

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Sunmarke 28V-234**

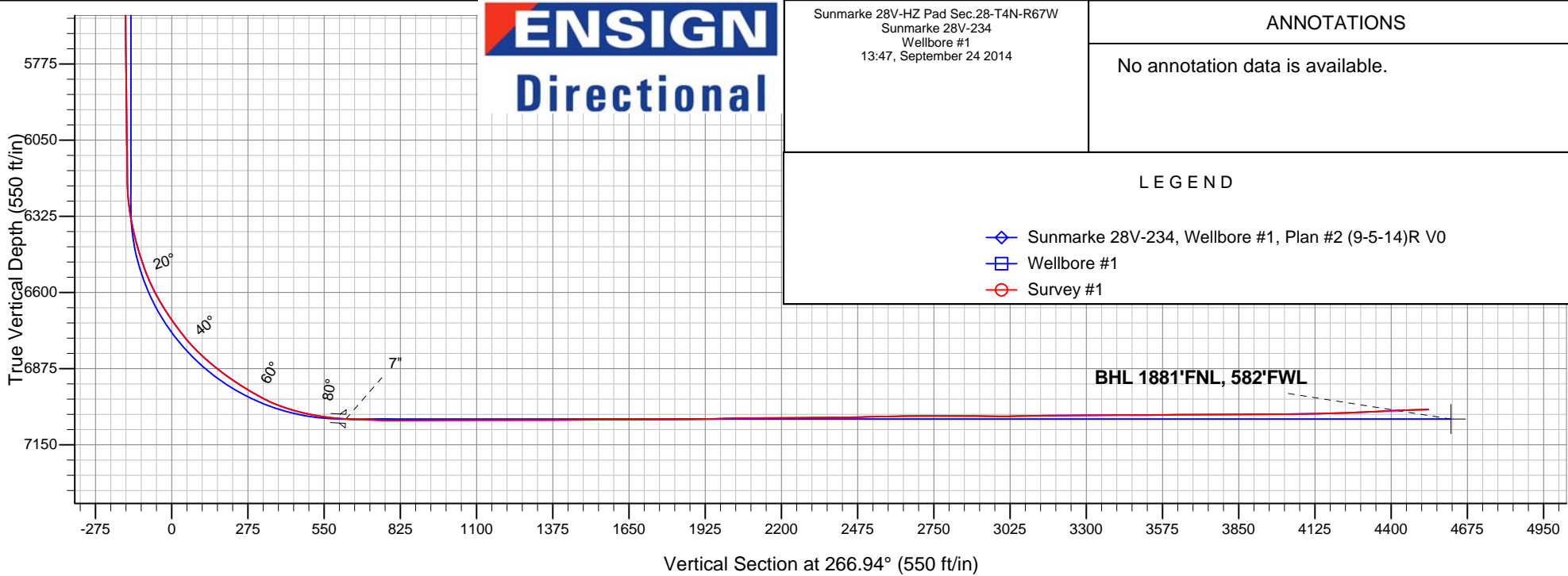
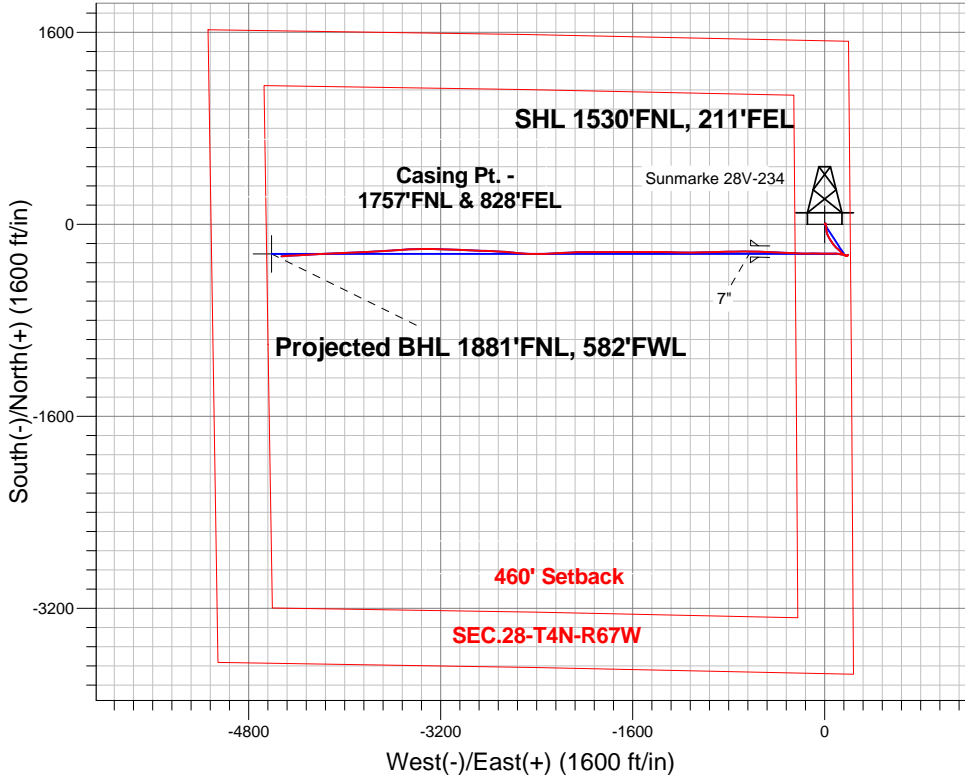
Surface Location: Sunmarke 28V-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

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')						

FINAL SURVEY

Projected Bottom Hole Location
11420'MD 7022'TVD 265'S & 4527'W of SHL
92.2 degree Incl @ 266.6 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28V-234

Wellbore #1

Survey: Survey #1

Standard Survey Report

24 September, 2014

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')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Well:	Sunmarke 28V-234	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 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	0.0 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	9/5/2014	8.49	66.83	52,719

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	266.94	

Survey Program	Date	9/24/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
143.0	11,420.0	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	59.60	1.0	0.0	0.0	0.0	0.77	0.77	0.00	
SHL 1530'FNL, 211'FEL										
143.0	1.10	59.60	143.0	0.7	1.2	-1.2	0.77	0.77	0.00	
234.0	1.10	30.50	234.0	1.9	2.4	-2.5	0.61	0.00	-31.98	
326.0	0.40	48.20	326.0	2.9	3.1	-3.2	0.79	-0.76	19.24	
417.0	0.70	42.30	417.0	3.5	3.7	-3.9	0.34	0.33	-6.48	
509.0	0.80	51.20	509.0	4.3	4.6	-4.8	0.17	0.11	9.67	
600.0	0.30	89.90	600.0	4.7	5.3	-5.5	0.66	-0.55	42.53	
692.0	0.40	341.70	691.9	5.0	5.4	-5.7	0.62	0.11	-117.61	
783.0	0.80	2.70	782.9	5.9	5.4	-5.7	0.49	0.44	23.08	
895.0	0.70	28.00	894.9	7.3	5.7	-6.1	0.31	-0.09	22.59	

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Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Well:	Sunmarke 28V-234	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)
968.0	0.50	3.40	967.9	8.0	5.9	-6.4	0.44	-0.27	-33.70
1,060.0	0.20	213.60	1,059.9	8.3	5.9	-6.3	0.74	-0.33	-162.83
1,152.0	1.30	152.00	1,151.9	7.3	6.3	-6.7	1.32	1.20	-66.96
1,248.0	2.10	160.70	1,247.9	4.6	7.4	-7.6	0.87	0.83	9.06
1,343.0	3.60	153.00	1,342.8	0.3	9.3	-9.3	1.63	1.58	-8.11
1,438.0	3.60	170.60	1,437.6	-5.3	11.1	-10.8	1.16	0.00	18.53
1,533.0	4.70	172.70	1,532.3	-12.1	12.1	-11.5	1.17	1.16	2.21
1,627.0	5.50	177.80	1,626.0	-20.4	12.8	-11.7	0.98	0.85	5.43
1,722.0	6.20	179.10	1,720.5	-30.1	13.0	-11.4	0.75	0.74	1.37
1,817.0	6.70	174.80	1,814.9	-40.7	13.6	-11.4	0.73	0.53	-4.53
1,913.0	7.40	173.60	1,910.1	-52.4	14.8	-12.0	0.75	0.73	-1.25
2,007.0	8.00	166.90	2,003.3	-64.8	17.0	-13.5	1.15	0.64	-7.13
2,102.0	8.30	163.20	2,097.3	-77.8	20.5	-16.3	0.64	0.32	-3.89
2,197.0	8.60	157.00	2,191.3	-90.9	25.2	-20.3	1.01	0.32	-6.53
2,292.0	8.50	151.30	2,285.2	-103.6	31.4	-25.8	0.90	-0.11	-6.00
2,387.0	8.90	149.70	2,379.1	-116.1	38.4	-32.2	0.49	0.42	-1.68
2,482.0	8.80	148.30	2,473.0	-128.7	46.0	-39.0	0.25	-0.11	-1.47
2,577.0	10.10	145.30	2,566.7	-141.7	54.5	-46.9	1.46	1.37	-3.16
2,672.0	10.80	145.20	2,660.1	-155.9	64.4	-55.9	0.74	0.74	-0.11
2,767.0	10.20	141.00	2,753.6	-169.7	74.7	-65.6	1.02	-0.63	-4.42
2,862.0	9.60	136.80	2,847.1	-182.0	85.4	-75.6	0.99	-0.63	-4.42
2,957.0	9.40	137.40	2,940.8	-193.5	96.1	-85.6	0.23	-0.21	0.63
3,052.0	8.70	131.50	3,034.7	-204.0	106.8	-95.7	1.22	-0.74	-6.21
3,147.0	7.50	135.40	3,128.7	-213.1	116.5	-104.9	1.39	-1.26	4.11
3,242.0	7.30	134.00	3,222.9	-221.7	125.2	-113.2	0.28	-0.21	-1.47
3,337.0	5.90	133.20	3,317.3	-229.3	133.1	-120.6	1.48	-1.47	-0.84
3,432.0	5.50	133.50	3,411.8	-235.8	139.9	-127.1	0.42	-0.42	0.32
3,526.0	5.00	137.30	3,505.4	-241.9	146.0	-132.9	0.65	-0.53	4.04
3,621.0	4.70	131.30	3,600.1	-247.5	151.7	-138.3	0.62	-0.32	-6.32
3,715.0	4.80	127.00	3,693.8	-252.4	157.8	-144.0	0.39	0.11	-4.57
3,810.0	4.70	120.50	3,788.4	-256.8	164.3	-150.3	0.58	-0.11	-6.84
3,904.0	4.00	116.80	3,882.2	-260.2	170.5	-156.4	0.80	-0.74	-3.94
3,999.0	3.80	85.70	3,977.0	-261.5	176.6	-162.4	2.21	-0.21	-32.74
4,093.0	3.30	76.20	4,070.8	-260.6	182.4	-168.2	0.82	-0.53	-10.11
4,188.0	3.80	74.50	4,165.6	-259.1	188.0	-173.9	0.54	0.53	-1.79
4,283.0	2.00	73.00	4,260.5	-257.8	192.7	-178.6	1.90	-1.89	-1.58
4,378.0	1.60	22.20	4,355.4	-256.0	194.8	-180.8	1.67	-0.42	-53.47
4,473.0	0.60	205.50	4,450.4	-255.3	195.0	-181.1	2.32	-1.05	-186.00
4,568.0	0.70	227.70	4,545.4	-256.1	194.4	-180.4	0.28	0.11	23.37
4,663.0	0.80	218.70	4,640.4	-257.0	193.6	-179.5	0.16	0.11	-9.47
4,758.0	0.80	225.20	4,735.4	-258.0	192.7	-178.6	0.10	0.00	6.84
4,853.0	1.10	224.60	4,830.4	-259.1	191.6	-177.4	0.32	0.32	-0.63
4,946.0	1.00	236.00	4,923.4	-260.2	190.3	-176.1	0.25	-0.11	12.26
5,041.0	1.00	233.80	5,018.4	-261.2	188.9	-174.7	0.04	0.00	-2.32
5,137.0	0.90	237.50	5,114.3	-262.1	187.6	-173.3	0.12	-0.10	3.85
5,233.0	1.20	279.50	5,210.3	-262.3	186.0	-171.7	0.84	0.31	43.75
5,328.0	1.10	285.00	5,305.3	-261.9	184.1	-169.8	0.16	-0.11	5.79
5,422.0	1.00	282.10	5,399.3	-261.5	182.4	-168.2	0.12	-0.11	-3.09
5,517.0	0.50	273.40	5,494.3	-261.3	181.2	-167.0	0.54	-0.53	-9.16
5,613.0	0.30	309.60	5,590.3	-261.1	180.6	-166.4	0.33	-0.21	37.71
5,707.0	0.40	252.50	5,684.3	-261.0	180.1	-165.9	0.37	0.11	-60.74
5,802.0	0.60	262.30	5,779.3	-261.2	179.3	-165.1	0.23	0.21	10.32
5,897.0	0.90	298.60	5,874.3	-260.9	178.1	-163.9	0.58	0.32	38.21
5,992.0	0.70	293.80	5,969.3	-260.3	176.9	-162.8	0.22	-0.21	-5.05

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Survey									
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6,086.0	0.90	310.60	6,063.2	-259.6	175.9	-161.7	0.33	0.21	17.87
6,183.0	1.20	315.90	6,160.2	-258.4	174.6	-160.5	0.32	0.31	5.46
6,214.0	1.20	319.10	6,191.2	-257.9	174.1	-160.1	0.22	0.00	10.32
6,246.0	2.60	285.80	6,223.2	-257.5	173.2	-159.2	5.40	4.38	-104.06
6,277.0	4.70	282.60	6,254.1	-257.0	171.3	-157.3	6.80	6.77	-10.32
6,309.0	6.80	282.50	6,286.0	-256.3	168.2	-154.2	6.56	6.56	-0.31
6,340.0	9.30	281.40	6,316.7	-255.4	163.9	-150.0	8.08	8.06	-3.55
6,372.0	11.50	282.10	6,348.1	-254.2	158.3	-144.5	6.89	6.88	2.19
6,403.0	12.80	281.80	6,378.4	-252.9	151.9	-138.2	4.20	4.19	-0.97
6,435.0	14.90	281.10	6,409.5	-251.4	144.4	-130.7	6.58	6.56	-2.19
6,466.0	16.90	279.50	6,439.3	-249.8	136.0	-122.5	6.60	6.45	-5.16
6,498.0	17.80	278.50	6,469.9	-248.4	126.6	-113.1	2.96	2.81	-3.13
6,529.0	19.50	279.80	6,499.2	-246.8	116.8	-103.5	5.65	5.48	4.19
6,561.0	21.60	276.90	6,529.2	-245.2	105.7	-92.5	7.29	6.56	-9.06
6,592.0	24.00	275.00	6,557.8	-243.9	93.8	-80.6	8.10	7.74	-6.13
6,624.0	26.40	271.60	6,586.7	-243.2	80.2	-67.1	8.76	7.50	-10.63
6,655.0	28.70	268.60	6,614.2	-243.1	65.8	-52.7	8.66	7.42	-9.68
6,687.0	31.10	268.20	6,642.0	-243.6	49.9	-36.8	7.53	7.50	-1.25
6,719.0	33.20	267.50	6,669.1	-244.2	32.9	-19.8	6.66	6.56	-2.19
6,750.0	34.50	268.60	6,694.8	-244.8	15.6	-2.5	4.64	4.19	3.55
6,782.0	35.40	271.70	6,721.0	-244.8	-2.7	15.8	6.22	2.81	9.69
6,814.0	37.50	273.10	6,746.8	-244.0	-21.7	34.7	7.06	6.56	4.38
6,845.0	40.60	272.60	6,770.8	-243.0	-41.2	54.1	10.05	10.00	-1.61
6,877.0	43.10	271.00	6,794.7	-242.3	-62.5	75.4	8.49	7.81	-5.00
6,908.0	45.90	269.20	6,816.8	-242.3	-84.3	97.1	9.91	9.03	-5.81
6,940.0	47.90	269.10	6,838.6	-242.7	-107.6	120.4	6.25	6.25	-0.31
6,972.0	50.50	269.50	6,859.6	-242.9	-131.9	144.6	8.18	8.13	1.25
7,003.0	52.10	269.70	6,878.9	-243.1	-156.0	168.8	5.19	5.16	0.65
7,035.0	54.30	270.60	6,898.1	-243.0	-181.7	194.4	7.23	6.88	2.81
7,066.0	55.70	271.30	6,915.9	-242.6	-207.1	219.7	4.88	4.52	2.26
7,098.0	56.70	271.70	6,933.7	-241.9	-233.6	246.2	3.29	3.13	1.25
7,129.0	58.70	272.40	6,950.2	-241.0	-259.8	272.3	6.73	6.45	2.26
7,161.0	60.40	273.20	6,966.5	-239.6	-287.4	299.8	5.73	5.31	2.50
7,192.0	62.90	272.90	6,981.2	-238.2	-314.6	326.9	8.11	8.06	-0.97
7,224.0	65.50	272.70	6,995.1	-236.8	-343.4	355.6	8.14	8.13	-0.63
7,255.0	68.70	272.70	7,007.2	-235.4	-371.9	384.0	10.32	10.32	0.00
7,287.0	71.60	272.50	7,018.0	-234.1	-402.0	413.9	9.08	9.06	-0.63
7,318.0	74.70	272.40	7,027.0	-232.8	-431.6	443.4	10.00	10.00	-0.32
7,350.0	77.10	273.60	7,034.8	-231.2	-462.6	474.3	8.34	7.50	3.75
7,381.0	79.00	273.20	7,041.2	-229.4	-492.9	504.4	6.26	6.13	-1.29
7,413.0	80.70	271.30	7,046.9	-228.1	-524.4	535.8	7.90	5.31	-5.94
7,444.0	82.80	270.70	7,051.3	-227.6	-555.0	566.4	7.04	6.77	-1.94
7,476.0	84.90	271.20	7,054.8	-227.1	-586.8	598.1	6.74	6.56	1.56
7,482.0	85.20	271.40	7,055.3	-226.9	-592.8	604.1	6.00	5.00	3.33
7,506.0	86.32	270.78	7,057.0	-226.5	-616.7	628.0	5.34	4.68	-2.59
7"									
7,544.0	88.10	269.80	7,058.9	-226.3	-654.7	665.8	5.34	4.68	-2.58
7,574.0	88.30	269.40	7,059.8	-226.5	-684.7	695.8	1.49	0.67	-1.33
7,604.0	88.50	269.40	7,060.7	-226.8	-714.7	725.8	0.67	0.67	0.00
7,635.0	88.70	269.10	7,061.4	-227.2	-745.7	756.7	1.16	0.65	-0.97
7,665.0	89.40	268.90	7,061.9	-227.7	-775.6	786.7	2.43	2.33	-0.67
7,696.0	90.40	269.40	7,062.0	-228.2	-806.6	817.7	3.61	3.23	1.61
7,726.0	90.70	269.20	7,061.7	-228.6	-836.6	847.7	1.20	1.00	-0.67

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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)
7,756.0	90.70	268.70	7,061.3	-229.1	-866.6	877.6	1.67	0.00	-1.67
7,786.0	90.50	268.70	7,061.0	-229.8	-896.6	907.6	0.67	-0.67	0.00
7,817.0	89.80	267.30	7,060.9	-230.9	-927.6	938.6	5.05	-2.26	-4.52
7,847.0	89.50	266.70	7,061.1	-232.5	-957.6	968.6	2.24	-1.00	-2.00
7,877.0	89.90	267.70	7,061.3	-233.9	-987.5	998.6	3.59	1.33	3.33
7,908.0	90.10	270.20	7,061.3	-234.5	-1,018.5	1,029.6	8.09	0.65	8.06
7,938.0	90.50	271.00	7,061.1	-234.2	-1,048.5	1,059.5	2.98	1.33	2.67
7,968.0	90.00	269.80	7,061.0	-234.0	-1,078.5	1,089.5	4.33	-1.67	-4.00
7,999.0	89.60	268.10	7,061.1	-234.5	-1,109.5	1,120.4	5.63	-1.29	-5.48
8,029.0	89.80	268.90	7,061.2	-235.3	-1,139.5	1,150.4	2.75	0.67	2.67
8,059.0	90.20	270.40	7,061.2	-235.5	-1,169.5	1,180.4	5.17	1.33	5.00
8,090.0	90.20	271.90	7,061.1	-234.9	-1,200.5	1,211.3	4.84	0.00	4.84
8,120.0	90.50	272.90	7,061.0	-233.6	-1,230.5	1,241.2	3.48	1.00	3.33
8,151.0	90.20	271.60	7,060.8	-232.4	-1,261.4	1,272.0	4.30	-0.97	-4.19
8,181.0	89.90	270.10	7,060.7	-232.0	-1,291.4	1,302.0	5.10	-1.00	-5.00
8,211.0	90.10	270.60	7,060.7	-231.8	-1,321.4	1,331.9	1.80	0.67	1.67
8,242.0	90.50	271.50	7,060.6	-231.2	-1,352.4	1,362.8	3.18	1.29	2.90
8,272.0	90.30	270.60	7,060.4	-230.7	-1,382.4	1,392.8	3.07	-0.67	-3.00
8,302.0	89.80	268.50	7,060.3	-230.9	-1,412.4	1,422.7	7.20	-1.67	-7.00
8,332.0	89.70	268.60	7,060.5	-231.7	-1,442.4	1,452.7	0.47	-0.33	0.33
8,362.0	90.20	270.00	7,060.5	-232.0	-1,472.4	1,482.7	4.96	1.67	4.67
8,392.0	90.50	270.80	7,060.3	-231.8	-1,502.4	1,512.6	2.85	1.00	2.67
8,422.0	90.80	271.50	7,060.0	-231.2	-1,532.4	1,542.6	2.54	1.00	2.33
8,452.0	90.50	270.80	7,059.6	-230.6	-1,562.4	1,572.5	2.54	-1.00	-2.33
8,482.0	90.00	269.00	7,059.5	-230.7	-1,592.4	1,602.4	6.23	-1.67	-6.00
8,513.0	89.80	268.60	7,059.6	-231.3	-1,623.4	1,633.4	1.44	-0.65	-1.29
8,543.0	90.20	269.40	7,059.6	-231.8	-1,653.4	1,663.4	2.98	1.33	2.67
8,573.0	90.70	270.90	7,059.3	-231.8	-1,683.4	1,693.3	5.27	1.67	5.00
8,605.0	90.60	270.90	7,059.0	-231.3	-1,715.4	1,725.3	0.31	-0.31	0.00
8,637.0	90.50	270.10	7,058.7	-231.0	-1,747.4	1,757.2	2.52	-0.31	-2.50
8,668.0	90.20	268.30	7,058.5	-231.4	-1,778.3	1,788.2	5.89	-0.97	-5.81
8,699.0	90.30	269.30	7,058.3	-232.1	-1,809.3	1,819.2	3.24	0.32	3.23
8,730.0	90.60	270.60	7,058.1	-232.1	-1,840.3	1,850.1	4.30	0.97	4.19
8,762.0	90.90	270.80	7,057.7	-231.7	-1,872.3	1,882.0	1.13	0.94	0.63
8,793.0	90.90	270.40	7,057.2	-231.4	-1,903.3	1,913.0	1.29	0.00	-1.29
8,825.0	91.10	269.90	7,056.6	-231.3	-1,935.3	1,944.9	1.68	0.63	-1.56
8,857.0	91.30	269.50	7,056.0	-231.5	-1,967.3	1,976.9	1.40	0.63	-1.25
8,888.0	91.60	269.60	7,055.2	-231.7	-1,998.3	2,007.8	1.02	0.97	0.32
8,920.0	91.00	268.60	7,054.4	-232.2	-2,030.3	2,039.8	3.64	-1.88	-3.13
8,952.0	90.90	268.40	7,053.9	-233.0	-2,062.3	2,071.8	0.70	-0.31	-0.63
8,984.0	91.30	268.20	7,053.3	-234.0	-2,094.3	2,103.8	1.40	1.25	-0.63
9,015.0	90.50	267.50	7,052.8	-235.1	-2,125.2	2,134.8	3.43	-2.58	-2.26
9,047.0	89.50	266.50	7,052.8	-236.8	-2,157.2	2,166.8	4.42	-3.13	-3.13
9,079.0	90.00	266.40	7,052.9	-238.8	-2,189.1	2,198.8	1.59	1.56	-0.31
9,110.0	90.20	266.50	7,052.9	-240.7	-2,220.1	2,229.8	0.72	0.65	0.32
9,142.0	90.60	267.20	7,052.7	-242.5	-2,252.0	2,261.8	2.52	1.25	2.19
9,173.0	90.80	267.80	7,052.3	-243.8	-2,283.0	2,292.8	2.04	0.65	1.94
9,205.0	90.20	267.30	7,052.0	-245.2	-2,315.0	2,324.7	2.44	-1.88	-1.56
9,237.0	90.20	267.90	7,051.9	-246.5	-2,346.9	2,356.7	1.87	0.00	1.88
9,269.0	90.50	268.90	7,051.7	-247.4	-2,378.9	2,388.7	3.26	0.94	3.13
9,300.0	91.00	270.90	7,051.3	-247.5	-2,409.9	2,419.7	6.65	1.61	6.45
9,332.0	91.30	271.70	7,050.7	-246.8	-2,441.9	2,451.6	2.67	0.94	2.50
9,364.0	91.20	272.60	7,050.0	-245.6	-2,473.9	2,483.4	2.83	-0.31	2.81

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')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Well:	Sunmarke 28V-234	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)
9,395.0	91.50	273.80	7,049.2	-243.8	-2,504.8	2,514.3	3.99	0.97	3.87
9,427.0	91.60	275.00	7,048.4	-241.4	-2,536.7	2,546.0	3.76	0.31	3.75
9,459.0	90.90	275.60	7,047.7	-238.4	-2,568.6	2,577.6	2.88	-2.19	1.88
9,491.0	90.50	274.90	7,047.3	-235.5	-2,600.4	2,609.3	2.52	-1.25	-2.19
9,522.0	90.40	275.20	7,047.0	-232.8	-2,631.3	2,640.0	1.02	-0.32	0.97
9,554.0	90.70	274.80	7,046.7	-230.0	-2,663.2	2,671.7	1.56	0.94	-1.25
9,585.0	90.60	273.90	7,046.4	-227.6	-2,694.1	2,702.4	2.92	-0.32	-2.90
9,617.0	90.50	273.10	7,046.1	-225.7	-2,726.0	2,734.2	2.52	-0.31	-2.50
9,648.0	90.10	272.60	7,045.9	-224.1	-2,757.0	2,765.0	2.07	-1.29	-1.61
9,680.0	89.70	272.10	7,046.0	-222.8	-2,789.0	2,796.9	2.00	-1.25	-1.56
9,711.0	89.60	271.90	7,046.1	-221.7	-2,819.9	2,827.8	0.72	-0.32	-0.65
9,743.0	89.50	271.60	7,046.4	-220.8	-2,851.9	2,859.6	0.99	-0.31	-0.94
9,774.0	89.80	271.80	7,046.6	-219.8	-2,882.9	2,890.5	1.16	0.97	0.65
9,805.0	89.50	271.50	7,046.8	-218.9	-2,913.9	2,921.4	1.37	-0.97	-0.97
9,837.0	89.60	272.00	7,047.0	-218.0	-2,945.9	2,953.3	1.59	0.31	1.56
9,868.0	89.50	271.50	7,047.3	-217.0	-2,976.9	2,984.2	1.64	-0.32	-1.61
9,900.0	90.20	272.00	7,047.4	-216.0	-3,008.8	3,016.1	2.69	2.19	1.56
9,932.0	91.10	273.50	7,047.0	-214.5	-3,040.8	3,047.9	5.47	2.81	4.69
9,964.0	91.70	273.90	7,046.2	-212.4	-3,072.7	3,079.7	2.25	1.88	1.25
9,995.0	91.30	273.60	7,045.4	-210.4	-3,103.6	3,110.5	1.61	-1.29	-0.97
10,027.0	91.00	273.20	7,044.8	-208.5	-3,135.6	3,142.2	1.56	-0.94	-1.25
10,059.0	90.60	272.20	7,044.3	-207.0	-3,167.5	3,174.1	3.37	-1.25	-3.13
10,090.0	90.30	271.60	7,044.1	-206.0	-3,198.5	3,205.0	2.16	-0.97	-1.94
10,122.0	89.90	270.30	7,044.0	-205.5	-3,230.5	3,236.9	4.25	-1.25	-4.06
10,153.0	90.00	269.80	7,044.0	-205.4	-3,261.5	3,267.8	1.64	0.32	-1.61
10,185.0	90.60	270.10	7,043.9	-205.5	-3,293.5	3,299.8	2.10	1.88	0.94
10,217.0	90.60	269.70	7,043.5	-205.5	-3,325.5	3,331.8	1.25	0.00	-1.25
10,248.0	90.50	268.60	7,043.2	-206.0	-3,356.5	3,362.7	3.56	-0.32	-3.55
10,279.0	90.50	268.10	7,043.0	-206.9	-3,387.5	3,393.7	1.61	0.00	-1.61
10,311.0	90.10	267.40	7,042.8	-208.1	-3,419.5	3,425.7	2.52	-1.25	-2.19
10,343.0	90.00	266.50	7,042.8	-209.8	-3,451.4	3,457.7	2.83	-0.31	-2.81
10,374.0	89.80	266.00	7,042.8	-211.9	-3,482.4	3,488.7	1.74	-0.65	-1.61
10,406.0	90.30	266.70	7,042.8	-213.9	-3,514.3	3,520.7	2.69	1.56	2.19
10,438.0	90.80	267.50	7,042.5	-215.5	-3,546.3	3,552.7	2.95	1.56	2.50
10,469.0	90.70	267.20	7,042.1	-216.9	-3,577.2	3,583.7	1.02	-0.32	-0.97
10,501.0	90.40	267.20	7,041.8	-218.5	-3,609.2	3,615.7	0.94	-0.94	0.00
10,532.0	90.30	266.40	7,041.6	-220.2	-3,640.1	3,646.7	2.60	-0.32	-2.58
10,564.0	90.60	266.00	7,041.3	-222.4	-3,672.1	3,678.7	1.56	0.94	-1.25
10,595.0	91.30	266.80	7,040.8	-224.3	-3,703.0	3,709.7	3.43	2.26	2.58
10,626.0	90.80	266.90	7,040.3	-226.0	-3,733.9	3,740.7	1.64	-1.61	0.32
10,658.0	90.30	266.60	7,040.0	-227.8	-3,765.9	3,772.7	1.82	-1.56	-0.94
10,690.0	89.50	267.20	7,040.0	-229.6	-3,797.8	3,804.7	3.12	-2.50	1.88
10,721.0	89.20	267.30	7,040.4	-231.0	-3,828.8	3,835.7	1.02	-0.97	0.32
10,752.0	89.60	267.60	7,040.7	-232.4	-3,859.8	3,866.7	1.61	1.29	0.97
10,784.0	89.90	267.60	7,040.8	-233.8	-3,891.7	3,898.7	0.94	0.94	0.00
10,816.0	90.20	267.90	7,040.8	-235.0	-3,923.7	3,930.7	1.33	0.94	0.94
10,847.0	90.30	267.60	7,040.7	-236.2	-3,954.7	3,961.7	1.02	0.32	-0.97
10,879.0	90.60	267.50	7,040.4	-237.6	-3,986.7	3,993.7	0.99	0.94	-0.31
10,910.0	91.10	267.70	7,039.9	-238.9	-4,017.6	4,024.7	1.74	1.61	0.65
10,941.0	91.30	267.90	7,039.3	-240.1	-4,048.6	4,055.6	0.91	0.65	0.65
10,973.0	91.00	267.60	7,038.7	-241.3	-4,080.6	4,087.6	1.33	-0.94	-0.94
11,005.0	91.30	267.20	7,038.0	-242.8	-4,112.5	4,119.6	1.56	0.94	-1.25
11,037.0	91.70	267.00	7,037.2	-244.4	-4,144.5	4,151.6	1.40	1.25	-0.63
11,068.0	91.80	266.80	7,036.2	-246.1	-4,175.4	4,182.6	0.72	0.32	-0.65

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')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4922.0ft (RKB - 15')
Well:	Sunmarke 28V-234	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)	
11,100.0	92.00	267.10	7,035.2	-247.8	-4,207.4	4,214.6	1.13	0.63	0.94	
11,131.0	92.20	267.00	7,034.0	-249.4	-4,238.3	4,245.6	0.72	0.65	-0.32	
11,163.0	92.30	267.40	7,032.8	-250.9	-4,270.2	4,277.5	1.29	0.31	1.25	
11,194.0	92.40	267.10	7,031.5	-252.4	-4,301.2	4,308.5	1.02	0.32	-0.97	
11,226.0	92.70	267.30	7,030.1	-254.0	-4,333.1	4,340.5	1.13	0.94	0.63	
11,258.0	93.00	266.70	7,028.5	-255.7	-4,365.0	4,372.4	2.09	0.94	-1.88	
11,289.0	92.20	266.80	7,027.1	-257.4	-4,395.9	4,403.4	2.60	-2.58	0.32	
11,321.0	91.90	266.80	7,025.9	-259.2	-4,427.9	4,435.4	0.94	-0.94	0.00	
11,352.0	91.90	266.10	7,024.9	-261.1	-4,458.8	4,466.4	2.26	0.00	-2.26	
11,366.0	92.20	266.60	7,024.4	-262.0	-4,472.7	4,480.4	4.16	2.14	3.57	
11,420.0	92.20	266.60	7,022.3	-265.2	-4,526.6	4,534.3	0.00	0.00	0.00	
BHL 1862'FNL, 500'FWL										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,506.0	7,057.0	7"	7	7-1/2	

Checked By: _____	Approved By: _____	Date: _____
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