

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Sunmarke 28U-334**

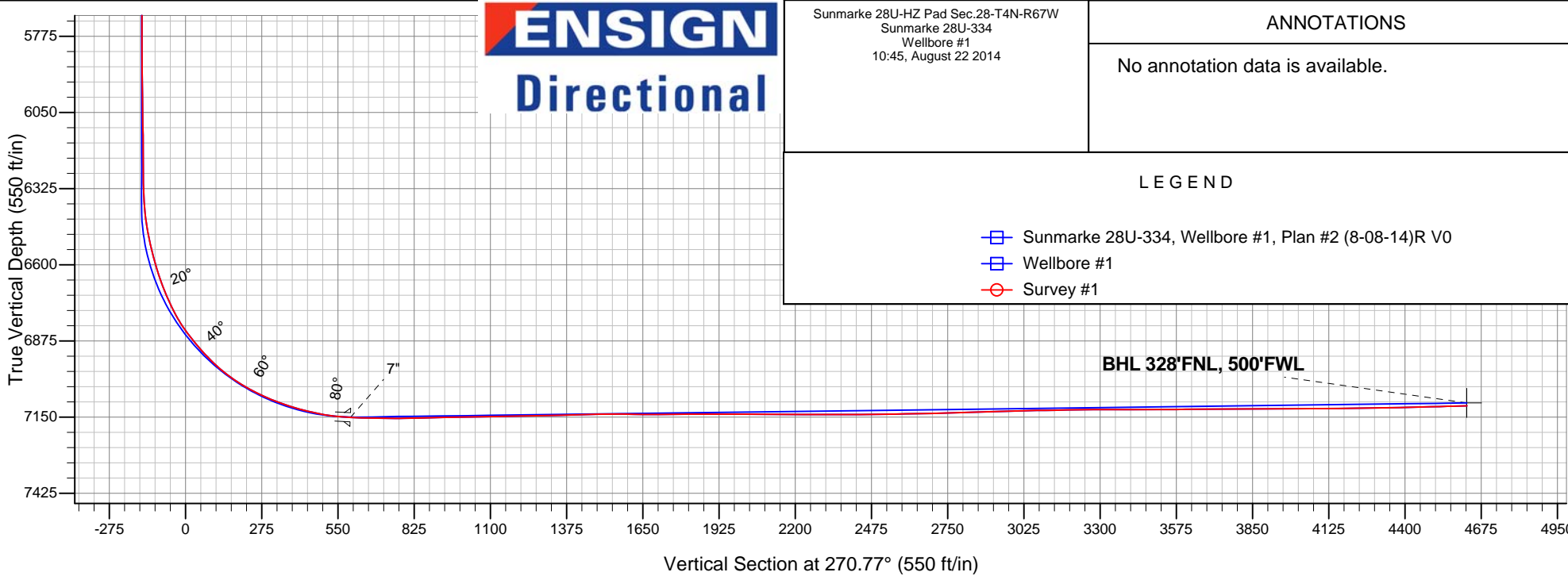
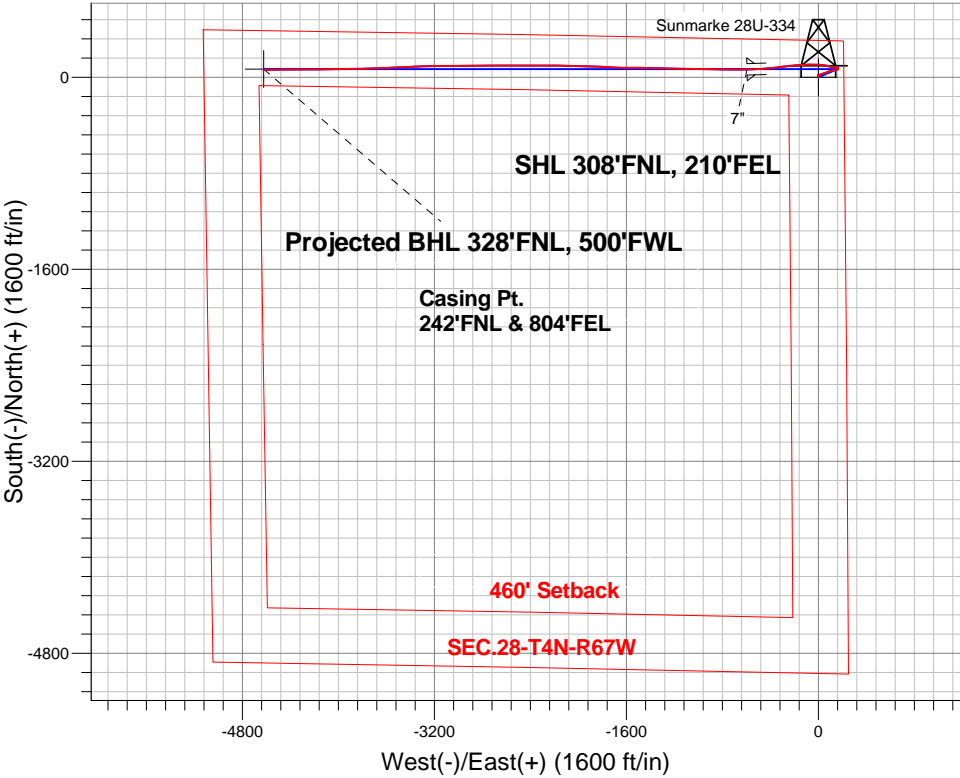
Surface Location: Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4894.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1349119.29	3170999.44	40.290110	-104.887010	
RKB - 15' WELL @ 4909.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
11603'MD 7109'TVD 62'N & 4623'W of SHL
91.6 degree Incl @ 269.1 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28U-334

Wellbore #1

Survey: Survey #1

Standard Survey Report

22 August, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28U-334
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28U-334	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 28U-334					
Well Position	+N-S	0.0 ft	Northing:	1,349,119.29 ft	Latitude:	40.290110
	+E-W	0.0 ft	Easting:	3,170,999.44 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	8/8/2014	8.50	66.83	52,729

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	270.77	

Survey Program	Date	8/22/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
140.0	11,603.0	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	0.01	11.30	1.0	0.0	0.0	0.0	0.93	0.93	0.00	
SHL 308°FNL, 210°FEL										
140.0	1.30	11.30	140.0	1.6	0.3	-0.3	0.93	0.93	0.00	
231.0	1.40	19.70	231.0	3.6	0.9	-0.8	0.24	0.11	9.23	
322.0	1.00	344.70	321.9	5.4	1.1	-1.0	0.90	-0.44	-38.46	
414.0	1.10	346.70	413.9	7.1	0.6	-0.5	0.12	0.11	2.17	
505.0	1.10	339.70	504.9	8.7	0.1	0.0	0.15	0.00	-7.69	
597.0	1.00	316.20	596.9	10.1	-0.7	0.9	0.48	-0.11	-25.54	
688.0	0.70	319.20	687.9	11.1	-1.6	1.8	0.33	-0.33	3.30	
780.0	0.60	322.90	779.9	11.9	-2.3	2.5	0.12	-0.11	4.02	
884.0	1.10	340.20	883.9	13.3	-3.0	3.1	0.54	0.48	16.63	

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Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28U-334	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)
972.0	1.10	334.00	971.9	14.9	-3.6	3.8	0.14	0.00	-7.05
1,063.0	1.10	19.40	1,062.8	16.5	-3.7	3.9	0.93	0.00	49.89
1,155.0	1.10	18.10	1,154.8	18.2	-3.1	3.4	0.03	0.00	-1.41
1,251.0	1.00	78.50	1,250.8	19.2	-2.0	2.3	1.10	-0.10	62.92
1,346.0	1.00	74.80	1,345.8	19.6	-0.4	0.7	0.07	0.00	-3.89
1,441.0	1.50	72.90	1,440.8	20.2	1.6	-1.3	0.53	0.53	-2.00
1,536.0	2.50	79.20	1,535.7	20.9	4.8	-4.5	1.08	1.05	6.63
1,631.0	3.30	77.00	1,630.6	21.9	9.5	-9.2	0.85	0.84	-2.32
1,727.0	4.00	72.80	1,726.4	23.5	15.4	-15.1	0.78	0.73	-4.38
1,822.0	4.00	71.80	1,821.2	25.5	21.7	-21.3	0.07	0.00	-1.05
1,917.0	3.60	69.10	1,916.0	27.6	27.6	-27.3	0.46	-0.42	-2.84
2,012.0	4.00	76.30	2,010.7	29.5	33.6	-33.2	0.65	0.42	7.58
2,107.0	4.00	75.00	2,105.5	31.1	40.0	-39.6	0.10	0.00	-1.37
2,202.0	3.60	71.50	2,200.3	32.9	46.1	-45.6	0.49	-0.42	-3.68
2,297.0	4.10	70.40	2,295.1	35.0	52.1	-51.6	0.53	0.53	-1.16
2,392.0	3.80	69.10	2,389.9	37.3	58.2	-57.7	0.33	-0.32	-1.37
2,487.0	4.50	68.20	2,484.6	39.8	64.6	-64.1	0.74	0.74	-0.95
2,582.0	4.50	66.60	2,579.3	42.7	71.5	-70.9	0.13	0.00	-1.68
2,677.0	4.40	66.50	2,674.0	45.6	78.3	-77.7	0.11	-0.11	-0.11
2,772.0	3.80	65.60	2,768.8	48.3	84.5	-83.8	0.64	-0.63	-0.95
2,866.0	3.90	79.00	2,862.6	50.2	90.5	-89.8	0.96	0.11	14.26
2,961.0	4.80	78.10	2,957.3	51.7	97.5	-96.8	0.95	0.95	-0.95
3,056.0	4.50	78.10	3,052.0	53.3	105.1	-104.3	0.32	-0.32	0.00
3,151.0	4.00	79.20	3,146.7	54.7	112.0	-111.2	0.53	-0.53	1.16
3,246.0	3.60	77.50	3,241.5	55.9	118.1	-117.4	0.44	-0.42	-1.79
3,341.0	4.00	70.50	3,336.3	57.7	124.2	-123.4	0.64	0.42	-7.37
3,436.0	3.60	66.10	3,431.1	60.0	130.0	-129.2	0.52	-0.42	-4.63
3,531.0	4.00	78.40	3,525.9	61.9	136.0	-135.2	0.95	0.42	12.95
3,626.0	3.50	78.50	3,620.7	63.1	142.1	-141.2	0.53	-0.53	0.11
3,721.0	3.50	80.40	3,715.5	64.2	147.8	-146.9	0.12	0.00	2.00
3,816.0	3.30	80.90	3,810.4	65.1	153.3	-152.5	0.21	-0.21	0.53
3,911.0	3.30	79.40	3,905.2	66.0	158.7	-157.8	0.09	0.00	-1.58
4,006.0	2.10	67.80	4,000.1	67.2	163.0	-162.1	1.38	-1.26	-12.21
4,101.0	0.80	30.70	4,095.1	68.4	165.0	-164.1	1.62	-1.37	-39.05
4,196.0	0.80	23.60	4,190.0	69.6	165.6	-164.6	0.10	0.00	-7.47
4,291.0	0.80	21.00	4,285.0	70.8	166.1	-165.1	0.04	0.00	-2.74
4,386.0	0.80	16.90	4,380.0	72.1	166.5	-165.5	0.06	0.00	-4.32
4,480.0	0.80	9.80	4,474.0	73.3	166.8	-165.8	0.11	0.00	-7.55
4,575.0	0.50	310.40	4,569.0	74.3	166.6	-165.6	0.73	-0.32	-62.53
4,670.0	0.40	279.00	4,664.0	74.6	166.0	-165.0	0.28	-0.11	-33.05
4,765.0	0.50	278.20	4,759.0	74.7	165.2	-164.2	0.11	0.11	-0.84
4,860.0	0.40	284.60	4,854.0	74.8	164.5	-163.5	0.12	-0.11	6.74
4,955.0	0.60	301.60	4,949.0	75.2	163.8	-162.7	0.26	0.21	17.89
5,050.0	0.50	309.50	5,044.0	75.7	163.0	-162.0	0.13	-0.11	8.32
5,145.0	0.60	314.40	5,139.0	76.3	162.3	-161.3	0.12	0.11	5.16
5,241.0	0.40	298.50	5,235.0	76.8	161.7	-160.6	0.25	-0.21	-16.56
5,336.0	0.70	274.50	5,330.0	77.0	160.8	-159.8	0.39	0.32	-25.26
5,430.0	0.40	245.30	5,424.0	76.9	159.9	-158.9	0.43	-0.32	-31.06
5,525.0	0.60	260.60	5,519.0	76.7	159.2	-158.1	0.25	0.21	16.11
5,621.0	0.30	312.20	5,615.0	76.8	158.5	-157.4	0.50	-0.31	53.75
5,715.0	0.40	335.40	5,709.0	77.3	158.2	-157.1	0.18	0.11	24.68
5,810.0	0.30	353.30	5,804.0	77.8	158.0	-156.9	0.15	-0.11	18.84
5,905.0	0.80	326.00	5,899.0	78.6	157.6	-156.5	0.58	0.53	-28.74
5,999.0	0.80	311.00	5,993.0	79.6	156.7	-155.6	0.22	0.00	-15.96

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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)
6,095.0	0.80	287.00	6,088.9	80.2	155.6	-154.5	0.35	0.00	-25.00
6,190.0	0.80	285.00	6,183.9	80.6	154.3	-153.2	0.03	0.00	-2.11
6,285.0	0.60	292.00	6,278.9	81.0	153.2	-152.1	0.23	-0.21	7.37
6,317.0	0.70	288.10	6,310.9	81.1	152.9	-151.8	0.34	0.31	-12.19
6,348.0	1.90	281.80	6,341.9	81.2	152.2	-151.1	3.89	3.87	-20.32
6,380.0	3.80	280.00	6,373.9	81.5	150.6	-149.5	5.94	5.94	-5.63
6,412.0	5.70	278.80	6,405.8	82.0	148.0	-146.9	5.95	5.94	-3.75
6,443.0	7.60	278.60	6,436.6	82.5	144.5	-143.3	6.13	6.13	-0.65
6,475.0	9.60	278.20	6,468.2	83.2	139.7	-138.6	6.25	6.25	-1.25
6,507.0	11.50	277.60	6,499.7	84.0	133.9	-132.8	5.95	5.94	-1.88
6,539.0	13.10	278.10	6,530.9	84.9	127.2	-126.0	5.01	5.00	1.56
6,570.0	14.50	279.10	6,561.0	86.0	119.9	-118.7	4.58	4.52	3.23
6,602.0	16.10	280.80	6,591.9	87.5	111.5	-110.4	5.19	5.00	5.31
6,633.0	17.50	282.00	6,621.6	89.3	102.8	-101.6	4.65	4.52	3.87
6,665.0	19.40	282.20	6,651.9	91.4	92.9	-91.6	5.94	5.94	0.63
6,697.0	21.40	281.90	6,681.9	93.7	81.9	-80.7	6.26	6.25	-0.94
6,728.0	23.40	281.20	6,710.6	96.1	70.4	-69.1	6.51	6.45	-2.26
6,760.0	25.10	280.50	6,739.7	98.6	57.5	-56.1	5.39	5.31	-2.19
6,792.0	27.50	279.00	6,768.4	101.0	43.5	-42.1	7.78	7.50	-4.69
6,823.0	30.40	275.20	6,795.6	102.8	28.6	-27.2	11.07	9.35	-12.26
6,855.0	33.60	272.40	6,822.7	103.9	11.7	-10.3	11.02	10.00	-8.75
6,887.0	36.60	271.60	6,848.9	104.5	-6.7	8.1	9.48	9.38	-2.50
6,918.0	39.30	271.40	6,873.3	105.0	-25.8	27.2	8.72	8.71	-0.65
6,950.0	40.50	271.20	6,897.9	105.5	-46.3	47.7	3.77	3.75	-0.63
6,982.0	42.80	270.00	6,921.8	105.7	-67.5	68.9	7.61	7.19	-3.75
7,013.0	45.20	268.30	6,944.1	105.4	-89.1	90.5	8.63	7.74	-5.48
7,045.0	47.60	267.80	6,966.1	104.6	-112.2	113.6	7.58	7.50	-1.56
7,077.0	50.70	267.20	6,987.1	103.5	-136.4	137.8	9.79	9.69	-1.88
7,109.0	54.50	265.50	7,006.5	101.9	-161.8	163.1	12.60	11.88	-5.31
7,141.0	57.60	264.40	7,024.4	99.6	-188.2	189.5	10.10	9.69	-3.44
7,172.0	59.90	264.40	7,040.4	97.0	-214.6	215.9	7.42	7.42	0.00
7,204.0	62.30	263.90	7,055.9	94.1	-242.4	243.7	7.62	7.50	-1.56
7,235.0	64.70	264.10	7,069.7	91.2	-270.0	271.2	7.76	7.74	0.65
7,267.0	67.20	263.50	7,082.8	88.1	-299.1	300.2	8.00	7.81	-1.88
7,299.0	69.30	262.80	7,094.6	84.5	-328.6	329.7	6.87	6.56	-2.19
7,330.0	71.50	262.90	7,105.0	80.9	-357.6	358.6	7.10	7.10	0.32
7,361.0	73.20	263.80	7,114.4	77.5	-386.9	387.9	6.14	5.48	2.90
7,393.0	75.20	264.70	7,123.2	74.4	-417.5	418.5	6.81	6.25	2.81
7,425.0	76.80	266.10	7,130.9	71.9	-448.5	449.4	6.56	5.00	4.38
7,456.0	78.50	267.40	7,137.5	70.2	-478.7	479.6	6.84	5.48	4.19
7,488.0	80.80	267.90	7,143.3	68.9	-510.2	511.0	7.35	7.19	1.56
7,519.0	83.60	267.90	7,147.5	67.8	-540.9	541.7	9.03	9.03	0.00
7,542.0	86.30	268.50	7,149.5	67.0	-563.8	564.6	12.02	11.74	2.61
7,572.0	87.29	268.76	7,151.2	66.3	-593.7	594.5	3.40	3.29	0.86
7"									
7,612.0	88.60	269.10	7,152.6	65.6	-633.7	634.5	3.40	3.29	0.86
7,643.0	88.70	268.90	7,153.3	65.0	-664.7	665.5	0.72	0.32	-0.65
7,673.0	88.70	269.50	7,154.0	64.6	-694.6	695.4	2.00	0.00	2.00
7,703.0	89.20	271.10	7,154.6	64.8	-724.6	725.4	5.59	1.67	5.33
7,734.0	89.90	270.10	7,154.8	65.1	-755.6	756.4	3.94	2.26	-3.23
7,764.0	91.10	271.40	7,154.6	65.5	-785.6	786.4	5.90	4.00	4.33
7,794.0	91.30	271.40	7,153.9	66.2	-815.6	816.4	0.67	0.67	0.00
7,824.0	91.30	271.40	7,153.2	67.0	-845.6	846.4	0.00	0.00	0.00

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7,855.0	91.30	271.40	7,152.5	67.7	-876.6	877.4	0.00	0.00	0.00
7,886.0	91.10	271.40	7,151.9	68.5	-907.6	908.4	0.65	-0.65	0.00
7,915.0	91.20	270.90	7,151.3	69.1	-936.5	937.4	1.76	0.34	-1.72
7,945.0	91.20	270.80	7,150.7	69.5	-966.5	967.4	0.33	0.00	-0.33
7,975.0	91.20	270.70	7,150.1	69.9	-996.5	997.4	0.33	0.00	-0.33
8,006.0	91.00	270.60	7,149.5	70.2	-1,027.5	1,028.4	0.72	-0.65	-0.32
8,036.0	91.30	270.80	7,148.9	70.6	-1,057.5	1,058.4	1.20	1.00	0.67
8,067.0	91.00	270.80	7,148.2	71.0	-1,088.5	1,089.4	0.97	-0.97	0.00
8,097.0	91.00	270.80	7,147.7	71.5	-1,118.5	1,119.4	0.00	0.00	0.00
8,127.0	91.00	270.60	7,147.2	71.8	-1,148.5	1,149.3	0.67	0.00	-0.67
8,157.0	91.10	271.00	7,146.6	72.3	-1,178.5	1,179.3	1.37	0.33	1.33
8,187.0	91.00	271.00	7,146.1	72.8	-1,208.5	1,209.3	0.33	-0.33	0.00
8,218.0	90.90	271.00	7,145.6	73.3	-1,239.5	1,240.3	0.32	-0.32	0.00
8,248.0	91.00	271.50	7,145.1	74.0	-1,269.5	1,270.3	1.70	0.33	1.67
8,278.0	90.90	271.60	7,144.6	74.8	-1,299.4	1,300.3	0.47	-0.33	0.33
8,309.0	90.80	271.30	7,144.1	75.6	-1,330.4	1,331.3	1.02	-0.32	-0.97
8,341.0	91.70	270.80	7,143.4	76.2	-1,362.4	1,363.3	3.22	2.81	-1.56
8,373.0	92.00	271.00	7,142.4	76.7	-1,394.4	1,395.3	1.13	0.94	0.63
8,405.0	92.20	271.00	7,141.2	77.2	-1,426.4	1,427.3	0.63	0.63	0.00
8,436.0	91.40	271.00	7,140.2	77.8	-1,457.3	1,458.3	2.58	-2.58	0.00
8,468.0	91.10	270.50	7,139.5	78.2	-1,489.3	1,490.2	1.82	-0.94	-1.56
8,500.0	89.90	270.30	7,139.3	78.4	-1,521.3	1,522.2	3.80	-3.75	-0.63
8,531.0	89.30	270.30	7,139.5	78.6	-1,552.3	1,553.2	1.94	-1.94	0.00
8,563.0	89.50	270.40	7,139.8	78.8	-1,584.3	1,585.2	0.70	0.63	0.31
8,595.0	89.20	270.50	7,140.2	79.0	-1,616.3	1,617.2	0.99	-0.94	0.31
8,627.0	89.60	271.00	7,140.5	79.4	-1,648.3	1,649.2	2.00	1.25	1.56
8,659.0	90.10	272.00	7,140.6	80.3	-1,680.3	1,681.2	3.49	1.56	3.13
8,690.0	90.20	272.70	7,140.5	81.5	-1,711.3	1,712.2	2.28	0.32	2.26
8,722.0	90.60	273.20	7,140.3	83.2	-1,743.2	1,744.2	2.00	1.25	1.56
8,754.0	90.80	274.00	7,139.9	85.2	-1,775.2	1,776.2	2.58	0.63	2.50
8,785.0	90.60	273.80	7,139.5	87.3	-1,806.1	1,807.1	0.91	-0.65	-0.65
8,817.0	90.40	273.10	7,139.2	89.2	-1,838.0	1,839.1	2.27	-0.63	-2.19
8,849.0	89.70	271.60	7,139.2	90.5	-1,870.0	1,871.1	5.17	-2.19	-4.69
8,880.0	89.90	271.00	7,139.3	91.2	-1,901.0	1,902.1	2.04	0.65	-1.94
8,912.0	89.80	271.30	7,139.4	91.9	-1,933.0	1,934.1	0.99	-0.31	0.94
8,943.0	89.70	271.50	7,139.5	92.6	-1,964.0	1,965.0	0.72	-0.32	0.65
8,975.0	89.90	272.10	7,139.7	93.6	-1,996.0	1,997.0	1.98	0.63	1.88
9,006.0	89.90	271.80	7,139.7	94.7	-2,027.0	2,028.0	0.97	0.00	-0.97
9,038.0	89.90	272.00	7,139.8	95.8	-2,058.9	2,060.0	0.63	0.00	0.63
9,069.0	88.90	271.90	7,140.1	96.8	-2,089.9	2,091.0	3.24	-3.23	-0.32
9,101.0	90.00	272.10	7,140.4	97.9	-2,121.9	2,123.0	3.49	3.44	0.63
9,132.0	89.60	271.30	7,140.5	98.8	-2,152.9	2,154.0	2.89	-1.29	-2.58
9,164.0	89.80	270.80	7,140.7	99.4	-2,184.9	2,186.0	1.68	0.63	-1.56
9,196.0	89.80	271.00	7,140.8	99.9	-2,216.9	2,218.0	0.62	0.00	0.63
9,228.0	89.60	270.00	7,141.0	100.2	-2,248.9	2,250.0	3.19	-0.63	-3.13
9,260.0	89.80	269.60	7,141.1	100.1	-2,280.9	2,282.0	1.40	0.63	-1.25
9,291.0	89.60	269.20	7,141.3	99.8	-2,311.9	2,313.0	1.44	-0.65	-1.29
9,323.0	90.00	269.30	7,141.4	99.4	-2,343.9	2,345.0	1.29	1.25	0.31
9,354.0	90.40	269.50	7,141.3	99.0	-2,374.9	2,376.0	1.44	1.29	0.65
9,386.0	90.60	269.60	7,141.0	98.8	-2,406.9	2,408.0	0.70	0.63	0.31
9,418.0	90.60	270.00	7,140.7	98.7	-2,438.9	2,440.0	1.25	0.00	1.25
9,449.0	90.50	270.20	7,140.4	98.7	-2,469.9	2,471.0	0.72	-0.32	0.65
9,481.0	90.80	269.50	7,140.0	98.6	-2,501.9	2,502.9	2.38	0.94	-2.19

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28U-334
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28U-334	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)
9,513.0	91.00	269.00	7,139.5	98.2	-2,533.8	2,534.9	1.68	0.63	-1.56
9,544.0	90.90	269.50	7,139.0	97.8	-2,564.8	2,565.9	1.64	-0.32	1.61
9,575.0	91.00	269.50	7,138.5	97.5	-2,595.8	2,596.9	0.32	0.32	0.00
9,607.0	91.10	269.90	7,137.9	97.4	-2,627.8	2,628.9	1.29	0.31	1.25
9,639.0	91.20	270.00	7,137.3	97.4	-2,659.8	2,660.9	0.44	0.31	0.31
9,671.0	91.10	270.00	7,136.6	97.4	-2,691.8	2,692.9	0.31	-0.31	0.00
9,702.0	91.30	270.10	7,136.0	97.4	-2,722.8	2,723.9	0.72	0.65	0.32
9,734.0	91.30	270.20	7,135.2	97.5	-2,754.8	2,755.9	0.31	0.00	0.31
9,765.0	91.60	269.60	7,134.5	97.4	-2,785.8	2,786.8	2.16	0.97	-1.94
9,797.0	92.20	269.50	7,133.4	97.2	-2,817.8	2,818.8	1.90	1.88	-0.31
9,829.0	92.20	269.50	7,132.2	96.9	-2,849.7	2,850.8	0.00	0.00	0.00
9,861.0	91.60	269.50	7,131.1	96.6	-2,881.7	2,882.8	1.88	-1.88	0.00
9,892.0	91.40	269.50	7,130.3	96.3	-2,912.7	2,913.7	0.65	-0.65	0.00
9,924.0	91.60	269.50	7,129.5	96.1	-2,944.7	2,945.7	0.63	0.63	0.00
9,955.0	91.90	269.50	7,128.5	95.8	-2,975.7	2,976.7	0.97	0.97	0.00
9,987.0	92.00	269.70	7,127.4	95.6	-3,007.7	3,008.7	0.70	0.31	0.63
10,019.0	91.20	270.20	7,126.5	95.5	-3,039.7	3,040.7	2.95	-2.50	1.56
10,050.0	90.70	269.50	7,126.0	95.4	-3,070.6	3,071.6	2.77	-1.61	-2.26
10,081.0	90.70	269.40	7,125.6	95.2	-3,101.6	3,102.6	0.32	0.00	-0.32
10,113.0	90.50	269.10	7,125.3	94.7	-3,133.6	3,134.6	1.13	-0.63	-0.94
10,144.0	90.90	269.50	7,124.9	94.4	-3,164.6	3,165.6	1.82	1.29	1.29
10,176.0	90.90	269.20	7,124.4	94.0	-3,196.6	3,197.6	0.94	0.00	-0.94
10,208.0	91.10	269.50	7,123.9	93.6	-3,228.6	3,229.6	1.13	0.63	0.94
10,239.0	91.20	269.50	7,123.2	93.4	-3,259.6	3,260.6	0.32	0.32	0.00
10,270.0	90.40	268.80	7,122.8	92.9	-3,290.6	3,291.6	3.43	-2.58	-2.26
10,302.0	90.00	267.60	7,122.7	91.9	-3,322.6	3,323.5	3.95	-1.25	-3.75
10,334.0	89.90	267.00	7,122.7	90.4	-3,354.6	3,355.5	1.90	-0.31	-1.88
10,365.0	89.70	266.90	7,122.8	88.7	-3,385.5	3,386.4	0.72	-0.65	-0.32
10,397.0	89.70	267.30	7,123.0	87.1	-3,417.5	3,418.3	1.25	0.00	1.25
10,429.0	90.10	267.40	7,123.1	85.6	-3,449.4	3,450.3	1.29	1.25	0.31
10,460.0	90.50	267.20	7,122.9	84.2	-3,480.4	3,481.2	1.44	1.29	-0.65
10,492.0	90.40	267.30	7,122.6	82.6	-3,512.4	3,513.2	0.44	-0.31	0.31
10,524.0	90.20	267.50	7,122.5	81.2	-3,544.3	3,545.1	0.88	-0.63	0.63
10,555.0	90.20	267.40	7,122.4	79.8	-3,575.3	3,576.0	0.32	0.00	-0.32
10,587.0	90.40	267.40	7,122.2	78.4	-3,607.3	3,608.0	0.63	0.63	0.00
10,619.0	90.50	267.60	7,121.9	77.0	-3,639.2	3,639.9	0.70	0.31	0.63
10,651.0	90.70	267.40	7,121.6	75.6	-3,671.2	3,671.9	0.88	0.63	-0.63
10,682.0	90.50	267.90	7,121.3	74.3	-3,702.2	3,702.8	1.74	-0.65	1.61
10,714.0	90.20	267.50	7,121.1	73.0	-3,734.1	3,734.8	1.56	-0.94	-1.25
10,746.0	90.00	268.30	7,121.0	71.8	-3,766.1	3,766.7	2.58	-0.63	2.50
10,777.0	90.30	269.20	7,121.0	71.2	-3,797.1	3,797.7	3.06	0.97	2.90
10,809.0	90.40	269.50	7,120.8	70.8	-3,829.1	3,829.7	0.99	0.31	0.94
10,841.0	90.30	269.40	7,120.6	70.5	-3,861.1	3,861.7	0.44	-0.31	-0.31
10,872.0	90.00	269.30	7,120.5	70.1	-3,892.1	3,892.7	1.02	-0.97	-0.32
10,904.0	90.10	269.40	7,120.5	69.8	-3,924.1	3,924.7	0.44	0.31	0.31
10,936.0	90.30	269.20	7,120.3	69.4	-3,956.1	3,956.7	0.88	0.63	-0.63
10,967.0	90.50	269.50	7,120.1	69.0	-3,987.1	3,987.7	1.16	0.65	0.97
10,999.0	90.50	269.40	7,119.8	68.7	-4,019.1	4,019.7	0.31	0.00	-0.31
11,030.0	90.30	269.50	7,119.6	68.4	-4,050.1	4,050.7	0.72	-0.65	0.32
11,062.0	90.20	269.40	7,119.5	68.1	-4,082.1	4,082.6	0.44	-0.31	-0.31
11,093.0	90.30	269.50	7,119.4	67.8	-4,113.1	4,113.6	0.46	0.32	0.32
11,125.0	90.50	269.60	7,119.1	67.6	-4,145.1	4,145.6	0.70	0.63	0.31
11,156.0	90.60	269.70	7,118.8	67.4	-4,176.1	4,176.6	0.46	0.32	0.32
11,188.0	90.40	269.50	7,118.6	67.2	-4,208.1	4,208.6	0.88	-0.63	-0.63

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28U-334
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4909.0ft (RKB - 15')
Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28U-334	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)
11,220.0	90.70	269.20	7,118.2	66.8	-4,240.1	4,240.6	1.33	0.94	-0.94
11,251.0	90.80	269.10	7,117.8	66.3	-4,271.1	4,271.6	0.46	0.32	-0.32
11,283.0	91.10	269.50	7,117.3	65.9	-4,303.1	4,303.6	1.56	0.94	1.25
11,314.0	91.30	269.50	7,116.7	65.7	-4,334.1	4,334.6	0.65	0.65	0.00
11,346.0	91.30	269.50	7,115.9	65.4	-4,366.1	4,366.5	0.00	0.00	0.00
11,378.0	91.30	269.40	7,115.2	65.1	-4,398.0	4,398.5	0.31	0.00	-0.31
11,410.0	91.40	269.50	7,114.5	64.8	-4,430.0	4,430.5	0.44	0.31	0.31
11,441.0	91.30	269.10	7,113.7	64.4	-4,461.0	4,461.5	1.33	-0.32	-1.29
11,473.0	91.50	269.30	7,112.9	64.0	-4,493.0	4,493.5	0.88	0.63	0.63
11,505.0	91.50	268.90	7,112.1	63.5	-4,525.0	4,525.4	1.25	0.00	-1.25
11,536.0	91.50	269.00	7,111.3	62.9	-4,556.0	4,556.4	0.32	0.00	0.32
11,549.0	91.60	269.10	7,110.9	62.7	-4,569.0	4,569.4	1.09	0.77	0.77
11,602.8	91.60	269.10	7,109.4	61.8	-4,622.8	4,623.2	0.00	0.00	0.00
BHL 320'FNL, 500'FWL									
11,603.0	91.60	269.10	7,109.4	61.8	-4,622.9	4,623.4	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,572.0	7,151.2	7"	7	7-1/2

Checked By: _____	Approved By: _____	Date: _____
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