

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Sunmarke 28V-304**

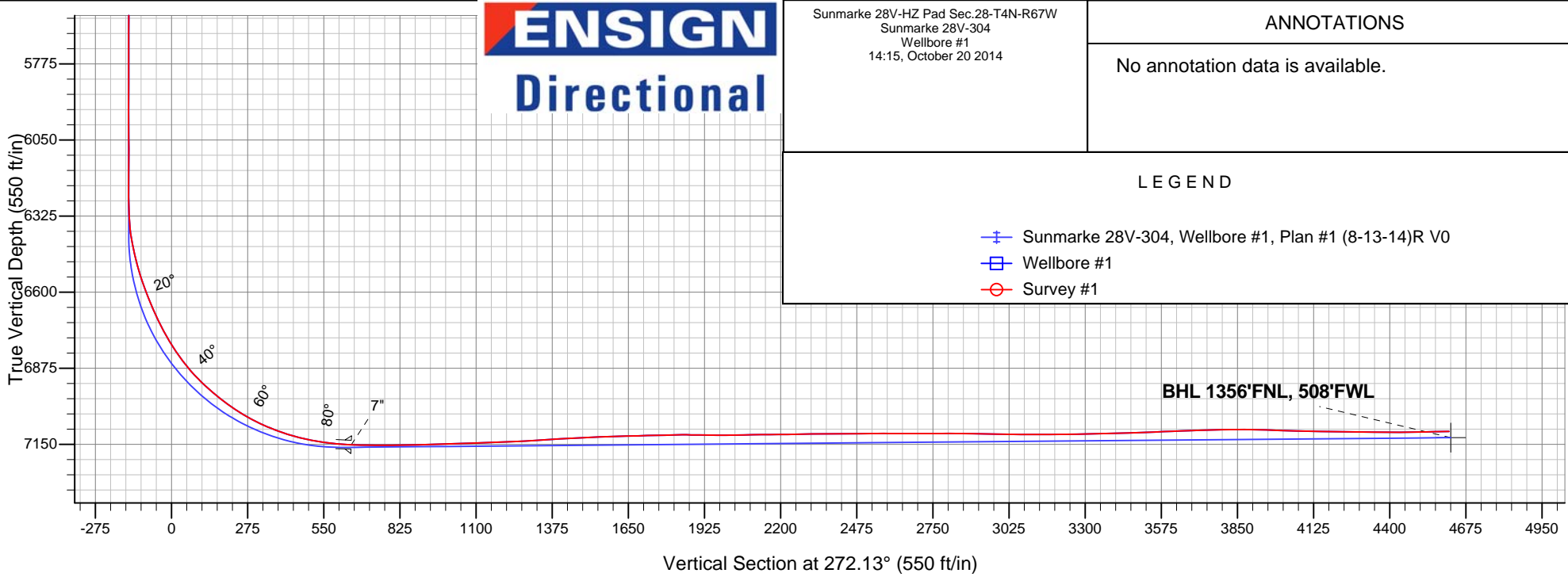
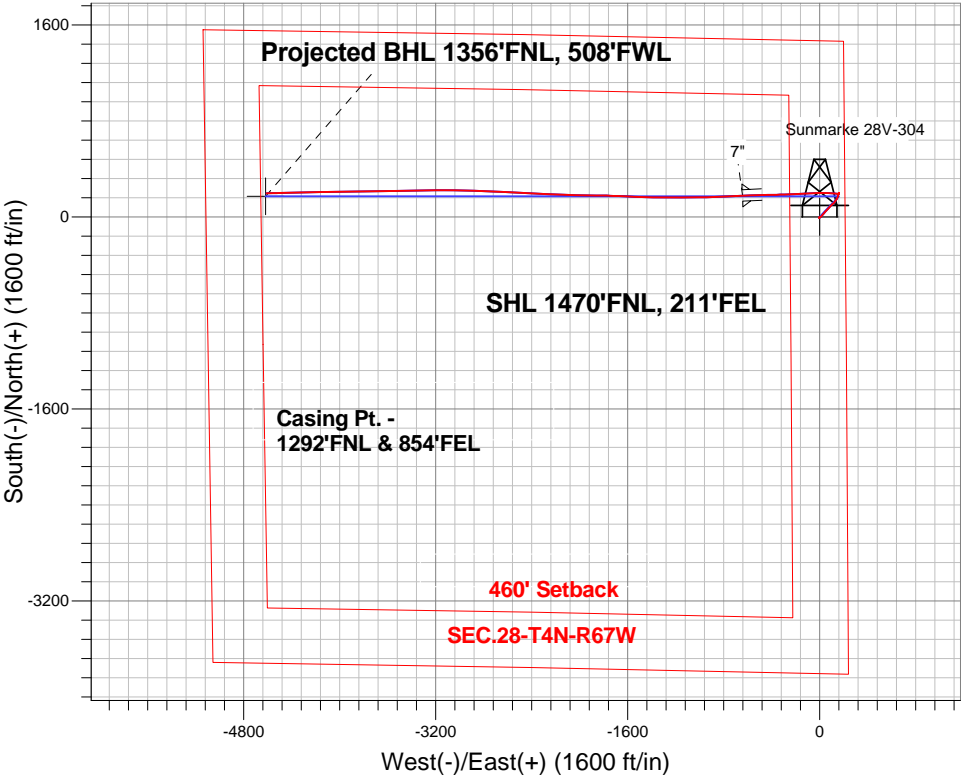
Surface Location: Sunmarke 28V-HZ Pad Sec.28-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4906.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1347957.32	3171018.63	40.286920	-104.886970	
RKB - 15' WELL @ 4921.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
11577'MD 7103'TVD 196'N & 4610'W of SHL
91.4 degree Incl @ 268.2 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T4N-R67W

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

Sunmarke 28V-304

Wellbore #1

Survey: Survey #1

Standard Survey Report

20 October, 2014

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-304
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4921.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4921.0ft (RKB - 15')
Well:	Sunmarke 28V-304	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-304					
Well Position	+N-S	0.0 ft	Northing:	1,347,957.32 ft	Latitude:	40.286920
	+E-W	0.0 ft	Easting:	3,171,018.63 ft	Longitude:	-104.886970
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,906.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/6/2014	8.47	66.83	52,710

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	272.13	

Survey Program	Date	10/20/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
143.0	11,577.0	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	308.40	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SHL 1470'FNL, 211'FEL									
143.0	0.20	308.40	143.0	0.2	-0.2	0.2	0.14	0.14	0.00
234.0	0.30	234.80	234.0	0.1	-0.5	0.5	0.34	0.11	-80.88
326.0	0.50	207.90	326.0	-0.4	-0.9	0.9	0.29	0.22	-29.24
417.0	0.20	171.40	417.0	-0.9	-1.1	1.0	0.40	-0.33	-40.11
509.0	0.30	161.10	509.0	-1.3	-1.0	0.9	0.12	0.11	-11.20
600.0	0.40	174.10	600.0	-1.8	-0.8	0.8	0.14	0.11	14.29
692.0	0.80	196.70	692.0	-2.7	-1.0	0.9	0.50	0.43	24.57
783.0	1.10	226.00	783.0	-4.0	-1.8	1.7	0.62	0.33	32.20
876.0	1.00	222.40	876.0	-5.2	-3.0	2.8	0.13	-0.11	-3.87

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Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4921.0ft (RKB - 15')
Well:	Sunmarke 28V-304	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)
938.0	1.30	203.80	937.9	-6.2	-3.7	3.4	0.77	0.48	-30.00
1,029.0	1.00	204.00	1,028.9	-7.9	-4.4	4.1	0.33	-0.33	0.22
1,121.0	1.00	101.60	1,120.9	-8.8	-3.9	3.6	1.69	0.00	-111.30
1,216.0	2.00	56.40	1,215.9	-8.0	-1.7	1.4	1.55	1.05	-47.58
1,311.0	3.60	45.90	1,310.8	-5.0	1.8	-2.0	1.76	1.68	-11.05
1,405.0	4.30	56.70	1,404.6	-1.1	6.9	-6.9	1.08	0.74	11.49
1,500.0	4.80	49.50	1,499.3	3.5	12.9	-12.7	0.80	0.53	-7.58
1,595.0	6.10	40.10	1,593.8	9.9	19.1	-18.7	1.66	1.37	-9.89
1,690.0	6.90	40.80	1,688.2	18.1	26.1	-25.4	0.85	0.84	0.74
1,785.0	6.70	39.10	1,782.5	26.7	33.3	-32.3	0.30	-0.21	-1.79
1,880.0	6.20	38.00	1,876.9	35.1	40.0	-38.7	0.54	-0.53	-1.16
1,975.0	5.70	40.20	1,971.4	42.7	46.2	-44.6	0.58	-0.53	2.32
2,069.0	6.70	46.00	2,064.9	50.1	53.1	-51.2	1.25	1.06	6.17
2,164.0	6.30	44.50	2,159.3	57.7	60.8	-58.6	0.46	-0.42	-1.58
2,259.0	6.00	43.00	2,253.7	65.0	67.8	-65.4	0.36	-0.32	-1.58
2,354.0	5.50	42.60	2,348.2	72.0	74.3	-71.6	0.53	-0.53	-0.42
2,448.0	5.20	41.20	2,441.8	78.5	80.1	-77.2	0.35	-0.32	-1.49
2,543.0	4.90	40.40	2,536.5	84.8	85.6	-82.4	0.32	-0.32	-0.84
2,637.0	6.10	46.70	2,630.0	91.3	91.8	-88.4	1.43	1.28	6.70
2,732.0	6.10	47.00	2,724.5	98.2	99.2	-95.5	0.03	0.00	0.32
2,827.0	5.90	45.80	2,819.0	105.1	106.4	-102.4	0.25	-0.21	-1.26
2,921.0	5.80	43.80	2,912.5	111.9	113.2	-108.9	0.24	-0.11	-2.13
3,016.0	5.60	41.80	3,007.0	118.8	119.6	-115.1	0.30	-0.21	-2.11
3,111.0	5.00	39.80	3,101.6	125.4	125.3	-120.6	0.66	-0.63	-2.11
3,205.0	4.60	37.90	3,195.3	131.5	130.2	-125.3	0.46	-0.43	-2.02
3,300.0	4.20	34.80	3,290.0	137.4	134.6	-129.4	0.49	-0.42	-3.26
3,395.0	3.70	33.20	3,384.8	142.8	138.2	-132.8	0.54	-0.53	-1.68
3,489.0	3.50	28.70	3,478.6	147.9	141.3	-135.7	0.37	-0.21	-4.79
3,584.0	3.20	26.30	3,573.4	152.8	143.8	-138.1	0.35	-0.32	-2.53
3,679.0	3.10	26.60	3,668.3	157.5	146.2	-140.2	0.11	-0.11	0.32
3,774.0	3.20	24.20	3,763.1	162.2	148.4	-142.3	0.17	0.11	-2.53
3,867.0	3.10	20.50	3,856.0	166.9	150.3	-144.0	0.24	-0.11	-3.98
3,962.0	3.20	19.00	3,950.9	171.8	152.1	-145.6	0.14	0.11	-1.58
4,057.0	2.50	7.70	4,045.7	176.4	153.3	-146.6	0.94	-0.74	-11.89
4,152.0	2.40	9.80	4,140.6	180.4	153.9	-147.1	0.14	-0.11	2.21
4,246.0	2.30	8.20	4,234.6	184.2	154.5	-147.5	0.13	-0.11	-1.70
4,341.0	2.20	3.90	4,329.5	187.9	154.9	-147.8	0.21	-0.11	-4.53
4,436.0	1.50	32.60	4,424.4	190.8	155.7	-148.5	1.20	-0.74	30.21
4,531.0	1.20	27.60	4,519.4	192.7	156.8	-149.5	0.34	-0.32	-5.26
4,626.0	1.30	19.30	4,614.4	194.6	157.6	-150.3	0.22	0.11	-8.74
4,721.0	1.30	9.20	4,709.4	196.7	158.1	-150.7	0.24	0.00	-10.63
4,816.0	0.30	20.30	4,804.4	198.0	158.4	-150.9	1.06	-1.05	11.68
4,911.0	0.40	9.70	4,899.4	198.5	158.5	-151.1	0.12	0.11	-11.16
5,006.0	0.80	165.90	4,994.4	198.2	158.8	-151.3	1.24	0.42	164.42
5,102.0	0.70	156.80	5,090.4	197.0	159.1	-151.7	0.16	-0.10	-9.48
5,197.0	0.60	152.70	5,185.3	196.1	159.6	-152.2	0.12	-0.11	-4.32
5,292.0	0.60	138.90	5,280.3	195.2	160.2	-152.8	0.15	0.00	-14.53
5,387.0	0.30	134.20	5,375.3	194.7	160.7	-153.3	0.32	-0.32	-4.95
5,482.0	0.30	98.10	5,470.3	194.5	161.1	-153.8	0.20	0.00	-38.00
5,576.0	0.50	130.60	5,564.3	194.2	161.6	-154.3	0.31	0.21	34.57
5,671.0	0.40	114.50	5,659.3	193.8	162.3	-155.0	0.17	-0.11	-16.95
5,766.0	0.30	179.40	5,754.3	193.4	162.6	-155.3	0.41	-0.11	68.32
5,861.0	0.40	180.80	5,849.3	192.8	162.6	-155.3	0.11	0.11	1.47
5,955.0	0.20	173.60	5,943.3	192.3	162.6	-155.3	0.22	-0.21	-7.66

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Survey									
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6,051.0	0.10	246.70	6,039.3	192.1	162.5	-155.3	0.20	-0.10	76.15
6,146.0	0.10	275.60	6,134.3	192.1	162.4	-155.1	0.05	0.00	30.42
6,241.0	0.20	283.10	6,229.3	192.1	162.1	-154.9	0.11	0.11	7.89
6,304.0	1.10	272.70	6,292.3	192.2	161.4	-154.2	1.43	1.43	-16.51
6,336.0	2.50	270.70	6,324.3	192.2	160.4	-153.1	4.38	4.38	-6.25
6,368.0	4.70	273.00	6,356.2	192.3	158.4	-151.1	6.89	6.88	7.19
6,399.0	7.60	273.90	6,387.1	192.5	155.1	-147.8	9.36	9.35	2.90
6,431.0	10.30	273.10	6,418.7	192.8	150.1	-142.8	8.45	8.44	-2.50
6,463.0	12.50	272.10	6,450.0	193.1	143.8	-136.5	6.90	6.88	-3.13
6,494.0	13.90	273.20	6,480.2	193.4	136.7	-129.4	4.59	4.52	3.55
6,526.0	15.70	274.50	6,511.1	194.0	128.6	-121.3	5.72	5.63	4.06
6,558.0	17.80	275.90	6,541.8	194.8	119.4	-112.1	6.68	6.56	4.38
6,589.0	19.40	275.90	6,571.2	195.8	109.6	-102.2	5.16	5.16	0.00
6,621.0	20.90	275.90	6,601.2	197.0	98.6	-91.2	4.69	4.69	0.00
6,653.0	22.30	275.90	6,631.0	198.2	86.9	-79.4	4.38	4.38	0.00
6,684.0	23.60	273.50	6,659.5	199.2	74.8	-67.4	5.17	4.19	-7.74
6,716.0	24.90	272.10	6,688.7	199.8	61.7	-54.2	4.44	4.06	-4.38
6,747.0	26.50	271.20	6,716.6	200.2	48.3	-40.8	5.31	5.16	-2.90
6,779.0	28.40	270.30	6,745.0	200.4	33.5	-26.0	6.08	5.94	-2.81
6,811.0	30.20	269.60	6,772.9	200.4	17.9	-10.4	5.73	5.63	-2.19
6,842.0	32.70	268.80	6,799.4	200.1	1.7	5.8	8.18	8.06	-2.58
6,874.0	35.20	267.20	6,825.9	199.5	-16.2	23.6	8.30	7.81	-5.00
6,906.0	37.90	266.80	6,851.6	198.5	-35.2	42.6	8.47	8.44	-1.25
6,937.0	40.20	266.40	6,875.7	197.3	-54.7	62.0	7.46	7.42	-1.29
6,969.0	42.70	266.70	6,899.7	196.1	-75.8	83.1	7.84	7.81	0.94
7,000.0	45.30	266.60	6,922.0	194.8	-97.3	104.5	8.39	8.39	-0.32
7,032.0	48.00	268.70	6,943.9	193.9	-120.6	127.7	9.69	8.44	6.56
7,063.0	50.20	267.70	6,964.2	193.1	-144.0	151.1	7.50	7.10	-3.23
7,095.0	51.40	266.90	6,984.5	191.9	-168.8	175.8	4.22	3.75	-2.50
7,126.0	53.70	267.60	7,003.3	190.8	-193.4	200.3	7.63	7.42	2.26
7,158.0	55.90	267.90	7,021.7	189.7	-219.5	226.4	6.92	6.88	0.94
7,189.0	58.60	266.20	7,038.5	188.4	-245.5	252.3	9.86	8.71	-5.48
7,221.0	61.10	266.70	7,054.6	186.7	-273.1	279.9	7.93	7.81	1.56
7,253.0	63.60	268.40	7,069.4	185.5	-301.4	308.1	9.12	7.81	5.31
7,284.0	66.10	269.10	7,082.6	184.9	-329.5	336.1	8.32	8.06	2.26
7,316.0	68.50	268.70	7,095.0	184.3	-359.0	365.6	7.59	7.50	-1.25
7,347.0	70.90	268.90	7,105.7	183.7	-388.1	394.6	7.77	7.74	0.65
7,379.0	73.20	268.70	7,115.6	183.1	-418.5	425.0	7.21	7.19	-0.63
7,411.0	75.50	268.90	7,124.2	182.4	-449.3	455.8	7.21	7.19	0.63
7,442.0	77.70	269.00	7,131.4	181.9	-479.5	485.9	7.10	7.10	0.32
7,474.0	79.80	269.30	7,137.6	181.4	-510.8	517.2	6.63	6.56	0.94
7,505.0	81.60	268.60	7,142.6	180.8	-541.4	547.8	6.22	5.81	-2.26
7,537.0	83.80	268.30	7,146.7	180.0	-573.2	579.4	6.94	6.88	-0.94
7,569.0	86.00	268.20	7,149.6	179.0	-605.0	611.2	6.88	6.88	-0.31
7,607.0	87.58	267.67	7,151.7	177.6	-642.9	649.1	4.38	4.15	-1.39
7"									
7,634.0	88.70	267.30	7,152.6	176.4	-669.9	676.0	4.38	4.15	-1.38
7,664.0	89.10	266.90	7,153.1	174.9	-699.8	705.9	1.89	1.33	-1.33
7,694.0	89.50	266.40	7,153.5	173.2	-729.8	735.7	2.13	1.33	-1.67
7,724.0	90.00	266.40	7,153.6	171.3	-759.7	765.6	1.67	1.67	0.00
7,755.0	90.50	267.00	7,153.5	169.5	-790.7	796.4	2.52	1.61	1.94
7,785.0	90.90	267.20	7,153.1	168.0	-820.6	826.3	1.49	1.33	0.67
7,815.0	91.30	267.30	7,152.6	166.6	-850.6	856.2	1.37	1.33	0.33

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7,845.0	91.50	268.60	7,151.8	165.5	-880.6	886.1	4.38	0.67	4.33
7,876.0	91.20	268.60	7,151.1	164.7	-911.5	917.0	0.97	-0.97	0.00
7,906.0	91.40	268.50	7,150.4	164.0	-941.5	947.0	0.75	0.67	-0.33
7,936.0	91.80	268.70	7,149.6	163.2	-971.5	976.9	1.49	1.33	0.67
7,967.0	92.10	269.40	7,148.5	162.7	-1,002.5	1,007.8	2.46	0.97	2.26
7,997.0	91.90	269.80	7,147.5	162.5	-1,032.5	1,037.8	1.49	-0.67	1.33
8,027.0	91.90	269.40	7,146.5	162.3	-1,062.5	1,067.7	1.33	0.00	-1.33
8,058.0	92.20	269.40	7,145.4	162.0	-1,093.4	1,098.7	0.97	0.97	0.00
8,088.0	92.40	270.10	7,144.2	161.8	-1,123.4	1,128.6	2.42	0.67	2.33
8,118.0	91.70	269.90	7,143.1	161.8	-1,153.4	1,158.6	2.43	-2.33	-0.67
8,148.0	91.80	269.80	7,142.2	161.8	-1,183.4	1,188.6	0.47	0.33	-0.33
8,178.0	92.30	270.20	7,141.1	161.8	-1,213.4	1,218.5	2.13	1.67	1.33
8,209.0	92.60	269.60	7,139.8	161.7	-1,244.3	1,249.5	2.16	0.97	-1.94
8,239.0	93.20	270.30	7,138.3	161.7	-1,274.3	1,279.4	3.07	2.00	2.33
8,269.0	93.70	270.10	7,136.4	161.8	-1,304.2	1,309.3	1.79	1.67	-0.67
8,299.0	94.00	270.30	7,134.4	161.9	-1,334.2	1,339.3	1.20	1.00	0.67
8,329.0	93.50	270.70	7,132.5	162.2	-1,364.1	1,369.2	2.13	-1.67	1.33
8,361.0	93.10	270.80	7,130.6	162.6	-1,396.0	1,401.1	1.29	-1.25	0.31
8,392.0	93.00	271.60	7,129.0	163.2	-1,427.0	1,432.1	2.60	-0.32	2.58
8,424.0	93.00	271.90	7,127.3	164.2	-1,458.9	1,464.0	0.94	0.00	0.94
8,455.0	93.10	272.40	7,125.7	165.4	-1,489.9	1,495.0	1.64	0.32	1.61
8,488.0	92.20	272.50	7,124.1	166.8	-1,522.8	1,527.9	2.74	-2.73	0.30
8,520.0	92.20	273.00	7,122.9	168.3	-1,554.7	1,559.9	1.56	0.00	1.56
8,551.0	91.80	272.70	7,121.8	169.8	-1,585.7	1,590.9	1.61	-1.29	-0.97
8,583.0	91.50	272.30	7,120.9	171.2	-1,617.6	1,622.9	1.56	-0.94	-1.25
8,615.0	91.70	272.20	7,120.0	172.5	-1,649.6	1,654.9	0.70	0.63	-0.31
8,647.0	91.40	272.60	7,119.1	173.8	-1,681.6	1,686.9	1.56	-0.94	1.25
8,679.0	91.30	272.00	7,118.4	175.1	-1,713.5	1,718.8	1.90	-0.31	-1.88
8,710.0	91.40	272.20	7,117.7	176.3	-1,744.5	1,749.8	0.72	0.32	0.65
8,742.0	91.20	271.90	7,116.9	177.4	-1,776.5	1,781.8	1.13	-0.63	-0.94
8,773.0	91.30	271.70	7,116.3	178.4	-1,807.4	1,812.8	0.72	0.32	-0.65
8,805.0	90.50	271.10	7,115.8	179.2	-1,839.4	1,844.8	3.12	-2.50	-1.88
8,837.0	89.20	270.50	7,115.8	179.6	-1,871.4	1,876.8	4.47	-4.06	-1.88
8,868.0	89.00	270.10	7,116.3	179.8	-1,902.4	1,907.8	1.44	-0.65	-1.29
8,900.0	89.50	270.60	7,116.7	180.0	-1,934.4	1,939.8	2.21	1.56	1.56
8,931.0	89.60	270.30	7,117.0	180.2	-1,965.4	1,970.8	1.02	0.32	-0.97
8,963.0	90.40	270.70	7,117.0	180.5	-1,997.4	2,002.7	2.80	2.50	1.25
8,995.0	91.20	271.60	7,116.5	181.1	-2,029.4	2,034.7	3.76	2.50	2.81
9,027.0	91.20	271.40	7,115.9	182.0	-2,061.4	2,066.7	0.62	0.00	-0.63
9,059.0	90.70	271.30	7,115.3	182.7	-2,093.4	2,098.7	1.59	-1.56	-0.31
9,090.0	90.30	272.10	7,115.1	183.6	-2,124.4	2,129.7	2.89	-1.29	2.58
9,122.0	90.40	271.70	7,114.9	184.7	-2,156.3	2,161.7	1.29	0.31	-1.25
9,153.0	90.50	272.20	7,114.6	185.7	-2,187.3	2,192.7	1.64	0.32	1.61
9,185.0	90.60	272.70	7,114.3	187.1	-2,219.3	2,224.7	1.59	0.31	1.56
9,216.0	91.00	272.70	7,113.9	188.6	-2,250.3	2,255.7	1.29	1.29	0.00
9,248.0	91.50	272.40	7,113.2	190.0	-2,282.2	2,287.7	1.82	1.56	-0.94
9,280.0	91.00	272.50	7,112.5	191.4	-2,314.2	2,319.7	1.59	-1.56	0.31
9,311.0	89.90	272.30	7,112.2	192.7	-2,345.1	2,350.7	3.61	-3.55	-0.65
9,343.0	90.10	273.20	7,112.2	194.2	-2,377.1	2,382.7	2.88	0.63	2.81
9,375.0	89.90	273.00	7,112.2	195.9	-2,409.1	2,414.7	0.88	-0.63	-0.63
9,407.0	90.60	273.00	7,112.1	197.6	-2,441.0	2,446.7	2.19	2.19	0.00
9,438.0	91.00	273.80	7,111.7	199.4	-2,472.0	2,477.7	2.89	1.29	2.58
9,470.0	91.00	272.90	7,111.1	201.3	-2,503.9	2,509.7	2.81	0.00	-2.81

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-304
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4921.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4921.0ft (RKB - 15')
Well:	Sunmarke 28V-304	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)
9,501.0	90.50	273.00	7,110.7	202.9	-2,534.9	2,540.6	1.64	-1.61	0.32
9,533.0	89.50	272.80	7,110.7	204.5	-2,566.8	2,572.6	3.19	-3.13	-0.63
9,564.0	89.50	272.30	7,111.0	205.9	-2,597.8	2,603.6	1.61	0.00	-1.61
9,596.0	89.80	272.60	7,111.2	207.3	-2,629.8	2,635.6	1.33	0.94	0.94
9,628.0	90.30	273.50	7,111.1	209.0	-2,661.7	2,667.6	3.22	1.56	2.81
9,660.0	90.50	273.10	7,110.9	210.8	-2,693.7	2,699.6	1.40	0.63	-1.25
9,692.0	89.70	272.40	7,110.9	212.4	-2,725.6	2,731.6	3.32	-2.50	-2.19
9,723.0	89.80	272.10	7,111.0	213.6	-2,756.6	2,762.6	1.02	0.32	-0.97
9,755.0	90.00	272.20	7,111.1	214.8	-2,788.6	2,794.6	0.70	0.63	0.31
9,787.0	90.10	271.90	7,111.0	215.9	-2,820.6	2,826.6	0.99	0.31	-0.94
9,818.0	90.00	272.10	7,111.0	217.0	-2,851.5	2,857.6	0.72	-0.32	0.65
9,850.0	89.20	271.50	7,111.2	218.0	-2,883.5	2,889.6	3.12	-2.50	-1.88
9,882.0	88.70	271.10	7,111.8	218.7	-2,915.5	2,921.6	2.00	-1.56	-1.25
9,913.0	88.50	270.40	7,112.6	219.1	-2,946.5	2,952.6	2.35	-0.65	-2.26
9,945.0	89.10	270.70	7,113.2	219.4	-2,978.5	2,984.6	2.10	1.88	0.94
9,977.0	89.10	271.30	7,113.7	220.0	-3,010.5	3,016.6	1.87	0.00	1.88
10,008.0	89.20	270.90	7,114.2	220.6	-3,041.5	3,047.6	1.33	0.32	-1.29
10,040.0	89.90	271.50	7,114.5	221.3	-3,073.5	3,079.6	2.88	2.19	1.88
10,072.0	89.80	270.60	7,114.5	221.9	-3,105.4	3,111.5	2.83	-0.31	-2.81
10,103.0	90.40	270.80	7,114.5	222.2	-3,136.4	3,142.5	2.04	1.94	0.65
10,134.0	90.50	270.10	7,114.2	222.5	-3,167.4	3,173.5	2.28	0.32	-2.26
10,166.0	90.30	270.00	7,114.0	222.5	-3,199.4	3,205.5	0.70	-0.63	-0.31
10,197.0	90.40	269.00	7,113.8	222.2	-3,230.4	3,236.5	3.24	0.32	-3.23
10,229.0	91.00	270.00	7,113.4	222.0	-3,262.4	3,268.4	3.64	1.88	3.13
10,261.0	91.20	269.90	7,112.8	221.9	-3,294.4	3,300.4	0.70	0.63	-0.31
10,292.0	91.20	269.20	7,112.2	221.7	-3,325.4	3,331.4	2.26	0.00	-2.26
10,324.0	91.20	268.60	7,111.5	221.1	-3,357.4	3,363.3	1.87	0.00	-1.88
10,356.0	91.30	268.70	7,110.8	220.3	-3,389.4	3,395.2	0.44	0.31	0.31
10,387.0	91.50	268.20	7,110.1	219.5	-3,420.4	3,426.2	1.74	0.65	-1.61
10,418.0	91.90	268.40	7,109.1	218.6	-3,451.3	3,457.1	1.44	1.29	0.65
10,450.0	92.30	268.40	7,108.0	217.7	-3,483.3	3,489.0	1.25	1.25	0.00
10,482.0	92.40	269.40	7,106.6	217.1	-3,515.3	3,520.9	3.14	0.31	3.13
10,513.0	92.30	268.70	7,105.4	216.5	-3,546.2	3,551.8	2.28	-0.32	-2.26
10,545.0	92.60	269.20	7,104.0	216.0	-3,578.2	3,583.8	1.82	0.94	1.56
10,577.0	92.00	268.50	7,102.7	215.3	-3,610.2	3,615.7	2.88	-1.88	-2.19
10,608.0	92.00	268.50	7,101.6	214.5	-3,641.2	3,646.6	0.00	0.00	0.00
10,639.0	91.60	268.40	7,100.7	213.7	-3,672.1	3,677.5	1.33	-1.29	-0.32
10,671.0	91.80	268.60	7,099.7	212.8	-3,704.1	3,709.4	0.88	0.63	0.63
10,703.0	91.30	268.60	7,098.9	212.0	-3,736.1	3,741.4	1.56	-1.56	0.00
10,735.0	91.50	268.40	7,098.1	211.2	-3,768.1	3,773.3	0.88	0.63	-0.63
10,766.0	91.60	268.40	7,097.2	210.3	-3,799.0	3,804.2	0.32	0.32	0.00
10,797.0	91.20	269.20	7,096.5	209.7	-3,830.0	3,835.2	2.88	-1.29	2.58
10,829.0	89.00	269.00	7,096.4	209.2	-3,862.0	3,867.1	6.90	-6.88	-0.63
10,861.0	88.40	270.50	7,097.1	209.0	-3,894.0	3,899.1	5.05	-1.88	4.69
10,893.0	88.40	270.00	7,098.0	209.2	-3,926.0	3,931.1	1.56	0.00	-1.56
10,924.0	88.40	269.80	7,098.9	209.1	-3,957.0	3,962.0	0.64	0.00	-0.65
10,956.0	88.50	269.90	7,099.8	209.0	-3,989.0	3,994.0	0.44	0.31	0.31
10,987.0	88.40	269.70	7,100.6	208.9	-4,020.0	4,024.9	0.72	-0.32	-0.65
11,019.0	88.40	269.50	7,101.5	208.7	-4,051.9	4,056.9	0.62	0.00	-0.63
11,050.0	89.00	269.90	7,102.2	208.6	-4,082.9	4,087.9	2.33	1.94	1.29
11,082.0	89.00	270.00	7,102.8	208.5	-4,114.9	4,119.8	0.31	0.00	0.31
11,114.0	88.80	269.00	7,103.4	208.2	-4,146.9	4,151.8	3.19	-0.63	-3.13
11,145.0	89.10	268.70	7,103.9	207.6	-4,177.9	4,182.7	1.37	0.97	-0.97
11,177.0	89.20	269.30	7,104.4	207.1	-4,209.9	4,214.7	1.90	0.31	1.88

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-304
Project:	SEC.28-T4N-R67W	TVD Reference:	WELL @ 4921.0ft (RKB - 15')
Site:	Sunmarke 28V-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4921.0ft (RKB - 15')
Well:	Sunmarke 28V-304	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)
11,208.0	89.30	269.00	7,104.8	206.6	-4,240.9	4,245.6	1.02	0.32	-0.97
11,240.0	89.60	269.30	7,105.1	206.1	-4,272.9	4,277.6	1.33	0.94	0.94
11,271.0	89.20	268.20	7,105.5	205.5	-4,303.9	4,308.5	3.78	-1.29	-3.55
11,303.0	89.20	268.10	7,105.9	204.4	-4,335.9	4,340.5	0.31	0.00	-0.31
11,335.0	89.60	268.30	7,106.2	203.4	-4,367.8	4,372.4	1.40	1.25	0.63
11,367.0	89.70	268.00	7,106.4	202.4	-4,399.8	4,404.3	0.99	0.31	-0.94
11,398.0	90.20	268.30	7,106.5	201.4	-4,430.8	4,435.2	1.88	1.61	0.97
11,430.0	90.80	268.90	7,106.2	200.6	-4,462.8	4,467.2	2.65	1.88	1.88
11,461.0	91.00	268.30	7,105.7	199.8	-4,493.8	4,498.1	2.04	0.65	-1.94
11,492.0	90.80	268.00	7,105.2	198.8	-4,524.8	4,529.0	1.16	-0.65	-0.97
11,523.0	91.40	268.20	7,104.6	197.8	-4,555.7	4,559.9	2.04	1.94	0.65
11,577.0	91.40	268.20	7,103.3	196.1	-4,609.7	4,613.8	0.00	0.00	0.00
BHL 1380'FNL, 500'FWL									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,607.0	7,151.7	7"	7	7-1/2

Checked By: _____	Approved By: _____	Date: _____
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