

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Sunmarke 28V-214**

Surface Location: Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

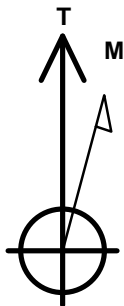
Ground Elevation: 4894.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1349057.37	3170999.86	40.289940	-104.887010	

RKB - 15' WELL @ 4909.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 368'FNL, 210'FEL		0.0	0.0	Point
BHL 850'FNL, 500'FWL	7029.0	-396.7	-4614.3	Point



Azimuths to True North
Magnetic North: 8.59°

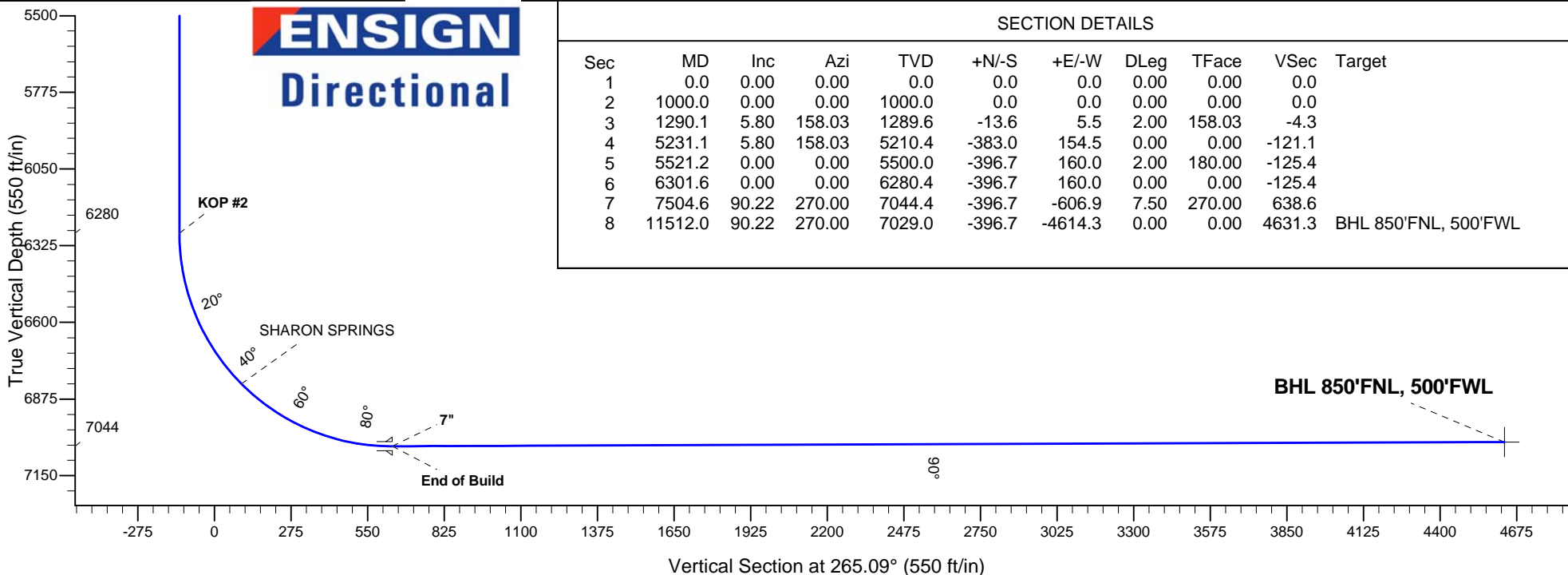
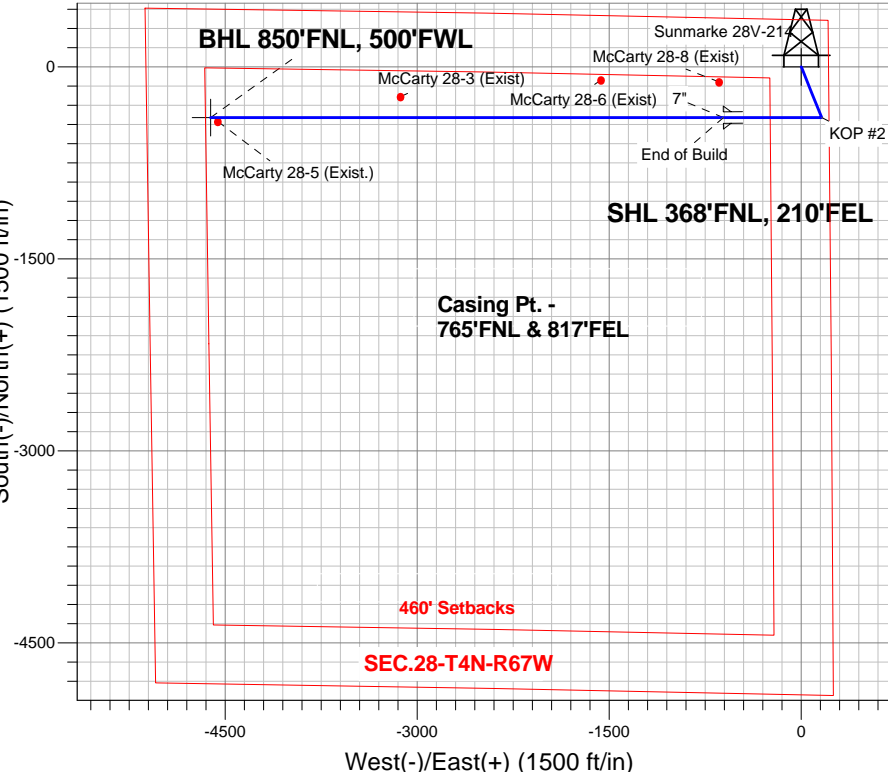
Magnetic Field
Strength: 52803.5snT
Dip Angle: 66.86°
Date: 11/21/2013
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6280.4	6301.6	KOP #2
7044.4	7504.6	End of Build

Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
Sunmarke 28V-214
Plan #1 (11-18-13)
6:49, November 21 2013

South(-)/North(+) (1500 ft/in)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1290.1	5.80	158.03	1289.6	-13.6	5.5	2.00	158.03	-4.3	
4	5231.1	5.80	158.03	5210.4	-383.0	154.5	0.00	0.00	-121.1	
5	5521.2	0.00	0.00	5500.0	-396.7	160.0	2.00	180.00	-125.4	
6	6301.6	0.00	0.00	6280.4	-396.7	160.0	0.00	0.00	-125.4	
7	7504.6	90.22	270.00	7044.4	-396.7	-606.9	7.50	270.00	638.6	
8	11512.0	90.22	270.00	7029.0	-396.7	-4614.3	0.00	0.00	4631.3	BHL 850'FNL, 500'FWL



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

Sunmarke 28U-HZ Pad Sec.28-T4N-R67W

Sunmarke 28V-214

Wellbore #1

Plan: Plan #1 (11-18-13)

Standard Planning Report

21 November, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-214	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-18-13)		

Project	SEC.28-T4N-R67W, 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						Sunmarke 28U-HZ Pad Sec.28-T4N-R67W											
Site Position:						Northing:			1,349,119.31 ft			Latitude:			40.290110		
From:			Lat/Long			Easting:			3,170,999.44 ft			Longitude:			-104.887010		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.40 °		

Well	Sunmarke 28V-214					
Well Position	+N-S	-61.9 ft	Northing:	1,349,057.37 ft	Latitude:	40.289940
	+E-W	0.0 ft	Easting:	3,170,999.86 ft	Longitude:	-104.887010
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,894.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/21/2013	8.59	66.86	52,803

Design	Plan #1 (11-18-13)			
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	265.09

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,290.1	5.80	158.03	1,289.6	-13.6	5.5	2.00	2.00	0.00	158.03	
5,231.1	5.80	158.03	5,210.4	-383.0	154.5	0.00	0.00	0.00	0.00	
5,521.2	0.00	0.00	5,500.0	-396.7	160.0	2.00	-2.00	0.00	180.00	
6,301.6	0.00	0.00	6,280.4	-396.7	160.0	0.00	0.00	0.00	0.00	
7,504.6	90.22	270.00	7,044.4	-396.7	-606.9	7.50	7.50	0.00	270.00	
11,512.0	90.22	270.00	7,029.0	-396.7	-4,614.3	0.00	0.00	0.00	0.00	BHL 850'FNL, 500'

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Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-214	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-18-13)		

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 368°FNL, 210°FEL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,100.0	2.00	158.03	1,100.0	-1.6	0.7	-0.5	2.00	2.00	0.00
1,200.0	4.00	158.03	1,199.8	-6.5	2.6	-2.0	2.00	2.00	0.00
1,290.1	5.80	158.03	1,289.6	-13.6	5.5	-4.3	2.00	2.00	0.00
1,300.0	5.80	158.03	1,299.5	-14.5	5.9	-4.6	0.00	0.00	0.00
1,400.0	5.80	158.03	1,398.9	-23.9	9.6	-7.6	0.00	0.00	0.00
1,500.0	5.80	158.03	1,498.4	-33.3	13.4	-10.5	0.00	0.00	0.00
1,600.0	5.80	158.03	1,597.9	-42.7	17.2	-13.5	0.00	0.00	0.00
1,700.0	5.80	158.03	1,697.4	-52.0	21.0	-16.5	0.00	0.00	0.00
1,800.0	5.80	158.03	1,796.9	-61.4	24.8	-19.4	0.00	0.00	0.00
1,900.0	5.80	158.03	1,896.4	-70.8	28.6	-22.4	0.00	0.00	0.00
2,000.0	5.80	158.03	1,995.9	-80.2	32.3	-25.3	0.00	0.00	0.00
2,100.0	5.80	158.03	2,095.4	-89.5	36.1	-28.3	0.00	0.00	0.00
2,200.0	5.80	158.03	2,194.8	-98.9	39.9	-31.3	0.00	0.00	0.00
2,300.0	5.80	158.03	2,294.3	-108.3	43.7	-34.2	0.00	0.00	0.00
2,400.0	5.80	158.03	2,393.8	-117.7	47.5	-37.2	0.00	0.00	0.00
2,500.0	5.80	158.03	2,493.3	-127.0	51.2	-40.2	0.00	0.00	0.00
2,600.0	5.80	158.03	2,592.8	-136.4	55.0	-43.1	0.00	0.00	0.00
2,700.0	5.80	158.03	2,692.3	-145.8	58.8	-46.1	0.00	0.00	0.00
2,800.0	5.80	158.03	2,791.8	-155.2	62.6	-49.1	0.00	0.00	0.00
2,900.0	5.80	158.03	2,891.3	-164.5	66.4	-52.0	0.00	0.00	0.00
3,000.0	5.80	158.03	2,990.7	-173.9	70.1	-55.0	0.00	0.00	0.00
3,100.0	5.80	158.03	3,090.2	-183.3	73.9	-58.0	0.00	0.00	0.00
3,200.0	5.80	158.03	3,189.7	-192.6	77.7	-60.9	0.00	0.00	0.00
3,300.0	5.80	158.03	3,289.2	-202.0	81.5	-63.9	0.00	0.00	0.00
3,400.0	5.80	158.03	3,388.7	-211.4	85.3	-66.9	0.00	0.00	0.00
3,500.0	5.80	158.03	3,488.2	-220.8	89.1	-69.8	0.00	0.00	0.00
3,600.0	5.80	158.03	3,587.7	-230.1	92.8	-72.8	0.00	0.00	0.00
3,652.6	5.80	158.03	3,640.0	-235.1	94.8	-74.3	0.00	0.00	0.00
PARKMAN									
3,700.0	5.80	158.03	3,687.2	-239.5	96.6	-75.7	0.00	0.00	0.00
3,800.0	5.80	158.03	3,786.6	-248.9	100.4	-78.7	0.00	0.00	0.00
3,900.0	5.80	158.03	3,886.1	-258.3	104.2	-81.7	0.00	0.00	0.00
4,000.0	5.80	158.03	3,985.6	-267.6	108.0	-84.6	0.00	0.00	0.00
4,100.0	5.80	158.03	4,085.1	-277.0	111.7	-87.6	0.00	0.00	0.00
4,165.2	5.80	158.03	4,150.0	-283.1	114.2	-89.5	0.00	0.00	0.00
SUSSEX									
4,200.0	5.80	158.03	4,184.6	-286.4	115.5	-90.6	0.00	0.00	0.00
4,300.0	5.80	158.03	4,284.1	-295.8	119.3	-93.5	0.00	0.00	0.00
4,400.0	5.80	158.03	4,383.6	-305.1	123.1	-96.5	0.00	0.00	0.00

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Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-214	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-18-13)		

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	5.80	158.03	4,483.1	-314.5	126.9	-99.5	0.00	0.00	0.00
4,600.0	5.80	158.03	4,582.6	-323.9	130.6	-102.4	0.00	0.00	0.00
4,680.9	5.80	158.03	4,663.0	-331.5	133.7	-104.8	0.00	0.00	0.00
SHANNON									
4,700.0	5.80	158.03	4,682.0	-333.3	134.4	-105.4	0.00	0.00	0.00
4,800.0	5.80	158.03	4,781.5	-342.6	138.2	-108.4	0.00	0.00	0.00
4,900.0	5.80	158.03	4,881.0	-352.0	142.0	-111.3	0.00	0.00	0.00
5,000.0	5.80	158.03	4,980.5	-361.4	145.8	-114.3	0.00	0.00	0.00
5,100.0	5.80	158.03	5,080.0	-370.8	149.6	-117.3	0.00	0.00	0.00
5,200.0	5.80	158.03	5,179.5	-380.1	153.3	-120.2	0.00	0.00	0.00
5,231.1	5.80	158.03	5,210.4	-383.0	154.5	-121.1	0.00	0.00	0.00
5,300.0	4.42	158.03	5,279.0	-388.7	156.8	-122.9	2.00	-2.00	0.00
5,400.0	2.42	158.03	5,378.9	-394.3	159.0	-124.7	2.00	-2.00	0.00
5,500.0	0.42	158.03	5,478.8	-396.6	160.0	-125.4	2.00	-2.00	0.00
5,521.2	0.00	0.00	5,500.0	-396.7	160.0	-125.4	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,578.8	-396.7	160.0	-125.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,678.8	-396.7	160.0	-125.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,778.8	-396.7	160.0	-125.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,878.8	-396.7	160.0	-125.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,978.8	-396.7	160.0	-125.4	0.00	0.00	0.00
6,100.0	0.00	0.00	6,078.8	-396.7	160.0	-125.4	0.00	0.00	0.00
6,200.0	0.00	0.00	6,178.8	-396.7	160.0	-125.4	0.00	0.00	0.00
6,300.0	0.00	0.00	6,278.8	-396.7	160.0	-125.4	0.00	0.00	0.00
6,301.6	0.00	0.00	6,280.4	-396.7	160.0	-125.4	0.00	0.00	0.00
KOP #2									
6,400.0	7.38	270.00	6,378.6	-396.7	153.7	-119.1	7.50	7.50	0.00
6,500.0	14.88	270.00	6,476.6	-396.7	134.4	-99.9	7.50	7.50	0.00
6,600.0	22.38	270.00	6,571.3	-396.7	102.5	-68.1	7.50	7.50	0.00
6,700.0	29.88	270.00	6,661.0	-396.7	58.5	-24.3	7.50	7.50	0.00
6,800.0	37.38	270.00	6,744.2	-396.7	3.1	30.9	7.50	7.50	0.00
6,900.0	44.88	270.00	6,819.5	-396.7	-62.6	96.3	7.50	7.50	0.00
6,900.7	44.93	270.00	6,820.0	-396.7	-63.1	96.9	7.50	7.50	0.00
SHARON SPRINGS									
7,000.0	52.38	270.00	6,885.5	-396.7	-137.6	171.1	7.50	7.50	0.00
7,100.0	59.88	270.00	6,941.2	-396.7	-220.6	253.7	7.50	7.50	0.00
7,200.0	67.38	270.00	6,985.6	-396.7	-310.1	342.9	7.50	7.50	0.00
7,300.0	74.88	270.00	7,017.9	-396.7	-404.7	437.1	7.50	7.50	0.00
7,400.0	82.38	270.00	7,037.6	-396.7	-502.6	534.7	7.50	7.50	0.00
7,500.0	89.88	270.00	7,044.4	-396.7	-602.3	634.1	7.50	7.50	0.00
7,504.6	90.22	270.00	7,044.4	-396.7	-606.9	638.7	7.43	7.43	0.00
End of Build - 7"									
7,600.0	90.22	270.00	7,044.0	-396.7	-702.3	733.7	0.00	0.00	0.00
7,700.0	90.22	270.00	7,043.6	-396.7	-802.3	833.3	0.00	0.00	0.00
7,800.0	90.22	270.00	7,043.3	-396.7	-902.3	933.0	0.00	0.00	0.00
7,900.0	90.22	270.00	7,042.9	-396.7	-1,002.3	1,032.6	0.00	0.00	0.00
8,000.0	90.22	270.00	7,042.5	-396.7	-1,102.3	1,132.2	0.00	0.00	0.00
8,100.0	90.22	270.00	7,042.1	-396.7	-1,202.3	1,231.9	0.00	0.00	0.00
8,200.0	90.22	270.00	7,041.7	-396.7	-1,302.3	1,331.5	0.00	0.00	0.00
8,300.0	90.22	270.00	7,041.3	-396.7	-1,402.3	1,431.1	0.00	0.00	0.00
8,400.0	90.22	270.00	7,040.9	-396.7	-1,502.3	1,530.8	0.00	0.00	0.00
8,500.0	90.22	270.00	7,040.6	-396.7	-1,602.3	1,630.4	0.00	0.00	0.00
8,600.0	90.22	270.00	7,040.2	-396.7	-1,702.3	1,730.0	0.00	0.00	0.00

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Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-214	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-18-13)		

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	90.22	270.00	7,039.8	-396.7	-1,802.3	1,829.7	0.00	0.00	0.00
8,800.0	90.22	270.00	7,039.4	-396.7	-1,902.3	1,929.3	0.00	0.00	0.00
8,900.0	90.22	270.00	7,039.0	-396.7	-2,002.3	2,028.9	0.00	0.00	0.00
9,000.0	90.22	270.00	7,038.6	-396.7	-2,102.3	2,128.6	0.00	0.00	0.00
9,100.0	90.22	270.00	7,038.3	-396.7	-2,202.3	2,228.2	0.00	0.00	0.00
9,200.0	90.22	270.00	7,037.9	-396.7	-2,302.3	2,327.8	0.00	0.00	0.00
9,300.0	90.22	270.00	7,037.5	-396.7	-2,402.3	2,427.5	0.00	0.00	0.00
9,400.0	90.22	270.00	7,037.1	-396.7	-2,502.3	2,527.1	0.00	0.00	0.00
9,500.0	90.22	270.00	7,036.7	-396.7	-2,602.3	2,626.7	0.00	0.00	0.00
9,600.0	90.22	270.00	7,036.3	-396.7	-2,702.3	2,726.3	0.00	0.00	0.00
9,700.0	90.22	270.00	7,036.0	-396.7	-2,802.3	2,826.0	0.00	0.00	0.00
9,800.0	90.22	270.00	7,035.6	-396.7	-2,902.3	2,925.6	0.00	0.00	0.00
9,900.0	90.22	270.00	7,035.2	-396.7	-3,002.3	3,025.2	0.00	0.00	0.00
10,000.0	90.22	270.00	7,034.8	-396.7	-3,102.3	3,124.9	0.00	0.00	0.00
10,100.0	90.22	270.00	7,034.4	-396.7	-3,202.3	3,224.5	0.00	0.00	0.00
10,200.0	90.22	270.00	7,034.0	-396.7	-3,302.3	3,324.1	0.00	0.00	0.00
10,300.0	90.22	270.00	7,033.7	-396.7	-3,402.3	3,423.8	0.00	0.00	0.00
10,400.0	90.22	270.00	7,033.3	-396.7	-3,502.3	3,523.4	0.00	0.00	0.00
10,500.0	90.22	270.00	7,032.9	-396.7	-3,602.3	3,623.0	0.00	0.00	0.00
10,600.0	90.22	270.00	7,032.5	-396.7	-3,702.3	3,722.7	0.00	0.00	0.00
10,700.0	90.22	270.00	7,032.1	-396.7	-3,802.3	3,822.3	0.00	0.00	0.00
10,800.0	90.22	270.00	7,031.7	-396.7	-3,902.3	3,921.9	0.00	0.00	0.00
10,900.0	90.22	270.00	7,031.4	-396.7	-4,002.3	4,021.6	0.00	0.00	0.00
11,000.0	90.22	270.00	7,031.0	-396.7	-4,102.3	4,121.2	0.00	0.00	0.00
11,100.0	90.22	270.00	7,030.6	-396.7	-4,202.3	4,220.8	0.00	0.00	0.00
11,200.0	90.22	270.00	7,030.2	-396.7	-4,302.3	4,320.5	0.00	0.00	0.00
11,300.0	90.22	270.00	7,029.8	-396.7	-4,402.3	4,420.1	0.00	0.00	0.00
11,400.0	90.22	270.00	7,029.4	-396.7	-4,502.3	4,519.7	0.00	0.00	0.00
11,500.0	90.22	270.00	7,029.0	-396.7	-4,602.3	4,619.4	0.00	0.00	0.00
11,512.0	90.22	270.00	7,029.0	-396.7	-4,614.3	4,631.3	0.00	0.00	0.00
BHL 850'FNL, 500'FWL									

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude
BHL 850'FNL, 500'FW	- plan hits target center	0.00	0.00	7,029.0	-396.7	-4,614.3	1,348,628.85	3,166,388.60	40.288850 -104.903550
	- Point								
SHL 368'FNL, 210'FE	- plan hits target center	0.00	0.00	1.0	0.0	0.0	1,349,057.38	3,170,999.86	40.289940 -104.887010
	- Point								

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,504.6	7,044.4	7"	7	7-1/2	

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-214	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-18-13)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,652.6	3,640.0	PARKMAN				
4,165.2	4,150.0	SUSSEX				
4,680.9	4,663.0	SHANNON				
6,900.7	6,820.0	SHARON SPRINGS				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.0	1,000.0	0.0	0.0	KOP #1	
6,301.6	6,280.4	-396.7	160.0	KOP #2	
7,504.6	7,044.4	-396.7	-606.9	End of Build	



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

Sunmarke 28U-HZ Pad Sec.28-T4N-R67W

Sunmarke 28V-214

Wellbore #1

Plan #1 (11-18-13)

Anticollision Report

21 November, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design											Existing wells - Sec.28-T4N-R67W - McCarty 28-3 (Exist) - Wellbore #1 - Wellbore #1			Offset Site Error:		0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
10,500.0	7,032.9	7,084.9	7,084.9	102.4	141.7	89.37	-233.0	-3,130.1	499.7	255.8	243.95	2.049				
10,600.0	7,032.5	7,084.5	7,084.5	105.1	141.7	89.23	-233.0	-3,130.1	595.1	348.4	246.71	2.412				
10,700.0	7,032.1	7,084.1	7,084.1	107.9	141.7	89.10	-233.0	-3,130.1	691.8	442.3	249.47	2.773				
10,800.0	7,031.7	7,083.7	7,083.7	110.7	141.7	88.96	-233.0	-3,130.1	789.3	537.1	252.23	3.129				
10,900.0	7,031.4	7,083.4	7,083.4	113.5	141.7	88.83	-233.0	-3,130.1	887.4	632.4	254.98	3.480				
11,000.0	7,031.0	7,083.0	7,083.0	116.2	141.7	88.69	-233.0	-3,130.1	985.8	728.1	257.74	3.825				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells - Sec.28-T4N-R67W - McCarty 28-5 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,500.0	7,032.9	7,096.9	7,096.9	102.4	141.9	-97.18	-425.8	-4,558.5	956.7	714.4	242.27	3.949		
10,600.0	7,032.5	7,096.5	7,096.5	105.1	141.9	-96.43	-425.8	-4,558.5	856.7	611.3	245.40	3.491		
10,700.0	7,032.1	7,096.1	7,096.1	107.9	141.9	-95.69	-425.8	-4,558.5	756.8	508.3	248.49	3.046		
10,800.0	7,031.7	7,095.7	7,095.7	110.7	141.9	-94.94	-425.8	-4,558.5	656.9	405.3	251.55	2.611		
10,900.0	7,031.4	7,095.4	7,095.4	113.5	141.9	-94.19	-425.8	-4,558.5	557.0	302.4	254.58	2.188		
11,000.0	7,031.0	7,095.0	7,095.0	116.2	141.9	-93.44	-425.8	-4,558.5	457.2	199.6	257.57	1.775		
11,100.0	7,030.6	7,094.6	7,094.6	119.0	141.9	-92.69	-425.8	-4,558.5	357.4	96.9	260.53	1.372	Level 3	
11,200.0	7,030.2	7,094.2	7,094.2	121.8	141.9	-91.93	-425.8	-4,558.5	257.9	-5.6	263.45	0.979	Level 1	
11,300.0	7,029.8	7,093.8	7,093.8	124.6	141.9	-91.18	-425.8	-4,558.5	158.9	-107.4	266.32	0.597	Level 1	
11,400.0	7,029.4	7,093.4	7,093.4	127.4	141.9	-90.42	-425.8	-4,558.5	63.3	-205.8	269.15	0.235	Level 1	
11,456.2	7,029.2	7,093.2	7,093.2	128.9	141.9	-90.00	-425.8	-4,558.5	29.2	-241.6	270.73	0.108	Level 1, CC, ES, SF	
11,500.0	7,029.0	7,093.0	7,093.0	130.1	141.9	-89.67	-425.8	-4,558.5	52.6	-219.4	271.94	0.193	Level 1	
11,512.0	7,029.0	7,093.0	7,093.0	130.4	141.9	-89.58	-425.8	-4,558.5	63.0	-209.2	272.16	0.231	Level 1	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design		Existing wells - Sec.28-T4N-R67W - McCarty 28-6 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,600.0	7,044.0	7,059.0	7,059.0	25.4	141.2	90.64	-102.0	-1,565.1	911.7	745.4	166.29	5.483		
7,700.0	7,043.6	7,058.6	7,058.6	27.6	141.2	90.57	-102.0	-1,565.1	817.7	649.2	168.54	4.852		
7,800.0	7,043.3	7,058.3	7,058.3	29.9	141.2	90.49	-102.0	-1,565.1	725.3	554.4	170.88	4.245		
7,900.0	7,042.9	7,057.9	7,057.9	32.3	141.2	90.42	-102.0	-1,565.1	635.2	461.9	173.30	3.666		
8,000.0	7,042.5	7,057.5	7,057.5	34.8	141.1	90.35	-102.0	-1,565.1	548.6	372.8	175.77	3.121		
8,100.0	7,042.1	7,057.1	7,057.1	37.3	141.1	90.27	-102.0	-1,565.1	467.4	289.1	178.29	2.621		
8,200.0	7,041.7	7,056.7	7,056.7	39.9	141.1	90.20	-102.0	-1,565.1	394.8	214.0	180.85	2.183		
8,300.0	7,041.3	7,056.3	7,056.3	42.5	141.1	90.12	-102.0	-1,565.1	336.6	153.2	183.44	1.835		
8,400.0	7,040.9	7,055.9	7,055.9	45.1	141.1	90.05	-102.0	-1,565.1	301.3	115.3	186.05	1.619		
8,462.7	7,040.7	7,055.7	7,055.7	46.7	141.1	90.00	-102.0	-1,565.1	294.7	107.0	187.70	1.570 CC, ES, SF		
8,500.0	7,040.6	7,055.6	7,055.6	47.7	141.1	89.97	-102.0	-1,565.1	297.0	108.4	188.68	1.574		
8,600.0	7,040.2	7,055.2	7,055.2	50.4	141.1	89.90	-102.0	-1,565.1	325.1	133.8	191.33	1.699		
8,700.0	7,039.8	7,054.8	7,054.8	53.0	141.1	89.82	-102.0	-1,565.1	378.3	184.3	194.00	1.950		
8,800.0	7,039.4	7,054.4	7,054.4	55.7	141.1	89.75	-102.0	-1,565.1	447.9	251.2	196.68	2.277		
8,900.0	7,039.0	7,054.0	7,054.0	58.4	141.1	89.67	-102.0	-1,565.1	527.3	327.9	199.37	2.645		
9,000.0	7,038.6	7,053.6	7,053.6	61.1	141.1	89.60	-102.0	-1,565.1	612.8	410.7	202.07	3.033		
9,100.0	7,038.3	7,053.3	7,053.3	63.8	141.1	89.52	-102.0	-1,565.1	702.1	497.3	204.77	3.429		
9,200.0	7,037.9	7,052.9	7,052.9	66.6	141.1	89.45	-102.0	-1,565.1	794.0	586.5	207.49	3.827		
9,300.0	7,037.5	7,052.5	7,052.5	69.3	141.0	89.37	-102.0	-1,565.1	887.6	677.4	210.21	4.222		
9,400.0	7,037.1	7,052.1	7,052.1	72.0	141.0	89.30	-102.0	-1,565.1	982.5	769.6	212.93	4.614		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells - Sec.28-T4N-R67W - McCarty 28-8 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-100.30	-100.30	-116.6	-641.6	652.2				
100.0	100.0	97.0	97.0	0.1	1.9	-100.30	-100.30	-116.6	-641.6	652.1	650.1	2.05	317.721	
200.0	200.0	197.0	197.0	0.3	3.9	-100.30	-100.30	-116.6	-641.6	652.1	647.9	4.28	152.466	
300.0	300.0	297.0	297.0	0.6	5.9	-100.30	-100.30	-116.6	-641.6	652.1	645.6	6.50	100.298	
400.0	400.0	397.0	397.0	0.8	7.9	-100.30	-100.30	-116.6	-641.6	652.1	643.4	8.73	74.729	
500.0	500.0	497.0	497.0	1.0	9.9	-100.30	-100.30	-116.6	-641.6	652.1	641.2	10.95	59.548	
600.0	600.0	597.0	597.0	1.2	11.9	-100.30	-100.30	-116.6	-641.6	652.1	639.0	13.18	49.494	
700.0	700.0	697.0	697.0	1.5	13.9	-100.30	-100.30	-116.6	-641.6	652.1	636.7	15.40	42.344	
800.0	800.0	797.0	797.0	1.7	15.9	-100.30	-100.30	-116.6	-641.6	652.1	634.5	17.63	36.999	
900.0	900.0	897.0	897.0	1.9	17.9	-100.30	-100.30	-116.6	-641.6	652.1	632.3	19.85	32.853	
1,000.0	1,000.0	997.0	997.0	2.1	19.9	-100.30	-100.30	-116.6	-641.6	652.1	630.1	22.08	29.542	
1,100.0	1,100.0	1,097.0	1,097.0	2.3	21.9	101.81	101.81	-116.6	-641.6	652.5	628.2	24.27	26.884	
1,200.0	1,199.8	1,196.8	1,196.8	2.5	23.9	102.24	102.24	-116.6	-641.6	653.6	627.2	26.44	24.716	
1,290.1	1,289.6	1,286.6	1,286.6	2.7	25.7	102.86	102.86	-116.6	-641.6	655.3	626.9	28.41	23.067	
1,300.0	1,299.5	1,296.5	1,296.5	2.7	25.9	102.95	102.95	-116.6	-641.6	655.5	626.9	28.63	22.899	
1,400.0	1,398.9	1,395.9	1,395.9	2.9	27.9	103.80	103.80	-116.6	-641.6	657.8	627.0	30.82	21.342	
1,500.0	1,498.4	1,495.4	1,495.4	3.1	29.9	104.65	104.65	-116.6	-641.6	660.3	627.3	33.04	19.988	
1,600.0	1,597.9	1,594.9	1,594.9	3.4	31.9	105.49	105.49	-116.6	-641.6	663.0	627.7	35.26	18.802	
1,700.0	1,697.4	1,694.4	1,694.4	3.6	33.9	106.33	106.33	-116.6	-641.6	665.8	628.3	37.49	17.758	
1,800.0	1,796.9	1,793.9	1,793.9	3.9	35.9	107.15	107.15	-116.6	-641.6	668.7	629.0	39.73	16.831	
1,900.0	1,896.4	1,893.4	1,893.4	4.1	37.9	107.97	107.97	-116.6	-641.6	671.8	629.8	41.97	16.005	
2,000.0	1,995.9	1,992.9	1,992.9	4.4	39.9	108.79	108.79	-116.6	-641.6	675.0	630.7	44.22	15.264	
2,100.0	2,095.4	2,092.4	2,092.4	4.7	41.8	109.59	109.59	-116.6	-641.6	678.3	631.8	46.47	14.597	
2,200.0	2,194.8	2,191.8	2,191.8	5.0	43.8	110.39	110.39	-116.6	-641.6	681.8	633.1	48.72	13.994	
2,300.0	2,294.3	2,291.3	2,291.3	5.2	45.8	111.18	111.18	-116.6	-641.6	685.4	634.4	50.97	13.446	
2,400.0	2,393.8	2,390.8	2,390.8	5.5	47.8	111.96	111.96	-116.6	-641.6	689.1	635.9	53.23	12.947	
2,500.0	2,493.3	2,490.3	2,490.3	5.8	49.8	112.73	112.73	-116.6	-641.6	693.0	637.5	55.48	12.490	
2,600.0	2,592.8	2,589.8	2,589.8	6.1	51.8	113.49	113.49	-116.6	-641.6	696.9	639.2	57.74	12.071	
2,700.0	2,692.3	2,689.3	2,689.3	6.4	53.8	114.25	114.25	-116.6	-641.6	701.1	641.1	59.99	11.686	
2,800.0	2,791.8	2,788.8	2,788.8	6.6	55.8	114.99	114.99	-116.6	-641.6	705.3	643.0	62.25	11.330	
2,900.0	2,891.3	2,888.3	2,888.3	6.9	57.8	115.73	115.73	-116.6	-641.6	709.6	645.1	64.50	11.001	
3,000.0	2,990.7	2,987.7	2,987.7	7.2	59.8	116.46	116.46	-116.6	-641.6	714.1	647.3	66.76	10.697	
3,100.0	3,090.2	3,087.2	3,087.2	7.5	61.7	117.17	117.17	-116.6	-641.6	718.7	649.7	69.01	10.414	
3,200.0	3,189.7	3,186.7	3,186.7	7.8	63.7	117.88	117.88	-116.6	-641.6	723.4	652.1	71.27	10.150	
3,300.0	3,289.2	3,286.2	3,286.2	8.1	65.7	118.58	118.58	-116.6	-641.6	728.2	654.6	73.52	9.904	
3,400.0	3,388.7	3,385.7	3,385.7	8.4	67.7	119.27	119.27	-116.6	-641.6	733.1	657.3	75.77	9.675	
3,500.0	3,488.2	3,485.2	3,485.2	8.7	69.7	119.96	119.96	-116.6	-641.6	738.1	660.1	78.02	9.460	
3,600.0	3,587.7	3,584.7	3,584.7	9.0	71.7	120.63	120.63	-116.6	-641.6	743.2	662.9	80.28	9.258	
3,700.0	3,687.2	3,684.2	3,684.2	9.3	73.7	121.29	121.29	-116.6	-641.6	748.4	665.9	82.53	9.069	
3,800.0	3,786.6	3,783.6	3,783.6	9.6	75.7	121.95	121.95	-116.6	-641.6	753.7	669.0	84.77	8.891	
3,900.0	3,886.1	3,883.1	3,883.1	9.8	77.7	122.59	122.59	-116.6	-641.6	759.2	672.1	87.02	8.724	
4,000.0	3,985.6	3,982.6	3,982.6	10.1	79.7	123.23	123.23	-116.6	-641.6	764.7	675.4	89.27	8.566	
4,100.0	4,085.1	4,082.1	4,082.1	10.4	81.6	123.85	123.85	-116.6	-641.6	770.3	678.8	91.51	8.417	
4,200.0	4,184.6	4,181.6	4,181.6	10.7	83.6	124.47	124.47	-116.6	-641.6	776.0	682.2	93.76	8.276	
4,300.0	4,284.1	4,281.1	4,281.1	11.0	85.6	125.08	125.08	-116.6	-641.6	781.8	685.8	96.00	8.143	
4,400.0	4,383.6	4,380.6	4,380.6	11.3	87.6	125.68	125.68	-116.6	-641.6	787.6	689.4	98.25	8.017	
4,500.0	4,483.1	4,480.1	4,480.1	11.6	89.6	126.27	126.27	-116.6	-641.6	793.6	693.1	100.49	7.897	
4,600.0	4,582.6	4,579.6	4,579.6	11.9	91.6	126.85	126.85	-116.6	-641.6	799.6	696.9	102.73	7.784	
4,700.0	4,682.0	4,679.0	4,679.0	12.2	93.6	127.43	127.43	-116.6	-641.6	805.8	700.8	104.97	7.676	
4,800.0	4,781.5	4,778.5	4,778.5	12.5	95.6	127.99	127.99	-116.6	-641.6	812.0	704.8	107.21	7.574	
4,900.0	4,881.0	4,878.0	4,878.0	12.8	97.6	128.55	128.55	-116.6	-641.6	818.2	708.8	109.45	7.476	

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Existing wells - Sec.28-T4N-R67W - McCarty 28-8 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7600-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,980.5	4,977.5	4,977.5	13.1	99.6	129.09		-116.6	-641.6	824.6	712.9	111.68	7.383	
5,100.0	5,080.0	5,077.0	5,077.0	13.4	101.5	129.63		-116.6	-641.6	831.0	717.1	113.92	7.295	
5,200.0	5,179.5	5,176.5	5,176.5	13.7	103.5	130.16		-116.6	-641.6	837.5	721.4	116.15	7.210	
5,231.1	5,210.4	5,207.4	5,207.4	13.8	104.1	130.33		-116.6	-641.6	839.6	722.7	116.85	7.185	
5,300.0	5,279.0	5,276.0	5,276.0	14.0	105.5	130.71		-116.6	-641.6	843.6	725.1	118.46	7.121	
5,400.0	5,378.9	5,375.9	5,375.9	14.1	107.5	131.07		-116.6	-641.6	847.5	726.8	120.72	7.020	
5,500.0	5,478.8	5,475.8	5,475.8	14.3	109.5	131.22		-116.6	-641.6	849.1	726.2	122.92	6.908	
5,521.2	5,500.0	5,497.0	5,497.0	14.3	109.9	-70.74		-116.6	-641.6	849.2	726.1	123.02	6.903	
5,600.0	5,578.8	5,575.8	5,575.8	14.5	111.5	-70.74		-116.6	-641.6	849.2	724.4	124.74	6.808	
5,700.0	5,678.8	5,675.8	5,675.8	14.6	113.5	-70.74		-116.6	-641.6	849.2	722.3	126.91	6.691	
5,800.0	5,778.8	5,775.8	5,775.8	14.8	115.5	-70.74		-116.6	-641.6	849.2	720.1	129.08	6.579	
5,900.0	5,878.8	5,875.8	5,875.8	14.9	117.5	-70.74		-116.6	-641.6	849.2	717.9	131.26	6.470	
6,000.0	5,978.8	5,975.8	5,975.8	15.1	119.5	-70.74		-116.6	-641.6	849.2	715.7	133.43	6.364	
6,100.0	6,078.8	6,075.8	6,075.8	15.3	121.5	-70.74		-116.6	-641.6	849.2	713.6	135.61	6.262	
6,200.0	6,178.8	6,175.8	6,175.8	15.4	123.5	-70.74		-116.6	-641.6	849.2	711.4	137.79	6.163	
6,301.6	6,280.4	6,277.4	6,277.4	15.6	125.5	-70.74		-116.6	-641.6	849.2	709.2	140.00	6.065	
6,350.0	6,328.8	6,325.8	6,325.8	15.7	126.5	19.33		-116.6	-641.6	847.7	706.6	141.07	6.009	
6,400.0	6,378.6	6,375.6	6,375.6	15.7	127.5	19.55		-116.6	-641.6	843.2	701.9	141.34	5.966	
6,450.0	6,427.9	6,424.9	6,424.9	15.8	128.5	19.93		-116.6	-641.6	835.6	694.6	141.07	5.923	
6,500.0	6,476.6	6,473.6	6,473.6	15.9	129.5	20.48		-116.6	-641.6	825.0	684.8	140.26	5.882	
6,550.0	6,524.5	6,521.5	6,521.5	15.9	130.4	21.21		-116.6	-641.6	811.5	672.5	138.95	5.840	
6,600.0	6,571.3	6,568.3	6,568.3	16.0	131.4	22.15		-116.6	-641.6	795.1	657.9	137.17	5.796	
6,650.0	6,616.9	6,613.9	6,613.9	16.0	132.3	23.32		-116.6	-641.6	775.9	640.9	134.99	5.748	
6,700.0	6,661.0	6,658.0	6,658.0	16.0	133.2	24.77		-116.6	-641.6	754.1	621.5	132.52	5.690	
6,750.0	6,703.5	6,700.5	6,700.5	16.1	134.0	26.53		-116.6	-641.6	729.7	599.8	129.92	5.617	
6,800.0	6,744.2	6,741.2	6,741.2	16.1	134.8	28.66		-116.6	-641.6	703.0	575.6	127.38	5.519	
6,850.0	6,782.9	6,779.9	6,779.9	16.2	135.6	31.23		-116.6	-641.6	674.1	548.9	125.21	5.383	
6,900.0	6,819.5	6,816.5	6,816.5	16.2	136.3	34.32		-116.6	-641.6	643.2	519.4	123.77	5.197	
6,950.0	6,853.7	6,850.7	6,850.7	16.3	137.0	37.99		-116.6	-641.6	610.6	487.1	123.50	4.945	
7,000.0	6,885.5	6,882.5	6,882.5	16.4	137.7	42.31		-116.6	-641.6	576.6	451.8	124.80	4.620	
7,050.0	6,914.7	6,911.7	6,911.7	16.6	138.2	47.32		-116.6	-641.6	541.5	413.6	127.94	4.233	
7,100.0	6,941.2	6,938.2	6,938.2	16.9	138.8	52.97		-116.6	-641.6	505.7	372.9	132.83	3.807	
7,150.0	6,964.9	6,961.9	6,961.9	17.4	139.2	59.12		-116.6	-641.6	469.7	330.7	138.97	3.380	
7,200.0	6,985.6	6,982.6	6,982.6	18.0	139.7	65.52		-116.6	-641.6	434.0	288.6	145.44	2.984	
7,250.0	7,003.3	7,000.3	7,000.3	18.7	140.0	71.79		-116.6	-641.6	399.4	248.1	151.32	2.640	
7,300.0	7,017.9	7,014.9	7,014.9	19.5	140.3	77.55		-116.6	-641.6	366.9	210.9	155.96	2.353	
7,350.0	7,029.4	7,026.4	7,026.4	20.3	140.5	82.45		-116.6	-641.6	337.5	178.3	159.19	2.120	
7,400.0	7,037.6	7,034.6	7,034.6	21.2	140.7	86.23		-116.6	-641.6	312.7	151.4	161.29	1.939	
7,450.0	7,042.6	7,039.6	7,039.6	22.2	140.8	88.77		-116.6	-641.6	294.0	131.3	162.69	1.807	
7,504.6	7,044.4	7,041.4	7,041.4	23.3	140.8	90.03		-116.6	-641.6	282.2	118.3	163.89	1.722	
7,539.3	7,044.3	7,041.3	7,041.3	24.1	140.8	90.00		-116.6	-641.6	280.1	115.5	164.63	1.701 CC, ES, SF	
7,600.0	7,044.0	7,041.0	7,041.0	25.4	140.8	89.95		-116.6	-641.6	286.6	120.7	165.93	1.727	
7,700.0	7,043.6	7,040.6	7,040.6	27.6	140.8	89.87		-116.6	-641.6	322.9	154.7	168.17	1.920	
7,800.0	7,043.3	7,040.3	7,040.3	29.9	140.8	89.80		-116.6	-641.6	382.6	212.1	170.51	2.244	
7,900.0	7,042.9	7,039.9	7,039.9	32.3	140.8	89.72		-116.6	-641.6	456.7	283.7	172.93	2.641	
8,000.0	7,042.5	7,039.5	7,039.5	34.8	140.8	89.64		-116.6	-641.6	539.1	363.7	175.40	3.074	
8,100.0	7,042.1	7,039.1	7,039.1	37.3	140.8	89.56		-116.6	-641.6	626.7	448.8	177.92	3.523	
8,200.0	7,041.7	7,038.7	7,038.7	39.9	140.8	89.48		-116.6	-641.6	717.6	537.1	180.47	3.976	
8,300.0	7,041.3	7,038.3	7,038.3	42.5	140.8	89.40		-116.6	-641.6	810.6	627.5	183.06	4.428	
8,400.0	7,040.9	7,037.9	7,037.9	45.1	140.8	89.32		-116.6	-641.6	905.1	719.4	185.67	4.875	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-334 - Wellbore #1 - Plan #1 (11-18-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	61.9	0.0	61.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	61.9	0.0	61.9	61.7	0.22	275.521		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	61.9	0.0	61.9	61.3	0.67	91.840		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	61.9	0.0	61.9	60.8	1.12	55.104		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	61.9	0.0	61.9	60.4	1.57	39.360		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	61.9	0.0	61.9	59.9	2.02	30.613		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	61.9	0.0	61.9	59.5	2.47	25.047		
700.0	700.0	700.0	700.0	1.5	1.5	0.00	61.9	0.0	61.9	59.0	2.92	21.194		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	61.9	0.0	61.9	58.6	3.37	18.368		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	61.9	0.0	61.9	58.1	3.82	16.207		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	61.9	0.0	61.9	57.7	4.27	14.501 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-158.61	61.9	0.0	63.5	58.9	4.69	13.543		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-160.17	61.9	0.0	68.4	63.4	5.09	13.445		
1,290.1	1,289.6	1,289.6	1,289.6	2.7	2.8	-162.10	61.9	0.0	75.7	70.3	5.45	13.888		
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	-162.33	61.9	0.0	76.7	71.2	5.49	13.958		
1,400.0	1,398.9	1,398.9	1,398.9	2.9	3.0	-164.37	61.9	0.0	86.4	80.5	5.91	14.616		
1,500.0	1,498.4	1,498.4	1,498.4	3.1	3.3	-165.99	61.9	0.0	96.2	89.8	6.33	15.186		
1,600.0	1,597.9	1,597.9	1,597.9	3.4	3.5	-167.31	61.9	0.0	106.0	99.2	6.76	15.684		
1,700.0	1,697.4	1,697.4	1,697.4	3.6	3.7	-168.41	61.9	0.0	115.9	108.7	7.19	16.120		
1,800.0	1,796.9	1,796.9	1,796.9	3.9	3.9	-169.33	61.9	0.0	125.8	118.2	7.62	16.505		
1,900.0	1,896.4	1,896.4	1,896.4	4.1	4.2	-170.12	61.9	0.0	135.7	127.7	8.06	16.846		
2,000.0	1,995.9	1,995.9	1,995.9	4.4	4.4	-170.81	61.9	0.0	145.7	137.2	8.50	17.150		
2,100.0	2,095.4	2,094.4	2,094.4	4.7	4.6	-170.83	62.5	1.4	156.0	147.1	8.93	17.470		
2,200.0	2,194.8	2,192.9	2,192.7	5.0	4.8	-169.72	64.5	5.9	166.9	157.6	9.36	17.830		
2,300.0	2,294.3	2,292.2	2,291.8	5.2	5.0	-168.35	66.9	11.5	178.2	168.4	9.80	18.176		
2,400.0	2,393.8	2,391.4	2,390.9	5.5	5.2	-167.16	69.4	17.1	189.5	179.3	10.25	18.492		
2,500.0	2,493.3	2,490.7	2,490.0	5.8	5.4	-166.09	71.8	22.8	200.9	190.2	10.70	18.781		
2,600.0	2,592.8	2,590.0	2,589.1	6.1	5.7	-165.14	74.3	28.4	212.4	201.2	11.15	19.045		
2,700.0	2,692.3	2,689.3	2,688.2	6.4	5.9	-164.29	76.7	34.0	223.9	212.3	11.61	19.286		
2,800.0	2,791.8	2,788.6	2,787.3	6.6	6.1	-163.52	79.2	39.6	235.5	223.4	12.07	19.508		
2,900.0	2,891.3	2,887.9	2,886.4	6.9	6.4	-162.82	81.6	45.2	247.1	234.6	12.53	19.713		
3,000.0	2,990.7	2,987.1	2,985.5	7.2	6.6	-162.19	84.1	50.8	258.7	245.7	13.00	19.901		
3,100.0	3,090.2	3,086.4	3,084.6	7.5	6.8	-161.61	86.5	56.5	270.4	256.9	13.47	20.075		
3,200.0	3,189.7	3,185.7	3,183.7	7.8	7.0	-161.08	88.9	62.1	282.1	268.2	13.94	20.237		
3,300.0	3,289.2	3,285.0	3,282.8	8.1	7.3	-160.59	91.4	67.7	293.8	279.4	14.41	20.387		
3,400.0	3,388.7	3,384.3	3,381.8	8.4	7.5	-160.14	93.8	73.3	305.5	290.7	14.89	20.526		
3,500.0	3,488.2	3,483.5	3,480.9	8.7	7.7	-159.72	96.3	78.9	317.3	301.9	15.36	20.656		
3,600.0	3,587.7	3,582.8	3,580.0	9.0	8.0	-159.33	98.7	84.5	329.1	313.2	15.84	20.777		
3,700.0	3,687.2	3,682.1	3,679.1	9.3	8.2	-158.97	101.2	90.2	340.8	324.5	16.32	20.891		
3,800.0	3,786.6	3,781.4	3,778.2	9.6	8.5	-158.63	103.6	95.8	352.6	335.8	16.79	20.997		
3,900.0	3,886.1	3,880.7	3,877.3	9.8	8.7	-158.32	106.1	101.4	364.4	347.2	17.27	21.097		
4,000.0	3,985.6	3,979.9	3,976.4	10.1	8.9	-158.02	108.5	107.0	376.3	358.5	17.76	21.191		
4,100.0	4,085.1	4,079.2	4,075.5	10.4	9.2	-157.75	111.0	112.6	388.1	369.9	18.24	21.280		
4,200.0	4,184.6	4,178.5	4,174.6	10.7	9.4	-157.48	113.4	118.2	399.9	381.2	18.72	21.363		
4,300.0	4,284.1	4,277.8	4,273.7	11.0	9.7	-157.24	115.8	123.8	411.8	392.6	19.20	21.442		
4,400.0	4,383.6	4,377.1	4,372.8	11.3	9.9	-157.01	118.3	129.5	423.6	403.9	19.69	21.517		
4,500.0	4,483.1	4,476.4	4,471.9	11.6	10.1	-156.79	120.7	135.1	435.5	415.3	20.17	21.588		
4,600.0	4,582.6	4,575.6	4,571.0	11.9	10.4	-156.58	123.2	140.7	447.3	426.7	20.66	21.655		
4,700.0	4,682.0	4,674.9	4,670.0	12.2	10.6	-156.38	125.6	146.3	459.2	438.1	21.14	21.718		
4,800.0	4,781.5	4,774.2	4,769.1	12.5	10.9	-156.19	128.1	151.9	471.1	449.4	21.63	21.779		
4,900.0	4,881.0	4,877.0	4,871.8	12.8	11.1	-156.05	130.4	157.4	482.8	460.7	22.11	21.836		

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-334 - Wellbore #1 - Plan #1 (11-18-13)													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
5,000.0	4,980.5	4,984.2	4,979.0	13.1	11.3	-156.27		131.6	159.9	493.1	470.6	22.54	21.874	
5,100.0	5,080.0	5,085.3	5,080.0	13.4	11.5	-156.73		131.6	160.0	502.4	479.5	22.97	21.876	
5,200.0	5,179.5	5,184.8	5,179.5	13.7	11.7	-157.18		131.6	160.0	511.8	488.3	23.41	21.863	
5,231.1	5,210.4	5,215.7	5,210.4	13.8	11.8	-157.32		131.6	160.0	514.7	491.1	23.55	21.858	
5,300.0	5,279.0	5,284.3	5,279.0	14.0	11.9	-157.62		131.6	160.0	520.3	496.5	23.86	21.811	
5,400.0	5,378.9	5,384.1	5,378.9	14.1	12.1	-157.91		131.6	160.0	525.9	501.6	24.27	21.667	
5,500.0	5,478.8	5,484.1	5,478.8	14.3	12.3	-158.03		131.6	160.0	528.2	503.5	24.66	21.419	
5,521.2	5,500.0	5,505.3	5,500.0	14.3	12.4	0.00		131.6	160.0	528.2	502.1	26.09	20.247	
5,600.0	5,578.8	5,584.1	5,578.8	14.5	12.5	0.00		131.6	160.0	528.2	501.8	26.39	20.013	
5,700.0	5,678.8	5,684.1	5,678.8	14.6	12.8	0.00		131.6	160.0	528.2	501.5	26.77	19.734	
5,800.0	5,778.8	5,784.1	5,778.8	14.8	13.0	0.00		131.6	160.0	528.2	501.1	27.14	19.461	
5,900.0	5,878.8	5,884.1	5,878.8	14.9	13.2	0.00		131.6	160.0	528.2	500.7	27.52	19.194	
6,000.0	5,978.8	5,984.1	5,978.8	15.1	13.4	0.00		131.6	160.0	528.2	500.3	27.90	18.934	
6,100.0	6,078.8	6,084.1	6,078.8	15.3	13.6	0.00		131.6	160.0	528.2	500.0	28.28	18.678	
6,200.0	6,178.8	6,184.1	6,178.8	15.4	13.8	0.00		131.6	160.0	528.2	499.6	28.66	18.429	
6,301.6	6,280.4	6,285.7	6,280.4	15.6	14.1	0.00		131.6	160.0	528.2	499.2	29.05	18.181	
6,312.2	6,291.0	6,296.3	6,291.0	15.6	14.1	90.01		131.6	160.0	528.2	500.3	27.91	18.930	
6,350.0	6,328.8	6,334.1	6,328.8	15.7	14.2	90.17		131.6	160.0	528.2	500.2	28.06	18.827	
6,400.0	6,378.6	6,383.8	6,378.6	15.7	14.3	90.68		131.6	160.0	528.3	500.0	28.25	18.697	
6,450.0	6,427.9	6,433.9	6,428.6	15.8	14.4	91.42		131.6	158.8	528.4	500.0	28.43	18.586	
6,500.0	6,476.6	6,484.6	6,479.0	15.9	14.4	92.16		131.6	154.3	528.6	500.0	28.59	18.491	
6,550.0	6,524.5	6,535.7	6,529.5	15.9	14.5	92.89		131.6	146.4	528.9	500.2	28.73	18.410	
6,600.0	6,571.3	6,587.2	6,579.8	16.0	14.6	93.62		131.6	135.1	529.3	500.4	28.86	18.338	
6,650.0	6,616.9	6,639.3	6,629.7	16.0	14.7	94.33		131.6	120.1	529.8	500.8	29.00	18.270	
6,700.0	6,661.0	6,691.9	6,678.9	16.0	14.7	95.02		131.6	101.7	530.3	501.2	29.14	18.201	
6,750.0	6,703.5	6,745.0	6,727.2	16.1	14.8	95.70		131.6	79.7	530.9	501.6	29.30	18.121	
6,800.0	6,744.2	6,798.5	6,774.3	16.1	14.9	96.35		131.6	54.1	531.5	502.0	29.50	18.021	
6,850.0	6,782.9	6,852.6	6,819.8	16.2	15.0	96.97		131.6	25.0	532.2	502.5	29.75	17.889	
6,900.0	6,819.5	6,907.1	6,863.6	16.2	15.2	97.56		131.6	-7.5	532.9	502.8	30.09	17.713	
6,950.0	6,853.7	6,962.1	6,905.2	16.3	15.4	98.12		131.6	-43.4	533.6	503.1	30.52	17.484	
7,000.0	6,885.5	7,017.6	6,944.5	16.4	15.7	98.65		131.6	-82.5	534.4	503.3	31.08	17.192	
7,050.0	6,914.7	7,073.4	6,981.1	16.6	16.0	99.13		131.6	-124.7	535.1	503.3	31.79	16.832	
7,100.0	6,941.2	7,129.7	7,014.8	16.9	16.5	99.57		131.6	-169.8	535.7	503.1	32.66	16.405	
7,150.0	6,964.9	7,186.3	7,045.2	17.4	17.0	99.97		131.6	-217.5	536.4	502.7	33.70	15.916	
7,200.0	6,985.6	7,243.3	7,072.2	18.0	17.7	100.32		131.6	-267.7	537.0	502.0	34.93	15.373	
7,250.0	7,003.3	7,300.5	7,095.4	18.7	18.4	100.62		131.6	-320.0	537.5	501.1	36.34	14.789	
7,300.0	7,017.9	7,358.0	7,114.7	19.5	19.3	100.87		131.6	-374.1	537.9	500.0	37.94	14.177	
7,350.0	7,029.4	7,415.7	7,130.0	20.3	20.2	101.06		131.6	-429.7	538.3	498.5	39.71	13.555	
7,400.0	7,037.6	7,473.6	7,141.1	21.2	21.2	101.20		131.6	-486.5	538.5	496.9	41.62	12.938	
7,450.0	7,042.6	7,531.6	7,147.8	22.2	22.3	101.29		131.6	-544.1	538.7	495.0	43.66	12.337	
7,504.6	7,044.4	7,594.9	7,150.1	23.3	23.6	101.32		131.6	-607.3	538.7	492.7	46.00	11.711	
7,600.0	7,044.0	7,691.2	7,148.9	25.4	25.6	101.23		131.6	-703.7	538.6	488.6	50.01	10.770	
7,700.0	7,043.6	7,791.2	7,147.7	27.6	27.8	101.14		131.6	-803.6	538.4	484.0	54.41	9.894	
7,800.0	7,043.3	7,891.2	7,146.4	29.9	30.2	101.05		131.6	-903.6	538.2	479.2	59.01	9.120	
7,900.0	7,042.9	7,991.2	7,145.1	32.3	32.6	100.95		131.6	-1,003.6	538.0	474.3	63.76	8.438	
8,000.0	7,042.5	8,091.2	7,143.8	34.8	35.0	100.86		131.6	-1,103.6	537.9	469.2	68.63	7.837	
8,100.0	7,042.1	8,191.2	7,142.6	37.3	37.5	100.77		131.6	-1,203.6	537.7	464.1	73.60	7.306	
8,200.0	7,041.7	8,291.2	7,141.3	39.9	40.1	100.68		131.6	-1,303.6	537.5	458.9	78.64	6.835	
8,300.0	7,041.3	8,391.2	7,140.0	42.5	42.7	100.58		131.6	-1,403.6	537.4	453.6	83.75	6.416	
8,400.0	7,040.9	8,491.2	7,138.7	45.1	45.3	100.49		131.6	-1,503.6	537.2	448.3	88.92	6.042	
8,500.0	7,040.6	8,591.2	7,137.5	47.7	47.9	100.40		131.6	-1,603.5	537.1	442.9	94.13	5.706	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-334 - Wellbore #1 - Plan #1 (11-18-13)													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
8,600.0	7,040.2	8,691.2	7,136.2	50.4	50.5	100.30	131.6	-1,703.5	536.9	437.5	99.38	5.403		
8,700.0	7,039.8	8,791.1	7,134.9	53.0	53.2	100.21	131.6	-1,803.5	536.7	432.1	104.66	5.128		
8,800.0	7,039.4	8,891.1	7,133.6	55.7	55.9	100.11	131.6	-1,903.5	536.6	426.6	109.97	4.879		
8,900.0	7,039.0	8,991.1	7,132.4	58.4	58.6	100.02	131.6	-2,003.5	536.4	421.1	115.31	4.652		
9,000.0	7,038.6	9,091.1	7,131.1	61.1	61.3	99.93	131.6	-2,103.5	536.3	415.6	120.67	4.444		
9,100.0	7,038.3	9,191.1	7,129.8	63.8	64.0	99.83	131.6	-2,203.5	536.1	410.1	126.05	4.253		
9,200.0	7,037.9	9,291.1	7,128.5	66.6	66.7	99.74	131.6	-2,303.5	536.0	404.5	131.45	4.077		
9,300.0	7,037.5	9,391.1	7,127.3	69.3	69.4	99.65	131.6	-2,403.4	535.8	398.9	136.87	3.915		
9,400.0	7,037.1	9,491.1	7,126.0	72.0	72.2	99.55	131.6	-2,503.4	535.7	393.4	142.30	3.764		
9,500.0	7,036.7	9,591.1	7,124.7	74.8	74.9	99.46	131.6	-2,603.4	535.5	387.8	147.74	3.625		
9,600.0	7,036.3	9,691.1	7,123.5	77.5	77.6	99.36	131.6	-2,703.4	535.4	382.2	153.19	3.495		
9,700.0	7,036.0	9,791.1	7,122.2	80.3	80.4	99.27	131.6	-2,803.4	535.2	376.6	158.66	3.373		
9,800.0	7,035.6	9,891.1	7,120.9	83.0	83.1	99.18	131.6	-2,903.4	535.1	371.0	164.13	3.260		
9,900.0	7,035.2	9,991.1	7,119.6	85.8	85.9	99.08	131.6	-3,003.4	534.9	365.3	169.62	3.154		
10,000.0	7,034.8	10,091.1	7,118.4	88.5	88.6	98.99	131.6	-3,103.4	534.8	359.7	175.11	3.054		
10,100.0	7,034.4	10,191.1	7,117.1	91.3	91.4	98.89	131.6	-3,203.4	534.7	354.1	180.61	2.960		
10,200.0	7,034.0	10,291.1	7,115.8	94.0	94.2	98.80	131.6	-3,303.3	534.5	348.4	186.12	2.872		
10,300.0	7,033.7	10,391.1	7,114.5	96.8	96.9	98.71	131.6	-3,403.3	534.4	342.8	191.64	2.789		
10,400.0	7,033.3	10,491.1	7,113.3	99.6	99.7	98.61	131.6	-3,503.3	534.3	337.1	197.16	2.710		
10,500.0	7,032.9	10,591.1	7,112.0	102.4	102.5	98.52	131.6	-3,603.3	534.1	331.4	202.69	2.635		
10,600.0	7,032.5	10,691.1	7,110.7	105.1	105.2	98.42	131.6	-3,703.3	534.0	325.8	208.22	2.565		
10,700.0	7,032.1	10,791.1	7,109.4	107.9	108.0	98.33	131.6	-3,803.3	533.9	320.1	213.76	2.498		
10,800.0	7,031.7	10,891.1	7,108.2	110.7	110.8	98.23	131.6	-3,903.3	533.7	314.4	219.31	2.434		
10,900.0	7,031.4	10,991.1	7,106.9	113.5	113.6	98.14	131.6	-4,003.3	533.6	308.8	224.86	2.373		
11,000.0	7,031.0	11,091.1	7,105.6	116.2	116.3	98.04	131.6	-4,103.2	533.5	303.1	230.41	2.315		
11,100.0	7,030.6	11,191.1	7,104.3	119.0	119.1	97.95	131.6	-4,203.2	533.4	297.4	235.97	2.260		
11,200.0	7,030.2	11,291.0	7,103.1	121.8	121.9	97.85	131.6	-4,303.2	533.2	291.7	241.53	2.208		
11,300.0	7,029.8	11,391.0	7,101.8	124.6	124.7	97.76	131.6	-4,403.2	533.1	286.0	247.10	2.158		
11,400.0	7,029.4	11,491.0	7,100.5	127.4	127.5	97.67	131.6	-4,503.2	533.0	280.3	252.67	2.109		
11,500.0	7,029.0	11,591.0	7,099.2	130.1	130.2	97.57	131.6	-4,603.2	532.9	274.6	258.24	2.064		
11,512.0	7,029.0	11,603.1	7,099.1	130.4	130.6	97.56	131.6	-4,615.2	532.9	274.1	258.77	2.059 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-434 - Wellbore #1 - Plan #1 (11-18-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	32.8	0.0	32.8				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.00	32.8	0.0	32.8	32.6	0.22	145.892	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.00	32.8	0.0	32.8	32.1	0.67	48.631	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	0.00	32.8	0.0	32.8	31.7	1.12	29.178	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	0.00	32.8	0.0	32.8	31.2	1.57	20.842	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	0.00	32.8	0.0	32.8	30.8	2.02	16.210	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	0.00	32.8	0.0	32.8	30.3	2.47	13.263	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	0.00	32.8	0.0	32.8	29.9	2.92	11.222	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	0.00	32.8	0.0	32.8	29.4	3.37	9.726	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	0.00	32.8	0.0	32.8	29.0	3.82	8.582	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	0.00	32.8	0.0	32.8	28.5	4.27	7.679 CC, ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-159.11	32.8	0.0	34.4	29.7	4.69	7.334		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-161.79	32.8	0.0	39.4	34.3	5.09	7.729		
1,290.1	1,289.6	1,289.6	1,289.6	2.7	2.8	-164.70	32.8	0.0	46.7	41.3	5.45	8.569		
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	-165.02	32.8	0.0	47.7	42.2	5.49	8.682		
1,400.0	1,398.9	1,398.9	1,398.9	2.9	3.0	-167.62	32.8	0.0	57.5	51.6	5.91	9.735		
1,500.0	1,498.4	1,498.4	1,498.4	3.1	3.3	-169.47	32.8	0.0	67.4	61.1	6.33	10.654		
1,600.0	1,597.9	1,600.2	1,600.2	3.4	3.5	-170.18	31.5	1.2	75.9	69.2	6.73	11.274		
1,700.0	1,697.4	1,702.4	1,702.2	3.6	3.6	-169.43	27.6	4.9	81.4	74.3	7.13	11.423		
1,800.0	1,796.9	1,802.3	1,801.9	3.9	3.8	-168.17	22.6	9.8	85.5	77.9	7.53	11.352		
1,900.0	1,896.4	1,902.2	1,901.5	4.1	4.0	-167.02	17.5	14.6	89.6	81.6	7.94	11.279		
2,000.0	1,995.9	2,002.1	2,001.2	4.4	4.2	-165.97	12.5	19.4	93.7	85.3	8.36	11.205		
2,100.0	2,095.4	2,102.0	2,100.8	4.7	4.5	-165.01	7.4	24.3	97.8	89.1	8.79	11.133		
2,200.0	2,194.8	2,201.9	2,200.5	5.0	4.7	-164.12	2.4	29.1	102.0	92.8	9.22	11.062		
2,300.0	2,294.3	2,301.8	2,300.2	5.2	4.9	-163.31	-2.7	33.9	106.2	96.6	9.66	10.993		
2,400.0	2,393.8	2,401.7	2,399.8	5.5	5.1	-162.56	-7.7	38.8	110.4	100.3	10.11	10.926		
2,500.0	2,493.3	2,501.6	2,499.5	5.8	5.4	-161.87	-12.8	43.6	114.7	104.1	10.56	10.861		
2,600.0	2,592.8	2,601.5	2,599.1	6.1	5.6	-161.22	-17.8	48.4	118.9	107.9	11.01	10.799		
2,700.0	2,692.3	2,701.4	2,698.8	6.4	5.8	-160.62	-22.9	53.3	123.2	111.7	11.47	10.740		
2,800.0	2,791.8	2,801.3	2,798.4	6.6	6.1	-160.06	-27.9	58.1	127.5	115.6	11.94	10.682		
2,900.0	2,891.3	2,901.2	2,898.1	6.9	6.3	-159.53	-33.0	62.9	131.8	119.4	12.40	10.628		
3,000.0	2,990.7	3,001.1	2,997.7	7.2	6.5	-159.04	-38.0	67.8	136.1	123.2	12.87	10.576		
3,100.0	3,090.2	3,101.0	3,097.4	7.5	6.8	-158.58	-43.1	72.6	140.4	127.1	13.34	10.526		
3,200.0	3,189.7	3,200.9	3,197.1	7.8	7.0	-158.15	-48.1	77.4	144.7	130.9	13.81	10.478		
3,300.0	3,289.2	3,300.8	3,296.7	8.1	7.3	-157.74	-53.1	82.3	149.1	134.8	14.29	10.432		
3,400.0	3,388.7	3,400.7	3,396.4	8.4	7.5	-157.36	-58.2	87.1	153.4	138.6	14.77	10.388		
3,500.0	3,488.2	3,500.6	3,496.0	8.7	7.8	-156.99	-63.2	91.9	157.7	142.5	15.25	10.347		
3,600.0	3,587.7	3,600.5	3,595.7	9.0	8.0	-156.65	-68.3	96.8	162.1	146.4	15.73	10.307		
3,700.0	3,687.2	3,700.4	3,695.3	9.3	8.3	-156.32	-73.3	101.6	166.5	150.2	16.21	10.268		
3,800.0	3,786.6	3,800.3	3,795.0	9.6	8.5	-156.01	-78.4	106.4	170.8	154.1	16.69	10.232		
3,900.0	3,886.1	3,900.2	3,894.7	9.8	8.8	-155.72	-83.4	111.3	175.2	158.0	17.18	10.197		
4,000.0	3,985.6	4,000.1	3,994.3	10.1	9.0	-155.44	-88.5	116.1	179.5	161.9	17.67	10.163		
4,100.0	4,085.1	4,100.0	4,094.0	10.4	9.3	-155.17	-93.5	120.9	183.9	165.8	18.15	10.131		
4,200.0	4,184.6	4,199.9	4,193.6	10.7	9.5	-154.92	-98.6	125.8	188.3	169.7	18.64	10.100		
4,300.0	4,284.1	4,299.8	4,293.3	11.0	9.8	-154.67	-103.6	130.6	192.7	173.5	19.13	10.070		
4,400.0	4,383.6	4,399.7	4,392.9	11.3	10.0	-154.44	-108.7	135.4	197.1	177.4	19.63	10.041		
4,500.0	4,483.1	4,499.6	4,492.6	11.6	10.3	-154.22	-113.7	140.3	201.5	181.3	20.12	10.014		
4,600.0	4,582.6	4,599.5	4,592.2	11.9	10.5	-154.01	-118.8	145.1	205.8	185.2	20.61	9.988		
4,700.0	4,682.0	4,699.4	4,691.9	12.2	10.8	-153.80	-123.8	149.9	210.2	189.1	21.10	9.962		
4,800.0	4,781.5	4,799.3	4,791.6	12.5	11.1	-153.61	-128.9	154.8	214.6	193.0	21.60	9.938		
4,900.0	4,881.0	4,894.7	4,886.8	12.8	11.3	-153.69	-132.7	158.5	220.0	197.9	22.05	9.976		

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-434 - Wellbore #1 - Plan #1 (11-18-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,980.5	4,989.4	4,981.5	13.1	11.5	-154.35	-134.3	160.0	227.5	205.1	22.45	10.133		
5,100.0	5,080.0	5,087.9	5,080.0	13.4	11.6	-155.39	-134.4	160.0	236.6	213.8	22.85	10.357		
5,200.0	5,179.5	5,187.4	5,179.5	13.7	11.8	-156.37	-134.4	160.0	245.9	222.6	23.24	10.579		
5,231.1	5,210.4	5,218.4	5,210.4	13.8	11.9	-156.66	-134.4	160.0	248.8	225.4	23.36	10.647		
5,300.0	5,279.0	5,287.0	5,279.0	14.0	12.0	-157.25	-134.4	160.0	254.4	230.8	23.63	10.764		
5,400.0	5,378.9	5,386.8	5,378.9	14.1	12.2	-157.80	-134.4	160.0	259.9	235.9	24.00	10.831		
5,500.0	5,478.8	5,486.8	5,478.8	14.3	12.4	-158.03	-134.4	160.0	262.2	237.9	24.35	10.769		
5,521.2	5,500.0	5,507.9	5,500.0	14.3	12.4	0.00	-134.4	160.0	262.3	236.1	26.16	10.028		
5,600.0	5,578.8	5,586.8	5,578.8	14.5	12.6	0.00	-134.4	160.0	262.3	235.9	26.45	9.919		
5,700.0	5,678.8	5,686.8	5,678.8	14.6	12.8	0.00	-134.4	160.0	262.3	235.5	26.80	9.789		
5,800.0	5,778.8	5,786.8	5,778.8	14.8	13.0	0.00	-134.4	160.0	262.3	235.2	27.15	9.661		
5,900.0	5,878.8	5,886.8	5,878.8	14.9	13.2	0.00	-134.4	160.0	262.3	234.8	27.51	9.536		
6,000.0	5,978.8	5,986.8	5,978.8	15.1	13.4	0.00	-134.4	160.0	262.3	234.4	27.86	9.413		
6,100.0	6,078.8	6,086.8	6,078.8	15.3	13.6	0.00	-134.4	160.0	262.3	234.1	28.23	9.293		
6,200.0	6,178.8	6,186.8	6,178.8	15.4	13.7	0.00	-134.4	160.0	262.3	233.7	28.59	9.175		
6,301.6	6,280.4	6,288.4	6,280.4	15.6	13.9	0.00	-134.4	160.0	262.3	233.3	28.96	9.057		
6,312.2	6,291.0	6,299.0	6,291.0	15.6	14.0	90.02	-134.4	160.0	262.3	234.8	27.48	9.545		
6,350.0	6,328.8	6,336.7	6,328.8	15.7	14.0	90.33	-134.4	160.0	262.3	234.7	27.64	9.492		
6,400.0	6,378.6	6,386.5	6,378.6	15.7	14.1	91.37	-134.4	160.0	262.4	234.5	27.85	9.419		
6,450.0	6,427.9	6,435.8	6,427.9	15.8	14.2	93.08	-134.4	160.0	262.7	234.6	28.09	9.352		
6,500.0	6,476.6	6,484.5	6,476.6	15.9	14.3	95.39	-134.4	160.0	263.5	235.2	28.33	9.302		
6,550.0	6,524.5	6,534.5	6,526.5	15.9	14.4	98.15	-134.4	158.9	265.2	236.6	28.57	9.283		
6,600.0	6,571.3	6,585.7	6,577.6	16.0	14.5	100.90	-134.4	154.5	267.5	238.7	28.76	9.299		
6,650.0	6,616.9	6,638.0	6,629.2	16.0	14.6	103.59	-134.4	146.5	270.4	241.5	28.92	9.352		
6,700.0	6,661.0	6,691.2	6,681.1	16.0	14.7	106.19	-134.4	134.8	273.9	244.9	29.02	9.439		
6,750.0	6,703.5	6,745.6	6,733.2	16.1	14.7	108.70	-134.4	119.0	277.9	248.8	29.08	9.558		
6,800.0	6,744.2	6,801.2	6,785.0	16.1	14.8	111.08	-134.4	99.2	282.3	253.2	29.09	9.703		
6,850.0	6,782.9	6,857.8	6,836.3	16.2	14.8	113.34	-134.4	75.1	287.0	258.0	29.09	9.868		
6,900.0	6,819.5	6,915.7	6,886.7	16.2	14.9	115.46	-134.4	46.7	292.0	262.9	29.07	10.044		
6,950.0	6,853.7	6,974.8	6,935.8	16.3	15.0	117.43	-134.4	13.8	297.1	268.0	29.08	10.217		
7,000.0	6,885.5	7,035.1	6,983.1	16.4	15.1	119.25	-134.4	-23.6	302.2	273.1	29.13	10.374		
7,050.0	6,914.7	7,096.6	7,028.2	16.6	15.3	120.91	-134.4	-65.4	307.2	278.0	29.26	10.499		
7,100.0	6,941.2	7,159.3	7,070.5	16.9	15.6	122.40	-134.4	-111.6	312.1	282.5	29.52	10.572		
7,150.0	6,964.9	7,223.1	7,109.5	17.4	16.1	123.73	-134.4	-162.0	316.6	286.7	29.93	10.580		
7,200.0	6,985.6	7,287.9	7,144.7	18.0	16.7	124.89	-134.4	-216.4	320.8	290.3	30.51	10.513		
7,250.0	7,003.3	7,353.7	7,175.6	18.7	17.5	125.87	-134.4	-274.5	324.4	293.1	31.31	10.363		
7,300.0	7,017.9	7,420.3	7,201.7	19.5	18.4	126.68	-134.4	-335.8	327.6	295.2	32.34	10.129		
7,350.0	7,029.4	7,487.6	7,222.5	20.3	19.4	127.31	-134.4	-399.7	330.1	296.5	33.60	9.824		
7,400.0	7,037.6	7,555.4	7,237.7	21.2	20.6	127.76	-134.4	-465.8	331.9	296.8	35.10	9.458		
7,450.0	7,042.6	7,621.1	7,246.8	22.2	21.8	128.03	-134.4	-530.9	333.1	296.3	36.78	9.057		
7,504.6	7,044.4	7,675.5	7,252.5	23.3	22.9	128.42	-134.4	-585.0	335.6	297.1	38.45	8.727		
7,600.0	7,044.0	7,789.6	7,260.0	25.4	25.3	129.46	-134.4	-698.8	339.8	298.3	41.47	8.193		
7,700.0	7,043.6	7,893.5	7,260.0	27.6	27.7	129.52	-134.4	-802.7	340.0	295.0	44.99	7.558		
7,800.0	7,043.3	7,993.5	7,259.8	29.9	30.0	129.55	-134.4	-902.7	340.2	291.6	48.60	6.999		
7,900.0	7,042.9	8,093.5	7,259.7	32.3	32.4	129.58	-134.4	-1,002.7	340.3	288.0	52.34	6.502		
8,000.0	7,042.5	8,193.5	7,259.5	34.8	34.9	129.61	-134.4	-1,102.7	340.5	284.3	56.16	6.062		
8,100.0	7,042.1	8,293.5	7,259.4	37.3	37.4	129.64	-134.4	-1,202.7	340.6	280.5	60.07	5.670		
8,200.0	7,041.7	8,393.5	7,259.2	39.9	39.9	129.66	-134.4	-1,302.7	340.7	276.7	64.03	5.322		
8,300.0	7,041.3	8,493.5	7,259.1	42.5	42.5	129.69	-134.4	-1,402.7	340.9	272.8	68.04	5.010		
8,400.0	7,040.9	8,593.5	7,258.9	45.1	45.1	129.72	-134.4	-1,502.7	341.0	268.9	72.10	4.730		
8,500.0	7,040.6	8,693.5	7,258.7	47.7	47.8	129.75	-134.4	-1,602.7	341.2	265.0	76.19	4.478		

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28U-434 - Wellbore #1 - Plan #1 (11-18-13)											Offset Site Error: 0.0 ft	
Survey Program: 0-MWD											Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Between Centres (ft)	Between Ellipses (ft)				
8,600.0	7,040.2	8,793.5	7,258.6	50.4	50.4	129.78	-134.4	-1,702.7	341.3	261.0	80.31	4.250
8,700.0	7,039.8	8,893.5	7,258.4	53.0	53.1	129.81	-134.4	-1,802.7	341.5	257.0	84.45	4.044
8,800.0	7,039.4	8,993.5	7,258.3	55.7	55.8	129.84	-134.4	-1,902.7	341.6	253.0	88.61	3.855
8,900.0	7,039.0	9,093.5	7,258.1	58.4	58.5	129.87	-134.4	-2,002.7	341.8	249.0	92.78	3.683
9,000.0	7,038.6	9,193.5	7,258.0	61.1	61.2	129.90	-134.4	-2,102.7	341.9	244.9	96.97	3.526
9,100.0	7,038.3	9,293.5	7,257.8	63.8	63.9	129.93	-134.4	-2,202.7	342.0	240.9	101.17	3.381
9,200.0	7,037.9	9,393.5	7,257.6	66.6	66.6	129.96	-134.4	-2,302.7	342.2	236.8	105.39	3.247
9,300.0	7,037.5	9,493.5	7,257.5	69.3	69.3	129.99	-134.4	-2,402.7	342.3	232.7	109.61	3.123
9,400.0	7,037.1	9,593.5	7,257.3	72.0	72.1	130.02	-134.4	-2,502.7	342.5	228.7	113.84	3.009
9,500.0	7,036.7	9,693.5	7,257.2	74.8	74.8	130.04	-134.4	-2,602.7	342.6	224.6	118.07	2.902
9,600.0	7,036.3	9,793.5	7,257.0	77.5	77.5	130.07	-134.4	-2,702.7	342.8	220.5	122.31	2.803
9,700.0	7,036.0	9,893.5	7,256.9	80.3	80.3	130.10	-134.4	-2,802.6	342.9	216.4	126.55	2.710
9,800.0	7,035.6	9,993.5	7,256.7	83.0	83.0	130.13	-134.4	-2,902.6	343.1	212.3	130.80	2.623
9,900.0	7,035.2	10,093.5	7,256.5	85.8	85.8	130.16	-134.4	-3,002.6	343.2	208.2	135.05	2.541
10,000.0	7,034.8	10,193.5	7,256.4	88.5	88.5	130.19	-134.4	-3,102.6	343.4	204.1	139.30	2.465
10,100.0	7,034.4	10,293.5	7,256.2	91.3	91.3	130.22	-134.4	-3,202.6	343.5	200.0	143.55	2.393
10,200.0	7,034.0	10,393.5	7,256.1	94.0	94.1	130.25	-134.4	-3,302.6	343.7	195.9	147.80	2.325
10,300.0	7,033.7	10,493.5	7,255.9	96.8	96.8	130.28	-134.4	-3,402.6	343.8	191.7	152.06	2.261
10,400.0	7,033.3	10,593.5	7,255.8	99.6	99.6	130.30	-134.4	-3,502.6	343.9	187.6	156.32	2.200
10,500.0	7,032.9	10,693.5	7,255.6	102.4	102.4	130.33	-134.4	-3,602.6	344.1	183.5	160.57	2.143
10,600.0	7,032.5	10,793.5	7,255.4	105.1	105.2	130.36	-134.4	-3,702.6	344.2	179.4	164.83	2.089
10,700.0	7,032.1	10,893.5	7,255.3	107.9	107.9	130.39	-134.4	-3,802.6	344.4	175.3	169.08	2.037
10,800.0	7,031.7	10,993.5	7,255.1	110.7	110.7	130.42	-134.4	-3,902.6	344.5	171.2	173.34	1.988
10,900.0	7,031.4	11,093.5	7,255.0	113.5	113.5	130.45	-134.4	-4,002.6	344.7	167.1	177.59	1.941
11,000.0	7,031.0	11,193.5	7,254.8	116.2	116.3	130.48	-134.4	-4,102.6	344.8	163.0	181.85	1.896
11,100.0	7,030.6	11,293.5	7,254.7	119.0	119.0	130.51	-134.4	-4,202.6	345.0	158.9	186.10	1.854
11,200.0	7,030.2	11,393.5	7,254.5	121.8	121.8	130.53	-134.4	-4,302.6	345.1	154.8	190.35	1.813
11,300.0	7,029.8	11,493.5	7,254.3	124.6	124.6	130.56	-134.4	-4,402.6	345.3	150.7	194.60	1.774
11,400.0	7,029.4	11,593.5	7,254.2	127.4	127.4	130.59	-134.4	-4,502.6	345.4	146.6	198.85	1.737
11,500.0	7,029.0	11,693.5	7,254.0	130.1	130.2	130.62	-134.4	-4,602.6	345.6	142.5	203.10	1.702
11,512.0	7,029.0	11,705.5	7,254.0	130.4	130.5	130.62	-134.4	-4,614.7	345.6	142.1	203.51	1.698 SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-404 - Wellbore #1 - Plan #1 (11-18-13)										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)					
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-29.1	0.0	29.1							
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-29.1	0.0	29.1	28.9	0.22	129.666				
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.67	43.222				
300.0	300.0	300.0	300.0	0.6	0.6	180.00	-29.1	0.0	29.1	28.0	1.12	25.933				
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-29.1	0.0	29.1	27.6	1.57	18.524				
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-29.1	0.0	29.1	27.1	2.02	14.407				
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-29.1	0.0	29.1	26.7	2.47	11.788	CC, ES			
700.0	700.0	699.0	699.0	1.5	1.4	179.22	-30.8	0.4	30.8	27.9	2.89	10.652				
800.0	800.0	797.7	797.6	1.7	1.6	177.31	-35.8	1.7	35.9	32.6	3.30	10.863				
900.0	900.0	896.0	895.5	1.9	1.8	175.11	-44.0	3.8	44.3	40.6	3.73	11.901				
1,000.0	1,000.0	993.6	992.4	2.1	2.1	173.14	-55.3	6.6	56.2	52.1	4.16	13.505				
1,100.0	1,100.0	1,092.4	1,090.1	2.3	2.3	13.90	-69.0	10.1	68.8	64.2	4.56	15.097				
1,200.0	1,199.8	1,191.9	1,188.6	2.5	2.6	13.63	-83.0	13.7	78.1	73.1	4.94	15.807				
1,290.1	1,289.6	1,281.8	1,277.6	2.7	2.9	13.92	-95.5	16.9	83.6	78.3	5.30	15.774				
1,300.0	1,299.5	1,291.8	1,287.4	2.7	2.9	13.98	-96.9	17.2	84.0	78.7	5.34	15.737				
1,400.0	1,398.9	1,391.6	1,386.3	2.9	3.2	14.54	-110.9	20.8	88.6	82.8	5.76	15.375				
1,500.0	1,498.4	1,491.5	1,485.1	3.1	3.6	15.04	-124.8	24.3	93.1	87.0	6.19	15.038				
1,600.0	1,597.9	1,591.4	1,584.0	3.4	3.9	15.49	-138.8	27.9	97.7	91.1	6.64	14.728				
1,700.0	1,697.4	1,691.3	1,682.8	3.6	4.2	15.91	-152.8	31.4	102.3	95.2	7.08	14.443				
1,800.0	1,796.9	1,791.2	1,781.7	3.9	4.6	16.28	-166.7	35.0	106.9	99.4	7.54	14.181				
1,900.0	1,896.4	1,891.1	1,880.5	4.1	4.9	16.63	-180.7	38.5	111.5	103.5	8.00	13.941				
2,000.0	1,995.9	1,991.0	1,979.3	4.4	5.3	16.95	-194.6	42.1	116.1	107.6	8.46	13.720				
2,100.0	2,095.4	2,090.9	2,078.2	4.7	5.6	17.24	-208.6	45.6	120.7	111.8	8.93	13.517				
2,200.0	2,194.8	2,190.8	2,177.0	5.0	6.0	17.52	-222.6	49.2	125.3	115.9	9.40	13.330				
2,300.0	2,294.3	2,290.7	2,275.9	5.2	6.3	17.77	-236.5	52.7	129.9	120.0	9.87	13.157				
2,400.0	2,393.8	2,390.6	2,374.7	5.5	6.7	18.01	-250.5	56.3	134.5	124.1	10.35	12.997				
2,500.0	2,493.3	2,490.5	2,473.6	5.8	7.0	18.23	-264.5	59.8	139.1	128.3	10.83	12.849				
2,600.0	2,592.8	2,590.4	2,572.4	6.1	7.4	18.44	-278.4	63.4	143.7	132.4	11.31	12.712				
2,700.0	2,692.3	2,690.2	2,671.3	6.4	7.7	18.63	-292.4	66.9	148.3	136.5	11.79	12.584				
2,800.0	2,791.8	2,790.1	2,770.1	6.6	8.1	18.81	-306.3	70.5	152.9	140.7	12.27	12.464				
2,900.0	2,891.3	2,890.0	2,869.0	6.9	8.4	18.98	-320.3	74.0	157.5	144.8	12.75	12.352				
3,000.0	2,990.7	2,989.9	2,967.8	7.2	8.8	19.14	-334.3	77.6	162.2	148.9	13.24	12.248				
3,100.0	3,090.2	3,089.8	3,066.7	7.5	9.1	19.30	-348.2	81.1	166.8	153.1	13.73	12.150				
3,200.0	3,189.7	3,189.7	3,165.5	7.8	9.5	19.44	-362.2	84.6	171.4	157.2	14.22	12.058				
3,300.0	3,289.2	3,289.6	3,264.4	8.1	9.8	19.58	-376.2	88.2	176.0	161.3	14.70	11.971				
3,400.0	3,388.7	3,389.5	3,363.2	8.4	10.2	19.71	-390.1	91.7	180.6	165.4	15.19	11.889				
3,500.0	3,488.2	3,489.4	3,462.1	8.7	10.6	19.83	-404.1	95.3	185.3	169.6	15.68	11.812				
3,600.0	3,587.7	3,589.3	3,560.9	9.0	10.9	19.95	-418.0	98.8	189.9	173.7	16.18	11.739				
3,700.0	3,687.2	3,689.2	3,659.8	9.3	11.3	20.06	-432.0	102.4	194.5	177.8	16.67	11.670				
3,800.0	3,786.6	3,789.1	3,758.6	9.6	11.6	20.17	-446.0	105.9	199.1	182.0	17.16	11.604				
3,900.0	3,886.1	3,889.0	3,857.5	9.8	12.0	20.27	-459.9	109.5	203.8	186.1	17.65	11.542				
4,000.0	3,985.6	3,988.8	3,956.3	10.1	12.3	20.37	-473.9	113.0	208.4	190.2	18.15	11.483				
4,100.0	4,085.1	4,088.7	4,055.2	10.4	12.7	20.46	-487.8	116.6	213.0	194.4	18.64	11.427				
4,200.0	4,184.6	4,188.6	4,154.0	10.7	13.0	20.55	-501.8	120.1	217.6	198.5	19.14	11.373				
4,300.0	4,284.1	4,288.5	4,252.9	11.0	13.4	20.63	-515.8	123.7	222.3	202.6	19.63	11.322				
4,400.0	4,383.6	4,388.4	4,351.7	11.3	13.8	20.72	-529.7	127.2	226.9	206.8	20.13	11.273				
4,500.0	4,483.1	4,488.3	4,450.6	11.6	14.1	20.80	-543.7	130.8	231.5	210.9	20.62	11.226				
4,600.0	4,582.6	4,588.2	4,549.4	11.9	14.5	20.87	-557.7	134.3	236.1	215.0	21.12	11.182				
4,700.0	4,682.0	4,688.1	4,648.2	12.2	14.8	20.94	-571.6	137.9	240.8	219.2	21.62	11.139				
4,800.0	4,781.5	4,788.0	4,747.1	12.5	15.2	21.01	-585.6	141.4	245.4	223.3	22.11	11.098				
4,900.0	4,881.0	4,887.9	4,845.9	12.8	15.5	21.08	-599.5	145.0	250.0	227.4	22.61	11.059				

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-404 - Wellbore #1 - Plan #1 (11-18-13)											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		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)						
5,000.0	4,980.5	4,987.8	4,944.8	13.1	15.9	21.15	-613.5	148.5	254.7	231.5	23.11	11.021		
5,100.0	5,080.0	5,087.7	5,043.6	13.4	16.3	21.21	-627.5	152.1	259.3	235.7	23.60	10.985		
5,200.0	5,179.5	5,193.1	5,148.0	13.7	16.6	21.31	-641.6	155.7	263.3	239.2	24.10	10.925		
5,231.1	5,210.4	5,227.2	5,182.0	13.8	16.7	21.37	-645.4	156.6	263.9	239.7	24.25	10.883		
5,300.0	5,279.0	5,302.9	5,257.3	14.0	16.8	21.53	-652.6	158.5	264.8	240.2	24.55	10.784		
5,400.0	5,378.9	5,412.8	5,366.9	14.1	17.0	21.69	-659.6	160.2	265.6	240.7	24.93	10.654		
5,500.0	5,478.8	5,522.7	5,476.7	14.3	17.2	21.75	-662.5	161.0	265.9	240.7	25.26	10.528		
5,521.2	5,500.0	5,545.9	5,500.0	14.3	17.2	179.78	-662.6	161.0	265.9	234.8	31.10	8.552		
5,600.0	5,578.8	5,624.8	5,578.8	14.5	17.3	179.78	-662.6	161.0	265.9	234.6	31.34	8.487		
5,700.0	5,678.8	5,724.8	5,678.8	14.6	17.5	179.78	-662.6	161.0	265.9	234.3	31.62	8.412		
5,800.0	5,778.8	5,824.8	5,778.8	14.8	17.6	179.78	-662.6	161.0	265.9	234.0	31.90	8.337		
5,900.0	5,878.8	5,924.8	5,878.8	14.9	17.7	179.78	-662.6	161.0	265.9	233.8	32.19	8.262		
6,000.0	5,978.8	6,024.8	5,978.8	15.1	17.8	179.78	-662.6	161.0	265.9	233.5	32.48	8.188		
6,100.0	6,078.8	6,124.8	6,078.8	15.3	18.0	179.78	-662.6	161.0	265.9	233.2	32.77	8.115		
6,200.0	6,178.8	6,224.8	6,178.8	15.4	18.1	179.78	-662.6	161.0	265.9	232.9	33.07	8.041		
6,301.6	6,280.4	6,326.4	6,280.4	15.6	18.3	179.78	-662.6	161.0	265.9	232.6	33.38	7.968		
6,350.0	6,328.8	6,374.7	6,328.8	15.7	18.3	-90.54	-662.6	161.0	266.0	237.7	28.28	9.404		
6,400.0	6,378.6	6,424.5	6,378.6	15.7	18.4	-91.56	-662.6	161.0	266.0	237.7	28.38	9.373		
6,450.0	6,427.9	6,473.8	6,427.9	15.8	18.5	-93.24	-662.6	161.0	266.4	237.9	28.44	9.367		
6,500.0	6,476.6	6,522.5	6,476.6	15.9	18.5	-95.52	-662.6	161.0	267.3	238.8	28.46	9.391		
6,550.0	6,524.5	6,572.5	6,526.6	15.9	18.6	-98.25	-662.6	159.9	268.9	240.5	28.47	9.446		
6,600.0	6,571.3	6,623.8	6,577.7	16.0	18.7	-100.96	-662.6	155.5	271.3	242.8	28.49	9.522		
6,650.0	6,616.9	6,676.1	6,629.4	16.0	18.7	-103.60	-662.6	147.5	274.2	245.7	28.51	9.616		
6,700.0	6,661.0	6,729.5	6,681.4	16.0	18.8	-106.17	-662.6	135.7	277.7	249.1	28.54	9.729		
6,750.0	6,703.5	6,784.0	6,733.5	16.1	18.8	-108.64	-662.6	119.9	281.6	253.1	28.57	9.857		
6,800.0	6,744.2	6,839.6	6,785.4	16.1	18.9	-110.99	-662.6	100.0	286.0	257.4	28.61	9.999		
6,850.0	6,782.9	6,896.4	6,836.8	16.2	18.9	-113.21	-662.6	75.9	290.7	262.1	28.65	10.149		
6,900.0	6,819.5	6,954.3	6,887.3	16.2	18.9	-115.30	-662.6	47.3	295.6	266.9	28.70	10.302		
6,950.0	6,853.7	7,013.5	6,936.4	16.3	19.0	-117.25	-662.6	14.4	300.7	271.9	28.78	10.448		
7,000.0	6,885.5	7,073.9	6,983.7	16.4	19.0	-119.04	-662.6	-23.1	305.7	276.8	28.90	10.578		
7,050.0	6,914.7	7,135.5	7,028.8	16.6	19.1	-120.68	-662.6	-65.1	310.7	281.7	29.05	10.695		
7,100.0	6,941.2	7,198.3	7,071.1	16.9	19.2	-122.15	-662.6	-111.4	315.5	286.1	29.33	10.758		
7,150.0	6,964.9	7,262.1	7,110.1	17.4	19.3	-123.46	-662.6	-161.9	319.9	290.2	29.70	10.773		
7,200.0	6,985.6	7,327.0	7,145.3	18.0	19.5	-124.59	-662.6	-216.4	324.0	293.8	30.20	10.729		
7,250.0	7,003.3	7,392.9	7,176.1	18.7	19.8	-125.56	-662.6	-274.6	327.6	296.8	30.85	10.620		
7,300.0	7,017.9	7,459.5	7,202.1	19.5	20.2	-126.35	-662.6	-336.0	330.7	299.0	31.68	10.439		
7,350.0	7,029.4	7,526.9	7,222.8	20.3	20.9	-126.97	-662.6	-400.0	333.1	300.5	32.69	10.190		
7,400.0	7,037.6	7,594.8	7,237.9	21.2	21.9	-127.41	-662.6	-466.2	334.9	301.0	33.89	9.883		
7,450.0	7,042.6	7,660.1	7,246.9	22.2	23.0	-127.66	-662.6	-530.9	336.0	300.8	35.23	9.538		
7,504.6	7,044.4	7,714.5	7,252.6	23.3	24.0	-128.05	-662.6	-585.0	338.5	302.0	36.48	9.277		
7,600.0	7,044.0	7,828.8	7,260.0	25.4	26.3	-129.08	-662.6	-699.0	342.6	303.1	39.49	8.676		
7,700.0	7,043.6	7,932.5	7,260.0	27.6	28.5	-129.13	-662.6	-802.7	342.8	299.8	43.03	7.967		
7,800.0	7,043.3	8,032.5	7,259.8	29.9	30.8	-129.16	-662.6	-902.7	343.0	296.3	46.68	7.348		
7,900.0	7,042.9	8,132.5	7,259.7	32.3	33.1	-129.19	-662.6	-1,002.7	343.1	292.7	50.45	6.801		
8,000.0	7,042.5	8,232.5	7,259.5	34.8	35.5	-129.22	-662.6	-1,102.7	343.3	288.9	54.32	6.319		
8,100.0	7,042.1	8,332.5	7,259.4	37.3	38.0	-129.25	-662.6	-1,202.7	343.4	285.1	58.27	5.894		
8,200.0	7,041.7	8,432.5	7,259.2	39.9	40.5	-129.28	-662.6	-1,302.7	343.5	281.3	62.28	5.516		
8,300.0	7,041.3	8,532.5	7,259.0	42.5	43.1	-129.30	-662.6	-1,402.7	343.7	277.4	66.34	5.181		
8,400.0	7,040.9	8,632.5	7,258.9	45.1	45.7	-129.33	-662.6	-1,502.7	343.8	273.4	70.44	4.881		
8,500.0	7,040.6	8,732.5	7,258.7	47.7	48.3	-129.36	-662.6	-1,602.7	344.0	269.4	74.57	4.613		
8,600.0	7,040.2	8,832.5	7,258.6	50.4	50.9	-129.39	-662.6	-1,702.7	344.1	265.4	78.74	4.370		

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 Sunmarke 28V-214
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Reference Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-214	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 (11-18-13)	Offset TVD Reference:	Offset Datum

Offset Design		Sunmarke 28U-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-404 - Wellbore #1 - Plan #1 (11-18-13)										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)						
8,700.0	7,039.8	8,932.5	7,258.4	53.0	53.5	-129.42	-662.6	-1,802.7	344.3	261.3	82.92	4.152					
8,800.0	7,039.4	9,032.5	7,258.3	55.7	56.2	-129.45	-662.6	-1,902.7	344.4	257.3	87.13	3.953					
8,900.0	7,039.0	9,132.5	7,258.1	58.4	58.9	-129.48	-662.6	-2,002.7	344.6	253.2	91.35	3.772					
9,000.0	7,038.6	9,232.5	7,257.9	61.1	61.5	-129.51	-662.6	-2,102.7	344.7	249.1	95.59	3.606					
9,100.0	7,038.3	9,332.5	7,257.8	63.8	64.2	-129.54	-662.6	-2,202.7	344.8	245.0	99.83	3.454					
9,200.0	7,037.9	9,432.5	7,257.6	66.6	67.0	-129.57	-662.6	-2,302.7	345.0	240.9	104.09	3.314					
9,300.0	7,037.5	9,532.5	7,257.5	69.3	69.7	-129.60	-662.6	-2,402.7	345.1	236.8	108.35	3.185					
9,400.0	7,037.1	9,632.5	7,257.3	72.0	72.4	-129.62	-662.6	-2,502.7	345.3	232.7	112.62	3.066					
9,500.0	7,036.7	9,732.5	7,257.2	74.8	75.1	-129.65	-662.6	-2,602.7	345.4	228.5	116.90	2.955					
9,600.0	7,036.3	9,832.5	7,257.0	77.5	77.8	-129.68	-662.6	-2,702.7	345.6	224.4	121.18	2.852					
9,700.0	7,036.0	9,932.5	7,256.8	80.3	80.6	-129.71	-662.6	-2,802.6	345.7	220.2	125.47	2.755					
9,800.0	7,035.6	10,032.5	7,256.7	83.0	83.3	-129.74	-662.6	-2,902.6	345.9	216.1	129.75	2.665					
9,900.0	7,035.2	10,132.5	7,256.5	85.8	86.1	-129.77	-662.6	-3,002.6	346.0	212.0	134.05	2.581					
10,000.0	7,034.8	10,232.5	7,256.4	88.5	88.8	-129.80	-662.6	-3,102.6	346.1	207.8	138.34	2.502					
10,100.0	7,034.4	10,332.5	7,256.2	91.3	91.6	-129.83	-662.6	-3,202.6	346.3	203.7	142.63	2.428					
10,200.0	7,034.0	10,432.5	7,256.1	94.0	94.3	-129.86	-662.6	-3,302.6	346.4	199.5	146.93	2.358					
10,300.0	7,033.7	10,532.5	7,255.9	96.8	97.1	-129.89	-662.6	-3,402.6	346.6	195.4	151.22	2.292					
10,400.0	7,033.3	10,632.5	7,255.7	99.6	99.8	-129.91	-662.6	-3,502.6	346.7	191.2	155.52	2.229					
10,500.0	7,032.9	10,732.5	7,255.6	102.4	102.6	-129.94	-662.6	-3,602.6	346.9	187.1	159.82	2.170					
10,600.0	7,032.5	10,832.5	7,255.4	105.1	105.4	-129.97	-662.6	-3,702.6	347.0	182.9	164.11	2.115					
10,700.0	7,032.1	10,932.5	7,255.3	107.9	108.1	-130.00	-662.6	-3,802.6	347.2	178.8	168.41	2.061					
10,800.0	7,031.7	11,032.5	7,255.1	110.7	110.9	-130.03	-662.6	-3,902.6	347.3	174.6	172.70	2.011					
10,900.0	7,031.4	11,132.5	7,255.0	113.5	113.7	-130.06	-662.6	-4,002.6	347.5	170.5	177.00	1.963					
11,000.0	7,031.0	11,232.5	7,254.8	116.2	116.5	-130.09	-662.6	-4,102.6	347.6	166.3	181.29	1.917					
11,100.0	7,030.6	11,332.5	7,254.6	119.0	119.2	-130.11	-662.6	-4,202.6	347.7	162.2	185.59	1.874					
11,200.0	7,030.2	11,432.5	7,254.5	121.8	122.0	-130.14	-662.6	-4,302.6	347.9	158.0	189.88	1.832					
11,300.0	7,029.8	11,532.5	7,254.3	124.6	124.8	-130.17	-662.6	-4,402.6	348.0	153.9	194.17	1.792					
11,400.0	7,029.4	11,632.5	7,254.2	127.4	127.6	-130.20	-662.6	-4,502.6	348.2	149.7	198.45	1.755					
11,500.0	7,029.0	11,732.5	7,254.0	130.1	130.4	-130.23	-662.6	-4,602.6	348.3	145.6	202.74	1.718					
11,512.0	7,029.0	11,741.4	7,254.0	130.4	130.6	-130.23	-662.6	-4,611.6	348.4	145.3	203.10	1.715 SF					

Reference Depths are relative to WELL @ 4909.0ft (RKB - 15')	Coordinates are relative to: Sunmarke 28V-214
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.40°



Coordinates are relative to: Sunmarke 28V-214
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.40°

