

PETROLEUM DEVELOPMENT CORP Weld County CO

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

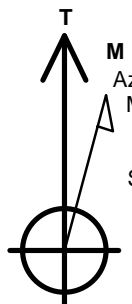
Surface Location: Churchill 28J-HZ Pad Sec.28-T5N-R64W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4635.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1381537.71	3261964.79	40.376910	-104.559710	

RKB - 15' WELL @ 4650.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 250'FNL, 1275'FWL, SEC.28	1.0	0.0	0.0	Point
BHL 2142'FNL, 735'FWL, SEC.33	6703.0	-7198.8	-496.1	Point

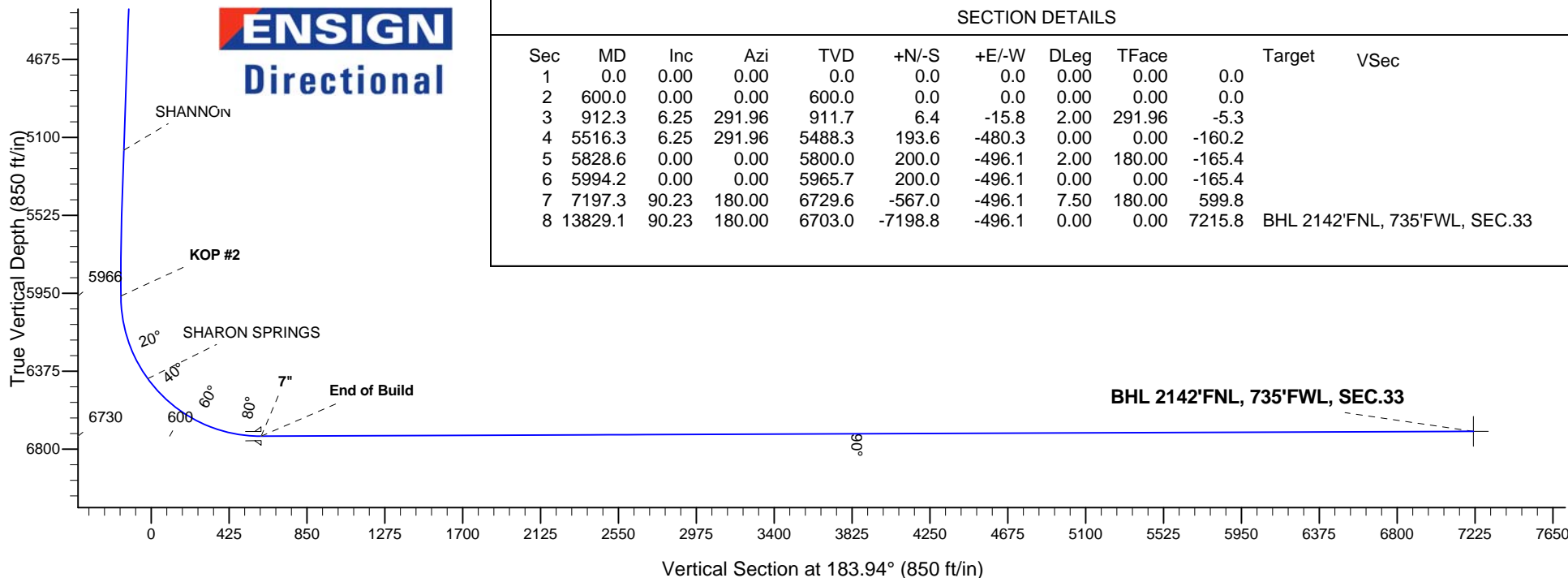
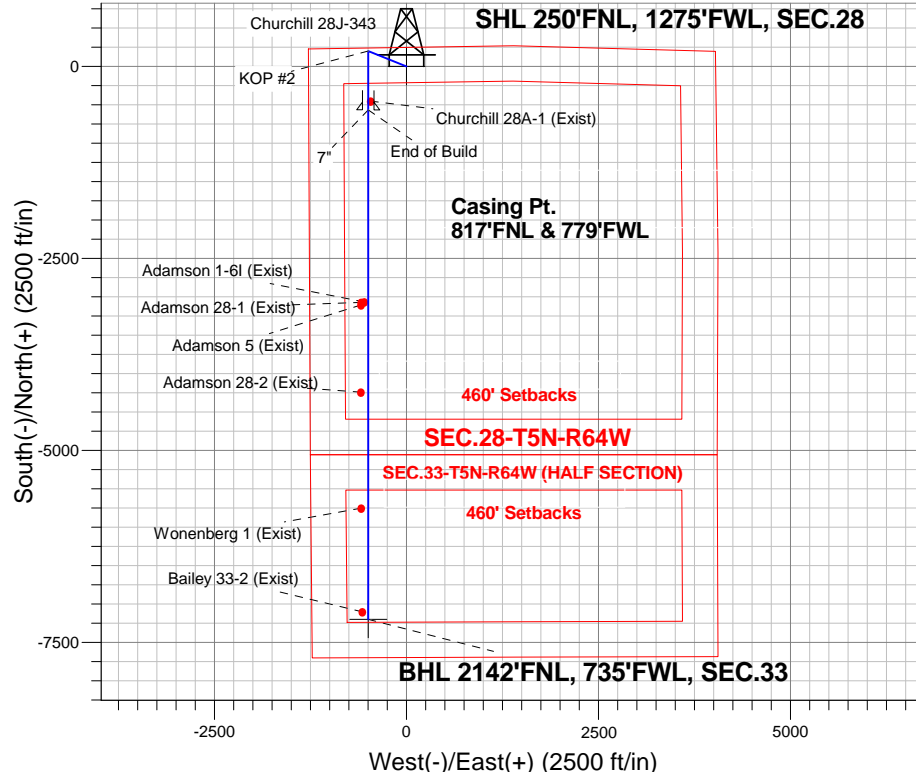


Azimuths to True North
 Magnetic North: 8.41°
 Magnetic Field
 Strength: 52874.3snT
 Dip Angle: 66.98°
 Date: 12/30/2013
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP #1
5965.6	5994.2	KOP #2
6729.6	7197.3	End of Build

Churchill 28J-HZ Pad Sec.28-T5N-R64W
 Churchill 28J-343
 Plan #1 (12-30-13)
 13:34, January 09 2014





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

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

Churchill 28J-343

Wellbore #1

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

Standard Planning Report

08 January, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

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

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

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

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

Design	Plan #1 (12-30-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	183.94

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
912.3	6.25	291.96	911.7	6.4	-15.8	2.00	2.00	0.00	291.96	
5,516.3	6.25	291.96	5,488.3	193.6	-480.3	0.00	0.00	0.00	0.00	
5,828.6	0.00	0.00	5,800.0	200.0	-496.1	2.00	-2.00	0.00	180.00	
5,994.2	0.00	0.00	5,965.7	200.0	-496.1	0.00	0.00	0.00	0.00	
7,197.3	90.23	180.00	6,729.6	-567.0	-496.1	7.50	7.50	0.00	180.00	
13,829.1	90.23	180.00	6,703.0	-7,198.8	-496.1	0.00	0.00	0.00	0.00	BHL 2142°FNL, 735

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 250'FNL, 1275'FWL, SEC.28									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
700.0	2.00	291.96	700.0	0.7	-1.6	-0.5	2.00	2.00	0.00
800.0	4.00	291.96	799.8	2.6	-6.5	-2.2	2.00	2.00	0.00
900.0	6.00	291.96	899.5	5.9	-14.6	-4.9	2.00	2.00	0.00
912.3	6.25	291.96	911.7	6.4	-15.8	-5.3	2.00	2.00	0.00
1,000.0	6.25	291.96	998.9	9.9	-24.6	-8.2	0.00	0.00	0.00
1,100.0	6.25	291.96	1,098.3	14.0	-34.7	-11.6	0.00	0.00	0.00
1,200.0	6.25	291.96	1,197.7	18.1	-44.8	-14.9	0.00	0.00	0.00
1,300.0	6.25	291.96	1,297.1	22.1	-54.9	-18.3	0.00	0.00	0.00
1,400.0	6.25	291.96	1,396.5	26.2	-65.0	-21.7	0.00	0.00	0.00
1,500.0	6.25	291.96	1,495.9	30.3	-75.1	-25.0	0.00	0.00	0.00
1,600.0	6.25	291.96	1,595.3	34.3	-85.2	-28.4	0.00	0.00	0.00
1,700.0	6.25	291.96	1,694.7	38.4	-95.3	-31.8	0.00	0.00	0.00
1,800.0	6.25	291.96	1,794.1	42.5	-105.3	-35.1	0.00	0.00	0.00
1,900.0	6.25	291.96	1,893.5	46.5	-115.4	-38.5	0.00	0.00	0.00
2,000.0	6.25	291.96	1,992.9	50.6	-125.5	-41.9	0.00	0.00	0.00
2,100.0	6.25	291.96	2,092.3	54.7	-135.6	-45.2	0.00	0.00	0.00
2,200.0	6.25	291.96	2,191.7	58.7	-145.7	-48.6	0.00	0.00	0.00
2,300.0	6.25	291.96	2,291.1	62.8	-155.8	-52.0	0.00	0.00	0.00
2,400.0	6.25	291.96	2,390.6	66.9	-165.9	-55.3	0.00	0.00	0.00
2,500.0	6.25	291.96	2,490.0	70.9	-176.0	-58.7	0.00	0.00	0.00
2,600.0	6.25	291.96	2,589.4	75.0	-186.1	-62.0	0.00	0.00	0.00
2,700.0	6.25	291.96	2,688.8	79.1	-196.2	-65.4	0.00	0.00	0.00
2,800.0	6.25	291.96	2,788.2	83.1	-206.2	-68.8	0.00	0.00	0.00
2,900.0	6.25	291.96	2,887.6	87.2	-216.3	-72.1	0.00	0.00	0.00
3,000.0	6.25	291.96	2,987.0	91.3	-226.4	-75.5	0.00	0.00	0.00
3,100.0	6.25	291.96	3,086.4	95.4	-236.5	-78.9	0.00	0.00	0.00
3,200.0	6.25	291.96	3,185.8	99.4	-246.6	-82.2	0.00	0.00	0.00
3,300.0	6.25	291.96	3,285.2	103.5	-256.7	-85.6	0.00	0.00	0.00
3,400.0	6.25	291.96	3,384.6	107.6	-266.8	-89.0	0.00	0.00	0.00
3,500.0	6.25	291.96	3,484.0	111.6	-276.9	-92.3	0.00	0.00	0.00
3,566.4	6.25	291.96	3,550.0	114.3	-283.6	-94.6	0.00	0.00	0.00
PARKMAN									
3,600.0	6.25	291.96	3,583.4	115.7	-287.0	-95.7	0.00	0.00	0.00
3,700.0	6.25	291.96	3,682.8	119.8	-297.1	-99.1	0.00	0.00	0.00
3,800.0	6.25	291.96	3,782.2	123.8	-307.1	-102.4	0.00	0.00	0.00
3,900.0	6.25	291.96	3,881.6	127.9	-317.2	-105.8	0.00	0.00	0.00
4,000.0	6.25	291.96	3,981.1	132.0	-327.3	-109.1	0.00	0.00	0.00
4,100.0	6.25	291.96	4,080.5	136.0	-337.4	-112.5	0.00	0.00	0.00
4,185.0	6.25	291.96	4,165.0	139.5	-346.0	-115.4	0.00	0.00	0.00
SUSSEX									
4,200.0	6.25	291.96	4,179.9	140.1	-347.5	-115.9	0.00	0.00	0.00
4,300.0	6.25	291.96	4,279.3	144.2	-357.6	-119.2	0.00	0.00	0.00
4,400.0	6.25	291.96	4,378.7	148.2	-367.7	-122.6	0.00	0.00	0.00

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Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.0	6.25	291.96	4,478.1	152.3	-377.8	-126.0	0.00	0.00	0.00
4,600.0	6.25	291.96	4,577.5	156.4	-387.9	-129.3	0.00	0.00	0.00
4,700.0	6.25	291.96	4,676.9	160.4	-398.0	-132.7	0.00	0.00	0.00
4,800.0	6.25	291.96	4,776.3	164.5	-408.0	-136.1	0.00	0.00	0.00
4,900.0	6.25	291.96	4,875.7	168.6	-418.1	-139.4	0.00	0.00	0.00
5,000.0	6.25	291.96	4,975.1	172.6	-428.2	-142.8	0.00	0.00	0.00
5,100.0	6.25	291.96	5,074.5	176.7	-438.3	-146.2	0.00	0.00	0.00
5,196.0	6.25	291.96	5,170.0	180.6	-448.0	-149.4	0.00	0.00	0.00
SHANNON									
5,200.0	6.25	291.96	5,173.9	180.8	-448.4	-149.5	0.00	0.00	0.00
5,300.0	6.25	291.96	5,273.3	184.8	-458.5	-152.9	0.00	0.00	0.00
5,400.0	6.25	291.96	5,372.7	188.9	-468.6	-156.3	0.00	0.00	0.00
5,500.0	6.25	291.96	5,472.2	193.0	-478.7	-159.6	0.00	0.00	0.00
5,516.3	6.25	291.96	5,488.3	193.6	-480.3	-160.2	0.00	0.00	0.00
5,600.0	4.57	291.96	5,571.7	196.6	-487.6	-162.6	2.00	-2.00	0.00
5,700.0	2.57	291.96	5,671.5	198.9	-493.4	-164.5	2.00	-2.00	0.00
5,800.0	0.57	291.96	5,771.4	199.9	-496.0	-165.4	2.00	-2.00	0.00
5,828.6	0.00	0.00	5,800.0	200.0	-496.1	-165.4	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,871.4	200.0	-496.1	-165.4	0.00	0.00	0.00
5,994.2	0.00	0.00	5,965.6	200.0	-496.1	-165.4	0.00	0.00	0.00
KOP #2									
6,000.0	0.43	180.00	5,971.4	200.0	-496.1	-165.4	7.44	7.44	0.00
6,100.0	7.93	180.00	6,071.1	192.7	-496.1	-158.1	7.50	7.50	0.00
6,200.0	15.43	180.00	6,169.0	172.5	-496.1	-137.9	7.50	7.50	0.00
6,300.0	22.93	180.00	6,263.3	139.6	-496.1	-105.2	7.50	7.50	0.00
6,400.0	30.43	180.00	6,352.6	94.8	-496.1	-60.4	7.50	7.50	0.00
6,475.8	36.12	180.00	6,416.0	53.2	-496.1	-18.9	7.50	7.50	0.00
SHARON SPRINGS									
6,500.0	37.93	180.00	6,435.3	38.6	-496.1	-4.4	7.50	7.50	0.00
6,600.0	45.43	180.00	6,509.9	-27.8	-496.1	61.9	7.50	7.50	0.00
6,700.0	52.93	180.00	6,575.2	-103.5	-496.1	137.3	7.50	7.50	0.00
6,800.0	60.43	180.00	6,630.1	-187.0	-496.1	220.6	7.50	7.50	0.00
6,900.0	67.93	180.00	6,673.7	-276.9	-496.1	310.4	7.50	7.50	0.00
7,000.0	75.43	180.00	6,705.1	-371.8	-496.1	405.0	7.50	7.50	0.00
7,100.0	82.93	180.00	6,723.8	-469.9	-496.1	502.9	7.50	7.50	0.00
7,197.3	90.23	180.00	6,729.6	-567.0	-496.1	599.8	7.50	7.50	0.00
End of Build - 7"									
7,200.0	90.23	180.00	6,729.6	-569.7	-496.1	602.5	0.04	0.04	0.00
7,300.0	90.23	180.00	6,729.2	-669.7	-496.1	702.2	0.00	0.00	0.00
7,400.0	90.23	180.00	6,728.8	-769.7	-496.1	802.0	0.00	0.00	0.00
7,500.0	90.23	180.00	6,728.4	-869.7	-496.1	901.7	0.00	0.00	0.00
7,600.0	90.23	180.00	6,728.0	-969.7	-496.1	1,001.5	0.00	0.00	0.00
7,700.0	90.23	180.00	6,727.6	-1,069.7	-496.1	1,101.3	0.00	0.00	0.00
7,800.0	90.23	180.00	6,727.2	-1,169.7	-496.1	1,201.0	0.00	0.00	0.00
7,900.0	90.23	180.00	6,726.8	-1,269.7	-496.1	1,300.8	0.00	0.00	0.00
8,000.0	90.23	180.00	6,726.4	-1,369.7	-496.1	1,400.6	0.00	0.00	0.00
8,100.0	90.23	180.00	6,726.0	-1,469.7	-496.1	1,500.3	0.00	0.00	0.00
8,200.0	90.23	180.00	6,725.6	-1,569.7	-496.1	1,600.1	0.00	0.00	0.00
8,300.0	90.23	180.00	6,725.2	-1,669.7	-496.1	1,699.8	0.00	0.00	0.00
8,400.0	90.23	180.00	6,724.8	-1,769.7	-496.1	1,799.6	0.00	0.00	0.00
8,500.0	90.23	180.00	6,724.4	-1,869.7	-496.1	1,899.4	0.00	0.00	0.00
8,600.0	90.23	180.00	6,724.0	-1,969.7	-496.1	1,999.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,700.0	90.23	180.00	6,723.6	-2,069.7	-496.1	2,098.9	0.00	0.00	0.00
8,800.0	90.23	180.00	6,723.2	-2,169.7	-496.1	2,198.7	0.00	0.00	0.00
8,900.0	90.23	180.00	6,722.8	-2,269.7	-496.1	2,298.4	0.00	0.00	0.00
9,000.0	90.23	180.00	6,722.4	-2,369.7	-496.1	2,398.2	0.00	0.00	0.00
9,100.0	90.23	180.00	6,722.0	-2,469.7	-496.1	2,497.9	0.00	0.00	0.00
9,200.0	90.23	180.00	6,721.6	-2,569.7	-496.1	2,597.7	0.00	0.00	0.00
9,300.0	90.23	180.00	6,721.2	-2,669.7	-496.1	2,697.5	0.00	0.00	0.00
9,400.0	90.23	180.00	6,720.8	-2,769.7	-496.1	2,797.2	0.00	0.00	0.00
9,500.0	90.23	180.00	6,720.4	-2,869.7	-496.1	2,897.0	0.00	0.00	0.00
9,600.0	90.23	180.00	6,720.0	-2,969.7	-496.1	2,996.8	0.00	0.00	0.00
9,700.0	90.23	180.00	6,719.6	-3,069.7	-496.1	3,096.5	0.00	0.00	0.00
9,800.0	90.23	180.00	6,719.2	-3,169.7	-496.1	3,196.3	0.00	0.00	0.00
9,900.0	90.23	180.00	6,718.8	-3,269.7	-496.1	3,296.0	0.00	0.00	0.00
10,000.0	90.23	180.00	6,718.4	-3,369.7	-496.1	3,395.8	0.00	0.00	0.00
10,100.0	90.23	180.00	6,718.0	-3,469.7	-496.1	3,495.6	0.00	0.00	0.00
10,200.0	90.23	180.00	6,717.6	-3,569.7	-496.1	3,595.3	0.00	0.00	0.00
10,300.0	90.23	180.00	6,717.2	-3,669.7	-496.1	3,695.1	0.00	0.00	0.00
10,400.0	90.23	180.00	6,716.8	-3,769.7	-496.1	3,794.9	0.00	0.00	0.00
10,500.0	90.23	180.00	6,716.4	-3,869.7	-496.1	3,894.6	0.00	0.00	0.00
10,600.0	90.23	180.00	6,716.0	-3,969.7	-496.1	3,994.4	0.00	0.00	0.00
10,700.0	90.23	180.00	6,715.6	-4,069.7	-496.1	4,094.1	0.00	0.00	0.00
10,800.0	90.23	180.00	6,715.2	-4,169.7	-496.1	4,193.9	0.00	0.00	0.00
10,900.0	90.23	180.00	6,714.8	-4,269.7	-496.1	4,293.7	0.00	0.00	0.00
11,000.0	90.23	180.00	6,714.4	-4,369.7	-496.1	4,393.4	0.00	0.00	0.00
11,100.0	90.23	180.00	6,714.0	-4,469.7	-496.1	4,493.2	0.00	0.00	0.00
11,200.0	90.23	180.00	6,713.6	-4,569.7	-496.1	4,593.0	0.00	0.00	0.00
11,300.0	90.23	180.00	6,713.2	-4,669.7	-496.1	4,692.7	0.00	0.00	0.00
11,400.0	90.23	180.00	6,712.8	-4,769.7	-496.1	4,792.5	0.00	0.00	0.00
11,500.0	90.23	180.00	6,712.3	-4,869.7	-496.1	4,892.2	0.00	0.00	0.00
11,600.0	90.23	180.00	6,711.9	-4,969.7	-496.1	4,992.0	0.00	0.00	0.00
11,700.0	90.23	180.00	6,711.5	-5,069.7	-496.1	5,091.8	0.00	0.00	0.00
11,800.0	90.23	180.00	6,711.1	-5,169.7	-496.1	5,191.5	0.00	0.00	0.00
11,900.0	90.23	180.00	6,710.7	-5,269.7	-496.1	5,291.3	0.00	0.00	0.00
12,000.0	90.23	180.00	6,710.3	-5,369.7	-496.1	5,391.1	0.00	0.00	0.00
12,100.0	90.23	180.00	6,709.9	-5,469.7	-496.1	5,490.8	0.00	0.00	0.00
12,200.0	90.23	180.00	6,709.5	-5,569.7	-496.1	5,590.6	0.00	0.00	0.00
12,300.0	90.23	180.00	6,709.1	-5,669.7	-496.1	5,690.3	0.00	0.00	0.00
12,400.0	90.23	180.00	6,708.7	-5,769.7	-496.1	5,790.1	0.00	0.00	0.00
12,500.0	90.23	180.00	6,708.3	-5,869.7	-496.1	5,889.9	0.00	0.00	0.00
12,600.0	90.23	180.00	6,707.9	-5,969.7	-496.1	5,989.6	0.00	0.00	0.00
12,700.0	90.23	180.00	6,707.5	-6,069.7	-496.1	6,089.4	0.00	0.00	0.00
12,800.0	90.23	180.00	6,707.1	-6,169.7	-496.1	6,189.2	0.00	0.00	0.00
12,900.0	90.23	180.00	6,706.7	-6,269.7	-496.1	6,288.9	0.00	0.00	0.00
13,000.0	90.23	180.00	6,706.3	-6,369.7	-496.1	6,388.7	0.00	0.00	0.00
13,100.0	90.23	180.00	6,705.9	-6,469.7	-496.1	6,488.4	0.00	0.00	0.00
13,200.0	90.23	180.00	6,705.5	-6,569.6	-496.1	6,588.2	0.00	0.00	0.00
13,300.0	90.23	180.00	6,705.1	-6,669.6	-496.1	6,688.0	0.00	0.00	0.00
13,400.0	90.23	180.00	6,704.7	-6,769.6	-496.1	6,787.7	0.00	0.00	0.00
13,500.0	90.23	180.00	6,704.3	-6,869.6	-496.1	6,887.5	0.00	0.00	0.00
13,600.0	90.23	180.00	6,703.9	-6,969.6	-496.1	6,987.3	0.00	0.00	0.00
13,700.0	90.23	180.00	6,703.5	-7,069.6	-496.1	7,087.0	0.00	0.00	0.00
13,800.0	90.23	180.00	6,703.1	-7,169.6	-496.1	7,186.8	0.00	0.00	0.00
13,829.1	90.23	180.00	6,703.0	-7,198.8	-496.1	7,215.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Churchill 28J-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Project:	SEC.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	North Reference:	True
Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (12-30-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
BHL 2142'FNL, 735'FWL, SEC.33									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,197.3	6,729.6	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,566.4	3,550.0	PARKMAN				
4,185.0	4,165.0	SUSSEX				
5,196.0	5,170.0	SHANNON				
6,475.8	6,416.0	SHARON SPRINGS				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP #1
5,994.2	5,965.6	200.0	-496.1	KOP #2
7,197.3	6,729.6	-567.0	-496.1	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T5N-R64W

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

Churchill 28J-343

Wellbore #1

Plan #1 (12-30-13)

Anticollision Report

08 January, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date 1/6/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,829.1	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)	200.0	200.0	61.4	60.7	91.063	CC, ES
Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)	13,829.7	13,837.5	664.5	386.0	2.386	SF
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	400.0	400.0	30.9	29.3	19.616	CC, ES
Churchill 28E-423 - Wellbore #1 - Plan #1 (12-30-13)	13,829.7	13,939.5	344.3	76.7	1.286	Level 3, SF
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	600.0	599.0	58.5	56.0	23.686	CC, ES
Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)	13,829.7	13,727.3	664.0	386.1	2.390	SF
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	600.0	599.0	30.6	28.2	12.407	CC, ES
Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)	13,829.7	13,888.1	344.6	75.6	1.281	Level 3, SF
Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W						
Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #1	9,697.8	6,742.6	52.9	-143.3	0.269	Level 1, CC, ES, SF
Adamson 28-1 (Exist) - Wellbore #1 - Wellbore #1	9,701.5	6,742.6	91.9	-104.4	0.468	Level 1, CC, ES, SF
Adamson 28-2 (Exist) - Wellbore #1 - Wellbore #1	10,870.9	6,738.9	97.5	-120.7	0.447	Level 1, CC, ES, SF
Adamson 5 (Exist) - Wellbore #1 - Wellbore #1	9,737.9	6,743.4	94.7	-102.3	0.481	Level 1, CC, ES, SF
Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1	13,730.7	6,765.4	78.0	-195.0	0.286	Level 1, CC, ES, SF
Churchill 2 28A (Exist) - Wellbore #1 - Wellbore #1	8,371.7	6,731.9	114.1	-57.7	0.664	Level 1, CC, ES, SF
Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore #1	7,081.6	6,722.3	30.8	-121.2	0.203	Level 1, CC, ES, SF
Wonenberg 1 (Exist) - Wellbore #1 - Wellbore #1	12,382.8	6,757.8	91.9	-155.3	0.372	Level 1, CC, ES, SF

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28E-203 - Wellbore #1 - Plan #1 (12-30-13)											
Survey Program: 0-MWD											
Reference											
Offset											
Semi Major Axis											
Distance											
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)
0.0	0.0	0.0	0.0	0.0	0.0	-93.40	-3.6	-61.3	61.4		
100.0	100.0	100.0	100.0	0.1	0.1	-93.40	-3.6	-61.3	61.4	61.2	0.22
200.0	200.0	200.0	200.0	0.3	0.3	-93.40	-3.6	-61.3	61.4	60.7	0.67
300.0	300.0	297.9	297.9	0.6	0.6	-93.04	-3.3	-62.9	63.1	62.0	1.11
400.0	400.0	395.6	395.5	0.8	0.8	-92.06	-2.4	-67.9	68.1	66.5	1.56
500.0	500.0	492.9	492.3	1.0	1.0	-90.72	-1.0	-76.0	76.4	74.4	2.02
600.0	600.0	589.4	588.2	1.2	1.3	-89.27	1.1	-87.3	88.1	85.6	2.52
700.0	700.0	685.4	683.1	1.5	1.6	-20.09	3.7	-101.6	101.5	98.6	2.91
800.0	799.8	780.9	776.9	1.7	2.0	-19.54	6.9	-119.0	115.0	111.6	3.35
											34.309

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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	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
900.0	899.5	877.3	871.0	1.9	2.4	-19.41	-19.41	10.6	-139.5	128.3	124.4	3.81	33.674	
1,000.0	998.9	976.6	967.8	2.2	2.8	-19.62	-19.62	14.6	-161.4	140.3	136.0	4.29	32.726	
1,100.0	1,098.3	1,075.8	1,064.5	2.4	3.3	-19.80	-19.80	18.6	-183.2	152.4	147.6	4.78	31.904	
1,200.0	1,197.7	1,175.1	1,161.3	2.7	3.8	-19.96	-19.96	22.6	-205.1	164.4	159.1	5.27	31.195	
1,300.0	1,297.1	1,274.4	1,258.1	3.0	4.2	-20.09	-20.09	26.6	-226.9	176.5	170.7	5.77	30.590	
1,400.0	1,396.5	1,373.6	1,354.8	3.3	4.7	-20.21	-20.21	30.6	-248.8	188.5	182.2	6.27	30.053	
1,500.0	1,495.9	1,472.9	1,451.6	3.6	5.2	-20.31	-20.31	34.6	-270.6	200.5	193.8	6.78	29.585	
1,600.0	1,595.3	1,572.2	1,548.3	3.8	5.7	-20.40	-20.40	38.6	-292.5	212.6	205.3	7.29	29.173	
1,700.0	1,694.7	1,671.5	1,645.1	4.1	6.2	-20.49	-20.49	42.6	-314.3	224.6	216.8	7.80	28.807	
1,800.0	1,794.1	1,770.7	1,741.8	4.4	6.6	-20.56	-20.56	46.5	-336.1	236.7	228.4	8.31	28.481	
1,900.0	1,893.5	1,870.0	1,838.6	4.7	7.1	-20.63	-20.63	50.5	-358.0	248.7	239.9	8.82	28.189	
2,000.0	1,992.9	1,969.3	1,935.3	5.0	7.6	-20.69	-20.69	54.5	-379.8	260.8	251.4	9.34	27.926	
2,100.0	2,092.3	2,068.5	2,032.1	5.3	8.1	-20.74	-20.74	58.5	-401.7	272.8	263.0	9.85	27.687	
2,200.0	2,191.7	2,167.8	2,128.9	5.6	8.6	-20.79	-20.79	62.5	-423.5	284.9	274.5	10.37	27.470	
2,300.0	2,291.1	2,267.1	2,225.6	5.9	9.1	-20.84	-20.84	66.5	-445.4	296.9	286.0	10.89	27.272	
2,400.0	2,390.6	2,366.4	2,322.4	6.2	9.5	-20.88	-20.88	70.5	-467.2	309.0	297.6	11.41	27.090	
2,500.0	2,490.0	2,465.6	2,419.1	6.5	10.0	-20.92	-20.92	74.5	-489.1	321.0	309.1	11.92	26.923	
2,600.0	2,589.4	2,564.9	2,515.9	6.8	10.5	-20.96	-20.96	78.5	-510.9	333.1	320.6	12.44	26.768	
2,700.0	2,688.8	2,664.2	2,612.6	7.1	11.0	-20.99	-20.99	82.5	-532.8	345.1	332.2	12.96	26.626	
2,800.0	2,788.2	2,763.4	2,709.4	7.4	11.5	-21.02	-21.02	86.4	-554.6	357.2	343.7	13.48	26.493	
2,900.0	2,887.6	2,862.7	2,806.1	7.7	12.0	-21.05	-21.05	90.4	-576.5	369.2	355.2	14.00	26.370	
3,000.0	2,987.0	2,962.0	2,902.9	8.0	12.5	-21.08	-21.08	94.4	-598.3	381.3	366.8	14.52	26.255	
3,100.0	3,086.4	3,061.3	2,999.6	8.3	12.9	-21.11	-21.11	98.4	-620.1	393.3	378.3	15.04	26.147	
3,200.0	3,185.8	3,160.5	3,096.4	8.6	13.4	-21.13	-21.13	102.4	-642.0	405.4	389.8	15.56	26.046	
3,300.0	3,285.2	3,259.8	3,193.2	8.9	13.9	-21.15	-21.15	106.4	-663.8	417.4	401.4	16.09	25.952	
3,400.0	3,384.6	3,359.1	3,289.9	9.2	14.4	-21.18	-21.18	110.4	-685.7	429.5	412.9	16.61	25.863	
3,500.0	3,484.0	3,458.3	3,386.7	9.5	14.9	-21.20	-21.20	114.4	-707.5	441.5	424.4	17.13	25.779	
3,600.0	3,583.4	3,557.6	3,483.4	9.8	15.4	-21.22	-21.22	118.4	-729.4	453.6	435.9	17.65	25.700	
3,700.0	3,682.8	3,656.9	3,580.2	10.1	15.9	-21.24	-21.24	122.3	-751.2	465.6	447.5	18.17	25.625	
3,800.0	3,782.2	3,756.2	3,676.9	10.4	16.4	-21.25	-21.25	126.3	-773.1	477.7	459.0	18.69	25.554	
3,900.0	3,881.6	3,855.4	3,773.7	10.7	16.8	-21.27	-21.27	130.3	-794.9	489.7	470.5	19.22	25.487	
4,000.0	3,981.1	3,954.7	3,870.4	11.0	17.3	-21.29	-21.29	134.3	-816.8	501.8	482.1	19.74	25.423	
4,100.0	4,080.5	4,054.0	3,967.2	11.3	17.8	-21.30	-21.30	138.3	-838.6	513.8	493.6	20.26	25.362	
4,200.0	4,179.9	4,153.2	4,064.0	11.6	18.3	-21.32	-21.32	142.3	-860.5	525.9	505.1	20.78	25.305	
4,300.0	4,279.3	4,252.5	4,160.7	11.9	18.8	-21.33	-21.33	146.3	-882.3	537.9	516.6	21.31	25.250	
4,400.0	4,378.7	4,351.8	4,257.5	12.2	19.3	-21.34	-21.34	150.3	-904.2	550.0	528.2	21.83	25.197	
4,500.0	4,478.1	4,451.0	4,354.2	12.5	19.8	-21.36	-21.36	154.3	-926.0	562.0	539.7	22.35	25.147	
4,600.0	4,577.5	4,550.3	4,451.0	12.8	20.3	-21.37	-21.37	158.2	-947.8	574.1	551.2	22.87	25.099	
4,700.0	4,676.9	4,649.6	4,547.7	13.2	20.7	-21.38	-21.38	162.2	-969.7	586.2	562.8	23.40	25.053	
4,800.0	4,776.3	4,748.9	4,644.5	13.5	21.2	-21.39	-21.39	166.2	-991.5	598.2	574.3	23.92	25.009	
4,900.0	4,875.7	4,848.1	4,741.2	13.8	21.7	-21.40	-21.40	170.2	-1,013.4	610.3	585.8	24.44	24.967	
5,000.0	4,975.1	4,947.4	4,838.0	14.1	22.2	-21.41	-21.41	174.2	-1,035.2	622.3	597.3	24.97	24.926	
5,100.0	5,074.5	5,046.7	4,934.8	14.4	22.7	-21.42	-21.42	178.2	-1,057.1	634.4	608.9	25.49	24.888	
5,200.0	5,173.9	5,145.9	5,031.5	14.7	23.2	-21.43	-21.43	182.2	-1,078.9	646.4	620.4	26.01	24.850	
5,300.0	5,273.3	5,245.9	5,148.8	15.0	23.6	-21.46	-21.46	186.7	-1,103.9	657.3	630.8	26.56	24.754	
5,400.0	5,372.7	5,345.0	5,276.0	15.3	24.0	-21.58	-21.58	190.7	-1,125.5	664.1	637.0	27.09	24.511	
5,500.0	5,472.2	5,444.6	5,404.5	15.6	24.3	-21.78	-21.78	193.6	-1,141.5	666.3	638.7	27.61	24.130	
5,600.0	5,571.7	5,544.2	5,533.7	15.8	24.6	-22.02	-22.02	195.5	-1,151.8	665.3	637.2	28.05	23.716	
5,700.0	5,671.5	5,643.7	5,663.1	16.0	24.8	-22.19	-22.19	196.3	-1,156.3	663.0	634.6	28.39	23.351	
5,800.0	5,771.4	5,743.6	5,771.4	16.2	24.9	-22.27	-22.27	196.4	-1,156.6	660.6	632.0	28.65	23.056	
5,851.7	5,823.1	5,795.3	5,823.1	16.3	24.9	-22.28	-22.28	196.4	-1,156.6	660.3	631.5	28.82	22.911	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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	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
5,900.0	5,871.4	5,992.1	5,871.4	16.3	25.0	-90.32		196.4	-1,156.6	660.5	631.5	28.97	22.798	
5,907.5	5,879.0	5,999.6	5,879.0	16.3	25.0	89.68		196.4	-1,156.6	660.5	631.5	29.00	22.776	
6,000.0	5,971.4	6,091.3	5,970.5	16.5	25.1	89.28		191.6	-1,156.6	660.6	631.2	29.36	22.502	
6,100.0	6,071.1	6,189.1	6,066.7	16.6	25.1	88.39		174.6	-1,156.6	660.8	631.1	29.69	22.253	
6,200.0	6,169.0	6,285.6	6,158.8	16.7	25.2	87.55		145.9	-1,156.6	661.1	631.2	29.93	22.086	
6,300.0	6,263.3	6,381.0	6,245.6	16.8	25.2	86.74		106.3	-1,156.6	661.6	631.5	30.10	21.977	
6,400.0	6,352.6	6,475.4	6,325.9	16.8	25.2	85.99		56.8	-1,156.6	662.1	631.9	30.25	21.887	
6,500.0	6,435.3	6,568.9	6,398.8	16.9	25.3	85.31		-1.6	-1,156.6	662.7	632.3	30.45	21.766	
6,600.0	6,509.9	6,661.7	6,463.6	17.0	25.3	84.71		-67.9	-1,156.6	663.3	632.5	30.78	21.548	
6,700.0	6,575.2	6,753.8	6,519.5	17.1	25.4	84.20		-141.0	-1,156.6	663.9	632.6	31.34	21.187	
6,800.0	6,630.1	6,845.3	6,565.9	17.3	25.6	83.77		-219.8	-1,156.6	664.4	632.2	32.19	20.639	
6,900.0	6,673.7	6,936.4	6,602.5	17.8	25.8	83.45		-303.2	-1,156.6	664.8	631.4	33.41	19.900	
7,000.0	6,705.1	7,027.2	6,628.7	18.4	26.1	83.23		-390.0	-1,156.6	665.1	630.1	35.00	19.006	
7,100.0	6,723.8	7,117.7	6,644.5	19.2	26.5	83.11		-479.2	-1,156.6	665.3	628.4	36.94	18.012	
7,200.0	6,729.6	7,208.6	6,649.7	20.2	27.0	83.10		-569.9	-1,156.6	665.3	626.1	39.17	16.985	
7,247.0	6,729.4	7,255.2	6,649.5	20.8	27.3	83.10		-616.5	-1,156.6	665.3	625.0	40.29	16.512	
7,300.0	6,729.2	7,308.2	6,649.4	21.4	27.7	83.11		-669.5	-1,156.6	665.3	623.7	41.57	16.005	
7,400.0	6,728.8	7,408.2	6,649.1	22.7	28.5	83.12		-769.5	-1,156.6	665.3	621.1	44.17	15.064	
7,500.0	6,728.4	7,508.2	6,648.8	24.0	29.5	83.13		-869.5	-1,156.6	665.3	618.3	46.93	14.176	
7,600.0	6,728.0	7,608.2	6,648.5	25.4	30.6	83.13		-969.5	-1,156.6	665.3	615.4	49.83	13.350	
7,700.0	6,727.6	7,708.2	6,648.2	26.9	31.7	83.14		-1,069.5	-1,156.6	665.3	612.4	52.85	12.587	
7,800.0	6,727.2	7,808.2	6,647.9	28.5	33.0	83.15		-1,169.5	-1,156.6	665.2	609.3	55.97	11.885	
7,900.0	6,726.8	7,908.2	6,647.6	30.0	34.3	83.16		-1,269.5	-1,156.6	665.2	606.1	59.17	11.242	
8,000.0	6,726.4	8,008.2	6,647.3	31.7	35.7	83.17		-1,369.5	-1,156.6	665.2	602.8	62.44	10.653	
8,100.0	6,726.0	8,108.2	6,647.0	33.3	37.1	83.18		-1,469.5	-1,156.6	665.2	599.4	65.77	10.114	
8,200.0	6,725.6	8,208.2	6,646.7	35.0	38.6	83.19		-1,569.5	-1,156.6	665.2	596.0	69.15	9.620	
8,300.0	6,725.2	8,308.2	6,646.4	36.7	40.2	83.20		-1,669.5	-1,156.6	665.2	592.6	72.57	9.166	
8,400.0	6,724.8	8,408.2	6,646.1	38.4	41.7	83.21		-1,769.5	-1,156.6	665.2	589.1	76.03	8.748	
8,500.0	6,724.4	8,508.2	6,645.8	40.1	43.3	83.22		-1,869.5	-1,156.6	665.2	585.6	79.53	8.364	
8,600.0	6,724.0	8,608.2	6,645.5	41.9	44.9	83.22		-1,969.5	-1,156.6	665.1	582.1	83.05	8.009	
8,700.0	6,723.6	8,708.2	6,645.2	43.7	46.6	83.23		-2,069.5	-1,156.6	665.1	578.5	86.60	7.681	
8,800.0	6,723.2	8,808.2	6,644.9	45.5	48.3	83.24		-2,169.5	-1,156.6	665.1	574.9	90.17	7.376	
8,900.0	6,722.8	8,908.2	6,644.6	47.2	49.9	83.25		-2,269.5	-1,156.6	665.1	571.3	93.76	7.094	
9,000.0	6,722.4	9,008.2	6,644.3	49.0	51.7	83.26		-2,369.5	-1,156.6	665.1	567.7	97.37	6.831	
9,100.0	6,722.0	9,108.2	6,644.0	50.9	53.4	83.27		-2,469.5	-1,156.6	665.1	564.1	100.99	6.586	
9,200.0	6,721.6	9,208.2	6,643.7	52.7	55.1	83.28		-2,569.5	-1,156.6	665.1	560.4	104.63	6.357	
9,300.0	6,721.2	9,308.2	6,643.4	54.5	56.9	83.29		-2,669.5	-1,156.6	665.1	556.8	108.28	6.142	
9,400.0	6,720.8	9,408.2	6,643.1	56.3	58.6	83.30		-2,769.4	-1,156.6	665.0	553.1	111.94	5.941	
9,500.0	6,720.4	9,508.2	6,642.8	58.2	60.4	83.30		-2,869.4	-1,156.6	665.0	549.4	115.61	5.752	
9,600.0	6,720.0	9,608.2	6,642.5	60.0	62.2	83.31		-2,969.4	-1,156.6	665.0	545.7	119.29	5.575	
9,700.0	6,719.6	9,708.2	6,642.3	61.9	63.9	83.32		-3,069.4	-1,156.6	665.0	542.0	122.98	5.407	
9,800.0	6,719.2	9,808.2	6,642.0	63.7	65.7	83.33		-3,169.4	-1,156.6	665.0	538.3	126.68	5.249	
9,900.0	6,718.8	9,908.2	6,641.7	65.6	67.5	83.34		-3,269.4	-1,156.6	665.0	534.6	130.38	5.100	
10,000.0	6,718.4	10,008.2	6,641.4	67.4	69.3	83.35		-3,369.4	-1,156.6	665.0	530.9	134.09	4.959	
10,100.0	6,718.0	10,108.2	6,641.1	69.3	71.2	83.36		-3,469.4	-1,156.6	665.0	527.1	137.81	4.825	
10,200.0	6,717.6	10,208.2	6,640.8	71.2	73.0	83.37		-3,569.4	-1,156.6	664.9	523.4	141.54	4.698	
10,300.0	6,717.2	10,308.2	6,640.5	73.0	74.8	83.38		-3,669.4	-1,156.6	664.9	519.7	145.26	4.577	
10,400.0	6,716.8	10,408.2	6,640.2	74.9	76.6	83.39		-3,769.4	-1,156.6	664.9	515.9	149.00	4.463	
10,500.0	6,716.4	10,508.2	6,639.9	76.8	78.5	83.39		-3,869.4	-1,156.6	664.9	512.2	152.73	4.353	
10,600.0	6,716.0	10,608.2	6,639.6	78.6	80.3	83.40		-3,969.4	-1,156.6	664.9	508.4	156.48	4.249	
10,700.0	6,715.6	10,708.2	6,639.3	80.5	82.1	83.41		-4,069.4	-1,156.6	664.9	504.7	160.22	4.150	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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)	
10,800.0	6,715.2	10,808.2	6,639.0	82.4	84.0	83.42	-4,169.4	-1,156.6	664.9	500.9	163.97	4.055	
10,900.0	6,714.8	10,908.2	6,638.7	84.3	85.8	83.43	-4,269.4	-1,156.6	664.9	497.1	167.72	3.964	
11,000.0	6,714.4	11,008.2	6,638.4	86.2	87.7	83.44	-4,369.4	-1,156.6	664.9	493.4	171.48	3.877	
11,100.0	6,714.0	11,108.2	6,638.1	88.0	89.5	83.45	-4,469.4	-1,156.6	664.8	489.6	175.24	3.794	
11,200.0	6,713.6	11,208.2	6,637.8	89.9	91.4	83.46	-4,569.4	-1,156.6	664.8	485.8	179.00	3.714	
11,300.0	6,713.2	11,308.2	6,637.5	91.8	93.2	83.47	-4,669.4	-1,156.6	664.8	482.1	182.76	3.638	
11,400.0	6,712.8	11,408.2	6,637.2	93.7	95.1	83.48	-4,769.4	-1,156.6	664.8	478.3	186.53	3.564	
11,500.0	6,712.3	11,508.2	6,636.9	95.6	97.0	83.48	-4,869.4	-1,156.6	664.8	474.5	190.30	3.493	
11,600.0	6,711.9	11,608.2	6,636.6	97.5	98.8	83.49	-4,969.4	-1,156.6	664.8	470.7	194.07	3.425	
11,700.0	6,711.5	11,708.2	6,636.3	99.4	100.7	83.50	-5,069.4	-1,156.6	664.8	466.9	197.85	3.360	
11,800.0	6,711.1	11,808.2	6,636.0	101.3	102.6	83.51	-5,169.4	-1,156.6	664.8	463.1	201.62	3.297	
11,900.0	6,710.7	11,908.2	6,635.7	103.2	104.4	83.52	-5,269.4	-1,156.6	664.7	459.3	205.40	3.236	
12,000.0	6,710.3	12,008.2	6,635.4	105.1	106.3	83.53	-5,369.4	-1,156.6	664.7	455.6	209.18	3.178	
12,100.0	6,709.9	12,108.2	6,635.1	107.0	108.2	83.54	-5,469.4	-1,156.6	664.7	451.8	212.96	3.121	
12,200.0	6,709.5	12,208.2	6,634.8	108.9	110.1	83.55	-5,569.4	-1,156.6	664.7	448.0	216.74	3.067	
12,300.0	6,709.1	12,308.2	6,634.5	110.8	111.9	83.56	-5,669.4	-1,156.6	664.7	444.2	220.52	3.014	
12,400.0	6,708.7	12,408.2	6,634.2	112.7	113.8	83.56	-5,769.4	-1,156.6	664.7	440.4	224.31	2.963	
12,500.0	6,708.3	12,508.2	6,633.9	114.6	115.7	83.57	-5,869.4	-1,156.6	664.7	436.6	228.10	2.914	
12,600.0	6,707.9	12,608.2	6,633.6	116.5	117.6	83.58	-5,969.4	-1,156.6	664.7	432.8	231.88	2.866	
12,700.0	6,707.5	12,708.2	6,633.4	118.4	119.5	83.59	-6,069.4	-1,156.6	664.6	429.0	235.67	2.820	
12,800.0	6,707.1	12,808.2	6,633.1	120.3	121.4	83.60	-6,169.4	-1,156.6	664.6	425.2	239.46	2.776	
12,900.0	6,706.7	12,908.2	6,632.8	122.2	123.2	83.61	-6,269.4	-1,156.6	664.6	421.4	243.25	2.732	
13,000.0	6,706.3	13,008.2	6,632.5	124.1	125.1	83.62	-6,369.4	-1,156.6	664.6	417.6	247.05	2.690	
13,100.0	6,705.9	13,108.2	6,632.2	126.0	127.0	83.63	-6,469.4	-1,156.6	664.6	413.8	250.84	2.649	
13,200.0	6,705.5	13,208.2	6,631.9	127.9	128.9	83.64	-6,569.4	-1,156.6	664.6	410.0	254.64	2.610	
13,300.0	6,705.1	13,308.2	6,631.6	129.8	130.8	83.65	-6,669.4	-1,156.6	664.6	406.1	258.43	2.572	
13,400.0	6,704.7	13,408.2	6,631.3	131.7	132.7	83.65	-6,769.4	-1,156.6	664.6	402.3	262.23	2.534	
13,500.0	6,704.3	13,508.2	6,631.0	133.6	134.6	83.66	-6,869.4	-1,156.6	664.6	398.5	266.03	2.498	
13,600.0	6,703.9	13,608.2	6,630.7	135.5	136.5	83.67	-6,969.4	-1,156.6	664.5	394.7	269.82	2.463	
13,700.0	6,703.5	13,708.2	6,630.4	137.4	138.4	83.68	-7,069.4	-1,156.6	664.5	390.9	273.62	2.429	
13,800.0	6,703.1	13,808.2	6,630.1	139.3	140.3	83.69	-7,169.4	-1,156.6	664.5	387.1	277.42	2.395	
13,822.2	6,703.0	13,830.4	6,630.0	139.7	140.7	83.69	-7,191.6	-1,156.6	664.5	386.3	278.27	2.388	
13,829.7	6,703.0	13,837.5	6,630.0	139.9	140.8	83.69	-7,198.7	-1,156.6	664.5	386.0	278.54	2.386 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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	0.0	0.0	0.0	0.0	-96.78	-3.6	-30.6	30.9					
100.0	100.0	100.0	100.0	0.1	0.1	-96.78	-3.6	-30.6	30.9	30.6	0.22	137.315		
200.0	200.0	200.0	200.0	0.3	0.3	-96.78	-3.6	-30.6	30.9	30.2	0.67	45.772		
300.0	300.0	300.0	300.0	0.6	0.6	-96.78	-3.6	-30.6	30.9	29.7	1.12	27.463		
400.0	400.0	400.0	400.0	0.8	0.8	-96.78	-3.6	-30.6	30.9	29.3	1.57	19.616 CC, ES		
500.0	500.0	499.0	498.9	1.0	1.0	-95.70	-3.2	-32.3	32.5	30.5	2.01	16.141		
600.0	600.0	597.7	597.5	1.2	1.2	-93.04	-2.0	-37.3	37.4	34.9	2.45	15.239		
700.0	700.0	696.1	695.6	1.5	1.5	-22.63	0.1	-45.5	44.1	41.2	2.88	15.290		
800.0	799.8	794.3	793.0	1.7	1.7	-21.40	3.0	-56.9	50.9	47.6	3.31	15.362		
900.0	899.5	892.8	890.4	1.9	2.0	-20.94	6.6	-71.5	57.7	53.9	3.76	15.351		
1,000.0	998.9	992.7	989.0	2.2	2.4	-21.14	10.6	-87.0	63.2	59.0	4.22	14.992		
1,100.0	1,098.3	1,092.5	1,087.5	2.4	2.7	-21.31	14.5	-102.6	68.7	64.0	4.68	14.666		
1,200.0	1,197.7	1,192.4	1,186.1	2.7	3.1	-21.46	18.4	-118.1	74.2	69.1	5.16	14.381		
1,300.0	1,297.1	1,292.2	1,284.7	3.0	3.4	-21.59	22.3	-133.7	79.7	74.1	5.64	14.132		
1,400.0	1,396.5	1,392.1	1,383.2	3.3	3.8	-21.70	26.2	-149.2	85.3	79.1	6.13	13.913		
1,500.0	1,495.9	1,491.9	1,481.8	3.6	4.1	-21.80	30.1	-164.7	90.8	84.2	6.62	13.721		
1,600.0	1,595.3	1,591.8	1,580.3	3.8	4.5	-21.89	34.0	-180.3	96.3	89.2	7.11	13.549		
1,700.0	1,694.7	1,691.6	1,678.9	4.1	4.9	-21.97	37.9	-195.8	101.8	94.2	7.60	13.397		
1,800.0	1,794.1	1,791.5	1,777.4	4.4	5.3	-22.04	41.9	-211.4	107.3	99.2	8.09	13.260		
1,900.0	1,893.5	1,891.3	1,876.0	4.7	5.6	-22.10	45.8	-226.9	112.8	104.3	8.59	13.137		
2,000.0	1,992.9	1,991.2	1,974.5	5.0	6.0	-22.16	49.7	-242.4	118.4	109.3	9.09	13.026		
2,100.0	2,092.3	2,091.0	2,073.1	5.3	6.4	-22.21	53.6	-258.0	123.9	114.3	9.58	12.925		
2,200.0	2,191.7	2,190.9	2,171.6	5.6	6.7	-22.26	57.5	-273.5	129.4	119.3	10.08	12.832		
2,300.0	2,291.1	2,290.7	2,270.2	5.9	7.1	-22.30	61.4	-289.1	134.9	124.3	10.58	12.748		
2,400.0	2,390.6	2,390.6	2,368.7	6.2	7.5	-22.34	65.3	-304.6	140.4	129.3	11.08	12.671		
2,500.0	2,490.0	2,490.4	2,467.3	6.5	7.9	-22.38	69.3	-320.1	146.0	134.4	11.58	12.599		
2,600.0	2,589.4	2,590.3	2,565.8	6.8	8.3	-22.41	73.2	-335.7	151.5	139.4	12.09	12.533		
2,700.0	2,688.8	2,690.1	2,664.4	7.1	8.6	-22.44	77.1	-351.2	157.0	144.4	12.59	12.472		
2,800.0	2,788.2	2,789.9	2,763.0	7.4	9.0	-22.47	81.0	-366.8	162.5	149.4	13.09	12.415		
2,900.0	2,887.6	2,889.8	2,861.5	7.7	9.4	-22.50	84.9	-382.3	168.0	154.4	13.59	12.362		
3,000.0	2,987.0	2,989.6	2,960.1	8.0	9.8	-22.53	88.8	-397.8	173.5	159.4	14.09	12.313		
3,100.0	3,086.4	3,089.5	3,058.6	8.3	10.1	-22.55	92.7	-413.4	179.1	164.5	14.60	12.267		
3,200.0	3,185.8	3,189.3	3,157.2	8.6	10.5	-22.57	96.6	-428.9	184.6	169.5	15.10	12.223		
3,300.0	3,285.2	3,289.2	3,255.7	8.9	10.9	-22.60	100.6	-444.5	190.1	174.5	15.60	12.183		
3,400.0	3,384.6	3,389.0	3,354.3	9.2	11.3	-22.62	104.5	-460.0	195.6	179.5	16.11	12.144		
3,500.0	3,484.0	3,488.9	3,452.8	9.5	11.7	-22.64	108.4	-475.5	201.1	184.5	16.61	12.108		
3,600.0	3,583.4	3,588.7	3,551.4	9.8	12.0	-22.65	112.3	-491.1	206.7	189.5	17.12	12.074		
3,700.0	3,682.8	3,688.6	3,649.9	10.1	12.4	-22.67	116.2	-506.6	212.2	194.6	17.62	12.042		
3,800.0	3,782.2	3,788.4	3,748.5	10.4	12.8	-22.69	120.1	-522.2	217.7	199.6	18.12	12.011		
3,900.0	3,881.6	3,888.3	3,847.0	10.7	13.2	-22.70	124.0	-537.7	223.2	204.6	18.63	11.982		
4,000.0	3,981.1	3,988.1	3,945.6	11.0	13.5	-22.72	127.9	-553.2	228.7	209.6	19.13	11.954		
4,100.0	4,080.5	4,088.0	4,044.1	11.3	13.9	-22.73	131.9	-568.8	234.2	214.6	19.64	11.928		
4,200.0	4,179.9	4,187.8	4,142.7	11.6	14.3	-22.75	135.8	-584.3	239.8	219.6	20.14	11.903		
4,300.0	4,279.3	4,287.7	4,241.2	11.9	14.7	-22.76	139.7	-599.9	245.3	224.6	20.65	11.879		
4,400.0	4,378.7	4,387.5	4,339.8	12.2	15.1	-22.77	143.6	-615.4	250.8	229.6	21.15	11.857		
4,500.0	4,478.1	4,487.4	4,438.4	12.5	15.4	-22.78	147.5	-630.9	256.3	234.7	21.66	11.835		
4,600.0	4,577.5	4,587.2	4,536.9	12.8	15.8	-22.80	151.4	-646.5	261.8	239.7	22.16	11.814		
4,700.0	4,676.9	4,687.0	4,635.5	13.2	16.2	-22.81	155.3	-662.0	267.4	244.7	22.67	11.794		
4,800.0	4,776.3	4,786.9	4,734.0	13.5	16.6	-22.82	159.2	-677.6	272.9	249.7	23.17	11.775		
4,900.0	4,875.7	4,886.7	4,832.6	13.8	17.0	-22.83	163.2	-693.1	278.4	254.7	23.68	11.757		
5,000.0	4,975.1	4,986.6	4,931.1	14.1	17.3	-22.84	167.1	-708.6	283.9	259.7	24.18	11.739		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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
5,100.0	5,074.5	5,086.4	5,029.7	14.4	17.7	-22.85	-22.85	171.0	-724.2	289.4	264.7	24.69	11.723	
5,200.0	5,173.9	5,186.3	5,128.2	14.7	18.1	-22.85	-22.85	174.9	-739.7	295.0	269.8	25.20	11.706	
5,300.0	5,273.3	5,286.1	5,226.8	15.0	18.5	-22.86	-22.86	178.8	-755.3	300.5	274.8	25.70	11.691	
5,400.0	5,372.7	5,386.0	5,325.3	15.3	18.9	-22.87	-22.87	182.7	-770.8	306.0	279.8	26.21	11.676	
5,500.0	5,472.2	5,485.8	5,423.9	15.6	19.2	-22.88	-22.88	186.6	-786.4	311.5	284.8	26.71	11.661	
5,600.0	5,571.7	5,585.6	5,532.4	15.8	19.6	-22.90	-22.90	190.6	-802.0	316.8	289.7	27.18	11.659	
5,700.0	5,671.5	5,707.5	5,643.7	16.0	19.8	-22.85	-22.85	193.6	-813.8	321.6	294.1	27.53	11.682	
5,800.0	5,771.4	5,819.7	5,755.6	16.2	20.1	-22.74	-22.74	195.5	-821.4	325.9	298.0	27.83	11.708	
5,900.0	5,871.4	5,932.0	5,867.9	16.3	20.2	-90.64	-90.64	196.3	-824.8	328.7	300.6	28.17	11.670	
6,000.0	5,971.4	6,035.6	5,971.4	16.5	20.3	89.37	89.37	196.4	-824.9	328.9	300.3	28.54	11.521	
6,068.9	6,040.2	6,104.4	6,040.2	16.6	20.4	90.00	90.00	196.4	-824.9	328.9	300.1	28.71	11.453	
6,100.0	6,071.1	6,135.4	6,071.2	16.6	20.5	90.55	90.55	195.9	-824.9	328.9	300.1	28.76	11.435	
6,200.0	6,169.0	6,235.9	6,171.2	16.7	20.6	92.32	92.32	185.7	-824.9	329.1	300.3	28.84	11.413	
6,300.0	6,263.3	6,337.9	6,270.3	16.8	20.6	94.05	94.05	162.0	-824.9	329.7	300.8	28.88	11.416	
6,400.0	6,352.6	6,441.3	6,366.6	16.8	20.7	95.72	95.72	124.8	-824.9	330.5	301.6	28.94	11.419	
6,500.0	6,435.3	6,546.0	6,458.2	16.9	20.7	97.30	97.30	74.1	-824.9	331.6	302.5	29.09	11.398	
6,600.0	6,509.9	6,652.1	6,543.1	17.0	20.8	98.74	98.74	10.6	-824.9	332.7	303.4	29.38	11.325	
6,700.0	6,575.2	6,759.5	6,619.2	17.1	20.9	100.03	100.03	-65.1	-824.9	334.0	304.1	29.87	11.180	
6,800.0	6,630.1	6,868.1	6,684.5	17.3	21.0	101.14	101.14	-151.7	-824.9	335.2	304.6	30.62	10.947	
6,900.0	6,673.7	6,977.6	6,737.4	17.8	21.3	102.04	102.04	-247.5	-824.9	336.3	304.6	31.65	10.625	
7,000.0	6,705.1	7,088.0	6,776.3	18.4	21.7	102.71	102.71	-350.7	-824.9	337.1	304.2	32.97	10.225	
7,100.0	6,723.8	7,198.9	6,799.9	19.2	22.3	103.16	103.16	-459.0	-824.9	337.7	303.1	34.59	9.764	
7,200.0	6,729.6	7,301.7	6,811.2	20.2	23.1	103.93	103.93	-561.1	-824.9	338.9	302.7	36.28	9.342	
7,300.0	6,729.2	7,409.5	6,817.4	21.4	24.1	105.02	105.02	-668.7	-824.9	340.5	302.0	38.47	8.850	
7,400.0	6,728.8	7,510.7	6,817.3	22.7	25.2	105.07	105.07	-769.9	-824.9	340.6	299.6	41.01	8.304	
7,500.0	6,728.4	7,610.7	6,817.2	24.0	26.4	105.10	105.10	-869.9	-824.9	340.6	296.9	43.71	7.793	
7,600.0	6,728.0	7,710.7	6,817.0	25.4	27.6	105.14	105.14	-969.9	-824.9	340.7	294.1	46.55	7.319	
7,700.0	6,727.6	7,810.7	6,816.8	26.9	29.0	105.17	105.17	-1,069.9	-824.9	340.7	291.2	49.50	6.883	
7,800.0	6,727.2	7,910.7	6,816.6	28.5	30.4	105.20	105.20	-1,169.9	-824.9	340.8	288.2	52.55	6.485	
7,900.0	6,726.8	8,010.7	6,816.4	30.0	31.9	105.24	105.24	-1,269.9	-824.9	340.8	285.2	55.68	6.121	
8,000.0	6,726.4	8,110.6	6,816.2	31.7	33.4	105.27	105.27	-1,369.9	-824.9	340.9	282.0	58.88	5.789	
8,100.0	6,726.0	8,210.6	6,816.0	33.3	35.0	105.31	105.31	-1,469.9	-824.9	340.9	278.8	62.14	5.487	
8,200.0	6,725.6	8,310.6	6,815.8	35.0	36.6	105.34	105.34	-1,569.9	-824.9	341.0	275.6	65.44	5.211	
8,300.0	6,725.2	8,410.6	6,815.6	36.7	38.2	105.37	105.37	-1,669.9	-824.9	341.1	272.3	68.79	4.958	
8,400.0	6,724.8	8,510.6	6,815.4	38.4	39.8	105.41	105.41	-1,769.9	-824.9	341.1	268.9	72.17	4.727	
8,500.0	6,724.4	8,610.6	6,815.2	40.1	41.5	105.44	105.44	-1,869.9	-824.9	341.2	265.6	75.58	4.514	
8,600.0	6,724.0	8,710.6	6,815.0	41.9	43.2	105.48	105.48	-1,969.9	-824.9	341.2	262.2	79.02	4.318	
8,700.0	6,723.6	8,810.6	6,814.8	43.7	44.9	105.51	105.51	-2,069.9	-824.9	341.3	258.8	82.48	4.138	
8,800.0	6,723.2	8,910.6	6,814.7	45.5	46.7	105.54	105.54	-2,169.9	-824.9	341.3	255.4	85.96	3.971	
8,900.0	6,722.8	9,010.6	6,814.5	47.2	48.4	105.58	105.58	-2,269.9	-824.9	341.4	251.9	89.46	3.816	
9,000.0	6,722.4	9,110.6	6,814.3	49.0	50.2	105.61	105.61	-2,369.9	-824.9	341.5	248.5	92.97	3.673	
9,100.0	6,722.0	9,210.6	6,814.1	50.9	51.9	105.64	105.64	-2,469.9	-824.9	341.5	245.0	96.50	3.539	
9,200.0	6,721.6	9,310.6	6,813.9	52.7	53.7	105.68	105.68	-2,569.9	-824.9	341.6	241.5	100.04	3.414	
9,300.0	6,721.2	9,410.6	6,813.7	54.5	55.5	105.71	105.71	-2,669.9	-824.9	341.6	238.0	103.59	3.298	
9,400.0	6,720.8	9,510.6	6,813.5	56.3	57.3	105.75	105.75	-2,769.9	-824.9	341.7	234.5	107.14	3.189	
9,500.0	6,720.4	9,610.6	6,813.3	58.2	59.1	105.78	105.78	-2,869.9	-824.9	341.7	231.0	110.71	3.087	
9,600.0	6,720.0	9,710.6	6,813.1	60.0	60.9	105.81	105.81	-2,969.9	-824.9	341.8	227.5	114.29	2.991	
9,700.0	6,719.6	9,810.6	6,812.9	61.9	62.7	105.85	105.85	-3,069.9	-824.9	341.8	224.0	117.87	2.900	
9,800.0	6,719.2	9,910.6	6,812.7	63.7	64.6	105.88	105.88	-3,169.9	-824.9	341.9	220.4	121.46	2.815	
9,900.0	6,718.8	10,010.6	6,812.5	65.6	66.4	105.92	105.92	-3,269.9	-824.9	342.0	216.9	125.05	2.735	
10,000.0	6,718.4	10,110.6	6,812.4	67.4	68.2	105.95	105.95	-3,369.9	-824.9	342.0	213.4	128.65	2.659	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 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
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
10,100.0	6,718.0	10,210.6	6,812.2	69.3	70.1	105.98	-3,469.9	-824.9	342.1	209.8	132.25	2.587	
10,200.0	6,717.6	10,310.6	6,812.0	71.2	71.9	106.02	-3,569.9	-824.9	342.1	206.3	135.86	2.518	
10,300.0	6,717.2	10,410.6	6,811.8	73.0	73.8	106.05	-3,669.9	-824.9	342.2	202.7	139.47	2.454	
10,400.0	6,716.8	10,510.6	6,811.6	74.9	75.6	106.08	-3,769.9	-824.9	342.3	199.2	143.08	2.392	
10,500.0	6,716.4	10,610.6	6,811.4	76.8	77.5	106.12	-3,869.9	-824.9	342.3	195.6	146.70	2.333	
10,600.0	6,716.0	10,710.6	6,811.2	78.6	79.3	106.15	-3,969.9	-824.9	342.4	192.1	150.32	2.278	
10,700.0	6,715.6	10,810.6	6,811.0	80.5	81.2	106.18	-4,069.9	-824.9	342.4	188.5	153.94	2.224	
10,800.0	6,715.2	10,910.6	6,810.8	82.4	83.1	106.22	-4,169.9	-824.9	342.5	184.9	157.56	2.174	
10,900.0	6,714.8	11,010.6	6,810.6	84.3	84.9	106.25	-4,269.9	-824.9	342.5	181.4	161.19	2.125	
11,000.0	6,714.4	11,110.6	6,810.4	86.2	86.8	106.29	-4,369.9	-824.9	342.6	177.8	164.81	2.079	
11,100.0	6,714.0	11,210.6	6,810.2	88.0	88.7	106.32	-4,469.9	-824.9	342.7	174.2	168.44	2.034	
11,200.0	6,713.6	11,310.6	6,810.0	89.9	90.5	106.35	-4,569.9	-824.9	342.7	170.6	172.07	1.992	
11,300.0	6,713.2	11,410.6	6,809.9	91.8	92.4	106.39	-4,669.9	-824.9	342.8	167.1	175.70	1.951	
11,400.0	6,712.8	11,510.6	6,809.7	93.7	94.3	106.42	-4,769.8	-824.9	342.8	163.5	179.33	1.912	
11,500.0	6,712.3	11,610.6	6,809.5	95.6	96.2	106.45	-4,869.8	-824.9	342.9	159.9	182.97	1.874	
11,600.0	6,711.9	11,710.6	6,809.3	97.5	98.1	106.49	-4,969.8	-824.9	343.0	156.4	186.60	1.838	
11,700.0	6,711.5	11,810.6	6,809.1	99.4	99.9	106.52	-5,069.8	-824.9	343.0	152.8	190.23	1.803	
11,800.0	6,711.1	11,910.6	6,808.9	101.3	101.8	106.55	-5,169.8	-824.9	343.1	149.2	193.87	1.770	
11,900.0	6,710.7	12,010.6	6,808.7	103.2	103.7	106.59	-5,269.8	-824.9	343.1	145.6	197.50	1.737	
12,000.0	6,710.3	12,110.6	6,808.5	105.1	105.6	106.62	-5,369.8	-824.9	343.2	142.1	201.14	1.706	
12,100.0	6,709.9	12,210.6	6,808.3	107.0	107.5	106.65	-5,469.8	-824.9	343.3	138.5	204.78	1.676	
12,200.0	6,709.5	12,310.6	6,808.1	108.9	109.4	106.69	-5,569.8	-824.9	343.3	134.9	208.41	1.647	
12,300.0	6,709.1	12,410.6	6,807.9	110.8	111.3	106.72	-5,669.8	-824.9	343.4	131.3	212.05	1.619	
12,400.0	6,708.7	12,510.6	6,807.7	112.7	113.1	106.76	-5,769.8	-824.9	343.4	127.8	215.68	1.592	
12,500.0	6,708.3	12,610.6	6,807.6	114.6	115.0	106.79	-5,869.8	-824.9	343.5	124.2	219.32	1.566	
12,600.0	6,707.9	12,710.6	6,807.4	116.5	116.9	106.82	-5,969.8	-824.9	343.6	120.6	222.96	1.541	
12,700.0	6,707.5	12,810.6	6,807.2	118.4	118.8	106.86	-6,069.8	-824.9	343.6	117.0	226.59	1.516	
12,800.0	6,707.1	12,910.6	6,807.0	120.3	120.7	106.89	-6,169.8	-824.9	343.7	113.4	230.23	1.493 Level 3	
12,900.0	6,706.7	13,010.6	6,806.8	122.2	122.6	106.92	-6,269.8	-824.9	343.7	109.9	233.87	1.470 Level 3	
13,000.0	6,706.3	13,110.6	6,806.6	124.1	124.5	106.96	-6,369.8	-824.9	343.8	106.3	237.50	1.448 Level 3	
13,100.0	6,705.9	13,210.6	6,806.4	126.0	126.4	106.99	-6,469.8	-824.9	343.9	102.7	241.14	1.426 Level 3	
13,200.0	6,705.5	13,310.6	6,806.2	127.9	128.3	107.02	-6,569.8	-824.9	343.9	99.2	244.77	1.405 Level 3	
13,300.0	6,705.1	13,410.6	6,806.0	129.8	130.2	107.06	-6,669.8	-824.9	344.0	95.6	248.41	1.385 Level 3	
13,400.0	6,704.7	13,510.6	6,805.8	131.7	132.1	107.09	-6,769.8	-824.9	344.0	92.0	252.04	1.365 Level 3	
13,500.0	6,704.3	13,610.6	6,805.6	133.6	134.0	107.12	-6,869.8	-824.9	344.1	88.4	255.67	1.346 Level 3	
13,600.0	6,703.9	13,710.6	6,805.4	135.5	135.9	107.16	-6,969.8	-824.9	344.2	84.9	259.31	1.327 Level 3	
13,700.0	6,703.5	13,810.6	6,805.2	137.4	137.8	107.19	-7,069.8	-824.9	344.2	81.3	262.94	1.309 Level 3	
13,800.0	6,703.1	13,910.6	6,805.1	139.3	139.7	107.22	-7,169.8	-824.9	344.3	77.7	266.57	1.292 Level 3	
13,829.7	6,703.0	13,939.5	6,805.0	139.9	140.2	107.23	-7,198.7	-824.9	344.3	76.7	267.63	1.286 Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	58.5	58.5				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	58.5	58.5	58.3	0.22	261.619	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	58.5	58.5	57.8	0.67	87.061	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	58.5	58.5	57.4	1.12	52.167	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	58.5	58.5	56.9	1.57	37.241	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	58.5	58.5	56.5	2.02	28.956	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	58.5	58.5	56.0	2.47	23.686	CC, ES
700.0	700.0	699.0	699.0	1.5	1.5	158.65	158.65	0.0	58.5	60.1	57.2	2.91	20.646	
800.0	799.8	798.8	798.8	1.7	1.7	160.30	160.30	0.0	58.5	65.0	61.7	3.35	19.415	
900.0	899.5	898.5	898.5	1.9	1.9	162.54	162.54	0.0	58.5	73.3	69.5	3.79	19.347	
1,000.0	998.9	997.9	997.9	2.2	2.1	164.77	164.77	0.0	58.5	83.7	79.5	4.23	19.791	
1,100.0	1,098.3	1,097.3	1,097.3	2.4	2.4	166.50	166.50	0.0	58.5	94.3	89.6	4.68	20.162	
1,200.0	1,197.7	1,196.7	1,196.7	2.7	2.6	167.89	167.89	0.0	58.5	104.9	99.8	5.12	20.472	
1,300.0	1,297.1	1,296.1	1,296.1	3.0	2.8	169.02	169.02	0.0	58.5	115.5	110.0	5.57	20.734	
1,400.0	1,396.5	1,395.5	1,395.5	3.3	3.0	169.96	169.96	0.0	58.5	126.2	120.2	6.02	20.958	
1,500.0	1,495.9	1,494.9	1,494.9	3.6	3.2	170.75	170.75	0.0	58.5	137.0	130.5	6.48	21.151	
1,600.0	1,595.3	1,594.3	1,594.3	3.8	3.5	171.43	171.43	0.0	58.5	147.7	140.8	6.93	21.319	
1,700.0	1,694.7	1,693.7	1,693.7	4.1	3.7	172.02	172.02	0.0	58.5	158.5	151.1	7.38	21.467	
1,800.0	1,794.1	1,793.1	1,793.1	4.4	3.9	172.53	172.53	0.0	58.5	169.3	161.4	7.84	21.598	
1,900.0	1,893.5	1,892.5	1,892.5	4.7	4.1	172.98	172.98	0.0	58.5	180.1	171.8	8.29	21.714	
2,000.0	1,992.9	1,991.9	1,991.9	5.0	4.4	173.38	173.38	0.0	58.5	190.9	182.1	8.75	21.818	
2,100.0	2,092.3	2,091.3	2,091.3	5.3	4.6	173.74	173.74	0.0	58.5	201.7	192.5	9.20	21.912	
2,200.0	2,191.7	2,190.7	2,190.7	5.6	4.8	174.06	174.06	0.0	58.5	212.5	202.8	9.66	21.996	
2,300.0	2,291.1	2,290.1	2,290.1	5.9	5.0	174.34	174.34	0.0	58.5	223.3	213.2	10.12	22.073	
2,400.0	2,390.6	2,389.6	2,389.6	6.2	5.3	174.61	174.61	0.0	58.5	234.1	223.6	10.57	22.144	
2,500.0	2,490.0	2,489.0	2,489.0	6.5	5.5	174.85	174.85	0.0	58.5	245.0	233.9	11.03	22.208	
2,600.0	2,589.4	2,588.4	2,588.4	6.8	5.7	174.77	174.77	1.2	59.1	256.1	244.6	11.48	22.299	
2,700.0	2,688.8	2,687.8	2,687.8	7.1	5.9	174.00	174.00	5.2	61.3	267.8	255.9	11.93	22.443	
2,800.0	2,788.2	2,787.2	2,787.2	7.4	6.1	172.64	172.64	12.2	65.0	280.4	268.0	12.39	22.636	
2,900.0	2,887.6	2,886.6	2,886.6	7.7	6.4	170.99	170.99	21.1	69.7	293.6	280.8	12.85	22.850	
3,000.0	2,987.0	2,986.0	2,986.0	8.0	6.6	169.47	169.47	30.0	74.4	307.1	293.8	13.32	23.055	
3,100.0	3,086.4	3,085.4	3,085.4	8.3	6.8	168.08	168.08	38.9	79.1	320.8	307.0	13.80	23.250	
3,200.0	3,185.8	3,184.8	3,184.8	8.6	7.1	166.80	166.80	47.8	83.8	334.6	320.3	14.28	23.436	
3,300.0	3,285.2	3,284.2	3,284.2	8.9	7.3	165.63	165.63	56.7	88.5	348.6	333.8	14.76	23.613	
3,400.0	3,384.6	3,383.6	3,383.6	9.2	7.5	164.54	164.54	65.6	93.2	362.7	347.5	15.25	23.782	
3,500.0	3,484.0	3,483.0	3,483.0	9.5	7.8	163.54	163.54	74.5	97.9	376.9	361.2	15.74	23.943	
3,600.0	3,583.4	3,582.4	3,582.4	9.8	8.0	162.61	162.61	83.4	102.7	391.3	375.0	16.24	24.097	
3,700.0	3,682.8	3,681.8	3,681.8	10.1	8.3	161.75	161.75	92.3	107.4	405.7	389.0	16.74	24.243	
3,800.0	3,782.2	3,781.2	3,781.2	10.4	8.5	160.94	160.94	101.2	112.1	420.2	403.0	17.23	24.383	
3,900.0	3,881.6	3,880.6	3,880.6	10.7	8.8	160.19	160.19	110.1	116.8	434.8	417.1	17.74	24.516	
4,000.0	3,981.1	3,980.1	3,980.1	11.0	9.1	159.49	159.49	119.0	121.5	449.5	431.3	18.24	24.643	
4,100.0	4,080.5	4,079.5	4,079.5	11.3	9.3	158.83	158.83	127.9	126.2	464.2	445.5	18.74	24.765	
4,200.0	4,179.9	4,178.9	4,178.9	11.6	9.6	158.21	158.21	136.8	131.0	479.0	459.8	19.25	24.882	
4,300.0	4,279.3	4,278.3	4,278.3	11.9	9.8	157.63	157.63	145.7	135.7	493.8	474.1	19.76	24.993	
4,400.0	4,378.7	4,377.7	4,377.7	12.2	10.1	157.08	157.08	154.6	140.4	508.7	488.5	20.27	25.100	
4,500.0	4,478.1	4,477.1	4,477.1	12.5	10.4	156.57	156.57	163.5	145.1	523.6	502.9	20.78	25.203	
4,600.0	4,577.5	4,576.5	4,576.5	12.8	10.6	156.08	156.08	172.4	149.8	538.6	517.3	21.29	25.301	
4,700.0	4,676.9	4,675.9	4,675.9	13.2	10.9	155.62	155.62	181.3	154.5	553.6	531.8	21.80	25.396	
4,800.0	4,776.3	4,775.3	4,775.3	13.5	11.2	155.19	155.19	190.3	159.3	568.5	546.2	22.31	25.483	
4,900.0	4,875.7	4,874.7	4,874.7	13.8	11.4	155.05	155.05	197.0	162.8	581.8	559.0	22.78	25.539	
5,000.0	4,975.1	4,974.1	4,974.1	14.1	11.6	155.27	155.27	199.9	164.3	593.2	570.0	23.22	25.544	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,074.5	5,084.6	5,073.5	14.4	11.8	155.70		200.0	164.4	603.2	579.5	23.65	25.507	
5,200.0	5,173.9	5,184.0	5,172.9	14.7	12.0	156.12		200.0	164.4	613.1	589.0	24.09	25.451	
5,300.0	5,273.3	5,283.4	5,272.3	15.0	12.2	156.52		200.0	164.4	623.1	598.6	24.54	25.394	
5,400.0	5,372.7	5,382.8	5,371.7	15.3	12.4	156.92		200.0	164.4	633.1	608.1	24.98	25.340	
5,500.0	5,472.2	5,482.2	5,471.2	15.6	12.6	157.30		200.0	164.4	643.1	617.7	25.43	25.290	
5,600.0	5,571.7	5,581.7	5,570.7	15.8	12.8	157.68		200.0	164.4	652.1	626.2	25.88	25.193	
5,700.0	5,671.5	5,681.5	5,670.5	16.0	13.0	157.93		200.0	164.4	657.8	631.5	26.29	25.025	
5,800.0	5,771.4	5,781.5	5,770.4	16.2	13.3	158.04		200.0	164.4	660.4	633.7	26.66	24.768	
5,900.0	5,871.4	5,881.5	5,870.4	16.3	13.5	90.00		200.0	164.4	660.5	633.4	27.05	24.416	
5,933.1	5,904.5	5,914.6	5,903.5	16.4	13.5	-89.98		199.8	164.4	660.5	633.3	27.18	24.304	
6,000.0	5,971.4	5,981.2	5,969.9	16.5	13.6	-89.59		195.3	164.4	660.5	633.1	27.39	24.116	
6,100.0	6,071.1	6,079.4	6,066.5	16.6	13.7	-88.71		178.1	164.4	660.7	633.1	27.60	23.935	
6,200.0	6,169.0	6,176.3	6,159.0	16.7	13.8	-87.85		149.2	164.4	661.0	633.2	27.74	23.831	
6,300.0	6,263.3	6,272.2	6,246.1	16.8	13.8	-87.03		109.3	164.4	661.4	633.6	27.84	23.761	
6,400.0	6,352.6	6,366.9	6,326.6	16.8	13.9	-86.27		59.5	164.4	661.9	633.9	27.97	23.669	
6,500.0	6,435.3	6,460.8	6,399.7	16.9	14.0	-85.57		0.7	164.4	662.5	634.3	28.20	23.496	
6,600.0	6,509.9	6,553.8	6,464.5	17.0	14.1	-84.94		-66.0	164.4	663.1	634.5	28.60	23.186	
6,700.0	6,575.2	6,646.2	6,520.3	17.1	14.5	-84.40		-139.5	164.4	663.7	634.4	29.24	22.696	
6,800.0	6,630.1	6,737.9	6,566.6	17.3	15.0	-83.94		-218.7	164.4	664.2	634.0	30.18	22.012	
6,900.0	6,673.7	6,829.2	6,602.9	17.8	15.7	-83.59		-302.4	164.4	664.7	633.2	31.42	21.155	
7,000.0	6,705.1	6,920.1	6,628.8	18.4	16.5	-83.33		-389.4	164.4	665.0	632.0	32.97	20.168	
7,100.0	6,723.8	7,010.8	6,644.3	19.2	17.4	-83.18		-478.8	164.4	665.2	630.4	34.81	19.108	
7,200.0	6,729.6	7,101.7	6,649.0	20.2	18.5	-83.13		-569.5	164.4	665.3	628.4	36.90	18.028	
7,300.0	6,729.2	7,201.7	6,648.8	21.4	19.7	-83.14		-669.5	164.4	665.3	625.9	39.37	16.896	
7,400.0	6,728.8	7,301.7	6,648.6	22.7	21.1	-83.16		-769.5	164.4	665.2	623.2	42.05	15.820	
7,500.0	6,728.4	7,401.7	6,648.4	24.0	22.5	-83.17		-869.5	164.4	665.2	620.3	44.89	14.819	
7,600.0	6,728.0	7,501.7	6,648.1	25.4	24.0	-83.19		-969.5	164.4	665.2	617.3	47.87	13.896	
7,700.0	6,727.6	7,601.7	6,647.9	26.9	25.6	-83.20		-1,069.5	164.4	665.2	614.2	50.96	13.053	
7,800.0	6,727.2	7,701.7	6,647.7	28.5	27.2	-83.22		-1,169.5	164.4	665.2	611.0	54.14	12.285	
7,900.0	6,726.8	7,801.7	6,647.4	30.0	28.8	-83.23		-1,269.5	164.4	665.1	607.7	57.40	11.587	
8,000.0	6,726.4	7,901.7	6,647.2	31.7	30.5	-83.25		-1,369.5	164.4	665.1	604.4	60.73	10.952	
8,100.0	6,726.0	8,001.7	6,647.0	33.3	32.2	-83.26		-1,469.5	164.4	665.1	601.0	64.11	10.374	
8,200.0	6,725.6	8,101.7	6,646.8	35.0	34.0	-83.28		-1,569.5	164.4	665.1	597.5	67.54	9.847	
8,300.0	6,725.2	8,201.7	6,646.5	36.7	35.7	-83.29		-1,669.5	164.4	665.0	594.0	71.01	9.365	
8,400.0	6,724.8	8,301.7	6,646.3	38.4	37.5	-83.31		-1,769.5	164.4	665.0	590.5	74.52	8.925	
8,500.0	6,724.4	8,401.7	6,646.1	40.1	39.3	-83.32		-1,869.5	164.4	665.0	587.0	78.05	8.520	
8,600.0	6,724.0	8,501.7	6,645.9	41.9	41.0	-83.34		-1,969.5	164.4	665.0	583.4	81.61	8.148	
8,700.0	6,723.6	8,601.7	6,645.6	43.7	42.8	-83.35		-2,069.5	164.4	665.0	579.8	85.19	7.805	
8,800.0	6,723.2	8,701.7	6,645.4	45.5	44.7	-83.37		-2,169.5	164.4	664.9	576.1	88.80	7.488	
8,900.0	6,722.8	8,801.7	6,645.2	47.2	46.5	-83.38		-2,269.5	164.4	664.9	572.5	92.42	7.195	
9,000.0	6,722.4	8,901.7	6,644.9	49.0	48.3	-83.40		-2,369.5	164.4	664.9	568.9	96.06	6.922	
9,100.0	6,722.0	9,001.7	6,644.7	50.9	50.2	-83.41		-2,469.5	164.4	664.9	565.2	99.71	6.668	
9,200.0	6,721.6	9,101.7	6,644.5	52.7	52.0	-83.43		-2,569.5	164.4	664.9	561.5	103.37	6.432	
9,300.0	6,721.2	9,201.7	6,644.3	54.5	53.8	-83.44		-2,669.5	164.4	664.8	557.8	107.05	6.211	
9,400.0	6,720.8	9,301.7	6,644.0	56.3	55.7	-83.46		-2,769.5	164.4	664.8	554.1	110.73	6.004	
9,500.0	6,720.4	9,401.7	6,643.8	58.2	57.6	-83.47		-2,869.5	164.4	664.8	550.4	114.42	5.810	
9,600.0	6,720.0	9,501.7	6,643.6	60.0	59.4	-83.49		-2,969.5	164.4	664.8	546.7	118.13	5.628	
9,700.0	6,719.6	9,601.7	6,643.4	61.9	61.3	-83.50		-3,069.5	164.4	664.8	542.9	121.84	5.456	
9,800.0	6,719.2	9,701.7	6,643.1	63.7	63.1	-83.52		-3,169.5	164.4	664.7	539.2	125.56	5.294	
9,900.0	6,718.8	9,801.7	6,642.9	65.6	65.0	-83.53		-3,269.5	164.4	664.7	535.4	129.28	5.142	
10,000.0	6,718.4	9,901.7	6,642.7	67.4	66.9	-83.55		-3,369.5	164.4	664.7	531.7	133.01	4.997	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-203 - Wellbore #1 - Plan #1 (12-30-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	6,718.0	10,001.7	6,642.5	69.3	68.8	-83.56	-3,469.5	164.4	664.7	527.9	136.75	4.861		
10,200.0	6,717.6	10,101.7	6,642.2	71.2	70.7	-83.58	-3,569.5	164.4	664.7	524.2	140.49	4.731		
10,300.0	6,717.2	10,201.7	6,642.0	73.0	72.5	-83.59	-3,669.5	164.4	664.6	520.4	144.23	4.608		
10,400.0	6,716.8	10,301.7	6,641.8	74.9	74.4	-83.61	-3,769.5	164.4	664.6	516.6	147.98	4.491		
10,500.0	6,716.4	10,401.7	6,641.5	76.8	76.3	-83.62	-3,869.5	164.4	664.6	512.9	151.73	4.380		
10,600.0	6,716.0	10,501.7	6,641.3	78.6	78.2	-83.64	-3,969.5	164.4	664.6	509.1	155.49	4.274		
10,700.0	6,715.6	10,601.7	6,641.1	80.5	80.1	-83.65	-4,069.5	164.4	664.6	505.3	159.25	4.173		
10,800.0	6,715.2	10,701.7	6,640.9	82.4	82.0	-83.67	-4,169.5	164.4	664.6	501.5	163.01	4.077		
10,900.0	6,714.8	10,801.7	6,640.6	84.3	83.9	-83.68	-4,269.5	164.4	664.5	497.8	166.78	3.984		
11,000.0	6,714.4	10,901.7	6,640.4	86.2	85.8	-83.70	-4,369.5	164.4	664.5	494.0	170.55	3.896		
11,100.0	6,714.0	11,001.7	6,640.2	88.0	87.6	-83.71	-4,469.5	164.4	664.5	490.2	174.32	3.812		
11,200.0	6,713.6	11,101.7	6,640.0	89.9	89.5	-83.73	-4,569.5	164.4	664.5	486.4	178.10	3.731		
11,300.0	6,713.2	11,201.7	6,639.7	91.8	91.4	-83.74	-4,669.5	164.4	664.5	482.6	181.87	3.653		
11,400.0	6,712.8	11,301.7	6,639.5	93.7	93.3	-83.76	-4,769.5	164.4	664.4	478.8	185.65	3.579		
11,500.0	6,712.3	11,401.7	6,639.3	95.6	95.2	-83.77	-4,869.5	164.4	664.4	475.0	189.44	3.507		
11,600.0	6,711.9	11,501.7	6,639.0	97.5	97.1	-83.79	-4,969.5	164.4	664.4	471.2	193.22	3.439		
11,700.0	6,711.5	11,601.7	6,638.8	99.4	99.0	-83.80	-5,069.5	164.4	664.4	467.4	197.00	3.372		
11,800.0	6,711.1	11,701.7	6,638.6	101.3	100.9	-83.82	-5,169.5	164.4	664.4	463.6	200.79	3.309		
11,900.0	6,710.7	11,801.7	6,638.4	103.2	102.8	-83.83	-5,269.5	164.4	664.3	459.8	204.58	3.247		
12,000.0	6,710.3	11,901.7	6,638.1	105.1	104.7	-83.85	-5,369.5	164.4	664.3	456.0	208.37	3.188		
12,100.0	6,709.9	12,001.7	6,637.9	107.0	106.6	-83.86	-5,469.5	164.4	664.3	452.1	212.16	3.131		
12,200.0	6,709.5	12,101.7	6,637.7	108.9	108.5	-83.88	-5,569.5	164.4	664.3	448.3	215.96	3.076		
12,300.0	6,709.1	12,201.7	6,637.5	110.8	110.4	-83.89	-5,669.5	164.4	664.3	444.5	219.75	3.023		
12,400.0	6,708.7	12,301.7	6,637.2	112.7	112.4	-83.91	-5,769.5	164.4	664.3	440.7	223.55	2.971		
12,500.0	6,708.3	12,401.7	6,637.0	114.6	114.3	-83.92	-5,869.5	164.4	664.2	436.9	227.34	2.922		
12,600.0	6,707.9	12,501.7	6,636.8	116.5	116.2	-83.94	-5,969.5	164.4	664.2	433.1	231.14	2.874		
12,700.0	6,707.5	12,601.7	6,636.6	118.4	118.1	-83.95	-6,069.5	164.4	664.2	429.3	234.94	2.827		
12,800.0	6,707.1	12,701.7	6,636.3	120.3	120.0	-83.97	-6,169.5	164.4	664.2	425.4	238.74	2.782		
12,900.0	6,706.7	12,801.7	6,636.1	122.2	121.9	-83.98	-6,269.5	164.4	664.2	421.6	242.54	2.738		
13,000.0	6,706.3	12,901.7	6,635.9	124.1	123.8	-84.00	-6,369.5	164.4	664.1	417.8	246.35	2.696		
13,100.0	6,705.9	13,001.7	6,635.6	126.0	125.7	-84.01	-6,469.5	164.4	664.1	414.0	250.15	2.655		
13,200.0	6,705.5	13,101.7	6,635.4	127.9	127.6	-84.03	-6,569.5	164.4	664.1	410.1	253.96	2.615		
13,300.0	6,705.1	13,201.7	6,635.2	129.8	129.5	-84.04	-6,669.5	164.4	664.1	406.3	257.76	2.576		
13,400.0	6,704.7	13,301.7	6,635.0	131.7	131.4	-84.06	-6,769.5	164.4	664.1	402.5	261.57	2.539		
13,500.0	6,704.3	13,401.7	6,634.7	133.6	133.3	-84.07	-6,869.5	164.4	664.0	398.7	265.38	2.502		
13,600.0	6,703.9	13,501.7	6,634.5	135.5	135.2	-84.09	-6,969.5	164.4	664.0	394.8	269.18	2.467		
13,700.0	6,703.5	13,601.7	6,634.3	137.4	137.2	-84.10	-7,069.5	164.4	664.0	391.0	272.99	2.432		
13,800.0	6,703.1	13,701.7	6,634.1	139.3	139.1	-84.12	-7,169.5	164.4	664.0	387.2	276.80	2.399		
13,823.8	6,703.0	13,725.5	6,634.0	139.8	139.5	-84.12	-7,193.2	164.4	664.0	386.3	277.71	2.391		
13,829.7	6,703.0	13,727.3	6,634.0	139.9	139.6	-84.12	-7,195.1	164.4	664.0	386.1	277.86	2.390 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-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	90.00	0.0	30.6	30.7					
100.0	100.0	99.0	99.0	0.1	0.1	90.00	0.0	30.6	30.6	30.4	0.22	137.039		
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	30.6	30.6	30.0	0.67	45.604		
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	30.6	30.6	29.5	1.12	27.326		
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	30.6	30.6	29.1	1.57	19.507		
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	30.6	30.6	28.6	2.02	15.167		
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	30.6	30.6	28.2	2.47	12.407 CC, ES		
700.0	700.0	699.0	699.0	1.5	1.5	159.19	0.0	30.6	32.3	29.4	2.91	11.081		
800.0	799.8	798.8	798.8	1.7	1.7	162.02	0.0	30.6	37.2	33.9	3.35	11.109		
900.0	899.5	899.7	899.6	1.9	1.9	164.02	1.2	29.4	44.2	40.5	3.78	11.693		
1,000.0	998.9	1,000.4	1,000.3	2.2	2.1	163.71	4.9	25.8	50.7	46.5	4.22	12.023		
1,100.0	1,098.3	1,100.3	1,099.9	2.4	2.4	162.79	9.3	21.4	56.4	51.7	4.66	12.090		
1,200.0	1,197.7	1,200.1	1,199.6	2.7	2.6	162.03	13.7	17.1	62.1	57.0	5.12	12.132		
1,300.0	1,297.1	1,300.0	1,299.2	3.0	2.8	161.41	18.1	12.7	67.8	62.2	5.58	12.157		
1,400.0	1,396.5	1,399.8	1,398.9	3.3	3.1	160.88	22.5	8.3	73.5	67.4	6.04	12.171		
1,500.0	1,495.9	1,499.6	1,498.5	3.6	3.3	160.43	27.0	4.0	79.2	72.7	6.50	12.178		
1,600.0	1,595.3	1,599.5	1,598.1	3.8	3.5	160.04	31.4	-0.4	84.9	77.9	6.97	12.180		
1,700.0	1,694.7	1,699.3	1,697.8	4.1	3.8	159.69	35.8	-4.7	90.6	83.2	7.44	12.178		
1,800.0	1,794.1	1,799.1	1,797.4	4.4	4.0	159.39	40.2	-9.1	96.4	88.4	7.92	12.173		
1,900.0	1,893.5	1,899.0	1,897.1	4.7	4.3	159.13	44.6	-13.5	102.1	93.7	8.39	12.167		
2,000.0	1,992.9	1,998.8	1,996.7	5.0	4.5	158.89	49.0	-17.8	107.8	98.9	8.87	12.160		
2,100.0	2,092.3	2,098.6	2,096.4	5.3	4.8	158.67	53.4	-22.2	113.5	104.2	9.34	12.153		
2,200.0	2,191.7	2,198.5	2,196.0	5.6	5.0	158.48	57.8	-26.5	119.3	109.5	9.82	12.145		
2,300.0	2,291.1	2,298.3	2,295.6	5.9	5.3	158.30	62.2	-30.9	125.0	114.7	10.30	12.137		
2,400.0	2,390.6	2,398.1	2,395.3	6.2	5.5	158.14	66.6	-35.3	130.7	120.0	10.78	12.129		
2,500.0	2,490.0	2,498.0	2,494.9	6.5	5.8	157.99	71.0	-39.6	136.5	125.2	11.26	12.120		
2,600.0	2,589.4	2,597.8	2,594.6	6.8	6.0	157.86	75.4	-44.0	142.2	130.5	11.74	12.112		
2,700.0	2,688.8	2,697.6	2,694.2	7.1	6.2	157.73	79.8	-48.3	147.9	135.7	12.22	12.104		
2,800.0	2,788.2	2,797.5	2,793.8	7.4	6.5	157.62	84.2	-52.7	153.7	141.0	12.70	12.097		
2,900.0	2,887.6	2,897.3	2,893.5	7.7	6.7	157.51	88.7	-57.1	159.4	146.2	13.19	12.089		
3,000.0	2,987.0	2,997.1	2,993.1	8.0	7.0	157.41	93.1	-61.4	165.2	151.5	13.67	12.082		
3,100.0	3,086.4	3,097.0	3,092.8	8.3	7.2	157.31	97.5	-65.8	170.9	156.7	14.15	12.075		
3,200.0	3,185.8	3,196.8	3,192.4	8.6	7.5	157.23	101.9	-70.1	176.6	162.0	14.64	12.068		
3,300.0	3,285.2	3,296.6	3,292.1	8.9	7.7	157.15	106.3	-74.5	182.4	167.3	15.12	12.062		
3,400.0	3,384.6	3,396.5	3,391.7	9.2	8.0	157.07	110.7	-78.9	188.1	172.5	15.60	12.055		
3,500.0	3,484.0	3,496.3	3,491.3	9.5	8.2	157.00	115.1	-83.2	193.9	177.8	16.09	12.049		
3,600.0	3,583.4	3,596.2	3,591.0	9.8	8.5	156.93	119.5	-87.6	199.6	183.0	16.57	12.043		
3,700.0	3,682.8	3,696.0	3,690.6	10.1	8.7	156.86	123.9	-91.9	205.3	188.3	17.06	12.038		
3,800.0	3,782.2	3,795.8	3,790.3	10.4	9.0	156.80	128.3	-96.3	211.1	193.5	17.54	12.032		
3,900.0	3,881.6	3,895.7	3,889.9	10.7	9.2	156.75	132.7	-100.7	216.8	198.8	18.03	12.027		
4,000.0	3,981.1	3,995.5	3,989.6	11.0	9.5	156.69	137.1	-105.0	222.6	204.0	18.51	12.022		
4,100.0	4,080.5	4,095.3	4,089.2	11.3	9.7	156.64	141.5	-109.4	228.3	209.3	19.00	12.017		
4,200.0	4,179.9	4,195.2	4,188.8	11.6	10.0	156.59	145.9	-113.7	234.0	214.6	19.48	12.012		
4,300.0	4,279.3	4,295.0	4,288.5	11.9	10.2	156.54	150.4	-118.1	239.8	219.8	19.97	12.007		
4,400.0	4,378.7	4,394.8	4,388.1	12.2	10.5	156.50	154.8	-122.5	245.5	225.1	20.46	12.003		
4,500.0	4,478.1	4,494.7	4,487.8	12.5	10.7	156.46	159.2	-126.8	251.3	230.3	20.94	11.999		
4,600.0	4,577.5	4,594.5	4,587.4	12.8	11.0	156.42	163.6	-131.2	257.0	235.6	21.43	11.994		
4,700.0	4,676.9	4,694.3	4,687.0	13.2	11.2	156.38	168.0	-135.5	262.7	240.8	21.91	11.990		
4,800.0	4,776.3	4,794.2	4,786.7	13.5	11.5	156.34	172.4	-139.9	268.5	246.1	22.40	11.987		
4,900.0	4,875.7	4,894.0	4,886.3	13.8	11.7	156.30	176.8	-144.3	274.2	251.3	22.89	11.983		
5,000.0	4,975.1	4,993.8	4,986.0	14.1	12.0	156.27	181.2	-148.6	280.0	256.6	23.37	11.979		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-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	5,074.5	5,093.7	5,085.6	14.4	12.2	156.24		185.6	-153.0	285.7	261.9	23.86	11.976	
5,200.0	5,173.9	5,193.5	5,185.3	14.7	12.5	156.21		190.0	-157.4	291.5	267.1	24.34	11.972	
5,300.0	5,273.3	5,293.3	5,284.9	15.0	12.7	156.17		194.4	-161.7	297.2	272.4	24.83	11.969	
5,400.0	5,372.7	5,389.0	5,380.4	15.3	13.0	156.23		198.2	-165.5	303.4	278.1	25.29	11.998	
5,500.0	5,472.2	5,481.8	5,473.2	15.6	13.1	156.66		199.9	-167.1	311.6	285.9	25.68	12.136	
5,600.0	5,571.7	5,579.3	5,570.7	15.8	13.3	157.37		200.0	-167.2	320.4	294.4	26.06	12.297	
5,700.0	5,671.5	5,679.1	5,670.5	16.0	13.5	157.83		200.0	-167.2	326.2	299.8	26.42	12.348	
5,800.0	5,771.4	5,779.1	5,770.4	16.2	13.7	158.03		200.0	-167.2	328.7	302.0	26.76	12.283	
5,900.0	5,871.4	5,879.1	5,870.4	16.3	13.9	90.00		200.0	-167.2	328.9	301.7	27.14	12.116	
5,965.7	5,937.1	5,944.7	5,936.1	16.4	14.0	-90.03		200.0	-167.2	328.9	301.4	27.41	11.998	
6,000.0	5,971.4	5,979.1	5,970.4	16.5	14.1	-90.00		200.0	-167.2	328.9	301.3	27.55	11.938	
6,100.0	6,071.1	6,079.0	6,070.3	16.6	14.3	-91.19		199.5	-167.2	328.9	301.0	27.95	11.768	
6,200.0	6,169.0	6,180.0	6,170.8	16.7	14.4	-92.97		189.4	-167.2	329.3	301.0	28.26	11.652	
6,300.0	6,263.3	6,282.5	6,270.4	16.8	14.5	-94.70		165.6	-167.2	330.0	301.5	28.46	11.593	
6,400.0	6,352.6	6,386.4	6,367.2	16.8	14.6	-96.36		128.1	-167.2	330.9	302.3	28.60	11.572	
6,500.0	6,435.3	6,491.7	6,459.3	16.9	14.7	-97.91		77.1	-167.2	332.0	303.3	28.72	11.561	
6,600.0	6,509.9	6,598.4	6,544.4	17.0	14.7	-99.32		13.1	-167.2	333.3	304.4	28.93	11.519	
6,700.0	6,575.2	6,706.3	6,620.7	17.1	14.8	-100.56		-63.2	-167.2	334.6	305.2	29.35	11.399	
6,800.0	6,630.1	6,815.3	6,686.0	17.3	15.2	-101.61		-150.3	-167.2	335.7	305.7	30.08	11.161	
6,900.0	6,673.7	6,925.3	6,738.7	17.8	15.8	-102.44		-246.8	-167.2	336.8	305.6	31.22	10.787	
7,000.0	6,705.1	7,036.0	6,777.3	18.4	16.6	-103.05		-350.5	-167.2	337.6	304.8	32.82	10.286	
7,100.0	6,723.8	7,147.3	6,800.5	19.2	17.7	-103.41		-459.2	-167.2	338.1	303.2	34.87	9.696	
7,200.0	6,729.6	7,249.9	6,811.6	20.2	18.8	-104.16		-561.2	-167.2	339.3	302.1	37.15	9.132	
7,300.0	6,729.2	7,358.0	6,817.5	21.4	20.2	-105.19		-669.0	-167.2	340.8	301.2	39.55	8.615	
7,400.0	6,728.8	7,458.8	6,817.3	22.7	21.5	-105.23		-769.9	-167.2	340.8	298.7	42.16	8.084	
7,500.0	6,728.4	7,558.8	6,817.2	24.0	22.9	-105.26		-869.9	-167.2	340.9	296.0	44.91	7.591	
7,600.0	6,728.0	7,658.8	6,817.0	25.4	24.4	-105.30		-969.9	-167.2	340.9	293.2	47.79	7.135	
7,700.0	6,727.6	7,758.8	6,816.8	26.9	25.9	-105.33		-1,069.9	-167.2	341.0	290.2	50.77	6.716	
7,800.0	6,727.2	7,858.8	6,816.6	28.5	27.5	-105.37		-1,169.9	-167.2	341.0	287.2	53.85	6.333	
7,900.0	6,726.8	7,958.8	6,816.4	30.0	29.2	-105.40		-1,269.9	-167.2	341.1	284.1	57.01	5.984	
8,000.0	6,726.4	8,058.8	6,816.2	31.7	30.8	-105.43		-1,369.9	-167.2	341.2	280.9	60.22	5.665	
8,100.0	6,726.0	8,158.8	6,816.0	33.3	32.5	-105.47		-1,469.9	-167.2	341.2	277.7	63.50	5.374	
8,200.0	6,725.6	8,258.8	6,815.8	35.0	34.2	-105.50		-1,569.9	-167.2	341.3	274.5	66.81	5.108	
8,300.0	6,725.2	8,358.8	6,815.6	36.7	36.0	-105.54		-1,669.9	-167.2	341.3	271.2	70.17	4.864	
8,400.0	6,724.8	8,458.8	6,815.4	38.4	37.7	-105.57		-1,769.9	-167.2	341.4	267.8	73.56	4.641	
8,500.0	6,724.4	8,558.8	6,815.2	40.1	39.5	-105.60		-1,869.9	-167.2	341.4	264.5	76.98	4.436	
8,600.0	6,724.0	8,658.8	6,815.0	41.9	41.3	-105.64		-1,969.9	-167.2	341.5	261.1	80.42	4.246	
8,700.0	6,723.6	8,758.8	6,814.8	43.7	43.0	-105.67		-2,069.9	-167.2	341.6	257.7	83.89	4.072	
8,800.0	6,723.2	8,858.8	6,814.7	45.5	44.9	-105.70		-2,169.9	-167.2	341.6	254.2	87.37	3.910	
8,900.0	6,722.8	8,958.8	6,814.5	47.2	46.7	-105.74		-2,269.9	-167.2	341.7	250.8	90.87	3.760	
9,000.0	6,722.4	9,058.8	6,814.3	49.0	48.5	-105.77		-2,369.9	-167.2	341.7	247.3	94.39	3.620	
9,100.0	6,722.0	9,158.8	6,814.1	50.9	50.3	-105.81		-2,469.9	-167.2	341.8	243.9	97.92	3.490	
9,200.0	6,721.6	9,258.8	6,813.9	52.7	52.2	-105.84		-2,569.9	-167.2	341.8	240.4	101.46	3.369	
9,300.0	6,721.2	9,358.8	6,813.7	54.5	54.0	-105.87		-2,669.9	-167.2	341.9	236.9	105.01	3.256	
9,400.0	6,720.8	9,458.8	6,813.5	56.3	55.8	-105.91		-2,769.9	-167.2	341.9	233.4	108.57	3.150	
9,500.0	6,720.4	9,558.8	6,813.3	58.2	57.7	-105.94		-2,869.9	-167.2	342.0	229.9	112.14	3.050	
9,600.0	6,720.0	9,658.8	6,813.1	60.0	59.6	-105.97		-2,969.9	-167.2	342.1	226.3	115.72	2.956	
9,700.0	6,719.6	9,758.8	6,812.9	61.9	61.4	-106.01		-3,069.9	-167.2	342.1	222.8	119.30	2.868	
9,800.0	6,719.2	9,858.8	6,812.7	63.7	63.3	-106.04		-3,169.9	-167.2	342.2	219.3	122.89	2.785	
9,900.0	6,718.8	9,958.8	6,812.5	65.6	65.1	-106.08		-3,269.9	-167.2	342.2	215.8	126.48	2.706	
10,000.0	6,718.4	10,058.8	6,812.4	67.4	67.0	-106.11		-3,369.9	-167.2	342.3	212.2	130.08	2.631	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Churchill 28J-HZ Pad Sec.28-T5N-R64W - Churchill 28J-443 - Wellbore #1 - Plan #1 (12-30-13)											Offset Site Error:	0.0 ft	
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,100.0	6,718.0	10,158.8	6,812.2	69.3	68.9	-106.14	-3,469.9	-167.2	342.4	208.7	133.68	2.561			
10,200.0	6,717.6	10,258.8	6,812.0	71.2	70.8	-106.18	-3,569.9	-167.2	342.4	205.1	137.29	2.494			
10,300.0	6,717.2	10,358.8	6,811.8	73.0	72.6	-106.21	-3,669.9	-167.2	342.5	201.6	140.90	2.431			
10,400.0	6,716.8	10,458.8	6,811.6	74.9	74.5	-106.24	-3,769.9	-167.2	342.5	198.0	144.51	2.370			
10,500.0	6,716.4	10,558.8	6,811.4	76.8	76.4	-106.28	-3,869.9	-167.2	342.6	194.5	148.13	2.313			
10,600.0	6,716.0	10,658.8	6,811.2	78.6	78.3	-106.31	-3,969.9	-167.2	342.6	190.9	151.75	2.258			
10,700.0	6,715.6	10,758.8	6,811.0	80.5	80.2	-106.35	-4,069.9	-167.2	342.7	187.3	155.37	2.206			
10,800.0	6,715.2	10,858.8	6,810.8	82.4	82.1	-106.38	-4,169.9	-167.2	342.8	183.8	158.99	2.156			
10,900.0	6,714.8	10,958.8	6,810.6	84.3	83.9	-106.41	-4,269.9	-167.2	342.8	180.2	162.61	2.108			
11,000.0	6,714.4	11,058.8	6,810.4	86.2	85.8	-106.45	-4,369.9	-167.2	342.9	176.6	166.24	2.063			
11,100.0	6,714.0	11,158.8	6,810.2	88.0	87.7	-106.48	-4,469.9	-167.2	342.9	173.1	169.87	2.019			
11,200.0	6,713.6	11,258.8	6,810.0	89.9	89.6	-106.51	-4,569.9	-167.2	343.0	169.5	173.50	1.977			
11,300.0	6,713.2	11,358.8	6,809.9	91.8	91.5	-106.55	-4,669.9	-167.2	343.1	165.9	177.13	1.937			
11,400.0	6,712.8	11,458.8	6,809.7	93.7	93.4	-106.58	-4,769.9	-167.2	343.1	162.4	180.76	1.898			
11,500.0	6,712.3	11,558.8	6,809.5	95.6	95.3	-106.61	-4,869.9	-167.2	343.2	158.8	184.39	1.861			
11,600.0	6,711.9	11,658.8	6,809.3	97.5	97.2	-106.65	-4,969.9	-167.2	343.2	155.2	188.02	1.826			
11,700.0	6,711.5	11,758.8	6,809.1	99.4	99.1	-106.68	-5,069.9	-167.2	343.3	151.6	191.65	1.791			
11,800.0	6,711.1	11,858.8	6,808.9	101.3	101.0	-106.71	-5,169.9	-167.2	343.4	148.1	195.29	1.758			
11,900.0	6,710.7	11,958.8	6,808.7	103.2	102.9	-106.75	-5,269.8	-167.2	343.4	144.5	198.92	1.726			
12,000.0	6,710.3	12,058.8	6,808.5	105.1	104.8	-106.78	-5,369.8	-167.2	343.5	140.9	202.56	1.696			
12,100.0	6,709.9	12,158.8	6,808.3	107.0	106.7	-106.81	-5,469.8	-167.2	343.5	137.4	206.19	1.666			
12,200.0	6,709.5	12,258.8	6,808.1	108.9	108.6	-106.85	-5,569.8	-167.2	343.6	133.8	209.83	1.638			
12,300.0	6,709.1	12,358.8	6,807.9	110.8	110.5	-106.88	-5,669.8	-167.2	343.7	130.2	213.46	1.610			
12,400.0	6,708.7	12,458.8	6,807.7	112.7	112.4	-106.91	-5,769.8	-167.2	343.7	126.6	217.10	1.583			
12,500.0	6,708.3	12,558.8	6,807.6	114.6	114.3	-106.95	-5,869.8	-167.2	343.8	123.1	220.73	1.557			
12,600.0	6,707.9	12,658.8	6,807.4	116.5	116.2	-106.98	-5,969.8	-167.2	343.8	119.5	224.37	1.533			
12,700.0	6,707.5	12,758.8	6,807.2	118.4	118.1	-107.01	-6,069.8	-167.2	343.9	115.9	228.00	1.508			
12,800.0	6,707.1	12,858.8	6,807.0	120.3	120.0	-107.05	-6,169.8	-167.2	344.0	112.3	231.64	1.485 Level 3			
12,900.0	6,706.7	12,958.8	6,806.8	122.2	121.9	-107.08	-6,269.8	-167.2	344.0	108.8	235.27	1.462 Level 3			
13,000.0	6,706.3	13,058.8	6,806.6	124.1	123.8	-107.11	-6,369.8	-167.2	344.1	105.2	238.91	1.440 Level 3			
13,100.0	6,705.9	13,158.8	6,806.4	126.0	125.7	-107.15	-6,469.8	-167.2	344.2	101.6	242.54	1.419 Level 3			
13,200.0	6,705.5	13,258.8	6,806.2	127.9	127.7	-107.18	-6,569.8	-167.2	344.2	98.0	246.17	1.398 Level 3			
13,300.0	6,705.1	13,358.8	6,806.0	129.8	129.6	-107.21	-6,669.8	-167.2	344.3	94.5	249.81	1.378 Level 3			
13,400.0	6,704.7	13,458.8	6,805.8	131.7	131.5	-107.25	-6,769.8	-167.2	344.3	90.9	253.44	1.359 Level 3			
13,500.0	6,704.3	13,558.8	6,805.6	133.6	133.4	-107.28	-6,869.8	-167.2	344.4	87.3	257.07	1.340 Level 3			
13,600.0	6,703.9	13,658.8	6,805.4	135.5	135.3	-107.31	-6,969.8	-167.2	344.5	83.8	260.70	1.321 Level 3			
13,700.0	6,703.5	13,758.8	6,805.2	137.4	137.2	-107.35	-7,069.8	-167.2	344.5	80.2	264.33	1.303 Level 3			
13,800.0	6,703.1	13,858.8	6,805.1	139.3	139.1	-107.38	-7,169.8	-167.2	344.6	76.6	267.96	1.286 Level 3			
13,829.7	6,703.0	13,888.1	6,805.0	139.9	139.7	-107.39	-7,199.2	-167.2	344.6	75.6	269.03	1.281 Level 3, SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	23.0	23.0	0.0	0.5	-169.85	-3,067.5	-548.9	3,116.2	3,115.8	0.46	6,771.452		
100.0	100.0	123.0	123.0	0.1	2.5	-169.85	-3,067.5	-548.9	3,116.2	3,113.6	2.57	1,211.320		
200.0	200.0	223.0	223.0	0.3	4.5	-169.85	-3,067.5	-548.9	3,116.2	3,111.4	4.80	649.572		
300.0	300.0	323.0	323.0	0.6	6.5	-169.85	-3,067.5	-548.9	3,116.2	3,109.2	7.02	443.773		
400.0	400.0	423.0	423.0	0.8	8.5	-169.85	-3,067.5	-548.9	3,116.2	3,107.0	9.25	337.002		
500.0	500.0	523.0	523.0	1.0	10.5	-169.85	-3,067.5	-548.9	3,116.2	3,104.7	11.47	271.646		
600.0	600.0	623.0	623.0	1.2	12.5	-169.85	-3,067.5	-548.9	3,116.2	3,102.5	13.70	227.521		
700.0	700.0	723.0	723.0	1.5	14.5	-101.84	-3,067.5	-548.9	3,116.6	3,100.7	15.91	195.849		
800.0	799.8	822.8	822.8	1.7	16.5	-101.91	-3,067.5	-548.9	3,117.7	3,099.5	18.13	171.992		
900.0	899.5	922.5	922.5	1.9	18.4	-102.03	-3,067.5	-548.9	3,119.5	3,099.1	20.35	153.286		
1,000.0	998.9	1,021.9	1,021.9	2.2	20.4	-102.22	-3,067.5	-548.9	3,121.8	3,099.2	22.59	138.183		
1,100.0	1,098.3	1,121.3	1,121.3	2.4	22.4	-102.41	-3,067.5	-548.9	3,124.1	3,099.2	24.84	125.749		
1,200.0	1,197.7	1,220.7	1,220.7	2.7	24.4	-102.60	-3,067.5	-548.9	3,126.5	3,099.4	27.10	115.350		
1,300.0	1,297.1	1,320.1	1,320.1	3.0	26.4	-102.80	-3,067.5	-548.9	3,128.9	3,099.5	29.37	106.534		
1,400.0	1,396.5	1,419.5	1,419.5	3.3	28.4	-102.99	-3,067.5	-548.9	3,131.3	3,099.7	31.64	98.968		
1,500.0	1,495.9	1,518.9	1,518.9	3.6	30.4	-103.18	-3,067.5	-548.9	3,133.8	3,099.9	33.91	92.408		
1,600.0	1,595.3	1,618.3	1,618.3	3.8	32.4	-103.38	-3,067.5	-548.9	3,136.3	3,100.1	36.19	86.668		
1,700.0	1,694.7	1,717.7	1,717.7	4.1	34.4	-103.57	-3,067.5	-548.9	3,138.8	3,100.4	38.46	81.604		
1,800.0	1,794.1	1,817.1	1,817.1	4.4	36.3	-103.76	-3,067.5	-548.9	3,141.4	3,100.7	40.74	77.104		
1,900.0	1,893.5	1,916.5	1,916.5	4.7	38.3	-103.95	-3,067.5	-548.9	3,144.1	3,101.0	43.02	73.080		
2,000.0	1,992.9	2,015.9	2,015.9	5.0	40.3	-104.14	-3,067.5	-548.9	3,146.7	3,101.4	45.30	69.460		
2,100.0	2,092.3	2,115.3	2,115.3	5.3	42.3	-104.33	-3,067.5	-548.9	3,149.4	3,101.8	47.58	66.187		
2,200.0	2,191.7	2,214.7	2,214.7	5.6	44.3	-104.52	-3,067.5	-548.9	3,152.1	3,102.3	49.87	63.213		
2,300.0	2,291.1	2,314.1	2,314.1	5.9	46.3	-104.71	-3,067.5	-548.9	3,154.9	3,102.7	52.15	60.500		
2,400.0	2,390.6	2,413.6	2,413.6	6.2	48.3	-104.90	-3,067.5	-548.9	3,157.7	3,103.3	54.43	58.014		
2,500.0	2,490.0	2,513.0	2,513.0	6.5	50.3	-105.09	-3,067.5	-548.9	3,160.5	3,103.8	56.71	55.729		
2,600.0	2,589.4	2,612.4	2,612.4	6.8	52.2	-105.28	-3,067.5	-548.9	3,163.4	3,104.4	58.99	53.621		
2,700.0	2,688.8	2,711.8	2,711.8	7.1	54.2	-105.47	-3,067.5	-548.9	3,166.3	3,105.0	61.28	51.671		
2,800.0	2,788.2	2,811.2	2,811.2	7.4	56.2	-105.66	-3,067.5	-548.9	3,169.2	3,105.7	63.56	49.861		
2,900.0	2,887.6	2,910.6	2,910.6	7.7	58.2	-105.85	-3,067.5	-548.9	3,172.2	3,106.3	65.84	48.178		
3,000.0	2,987.0	3,010.0	3,010.0	8.0	60.2	-106.04	-3,067.5	-548.9	3,175.2	3,107.1	68.13	46.607		
3,100.0	3,086.4	3,109.4	3,109.4	8.3	62.2	-106.22	-3,067.5	-548.9	3,178.2	3,107.8	70.41	45.139		
3,200.0	3,185.8	3,208.8	3,208.8	8.6	64.2	-106.41	-3,067.5	-548.9	3,181.3	3,108.6	72.69	43.764		
3,300.0	3,285.2	3,308.2	3,308.2	8.9	66.2	-106.60	-3,067.5	-548.9	3,184.4	3,109.4	74.98	42.473		
3,400.0	3,384.6	3,407.6	3,407.6	9.2	68.2	-106.78	-3,067.5	-548.9	3,187.6	3,110.3	77.26	41.258		
3,500.0	3,484.0	3,507.0	3,507.0	9.5	70.1	-106.97	-3,067.5	-548.9	3,190.7	3,111.2	79.54	40.114		
3,600.0	3,583.4	3,606.4	3,606.4	9.8	72.1	-107.16	-3,067.5	-548.9	3,193.9	3,112.1	81.82	39.035		
3,700.0	3,682.8	3,705.8	3,705.8	10.1	74.1	-107.34	-3,067.5	-548.9	3,197.2	3,113.1	84.11	38.014		
3,800.0	3,782.2	3,805.2	3,805.2	10.4	76.1	-107.53	-3,067.5	-548.9	3,200.5	3,114.1	86.39	37.047		
3,900.0	3,881.6	3,904.6	3,904.6	10.7	78.1	-107.71	-3,067.5	-548.9	3,203.8	3,115.1	88.67	36.131		
4,000.0	3,981.1	4,004.1	4,004.1	11.0	80.1	-107.89	-3,067.5	-548.9	3,207.1	3,116.2	90.95	35.262		
4,100.0	4,080.5	4,103.5	4,103.5	11.3	82.1	-108.08	-3,067.5	-548.9	3,210.5	3,117.3	93.23	34.435		
4,200.0	4,179.9	4,202.9	4,202.9	11.6	84.1	-108.26	-3,067.5	-548.9	3,213.9	3,118.4	95.52	33.648		
4,300.0	4,279.3	4,302.3	4,302.3	11.9	86.0	-108.44	-3,067.5	-548.9	3,217.3	3,119.6	97.80	32.898		
4,400.0	4,378.7	4,401.7	4,401.7	12.2	88.0	-108.63	-3,067.5	-548.9	3,220.8	3,120.7	100.08	32.183		
4,500.0	4,478.1	4,501.1	4,501.1	12.5	90.0	-108.81	-3,067.5	-548.9	3,224.3	3,122.0	102.36	31.500		
4,600.0	4,577.5	4,600.5	4,600.5	12.8	92.0	-108.99	-3,067.5	-548.9	3,227.9	3,123.2	104.64	30.848		
4,700.0	4,676.9	4,699.9	4,699.9	13.2	94.0	-109.17	-3,067.5	-548.9	3,231.5	3,124.5	106.92	30.223		
4,800.0	4,776.3	4,799.3	4,799.3	13.5	96.0	-109.35	-3,067.5	-548.9	3,235.1	3,125.9	109.20	29.625		
4,900.0	4,875.7	4,898.7	4,898.7	13.8	98.0	-109.53	-3,067.5	-548.9	3,238.7	3,127.2	111.48	29.052		
5,000.0	4,975.1	4,998.1	4,998.1	14.1	100.0	-109.71	-3,067.5	-548.9	3,242.4	3,128.6	113.76	28.502		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,074.5	5,097.5	5,097.5	14.4	102.0	-109.89	-109.89	-3,067.5	-548.9	3,246.1	3,130.0	116.04	27.974	
5,200.0	5,173.9	5,196.9	5,196.9	14.7	103.9	-110.07	-110.07	-3,067.5	-548.9	3,249.8	3,131.5	118.32	27.467	
5,300.0	5,273.3	5,296.3	5,296.3	15.0	105.9	-110.25	-110.25	-3,067.5	-548.9	3,253.6	3,133.0	120.60	26.979	
5,400.0	5,372.7	5,395.7	5,395.7	15.3	107.9	-110.43	-110.43	-3,067.5	-548.9	3,257.4	3,134.5	122.88	26.510	
5,500.0	5,472.2	5,495.2	5,495.2	15.6	109.9	-110.61	-110.61	-3,067.5	-548.9	3,261.2	3,136.1	125.15	26.058	
5,600.0	5,571.7	5,594.7	5,594.7	15.8	111.9	-110.82	-110.82	-3,067.5	-548.9	3,264.7	3,137.2	127.43	25.619	
5,700.0	5,671.5	5,694.5	5,694.5	16.0	113.9	-110.96	-110.96	-3,067.5	-548.9	3,266.9	3,137.2	129.63	25.201	
5,800.0	5,771.4	5,794.4	5,794.4	16.2	115.9	-111.03	-111.03	-3,067.5	-548.9	3,267.9	3,136.1	131.80	24.794	
5,900.0	5,871.4	5,894.4	5,894.4	16.3	117.9	-119.07	-119.07	-3,067.5	-548.9	3,267.9	3,134.0	133.95	24.396	
6,000.0	5,971.4	5,994.4	5,994.4	16.5	119.9	0.93	0.93	-3,067.5	-548.9	3,267.9	3,131.8	136.12	24.008	
6,100.0	6,071.1	6,094.1	6,094.1	16.6	121.9	0.94	0.94	-3,067.5	-548.9	3,260.6	3,123.7	136.91	23.816	
6,200.0	6,169.0	6,192.0	6,192.0	16.7	123.8	0.97	0.97	-3,067.5	-548.9	3,240.4	3,105.1	135.28	23.952	
6,300.0	6,263.3	6,286.3	6,286.3	16.8	125.7	1.03	1.03	-3,067.5	-548.9	3,207.5	3,076.4	131.18	24.451	
6,400.0	6,352.6	6,375.6	6,375.6	16.8	127.5	1.11	1.11	-3,067.5	-548.9	3,162.7	3,038.1	124.61	25.381	
6,500.0	6,435.3	6,458.3	6,458.3	16.9	129.2	1.24	1.24	-3,067.5	-548.9	3,106.5	2,990.9	115.63	26.866	
6,600.0	6,509.9	6,532.9	6,532.9	17.0	130.7	1.42	1.42	-3,067.5	-548.9	3,040.1	2,935.7	104.41	29.118	
6,700.0	6,575.2	6,598.2	6,598.2	17.1	132.0	1.69	1.69	-3,067.5	-548.9	2,964.5	2,873.3	91.16	32.518	
6,800.0	6,630.1	6,653.1	6,653.1	17.3	133.1	2.13	2.13	-3,067.5	-548.9	2,881.0	2,804.8	76.25	37.785	
6,900.0	6,673.7	6,696.7	6,696.7	17.8	133.9	2.89	2.89	-3,067.5	-548.9	2,791.1	2,730.9	60.18	46.377	
7,000.0	6,705.1	6,728.1	6,728.1	18.4	134.6	4.46	4.46	-3,067.5	-548.9	2,696.2	2,652.0	44.17	61.039	
7,100.0	6,723.8	6,746.8	6,746.8	19.2	134.9	9.39	9.39	-3,067.5	-548.9	2,598.1	2,561.6	36.51	71.163	
7,200.0	6,729.6	6,752.6	6,752.6	20.2	135.1	100.74	100.74	-3,067.5	-548.9	2,498.3	2,347.4	150.97	16.548	
7,300.0	6,729.2	6,752.2	6,752.2	21.4	135.0	100.32	100.32	-3,067.5	-548.9	2,398.4	2,246.0	152.39	15.739	
7,400.0	6,728.8	6,751.8	6,751.8	22.7	135.0	99.90	99.90	-3,067.5	-548.9	2,298.4	2,144.5	153.90	14.935	
7,500.0	6,728.4	6,751.4	6,751.4	24.0	135.0	99.48	99.48	-3,067.5	-548.9	2,198.4	2,042.9	155.49	14.139	
7,600.0	6,728.0	6,751.0	6,751.0	25.4	135.0	99.05	99.05	-3,067.5	-548.9	2,098.5	1,941.3	157.14	13.354	
7,700.0	6,727.6	6,750.6	6,750.6	26.9	135.0	98.63	98.63	-3,067.5	-548.9	1,998.5	1,839.6	158.85	12.581	
7,800.0	6,727.2	6,750.2	6,750.2	28.5	135.0	98.20	98.20	-3,067.5	-548.9	1,898.5	1,737.9	160.60	11.821	
7,900.0	6,726.8	6,749.8	6,749.8	30.0	135.0	97.77	97.77	-3,067.5	-548.9	1,798.6	1,636.2	162.39	11.076	
8,000.0	6,726.4	6,749.4	6,749.4	31.7	135.0	97.35	97.35	-3,067.5	-548.9	1,698.6	1,534.4	164.20	10.345	
8,100.0	6,726.0	6,749.0	6,749.0	33.3	135.0	96.92	96.92	-3,067.5	-548.9	1,598.7	1,432.6	166.04	9.628	
8,200.0	6,725.6	6,748.6	6,748.6	35.0	135.0	96.49	96.49	-3,067.5	-548.9	1,498.7	1,330.8	167.89	8.927	
8,300.0	6,725.2	6,748.2	6,748.2	36.7	135.0	96.06	96.06	-3,067.5	-548.9	1,398.8	1,229.0	169.76	8.240	
8,400.0	6,724.8	6,747.8	6,747.8	38.4	135.0	95.63	95.63	-3,067.5	-548.9	1,298.9	1,127.2	171.64	7.567	
8,500.0	6,724.4	6,747.4	6,747.4	40.1	134.9	95.20	95.20	-3,067.5	-548.9	1,199.0	1,025.4	173.53	6.909	
8,600.0	6,724.0	6,747.0	6,747.0	41.9	134.9	94.77	94.77	-3,067.5	-548.9	1,099.1	923.6	175.42	6.265	
8,700.0	6,723.6	6,746.6	6,746.6	43.7	134.9	94.33	94.33	-3,067.5	-548.9	999.2	821.9	177.32	5.635	
8,800.0	6,723.2	6,746.2	6,746.2	45.5	134.9	93.90	93.90	-3,067.5	-548.9	899.4	720.1	179.22	5.018	
8,900.0	6,722.8	6,745.8	6,745.8	47.2	134.9	93.47	93.47	-3,067.5	-548.9	799.6	618.4	181.12	4.414	
9,000.0	6,722.4	6,745.4	6,745.4	49.0	134.9	93.03	93.03	-3,067.5	-548.9	699.8	516.8	183.02	3.824	
9,100.0	6,722.0	6,745.0	6,745.0	50.9	134.9	92.60	92.60	-3,067.5	-548.9	600.1	415.2	184.92	3.245	
9,200.0	6,721.6	6,744.6	6,744.6	52.7	134.9	92.16	92.16	-3,067.5	-548.9	500.6	313.8	186.82	2.680	
9,300.0	6,721.2	6,744.2	6,744.2	54.5	134.9	91.73	91.73	-3,067.5	-548.9	401.3	212.6	188.71	2.127	
9,400.0	6,720.8	6,743.8	6,743.8	56.3	134.9	91.30	91.30	-3,067.5	-548.9	302.5	111.9	190.60	1.587	
9,500.0	6,720.4	6,743.4	6,743.4	58.2	134.9	90.86	90.86	-3,067.5	-548.9	204.7	12.3	192.48	1.064 Level 2	
9,600.0	6,720.0	6,743.0	6,743.0	60.0	134.9	90.43	90.43	-3,067.5	-548.9	111.2	-83.2	194.36	0.572 Level 1	
9,697.8	6,719.6	6,742.6	6,742.6	61.8	134.9	90.00	90.00	-3,067.5	-548.9	52.9	-143.3	196.19	0.269 Level 1, CC, ES, SF	
9,700.0	6,719.6	6,742.6	6,742.6	61.9	134.9	89.99	89.99	-3,067.5	-548.9	52.9	-143.3	196.23	0.270 Level 1	
9,800.0	6,719.2	6,742.2	6,742.2	63.7	134.8	89.56	89.56	-3,067.5	-548.9	115.1	-83.0	198.09	0.581 Level 1	
9,900.0	6,718.8	6,741.8	6,741.8	65.6	134.8	89.12	89.12	-3,067.5	-548.9	209.0	9.0	199.95	1.045 Level 2	
10,000.0	6,718.4	6,741.4	6,741.4	67.4	134.8	88.69	88.69	-3,067.5	-548.9	306.8	105.0	201.80	1.520	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 1-6I (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,718.0	6,741.0	6,741.0	69.3	134.8	88.25	88.25	-3,067.5	-548.9	405.6	202.0	203.63	1.992	
10,200.0	6,717.6	6,740.6	6,740.6	71.2	134.8	87.82	87.82	-3,067.5	-548.9	505.0	299.5	205.46	2.458	
10,300.0	6,717.2	6,740.2	6,740.2	73.0	134.8	87.38	87.38	-3,067.5	-548.9	604.5	397.2	207.28	2.916	
10,400.0	6,716.8	6,739.8	6,739.8	74.9	134.8	86.95	86.95	-3,067.5	-548.9	704.2	495.1	209.09	3.368	
10,500.0	6,716.4	6,739.4	6,739.4	76.8	134.8	86.51	86.51	-3,067.5	-548.9	803.9	593.0	210.89	3.812	
10,600.0	6,716.0	6,739.0	6,739.0	78.6	134.8	86.08	86.08	-3,067.5	-548.9	903.7	691.1	212.67	4.249	
10,700.0	6,715.6	6,738.6	6,738.6	80.5	134.8	85.65	85.65	-3,067.5	-548.9	1,003.6	789.1	214.45	4.680	
10,800.0	6,715.2	6,738.2	6,738.2	82.4	134.8	85.22	85.22	-3,067.5	-548.9	1,103.4	887.2	216.21	5.104	
10,900.0	6,714.8	6,737.8	6,737.8	84.3	134.8	84.78	84.78	-3,067.5	-548.9	1,203.3	985.4	217.97	5.521	
11,000.0	6,714.4	6,737.4	6,737.4	86.2	134.7	84.35	84.35	-3,067.5	-548.9	1,303.3	1,083.5	219.70	5.932	
11,100.0	6,714.0	6,737.0	6,737.0	88.0	134.7	83.92	83.92	-3,067.5	-548.9	1,403.2	1,181.7	221.43	6.337	
11,200.0	6,713.6	6,736.6	6,736.6	89.9	134.7	83.49	83.49	-3,067.5	-548.9	1,503.1	1,280.0	223.15	6.736	
11,300.0	6,713.2	6,736.2	6,736.2	91.8	134.7	83.06	83.06	-3,067.5	-548.9	1,603.0	1,378.2	224.85	7.130	
11,400.0	6,712.8	6,735.8	6,735.8	93.7	134.7	82.63	82.63	-3,067.5	-548.9	1,703.0	1,476.5	226.53	7.518	
11,500.0	6,712.3	6,735.3	6,735.3	95.6	134.7	82.21	82.21	-3,067.5	-548.9	1,803.0	1,574.7	228.21	7.901	
11,600.0	6,711.9	6,734.9	6,734.9	97.5	134.7	81.78	81.78	-3,067.5	-548.9	1,902.9	1,673.0	229.87	8.278	
11,700.0	6,711.5	6,734.5	6,734.5	99.4	134.7	81.35	81.35	-3,067.5	-548.9	2,002.9	1,771.4	231.51	8.651	
11,800.0	6,711.1	6,734.1	6,734.1	101.3	134.7	80.93	80.93	-3,067.5	-548.9	2,102.8	1,869.7	233.14	9.019	
11,900.0	6,710.7	6,733.7	6,733.7	103.2	134.7	80.51	80.51	-3,067.5	-548.9	2,202.8	1,968.0	234.76	9.383	
12,000.0	6,710.3	6,733.3	6,733.3	105.1	134.7	80.08	80.08	-3,067.5	-548.9	2,302.8	2,066.4	236.37	9.742	
12,100.0	6,709.9	6,732.9	6,732.9	107.0	134.7	79.66	79.66	-3,067.5	-548.9	2,402.8	2,164.8	237.95	10.098	
12,200.0	6,709.5	6,732.5	6,732.5	108.9	134.7	79.24	79.24	-3,067.5	-548.9	2,502.7	2,263.2	239.53	10.449	
12,300.0	6,709.1	6,732.1	6,732.1	110.8	134.6	78.82	78.82	-3,067.5	-548.9	2,602.7	2,361.6	241.09	10.796	
12,400.0	6,708.7	6,731.7	6,731.7	112.7	134.6	78.40	78.40	-3,067.5	-548.9	2,702.7	2,460.1	242.63	11.139	
12,500.0	6,708.3	6,731.3	6,731.3	114.6	134.6	77.99	77.99	-3,067.5	-548.9	2,802.7	2,558.5	244.16	11.479	
12,600.0	6,707.9	6,730.9	6,730.9	116.5	134.6	77.57	77.57	-3,067.5	-548.9	2,902.6	2,657.0	245.67	11.815	
12,700.0	6,707.5	6,730.5	6,730.5	118.4	134.6	77.16	77.16	-3,067.5	-548.9	3,002.6	2,755.5	247.17	12.148	
12,800.0	6,707.1	6,730.1	6,730.1	120.3	134.6	76.74	76.74	-3,067.5	-548.9	3,102.6	2,854.0	248.65	12.478	
12,900.0	6,706.7	6,729.7	6,729.7	122.2	134.6	76.33	76.33	-3,067.5	-548.9	3,202.6	2,952.5	250.12	12.804	
13,000.0	6,706.3	6,729.3	6,729.3	124.1	134.6	75.92	75.92	-3,067.5	-548.9	3,302.6	3,051.0	251.57	13.128	
13,100.0	6,705.9	6,728.9	6,728.9	126.0	134.6	75.51	75.51	-3,067.5	-548.9	3,402.6	3,149.6	253.00	13.449	
13,200.0	6,705.5	6,728.5	6,728.5	127.9	134.6	75.11	75.11	-3,067.5	-548.9	3,502.6	3,248.1	254.42	13.767	
13,300.0	6,705.1	6,728.1	6,728.1	129.8	134.6	74.70	74.70	-3,067.5	-548.9	3,602.5	3,346.7	255.83	14.082	
13,400.0	6,704.7	6,727.7	6,727.7	131.7	134.6	74.30	74.30	-3,067.5	-548.9	3,702.5	3,445.3	257.22	14.395	
13,500.0	6,704.3	6,727.3	6,727.3	133.6	134.5	73.89	73.89	-3,067.5	-548.9	3,802.5	3,543.9	258.59	14.705	
13,600.0	6,703.9	6,726.9	6,726.9	135.5	134.5	73.49	73.49	-3,067.5	-548.9	3,902.5	3,642.6	259.95	15.013	
13,700.0	6,703.5	6,726.5	6,726.5	137.4	134.5	73.09	73.09	-3,067.5	-548.9	4,002.5	3,741.2	261.29	15.318	
13,800.0	6,703.1	6,726.1	6,726.1	139.3	134.5	72.70	72.70	-3,067.5	-548.9	4,102.5	3,839.9	262.61	15.622	
13,829.7	6,703.0	6,726.0	6,726.0	139.9	134.5	72.58	72.58	-3,067.5	-548.9	4,132.2	3,869.2	263.00	15.712	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	23.0	23.0	0.0	0.5	-169.16	-3,071.1	-588.0	3,126.9	3,126.4	0.46	6,794.671		
100.0	100.0	123.0	123.0	0.1	2.5	-169.16	-3,071.1	-588.0	3,126.9	3,124.3	2.57	1,215.474		
200.0	200.0	223.0	223.0	0.3	4.5	-169.16	-3,071.1	-588.0	3,126.9	3,122.1	4.80	651.799		
300.0	300.0	323.0	323.0	0.6	6.5	-169.16	-3,071.1	-588.0	3,126.9	3,119.9	7.02	445.294		
400.0	400.0	423.0	423.0	0.8	8.5	-169.16	-3,071.1	-588.0	3,126.9	3,117.7	9.25	338.158		
500.0	500.0	523.0	523.0	1.0	10.5	-169.16	-3,071.1	-588.0	3,126.9	3,115.4	11.47	272.577		
600.0	600.0	623.0	623.0	1.2	12.5	-169.16	-3,071.1	-588.0	3,126.9	3,113.2	13.70	228.301		
700.0	700.0	723.0	723.0	1.5	14.5	-101.14	-3,071.1	-588.0	3,127.2	3,111.3	15.91	196.519		
800.0	799.8	822.8	822.8	1.7	16.5	-101.22	-3,071.1	-588.0	3,128.3	3,110.1	18.13	172.575		
900.0	899.5	922.5	922.5	1.9	18.4	-101.34	-3,071.1	-588.0	3,130.0	3,109.6	20.35	153.798		
1,000.0	998.9	1,021.9	1,021.9	2.2	20.4	-101.53	-3,071.1	-588.0	3,132.1	3,109.5	22.59	138.637		
1,100.0	1,098.3	1,121.3	1,121.3	2.4	22.4	-101.72	-3,071.1	-588.0	3,134.3	3,109.5	24.84	126.156		
1,200.0	1,197.7	1,220.7	1,220.7	2.7	24.4	-101.92	-3,071.1	-588.0	3,136.6	3,109.5	27.11	115.719		
1,300.0	1,297.1	1,320.1	1,320.1	3.0	26.4	-102.11	-3,071.1	-588.0	3,138.9	3,109.5	29.37	106.869		
1,400.0	1,396.5	1,419.5	1,419.5	3.3	28.4	-102.30	-3,071.1	-588.0	3,141.2	3,109.5	31.64	99.274		
1,500.0	1,495.9	1,518.9	1,518.9	3.6	30.4	-102.49	-3,071.1	-588.0	3,143.5	3,109.6	33.91	92.690		
1,600.0	1,595.3	1,618.3	1,618.3	3.8	32.4	-102.69	-3,071.1	-588.0	3,145.9	3,109.7	36.19	86.928		
1,700.0	1,694.7	1,717.7	1,717.7	4.1	34.4	-102.88	-3,071.1	-588.0	3,148.3	3,109.9	38.47	81.844		
1,800.0	1,794.1	1,817.1	1,817.1	4.4	36.3	-103.07	-3,071.1	-588.0	3,150.8	3,110.0	40.75	77.328		
1,900.0	1,893.5	1,916.5	1,916.5	4.7	38.3	-103.26	-3,071.1	-588.0	3,153.3	3,110.2	43.03	73.288		
2,000.0	1,992.9	2,015.9	2,015.9	5.0	40.3	-103.45	-3,071.1	-588.0	3,155.8	3,110.5	45.31	69.655		
2,100.0	2,092.3	2,115.3	2,115.3	5.3	42.3	-103.64	-3,071.1	-588.0	3,158.4	3,110.8	47.59	66.369		
2,200.0	2,191.7	2,214.7	2,214.7	5.6	44.3	-103.84	-3,071.1	-588.0	3,161.0	3,111.1	49.87	63.384		
2,300.0	2,291.1	2,314.1	2,314.1	5.9	46.3	-104.03	-3,071.1	-588.0	3,163.6	3,111.4	52.15	60.661		
2,400.0	2,390.6	2,413.6	2,413.6	6.2	48.3	-104.22	-3,071.1	-588.0	3,166.3	3,111.8	54.43	58.166		
2,500.0	2,490.0	2,513.0	2,513.0	6.5	50.3	-104.40	-3,071.1	-588.0	3,169.0	3,112.2	56.72	55.872		
2,600.0	2,589.4	2,612.4	2,612.4	6.8	52.2	-104.59	-3,071.1	-588.0	3,171.7	3,112.7	59.00	53.757		
2,700.0	2,688.8	2,711.8	2,711.8	7.1	54.2	-104.78	-3,071.1	-588.0	3,174.5	3,113.2	61.28	51.799		
2,800.0	2,788.2	2,811.2	2,811.2	7.4	56.2	-104.97	-3,071.1	-588.0	3,177.3	3,113.7	63.57	49.983		
2,900.0	2,887.6	2,910.6	2,910.6	7.7	58.2	-105.16	-3,071.1	-588.0	3,180.1	3,114.3	65.85	48.293		
3,000.0	2,987.0	3,010.0	3,010.0	8.0	60.2	-105.35	-3,071.1	-588.0	3,183.0	3,114.9	68.13	46.716		
3,100.0	3,086.4	3,109.4	3,109.4	8.3	62.2	-105.54	-3,071.1	-588.0	3,185.9	3,115.5	70.42	45.243		
3,200.0	3,185.8	3,208.8	3,208.8	8.6	64.2	-105.72	-3,071.1	-588.0	3,188.9	3,116.2	72.70	43.862		
3,300.0	3,285.2	3,308.2	3,308.2	8.9	66.2	-105.91	-3,071.1	-588.0	3,191.9	3,116.9	74.99	42.566		
3,400.0	3,384.6	3,407.6	3,407.6	9.2	68.2	-106.10	-3,071.1	-588.0	3,194.9	3,117.6	77.27	41.348		
3,500.0	3,484.0	3,507.0	3,507.0	9.5	70.1	-106.28	-3,071.1	-588.0	3,197.9	3,118.4	79.55	40.199		
3,600.0	3,583.4	3,606.4	3,606.4	9.8	72.1	-106.47	-3,071.1	-588.0	3,201.0	3,119.2	81.83	39.115		
3,700.0	3,682.8	3,705.8	3,705.8	10.1	74.1	-106.65	-3,071.1	-588.0	3,204.1	3,120.0	84.12	38.091		
3,800.0	3,782.2	3,805.2	3,805.2	10.4	76.1	-106.84	-3,071.1	-588.0	3,207.3	3,120.9	86.40	37.121		
3,900.0	3,881.6	3,904.6	3,904.6	10.7	78.1	-107.02	-3,071.1	-588.0	3,210.5	3,121.8	88.68	36.201		
4,000.0	3,981.1	4,004.1	4,004.1	11.0	80.1	-107.21	-3,071.1	-588.0	3,213.7	3,122.7	90.97	35.328		
4,100.0	4,080.5	4,103.5	4,103.5	11.3	82.1	-107.39	-3,071.1	-588.0	3,216.9	3,123.7	93.25	34.499		
4,200.0	4,179.9	4,202.9	4,202.9	11.6	84.1	-107.58	-3,071.1	-588.0	3,220.2	3,124.7	95.53	33.709		
4,300.0	4,279.3	4,302.3	4,302.3	11.9	86.0	-107.76	-3,071.1	-588.0	3,223.5	3,125.7	97.81	32.956		
4,400.0	4,378.7	4,401.7	4,401.7	12.2	88.0	-107.94	-3,071.1	-588.0	3,226.9	3,126.8	100.09	32.239		
4,500.0	4,478.1	4,501.1	4,501.1	12.5	90.0	-108.13	-3,071.1	-588.0	3,230.3	3,127.9	102.38	31.553		
4,600.0	4,577.5	4,600.5	4,600.5	12.8	92.0	-108.31	-3,071.1	-588.0	3,233.7	3,129.0	104.66	30.898		
4,700.0	4,676.9	4,699.9	4,699.9	13.2	94.0	-108.49	-3,071.1	-588.0	3,237.1	3,130.2	106.94	30.271		
4,800.0	4,776.3	4,799.3	4,799.3	13.5	96.0	-108.67	-3,071.1	-588.0	3,240.6	3,131.4	109.22	29.671		
4,900.0	4,875.7	4,898.7	4,898.7	13.8	98.0	-108.85	-3,071.1	-588.0	3,244.1	3,132.7	111.50	29.096		
5,000.0	4,975.1	4,998.1	4,998.1	14.1	100.0	-109.03	-3,071.1	-588.0	3,247.7	3,133.9	113.78	28.544		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 28-1 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,074.5	5,097.5	5,097.5	14.4	102.0	-109.21	-109.21	-3,071.1	-588.0	3,251.3	3,135.2	116.06	28.014	
5,200.0	5,173.9	5,196.9	5,196.9	14.7	103.9	-109.39	-109.39	-3,071.1	-588.0	3,254.9	3,136.6	118.34	27.505	
5,300.0	5,273.3	5,296.3	5,296.3	15.0	105.9	-109.57	-109.57	-3,071.1	-588.0	3,258.5	3,137.9	120.62	27.015	
5,400.0	5,372.7	5,395.7	5,395.7	15.3	107.9	-109.75	-109.75	-3,071.1	-588.0	3,262.2	3,139.3	122.90	26.544	
5,500.0	5,472.2	5,495.2	5,495.2	15.6	109.9	-109.93	-109.93	-3,071.1	-588.0	3,265.9	3,140.8	125.18	26.091	
5,600.0	5,571.7	5,594.7	5,594.7	15.8	111.9	-110.14	-110.14	-3,071.1	-588.0	3,269.3	3,141.8	127.45	25.651	
5,700.0	5,671.5	5,694.5	5,694.5	16.0	113.9	-110.28	-110.28	-3,071.1	-588.0	3,271.4	3,141.8	129.65	25.232	
5,800.0	5,771.4	5,794.4	5,794.4	16.2	115.9	-110.35	-110.35	-3,071.1	-588.0	3,272.4	3,140.6	131.82	24.825	
5,900.0	5,871.4	5,894.4	5,894.4	16.3	117.9	-110.39	-110.39	-3,071.1	-588.0	3,272.4	3,138.4	133.97	24.426	
6,000.0	5,971.4	5,994.4	5,994.4	16.5	119.9	-1.61	-1.61	-3,071.1	-588.0	3,272.4	3,136.3	136.14	24.037	
6,100.0	6,071.1	6,094.1	6,094.1	16.6	121.9	1.63	1.63	-3,071.1	-588.0	3,265.1	3,128.2	136.93	23.845	
6,200.0	6,169.0	6,192.0	6,192.0	16.7	123.8	1.68	1.68	-3,071.1	-588.0	3,244.9	3,109.6	135.31	23.982	
6,300.0	6,263.3	6,286.3	6,286.3	16.8	125.7	1.78	1.78	-3,071.1	-588.0	3,212.1	3,080.9	131.21	24.481	
6,400.0	6,352.6	6,375.6	6,375.6	16.8	127.5	1.93	1.93	-3,071.1	-588.0	3,167.2	3,042.6	124.64	25.411	
6,500.0	6,435.3	6,458.3	6,458.3	16.9	129.2	2.15	2.15	-3,071.1	-588.0	3,111.1	2,995.4	115.68	26.894	
6,600.0	6,509.9	6,532.9	6,532.9	17.0	130.7	2.46	2.46	-3,071.1	-588.0	3,044.7	2,940.2	104.48	29.141	
6,700.0	6,575.2	6,598.2	6,598.2	17.1	132.0	2.94	2.94	-3,071.1	-588.0	2,969.1	2,877.8	91.31	32.517	
6,800.0	6,630.1	6,653.1	6,653.1	17.3	133.1	3.69	3.69	-3,071.1	-588.0	2,885.6	2,809.1	76.56	37.689	
6,900.0	6,673.7	6,696.7	6,696.7	17.8	133.9	5.00	5.00	-3,071.1	-588.0	2,795.7	2,734.7	61.02	45.815	
7,000.0	6,705.1	6,728.1	6,728.1	18.4	134.6	7.71	7.71	-3,071.1	-588.0	2,700.9	2,653.8	47.15	57.287	
7,100.0	6,723.8	6,746.8	6,746.8	19.2	134.9	16.01	16.01	-3,071.1	-588.0	2,602.8	2,552.4	50.43	51.608	
7,200.0	6,729.6	6,752.6	6,752.6	20.2	135.1	96.24	96.24	-3,071.1	-588.0	2,503.1	2,350.3	152.84	16.377	
7,300.0	6,729.2	6,752.2	6,752.2	21.4	135.0	95.99	95.99	-3,071.1	-588.0	2,403.2	2,249.1	154.13	15.592	
7,400.0	6,728.8	6,751.8	6,751.8	22.7	135.0	95.74	95.74	-3,071.1	-588.0	2,303.3	2,147.7	155.52	14.810	
7,500.0	6,728.4	6,751.4	6,751.4	24.0	135.0	95.49	95.49	-3,071.1	-588.0	2,203.3	2,046.4	157.00	14.034	
7,600.0	6,728.0	6,751.0	6,751.0	25.4	135.0	95.25	95.25	-3,071.1	-588.0	2,103.4	1,944.9	158.54	13.268	
7,700.0	6,727.6	6,750.6	6,750.6	26.9	135.0	95.00	95.00	-3,071.1	-588.0	2,003.5	1,843.4	160.13	12.512	
7,800.0	6,727.2	6,750.2	6,750.2	28.5	135.0	94.75	94.75	-3,071.1	-588.0	1,903.7	1,741.9	161.78	11.767	
7,900.0	6,726.8	6,749.8	6,749.8	30.0	135.0	94.50	94.50	-3,071.1	-588.0	1,803.8	1,640.3	163.46	11.035	
8,000.0	6,726.4	6,749.4	6,749.4	31.7	135.0	94.25	94.25	-3,071.1	-588.0	1,703.9	1,538.7	165.17	10.316	
8,100.0	6,726.0	6,749.0	6,749.0	33.3	135.0	94.00	94.00	-3,071.1	-588.0	1,604.1	1,437.2	166.91	9.610	
8,200.0	6,725.6	6,748.6	6,748.6	35.0	135.0	93.75	93.75	-3,071.1	-588.0	1,504.2	1,335.6	168.67	8.918	
8,300.0	6,725.2	6,748.2	6,748.2	36.7	135.0	93.50	93.50	-3,071.1	-588.0	1,404.4	1,234.0	170.45	8.240	
8,400.0	6,724.8	6,747.8	6,747.8	38.4	135.0	93.25	93.25	-3,071.1	-588.0	1,304.7	1,132.4	172.24	7.575	
8,500.0	6,724.4	6,747.4	6,747.4	40.1	134.9	93.01	93.01	-3,071.1	-588.0	1,204.9	1,030.9	174.05	6.923	
8,600.0	6,724.0	6,747.0	6,747.0	41.9	134.9	92.76	92.76	-3,071.1	-588.0	1,105.3	929.4	175.87	6.285	
8,700.0	6,723.6	6,746.6	6,746.6	43.7	134.9	92.51	92.51	-3,071.1	-588.0	1,005.6	827.9	177.70	5.659	
8,800.0	6,723.2	6,746.2	6,746.2	45.5	134.9	92.26	92.26	-3,071.1	-588.0	906.1	726.6	179.53	5.047	
8,900.0	6,722.8	6,745.8	6,745.8	47.2	134.9	92.01	92.01	-3,071.1	-588.0	806.7	625.3	181.38	4.448	
9,000.0	6,722.4	6,745.4	6,745.4	49.0	134.9	91.76	91.76	-3,071.1	-588.0	707.4	524.2	183.22	3.861	
9,100.0	6,722.0	6,745.0	6,745.0	50.9	134.9	91.51	91.51	-3,071.1	-588.0	608.4	423.3	185.07	3.287	
9,200.0	6,721.6	6,744.6	6,744.6	52.7	134.9	91.26	91.26	-3,071.1	-588.0	509.8	322.9	186.93	2.727	
9,300.0	6,721.2	6,744.2	6,744.2	54.5	134.9	91.00	91.00	-3,071.1	-588.0	411.8	223.0	188.79	2.181	
9,400.0	6,720.8	6,743.8	6,743.8	56.3	134.9	90.75	90.75	-3,071.1	-588.0	315.1	124.5	190.65	1.653	
9,500.0	6,720.4	6,743.4	6,743.4	58.2	134.9	90.50	90.50	-3,071.1	-588.0	221.4	28.9	192.51	1.150 Level 2	
9,600.0	6,720.0	6,743.0	6,743.0	60.0	134.9	90.25	90.25	-3,071.1	-588.0	136.9	-57.5	194.37	0.704 Level 1	
9,700.0	6,719.6	6,742.6	6,742.6	61.9	134.9	90.00	90.00	-3,071.1	-588.0	91.9	-104.3	196.23	0.468 Level 1	
9,701.5	6,719.6	6,742.6	6,742.6	61.9	134.9	90.00	90.00	-3,071.1	-588.0	91.9	-104.4	196.26	0.468 Level 1, CC, ES, SF	
9,800.0	6,719.2	6,742.2	6,742.2	63.7	134.8	89.75	89.75	-3,071.1	-588.0	134.7	-63.4	198.09	0.680 Level 1	
9,900.0	6,718.8	6,741.8	6,741.8	65.6	134.8	89.50	89.50	-3,071.1	-588.0	218.8	18.8	199.95	1.094 Level 2	
10,000.0	6,718.4	6,741.4	6,741.4	67.4	134.8	89.25	89.25	-3,071.1	-588.0	312.4	110.5	201.81	1.548	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 28-1 (Exist) - Wellbore #1 - Wellbore #													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,100.0	6,718.0	6,741.0	6,741.0	69.3	134.8	89.00	-3,071.1	-588.0	409.0	205.3	203.67	2.008		
10,200.0	6,717.6	6,740.6	6,740.6	71.2	134.8	88.75	-3,071.1	-588.0	506.9	301.4	205.53	2.466		
10,300.0	6,717.2	6,740.2	6,740.2	73.0	134.8	88.50	-3,071.1	-588.0	605.6	398.2	207.39	2.920		
10,400.0	6,716.8	6,739.8	6,739.8	74.9	134.8	88.25	-3,071.1	-588.0	704.6	495.3	209.24	3.367		
10,500.0	6,716.4	6,739.4	6,739.4	76.8	134.8	88.00	-3,071.1	-588.0	803.8	592.7	211.10	3.808		
10,600.0	6,716.0	6,739.0	6,739.0	78.6	134.8	87.75	-3,071.1	-588.0	903.2	690.3	212.95	4.242		
10,700.0	6,715.6	6,738.6	6,738.6	80.5	134.8	87.50	-3,071.1	-588.0	1,002.8	788.0	214.79	4.668		
10,800.0	6,715.2	6,738.2	6,738.2	82.4	134.8	87.25	-3,071.1	-588.0	1,102.4	885.7	216.64	5.089		
10,900.0	6,714.8	6,737.8	6,737.8	84.3	134.8	87.00	-3,071.1	-588.0	1,202.1	983.6	218.48	5.502		
11,000.0	6,714.4	6,737.4	6,737.4	86.2	134.7	86.75	-3,071.1	-588.0	1,301.8	1,081.5	220.32	5.909		
11,100.0	6,714.0	6,737.0	6,737.0	88.0	134.7	86.50	-3,071.1	-588.0	1,401.6	1,179.4	222.15	6.309		
11,200.0	6,713.6	6,736.6	6,736.6	89.9	134.7	86.25	-3,071.1	-588.0	1,501.4	1,277.4	223.98	6.703		
11,300.0	6,713.2	6,736.2	6,736.2	91.8	134.7	86.00	-3,071.1	-588.0	1,601.2	1,375.4	225.81	7.091		
11,400.0	6,712.8	6,735.8	6,735.8	93.7	134.7	85.76	-3,071.1	-588.0	1,701.0	1,473.4	227.63	7.473		
11,500.0	6,712.3	6,735.3	6,735.3	95.6	134.7	85.51	-3,071.1	-588.0	1,800.9	1,571.4	229.45	7.849		
11,600.0	6,711.9	6,734.9	6,734.9	97.5	134.7	85.26	-3,071.1	-588.0	1,900.8	1,669.5	231.26	8.219		
11,700.0	6,711.5	6,734.5	6,734.5	99.4	134.7	85.01	-3,071.1	-588.0	2,000.6	1,767.6	233.08	8.584		
11,800.0	6,711.1	6,734.1	6,734.1	101.3	134.7	84.76	-3,071.1	-588.0	2,100.5	1,865.7	234.88	8.943		
11,900.0	6,710.7	6,733.7	6,733.7	103.2	134.7	84.51	-3,071.1	-588.0	2,200.4	1,963.8	236.68	9.297		
12,000.0	6,710.3	6,733.3	6,733.3	105.1	134.7	84.26	-3,071.1	-588.0	2,300.4	2,061.9	238.48	9.646		
12,100.0	6,709.9	6,732.9	6,732.9	107.0	134.7	84.02	-3,071.1	-588.0	2,400.3	2,160.0	240.27	9.990		
12,200.0	6,709.5	6,732.5	6,732.5	108.9	134.7	83.77	-3,071.1	-588.0	2,500.2	2,258.2	242.06	10.329		
12,300.0	6,709.1	6,732.1	6,732.1	110.8	134.6	83.52	-3,071.1	-588.0	2,600.2	2,356.3	243.84	10.663		
12,400.0	6,708.7	6,731.7	6,731.7	112.7	134.6	83.28	-3,071.1	-588.0	2,700.1	2,454.5	245.62	10.993		
12,500.0	6,708.3	6,731.3	6,731.3	114.6	134.6	83.03	-3,071.1	-588.0	2,800.0	2,552.6	247.39	11.318		
12,600.0	6,707.9	6,730.9	6,730.9	116.5	134.6	82.78	-3,071.1	-588.0	2,900.0	2,650.8	249.16	11.639		
12,700.0	6,707.5	6,730.5	6,730.5	118.4	134.6	82.54	-3,071.1	-588.0	2,999.9	2,749.0	250.92	11.956		
12,800.0	6,707.1	6,730.1	6,730.1	120.3	134.6	82.29	-3,071.1	-588.0	3,099.9	2,847.2	252.67	12.268		
12,900.0	6,706.7	6,729.7	6,729.7	122.2	134.6	82.04	-3,071.1	-588.0	3,199.8	2,945.4	254.42	12.577		
13,000.0	6,706.3	6,729.3	6,729.3	124.1	134.6	81.80	-3,071.1	-588.0	3,299.8	3,043.6	256.17	12.881		
13,100.0	6,705.9	6,728.9	6,728.9	126.0	134.6	81.55	-3,071.1	-588.0	3,399.8	3,141.9	257.91	13.182		
13,200.0	6,705.5	6,728.5	6,728.5	127.9	134.6	81.31	-3,071.1	-588.0	3,499.7	3,240.1	259.64	13.479		
13,300.0	6,705.1	6,728.1	6,728.1	129.8	134.6	81.06	-3,071.1	-588.0	3,599.7	3,338.3	261.37	13.773		
13,400.0	6,704.7	6,727.7	6,727.7	131.7	134.6	80.82	-3,071.1	-588.0	3,699.7	3,436.6	263.09	14.062		
13,500.0	6,704.3	6,727.3	6,727.3	133.6	134.5	80.58	-3,071.1	-588.0	3,799.6	3,534.8	264.80	14.349		
13,600.0	6,703.9	6,726.9	6,726.9	135.5	134.5	80.33	-3,071.1	-588.0	3,899.6	3,633.1	266.51	14.632		
13,700.0	6,703.5	6,726.5	6,726.5	137.4	134.5	80.09	-3,071.1	-588.0	3,999.6	3,731.4	268.22	14.912		
13,800.0	6,703.1	6,726.1	6,726.1	139.3	134.5	79.85	-3,071.1	-588.0	4,099.5	3,829.6	269.91	15.188		
13,829.7	6,703.0	6,726.0	6,726.0	139.9	134.5	79.78	-3,071.1	-588.0	4,129.3	3,858.8	270.41	15.270		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	24.0	24.0	0.0	0.5	-172.03	-4,240.6	-593.6	4,281.9	4,281.4	0.48	8,916.926		
100.0	100.0	124.0	124.0	0.1	2.5	-172.03	-4,240.6	-593.6	4,281.9	4,279.3	2.59	1,651.599		
200.0	200.0	224.0	224.0	0.3	4.5	-172.03	-4,240.6	-593.6	4,281.9	4,277.1	4.82	888.851		
300.0	300.0	324.0	324.0	0.6	6.5	-172.03	-4,240.6	-593.6	4,281.9	4,274.9	7.04	608.043		
400.0	400.0	424.0	424.0	0.8	8.5	-172.03	-4,240.6	-593.6	4,281.9	4,272.6	9.27	462.066		
500.0	500.0	524.0	524.0	1.0	10.5	-172.03	-4,240.6	-593.6	4,281.9	4,270.4	11.49	372.610		
600.0	600.0	624.0	624.0	1.2	12.5	-172.03	-4,240.6	-593.6	4,281.9	4,268.2	13.72	312.174		
700.0	700.0	724.0	724.0	1.5	14.5	-104.00	-4,240.6	-593.6	4,282.3	4,266.4	15.93	268.771		
800.0	799.8	823.8	823.8	1.7	16.5	-104.05	-4,240.6	-593.6	4,283.6	4,265.4	18.15	236.062		
900.0	899.5	923.5	923.5	1.9	18.5	-104.12	-4,240.6	-593.6	4,285.7	4,265.4	20.37	210.406		
1,000.0	998.9	1,022.9	1,022.9	2.2	20.5	-104.25	-4,240.6	-593.6	4,288.4	4,265.8	22.61	189.676		
1,100.0	1,098.3	1,122.3	1,122.3	2.4	22.4	-104.39	-4,240.6	-593.6	4,291.1	4,266.2	24.86	172.605		
1,200.0	1,197.7	1,221.7	1,221.7	2.7	24.4	-104.53	-4,240.6	-593.6	4,293.8	4,266.7	27.12	158.326		
1,300.0	1,297.1	1,321.1	1,321.1	3.0	26.4	-104.67	-4,240.6	-593.6	4,296.6	4,267.2	29.39	146.216		
1,400.0	1,396.5	1,420.5	1,420.5	3.3	28.4	-104.81	-4,240.6	-593.6	4,299.4	4,267.7	31.65	135.823		
1,500.0	1,495.9	1,519.9	1,519.9	3.6	30.4	-104.95	-4,240.6	-593.6	4,302.2	4,268.3	33.93	126.809		
1,600.0	1,595.3	1,619.3	1,619.3	3.8	32.4	-105.09	-4,240.6	-593.6	4,305.0	4,268.8	36.20	118.920		
1,700.0	1,694.7	1,718.7	1,718.7	4.1	34.4	-105.23	-4,240.6	-593.6	4,307.9	4,269.4	38.48	111.959		
1,800.0	1,794.1	1,818.1	1,818.1	4.4	36.4	-105.37	-4,240.6	-593.6	4,310.8	4,270.0	40.76	105.773		
1,900.0	1,893.5	1,917.5	1,917.5	4.7	38.4	-105.51	-4,240.6	-593.6	4,313.7	4,270.6	43.03	100.239		
2,000.0	1,992.9	2,016.9	2,016.9	5.0	40.3	-105.64	-4,240.6	-593.6	4,316.6	4,271.3	45.31	95.261		
2,100.0	2,092.3	2,116.3	2,116.3	5.3	42.3	-105.78	-4,240.6	-593.6	4,319.6	4,272.0	47.59	90.759		
2,200.0	2,191.7	2,215.7	2,215.7	5.6	44.3	-105.92	-4,240.6	-593.6	4,322.6	4,272.7	49.88	86.668		
2,300.0	2,291.1	2,315.1	2,315.1	5.9	46.3	-106.06	-4,240.6	-593.6	4,325.6	4,273.4	52.16	82.934		
2,400.0	2,390.6	2,414.6	2,414.6	6.2	48.3	-106.20	-4,240.6	-593.6	4,328.6	4,274.2	54.44	79.514		
2,500.0	2,490.0	2,514.0	2,514.0	6.5	50.3	-106.33	-4,240.6	-593.6	4,331.7	4,275.0	56.72	76.368		
2,600.0	2,589.4	2,613.4	2,613.4	6.8	52.3	-106.47	-4,240.6	-593.6	4,334.8	4,275.8	59.00	73.467		
2,700.0	2,688.8	2,712.8	2,712.8	7.1	54.3	-106.61	-4,240.6	-593.6	4,337.9	4,276.6	61.29	70.781		
2,800.0	2,788.2	2,812.2	2,812.2	7.4	56.2	-106.74	-4,240.6	-593.6	4,341.0	4,277.5	63.57	68.289		
2,900.0	2,887.6	2,911.6	2,911.6	7.7	58.2	-106.88	-4,240.6	-593.6	4,344.2	4,278.3	65.85	65.969		
3,000.0	2,987.0	3,011.0	3,011.0	8.0	60.2	-107.02	-4,240.6	-593.6	4,347.4	4,279.2	68.13	63.806		
3,100.0	3,086.4	3,110.4	3,110.4	8.3	62.2	-107.15	-4,240.6	-593.6	4,350.6	4,280.2	70.42	61.783		
3,200.0	3,185.8	3,209.8	3,209.8	8.6	64.2	-107.29	-4,240.6	-593.6	4,353.8	4,281.1	72.70	59.887		
3,300.0	3,285.2	3,309.2	3,309.2	8.9	66.2	-107.43	-4,240.6	-593.6	4,357.1	4,282.1	74.98	58.108		
3,400.0	3,384.6	3,408.6	3,408.6	9.2	68.2	-107.56	-4,240.6	-593.6	4,360.4	4,283.1	77.27	56.433		
3,500.0	3,484.0	3,508.0	3,508.0	9.5	70.2	-107.70	-4,240.6	-593.6	4,363.7	4,284.1	79.55	54.855		
3,600.0	3,583.4	3,607.4	3,607.4	9.8	72.1	-107.83	-4,240.6	-593.6	4,367.0	4,285.2	81.83	53.366		
3,700.0	3,682.8	3,706.8	3,706.8	10.1	74.1	-107.97	-4,240.6	-593.6	4,370.4	4,286.3	84.11	51.958		
3,800.0	3,782.2	3,806.2	3,806.2	10.4	76.1	-108.10	-4,240.6	-593.6	4,373.8	4,287.4	86.40	50.624		
3,900.0	3,881.6	3,905.6	3,905.6	10.7	78.1	-108.24	-4,240.6	-593.6	4,377.2	4,288.5	88.68	49.359		
4,000.0	3,981.1	4,005.1	4,005.1	11.0	80.1	-108.37	-4,240.6	-593.6	4,380.6	4,289.7	90.96	48.159		
4,100.0	4,080.5	4,104.5	4,104.5	11.3	82.1	-108.50	-4,240.6	-593.6	4,384.1	4,290.8	93.24	47.017		
4,200.0	4,179.9	4,203.9	4,203.9	11.6	84.1	-108.64	-4,240.6	-593.6	4,387.6	4,292.0	95.53	45.930		
4,300.0	4,279.3	4,303.3	4,303.3	11.9	86.1	-108.77	-4,240.6	-593.6	4,391.1	4,293.3	97.81	44.894		
4,400.0	4,378.7	4,402.7	4,402.7	12.2	88.1	-108.91	-4,240.6	-593.6	4,394.6	4,294.5	100.09	43.906		
4,500.0	4,478.1	4,502.1	4,502.1	12.5	90.0	-109.04	-4,240.6	-593.6	4,398.2	4,295.8	102.37	42.962		
4,600.0	4,577.5	4,601.5	4,601.5	12.8	92.0	-109.17	-4,240.6	-593.6	4,401.7	4,297.1	104.65	42.060		
4,700.0	4,676.9	4,700.9	4,700.9	13.2	94.0	-109.31	-4,240.6	-593.6	4,405.3	4,298.4	106.94	41.196		
4,800.0	4,776.3	4,800.3	4,800.3	13.5	96.0	-109.44	-4,240.6	-593.6	4,409.0	4,299.8	109.22	40.369		
4,900.0	4,875.7	4,899.7	4,899.7	13.8	98.0	-109.57	-4,240.6	-593.6	4,412.6	4,301.1	111.50	39.576		
5,000.0	4,975.1	4,999.1	4,999.1	14.1	100.0	-109.70	-4,240.6	-593.6	4,416.3	4,302.5	113.78	38.814		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
5,100.0	5,074.5	5,098.5	5,098.5	14.4	102.0	-109.84	-4,240.6	-593.6	4,420.0	4,303.9	116.06	38.084		
5,200.0	5,173.9	5,197.9	5,197.9	14.7	104.0	-109.97	-4,240.6	-593.6	4,423.7	4,305.4	118.34	37.381		
5,300.0	5,273.3	5,297.3	5,297.3	15.0	105.9	-110.10	-4,240.6	-593.6	4,427.5	4,306.8	120.62	36.705		
5,400.0	5,372.7	5,396.7	5,396.7	15.3	107.9	-110.23	-4,240.6	-593.6	4,431.2	4,308.3	122.90	36.055		
5,500.0	5,472.2	5,496.2	5,496.2	15.6	109.9	-110.36	-4,240.6	-593.6	4,435.0	4,309.8	125.18	35.429		
5,600.0	5,571.7	5,595.7	5,595.7	15.8	111.9	-110.53	-4,240.6	-593.6	4,438.4	4,311.0	127.46	34.822		
5,700.0	5,671.5	5,695.5	5,695.5	16.0	113.9	-110.65	-4,240.6	-593.6	4,440.6	4,311.0	129.66	34.247		
5,800.0	5,771.4	5,795.4	5,795.4	16.2	115.9	-110.70	-4,240.6	-593.6	4,441.6	4,309.8	131.83	33.692		
5,900.0	5,871.4	5,895.4	5,895.4	16.3	117.9	-1178.74	-4,240.6	-593.6	4,441.6	4,307.7	133.98	33.151		
6,000.0	5,971.4	5,995.4	5,995.4	16.5	119.9	1.26	-4,240.6	-593.6	4,441.6	4,305.5	136.15	32.623		
6,100.0	6,071.1	6,095.1	6,095.1	16.6	121.9	1.27	-4,240.6	-593.6	4,434.3	4,297.4	136.94	32.381		
6,200.0	6,169.0	6,193.0	6,193.0	16.7	123.9	1.31	-4,240.6	-593.6	4,414.1	4,278.8	135.31	32.621		
6,300.0	6,263.3	6,287.3	6,287.3	16.8	125.7	1.38	-4,240.6	-593.6	4,381.3	4,250.1	131.21	33.391		
6,400.0	6,352.6	6,376.6	6,376.6	16.8	127.5	1.49	-4,240.6	-593.6	4,336.4	4,211.8	124.64	34.792		
6,500.0	6,435.3	6,459.3	6,459.3	16.9	129.2	1.65	-4,240.6	-593.6	4,280.3	4,164.6	115.67	37.005		
6,600.0	6,509.9	6,533.9	6,533.9	17.0	130.7	1.89	-4,240.6	-593.6	4,213.9	4,109.4	104.45	40.343		
6,700.0	6,575.2	6,599.2	6,599.2	17.1	132.0	2.24	-4,240.6	-593.6	4,138.2	4,047.0	91.23	45.361		
6,800.0	6,630.1	6,654.1	6,654.1	17.3	133.1	2.79	-4,240.6	-593.6	4,054.8	3,978.4	76.37	53.092		
6,900.0	6,673.7	6,697.7	6,697.7	17.8	134.0	3.74	-4,240.6	-593.6	3,964.8	3,904.4	60.48	65.556		
7,000.0	6,705.1	6,729.1	6,729.1	18.4	134.6	5.72	-4,240.6	-593.6	3,870.0	3,824.8	45.18	85.664		
7,100.0	6,723.8	6,747.8	6,747.8	19.2	135.0	11.86	-4,240.6	-593.6	3,771.9	3,730.4	41.52	90.846		
7,200.0	6,729.6	6,753.6	6,753.6	20.2	135.1	98.60	-4,240.6	-593.6	3,672.2	3,520.2	152.00	24.159		
7,300.0	6,729.2	6,753.2	6,753.2	21.4	135.1	98.37	-4,240.6	-593.6	3,572.2	3,418.9	153.30	23.302		
7,400.0	6,728.8	6,752.8	6,752.8	22.7	135.1	98.13	-4,240.6	-593.6	3,472.2	3,317.5	154.70	22.445		
7,500.0	6,728.4	6,752.4	6,752.4	24.0	135.0	97.90	-4,240.6	-593.6	3,372.3	3,216.1	156.19	21.591		
7,600.0	6,728.0	6,752.0	6,752.0	25.4	135.0	97.67	-4,240.6	-593.6	3,272.3	3,114.6	157.75	20.744		
7,700.0	6,727.6	6,751.6	6,751.6	26.9	135.0	97.44	-4,240.6	-593.6	3,172.4	3,013.0	159.36	19.907		
7,800.0	6,727.2	6,751.2	6,751.2	28.5	135.0	97.21	-4,240.6	-593.6	3,072.4	2,911.4	161.02	19.081		
7,900.0	6,726.8	6,750.8	6,750.8	30.0	135.0	96.98	-4,240.6	-593.6	2,972.5	2,809.8	162.72	18.268		
8,000.0	6,726.4	6,750.4	6,750.4	31.7	135.0	96.74	-4,240.6	-593.6	2,872.5	2,708.1	164.45	17.468		
8,100.0	6,726.0	6,750.0	6,750.0	33.3	135.0	96.51	-4,240.6	-593.6	2,772.6	2,606.4	166.21	16.682		
8,200.0	6,725.6	6,749.6	6,749.6	35.0	135.0	96.28	-4,240.6	-593.6	2,672.7	2,504.7	167.99	15.910		
8,300.0	6,725.2	6,749.2	6,749.2	36.7	135.0	96.04	-4,240.6	-593.6	2,572.7	2,402.9	169.79	15.153		
8,400.0	6,724.8	6,748.8	6,748.8	38.4	135.0	95.81	-4,240.6	-593.6	2,472.8	2,301.2	171.60	14.410		
8,500.0	6,724.4	6,748.4	6,748.4	40.1	135.0	95.58	-4,240.6	-593.6	2,372.9	2,199.4	173.43	13.682		
8,600.0	6,724.0	6,748.0	6,748.0	41.9	135.0	95.34	-4,240.6	-593.6	2,273.0	2,097.7	175.28	12.968		
8,700.0	6,723.6	6,747.6	6,747.6	43.7	135.0	95.11	-4,240.6	-593.6	2,173.1	1,995.9	177.13	12.268		
8,800.0	6,723.2	6,747.2	6,747.2	45.5	134.9	94.87	-4,240.6	-593.6	2,073.2	1,894.2	178.99	11.583		
8,900.0	6,722.8	6,746.8	6,746.8	47.2	134.9	94.64	-4,240.6	-593.6	1,973.3	1,792.4	180.86	10.911		
9,000.0	6,722.4	6,746.4	6,746.4	49.0	134.9	94.41	-4,240.6	-593.6	1,873.4	1,690.7	182.73	10.252		
9,100.0	6,722.0	6,746.0	6,746.0	50.9	134.9	94.17	-4,240.6	-593.6	1,773.6	1,589.0	184.61	9.607		
9,200.0	6,721.6	6,745.6	6,745.6	52.7	134.9	93.94	-4,240.6	-593.6	1,673.7	1,487.2	186.50	8.975		
9,300.0	6,721.2	6,745.2	6,745.2	54.5	134.9	93.70	-4,240.6	-593.6	1,573.9	1,385.5	188.38	8.355		
9,400.0	6,720.8	6,744.8	6,744.8	56.3	134.9	93.47	-4,240.6	-593.6	1,474.1	1,283.8	190.27	7.747		
9,500.0	6,720.4	6,744.4	6,744.4	58.2	134.9	93.23	-4,240.6	-593.6	1,374.3	1,182.2	192.17	7.152		
9,600.0	6,720.0	6,744.0	6,744.0	60.0	134.9	93.00	-4,240.6	-593.6	1,274.6	1,080.6	194.06	6.568		
9,700.0	6,719.6	6,743.6	6,743.6	61.9	134.9	92.76	-4,240.6	-593.6	1,174.9	979.0	195.96	5.996		
9,800.0	6,719.2	6,743.2	6,743.2	63.7	134.9	92.53	-4,240.6	-593.6	1,075.3	877.5	197.86	5.435		
9,900.0	6,718.8	6,742.8	6,742.8	65.6	134.9	92.29	-4,240.6	-593.6	975.8	776.0	199.75	4.885		
10,000.0	6,718.4	6,742.4	6,742.4	67.4	134.8	92.05	-4,240.6	-593.6	876.3	674.7	201.65	4.346		
10,100.0	6,718.0	6,742.0	6,742.0	69.3	134.8	91.82	-4,240.6	-593.6	777.0	573.5	203.55	3.817		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	6,717.6	6,741.6	6,741.6	71.2	134.8	91.58	91.58	-4,240.6	-593.6	677.9	472.5	205.45	3.300	
10,300.0	6,717.2	6,741.2	6,741.2	73.0	134.8	91.35	91.35	-4,240.6	-593.6	579.2	371.8	207.35	2.793	
10,400.0	6,716.8	6,740.8	6,740.8	74.9	134.8	91.11	91.11	-4,240.6	-593.6	480.9	271.6	209.24	2.298	
10,500.0	6,716.4	6,740.4	6,740.4	76.8	134.8	90.88	90.88	-4,240.6	-593.6	383.5	172.4	211.14	1.816	
10,600.0	6,716.0	6,740.0	6,740.0	78.6	134.8	90.64	90.64	-4,240.6	-593.6	287.9	74.9	213.03	1.351 Level 3	
10,700.0	6,715.6	6,739.6	6,739.6	80.5	134.8	90.40	90.40	-4,240.6	-593.6	196.7	-18.2	214.92	0.915 Level 1	
10,800.0	6,715.2	6,739.2	6,739.2	82.4	134.8	90.17	90.17	-4,240.6	-593.6	120.5	-96.3	216.81	0.556 Level 1	
10,870.9	6,714.9	6,738.9	6,738.9	83.7	134.8	90.00	90.00	-4,240.6	-593.6	97.5	-120.7	218.15	0.447 Level 1, CC, ES, SF	
10,900.0	6,714.8	6,738.8	6,738.8	84.3	134.8	89.93	89.93	-4,240.6	-593.6	101.7	-117.0	218.70	0.465 Level 1	
11,000.0	6,714.4	6,738.4	6,738.4	86.2	134.8	89.70	89.70	-4,240.6	-593.6	161.8	-58.8	220.59	0.733 Level 1	
11,100.0	6,714.0	6,738.0	6,738.0	88.0	134.8	89.46	89.46	-4,240.6	-593.6	249.0	26.5	222.47	1.119 Level 2	
11,200.0	6,713.6	6,737.6	6,737.6	89.9	134.8	89.22	89.22	-4,240.6	-593.6	343.2	118.9	224.35	1.530	
11,300.0	6,713.2	6,737.2	6,737.2	91.8	134.7	88.99	88.99	-4,240.6	-593.6	440.0	213.8	226.23	1.945	
11,400.0	6,712.8	6,736.8	6,736.8	93.7	134.7	88.75	88.75	-4,240.6	-593.6	538.0	309.9	228.11	2.359	
11,500.0	6,712.3	6,736.3	6,736.3	95.6	134.7	88.52	88.52	-4,240.6	-593.6	636.6	406.6	229.98	2.768	
11,600.0	6,711.9	6,735.9	6,735.9	97.5	134.7	88.28	88.28	-4,240.6	-593.6	735.6	503.7	231.85	3.173	
11,700.0	6,711.5	6,735.5	6,735.5	99.4	134.7	88.04	88.04	-4,240.6	-593.6	834.8	601.1	233.72	3.572	
11,800.0	6,711.1	6,735.1	6,735.1	101.3	134.7	87.81	87.81	-4,240.6	-593.6	934.2	698.6	235.58	3.965	
11,900.0	6,710.7	6,734.7	6,734.7	103.2	134.7	87.57	87.57	-4,240.6	-593.6	1,033.7	796.3	237.44	4.353	
12,000.0	6,710.3	6,734.3	6,734.3	105.1	134.7	87.34	87.34	-4,240.6	-593.6	1,133.3	894.0	239.30	4.736	
12,100.0	6,709.9	6,733.9	6,733.9	107.0	134.7	87.10	87.10	-4,240.6	-593.6	1,233.0	991.8	241.15	5.113	
12,200.0	6,709.5	6,733.5	6,733.5	108.9	134.7	86.87	86.87	-4,240.6	-593.6	1,332.7	1,089.7	243.00	5.484	
12,300.0	6,709.1	6,733.1	6,733.1	110.8	134.7	86.63	86.63	-4,240.6	-593.6	1,432.4	1,187.6	244.85	5.850	
12,400.0	6,708.7	6,732.7	6,732.7	112.7	134.7	86.40	86.40	-4,240.6	-593.6	1,532.2	1,285.5	246.69	6.211	
12,500.0	6,708.3	6,732.3	6,732.3	114.6	134.6	86.16	86.16	-4,240.6	-593.6	1,632.0	1,383.5	248.52	6.567	
12,600.0	6,707.9	6,731.9	6,731.9	116.5	134.6	85.93	85.93	-4,240.6	-593.6	1,731.8	1,481.5	250.36	6.917	
12,700.0	6,707.5	6,731.5	6,731.5	118.4	134.6	85.69	85.69	-4,240.6	-593.6	1,831.7	1,579.5	252.19	7.263	
12,800.0	6,707.1	6,731.1	6,731.1	120.3	134.6	85.46	85.46	-4,240.6	-593.6	1,931.5	1,677.5	254.01	7.604	
12,900.0	6,706.7	6,730.7	6,730.7	122.2	134.6	85.22	85.22	-4,240.6	-593.6	2,031.4	1,775.6	255.83	7.941	
13,000.0	6,706.3	6,730.3	6,730.3	124.1	134.6	84.99	84.99	-4,240.6	-593.6	2,131.3	1,873.7	257.64	8.272	
13,100.0	6,705.9	6,729.9	6,729.9	126.0	134.6	84.75	84.75	-4,240.6	-593.6	2,231.2	1,971.8	259.46	8.600	
13,200.0	6,705.5	6,729.5	6,729.5	127.9	134.6	84.52	84.52	-4,240.6	-593.6	2,331.1	2,069.9	261.26	8.923	
13,300.0	6,705.1	6,729.1	6,729.1	129.8	134.6	84.29	84.29	-4,240.6	-593.6	2,431.0	2,168.0	263.06	9.241	
13,400.0	6,704.7	6,728.7	6,728.7	131.7	134.6	84.05	84.05	-4,240.6	-593.6	2,531.0	2,266.1	264.86	9.556	
13,500.0	6,704.3	6,728.3	6,728.3	133.6	134.6	83.82	83.82	-4,240.6	-593.6	2,630.9	2,364.2	266.65	9.867	
13,600.0	6,703.9	6,727.9	6,727.9	135.5	134.6	83.59	83.59	-4,240.6	-593.6	2,730.8	2,462.4	268.43	10.173	
13,700.0	6,703.5	6,727.5	6,727.5	137.4	134.6	83.35	83.35	-4,240.6	-593.6	2,830.8	2,560.5	270.21	10.476	
13,800.0	6,703.1	6,727.1	6,727.1	139.3	134.5	83.12	83.12	-4,240.6	-593.6	2,930.7	2,658.7	271.99	10.775	
13,829.7	6,703.0	6,727.0	6,727.0	139.9	134.5	83.05	83.05	-4,240.6	-593.6	2,960.4	2,687.9	272.51	10.863	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	24.0	24.0	0.0	0.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,162.7	0.48	6,587.287	
100.0	100.0	124.0	124.0	0.1	2.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,160.6	2.59	1,220.102	
200.0	200.0	224.0	224.0	0.3	4.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,158.4	4.82	656.630	
300.0	300.0	324.0	324.0	0.6	6.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,156.2	7.04	449.185	
400.0	400.0	424.0	424.0	0.8	8.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,153.9	9.27	341.346	
500.0	500.0	524.0	524.0	1.0	10.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,151.7	11.49	275.262	
600.0	600.0	624.0	624.0	1.2	12.5	-169.24	-169.24	-3,107.6	-590.7	3,163.2	3,149.5	13.72	230.615	
700.0	700.0	724.0	724.0	1.5	14.5	-101.22	-101.22	-3,107.6	-590.7	3,163.6	3,147.6	15.93	198.551	
800.0	799.8	823.8	823.8	1.7	16.5	-101.29	-101.29	-3,107.6	-590.7	3,164.6	3,146.4	18.15	174.386	
900.0	899.5	923.5	923.5	1.9	18.5	-101.41	-101.41	-3,107.6	-590.7	3,166.3	3,145.9	20.37	155.431	
1,000.0	998.9	1,022.9	1,022.9	2.2	20.5	-101.60	-101.60	-3,107.6	-590.7	3,168.5	3,145.9	22.61	140.122	
1,100.0	1,098.3	1,122.3	1,122.3	2.4	22.4	-101.79	-101.79	-3,107.6	-590.7	3,170.7	3,145.8	24.86	127.517	
1,200.0	1,197.7	1,221.7	1,221.7	2.7	24.4	-101.98	-101.98	-3,107.6	-590.7	3,172.9	3,145.8	27.13	116.974	
1,300.0	1,297.1	1,321.1	1,321.1	3.0	26.4	-102.17	-102.17	-3,107.6	-590.7	3,175.2	3,145.8	29.39	108.034	
1,400.0	1,396.5	1,420.5	1,420.5	3.3	28.4	-102.36	-102.36	-3,107.6	-590.7	3,177.6	3,145.9	31.66	100.362	
1,500.0	1,495.9	1,519.9	1,519.9	3.6	30.4	-102.55	-102.55	-3,107.6	-590.7	3,179.9	3,146.0	33.93	93.708	
1,600.0	1,595.3	1,619.3	1,619.3	3.8	32.4	-102.74	-102.74	-3,107.6	-590.7	3,182.3	3,146.1	36.21	87.886	
1,700.0	1,694.7	1,718.7	1,718.7	4.1	34.4	-102.93	-102.93	-3,107.6	-590.7	3,184.7	3,146.3	38.49	82.749	
1,800.0	1,794.1	1,818.1	1,818.1	4.4	36.4	-103.12	-103.12	-3,107.6	-590.7	3,187.2	3,146.4	40.77	78.184	
1,900.0	1,893.5	1,917.5	1,917.5	4.7	38.4	-103.31	-103.31	-3,107.6	-590.7	3,189.7	3,146.7	43.05	74.101	
2,000.0	1,992.9	2,016.9	2,016.9	5.0	40.3	-103.50	-103.50	-3,107.6	-590.7	3,192.2	3,146.9	45.33	70.428	
2,100.0	2,092.3	2,116.3	2,116.3	5.3	42.3	-103.69	-103.69	-3,107.6	-590.7	3,194.8	3,147.2	47.61	67.107	
2,200.0	2,191.7	2,215.7	2,215.7	5.6	44.3	-103.88	-103.88	-3,107.6	-590.7	3,197.4	3,147.5	49.89	64.090	
2,300.0	2,291.1	2,315.1	2,315.1	5.9	46.3	-104.06	-104.06	-3,107.6	-590.7	3,200.1	3,147.9	52.17	61.337	
2,400.0	2,390.6	2,414.6	2,414.6	6.2	48.3	-104.25	-104.25	-3,107.6	-590.7	3,202.7	3,148.3	54.45	58.815	
2,500.0	2,490.0	2,514.0	2,514.0	6.5	50.3	-104.44	-104.44	-3,107.6	-590.7	3,205.5	3,148.7	56.74	56.496	
2,600.0	2,589.4	2,613.4	2,613.4	6.8	52.3	-104.63	-104.63	-3,107.6	-590.7	3,208.2	3,149.2	59.02	54.357	
2,700.0	2,688.8	2,712.8	2,712.8	7.1	54.3	-104.81	-104.81	-3,107.6	-590.7	3,211.0	3,149.7	61.30	52.378	
2,800.0	2,788.2	2,812.2	2,812.2	7.4	56.2	-105.00	-105.00	-3,107.6	-590.7	3,213.8	3,150.2	63.59	50.541	
2,900.0	2,887.6	2,911.6	2,911.6	7.7	58.2	-105.19	-105.19	-3,107.6	-590.7	3,216.6	3,150.8	65.87	48.832	
3,000.0	2,987.0	3,011.0	3,011.0	8.0	60.2	-105.37	-105.37	-3,107.6	-590.7	3,219.5	3,151.4	68.15	47.239	
3,100.0	3,086.4	3,110.4	3,110.4	8.3	62.2	-105.56	-105.56	-3,107.6	-590.7	3,222.4	3,152.0	70.44	45.749	
3,200.0	3,185.8	3,209.8	3,209.8	8.6	64.2	-105.74	-105.74	-3,107.6	-590.7	3,225.4	3,152.7	72.72	44.353	
3,300.0	3,285.2	3,309.2	3,309.2	8.9	66.2	-105.93	-105.93	-3,107.6	-590.7	3,228.4	3,153.4	75.00	43.042	
3,400.0	3,384.6	3,408.6	3,408.6	9.2	68.2	-106.11	-106.11	-3,107.6	-590.7	3,231.4	3,154.1	77.29	41.810	
3,500.0	3,484.0	3,508.0	3,508.0	9.5	70.2	-106.30	-106.30	-3,107.6	-590.7	3,234.4	3,154.9	79.57	40.648	
3,600.0	3,583.4	3,607.4	3,607.4	9.8	72.1	-106.48	-106.48	-3,107.6	-590.7	3,237.5	3,155.7	81.85	39.552	
3,700.0	3,682.8	3,706.8	3,706.8	10.1	74.1	-106.66	-106.66	-3,107.6	-590.7	3,240.7	3,156.5	84.14	38.516	
3,800.0	3,782.2	3,806.2	3,806.2	10.4	76.1	-106.85	-106.85	-3,107.6	-590.7	3,243.8	3,157.4	86.42	37.535	
3,900.0	3,881.6	3,905.6	3,905.6	10.7	78.1	-107.03	-107.03	-3,107.6	-590.7	3,247.0	3,158.3	88.70	36.605	
4,000.0	3,981.1	4,005.1	4,005.1	11.0	80.1	-107.21	-107.21	-3,107.6	-590.7	3,250.2	3,159.2	90.99	35.722	
4,100.0	4,080.5	4,104.5	4,104.5	11.3	82.1	-107.39	-107.39	-3,107.6	-590.7	3,253.5	3,160.2	93.27	34.883	
4,200.0	4,179.9	4,203.9	4,203.9	11.6	84.1	-107.58	-107.58	-3,107.6	-590.7	3,256.8	3,161.2	95.55	34.084	
4,300.0	4,279.3	4,303.3	4,303.3	11.9	86.1	-107.76	-107.76	-3,107.6	-590.7	3,260.1	3,162.2	97.83	33.323	
4,400.0	4,378.7	4,402.7	4,402.7	12.2	88.1	-107.94	-107.94	-3,107.6	-590.7	3,263.4	3,163.3	100.11	32.597	
4,500.0	4,478.1	4,502.1	4,502.1	12.5	90.0	-108.12	-108.12	-3,107.6	-590.7	3,266.8	3,164.4	102.40	31.904	
4,600.0	4,577.5	4,601.5	4,601.5	12.8	92.0	-108.30	-108.30	-3,107.6	-590.7	3,270.2	3,165.6	104.68	31.241	
4,700.0	4,676.9	4,700.9	4,700.9	13.2	94.0	-108.48	-108.48	-3,107.6	-590.7	3,273.7	3,166.7	106.96	30.607	
4,800.0	4,776.3	4,800.3	4,800.3	13.5	96.0	-108.66	-108.66	-3,107.6	-590.7	3,277.2	3,167.9	109.24	30.000	
4,900.0	4,875.7	4,899.7	4,899.7	13.8	98.0	-108.84	-108.84	-3,107.6	-590.7	3,280.7	3,169.2	111.52	29.418	
5,000.0	4,975.1	4,999.1	4,999.1	14.1	100.0	-109.02	-109.02	-3,107.6	-590.7	3,284.2	3,170.4	113.80	28.860	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,074.5	5,098.5	5,098.5	14.4	102.0	-109.19	-109.19	-3,107.6	-590.7	3,287.8	3,171.7	116.08	28.324	
5,200.0	5,173.9	5,197.9	5,197.9	14.7	104.0	-109.37	-109.37	-3,107.6	-590.7	3,291.4	3,173.1	118.36	27.809	
5,300.0	5,273.3	5,297.3	5,297.3	15.0	105.9	-109.55	-109.55	-3,107.6	-590.7	3,295.1	3,174.4	120.64	27.313	
5,400.0	5,372.7	5,396.7	5,396.7	15.3	107.9	-109.73	-109.73	-3,107.6	-590.7	3,298.7	3,175.8	122.92	26.837	
5,500.0	5,472.2	5,496.2	5,496.2	15.6	109.9	-109.90	-109.90	-3,107.6	-590.7	3,302.4	3,177.2	125.20	26.378	
5,600.0	5,571.7	5,595.7	5,595.7	15.8	111.9	-110.11	-110.11	-3,107.6	-590.7	3,305.8	3,178.3	127.47	25.933	
5,700.0	5,671.5	5,695.5	5,695.5	16.0	113.9	-110.25	-110.25	-3,107.6	-590.7	3,307.9	3,178.2	129.67	25.509	
5,800.0	5,771.4	5,795.4	5,795.4	16.2	115.9	-110.31	-110.31	-3,107.6	-590.7	3,308.9	3,177.0	131.84	25.098	
5,900.0	5,871.4	5,895.4	5,895.4	16.3	117.9	-178.36	-178.36	-3,107.6	-590.7	3,308.9	3,174.9	133.99	24.695	
6,000.0	5,971.4	5,995.4	5,995.4	16.5	119.9	1.64	1.64	-3,107.6	-590.7	3,308.9	3,172.7	136.16	24.302	
6,100.0	6,071.1	6,095.1	6,095.1	16.6	121.9	1.66	1.66	-3,107.6	-590.7	3,301.6	3,164.7	136.95	24.108	
6,200.0	6,169.0	6,193.0	6,193.0	16.7	123.9	1.71	1.71	-3,107.6	-590.7	3,281.4	3,146.1	135.33	24.248	
6,300.0	6,263.3	6,287.3	6,287.3	16.8	125.7	1.81	1.81	-3,107.6	-590.7	3,248.6	3,117.3	131.23	24.755	
6,400.0	6,352.6	6,376.6	6,376.6	16.8	127.5	1.96	1.96	-3,107.6	-590.7	3,203.7	3,079.1	124.66	25.700	
6,500.0	6,435.3	6,459.3	6,459.3	16.9	129.2	2.18	2.18	-3,107.6	-590.7	3,147.6	3,031.9	115.70	27.206	
6,600.0	6,509.9	6,533.9	6,533.9	17.0	130.7	2.51	2.51	-3,107.6	-590.7	3,081.2	2,976.7	104.50	29.485	
6,700.0	6,575.2	6,599.2	6,599.2	17.1	132.0	2.99	2.99	-3,107.6	-590.7	3,005.6	2,914.3	91.33	32.910	
6,800.0	6,630.1	6,654.1	6,654.1	17.3	133.1	3.76	3.76	-3,107.6	-590.7	2,922.1	2,845.5	76.59	38.153	
6,900.0	6,673.7	6,697.7	6,697.7	17.8	134.0	5.09	5.09	-3,107.6	-590.7	2,832.2	2,771.2	61.07	46.375	
7,000.0	6,705.1	6,729.1	6,729.1	18.4	134.6	7.83	7.83	-3,107.6	-590.7	2,737.4	2,690.1	47.29	57.881	
7,100.0	6,723.8	6,747.8	6,747.8	19.2	135.0	16.26	16.26	-3,107.6	-590.7	2,639.3	2,588.3	50.98	51.774	
7,200.0	6,729.6	6,753.6	6,753.6	20.2	135.1	96.14	96.14	-3,107.6	-590.7	2,539.6	2,386.7	152.89	16.610	
7,300.0	6,729.2	6,753.2	6,753.2	21.4	135.1	95.90	95.90	-3,107.6	-590.7	2,439.7	2,285.5	154.18	15.824	
7,400.0	6,728.8	6,752.8	6,752.8	22.7	135.1	95.66	95.66	-3,107.6	-590.7	2,339.8	2,184.2	155.57	15.040	
7,500.0	6,728.4	6,752.4	6,752.4	24.0	135.0	95.42	95.42	-3,107.6	-590.7	2,239.9	2,082.8	157.04	14.263	
7,600.0	6,728.0	6,752.0	6,752.0	25.4	135.0	95.18	95.18	-3,107.6	-590.7	2,140.0	1,981.4	158.58	13.495	
7,700.0	6,727.6	6,751.6	6,751.6	26.9	135.0	94.94	94.94	-3,107.6	-590.7	2,040.1	1,879.9	160.17	12.737	
7,800.0	6,727.2	6,751.2	6,751.2	28.5	135.0	94.70	94.70	-3,107.6	-590.7	1,940.2	1,778.4	161.81	11.990	
7,900.0	6,726.8	6,750.8	6,750.8	30.0	135.0	94.46	94.46	-3,107.6	-590.7	1,840.3	1,676.8	163.49	11.256	
8,000.0	6,726.4	6,750.4	6,750.4	31.7	135.0	94.21	94.21	-3,107.6	-590.7	1,740.4	1,575.2	165.20	10.535	
8,100.0	6,726.0	6,750.0	6,750.0	33.3	135.0	93.97	93.97	-3,107.6	-590.7	1,640.6	1,473.7	166.94	9.828	
8,200.0	6,725.6	6,749.6	6,749.6	35.0	135.0	93.73	93.73	-3,107.6	-590.7	1,540.8	1,372.1	168.70	9.134	
8,300.0	6,725.2	6,749.2	6,749.2	36.7	135.0	93.49	93.49	-3,107.6	-590.7	1,441.0	1,270.5	170.47	8.453	
8,400.0	6,724.8	6,748.8	6,748.8	38.4	135.0	93.25	93.25	-3,107.6	-590.7	1,341.2	1,169.0	172.27	7.786	
8,500.0	6,724.4	6,748.4	6,748.4	40.1	135.0	93.00	93.00	-3,107.6	-590.7	1,241.5	1,067.4	174.07	7.132	
8,600.0	6,724.0	6,748.0	6,748.0	41.9	135.0	92.76	92.76	-3,107.6	-590.7	1,141.8	965.9	175.89	6.492	
8,700.0	6,723.6	6,747.6	6,747.6	43.7	135.0	92.52	92.52	-3,107.6	-590.7	1,042.2	864.5	177.72	5.864	
8,800.0	6,723.2	6,747.2	6,747.2	45.5	134.9	92.28	92.28	-3,107.6	-590.7	942.6	763.1	179.55	5.250	
8,900.0	6,722.8	6,746.8	6,746.8	47.2	134.9	92.03	92.03	-3,107.6	-590.7	843.2	661.8	181.39	4.649	
9,000.0	6,722.4	6,746.4	6,746.4	49.0	134.9	91.79	91.79	-3,107.6	-590.7	743.9	560.7	183.24	4.060	
9,100.0	6,722.0	6,746.0	6,746.0	50.9	134.9	91.55	91.55	-3,107.6	-590.7	644.9	459.8	185.09	3.484	
9,200.0	6,721.6	6,745.6	6,745.6	52.7	134.9	91.31	91.31	-3,107.6	-590.7	546.1	359.2	186.94	2.921	
9,300.0	6,721.2	6,745.2	6,745.2	54.5	134.9	91.06	91.06	-3,107.6	-590.7	448.0	259.2	188.80	2.373	
9,400.0	6,720.8	6,744.8	6,744.8	56.3	134.9	90.82	90.82	-3,107.6	-590.7	350.9	160.2	190.66	1.840	
9,500.0	6,720.4	6,744.4	6,744.4	58.2	134.9	90.58	90.58	-3,107.6	-590.7	256.0	63.5	192.52	1.330 Level 3	
9,600.0	6,720.0	6,744.0	6,744.0	60.0	134.9	90.34	90.34	-3,107.6	-590.7	167.2	-27.1	194.38	0.860 Level 1	
9,700.0	6,719.6	6,743.6	6,743.6	61.9	134.9	90.09	90.09	-3,107.6	-590.7	102.0	-94.3	196.25	0.520 Level 1	
9,737.9	6,719.4	6,743.4	6,743.4	62.6	134.9	90.00	90.00	-3,107.6	-590.7	94.7	-102.3	196.95	0.481 Level 1, CC, ES, SF	
9,800.0	6,719.2	6,743.2	6,743.2	63.7	134.9	89.85	89.85	-3,107.6	-590.7	113.2	-84.9	198.11	0.572 Level 1	
9,900.0	6,718.8	6,742.8	6,742.8	65.6	134.9	89.61	89.61	-3,107.6	-590.7	187.7	-12.2	199.97	0.939 Level 1	
10,000.0	6,718.4	6,742.4	6,742.4	67.4	134.8	89.36	89.36	-3,107.6	-590.7	278.7	76.8	201.84	1.381 Level 3	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Adamson 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,718.0	6,742.0	6,742.0	69.3	134.8	89.12	89.12	-3,107.6	-590.7	374.3	170.6	203.70	1.837	
10,200.0	6,717.6	6,741.6	6,741.6	71.2	134.8	88.88	88.88	-3,107.6	-590.7	471.7	266.2	205.56	2.295	
10,300.0	6,717.2	6,741.2	6,741.2	73.0	134.8	88.63	88.63	-3,107.6	-590.7	570.0	362.6	207.42	2.748	
10,400.0	6,716.8	6,740.8	6,740.8	74.9	134.8	88.39	88.39	-3,107.6	-590.7	668.8	459.6	209.27	3.196	
10,500.0	6,716.4	6,740.4	6,740.4	76.8	134.8	88.15	88.15	-3,107.6	-590.7	768.0	556.8	211.13	3.637	
10,600.0	6,716.0	6,740.0	6,740.0	78.6	134.8	87.91	87.91	-3,107.6	-590.7	867.3	654.3	212.98	4.072	
10,700.0	6,715.6	6,739.6	6,739.6	80.5	134.8	87.66	87.66	-3,107.6	-590.7	966.8	751.9	214.83	4.500	
10,800.0	6,715.2	6,739.2	6,739.2	82.4	134.8	87.42	87.42	-3,107.6	-590.7	1,066.3	849.6	216.68	4.921	
10,900.0	6,714.8	6,738.8	6,738.8	84.3	134.8	87.18	87.18	-3,107.6	-590.7	1,166.0	947.4	218.53	5.336	
11,000.0	6,714.4	6,738.4	6,738.4	86.2	134.8	86.94	86.94	-3,107.6	-590.7	1,265.7	1,045.3	220.37	5.743	
11,100.0	6,714.0	6,738.0	6,738.0	88.0	134.8	86.69	86.69	-3,107.6	-590.7	1,365.4	1,143.2	222.21	6.145	
11,200.0	6,713.6	6,737.6	6,737.6	89.9	134.8	86.45	86.45	-3,107.6	-590.7	1,465.2	1,241.1	224.04	6.540	
11,300.0	6,713.2	6,737.2	6,737.2	91.8	134.7	86.21	86.21	-3,107.6	-590.7	1,565.0	1,339.1	225.87	6.929	
11,400.0	6,712.8	6,736.8	6,736.8	93.7	134.7	85.97	85.97	-3,107.6	-590.7	1,664.8	1,437.1	227.70	7.311	
11,500.0	6,712.3	6,736.3	6,736.3	95.6	134.7	85.73	85.73	-3,107.6	-590.7	1,764.6	1,535.1	229.53	7.688	
11,600.0	6,711.9	6,735.9	6,735.9	97.5	134.7	85.48	85.48	-3,107.6	-590.7	1,864.5	1,633.2	231.35	8.059	
11,700.0	6,711.5	6,735.5	6,735.5	99.4	134.7	85.24	85.24	-3,107.6	-590.7	1,964.4	1,731.2	233.17	8.425	
11,800.0	6,711.1	6,735.1	6,735.1	101.3	134.7	85.00	85.00	-3,107.6	-590.7	2,064.3	1,829.3	234.98	8.785	
11,900.0	6,710.7	6,734.7	6,734.7	103.2	134.7	84.76	84.76	-3,107.6	-590.7	2,164.2	1,927.4	236.79	9.140	
12,000.0	6,710.3	6,734.3	6,734.3	105.1	134.7	84.52	84.52	-3,107.6	-590.7	2,264.1	2,025.5	238.59	9.489	
12,100.0	6,709.9	6,733.9	6,733.9	107.0	134.7	84.28	84.28	-3,107.6	-590.7	2,364.0	2,123.6	240.39	9.834	
12,200.0	6,709.5	6,733.5	6,733.5	108.9	134.7	84.04	84.04	-3,107.6	-590.7	2,463.9	2,221.7	242.19	10.174	
12,300.0	6,709.1	6,733.1	6,733.1	110.8	134.7	83.80	83.80	-3,107.6	-590.7	2,563.8	2,319.9	243.98	10.509	
12,400.0	6,708.7	6,732.7	6,732.7	112.7	134.7	83.56	83.56	-3,107.6	-590.7	2,663.8	2,418.0	245.76	10.839	
12,500.0	6,708.3	6,732.3	6,732.3	114.6	134.6	83.32	83.32	-3,107.6	-590.7	2,763.7	2,516.2	247.54	11.165	
12,600.0	6,707.9	6,731.9	6,731.9	116.5	134.6	83.08	83.08	-3,107.6	-590.7	2,863.7	2,614.3	249.32	11.486	
12,700.0	6,707.5	6,731.5	6,731.5	118.4	134.6	82.84	82.84	-3,107.6	-590.7	2,963.6	2,712.5	251.09	11.803	
12,800.0	6,707.1	6,731.1	6,731.1	120.3	134.6	82.60	82.60	-3,107.6	-590.7	3,063.6	2,810.7	252.86	12.116	
12,900.0	6,706.7	6,730.7	6,730.7	122.2	134.6	82.36	82.36	-3,107.6	-590.7	3,163.5	2,908.9	254.62	12.425	
13,000.0	6,706.3	6,730.3	6,730.3	124.1	134.6	82.12	82.12	-3,107.6	-590.7	3,263.5	3,007.1	256.37	12.729	
13,100.0	6,705.9	6,729.9	6,729.9	126.0	134.6	81.89	81.89	-3,107.6	-590.7	3,363.4	3,105.3	258.12	13.030	
13,200.0	6,705.5	6,729.5	6,729.5	127.9	134.6	81.65	81.65	-3,107.6	-590.7	3,463.4	3,203.5	259.86	13.328	
13,300.0	6,705.1	6,729.1	6,729.1	129.8	134.6	81.41	81.41	-3,107.6	-590.7	3,563.3	3,301.7	261.60	13.621	
13,400.0	6,704.7	6,728.7	6,728.7	131.7	134.6	81.17	81.17	-3,107.6	-590.7	3,663.3	3,400.0	263.34	13.911	
13,500.0	6,704.3	6,728.3	6,728.3	133.6	134.6	80.94	80.94	-3,107.6	-590.7	3,763.3	3,498.2	265.06	14.198	
13,600.0	6,703.9	6,727.9	6,727.9	135.5	134.6	80.70	80.70	-3,107.6	-590.7	3,863.2	3,596.5	266.79	14.481	
13,700.0	6,703.5	6,727.5	6,727.5	137.4	134.6	80.46	80.46	-3,107.6	-590.7	3,963.2	3,694.7	268.50	14.761	
13,800.0	6,703.1	6,727.1	6,727.1	139.3	134.5	80.23	80.23	-3,107.6	-590.7	4,063.2	3,793.0	270.21	15.037	
13,829.7	6,703.0	6,727.0	6,727.0	139.9	134.5	80.16	80.16	-3,107.6	-590.7	4,092.9	3,822.2	270.72	15.119	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	62.0	62.0	0.0	1.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,122.3	1.24	5,743.893	
100.0	100.0	162.0	162.0	0.1	3.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,120.2	3.35	2,124.802	
200.0	200.0	262.0	262.0	0.3	5.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,118.0	5.58	1,277.233	
300.0	300.0	362.0	362.0	0.6	7.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,115.8	7.80	913.031	
400.0	400.0	462.0	462.0	0.8	9.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,113.5	10.03	710.448	
500.0	500.0	562.0	562.0	1.0	11.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,111.3	12.25	581.438	
600.0	600.0	662.0	662.0	1.2	13.2	-175.38	-175.38	-7,100.4	-574.1	7,123.6	7,109.1	14.48	492.081	
700.0	700.0	762.0	762.0	1.5	15.2	-107.34	-107.34	-7,100.4	-574.1	7,124.1	7,107.4	16.69	426.779	
800.0	799.8	861.8	861.8	1.7	17.2	-107.35	-107.35	-7,100.4	-574.1	7,125.6	7,106.7	18.90	376.926	
900.0	899.5	961.5	961.5	1.9	19.2	-107.37	-107.37	-7,100.4	-574.1	7,128.3	7,107.1	21.12	337.433	
1,000.0	998.9	1,060.9	1,060.9	2.2	21.2	-107.44	-107.44	-7,100.4	-574.1	7,131.5	7,108.2	23.36	305.236	
1,100.0	1,098.3	1,160.3	1,160.3	2.4	23.2	-107.52	-107.52	-7,100.4	-574.1	7,134.8	7,109.2	25.61	278.545	
1,200.0	1,197.7	1,259.7	1,259.7	2.7	25.2	-107.61	-107.61	-7,100.4	-574.1	7,138.1	7,110.2	27.87	256.097	
1,300.0	1,297.1	1,359.1	1,359.1	3.0	27.2	-107.69	-107.69	-7,100.4	-574.1	7,141.4	7,111.3	30.14	236.971	
1,400.0	1,396.5	1,458.5	1,458.5	3.3	29.2	-107.77	-107.77	-7,100.4	-574.1	7,144.8	7,112.4	32.40	220.490	
1,500.0	1,495.9	1,557.9	1,557.9	3.6	31.2	-107.85	-107.85	-7,100.4	-574.1	7,148.1	7,113.4	34.67	206.147	
1,600.0	1,595.3	1,657.3	1,657.3	3.8	33.1	-107.94	-107.94	-7,100.4	-574.1	7,151.5	7,114.5	36.95	193.556	
1,700.0	1,694.7	1,756.7	1,756.7	4.1	35.1	-108.02	-108.02	-7,100.4	-574.1	7,154.8	7,115.6	39.22	182.416	
1,800.0	1,794.1	1,856.1	1,856.1	4.4	37.1	-108.10	-108.10	-7,100.4	-574.1	7,158.2	7,116.7	41.50	172.491	
1,900.0	1,893.5	1,955.5	1,955.5	4.7	39.1	-108.18	-108.18	-7,100.4	-574.1	7,161.6	7,117.9	43.78	163.595	
2,000.0	1,992.9	2,054.9	2,054.9	5.0	41.1	-108.27	-108.27	-7,100.4	-574.1	7,165.1	7,119.0	46.06	155.576	
2,100.0	2,092.3	2,154.3	2,154.3	5.3	43.1	-108.35	-108.35	-7,100.4	-574.1	7,168.5	7,120.2	48.33	148.311	
2,200.0	2,191.7	2,253.7	2,253.7	5.6	45.1	-108.43	-108.43	-7,100.4	-574.1	7,171.9	7,121.3	50.61	141.698	
2,300.0	2,291.1	2,353.1	2,353.1	5.9	47.1	-108.51	-108.51	-7,100.4	-574.1	7,175.4	7,122.5	52.89	135.655	
2,400.0	2,390.6	2,452.6	2,452.6	6.2	49.1	-108.59	-108.59	-7,100.4	-574.1	7,178.9	7,123.7	55.18	130.111	
2,500.0	2,490.0	2,552.0	2,552.0	6.5	51.0	-108.68	-108.68	-7,100.4	-574.1	7,182.4	7,124.9	57.46	125.006	
2,600.0	2,589.4	2,651.4	2,651.4	6.8	53.0	-108.76	-108.76	-7,100.4	-574.1	7,185.9	7,126.2	59.74	120.291	
2,700.0	2,688.8	2,750.8	2,750.8	7.1	55.0	-108.84	-108.84	-7,100.4	-574.1	7,189.4	7,127.4	62.02	115.922	
2,800.0	2,788.2	2,850.2	2,850.2	7.4	57.0	-108.92	-108.92	-7,100.4	-574.1	7,193.0	7,128.7	64.30	111.863	
2,900.0	2,887.6	2,949.6	2,949.6	7.7	59.0	-109.00	-109.00	-7,100.4	-574.1	7,196.5	7,129.9	66.58	108.083	
3,000.0	2,987.0	3,049.0	3,049.0	8.0	61.0	-109.08	-109.08	-7,100.4	-574.1	7,200.1	7,131.2	68.87	104.553	
3,100.0	3,086.4	3,148.4	3,148.4	8.3	63.0	-109.17	-109.17	-7,100.4	-574.1	7,203.7	7,132.5	71.15	101.249	
3,200.0	3,185.8	3,247.8	3,247.8	8.6	65.0	-109.25	-109.25	-7,100.4	-574.1	7,207.3	7,133.8	73.43	98.152	
3,300.0	3,285.2	3,347.2	3,347.2	8.9	66.9	-109.33	-109.33	-7,100.4	-574.1	7,210.9	7,135.2	75.71	95.240	
3,400.0	3,384.6	3,446.6	3,446.6	9.2	68.9	-109.41	-109.41	-7,100.4	-574.1	7,214.5	7,136.5	77.99	92.500	
3,500.0	3,484.0	3,546.0	3,546.0	9.5	70.9	-109.49	-109.49	-7,100.4	-574.1	7,218.1	7,137.9	80.28	89.915	
3,600.0	3,583.4	3,645.4	3,645.4	9.8	72.9	-109.57	-109.57	-7,100.4	-574.1	7,221.8	7,139.2	82.56	87.474	
3,700.0	3,682.8	3,744.8	3,744.8	10.1	74.9	-109.65	-109.65	-7,100.4	-574.1	7,225.5	7,140.6	84.84	85.164	
3,800.0	3,782.2	3,844.2	3,844.2	10.4	76.9	-109.73	-109.73	-7,100.4	-574.1	7,229.2	7,142.0	87.12	82.975	
3,900.0	3,881.6	3,943.6	3,943.6	10.7	78.9	-109.81	-109.81	-7,100.4	-574.1	7,232.9	7,143.4	89.41	80.898	
4,000.0	3,981.1	4,043.1	4,043.1	11.0	80.9	-109.89	-109.89	-7,100.4	-574.1	7,236.6	7,144.9	91.69	78.925	
4,100.0	4,080.5	4,142.5	4,142.5	11.3	82.8	-109.97	-109.97	-7,100.4	-574.1	7,240.3	7,146.3	93.97	77.048	
4,200.0	4,179.9	4,241.9	4,241.9	11.6	84.8	-110.05	-110.05	-7,100.4	-574.1	7,244.0	7,147.8	96.25	75.260	
4,300.0	4,279.3	4,341.3	4,341.3	11.9	86.8	-110.13	-110.13	-7,100.4	-574.1	7,247.8	7,149.3	98.54	73.555	
4,400.0	4,378.7	4,440.7	4,440.7	12.2	88.8	-110.22	-110.22	-7,100.4	-574.1	7,251.6	7,150.7	100.82	71.927	
4,500.0	4,478.1	4,540.1	4,540.1	12.5	90.8	-110.30	-110.30	-7,100.4	-574.1	7,255.4	7,152.3	103.10	70.372	
4,600.0	4,577.5	4,639.5	4,639.5	12.8	92.8	-110.38	-110.38	-7,100.4	-574.1	7,259.2	7,153.8	105.38	68.884	
4,700.0	4,676.9	4,738.9	4,738.9	13.2	94.8	-110.46	-110.46	-7,100.4	-574.1	7,263.0	7,155.3	107.66	67.460	
4,800.0	4,776.3	4,838.3	4,838.3	13.5	96.8	-110.54	-110.54	-7,100.4	-574.1	7,266.8	7,156.9	109.95	66.094	
4,900.0	4,875.7	4,937.7	4,937.7	13.8	98.8	-110.62	-110.62	-7,100.4	-574.1	7,270.6	7,158.4	112.23	64.785	
5,000.0	4,975.1	5,037.1	5,037.1	14.1	100.7	-110.70	-110.70	-7,100.4	-574.1	7,274.5	7,160.0	114.51	63.528	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft
Survey Program: 7600-UNKNOWN												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,100.0	5,074.5	5,136.5	5,136.5	14.4	102.7	-110.77	-7,100.4	-574.1	7,278.4	7,161.6	116.79	62.320		
5,200.0	5,173.9	5,235.9	5,235.9	14.7	104.7	-110.85	-7,100.4	-574.1	7,282.3	7,163.2	119.07	61.158		
5,300.0	5,273.3	5,335.3	5,335.3	15.0	106.7	-110.93	-7,100.4	-574.1	7,286.2	7,164.8	121.35	60.041		
5,400.0	5,372.7	5,434.7	5,434.7	15.3	108.7	-111.01	-7,100.4	-574.1	7,290.1	7,166.4	123.64	58.964		
5,500.0	5,472.2	5,534.2	5,534.2	15.6	110.7	-111.09	-7,100.4	-574.1	7,294.0	7,168.1	125.92	57.927		
5,600.0	5,571.7	5,633.7	5,633.7	15.8	112.7	-111.22	-7,100.4	-574.1	7,297.5	7,169.3	128.20	56.924		
5,700.0	5,671.5	5,733.5	5,733.5	16.0	114.7	-111.30	-7,100.4	-574.1	7,299.8	7,169.4	130.40	55.978		
5,800.0	5,771.4	5,833.4	5,833.4	16.2	116.7	-111.34	-7,100.4	-574.1	7,300.8	7,168.2	132.57	55.071		
5,900.0	5,871.4	5,933.4	5,933.4	16.3	118.7	-179.39	-7,100.4	-574.1	7,300.8	7,166.1	134.72	54.191		
6,000.0	5,971.4	6,033.4	6,033.4	16.5	120.7	0.61	-7,100.4	-574.1	7,300.8	7,163.9	136.89	53.333		
6,100.0	6,071.1	6,133.1	6,133.1	16.6	122.7	0.62	-7,100.4	-574.1	7,293.5	7,155.8	137.67	52.977		
6,200.0	6,169.0	6,231.0	6,231.0	16.7	124.6	0.64	-7,100.4	-574.1	7,273.3	7,137.2	136.03	53.470		
6,300.0	6,263.3	6,325.3	6,325.3	16.8	126.5	0.67	-7,100.4	-574.1	7,240.4	7,108.6	131.89	54.898		
6,400.0	6,352.6	6,414.6	6,414.6	16.8	128.3	0.72	-7,100.4	-574.1	7,195.6	7,070.3	125.27	57.442		
6,500.0	6,435.3	6,497.3	6,497.3	16.9	129.9	0.79	-7,100.4	-574.1	7,139.4	7,023.2	116.23	61.425		
6,600.0	6,509.9	6,571.9	6,571.9	17.0	131.4	0.90	-7,100.4	-574.1	7,073.0	6,968.1	104.93	67.409		
6,700.0	6,575.2	6,637.2	6,637.2	17.1	132.7	1.06	-7,100.4	-574.1	6,997.4	6,905.8	91.59	76.402		
6,800.0	6,630.1	6,692.1	6,692.1	17.3	133.8	1.31	-7,100.4	-574.1	6,913.9	6,837.3	76.53	90.341		
6,900.0	6,673.7	6,735.7	6,735.7	17.8	134.7	1.74	-7,100.4	-574.1	6,823.9	6,763.7	60.20	113.356		
7,000.0	6,705.1	6,767.1	6,767.1	18.4	135.3	2.64	-7,100.4	-574.1	6,729.1	6,685.7	43.33	155.311		
7,100.0	6,723.8	6,785.8	6,785.8	19.2	135.7	5.46	-7,100.4	-574.1	6,630.9	6,601.2	29.73	223.063		
7,200.0	6,729.6	6,791.6	6,791.6	20.2	135.8	108.57	-7,100.4	-574.1	6,531.2	6,384.9	146.31	44.639		
7,300.0	6,729.2	6,791.2	6,791.2	21.4	135.8	108.30	-7,100.4	-574.1	6,431.2	6,283.5	147.70	43.543		
7,400.0	6,728.8	6,790.8	6,790.8	22.7	135.8	108.04	-7,100.4	-574.1	6,331.2	6,182.0	149.18	42.439		
7,500.0	6,728.4	6,790.4	6,790.4	24.0	135.8	107.77	-7,100.4	-574.1	6,231.2	6,080.4	150.76	41.333		
7,600.0	6,728.0	6,790.0	6,790.0	25.4	135.8	107.50	-7,100.4	-574.1	6,131.2	5,978.8	152.40	40.231		
7,700.0	6,727.6	6,789.6	6,789.6	26.9	135.8	107.24	-7,100.4	-574.1	6,031.2	5,877.1	154.10	39.138		
7,800.0	6,727.2	6,789.2	6,789.2	28.5	135.8	106.97	-7,100.4	-574.1	5,931.2	5,775.4	155.85	38.058		
7,900.0	6,726.8	6,788.8	6,788.8	30.0	135.8	106.70	-7,100.4	-574.1	5,831.2	5,673.6	157.64	36.992		
8,000.0	6,726.4	6,788.4	6,788.4	31.7	135.8	106.43	-7,100.4	-574.1	5,731.2	5,571.8	159.46	35.942		
8,100.0	6,726.0	6,788.0	6,788.0	33.3	135.8	106.15	-7,100.4	-574.1	5,631.2	5,469.9	161.31	34.909		
8,200.0	6,725.6	6,787.6	6,787.6	35.0	135.8	105.88	-7,100.4	-574.1	5,531.3	5,368.1	163.19	33.896		
8,300.0	6,725.2	6,787.2	6,787.2	36.7	135.7	105.61	-7,100.4	-574.1	5,431.3	5,266.2	165.08	32.900		
8,400.0	6,724.8	6,786.8	6,786.8	38.4	135.7	105.34	-7,100.4	-574.1	5,331.3	5,164.3	167.00	31.924		
8,500.0	6,724.4	6,786.4	6,786.4	40.1	135.7	105.06	-7,100.4	-574.1	5,231.3	5,062.4	168.93	30.968		
8,600.0	6,724.0	6,786.0	6,786.0	41.9	135.7	104.79	-7,100.4	-574.1	5,131.3	4,960.4	170.87	30.030		
8,700.0	6,723.6	6,785.6	6,785.6	43.7	135.7	104.51	-7,100.4	-574.1	5,031.3	4,858.5	172.83	29.112		
8,800.0	6,723.2	6,785.2	6,785.2	45.5	135.7	104.23	-7,100.4	-574.1	4,931.3	4,756.5	174.79	28.212		
8,900.0	6,722.8	6,784.8	6,784.8	47.2	135.7	103.96	-7,100.4	-574.1	4,831.3	4,654.6	176.77	27.332		
9,000.0	6,722.4	6,784.4	6,784.4	49.0	135.7	103.68	-7,100.4	-574.1	4,731.4	4,552.6	178.75	26.469		
9,100.0	6,722.0	6,784.0	6,784.0	50.9	135.7	103.40	-7,100.4	-574.1	4,631.4	4,450.6	180.74	25.624		
9,200.0	6,721.6	6,783.6	6,783.6	52.7	135.7	103.12	-7,100.4	-574.1	4,531.4	4,348.6	182.74	24.797		
9,300.0	6,721.2	6,783.2	6,783.2	54.5	135.7	102.84	-7,100.4	-574.1	4,431.4	4,246.7	184.74	23.987		
9,400.0	6,720.8	6,782.8	6,782.8	56.3	135.7	102.56	-7,100.4	-574.1	4,331.4	4,144.7	186.75	23.194		
9,500.0	6,720.4	6,782.4	6,782.4	58.2	135.6	102.28	-7,100.4	-574.1	4,231.4	4,042.7	188.76	22.417		
9,600.0	6,720.0	6,782.0	6,782.0	60.0	135.6	102.00	-7,100.4	-574.1	4,131.5	3,940.7	190.77	21.657		
9,700.0	6,719.6	6,781.6	6,781.6	61.9	135.6	101.71	-7,100.4	-574.1	4,031.5	3,838.7	192.79	20.911		
9,800.0	6,719.2	6,781.2	6,781.2	63.7	135.6	101.43	-7,100.4	-574.1	3,931.5	3,736.7	194.81	20.181		
9,900.0	6,718.8	6,780.8	6,780.8	65.6	135.6	101.15	-7,100.4	-574.1	3,831.5	3,634.7	196.83	19.466		
10,000.0	6,718.4	6,780.4	6,780.4	67.4	135.6	100.86	-7,100.4	-574.1	3,731.5	3,532.7	198.85	18.765		
10,100.0	6,718.0	6,780.0	6,780.0	69.3	135.6	100.58	-7,100.4	-574.1	3,631.6	3,430.7	200.88	18.078		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Bailey 33-2 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	6,717.6	6,779.6	6,779.6	71.2	135.6	100.29	100.29	-7,100.4	-574.1	3,531.6	3,328.7	202.90	17.405	
10,300.0	6,717.2	6,779.2	6,779.2	73.0	135.6	100.01	100.01	-7,100.4	-574.1	3,431.6	3,226.7	204.93	16.745	
10,400.0	6,716.8	6,778.8	6,778.8	74.9	135.6	99.72	99.72	-7,100.4	-574.1	3,331.6	3,124.7	206.96	16.098	
10,500.0	6,716.4	6,778.4	6,778.4	76.8	135.6	99.44	99.44	-7,100.4	-574.1	3,231.7	3,022.7	208.98	15.464	
10,600.0	6,716.0	6,778.0	6,778.0	78.6	135.6	99.15	99.15	-7,100.4	-574.1	3,131.7	2,920.7	211.01	14.841	
10,700.0	6,715.6	6,777.6	6,777.6	80.5	135.6	98.86	98.86	-7,100.4	-574.1	3,031.7	2,818.7	213.04	14.231	
10,800.0	6,715.2	6,777.2	6,777.2	82.4	135.5	98.57	98.57	-7,100.4	-574.1	2,931.8	2,716.7	215.06	13.632	
10,900.0	6,714.8	6,776.8	6,776.8	84.3	135.5	98.29	98.29	-7,100.4	-574.1	2,831.8	2,614.7	217.08	13.045	
11,000.0	6,714.4	6,776.4	6,776.4	86.2	135.5	98.00	98.00	-7,100.4	-574.1	2,731.8	2,512.7	219.11	12.468	
11,100.0	6,714.0	6,776.0	6,776.0	88.0	135.5	97.71	97.71	-7,100.4	-574.1	2,631.9	2,410.8	221.13	11.902	
11,200.0	6,713.6	6,775.6	6,775.6	89.9	135.5	97.42	97.42	-7,100.4	-574.1	2,531.9	2,308.8	223.15	11.346	
11,300.0	6,713.2	6,775.2	6,775.2	91.8	135.5	97.13	97.13	-7,100.4	-574.1	2,432.0	2,206.8	225.17	10.801	
11,400.0	6,712.8	6,774.8	6,774.8	93.7	135.5	96.84	96.84	-7,100.4	-574.1	2,332.0	2,104.9	227.18	10.265	
11,500.0	6,712.3	6,774.3	6,774.3	95.6	135.5	96.55	96.55	-7,100.4	-574.1	2,232.1	2,002.9	229.19	9.739	
11,600.0	6,711.9	6,773.9	6,773.9	97.5	135.5	96.26	96.26	-7,100.4	-574.1	2,132.2	1,901.0	231.21	9.222	
11,700.0	6,711.5	6,773.5	6,773.5	99.4	135.5	95.96	95.96	-7,100.4	-574.1	2,032.2	1,799.0	233.21	8.714	
11,800.0	6,711.1	6,773.1	6,773.1	101.3	135.5	95.67	95.67	-7,100.4	-574.1	1,932.3	1,697.1	235.22	8.215	
11,900.0	6,710.7	6,772.7	6,772.7	103.2	135.5	95.38	95.38	-7,100.4	-574.1	1,832.4	1,595.2	237.22	7.724	
12,000.0	6,710.3	6,772.3	6,772.3	105.1	135.4	95.09	95.09	-7,100.4	-574.1	1,732.5	1,493.3	239.22	7.242	
12,100.0	6,709.9	6,771.9	6,771.9	107.0	135.4	94.80	94.80	-7,100.4	-574.1	1,632.6	1,391.4	241.21	6.768	
12,200.0	6,709.5	6,771.5	6,771.5	108.9	135.4	94.50	94.50	-7,100.4	-574.1	1,532.7	1,289.5	243.20	6.302	
12,300.0	6,709.1	6,771.1	6,771.1	110.8	135.4	94.21	94.21	-7,100.4	-574.1	1,432.9	1,187.7	245.19	5.844	
12,400.0	6,708.7	6,770.7	6,770.7	112.7	135.4	93.92	93.92	-7,100.4	-574.1	1,333.0	1,085.9	247.17	5.393	
12,500.0	6,708.3	6,770.3	6,770.3	114.6	135.4	93.62	93.62	-7,100.4	-574.1	1,233.2	984.1	249.15	4.950	
12,600.0	6,707.9	6,769.9	6,769.9	116.5	135.4	93.33	93.33	-7,100.4	-574.1	1,133.4	882.3	251.12	4.513	
12,700.0	6,707.5	6,769.5	6,769.5	118.4	135.4	93.04	93.04	-7,100.4	-574.1	1,033.7	780.6	253.09	4.084	
12,800.0	6,707.1	6,769.1	6,769.1	120.3	135.4	92.74	92.74	-7,100.4	-574.1	934.0	678.9	255.06	3.662	
12,900.0	6,706.7	6,768.7	6,768.7	122.2	135.4	92.45	92.45	-7,100.4	-574.1	834.4	577.4	257.02	3.246	
13,000.0	6,706.3	6,768.3	6,768.3	124.1	135.4	92.15	92.15	-7,100.4	-574.1	734.9	475.9	258.97	2.838	
13,100.0	6,705.9	6,767.9	6,767.9	126.0	135.4	91.86	91.86	-7,100.4	-574.1	635.6	374.6	260.92	2.436	
13,200.0	6,705.5	6,767.5	6,767.5	127.9	135.4	91.56	91.56	-7,100.4	-574.1	536.4	273.6	262.86	2.041	
13,300.0	6,705.1	6,767.1	6,767.1	129.8	135.3	91.27	91.27	-7,100.4	-574.1	437.8	173.0	264.80	1.653	
13,400.0	6,704.7	6,766.7	6,766.7	131.7	135.3	90.97	90.97	-7,100.4	-574.1	339.8	73.1	266.73	1.274	Level 3
13,500.0	6,704.3	6,766.3	6,766.3	133.6	135.3	90.68	90.68	-7,100.4	-574.1	243.6	-25.1	268.66	0.907	Level 1
13,600.0	6,703.9	6,765.9	6,765.9	135.5	135.3	90.39	90.39	-7,100.4	-574.1	152.3	-118.3	270.58	0.563	Level 1
13,700.0	6,703.5	6,765.5	6,765.5	137.4	135.3	90.09	90.09	-7,100.4	-574.1	83.9	-188.6	272.49	0.308	Level 1
13,730.7	6,703.4	6,765.4	6,765.4	138.0	135.3	90.00	90.00	-7,100.4	-574.1	78.0	-195.0	273.08	0.286	Level 1, CC, ES, SF
13,800.0	6,703.1	6,765.1	6,765.1	139.3	135.3	89.80	89.80	-7,100.4	-574.1	104.3	-170.1	274.40	0.380	Level 1
13,829.7	6,703.0	6,765.0	6,765.0	139.9	135.3	89.71	89.71	-7,100.4	-574.1	126.0	-148.9	274.97	0.458	Level 1

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	7.0	7.0	0.0	0.1	-160.69	-1,741.4	-610.2	1,845.2	1,845.1	0.14	N/A	
100.0	100.0	107.0	107.0	0.1	2.1	-160.69	-1,741.4	-610.2	1,845.2	1,843.0	2.25	819.157	
200.0	200.0	207.0	207.0	0.3	4.1	-160.69	-1,741.4	-610.2	1,845.2	1,840.7	4.48	412.123	
300.0	300.0	307.0	307.0	0.6	6.1	-160.69	-1,741.4	-610.2	1,845.2	1,838.5	6.70	275.319	
400.0	400.0	407.0	407.0	0.8	8.1	-160.69	-1,741.4	-610.2	1,845.2	1,836.3	8.93	206.704	
500.0	500.0	507.0	507.0	1.0	10.1	-160.69	-1,741.4	-610.2	1,845.2	1,834.1	11.15	165.466	
600.0	600.0	607.0	607.0	1.2	12.1	-160.69	-1,741.4	-610.2	1,845.2	1,831.8	13.38	137.946	
700.0	700.0	707.0	707.0	1.5	14.1	-92.70	-1,741.4	-610.2	1,845.3	1,829.7	15.59	118.338	
800.0	799.8	806.8	806.8	1.7	16.1	-92.86	-1,741.4	-610.2	1,845.6	1,827.7	17.81	103.635	
900.0	899.5	906.5	906.5	1.9	18.1	-93.12	-1,741.4	-610.2	1,846.0	1,826.0	20.03	92.141	
1,000.0	998.9	1,005.9	1,005.9	2.2	20.1	-93.45	-1,741.4	-610.2	1,846.6	1,824.4	22.28	82.894	
1,100.0	1,098.3	1,105.3	1,105.3	2.4	22.1	-93.78	-1,741.4	-610.2	1,847.3	1,822.8	24.53	75.306	
1,200.0	1,197.7	1,204.7	1,204.7	2.7	24.1	-94.12	-1,741.4	-610.2	1,848.1	1,821.3	26.79	68.976	
1,300.0	1,297.1	1,304.1	1,304.1	3.0	26.1	-94.45	-1,741.4	-610.2	1,848.9	1,819.8	29.06	63.622	
1,400.0	1,396.5	1,403.5	1,403.5	3.3	28.1	-94.79	-1,741.4	-610.2	1,849.8	1,818.4	31.33	59.037	
1,500.0	1,495.9	1,502.9	1,502.9	3.6	30.1	-95.12	-1,741.4	-610.2	1,850.7	1,817.1	33.61	55.068	
1,600.0	1,595.3	1,602.3	1,602.3	3.8	32.0	-95.45	-1,741.4	-610.2	1,851.7	1,815.8	35.89	51.601	
1,700.0	1,694.7	1,701.7	1,701.7	4.1	34.0	-95.79	-1,741.4	-610.2	1,852.8	1,814.6	38.16	48.547	
1,800.0	1,794.1	1,801.1	1,801.1	4.4	36.0	-96.12	-1,741.4	-610.2	1,853.9	1,813.5	40.45	45.837	
1,900.0	1,893.5	1,900.5	1,900.5	4.7	38.0	-96.45	-1,741.4	-610.2	1,855.1	1,812.4	42.73	43.417	
2,000.0	1,992.9	1,999.9	1,999.9	5.0	40.0	-96.78	-1,741.4	-610.2	1,856.4	1,811.4	45.01	41.243	
2,100.0	2,092.3	2,099.3	2,099.3	5.3	42.0	-97.11	-1,741.4	-610.2	1,857.7	1,810.4	47.30	39.279	
2,200.0	2,191.7	2,198.7	2,198.7	5.6	44.0	-97.44	-1,741.4	-610.2	1,859.1	1,809.5	49.58	37.497	
2,300.0	2,291.1	2,298.1	2,298.1	5.9	46.0	-97.77	-1,741.4	-610.2	1,860.6	1,808.7	51.86	35.873	
2,400.0	2,390.6	2,397.6	2,397.6	6.2	48.0	-98.10	-1,741.4	-610.2	1,862.1	1,807.9	54.15	34.387	
2,500.0	2,490.0	2,497.0	2,497.0	6.5	49.9	-98.43	-1,741.4	-610.2	1,863.6	1,807.2	56.44	33.023	
2,600.0	2,589.4	2,596.4	2,596.4	6.8	51.9	-98.76	-1,741.4	-610.2	1,865.3	1,806.6	58.72	31.765	
2,700.0	2,688.8	2,695.8	2,695.8	7.1	53.9	-99.09	-1,741.4	-610.2	1,867.0	1,806.0	61.01	30.603	
2,800.0	2,788.2	2,795.2	2,795.2	7.4	55.9	-99.42	-1,741.4	-610.2	1,868.7	1,805.4	63.29	29.525	
2,900.0	2,887.6	2,894.6	2,894.6	7.7	57.9	-99.74	-1,741.4	-610.2	1,870.6	1,805.0	65.58	28.524	
3,000.0	2,987.0	2,994.0	2,994.0	8.0	59.9	-100.07	-1,741.4	-610.2	1,872.4	1,804.6	67.86	27.591	
3,100.0	3,086.4	3,093.4	3,093.4	8.3	61.9	-100.40	-1,741.4	-610.2	1,874.4	1,804.2	70.15	26.720	
3,200.0	3,185.8	3,192.8	3,192.8	8.6	63.9	-100.72	-1,741.4	-610.2	1,876.4	1,803.9	72.44	25.904	
3,300.0	3,285.2	3,292.2	3,292.2	8.9	65.8	-101.05	-1,741.4	-610.2	1,878.4	1,803.7	74.72	25.140	
3,400.0	3,384.6	3,391.6	3,391.6	9.2	67.8	-101.37	-1,741.4	-610.2	1,880.6	1,803.6	77.01	24.421	
3,500.0	3,484.0	3,491.0	3,491.0	9.5	69.8	-101.69	-1,741.4	-610.2	1,882.8	1,803.5	79.29	23.745	
3,600.0	3,583.4	3,590.4	3,590.4	9.8	71.8	-102.01	-1,741.4	-610.2	1,885.0	1,803.4	81.58	23.108	
3,700.0	3,682.8	3,689.8	3,689.8	10.1	73.8	-102.33	-1,741.4	-610.2	1,887.3	1,803.5	83.86	22.506	
3,800.0	3,782.2	3,789.2	3,789.2	10.4	75.8	-102.65	-1,741.4	-610.2	1,889.7	1,803.5	86.14	21.936	
3,900.0	3,881.6	3,888.6	3,888.6	10.7	77.8	-102.97	-1,741.4	-610.2	1,892.1	1,803.7	88.43	21.397	
4,000.0	3,981.1	3,988.1	3,988.1	11.0	79.8	-103.29	-1,741.4	-610.2	1,894.6	1,803.9	90.71	20.886	
4,100.0	4,080.5	4,087.5	4,087.5	11.3	81.7	-103.61	-1,741.4	-610.2	1,897.1	1,804.1	93.00	20.400	
4,200.0	4,179.9	4,186.9	4,186.9	11.6	83.7	-103.93	-1,741.4	-610.2	1,899.7	1,804.5	95.28	19.939	
4,300.0	4,279.3	4,286.3	4,286.3	11.9	85.7	-104.24	-1,741.4	-610.2	1,902.4	1,804.8	97.56	19.500	
4,400.0	4,378.7	4,385.7	4,385.7	12.2	87.7	-104.56	-1,741.4	-610.2	1,905.1	1,805.3	99.84	19.081	
4,500.0	4,478.1	4,485.1	4,485.1	12.5	89.7	-104.87	-1,741.4	-610.2	1,907.9	1,805.8	102.12	18.682	
4,600.0	4,577.5	4,584.5	4,584.5	12.8	91.7	-105.19	-1,741.4	-610.2	1,910.7	1,806.3	104.41	18.301	
4,700.0	4,676.9	4,683.9	4,683.9	13.2	93.7	-105.50	-1,741.4	-610.2	1,913.6	1,807.0	106.69	17.937	
4,800.0	4,776.3	4,783.3	4,783.3	13.5	95.7	-105.81	-1,741.4	-610.2	1,916.6	1,807.6	108.97	17.589	
4,900.0	4,875.7	4,882.7	4,882.7	13.8	97.7	-106.12	-1,741.4	-610.2	1,919.6	1,808.4	111.25	17.255	
5,000.0	4,975.1	4,982.1	4,982.1	14.1	99.6	-106.43	-1,741.4	-610.2	1,922.7	1,809.1	113.53	16.936	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
5,100.0	5,074.5	5,081.5	5,081.5	14.4	101.6	-106.74	-1,741.4	-610.2	1,925.8	1,810.0	115.81	16.629		
5,200.0	5,173.9	5,180.9	5,180.9	14.7	103.6	-107.05	-1,741.4	-610.2	1,929.0	1,810.9	118.09	16.335		
5,300.0	5,273.3	5,280.3	5,280.3	15.0	105.6	-107.36	-1,741.4	-610.2	1,932.2	1,811.8	120.36	16.053		
5,400.0	5,372.7	5,379.7	5,379.7	15.3	107.6	-107.66	-1,741.4	-610.2	1,935.5	1,812.9	122.64	15.782		
5,500.0	5,472.2	5,479.2	5,479.2	15.6	109.6	-107.97	-1,741.4	-610.2	1,938.8	1,813.9	124.92	15.521		
5,600.0	5,571.7	5,578.7	5,578.7	15.8	111.6	-108.28	-1,741.4	-610.2	1,941.9	1,814.7	127.19	15.268		
5,700.0	5,671.5	5,678.5	5,678.5	16.0	113.6	-108.49	-1,741.4	-610.2	1,943.8	1,814.4	129.38	15.024		
5,800.0	5,771.4	5,778.4	5,778.4	16.2	115.6	-108.59	-1,741.4	-610.2	1,944.7	1,813.2	131.55	14.784		
5,900.0	5,871.4	5,878.4	5,878.4	16.3	117.6	-176.64	-1,741.4	-610.2	1,944.7	1,811.0	133.70	14.546		
6,000.0	5,971.4	5,978.4	5,978.4	16.5	119.6	3.36	-1,741.4	-610.2	1,944.7	1,808.9	135.86	14.314		
6,100.0	6,071.1	6,078.1	6,078.1	16.6	121.6	3.41	-1,741.4	-610.2	1,937.5	1,800.8	136.67	14.177		
6,200.0	6,169.0	6,176.0	6,176.0	16.7	123.5	3.54	-1,741.4	-610.2	1,917.3	1,782.2	135.06	14.195		
6,300.0	6,263.3	6,270.3	6,270.3	16.8	125.4	3.77	-1,741.4	-610.2	1,884.5	1,753.5	131.00	14.386		
6,400.0	6,352.6	6,359.6	6,359.6	16.8	127.2	4.12	-1,741.4	-610.2	1,839.7	1,715.2	124.49	14.778		
6,500.0	6,435.3	6,442.3	6,442.3	16.9	128.8	4.65	-1,741.4	-610.2	1,783.7	1,668.0	115.64	15.425		
6,600.0	6,509.9	6,516.9	6,516.9	17.0	130.3	5.42	-1,741.4	-610.2	1,717.4	1,612.7	104.65	16.410		
6,700.0	6,575.2	6,582.2	6,582.2	17.1	131.6	6.59	-1,741.4	-610.2	1,641.9	1,550.0	91.93	17.861		
6,800.0	6,630.1	6,637.1	6,637.1	17.3	132.7	8.46	-1,741.4	-610.2	1,558.6	1,480.3	78.31	19.903		
6,900.0	6,673.7	6,680.7	6,680.7	17.8	133.6	11.72	-1,741.4	-610.2	1,468.9	1,402.8	66.08	22.229		
7,000.0	6,705.1	6,712.1	6,712.1	18.4	134.2	18.33	-1,741.4	-610.2	1,374.4	1,311.2	63.15	21.762		
7,100.0	6,723.8	6,730.8	6,730.8	19.2	134.6	36.11	-1,741.4	-610.2	1,276.6	1,182.9	93.64	13.632		
7,200.0	6,729.6	6,736.6	6,736.6	20.2	134.7	92.36	-1,741.4	-610.2	1,177.2	1,023.8	153.40	7.674		
7,300.0	6,729.2	6,736.2	6,736.2	21.4	134.7	92.16	-1,741.4	-610.2	1,077.8	923.1	154.64	6.969		
7,400.0	6,728.8	6,735.8	6,735.8	22.7	134.7	91.96	-1,741.4	-610.2	978.4	822.4	155.99	6.272		
7,500.0	6,728.4	6,735.4	6,735.4	24.0	134.7	91.76	-1,741.4	-610.2	879.1	721.7	157.42	5.585		
7,600.0	6,728.0	6,735.0	6,735.0	25.4	134.7	91.55	-1,741.4	-610.2	780.1	621.2	158.92	4.909		
7,700.0	6,727.6	6,734.6	6,734.6	26.9	134.7	91.35	-1,741.4	-610.2	681.3	520.9	160.47	4.246		
7,800.0	6,727.2	6,734.2	6,734.2	28.5	134.7	91.15	-1,741.4	-610.2	583.0	420.9	162.07	3.597		
7,900.0	6,726.8	6,733.8	6,733.8	30.0	134.7	90.95	-1,741.4	-610.2	485.3	321.6	163.71	2.964		
8,000.0	6,726.4	6,733.4	6,733.4	31.7	134.7	90.75	-1,741.4	-610.2	388.8	223.4	165.38	2.351		
8,100.0	6,726.0	6,733.0	6,733.0	33.3	134.7	90.55	-1,741.4	-610.2	294.7	127.6	167.08	1.764		
8,200.0	6,725.6	6,732.6	6,732.6	35.0	134.7	90.35	-1,741.4	-610.2	206.2	37.4	168.80	1.221 Level 2		
8,300.0	6,725.2	6,732.2	6,732.2	36.7	134.6	90.14	-1,741.4	-610.2	134.8	-35.7	170.54	0.790 Level 1		
8,371.7	6,724.9	6,731.9	6,731.9	37.9	134.6	90.00	-1,741.4	-610.2	114.1	-57.7	171.79	0.664 Level 1, CC, ES, SF		
8,400.0	6,724.8	6,731.8	6,731.8	38.4	134.6	89.94	-1,741.4	-610.2	117.6	-54.7	172.29	0.682 Level 1		
8,500.0	6,724.4	6,731.4	6,731.4	40.1	134.6	89.74	-1,741.4	-610.2	171.7	-2.3	174.06	0.987 Level 1		
8,600.0	6,724.0	6,731.0	6,731.0	41.9	134.6	89.54	-1,741.4	-610.2	255.2	79.4	175.83	1.452 Level 3		
8,700.0	6,723.6	6,730.6	6,730.6	43.7	134.6	89.34	-1,741.4	-610.2	347.6	169.9	177.62	1.957		
8,800.0	6,723.2	6,730.2	6,730.2	45.5	134.6	89.14	-1,741.4	-610.2	443.2	263.8	179.42	2.470		
8,900.0	6,722.8	6,729.8	6,729.8	47.2	134.6	88.94	-1,741.4	-610.2	540.5	359.3	181.22	2.982		
9,000.0	6,722.4	6,729.4	6,729.4	49.0	134.6	88.73	-1,741.4	-610.2	638.6	455.5	183.03	3.489		
9,100.0	6,722.0	6,729.0	6,729.0	50.9	134.6	88.53	-1,741.4	-610.2	737.2	552.3	184.84	3.988		
9,200.0	6,721.6	6,728.6	6,728.6	52.7	134.6	88.33	-1,741.4	-610.2	836.1	649.5	186.66	4.479		
9,300.0	6,721.2	6,728.2	6,728.2	54.5	134.6	88.13	-1,741.4	-610.2	935.3	746.8	188.48	4.962		
9,400.0	6,720.8	6,727.8	6,727.8	56.3	134.6	87.93	-1,741.4	-610.2	1,034.6	844.3	190.30	5.437		
9,500.0	6,720.4	6,727.4	6,727.4	58.2	134.5	87.73	-1,741.4	-610.2	1,134.0	941.9	192.13	5.903		
9,600.0	6,720.0	6,727.0	6,727.0	60.0	134.5	87.53	-1,741.4	-610.2	1,233.6	1,039.6	193.95	6.360		
9,700.0	6,719.6	6,726.6	6,726.6	61.9	134.5	87.33	-1,741.4	-610.2	1,333.2	1,137.4	195.78	6.810		
9,800.0	6,719.2	6,726.2	6,726.2	63.7	134.5	87.12	-1,741.4	-610.2	1,432.8	1,235.2	197.61	7.251		
9,900.0	6,718.8	6,725.8	6,725.8	65.6	134.5	86.92	-1,741.4	-610.2	1,532.5	1,333.1	199.44	7.684		
10,000.0	6,718.4	6,725.4	6,725.4	67.4	134.5	86.72	-1,741.4	-610.2	1,632.3	1,431.0	201.27	8.110		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 2 28A (Exist) - Wellbore #1 - Wellbore													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,718.0	6,725.0	6,725.0	69.3	134.5	86.52	86.52	-1,741.4	-610.2	1,732.0	1,528.9	203.10	8.528	
10,200.0	6,717.6	6,724.6	6,724.6	71.2	134.5	86.32	86.32	-1,741.4	-610.2	1,831.8	1,626.9	204.92	8.939	
10,300.0	6,717.2	6,724.2	6,724.2	73.0	134.5	86.12	86.12	-1,741.4	-610.2	1,931.7	1,724.9	206.75	9.343	
10,400.0	6,716.8	6,723.8	6,723.8	74.9	134.5	85.92	85.92	-1,741.4	-610.2	2,031.5	1,822.9	208.58	9.740	
10,500.0	6,716.4	6,723.4	6,723.4	76.8	134.5	85.72	85.72	-1,741.4	-610.2	2,131.3	1,920.9	210.40	10.130	
10,600.0	6,716.0	6,723.0	6,723.0	78.6	134.5	85.52	85.52	-1,741.4	-610.2	2,231.2	2,019.0	212.23	10.513	
10,700.0	6,715.6	6,722.6	6,722.6	80.5	134.5	85.32	85.32	-1,741.4	-610.2	2,331.1	2,117.0	214.05	10.890	
10,800.0	6,715.2	6,722.2	6,722.2	82.4	134.4	85.12	85.12	-1,741.4	-610.2	2,431.0	2,215.1	215.87	11.261	
10,900.0	6,714.8	6,721.8	6,721.8	84.3	134.4	84.92	84.92	-1,741.4	-610.2	2,530.8	2,313.2	217.69	11.626	
11,000.0	6,714.4	6,721.4	6,721.4	86.2	134.4	84.72	84.72	-1,741.4	-610.2	2,630.7	2,411.2	219.50	11.985	
11,100.0	6,714.0	6,721.0	6,721.0	88.0	134.4	84.52	84.52	-1,741.4	-610.2	2,730.7	2,509.3	221.32	12.338	
11,200.0	6,713.6	6,720.6	6,720.6	89.9	134.4	84.32	84.32	-1,741.4	-610.2	2,830.6	2,607.4	223.13	12.686	
11,300.0	6,713.2	6,720.2	6,720.2	91.8	134.4	84.12	84.12	-1,741.4	-610.2	2,930.5	2,705.6	224.94	13.028	
11,400.0	6,712.8	6,719.8	6,719.8	93.7	134.4	83.92	83.92	-1,741.4	-610.2	3,030.4	2,803.7	226.74	13.365	
11,500.0	6,712.3	6,719.3	6,719.3	95.6	134.4	83.72	83.72	-1,741.4	-610.2	3,130.3	2,901.8	228.55	13.697	
11,600.0	6,711.9	6,718.9	6,718.9	97.5	134.4	83.52	83.52	-1,741.4	-610.2	3,230.3	2,999.9	230.35	14.023	
11,700.0	6,711.5	6,718.5	6,718.5	99.4	134.4	83.32	83.32	-1,741.4	-610.2	3,330.2	3,098.1	232.15	14.345	
11,800.0	6,711.1	6,718.1	6,718.1	101.3	134.4	83.12	83.12	-1,741.4	-610.2	3,430.2	3,196.2	233.94	14.662	
11,900.0	6,710.7	6,717.7	6,717.7	103.2	134.4	82.93	82.93	-1,741.4	-610.2	3,530.1	3,294.4	235.73	14.975	
12,000.0	6,710.3	6,717.3	6,717.3	105.1	134.3	82.73	82.73	-1,741.4	-610.2	3,630.1	3,392.5	237.52	15.283	
12,100.0	6,709.9	6,716.9	6,716.9	107.0	134.3	82.53	82.53	-1,741.4	-610.2	3,730.0	3,490.7	239.31	15.587	
12,200.0	6,709.5	6,716.5	6,716.5	108.9	134.3	82.33	82.33	-1,741.4	-610.2	3,830.0	3,588.9	241.09	15.886	
12,300.0	6,709.1	6,716.1	6,716.1	110.8	134.3	82.13	82.13	-1,741.4	-610.2	3,929.9	3,687.0	242.87	16.181	
12,400.0	6,708.7	6,715.7	6,715.7	112.7	134.3	81.94	81.94	-1,741.4	-610.2	4,029.9	3,785.2	244.64	16.472	
12,500.0	6,708.3	6,715.3	6,715.3	114.6	134.3	81.74	81.74	-1,741.4	-610.2	4,129.8	3,883.4	246.41	16.760	
12,600.0	6,707.9	6,714.9	6,714.9	116.5	134.3	81.54	81.54	-1,741.4	-610.2	4,229.8	3,981.6	248.18	17.043	
12,700.0	6,707.5	6,714.5	6,714.5	118.4	134.3	81.34	81.34	-1,741.4	-610.2	4,329.8	4,079.8	249.95	17.323	
12,800.0	6,707.1	6,714.1	6,714.1	120.3	134.3	81.15	81.15	-1,741.4	-610.2	4,429.7	4,178.0	251.71	17.599	
12,900.0	6,706.7	6,713.7	6,713.7	122.2	134.3	80.95	80.95	-1,741.4	-610.2	4,529.7	4,276.2	253.46	17.871	
13,000.0	6,706.3	6,713.3	6,713.3	124.1	134.3	80.75	80.75	-1,741.4	-610.2	4,629.7	4,374.4	255.22	18.140	
13,100.0	6,705.9	6,712.9	6,712.9	126.0	134.3	80.56	80.56	-1,741.4	-610.2	4,729.6	4,472.7	256.96	18.406	
13,200.0	6,705.5	6,712.5	6,712.5	127.9	134.3	80.36	80.36	-1,741.4	-610.2	4,829.6	4,570.9	258.71	18.668	
13,300.0	6,705.1	6,712.1	6,712.1	129.8	134.2	80.17	80.17	-1,741.4	-610.2	4,929.6	4,669.1	260.45	18.927	
13,400.0	6,704.7	6,711.7	6,711.7	131.7	134.2	79.97	79.97	-1,741.4	-610.2	5,029.5	4,767.4	262.19	19.183	
13,500.0	6,704.3	6,711.3	6,711.3	133.6	134.2	79.78	79.78	-1,741.4	-610.2	5,129.5	4,865.6	263.92	19.436	
13,600.0	6,703.9	6,710.9	6,710.9	135.5	134.2	79.58	79.58	-1,741.4	-610.2	5,229.5	4,963.9	265.64	19.686	
13,700.0	6,703.5	6,710.5	6,710.5	137.4	134.2	79.39	79.39	-1,741.4	-610.2	5,329.5	5,062.1	267.37	19.933	
13,800.0	6,703.1	6,710.1	6,710.1	139.3	134.2	79.19	79.19	-1,741.4	-610.2	5,429.4	5,160.4	269.09	20.177	
13,829.7	6,703.0	6,710.0	6,710.0	139.9	134.2	79.13	79.13	-1,741.4	-610.2	5,459.2	5,189.6	269.59	20.249	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 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
0.0	0.0	1.0	1.0	0.0	0.0	-134.15	-134.15	-451.7	-465.3	648.5	648.5	0.02	N/A	
100.0	100.0	101.0	101.0	0.1	2.0	-134.15	-134.15	-451.7	-465.3	648.5	646.4	2.13	304.099	
200.0	200.0	201.0	201.0	0.3	4.0	-134.15	-134.15	-451.7	-465.3	648.5	644.2	4.36	148.833	
300.0	300.0	301.0	301.0	0.6	6.0	-134.15	-134.15	-451.7	-465.3	648.5	641.9	6.58	98.527	
400.0	400.0	401.0	401.0	0.8	8.0	-134.15	-134.15	-451.7	-465.3	648.5	639.7	8.81	73.638	
500.0	500.0	501.0	501.0	1.0	10.0	-134.15	-134.15	-451.7	-465.3	648.5	637.5	11.03	58.787	
600.0	600.0	601.0	601.0	1.2	12.0	-134.15	-134.15	-451.7	-465.3	648.5	635.3	13.26	48.921	
700.0	700.0	701.0	701.0	1.5	14.0	-66.26	-66.26	-451.7	-465.3	647.8	632.3	15.47	41.871	
800.0	799.8	800.8	800.8	1.7	16.0	-66.73	-66.73	-451.7	-465.3	645.7	628.0	17.68	36.523	
900.0	899.5	900.5	900.5	1.9	18.0	-67.50	-67.50	-451.7	-465.3	642.3	622.4	19.89	32.288	
1,000.0	998.9	999.9	999.9	2.2	20.0	-68.41	-68.41	-451.7	-465.3	638.2	616.1	22.13	28.843	
1,100.0	1,098.3	1,099.3	1,099.3	2.4	22.0	-69.32	-69.32	-451.7	-465.3	634.3	609.9	24.38	26.022	
1,200.0	1,197.7	1,198.7	1,198.7	2.7	24.0	-70.24	-70.24	-451.7	-465.3	630.5	603.9	26.63	23.675	
1,300.0	1,297.1	1,298.1	1,298.1	3.0	26.0	-71.17	-71.17	-451.7	-465.3	626.9	598.0	28.89	21.696	
1,400.0	1,396.5	1,397.5	1,397.5	3.3	27.9	-72.11	-72.11	-451.7	-465.3	623.4	592.3	31.16	20.006	
1,500.0	1,495.9	1,496.9	1,496.9	3.6	29.9	-73.06	-73.06	-451.7	-465.3	620.2	586.7	33.43	18.548	
1,600.0	1,595.3	1,596.3	1,596.3	3.8	31.9	-74.02	-74.02	-451.7	-465.3	617.1	581.4	35.71	17.279	
1,700.0	1,694.7	1,695.7	1,695.7	4.1	33.9	-74.99	-74.99	-451.7	-465.3	614.1	576.2	37.99	16.166	
1,800.0	1,794.1	1,795.1	1,795.1	4.4	35.9	-75.97	-75.97	-451.7	-465.3	611.4	571.1	40.27	15.181	
1,900.0	1,893.5	1,894.5	1,894.5	4.7	37.9	-76.96	-76.96	-451.7	-465.3	608.8	566.3	42.56	14.306	
2,000.0	1,992.9	1,993.9	1,993.9	5.0	39.9	-77.95	-77.95	-451.7	-465.3	606.5	561.6	44.84	13.524	
2,100.0	2,092.3	2,093.3	2,093.3	5.3	41.9	-78.96	-78.96	-451.7	-465.3	604.3	557.1	47.13	12.821	
2,200.0	2,191.7	2,192.7	2,192.7	5.6	43.9	-79.97	-79.97	-451.7	-465.3	602.3	552.9	49.42	12.186	
2,300.0	2,291.1	2,292.1	2,292.1	5.9	45.8	-80.98	-80.98	-451.7	-465.3	600.5	548.8	51.71	11.612	
2,400.0	2,390.6	2,391.6	2,391.6	6.2	47.8	-82.00	-82.00	-451.7	-465.3	598.8	544.8	54.00	11.089	
2,500.0	2,490.0	2,491.0	2,491.0	6.5	49.8	-83.03	-83.03	-451.7	-465.3	597.4	541.1	56.30	10.612	
2,600.0	2,589.4	2,590.4	2,590.4	6.8	51.8	-84.06	-84.06	-451.7	-465.3	596.2	537.6	58.59	10.176	
2,700.0	2,688.8	2,689.8	2,689.8	7.1	53.8	-85.10	-85.10	-451.7	-465.3	595.2	534.3	60.88	9.776	
2,800.0	2,788.2	2,789.2	2,789.2	7.4	55.8	-86.14	-86.14	-451.7	-465.3	594.3	531.1	63.18	9.407	
2,900.0	2,887.6	2,888.6	2,888.6	7.7	57.8	-87.18	-87.18	-451.7	-465.3	593.7	528.2	65.47	9.068	
3,000.0	2,987.0	2,988.0	2,988.0	8.0	59.8	-88.22	-88.22	-451.7	-465.3	593.2	525.5	67.76	8.755	
3,100.0	3,086.4	3,087.4	3,087.4	8.3	61.7	-89.27	-89.27	-451.7	-465.3	593.0	522.9	70.05	8.465	
3,170.1	3,156.1	3,157.1	3,157.1	8.5	63.1	-90.00	-90.00	-451.7	-465.3	593.0	521.3	71.66	8.274	
3,200.0	3,185.8	3,186.8	3,186.8	8.6	63.7	-90.31	-90.31	-451.7	-465.3	593.0	520.6	72.35	8.196	
3,300.0	3,285.2	3,286.2	3,286.2	8.9	65.7	-91.36	-91.36	-451.7	-465.3	593.1	518.5	74.64	7.947	
3,400.0	3,384.6	3,385.6	3,385.6	9.2	67.7	-92.40	-92.40	-451.7	-465.3	593.5	516.6	76.93	7.715	
3,500.0	3,484.0	3,485.0	3,485.0	9.5	69.7	-93.44	-93.44	-451.7	-465.3	594.0	514.8	79.22	7.499	
3,600.0	3,583.4	3,584.4	3,584.4	9.8	71.7	-94.48	-94.48	-451.7	-465.3	594.8	513.3	81.51	7.298	
3,700.0	3,682.8	3,683.8	3,683.8	10.1	73.7	-95.52	-95.52	-451.7	-465.3	595.8	512.0	83.79	7.110	
3,800.0	3,782.2	3,783.2	3,783.2	10.4	75.7	-96.55	-96.55	-451.7	-465.3	596.9	510.8	86.08	6.934	
3,900.0	3,881.6	3,882.6	3,882.6	10.7	77.7	-97.58	-97.58	-451.7	-465.3	598.2	509.9	88.36	6.770	
4,000.0	3,981.1	3,982.1	3,982.1	11.0	79.6	-98.61	-98.61	-451.7	-465.3	599.8	509.1	90.65	6.617	
4,100.0	4,080.5	4,081.5	4,081.5	11.3	81.6	-99.63	-99.63	-451.7	-465.3	601.5	508.6	92.93	6.473	
4,200.0	4,179.9	4,180.9	4,180.9	11.6	83.6	-100.64	-100.64	-451.7	-465.3	603.4	508.2	95.20	6.338	
4,300.0	4,279.3	4,280.3	4,280.3	11.9	85.6	-101.64	-101.64	-451.7	-465.3	605.6	508.1	97.48	6.212	
4,400.0	4,378.7	4,379.7	4,379.7	12.2	87.6	-102.64	-102.64	-451.7	-465.3	607.9	508.1	99.75	6.094	
4,500.0	4,478.1	4,479.1	4,479.1	12.5	89.6	-103.63	-103.63	-451.7	-465.3	610.4	508.3	102.03	5.982	
4,600.0	4,577.5	4,578.5	4,578.5	12.8	91.6	-104.62	-104.62	-451.7	-465.3	613.0	508.7	104.30	5.878	
4,700.0	4,676.9	4,677.9	4,677.9	13.2	93.6	-105.59	-105.59	-451.7	-465.3	615.9	509.3	106.57	5.779	
4,800.0	4,776.3	4,777.3	4,777.3	13.5	95.5	-106.56	-106.56	-451.7	-465.3	618.9	510.1	108.83	5.687	
4,900.0	4,875.7	4,876.7	4,876.7	13.8	97.5	-107.51	-107.51	-451.7	-465.3	622.1	511.0	111.09	5.600	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 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
5,000.0	4,975.1	4,976.1	4,976.1	14.1	99.5	-108.46		-451.7	-465.3	625.5	512.1	113.36	5.518	
5,100.0	5,074.5	5,075.5	5,075.5	14.4	101.5	-109.39		-451.7	-465.3	629.0	513.4	115.61	5.441	
5,200.0	5,173.9	5,174.9	5,174.9	14.7	103.5	-110.32		-451.7	-465.3	632.7	514.9	117.87	5.368	
5,300.0	5,273.3	5,274.3	5,274.3	15.0	105.5	-111.23		-451.7	-465.3	636.6	516.5	120.12	5.300	
5,400.0	5,372.7	5,373.7	5,373.7	15.3	107.5	-112.13		-451.7	-465.3	640.7	518.3	122.38	5.235	
5,500.0	5,472.2	5,473.2	5,473.2	15.6	109.5	-113.02		-451.7	-465.3	644.9	520.2	124.63	5.174	
5,600.0	5,571.7	5,572.7	5,572.7	15.8	111.5	-113.86		-451.7	-465.3	648.7	521.8	126.89	5.113	
5,700.0	5,671.5	5,672.5	5,672.5	16.0	113.4	-114.41		-451.7	-465.3	651.3	522.2	129.08	5.045	
5,800.0	5,771.4	5,772.4	5,772.4	16.2	115.4	-114.65		-451.7	-465.3	652.4	521.2	131.25	4.971	
5,900.0	5,871.4	5,872.4	5,872.4	16.3	117.4	-177.30		-451.7	-465.3	652.5	519.1	133.40	4.891	
6,000.0	5,971.4	5,972.4	5,972.4	16.5	119.4	-2.70		-451.7	-465.3	652.4	516.9	135.57	4.813	
6,100.0	6,071.1	6,072.1	6,072.1	16.6	121.4	-2.76		-451.7	-465.3	645.2	508.8	136.36	4.731	
6,200.0	6,169.0	6,170.0	6,170.0	16.7	123.4	-2.93		-451.7	-465.3	625.0	490.2	134.75	4.638	
6,300.0	6,263.3	6,264.3	6,264.3	16.8	125.3	-3.24		-451.7	-465.3	592.2	461.5	130.69	4.531	
6,400.0	6,352.6	6,353.6	6,353.6	16.8	127.1	-3.74		-451.7	-465.3	547.4	423.2	124.18	4.408	
6,500.0	6,435.3	6,436.3	6,436.3	16.9	128.7	-4.55		-451.7	-465.3	491.3	376.0	115.35	4.259	
6,600.0	6,509.9	6,510.9	6,510.9	17.0	130.2	-5.91		-451.7	-465.3	425.0	320.5	104.47	4.068	
6,700.0	6,575.2	6,576.2	6,576.2	17.1	131.5	-8.34		-451.7	-465.3	349.6	257.4	92.24	3.791	
6,800.0	6,630.1	6,631.1	6,631.1	17.3	132.6	-13.26		-451.7	-465.3	266.6	185.4	81.17	3.284	
6,900.0	6,673.7	6,674.7	6,674.7	17.8	133.5	-25.11		-451.7	-465.3	177.5	94.3	83.19	2.134	
7,000.0	6,705.1	6,706.1	6,706.1	18.4	134.1	-56.84		-451.7	-465.3	85.7	-42.5	128.21	0.668	Level 1
7,081.6	6,721.3	6,722.3	6,722.3	19.1	134.4	-90.00		-451.7	-465.3	30.8	-121.2	152.02	0.203	Level 1, CC, ES, SF
7,100.0	6,723.8	6,724.8	6,724.8	19.2	134.5	-94.16		-451.7	-465.3	35.8	-116.2	151.94	0.235	Level 1
7,200.0	6,729.6	6,730.6	6,730.6	20.2	134.6	-89.12		-451.7	-465.3	121.9	-31.5	153.43	0.795	Level 1
7,300.0	6,729.2	6,730.2	6,730.2	21.4	134.6	-88.37		-451.7	-465.3	220.1	65.5	154.59	1.424	Level 3
7,400.0	6,728.8	6,729.8	6,729.8	22.7	134.6	-87.63		-451.7	-465.3	319.4	163.6	155.82	2.050	
7,500.0	6,728.4	6,729.4	6,729.4	24.0	134.6	-86.88		-451.7	-465.3	419.1	262.0	157.11	2.668	
7,600.0	6,728.0	6,729.0	6,729.0	25.4	134.6	-86.14		-451.7	-465.3	518.9	360.4	158.44	3.275	
7,700.0	6,727.6	6,728.6	6,728.6	26.9	134.6	-85.39		-451.7	-465.3	618.7	458.9	159.80	3.872	
7,800.0	6,727.2	6,728.2	6,728.2	28.5	134.6	-84.65		-451.7	-465.3	718.6	557.4	161.18	4.459	
7,900.0	6,726.8	6,727.8	6,727.8	30.0	134.6	-83.91		-451.7	-465.3	818.5	656.0	162.57	5.035	
8,000.0	6,726.4	6,727.4	6,727.4	31.7	134.5	-83.17		-451.7	-465.3	918.5	754.5	163.96	5.602	
8,100.0	6,726.0	6,727.0	6,727.0	33.3	134.5	-82.44		-451.7	-465.3	1,018.4	853.1	165.36	6.159	
8,200.0	6,725.6	6,726.6	6,726.6	35.0	134.5	-81.71		-451.7	-465.3	1,118.4	951.6	166.74	6.707	
8,300.0	6,725.2	6,726.2	6,726.2	36.7	134.5	-80.98		-451.7	-465.3	1,218.3	1,050.2	168.12	7.247	
8,400.0	6,724.8	6,725.8	6,725.8	38.4	134.5	-80.25		-451.7	-465.3	1,318.3	1,148.8	169.49	7.778	
8,500.0	6,724.4	6,725.4	6,725.4	40.1	134.5	-79.52		-451.7	-465.3	1,418.3	1,247.4	170.84	8.302	
8,600.0	6,724.0	6,725.0	6,725.0	41.9	134.5	-78.80		-451.7	-465.3	1,518.3	1,346.1	172.17	8.818	
8,700.0	6,723.6	6,724.6	6,724.6	43.7	134.5	-78.09		-451.7	-465.3	1,618.2	1,444.8	173.48	9.328	
8,800.0	6,723.2	6,724.2	6,724.2	45.5	134.5	-77.37		-451.7	-465.3	1,718.2	1,543.4	174.77	9.831	
8,900.0	6,722.8	6,723.8	6,723.8	47.2	134.5	-76.66		-451.7	-465.3	1,818.2	1,642.2	176.04	10.328	
9,000.0	6,722.4	6,723.4	6,723.4	49.0	134.5	-75.96		-451.7	-465.3	1,918.2	1,740.9	177.29	10.820	
9,100.0	6,722.0	6,723.0	6,723.0	50.9	134.5	-75.26		-451.7	-465.3	2,018.2	1,839.7	178.51	11.306	
9,200.0	6,721.6	6,722.6	6,722.6	52.7	134.5	-74.56		-451.7	-465.3	2,118.2	1,938.5	179.71	11.787	
9,300.0	6,721.2	6,722.2	6,722.2	54.5	134.4	-73.87		-451.7	-465.3	2,218.2	2,037.3	180.88	12.263	
9,400.0	6,720.8	6,721.8	6,721.8	56.3	134.4	-73.18		-451.7	-465.3	2,318.1	2,136.1	182.03	12.735	
9,500.0	6,720.4	6,721.4	6,721.4	58.2	134.4	-72.50		-451.7	-465.3	2,418.1	2,235.0	183.15	13.203	
9,600.0	6,720.0	6,721.0	6,721.0	60.0	134.4	-71.82		-451.7	-465.3	2,518.1	2,333.9	184.24	13.668	
9,700.0	6,719.6	6,720.6	6,720.6	61.9	134.4	-71.15		-451.7	-465.3	2,618.1	2,432.8	185.31	14.129	
9,800.0	6,719.2	6,720.2	6,720.2	63.7	134.4	-70.48		-451.7	-465.3	2,718.1	2,531.8	186.35	14.586	
9,900.0	6,718.8	6,719.8	6,719.8	65.6	134.4	-69.82		-451.7	-465.3	2,818.1	2,630.7	187.36	15.041	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Churchill 28A-1 (Exist) - Wellbore #1 - Wellbore										Offset Site Error:		0.0 ft	
Survey Program: 7600-UNKNOWN												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis		Distance								Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
10,000.0	6,718.4	6,719.4	6,719.4		67.4	134.4	-69.17	-451.7	-465.3	2,918.1	2,729.7	188.35	15.493		
10,100.0	6,718.0	6,719.0	6,719.0		69.3	134.4	-68.52	-451.7	-465.3	3,018.1	2,828.8	189.31	15.942		
10,200.0	6,717.6	6,718.6	6,718.6		71.2	134.4	-67.87	-451.7	-465.3	3,118.1	2,927.8	190.25	16.389		
10,300.0	6,717.2	6,718.2	6,718.2		73.0	134.4	-67.24	-451.7	-465.3	3,218.1	3,026.9	191.16	16.835		
10,400.0	6,716.8	6,717.8	6,717.8		74.9	134.4	-66.60	-451.7	-465.3	3,318.1	3,126.0	192.04	17.278		
10,500.0	6,716.4	6,717.4	6,717.4		76.8	134.3	-65.98	-451.7	-465.3	3,418.1	3,225.2	192.91	17.719		
10,600.0	6,716.0	6,717.0	6,717.0		78.6	134.3	-65.36	-451.7	-465.3	3,518.1	3,324.3	193.74	18.159		
10,700.0	6,715.6	6,716.6	6,716.6		80.5	134.3	-64.74	-451.7	-465.3	3,618.1	3,423.5	194.55	18.597		
10,800.0	6,715.2	6,716.2	6,716.2		82.4	134.3	-64.13	-451.7	-465.3	3,718.1	3,522.7	195.34	19.034		
10,900.0	6,714.8	6,715.8	6,715.8		84.3	134.3	-63.53	-451.7	-465.3	3,818.1	3,621.9	196.10	19.470		
11,000.0	6,714.4	6,715.4	6,715.4		86.2	134.3	-62.94	-451.7	-465.3	3,918.0	3,721.2	196.84	19.904		
11,100.0	6,714.0	6,715.0	6,715.0		88.0	134.3	-62.35	-451.7	-465.3	4,018.0	3,820.5	197.56	20.338		
11,200.0	6,713.6	6,714.6	6,714.6		89.9	134.3	-61.77	-451.7	-465.3	4,118.0	3,919.8	198.26	20.771		
11,300.0	6,713.2	6,714.2	6,714.2		91.8	134.3	-61.19	-451.7	-465.3	4,218.0	4,019.1	198.93	21.203		
11,400.0	6,712.8	6,713.8	6,713.8		93.7	134.3	-60.62	-451.7	-465.3	4,318.0	4,118.4	199.59	21.635		
11,500.0	6,712.3	6,713.3	6,713.3		95.6	134.3	-60.05	-451.7	-465.3	4,418.0	4,217.8	200.22	22.066		
11,600.0	6,711.9	6,712.9	6,712.9		97.5	134.3	-59.50	-451.7	-465.3	4,518.0	4,317.2	200.84	22.496		
11,700.0	6,711.5	6,712.5	6,712.5		99.4	134.3	-58.94	-451.7	-465.3	4,618.0	4,416.6	201.43	22.926		
11,800.0	6,711.1	6,712.1	6,712.1		101.3	134.2	-58.40	-451.7	-465.3	4,718.0	4,516.0	202.01	23.356		
11,900.0	6,710.7	6,711.7	6,711.7		103.2	134.2	-57.86	-451.7	-465.3	4,818.0	4,615.5	202.57	23.785		
12,000.0	6,710.3	6,711.3	6,711.3		105.1	134.2	-57.33	-451.7	-465.3	4,918.0	4,714.9	203.11	24.214		
12,100.0	6,709.9	6,710.9	6,710.9		107.0	134.2	-56.80	-451.7	-465.3	5,018.0	4,814.4	203.63	24.643		
12,200.0	6,709.5	6,710.5	6,710.5		108.9	134.2	-56.28	-451.7	-465.3	5,118.0	4,913.9	204.14	25.072		
12,300.0	6,709.1	6,710.1	6,710.1		110.8	134.2	-55.77	-451.7	-465.3	5,218.0	5,013.4	204.63	25.500		
12,400.0	6,708.7	6,709.7	6,709.7		112.7	134.2	-55.26	-451.7	-465.3	5,318.0	5,112.9	205.10	25.929		
12,500.0	6,708.3	6,709.3	6,709.3		114.6	134.2	-54.76	-451.7	-465.3	5,418.0	5,212.4	205.56	26.357		
12,600.0	6,707.9	6,708.9	6,708.9		116.5	134.2	-54.26	-451.7	-465.3	5,518.0	5,312.0	206.01	26.785		
12,700.0	6,707.5	6,708.5	6,708.5		118.4	134.2	-53.77	-451.7	-465.3	5,618.0	5,411.6	206.44	27.214		
12,800.0	6,707.1	6,708.1	6,708.1		120.3	134.2	-53.29	-451.7	-465.3	5,718.0	5,511.1	206.86	27.642		
12,900.0	6,706.7	6,707.7	6,707.7		122.2	134.2	-52.81	-451.7	-465.3	5,818.0	5,610.7	207.26	28.070		
13,000.0	6,706.3	6,707.3	6,707.3		124.1	134.1	-52.34	-451.7	-465.3	5,918.0	5,710.3	207.66	28.499		
13,100.0	6,705.9	6,706.9	6,706.9		126.0	134.1	-51.88	-451.7	-465.3	6,018.0	5,809.9	208.04	28.927		
13,200.0	6,705.5	6,706.5	6,706.5		127.9	134.1	-51.42	-451.7	-465.3	6,118.0	5,909.6	208.41	29.356		
13,300.0	6,705.1	6,706.1	6,706.1		129.8	134.1	-50.96	-451.7	-465.3	6,218.0	6,009.2	208.77	29.784		
13,400.0	6,704.7	6,705.7	6,705.7		131.7	134.1	-50.52	-451.7	-465.3	6,318.0	6,108.9	209.12	30.213		
13,500.0	6,704.3	6,705.3	6,705.3		133.6	134.1	-50.07	-451.7	-465.3	6,418.0	6,208.5	209.45	30.641		
13,600.0	6,703.9	6,704.9	6,704.9		135.5	134.1	-49.64	-451.7	-465.3	6,518.0	6,308.2	209.78	31.070		
13,700.0	6,703.5	6,704.5	6,704.5		137.4	134.1	-49.21	-451.7	-465.3	6,618.0	6,407.9	210.10	31.499		
13,800.0	6,703.1	6,704.1	6,704.1		139.3	134.1	-48.78	-451.7	-465.3	6,718.0	6,507.6	210.41	31.927		
13,829.7	6,703.0	6,704.0	6,704.0		139.9	134.1	-48.66	-451.7	-465.3	6,747.7	6,537.2	210.50	32.055		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg 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
0.0	0.0	49.0	49.0	0.0	1.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,781.4	0.98	5,899.237	
100.0	100.0	149.0	149.0	0.1	3.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,779.3	3.09	1,869.774	
200.0	200.0	249.0	249.0	0.3	5.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,777.1	5.32	1,087.465	
300.0	300.0	349.0	349.0	0.6	7.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,774.9	7.54	766.686	
400.0	400.0	449.0	449.0	0.8	9.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,772.7	9.77	592.045	
500.0	500.0	549.0	549.0	1.0	11.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,770.4	11.99	482.205	
600.0	600.0	649.0	649.0	1.2	13.0	-174.16	-174.16	-5,752.4	-588.0	5,782.4	5,768.2	14.22	406.743	
700.0	700.0	749.0	749.0	1.5	15.0	-106.13	-106.13	-5,752.4	-588.0	5,782.9	5,766.5	16.43	351.912	
800.0	799.8	848.8	848.8	1.7	17.0	-106.15	-106.15	-5,752.4	-588.0	5,784.4	5,765.7	18.65	310.233	
900.0	899.5	948.5	948.5	1.9	19.0	-106.19	-106.19	-5,752.4	-588.0	5,786.8	5,765.9	20.87	277.325	
1,000.0	998.9	1,047.9	1,047.9	2.2	21.0	-106.28	-106.28	-5,752.4	-588.0	5,789.9	5,766.7	23.11	250.579	
1,100.0	1,098.3	1,147.3	1,147.3	2.4	22.9	-106.38	-106.38	-5,752.4	-588.0	5,792.9	5,767.6	25.36	228.455	
1,200.0	1,197.7	1,246.7	1,246.7	2.7	24.9	-106.49	-106.49	-5,752.4	-588.0	5,796.0	5,768.4	27.62	209.882	
1,300.0	1,297.1	1,346.1	1,346.1	3.0	26.9	-106.59	-106.59	-5,752.4	-588.0	5,799.1	5,769.3	29.88	194.082	
1,400.0	1,396.5	1,445.5	1,445.5	3.3	28.9	-106.69	-106.69	-5,752.4	-588.0	5,802.3	5,770.1	32.15	180.486	
1,500.0	1,495.9	1,544.9	1,544.9	3.6	30.9	-106.79	-106.79	-5,752.4	-588.0	5,805.4	5,771.0	34.42	168.668	
1,600.0	1,595.3	1,644.3	1,644.3	3.8	32.9	-106.90	-106.90	-5,752.4	-588.0	5,808.6	5,771.9	36.69	158.303	
1,700.0	1,694.7	1,743.7	1,743.7	4.1	34.9	-107.00	-107.00	-5,752.4	-588.0	5,811.8	5,772.8	38.97	149.141	
1,800.0	1,794.1	1,843.1	1,843.1	4.4	36.9	-107.10	-107.10	-5,752.4	-588.0	5,815.0	5,773.7	41.25	140.985	
1,900.0	1,893.5	1,942.5	1,942.5	4.7	38.9	-107.20	-107.20	-5,752.4	-588.0	5,818.2	5,774.7	43.52	133.680	
2,000.0	1,992.9	2,041.9	2,041.9	5.0	40.8	-107.30	-107.30	-5,752.4	-588.0	5,821.5	5,775.7	45.80	127.100	
2,100.0	2,092.3	2,141.3	2,141.3	5.3	42.8	-107.40	-107.40	-5,752.4	-588.0	5,824.7	5,776.6	48.08	121.141	
2,200.0	2,191.7	2,240.7	2,240.7	5.6	44.8	-107.51	-107.51	-5,752.4	-588.0	5,828.0	5,777.6	50.36	115.721	
2,300.0	2,291.1	2,340.1	2,340.1	5.9	46.8	-107.61	-107.61	-5,752.4	-588.0	5,831.3	5,778.7	52.64	110.770	
2,400.0	2,390.6	2,439.6	2,439.6	6.2	48.8	-107.71	-107.71	-5,752.4	-588.0	5,834.6	5,779.7	54.92	106.230	
2,500.0	2,490.0	2,539.0	2,539.0	6.5	50.8	-107.81	-107.81	-5,752.4	-588.0	5,838.0	5,780.7	57.21	102.052	
2,600.0	2,589.4	2,638.4	2,638.4	6.8	52.8	-107.91	-107.91	-5,752.4	-588.0	5,841.3	5,781.8	59.49	98.194	
2,700.0	2,688.8	2,737.8	2,737.8	7.1	54.8	-108.01	-108.01	-5,752.4	-588.0	5,844.7	5,782.9	61.77	94.621	
2,800.0	2,788.2	2,837.2	2,837.2	7.4	56.7	-108.11	-108.11	-5,752.4	-588.0	5,848.1	5,784.0	64.05	91.302	
2,900.0	2,887.6	2,936.6	2,936.6	7.7	58.7	-108.21	-108.21	-5,752.4	-588.0	5,851.5	5,785.1	66.33	88.212	
3,000.0	2,987.0	3,036.0	3,036.0	8.0	60.7	-108.31	-108.31	-5,752.4	-588.0	5,854.9	5,786.3	68.62	85.328	
3,100.0	3,086.4	3,135.4	3,135.4	8.3	62.7	-108.41	-108.41	-5,752.4	-588.0	5,858.4	5,787.5	70.90	82.629	
3,200.0	3,185.8	3,234.8	3,234.8	8.6	64.7	-108.52	-108.52	-5,752.4	-588.0	5,861.8	5,788.6	73.18	80.100	
3,300.0	3,285.2	3,334.2	3,334.2	8.9	66.7	-108.62	-108.62	-5,752.4	-588.0	5,865.3	5,789.8	75.46	77.723	
3,400.0	3,384.6	3,433.6	3,433.6	9.2	68.7	-108.72	-108.72	-5,752.4	-588.0	5,868.8	5,791.1	77.75	75.486	
3,500.0	3,484.0	3,533.0	3,533.0	9.5	70.7	-108.82	-108.82	-5,752.4	-588.0	5,872.3	5,792.3	80.03	73.377	
3,600.0	3,583.4	3,632.4	3,632.4	9.8	72.6	-108.92	-108.92	-5,752.4	-588.0	5,875.9	5,793.5	82.31	71.385	
3,700.0	3,682.8	3,731.8	3,731.8	10.1	74.6	-109.02	-109.02	-5,752.4	-588.0	5,879.4	5,794.8	84.59	69.501	
3,800.0	3,782.2	3,831.2	3,831.2	10.4	76.6	-109.11	-109.11	-5,752.4	-588.0	5,883.0	5,796.1	86.88	67.716	
3,900.0	3,881.6	3,930.6	3,930.6	10.7	78.6	-109.21	-109.21	-5,752.4	-588.0	5,886.6	5,797.4	89.16	66.023	
4,000.0	3,981.1	4,030.1	4,030.1	11.0	80.6	-109.31	-109.31	-5,752.4	-588.0	5,890.2	5,798.7	91.44	64.414	
4,100.0	4,080.5	4,129.5	4,129.5	11.3	82.6	-109.41	-109.41	-5,752.4	-588.0	5,893.8	5,800.1	93.72	62.884	
4,200.0	4,179.9	4,228.9	4,228.9	11.6	84.6	-109.51	-109.51	-5,752.4	-588.0	5,897.5	5,801.4	96.01	61.428	
4,300.0	4,279.3	4,328.3	4,328.3	11.9	86.6	-109.61	-109.61	-5,752.4	-588.0	5,901.1	5,802.8	98.29	60.038	
4,400.0	4,378.7	4,427.7	4,427.7	12.2	88.6	-109.71	-109.71	-5,752.4	-588.0	5,904.8	5,804.2	100.57	58.713	
4,500.0	4,478.1	4,527.1	4,527.1	12.5	90.5	-109.81	-109.81	-5,752.4	-588.0	5,908.5	5,805.6	102.85	57.446	
4,600.0	4,577.5	4,626.5	4,626.5	12.8	92.5	-109.91	-109.91	-5,752.4	-588.0	5,912.2	5,807.1	105.13	56.234	
4,700.0	4,676.9	4,725.9	4,725.9	13.2	94.5	-110.01	-110.01	-5,752.4	-588.0	5,915.9	5,808.5	107.42	55.075	
4,800.0	4,776.3	4,825.3	4,825.3	13.5	96.5	-110.10	-110.10	-5,752.4	-588.0	5,919.7	5,810.0	109.70	53.963	
4,900.0	4,875.7	4,924.7	4,924.7	13.8	98.5	-110.20	-110.20	-5,752.4	-588.0	5,923.5	5,811.5	111.98	52.897	
5,000.0	4,975.1	5,024.1	5,024.1	14.1	100.5	-110.30	-110.30	-5,752.4	-588.0	5,927.2	5,813.0	114.26	51.874	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg 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
5,100.0	5,074.5	5,123.5	5,123.5	14.4	102.5	-110.40		-5,752.4	-588.0	5,931.0	5,814.5	116.54	50.891	
5,200.0	5,173.9	5,222.9	5,222.9	14.7	104.5	-110.50		-5,752.4	-588.0	5,934.9	5,816.0	118.82	49.947	
5,300.0	5,273.3	5,322.3	5,322.3	15.0	106.4	-110.59		-5,752.4	-588.0	5,938.7	5,817.6	121.11	49.037	
5,400.0	5,372.7	5,421.7	5,421.7	15.3	108.4	-110.69		-5,752.4	-588.0	5,942.6	5,819.2	123.39	48.162	
5,500.0	5,472.2	5,521.2	5,521.2	15.6	110.4	-110.79		-5,752.4	-588.0	5,946.4	5,820.8	125.67	47.319	
5,600.0	5,571.7	5,620.7	5,620.7	15.8	112.4	-110.93		-5,752.4	-588.0	5,949.9	5,821.9	127.95	46.503	
5,700.0	5,671.5	5,720.5	5,720.5	16.0	114.4	-111.03		-5,752.4	-588.0	5,952.1	5,822.0	130.15	45.732	
5,800.0	5,771.4	5,820.4	5,820.4	16.2	116.4	-111.07		-5,752.4	-588.0	5,953.1	5,820.8	132.32	44.991	
5,900.0	5,871.4	5,920.4	5,920.4	16.3	118.4	-179.12		-5,752.4	-588.0	5,953.2	5,818.7	134.47	44.271	
6,000.0	5,971.4	6,020.4	6,020.4	16.5	120.4	0.88		-5,752.4	-588.0	5,953.1	5,816.5	136.64	43.569	
6,100.0	6,071.1	6,120.1	6,120.1	16.6	122.4	0.89		-5,752.4	-588.0	5,945.9	5,808.4	137.42	43.266	
6,200.0	6,169.0	6,218.0	6,218.0	16.7	124.4	0.92		-5,752.4	-588.0	5,925.6	5,789.8	135.78	43.640	
6,300.0	6,263.3	6,312.3	6,312.3	16.8	126.2	0.97		-5,752.4	-588.0	5,892.8	5,761.1	131.66	44.758	
6,400.0	6,352.6	6,401.6	6,401.6	16.8	128.0	1.04		-5,752.4	-588.0	5,847.9	5,722.9	125.05	46.764	
6,500.0	6,435.3	6,484.3	6,484.3	16.9	129.7	1.15		-5,752.4	-588.0	5,791.8	5,675.8	116.04	49.913	
6,600.0	6,509.9	6,558.9	6,558.9	17.0	131.2	1.31		-5,752.4	-588.0	5,725.3	5,620.6	104.76	54.650	
6,700.0	6,575.2	6,624.2	6,624.2	17.1	132.5	1.55		-5,752.4	-588.0	5,649.7	5,558.3	91.46	61.770	
6,800.0	6,630.1	6,679.1	6,679.1	17.3	133.6	1.92		-5,752.4	-588.0	5,566.2	5,489.8	76.47	72.786	
6,900.0	6,673.7	6,722.7	6,722.7	17.8	134.5	2.56		-5,752.4	-588.0	5,476.3	5,416.0	60.29	90.838	
7,000.0	6,705.1	6,754.1	6,754.1	18.4	135.1	3.89		-5,752.4	-588.0	5,381.4	5,337.5	43.93	122.508	
7,100.0	6,723.8	6,772.8	6,772.8	19.2	135.5	8.05		-5,752.4	-588.0	5,283.3	5,249.2	34.06	155.098	
7,200.0	6,729.6	6,778.6	6,778.6	20.2	135.6	102.75		-5,752.4	-588.0	5,183.6	5,033.2	150.35	34.476	
7,300.0	6,729.2	6,778.2	6,778.2	21.4	135.6	102.51		-5,752.4	-588.0	5,083.6	4,931.9	151.68	33.514	
7,400.0	6,728.8	6,777.8	6,777.8	22.7	135.6	102.27		-5,752.4	-588.0	4,983.6	4,830.5	153.12	32.547	
7,500.0	6,728.4	6,777.4	6,777.4	24.0	135.5	102.04		-5,752.4	-588.0	4,883.6	4,729.0	154.64	31.581	
7,600.0	6,728.0	6,777.0	6,777.0	25.4	135.5	101.80		-5,752.4	-588.0	4,783.6	4,627.4	156.23	30.619	
7,700.0	6,727.6	6,776.6	6,776.6	26.9	135.5	101.56		-5,752.4	-588.0	4,683.7	4,525.8	157.88	29.667	
7,800.0	6,727.2	6,776.2	6,776.2	28.5	135.5	101.32		-5,752.4	-588.0	4,583.7	4,424.1	159.57	28.725	
7,900.0	6,726.8	6,775.8	6,775.8	30.0	135.5	101.07		-5,752.4	-588.0	4,483.7	4,322.4	161.30	27.797	
8,000.0	6,726.4	6,775.4	6,775.4	31.7	135.5	100.83		-5,752.4	-588.0	4,383.7	4,220.7	163.07	26.883	
8,100.0	6,726.0	6,775.0	6,775.0	33.3	135.5	100.59		-5,752.4	-588.0	4,283.7	4,118.9	164.86	25.984	
8,200.0	6,725.6	6,774.6	6,774.6	35.0	135.5	100.35		-5,752.4	-588.0	4,183.8	4,017.1	166.68	25.101	
8,300.0	6,725.2	6,774.2	6,774.2	36.7	135.5	100.11		-5,752.4	-588.0	4,083.8	3,915.3	168.52	24.234	
8,400.0	6,724.8	6,773.8	6,773.8	38.4	135.5	99.87		-5,752.4	-588.0	3,983.8	3,813.4	170.37	23.383	
8,500.0	6,724.4	6,773.4	6,773.4	40.1	135.5	99.62		-5,752.4	-588.0	3,883.8	3,711.6	172.24	22.549	
8,600.0	6,724.0	6,773.0	6,773.0	41.9	135.5	99.38		-5,752.4	-588.0	3,783.9	3,609.8	174.12	21.731	
8,700.0	6,723.6	6,772.6	6,772.6	43.7	135.5	99.14		-5,752.4	-588.0	3,683.9	3,507.9	176.02	20.929	
8,800.0	6,723.2	6,772.2	6,772.2	45.5	135.4	98.89		-5,752.4	-588.0	3,583.9	3,406.0	177.92	20.144	
8,900.0	6,722.8	6,771.8	6,771.8	47.2	135.4	98.65		-5,752.4	-588.0	3,484.0	3,304.1	179.83	19.374	
9,000.0	6,722.4	6,771.4	6,771.4	49.0	135.4	98.40		-5,752.4	-588.0	3,384.0	3,202.3	181.75	18.619	
9,100.0	6,722.0	6,771.0	6,771.0	50.9	135.4	98.16		-5,752.4	-588.0	3,284.1	3,100.4	183.67	17.880	
9,200.0	6,721.6	6,770.6	6,770.6	52.7	135.4	97.91		-5,752.4	-588.0	3,184.1	2,998.5	185.60	17.156	
9,300.0	6,721.2	6,770.2	6,770.2	54.5	135.4	97.67		-5,752.4	-588.0	3,084.1	2,896.6	187.53	16.446	
9,400.0	6,720.8	6,769.8	6,769.8	56.3	135.4	97.42		-5,752.4	-588.0	2,984.2	2,794.7	189.47	15.750	
9,500.0	6,720.4	6,769.4	6,769.4	58.2	135.4	97.17		-5,752.4	-588.0	2,884.2	2,692.8	191.41	15.068	
9,600.0	6,720.0	6,769.0	6,769.0	60.0	135.4	96.93		-5,752.4	-588.0	2,784.3	2,590.9	193.35	14.400	
9,700.0	6,719.6	6,768.6	6,768.6	61.9	135.4	96.68		-5,752.4	-588.0	2,684.3	2,489.1	195.30	13.745	
9,800.0	6,719.2	6,768.2	6,768.2	63.7	135.4	96.43		-5,752.4	-588.0	2,584.4	2,387.2	197.24	13.103	
9,900.0	6,718.8	6,767.8	6,767.8	65.6	135.4	96.19		-5,752.4	-588.0	2,484.5	2,285.3	199.19	12.473	
10,000.0	6,718.4	6,767.4	6,767.4	67.4	135.3	95.94		-5,752.4	-588.0	2,384.5	2,183.4	201.14	11.855	
10,100.0	6,718.0	6,767.0	6,767.0	69.3	135.3	95.69		-5,752.4	-588.0	2,284.6	2,081.5	203.09	11.249	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Churchill 28J-HZ Sec.28-T5N-R64W - Wonenberg 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
10,200.0	6,717.6	6,766.6	6,766.6	71.2	135.3	95.44	95.44	-5,752.4	-588.0	2,184.7	1,979.7	205.04	10.655	
10,300.0	6,717.2	6,766.2	6,766.2	73.0	135.3	95.20	95.20	-5,752.4	-588.0	2,084.8	1,877.8	206.99	10.072	
10,400.0	6,716.8	6,765.8	6,765.8	74.9	135.3	94.95	94.95	-5,752.4	-588.0	1,984.9	1,776.0	208.94	9.500	
10,500.0	6,716.4	6,765.4	6,765.4	76.8	135.3	94.70	94.70	-5,752.4	-588.0	1,885.0	1,674.1	210.89	8.939	
10,600.0	6,716.0	6,765.0	6,765.0	78.6	135.3	94.45	94.45	-5,752.4	-588.0	1,785.1	1,572.3	212.83	8.388	
10,700.0	6,715.6	6,764.6	6,764.6	80.5	135.3	94.20	94.20	-5,752.4	-588.0	1,685.3	1,470.5	214.78	7.847	
10,800.0	6,715.2	6,764.2	6,764.2	82.4	135.3	93.95	93.95	-5,752.4	-588.0	1,585.4	1,368.7	216.73	7.315	
10,900.0	6,714.8	6,763.8	6,763.8	84.3	135.3	93.70	93.70	-5,752.4	-588.0	1,485.6	1,267.0	218.67	6.794	
11,000.0	6,714.4	6,763.4	6,763.4	86.2	135.3	93.46	93.46	-5,752.4	-588.0	1,385.8	1,165.2	220.61	6.282	
11,100.0	6,714.0	6,763.0	6,763.0	88.0	135.3	93.21	93.21	-5,752.4	-588.0	1,286.1	1,063.5	222.55	5.779	
11,200.0	6,713.6	6,762.6	6,762.6	89.9	135.3	92.96	92.96	-5,752.4	-588.0	1,186.4	961.9	224.49	5.285	
11,300.0	6,713.2	6,762.2	6,762.2	91.8	135.2	92.71	92.71	-5,752.4	-588.0	1,086.7	860.2	226.43	4.799	
11,400.0	6,712.8	6,761.8	6,761.8	93.7	135.2	92.46	92.46	-5,752.4	-588.0	987.1	758.7	228.37	4.322	
11,500.0	6,712.3	6,761.3	6,761.3	95.6	135.2	92.21	92.21	-5,752.4	-588.0	887.6	657.3	230.30	3.854	
11,600.0	6,711.9	6,760.9	6,760.9	97.5	135.2	91.96	91.96	-5,752.4	-588.0	788.2	555.9	232.23	3.394	
11,700.0	6,711.5	6,760.5	6,760.5	99.4	135.2	91.71	91.71	-5,752.4	-588.0	688.9	454.8	234.15	2.942	
11,800.0	6,711.1	6,760.1	6,760.1	101.3	135.2	91.46	91.46	-5,752.4	-588.0	590.0	353.9	236.08	2.499	
11,900.0	6,710.7	6,759.7	6,759.7	103.2	135.2	91.21	91.21	-5,752.4	-588.0	491.5	253.5	238.00	2.065	
12,000.0	6,710.3	6,759.3	6,759.3	105.1	135.2	90.96	90.96	-5,752.4	-588.0	393.7	153.8	239.92	1.641	
12,100.0	6,709.9	6,758.9	6,758.9	107.0	135.2	90.71	90.71	-5,752.4	-588.0	297.4	55.5	241.83	1.230 Level 2	
12,200.0	6,709.5	6,758.5	6,758.5	108.9	135.2	90.46	90.46	-5,752.4	-588.0	204.6	-39.1	243.74	0.839 Level 1	
12,300.0	6,709.1	6,758.1	6,758.1	110.8	135.2	90.21	90.21	-5,752.4	-588.0	123.7	-121.9	245.65	0.504 Level 1	
12,382.8	6,708.8	6,757.8	6,757.8	112.3	135.2	90.00	90.00	-5,752.4	-588.0	91.9	-155.3	247.22	0.372 Level 1, CC, ES, SF	
12,400.0	6,708.7	6,757.7	6,757.7	112.7	135.2	89.96	89.96	-5,752.4	-588.0	93.5	-154.0	247.55	0.378 Level 1	
12,500.0	6,708.3	6,757.3	6,757.3	114.6	135.1	89.71	89.71	-5,752.4	-588.0	149.0	-100.5	249.45	0.597 Level 1	
12,600.0	6,707.9	6,756.9	6,756.9	116.5	135.1	89.46	89.46	-5,752.4	-588.0	235.9	-15.5	251.35	0.938 Level 1	
12,700.0	6,707.5	6,756.5	6,756.5	118.4	135.1	89.21	89.21	-5,752.4	-588.0	330.3	77.0	253.24	1.304 Level 3	
12,800.0	6,707.1	6,756.1	6,756.1	120.3	135.1	88.96	88.96	-5,752.4	-588.0	427.2	172.1	255.13	1.675	
12,900.0	6,706.7	6,755.7	6,755.7	122.2	135.1	88.71	88.71	-5,752.4	-588.0	525.3	268.3	257.01	2.044	
13,000.0	6,706.3	6,755.3	6,755.3	124.1	135.1	88.46	88.46	-5,752.4	-588.0	624.0	365.1	258.89	2.410	
13,100.0	6,705.9	6,754.9	6,754.9	126.0	135.1	88.21	88.21	-5,752.4	-588.0	723.1	462.3	260.76	2.773	
13,200.0	6,705.5	6,754.5	6,754.5	127.9	135.1	87.96	87.96	-5,752.4	-588.0	822.4	559.7	262.63	3.131	
13,300.0	6,705.1	6,754.1	6,754.1	129.8	135.1	87.71	87.71	-5,752.4	-588.0	921.8	657.3	264.49	3.485	
13,400.0	6,704.7	6,753.7	6,753.7	131.7	135.1	87.46	87.46	-5,752.4	-588.0	1,021.3	755.0	266.35	3.835	
13,500.0	6,704.3	6,753.3	6,753.3	133.6	135.1	87.21	87.21	-5,752.4	-588.0	1,121.0	852.8	268.21	4.179	
13,600.0	6,703.9	6,752.9	6,752.9	135.5	135.1	86.96	86.96	-5,752.4	-588.0	1,220.7	950.6	270.06	4.520	
13,700.0	6,703.5	6,752.5	6,752.5	137.4	135.1	86.71	86.71	-5,752.4	-588.0	1,320.4	1,048.5	271.90	4.856	
13,800.0	6,703.1	6,752.1	6,752.1	139.3	135.0	86.46	86.46	-5,752.4	-588.0	1,420.2	1,146.4	273.74	5.188	
13,829.7	6,703.0	6,752.0	6,752.0	139.9	135.0	86.39	86.39	-5,752.4	-588.0	1,449.8	1,175.5	274.29	5.286	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
Reference Site:	Churchill 28J-HZ Pad Sec.28-T5N-R64W	MD Reference:	WELL @ 4650.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Churchill 28J-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

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

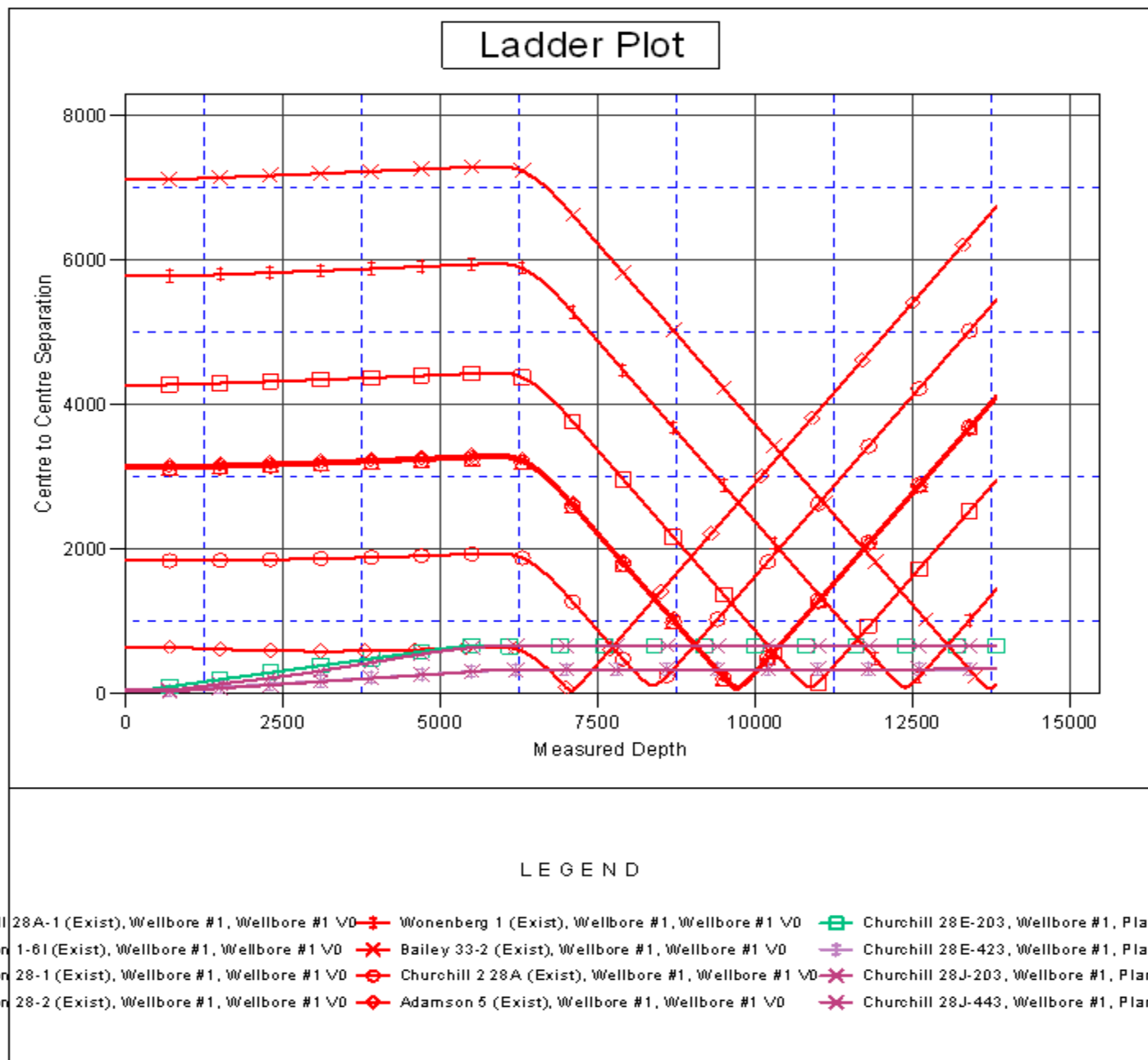
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-343

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.61°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Churchill 28J-343
Project:	SEC.28-T5N-R64W	TVD Reference:	WELL @ 4650.0ft (RKB - 15')
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Site Error:	0.0ft	North Reference:	True
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Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (12-30-13)	Offset TVD Reference:	Offset Datum

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

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Central Meridian is -105.500000 °

Coordinates are relative to: Churchill 28J-343

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