

# PETROLEUM DEVELOPMENT CORP Weld County CO

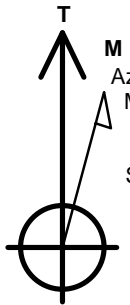
Well Name: **Churchill 28E-203**

Surface Location: Churchill 28J-HZ Pad Sec.28-T5N-R64W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4635.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381533.42	3261903.54	40.376900	-104.559930	
RKB - 15' WELL @ 4650.0ft (RKB - 15')						

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1215'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2143'FNL, 75'FWL, SEC.33	6630.0	-7195.1	-1095.3	Point

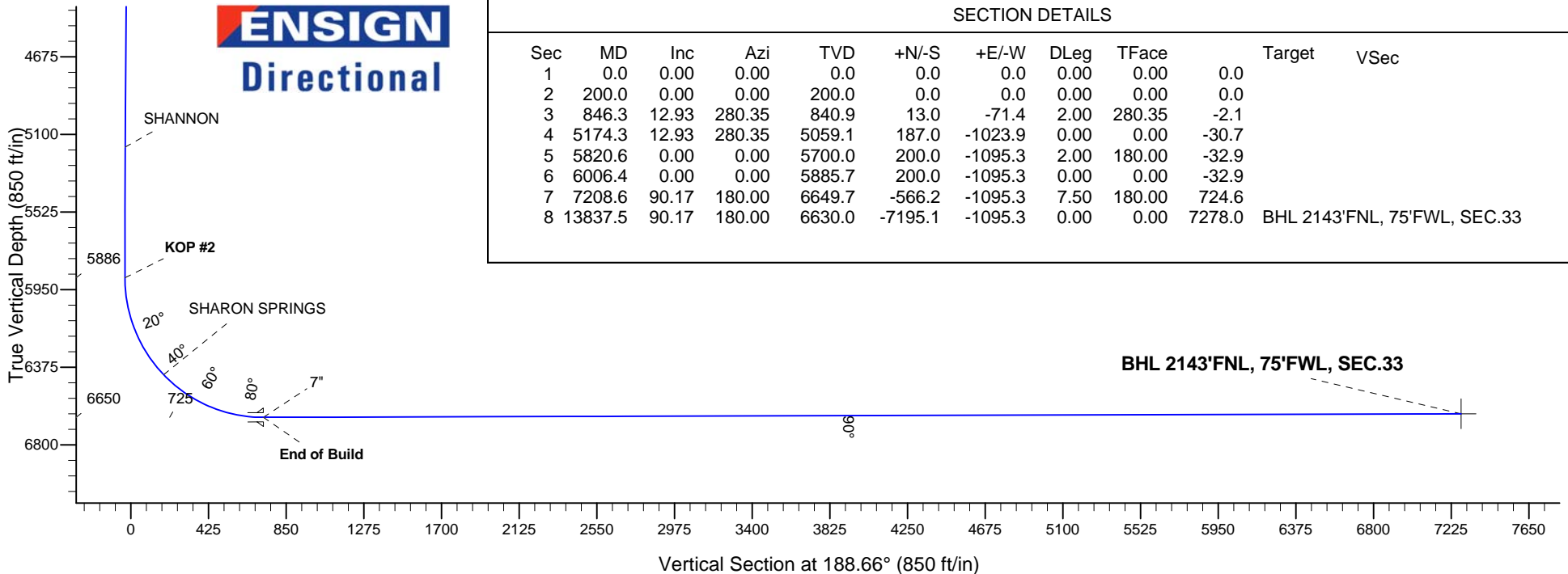
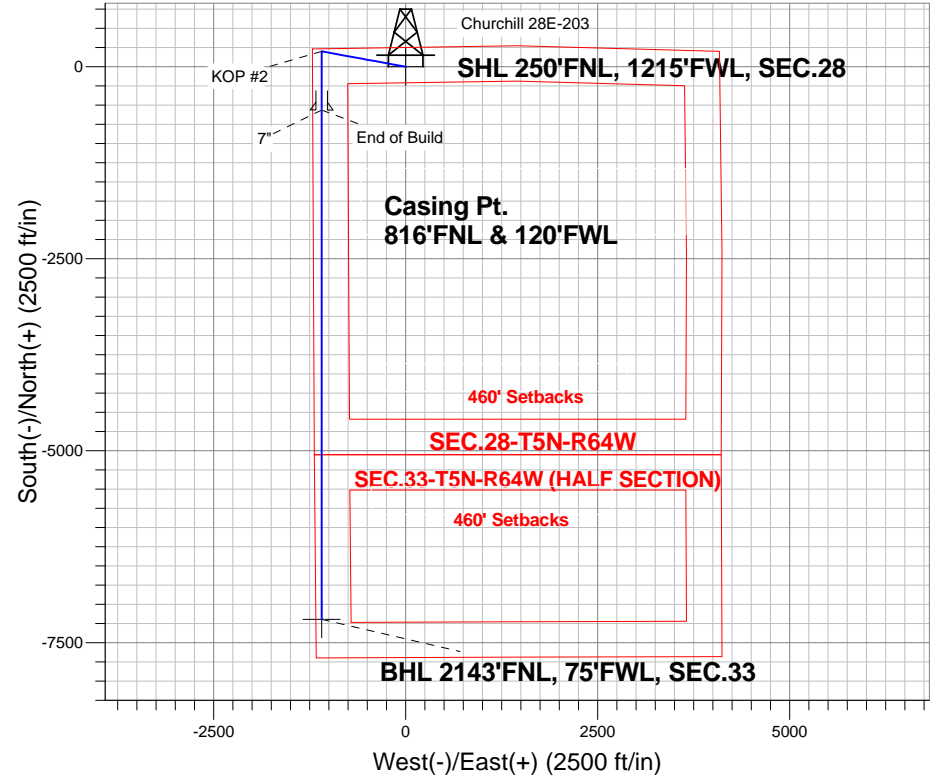


Azimuths to True North  
 Magnetic North: 8.41°  
 Magnetic Field  
 Strength: 52874.3snT  
 Dip Angle: 66.98°  
 Date: 12/30/2013  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
5885.8	6006.4	KOP #2
6649.7	7208.6	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W  
 Churchill 28E-203  
 Plan #1 (12-30-13)  
 13:15, January 08 2014





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28E-203**

**Wellbore #1**

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

## **Standard Planning Report**

**08 January, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28E-203	<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 28E-203					
Well Position	+N/-S	0.0 ft	Northing:	1,381,533.42 ft	Latitude:	40.376900
	+E/-W	0.0 ft	Easting:	3,261,903.54 ft	Longitude:	-104.559930
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,635.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	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	188.66

<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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
846.3	12.93	280.35	840.9	13.0	-71.4	2.00	2.00	0.00	280.35	
5,174.3	12.93	280.35	5,059.1	187.0	-1,023.9	0.00	0.00	0.00	0.00	
5,820.6	0.00	0.00	5,700.0	200.0	-1,095.3	2.00	-2.00	0.00	180.00	
6,006.4	0.00	0.00	5,885.7	200.0	-1,095.3	0.00	0.00	0.00	0.00	
7,208.6	90.17	180.00	6,649.7	-566.2	-1,095.3	7.50	7.50	0.00	180.00	
13,837.5	90.17	180.00	6,630.0	-7,195.1	-1,095.3	0.00	0.00	0.00	0.00	BHL 2143°FNL, 75'

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28E-203	<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, 1215'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
<b>KOP #1</b>									
300.0	2.00	280.35	300.0	0.3	-1.7	-0.1	2.00	2.00	0.00
400.0	4.00	280.35	399.8	1.3	-6.9	-0.2	2.00	2.00	0.00
500.0	6.00	280.35	499.5	2.8	-15.4	-0.5	2.00	2.00	0.00
600.0	8.00	280.35	598.7	5.0	-27.4	-0.8	2.00	2.00	0.00
700.0	10.00	280.35	697.5	7.8	-42.8	-1.3	2.00	2.00	0.00
800.0	12.00	280.35	795.6	11.2	-61.6	-1.8	2.00	2.00	0.00
846.3	12.93	280.35	840.9	13.0	-71.4	-2.1	2.00	2.00	0.00
900.0	12.93	280.35	893.2	15.2	-83.2	-2.5	0.00	0.00	0.00
1,000.0	12.93	280.35	990.6	19.2	-105.2	-3.2	0.00	0.00	0.00
1,100.0	12.93	280.35	1,088.1	23.2	-127.2	-3.8	0.00	0.00	0.00
1,200.0	12.93	280.35	1,185.6	27.3	-149.3	-4.5	0.00	0.00	0.00
1,300.0	12.93	280.35	1,283.0	31.3	-171.3	-5.1	0.00	0.00	0.00
1,400.0	12.93	280.35	1,380.5	35.3	-193.3	-5.8	0.00	0.00	0.00
1,500.0	12.93	280.35	1,478.0	39.3	-215.3	-6.5	0.00	0.00	0.00
1,600.0	12.93	280.35	1,575.4	43.3	-237.3	-7.1	0.00	0.00	0.00
1,700.0	12.93	280.35	1,672.9	47.3	-259.3	-7.8	0.00	0.00	0.00
1,800.0	12.93	280.35	1,770.4	51.4	-281.3	-8.4	0.00	0.00	0.00
1,900.0	12.93	280.35	1,867.8	55.4	-303.3	-9.1	0.00	0.00	0.00
2,000.0	12.93	280.35	1,965.3	59.4	-325.3	-9.8	0.00	0.00	0.00
2,100.0	12.93	280.35	2,062.8	63.4	-347.3	-10.4	0.00	0.00	0.00
2,200.0	12.93	280.35	2,160.2	67.4	-369.3	-11.1	0.00	0.00	0.00
2,300.0	12.93	280.35	2,257.7	71.5	-391.3	-11.8	0.00	0.00	0.00
2,400.0	12.93	280.35	2,355.2	75.5	-413.3	-12.4	0.00	0.00	0.00
2,500.0	12.93	280.35	2,452.6	79.5	-435.3	-13.1	0.00	0.00	0.00
2,600.0	12.93	280.35	2,550.1	83.5	-457.3	-13.7	0.00	0.00	0.00
2,700.0	12.93	280.35	2,647.6	87.5	-479.4	-14.4	0.00	0.00	0.00
2,800.0	12.93	280.35	2,745.0	91.5	-501.4	-15.1	0.00	0.00	0.00
2,900.0	12.93	280.35	2,842.5	95.6	-523.4	-15.7	0.00	0.00	0.00
3,000.0	12.93	280.35	2,939.9	99.6	-545.4	-16.4	0.00	0.00	0.00
3,100.0	12.93	280.35	3,037.4	103.6	-567.4	-17.0	0.00	0.00	0.00
3,200.0	12.93	280.35	3,134.9	107.6	-589.4	-17.7	0.00	0.00	0.00
3,300.0	12.93	280.35	3,232.3	111.6	-611.4	-18.4	0.00	0.00	0.00
3,400.0	12.93	280.35	3,329.8	115.7	-633.4	-19.0	0.00	0.00	0.00
3,500.0	12.93	280.35	3,427.3	119.7	-655.4	-19.7	0.00	0.00	0.00
3,600.0	12.93	280.35	3,524.7	123.7	-677.4	-20.3	0.00	0.00	0.00
3,625.9	12.93	280.35	3,550.0	124.7	-683.1	-20.5	0.00	0.00	0.00
<b>PARKMAN</b>									
3,700.0	12.93	280.35	3,622.2	127.7	-699.4	-21.0	0.00	0.00	0.00
3,800.0	12.93	280.35	3,719.7	131.7	-721.4	-21.7	0.00	0.00	0.00
3,900.0	12.93	280.35	3,817.1	135.8	-743.4	-22.3	0.00	0.00	0.00
4,000.0	12.93	280.35	3,914.6	139.8	-765.4	-23.0	0.00	0.00	0.00
4,100.0	12.93	280.35	4,012.1	143.8	-787.4	-23.6	0.00	0.00	0.00
4,200.0	12.93	280.35	4,109.5	147.8	-809.5	-24.3	0.00	0.00	0.00
4,256.9	12.93	280.35	4,165.0	150.1	-822.0	-24.7	0.00	0.00	0.00
<b>SUSSEX</b>									
4,300.0	12.93	280.35	4,207.0	151.8	-831.5	-25.0	0.00	0.00	0.00
4,400.0	12.93	280.35	4,304.5	155.8	-853.5	-25.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
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<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28E-203	<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	12.93	280.35	4,401.9	159.9	-875.5	-26.3	0.00	0.00	0.00
4,600.0	12.93	280.35	4,499.4	163.9	-897.5	-26.9	0.00	0.00	0.00
4,700.0	12.93	280.35	4,596.9	167.9	-919.5	-27.6	0.00	0.00	0.00
4,800.0	12.93	280.35	4,694.3	171.9	-941.5	-28.3	0.00	0.00	0.00
4,900.0	12.93	280.35	4,791.8	175.9	-963.5	-28.9	0.00	0.00	0.00
5,000.0	12.93	280.35	4,889.3	180.0	-985.5	-29.6	0.00	0.00	0.00
5,100.0	12.93	280.35	4,986.7	184.0	-1,007.5	-30.3	0.00	0.00	0.00
5,174.3	12.93	280.35	5,059.1	187.0	-1,023.9	-30.7	0.00	0.00	0.00
5,200.0	12.41	280.35	5,084.2	188.0	-1,029.4	-30.9	2.00	-2.00	0.00
5,287.6	10.66	280.35	5,170.0	191.1	-1,046.6	-31.4	2.00	-2.00	0.00
<b>SHANNON</b>									
5,300.0	10.41	280.35	5,182.2	191.5	-1,048.9	-31.5	2.00	-2.00	0.00
5,400.0	8.41	280.35	5,280.9	194.5	-1,065.0	-32.0	2.00	-2.00	0.00
5,500.0	6.41	280.35	5,380.0	196.8	-1,077.7	-32.4	2.00	-2.00	0.00
5,600.0	4.41	280.35	5,479.6	198.5	-1,086.9	-32.6	2.00	-2.00	0.00
5,700.0	2.41	280.35	5,579.4	199.5	-1,092.8	-32.8	2.00	-2.00	0.00
5,800.0	0.41	280.35	5,679.4	200.0	-1,095.2	-32.9	2.00	-2.00	0.00
5,820.6	0.00	0.00	5,700.0	200.0	-1,095.3	-32.9	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,779.4	200.0	-1,095.3	-32.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,879.4	200.0	-1,095.3	-32.9	0.00	0.00	0.00
6,006.4	0.00	0.00	5,885.8	200.0	-1,095.3	-32.9	0.00	0.00	0.00
<b>KOP #2</b>									
6,100.0	7.02	180.00	5,979.1	194.3	-1,095.3	-27.2	7.50	7.50	0.00
6,200.0	14.52	180.00	6,077.3	175.6	-1,095.3	-8.8	7.50	7.50	0.00
6,300.0	22.02	180.00	6,172.2	144.3	-1,095.3	22.2	7.50	7.50	0.00
6,400.0	29.52	180.00	6,262.2	100.8	-1,095.3	65.2	7.50	7.50	0.00
6,500.0	37.02	180.00	6,345.7	46.0	-1,095.3	119.4	7.50	7.50	0.00
6,592.5	43.96	180.00	6,416.0	-14.0	-1,095.3	178.7	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,600.0	44.52	180.00	6,421.4	-19.3	-1,095.3	183.9	7.50	7.50	0.00
6,700.0	52.02	180.00	6,487.9	-93.9	-1,095.3	257.6	7.50	7.50	0.00
6,800.0	59.52	180.00	6,544.1	-176.5	-1,095.3	339.3	7.50	7.50	0.00
6,900.0	67.02	180.00	6,589.1	-265.7	-1,095.3	427.5	7.50	7.50	0.00
7,000.0	74.52	180.00	6,622.0	-360.1	-1,095.3	520.8	7.50	7.50	0.00
7,100.0	82.02	180.00	6,642.3	-457.9	-1,095.3	617.6	7.50	7.50	0.00
7,200.0	89.52	180.00	6,649.6	-557.6	-1,095.3	716.1	7.50	7.50	0.00
7,208.6	90.17	180.00	6,649.7	-566.2	-1,095.3	724.6	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,300.0	90.17	180.00	6,649.4	-657.6	-1,095.3	814.9	0.00	0.00	0.00
7,400.0	90.17	180.00	6,649.1	-757.6	-1,095.3	913.8	0.00	0.00	0.00
7,500.0	90.17	180.00	6,648.8	-857.6	-1,095.3	1,012.7	0.00	0.00	0.00
7,600.0	90.17	180.00	6,648.5	-957.6	-1,095.3	1,111.5	0.00	0.00	0.00
7,700.0	90.17	180.00	6,648.2	-1,057.6	-1,095.3	1,210.4	0.00	0.00	0.00
7,800.0	90.17	180.00	6,647.9	-1,157.6	-1,095.3	1,309.2	0.00	0.00	0.00
7,900.0	90.17	180.00	6,647.6	-1,257.6	-1,095.3	1,408.1	0.00	0.00	0.00
8,000.0	90.17	180.00	6,647.3	-1,357.6	-1,095.3	1,507.0	0.00	0.00	0.00
8,100.0	90.17	180.00	6,647.0	-1,457.6	-1,095.3	1,605.8	0.00	0.00	0.00
8,200.0	90.17	180.00	6,646.7	-1,557.6	-1,095.3	1,704.7	0.00	0.00	0.00
8,300.0	90.17	180.00	6,646.4	-1,657.6	-1,095.3	1,803.5	0.00	0.00	0.00
8,400.0	90.17	180.00	6,646.1	-1,757.6	-1,095.3	1,902.4	0.00	0.00	0.00
8,500.0	90.17	180.00	6,645.8	-1,857.6	-1,095.3	2,001.3	0.00	0.00	0.00
8,600.0	90.17	180.00	6,645.5	-1,957.6	-1,095.3	2,100.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28E-203	<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)
8,700.0	90.17	180.00	6,645.2	-2,057.6	-1,095.3	2,199.0	0.00	0.00	0.00
8,800.0	90.17	180.00	6,644.9	-2,157.6	-1,095.3	2,297.8	0.00	0.00	0.00
8,900.0	90.17	180.00	6,644.6	-2,257.6	-1,095.3	2,396.7	0.00	0.00	0.00
9,000.0	90.17	180.00	6,644.4	-2,357.6	-1,095.3	2,495.6	0.00	0.00	0.00
9,100.0	90.17	180.00	6,644.1	-2,457.6	-1,095.3	2,594.4	0.00	0.00	0.00
9,200.0	90.17	180.00	6,643.8	-2,557.6	-1,095.3	2,693.3	0.00	0.00	0.00
9,300.0	90.17	180.00	6,643.5	-2,657.6	-1,095.3	2,792.1	0.00	0.00	0.00
9,400.0	90.17	180.00	6,643.2	-2,757.6	-1,095.3	2,891.0	0.00	0.00	0.00
9,500.0	90.17	180.00	6,642.9	-2,857.6	-1,095.3	2,989.9	0.00	0.00	0.00
9,600.0	90.17	180.00	6,642.6	-2,957.6	-1,095.3	3,088.7	0.00	0.00	0.00
9,700.0	90.17	180.00	6,642.3	-3,057.6	-1,095.3	3,187.6	0.00	0.00	0.00
9,800.0	90.17	180.00	6,642.0	-3,157.6	-1,095.3	3,286.5	0.00	0.00	0.00
9,900.0	90.17	180.00	6,641.7	-3,257.6	-1,095.3	3,385.3	0.00	0.00	0.00
10,000.0	90.17	180.00	6,641.4	-3,357.6	-1,095.3	3,484.2	0.00	0.00	0.00
10,100.0	90.17	180.00	6,641.1	-3,457.6	-1,095.3	3,583.0	0.00	0.00	0.00
10,200.0	90.17	180.00	6,640.8	-3,557.6	-1,095.3	3,681.9	0.00	0.00	0.00
10,300.0	90.17	180.00	6,640.5	-3,657.6	-1,095.3	3,780.8	0.00	0.00	0.00
10,400.0	90.17	180.00	6,640.2	-3,757.6	-1,095.3	3,879.6	0.00	0.00	0.00
10,500.0	90.17	180.00	6,639.9	-3,857.6	-1,095.3	3,978.5	0.00	0.00	0.00
10,600.0	90.17	180.00	6,639.6	-3,957.6	-1,095.3	4,077.3	0.00	0.00	0.00
10,700.0	90.17	180.00	6,639.3	-4,057.6	-1,095.3	4,176.2	0.00	0.00	0.00
10,800.0	90.17	180.00	6,639.0	-4,157.6	-1,095.3	4,275.1	0.00	0.00	0.00
10,900.0	90.17	180.00	6,638.7	-4,257.6	-1,095.3	4,373.9	0.00	0.00	0.00
11,000.0	90.17	180.00	6,638.4	-4,357.6	-1,095.3	4,472.8	0.00	0.00	0.00
11,100.0	90.17	180.00	6,638.1	-4,457.6	-1,095.3	4,571.6	0.00	0.00	0.00
11,200.0	90.17	180.00	6,637.8	-4,557.6	-1,095.3	4,670.5	0.00	0.00	0.00
11,300.0	90.17	180.00	6,637.5	-4,657.6	-1,095.3	4,769.4	0.00	0.00	0.00
11,400.0	90.17	180.00	6,637.2	-4,757.6	-1,095.3	4,868.2	0.00	0.00	0.00
11,500.0	90.17	180.00	6,636.9	-4,857.6	-1,095.3	4,967.1	0.00	0.00	0.00
11,600.0	90.17	180.00	6,636.6	-4,957.6	-1,095.3	5,065.9	0.00	0.00	0.00
11,700.0	90.17	180.00	6,636.3	-5,057.6	-1,095.3	5,164.8	0.00	0.00	0.00
11,800.0	90.17	180.00	6,636.0	-5,157.6	-1,095.3	5,263.7	0.00	0.00	0.00
11,900.0	90.17	180.00	6,635.7	-5,257.6	-1,095.3	5,362.5	0.00	0.00	0.00
12,000.0	90.17	180.00	6,635.5	-5,357.6	-1,095.3	5,461.4	0.00	0.00	0.00
12,100.0	90.17	180.00	6,635.2	-5,457.6	-1,095.3	5,560.2	0.00	0.00	0.00
12,200.0	90.17	180.00	6,634.9	-5,557.6	-1,095.3	5,659.1	0.00	0.00	0.00
12,300.0	90.17	180.00	6,634.6	-5,657.6	-1,095.3	5,758.0	0.00	0.00	0.00
12,400.0	90.17	180.00	6,634.3	-5,757.6	-1,095.3	5,856.8	0.00	0.00	0.00
12,500.0	90.17	180.00	6,634.0	-5,857.6	-1,095.3	5,955.7	0.00	0.00	0.00
12,600.0	90.17	180.00	6,633.7	-5,957.6	-1,095.3	6,054.6	0.00	0.00	0.00
12,700.0	90.17	180.00	6,633.4	-6,057.6	-1,095.3	6,153.4	0.00	0.00	0.00
12,800.0	90.17	180.00	6,633.1	-6,157.6	-1,095.3	6,252.3	0.00	0.00	0.00
12,900.0	90.17	180.00	6,632.8	-6,257.6	-1,095.3	6,351.1	0.00	0.00	0.00
13,000.0	90.17	180.00	6,632.5	-6,357.6	-1,095.3	6,450.0	0.00	0.00	0.00
13,100.0	90.17	180.00	6,632.2	-6,457.6	-1,095.3	6,548.9	0.00	0.00	0.00
13,200.0	90.17	180.00	6,631.9	-6,557.6	-1,095.3	6,647.7	0.00	0.00	0.00
13,300.0	90.17	180.00	6,631.6	-6,657.6	-1,095.3	6,746.6	0.00	0.00	0.00
13,400.0	90.17	180.00	6,631.3	-6,757.6	-1,095.3	6,845.4	0.00	0.00	0.00
13,500.0	90.17	180.00	6,631.0	-6,857.6	-1,095.3	6,944.3	0.00	0.00	0.00
13,600.0	90.17	180.00	6,630.7	-6,957.6	-1,095.3	7,043.2	0.00	0.00	0.00
13,700.0	90.17	180.00	6,630.4	-7,057.6	-1,095.3	7,142.0	0.00	0.00	0.00
13,800.0	90.17	180.00	6,630.1	-7,157.6	-1,095.3	7,240.9	0.00	0.00	0.00
13,837.5	90.17	180.00	6,630.0	-7,195.1	-1,095.3	7,278.0	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Project:</b>	SEC.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Churchill 28E-203	<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)
BHL 2143'FNL, 75'FWL, SEC.33									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,208.6	6,649.7	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,625.9	3,550.0	PARKMAN				
4,256.9	4,165.0	SUSSEX				
5,287.6	5,170.0	SHANNON				
6,592.5	6,416.0	SHARON SPRINGS				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP #1	
6,006.4	5,885.8	200.0	-1,095.3	KOP #2	
7,208.6	6,649.7	-566.2	-1,095.3	End of Build	



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.28-T5N-R64W**

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

**Churchill 28E-203**

**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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 1/6/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	13,837.5	Plan #1 (12-30-13) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Churchill 28J-HZ Pad Sec.28-T5N-R64W						
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	200.0	200.0	30.6	30.0	45.452	CC, ES
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	13,837.5	13,939.5	375.0	120.0	1.471	Level 3, SF
Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)	200.0	200.0	61.4	60.7	91.063	CC, ES
Churchill 28J-343 - Wellbore #1 - Plan #1 (12-30-13)	13,837.5	13,829.4	664.5	386.0	2.386	SF
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	200.0	199.0	92.0	91.3	136.918	CC, ES
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	13,837.5	13,888.0	1,004.9	728.5	3.635	SF

<b>Offset Design</b>												
Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)												
Survey Program: 0-MWD												
Reference												
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	30.6	30.6			
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	30.6	30.6	30.4	0.22	136.355
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	30.6	30.6	30.0	0.67	45.452 CC, ES
300.0	300.0	300.0	300.0	0.6	0.6	170.21	0.0	30.6	32.4	31.2	1.12	28.851
400.0	399.8	399.8	399.8	0.8	0.8	171.55	0.0	30.6	37.5	36.0	1.57	23.873
500.0	499.5	501.0	501.0	1.0	1.0	172.72	0.4	28.9	44.5	42.4	2.01	22.074
600.0	598.7	602.4	602.3	1.3	1.2	173.31	1.7	23.7	51.4	48.9	2.45	20.964
700.0	697.5	704.1	703.5	1.7	1.5	173.51	3.9	15.0	58.3	55.4	2.90	20.099
800.0	795.6	806.0	804.7	2.0	1.8	173.46	7.0	2.8	65.1	61.8	3.36	19.379
900.0	893.2	907.1	904.5	2.5	2.1	173.25	10.8	-12.4	71.8	68.0	3.84	18.702
1,000.0	990.6	1,006.9	1,003.0	2.9	2.4	173.03	14.8	-27.9	78.4	74.1	4.34	18.060
1,100.0	1,088.1	1,106.7	1,101.5	3.4	2.7	172.85	18.7	-43.5	85.0	80.1	4.85	17.523
1,200.0	1,185.6	1,206.4	1,200.0	3.9	3.1	172.70	22.6	-59.0	91.5	86.1	5.36	17.069
1,300.0	1,283.0	1,306.2	1,298.5	4.4	3.5	172.57	26.5	-74.5	98.1	92.2	5.88	16.681
1,400.0	1,380.5	1,406.0	1,397.0	4.8	3.8	172.45	30.4	-90.1	104.6	98.2	6.40	16.353
1,500.0	1,478.0	1,505.8	1,495.5	5.3	4.2	172.35	34.3	-105.6	111.2	104.2	6.92	16.065
1,600.0	1,575.4	1,605.6	1,593.9	5.8	4.6	172.25	38.2	-121.1	117.7	110.3	7.44	15.814
1,700.0	1,672.9	1,705.4	1,692.4	6.3	4.9	172.17	42.1	-136.7	124.3	116.3	7.97	15.592
1,800.0	1,770.4	1,805.2	1,790.9	6.8	5.3	172.10	46.0	-152.2	130.8	122.3	8.50	15.395
1,900.0	1,867.8	1,904.9	1,889.4	7.3	5.7	172.03	49.9	-167.7	137.4	128.4	9.03	15.220
2,000.0	1,965.3	2,004.7	1,987.9	7.8	6.0	171.97	53.9	-183.3	143.9	134.4	9.56	15.062

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,100.0	2,062.8	2,104.5	2,086.4	8.2	6.4	171.92	171.92	57.8	-198.8	150.5	140.4	10.09	14.920	
2,200.0	2,160.2	2,204.3	2,184.9	8.7	6.8	171.87	171.87	61.7	-214.3	157.1	146.4	10.62	14.791	
2,300.0	2,257.7	2,304.1	2,283.4	9.2	7.2	171.82	171.82	65.6	-229.8	163.6	152.5	11.15	14.674	
2,400.0	2,355.2	2,403.9	2,381.9	9.7	7.6	171.78	171.78	69.5	-245.4	170.2	158.5	11.68	14.567	
2,500.0	2,452.6	2,503.7	2,480.4	10.2	7.9	171.74	171.74	73.4	-260.9	176.7	164.5	12.22	14.468	
2,600.0	2,550.1	2,603.4	2,578.9	10.7	8.3	171.70	171.70	77.3	-276.4	183.3	170.5	12.75	14.377	
2,700.0	2,647.6	2,703.2	2,677.4	11.2	8.7	171.66	171.66	81.2	-292.0	189.8	176.6	13.28	14.294	
2,800.0	2,745.0	2,803.0	2,775.8	11.7	9.1	171.63	171.63	85.1	-307.5	196.4	182.6	13.82	14.216	
2,900.0	2,842.5	2,902.8	2,874.3	12.2	9.4	171.60	171.60	89.1	-323.0	203.0	188.6	14.35	14.144	
3,000.0	2,939.9	3,002.6	2,972.8	12.6	9.8	171.57	171.57	93.0	-338.6	209.5	194.6	14.88	14.077	
3,100.0	3,037.4	3,102.4	3,071.3	13.1	10.2	171.55	171.55	96.9	-354.1	216.1	200.7	15.42	14.014	
3,200.0	3,134.9	3,202.1	3,169.8	13.6	10.6	171.52	171.52	100.8	-369.6	222.6	206.7	15.95	13.955	
3,300.0	3,232.3	3,301.9	3,268.3	14.1	10.9	171.50	171.50	104.7	-385.2	229.2	212.7	16.49	13.900	
3,400.0	3,329.8	3,401.7	3,366.8	14.6	11.3	171.48	171.48	108.6	-400.7	235.7	218.7	17.02	13.848	
3,500.0	3,427.3	3,501.5	3,465.3	15.1	11.7	171.46	171.46	112.5	-416.2	242.3	224.7	17.56	13.799	
3,600.0	3,524.7	3,601.3	3,563.8	15.6	12.1	171.44	171.44	116.4	-431.7	248.9	230.8	18.09	13.754	
3,700.0	3,622.2	3,701.1	3,662.3	16.1	12.5	171.42	171.42	120.3	-447.3	255.4	236.8	18.63	13.710	
3,800.0	3,719.7	3,800.9	3,760.8	16.6	12.8	171.40	171.40	124.2	-462.8	262.0	242.8	19.17	13.669	
3,900.0	3,817.1	3,900.6	3,859.2	17.1	13.2	171.38	171.38	128.2	-478.3	268.5	248.8	19.70	13.630	
4,000.0	3,914.6	4,000.4	3,957.7	17.6	13.6	171.37	171.37	132.1	-493.9	275.1	254.8	20.24	13.593	
4,100.0	4,012.1	4,100.2	4,056.2	18.0	14.0	171.35	171.35	136.0	-509.4	281.6	260.9	20.77	13.558	
4,200.0	4,109.5	4,200.0	4,154.7	18.5	14.4	171.34	171.34	139.9	-524.9	288.2	266.9	21.31	13.525	
4,300.0	4,207.0	4,299.8	4,253.2	19.0	14.7	171.32	171.32	143.8	-540.5	294.8	272.9	21.85	13.493	
4,400.0	4,304.5	4,399.6	4,351.7	19.5	15.1	171.31	171.31	147.7	-556.0	301.3	278.9	22.38	13.463	
4,500.0	4,401.9	4,499.3	4,450.2	20.0	15.5	171.30	171.30	151.6	-571.5	307.9	285.0	22.92	13.434	
4,600.0	4,499.4	4,599.1	4,548.7	20.5	15.9	171.28	171.28	155.5	-587.0	314.4	291.0	23.45	13.406	
4,700.0	4,596.9	4,698.9	4,647.2	21.0	16.2	171.27	171.27	159.4	-602.6	321.0	297.0	23.99	13.380	
4,800.0	4,694.3	4,798.7	4,745.7	21.5	16.6	171.26	171.26	163.4	-618.1	327.5	303.0	24.53	13.354	
4,900.0	4,791.8	4,898.5	4,844.2	22.0	17.0	171.25	171.25	167.3	-633.6	334.1	309.0	25.06	13.330	
5,000.0	4,889.3	4,998.3	4,942.6	22.5	17.4	171.24	171.24	171.2	-649.2	340.7	315.1	25.60	13.307	
5,100.0	4,986.7	5,098.1	5,041.1	23.0	17.8	171.23	171.23	175.1	-664.7	347.2	321.1	26.14	13.284	
5,200.0	5,084.2	5,197.8	5,139.6	23.4	18.1	171.22	171.22	179.0	-680.2	353.7	327.0	26.68	13.257	
5,300.0	5,182.2	5,297.8	5,238.3	23.8	18.5	171.16	171.16	182.9	-695.8	357.6	330.4	27.18	13.155	
5,400.0	5,280.9	5,397.8	5,336.9	24.1	18.9	171.00	171.00	186.8	-711.3	358.1	330.5	27.66	12.947	
5,500.0	5,380.0	5,497.7	5,435.6	24.3	19.3	170.74	170.74	190.7	-726.9	355.2	327.1	28.11	12.636	
5,600.0	5,479.6	5,587.4	5,524.3	24.5	19.6	170.46	170.46	194.0	-739.6	350.2	321.7	28.47	12.301	
5,700.0	5,579.4	5,676.7	5,613.0	24.7	19.8	170.20	170.20	196.5	-749.7	344.8	316.0	28.75	11.991	
5,800.0	5,679.4	5,766.1	5,702.1	24.8	20.0	169.94	169.94	198.3	-757.0	339.0	310.0	28.99	11.694	
5,900.0	5,779.4	5,855.8	5,791.6	24.9	20.1	90.09	90.09	199.5	-761.7	333.9	304.6	29.30	11.394	
6,000.0	5,879.4	5,945.6	5,881.5	25.0	20.2	90.00	90.00	200.0	-763.6	331.7	302.1	29.63	11.195	
6,035.8	5,915.2	5,979.3	5,915.2	25.0	20.3	-90.13	-90.13	200.0	-763.6	331.6	301.9	29.76	11.145	
6,100.0	5,979.1	6,043.3	5,979.1	25.1	20.4	-90.98	-90.98	200.0	-763.6	331.7	301.6	30.08	11.027	
6,200.0	6,077.3	6,142.5	6,078.4	25.1	20.5	-93.99	-93.99	199.2	-763.6	332.5	301.7	30.81	10.791	
6,300.0	6,172.2	6,245.0	6,180.1	25.2	20.6	-97.43	-97.43	187.7	-763.6	334.6	303.0	31.53	10.612	
6,400.0	6,262.2	6,350.4	6,282.2	25.2	20.7	-100.75	-100.75	161.8	-763.6	337.8	305.8	32.05	10.540	
6,500.0	6,345.7	6,459.1	6,382.7	25.2	20.7	-103.87	-103.87	120.7	-763.6	342.0	309.6	32.31	10.582	
6,600.0	6,421.4	6,571.1	6,479.0	25.3	20.7	-106.73	-106.73	63.8	-763.6	346.7	314.4	32.36	10.715	
6,700.0	6,487.9	6,686.3	6,568.4	25.3	20.8	-109.26	-109.26	-8.7	-763.6	351.7	319.4	32.31	10.887	
6,800.0	6,544.1	6,804.5	6,647.8	25.5	20.9	-111.41	-111.41	-96.2	-763.6	356.6	324.2	32.41	11.003	
6,900.0	6,589.1	6,925.6	6,714.0	25.7	21.1	-113.14	-113.14	-197.4	-763.6	360.9	328.0	32.92	10.965	
7,000.0	6,622.0	7,049.0	6,764.2	26.0	21.5	-114.40	-114.40	-309.9	-763.6	364.3	330.3	34.07	10.695	

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,100.0	6,642.3	7,174.0	6,796.0	26.4	22.2	-115.19		-430.7	-763.6	366.5	330.5	36.02	10.175	
7,200.0	6,649.6	7,284.9	6,809.5	26.9	23.0	-115.75		-540.8	-763.6	368.5	330.0	38.57	9.555	
7,300.0	6,649.4	7,398.6	6,817.3	27.6	24.0	-116.85		-654.2	-763.6	371.7	330.9	40.80	9.111	
7,400.0	6,649.1	7,502.3	6,817.4	28.5	25.1	-116.90		-757.9	-763.6	371.9	328.7	43.19	8.610	
7,500.0	6,648.8	7,602.3	6,817.2	29.4	26.3	-116.92		-857.9	-763.6	371.9	326.2	45.69	8.140	
7,600.0	6,648.5	7,702.3	6,817.0	30.5	27.5	-116.93		-957.9	-763.6	372.0	323.7	48.31	7.699	
7,700.0	6,648.2	7,802.3	6,816.8	31.6	28.9	-116.94		-1,057.9	-763.6	372.0	321.0	51.04	7.289	
7,800.0	6,647.9	7,902.3	6,816.6	32.9	30.3	-116.96		-1,157.9	-763.6	372.1	318.2	53.85	6.909	
7,900.0	6,647.6	8,002.3	6,816.4	34.2	31.7	-116.97		-1,257.9	-763.6	372.1	315.4	56.74	6.559	
8,000.0	6,647.3	8,102.3	6,816.2	35.6	33.3	-116.99		-1,357.9	-763.6	372.2	312.5	59.69	6.235	
8,100.0	6,647.0	8,202.3	6,816.0	37.0	34.8	-117.00		-1,457.9	-763.6	372.2	309.5	62.69	5.937	
8,200.0	6,646.7	8,302.3	6,815.8	38.5	36.4	-117.02		-1,557.9	-763.6	372.3	306.5	65.74	5.663	
8,300.0	6,646.4	8,402.3	6,815.6	40.0	38.0	-117.03		-1,657.9	-763.6	372.3	303.5	68.83	5.409	
8,400.0	6,646.1	8,502.3	6,815.4	41.6	39.7	-117.04		-1,757.9	-763.6	372.4	300.4	71.96	5.175	
8,500.0	6,645.8	8,602.3	6,815.2	43.2	41.4	-117.06		-1,857.9	-763.6	372.4	297.3	75.11	4.958	
8,600.0	6,645.5	8,702.3	6,815.1	44.8	43.1	-117.07		-1,957.9	-763.6	372.5	294.2	78.29	4.757	
8,700.0	6,645.2	8,802.3	6,814.9	46.5	44.8	-117.09		-2,057.9	-763.6	372.5	291.0	81.50	4.571	
8,800.0	6,644.9	8,902.3	6,814.7	48.1	46.5	-117.10		-2,157.9	-763.6	372.5	287.8	84.73	4.397	
8,900.0	6,644.6	9,002.3	6,814.5	49.8	48.3	-117.12		-2,257.9	-763.6	372.6	284.6	87.97	4.235	
9,000.0	6,644.4	9,102.3	6,814.3	51.5	50.0	-117.13		-2,357.9	-763.6	372.6	281.4	91.23	4.084	
9,100.0	6,644.1	9,202.3	6,814.1	53.2	51.8	-117.14		-2,457.9	-763.6	372.7	278.2	94.51	3.943	
9,200.0	6,643.8	9,302.3	6,813.9	55.0	53.6	-117.16		-2,557.9	-763.6	372.7	274.9	97.80	3.811	
9,300.0	6,643.5	9,402.3	6,813.7	56.7	55.4	-117.17		-2,657.9	-763.6	372.8	271.7	101.10	3.687	
9,400.0	6,643.2	9,502.3	6,813.5	58.5	57.2	-117.19		-2,757.9	-763.6	372.8	268.4	104.41	3.571	
9,500.0	6,642.9	9,602.3	6,813.3	60.2	59.0	-117.20		-2,857.9	-763.6	372.9	265.2	107.73	3.461	
9,600.0	6,642.6	9,702.3	6,813.1	62.0	60.8	-117.22		-2,957.9	-763.6	372.9	261.9	111.06	3.358	
9,700.0	6,642.3	9,802.3	6,812.9	63.8	62.6	-117.23		-3,057.9	-763.6	373.0	258.6	114.40	3.260	
9,800.0	6,642.0	9,902.3	6,812.8	65.6	64.4	-117.25		-3,157.9	-763.6	373.0	255.3	117.74	3.168	
9,900.0	6,641.7	10,002.3	6,812.6	67.4	66.2	-117.26		-3,257.9	-763.6	373.1	252.0	121.09	3.081	
10,000.0	6,641.4	10,102.3	6,812.4	69.2	68.1	-117.27		-3,357.9	-763.6	373.1	248.7	124.45	2.998	
10,100.0	6,641.1	10,202.3	6,812.2	71.0	69.9	-117.29		-3,457.9	-763.6	373.2	245.4	127.81	2.920	
10,200.0	6,640.8	10,302.3	6,812.0	72.8	71.8	-117.30		-3,557.9	-763.6	373.2	242.0	131.18	2.845	
10,300.0	6,640.5	10,402.3	6,811.8	74.6	73.6	-117.32		-3,657.9	-763.6	373.3	238.7	134.55	2.774	
10,400.0	6,640.2	10,502.3	6,811.6	76.5	75.5	-117.33		-3,757.9	-763.6	373.3	235.4	137.92	2.707	
10,500.0	6,639.9	10,602.3	6,811.4	78.3	77.3	-117.35		-3,857.9	-763.6	373.4	232.1	141.30	2.642	
10,600.0	6,639.6	10,702.3	6,811.2	80.1	79.2	-117.36		-3,957.9	-763.6	373.4	228.7	144.69	2.581	
10,700.0	6,639.3	10,802.3	6,811.0	82.0	81.0	-117.37		-4,057.9	-763.6	373.5	225.4	148.07	2.522	
10,800.0	6,639.0	10,902.3	6,810.8	83.8	82.9	-117.39		-4,157.9	-763.6	373.5	222.1	151.46	2.466	
10,900.0	6,638.7	11,002.3	6,810.6	85.7	84.8	-117.40		-4,257.9	-763.6	373.6	218.7	154.85	2.412	
11,000.0	6,638.4	11,102.3	6,810.4	87.5	86.6	-117.42		-4,357.9	-763.6	373.6	215.4	158.24	2.361	
11,100.0	6,638.1	11,202.3	6,810.3	89.4	88.5	-117.43		-4,457.9	-763.6	373.7	212.0	161.64	2.312	
11,200.0	6,637.8	11,302.3	6,810.1	91.2	90.4	-117.45		-4,557.9	-763.6	373.7	208.7	165.03	2.264	
11,300.0	6,637.5	11,402.3	6,809.9	93.1	92.3	-117.46		-4,657.9	-763.6	373.7	205.3	168.43	2.219	
11,400.0	6,637.2	11,502.3	6,809.7	95.0	94.1	-117.47		-4,757.9	-763.6	373.8	202.0	171.83	2.175	
11,500.0	6,636.9	11,602.3	6,809.5	96.8	96.0	-117.49		-4,857.9	-763.6	373.8	198.6	175.23	2.133	
11,600.0	6,636.6	11,702.3	6,809.3	98.7	97.9	-117.50		-4,957.9	-763.6	373.9	195.3	178.64	2.093	
11,700.0	6,636.3	11,802.3	6,809.1	100.5	99.8	-117.52		-5,057.9	-763.6	373.9	191.9	182.04	2.054	
11,800.0	6,636.0	11,902.3	6,808.9	102.4	101.7	-117.53		-5,157.9	-763.6	374.0	188.5	185.45	2.017	
11,900.0	6,635.7	12,002.3	6,808.7	104.3	103.5	-117.54		-5,257.9	-763.6	374.0	185.2	188.85	1.981	
12,000.0	6,635.5	12,102.3	6,808.5	106.2	105.4	-117.56		-5,357.9	-763.6	374.1	181.8	192.26	1.946	
12,100.0	6,635.2	12,202.3	6,808.3	108.0	107.3	-117.57		-5,457.9	-763.6	374.1	178.5	195.67	1.912	

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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	
12,200.0	6,634.9	12,302.3	6,808.1	109.9	109.2	-117.59	-5,557.9	-763.6	374.2	175.1	199.08	1.880		
12,300.0	6,634.6	12,402.3	6,808.0	111.8	111.1	-117.60	-5,657.9	-763.6	374.2	171.7	202.49	1.848		
12,400.0	6,634.3	12,502.3	6,807.8	113.7	113.0	-117.62	-5,757.9	-763.6	374.3	168.4	205.90	1.818		
12,500.0	6,634.0	12,602.3	6,807.6	115.6	114.9	-117.63	-5,857.9	-763.6	374.3	165.0	209.31	1.788		
12,600.0	6,633.7	12,702.3	6,807.4	117.4	116.8	-117.64	-5,957.9	-763.6	374.4	161.7	212.72	1.760		
12,700.0	6,633.4	12,802.3	6,807.2	119.3	118.7	-117.66	-6,057.9	-763.6	374.4	158.3	216.14	1.732		
12,800.0	6,633.1	12,902.3	6,807.0	121.2	120.6	-117.67	-6,157.9	-763.6	374.5	154.9	219.55	1.706		
12,900.0	6,632.8	13,002.3	6,806.8	123.1	122.5	-117.69	-6,257.9	-763.6	374.5	151.6	222.96	1.680		
13,000.0	6,632.5	13,102.3	6,806.6	125.0	124.3	-117.70	-6,357.9	-763.6	374.6	148.2	226.37	1.655		
13,100.0	6,632.2	13,202.3	6,806.4	126.9	126.2	-117.72	-6,457.9	-763.6	374.6	144.8	229.79	1.630		
13,200.0	6,631.9	13,302.3	6,806.2	128.8	128.1	-117.73	-6,557.9	-763.6	374.7	141.5	233.20	1.607		
13,300.0	6,631.6	13,402.3	6,806.0	130.6	130.0	-117.74	-6,657.9	-763.6	374.7	138.1	236.62	1.584		
13,400.0	6,631.3	13,502.3	6,805.8	132.5	131.9	-117.76	-6,757.9	-763.6	374.8	134.7	240.03	1.561		
13,500.0	6,631.0	13,602.3	6,805.6	134.4	133.8	-117.77	-6,857.9	-763.6	374.8	131.4	243.44	1.540		
13,600.0	6,630.7	13,702.3	6,805.5	136.3	135.7	-117.79	-6,957.9	-763.6	374.9	128.0	246.86	1.519		
13,700.0	6,630.4	13,802.3	6,805.3	138.2	137.6	-117.80	-7,057.9	-763.6	374.9	124.6	250.27	1.498 Level 3		
13,800.0	6,630.1	13,902.3	6,805.1	140.1	139.5	-117.81	-7,157.9	-763.6	375.0	121.3	253.69	1.478 Level 3		
13,837.5	6,630.0	13,939.5	6,805.0	140.8	140.2	-117.82	-7,195.1	-763.6	375.0	120.0	254.96	1.471 Level 3, SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	86.60	3.6	61.3	61.4				
100.0	100.0	100.0	100.0	0.1	0.1	86.60	3.6	61.3	61.4	61.2	0.22	273.189	
200.0	200.0	200.0	200.0	0.3	0.3	86.60	3.6	61.3	61.4	60.7	0.67	91.063 CC, ES	
300.0	300.0	300.0	300.0	0.6	0.6	166.62	3.6	61.3	63.1	62.0	1.12	56.256	
400.0	399.8	399.8	399.8	0.8	0.8	167.62	3.6	61.3	68.2	66.6	1.57	43.389	
500.0	499.5	499.5	499.5	1.0	1.0	168.98	3.6	61.3	76.7	74.7	2.03	37.851	
600.0	598.7	598.7	598.7	1.3	1.2	170.44	3.6	61.3	88.7	86.2	2.49	35.694	
700.0	697.5	700.9	700.9	1.7	1.5	171.54	4.3	59.6	102.6	99.6	2.94	34.923	
800.0	795.6	803.6	803.4	2.0	1.7	172.01	6.3	54.6	116.5	113.2	3.38	34.448	
900.0	893.2	906.9	906.3	2.5	1.9	172.03	9.8	46.1	130.1	126.2	3.84	33.857	
1,000.0	990.6	1,006.4	1,005.2	2.9	2.2	171.82	13.8	36.0	142.1	137.8	4.32	32.893	
1,100.0	1,088.1	1,105.6	1,103.9	3.4	2.4	171.64	17.9	26.0	154.2	149.4	4.81	32.046	
1,200.0	1,185.6	1,204.9	1,202.6	3.9	2.7	171.49	21.9	16.0	166.2	160.9	5.31	31.319	
1,300.0	1,283.0	1,304.2	1,301.2	4.4	3.0	171.36	25.9	6.0	178.3	172.4	5.81	30.691	
1,400.0	1,380.5	1,403.5	1,399.9	4.8	3.3	171.24	30.0	-4.0	190.3	184.0	6.31	30.146	
1,500.0	1,478.0	1,502.7	1,498.6	5.3	3.6	171.14	34.0	-14.1	202.3	195.5	6.82	29.670	
1,600.0	1,575.4	1,602.0	1,597.3	5.8	3.8	171.05	38.1	-24.1	214.4	207.1	7.33	29.250	
1,700.0	1,672.9	1,701.3	1,696.0	6.3	4.1	170.97	42.1	-34.1	226.4	218.6	7.84	28.878	
1,800.0	1,770.4	1,800.5	1,794.7	6.8	4.4	170.90	46.1	-44.1	238.5	230.1	8.35	28.546	
1,900.0	1,867.8	1,899.8	1,893.3	7.3	4.7	170.83	50.2	-54.1	250.5	241.7	8.87	28.249	
2,000.0	1,965.3	1,999.1	1,992.0	7.8	5.0	170.77	54.2	-64.1	262.6	253.2	9.38	27.981	
2,100.0	2,062.8	2,098.4	2,090.7	8.2	5.3	170.72	58.2	-74.1	274.6	264.7	9.90	27.738	
2,200.0	2,160.2	2,197.6	2,189.4	8.7	5.6	170.67	62.3	-84.2	286.7	276.3	10.42	27.518	
2,300.0	2,257.7	2,296.9	2,288.1	9.2	5.9	170.62	66.3	-94.2	298.7	287.8	10.94	27.316	
2,400.0	2,355.2	2,396.2	2,386.7	9.7	6.2	170.58	70.4	-104.2	310.8	299.3	11.45	27.131	
2,500.0	2,452.6	2,495.4	2,485.4	10.2	6.5	170.54	74.4	-114.2	322.8	310.9	11.97	26.961	
2,600.0	2,550.1	2,594.7	2,584.1	10.7	6.8	170.50	78.4	-124.2	334.9	322.4	12.49	26.805	
2,700.0	2,647.6	2,694.0	2,682.8	11.2	7.1	170.47	82.5	-134.2	346.9	333.9	13.01	26.659	
2,800.0	2,745.0	2,793.3	2,781.5	11.7	7.4	170.44	86.5	-144.3	359.0	345.5	13.53	26.525	
2,900.0	2,842.5	2,892.5	2,880.2	12.2	7.7	170.41	90.6	-154.3	371.0	357.0	14.05	26.399	
3,000.0	2,939.9	2,991.8	2,978.8	12.6	8.0	170.38	94.6	-164.3	383.1	368.5	14.58	26.283	
3,100.0	3,037.4	3,091.1	3,077.5	13.1	8.3	170.36	98.6	-174.3	395.1	380.0	15.10	26.173	
3,200.0	3,134.9	3,190.3	3,176.2	13.6	8.6	170.33	102.7	-184.3	407.2	391.6	15.62	26.071	
3,300.0	3,232.3	3,289.6	3,274.9	14.1	8.9	170.31	106.7	-194.3	419.2	403.1	16.14	25.975	
3,400.0	3,329.8	3,388.9	3,373.6	14.6	9.2	170.29	110.7	-204.4	431.3	414.6	16.66	25.884	
3,500.0	3,427.3	3,488.2	3,472.2	15.1	9.5	170.27	114.8	-214.4	443.3	426.2	17.18	25.799	
3,600.0	3,524.7	3,587.4	3,570.9	15.6	9.8	170.25	118.8	-224.4	455.4	437.7	17.71	25.719	
3,700.0	3,622.2	3,686.7	3,669.6	16.1	10.1	170.23	122.9	-234.4	467.4	449.2	18.23	25.643	
3,800.0	3,719.7	3,786.0	3,768.3	16.6	10.4	170.21	126.9	-244.4	479.5	460.7	18.75	25.571	
3,900.0	3,817.1	3,885.2	3,867.0	17.1	10.7	170.20	130.9	-254.4	491.5	472.3	19.27	25.502	
4,000.0	3,914.6	3,984.5	3,965.7	17.6	11.0	170.18	135.0	-264.5	503.6	483.8	19.80	25.437	
4,100.0	4,012.1	4,083.8	4,064.3	18.0	11.3	170.16	139.0	-274.5	515.6	495.3	20.32	25.376	
4,200.0	4,109.5	4,183.0	4,163.0	18.5	11.6	170.15	143.0	-284.5	527.7	506.9	20.84	25.317	
4,300.0	4,207.0	4,282.3	4,261.7	19.0	11.9	170.14	147.1	-294.5	539.7	518.4	21.37	25.261	
4,400.0	4,304.5	4,381.6	4,360.4	19.5	12.2	170.12	151.1	-304.5	551.8	529.9	21.89	25.208	
4,500.0	4,401.9	4,480.9	4,459.1	20.0	12.5	170.11	155.2	-314.5	563.9	541.4	22.41	25.157	
4,600.0	4,499.4	4,580.1	4,557.7	20.5	12.8	170.10	159.2	-324.6	575.9	553.0	22.94	25.108	
4,700.0	4,596.9	4,679.4	4,656.4	21.0	13.1	170.09	163.2	-334.6	588.0	564.5	23.46	25.061	
4,800.0	4,694.3	4,778.7	4,755.1	21.5	13.4	170.08	167.3	-344.6	600.0	576.0	23.98	25.017	
4,900.0	4,791.8	4,877.9	4,853.8	22.0	13.7	170.06	171.3	-354.6	612.1	587.5	24.51	24.974	
5,000.0	4,889.3	4,977.2	4,952.5	22.5	14.0	170.05	175.4	-364.6	624.1	599.1	25.03	24.933	

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	4,986.7	5,076.5	5,051.2	23.0	14.3	170.04	179.4	-374.6	636.2	610.6	25.56	24.893		
5,200.0	5,084.2	5,175.8	5,149.8	23.4	14.6	170.04	183.4	-384.7	648.1	622.0	26.09	24.845		
5,300.0	5,182.2	5,275.3	5,248.8	23.8	14.9	170.03	187.5	-394.7	657.6	631.0	26.59	24.726		
5,400.0	5,280.9	5,375.1	5,348.0	24.1	15.2	169.95	191.5	-404.8	663.6	636.5	27.07	24.515		
5,500.0	5,380.0	5,475.1	5,447.4	24.3	15.5	169.81	195.6	-414.9	666.2	638.7	27.51	24.216		
5,600.0	5,479.6	5,564.6	5,536.4	24.5	15.7	169.64	199.1	-423.5	665.8	638.0	27.88	23.885		
5,700.0	5,579.4	5,646.9	5,618.4	24.7	15.9	169.50	201.5	-429.4	664.5	636.3	28.15	23.602		
5,800.0	5,679.4	5,729.2	5,700.6	24.8	16.1	169.39	203.0	-433.2	662.4	634.0	28.37	23.346		
5,900.0	5,779.4	5,811.6	5,783.0	24.9	16.2	89.69	203.6	-434.7	660.6	631.9	28.66	23.051		
5,942.0	5,821.4	5,849.9	5,821.4	24.9	16.3	89.68	203.6	-434.8	660.5	631.7	28.80	22.938		
6,000.0	5,879.4	5,907.9	5,879.4	25.0	16.3	89.68	203.6	-434.8	660.5	631.5	29.00	22.775		
6,100.0	5,979.1	6,007.9	5,979.3	25.1	16.5	-90.80	203.5	-434.8	660.6	631.2	29.39	22.475		
6,200.0	6,077.3	6,109.3	6,080.3	25.1	16.6	-91.69	195.0	-434.8	660.8	631.1	29.73	22.229		
6,300.0	6,172.2	6,212.1	6,180.6	25.2	16.7	-92.57	172.8	-434.8	661.2	631.2	29.96	22.066		
6,400.0	6,262.2	6,316.3	6,278.3	25.2	16.8	-93.40	136.7	-434.8	661.7	631.5	30.13	21.961		
6,500.0	6,345.7	6,422.0	6,371.4	25.2	16.8	-94.17	87.0	-434.8	662.3	632.0	30.29	21.864		
6,600.0	6,421.4	6,529.0	6,457.8	25.3	16.9	-94.88	24.0	-434.8	662.9	632.4	30.54	21.709		
6,700.0	6,487.9	6,637.3	6,535.4	25.3	17.0	-95.50	-51.4	-434.8	663.6	632.6	30.98	21.420		
6,800.0	6,544.1	6,746.7	6,602.2	25.5	17.2	-96.02	-137.9	-434.8	664.2	632.4	31.73	20.935		
6,900.0	6,589.1	6,857.0	6,656.4	25.7	17.6	-96.43	-233.9	-434.8	664.7	631.8	32.88	20.215		
7,000.0	6,622.0	6,968.0	6,696.4	26.0	18.2	-96.72	-337.4	-434.8	665.1	630.6	34.49	19.285		
7,100.0	6,642.3	7,079.5	6,721.0	26.4	19.0	-96.88	-446.0	-434.8	665.3	628.7	36.53	18.210		
7,200.0	6,649.6	7,191.2	6,729.6	26.9	20.1	-96.90	-557.3	-434.8	665.3	626.4	38.96	17.078		
7,300.0	6,649.4	7,291.9	6,729.2	27.6	21.3	-96.89	-657.9	-434.8	665.3	623.9	41.36	16.085		
7,400.0	6,649.1	7,391.9	6,728.8	28.5	22.5	-96.88	-757.9	-434.8	665.3	621.3	43.94	15.139		
7,500.0	6,648.8	7,491.9	6,728.4	29.4	23.9	-96.87	-857.9	-434.8	665.3	618.6	46.70	14.247		
7,600.0	6,648.5	7,591.9	6,728.0	30.5	25.3	-96.87	-957.9	-434.8	665.3	615.7	49.59	13.415		
7,700.0	6,648.2	7,691.9	6,727.6	31.6	26.8	-96.86	-1,057.9	-434.8	665.3	612.7	52.60	12.647		
7,800.0	6,647.9	7,791.9	6,727.2	32.9	28.3	-96.85	-1,157.9	-434.8	665.2	609.5	55.71	11.941		
7,900.0	6,647.6	7,891.9	6,726.8	34.2	29.9	-96.84	-1,257.9	-434.8	665.2	606.3	58.91	11.293		
8,000.0	6,647.3	7,991.9	6,726.4	35.6	31.5	-96.83	-1,357.9	-434.8	665.2	603.0	62.17	10.700		
8,100.0	6,647.0	8,091.9	6,726.0	37.0	33.2	-96.82	-1,457.9	-434.8	665.2	599.7	65.49	10.157		
8,200.0	6,646.7	8,191.9	6,725.6	38.5	34.8	-96.81	-1,557.9	-434.8	665.2	596.3	68.87	9.659		
8,300.0	6,646.4	8,291.9	6,725.2	40.0	36.5	-96.80	-1,657.9	-434.8	665.2	592.9	72.29	9.202		
8,400.0	6,646.1	8,391.9	6,724.8	41.6	38.3	-96.79	-1,757.9	-434.8	665.2	589.4	75.75	8.781		
8,500.0	6,645.8	8,491.9	6,724.4	43.2	40.0	-96.79	-1,857.9	-434.8	665.2	585.9	79.24	8.394		
8,600.0	6,645.5	8,591.9	6,724.0	44.8	41.8	-96.78	-1,957.9	-434.8	665.1	582.4	82.76	8.037		
8,700.0	6,645.2	8,691.9	6,723.6	46.5	43.5	-96.77	-2,057.9	-434.8	665.1	578.8	86.30	7.707		
8,800.0	6,644.9	8,791.9	6,723.2	48.1	45.3	-96.76	-2,157.9	-434.8	665.1	575.2	89.87	7.401		
8,900.0	6,644.6	8,891.9	6,722.8	49.8	47.1	-96.75	-2,257.9	-434.8	665.1	571.6	93.46	7.116		
9,000.0	6,644.4	8,991.9	6,722.4	51.5	48.9	-96.74	-2,357.9	-434.8	665.1	568.0	97.07	6.852		
9,100.0	6,644.1	9,091.9	6,722.0	53.2	50.7	-96.73	-2,457.9	-434.8	665.1	564.4	100.69	6.605		
9,200.0	6,643.8	9,191.9	6,721.6	55.0	52.5	-96.72	-2,557.9	-434.8	665.1	560.7	104.33	6.375		
9,300.0	6,643.5	9,291.9	6,721.2	56.7	54.4	-96.71	-2,657.9	-434.8	665.1	557.1	107.97	6.159		
9,400.0	6,643.2	9,391.9	6,720.8	58.5	56.2	-96.70	-2,757.9	-434.8	665.0	553.4	111.64	5.957		
9,500.0	6,642.9	9,491.9	6,720.4	60.2	58.0	-96.70	-2,857.9	-434.8	665.0	549.7	115.31	5.768		
9,600.0	6,642.6	9,591.9	6,720.0	62.0	59.9	-96.69	-2,957.9	-434.8	665.0	546.0	118.99	5.589		
9,700.0	6,642.3	9,691.9	6,719.6	63.8	61.7	-96.68	-3,057.9	-434.8	665.0	542.3	122.68	5.421		
9,800.0	6,642.0	9,791.9	6,719.2	65.6	63.6	-96.67	-3,157.9	-434.8	665.0	538.6	126.37	5.262		
9,900.0	6,641.7	9,891.9	6,718.8	67.4	65.4	-96.66	-3,257.9	-434.8	665.0	534.9	130.08	5.112		
10,000.0	6,641.4	9,991.9	6,718.4	69.2	67.3	-96.65	-3,357.9	-434.8	665.0	531.2	133.79	4.970		

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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			Distance					Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor	
10,100.0	6,641.1	10,091.9	6,718.0	71.0	69.1	-96.64	-3,457.9	-434.8	665.0	527.5	137.51	4.836		
10,200.0	6,640.8	10,191.9	6,717.6	72.8	71.0	-96.63	-3,557.9	-434.8	664.9	523.7	141.23	4.708		
10,300.0	6,640.5	10,291.9	6,717.2	74.6	72.9	-96.62	-3,657.9	-434.8	664.9	520.0	144.96	4.587		
10,400.0	6,640.2	10,391.9	6,716.8	76.5	74.7	-96.62	-3,757.9	-434.8	664.9	516.2	148.69	4.472		
10,500.0	6,639.9	10,491.9	6,716.4	78.3	76.6	-96.61	-3,857.9	-434.8	664.9	512.5	152.43	4.362		
10,600.0	6,639.6	10,591.9	6,716.0	80.1	78.5	-96.60	-3,957.9	-434.8	664.9	508.7	156.17	4.258		
10,700.0	6,639.3	10,691.9	6,715.6	82.0	80.4	-96.59	-4,057.9	-434.8	664.9	505.0	159.91	4.158		
10,800.0	6,639.0	10,791.9	6,715.2	83.8	82.2	-96.58	-4,157.9	-434.8	664.9	501.2	163.66	4.062		
10,900.0	6,638.7	10,891.9	6,714.8	85.7	84.1	-96.57	-4,257.9	-434.8	664.9	497.4	167.41	3.971		
11,000.0	6,638.4	10,991.9	6,714.4	87.5	86.0	-96.56	-4,357.9	-434.8	664.9	493.7	171.17	3.884		
11,100.0	6,638.1	11,091.9	6,714.0	89.4	87.9	-96.55	-4,457.9	-434.8	664.8	489.9	174.93	3.801		
11,200.0	6,637.8	11,191.9	6,713.6	91.2	89.8	-96.54	-4,557.9	-434.8	664.8	486.1	178.69	3.721		
11,300.0	6,637.5	11,291.9	6,713.2	93.1	91.7	-96.53	-4,657.9	-434.8	664.8	482.4	182.45	3.644		
11,400.0	6,637.2	11,391.9	6,712.8	95.0	93.6	-96.53	-4,757.9	-434.8	664.8	478.6	186.22	3.570		
11,500.0	6,636.9	11,491.9	6,712.4	96.8	95.4	-96.52	-4,857.9	-434.8	664.8	474.8	189.99	3.499		
11,600.0	6,636.6	11,591.9	6,712.0	98.7	97.3	-96.51	-4,957.9	-434.8	664.8	471.0	193.76	3.431		
11,700.0	6,636.3	11,691.9	6,711.6	100.5	99.2	-96.50	-5,057.9	-434.8	664.8	467.2	197.53	3.365		
11,800.0	6,636.0	11,791.9	6,711.2	102.4	101.1	-96.49	-5,157.9	-434.8	664.8	463.4	201.31	3.302		
11,900.0	6,635.7	11,891.9	6,710.8	104.3	103.0	-96.48	-5,257.9	-434.8	664.7	459.7	205.09	3.241		
12,000.0	6,635.5	11,991.9	6,710.4	106.2	104.9	-96.47	-5,357.9	-434.8	664.7	455.9	208.86	3.183		
12,100.0	6,635.2	12,091.9	6,710.0	108.0	106.8	-96.46	-5,457.9	-434.8	664.7	452.1	212.65	3.126		
12,200.0	6,634.9	12,191.9	6,709.6	109.9	108.7	-96.45	-5,557.9	-434.8	664.7	448.3	216.43	3.071		
12,300.0	6,634.6	12,291.9	6,709.2	111.8	110.6	-96.44	-5,657.9	-434.8	664.7	444.5	220.21	3.018		
12,400.0	6,634.3	12,391.9	6,708.8	113.7	112.5	-96.44	-5,757.9	-434.8	664.7	440.7	224.00	2.967		
12,500.0	6,634.0	12,491.9	6,708.4	115.6	114.4	-96.43	-5,857.9	-434.8	664.7	436.9	227.78	2.918		
12,600.0	6,633.7	12,591.9	6,708.0	117.4	116.3	-96.42	-5,957.9	-434.8	664.7	433.1	231.57	2.870		
12,700.0	6,633.4	12,691.9	6,707.6	119.3	118.2	-96.41	-6,057.9	-434.8	664.7	429.3	235.36	2.824		
12,800.0	6,633.1	12,791.9	6,707.2	121.2	120.1	-96.40	-6,157.9	-434.8	664.6	425.5	239.15	2.779		
12,900.0	6,632.8	12,891.9	6,706.8	123.1	122.0	-96.39	-6,257.9	-434.8	664.6	421.7	242.94	2.736		
13,000.0	6,632.5	12,991.9	6,706.4	125.0	123.9	-96.38	-6,357.9	-434.8	664.6	417.9	246.73	2.694		
13,100.0	6,632.2	13,091.9	6,706.0	126.9	125.8	-96.37	-6,457.9	-434.8	664.6	414.1	250.53	2.653		
13,200.0	6,631.9	13,191.9	6,705.6	128.8	127.7	-96.36	-6,557.9	-434.8	664.6	410.3	254.32	2.613		
13,300.0	6,631.6	13,291.9	6,705.2	130.6	129.6	-96.36	-6,657.9	-434.8	664.6	406.5	258.12	2.575		
13,400.0	6,631.3	13,391.9	6,704.8	132.5	131.5	-96.35	-6,757.9	-434.8	664.6	402.7	261.91	2.537		
13,500.0	6,631.0	13,491.9	6,704.4	134.4	133.4	-96.34	-6,857.9	-434.8	664.6	398.8	265.71	2.501		
13,600.0	6,630.7	13,591.9	6,704.0	136.3	135.3	-96.33	-6,957.9	-434.8	664.5	395.0	269.51	2.466		
13,700.0	6,630.4	13,691.9	6,703.6	138.2	137.3	-96.32	-7,057.9	-434.8	664.5	391.2	273.31	2.431		
13,800.0	6,630.1	13,791.9	6,703.1	140.1	139.2	-96.31	-7,157.9	-434.8	664.5	387.4	277.11	2.398		
13,837.5	6,630.0	13,829.4	6,703.0	140.8	139.9	-96.31	-7,195.4	-434.8	664.5	386.0	278.54	2.386 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	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	87.73	3.6	91.9	92.0					
100.0	100.0	99.0	99.0	0.1	0.1	87.73	3.6	91.9	92.0	91.8	0.22	411.438		
200.0	200.0	199.0	199.0	0.3	0.3	87.73	3.6	91.9	92.0	91.3	0.67	136.918 CC, ES		
300.0	300.0	299.0	299.0	0.6	0.6	167.61	3.6	91.9	93.7	92.6	1.12	83.717		
400.0	399.8	398.8	398.8	0.8	0.8	168.24	3.6	91.9	98.8	97.3	1.57	62.964		
500.0	499.5	498.5	498.5	1.0	1.0	169.16	3.6	91.9	107.4	105.4	2.03	53.024		
600.0	598.7	597.7	597.7	1.3	1.2	170.22	3.6	91.9	119.4	116.9	2.48	48.062		
700.0	697.5	696.5	696.5	1.7	1.5	171.30	3.6	91.9	134.8	131.9	2.94	45.781		
800.0	795.6	794.6	794.6	2.0	1.7	172.32	3.6	91.9	153.7	150.3	3.41	45.100		
900.0	893.2	896.6	896.5	2.5	1.9	172.93	4.8	90.8	174.4	170.5	3.87	45.043		
1,000.0	990.6	998.7	998.5	2.9	2.1	172.74	8.5	87.2	192.9	188.6	4.33	44.522		
1,100.0	1,088.1	1,097.1	1,096.8	3.4	2.4	172.37	12.8	82.9	210.6	205.8	4.81	43.770		
1,200.0	1,185.6	1,195.5	1,195.0	3.9	2.6	172.07	17.2	78.6	228.3	223.0	5.30	43.101		
1,300.0	1,283.0	1,293.9	1,293.2	4.4	2.8	171.81	21.5	74.3	246.0	240.2	5.79	42.509		
1,400.0	1,380.5	1,392.3	1,391.4	4.8	3.0	171.58	25.9	70.0	263.7	257.4	6.28	41.985		
1,500.0	1,478.0	1,490.8	1,489.7	5.3	3.3	171.38	30.2	65.7	281.4	274.6	6.78	41.518		
1,600.0	1,575.4	1,589.2	1,587.9	5.8	3.5	171.20	34.5	61.4	299.1	291.8	7.28	41.101		
1,700.0	1,672.9	1,687.6	1,686.1	6.3	3.8	171.05	38.9	57.1	316.8	309.0	7.78	40.730		
1,800.0	1,770.4	1,786.0	1,784.3	6.8	4.0	170.91	43.2	52.8	334.5	326.2	8.28	40.392		
1,900.0	1,867.8	1,884.4	1,882.6	7.3	4.2	170.78	47.6	48.5	352.2	343.4	8.79	40.088		
2,000.0	1,965.3	1,982.8	1,980.8	7.8	4.5	170.67	51.9	44.2	369.9	360.6	9.29	39.811		
2,100.0	2,062.8	2,081.3	2,079.0	8.2	4.7	170.57	56.3	39.9	387.6	377.8	9.80	39.559		
2,200.0	2,160.2	2,179.7	2,177.2	8.7	5.0	170.47	60.6	35.6	405.3	395.0	10.31	39.329		
2,300.0	2,257.7	2,278.1	2,275.5	9.2	5.2	170.39	65.0	31.3	423.1	412.3	10.82	39.117		
2,400.0	2,355.2	2,376.5	2,373.7	9.7	5.5	170.31	69.3	27.0	440.8	429.5	11.32	38.922		
2,500.0	2,452.6	2,474.9	2,471.9	10.2	5.7	170.24	73.6	22.7	458.5	446.7	11.83	38.742		
2,600.0	2,550.1	2,573.3	2,570.1	10.7	5.9	170.17	78.0	18.4	476.2	463.9	12.35	38.575		
2,700.0	2,647.6	2,671.8	2,668.4	11.2	6.2	170.11	82.3	14.1	493.9	481.1	12.86	38.420		
2,800.0	2,745.0	2,770.2	2,766.6	11.7	6.4	170.05	86.7	9.8	511.7	498.3	13.37	38.276		
2,900.0	2,842.5	2,868.6	2,864.8	12.2	6.7	169.99	91.0	5.5	529.4	515.5	13.88	38.141		
3,000.0	2,939.9	2,967.0	2,963.1	12.6	6.9	169.94	95.4	1.2	547.1	532.7	14.39	38.015		
3,100.0	3,037.4	3,065.4	3,061.3	13.1	7.2	169.89	99.7	-3.1	564.8	549.9	14.90	37.897		
3,200.0	3,134.9	3,163.8	3,159.5	13.6	7.4	169.85	104.1	-7.4	582.6	567.1	15.42	37.786		
3,300.0	3,232.3	3,262.3	3,257.7	14.1	7.7	169.81	108.4	-11.7	600.3	584.3	15.93	37.681		
3,400.0	3,329.8	3,360.7	3,356.0	14.6	7.9	169.77	112.7	-16.0	618.0	601.6	16.44	37.583		
3,500.0	3,427.3	3,459.1	3,454.2	15.1	8.1	169.73	117.1	-20.3	635.7	618.8	16.96	37.490		
3,600.0	3,524.7	3,557.5	3,552.4	15.6	8.4	169.70	121.4	-24.6	653.4	636.0	17.47	37.402		
3,700.0	3,622.2	3,655.9	3,650.6	16.1	8.6	169.66	125.8	-28.9	671.2	653.2	17.98	37.318		
3,800.0	3,719.7	3,754.3	3,748.9	16.6	8.9	169.63	130.1	-33.2	688.9	670.4	18.50	37.239		
3,900.0	3,817.1	3,852.8	3,847.1	17.1	9.1	169.60	134.5	-37.5	706.6	687.6	19.01	37.164		
4,000.0	3,914.6	3,951.2	3,945.3	17.6	9.4	169.57	138.8	-41.8	724.3	704.8	19.53	37.092		
4,100.0	4,012.1	4,049.6	4,043.5	18.0	9.6	169.54	143.2	-46.1	742.1	722.0	20.04	37.024		
4,200.0	4,109.5	4,148.0	4,141.8	18.5	9.9	169.52	147.5	-50.4	759.8	739.2	20.56	36.959		
4,300.0	4,207.0	4,246.4	4,240.0	19.0	10.1	169.49	151.8	-54.7	777.5	756.4	21.07	36.897		
4,400.0	4,304.5	4,344.8	4,338.2	19.5	10.4	169.47	156.2	-59.0	795.2	773.6	21.59	36.838		
4,500.0	4,401.9	4,443.2	4,436.4	20.0	10.6	169.45	160.5	-63.3	813.0	790.9	22.10	36.781		
4,600.0	4,499.4	4,541.7	4,534.7	20.5	10.9	169.42	164.9	-67.6	830.7	808.1	22.62	36.727		
4,700.0	4,596.9	4,640.1	4,632.9	21.0	11.1	169.40	169.2	-71.9	848.4	825.3	23.13	36.675		
4,800.0	4,694.3	4,738.5	4,731.1	21.5	11.3	169.38	173.6	-76.2	866.1	842.5	23.65	36.625		
4,900.0	4,791.8	4,836.9	4,829.3	22.0	11.6	169.36	177.9	-80.5	883.9	859.7	24.16	36.577		
5,000.0	4,889.3	4,935.3	4,927.6	22.5	11.8	169.34	182.3	-84.8	901.6	876.9	24.68	36.530		

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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-443 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	4,986.7	5,033.7	5,025.8	23.0	12.1	169.33	169.33	186.6	-89.1	919.3	894.1	25.20	36.486	
5,200.0	5,084.2	5,132.2	5,124.0	23.4	12.3	169.33	169.33	190.9	-93.4	936.9	911.2	25.72	36.425	
5,300.0	5,182.2	5,231.0	5,222.7	23.8	12.6	169.34	169.34	195.3	-97.7	952.1	925.9	26.23	36.291	
5,400.0	5,280.9	5,330.3	5,321.8	24.1	12.8	169.30	169.30	199.7	-102.0	963.9	937.1	26.71	36.079	
5,500.0	5,380.0	5,410.9	5,402.3	24.3	13.0	169.28	169.28	202.5	-104.8	973.2	946.1	27.08	35.936	
5,600.0	5,479.6	5,491.4	5,482.7	24.5	13.1	169.32	169.32	203.6	-105.9	981.1	953.7	27.38	35.834	
5,700.0	5,579.4	5,587.0	5,578.4	24.7	13.3	169.40	169.40	203.6	-105.9	986.9	959.2	27.67	35.669	
5,800.0	5,679.4	5,687.0	5,678.4	24.8	13.5	169.44	169.44	203.6	-105.9	989.3	961.3	27.95	35.398	
5,900.0	5,779.4	5,787.0	5,778.4	24.9	13.7	89.79	89.79	203.6	-105.9	989.4	961.1	28.30	34.963	
6,000.0	5,879.4	5,887.0	5,878.4	25.0	13.9	89.79	89.79	203.6	-105.9	989.4	960.7	28.68	34.502	
6,000.0	5,879.4	5,887.0	5,878.4	25.0	13.9	89.79	89.79	203.6	-105.9	989.4	960.7	28.68	34.502	
6,100.0	5,979.1	5,986.8	5,978.1	25.1	14.1	-90.54	-90.54	203.6	-105.9	989.4	960.3	29.06	34.052	
6,200.0	6,077.3	6,086.2	6,077.5	25.1	14.3	-91.55	-91.55	202.9	-105.9	989.7	960.3	29.44	33.620	
6,300.0	6,172.2	6,189.1	6,179.7	25.2	14.4	-92.72	-92.72	191.4	-105.9	990.5	960.8	29.73	33.321	
6,400.0	6,262.2	6,295.1	6,282.4	25.2	14.5	-93.86	-93.86	165.4	-105.9	991.7	961.8	29.93	33.136	
6,500.0	6,345.7	6,404.4	6,383.4	25.2	14.6	-94.94	-94.94	124.0	-105.9	993.2	963.1	30.09	33.005	
6,600.0	6,421.4	6,517.0	6,480.2	25.3	14.7	-95.96	-95.96	66.7	-105.9	994.9	964.6	30.30	32.834	
6,700.0	6,487.9	6,632.8	6,569.9	25.3	14.8	-96.87	-96.87	-6.5	-105.9	996.7	966.0	30.67	32.497	
6,800.0	6,544.1	6,751.8	6,649.5	25.5	14.9	-97.66	-97.66	-94.8	-105.9	998.4	967.1	31.33	31.863	
6,900.0	6,589.1	6,873.4	6,715.6	25.7	15.5	-98.30	-98.30	-196.7	-105.9	999.9	967.5	32.43	30.836	
7,000.0	6,622.0	6,997.3	6,765.5	26.0	16.3	-98.77	-98.77	-310.0	-105.9	1,001.1	967.1	34.02	29.427	
7,100.0	6,642.3	7,122.8	6,796.7	26.4	17.4	-99.05	-99.05	-431.3	-105.9	1,001.8	965.7	36.14	27.721	
7,200.0	6,649.6	7,232.9	6,809.8	26.9	18.6	-99.26	-99.26	-540.7	-105.9	1,002.5	964.0	38.52	26.023	
7,300.0	6,649.4	7,347.3	6,817.4	27.6	20.0	-99.69	-99.69	-654.8	-105.9	1,003.7	962.6	41.08	24.432	
7,400.0	6,649.1	7,450.5	6,817.4	28.5	21.4	-99.71	-99.71	-757.9	-105.9	1,003.7	960.0	43.70	22.969	
7,500.0	6,648.8	7,550.5	6,817.2	29.4	22.8	-99.71	-99.71	-857.9	-105.9	1,003.7	957.3	46.44	21.615	
7,600.0	6,648.5	7,650.5	6,817.0	30.5	24.3	-99.72	-99.72	-957.9	-105.9	1,003.8	954.4	49.32	20.353	
7,700.0	6,648.2	7,750.5	6,816.8	31.6	25.8	-99.73	-99.73	-1,057.9	-105.9	1,003.8	951.5	52.31	19.188	
7,800.0	6,647.9	7,850.5	6,816.6	32.9	27.4	-99.73	-99.73	-1,157.9	-105.9	1,003.8	948.4	55.41	18.117	
7,900.0	6,647.6	7,950.5	6,816.4	34.2	29.0	-99.74	-99.74	-1,257.9	-105.9	1,003.8	945.2	58.58	17.135	
8,000.0	6,647.3	8,050.5	6,816.2	35.6	30.7	-99.74	-99.74	-1,357.9	-105.9	1,003.8	942.0	61.83	16.236	
8,100.0	6,647.0	8,150.5	6,816.0	37.0	32.4	-99.75	-99.75	-1,457.9	-105.9	1,003.9	938.7	65.13	15.412	
8,200.0	6,646.7	8,250.5	6,815.8	38.5	34.1	-99.76	-99.76	-1,557.9	-105.9	1,003.9	935.4	68.49	14.658	
8,300.0	6,646.4	8,350.5	6,815.6	40.0	35.8	-99.76	-99.76	-1,657.9	-105.9	1,003.9	932.0	71.89	13.965	
8,400.0	6,646.1	8,450.5	6,815.4	41.6	37.6	-99.77	-99.77	-1,757.9	-105.9	1,003.9	928.6	75.32	13.328	
8,500.0	6,645.8	8,550.5	6,815.2	43.2	39.3	-99.77	-99.77	-1,857.9	-105.9	1,003.9	925.1	78.79	12.741	
8,600.0	6,645.5	8,650.5	6,815.1	44.8	41.1	-99.78	-99.78	-1,957.9	-105.9	1,003.9	921.6	82.29	12.200	
8,700.0	6,645.2	8,750.5	6,814.9	46.5	42.9	-99.78	-99.78	-2,057.9	-105.9	1,004.0	918.1	85.81	11.700	
8,800.0	6,644.9	8,850.5	6,814.7	48.1	44.7	-99.79	-99.79	-2,157.9	-105.9	1,004.0	914.6	89.36	11.236	
8,900.0	6,644.6	8,950.5	6,814.5	49.8	46.5	-99.80	-99.80	-2,257.9	-105.9	1,004.0	911.1	92.92	10.805	
9,000.0	6,644.4	9,050.5	6,814.3	51.5	48.3	-99.80	-99.80	-2,357.9	-105.9	1,004.0	907.5	96.50	10.404	
9,100.0	6,644.1	9,150.5	6,814.1	53.2	50.2	-99.81	-99.81	-2,457.9	-105.9	1,004.0	903.9	100.10	10.030	
9,200.0	6,643.8	9,250.5	6,813.9	55.0	52.0	-99.81	-99.81	-2,557.9	-105.9	1,004.0	900.3	103.71	9.681	
9,300.0	6,643.5	9,350.5	6,813.7	56.7	53.8	-99.82	-99.82	-2,657.9	-105.9	1,004.1	896.7	107.33	9.355	
9,400.0	6,643.2	9,450.5	6,813.5	58.5	55.7	-99.83	-99.83	-2,757.9	-105.9	1,004.1	893.1	110.97	9.049	
9,500.0	6,642.9	9,550.5	6,813.3	60.2	57.5	-99.83	-99.83	-2,857.9	-105.9	1,004.1	889.5	114.61	8.761	
9,600.0	6,642.6	9,650.5	6,813.1	62.0	59.4	-99.84	-99.84	-2,957.9	-105.9	1,004.1	885.9	118.26	8.490	
9,700.0	6,642.3	9,750.5	6,812.9	63.8	61.3	-99.84	-99.84	-3,057.9	-105.9	1,004.1	882.2	121.93	8.236	
9,800.0	6,642.0	9,850.5	6,812.8	65.6	63.1	-99.85	-99.85	-3,157.9	-105.9	1,004.2	878.6	125.60	7.995	
9,900.0	6,641.7	9,950.5	6,812.6	67.4	65.0	-99.86	-99.86	-3,257.9	-105.9	1,004.2	874.9	129.27	7.768	
10,000.0	6,641.4	10,050.5	6,812.4	69.2	66.9	-99.86	-99.86	-3,357.9	-105.9	1,004.2	871.2	132.96	7.553	

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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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-443 - Wellbore #1 - Plan #1 (12-30-13)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,100.0	6,641.1	10,150.5	6,812.2	71.0	68.7	-99.87	-3,457.9	-105.9	1,004.2	867.6	136.64	7.349	
10,200.0	6,640.8	10,250.5	6,812.0	72.8	70.6	-99.87	-3,557.9	-105.9	1,004.2	863.9	140.34	7.156	
10,300.0	6,640.5	10,350.5	6,811.8	74.6	72.5	-99.88	-3,657.9	-105.9	1,004.2	860.2	144.04	6.972	
10,400.0	6,640.2	10,450.5	6,811.6	76.5	74.4	-99.88	-3,757.9	-105.9	1,004.3	856.5	147.74	6.797	
10,500.0	6,639.9	10,550.5	6,811.4	78.3	76.2	-99.89	-3,857.9	-105.9	1,004.3	852.8	151.45	6.631	
10,600.0	6,639.6	10,650.5	6,811.2	80.1	78.1	-99.90	-3,957.9	-105.9	1,004.3	849.1	155.16	6.473	
10,700.0	6,639.3	10,750.5	6,811.0	82.0	80.0	-99.90	-4,057.9	-105.9	1,004.3	845.4	158.88	6.321	
10,800.0	6,639.0	10,850.5	6,810.8	83.8	81.9	-99.91	-4,157.9	-105.9	1,004.3	841.7	162.59	6.177	
10,900.0	6,638.7	10,950.5	6,810.6	85.7	83.8	-99.91	-4,257.9	-105.9	1,004.4	838.0	166.32	6.039	
11,000.0	6,638.4	11,050.5	6,810.4	87.5	85.7	-99.92	-4,357.9	-105.9	1,004.4	834.3	170.04	5.907	
11,100.0	6,638.1	11,150.5	6,810.3	89.4	87.6	-99.93	-4,457.9	-105.9	1,004.4	830.6	173.77	5.780	
11,200.0	6,637.8	11,250.5	6,810.1	91.2	89.5	-99.93	-4,557.9	-105.9	1,004.4	826.9	177.50	5.659	
11,300.0	6,637.5	11,350.5	6,809.9	93.1	91.4	-99.94	-4,657.9	-105.9	1,004.4	823.2	181.23	5.542	
11,400.0	6,637.2	11,450.5	6,809.7	95.0	93.3	-99.94	-4,757.9	-105.9	1,004.4	819.5	184.96	5.430	
11,500.0	6,636.9	11,550.5	6,809.5	96.8	95.1	-99.95	-4,857.9	-105.9	1,004.5	815.8	188.70	5.323	
11,600.0	6,636.6	11,650.5	6,809.3	98.7	97.0	-99.96	-4,957.9	-105.9	1,004.5	812.0	192.44	5.220	
11,700.0	6,636.3	11,750.5	6,809.1	100.5	98.9	-99.96	-5,057.9	-105.9	1,004.5	808.3	196.18	5.120	
11,800.0	6,636.0	11,850.5	6,808.9	102.4	100.8	-99.97	-5,157.9	-105.9	1,004.5	804.6	199.92	5.025	
11,900.0	6,635.7	11,950.5	6,808.7	104.3	102.7	-99.97	-5,257.9	-105.9	1,004.5	800.9	203.67	4.932	
12,000.0	6,635.5	12,050.5	6,808.5	106.2	104.6	-99.98	-5,357.9	-105.9	1,004.5	797.1	207.41	4.843	
12,100.0	6,635.2	12,150.5	6,808.3	108.0	106.5	-99.98	-5,457.9	-105.9	1,004.6	793.4	211.16	4.757	
12,200.0	6,634.9	12,250.5	6,808.1	109.9	108.4	-99.99	-5,557.9	-105.9	1,004.6	789.7	214.91	4.675	
12,300.0	6,634.6	12,350.5	6,808.0	111.8	110.3	-100.00	-5,657.9	-105.9	1,004.6	785.9	218.66	4.594	
12,400.0	6,634.3	12,450.5	6,807.8	113.7	112.3	-100.00	-5,757.9	-105.9	1,004.6	782.2	222.41	4.517	
12,500.0	6,634.0	12,550.5	6,807.6	115.6	114.2	-100.01	-5,857.9	-105.9	1,004.6	778.5	226.16	4.442	
12,600.0	6,633.7	12,650.5	6,807.4	117.4	116.1	-100.01	-5,957.9	-105.9	1,004.7	774.7	229.91	4.370	
12,700.0	6,633.4	12,750.5	6,807.2	119.3	118.0	-100.02	-6,057.9	-105.9	1,004.7	771.0	233.67	4.300	
12,800.0	6,633.1	12,850.5	6,807.0	121.2	119.9	-100.03	-6,157.9	-105.9	1,004.7	767.3	237.42	4.232	
12,900.0	6,632.8	12,950.5	6,806.8	123.1	121.8	-100.03	-6,257.9	-105.9	1,004.7	763.5	241.18	4.166	
13,000.0	6,632.5	13,050.5	6,806.6	125.0	123.7	-100.04	-6,357.9	-105.9	1,004.7	759.8	244.93	4.102	
13,100.0	6,632.2	13,150.5	6,806.4	126.9	125.6	-100.04	-6,457.9	-105.9	1,004.7	756.1	248.69	4.040	
13,200.0	6,631.9	13,250.5	6,806.2	128.8	127.5	-100.05	-6,557.9	-105.9	1,004.8	752.3	252.45	3.980	
13,300.0	6,631.6	13,350.5	6,806.0	130.6	129.4	-100.06	-6,657.9	-105.9	1,004.8	748.6	256.21	3.922	
13,400.0	6,631.3	13,450.5	6,805.8	132.5	131.3	-100.06	-6,757.9	-105.9	1,004.8	744.8	259.97	3.865	
13,500.0	6,631.0	13,550.5	6,805.6	134.4	133.2	-100.07	-6,857.9	-105.9	1,004.8	741.1	263.73	3.810	
13,600.0	6,630.7	13,650.5	6,805.5	136.3	135.1	-100.07	-6,957.9	-105.9	1,004.8	737.4	267.49	3.757	
13,700.0	6,630.4	13,750.5	6,805.3	138.2	137.0	-100.08	-7,057.9	-105.9	1,004.9	733.6	271.25	3.705	
13,800.0	6,630.1	13,850.5	6,805.1	140.1	138.9	-100.08	-7,157.9	-105.9	1,004.9	729.9	275.01	3.654	
13,837.5	6,630.0	13,888.0	6,805.0	140.8	139.7	-100.09	-7,195.4	-105.9	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 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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 @ 4650.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28E-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.61°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Churchill 28E-203
<b>Project:</b>	SEC.28-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Reference Site:</b>	Churchill 28J-HZ Pad Sec.28-T5N-R64W	<b>MD Reference:</b>	WELL @ 4650.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Churchill 28E-203	<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 @ 4650.0ft (RKB - 15')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28E-203  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.61°

