

PETROLEUM DEVELOPMENT CORP Weld County CO

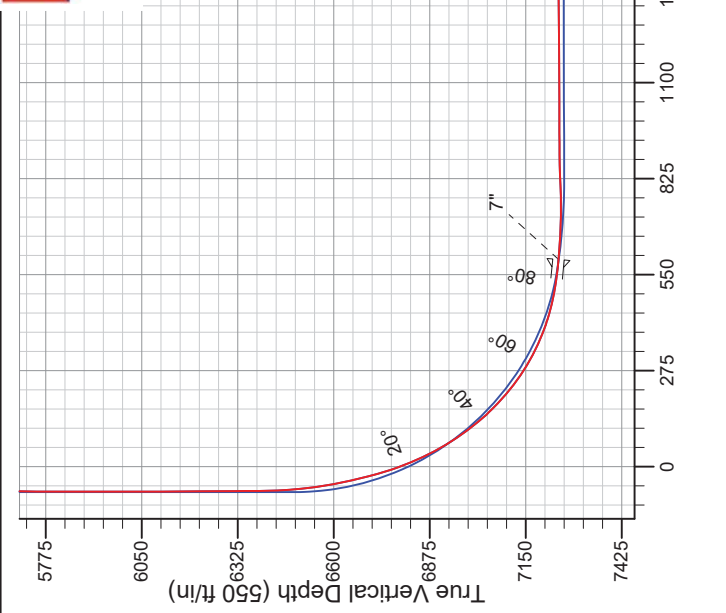
Well Name: **Sunmarke 28V-404**

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

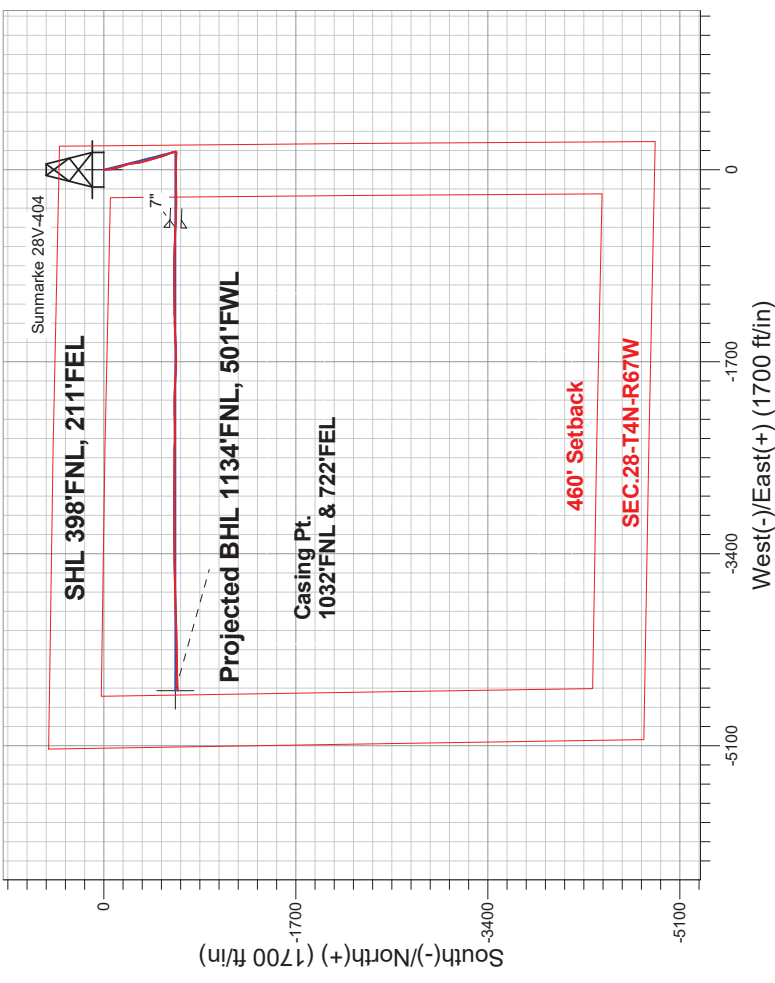
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1349028.23	3171000.06	40.289860	-104.887010	
RKB - 15' WELL @ 4909.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
 11739'MD 7239'TVD 652'S & 4611'W of SHL
 89.5 degree Incl @ 268.7 degree AZM



Vertical Section at 262.18° (550 ft/in)



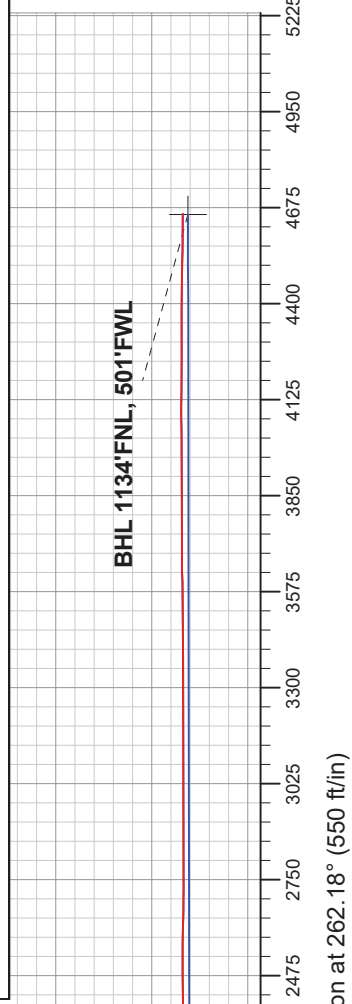
Sunmarke 28U-HZ Pad Sec.28-T4N-R67W
 Sunmarke 28V-404
 Wellbore #1
 13:23, July 16 2014

ANNOTATIONS

No annotation data is available.

LEGEND

- Sunmarke 28V-404, Wellbore #1, Plan #1 (6-20-14) 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-404

Wellbore #1

Survey: Survey #1

Standard Survey Report

16 July, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-404
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 28V-404	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-404					
Well Position	+N/-S	0.0 ft	Northing:	1,349,028.23 ft	Latitude:	40.289860
	+E/-W	0.0 ft	Easting:	3,171,000.06 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	6/24/2014	8.51	66.84	52,741

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	262.18	

Survey Program	Date	7/16/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
140.0	11,739.0	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	190.20	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
SHL 398°FNL, 210°FEL										
140.0	0.10	190.20	140.0	-0.1	0.0	0.0	0.07	0.07	0.00	
232.0	0.20	153.40	232.0	-0.3	0.0	0.0	0.15	0.11	-40.00	
324.0	1.50	200.70	324.0	-1.6	-0.3	0.5	1.49	1.41	51.41	
415.0	2.30	185.80	414.9	-4.5	-0.9	1.5	1.03	0.88	-16.37	
506.0	3.10	164.80	505.8	-8.7	-0.5	1.6	1.38	0.88	-23.08	
597.0	4.00	172.20	596.7	-14.3	0.6	1.3	1.11	0.99	8.13	
689.0	4.80	168.70	688.4	-21.2	1.8	1.1	0.92	0.87	-3.80	
780.0	4.30	172.10	779.1	-28.3	3.0	0.9	0.62	-0.55	3.74	
887.0	4.30	172.20	885.8	-36.3	4.1	0.9	0.01	0.00	0.09	

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Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28V-404	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)
950.0	4.40	176.30	948.6	-41.0	4.6	1.0	0.52	0.16	6.51
1,042.0	5.40	178.50	1,040.3	-48.9	4.9	1.8	1.11	1.09	2.39
1,134.0	6.40	174.50	1,131.8	-58.3	5.5	2.4	1.17	1.09	-4.35
1,231.0	7.30	169.40	1,228.1	-69.7	7.2	2.4	1.12	0.93	-5.26
1,325.0	8.00	164.40	1,321.3	-81.9	10.0	1.2	1.03	0.74	-5.32
1,420.0	7.40	162.70	1,415.4	-94.1	13.6	-0.7	0.68	-0.63	-1.79
1,515.0	7.20	168.80	1,509.6	-105.8	16.6	-2.1	0.84	-0.21	6.42
1,610.0	7.70	167.90	1,603.8	-117.9	19.1	-2.9	0.54	0.53	-0.95
1,705.0	8.00	162.80	1,698.0	-130.4	22.4	-4.4	0.80	0.32	-5.37
1,800.0	8.00	162.50	1,792.0	-143.0	26.3	-6.6	0.04	0.00	-0.32
1,895.0	7.90	162.00	1,886.1	-155.5	30.3	-8.9	0.13	-0.11	-0.53
1,990.0	8.30	159.30	1,980.2	-168.2	34.8	-11.6	0.58	0.42	-2.84
2,086.0	8.50	163.30	2,075.1	-181.4	39.3	-14.2	0.64	0.21	4.17
2,181.0	7.10	156.40	2,169.3	-193.5	43.6	-16.9	1.77	-1.47	-7.26
2,276.0	6.20	164.00	2,263.6	-203.9	47.4	-19.2	1.32	-0.95	8.00
2,371.0	6.50	162.70	2,358.0	-213.9	50.4	-20.8	0.35	0.32	-1.37
2,466.0	7.80	172.40	2,452.3	-225.4	52.9	-21.7	1.86	1.37	10.21
2,561.0	10.10	175.60	2,546.1	-240.1	54.4	-21.2	2.48	2.42	3.37
2,656.0	10.50	171.50	2,639.6	-257.0	56.3	-20.8	0.88	0.42	-4.32
2,751.0	10.40	171.80	2,733.0	-274.1	58.8	-20.9	0.12	-0.11	0.32
2,846.0	9.30	171.80	2,826.6	-290.1	61.1	-21.1	1.16	-1.16	0.00
2,941.0	9.40	173.00	2,920.4	-305.4	63.1	-21.0	0.23	0.11	1.26
3,036.0	9.00	170.40	3,014.1	-320.5	65.3	-21.1	0.61	-0.42	-2.74
3,131.0	8.00	167.50	3,108.1	-334.2	68.0	-21.9	1.14	-1.05	-3.05
3,226.0	7.80	165.70	3,202.2	-346.9	71.0	-23.1	0.33	-0.21	-1.89
3,321.0	7.40	162.10	3,296.4	-359.0	74.5	-24.9	0.65	-0.42	-3.79
3,416.0	6.80	158.20	3,390.6	-370.1	78.5	-27.4	0.81	-0.63	-4.11
3,511.0	6.00	158.80	3,485.0	-379.9	82.3	-29.9	0.85	-0.84	0.63
3,606.0	5.50	161.90	3,579.6	-388.9	85.6	-31.8	0.62	-0.53	3.26
3,701.0	5.30	169.10	3,674.1	-397.5	87.8	-32.9	0.74	-0.21	7.58
3,796.0	5.70	169.80	3,768.7	-406.5	89.5	-33.3	0.43	0.42	0.74
3,891.0	6.90	168.90	3,863.1	-416.7	91.4	-33.8	1.27	1.26	-0.95
3,986.0	6.70	169.30	3,957.5	-427.7	93.5	-34.4	0.22	-0.21	0.42
4,081.0	5.50	165.70	4,051.9	-437.6	95.7	-35.2	1.33	-1.26	-3.79
4,176.0	5.60	156.50	4,146.5	-446.3	98.7	-37.0	0.94	0.11	-9.68
4,271.0	5.70	158.20	4,241.0	-454.9	102.3	-39.4	0.21	0.11	1.79
4,366.0	5.50	160.70	4,335.6	-463.6	105.5	-41.4	0.33	-0.21	2.63
4,461.0	6.20	164.90	4,430.1	-472.8	108.4	-43.0	0.86	0.74	4.42
4,556.0	5.70	163.50	4,524.6	-482.3	111.0	-44.4	0.55	-0.53	-1.47
4,651.0	6.00	166.70	4,619.1	-491.7	113.5	-45.5	0.47	0.32	3.37
4,746.0	6.80	163.50	4,713.5	-501.9	116.3	-46.9	0.92	0.84	-3.37
4,841.0	7.90	165.40	4,807.7	-513.6	119.5	-48.5	1.19	1.16	2.00
4,936.0	8.30	162.90	4,901.7	-526.5	123.2	-50.4	0.56	0.42	-2.63
5,031.0	7.60	156.10	4,995.8	-538.8	127.7	-53.2	1.23	-0.74	-7.16
5,125.0	7.50	157.00	5,089.0	-550.1	132.6	-56.5	0.16	-0.11	0.96
5,221.0	7.70	158.10	5,184.2	-561.8	137.5	-59.7	0.26	0.21	1.15
5,316.0	7.30	160.30	5,278.4	-573.4	141.9	-62.5	0.52	-0.42	2.32
5,411.0	6.80	157.50	5,372.6	-584.3	146.1	-65.2	0.64	-0.53	-2.95
5,505.0	6.80	157.30	5,466.0	-594.6	150.4	-68.0	0.03	0.00	-0.21
5,600.0	6.80	167.60	5,560.3	-605.2	153.7	-69.9	1.28	0.00	10.84
5,695.0	6.00	166.80	5,654.7	-615.6	156.1	-70.9	0.85	-0.84	-0.84
5,790.0	4.10	169.00	5,749.4	-623.7	157.9	-71.5	2.01	-2.00	2.32
5,885.0	3.00	169.30	5,844.2	-629.5	159.0	-71.8	1.16	-1.16	0.32
5,979.0	2.20	171.30	5,938.1	-633.7	159.7	-72.0	0.86	-0.85	2.13

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Site:	Sunmarke 28U-HZ Pad Sec.28-T4N-R67W	MD Reference:	WELL @ 4909.0ft (RKB - 15')
Well:	Sunmarke 28V-404	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)
6,074.0	1.40	177.40	6,033.0	-636.7	160.0	-71.9	0.86	-0.84	6.42
6,170.0	1.20	182.60	6,129.0	-638.9	160.0	-71.6	0.24	-0.21	5.42
6,264.0	0.90	195.90	6,223.0	-640.5	159.8	-71.1	0.41	-0.32	14.15
6,359.0	0.70	215.30	6,318.0	-641.7	159.2	-70.4	0.35	-0.21	20.42
6,391.0	0.70	205.50	6,350.0	-642.1	159.0	-70.2	0.37	0.00	-30.63
6,423.0	0.60	228.10	6,382.0	-642.4	158.8	-69.9	0.85	-0.31	70.63
6,454.0	1.30	256.30	6,413.0	-642.6	158.4	-69.5	2.65	2.26	90.97
6,486.0	2.90	268.10	6,444.9	-642.7	157.2	-68.3	5.15	5.00	36.88
6,518.0	4.50	273.40	6,476.9	-642.6	155.2	-66.3	5.11	5.00	16.56
6,549.0	6.10	275.70	6,507.7	-642.4	152.3	-63.5	5.21	5.16	7.42
6,581.0	7.70	275.80	6,539.5	-642.0	148.5	-59.7	5.00	5.00	0.31
6,612.0	9.20	275.30	6,570.2	-641.6	143.9	-55.3	4.84	4.84	-1.61
6,644.0	10.60	275.00	6,601.7	-641.1	138.5	-49.9	4.38	4.38	-0.94
6,676.0	12.00	273.10	6,633.1	-640.6	132.2	-43.8	4.53	4.38	-5.94
6,707.0	13.40	271.70	6,663.3	-640.4	125.4	-37.1	4.62	4.52	-4.52
6,739.0	14.50	270.20	6,694.4	-640.2	117.7	-29.5	3.62	3.44	-4.69
6,770.0	16.00	269.60	6,724.3	-640.2	109.5	-21.4	4.87	4.84	-1.94
6,802.0	17.90	269.70	6,754.9	-640.3	100.2	-12.1	5.94	5.94	0.31
6,834.0	20.10	269.40	6,785.1	-640.4	89.8	-1.8	6.88	6.88	-0.94
6,866.0	22.50	268.90	6,815.0	-640.6	78.2	9.7	7.52	7.50	-1.56
6,897.0	24.10	269.30	6,843.4	-640.8	65.9	21.9	5.19	5.16	1.29
6,929.0	26.40	269.50	6,872.4	-640.9	52.3	35.4	7.19	7.19	0.63
6,961.0	29.40	270.40	6,900.6	-640.9	37.3	50.3	9.47	9.38	2.81
6,992.0	32.10	271.60	6,927.3	-640.6	21.4	65.9	8.93	8.71	3.87
7,025.0	34.70	272.40	6,954.8	-640.0	3.3	83.8	7.99	7.88	2.42
7,056.0	37.10	272.40	6,979.9	-639.2	-14.9	101.7	7.74	7.74	0.00
7,088.0	39.30	272.30	7,005.1	-638.4	-34.6	121.2	6.88	6.88	-0.31
7,120.0	41.60	271.00	7,029.4	-637.8	-55.4	141.7	7.66	7.19	-4.06
7,151.0	44.30	269.70	7,052.1	-637.7	-76.5	162.6	9.17	8.71	-4.19
7,183.0	47.60	269.00	7,074.4	-638.0	-99.5	185.4	10.43	10.31	-2.19
7,215.0	50.20	268.30	7,095.4	-638.5	-123.6	209.4	8.29	8.13	-2.19
7,246.0	52.70	268.20	7,114.7	-639.3	-147.8	233.5	8.07	8.06	-0.32
7,278.0	55.30	268.00	7,133.5	-640.1	-173.7	259.2	8.14	8.13	-0.63
7,310.0	58.50	268.80	7,151.0	-640.9	-200.5	285.9	10.22	10.00	2.50
7,342.0	62.10	268.90	7,166.9	-641.4	-228.3	313.5	11.25	11.25	0.31
7,373.0	65.00	269.00	7,180.7	-641.9	-256.0	341.0	9.36	9.35	0.32
7,405.0	67.60	269.80	7,193.5	-642.2	-285.3	370.1	8.44	8.13	2.50
7,437.0	70.10	270.40	7,205.1	-642.2	-315.2	399.6	8.01	7.81	1.88
7,468.0	73.20	271.00	7,214.8	-641.8	-344.6	428.7	10.17	10.00	1.94
7,500.0	76.40	271.80	7,223.2	-641.1	-375.5	459.2	10.29	10.00	2.50
7,532.0	79.10	272.60	7,230.0	-639.9	-406.7	490.0	8.78	8.44	2.50
7,563.0	81.30	273.40	7,235.3	-638.3	-437.2	520.0	7.54	7.10	2.58
7,595.0	83.30	273.20	7,239.6	-636.4	-468.9	551.1	6.28	6.25	-0.63
7,638.0	85.00	272.86	7,243.9	-634.2	-511.6	593.1	4.02	3.95	-0.79
7"									
7,671.0	86.30	272.60	7,246.5	-632.6	-544.5	625.5	4.02	3.95	-0.79
7,702.0	86.60	272.60	7,248.4	-631.2	-575.4	655.9	0.97	0.97	0.00
7,732.0	86.90	272.10	7,250.1	-630.0	-605.3	685.4	1.94	1.00	-1.67
7,762.0	89.30	272.10	7,251.1	-628.9	-635.3	714.9	8.00	8.00	0.00
7,793.0	90.30	271.80	7,251.2	-627.8	-666.2	745.5	3.37	3.23	-0.97
7,823.0	92.00	272.10	7,250.6	-626.8	-696.2	775.0	5.75	5.67	1.00
7,853.0	92.40	272.20	7,249.4	-625.7	-726.2	804.6	1.37	1.33	0.33
7,883.0	91.60	271.70	7,248.4	-624.7	-756.1	834.1	3.14	-2.67	-1.67

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Survey									
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7,914.0	91.10	271.30	7,247.6	-623.9	-787.1	864.7	2.07	-1.61	-1.29
7,944.0	90.90	271.30	7,247.1	-623.2	-817.1	894.3	0.67	-0.67	0.00
7,975.0	90.50	270.60	7,246.7	-622.7	-848.1	924.9	2.60	-1.29	-2.26
8,005.0	90.30	270.60	7,246.5	-622.3	-878.1	954.6	0.67	-0.67	0.00
8,035.0	89.70	269.70	7,246.5	-622.3	-908.1	984.3	3.61	-2.00	-3.00
8,066.0	90.20	269.50	7,246.6	-622.5	-939.1	1,015.1	1.74	1.61	-0.65
8,096.0	90.50	269.40	7,246.4	-622.8	-969.1	1,044.8	1.05	1.00	-0.33
8,126.0	90.60	269.30	7,246.1	-623.1	-999.1	1,074.6	0.47	0.33	-0.33
8,157.0	90.40	269.60	7,245.8	-623.4	-1,030.1	1,105.3	1.16	-0.65	0.97
8,187.0	89.40	269.60	7,245.9	-623.6	-1,060.1	1,135.1	3.33	-3.33	0.00
8,217.0	89.80	269.50	7,246.1	-623.9	-1,090.1	1,164.8	1.37	1.33	-0.33
8,247.0	90.20	269.10	7,246.1	-624.2	-1,120.1	1,194.6	1.89	1.33	-1.33
8,277.0	90.80	269.00	7,245.8	-624.7	-1,150.1	1,224.4	2.03	2.00	-0.33
8,307.0	90.90	269.20	7,245.4	-625.2	-1,180.1	1,254.2	0.75	0.33	0.67
8,338.0	91.60	269.50	7,244.7	-625.5	-1,211.1	1,284.9	2.46	2.26	0.97
8,368.0	90.20	269.20	7,244.2	-625.9	-1,241.0	1,314.7	4.77	-4.67	-1.00
8,399.0	89.50	269.20	7,244.3	-626.3	-1,272.0	1,345.4	2.26	-2.26	0.00
8,429.0	91.10	270.10	7,244.1	-626.5	-1,302.0	1,375.2	6.12	5.33	3.00
8,460.0	90.20	269.00	7,243.8	-626.7	-1,333.0	1,405.9	4.58	-2.90	-3.55
8,492.0	90.40	268.10	7,243.6	-627.6	-1,365.0	1,437.7	2.88	0.63	-2.81
8,524.0	90.20	267.30	7,243.5	-628.8	-1,397.0	1,469.6	2.58	-0.63	-2.50
8,555.0	89.40	266.40	7,243.6	-630.5	-1,428.0	1,500.5	3.88	-2.58	-2.90
8,587.0	90.40	267.20	7,243.6	-632.3	-1,459.9	1,532.4	4.00	3.13	2.50
8,618.0	90.50	268.30	7,243.4	-633.5	-1,490.9	1,563.2	3.56	0.32	3.55
8,650.0	90.20	267.80	7,243.2	-634.6	-1,522.9	1,595.1	1.82	-0.94	-1.56
8,682.0	90.30	266.40	7,243.0	-636.3	-1,554.8	1,626.9	4.39	0.31	-4.38
8,714.0	89.30	266.30	7,243.2	-638.3	-1,586.7	1,658.8	3.14	-3.13	-0.31
8,745.0	89.80	268.50	7,243.4	-639.7	-1,617.7	1,689.7	7.28	1.61	7.10
8,777.0	90.00	269.10	7,243.5	-640.4	-1,649.7	1,721.5	1.98	0.63	1.88
8,809.0	90.60	271.00	7,243.3	-640.3	-1,681.7	1,753.2	6.23	1.88	5.94
8,841.0	91.30	272.40	7,242.8	-639.4	-1,713.7	1,784.8	4.89	2.19	4.38
8,872.0	90.60	272.30	7,242.2	-638.1	-1,744.7	1,815.3	2.28	-2.26	-0.32
8,903.0	89.90	272.50	7,242.1	-636.8	-1,775.6	1,845.8	2.35	-2.26	0.65
8,935.0	89.80	272.10	7,242.2	-635.5	-1,807.6	1,877.3	1.29	-0.31	-1.25
8,967.0	90.80	273.10	7,242.0	-634.1	-1,839.6	1,908.7	4.42	3.13	3.13
8,999.0	91.10	273.10	7,241.5	-632.4	-1,871.5	1,940.2	0.94	0.94	0.00
9,031.0	90.10	272.20	7,241.2	-630.9	-1,903.5	1,971.6	4.20	-3.13	-2.81
9,063.0	90.50	272.90	7,241.0	-629.4	-1,935.4	2,003.1	2.52	1.25	2.19
9,094.0	91.20	273.40	7,240.5	-627.7	-1,966.4	2,033.5	2.77	2.26	1.61
9,126.0	89.70	271.80	7,240.3	-626.3	-1,998.4	2,065.0	6.85	-4.69	-5.00
9,158.0	89.10	270.40	7,240.6	-625.7	-2,030.4	2,096.6	4.76	-1.88	-4.38
9,189.0	89.00	269.60	7,241.1	-625.7	-2,061.3	2,127.3	2.60	-0.32	-2.58
9,221.0	89.10	269.50	7,241.7	-625.9	-2,093.3	2,159.0	0.44	0.31	-0.31
9,252.0	89.60	269.30	7,242.0	-626.3	-2,124.3	2,189.8	1.74	1.61	-0.65
9,284.0	90.10	269.20	7,242.1	-626.7	-2,156.3	2,221.6	1.59	1.56	-0.31
9,316.0	90.60	269.20	7,241.9	-627.1	-2,188.3	2,253.3	1.56	1.56	0.00
9,347.0	91.00	269.00	7,241.5	-627.6	-2,219.3	2,284.1	1.44	1.29	-0.65
9,379.0	90.90	269.50	7,240.9	-628.0	-2,251.3	2,315.8	1.59	-0.31	1.56
9,410.0	90.80	270.00	7,240.5	-628.2	-2,282.3	2,346.6	1.64	-0.32	1.61
9,442.0	91.40	270.00	7,239.9	-628.2	-2,314.3	2,378.3	1.88	1.88	0.00
9,474.0	90.20	270.40	7,239.4	-628.1	-2,346.3	2,409.9	3.95	-3.75	1.25
9,505.0	89.90	270.60	7,239.4	-627.8	-2,377.3	2,440.6	1.16	-0.97	0.65
9,537.0	90.60	271.40	7,239.3	-627.2	-2,409.3	2,472.2	3.32	2.19	2.50

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-404
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 28V-404	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)
9,569.0	90.70	270.80	7,238.9	-626.6	-2,441.3	2,503.8	1.90	0.31	-1.88
9,600.0	90.60	270.90	7,238.5	-626.1	-2,472.3	2,534.5	0.46	-0.32	0.32
9,632.0	89.10	270.60	7,238.6	-625.7	-2,504.3	2,566.1	4.78	-4.69	-0.94
9,663.0	88.50	270.50	7,239.3	-625.4	-2,535.3	2,596.8	1.96	-1.94	-0.32
9,695.0	88.80	270.40	7,240.0	-625.2	-2,567.3	2,628.5	0.99	0.94	-0.31
9,727.0	89.10	270.70	7,240.6	-624.9	-2,599.3	2,660.1	1.33	0.94	0.94
9,758.0	89.30	270.40	7,241.0	-624.6	-2,630.2	2,690.8	1.16	0.65	-0.97
9,790.0	89.90	270.10	7,241.3	-624.4	-2,662.2	2,722.5	2.10	1.88	-0.94
9,822.0	90.20	270.20	7,241.2	-624.4	-2,694.2	2,754.1	0.99	0.94	0.31
9,853.0	90.40	270.10	7,241.1	-624.3	-2,725.2	2,784.8	0.72	0.65	-0.32
9,885.0	89.90	270.40	7,241.0	-624.1	-2,757.2	2,816.5	1.82	-1.56	0.94
9,917.0	89.20	270.20	7,241.2	-624.0	-2,789.2	2,848.2	2.28	-2.19	-0.63
9,948.0	89.90	270.20	7,241.5	-623.9	-2,820.2	2,878.9	2.26	2.26	0.00
9,980.0	90.50	270.10	7,241.4	-623.8	-2,852.2	2,910.6	1.90	1.88	-0.31
10,012.0	90.80	269.90	7,241.0	-623.8	-2,884.2	2,942.3	1.13	0.94	-0.63
10,044.0	90.50	270.30	7,240.7	-623.7	-2,916.2	2,974.0	1.56	-0.94	1.25
10,075.0	89.50	270.40	7,240.7	-623.5	-2,947.2	3,004.7	3.24	-3.23	0.32
10,107.0	89.40	270.20	7,241.0	-623.4	-2,979.2	3,036.3	0.70	-0.31	-0.63
10,140.0	90.20	270.20	7,241.1	-623.2	-3,012.2	3,069.0	2.42	2.42	0.00
10,171.0	90.80	270.30	7,240.8	-623.1	-3,043.2	3,099.7	1.96	1.94	0.32
10,203.0	90.80	270.20	7,240.4	-623.0	-3,075.2	3,131.4	0.31	0.00	-0.31
10,235.0	89.70	269.70	7,240.2	-623.0	-3,107.2	3,163.1	3.78	-3.44	-1.56
10,266.0	89.50	269.50	7,240.4	-623.2	-3,138.2	3,193.8	0.91	-0.65	-0.65
10,298.0	89.90	269.70	7,240.6	-623.4	-3,170.2	3,225.6	1.40	1.25	0.63
10,329.0	90.40	269.70	7,240.5	-623.6	-3,201.2	3,256.3	1.61	1.61	0.00
10,361.0	90.60	269.70	7,240.2	-623.8	-3,233.2	3,288.0	0.63	0.63	0.00
10,393.0	90.10	269.90	7,240.0	-623.9	-3,265.2	3,319.7	1.68	-1.56	0.63
10,424.0	89.70	269.30	7,240.1	-624.1	-3,296.2	3,350.5	2.33	-1.29	-1.94
10,456.0	90.20	269.20	7,240.1	-624.5	-3,328.2	3,382.2	1.59	1.56	-0.31
10,488.0	90.80	269.00	7,239.8	-625.0	-3,360.2	3,414.0	1.98	1.88	-0.63
10,519.0	90.50	269.80	7,239.5	-625.3	-3,391.2	3,444.8	2.76	-0.97	2.58
10,551.0	89.60	269.40	7,239.5	-625.6	-3,423.2	3,476.5	3.08	-2.81	-1.25
10,582.0	89.90	269.00	7,239.6	-626.0	-3,454.2	3,507.3	1.61	0.97	-1.29
10,614.0	90.70	269.00	7,239.4	-626.6	-3,486.2	3,539.0	2.50	2.50	0.00
10,646.0	91.30	269.00	7,238.9	-627.1	-3,518.2	3,570.8	1.88	1.88	0.00
10,677.0	91.80	269.40	7,238.0	-627.5	-3,549.2	3,601.6	2.07	1.61	1.29
10,709.0	91.20	269.40	7,237.2	-627.9	-3,581.2	3,633.3	1.88	-1.88	0.00
10,741.0	90.00	268.50	7,236.9	-628.5	-3,613.2	3,665.1	4.69	-3.75	-2.81
10,772.0	89.90	269.00	7,236.9	-629.1	-3,644.1	3,695.9	1.64	-0.32	1.61
10,804.0	89.70	269.20	7,237.0	-629.6	-3,676.1	3,727.6	0.88	-0.63	0.63
10,835.0	91.00	270.20	7,236.8	-629.8	-3,707.1	3,758.4	5.29	4.19	3.23
10,867.0	90.50	268.80	7,236.4	-630.1	-3,739.1	3,790.1	4.65	-1.56	-4.38
10,899.0	90.20	267.10	7,236.2	-631.2	-3,771.1	3,821.9	5.39	-0.94	-5.31
10,930.0	89.80	267.10	7,236.2	-632.8	-3,802.1	3,852.8	1.29	-1.29	0.00
10,961.0	90.70	268.30	7,236.1	-634.0	-3,833.0	3,883.7	4.84	2.90	3.87
10,993.0	90.40	267.50	7,235.8	-635.2	-3,865.0	3,915.5	2.67	-0.94	-2.50
11,025.0	89.60	266.80	7,235.8	-636.8	-3,897.0	3,947.4	3.32	-2.50	-2.19
11,057.0	90.40	268.10	7,235.8	-638.2	-3,929.0	3,979.3	4.77	2.50	4.06
11,088.0	91.00	269.40	7,235.4	-638.9	-3,959.9	4,010.0	4.62	1.94	4.19
11,120.0	90.10	268.00	7,235.1	-639.6	-3,991.9	4,041.8	5.20	-2.81	-4.38
11,151.0	90.30	269.10	7,235.0	-640.4	-4,022.9	4,072.6	3.61	0.65	3.55
11,183.0	90.40	269.10	7,234.8	-640.9	-4,054.9	4,104.4	0.31	0.31	0.00
11,214.0	89.50	268.60	7,234.8	-641.5	-4,085.9	4,135.2	3.32	-2.90	-1.61
11,246.0	89.00	268.60	7,235.2	-642.3	-4,117.9	4,167.0	1.56	-1.56	0.00

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sunmarke 28V-404
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 28V-404	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)	
11,278.0	89.60	268.50	7,235.6	-643.1	-4,149.9	4,198.8	1.90	1.88	-0.31	
11,310.0	89.70	268.60	7,235.8	-643.9	-4,181.9	4,230.6	0.44	0.31	0.31	
11,341.0	89.80	268.60	7,235.9	-644.7	-4,212.9	4,261.4	0.32	0.32	0.00	
11,373.0	90.00	268.40	7,236.0	-645.5	-4,244.9	4,293.2	0.88	0.63	-0.63	
11,405.0	90.50	268.10	7,235.9	-646.5	-4,276.8	4,325.0	1.82	1.56	-0.94	
11,437.0	90.30	269.10	7,235.6	-647.3	-4,308.8	4,356.8	3.19	-0.63	3.13	
11,468.0	89.70	268.90	7,235.6	-647.8	-4,339.8	4,387.6	2.04	-1.94	-0.65	
11,500.0	89.70	269.70	7,235.8	-648.2	-4,371.8	4,419.4	2.50	0.00	2.50	
11,532.0	88.60	269.50	7,236.3	-648.5	-4,403.8	4,451.1	3.49	-3.44	-0.63	
11,563.0	88.80	269.50	7,237.0	-648.7	-4,434.8	4,481.8	0.65	0.65	0.00	
11,595.0	88.80	269.00	7,237.6	-649.1	-4,466.8	4,513.6	1.56	0.00	-1.56	
11,626.0	89.10	268.70	7,238.2	-649.8	-4,497.8	4,544.4	1.37	0.97	-0.97	
11,658.0	89.50	268.80	7,238.6	-650.5	-4,529.8	4,576.2	1.29	1.25	0.31	
11,685.0	89.50	268.70	7,238.8	-651.1	-4,556.8	4,603.0	0.37	0.00	-0.37	
11,739.0	89.50	268.70	7,239.3	-652.3	-4,610.7	4,656.6	0.00	0.00	0.00	
BHL 1115'FNL, 500'FWL										

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")		
7,638.0	7,243.9	7"	7	7-1/2		

Checked By: _____ Approved By: _____ Date: _____