

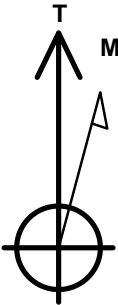
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Sunmarke 28V-234

Surface Location: Sunmarke 28V-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4907.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1347895.40 3171019.06 40.286750 -104.886970
RKB - 15' WELL @ 4922.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1530'FNL, 211'FEL		0.0	0.0	Point
BHL 1910'FNL, 500'FWL	7057.0	-294.6	-4608.9	Point



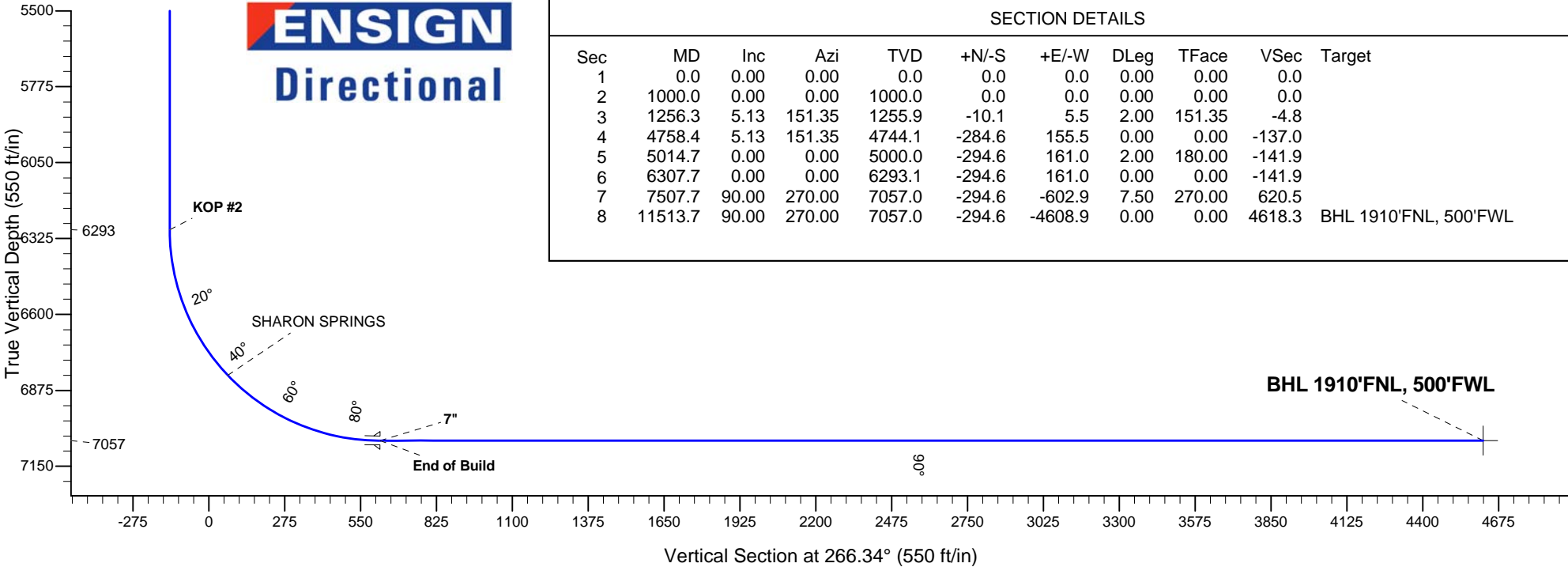
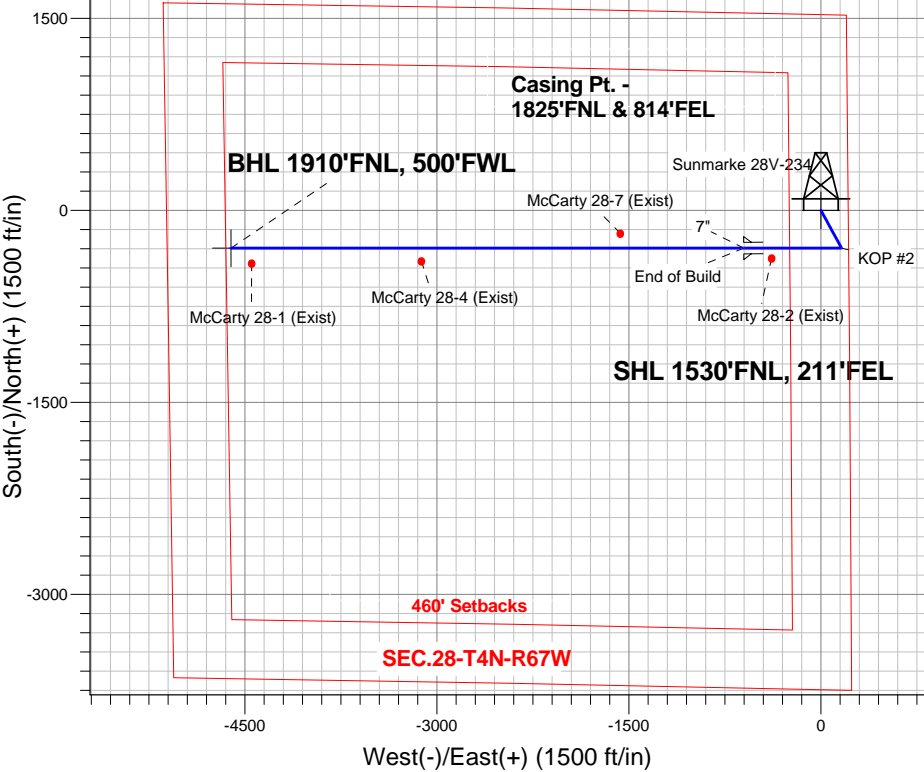
Azimuths to True North
Magnetic North: 8.59°

Magnetic Field
Strength: 52801.7snT
Dip Angle: 66.86°
Date: 11/21/2013
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6293.0	6307.7	KOP #2
7057.0	7507.7	End of Build

Sunmarke 28V-HZ Pad Sec.28-T4N-R67W
Sunmarke 28V-234
Plan #1 (11-18-13)
11:08, November 21 2013





Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28V-234

Wellbore #1

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

Standard Planning Report

21 November, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W											
Site Position:						Northing:			1,347,957.33ft			Latitude:			40.286920		
From:			Lat/Long			Easting:			3,171,018.63ft			Longitude:			-104.886970		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.40 °		

Well	Sunmarke 28V-234					
Well Position	+N/-S	-61.9 ft	Northing:	1,347,895.40 ft	Latitude:	40.286750
	+E/-W	0.0 ft	Easting:	3,171,019.06 ft	Longitude:	-104.886970
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,907.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/21/2013	8.59	66.86	52,802

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	266.34

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	
1,256.3	5.13	151.35	1,255.9	-10.1	5.5	2.00	2.00	0.00	151.35	
4,758.4	5.13	151.35	4,744.1	-284.6	155.5	0.00	0.00	0.00	0.00	
5,014.7	0.00	0.00	5,000.0	-294.6	161.0	2.00	-2.00	0.00	180.00	
6,307.7	0.00	0.00	6,293.1	-294.6	161.0	0.00	0.00	0.00	0.00	
7,507.7	90.00	270.00	7,057.0	-294.6	-602.9	7.50	7.50	0.00	270.00	
11,513.7	90.00	270.00	7,057.0	-294.6	-4,608.9	0.00	0.00	0.00	0.00	BHL 1910°FNL, 500

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-234	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 1530'FNL, 211'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	151.35	1,100.0	-1.5	0.8	-0.7	2.00	2.00	0.00
1,200.0	4.00	151.35	1,199.8	-6.1	3.3	-2.9	2.00	2.00	0.00
1,256.3	5.13	151.35	1,255.9	-10.1	5.5	-4.8	2.00	2.00	0.00
1,300.0	5.13	151.35	1,299.5	-13.5	7.4	-6.5	0.00	0.00	0.00
1,400.0	5.13	151.35	1,399.1	-21.3	11.6	-10.3	0.00	0.00	0.00
1,500.0	5.13	151.35	1,498.7	-29.2	15.9	-14.0	0.00	0.00	0.00
1,600.0	5.13	151.35	1,598.3	-37.0	20.2	-17.8	0.00	0.00	0.00
1,700.0	5.13	151.35	1,697.9	-44.8	24.5	-21.6	0.00	0.00	0.00
1,800.0	5.13	151.35	1,797.5	-52.7	28.8	-25.4	0.00	0.00	0.00
1,900.0	5.13	151.35	1,897.1	-60.5	33.1	-29.1	0.00	0.00	0.00
2,000.0	5.13	151.35	1,996.7	-68.4	37.4	-32.9	0.00	0.00	0.00
2,100.0	5.13	151.35	2,096.3	-76.2	41.6	-36.7	0.00	0.00	0.00
2,200.0	5.13	151.35	2,195.9	-84.0	45.9	-40.5	0.00	0.00	0.00
2,300.0	5.13	151.35	2,295.5	-91.9	50.2	-44.2	0.00	0.00	0.00
2,400.0	5.13	151.35	2,395.1	-99.7	54.5	-48.0	0.00	0.00	0.00
2,500.0	5.13	151.35	2,494.7	-107.6	58.8	-51.8	0.00	0.00	0.00
2,600.0	5.13	151.35	2,594.3	-115.4	63.1	-55.6	0.00	0.00	0.00
2,700.0	5.13	151.35	2,693.9	-123.2	67.3	-59.3	0.00	0.00	0.00
2,800.0	5.13	151.35	2,793.5	-131.1	71.6	-63.1	0.00	0.00	0.00
2,900.0	5.13	151.35	2,893.1	-138.9	75.9	-66.9	0.00	0.00	0.00
3,000.0	5.13	151.35	2,992.7	-146.7	80.2	-70.7	0.00	0.00	0.00
3,100.0	5.13	151.35	3,092.3	-154.6	84.5	-74.4	0.00	0.00	0.00
3,200.0	5.13	151.35	3,191.9	-162.4	88.8	-78.2	0.00	0.00	0.00
3,300.0	5.13	151.35	3,291.5	-170.3	93.0	-82.0	0.00	0.00	0.00
3,400.0	5.13	151.35	3,391.1	-178.1	97.3	-85.8	0.00	0.00	0.00
3,500.0	5.13	151.35	3,490.7	-185.9	101.6	-89.5	0.00	0.00	0.00
3,600.0	5.13	151.35	3,590.3	-193.8	105.9	-93.3	0.00	0.00	0.00
3,649.9	5.13	151.35	3,640.0	-197.7	108.0	-95.2	0.00	0.00	0.00
PARKMAN									
3,700.0	5.13	151.35	3,689.9	-201.6	110.2	-97.1	0.00	0.00	0.00
3,800.0	5.13	151.35	3,789.5	-209.5	114.5	-100.9	0.00	0.00	0.00
3,900.0	5.13	151.35	3,889.1	-217.3	118.7	-104.6	0.00	0.00	0.00
4,000.0	5.13	151.35	3,988.7	-225.1	123.0	-108.4	0.00	0.00	0.00
4,100.0	5.13	151.35	4,088.3	-233.0	127.3	-112.2	0.00	0.00	0.00
4,162.0	5.13	151.35	4,150.0	-237.8	130.0	-114.5	0.00	0.00	0.00
SUSSEX									
4,200.0	5.13	151.35	4,187.9	-240.8	131.6	-116.0	0.00	0.00	0.00
4,300.0	5.13	151.35	4,287.5	-248.7	135.9	-119.7	0.00	0.00	0.00
4,400.0	5.13	151.35	4,387.1	-256.5	140.2	-123.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-234	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	5.13	151.35	4,486.7	-264.3	144.4	-127.3	0.00	0.00	0.00
4,600.0	5.13	151.35	4,586.3	-272.2	148.7	-131.1	0.00	0.00	0.00
4,677.0	5.13	151.35	4,663.0	-278.2	152.0	-134.0	0.00	0.00	0.00
SHANNON									
4,700.0	5.13	151.35	4,685.9	-280.0	153.0	-134.8	0.00	0.00	0.00
4,758.4	5.13	151.35	4,744.1	-284.6	155.5	-137.0	0.00	0.00	0.00
4,800.0	4.29	151.35	4,785.5	-287.6	157.1	-138.5	2.00	-2.00	0.00
4,900.0	2.29	151.35	4,885.3	-292.6	159.9	-140.9	2.00	-2.00	0.00
5,000.0	0.29	151.35	4,985.3	-294.6	161.0	-141.9	2.00	-2.00	0.00
5,014.7	0.00	0.00	5,000.0	-294.6	161.0	-141.9	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,085.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,200.0	0.00	0.00	5,185.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,300.0	0.00	0.00	5,285.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,385.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,485.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,585.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,685.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,785.3	-294.6	161.0	-141.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,885.3	-294.6	161.0	-141.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,985.3	-294.6	161.0	-141.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,085.3	-294.6	161.0	-141.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,185.3	-294.6	161.0	-141.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,285.3	-294.6	161.0	-141.9	0.00	0.00	0.00
6,307.7	0.00	0.00	6,293.0	-294.6	161.0	-141.9	0.00	0.00	0.00
KOP #2									
6,400.0	6.92	270.00	6,385.1	-294.6	155.4	-136.3	7.50	7.50	0.00
6,500.0	14.42	270.00	6,483.3	-294.6	136.9	-117.9	7.50	7.50	0.00
6,600.0	21.92	270.00	6,578.2	-294.6	105.8	-86.8	7.50	7.50	0.00
6,700.0	29.42	270.00	6,668.3	-294.6	62.5	-43.6	7.50	7.50	0.00
6,800.0	36.92	270.00	6,751.9	-294.6	7.8	11.0	7.50	7.50	0.00
6,889.2	43.61	270.00	6,820.0	-294.6	-49.8	68.5	7.50	7.50	0.00
SHARON SPRINGS									
6,900.0	44.42	270.00	6,827.7	-294.6	-57.3	76.0	7.50	7.50	0.00
7,000.0	51.92	270.00	6,894.4	-294.6	-131.8	150.3	7.50	7.50	0.00
7,100.0	59.42	270.00	6,950.7	-294.6	-214.3	232.6	7.50	7.50	0.00
7,200.0	66.92	270.00	6,995.8	-294.6	-303.5	321.6	7.50	7.50	0.00
7,300.0	74.42	270.00	7,028.9	-294.6	-397.8	415.7	7.50	7.50	0.00
7,400.0	81.92	270.00	7,049.4	-294.6	-495.6	513.3	7.50	7.50	0.00
7,500.0	89.42	270.00	7,057.0	-294.6	-595.2	612.8	7.50	7.50	0.00
7,507.7	90.00	270.00	7,057.0	-294.6	-602.9	620.5	7.50	7.50	0.00
End of Build - 7"									
7,600.0	90.00	270.00	7,057.0	-294.6	-695.2	712.6	0.00	0.00	0.00
7,700.0	90.00	270.00	7,057.0	-294.6	-795.2	812.4	0.00	0.00	0.00
7,800.0	90.00	270.00	7,057.0	-294.6	-895.2	912.2	0.00	0.00	0.00
7,900.0	90.00	270.00	7,057.0	-294.6	-995.2	1,012.0	0.00	0.00	0.00
8,000.0	90.00	270.00	7,057.0	-294.6	-1,095.2	1,111.8	0.00	0.00	0.00
8,100.0	90.00	270.00	7,057.0	-294.6	-1,195.2	1,211.6	0.00	0.00	0.00
8,200.0	90.00	270.00	7,057.0	-294.6	-1,295.2	1,311.4	0.00	0.00	0.00
8,300.0	90.00	270.00	7,057.0	-294.6	-1,395.2	1,411.2	0.00	0.00	0.00
8,400.0	90.00	270.00	7,057.0	-294.6	-1,495.2	1,511.0	0.00	0.00	0.00
8,500.0	90.00	270.00	7,057.0	-294.6	-1,595.2	1,610.8	0.00	0.00	0.00
8,600.0	90.00	270.00	7,057.0	-294.6	-1,695.2	1,710.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-234	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	90.00	270.00	7,057.0	-294.6	-1,795.2	1,810.3	0.00	0.00	0.00
8,800.0	90.00	270.00	7,057.0	-294.6	-1,895.2	1,910.1	0.00	0.00	0.00
8,900.0	90.00	270.00	7,057.0	-294.6	-1,995.2	2,009.9	0.00	0.00	0.00
9,000.0	90.00	270.00	7,057.0	-294.6	-2,095.2	2,109.7	0.00	0.00	0.00
9,100.0	90.00	270.00	7,057.0	-294.6	-2,195.2	2,209.5	0.00	0.00	0.00
9,200.0	90.00	270.00	7,057.0	-294.6	-2,295.2	2,309.3	0.00	0.00	0.00
9,300.0	90.00	270.00	7,057.0	-294.6	-2,395.2	2,409.1	0.00	0.00	0.00
9,400.0	90.00	270.00	7,057.0	-294.6	-2,495.2	2,508.9	0.00	0.00	0.00
9,500.0	90.00	270.00	7,057.0	-294.6	-2,595.2	2,608.7	0.00	0.00	0.00
9,600.0	90.00	270.00	7,057.0	-294.6	-2,695.2	2,708.5	0.00	0.00	0.00
9,700.0	90.00	270.00	7,057.0	-294.6	-2,795.2	2,808.3	0.00	0.00	0.00
9,800.0	90.00	270.00	7,057.0	-294.6	-2,895.2	2,908.1	0.00	0.00	0.00
9,900.0	90.00	270.00	7,057.0	-294.6	-2,995.2	3,007.9	0.00	0.00	0.00
10,000.0	90.00	270.00	7,057.0	-294.6	-3,095.2	3,107.7	0.00	0.00	0.00
10,100.0	90.00	270.00	7,057.0	-294.6	-3,195.2	3,207.5	0.00	0.00	0.00
10,200.0	90.00	270.00	7,057.0	-294.6	-3,295.2	3,307.3	0.00	0.00	0.00
10,300.0	90.00	270.00	7,057.0	-294.6	-3,395.2	3,407.1	0.00	0.00	0.00
10,400.0	90.00	270.00	7,057.0	-294.6	-3,495.2	3,506.9	0.00	0.00	0.00
10,500.0	90.00	270.00	7,057.0	-294.6	-3,595.2	3,606.7	0.00	0.00	0.00
10,600.0	90.00	270.00	7,057.0	-294.6	-3,695.2	3,706.5	0.00	0.00	0.00
10,700.0	90.00	270.00	7,057.0	-294.6	-3,795.2	3,806.3	0.00	0.00	0.00
10,800.0	90.00	270.00	7,057.0	-294.6	-3,895.2	3,906.1	0.00	0.00	0.00
10,900.0	90.00	270.00	7,057.0	-294.6	-3,995.2	4,005.9	0.00	0.00	0.00
11,000.0	90.00	270.00	7,057.0	-294.6	-4,095.2	4,105.7	0.00	0.00	0.00
11,100.0	90.00	270.00	7,057.0	-294.6	-4,195.2	4,205.5	0.00	0.00	0.00
11,200.0	90.00	270.00	7,057.0	-294.6	-4,295.2	4,305.3	0.00	0.00	0.00
11,300.0	90.00	270.00	7,057.0	-294.6	-4,395.2	4,405.0	0.00	0.00	0.00
11,400.0	90.00	270.00	7,057.0	-294.6	-4,495.2	4,504.8	0.00	0.00	0.00
11,500.0	90.00	270.00	7,057.0	-294.6	-4,595.2	4,604.6	0.00	0.00	0.00
11,513.7	90.00	270.00	7,057.0	-294.6	-4,608.9	4,618.3	0.00	0.00	0.00
BHL 1910'FNL, 500'FWL									

Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHL 1530'FNL, 211'FI - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,347,895.40	3,171,019.06	40.286750	-104.886970
BHL 1910'FNL, 500'FI - plan hits target center - Point	0.00	0.00	7,057.0	-294.6	-4,608.9	1,347,568.90	3,166,412.47	40.285940	-104.903490

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,507.7	7,057.0	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Project:	SEC.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	North Reference:	True
Well:	Sunmarke 28V-234	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 (°)	
3,649.9	3,640.0	PARKMAN				
4,162.0	4,150.0	SUSSEX				
4,677.0	4,663.0	SHANNON				
6,889.2	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	
6,307.7	6,293.0	-294.6	161.0	KOP #2	
7,507.7	7,057.0	-294.6	-602.9	End of Build	



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28V-234

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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

Reference	Plan #1 (11-18-13)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	11/21/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,513.7	Plan #1 (11-18-13) (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						
Existing wells - Sec.28-T4N-R67W						
McCarty 28-1 (Exist) - Wellbore #1 - Wellbore #1	11,351.9	7,123.0	116.6	-151.6	0.435	Level 1, CC, ES, SF
McCarty 28-2 (Exist) - Wellbore #1 - Wellbore #1	7,286.7	7,020.2	76.9	-82.3	0.483	Level 1, CC, ES, SF
McCarty 28-4 (Exist) - Wellbore #1 - Wellbore #1	10,026.7	7,105.0	98.6	-132.5	0.427	Level 1, CC, ES, SF
McCarty 28-7 (Exist) - Wellbore #1 - Wellbore #1	8,472.7	7,061.0	116.2	-71.7	0.618	Level 1, CC, ES, SF
Sunmarke 28V-HZ Pad Sec.28-T4N-R67W						
Sunmarke 28V-304 - Wellbore #1 - Plan #1 (11-18-13)	1,000.0	999.0	61.9	57.7	14.509	CC, ES
Sunmarke 28V-304 - Wellbore #1 - Plan #1 (11-18-13)	11,513.7	11,612.0	532.9	274.3	2.061	SF
Sunmarke 28V-434 - Wellbore #1 - Plan #1 (11-18-13)	1,000.0	999.0	32.8	28.5	7.682	CC, ES
Sunmarke 28V-434 - Wellbore #1 - Plan #1 (11-18-13)	11,513.7	11,712.7	339.8	133.7	1.649	SF
Sunmarke 28W-414 - Wellbore #1 - Plan #1 (11-18-13)	566.3	567.3	29.1	26.8	12.544	CC
Sunmarke 28W-414 - Wellbore #1 - Plan #1 (11-18-13)	600.0	601.0	29.1	26.7	11.778	ES
Sunmarke 28W-414 - Wellbore #1 - Plan #1 (11-18-13)	11,513.7	11,741.3	361.2	152.5	1.731	SF

Offset Design												
Existing wells - Sec.28-T4N-R67W - McCarty 28-1 (Exist) - Wellbore #1 - Wellbore #1												
Survey Program: 7600-UNKNOWN												
Reference												
Offset												
Semi Major Axis												
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)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
Warning												
10,400.0	7,057.0	7,123.0	7,123.0	99.4	142.5	-90.00	-411.3	-4,447.1	959.1	717.3	241.79	3.967
10,500.0	7,057.0	7,123.0	7,123.0	102.1	142.5	-90.00	-411.3	-4,447.1	859.9	615.3	244.56	3.516
10,600.0	7,057.0	7,123.0	7,123.0	104.9	142.5	-90.00	-411.3	-4,447.1	760.9	513.6	247.33	3.077
10,700.0	7,057.0	7,123.0	7,123.0	107.7	142.5	-90.00	-411.3	-4,447.1	662.3	412.2	250.11	2.648
10,800.0	7,057.0	7,123.0	7,123.0	110.5	142.5	-90.00	-411.3	-4,447.1	564.1	311.2	252.89	2.231
10,900.0	7,057.0	7,123.0	7,123.0	113.2	142.5	-90.00	-411.3	-4,447.1	466.7	211.1	255.67	1.826
11,000.0	7,057.0	7,123.0	7,123.0	116.0	142.5	-90.00	-411.3	-4,447.1	370.8	112.3	258.45	1.435 Level 3
11,100.0	7,057.0	7,123.0	7,123.0	118.8	142.5	-90.00	-411.3	-4,447.1	277.6	16.4	261.23	1.063 Level 2
11,200.0	7,057.0	7,123.0	7,123.0	121.6	142.5	-90.00	-411.3	-4,447.1	191.5	-72.5	264.01	0.725 Level 1
11,300.0	7,057.0	7,123.0	7,123.0	124.4	142.5	-90.00	-411.3	-4,447.1	127.7	-139.1	266.80	0.478 Level 1
11,351.9	7,057.0	7,123.0	7,123.0	125.8	142.5	-90.00	-411.3	-4,447.1	116.6	-151.6	268.24	0.435 Level 1, CC, ES, SF
11,400.0	7,057.0	7,123.0	7,123.0	127.2	142.5	-90.00	-411.3	-4,447.1	126.1	-143.5	269.58	0.468 Level 1
11,500.0	7,057.0	7,123.0	7,123.0	129.9	142.5	-90.00	-411.3	-4,447.1	188.5	-83.9	272.37	0.692 Level 1
11,513.7	7,057.0	7,123.0	7,123.0	130.3	142.5	-90.00	-411.3	-4,447.1	199.4	-73.3	272.75	0.731 Level 1

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28-2 (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							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	-133.98	-371.6	-385.0	535.1						
100.0	100.0	95.0	95.0	0.1	1.9	-133.98	-371.6	-385.0	535.1	533.1	2.01	265.867			
200.0	200.0	195.0	195.0	0.3	3.9	-133.98	-371.6	-385.0	535.1	530.8	4.24	126.277			
300.0	300.0	295.0	295.0	0.6	5.9	-133.98	-371.6	-385.0	535.1	528.6	6.46	82.803			
400.0	400.0	395.0	395.0	0.8	7.9	-133.98	-371.6	-385.0	535.1	526.4	8.69	61.596			
500.0	500.0	495.0	495.0	1.0	9.9	-133.98	-371.6	-385.0	535.1	524.2	10.91	49.038			
600.0	600.0	595.0	595.0	1.2	11.9	-133.98	-371.6	-385.0	535.1	521.9	13.14	40.733			
700.0	700.0	695.0	695.0	1.5	13.9	-133.98	-371.6	-385.0	535.1	519.7	15.36	34.833			
800.0	800.0	795.0	795.0	1.7	15.9	-133.98	-371.6	-385.0	535.1	517.5	17.59	30.427			
900.0	900.0	895.0	895.0	1.9	17.9	-133.98	-371.6	-385.0	535.1	515.3	19.81	27.010			
1,000.0	1,000.0	995.0	995.0	2.1	19.9	-133.98	-371.6	-385.0	535.1	513.0	22.04	24.283			
1,100.0	1,100.0	1,095.0	1,095.0	2.3	21.9	74.86	-371.6	-385.0	534.6	510.4	24.23	22.062			
1,200.0	1,199.8	1,194.8	1,194.8	2.5	23.9	75.43	-371.6	-385.0	533.3	506.9	26.41	20.195			
1,256.3	1,255.9	1,250.9	1,250.9	2.6	25.0	75.91	-371.6	-385.0	532.2	504.5	27.63	19.257			
1,300.0	1,299.5	1,294.5	1,294.5	2.7	25.9	76.32	-371.6	-385.0	531.2	502.6	28.59	18.578			
1,400.0	1,399.1	1,394.1	1,394.1	2.9	27.9	77.26	-371.6	-385.0	529.2	498.4	30.80	17.183			
1,500.0	1,498.7	1,493.7	1,493.7	3.1	29.9	78.20	-371.6	-385.0	527.3	494.3	33.01	15.972			
1,600.0	1,598.3	1,593.3	1,593.3	3.4	31.9	79.15	-371.6	-385.0	525.5	490.3	35.24	14.914			
1,700.0	1,697.9	1,692.9	1,692.9	3.6	33.9	80.11	-371.6	-385.0	523.9	486.4	37.47	13.983			
1,800.0	1,797.5	1,792.5	1,792.5	3.9	35.8	81.07	-371.6	-385.0	522.4	482.7	39.71	13.157			
1,900.0	1,897.1	1,892.1	1,892.1	4.1	37.8	82.03	-371.6	-385.0	521.1	479.2	41.95	12.422			
2,000.0	1,996.7	1,991.7	1,991.7	4.4	39.8	83.00	-371.6	-385.0	519.9	475.7	44.20	11.764			
2,100.0	2,096.3	2,091.3	2,091.3	4.6	41.8	83.98	-371.6	-385.0	518.9	472.5	46.45	11.172			
2,200.0	2,195.9	2,190.9	2,190.9	4.9	43.8	84.96	-371.6	-385.0	518.1	469.4	48.70	10.637			
2,300.0	2,295.5	2,290.5	2,290.5	5.2	45.8	85.94	-371.6	-385.0	517.3	466.4	50.96	10.152			
2,400.0	2,395.1	2,390.1	2,390.1	5.4	47.8	86.92	-371.6	-385.0	516.8	463.6	53.22	9.710			
2,500.0	2,494.7	2,489.7	2,489.7	5.7	49.8	87.91	-371.6	-385.0	516.4	460.9	55.48	9.307			
2,600.0	2,594.3	2,589.3	2,589.3	6.0	51.8	88.90	-371.6	-385.0	516.1	458.4	57.74	8.938			
2,700.0	2,693.9	2,688.9	2,688.9	6.2	53.8	89.88	-371.6	-385.0	516.0	456.0	60.01	8.600			
2,711.7	2,705.5	2,700.5	2,700.5	6.3	54.0	90.00	-371.6	-385.0	516.0	455.8	60.27	8.562			
2,800.0	2,793.5	2,788.5	2,788.5	6.5	55.8	90.87	-371.6	-385.0	516.1	453.8	62.27	8.288			
2,900.0	2,893.1	2,888.1	2,888.1	6.8	57.8	91.86	-371.6	-385.0	516.3	451.8	64.54	8.000			
3,000.0	2,992.7	2,987.7	2,987.7	7.1	59.8	92.85	-371.6	-385.0	516.7	449.9	66.80	7.734			
3,100.0	3,092.3	3,087.3	3,087.3	7.3	61.7	93.83	-371.6	-385.0	517.2	448.1	69.07	7.488			
3,200.0	3,191.9	3,186.9	3,186.9	7.6	63.7	94.81	-371.6	-385.0	517.9	446.5	71.33	7.260			
3,300.0	3,291.5	3,286.5	3,286.5	7.9	65.7	95.79	-371.6	-385.0	518.7	445.1	73.60	7.048			
3,400.0	3,391.1	3,386.1	3,386.1	8.2	67.7	96.77	-371.6	-385.0	519.7	443.8	75.87	6.850			
3,500.0	3,490.7	3,485.7	3,485.7	8.4	69.7	97.74	-371.6	-385.0	520.8	442.7	78.13	6.666			
3,600.0	3,590.3	3,585.3	3,585.3	8.7	71.7	98.71	-371.6	-385.0	522.1	441.7	80.39	6.494			
3,700.0	3,689.9	3,684.9	3,684.9	9.0	73.7	99.67	-371.6	-385.0	523.5	440.9	82.66	6.334			
3,800.0	3,789.5	3,784.5	3,784.5	9.3	75.7	100.63	-371.6	-385.0	525.1	440.2	84.92	6.184			
3,900.0	3,889.1	3,884.1	3,884.1	9.6	77.7	101.58	-371.6	-385.0	526.8	439.7	87.18	6.043			
4,000.0	3,988.7	3,983.7	3,983.7	9.8	79.7	102.52	-371.6	-385.0	528.7	439.3	89.45	5.911			
4,100.0	4,088.3	4,083.3	4,083.3	10.1	81.7	103.46	-371.6	-385.0	530.7	439.0	91.71	5.787			
4,200.0	4,187.9	4,182.9	4,182.9	10.4	83.7	104.39	-371.6	-385.0	532.9	438.9	93.96	5.671			
4,300.0	4,287.5	4,282.5	4,282.5	10.7	85.6	105.32	-371.6	-385.0	535.2	439.0	96.22	5.562			
4,400.0	4,387.1	4,382.1	4,382.1	11.0	87.6	106.23	-371.6	-385.0	537.6	439.1	98.48	5.459			
4,500.0	4,486.7	4,481.7	4,481.7	11.2	89.6	107.14	-371.6	-385.0	540.2	439.5	100.73	5.363			
4,600.0	4,586.3	4,581.3	4,581.3	11.5	91.6	108.03	-371.6	-385.0	542.9	439.9	102.99	5.272			
4,700.0	4,685.9	4,680.9	4,680.9	11.8	93.6	108.92	-371.6	-385.0	545.8	440.5	105.24	5.186			
4,758.4	4,744.1	4,739.1	4,739.1	12.0	94.8	109.44	-371.6	-385.0	547.5	440.9	106.56	5.138			

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28-2 (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							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)					
4,800.0	4,785.5	4,780.5	4,780.5	12.1	95.6	109.79	-371.6	-385.0	548.6	441.1	107.49	5.104				
4,900.0	4,885.3	4,880.3	4,880.3	12.3	97.6	110.39	-371.6	-385.0	550.6	440.9	109.69	5.020				
5,000.0	4,985.3	4,980.3	4,980.3	12.4	99.6	110.63	-371.6	-385.0	551.4	439.5	111.87	4.929				
5,014.7	5,000.0	4,995.0	4,995.0	12.5	99.9	-98.02	-371.6	-385.0	551.4	440.5	110.95	4.970				
5,100.0	5,085.3	5,080.3	5,080.3	12.6	101.6	-98.02	-371.6	-385.0	551.4	438.6	112.82	4.887				
5,200.0	5,185.3	5,180.3	5,180.3	12.8	103.6	-98.02	-371.6	-385.0	551.4	436.4	115.01	4.794				
5,300.0	5,285.3	5,280.3	5,280.3	12.9	105.6	-98.02	-371.6	-385.0	551.4	434.2	117.20	4.705				
5,400.0	5,385.3	5,380.3	5,380.3	13.1	107.6	-98.02	-371.6	-385.0	551.4	432.0	119.38	4.619				
5,500.0	5,485.3	5,480.3	5,480.3	13.3	109.6	-98.02	-371.6	-385.0	551.4	429.8	121.57	4.536				
5,600.0	5,585.3	5,580.3	5,580.3	13.4	111.6	-98.02	-371.6	-385.0	551.4	427.6	123.77	4.455				
5,700.0	5,685.3	5,680.3	5,680.3	13.6	113.6	-98.02	-371.6	-385.0	551.4	425.4	125.96	4.378				
5,800.0	5,785.3	5,780.3	5,780.3	13.8	115.6	-98.02	-371.6	-385.0	551.4	423.3	128.15	4.303				
5,900.0	5,885.3	5,880.3	5,880.3	14.0	117.6	-98.02	-371.6	-385.0	551.4	421.1	130.35	4.230				
6,000.0	5,985.3	5,980.3	5,980.3	14.1	119.6	-98.02	-371.6	-385.0	551.4	418.9	132.54	4.160				
6,100.0	6,085.3	6,080.3	6,080.3	14.3	121.6	-98.02	-371.6	-385.0	551.4	416.7	134.74	4.092				
6,200.0	6,185.3	6,180.3	6,180.3	14.5	123.6	-98.02	-371.6	-385.0	551.4	414.5	136.93	4.027				
6,307.7	6,293.1	6,288.1	6,288.1	14.7	125.8	-98.02	-371.6	-385.0	551.4	412.1	139.30	3.958				
6,350.0	6,335.3	6,330.3	6,330.3	14.8	126.6	-8.05	-371.6	-385.0	550.2	409.3	141.00	3.903				
6,400.0	6,385.1	6,380.1	6,380.1	14.8	127.6	-8.16	-371.6	-385.0	545.9	404.6	141.28	3.864				
6,450.0	6,434.5	6,429.5	6,429.5	14.9	128.6	-8.36	-371.6	-385.0	538.3	397.4	140.95	3.819				
6,500.0	6,483.3	6,478.3	6,478.3	15.0	129.6	-8.65	-371.6	-385.0	527.6	387.6	140.02	3.768				
6,550.0	6,531.3	6,526.3	6,526.3	15.0	130.5	-9.06	-371.6	-385.0	513.7	375.2	138.48	3.710				
6,600.0	6,578.2	6,573.2	6,573.2	15.1	131.5	-9.59	-371.6	-385.0	496.8	360.4	136.35	3.644				
6,650.0	6,624.0	6,619.0	6,619.0	15.1	132.4	-10.28	-371.6	-385.0	476.9	343.2	133.63	3.568				
6,700.0	6,668.3	6,663.3	6,663.3	15.2	133.3	-11.17	-371.6	-385.0	454.1	323.7	130.39	3.482				
6,750.0	6,711.0	6,706.0	6,706.0	15.2	134.1	-12.30	-371.6	-385.0	428.5	301.8	126.67	3.383				
6,800.0	6,751.9	6,746.9	6,746.9	15.2	134.9	-13.77	-371.6	-385.0	400.3	277.7	122.60	3.265				
6,850.0	6,790.9	6,785.9	6,785.9	15.3	135.7	-15.67	-371.6	-385.0	369.6	251.2	118.38	3.122				
6,900.0	6,827.7	6,822.7	6,822.7	15.3	136.5	-18.20	-371.6	-385.0	336.6	222.3	114.35	2.944				
6,950.0	6,862.3	6,857.3	6,857.3	15.4	137.1	-21.59	-371.6	-385.0	301.5	190.4	111.13	2.713				
7,000.0	6,894.4	6,889.4	6,889.4	15.6	137.8	-26.22	-371.6	-385.0	264.7	154.9	109.80	2.411				
7,050.0	6,923.9	6,918.9	6,918.9	15.9	138.4	-32.65	-371.6	-385.0	226.4	114.4	112.01	2.021				
7,100.0	6,950.7	6,945.7	6,945.7	16.4	138.9	-41.54	-371.6	-385.0	187.3	67.6	119.64	1.565				
7,150.0	6,974.8	6,969.8	6,969.8	17.0	139.4	-53.34	-371.6	-385.0	148.4	15.5	132.85	1.117 Level 2				
7,200.0	6,995.8	6,990.8	6,990.8	17.6	139.8	-67.44	-371.6	-385.0	112.1	-35.4	147.48	0.760 Level 1				
7,250.0	7,013.9	7,008.9	7,008.9	18.3	140.2	-81.45	-371.6	-385.0	84.5	-72.4	156.91	0.539 Level 1				
7,286.7	7,025.2	7,020.2	7,020.2	18.9	140.4	-89.99	-371.6	-385.0	76.9	-82.3	159.22	0.483 Level 1, CC, ES, SF				
7,300.0	7,028.9	7,023.9	7,023.9	19.1	140.5	-92.55	-371.6	-385.0	78.0	-81.4	159.34	0.489 Level 1				
7,350.0	7,040.8	7,035.8	7,035.8	20.0	140.7	-99.28	-371.6	-385.0	98.4	-60.2	158.57	0.620 Level 1				
7,400.0	7,049.4	7,044.4	7,044.4	20.9	140.9	-101.42	-371.6	-385.0	134.7	-23.8	158.53	0.850 Level 1				
7,450.0	7,054.8	7,049.8	7,049.8	21.9	141.0	-98.94	-371.6	-385.0	177.8	17.0	160.77	1.106 Level 2				
7,500.0	7,057.0	7,052.0	7,052.0	22.9	141.0	-91.59	-371.6	-385.0	223.8	60.1	163.76	1.367 Level 3				
7,507.7	7,057.0	7,052.0	7,052.0	23.1	141.0	-90.00	-371.6	-385.0	231.1	67.1	164.00	1.409 Level 3				
7,600.0	7,057.0	7,052.0	7,052.0	25.1	141.0	-90.00	-371.6	-385.0	319.6	153.6	165.97	1.926				
7,700.0	7,057.0	7,052.0	7,052.0	27.3	141.0	-90.00	-371.6	-385.0	417.3	249.1	168.23	2.481				
7,800.0	7,057.0	7,052.0	7,052.0	29.6	141.0	-90.00	-371.6	-385.0	516.0	345.4	170.58	3.025				
7,900.0	7,057.0	7,052.0	7,052.0	32.1	141.0	-90.00	-371.6	-385.0	615.0	442.0	173.00	3.555				
8,000.0	7,057.0	7,052.0	7,052.0	34.5	141.0	-90.00	-371.6	-385.0	714.3	538.9	175.48	4.071				
8,100.0	7,057.0	7,052.0	7,052.0	37.1	141.0	-90.00	-371.6	-385.0	813.8	635.8	178.01	4.572				
8,200.0	7,057.0	7,052.0	7,052.0	39.6	141.0	-90.00	-371.6	-385.0	913.4	732.9	180.57	5.059				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28-4 (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 (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		
9,100.0	7,057.0	7,105.0	7,105.0	63.6	142.1	-90.00	-393.3	-3,121.9	932.0	726.3	205.64	4.532		
9,200.0	7,057.0	7,105.0	7,105.0	66.3	142.1	-90.00	-393.3	-3,121.9	832.6	624.2	208.37	3.996		
9,300.0	7,057.0	7,105.0	7,105.0	69.1	142.1	-90.00	-393.3	-3,121.9	733.4	522.3	211.10	3.474		
9,400.0	7,057.0	7,105.0	7,105.0	71.8	142.1	-90.00	-393.3	-3,121.9	634.4	420.6	213.84	2.967		
9,500.0	7,057.0	7,105.0	7,105.0	74.5	142.1	-90.00	-393.3	-3,121.9	535.9	319.3	216.58	2.474		
9,600.0	7,057.0	7,105.0	7,105.0	77.3	142.1	-90.00	-393.3	-3,121.9	438.0	218.6	219.33	1.997		
9,700.0	7,057.0	7,105.0	7,105.0	80.0	142.1	-90.00	-393.3	-3,121.9	341.3	119.2	222.08	1.537		
9,800.0	7,057.0	7,105.0	7,105.0	82.8	142.1	-90.00	-393.3	-3,121.9	247.2	22.4	224.84	1.100	Level 2	
9,900.0	7,057.0	7,105.0	7,105.0	85.5	142.1	-90.00	-393.3	-3,121.9	160.6	-67.0	227.59	0.705	Level 1	
10,000.0	7,057.0	7,105.0	7,105.0	88.3	142.1	-90.00	-393.3	-3,121.9	102.2	-128.2	230.35	0.443	Level 1	
10,026.7	7,057.0	7,105.0	7,105.0	89.0	142.1	-90.00	-393.3	-3,121.9	98.6	-132.5	231.09	0.427	Level 1, CC, ES, SF	
10,100.0	7,057.0	7,105.0	7,105.0	91.1	142.1	-90.00	-393.3	-3,121.9	122.8	-110.3	233.12	0.527	Level 1	
10,200.0	7,057.0	7,105.0	7,105.0	93.8	142.1	-90.00	-393.3	-3,121.9	199.4	-36.5	235.89	0.845	Level 1	
10,300.0	7,057.0	7,105.0	7,105.0	96.6	142.1	-90.00	-393.3	-3,121.9	290.5	51.9	238.65	1.217	Level 2	
10,400.0	7,057.0	7,105.0	7,105.0	99.4	142.1	-90.00	-393.3	-3,121.9	386.1	144.7	241.43	1.599		
10,500.0	7,057.0	7,105.0	7,105.0	102.1	142.1	-90.00	-393.3	-3,121.9	483.4	239.2	244.20	1.980		
10,600.0	7,057.0	7,105.0	7,105.0	104.9	142.1	-90.00	-393.3	-3,121.9	581.7	334.7	246.97	2.355		
10,700.0	7,057.0	7,105.0	7,105.0	107.7	142.1	-90.00	-393.3	-3,121.9	680.5	430.7	249.75	2.725		
10,800.0	7,057.0	7,105.0	7,105.0	110.5	142.1	-90.00	-393.3	-3,121.9	779.5	527.0	252.53	3.087		
10,900.0	7,057.0	7,105.0	7,105.0	113.2	142.1	-90.00	-393.3	-3,121.9	878.8	623.5	255.31	3.442		
11,000.0	7,057.0	7,105.0	7,105.0	116.0	142.1	-90.00	-393.3	-3,121.9	978.3	720.2	258.09	3.790		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28-7 (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)			
7,500.0	7,057.0	7,061.0	7,061.0	22.9	141.2	85.15	-178.5	-1,567.9	979.6	816.2	163.39	5.996		
7,507.7	7,057.0	7,061.0	7,061.0	23.1	141.2	90.00	-178.5	-1,567.9	971.9	807.8	164.18	5.920		
7,600.0	7,057.0	7,061.0	7,061.0	25.1	141.2	90.00	-178.5	-1,567.9	880.4	714.3	166.15	5.299		
7,700.0	7,057.0	7,061.0	7,061.0	27.3	141.2	90.00	-178.5	-1,567.9	781.4	613.0	168.41	4.640		
7,800.0	7,057.0	7,061.0	7,061.0	29.6	141.2	90.00	-178.5	-1,567.9	682.7	511.9	170.76	3.998		
7,900.0	7,057.0	7,061.0	7,061.0	32.1	141.2	90.00	-178.5	-1,567.9	584.4	411.2	173.18	3.374		
8,000.0	7,057.0	7,061.0	7,061.0	34.5	141.2	90.00	-178.5	-1,567.9	486.8	311.1	175.66	2.771		
8,100.0	7,057.0	7,061.0	7,061.0	37.1	141.2	90.00	-178.5	-1,567.9	390.4	212.2	178.19	2.191		
8,200.0	7,057.0	7,061.0	7,061.0	39.6	141.2	90.00	-178.5	-1,567.9	296.4	115.7	180.75	1.640		
8,300.0	7,057.0	7,061.0	7,061.0	42.2	141.2	90.00	-178.5	-1,567.9	208.2	24.8	183.35	1.135 Level 2		
8,400.0	7,057.0	7,061.0	7,061.0	44.8	141.2	90.00	-178.5	-1,567.9	137.1	-48.9	185.97	0.737 Level 1		
8,472.7	7,057.0	7,061.0	7,061.0	46.8	141.2	90.00	-178.5	-1,567.9	116.2	-71.7	187.89	0.618 Level 1, CC, ES, SF		
8,500.0	7,057.0	7,061.0	7,061.0	47.5	141.2	90.00	-178.5	-1,567.9	119.3	-69.3	188.61	0.633 Level 1		
8,600.0	7,057.0	7,061.0	7,061.0	50.1	141.2	90.00	-178.5	-1,567.9	172.3	-18.9	191.27	0.901 Level 1		
8,700.0	7,057.0	7,061.0	7,061.0	52.8	141.2	90.00	-178.5	-1,567.9	255.3	61.3	193.95	1.316 Level 3		
8,800.0	7,057.0	7,061.0	7,061.0	55.5	141.2	90.00	-178.5	-1,567.9	347.3	150.7	196.64	1.766		
8,900.0	7,057.0	7,061.0	7,061.0	58.2	141.2	90.00	-178.5	-1,567.9	442.8	243.5	199.34	2.221		
9,000.0	7,057.0	7,061.0	7,061.0	60.9	141.2	90.00	-178.5	-1,567.9	539.9	337.9	202.05	2.672		
9,100.0	7,057.0	7,061.0	7,061.0	63.6	141.2	90.00	-178.5	-1,567.9	637.9	433.2	204.76	3.116		
9,200.0	7,057.0	7,061.0	7,061.0	66.3	141.2	90.00	-178.5	-1,567.9	736.5	529.0	207.49	3.550		
9,300.0	7,057.0	7,061.0	7,061.0	69.1	141.2	90.00	-178.5	-1,567.9	835.4	625.2	210.22	3.974		
9,400.0	7,057.0	7,061.0	7,061.0	71.8	141.2	90.00	-178.5	-1,567.9	934.5	721.6	212.96	4.388		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-304 - 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
0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00	61.9	0.0	61.9				
100.0	100.0	99.0	99.0	0.1	0.1	0.00	0.00	61.9	0.0	61.9	61.7	0.22	276.903	
200.0	200.0	199.0	199.0	0.3	0.3	0.00	0.00	61.9	0.0	61.9	61.3	0.67	92.147	
300.0	300.0	299.0	299.0	0.6	0.6	0.00	0.00	61.9	0.0	61.9	60.8	1.12	55.215	
400.0	400.0	399.0	399.0	0.8	0.8	0.00	0.00	61.9	0.0	61.9	60.4	1.57	39.416	
500.0	500.0	499.0	499.0	1.0	1.0	0.00	0.00	61.9	0.0	61.9	59.9	2.02	30.647	
600.0	600.0	599.0	599.0	1.2	1.2	0.00	0.00	61.9	0.0	61.9	59.5	2.47	25.070	
700.0	700.0	699.0	699.0	1.5	1.5	0.00	0.00	61.9	0.0	61.9	59.0	2.92	21.210	
800.0	800.0	799.0	799.0	1.7	1.7	0.00	0.00	61.9	0.0	61.9	58.6	3.37	18.380	
900.0	900.0	899.0	899.0	1.9	1.9	0.00	0.00	61.9	0.0	61.9	58.1	3.82	16.217	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	0.00	0.00	61.9	0.0	61.9	57.7	4.27	14.509 CC, ES	
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.4	-152.09	61.9	0.0	63.5	58.8	4.69	13.529		
1,200.0	1,199.8	1,198.8	1,198.8	2.5	2.6	-154.11	61.9	0.0	68.1	63.0	5.09	13.381		
1,256.3	1,255.9	1,254.9	1,254.9	2.6	2.7	-155.62	61.9	0.0	72.2	66.9	5.32	13.571		
1,300.0	1,299.5	1,298.5	1,298.5	2.7	2.8	-156.84	61.9	0.0	75.8	70.3	5.50	13.776		
1,400.0	1,399.1	1,398.1	1,398.1	2.9	3.0	-159.24	61.9	0.0	84.1	78.1	5.92	14.205		
1,500.0	1,498.7	1,497.7	1,497.7	3.1	3.3	-161.20	61.9	0.0	92.5	86.1	6.34	14.583		
1,600.0	1,598.3	1,597.3	1,597.3	3.4	3.5	-162.83	61.9	0.0	101.0	94.2	6.77	14.919		
1,700.0	1,697.9	1,696.9	1,696.9	3.6	3.7	-164.21	61.9	0.0	109.5	102.3	7.20	15.217		
1,800.0	1,797.5	1,796.5	1,796.5	3.9	3.9	-165.39	61.9	0.0	118.2	110.5	7.63	15.482		
1,900.0	1,897.1	1,896.1	1,896.1	4.1	4.1	-166.41	61.9	0.0	126.8	118.8	8.07	15.719		
2,000.0	1,996.7	1,995.7	1,995.7	4.4	4.4	-167.29	61.9	0.0	135.5	127.0	8.51	15.933		
2,100.0	2,096.3	2,092.9	2,092.9	4.6	4.6	-167.54	63.0	1.0	145.0	136.1	8.94	16.225		
2,200.0	2,195.9	2,189.6	2,189.5	4.9	4.8	-166.71	66.5	4.3	156.3	146.9	9.38	16.670		
2,300.0	2,295.5	2,288.4	2,288.0	5.2	5.0	-165.36	71.6	9.1	168.7	158.9	9.82	17.178		
2,400.0	2,395.1	2,387.5	2,386.9	5.4	5.2	-164.18	76.8	13.9	181.2	170.9	10.27	17.645		
2,500.0	2,494.7	2,486.7	2,485.8	5.7	5.5	-163.15	81.9	18.7	193.8	183.1	10.72	18.073		
2,600.0	2,594.3	2,585.8	2,584.7	6.0	5.7	-162.25	87.1	23.6	206.4	195.3	11.18	18.466		
2,700.0	2,693.9	2,685.0	2,683.6	6.2	5.9	-161.45	92.2	28.4	219.1	207.5	11.64	18.828		
2,800.0	2,793.5	2,784.1	2,782.5	6.5	6.2	-160.74	97.4	33.2	231.9	219.8	12.10	19.161		
2,900.0	2,893.1	2,883.3	2,881.4	6.8	6.4	-160.10	102.5	38.1	244.6	232.0	12.56	19.469		
3,000.0	2,992.7	2,982.4	2,980.3	7.1	6.6	-159.53	107.7	42.9	257.4	244.4	13.03	19.754		
3,100.0	3,092.3	3,081.6	3,079.2	7.3	6.9	-159.01	112.8	47.7	270.2	256.7	13.50	20.018		
3,200.0	3,191.9	3,180.7	3,178.0	7.6	7.1	-158.54	118.0	52.6	283.0	269.0	13.97	20.265		
3,300.0	3,291.5	3,279.9	3,276.9	7.9	7.3	-158.11	123.1	57.4	295.9	281.4	14.44	20.494		
3,400.0	3,391.1	3,379.0	3,375.8	8.2	7.6	-157.71	128.3	62.2	308.7	293.8	14.91	20.709		
3,500.0	3,490.7	3,478.1	3,474.7	8.4	7.8	-157.35	133.4	67.1	321.6	306.2	15.38	20.910		
3,600.0	3,590.3	3,577.3	3,573.6	8.7	8.1	-157.01	138.6	71.9	334.5	318.6	15.85	21.098		
3,700.0	3,689.9	3,676.4	3,672.5	9.0	8.3	-156.70	143.7	76.7	347.4	331.0	16.33	21.275		
3,800.0	3,789.5	3,775.6	3,771.4	9.3	8.6	-156.41	148.9	81.5	360.3	343.5	16.80	21.441		
3,900.0	3,889.1	3,874.7	3,870.3	9.6	8.8	-156.14	154.0	86.4	373.2	355.9	17.28	21.598		
4,000.0	3,988.7	3,973.9	3,969.2	9.8	9.1	-155.89	159.2	91.2	386.1	368.3	17.75	21.746		
4,100.0	4,088.3	4,073.0	4,068.1	10.1	9.3	-155.66	164.3	96.0	399.0	380.8	18.23	21.886		
4,200.0	4,187.9	4,172.2	4,167.0	10.4	9.5	-155.44	169.5	100.9	411.9	393.2	18.71	22.018		
4,300.0	4,287.5	4,271.3	4,265.9	10.7	9.8	-155.23	174.6	105.7	424.9	405.7	19.19	22.143		
4,400.0	4,387.1	4,370.5	4,364.8	11.0	10.0	-155.04	179.8	110.5	437.8	418.1	19.67	22.262		
4,500.0	4,486.7	4,469.6	4,463.7	11.2	10.3	-154.86	184.9	115.4	450.8	430.6	20.14	22.376		
4,600.0	4,586.3	4,568.8	4,562.6	11.5	10.5	-154.68	190.1	120.2	463.7	443.1	20.62	22.483		
4,700.0	4,685.9	4,667.9	4,661.5	11.8	10.8	-154.52	195.2	125.0	476.7	455.6	21.10	22.586		
4,758.4	4,744.1	4,725.9	4,719.3	12.0	10.9	-154.43	198.2	127.9	484.2	462.8	21.38	22.643		
4,800.0	4,785.5	4,767.1	4,760.4	12.1	11.0	-154.39	200.4	129.9	489.3	467.8	21.59	22.667		

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-304 - 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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,900.0	4,885.3	4,866.6	4,859.6	12.3	11.3	-154.17	205.6	134.7	499.4	477.4	22.04	22.657		
5,000.0	4,985.3	4,966.2	4,959.0	12.4	11.5	-153.77	210.7	139.6	506.4	484.0	22.48	22.531		
5,014.7	5,000.0	4,980.9	4,973.6	12.5	11.6	-2.34	211.5	140.3	507.2	483.8	23.44	21.637		
5,100.0	5,085.3	5,066.0	5,058.5	12.6	11.8	-1.86	215.9	144.4	511.5	487.7	23.79	21.499		
5,200.0	5,185.3	5,165.7	5,158.0	12.8	12.0	-1.30	221.1	149.3	516.6	492.4	24.19	21.354		
5,300.0	5,285.3	5,265.5	5,257.5	12.9	12.3	-0.75	226.3	154.1	521.7	497.1	24.59	21.214		
5,400.0	5,385.3	5,374.7	5,366.5	13.1	12.5	-0.23	231.3	158.9	526.3	501.3	25.00	21.054		
5,500.0	5,485.3	5,490.1	5,481.9	13.3	12.8	0.00	233.6	161.0	528.2	502.8	25.38	20.814		
5,600.0	5,585.3	5,592.5	5,584.3	13.4	12.9	0.00	233.6	161.0	528.2	502.5	25.74	20.519		
5,700.0	5,685.3	5,692.5	5,684.3	13.6	13.2	0.00	233.6	161.0	528.2	502.1	26.13	20.215		
5,800.0	5,785.3	5,792.5	5,784.3	13.8	13.4	0.00	233.6	161.0	528.2	501.7	26.52	19.917		
5,900.0	5,885.3	5,892.5	5,884.3	14.0	13.6	0.00	233.6	161.0	528.2	501.3	26.91	19.627		
6,000.0	5,985.3	5,992.5	5,984.3	14.1	13.8	0.00	233.6	161.0	528.2	500.9	27.31	19.344		
6,100.0	6,085.3	6,092.5	6,084.3	14.3	14.0	0.00	233.6	161.0	528.2	500.5	27.70	19.068		
6,200.0	6,185.3	6,192.5	6,184.3	14.5	14.2	0.00	233.6	161.0	528.2	500.1	28.10	18.799		
6,307.7	6,293.1	6,300.3	6,292.1	14.7	14.4	0.00	233.6	161.0	528.2	499.7	28.53	18.516		
6,316.3	6,301.6	6,308.8	6,300.6	14.7	14.5	90.01	233.6	161.0	528.2	500.3	27.92	18.917		
6,350.0	6,335.3	6,342.5	6,334.3	14.8	14.5	90.13	233.6	161.0	528.2	500.2	28.06	18.825		
6,400.0	6,385.1	6,392.3	6,384.1	14.8	14.6	90.60	233.6	161.0	528.3	500.0	28.25	18.697		
6,450.0	6,434.5	6,442.3	6,434.1	14.9	14.7	91.32	233.6	160.1	528.4	500.0	28.43	18.585		
6,500.0	6,483.3	6,492.9	6,484.5	15.0	14.8	92.06	233.6	156.0	528.6	500.0	28.58	18.492		
6,550.0	6,531.3	6,543.9	6,535.0	15.0	14.9	92.79	233.6	148.4	528.9	500.2	28.72	18.413		
6,600.0	6,578.2	6,595.5	6,585.3	15.1	14.9	93.51	233.6	137.4	529.3	500.4	28.85	18.343		
6,650.0	6,624.0	6,647.5	6,635.2	15.1	15.0	94.22	233.6	122.9	529.7	500.7	28.98	18.277		
6,700.0	6,668.3	6,700.0	6,684.5	15.2	15.1	94.91	233.6	104.9	530.2	501.1	29.12	18.208		
6,750.0	6,711.0	6,753.0	6,732.9	15.2	15.1	95.58	233.6	83.2	530.8	501.5	29.28	18.128		
6,800.0	6,751.9	6,806.5	6,780.1	15.2	15.2	96.23	233.6	58.1	531.4	501.9	29.48	18.028		
6,850.0	6,790.9	6,860.4	6,825.8	15.3	15.2	96.85	233.6	29.4	532.1	502.4	29.73	17.896		
6,900.0	6,827.7	6,914.9	6,869.7	15.3	15.3	97.44	233.6	-2.8	532.8	502.7	30.07	17.721		
6,950.0	6,862.3	6,969.8	6,911.6	15.4	15.5	98.00	233.6	-38.2	533.5	503.0	30.49	17.496		
7,000.0	6,894.4	7,025.1	6,951.1	15.6	15.8	98.53	233.6	-77.0	534.2	503.2	31.04	17.209		
7,050.0	6,923.9	7,080.9	6,988.0	15.9	16.2	99.01	233.6	-118.8	534.9	503.2	31.73	16.856		
7,100.0	6,950.7	7,137.1	7,022.0	16.4	16.6	99.46	233.6	-163.5	535.6	503.0	32.58	16.437		
7,150.0	6,974.8	7,193.6	7,052.7	17.0	17.1	99.86	233.6	-210.9	536.2	502.6	33.61	15.956		
7,200.0	6,995.8	7,250.5	7,080.1	17.6	17.7	100.21	233.6	-260.8	536.8	502.0	34.81	15.421		
7,250.0	7,013.9	7,307.6	7,103.7	18.3	18.5	100.51	233.6	-312.8	537.3	501.1	36.20	14.842		
7,300.0	7,028.9	7,365.0	7,123.5	19.1	19.3	100.77	233.6	-366.7	537.7	500.0	37.77	14.238		
7,350.0	7,040.8	7,422.7	7,139.3	20.0	20.2	100.97	233.6	-422.1	538.1	498.6	39.50	13.623		
7,400.0	7,049.4	7,480.5	7,150.8	20.9	21.3	101.11	233.6	-478.7	538.3	497.0	41.38	13.011		
7,450.0	7,054.8	7,538.3	7,158.1	21.9	22.3	101.21	233.6	-536.1	538.5	495.1	43.38	12.413		
7,500.0	7,057.0	7,596.3	7,161.0	22.9	23.5	101.24	233.6	-594.0	538.6	493.1	45.49	11.839		
7,507.7	7,057.0	7,605.3	7,161.0	23.1	23.7	101.24	233.6	-602.9	538.6	492.8	45.83	11.753		
7,600.0	7,057.0	7,698.4	7,160.2	25.1	25.6	101.16	233.6	-696.1	538.4	488.7	49.68	10.838		
7,700.0	7,057.0	7,798.4	7,159.3	27.3	27.8	101.07	233.6	-796.1	538.3	484.2	54.07	9.954		
7,800.0	7,057.0	7,898.4	7,158.5	29.6	30.1	100.98	233.6	-896.1	538.1	479.4	58.66	9.173		
7,900.0	7,057.0	7,998.4	7,157.6	32.1	32.5	100.89	233.6	-996.1	537.9	474.5	63.40	8.484		
8,000.0	7,057.0	8,098.4	7,156.7	34.5	34.9	100.80	233.6	-1,096.1	537.8	469.5	68.26	7.878		
8,100.0	7,057.0	8,198.4	7,155.9	37.1	37.4	100.70	233.6	-1,196.1	537.6	464.4	73.23	7.342		
8,200.0	7,057.0	8,298.4	7,155.0	39.6	40.0	100.61	233.6	-1,296.1	537.4	459.2	78.27	6.867		
8,300.0	7,057.0	8,398.4	7,154.1	42.2	42.6	100.52	233.6	-1,396.1	537.3	453.9	83.37	6.444		
8,400.0	7,057.0	8,498.4	7,153.2	44.8	45.2	100.43	233.6	-1,496.1	537.1	448.6	88.53	6.067		

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-304 - 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						
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)		
8,500.0	7,057.0	8,598.4	7,152.4	47.5	47.8	100.34	233.6	-1,596.0	537.0	443.2	93.74	5.728	
8,600.0	7,057.0	8,698.4	7,151.5	50.1	50.4	100.25	233.6	-1,696.0	536.8	437.8	98.99	5.423	
8,700.0	7,057.0	8,798.4	7,150.6	52.8	53.1	100.16	233.6	-1,796.0	536.7	432.4	104.27	5.147	
8,800.0	7,057.0	8,898.4	7,149.7	55.5	55.8	100.06	233.6	-1,896.0	536.5	426.9	109.58	4.896	
8,900.0	7,057.0	8,998.4	7,148.9	58.2	58.4	99.97	233.6	-1,996.0	536.3	421.4	114.92	4.667	
9,000.0	7,057.0	9,098.4	7,148.0	60.9	61.1	99.88	233.6	-2,096.0	536.2	415.9	120.28	4.458	
9,100.0	7,057.0	9,198.4	7,147.1	63.6	63.8	99.79	233.6	-2,196.0	536.0	410.4	125.66	4.266	
9,200.0	7,057.0	9,298.4	7,146.3	66.3	66.6	99.70	233.6	-2,296.0	535.9	404.8	131.06	4.089	
9,300.0	7,057.0	9,398.4	7,145.4	69.1	69.3	99.60	233.6	-2,396.0	535.8	399.3	136.47	3.926	
9,400.0	7,057.0	9,498.4	7,144.5	71.8	72.0	99.51	233.6	-2,496.0	535.6	393.7	141.90	3.774	
9,500.0	7,057.0	9,598.4	7,143.6	74.5	74.7	99.42	233.6	-2,596.0	535.5	388.1	147.34	3.634	
9,600.0	7,057.0	9,698.4	7,142.8	77.3	77.5	99.33	233.6	-2,696.0	535.3	382.5	152.80	3.503	
9,700.0	7,057.0	9,798.4	7,141.9	80.0	80.2	99.24	233.6	-2,796.0	535.2	376.9	158.26	3.382	
9,800.0	7,057.0	9,898.4	7,141.0	82.8	83.0	99.14	233.6	-2,895.9	535.0	371.3	163.74	3.268	
9,900.0	7,057.0	9,998.4	7,140.1	85.5	85.7	99.05	233.6	-2,995.9	534.9	365.7	169.22	3.161	
10,000.0	7,057.0	10,098.4	7,139.3	88.3	88.5	98.96	233.6	-3,095.9	534.8	360.1	174.71	3.061	
10,100.0	7,057.0	10,198.4	7,138.4	91.1	91.2	98.87	233.6	-3,195.9	534.6	354.4	180.22	2.967	
10,200.0	7,057.0	10,298.4	7,137.5	93.8	94.0	98.77	233.6	-3,295.9	534.5	348.8	185.72	2.878	
10,300.0	7,057.0	10,398.3	7,136.7	96.6	96.8	98.68	233.6	-3,395.9	534.4	343.1	191.24	2.794	
10,400.0	7,057.0	10,498.3	7,135.8	99.4	99.5	98.59	233.6	-3,495.9	534.2	337.5	196.76	2.715	
10,500.0	7,057.0	10,598.3	7,134.9	102.1	102.3	98.50	233.6	-3,595.9	534.1	331.8	202.29	2.640	
10,600.0	7,057.0	10,698.3	7,134.0	104.9	105.1	98.40	233.6	-3,695.9	534.0	326.2	207.82	2.569	
10,700.0	7,057.0	10,798.3	7,133.2	107.7	107.8	98.31	233.6	-3,795.9	533.9	320.5	213.36	2.502	
10,800.0	7,057.0	10,898.3	7,132.3	110.5	110.6	98.22	233.6	-3,895.9	533.7	314.8	218.91	2.438	
10,900.0	7,057.0	10,998.3	7,131.4	113.2	113.4	98.13	233.6	-3,995.9	533.6	309.1	224.45	2.377	
11,000.0	7,057.0	11,098.3	7,130.5	116.0	116.2	98.03	233.6	-4,095.9	533.5	303.5	230.01	2.319	
11,100.0	7,057.0	11,198.3	7,129.7	118.8	119.0	97.94	233.6	-4,195.8	533.4	297.8	235.57	2.264	
11,200.0	7,057.0	11,298.3	7,128.8	121.6	121.7	97.85	233.6	-4,295.8	533.2	292.1	241.13	2.211	
11,300.0	7,057.0	11,398.3	7,127.9	124.4	124.5	97.75	233.6	-4,395.8	533.1	286.4	246.70	2.161	
11,400.0	7,057.0	11,498.3	7,127.1	127.2	127.3	97.66	233.6	-4,495.8	533.0	280.7	252.27	2.113	
11,500.0	7,057.0	11,598.3	7,126.2	129.9	130.1	97.57	233.6	-4,595.8	532.9	275.0	257.84	2.067	
11,513.7	7,057.0	11,612.0	7,126.1	130.3	130.5	97.56	233.6	-4,609.6	532.9	274.3	258.61	2.061 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-434 - Wellbore #1 - Plan #1 (11-18-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis (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	0.00	32.8	0.0	32.8				
100.0	100.0	99.0	99.0	0.1	0.1	0.00	0.00	32.8	0.0	32.8	32.6	0.22	146.605	
200.0	200.0	199.0	199.0	0.3	0.3	0.00	0.00	32.8	0.0	32.8	32.1	0.67	48.787	
300.0	300.0	299.0	299.0	0.6	0.6	0.00	0.00	32.8	0.0	32.8	31.7	1.12	29.233	
400.0	400.0	399.0	399.0	0.8	0.8	0.00	0.00	32.8	0.0	32.8	31.2	1.57	20.869	
500.0	500.0	499.0	499.0	1.0	1.0	0.00	0.00	32.8	0.0	32.8	30.8	2.02	16.226	
600.0	600.0	599.0	599.0	1.2	1.2	0.00	0.00	32.8	0.0	32.8	30.3	2.47	13.273	
700.0	700.0	699.0	699.0	1.5	1.5	0.00	0.00	32.8	0.0	32.8	29.9	2.92	11.230	
800.0	800.0	799.0	799.0	1.7	1.7	0.00	0.00	32.8	0.0	32.8	29.4	3.37	9.731	
900.0	900.0	899.0	899.0	1.9	1.9	0.00	0.00	32.8	0.0	32.8	29.0	3.82	8.586	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	0.00	0.00	32.8	0.0	32.8	28.5	4.27	7.682 CC, ES	
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.4	-152.73	32.8	0.0	34.3	29.6	4.69	7.318		
1,200.0	1,199.8	1,198.8	1,198.8	2.5	2.6	-156.21	32.8	0.0	39.1	34.0	5.09	7.670		
1,256.3	1,255.9	1,254.9	1,254.9	2.6	2.7	-158.58	32.8	0.0	43.2	37.9	5.32	8.121		
1,300.0	1,299.5	1,298.5	1,298.5	2.7	2.8	-160.32	32.8	0.0	46.9	41.4	5.50	8.520		
1,400.0	1,399.1	1,398.1	1,398.1	2.9	3.0	-163.43	32.8	0.0	55.3	49.4	5.92	9.357		
1,500.0	1,498.7	1,497.7	1,497.7	3.1	3.3	-165.72	32.8	0.0	64.0	57.6	6.34	10.093		
1,600.0	1,598.3	1,598.8	1,598.8	3.4	3.5	-166.40	32.1	1.6	71.6	64.9	6.75	10.615		
1,700.0	1,697.9	1,699.4	1,699.2	3.6	3.7	-165.15	30.4	6.0	77.5	70.3	7.15	10.836		
1,800.0	1,797.5	1,799.2	1,798.9	3.9	3.9	-163.83	28.4	10.8	83.1	75.5	7.56	10.991		
1,900.0	1,897.1	1,899.0	1,898.6	4.1	4.1	-162.69	26.5	15.6	88.8	80.8	7.98	11.124		
2,000.0	1,996.7	1,998.8	1,998.3	4.4	4.3	-161.68	24.5	20.4	94.5	86.1	8.41	11.237		
2,100.0	2,096.3	2,098.7	2,098.0	4.6	4.5	-160.79	22.6	25.2	100.2	91.4	8.84	11.335		
2,200.0	2,195.9	2,198.5	2,197.7	4.9	4.7	-159.99	20.7	30.0	106.0	96.7	9.28	11.419		
2,300.0	2,295.5	2,298.3	2,297.4	5.2	4.9	-159.28	18.7	34.7	111.7	102.0	9.72	11.492		
2,400.0	2,395.1	2,398.1	2,397.1	5.4	5.1	-158.63	16.8	39.5	117.5	107.3	10.17	11.556		
2,500.0	2,494.7	2,498.0	2,496.8	5.7	5.4	-158.05	14.9	44.3	123.3	112.7	10.62	11.611		
2,600.0	2,594.3	2,597.8	2,596.4	6.0	5.6	-157.52	12.9	49.1	129.1	118.0	11.07	11.659		
2,700.0	2,693.9	2,697.6	2,696.1	6.2	5.8	-157.03	11.0	53.9	134.9	123.4	11.53	11.702		
2,800.0	2,793.5	2,797.4	2,795.8	6.5	6.0	-156.59	9.0	58.7	140.8	128.8	11.99	11.739		
2,900.0	2,893.1	2,897.3	2,895.5	6.8	6.3	-156.18	7.1	63.5	146.6	134.1	12.45	11.772		
3,000.0	2,992.7	2,997.1	2,995.2	7.1	6.5	-155.80	5.2	68.3	152.4	139.5	12.92	11.802		
3,100.0	3,092.3	3,096.9	3,094.9	7.3	6.7	-155.45	3.2	73.0	158.3	144.9	13.38	11.828		
3,200.0	3,191.9	3,196.7	3,194.6	7.6	7.0	-155.12	1.3	77.8	164.1	150.3	13.85	11.851		
3,300.0	3,291.5	3,296.6	3,294.3	7.9	7.2	-154.82	-0.6	82.6	170.0	155.7	14.32	11.872		
3,400.0	3,391.1	3,396.4	3,394.0	8.2	7.4	-154.54	-2.6	87.4	175.8	161.1	14.79	11.891		
3,500.0	3,490.7	3,496.2	3,493.7	8.4	7.7	-154.27	-4.5	92.2	181.7	166.5	15.26	11.907		
3,600.0	3,590.3	3,596.0	3,593.4	8.7	7.9	-154.02	-6.5	97.0	187.6	171.9	15.73	11.923		
3,700.0	3,689.9	3,695.9	3,693.0	9.0	8.1	-153.79	-8.4	101.8	193.5	177.3	16.21	11.936		
3,800.0	3,789.5	3,795.7	3,792.7	9.3	8.4	-153.57	-10.3	106.6	199.3	182.7	16.68	11.949		
3,900.0	3,889.1	3,895.5	3,892.4	9.6	8.6	-153.36	-12.3	111.4	205.2	188.1	17.16	11.960		
4,000.0	3,988.7	3,995.3	3,992.1	9.8	8.8	-153.17	-14.2	116.1	211.1	193.5	17.64	11.970		
4,100.0	4,088.3	4,095.2	4,091.8	10.1	9.1	-152.98	-16.1	120.9	217.0	198.9	18.11	11.979		
4,200.0	4,187.9	4,195.0	4,191.5	10.4	9.3	-152.81	-18.1	125.7	222.9	204.3	18.59	11.987		
4,300.0	4,287.5	4,294.8	4,291.2	10.7	9.6	-152.64	-20.0	130.5	228.8	209.7	19.07	11.995		
4,400.0	4,387.1	4,394.6	4,390.9	11.0	9.8	-152.49	-22.0	135.3	234.6	215.1	19.55	12.002		
4,500.0	4,486.7	4,494.5	4,490.6	11.2	10.0	-152.34	-23.9	140.1	240.5	220.5	20.03	12.009		
4,600.0	4,586.3	4,594.3	4,590.3	11.5	10.3	-152.19	-25.8	144.9	246.4	225.9	20.51	12.014		
4,700.0	4,685.9	4,694.1	4,690.0	11.8	10.5	-152.06	-27.8	149.7	252.3	231.3	20.99	12.020		
4,758.4	4,744.1	4,752.4	4,748.2	12.0	10.7	-151.98	-28.9	152.5	255.8	234.5	21.27	12.023		
4,800.0	4,785.5	4,793.9	4,789.7	12.1	10.8	-151.92	-29.7	154.5	258.0	236.5	21.47	12.013		

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-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	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.0	4,885.3	4,892.6	4,888.2	12.3	11.0	-151.55	-31.5	159.0	261.1	239.2	21.91	11.918	
5,000.0	4,985.3	4,989.3	4,984.8	12.4	11.2	-151.35	-32.3	161.0	262.3	240.0	22.28	11.772	
5,014.7	5,000.0	5,004.4	5,000.0	12.5	11.2	0.00	-32.3	161.0	262.3	239.4	22.94	11.433	
5,043.5	5,028.8	5,032.2	5,027.8	12.5	11.3	0.00	-32.3	161.0	262.3	239.3	23.05	11.380	
5,100.0	5,085.3	5,088.7	5,084.3	12.6	11.4	0.00	-32.3	161.0	262.3	239.0	23.26	11.275	
5,200.0	5,185.3	5,188.7	5,184.3	12.8	11.6	0.00	-32.3	161.0	262.3	238.7	23.63	11.099	
5,300.0	5,285.3	5,288.7	5,284.3	12.9	11.8	0.00	-32.3	161.0	262.3	238.3	24.01	10.927	
5,400.0	5,385.3	5,388.7	5,384.3	13.1	12.0	0.00	-32.3	161.0	262.3	237.9	24.38	10.759	
5,500.0	5,485.3	5,488.7	5,484.3	13.3	12.2	0.00	-32.3	161.0	262.3	237.5	24.76	10.595	
5,600.0	5,585.3	5,588.7	5,584.3	13.4	12.4	0.00	-32.3	161.0	262.3	237.2	25.13	10.436	
5,700.0	5,685.3	5,688.7	5,684.3	13.6	12.6	0.00	-32.3	161.0	262.3	236.8	25.52	10.280	
5,800.0	5,785.3	5,788.7	5,784.3	13.8	12.8	0.00	-32.3	161.0	262.3	236.4	25.90	10.128	
5,900.0	5,885.3	5,888.7	5,884.3	14.0	13.0	0.00	-32.3	161.0	262.3	236.0	26.28	9.979	
6,000.0	5,985.3	5,988.7	5,984.3	14.1	13.2	0.00	-32.3	161.0	262.3	235.6	26.67	9.834	
6,100.0	6,085.3	6,088.7	6,084.3	14.3	13.4	0.00	-32.3	161.0	262.3	235.2	27.06	9.693	
6,200.0	6,185.3	6,188.7	6,184.3	14.5	13.6	0.00	-32.3	161.0	262.3	234.8	27.45	9.555	
6,307.7	6,293.1	6,296.5	6,292.1	14.7	13.8	0.00	-32.3	161.0	262.3	234.4	27.88	9.410	
6,316.3	6,301.6	6,305.0	6,300.6	14.7	13.8	90.01	-32.3	161.0	262.3	234.8	27.46	9.552	
6,350.0	6,335.3	6,338.7	6,334.3	14.8	13.9	90.25	-32.3	161.0	262.3	234.7	27.60	9.504	
6,400.0	6,385.1	6,388.5	6,384.1	14.8	14.0	91.21	-32.3	161.0	262.4	234.6	27.81	9.435	
6,450.0	6,434.5	6,437.9	6,433.5	14.9	14.1	92.83	-32.3	161.0	262.6	234.6	28.02	9.373	
6,500.0	6,483.3	6,486.7	6,482.3	15.0	14.2	95.08	-32.3	161.0	263.4	235.2	28.23	9.329	
6,550.0	6,531.3	6,536.2	6,531.8	15.0	14.3	97.83	-32.3	160.4	265.0	236.5	28.44	9.318	
6,600.0	6,578.2	6,587.3	6,582.7	15.1	14.4	100.64	-32.3	156.7	267.3	238.6	28.60	9.344	
6,650.0	6,624.0	6,639.3	6,634.2	15.1	14.5	103.38	-32.3	149.4	270.2	241.5	28.73	9.405	
6,700.0	6,668.3	6,692.5	6,686.2	15.2	14.5	106.03	-32.3	138.4	273.7	244.9	28.81	9.501	
6,750.0	6,711.0	6,746.7	6,738.3	15.2	14.6	108.59	-32.3	123.4	277.8	248.9	28.85	9.627	
6,800.0	6,751.9	6,802.1	6,790.4	15.2	14.7	111.03	-32.3	104.3	282.3	253.4	28.86	9.780	
6,850.0	6,790.9	6,858.7	6,841.9	15.3	14.8	113.34	-32.3	81.0	287.1	258.3	28.85	9.951	
6,900.0	6,827.7	6,916.6	6,892.7	15.3	14.8	115.51	-32.3	53.3	292.2	263.4	28.84	10.133	
6,950.0	6,862.3	6,975.6	6,942.2	15.4	15.0	117.53	-32.3	21.2	297.5	268.6	28.85	10.312	
7,000.0	6,894.4	7,036.0	6,990.0	15.6	15.1	119.40	-32.3	-15.5	302.7	273.8	28.90	10.477	
7,050.0	6,923.9	7,097.5	7,035.7	15.9	15.4	121.10	-32.3	-56.7	308.0	278.9	29.02	10.611	
7,100.0	6,950.7	7,160.3	7,078.7	16.4	15.7	122.64	-32.3	-102.4	313.0	283.7	29.27	10.695	
7,150.0	6,974.8	7,224.2	7,118.6	17.0	16.2	124.00	-32.3	-152.4	317.7	288.1	29.65	10.716	
7,200.0	6,995.8	7,289.2	7,154.6	17.6	16.8	125.20	-32.3	-206.4	322.1	291.9	30.20	10.664	
7,250.0	7,013.9	7,355.2	7,186.4	18.3	17.5	126.22	-32.3	-264.3	326.0	295.0	30.96	10.529	
7,300.0	7,028.9	7,422.1	7,213.4	19.1	18.4	127.06	-32.3	-325.4	329.3	297.3	31.93	10.312	
7,350.0	7,040.8	7,489.7	7,235.1	20.0	19.4	127.72	-32.3	-389.5	332.0	298.8	33.13	10.021	
7,400.0	7,049.4	7,557.9	7,251.3	20.9	20.5	128.20	-32.3	-455.7	334.0	299.4	34.55	9.666	
7,450.0	7,054.8	7,626.4	7,261.4	21.9	21.8	128.50	-32.3	-523.4	335.2	299.0	36.18	9.264	
7,500.0	7,057.0	7,676.3	7,266.6	22.9	22.8	128.80	-32.3	-573.1	337.2	299.5	37.67	8.951	
7,507.7	7,057.0	7,684.0	7,267.4	23.1	23.0	128.87	-32.3	-580.7	337.6	299.8	37.89	8.911	
7,600.0	7,057.0	7,793.8	7,275.1	25.1	25.3	129.87	-32.3	-690.2	341.8	301.0	40.76	8.386	
7,700.0	7,057.0	7,899.0	7,275.3	27.3	27.6	129.90	-32.3	-795.4	341.9	297.6	44.27	7.723	
7,800.0	7,057.0	7,999.0	7,275.2	29.6	29.9	129.89	-32.3	-895.4	341.9	294.0	47.88	7.140	
7,900.0	7,057.0	8,099.0	7,275.2	32.1	32.3	129.88	-32.3	-995.4	341.8	290.2	51.61	6.623	
8,000.0	7,057.0	8,199.0	7,275.1	34.5	34.8	129.87	-32.3	-1,095.4	341.8	286.3	55.44	6.164	
8,100.0	7,057.0	8,299.0	7,275.0	37.1	37.3	129.86	-32.3	-1,195.4	341.7	282.3	59.36	5.757	
8,200.0	7,057.0	8,399.0	7,274.9	39.6	39.8	129.85	-32.3	-1,295.4	341.6	278.3	63.34	5.394	
8,300.0	7,057.0	8,499.0	7,274.8	42.2	42.4	129.83	-32.3	-1,395.4	341.6	274.2	67.37	5.070	

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28V-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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	7,057.0	8,599.0	7,274.7	44.8	45.0	129.82	129.82	-32.3	-1,495.4	341.5	270.1	71.45	4.780	
8,500.0	7,057.0	8,699.0	7,274.6	47.5	47.6	129.81	129.81	-32.3	-1,595.4	341.5	265.9	75.57	4.519	
8,600.0	7,057.0	8,799.0	7,274.5	50.1	50.3	129.80	129.80	-32.3	-1,695.4	341.4	261.7	79.72	4.283	
8,700.0	7,057.0	8,899.0	7,274.5	52.8	52.9	129.79	129.79	-32.3	-1,795.4	341.4	257.5	83.90	4.069	
8,800.0	7,057.0	8,999.0	7,274.4	55.5	55.6	129.78	129.78	-32.3	-1,895.4	341.3	253.2	88.11	3.874	
8,900.0	7,057.0	9,099.0	7,274.3	58.2	58.3	129.77	129.77	-32.3	-1,995.4	341.2	248.9	92.33	3.696	
9,000.0	7,057.0	9,199.0	7,274.2	60.9	61.0	129.76	129.76	-32.3	-2,095.4	341.2	244.6	96.58	3.533	
9,100.0	7,057.0	9,299.0	7,274.1	63.6	63.7	129.74	129.74	-32.3	-2,195.4	341.1	240.3	100.84	3.383	
9,200.0	7,057.0	9,399.0	7,274.0	66.3	66.4	129.73	129.73	-32.3	-2,295.4	341.1	236.0	105.12	3.245	
9,300.0	7,057.0	9,499.0	7,273.9	69.1	69.2	129.72	129.72	-32.3	-2,395.4	341.0	231.6	109.40	3.117	
9,400.0	7,057.0	9,599.0	7,273.8	71.8	71.9	129.71	129.71	-32.3	-2,495.4	341.0	227.3	113.70	2.999	
9,500.0	7,057.0	9,699.0	7,273.8	74.5	74.6	129.70	129.70	-32.3	-2,595.4	340.9	222.9	118.02	2.889	
9,600.0	7,057.0	9,799.0	7,273.7	77.3	77.4	129.69	129.69	-32.3	-2,695.4	340.9	218.5	122.34	2.786	
9,700.0	7,057.0	9,899.0	7,273.6	80.0	80.1	129.68	129.68	-32.3	-2,795.4	340.8	214.1	126.67	2.691	
9,800.0	7,057.0	9,999.0	7,273.5	82.8	82.9	129.67	129.67	-32.3	-2,895.4	340.7	209.7	131.00	2.601	
9,900.0	7,057.0	10,099.0	7,273.4	85.5	85.6	129.65	129.65	-32.3	-2,995.4	340.7	205.3	135.35	2.517	
10,000.0	7,057.0	10,199.0	7,273.3	88.3	88.4	129.64	129.64	-32.3	-3,095.4	340.6	200.9	139.70	2.438	
10,100.0	7,057.0	10,299.0	7,273.2	91.1	91.1	129.63	129.63	-32.3	-3,195.4	340.6	196.5	144.06	2.364	
10,200.0	7,057.0	10,399.0	7,273.2	93.8	93.9	129.62	129.62	-32.3	-3,295.4	340.5	192.1	148.42	2.294	
10,300.0	7,057.0	10,499.0	7,273.1	96.6	96.7	129.61	129.61	-32.3	-3,395.4	340.5	187.7	152.79	2.228	
10,400.0	7,057.0	10,599.0	7,273.0	99.4	99.4	129.60	129.60	-32.3	-3,495.4	340.4	183.2	157.17	2.166	
10,500.0	7,057.0	10,699.0	7,272.9	102.1	102.2	129.59	129.59	-32.3	-3,595.4	340.4	178.8	161.55	2.107	
10,600.0	7,057.0	10,799.0	7,272.8	104.9	105.0	129.58	129.58	-32.3	-3,695.4	340.3	174.4	165.93	2.051	
10,700.0	7,057.0	10,899.0	7,272.7	107.7	107.8	129.56	129.56	-32.3	-3,795.4	340.2	169.9	170.32	1.998	
10,800.0	7,057.0	10,999.0	7,272.6	110.5	110.5	129.55	129.55	-32.3	-3,895.4	340.2	165.5	174.71	1.947	
10,900.0	7,057.0	11,099.0	7,272.5	113.2	113.3	129.54	129.54	-32.3	-3,995.4	340.1	161.0	179.11	1.899	
11,000.0	7,057.0	11,199.0	7,272.5	116.0	116.1	129.53	129.53	-32.3	-4,095.4	340.1	156.6	183.51	1.853	
11,100.0	7,057.0	11,299.0	7,272.4	118.8	118.9	129.52	129.52	-32.3	-4,195.4	340.0	152.1	187.91	1.809	
11,200.0	7,057.0	11,399.0	7,272.3	121.6	121.6	129.51	129.51	-32.3	-4,295.4	340.0	147.6	192.32	1.768	
11,300.0	7,057.0	11,499.0	7,272.2	124.4	124.4	129.50	129.50	-32.3	-4,395.4	339.9	143.2	196.73	1.728	
11,400.0	7,057.0	11,599.0	7,272.1	127.2	127.2	129.48	129.48	-32.3	-4,495.4	339.9	138.7	201.14	1.690	
11,500.0	7,057.0	11,699.0	7,272.0	129.9	130.0	129.47	129.47	-32.3	-4,595.4	339.8	134.2	205.56	1.653	
11,513.7	7,057.0	11,712.7	7,272.0	130.3	130.3	129.47	129.47	-32.3	-4,609.1	339.8	133.7	206.06	1.649 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28W-414 - 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)	Semi Major Axis (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	1.0	1.0	0.0	0.0	-180.00	-180.00	-29.1	0.0	29.1	29.1	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-180.00	-180.00	-29.1	0.0	29.1	28.9	0.23	128.382	
200.0	200.0	201.0	201.0	0.3	0.3	-180.00	-180.00	-29.1	0.0	29.1	28.5	0.68	43.078	
300.0	300.0	301.0	301.0	0.6	0.6	-180.00	-180.00	-29.1	0.0	29.1	28.0	1.13	25.881	
400.0	400.0	401.0	401.0	0.8	0.8	-180.00	-180.00	-29.1	0.0	29.1	27.6	1.58	18.497	
500.0	500.0	501.0	501.0	1.0	1.0	-180.00	-180.00	-29.1	0.0	29.1	27.1	2.03	14.391	
566.3	566.3	567.3	567.3	1.2	1.2	-180.00	-180.00	-29.1	0.0	29.1	26.8	2.32	12.544 CC	
600.0	600.0	601.0	601.0	1.2	1.2	180.00	180.00	-29.1	0.0	29.1	26.7	2.47	11.778 ES	
700.0	700.0	700.0	700.0	1.5	1.4	179.09	179.09	-30.8	0.5	30.8	27.9	2.90	10.651	
800.0	800.0	798.7	798.6	1.7	1.6	176.90	176.90	-35.8	1.9	35.9	32.6	3.30	10.862	
900.0	900.0	897.0	896.5	1.9	1.8	174.38	174.38	-43.9	4.3	44.4	40.6	3.73	11.891	
1,000.0	1,000.0	995.3	994.1	2.1	2.1	172.15	172.15	-55.1	7.6	56.0	51.8	4.17	13.425	
1,100.0	1,100.0	1,094.7	1,092.7	2.3	2.3	19.68	19.68	-67.0	11.1	66.8	62.2	4.56	14.653	
1,200.0	1,199.8	1,194.4	1,191.6	2.5	2.6	19.75	19.75	-79.0	14.6	74.3	69.4	4.94	15.029	
1,256.3	1,255.9	1,250.6	1,247.4	2.6	2.8	20.18	20.18	-85.7	16.6	77.1	71.9	5.17	14.916	
1,300.0	1,299.5	1,294.3	1,290.7	2.7	2.9	20.61	20.61	-91.0	18.1	78.8	73.5	5.35	14.743	
1,400.0	1,399.1	1,394.2	1,389.8	2.9	3.2	21.53	21.53	-103.0	21.6	82.9	77.1	5.77	14.365	
1,500.0	1,498.7	1,494.1	1,489.0	3.1	3.5	22.37	22.37	-115.0	25.1	87.0	80.8	6.20	14.019	
1,600.0	1,598.3	1,594.0	1,588.1	3.4	3.8	23.13	23.13	-127.0	28.7	91.1	84.4	6.65	13.704	
1,700.0	1,697.9	1,693.9	1,687.2	3.6	4.1	23.82	23.82	-139.0	32.2	95.2	88.1	7.09	13.415	
1,800.0	1,797.5	1,793.8	1,786.3	3.9	4.4	24.46	24.46	-151.0	35.7	99.3	91.7	7.55	13.152	
1,900.0	1,897.1	1,893.8	1,885.5	4.1	4.7	25.05	25.05	-163.0	39.2	103.4	95.4	8.01	12.912	
2,000.0	1,996.7	1,993.7	1,984.6	4.4	5.1	25.59	25.59	-175.0	42.7	107.6	99.1	8.48	12.691	
2,100.0	2,096.3	2,093.6	2,083.7	4.6	5.4	26.09	26.09	-187.0	46.2	111.7	102.8	8.94	12.490	
2,200.0	2,195.9	2,193.5	2,182.8	4.9	5.7	26.56	26.56	-199.0	49.7	115.9	106.5	9.42	12.304	
2,300.0	2,295.5	2,293.4	2,282.0	5.2	6.0	26.99	26.99	-211.0	53.3	120.0	110.1	9.89	12.133	
2,400.0	2,395.1	2,393.3	2,381.1	5.4	6.3	27.39	27.39	-223.0	56.8	124.2	113.8	10.37	11.975	
2,500.0	2,494.7	2,493.2	2,480.2	5.7	6.7	27.77	27.77	-235.0	60.3	128.4	117.5	10.85	11.828	
2,600.0	2,594.3	2,593.1	2,579.3	6.0	7.0	28.13	28.13	-247.0	63.8	132.6	121.2	11.34	11.693	
2,700.0	2,693.9	2,693.0	2,678.4	6.2	7.3	28.46	28.46	-259.0	67.3	136.8	124.9	11.82	11.566	
2,800.0	2,793.5	2,792.9	2,777.6	6.5	7.6	28.77	28.77	-271.0	70.8	140.9	128.6	12.31	11.449	
2,900.0	2,893.1	2,892.8	2,876.7	6.8	8.0	29.07	29.07	-283.0	74.4	145.1	132.3	12.80	11.339	
3,000.0	2,992.7	2,992.8	2,975.8	7.1	8.3	29.34	29.34	-295.0	77.9	149.3	136.0	13.29	11.236	
3,100.0	3,092.3	3,092.7	3,074.9	7.3	8.6	29.61	29.61	-307.0	81.4	153.5	139.8	13.78	11.140	
3,200.0	3,191.9	3,192.6	3,174.1	7.6	9.0	29.85	29.85	-319.0	84.9	157.7	143.5	14.28	11.049	
3,300.0	3,291.5	3,292.5	3,273.2	7.9	9.3	30.09	30.09	-331.0	88.4	162.0	147.2	14.77	10.964	
3,400.0	3,391.1	3,392.4	3,372.3	8.2	9.6	30.31	30.31	-343.0	91.9	166.2	150.9	15.27	10.884	
3,500.0	3,490.7	3,492.3	3,471.4	8.4	9.9	30.53	30.53	-355.0	95.4	170.4	154.6	15.76	10.808	
3,600.0	3,590.3	3,592.2	3,570.6	8.7	10.3	30.73	30.73	-367.0	99.0	174.6	158.3	16.26	10.737	
3,700.0	3,689.9	3,692.1	3,669.7	9.0	10.6	30.92	30.92	-379.0	102.5	178.8	162.0	16.76	10.669	
3,800.0	3,789.5	3,792.0	3,768.8	9.3	10.9	31.11	31.11	-391.0	106.0	183.0	165.8	17.26	10.605	
3,900.0	3,889.1	3,891.9	3,867.9	9.6	11.3	31.28	31.28	-403.0	109.5	187.2	169.5	17.76	10.544	
4,000.0	3,988.7	3,991.8	3,967.1	9.8	11.6	31.45	31.45	-415.0	113.0	191.5	173.2	18.26	10.487	
4,100.0	4,088.3	4,091.8	4,066.2	10.1	11.9	31.61	31.61	-427.0	116.5	195.7	176.9	18.76	10.432	
4,200.0	4,187.9	4,191.7	4,165.3	10.4	12.2	31.77	31.77	-439.0	120.1	199.9	180.7	19.26	10.379	
4,300.0	4,287.5	4,291.6	4,264.4	10.7	12.6	31.91	31.91	-451.0	123.6	204.1	184.4	19.76	10.329	
4,400.0	4,387.1	4,391.5	4,363.6	11.0	12.9	32.06	32.06	-463.0	127.1	208.4	188.1	20.27	10.282	
4,500.0	4,486.7	4,491.4	4,462.7	11.2	13.2	32.19	32.19	-475.0	130.6	212.6	191.8	20.77	10.236	
4,600.0	4,586.3	4,591.3	4,561.8	11.5	13.6	32.32	32.32	-487.0	134.1	216.8	195.6	21.27	10.193	
4,700.0	4,685.9	4,691.2	4,660.9	11.8	13.9	32.45	32.45	-499.0	137.6	221.1	199.3	21.78	10.151	
4,758.4	4,744.1	4,749.6	4,718.8	12.0	14.1	32.52	32.52	-506.0	139.7	223.5	201.5	22.07	10.127	

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28W-414 - 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
4,800.0	4,785.5	4,791.1	4,760.0	12.1	14.2	32.55	32.55	-511.0	141.1	225.6	203.3	22.27	10.129	
4,900.0	4,885.3	4,890.9	4,859.0	12.3	14.6	32.32	32.32	-523.0	144.7	232.5	209.8	22.68	10.250	
5,000.0	4,985.3	4,990.3	4,957.7	12.4	14.9	31.69	31.69	-534.9	148.2	242.4	219.3	23.04	10.520	
5,014.7	5,000.0	5,004.9	4,972.1	12.5	14.9	-177.08	-177.08	-536.7	148.7	244.1	217.4	26.68	9.148	
5,100.0	5,085.3	5,089.5	5,056.1	12.6	15.2	-177.87	-177.87	-546.9	151.6	254.2	227.0	27.15	9.361	
5,200.0	5,185.3	5,190.0	5,155.8	12.8	15.5	-178.74	-178.74	-558.9	155.2	266.1	238.4	27.68	9.610	
5,300.0	5,285.3	5,299.4	5,264.6	12.9	15.8	-179.43	-179.43	-569.5	158.3	275.7	247.6	28.13	9.803	
5,400.0	5,385.3	5,409.5	5,374.5	13.1	16.0	-179.84	-179.84	-576.2	160.2	281.8	253.3	28.52	9.881	
5,500.0	5,485.3	5,519.9	5,484.9	13.3	16.2	-180.00	-180.00	-578.8	161.0	284.1	255.3	28.87	9.844	
5,600.0	5,585.3	5,621.4	5,586.3	13.4	16.3	180.00	180.00	-578.8	161.0	284.2	255.0	29.19	9.735	
5,700.0	5,685.3	5,721.4	5,686.3	13.6	16.4	180.00	180.00	-578.8	161.0	284.2	254.7	29.50	9.633	
5,800.0	5,785.3	5,821.4	5,786.3	13.8	16.6	180.00	180.00	-578.8	161.0	284.2	254.3	29.81	9.532	
5,900.0	5,885.3	5,921.4	5,886.3	14.0	16.7	180.00	180.00	-578.8	161.0	284.2	254.0	30.13	9.432	
6,000.0	5,985.3	6,021.4	5,986.3	14.1	16.8	180.00	180.00	-578.8	161.0	284.2	253.7	30.44	9.334	
6,100.0	6,085.3	6,121.4	6,086.3	14.3	17.0	180.00	180.00	-578.8	161.0	284.2	253.4	30.77	9.236	
6,200.0	6,185.3	6,221.4	6,186.3	14.5	17.1	180.00	180.00	-578.8	161.0	284.2	253.1	31.09	9.139	
6,307.7	6,293.1	6,329.1	6,294.1	14.7	17.3	180.00	180.00	-578.8	161.0	284.2	252.7	31.45	9.037	
6,316.3	6,301.6	6,337.6	6,302.6	14.7	17.3	-90.01	-90.01	-578.8	161.0	284.2	256.3	27.89	10.188	
6,350.0	6,335.3	6,371.3	6,336.3	14.8	17.3	-90.24	-90.24	-578.8	161.0	284.2	256.2	28.00	10.148	
6,400.0	6,385.1	6,421.1	6,386.1	14.8	17.4	-91.11	-91.11	-578.8	161.0	284.2	256.1	28.13	10.105	
6,450.0	6,434.5	6,470.5	6,435.5	14.9	17.5	-92.62	-92.62	-578.8	161.0	284.5	256.3	28.21	10.085	
6,500.0	6,483.3	6,519.3	6,484.3	15.0	17.6	-94.69	-94.69	-578.8	161.0	285.2	256.9	28.26	10.093	
6,550.0	6,531.3	6,568.9	6,533.8	15.0	17.6	-97.23	-97.23	-578.8	160.4	286.6	258.3	28.28	10.134	
6,600.0	6,578.2	6,619.9	6,584.7	15.1	17.7	-99.82	-99.82	-578.8	156.6	288.7	260.4	28.31	10.198	
6,650.0	6,624.0	6,672.0	6,636.3	15.1	17.8	-102.35	-102.35	-578.8	149.2	291.4	263.1	28.34	10.283	
6,700.0	6,668.3	6,725.2	6,688.3	15.2	17.8	-104.81	-104.81	-578.8	138.1	294.6	266.3	28.37	10.387	
6,750.0	6,711.0	6,779.4	6,740.4	15.2	17.9	-107.19	-107.19	-578.8	123.0	298.4	270.0	28.40	10.507	
6,800.0	6,751.9	6,834.8	6,792.3	15.2	17.9	-109.47	-109.47	-578.8	103.9	302.5	274.1	28.43	10.640	
6,850.0	6,790.9	6,891.4	6,843.9	15.3	18.0	-111.64	-111.64	-578.8	80.5	307.0	278.5	28.48	10.781	
6,900.0	6,827.7	6,949.2	6,894.5	15.3	18.0	-113.68	-113.68	-578.8	52.7	311.7	283.2	28.54	10.922	
6,950.0	6,862.3	7,008.2	6,944.0	15.4	18.1	-115.60	-115.60	-578.8	20.5	316.6	288.0	28.64	11.054	
7,000.0	6,894.4	7,068.5	6,991.7	15.6	18.1	-117.37	-117.37	-578.8	-16.2	321.5	292.7	28.80	11.166	
7,050.0	6,923.9	7,130.0	7,037.3	15.9	18.2	-118.99	-118.99	-578.8	-57.5	326.4	297.4	29.00	11.253	
7,100.0	6,950.7	7,192.7	7,080.2	16.4	18.2	-120.47	-120.47	-578.8	-103.1	331.1	301.8	29.31	11.294	
7,150.0	6,974.8	7,256.5	7,119.9	17.0	18.4	-121.78	-121.78	-578.8	-153.1	335.5	305.8	29.74	11.280	
7,200.0	6,995.8	7,321.4	7,155.9	17.6	18.5	-122.93	-122.93	-578.8	-207.1	339.6	309.3	30.32	11.201	
7,250.0	7,013.9	7,387.3	7,187.5	18.3	18.9	-123.92	-123.92	-578.8	-264.9	343.2	312.2	31.04	11.056	
7,300.0	7,028.9	7,454.1	7,214.4	19.1	19.4	-124.73	-124.73	-578.8	-326.0	346.3	314.4	31.95	10.841	
7,350.0	7,040.8	7,521.6	7,236.1	20.0	20.3	-125.38	-125.38	-578.8	-389.9	348.9	315.8	33.04	10.557	
7,400.0	7,049.4	7,589.7	7,252.2	20.9	21.3	-125.85	-125.85	-578.8	-456.0	350.7	316.4	34.32	10.218	
7,450.0	7,054.8	7,658.0	7,262.3	21.9	22.5	-126.14	-126.14	-578.8	-523.6	351.9	316.1	35.78	9.835	
7,500.0	7,057.0	7,707.9	7,267.5	22.9	23.4	-126.43	-126.43	-578.8	-573.2	353.7	316.7	37.05	9.548	
7,507.7	7,057.0	7,715.6	7,268.3	23.1	23.6	-126.50	-126.50	-578.8	-580.8	354.2	317.0	37.24	9.512	
7,600.0	7,057.0	7,825.3	7,275.9	25.1	25.8	-127.49	-127.49	-578.8	-690.2	358.1	317.9	40.22	8.905	
7,700.0	7,057.0	7,930.0	7,276.3	27.3	28.1	-127.54	-127.54	-578.8	-794.9	358.4	314.5	43.85	8.172	
7,800.0	7,057.0	8,030.0	7,276.5	29.6	30.4	-127.55	-127.55	-578.8	-894.9	358.4	310.9	47.57	7.534	
7,900.0	7,057.0	8,130.0	7,276.6	32.1	32.7	-127.57	-127.57	-578.8	-994.9	358.5	307.1	51.43	6.971	
8,000.0	7,057.0	8,230.0	7,276.7	34.5	35.2	-127.58	-127.58	-578.8	-1,094.9	358.6	303.2	55.38	6.474	
8,100.0	7,057.0	8,330.0	7,276.8	37.1	37.6	-127.60	-127.60	-578.8	-1,194.9	358.7	299.2	59.42	6.036	
8,200.0	7,057.0	8,430.0	7,277.0	39.6	40.2	-127.62	-127.62	-578.8	-1,294.9	358.7	295.2	63.52	5.647	
8,300.0	7,057.0	8,530.0	7,277.1	42.2	42.7	-127.63	-127.63	-578.8	-1,394.9	358.8	291.1	67.68	5.301	

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-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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 28V-HZ Pad Sec.28-T4N-R67W - Sunmarke 28W-414 - 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
8,400.0	7,057.0	8,630.0	7,277.2	44.8	45.3	-127.65	-127.65	-578.8	-1,494.9	358.9	287.0	71.88	4.993	
8,500.0	7,057.0	8,730.0	7,277.3	47.5	47.9	-127.66	-127.66	-578.8	-1,594.9	359.0	282.8	76.12	4.716	
8,600.0	7,057.0	8,830.0	7,277.4	50.1	50.6	-127.68	-127.68	-578.8	-1,694.9	359.0	278.6	80.38	4.466	
8,700.0	7,057.0	8,930.0	7,277.6	52.8	53.2	-127.69	-127.69	-578.8	-1,794.9	359.1	274.4	84.67	4.241	
8,800.0	7,057.0	9,030.0	7,277.7	55.5	55.9	-127.71	-127.71	-578.8	-1,894.9	359.2	270.2	88.99	4.036	
8,900.0	7,057.0	9,130.0	7,277.8	58.2	58.5	-127.72	-127.72	-578.8	-1,994.9	359.3	265.9	93.32	3.850	
9,000.0	7,057.0	9,230.0	7,277.9	60.9	61.2	-127.74	-127.74	-578.8	-2,094.9	359.3	261.7	97.66	3.679	
9,100.0	7,057.0	9,330.0	7,278.1	63.6	63.9	-127.75	-127.75	-578.8	-2,194.9	359.4	257.4	102.02	3.523	
9,200.0	7,057.0	9,430.0	7,278.2	66.3	66.6	-127.77	-127.77	-578.8	-2,294.9	359.5	253.1	106.40	3.379	
9,300.0	7,057.0	9,530.0	7,278.3	69.1	69.4	-127.79	-127.79	-578.8	-2,394.9	359.6	248.8	110.78	3.246	
9,400.0	7,057.0	9,630.0	7,278.4	71.8	72.1	-127.80	-127.80	-578.8	-2,494.9	359.6	244.5	115.17	3.123	
9,500.0	7,057.0	9,730.0	7,278.5	74.5	74.8	-127.82	-127.82	-578.8	-2,594.9	359.7	240.1	119.56	3.008	
9,600.0	7,057.0	9,830.0	7,278.7	77.3	77.5	-127.83	-127.83	-578.8	-2,694.9	359.8	235.8	123.97	2.902	
9,700.0	7,057.0	9,930.0	7,278.8	80.0	80.3	-127.85	-127.85	-578.8	-2,794.9	359.9	231.5	128.38	2.803	
9,800.0	7,057.0	10,030.0	7,278.9	82.8	83.0	-127.86	-127.86	-578.8	-2,894.9	359.9	227.1	132.79	2.710	
9,900.0	7,057.0	10,130.0	7,279.0	85.5	85.8	-127.88	-127.88	-578.8	-2,994.9	360.0	222.8	137.21	2.624	
10,000.0	7,057.0	10,230.0	7,279.2	88.3	88.5	-127.89	-127.89	-578.8	-3,094.9	360.1	218.4	141.63	2.542	
10,100.0	7,057.0	10,330.0	7,279.3	91.1	91.3	-127.91	-127.91	-578.8	-3,194.9	360.2	214.1	146.06	2.466	
10,200.0	7,057.0	10,430.0	7,279.4	93.8	94.0	-127.92	-127.92	-578.8	-3,294.9	360.2	209.7	150.48	2.394	
10,300.0	7,057.0	10,530.0	7,279.5	96.6	96.8	-127.94	-127.94	-578.8	-3,394.9	360.3	205.4	154.91	2.326	
10,400.0	7,057.0	10,630.0	7,279.6	99.4	99.6	-127.95	-127.95	-578.8	-3,494.9	360.4	201.0	159.35	2.262	
10,500.0	7,057.0	10,730.0	7,279.8	102.1	102.3	-127.97	-127.97	-578.8	-3,594.9	360.5	196.7	163.78	2.201	
10,600.0	7,057.0	10,830.0	7,279.9	104.9	105.1	-127.98	-127.98	-578.8	-3,694.9	360.5	192.3	168.22	2.143	
10,700.0	7,057.0	10,930.0	7,280.0	107.7	107.9	-128.00	-128.00	-578.8	-3,794.9	360.6	187.9	172.65	2.089	
10,800.0	7,057.0	11,030.0	7,280.1	110.5	110.6	-128.02	-128.02	-578.8	-3,894.9	360.7	183.6	177.09	2.037	
10,900.0	7,057.0	11,130.0	7,280.3	113.2	113.4	-128.03	-128.03	-578.8	-3,994.9	360.8	179.2	181.53	1.987	
11,000.0	7,057.0	11,230.0	7,280.4	116.0	116.2	-128.05	-128.05	-578.8	-4,094.9	360.8	174.9	185.97	1.940	
11,100.0	7,057.0	11,330.0	7,280.5	118.8	119.0	-128.06	-128.06	-578.8	-4,194.9	360.9	170.5	190.41	1.895	
11,200.0	7,057.0	11,430.0	7,280.6	121.6	121.7	-128.08	-128.08	-578.8	-4,294.9	361.0	166.1	194.85	1.853	
11,300.0	7,057.0	11,530.0	7,280.7	124.4	124.5	-128.09	-128.09	-578.8	-4,394.9	361.1	161.8	199.29	1.812	
11,400.0	7,057.0	11,630.0	7,280.9	127.2	127.3	-128.11	-128.11	-578.8	-4,494.9	361.1	157.4	203.73	1.773	
11,500.0	7,057.0	11,730.0	7,281.0	129.9	130.1	-128.12	-128.12	-578.8	-4,594.9	361.2	153.0	208.17	1.735	
11,501.4	7,057.0	11,731.4	7,281.0	130.0	130.1	-128.12	-128.12	-578.8	-4,596.3	361.2	153.0	208.23	1.735	
11,513.7	7,057.0	11,741.3	7,281.0	130.3	130.4	-128.12	-128.12	-578.8	-4,606.2	361.2	152.5	208.72	1.731 SF	

Reference Depths are relative to WELL @ 4922.0ft (RKB - 15')	Coordinates are relative to: Sunmarke 28V-234
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°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-234
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4922.0ft (RKB - 15')
Reference Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sunmarke 28V-234	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

Reference Depths are relative to WELL @ 4922.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Sunmarke 28V-234

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.40°

