

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dillard 20Y-401**

Surface Location: Dillard 20Y-HZ Pad Sec.20-T7N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

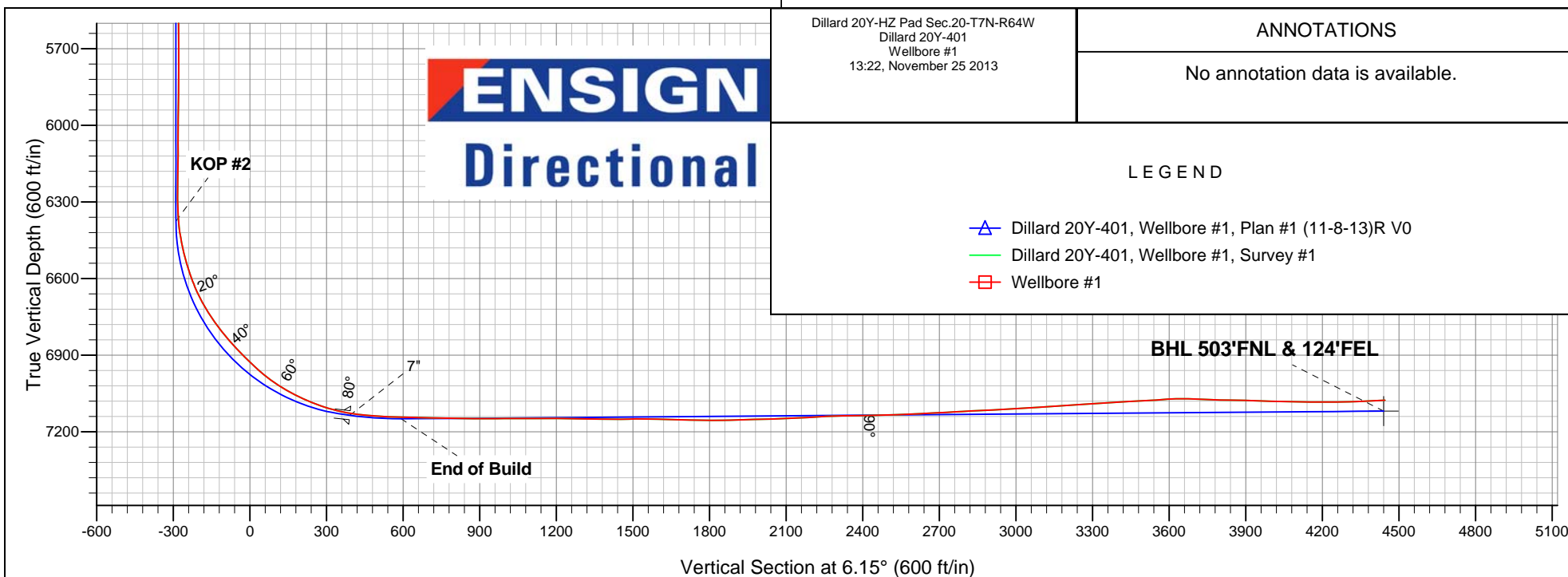
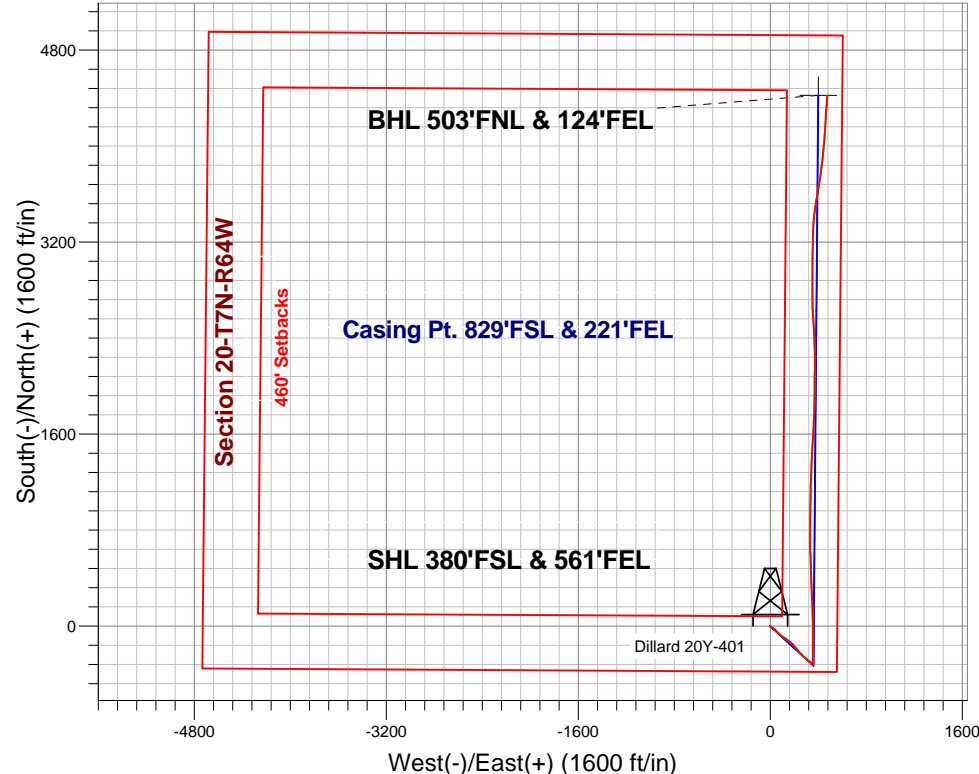
Ground Elevation: 4864.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445348.37	3259506.78	40.552130	-104.566120	

RKB - 15' WELL @ 4879.0ft (RKB - 15')

FINAL SURVEY

Projected Bottom Hole Location
11565' MD 7076' TVD 4420' N & 476' E of SHL
92.8 degree Incl @ 4.2 degree AZM



Dillard 20Y-HZ Pad Sec.20-T7N-R64W
Dillard 20Y-401
Wellbore #1
13:22, November 25 2013

ANNOTATIONS

No annotation data is available.

LEGEND

- Blue line with triangle: Dillard 20Y-401, Wellbore #1, Plan #1 (11-8-13)R V0
- Green line: Dillard 20Y-401, Wellbore #1, Survey #1
- Red line with square: Wellbore #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T7N-R64W

Dillard 20Y-HZ Pad Sec.20-T7N-R64W

Dillard 20Y-401

Wellbore #1

Design: Wellbore #1

Standard Survey Report

25 November, 2013

Survey	Survey Data									
	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)
Wellbore Data	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	146.0	1.30	135.00	146.0	-1.2	1.2	-1.0	0.89	0.89	0.00
	238.0	1.30	138.50	238.0	-2.7	2.6	-2.4	0.09	0.00	3.80
	330.0	1.00	149.00	329.9	-4.2	3.7	-3.7	0.40	-0.33	11.41
	422.0	0.92	139.70	421.9	-5.4	4.6	-4.9	0.19	-0.09	-10.11
	514.0	0.88	146.82	513.9	-6.6	5.5	-5.9	0.13	-0.04	7.74
	605.0	0.84	159.83	604.9	-7.8	6.1	-7.1	0.22	-0.04	14.30
	697.0	1.10	147.70	696.9	-9.2	6.8	-8.4	0.36	0.28	-13.18
	788.0	0.84	139.44	787.9	-10.4	7.7	-9.5	0.32	-0.29	-9.08
	880.0	0.84	134.25	879.9	-11.4	8.6	-10.4	0.08	0.00	-5.64
	973.0	0.80	105.10	972.9	-12.0	9.7	-10.9	0.45	-0.04	-31.34
	1,064.0	0.80	88.40	1,063.9	-12.2	11.0	-10.9	0.26	0.00	-18.35

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20Y-401
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4879.0ft (RKB - 15')
Site:	Dillard 20Y-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4879.0ft (RKB - 15')
Well:	Dillard 20Y-401	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)
1,156.0	0.90	102.80	1,155.8	-12.3	12.3	-10.9	0.26	0.11	15.65
1,252.0	1.20	103.60	1,251.8	-12.7	14.0	-11.1	0.31	0.31	0.83
1,347.0	2.40	107.10	1,346.8	-13.5	16.9	-11.7	1.27	1.26	3.68
1,442.0	3.70	124.40	1,441.6	-15.9	21.3	-13.5	1.66	1.37	18.21
1,537.0	4.80	126.20	1,536.4	-19.9	27.1	-16.9	1.17	1.16	1.89
1,632.0	6.40	127.70	1,630.9	-25.5	34.5	-21.7	1.69	1.68	1.58
1,728.0	7.20	135.60	1,726.3	-33.1	42.9	-28.3	1.28	0.83	8.23
1,823.0	8.60	139.50	1,820.4	-42.7	51.7	-37.0	1.58	1.47	4.11
1,918.0	7.80	134.80	1,914.4	-52.7	60.9	-45.9	1.10	-0.84	-4.95
2,013.0	6.60	129.90	2,008.6	-60.7	69.6	-52.9	1.42	-1.26	-5.16
2,107.0	7.50	131.50	2,101.9	-68.3	78.4	-59.5	0.98	0.96	1.70
2,202.0	7.70	129.30	2,196.1	-76.4	87.9	-66.6	0.37	0.21	-2.32
2,297.0	7.10	126.80	2,290.3	-84.0	97.6	-73.0	0.72	-0.63	-2.63
2,392.0	7.40	122.30	2,384.5	-90.7	107.4	-78.7	0.68	0.32	-4.74
2,487.0	7.70	125.90	2,478.7	-97.7	117.8	-84.6	0.59	0.32	3.79
2,582.0	8.70	124.70	2,572.7	-105.6	128.8	-91.2	1.07	1.05	-1.26
2,677.0	8.50	129.10	2,666.7	-114.1	140.2	-98.4	0.72	-0.21	4.63
2,773.0	8.80	125.90	2,761.6	-122.9	151.6	-105.9	0.59	0.31	-3.33
2,867.0	9.20	124.70	2,854.4	-131.4	163.6	-113.1	0.47	0.43	-1.28
2,962.0	8.80	130.40	2,948.3	-140.4	175.4	-120.8	1.03	-0.42	6.00
3,057.0	8.70	137.10	3,042.2	-150.4	185.8	-129.6	1.08	-0.11	7.05
3,152.0	8.80	139.80	3,136.0	-161.2	195.4	-139.3	0.44	0.11	2.84
3,247.0	8.00	139.30	3,230.0	-171.7	204.4	-148.9	0.85	-0.84	-0.53
3,342.0	7.50	138.10	3,324.2	-181.4	212.9	-157.5	0.55	-0.53	-1.26
3,437.0	8.00	140.40	3,418.3	-191.1	221.2	-166.3	0.62	0.53	2.42
3,532.0	6.30	140.00	3,512.5	-200.2	228.8	-174.5	1.79	-1.79	-0.42
3,627.0	6.20	143.40	3,607.0	-208.3	235.2	-181.9	0.40	-0.11	3.58
3,722.0	6.80	135.50	3,701.4	-216.4	242.2	-189.2	1.13	0.63	-8.32
3,817.0	6.90	138.70	3,795.7	-224.7	249.9	-196.7	0.42	0.11	3.37
3,913.0	7.00	141.30	3,891.0	-233.6	257.4	-204.7	0.34	0.10	2.71
4,008.0	7.80	137.90	3,985.2	-242.9	265.3	-213.1	0.96	0.84	-3.58
4,104.0	9.00	129.00	4,080.2	-252.5	275.5	-221.5	1.84	1.25	-9.27
4,199.0	9.20	128.70	4,174.0	-261.9	287.2	-229.6	0.22	0.21	-0.32
4,294.0	8.80	128.00	4,267.8	-271.1	298.9	-237.6	0.44	-0.42	-0.74
4,389.0	8.30	127.50	4,361.8	-279.8	310.0	-245.0	0.53	-0.53	-0.53
4,484.0	7.70	132.60	4,455.8	-288.2	320.2	-252.3	0.98	-0.63	5.37
4,579.0	6.60	130.80	4,550.1	-296.1	329.0	-259.2	1.18	-1.16	-1.89
4,675.0	5.80	130.60	4,645.5	-302.9	336.8	-265.1	0.83	-0.83	-0.21
4,770.0	5.20	130.30	4,740.1	-308.8	343.8	-270.2	0.63	-0.63	-0.32
4,865.0	3.30	142.50	4,834.8	-313.7	348.7	-274.6	2.20	-2.00	12.84
4,960.0	1.60	141.40	4,929.7	-316.9	351.2	-277.5	1.79	-1.79	-1.16
5,055.0	0.30	157.00	5,024.7	-318.2	352.1	-278.7	1.38	-1.37	16.42
5,150.0	0.20	342.50	5,119.7	-318.3	352.2	-278.7	0.53	-0.11	-183.68
5,245.0	0.40	280.00	5,214.7	-318.1	351.8	-278.6	0.37	0.21	-65.79
5,340.0	0.60	255.10	5,309.7	-318.1	351.0	-278.7	0.31	0.21	-26.21
5,435.0	0.30	283.80	5,404.7	-318.2	350.3	-278.9	0.39	-0.32	30.21
5,530.0	0.40	249.30	5,499.7	-318.3	349.7	-279.0	0.24	0.11	-36.32
5,625.0	0.30	309.40	5,594.7	-318.2	349.2	-279.0	0.38	-0.11	63.26
5,720.0	0.40	325.10	5,689.7	-317.8	348.8	-278.6	0.14	0.11	16.53
5,815.0	1.10	104.10	5,784.7	-317.7	349.5	-278.5	1.50	0.74	146.32
5,910.0	1.20	141.00	5,879.7	-318.7	351.0	-279.3	0.77	0.11	38.84
6,005.0	1.00	131.10	5,974.7	-320.1	352.3	-280.5	0.29	-0.21	-10.42
6,100.0	0.70	128.30	6,069.7	-321.0	353.4	-281.3	0.32	-0.32	-2.95

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20Y-401
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4879.0ft (RKB - 15')
Site:	Dillard 20Y-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4879.0ft (RKB - 15')
Well:	Dillard 20Y-401	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)
6,195.0	0.70	136.60	6,164.6	-321.7	354.2	-282.0	0.11	0.00	8.74
6,290.0	0.70	129.70	6,259.6	-322.5	355.1	-282.7	0.09	0.00	-7.26
6,353.0	1.30	7.80	6,322.6	-322.1	355.5	-282.2	2.81	0.95	-193.49
6,385.0	3.60	359.00	6,354.6	-320.7	355.5	-280.8	7.26	7.19	-27.50
6,417.0	5.90	357.60	6,386.5	-318.1	355.4	-278.2	7.20	7.19	-4.38
6,449.0	8.30	357.80	6,418.2	-314.1	355.3	-274.3	7.50	7.50	0.63
6,480.0	10.50	358.50	6,448.8	-309.0	355.1	-269.3	7.11	7.10	2.26
6,512.0	12.40	359.70	6,480.2	-302.7	355.0	-262.9	5.98	5.94	3.75
6,544.0	14.30	0.60	6,511.3	-295.3	355.0	-255.6	5.97	5.94	2.81
6,576.0	16.40	1.20	6,542.2	-286.8	355.2	-247.2	6.58	6.56	1.88
6,607.0	18.20	1.80	6,571.8	-277.6	355.4	-238.0	5.83	5.81	1.94
6,639.0	20.70	1.40	6,601.9	-267.0	355.7	-227.4	7.82	7.81	-1.25
6,671.0	23.10	1.30	6,631.6	-255.0	356.0	-215.5	7.50	7.50	-0.31
6,702.0	25.50	1.30	6,659.9	-242.3	356.3	-202.8	7.74	7.74	0.00
6,734.0	28.00	1.20	6,688.5	-227.9	356.6	-188.4	7.81	7.81	-0.31
6,766.0	30.60	0.30	6,716.4	-212.2	356.8	-172.8	8.24	8.13	-2.81
6,798.0	33.40	359.20	6,743.5	-195.3	356.7	-156.0	8.94	8.75	-3.44
6,829.0	35.60	359.20	6,769.0	-177.7	356.5	-138.5	7.10	7.10	0.00
6,861.0	37.80	358.90	6,794.7	-158.6	356.1	-119.6	6.90	6.88	-0.94
6,893.0	39.60	359.50	6,819.7	-138.6	355.9	-99.7	5.75	5.63	1.88
6,924.0	41.10	0.30	6,843.3	-118.5	355.8	-79.7	5.12	4.84	2.58
6,956.0	42.70	359.80	6,867.1	-97.2	355.8	-58.5	5.11	5.00	-1.56
6,988.0	44.00	359.10	6,890.4	-75.2	355.6	-36.7	4.33	4.06	-2.19
7,019.0	45.80	358.70	6,912.3	-53.3	355.2	-15.0	5.88	5.81	-1.29
7,051.0	47.30	358.90	6,934.3	-30.1	354.7	8.1	4.71	4.69	0.63
7,083.0	48.40	359.70	6,955.8	-6.4	354.4	31.6	3.91	3.44	2.50
7,114.0	50.50	359.80	6,976.0	17.2	354.3	55.0	6.78	6.77	0.32
7,146.0	53.70	359.90	6,995.6	42.4	354.3	80.1	10.00	10.00	0.31
7,178.0	56.60	359.50	7,013.9	68.7	354.1	106.2	9.12	9.06	-1.25
7,209.0	59.30	358.90	7,030.4	95.0	353.8	132.3	8.86	8.71	-1.94
7,241.0	61.80	358.40	7,046.1	122.8	353.1	159.9	7.93	7.81	-1.56
7,273.0	64.20	358.40	7,060.6	151.3	352.3	188.2	7.50	7.50	0.00
7,304.0	66.20	358.10	7,073.6	179.4	351.5	216.0	6.51	6.45	-0.97
7,336.0	68.30	356.90	7,086.0	208.9	350.2	245.2	7.42	6.56	-3.75
7,368.0	70.90	356.90	7,097.2	238.9	348.5	274.8	8.13	8.13	0.00
7,399.0	73.40	356.70	7,106.7	268.3	346.9	303.9	8.09	8.06	-0.65
7,431.0	76.00	357.10	7,115.1	299.1	345.2	334.4	8.21	8.13	1.25
7,463.0	78.30	357.80	7,122.2	330.3	343.8	365.2	7.50	7.19	2.19
7,494.0	80.90	358.30	7,127.8	360.8	342.8	395.4	8.54	8.39	1.61
7,516.0	82.80	358.40	7,130.9	382.5	342.2	417.0	8.65	8.64	0.45
7,583.0	85.90	358.20	7,137.5	449.2	340.2	483.0	4.64	4.63	-0.30
7,613.0	86.30	358.00	7,139.6	479.1	339.2	512.7	1.49	1.33	-0.67
7,644.0	87.10	357.40	7,141.3	510.0	338.0	543.3	3.22	2.58	-1.94
7,674.0	88.00	358.40	7,142.6	540.0	336.9	572.9	4.48	3.00	3.33
7,705.0	89.10	358.90	7,143.4	571.0	336.1	603.7	3.90	3.55	1.61
7,735.0	89.50	358.20	7,143.8	600.9	335.4	633.4	2.69	1.33	-2.33
7,766.0	89.50	358.10	7,144.1	631.9	334.4	664.1	0.32	0.00	-0.32
7,796.0	89.00	359.10	7,144.4	661.9	333.6	693.8	3.73	-1.67	3.33
7,827.0	88.00	358.80	7,145.3	692.9	333.1	724.6	3.37	-3.23	-0.97
7,857.0	88.40	0.40	7,146.2	722.9	332.9	754.4	5.49	1.33	5.33
7,887.0	88.40	0.30	7,147.0	752.9	333.0	784.2	0.33	0.00	-0.33
7,918.0	88.90	0.20	7,147.8	783.9	333.2	815.0	1.64	1.61	-0.32
7,948.0	89.40	0.50	7,148.2	813.9	333.4	844.9	1.94	1.67	1.00
7,979.0	90.10	0.60	7,148.3	844.9	333.7	875.7	2.28	2.26	0.32

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20Y-401
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4879.0ft (RKB - 15')
Site:	Dillard 20Y-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4879.0ft (RKB - 15')
Well:	Dillard 20Y-401	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)
8,010.0	90.40	0.90	7,148.2	875.9	334.1	906.6	1.37	0.97	0.97
8,040.0	90.10	0.10	7,148.1	905.8	334.3	936.4	2.85	-1.00	-2.67
8,070.0	90.20	1.10	7,148.0	935.8	334.6	966.3	3.35	0.33	3.33
8,101.0	90.20	1.00	7,147.9	966.8	335.2	997.2	0.32	0.00	-0.32
8,131.0	90.50	1.20	7,147.7	996.8	335.8	1,027.1	1.20	1.00	0.67
8,161.0	90.20	1.10	7,147.5	1,026.8	336.4	1,056.9	1.05	-1.00	-0.33
8,192.0	89.60	0.50	7,147.6	1,057.8	336.8	1,087.8	2.74	-1.94	-1.94
8,223.0	89.40	0.00	7,147.9	1,088.8	337.0	1,118.6	1.74	-0.65	-1.61
8,253.0	89.50	1.20	7,148.1	1,118.8	337.3	1,148.5	4.01	0.33	4.00
8,284.0	90.40	1.80	7,148.2	1,149.8	338.1	1,179.4	3.49	2.90	1.94
8,314.0	90.70	2.00	7,147.9	1,179.8	339.1	1,209.3	1.20	1.00	0.67
8,345.0	90.10	2.20	7,147.7	1,210.8	340.2	1,240.2	2.04	-1.94	0.65
8,375.0	88.50	1.60	7,148.0	1,240.7	341.2	1,270.1	5.70	-5.33	-2.00
8,406.0	88.40	2.40	7,148.9	1,271.7	342.3	1,301.1	2.60	-0.32	2.58
8,436.0	88.60	2.20	7,149.7	1,301.7	343.5	1,331.0	0.94	0.67	-0.67
8,466.0	89.00	2.20	7,150.3	1,331.7	344.6	1,360.9	1.33	1.33	0.00
8,497.0	89.50	2.40	7,150.7	1,362.6	345.9	1,391.8	1.74	1.61	0.65
8,527.0	90.10	2.00	7,150.8	1,392.6	347.0	1,421.8	2.40	2.00	-1.33
8,558.0	90.50	2.70	7,150.6	1,423.6	348.3	1,452.7	2.60	1.29	2.26
8,589.0	91.30	3.20	7,150.1	1,454.5	349.9	1,483.6	3.04	2.58	1.61
8,619.0	91.30	3.10	7,149.5	1,484.5	351.6	1,513.6	0.33	0.00	-0.33
8,650.0	89.40	3.00	7,149.3	1,515.4	353.2	1,544.5	6.14	-6.13	-0.32
8,680.0	88.20	3.00	7,149.9	1,545.4	354.8	1,574.5	4.00	-4.00	0.00
8,711.0	88.00	3.30	7,150.9	1,576.3	356.5	1,605.4	1.16	-0.65	0.97
8,741.0	88.30	3.80	7,151.9	1,606.2	358.3	1,635.4	1.94	1.00	1.67
8,771.0	88.90	4.10	7,152.6	1,636.2	360.4	1,665.4	2.24	2.00	1.00
8,802.0	88.80	3.40	7,153.3	1,667.1	362.4	1,696.3	2.28	-0.32	-2.26
8,833.0	89.00	2.90	7,153.8	1,698.0	364.1	1,727.3	1.74	0.65	-1.61
8,863.0	89.20	2.00	7,154.3	1,728.0	365.4	1,757.2	3.07	0.67	-3.00
8,894.0	89.50	1.70	7,154.7	1,759.0	366.4	1,788.1	1.37	0.97	-0.97
8,924.0	90.00	1.60	7,154.8	1,789.0	367.3	1,818.0	1.70	1.67	-0.33
8,956.0	90.70	1.50	7,154.6	1,821.0	368.1	1,849.9	2.21	2.19	-0.31
8,987.0	91.40	0.50	7,154.0	1,852.0	368.7	1,880.8	3.94	2.26	-3.23
9,019.0	91.40	0.70	7,153.3	1,883.9	369.0	1,912.6	0.62	0.00	0.63
9,050.0	91.80	0.80	7,152.4	1,914.9	369.4	1,943.5	1.33	1.29	0.32
9,082.0	91.90	0.10	7,151.4	1,946.9	369.7	1,975.3	2.21	0.31	-2.19
9,114.0	91.60	0.40	7,150.4	1,978.9	369.8	2,007.1	1.33	-0.94	0.94
9,145.0	91.30	359.90	7,149.6	2,009.9	369.9	2,037.9	1.88	-0.97	-1.61
9,177.0	90.70	0.60	7,149.0	2,041.9	370.0	2,069.8	2.88	-1.88	2.19
9,208.0	92.10	0.50	7,148.3	2,072.9	370.3	2,100.6	4.53	4.52	-0.32
9,240.0	93.20	1.10	7,146.8	2,104.8	370.8	2,132.4	3.91	3.44	1.88
9,272.0	93.40	1.30	7,145.0	2,136.8	371.4	2,164.3	0.88	0.63	0.63
9,303.0	93.90	0.80	7,143.0	2,167.7	372.0	2,195.1	2.28	1.61	-1.61
9,335.0	93.50	0.80	7,140.9	2,199.6	372.5	2,226.9	1.25	-1.25	0.00
9,366.0	92.10	0.30	7,139.4	2,230.6	372.8	2,257.7	4.79	-4.52	-1.61
9,398.0	91.80	0.20	7,138.3	2,262.6	372.9	2,289.5	0.99	-0.94	-0.31
9,430.0	91.70	358.80	7,137.3	2,294.6	372.6	2,321.3	4.38	-0.31	-4.38
9,461.0	90.70	357.70	7,136.7	2,325.5	371.7	2,352.0	4.79	-3.23	-3.55
9,493.0	90.50	356.50	7,136.4	2,357.5	370.1	2,383.6	3.80	-0.63	-3.75
9,525.0	91.30	357.10	7,135.9	2,389.4	368.3	2,415.1	3.12	2.50	1.88
9,557.0	90.40	356.50	7,135.4	2,421.4	366.5	2,446.7	3.38	-2.81	-1.88
9,588.0	91.50	357.40	7,134.9	2,452.3	364.8	2,477.3	4.58	3.55	2.90
9,620.0	92.10	356.50	7,133.9	2,484.3	363.1	2,508.9	3.38	1.88	-2.81

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20Y-401
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4879.0ft (RKB - 15')
Site:	Dillard 20Y-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4879.0ft (RKB - 15')
Well:	Dillard 20Y-401	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)
9,652.0	92.20	356.70	7,132.7	2,516.2	361.2	2,540.4	0.70	0.31	0.63
9,684.0	92.50	356.20	7,131.3	2,548.1	359.3	2,571.9	1.82	0.94	-1.56
9,716.0	92.70	356.20	7,129.9	2,580.0	357.1	2,603.4	0.63	0.63	0.00
9,747.0	92.80	356.30	7,128.4	2,610.9	355.1	2,633.9	0.46	0.32	0.32
9,779.0	92.60	357.60	7,126.9	2,642.8	353.4	2,665.5	4.11	-0.63	4.06
9,811.0	93.10	358.50	7,125.3	2,674.8	352.3	2,697.1	3.21	1.56	2.81
9,843.0	92.90	359.90	7,123.6	2,706.7	351.9	2,728.8	4.41	-0.63	4.38
9,874.0	93.10	0.80	7,122.0	2,737.7	352.1	2,759.6	2.97	0.65	2.90
9,906.0	93.10	0.10	7,120.3	2,769.6	352.3	2,791.4	2.18	0.00	-2.19
9,938.0	93.10	358.60	7,118.5	2,801.6	352.0	2,823.2	4.68	0.00	-4.69
9,969.0	92.90	358.80	7,116.9	2,832.5	351.2	2,853.8	0.91	-0.65	0.65
10,001.0	93.30	359.90	7,115.2	2,864.5	350.9	2,885.6	3.65	1.25	3.44
10,033.0	93.30	359.90	7,113.4	2,896.4	350.8	2,917.3	0.00	0.00	0.00
10,064.0	92.70	359.60	7,111.7	2,927.4	350.7	2,948.1	2.16	-1.94	-0.97
10,096.0	93.30	0.40	7,110.1	2,959.3	350.7	2,979.9	3.12	1.88	2.50
10,128.0	93.00	0.80	7,108.3	2,991.3	351.0	3,011.7	1.56	-0.94	1.25
10,160.0	93.10	0.80	7,106.6	3,023.2	351.5	3,043.5	0.31	0.31	0.00
10,191.0	92.90	0.90	7,105.0	3,054.2	351.9	3,074.3	0.72	-0.65	0.32
10,223.0	93.40	2.00	7,103.2	3,086.1	352.7	3,106.2	3.77	1.56	3.44
10,255.0	93.50	1.30	7,101.3	3,118.1	353.7	3,138.0	2.21	0.31	-2.19
10,286.0	94.90	2.10	7,099.0	3,149.0	354.6	3,168.8	5.20	4.52	2.58
10,318.0	94.30	0.80	7,096.5	3,180.8	355.4	3,200.6	4.46	-1.88	-4.06
10,350.0	93.30	0.90	7,094.3	3,212.8	355.9	3,232.4	3.14	-3.13	0.31
10,382.0	94.10	1.20	7,092.3	3,244.7	356.4	3,264.2	2.67	2.50	0.94
10,413.0	93.90	1.70	7,090.1	3,275.6	357.2	3,295.0	1.73	-0.65	1.61
10,445.0	93.50	2.00	7,088.0	3,307.5	358.3	3,326.9	1.56	-1.25	0.94
10,477.0	92.80	2.50	7,086.3	3,339.5	359.5	3,358.8	2.69	-2.19	1.56
10,509.0	93.60	5.00	7,084.5	3,371.3	361.6	3,390.7	8.19	2.50	7.81
10,541.0	94.70	6.90	7,082.2	3,403.1	364.9	3,422.6	6.85	3.44	5.94
10,573.0	92.40	5.80	7,080.2	3,434.8	368.4	3,454.5	7.96	-7.19	-3.44
10,604.0	92.60	6.50	7,078.8	3,465.6	371.8	3,485.5	2.35	0.65	2.26
10,635.0	92.70	7.60	7,077.4	3,496.3	375.6	3,516.5	3.56	0.32	3.55
10,667.0	94.00	10.20	7,075.5	3,527.9	380.5	3,548.4	9.07	4.06	8.13
10,698.0	94.20	11.70	7,073.3	3,558.3	386.4	3,579.2	4.87	0.65	4.84
10,730.0	93.20	10.70	7,071.3	3,589.6	392.6	3,611.0	4.41	-3.13	-3.13
10,762.0	89.70	9.20	7,070.4	3,621.1	398.1	3,642.9	11.90	-10.94	-4.69
10,793.0	88.90	9.40	7,070.8	3,651.7	403.1	3,673.8	2.66	-2.58	0.65
10,825.0	87.80	9.30	7,071.7	3,683.2	408.3	3,705.8	3.45	-3.44	-0.31
10,857.0	87.60	8.60	7,073.0	3,714.8	413.3	3,737.7	2.27	-0.63	-2.19
10,888.0	88.00	8.10	7,074.2	3,745.5	417.8	3,768.7	2.06	1.29	-1.61
10,920.0	88.60	6.90	7,075.2	3,777.2	422.0	3,800.6	4.19	1.88	-3.75
10,952.0	88.90	6.60	7,075.9	3,809.0	425.7	3,832.6	1.33	0.94	-0.94
10,984.0	89.10	6.60	7,076.4	3,840.7	429.4	3,864.6	0.63	0.63	0.00
11,015.0	89.20	6.70	7,076.9	3,871.5	433.0	3,895.6	0.46	0.32	0.32
11,047.0	88.40	6.40	7,077.6	3,903.3	436.6	3,927.6	2.67	-2.50	-0.94
11,078.0	88.00	6.40	7,078.5	3,934.1	440.1	3,958.6	1.29	-1.29	0.00
11,110.0	87.80	5.90	7,079.7	3,965.9	443.5	3,990.6	1.68	-0.63	-1.56
11,142.0	88.10	5.20	7,080.9	3,997.7	446.6	4,022.6	2.38	0.94	-2.19
11,174.0	88.40	4.70	7,081.8	4,029.6	449.4	4,054.5	1.82	0.94	-1.56
11,206.0	89.00	4.30	7,082.6	4,061.5	451.9	4,086.5	2.25	1.88	-1.25
11,238.0	89.20	4.10	7,083.1	4,093.4	454.2	4,118.5	0.88	0.63	-0.63
11,269.0	89.60	4.00	7,083.4	4,124.3	456.4	4,149.5	1.33	1.29	-0.32
11,301.0	89.90	3.80	7,083.5	4,156.2	458.6	4,181.4	1.13	0.94	-0.63

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20Y-401
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4879.0ft (RKB - 15')
Site:	Dillard 20Y-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4879.0ft (RKB - 15')
Well:	Dillard 20Y-401	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)
11,333.0	90.30	3.90	7,083.5	4,188.2	460.7	4,213.4	1.29	1.25	0.31
11,365.0	90.60	3.00	7,083.2	4,220.1	462.7	4,245.4	2.96	0.94	-2.81
11,396.0	90.60	3.10	7,082.9	4,251.1	464.3	4,276.3	0.32	0.00	0.32
11,428.0	91.20	3.10	7,082.4	4,283.0	466.0	4,308.3	1.88	1.88	0.00
11,459.0	92.50	4.40	7,081.4	4,313.9	468.1	4,339.2	5.93	4.19	4.19
11,491.0	92.70	4.30	7,079.9	4,345.8	470.5	4,371.2	0.70	0.63	-0.31
11,511.0	92.80	4.20	7,079.0	4,365.7	472.0	4,391.2	0.71	0.50	-0.50
11,560.7	92.80	4.20	7,076.5	4,415.3	475.6	4,440.8	0.00	0.00	0.00
11,565.0	92.80	4.20	7,076.3	4,419.5	475.9	4,445.1	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------