

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Sunmarke 28V-214

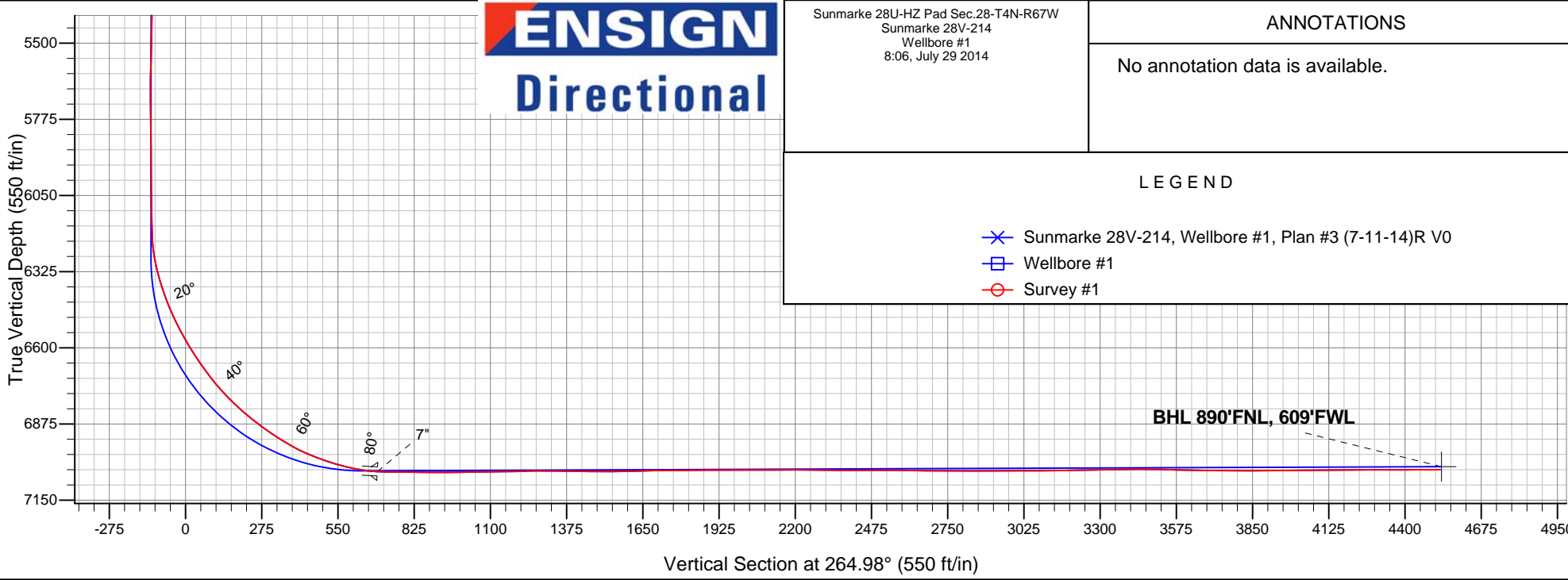
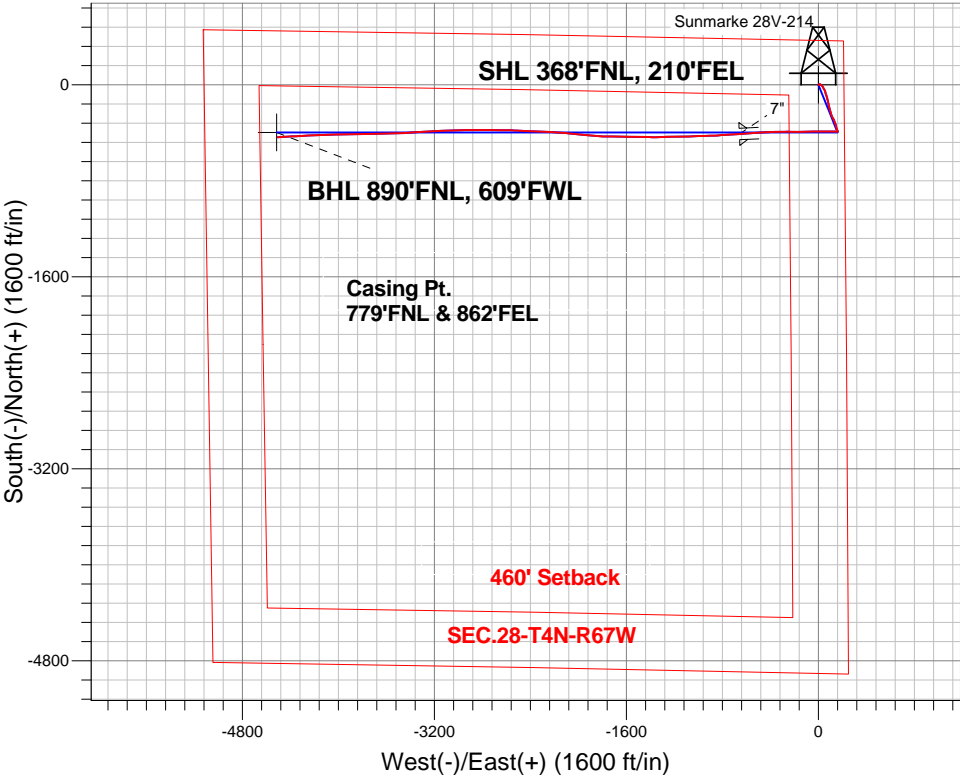
Surface Location: Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

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	
Ensign 32 RKB - 15' WELL @ 4909.0ft (Ensign 32 RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
11340'MD 7040'TVD 437'N & 4505'W of SHL
90.2 degree Incl @ 266.1 degree AZM



Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
Sunmarke 28V-214
Wellbore #1
8:06, July 29 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Sunmarke 28V-214, Wellbore #1, Plan #3 (7-11-14)R V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28V-214

Wellbore #1

Survey: Survey #1

Standard Survey Report

29 July, 2014

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 (Ensign 32 RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (Ensign 32 RKB - 15')
Well:	Sunmarke 28V-214	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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	0.0 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	7/10/2014	8.51	66.84	52,737

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	264.98	

Survey Program	Date	7/29/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
153.0	11,340.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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	56.00	1.0	0.0	0.0	0.0	0.46	0.46	0.00	
SHL 368°FNL, 210°FEL										
153.0	0.70	56.00	153.0	0.5	0.8	-0.8	0.46	0.46	0.00	
245.0	0.80	60.80	245.0	1.2	1.8	-1.9	0.13	0.11	5.22	
337.0	0.80	75.40	337.0	1.6	3.0	-3.1	0.22	0.00	15.87	
428.0	0.70	88.70	428.0	1.8	4.2	-4.3	0.22	-0.11	14.62	
519.0	0.80	77.30	519.0	2.0	5.3	-5.5	0.20	0.11	-12.53	
611.0	0.90	60.50	611.0	2.4	6.6	-6.8	0.29	0.11	-18.26	
702.0	0.90	51.00	701.9	3.2	7.8	-8.0	0.16	0.00	-10.44	
793.0	0.90	61.68	792.9	4.0	8.9	-9.3	0.18	0.00	11.74	
888.0	0.90	65.60	887.9	4.7	10.3	-10.7	0.06	0.00	4.13	

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Well:	Sunmarke 28V-214	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
951.0	0.40	77.90	950.9	5.0	10.9	-11.3	0.82	-0.79	19.52
1,042.0	1.70	118.60	1,041.9	4.4	12.4	-12.8	1.56	1.43	44.73
1,134.0	3.20	115.40	1,133.8	2.6	16.0	-16.1	1.64	1.63	-3.48
1,231.0	5.00	121.20	1,230.6	-0.7	22.0	-21.9	1.90	1.86	5.98
1,326.0	5.90	136.00	1,325.1	-6.4	29.0	-28.3	1.75	0.95	15.58
1,420.0	6.30	151.20	1,418.6	-14.4	34.8	-33.4	1.76	0.43	16.17
1,515.0	5.90	152.60	1,513.1	-23.3	39.6	-37.4	0.45	-0.42	1.47
1,610.0	5.50	148.90	1,607.6	-31.5	44.2	-41.2	0.57	-0.42	-3.89
1,705.0	6.30	147.40	1,702.1	-39.8	49.3	-45.6	0.86	0.84	-1.58
1,800.0	5.70	157.00	1,796.6	-48.5	54.0	-49.5	1.23	-0.63	10.11
1,895.0	5.50	164.70	1,891.1	-57.3	57.0	-51.8	0.82	-0.21	8.11
1,991.0	5.80	168.70	1,986.7	-66.5	59.2	-53.1	0.52	0.31	4.17
2,086.0	6.40	164.60	2,081.1	-76.3	61.5	-54.6	0.78	0.63	-4.32
2,181.0	5.20	158.50	2,175.6	-85.4	64.5	-56.8	1.42	-1.26	-6.42
2,276.0	5.10	157.00	2,270.3	-93.3	67.7	-59.3	0.18	-0.11	-1.58
2,371.0	5.20	159.90	2,364.9	-101.2	70.9	-61.7	0.29	0.11	3.05
2,466.0	5.80	166.90	2,459.4	-109.9	73.4	-63.5	0.95	0.63	7.37
2,561.0	6.10	169.20	2,553.9	-119.6	75.5	-64.7	0.40	0.32	2.42
2,656.0	6.20	170.10	2,648.4	-129.6	77.3	-65.7	0.15	0.11	0.95
2,751.0	6.10	165.60	2,742.8	-139.5	79.4	-66.9	0.52	-0.11	-4.74
2,846.0	5.40	162.30	2,837.3	-148.7	82.0	-68.7	0.81	-0.74	-3.47
2,941.0	5.10	167.60	2,932.0	-157.1	84.3	-70.2	0.60	-0.32	5.58
3,036.0	5.30	172.30	3,026.6	-165.5	85.8	-71.0	0.50	0.21	4.95
3,131.0	5.40	175.20	3,121.1	-174.3	86.8	-71.2	0.30	0.11	3.05
3,227.0	4.60	159.80	3,216.8	-182.4	88.5	-72.2	1.62	-0.83	-16.04
3,322.0	4.70	156.30	3,311.5	-189.6	91.4	-74.4	0.32	0.11	-3.68
3,417.0	4.50	168.50	3,406.2	-196.8	93.7	-76.1	1.05	-0.21	12.84
3,512.0	5.20	165.00	3,500.8	-204.6	95.5	-77.2	0.80	0.74	-3.68
3,607.0	5.50	165.20	3,595.4	-213.2	97.8	-78.8	0.32	0.32	0.21
3,701.0	5.30	163.20	3,689.0	-221.7	100.2	-80.4	0.29	-0.21	-2.13
3,795.0	5.30	163.10	3,782.6	-230.0	102.7	-82.2	0.01	0.00	-0.11
3,889.0	5.40	165.60	3,876.2	-238.4	105.1	-83.8	0.27	0.11	2.66
3,985.0	5.10	165.10	3,971.8	-246.9	107.3	-85.3	0.32	-0.31	-0.52
4,079.0	4.80	156.60	4,065.4	-254.6	109.9	-87.2	0.84	-0.32	-9.04
4,174.0	5.10	155.60	4,160.1	-262.1	113.3	-89.9	0.33	0.32	-1.05
4,269.0	5.70	152.50	4,254.7	-270.1	117.2	-93.1	0.70	0.63	-3.26
4,364.0	5.10	150.50	4,349.2	-278.0	121.4	-96.6	0.66	-0.63	-2.11
4,459.0	5.50	152.90	4,443.8	-285.7	125.6	-100.1	0.48	0.42	2.53
4,554.0	4.40	154.50	4,538.5	-293.0	129.2	-103.1	1.17	-1.16	1.68
4,649.0	5.60	157.80	4,633.1	-300.6	132.6	-105.7	1.30	1.26	3.47
4,744.0	6.90	160.90	4,727.5	-310.3	136.2	-108.5	1.41	1.37	3.26
4,839.0	6.80	161.90	4,821.9	-321.0	139.8	-111.2	0.16	-0.11	1.05
4,934.0	6.00	162.80	4,916.3	-331.1	143.0	-113.5	0.85	-0.84	0.95
5,029.0	5.30	164.10	5,010.8	-340.1	145.7	-115.4	0.75	-0.74	1.37
5,124.0	5.20	167.20	5,105.4	-348.5	147.8	-116.8	0.32	-0.11	3.26
5,220.0	5.50	164.40	5,201.0	-357.2	150.0	-118.2	0.41	0.31	-2.92
5,315.0	5.10	162.50	5,295.6	-365.6	152.5	-119.9	0.46	-0.42	-2.00
5,410.0	3.80	163.00	5,390.3	-372.6	154.7	-121.5	1.37	-1.37	0.53
5,505.0	3.10	154.60	5,485.1	-378.0	156.7	-123.1	0.91	-0.74	-8.84
5,600.0	3.60	150.50	5,580.0	-382.9	159.3	-125.2	0.58	0.53	-4.32
5,695.0	2.20	173.70	5,674.8	-387.3	161.0	-126.5	1.89	-1.47	24.42
5,790.0	0.60	251.80	5,769.8	-389.3	160.7	-126.0	2.27	-1.68	82.21
5,885.0	0.60	260.10	5,864.8	-389.5	159.7	-125.0	0.09	0.00	8.74
5,980.0	0.60	262.10	5,959.8	-389.6	158.8	-124.0	0.02	0.00	2.11

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Design:	Wellbore #1	Database:	Landmark

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)
6,075.0	0.70	244.40	6,054.8	-390.0	157.7	-123.0	0.23	0.11	-18.63
6,138.0	0.70	241.70	6,117.8	-390.3	157.1	-122.3	0.05	0.00	-4.29
6,170.0	0.70	243.20	6,149.8	-390.5	156.7	-121.9	0.06	0.00	4.69
6,201.0	1.70	269.80	6,180.8	-390.6	156.1	-121.3	3.61	3.23	85.81
6,233.0	4.30	272.10	6,212.7	-390.5	154.4	-119.6	8.13	8.13	7.19
6,265.0	7.10	272.80	6,244.6	-390.4	151.2	-116.5	8.75	8.75	2.19
6,296.0	9.80	273.90	6,275.2	-390.1	146.7	-112.0	8.72	8.71	3.55
6,328.0	12.60	273.50	6,306.6	-389.7	140.5	-105.8	8.75	8.75	-1.25
6,359.0	15.10	272.00	6,336.7	-389.4	133.1	-98.5	8.15	8.06	-4.84
6,391.0	17.30	271.00	6,367.5	-389.2	124.2	-89.6	6.93	6.88	-3.13
6,423.0	19.20	270.30	6,397.8	-389.0	114.1	-79.6	5.98	5.94	-2.19
6,454.0	21.00	270.50	6,427.0	-389.0	103.5	-69.0	5.81	5.81	0.65
6,486.0	22.90	270.50	6,456.6	-388.9	91.5	-57.1	5.94	5.94	0.00
6,518.0	24.60	269.90	6,485.9	-388.8	78.6	-44.3	5.37	5.31	-1.88
6,549.0	26.40	269.70	6,513.9	-388.9	65.3	-31.0	5.81	5.81	-0.65
6,581.0	28.10	269.50	6,542.3	-389.0	50.6	-16.4	5.32	5.31	-0.63
6,613.0	29.90	269.80	6,570.3	-389.1	35.1	-0.9	5.64	5.63	0.94
6,644.0	31.60	269.90	6,597.0	-389.1	19.3	14.9	5.49	5.48	0.32
6,676.0	33.10	270.00	6,624.0	-389.1	2.2	31.9	4.69	4.69	0.31
6,708.0	34.10	270.40	6,650.7	-389.1	-15.6	49.6	3.20	3.13	1.25
6,739.0	35.50	269.50	6,676.1	-389.1	-33.2	67.2	4.81	4.52	-2.90
6,771.0	37.50	268.60	6,701.8	-389.4	-52.3	86.2	6.47	6.25	-2.81
6,803.0	39.80	267.90	6,726.8	-390.0	-72.3	106.1	7.32	7.19	-2.19
6,834.0	42.00	268.20	6,750.3	-390.7	-92.5	126.4	7.13	7.10	0.97
6,866.0	44.00	269.20	6,773.7	-391.2	-114.4	148.2	6.60	6.25	3.13
6,898.0	46.00	269.90	6,796.3	-391.4	-137.0	170.7	6.44	6.25	2.19
6,929.0	47.70	270.30	6,817.5	-391.3	-159.6	193.2	5.56	5.48	1.29
6,961.0	49.60	270.20	6,838.6	-391.2	-183.6	217.2	5.94	5.94	-0.31
6,993.0	51.60	270.10	6,858.9	-391.2	-208.3	241.8	6.25	6.25	-0.31
7,024.0	53.50	270.20	6,877.8	-391.1	-233.0	266.3	6.13	6.13	0.32
7,056.0	55.00	269.90	6,896.5	-391.1	-258.9	292.2	4.75	4.69	-0.94
7,088.0	56.00	269.80	6,914.6	-391.1	-285.3	318.4	3.14	3.13	-0.31
7,119.0	57.50	270.10	6,931.6	-391.2	-311.2	344.3	4.91	4.84	0.97
7,151.0	60.10	269.60	6,948.2	-391.2	-338.6	371.5	8.23	8.13	-1.56
7,183.0	62.80	268.10	6,963.5	-391.8	-366.7	399.6	9.39	8.44	-4.69
7,214.0	65.40	267.00	6,977.0	-393.0	-394.5	427.4	8.97	8.39	-3.55
7,246.0	68.00	266.10	6,989.7	-394.8	-423.9	456.8	8.53	8.13	-2.81
7,277.0	69.80	265.90	7,000.8	-396.8	-452.7	485.7	5.84	5.81	-0.65
7,309.0	71.70	266.50	7,011.4	-398.8	-482.9	515.9	6.20	5.94	1.88
7,341.0	74.20	266.60	7,020.8	-400.6	-513.4	546.5	7.82	7.81	0.31
7,372.0	76.10	266.20	7,028.7	-402.5	-543.3	576.5	6.25	6.13	-1.29
7,404.0	78.40	266.00	7,035.8	-404.6	-574.4	607.7	7.21	7.19	-0.63
7,436.0	81.40	265.60	7,041.4	-406.9	-605.9	639.2	9.46	9.38	-1.25
7,459.0	84.00	265.30	7,044.3	-408.7	-628.6	662.0	11.38	11.30	-1.30
7,489.0	86.55	267.21	7,046.8	-410.7	-658.4	691.9	10.59	8.49	6.35
7"									
7,519.0	89.10	269.10	7,047.9	-411.7	-688.4	721.8	10.59	8.51	6.32
7,549.0	89.50	265.70	7,048.3	-413.0	-718.4	751.7	11.41	1.33	-11.33
7,579.0	89.50	265.20	7,048.5	-415.4	-748.3	781.7	1.67	0.00	-1.67
7,609.0	89.30	265.80	7,048.9	-417.8	-778.2	811.7	2.11	-0.67	2.00
7,640.0	89.20	266.50	7,049.3	-419.8	-809.1	842.7	2.28	-0.32	2.26
7,670.0	89.50	266.80	7,049.6	-421.6	-839.0	872.7	1.41	1.00	1.00
7,700.0	89.90	267.30	7,049.8	-423.1	-869.0	902.7	2.13	1.33	1.67

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7,731.0	90.30	267.60	7,049.7	-424.5	-900.0	933.7	1.61	1.29	0.97
7,761.0	90.50	268.10	7,049.5	-425.6	-929.9	963.6	1.80	0.67	1.67
7,792.0	90.90	268.20	7,049.1	-426.6	-960.9	994.6	1.33	1.29	0.32
7,822.0	91.30	268.10	7,048.5	-427.6	-990.9	1,024.5	1.37	1.33	-0.33
7,852.0	90.60	268.20	7,048.0	-428.6	-1,020.9	1,054.5	2.36	-2.33	0.33
7,882.0	90.80	268.80	7,047.7	-429.4	-1,050.9	1,084.4	2.11	0.67	2.00
7,912.0	90.80	268.40	7,047.3	-430.1	-1,080.9	1,114.4	1.33	0.00	-1.33
7,942.0	91.10	268.80	7,046.8	-430.8	-1,110.8	1,144.3	1.67	1.00	1.33
7,973.0	90.90	268.90	7,046.2	-431.5	-1,141.8	1,175.2	0.72	-0.65	0.32
8,003.0	91.30	268.40	7,045.6	-432.2	-1,171.8	1,205.2	2.13	1.33	-1.67
8,034.0	91.50	269.00	7,044.9	-432.9	-1,202.8	1,236.1	2.04	0.65	1.94
8,064.0	90.80	268.90	7,044.3	-433.4	-1,232.8	1,266.0	2.36	-2.33	-0.33
8,094.0	89.60	268.40	7,044.2	-434.1	-1,262.8	1,295.9	4.33	-4.00	-1.67
8,124.0	89.40	268.40	7,044.4	-435.0	-1,292.8	1,325.9	0.67	-0.67	0.00
8,155.0	89.20	269.00	7,044.8	-435.7	-1,323.8	1,356.8	2.04	-0.65	1.94
8,185.0	89.10	269.70	7,045.3	-436.0	-1,353.8	1,386.7	2.36	-0.33	2.33
8,216.0	89.40	270.40	7,045.7	-436.0	-1,384.8	1,417.6	2.46	0.97	2.26
8,247.0	89.40	271.00	7,046.0	-435.6	-1,415.7	1,448.4	1.94	0.00	1.94
8,278.0	89.10	270.90	7,046.4	-435.1	-1,446.7	1,479.3	1.02	-0.97	-0.32
8,310.0	90.20	270.70	7,046.6	-434.6	-1,478.7	1,511.1	3.49	3.44	-0.63
8,342.0	90.50	270.50	7,046.4	-434.3	-1,510.7	1,542.9	1.13	0.94	-0.63
8,373.0	90.70	270.20	7,046.1	-434.1	-1,541.7	1,573.8	1.16	0.65	-0.97
8,405.0	91.10	271.30	7,045.6	-433.7	-1,573.7	1,605.6	3.66	1.25	3.44
8,436.0	91.80	272.10	7,044.8	-432.8	-1,604.7	1,636.4	3.43	2.26	2.58
8,468.0	92.00	271.70	7,043.7	-431.7	-1,636.7	1,668.2	1.40	0.63	-1.25
8,500.0	91.30	272.10	7,042.8	-430.6	-1,668.6	1,699.9	2.52	-2.19	1.25
8,532.0	90.30	270.70	7,042.4	-429.9	-1,700.6	1,731.7	5.38	-3.13	-4.38
8,564.0	89.90	269.50	7,042.3	-429.8	-1,732.6	1,763.6	3.95	-1.25	-3.75
8,595.0	90.30	270.00	7,042.2	-429.9	-1,763.6	1,794.5	2.07	1.29	1.61
8,627.0	90.50	271.40	7,042.0	-429.6	-1,795.6	1,826.3	4.42	0.63	4.38
8,658.0	90.20	273.40	7,041.8	-428.3	-1,826.6	1,857.1	6.52	-0.97	6.45
8,690.0	90.30	274.80	7,041.7	-426.0	-1,858.5	1,888.7	4.39	0.31	4.38
8,722.0	90.60	275.60	7,041.4	-423.1	-1,890.4	1,920.1	2.67	0.94	2.50
8,753.0	90.10	275.00	7,041.3	-420.2	-1,921.2	1,950.6	2.52	-1.61	-1.94
8,785.0	90.10	274.90	7,041.2	-417.4	-1,953.1	1,982.2	0.31	0.00	-0.31
8,817.0	90.50	275.90	7,041.0	-414.4	-1,985.0	2,013.6	3.37	1.25	3.13
8,848.0	90.30	276.10	7,040.8	-411.2	-2,015.8	2,044.1	0.91	-0.65	0.65
8,880.0	89.50	275.70	7,040.9	-407.9	-2,047.6	2,075.5	2.80	-2.50	-1.25
8,912.0	89.90	275.10	7,041.0	-404.9	-2,079.5	2,106.9	2.25	1.25	-1.88
8,944.0	90.80	274.90	7,040.8	-402.1	-2,111.4	2,138.5	2.88	2.81	-0.63
8,975.0	90.30	274.60	7,040.5	-399.5	-2,142.3	2,169.0	1.88	-1.61	-0.97
9,007.0	89.80	273.90	7,040.5	-397.2	-2,174.2	2,200.6	2.69	-1.56	-2.19
9,038.0	89.30	273.30	7,040.8	-395.2	-2,205.1	2,231.2	2.52	-1.61	-1.94
9,070.0	89.40	272.50	7,041.1	-393.6	-2,237.1	2,262.9	2.52	0.31	-2.50
9,101.0	89.50	272.80	7,041.4	-392.2	-2,268.0	2,293.7	1.02	0.32	0.97
9,133.0	89.40	272.50	7,041.7	-390.7	-2,300.0	2,325.4	0.99	-0.31	-0.94
9,165.0	89.60	272.90	7,042.0	-389.2	-2,332.0	2,357.1	1.40	0.63	1.25
9,196.0	89.60	271.90	7,042.2	-387.9	-2,362.9	2,387.8	3.23	0.00	-3.23
9,228.0	90.00	271.80	7,042.3	-386.8	-2,394.9	2,419.6	1.29	1.25	-0.31
9,259.0	90.20	272.50	7,042.3	-385.7	-2,425.9	2,450.3	2.35	0.65	2.26
9,291.0	90.20	273.20	7,042.2	-384.1	-2,457.9	2,482.0	2.19	0.00	2.19
9,323.0	90.50	273.30	7,042.0	-382.3	-2,489.8	2,513.7	0.99	0.94	0.31
9,354.0	90.00	272.80	7,041.8	-380.6	-2,520.8	2,544.4	2.28	-1.61	-1.61

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 (Ensign 32 RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (Ensign 32 RKB - 15')
Well:	Sunmarke 28V-214	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
9,386.0	89.40	271.70	7,042.0	-379.4	-2,552.7	2,576.1	3.92	-1.88	-3.44
9,418.0	89.20	270.80	7,042.4	-378.7	-2,584.7	2,607.9	2.88	-0.63	-2.81
9,450.0	88.90	270.10	7,042.9	-378.4	-2,616.7	2,639.8	2.38	-0.94	-2.19
9,481.0	89.10	270.20	7,043.5	-378.3	-2,647.7	2,670.7	0.72	0.65	0.32
9,513.0	89.50	269.80	7,043.9	-378.3	-2,679.7	2,702.5	1.77	1.25	-1.25
9,545.0	89.70	269.50	7,044.1	-378.5	-2,711.7	2,734.4	1.13	0.63	-0.94
9,576.0	89.90	270.10	7,044.2	-378.6	-2,742.7	2,765.3	2.04	0.65	1.94
9,608.0	90.30	270.70	7,044.1	-378.4	-2,774.7	2,797.2	2.25	1.25	1.88
9,640.0	90.30	271.00	7,044.0	-378.0	-2,806.7	2,829.0	0.94	0.00	0.94
9,671.0	90.00	270.40	7,043.9	-377.6	-2,837.7	2,859.9	2.16	-0.97	-1.94
9,703.0	89.70	269.30	7,044.0	-377.7	-2,869.7	2,891.7	3.56	-0.94	-3.44
9,735.0	89.80	269.40	7,044.1	-378.0	-2,901.7	2,923.6	0.44	0.31	0.31
9,766.0	90.10	270.00	7,044.1	-378.2	-2,932.7	2,954.5	2.16	0.97	1.94
9,798.0	90.40	270.40	7,044.0	-378.1	-2,964.7	2,986.4	1.56	0.94	1.25
9,830.0	90.20	269.50	7,043.8	-378.1	-2,996.7	3,018.3	2.88	-0.63	-2.81
9,861.0	90.00	268.40	7,043.8	-378.7	-3,027.7	3,049.2	3.61	-0.65	-3.55
9,893.0	90.20	267.30	7,043.7	-379.9	-3,059.7	3,081.2	3.49	0.63	-3.44
9,925.0	90.50	267.10	7,043.5	-381.4	-3,091.6	3,113.1	1.13	0.94	-0.63
9,956.0	90.90	267.10	7,043.1	-383.0	-3,122.6	3,144.1	1.29	1.29	0.00
9,988.0	91.20	267.30	7,042.6	-384.6	-3,154.5	3,176.1	1.13	0.94	0.63
10,019.0	90.80	266.60	7,042.0	-386.2	-3,185.5	3,207.1	2.60	-1.29	-2.26
10,051.0	90.90	266.40	7,041.5	-388.2	-3,217.4	3,239.1	0.70	0.31	-0.63
10,082.0	91.00	266.80	7,041.0	-390.0	-3,248.4	3,270.0	1.33	0.32	1.29
10,114.0	90.90	267.00	7,040.5	-391.7	-3,280.3	3,302.0	0.70	-0.31	0.63
10,146.0	91.00	267.00	7,040.0	-393.4	-3,312.3	3,334.0	0.31	0.31	0.00
10,177.0	91.00	266.90	7,039.4	-395.1	-3,343.2	3,365.0	0.32	0.00	-0.32
10,209.0	91.10	266.60	7,038.8	-396.9	-3,375.2	3,396.9	0.99	0.31	-0.94
10,241.0	90.30	265.70	7,038.4	-399.0	-3,407.1	3,428.9	3.76	-2.50	-2.81
10,273.0	89.30	265.60	7,038.6	-401.4	-3,439.0	3,460.9	3.14	-3.13	-0.31
10,304.0	89.10	266.80	7,039.0	-403.5	-3,469.9	3,491.9	3.92	-0.65	3.87
10,336.0	89.00	268.00	7,039.5	-404.9	-3,501.9	3,523.9	3.76	-0.31	3.75
10,368.0	88.70	268.60	7,040.2	-405.9	-3,533.9	3,555.8	2.10	-0.94	1.88
10,399.0	88.40	269.20	7,041.0	-406.5	-3,564.8	3,586.7	2.16	-0.97	1.94
10,431.0	88.60	269.60	7,041.8	-406.8	-3,596.8	3,618.6	1.40	0.63	1.25
10,463.0	88.80	269.30	7,042.5	-407.1	-3,628.8	3,650.5	1.13	0.63	-0.94
10,494.0	89.10	269.10	7,043.1	-407.6	-3,659.8	3,681.4	1.16	0.97	-0.65
10,526.0	89.30	268.90	7,043.5	-408.1	-3,691.8	3,713.4	0.88	0.63	-0.63
10,558.0	89.40	268.50	7,043.9	-408.9	-3,723.8	3,745.3	1.29	0.31	-1.25
10,589.0	90.40	269.50	7,043.9	-409.4	-3,754.8	3,776.2	4.56	3.23	3.23
10,621.0	91.00	270.20	7,043.6	-409.5	-3,786.8	3,808.1	2.88	1.88	2.19
10,652.0	90.90	269.50	7,043.0	-409.6	-3,817.8	3,839.0	2.28	-0.32	-2.26
10,684.0	90.30	269.00	7,042.7	-410.0	-3,849.8	3,870.9	2.44	-1.88	-1.56
10,716.0	90.10	268.50	7,042.6	-410.7	-3,881.8	3,902.8	1.68	-0.63	-1.56
10,747.0	89.80	268.00	7,042.6	-411.6	-3,912.8	3,933.8	1.88	-0.97	-1.61
10,779.0	90.10	268.10	7,042.6	-412.7	-3,944.7	3,965.7	0.99	0.94	0.31
10,810.0	90.50	268.90	7,042.5	-413.5	-3,975.7	3,996.7	2.89	1.29	2.58
10,842.0	90.60	268.90	7,042.2	-414.1	-4,007.7	4,028.6	0.31	0.31	0.00
10,874.0	90.20	268.40	7,042.0	-414.9	-4,039.7	4,060.5	2.00	-1.25	-1.56
10,905.0	90.40	268.20	7,041.8	-415.8	-4,070.7	4,091.5	0.91	0.65	-0.65
10,937.0	90.50	268.10	7,041.5	-416.8	-4,102.7	4,123.4	0.44	0.31	-0.31
10,968.0	90.20	267.40	7,041.4	-418.1	-4,133.7	4,154.4	2.46	-0.97	-2.26
11,000.0	90.40	267.60	7,041.2	-419.5	-4,165.6	4,186.4	0.88	0.63	0.63
11,032.0	90.30	267.30	7,041.0	-420.9	-4,197.6	4,218.3	0.99	-0.31	-0.94
11,064.0	90.30	267.20	7,040.8	-422.4	-4,229.6	4,250.3	0.31	0.00	-0.31

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 (Ensign 32 RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (Ensign 32 RKB - 15')
Well:	Sunmarke 28V-214	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
11,096.0	90.10	267.30	7,040.7	-424.0	-4,261.5	4,282.3	0.70	-0.63	0.31
11,127.0	90.10	267.60	7,040.7	-425.3	-4,292.5	4,313.2	0.97	0.00	0.97
11,159.0	90.50	267.90	7,040.5	-426.6	-4,324.5	4,345.2	1.56	1.25	0.94
11,191.0	90.10	267.30	7,040.3	-427.9	-4,356.4	4,377.2	2.25	-1.25	-1.88
11,222.0	90.30	267.00	7,040.2	-429.5	-4,387.4	4,408.1	1.16	0.65	-0.97
11,254.0	90.40	266.60	7,040.0	-431.3	-4,419.3	4,440.1	1.29	0.31	-1.25
11,286.0	90.20	266.10	7,039.9	-433.3	-4,451.3	4,472.1	1.68	-0.63	-1.56
11,340.0	90.20	266.10	7,039.7	-437.0	-4,505.2	4,526.1	0.00	0.00	0.00
BHL 850'FNL, 600'FWL									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,489.0	7,046.8	7"	7	7-1/2

Checked By: _____ Approved By: _____ Date: _____