

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dillard 20M-203**

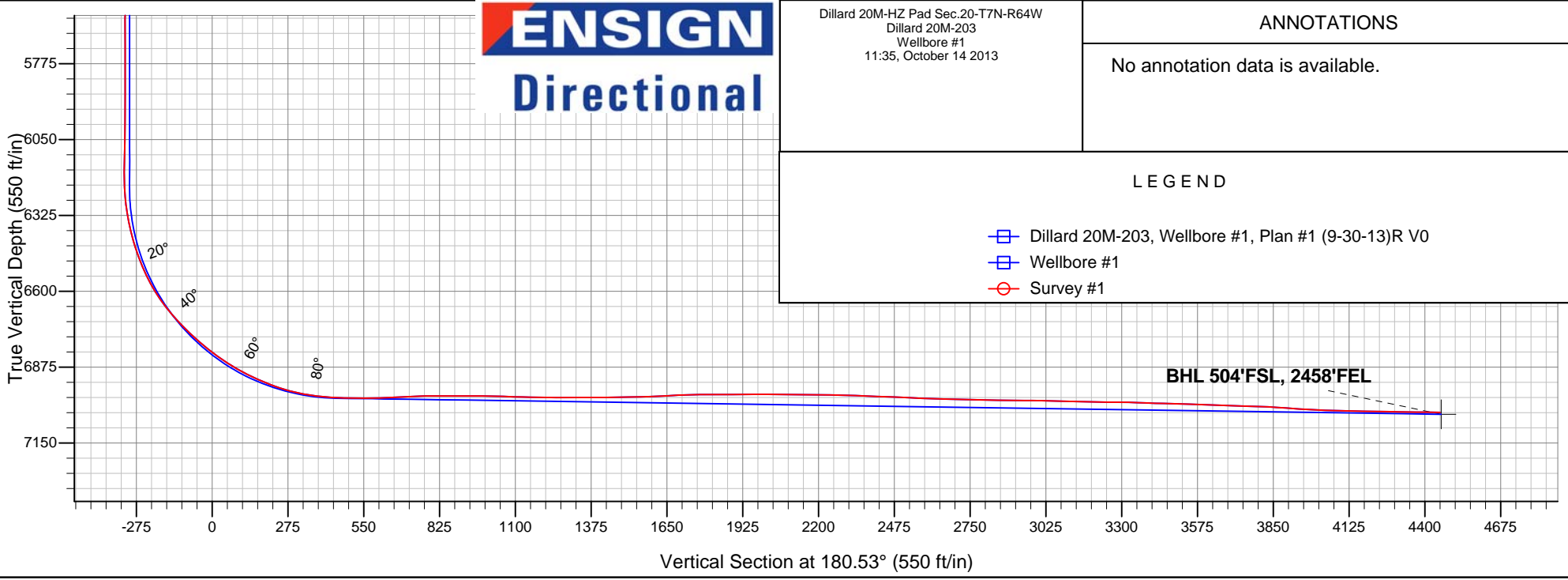
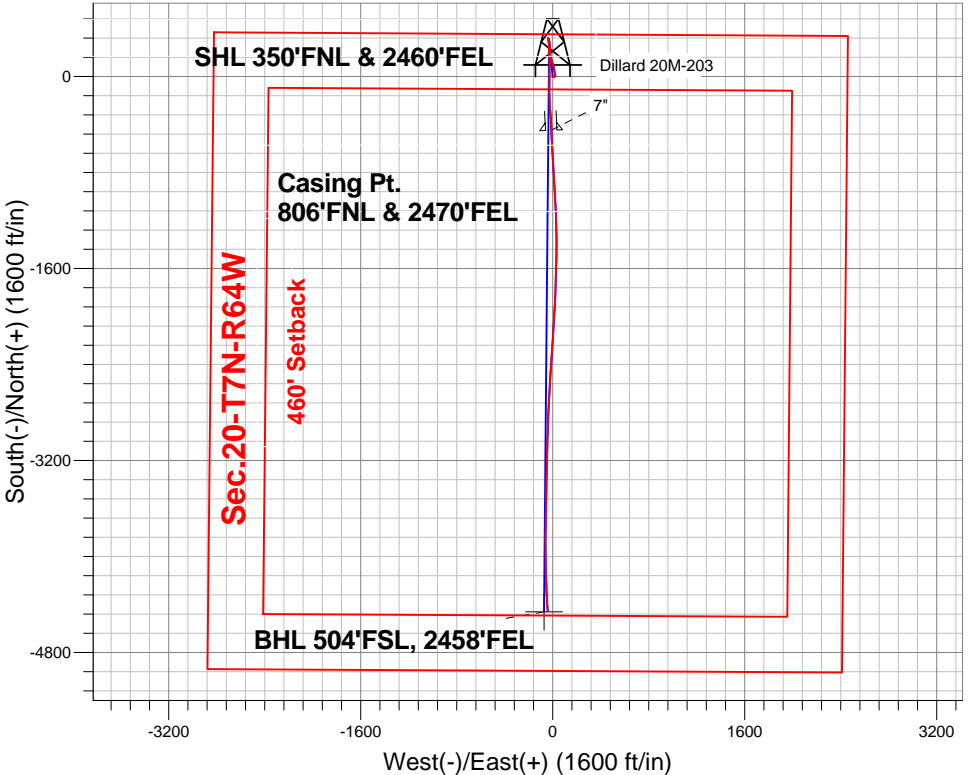
Surface Location: Dillard 20M-HZ Pad Sec.20-T7N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4899.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1449911.67	3257602.69	40.564710	-104.572800	
RKB - 15' WELL @ 4914.0ft (RKB - 15')						

FINAL SURVEY

Projected Bottom Hole Location
11440'MD 7039'TVD 4455'S & 41'W of SHL
89.8 degree Incl @ 176.4 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.20-T7N-R64W

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

Dillard 20M-203

Wellbore #1

Survey: Survey #1

Standard Survey Report

14 October, 2013

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20M-203
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4914.0ft (RKB - 15')
Site:	Dillard 20M-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4914.0ft (RKB - 15')
Well:	Dillard 20M-203	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.20-T7N-R64W, Weld County, CO		
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	Dillard 20M-HZ Pad Sec.20-T7N-R64W				
Site Position:		Northing:	1,449,911.68ft	Latitude:	40.564710
From:	Lat/Long	Easting:	3,257,602.69ft	Longitude:	-104.572800
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.60 °

Well	Dillard 20M-203					
Well Position	+N-S	0.0 ft	Northing:	1,449,911.67 ft	Latitude:	40.564710
	+E-W	0.0 ft	Easting:	3,257,602.69 ft	Longitude:	-104.572800
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,899.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/30/2013	8.47	67.14	52,995

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	180.53	

Survey Program	Date	10/14/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
146.0	11,440.0	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	
146.0	1.20	92.00	146.0	-0.1	1.5	0.0	0.82	0.82	0.00	
238.0	1.20	102.00	238.0	-0.3	3.4	0.3	0.23	0.00	10.87	
330.0	1.00	123.30	330.0	-0.9	5.0	0.9	0.49	-0.22	23.15	
422.0	0.50	98.70	421.9	-1.4	6.1	1.4	0.63	-0.54	-26.74	
514.0	0.80	113.80	513.9	-1.7	7.1	1.7	0.37	0.33	16.41	
605.0	0.70	97.80	604.9	-2.1	8.2	2.0	0.25	-0.11	-17.58	
697.0	0.30	94.00	696.9	-2.2	9.0	2.1	0.44	-0.43	-4.13	
788.0	0.30	87.00	787.9	-2.2	9.5	2.1	0.04	0.00	-7.69	
889.0	1.10	61.20	888.9	-1.7	10.6	1.6	0.83	0.79	-25.54	
974.0	0.60	63.78	973.9	-1.1	11.7	1.0	0.59	-0.59	3.04	
1,066.0	0.80	59.80	1,065.9	-0.6	12.7	0.5	0.22	0.22	-4.33	

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Site:	Dillard 20M-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4914.0ft (RKB - 15')
Well:	Dillard 20M-203	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)
1,158.0	0.80	59.90	1,157.9	0.1	13.8	-0.2	0.00	0.00	0.11
1,252.0	0.80	54.60	1,251.9	0.8	14.9	-0.9	0.08	0.00	-5.64
1,348.0	0.90	73.90	1,347.9	1.4	16.2	-1.5	0.31	0.10	20.10
1,442.0	0.80	54.90	1,441.9	2.0	17.4	-2.1	0.32	-0.11	-20.21
1,537.0	1.00	60.60	1,536.9	2.7	18.7	-2.9	0.23	0.21	6.00
1,633.0	1.10	79.10	1,632.8	3.3	20.3	-3.5	0.37	0.10	19.27
1,728.0	1.20	69.80	1,727.8	3.9	22.2	-4.1	0.22	0.11	-9.79
1,822.0	0.70	324.30	1,821.8	4.7	22.8	-4.9	1.64	-0.53	-112.23
1,918.0	0.80	328.40	1,917.8	5.7	22.1	-5.9	0.12	0.10	4.27
2,013.0	1.50	338.20	2,012.8	7.4	21.3	-7.6	0.76	0.74	10.32
2,108.0	2.50	349.20	2,107.7	10.6	20.4	-10.8	1.12	1.05	11.58
2,203.0	3.70	351.60	2,202.6	15.7	19.6	-15.9	1.27	1.26	2.53
2,298.0	4.30	352.20	2,297.3	22.2	18.6	-22.4	0.63	0.63	0.63
2,393.0	4.70	352.00	2,392.1	29.6	17.6	-29.8	0.42	0.42	-0.21
2,488.0	5.70	353.00	2,486.7	38.2	16.5	-38.3	1.06	1.05	1.05
2,584.0	6.10	352.40	2,582.2	47.9	15.2	-48.1	0.42	0.42	-0.63
2,678.0	5.80	345.00	2,675.6	57.5	13.4	-57.6	0.88	-0.32	-7.87
2,773.0	7.30	346.20	2,770.0	68.0	10.7	-68.1	1.59	1.58	1.26
2,868.0	7.40	346.40	2,864.2	79.8	7.8	-79.9	0.11	0.11	0.21
2,963.0	7.30	344.90	2,958.5	91.6	4.8	-91.6	0.23	-0.11	-1.58
3,058.0	7.20	343.80	3,052.7	103.1	1.6	-103.1	0.18	-0.11	-1.16
3,153.0	7.30	343.40	3,146.9	114.6	-1.8	-114.6	0.12	0.11	-0.42
3,248.0	7.20	341.90	3,241.2	126.1	-5.4	-126.0	0.23	-0.11	-1.58
3,343.0	7.10	340.10	3,335.4	137.2	-9.3	-137.1	0.26	-0.11	-1.89
3,438.0	7.10	339.00	3,429.7	148.2	-13.4	-148.1	0.14	0.00	-1.16
3,534.0	7.50	344.70	3,524.9	159.8	-17.1	-159.7	0.86	0.42	5.94
3,629.0	6.40	341.00	3,619.2	170.8	-20.5	-170.6	1.25	-1.16	-3.89
3,723.0	5.30	344.20	3,712.8	179.9	-23.4	-179.7	1.22	-1.17	3.40
3,819.0	5.50	357.00	3,808.3	188.8	-24.8	-188.6	1.27	0.21	13.33
3,915.0	5.80	357.60	3,903.9	198.2	-25.3	-198.0	0.32	0.31	0.63
4,010.0	6.70	2.90	3,998.3	208.6	-25.2	-208.3	1.12	0.95	5.58
4,105.0	7.50	3.90	4,092.6	220.3	-24.5	-220.1	0.85	0.84	1.05
4,200.0	7.40	358.40	4,186.8	232.6	-24.2	-232.4	0.76	-0.11	-5.79
4,295.0	6.90	358.10	4,281.0	244.4	-24.6	-244.2	0.53	-0.53	-0.32
4,390.0	6.70	355.70	4,375.4	255.6	-25.2	-255.4	0.37	-0.21	-2.53
4,485.0	6.20	353.80	4,469.8	266.3	-26.2	-266.0	0.57	-0.53	-2.00
4,580.0	5.50	351.60	4,564.3	275.9	-27.4	-275.6	0.77	-0.74	-2.32
4,675.0	5.10	355.30	4,658.9	284.6	-28.4	-284.3	0.55	-0.42	3.89
4,771.0	5.50	353.20	4,754.4	293.4	-29.3	-293.1	0.46	0.42	-2.19
4,867.0	4.10	353.60	4,850.1	301.4	-30.2	-301.1	1.46	-1.46	0.42
4,962.0	2.50	349.80	4,944.9	306.8	-31.0	-306.5	1.70	-1.68	-4.00
5,057.0	0.70	319.60	5,039.9	309.3	-31.7	-309.0	2.03	-1.89	-31.79
5,152.0	1.00	348.10	5,134.9	310.5	-32.3	-310.2	0.54	0.32	30.00
5,248.0	0.70	5.86	5,230.9	311.9	-32.4	-311.6	0.41	-0.31	18.50
5,343.0	1.10	359.30	5,325.9	313.4	-32.3	-313.1	0.43	0.42	-6.91
5,438.0	0.50	336.30	5,420.9	314.7	-32.5	-314.4	0.70	-0.63	-24.21
5,533.0	0.70	336.00	5,515.9	315.6	-32.9	-315.3	0.21	0.21	-0.32
5,628.0	0.10	358.00	5,610.9	316.2	-33.1	-315.9	0.64	-0.63	23.16
5,723.0	0.50	219.30	5,705.9	316.0	-33.4	-315.7	0.61	0.42	-146.00
5,818.0	0.70	262.10	5,800.9	315.6	-34.3	-315.3	0.50	0.21	45.05
5,913.0	0.80	278.40	5,895.8	315.6	-35.5	-315.3	0.25	0.11	17.16
6,007.0	0.90	331.40	5,989.8	316.4	-36.5	-316.0	0.81	0.11	56.38
6,103.0	1.20	323.10	6,085.8	317.8	-37.4	-317.5	0.35	0.31	-8.65

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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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)
6,167.0	0.70	351.80	6,149.8	318.7	-37.9	-318.4	1.06	-0.78	44.84
6,198.0	0.00	174.10	6,180.8	318.9	-37.9	-318.6	2.26	-2.26	0.00
6,230.0	1.40	171.70	6,212.8	318.5	-37.9	-318.2	4.38	4.38	0.00
6,262.0	4.00	168.40	6,244.8	317.1	-37.6	-316.7	8.14	8.13	-10.31
6,293.0	6.60	169.40	6,275.6	314.3	-37.1	-313.9	8.39	8.39	3.23
6,325.0	8.90	170.60	6,307.3	310.0	-36.3	-309.7	7.20	7.19	3.75
6,356.0	10.90	172.20	6,337.9	304.7	-35.5	-304.4	6.51	6.45	5.16
6,388.0	12.80	173.80	6,369.2	298.2	-34.7	-297.9	6.03	5.94	5.00
6,419.0	14.80	173.90	6,399.3	290.9	-33.9	-290.5	6.45	6.45	0.32
6,451.0	17.10	173.60	6,430.1	282.1	-33.0	-281.8	7.19	7.19	-0.94
6,483.0	19.10	173.90	6,460.5	272.2	-31.9	-271.9	6.26	6.25	0.94
6,515.0	21.40	175.10	6,490.5	261.2	-30.8	-260.9	7.30	7.19	3.75
6,546.0	23.60	176.60	6,519.1	249.4	-30.0	-249.1	7.33	7.10	4.84
6,578.0	26.00	177.20	6,548.2	236.0	-29.3	-235.7	7.54	7.50	1.88
6,610.0	28.80	177.90	6,576.6	221.3	-28.6	-221.0	8.81	8.75	2.19
6,642.0	32.00	178.00	6,604.2	205.1	-28.1	-204.8	10.00	10.00	0.31
6,673.0	35.20	177.60	6,630.0	188.0	-27.4	-187.7	10.35	10.32	-1.29
6,705.0	37.90	177.90	6,655.7	168.9	-26.7	-168.7	8.46	8.44	0.94
6,737.0	40.40	178.40	6,680.5	148.7	-26.0	-148.5	7.87	7.81	1.56
6,768.0	42.60	178.80	6,703.7	128.2	-25.5	-127.9	7.15	7.10	1.29
6,800.0	44.30	179.30	6,727.0	106.2	-25.1	-105.9	5.42	5.31	1.56
6,832.0	46.10	180.00	6,749.5	83.5	-25.0	-83.2	5.84	5.63	2.19
6,863.0	48.00	180.80	6,770.6	60.8	-25.2	-60.6	6.41	6.13	2.58
6,895.0	49.90	181.40	6,791.7	36.7	-25.6	-36.4	6.10	5.94	1.88
6,926.0	51.80	181.80	6,811.2	12.6	-26.3	-12.4	6.21	6.13	1.29
6,958.0	53.60	181.50	6,830.6	-12.8	-27.0	13.1	5.67	5.63	-0.94
6,990.0	55.70	181.20	6,849.1	-38.9	-27.6	39.2	6.61	6.56	-0.94
7,021.0	57.90	180.60	6,866.1	-64.8	-28.1	65.1	7.28	7.10	-1.94
7,053.0	60.30	179.90	6,882.5	-92.3	-28.2	92.5	7.73	7.50	-2.19
7,085.0	62.90	178.70	6,897.8	-120.4	-27.8	120.7	8.77	8.13	-3.75
7,117.0	65.10	177.90	6,911.8	-149.2	-27.0	149.4	7.23	6.88	-2.50
7,148.0	66.70	177.20	6,924.4	-177.5	-25.8	177.7	5.56	5.16	-2.26
7,180.0	68.70	176.50	6,936.6	-207.0	-24.1	207.2	6.57	6.25	-2.19
7,212.0	71.10	176.70	6,947.6	-237.0	-22.3	237.2	7.52	7.50	0.63
7,243.0	73.60	176.50	6,957.0	-266.5	-20.6	266.7	8.09	8.06	-0.65
7,275.0	76.30	176.50	6,965.3	-297.3	-18.7	297.5	8.44	8.44	0.00
7,306.0	79.00	176.50	6,971.9	-327.6	-16.9	327.7	8.71	8.71	0.00
7,338.0	81.60	176.70	6,977.3	-359.0	-15.0	359.2	8.15	8.13	0.63
7,369.0	84.10	176.80	6,981.2	-389.8	-13.2	389.9	8.07	8.06	0.32
7,426.0	87.25	177.31	6,985.5	-446.5	-10.3	446.6	5.59	5.52	0.90
7"									
7,436.0	87.80	177.40	6,985.9	-456.5	-9.9	456.6	5.59	5.52	0.89
7,466.0	88.50	177.40	6,986.9	-486.4	-8.5	486.5	2.33	2.33	0.00
7,497.0	89.20	177.10	6,987.5	-517.4	-7.0	517.4	2.46	2.26	-0.97
7,527.0	90.20	177.80	6,987.6	-547.4	-5.7	547.4	4.07	3.33	2.33
7,558.0	90.90	177.30	6,987.3	-578.3	-4.4	578.4	2.77	2.26	-1.61
7,588.0	91.70	177.50	6,986.7	-608.3	-3.0	608.3	2.75	2.67	0.67
7,619.0	92.40	176.80	6,985.6	-639.2	-1.5	639.2	3.19	2.26	-2.26
7,649.0	92.50	176.80	6,984.3	-669.2	0.2	669.1	0.33	0.33	0.00
7,680.0	92.60	176.90	6,982.9	-700.1	1.9	700.0	0.46	0.32	0.32
7,710.0	92.70	177.20	6,981.5	-730.0	3.5	730.0	1.05	0.33	1.00
7,741.0	91.80	176.70	6,980.3	-760.9	5.1	760.9	3.32	-2.90	-1.61
7,772.0	90.40	176.30	6,979.7	-791.9	7.0	791.8	4.70	-4.52	-1.29

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Design:	Wellbore #1	Database:	Landmark

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7,802.0	90.00	176.50	6,979.6	-821.8	8.9	821.7	1.49	-1.33	0.67
7,832.0	90.00	176.00	6,979.6	-851.8	10.8	851.6	1.67	0.00	-1.67
7,863.0	90.10	176.30	6,979.6	-882.7	12.9	882.5	1.02	0.32	0.97
7,894.0	89.80	176.50	6,979.6	-913.6	14.9	913.5	1.16	-0.97	0.65
7,924.0	89.80	176.40	6,979.7	-943.6	16.7	943.4	0.33	0.00	-0.33
7,954.0	89.90	176.80	6,979.8	-973.5	18.5	973.3	1.37	0.33	1.33
7,985.0	89.00	176.50	6,980.1	-1,004.5	20.3	1,004.2	3.06	-2.90	-0.97
8,016.0	88.00	177.00	6,980.9	-1,035.4	22.1	1,035.2	3.61	-3.23	1.61
8,046.0	87.70	176.60	6,982.0	-1,065.3	23.7	1,065.1	1.67	-1.00	-1.33
8,076.0	88.70	177.40	6,982.9	-1,095.3	25.3	1,095.0	4.27	3.33	2.67
8,107.0	89.10	176.70	6,983.5	-1,126.2	26.9	1,125.9	2.60	1.29	-2.26
8,137.0	89.40	177.80	6,983.9	-1,156.2	28.4	1,155.9	3.80	1.00	3.67
8,168.0	89.30	178.80	6,984.3	-1,187.2	29.3	1,186.9	3.24	-0.32	3.23
8,199.0	89.10	179.90	6,984.7	-1,218.2	29.6	1,217.8	3.61	-0.65	3.55
8,230.0	88.90	179.40	6,985.3	-1,249.2	29.8	1,248.8	1.74	-0.65	-1.61
8,260.0	89.30	179.30	6,985.7	-1,279.2	30.2	1,278.8	1.37	1.33	-0.33
8,290.0	90.00	179.40	6,985.9	-1,309.2	30.5	1,308.8	2.36	2.33	0.33
8,321.0	90.50	180.10	6,985.8	-1,340.2	30.6	1,339.8	2.77	1.61	2.26
8,351.0	90.70	179.80	6,985.5	-1,370.2	30.7	1,369.8	1.20	0.67	-1.00
8,382.0	90.50	179.70	6,985.1	-1,401.2	30.8	1,400.8	0.72	-0.65	-0.32
8,412.0	90.90	179.00	6,984.8	-1,431.1	31.1	1,430.8	2.69	1.33	-2.33
8,443.0	91.30	179.20	6,984.2	-1,462.1	31.6	1,461.8	1.44	1.29	0.65
8,474.0	90.50	181.30	6,983.7	-1,493.1	31.5	1,492.8	7.25	-2.58	6.77
8,505.0	90.50	182.10	6,983.4	-1,524.1	30.6	1,523.8	2.58	0.00	2.58
8,537.0	91.40	181.70	6,982.9	-1,556.1	29.5	1,555.8	3.08	2.81	-1.25
8,569.0	92.10	181.20	6,981.9	-1,588.1	28.7	1,587.7	2.69	2.19	-1.56
8,601.0	92.90	181.70	6,980.5	-1,620.0	27.9	1,619.7	2.95	2.50	1.56
8,632.0	92.60	181.00	6,979.0	-1,651.0	27.2	1,650.7	2.45	-0.97	-2.26
8,664.0	92.70	181.20	6,977.6	-1,682.9	26.5	1,682.6	0.70	0.31	0.63
8,696.0	92.60	181.30	6,976.1	-1,714.9	25.8	1,714.6	0.44	-0.31	0.31
8,727.0	91.50	181.70	6,975.0	-1,745.9	25.0	1,745.6	3.78	-3.55	1.29
8,759.0	90.00	182.50	6,974.5	-1,777.8	23.9	1,777.5	5.31	-4.69	2.50
8,791.0	89.70	183.00	6,974.6	-1,809.8	22.3	1,809.5	1.82	-0.94	1.56
8,822.0	90.30	183.00	6,974.6	-1,840.8	20.7	1,840.5	1.94	1.94	0.00
8,854.0	90.70	183.40	6,974.4	-1,872.7	18.9	1,872.5	1.77	1.25	1.25
8,886.0	90.30	183.10	6,974.1	-1,904.7	17.1	1,904.4	1.56	-1.25	-0.94
8,918.0	90.50	182.30	6,973.8	-1,936.6	15.6	1,936.4	2.58	0.63	-2.50
8,949.0	90.10	183.20	6,973.7	-1,967.6	14.1	1,967.4	3.18	-1.29	2.90
8,981.0	90.10	182.90	6,973.6	-1,999.5	12.4	1,999.3	0.94	0.00	-0.94
9,013.0	89.10	183.20	6,973.9	-2,031.5	10.7	2,031.3	3.26	-3.13	0.94
9,044.0	88.80	183.80	6,974.4	-2,062.4	8.8	2,062.3	2.16	-0.97	1.94
9,076.0	89.30	183.70	6,975.0	-2,094.4	6.7	2,094.2	1.59	1.56	-0.31
9,108.0	90.00	182.90	6,975.1	-2,126.3	4.9	2,126.2	3.32	2.19	-2.50
9,139.0	90.40	183.20	6,975.0	-2,157.3	3.2	2,157.1	1.61	1.29	0.97
9,171.0	89.60	183.30	6,975.0	-2,189.2	1.4	2,189.1	2.52	-2.50	0.31
9,203.0	89.20	183.60	6,975.4	-2,221.2	-0.5	2,221.1	1.56	-1.25	0.94
9,235.0	88.60	183.70	6,976.0	-2,253.1	-2.6	2,253.0	1.90	-1.88	0.31
9,266.0	88.50	183.50	6,976.8	-2,284.0	-4.5	2,284.0	0.72	-0.32	-0.65
9,298.0	87.70	184.40	6,977.8	-2,315.9	-6.7	2,315.9	3.76	-2.50	2.81
9,330.0	87.70	184.40	6,979.1	-2,347.8	-9.2	2,347.8	0.00	0.00	0.00
9,361.0	88.00	185.00	6,980.3	-2,378.7	-11.7	2,378.7	2.16	0.97	1.94
9,393.0	88.30	184.40	6,981.3	-2,410.5	-14.3	2,410.6	2.10	0.94	-1.88
9,425.0	87.70	183.70	6,982.4	-2,442.4	-16.6	2,442.5	2.88	-1.88	-2.19

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20M-203
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4914.0ft (RKB - 15')
Site:	Dillard 20M-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4914.0ft (RKB - 15')
Well:	Dillard 20M-203	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)
9,454.0	88.00	183.40	6,983.5	-2,471.4	-18.4	2,471.4	1.46	1.03	-1.03
9,486.0	87.30	183.30	6,984.8	-2,503.3	-20.2	2,503.4	2.21	-2.19	-0.31
9,517.0	87.30	183.00	6,986.3	-2,534.2	-21.9	2,534.3	0.97	0.00	-0.97
9,549.0	87.50	182.80	6,987.7	-2,566.1	-23.6	2,566.2	0.88	0.63	-0.63
9,580.0	88.00	183.20	6,989.0	-2,597.1	-25.2	2,597.2	2.06	1.61	1.29
9,612.0	88.40	182.70	6,990.0	-2,629.0	-26.8	2,629.1	2.00	1.25	-1.56
9,643.0	88.80	182.80	6,990.7	-2,660.0	-28.3	2,660.1	1.33	1.29	0.32
9,675.0	88.30	183.10	6,991.5	-2,691.9	-30.0	2,692.1	1.82	-1.56	0.94
9,707.0	88.00	182.80	6,992.6	-2,723.8	-31.6	2,724.0	1.33	-0.94	-0.94
9,738.0	88.50	182.60	6,993.5	-2,754.8	-33.1	2,755.0	1.74	1.61	-0.65
9,770.0	89.30	182.70	6,994.1	-2,786.8	-34.5	2,787.0	2.52	2.50	0.31
9,802.0	89.00	183.00	6,994.6	-2,818.7	-36.1	2,818.9	1.33	-0.94	0.94
9,834.0	89.10	182.20	6,995.1	-2,850.7	-37.6	2,850.9	2.52	0.31	-2.50
9,865.0	89.70	182.50	6,995.5	-2,881.7	-38.9	2,881.9	2.16	1.94	0.97
9,897.0	89.30	181.20	6,995.7	-2,913.6	-39.9	2,913.9	4.25	-1.25	-4.06
9,929.0	89.30	181.50	6,996.1	-2,945.6	-40.6	2,945.9	0.94	0.00	0.94
9,960.0	89.80	181.80	6,996.4	-2,976.6	-41.5	2,976.9	1.88	1.61	0.97
9,992.0	89.40	180.90	6,996.6	-3,008.6	-42.3	3,008.9	3.08	-1.25	-2.81
10,024.0	88.20	181.30	6,997.3	-3,040.6	-42.9	3,040.9	3.95	-3.75	1.25
10,055.0	87.80	181.60	6,998.3	-3,071.6	-43.7	3,071.8	1.61	-1.29	0.97
10,087.0	88.30	181.60	6,999.4	-3,103.5	-44.6	3,103.8	1.56	1.56	0.00
10,119.0	88.90	181.70	7,000.2	-3,135.5	-45.5	3,135.8	1.90	1.88	0.31
10,151.0	89.40	181.10	7,000.7	-3,167.5	-46.3	3,167.8	2.44	1.56	-1.88
10,182.0	89.00	181.50	7,001.1	-3,198.5	-47.0	3,198.8	1.82	-1.29	1.29
10,214.0	88.60	181.60	7,001.8	-3,230.5	-47.8	3,230.8	1.29	-1.25	0.31
10,246.0	89.30	182.20	7,002.4	-3,262.4	-48.9	3,262.7	2.88	2.19	1.88
10,277.0	89.80	181.60	7,002.6	-3,293.4	-49.9	3,293.7	2.52	1.61	-1.94
10,309.0	88.70	181.40	7,003.0	-3,325.4	-50.8	3,325.7	3.49	-3.44	-0.63
10,341.0	88.20	180.90	7,003.9	-3,357.4	-51.4	3,357.7	2.21	-1.56	-1.56
10,372.0	88.10	181.10	7,004.9	-3,388.4	-52.0	3,388.7	0.72	-0.32	0.65
10,404.0	88.60	181.30	7,005.8	-3,420.3	-52.6	3,420.7	1.68	1.56	0.63
10,436.0	88.50	180.60	7,006.6	-3,452.3	-53.2	3,452.7	2.21	-0.31	-2.19
10,468.0	88.70	180.70	7,007.4	-3,484.3	-53.5	3,484.7	0.70	0.63	0.31
10,500.0	88.00	180.40	7,008.3	-3,516.3	-53.8	3,516.6	2.38	-2.19	-0.94
10,531.0	87.40	181.30	7,009.6	-3,547.3	-54.3	3,547.6	3.49	-1.94	2.90
10,563.0	87.60	182.20	7,011.0	-3,579.2	-55.3	3,579.6	2.88	0.63	2.81
10,595.0	88.20	181.60	7,012.2	-3,611.2	-56.3	3,611.6	2.65	1.88	-1.88
10,626.0	88.70	181.40	7,013.0	-3,642.2	-57.1	3,642.5	1.74	1.61	-0.65
10,657.0	88.10	181.00	7,013.9	-3,673.1	-57.8	3,673.5	2.33	-1.94	-1.29
10,689.0	88.00	181.40	7,014.9	-3,705.1	-58.5	3,705.5	1.29	-0.31	1.25
10,722.0	88.70	180.80	7,015.9	-3,738.1	-59.1	3,738.5	2.79	2.12	-1.82
10,753.0	87.90	180.70	7,016.8	-3,769.1	-59.5	3,769.5	2.60	-2.58	-0.32
10,785.0	87.70	180.30	7,018.0	-3,801.1	-59.8	3,801.4	1.40	-0.63	-1.25
10,816.0	86.90	180.10	7,019.5	-3,832.0	-59.9	3,832.4	2.66	-2.58	-0.65
10,848.0	86.80	180.10	7,021.3	-3,864.0	-59.9	3,864.4	0.31	-0.31	0.00
10,880.0	86.60	180.40	7,023.1	-3,895.9	-60.1	3,896.3	1.13	-0.63	0.94
10,911.0	86.00	179.60	7,025.1	-3,926.9	-60.1	3,927.2	3.22	-1.94	-2.58
10,943.0	86.30	179.50	7,027.3	-3,958.8	-59.8	3,959.2	0.99	0.94	-0.31
10,975.0	86.70	179.00	7,029.2	-3,990.7	-59.4	3,991.1	2.00	1.25	-1.56
11,006.0	87.10	178.80	7,030.9	-4,021.7	-58.8	4,022.0	1.44	1.29	-0.65
11,038.0	87.70	179.40	7,032.3	-4,053.6	-58.3	4,054.0	2.65	1.88	1.88
11,069.0	88.40	178.40	7,033.4	-4,084.6	-57.7	4,085.0	3.94	2.26	-3.23
11,101.0	88.70	178.00	7,034.2	-4,116.6	-56.7	4,116.9	1.56	0.94	-1.25
11,133.0	89.50	178.00	7,034.7	-4,148.6	-55.6	4,148.9	2.50	2.50	0.00

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Dillard 20M-203
Project:	SEC.20-T7N-R64W	TVD Reference:	WELL @ 4914.0ft (RKB - 15')
Site:	Dillard 20M-HZ Pad Sec.20-T7N-R64W	MD Reference:	WELL @ 4914.0ft (RKB - 15')
Well:	Dillard 20M-203	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)
11,165.0	89.40	178.00	7,035.0	-4,180.5	-54.5	4,180.9	0.31	-0.31	0.00
11,196.0	89.30	177.80	7,035.4	-4,211.5	-53.3	4,211.8	0.72	-0.32	-0.65
11,227.0	89.10	178.00	7,035.8	-4,242.5	-52.2	4,242.8	0.91	-0.65	0.65
11,259.0	88.50	177.20	7,036.5	-4,274.5	-50.9	4,274.7	3.12	-1.88	-2.50
11,290.0	88.40	177.10	7,037.3	-4,305.4	-49.3	4,305.7	0.46	-0.32	-0.32
11,322.0	89.00	177.10	7,038.0	-4,337.4	-47.7	4,337.6	1.88	1.88	0.00
11,354.0	89.30	177.70	7,038.5	-4,369.3	-46.3	4,369.6	2.10	0.94	1.88
11,386.0	89.80	176.40	7,038.8	-4,401.3	-44.6	4,401.5	4.35	1.56	-4.06
11,440.0	89.80	176.40	7,038.9	-4,455.2	-41.2	4,455.4	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,426.0	6,985.5	7"	7	7-1/2

Checked By: _____ Approved By: _____ Date: _____