4,982.1	12.0	99.6	-148.31		-965.4	86.4	1,177.3	1,066.3	111.00	10.606	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,091.9	5,081.9	5,081.9	12.3	101.6	-148.47	-148.47	-965.4	86.4	1,182.6	1,069.4	113.23	10.444	
5,200.0	5,191.7	5,181.7	5,181.7	12.5	103.6	-148.63	-148.63	-965.4	86.4	1,187.9	1,072.5	115.46	10.289	
5,300.0	5,291.5	5,281.5	5,281.5	12.8	105.6	-148.78	-148.78	-965.4	86.4	1,193.2	1,075.5	117.68	10.139	
5,400.0	5,391.4	5,381.4	5,381.4	13.0	107.6	-148.94	-148.94	-965.4	86.4	1,197.8	1,077.8	119.98	9.983	
5,500.0	5,491.4	5,481.4	5,481.4	13.2	109.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,077.4	122.20	9.817	
5,600.0	5,591.4	5,581.4	5,581.4	13.3	111.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,075.2	124.39	9.644	
5,700.0	5,691.4	5,681.4	5,681.4	13.5	113.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,073.0	126.60	9.476	
5,800.0	5,791.4	5,781.4	5,781.4	13.7	115.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,070.8	128.81	9.313	
5,900.0	5,891.4	5,881.4	5,881.4	13.9	117.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,068.6	131.02	9.156	
6,000.0	5,991.4	5,981.4	5,981.4	14.1	119.6	-149.01	-149.01	-965.4	86.4	1,199.6	1,066.3	133.24	9.003	
6,100.0	6,091.3	6,081.3	6,081.3	14.3	121.6	-13.75	-13.75	-965.4	86.4	1,198.1	1,063.0	135.17	8.864	
6,200.0	6,190.5	6,180.5	6,180.5	14.5	123.6	-14.12	-14.12	-965.4	86.4	1,185.8	1,050.6	135.14	8.775	
6,300.0	6,287.1	6,277.1	6,277.1	14.5	125.5	-14.92	-14.92	-965.4	86.4	1,161.0	1,028.1	132.88	8.737	
6,400.0	6,379.5	6,369.5	6,369.5	14.6	127.4	-16.22	-16.22	-965.4	86.4	1,124.2	995.7	128.51	8.748	
6,500.0	6,466.2	6,456.2	6,456.2	14.7	129.1	-18.19	-18.19	-965.4	86.4	1,076.2	953.8	122.36	8.795	
6,600.0	6,545.7	6,535.7	6,535.7	14.7	130.7	-21.09	-21.09	-965.4	86.4	1,017.9	902.7	115.21	8.835	
6,700.0	6,616.5	6,606.5	6,606.5	14.8	132.1	-25.34	-25.34	-965.4	86.4	950.5	841.8	108.67	8.746	
6,800.0	6,677.6	6,667.6	6,667.6	15.1	133.4	-31.60	-31.60	-965.4	86.4	875.3	769.5	105.79	8.274	
6,900.0	6,727.9	6,717.9	6,717.9	15.6	134.4	-40.74	-40.74	-965.4	86.4	794.1	683.3	110.82	7.165	
7,000.0	6,766.4	6,756.4	6,756.4	16.3	135.1	-53.46	-53.46	-965.4	86.4	708.8	583.3	125.46	5.650	
7,100.0	6,792.5	6,782.5	6,782.5	17.2	135.7	-68.92	-68.92	-965.4	86.4	621.6	478.7	142.97	4.348	
7,200.0	6,806.4	6,796.4	6,796.4	18.3	135.9	-80.52	-80.52	-965.4	86.4	535.5	383.6	151.89	3.526	
7,300.0	6,815.6	6,805.6	6,805.6	19.4	136.1	-85.87	-85.87	-965.4	86.4	454.2	299.3	154.92	2.932	
7,400.0	6,817.5	6,807.5	6,807.5	20.7	136.1	-90.10	-90.10	-965.4	86.4	381.4	224.7	156.67	2.434	
7,500.0	6,817.3	6,807.3	6,807.3	22.1	136.1	-90.06	-90.06	-965.4	86.4	323.4	165.4	158.04	2.047	
7,600.0	6,817.1	6,807.1	6,807.1	23.5	136.1	-90.02	-90.02	-965.4	86.4	289.4	129.9	159.49	1.815	
7,654.3	6,817.0	6,807.0	6,807.0	24.3	136.1	-90.00	-90.00	-965.4	86.4	284.3	123.9	160.31	1.773	CC, ES, SF
7,700.0	6,816.9	6,806.9	6,806.9	25.0	136.1	-89.98	-89.98	-965.4	86.4	287.9	126.9	161.00	1.788	
7,800.0	6,816.7	6,806.7	6,806.7	26.6	136.1	-89.94	-89.94	-965.4	86.4	319.4	156.8	162.57	1.965	
7,900.0	6,816.5	6,806.5	6,806.5	28.2	136.1	-89.90	-89.90	-965.4	86.4	375.7	211.5	164.17	2.288	
8,000.0	6,816.3	6,806.3	6,806.3	29.8	136.1	-89.87	-89.87	-965.4	86.4	447.5	281.7	165.82	2.699	
8,100.0	6,816.1	6,806.1	6,806.1	31.5	136.1	-89.83	-89.83	-965.4	86.4	528.6	361.1	167.49	3.156	
8,200.0	6,815.9	6,805.9	6,805.9	33.2	136.1	-89.79	-89.79	-965.4	86.4	615.3	446.1	169.19	3.636	
8,300.0	6,815.7	6,805.7	6,805.7	34.9	136.1	-89.75	-89.75	-965.4	86.4	705.5	534.5	170.92	4.128	
8,400.0	6,815.5	6,805.5	6,805.5	36.7	136.1	-89.71	-89.71	-965.4	86.4	798.0	625.3	172.66	4.622	
8,500.0	6,815.3	6,805.3	6,805.3	38.4	136.1	-89.67	-89.67	-965.4	86.4	892.2	717.7	174.42	5.115	
8,600.0	6,815.2	6,805.2	6,805.2	40.2	136.1	-89.63	-89.63	-965.4	86.4	987.5	811.3	176.19	5.604	
8,700.0	6,815.0	6,805.0	6,805.0	42.0	136.1	-89.60	-89.60	-965.4	86.4	1,083.6	905.6	177.98	6.088	
8,800.0	6,814.8	6,804.8	6,804.8	43.8	136.1	-89.56	-89.56	-965.4	86.4	1,180.4	1,000.6	179.77	6.566	
8,900.0	6,814.6	6,804.6	6,804.6	45.6	136.1	-89.52	-89.52	-965.4	86.4	1,277.7	1,096.1	181.58	7.036	
9,000.0	6,814.4	6,804.4	6,804.4	47.4	136.1	-89.48	-89.48	-965.4	86.4	1,375.4	1,192.0	183.40	7.499	
9,100.0	6,814.2	6,804.2	6,804.2	49.2	136.1	-89.44	-89.44	-965.4	86.4	1,473.3	1,288.1	185.22	7.955	
9,200.0	6,814.0	6,804.0	6,804.0	51.1	136.1	-89.40	-89.40	-965.4	86.4	1,571.6	1,384.5	187.05	8.402	
9,300.0	6,813.8	6,803.8	6,803.8	52.9	136.1	-89.36	-89.36	-965.4	86.4	1,670.0	1,481.1	188.88	8.842	
9,400.0	6,813.6	6,803.6	6,803.6	54.8	136.1	-89.32	-89.32	-965.4	86.4	1,768.7	1,577.9	190.73	9.273	
9,500.0	6,813.4	6,803.4	6,803.4	56.6	136.1	-89.29	-89.29	-965.4	86.4	1,867.4	1,674.9	192.57	9.697	
9,600.0	6,813.2	6,803.2	6,803.2	58.5	136.1	-89.25	-89.25	-965.4	86.4	1,966.3	1,771.9	194.42	10.114	
9,700.0	6,813.0	6,803.0	6,803.0	60.3	136.1	-89.21	-89.21	-965.4	86.4	2,065.3	1,869.0	196.28	10.523	
9,800.0	6,812.8	6,802.8	6,802.8	62.2	136.1	-89.17	-89.17	-965.4	86.4	2,164.4	1,966.3	198.13	10.924	
9,900.0	6,812.7	6,802.7	6,802.7	64.0	136.1	-89.13	-89.13	-965.4	86.4	2,263.6	2,063.6	199.99	11.318	
10,000.0	6,812.5	6,802.5	6,802.5	65.9	136.0	-89.09	-89.09	-965.4	86.4	2,362.8	2,161.0	201.86	11.705	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 5 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:	0.0 ft	
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
10,100.0	6,812.3	6,802.3	6,802.3	67.8	136.0	-89.05	-965.4	86.4	2,462.1	2,258.4	203.72	12.086		
10,200.0	6,812.1	6,802.1	6,802.1	69.7	136.0	-89.01	-965.4	86.4	2,561.5	2,355.9	205.59	12.459		
10,300.0	6,811.9	6,801.9	6,801.9	71.5	136.0	-88.98	-965.4	86.4	2,660.9	2,453.4	207.46	12.826		
10,400.0	6,811.7	6,801.7	6,801.7	73.4	136.0	-88.94	-965.4	86.4	2,760.3	2,551.0	209.34	13.186		
10,500.0	6,811.5	6,801.5	6,801.5	75.3	136.0	-88.90	-965.4	86.4	2,859.8	2,648.6	211.21	13.540		
10,600.0	6,811.3	6,801.3	6,801.3	77.2	136.0	-88.86	-965.4	86.4	2,959.3	2,746.3	213.09	13.888		
10,700.0	6,811.1	6,801.1	6,801.1	79.1	136.0	-88.82	-965.4	86.4	3,058.9	2,843.9	214.97	14.229		
10,800.0	6,810.9	6,800.9	6,800.9	80.9	136.0	-88.78	-965.4	86.4	3,158.5	2,941.6	216.85	14.565		
10,900.0	6,810.7	6,800.7	6,800.7	82.8	136.0	-88.74	-965.4	86.4	3,258.1	3,039.4	218.73	14.895		
11,000.0	6,810.5	6,800.5	6,800.5	84.7	136.0	-88.71	-965.4	86.4	3,357.7	3,137.1	220.61	15.220		
11,100.0	6,810.4	6,800.4	6,800.4	86.6	136.0	-88.67	-965.4	86.4	3,457.4	3,234.9	222.50	15.539		
11,200.0	6,810.2	6,800.2	6,800.2	88.5	136.0	-88.63	-965.4	86.4	3,557.0	3,332.7	224.38	15.852		
11,300.0	6,810.0	6,800.0	6,800.0	90.4	136.0	-88.59	-965.4	86.4	3,656.7	3,430.5	226.27	16.161		
11,400.0	6,809.8	6,799.8	6,799.8	92.3	136.0	-88.55	-965.4	86.4	3,756.4	3,528.3	228.16	16.464		
11,500.0	6,809.6	6,799.6	6,799.6	94.2	136.0	-88.51	-965.4	86.4	3,856.2	3,626.1	230.05	16.763		
11,600.0	6,809.4	6,799.4	6,799.4	96.1	136.0	-88.47	-965.4	86.4	3,955.9	3,724.0	231.93	17.056		
11,700.0	6,809.2	6,799.2	6,799.2	98.0	136.0	-88.43	-965.4	86.4	4,055.6	3,821.8	233.82	17.345		
11,800.0	6,809.0	6,799.0	6,799.0	99.9	136.0	-88.40	-965.4	86.4	4,155.4	3,919.7	235.71	17.629		
11,900.0	6,808.8	6,798.8	6,798.8	101.8	136.0	-88.36	-965.4	86.4	4,255.2	4,017.6	237.61	17.908		
12,000.0	6,808.6	6,798.6	6,798.6	103.7	136.0	-88.32	-965.4	86.4	4,354.9	4,115.4	239.50	18.184		
12,100.0	6,808.4	6,798.4	6,798.4	105.6	136.0	-88.28	-965.4	86.4	4,454.7	4,213.3	241.39	18.455		
12,200.0	6,808.2	6,798.2	6,798.2	107.5	136.0	-88.24	-965.4	86.4	4,554.5	4,311.3	243.28	18.721		
12,300.0	6,808.0	6,798.0	6,798.0	109.4	136.0	-88.20	-965.4	86.4	4,654.3	4,409.2	245.18	18.984		
12,400.0	6,807.9	6,797.9	6,797.9	111.3	136.0	-88.16	-965.4	86.4	4,754.2	4,507.1	247.07	19.242		
12,500.0	6,807.7	6,797.7	6,797.7	113.2	136.0	-88.13	-965.4	86.4	4,854.0	4,605.0	248.96	19.497		
12,600.0	6,807.5	6,797.5	6,797.5	115.1	135.9	-88.09	-965.4	86.4	4,953.8	4,703.0	250.86	19.747		
12,700.0	6,807.3	6,797.3	6,797.3	117.0	135.9	-88.05	-965.4	86.4	5,053.7	4,800.9	252.75	19.994		
12,800.0	6,807.1	6,797.1	6,797.1	118.9	135.9	-88.01	-965.4	86.4	5,153.5	4,898.9	254.65	20.238		
12,900.0	6,806.9	6,796.9	6,796.9	120.8	135.9	-87.97	-965.4	86.4	5,253.4	4,996.8	256.54	20.477		
13,000.0	6,806.7	6,796.7	6,796.7	122.7	135.9	-87.93	-965.4	86.4	5,353.2	5,094.8	258.44	20.714		
13,100.0	6,806.5	6,796.5	6,796.5	124.6	135.9	-87.89	-965.4	86.4	5,453.1	5,192.7	260.34	20.946		
13,200.0	6,806.3	6,796.3	6,796.3	126.5	135.9	-87.85	-965.4	86.4	5,552.9	5,290.7	262.23	21.176		
13,300.0	6,806.1	6,796.1	6,796.1	128.4	135.9	-87.82	-965.4	86.4	5,652.8	5,388.7	264.13	21.402		
13,400.0	6,805.9	6,795.9	6,795.9	130.3	135.9	-87.78	-965.4	86.4	5,752.7	5,486.7	266.02	21.625		
13,500.0	6,805.7	6,795.7	6,795.7	132.3	135.9	-87.74	-965.4	86.4	5,852.6	5,584.6	267.92	21.844		
13,600.0	6,805.6	6,795.6	6,795.6	134.2	135.9	-87.70	-965.4	86.4	5,952.4	5,682.6	269.82	22.061		
13,700.0	6,805.4	6,795.4	6,795.4	136.1	135.9	-87.66	-965.4	86.4	6,052.3	5,780.6	271.72	22.275		
13,800.0	6,805.2	6,795.2	6,795.2	138.0	135.9	-87.62	-965.4	86.4	6,152.2	5,878.6	273.61	22.485		
13,888.1	6,805.0	6,795.0	6,795.0	139.7	135.9	-87.59	-965.4	86.4	6,240.2	5,964.9	275.28	22.668		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Hoffman B 33-19 (Exist) - Wellbore #1 - Wellbor													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	42.0	42.0	0.0	0.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,221.8	0.84	7,406.098	
100.0	100.0	142.0	142.0	0.1	2.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,219.6	2.95	2,107.512	
200.0	200.0	242.0	242.0	0.3	4.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,217.4	5.18	1,201.890	
300.0	300.0	342.0	342.0	0.6	6.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,215.2	7.40	840.652	
400.0	400.0	442.0	442.0	0.8	8.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,213.0	9.63	646.378	
500.0	500.0	542.0	542.0	1.0	10.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,210.7	11.85	525.041	
600.0	600.0	642.0	642.0	1.2	12.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,208.5	14.08	442.059	
700.0	700.0	742.0	742.0	1.5	14.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,206.3	16.30	381.727	
800.0	800.0	842.0	842.0	1.7	16.8	179.56	179.56	-6,222.4	47.4	6,222.6	6,204.1	18.53	335.886	
900.0	900.0	942.0	942.0	1.9	18.8	-135.74	-135.74	-6,222.4	47.4	6,223.8	6,203.1	20.74	300.074	
1,000.0	999.8	1,041.8	1,041.8	2.1	20.8	-135.73	-135.73	-6,222.4	47.4	6,227.5	6,204.6	22.94	271.419	
1,100.0	1,099.7	1,141.7	1,141.7	2.4	22.8	-135.77	-135.77	-6,222.4	47.4	6,232.0	6,206.8	25.16	247.652	
1,200.0	1,199.5	1,241.5	1,241.5	2.6	24.8	-135.81	-135.81	-6,222.4	47.4	6,236.4	6,209.1	27.39	227.715	
1,300.0	1,299.3	1,341.3	1,341.3	2.8	26.8	-135.85	-135.85	-6,222.4	47.4	6,240.9	6,211.3	29.61	210.756	
1,400.0	1,399.1	1,441.1	1,441.1	3.1	28.8	-135.89	-135.89	-6,222.4	47.4	6,245.4	6,213.5	31.84	196.157	
1,500.0	1,498.9	1,540.9	1,540.9	3.3	30.8	-135.93	-135.93	-6,222.4	47.4	6,249.8	6,215.8	34.07	183.459	
1,600.0	1,598.7	1,640.7	1,640.7	3.5	32.8	-135.97	-135.97	-6,222.4	47.4	6,254.3	6,218.0	36.30	172.316	
1,700.0	1,698.5	1,740.5	1,740.5	3.8	34.8	-136.01	-136.01	-6,222.4	47.4	6,258.8	6,220.2	38.53	162.458	
1,800.0	1,798.3	1,840.3	1,840.3	4.0	36.8	-136.05	-136.05	-6,222.4	47.4	6,263.2	6,222.5	40.76	153.677	
1,900.0	1,898.1	1,940.1	1,940.1	4.3	38.8	-136.09	-136.09	-6,222.4	47.4	6,267.7	6,224.7	42.99	145.805	
2,000.0	1,997.9	2,039.9	2,039.9	4.5	40.8	-136.13	-136.13	-6,222.4	47.4	6,272.2	6,227.0	45.22	138.708	
2,100.0	2,097.7	2,139.7	2,139.7	4.8	42.8	-136.17	-136.17	-6,222.4	47.4	6,276.7	6,229.2	47.45	132.278	
2,200.0	2,197.5	2,239.5	2,239.5	5.0	44.8	-136.21	-136.21	-6,222.4	47.4	6,281.2	6,231.5	49.68	126.425	
2,300.0	2,297.3	2,339.3	2,339.3	5.3	46.8	-136.24	-136.24	-6,222.4	47.4	6,285.6	6,233.7	51.92	121.075	
2,400.0	2,397.1	2,439.1	2,439.1	5.5	48.8	-136.28	-136.28	-6,222.4	47.4	6,290.1	6,236.0	54.15	116.166	
2,500.0	2,496.9	2,538.9	2,538.9	5.8	50.8	-136.32	-136.32	-6,222.4	47.4	6,294.6	6,238.3	56.38	111.645	
2,600.0	2,596.8	2,638.8	2,638.8	6.0	52.8	-136.36	-136.36	-6,222.4	47.4	6,299.1	6,240.5	58.61	107.468	
2,700.0	2,696.6	2,738.6	2,738.6	6.3	54.8	-136.40	-136.40	-6,222.4	47.4	6,303.6	6,242.8	60.85	103.597	
2,800.0	2,796.4	2,838.4	2,838.4	6.5	56.8	-136.44	-136.44	-6,222.4	47.4	6,308.1	6,245.1	63.08	100.001	
2,900.0	2,896.2	2,938.2	2,938.2	6.8	58.8	-136.48	-136.48	-6,222.4	47.4	6,312.6	6,247.3	65.31	96.650	
3,000.0	2,996.0	3,038.0	3,038.0	7.0	60.8	-136.52	-136.52	-6,222.4	47.4	6,317.1	6,249.6	67.55	93.521	
3,100.0	3,095.8	3,137.8	3,137.8	7.3	62.8	-136.56	-136.56	-6,222.4	47.4	6,321.7	6,251.9	69.78	90.592	
3,200.0	3,195.6	3,237.6	3,237.6	7.5	64.8	-136.59	-136.59	-6,222.4	47.4	6,326.2	6,254.2	72.02	87.844	
3,300.0	3,295.4	3,337.4	3,337.4	7.7	66.7	-136.63	-136.63	-6,222.4	47.4	6,330.7	6,256.4	74.25	85.262	
3,400.0	3,395.2	3,437.2	3,437.2	8.0	68.7	-136.67	-136.67	-6,222.4	47.4	6,335.2	6,258.7	76.48	82.831	
3,500.0	3,495.0	3,537.0	3,537.0	8.2	70.7	-136.71	-136.71	-6,222.4	47.4	6,339.7	6,261.0	78.72	80.538	
3,600.0	3,594.8	3,636.8	3,636.8	8.5	72.7	-136.75	-136.75	-6,222.4	47.4	6,344.3	6,263.3	80.95	78.371	
3,700.0	3,694.6	3,736.6	3,736.6	8.7	74.7	-136.79	-136.79	-6,222.4	47.4	6,348.8	6,265.6	83.19	76.321	
3,800.0	3,794.4	3,836.4	3,836.4	9.0	76.7	-136.82	-136.82	-6,222.4	47.4	6,353.3	6,267.9	85.42	74.378	
3,900.0	3,894.2	3,936.2	3,936.2	9.2	78.7	-136.86	-136.86	-6,222.4	47.4	6,357.8	6,270.2	87.65	72.534	
4,000.0	3,994.1	4,036.1	4,036.1	9.5	80.7	-136.90	-136.90	-6,222.4	47.4	6,362.4	6,272.5	89.89	70.782	
4,100.0	4,093.9	4,135.9	4,135.9	9.7	82.7	-136.94	-136.94	-6,222.4	47.4	6,366.9	6,274.8	92.12	69.114	
4,200.0	4,193.7	4,235.7	4,235.7	10.0	84.7	-136.98	-136.98	-6,222.4	47.4	6,371.5	6,277.1	94.36	67.526	
4,300.0	4,293.5	4,335.5	4,335.5	10.2	86.7	-137.02	-137.02	-6,222.4	47.4	6,376.0	6,279.4	96.59	66.011	
4,400.0	4,393.3	4,435.3	4,435.3	10.5	88.7	-137.05	-137.05	-6,222.4	47.4	6,380.6	6,281.7	98.82	64.565	
4,500.0	4,493.1	4,535.1	4,535.1	10.8	90.7	-137.09	-137.09	-6,222.4	47.4	6,385.1	6,284.1	101.06	63.183	
4,600.0	4,592.9	4,634.9	4,634.9	11.0	92.7	-137.13	-137.13	-6,222.4	47.4	6,389.7	6,286.4	103.29	61.860	
4,700.0	4,692.7	4,734.7	4,734.7	11.3	94.7	-137.17	-137.17	-6,222.4	47.4	6,394.2	6,288.7	105.53	60.594	
4,800.0	4,792.5	4,834.5	4,834.5	11.5	96.7	-137.20	-137.20	-6,222.4	47.4	6,398.8	6,291.0	107.76	59.380	
4,900.0	4,892.3	4,934.3	4,934.3	11.8	98.7	-137.24	-137.24	-6,222.4	47.4	6,403.3	6,293.3	109.99	58.215	
5,000.0	4,992.1	5,034.1	5,034.1	12.0	100.7	-137.28	-137.28	-6,222.4	47.4	6,407.9	6,295.7	112.23	57.097	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Hoffman B 33-19 (Exist) - Wellbore #1 - Wellbor													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,091.9	5,133.9	5,133.9	12.3	102.7	-137.32	-137.32	-6,222.4	47.4	6,412.5	6,298.0	114.46	56.022	
5,200.0	5,191.7	5,233.7	5,233.7	12.5	104.7	-137.36	-137.36	-6,222.4	47.4	6,417.0	6,300.4	116.70	54.989	
5,300.0	5,291.5	5,333.5	5,333.5	12.8	106.7	-137.39	-137.39	-6,222.4	47.4	6,421.6	6,302.7	118.93	53.995	
5,400.0	5,391.4	5,433.4	5,433.4	13.0	108.7	-137.46	-137.46	-6,222.4	47.4	6,425.6	6,304.4	121.21	53.011	
5,500.0	5,491.4	5,533.4	5,533.4	13.2	110.7	-137.49	-137.49	-6,222.4	47.4	6,427.1	6,303.7	123.42	52.077	
5,600.0	5,591.4	5,633.4	5,633.4	13.3	112.7	-177.81	-177.81	-6,222.4	47.4	6,427.1	6,301.5	125.60	51.171	
5,700.0	5,691.4	5,733.4	5,733.4	13.5	114.7	-177.81	-177.81	-6,222.4	47.4	6,427.1	6,299.3	127.81	50.286	
5,800.0	5,791.4	5,833.4	5,833.4	13.7	116.7	-177.81	-177.81	-6,222.4	47.4	6,427.1	6,297.1	130.02	49.431	
5,900.0	5,891.4	5,933.4	5,933.4	13.9	118.7	-177.81	-177.81	-6,222.4	47.4	6,427.1	6,294.9	132.23	48.605	
6,000.0	5,991.4	6,033.4	6,033.4	14.1	120.7	-177.81	-177.81	-6,222.4	47.4	6,427.1	6,292.7	134.44	47.805	
6,100.0	6,091.3	6,133.3	6,133.3	14.3	122.7	-2.19	-2.19	-6,222.4	47.4	6,425.6	6,289.3	136.36	47.123	
6,200.0	6,190.5	6,232.5	6,232.5	14.5	124.6	-2.23	-2.23	-6,222.4	47.4	6,412.9	6,276.7	136.18	47.092	
6,300.0	6,287.1	6,329.1	6,329.1	14.5	126.6	-2.32	-2.32	-6,222.4	47.4	6,387.3	6,253.8	133.56	47.822	
6,400.0	6,379.5	6,421.5	6,421.5	14.6	128.4	-2.46	-2.46	-6,222.4	47.4	6,349.4	6,220.9	128.48	49.418	
6,500.0	6,466.2	6,508.2	6,508.2	14.7	130.2	-2.68	-2.68	-6,222.4	47.4	6,299.8	6,178.8	120.97	52.077	
6,600.0	6,545.7	6,587.7	6,587.7	14.7	131.8	-2.99	-2.99	-6,222.4	47.4	6,239.2	6,128.1	111.14	56.138	
6,700.0	6,616.5	6,658.5	6,658.5	14.8	133.2	-3.44	-3.44	-6,222.4	47.4	6,168.8	6,069.6	99.20	62.188	
6,800.0	6,677.6	6,719.6	6,719.6	15.1	134.4	-4.13	-4.13	-6,222.4	47.4	6,089.8	6,004.3	85.47	71.251	
6,900.0	6,727.9	6,769.9	6,769.9	15.6	135.4	-5.25	-5.25	-6,222.4	47.4	6,003.5	5,933.0	70.53	85.117	
7,000.0	6,766.4	6,808.4	6,808.4	16.3	136.2	-7.29	-7.29	-6,222.4	47.4	5,911.4	5,855.6	55.80	105.946	
7,100.0	6,792.5	6,834.5	6,834.5	17.2	136.7	-12.03	-12.03	-6,222.4	47.4	5,815.0	5,767.5	47.53	122.355	
7,200.0	6,806.4	6,848.4	6,848.4	18.3	137.0	-22.34	-22.34	-6,222.4	47.4	5,716.1	5,652.4	63.67	89.776	
7,300.0	6,815.6	6,857.6	6,857.6	19.4	137.2	-37.05	-37.05	-6,222.4	47.4	5,616.6	5,520.7	95.95	58.536	
7,400.0	6,817.5	6,859.5	6,859.5	20.7	137.2	-92.47	-92.47	-6,222.4	47.4	5,516.8	5,359.2	157.60	35.005	
7,500.0	6,817.3	6,859.3	6,859.3	22.1	137.2	-92.43	-92.43	-6,222.4	47.4	5,416.9	5,257.9	158.97	34.074	
7,600.0	6,817.1	6,859.1	6,859.1	23.5	137.2	-92.38	-92.38	-6,222.4	47.4	5,317.0	5,156.6	160.42	33.143	
7,700.0	6,816.9	6,858.9	6,858.9	25.0	137.2	-92.34	-92.34	-6,222.4	47.4	5,217.1	5,055.2	161.94	32.217	
7,800.0	6,816.7	6,858.7	6,858.7	26.6	137.2	-92.29	-92.29	-6,222.4	47.4	5,117.2	4,953.7	163.51	31.297	
7,900.0	6,816.5	6,858.5	6,858.5	28.2	137.2	-92.25	-92.25	-6,222.4	47.4	5,017.3	4,852.2	165.12	30.387	
8,000.0	6,816.3	6,858.3	6,858.3	29.8	137.2	-92.20	-92.20	-6,222.4	47.4	4,917.4	4,750.7	166.76	29.487	
8,100.0	6,816.1	6,858.1	6,858.1	31.5	137.2	-92.16	-92.16	-6,222.4	47.4	4,817.6	4,649.1	168.44	28.601	
8,200.0	6,815.9	6,857.9	6,857.9	33.2	137.2	-92.11	-92.11	-6,222.4	47.4	4,717.7	4,547.6	170.15	27.727	
8,300.0	6,815.7	6,857.7	6,857.7	34.9	137.2	-92.07	-92.07	-6,222.4	47.4	4,617.8	4,446.0	171.88	26.867	
8,400.0	6,815.5	6,857.5	6,857.5	36.7	137.2	-92.02	-92.02	-6,222.4	47.4	4,518.0	4,344.4	173.62	26.022	
8,500.0	6,815.3	6,857.3	6,857.3	38.4	137.1	-91.98	-91.98	-6,222.4	47.4	4,418.1	4,242.8	175.39	25.191	
8,600.0	6,815.2	6,857.2	6,857.2	40.2	137.1	-91.93	-91.93	-6,222.4	47.4	4,318.3	4,141.1	177.16	24.375	
8,700.0	6,815.0	6,857.0	6,857.0	42.0	137.1	-91.89	-91.89	-6,222.4	47.4	4,218.5	4,039.5	178.95	23.573	
8,800.0	6,814.8	6,856.8	6,856.8	43.8	137.1	-91.84	-91.84	-6,222.4	47.4	4,118.6	3,937.9	180.76	22.786	
8,900.0	6,814.6	6,856.6	6,856.6	45.6	137.1	-91.80	-91.80	-6,222.4	47.4	4,018.8	3,836.3	182.57	22.013	
9,000.0	6,814.4	6,856.4	6,856.4	47.4	137.1	-91.75	-91.75	-6,222.4	47.4	3,919.0	3,734.6	184.39	21.254	
9,100.0	6,814.2	6,856.2	6,856.2	49.2	137.1	-91.71	-91.71	-6,222.4	47.4	3,819.2	3,633.0	186.21	20.510	
9,200.0	6,814.0	6,856.0	6,856.0	51.1	137.1	-91.66	-91.66	-6,222.4	47.4	3,719.4	3,531.4	188.05	19.779	
9,300.0	6,813.8	6,855.8	6,855.8	52.9	137.1	-91.62	-91.62	-6,222.4	47.4	3,619.6	3,429.8	189.89	19.062	
9,400.0	6,813.6	6,855.6	6,855.6	54.8	137.1	-91.57	-91.57	-6,222.4	47.4	3,519.9	3,328.2	191.73	18.358	
9,500.0	6,813.4	6,855.4	6,855.4	56.6	137.1	-91.53	-91.53	-6,222.4	47.4	3,420.1	3,226.5	193.58	17.668	
9,600.0	6,813.2	6,855.2	6,855.2	58.5	137.1	-91.48	-91.48	-6,222.4	47.4	3,320.4	3,125.0	195.44	16.990	
9,700.0	6,813.0	6,855.0	6,855.0	60.3	137.1	-91.44	-91.44	-6,222.4	47.4	3,220.7	3,023.4	197.30	16.324	
9,800.0	6,812.8	6,854.8	6,854.8	62.2	137.1	-91.40	-91.40	-6,222.4	47.4	3,121.0	2,921.8	199.16	15.671	
9,900.0	6,812.7	6,854.7	6,854.7	64.0	137.1	-91.35	-91.35	-6,222.4	47.4	3,021.3	2,820.3	201.03	15.029	
10,000.0	6,812.5	6,854.5	6,854.5	65.9	137.1	-91.31	-91.31	-6,222.4	47.4	2,921.6	2,718.7	202.89	14.400	
10,100.0	6,812.3	6,854.3	6,854.3	67.8	137.1	-91.26	-91.26	-6,222.4	47.4	2,822.0	2,617.2	204.77	13.782	

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-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Hoffman B 33-19 (Exist) - Wellbore #1 - Wellbor										Offset Site Error:		0.0 ft		
Survey Program: 7600-UNKNOWN														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
10,200.0	6,812.1	6,854.1	6,854.1	69.7	137.1	-91.22	-6,222.4	47.4	2,722.4	2,515.8	206.64	13.175				
10,300.0	6,811.9	6,853.9	6,853.9	71.5	137.1	-91.17	-6,222.4	47.4	2,622.8	2,414.3	208.52	12.578				
10,400.0	6,811.7	6,853.7	6,853.7	73.4	137.1	-91.13	-6,222.4	47.4	2,523.3	2,312.9	210.40	11.993				
10,500.0	6,811.5	6,853.5	6,853.5	75.3	137.1	-91.08	-6,222.4	47.4	2,423.8	2,211.5	212.28	11.418				
10,600.0	6,811.3	6,853.3	6,853.3	77.2	137.1	-91.04	-6,222.4	47.4	2,324.3	2,110.1	214.16	10.853				
10,700.0	6,811.1	6,853.1	6,853.1	79.1	137.1	-90.99	-6,222.4	47.4	2,224.9	2,008.8	216.04	10.298				
10,800.0	6,810.9	6,852.9	6,852.9	80.9	137.1	-90.95	-6,222.4	47.4	2,125.5	1,907.6	217.93	9.753				
10,900.0	6,810.7	6,852.7	6,852.7	82.8	137.1	-90.90	-6,222.4	47.4	2,026.2	1,806.4	219.82	9.218				
11,000.0	6,810.5	6,852.5	6,852.5	84.7	137.1	-90.86	-6,222.4	47.4	1,927.0	1,705.3	221.71	8.692				
11,100.0	6,810.4	6,852.4	6,852.4	86.6	137.0	-90.81	-6,222.4	47.4	1,827.9	1,604.3	223.60	8.175				
11,200.0	6,810.2	6,852.2	6,852.2	88.5	137.0	-90.77	-6,222.4	47.4	1,728.8	1,503.3	225.49	7.667				
11,300.0	6,810.0	6,852.0	6,852.0	90.4	137.0	-90.72	-6,222.4	47.4	1,629.9	1,402.5	227.38	7.168				
11,400.0	6,809.8	6,851.8	6,851.8	92.3	137.0	-90.68	-6,222.4	47.4	1,531.1	1,301.8	229.27	6.678				
11,500.0	6,809.6	6,851.6	6,851.6	94.2	137.0	-90.63	-6,222.4	47.4	1,432.5	1,201.3	231.17	6.197				
11,600.0	6,809.4	6,851.4	6,851.4	96.1	137.0	-90.59	-6,222.4	47.4	1,334.1	1,101.0	233.06	5.724				
11,700.0	6,809.2	6,851.2	6,851.2	98.0	137.0	-90.54	-6,222.4	47.4	1,235.9	1,001.0	234.96	5.260				
11,800.0	6,809.0	6,851.0	6,851.0	99.9	137.0	-90.50	-6,222.4	47.4	1,138.1	901.2	236.85	4.805				
11,900.0	6,808.8	6,850.8	6,850.8	101.8	137.0	-90.45	-6,222.4	47.4	1,040.6	801.9	238.75	4.359				
12,000.0	6,808.6	6,850.6	6,850.6	103.7	137.0	-90.41	-6,222.4	47.4	943.8	703.1	240.65	3.922				
12,100.0	6,808.4	6,850.4	6,850.4	105.6	137.0	-90.36	-6,222.4	47.4	847.6	605.0	242.55	3.495				
12,200.0	6,808.2	6,850.2	6,850.2	107.5	137.0	-90.32	-6,222.4	47.4	752.4	508.0	244.45	3.078				
12,300.0	6,808.0	6,850.0	6,850.0	109.4	137.0	-90.27	-6,222.4	47.4	658.7	412.3	246.35	2.674				
12,400.0	6,807.9	6,849.9	6,849.9	111.3	137.0	-90.23	-6,222.4	47.4	567.1	318.9	248.25	2.284				
12,500.0	6,807.7	6,849.7	6,849.7	113.2	137.0	-90.18	-6,222.4	47.4	478.9	228.8	250.15	1.914				
12,600.0	6,807.5	6,849.5	6,849.5	115.1	137.0	-90.14	-6,222.4	47.4	396.3	144.3	252.05	1.572				
12,700.0	6,807.3	6,849.3	6,849.3	117.0	137.0	-90.09	-6,222.4	47.4	323.7	69.8	253.95	1.275 Level 3				
12,800.0	6,807.1	6,849.1	6,849.1	118.9	137.0	-90.05	-6,222.4	47.4	269.3	13.5	255.85	1.053 Level 2				
12,900.0	6,806.9	6,848.9	6,848.9	120.8	137.0	-90.01	-6,222.4	47.4	245.5	-12.2	257.75	0.953 Level 1				
12,911.3	6,806.9	6,848.9	6,848.9	121.0	137.0	-90.00	-6,222.4	47.4	245.3	-12.7	257.97	0.951 Level 1, CC, ES, SF				
13,000.0	6,806.7	6,848.7	6,848.7	122.7	137.0	-89.96	-6,222.4	47.4	260.8	1.1	259.65	1.004 Level 2				
13,100.0	6,806.5	6,848.5	6,848.5	124.6	137.0	-89.92	-6,222.4	47.4	309.4	47.9	261.56	1.183 Level 2				
13,200.0	6,806.3	6,848.3	6,848.3	126.5	137.0	-89.87	-6,222.4	47.4	378.8	115.3	263.46	1.438 Level 3				
13,300.0	6,806.1	6,848.1	6,848.1	128.4	137.0	-89.83	-6,222.4	47.4	459.6	194.2	265.36	1.732				
13,400.0	6,805.9	6,847.9	6,847.9	130.3	137.0	-89.78	-6,222.4	47.4	546.8	279.5	267.27	2.046				
13,500.0	6,805.7	6,847.7	6,847.7	132.3	137.0	-89.74	-6,222.4	47.4	637.7	368.5	269.17	2.369				
13,600.0	6,805.6	6,847.6	6,847.6	134.2	137.0	-89.69	-6,222.4	47.4	731.0	460.0	271.07	2.697				
13,700.0	6,805.4	6,847.4	6,847.4	136.1	136.9	-89.65	-6,222.4	47.4	825.9	552.9	272.98	3.026				
13,800.0	6,805.2	6,847.2	6,847.2	138.0	136.9	-89.60	-6,222.4	47.4	921.9	647.0	274.88	3.354				
13,888.1	6,805.0	6,847.0	6,847.0	139.7	136.9	-89.56	-6,222.4	47.4	1,007.1	730.5	276.56	3.641				



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28J-443
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4649.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28J-443	<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 #1 (12-30-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4649.0ft (RKB - 15')

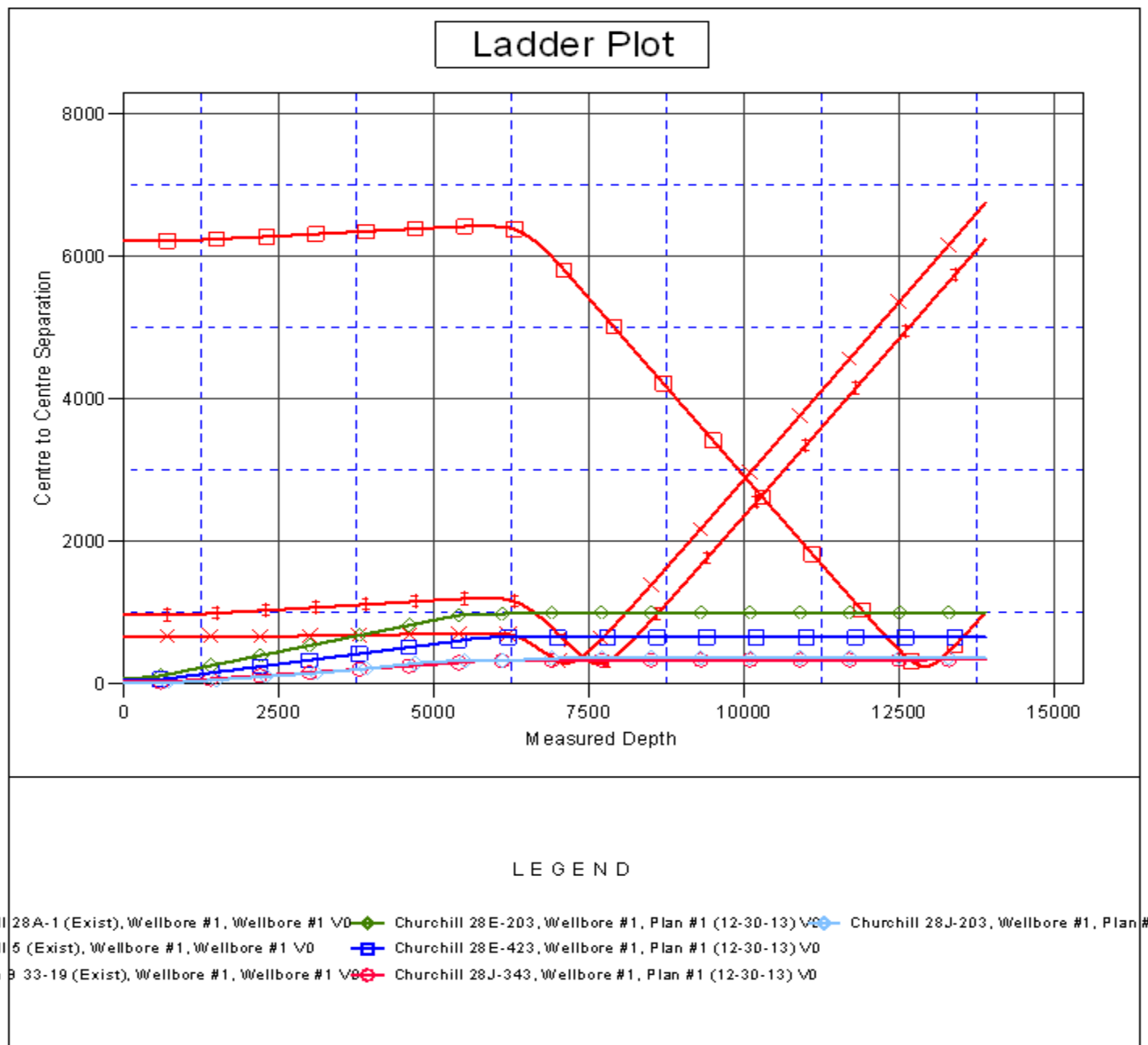
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-443

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.61°



Coordinates are relative to: Churchill 28J-443  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.61°

