

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Tracy 23M-203**

Surface Location: Tracy 23M-203 Pad Sec.23-T7N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

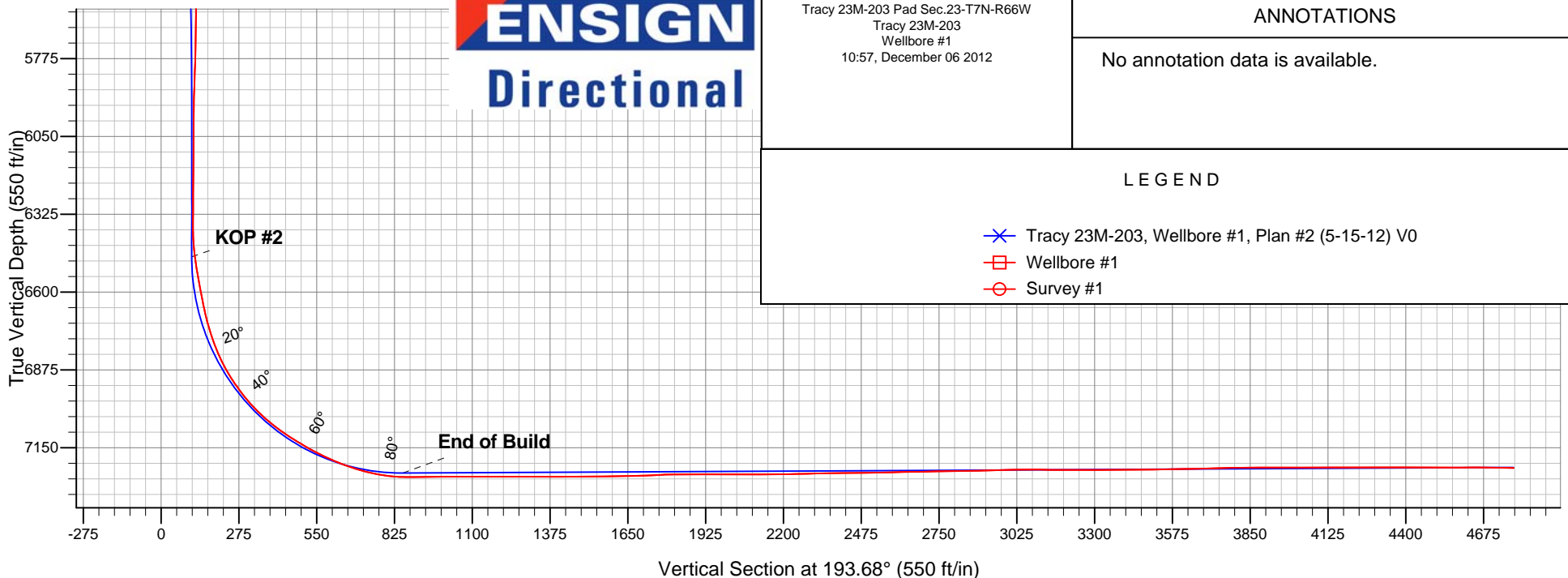
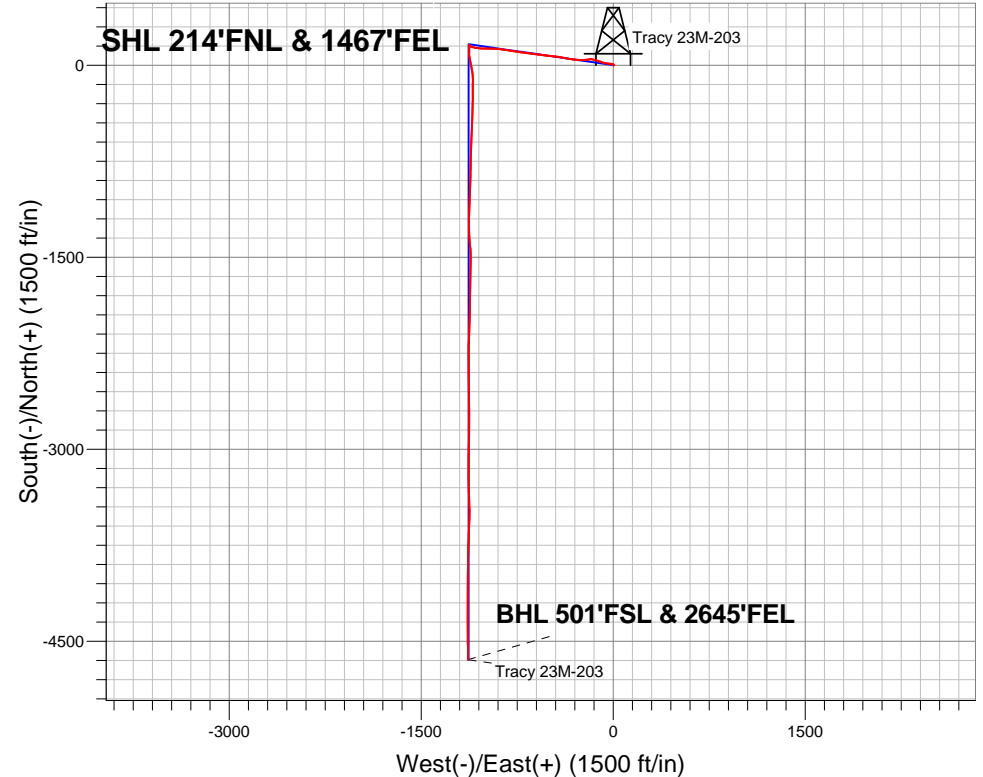
Ground Elevation: 4890.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1450517.47	3210972.55	40.567590	-104.740610	

RKB Ensign 32 - 15' WELL @ 4905.0ft (RKB Ensign 32 - 15')

FINAL SURVEY

Projected Bottom Hole Location
11843'MD 7222'TVD 4644'S & 1136'W of SHL
89.2 degree Incl @ 180.0 degree AZM



ENSIGN
Directional

Tracy 23M-203 Pad Sec.23-T7N-R66W
Tracy 23M-203
Wellbore #1
10:57, December 06 2012

ANNOTATIONS

No annotation data is available.

LEGEND

- ✕ Tracy 23M-203, Wellbore #1, Plan #2 (5-15-12) V0
- Wellbore #1
- Survey #1



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.23-T7N-R66W

Tracy 23M-203 Pad Sec.23-T7N-R66W

Tracy 23M-203

Wellbore #1

Survey: Survey #1

Standard Survey Report

06 December, 2012

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tracy 23M-203
Project:	SEC.23-T7N-R66W	TVD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Site:	Tracy 23M-203 Pad Sec.23-T7N-R66W	MD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Well:	Tracy 23M-203	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.23-T7N-R66W, 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	Tracy 23M-203 Pad Sec.23-T7N-R66W				
Site Position:		Northing:	1,450,517.48ft	Latitude:	40.567590
From:	Lat/Long	Easting:	3,210,972.55ft	Longitude:	-104.740610
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.49 °

Well	Tracy 23M-203					
Well Position	+N-S	0.0 ft	Northing:	1,450,517.47 ft	Latitude:	40.567590
	+E-W	0.0 ft	Easting:	3,210,972.55 ft	Longitude:	-104.740610
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,890.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/19/2012	8.67	67.14	53,070

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	193.68	

Survey Program	Date	12/6/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
128.0	11,843.0	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	
0.3	0.00	117.30	0.3	0.0	0.0	0.0	0.78	0.78	0.00	
HARDLINE SHL 460'FNL - SECTIONLINE 214'N OF SHL										
9.4	0.07	117.30	9.4	0.0	0.0	0.0	0.78	0.78	0.00	
HARDLINE BHL 460'FSL										
128.0	1.00	117.30	128.0	-0.5	1.0	0.3	0.78	0.78	0.00	
216.0	0.80	116.40	216.0	-1.1	2.2	0.6	0.23	-0.23	-1.02	
307.0	0.90	53.00	307.0	-1.0	3.4	0.2	0.99	0.11	-69.67	
399.0	1.20	354.40	399.0	0.4	3.8	-1.3	1.15	0.33	-63.70	
493.0	2.60	327.90	492.9	3.2	2.6	-3.7	1.72	1.49	-28.19	
586.0	4.00	299.90	585.8	6.6	-1.3	-6.1	2.25	1.51	-30.11	
679.0	5.50	283.40	678.4	9.2	-8.5	-7.0	2.17	1.61	-17.74	

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Site:	Tracy 23M-203 Pad Sec.23-T7N-R66W	MD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Well:	Tracy 23M-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)
772.0	6.60	275.00	770.9	10.7	-18.1	-6.2	1.52	1.18	-9.03
892.0	7.50	272.30	890.0	11.7	-32.8	-3.6	0.80	0.75	-2.25
991.0	8.10	278.50	988.1	12.9	-46.2	-1.7	1.04	0.61	6.26
1,114.0	8.10	282.00	1,109.9	16.0	-63.2	-0.6	0.40	0.00	2.85
1,237.0	7.60	282.70	1,231.7	19.6	-79.6	-0.2	0.41	-0.41	0.57
1,359.0	10.00	292.80	1,352.3	25.5	-97.3	-1.8	2.33	1.97	8.28
1,451.0	11.90	286.10	1,442.6	31.2	-113.7	-3.4	2.48	2.07	-7.28
1,574.0	11.30	288.10	1,563.1	38.5	-137.4	-4.9	0.59	-0.49	1.63
1,696.0	12.80	281.40	1,682.4	44.9	-162.0	-5.3	1.68	1.23	-5.49
1,819.0	13.30	261.30	1,802.3	45.4	-189.4	0.7	3.69	0.41	-16.34
1,946.0	13.10	262.90	1,925.9	41.4	-218.1	11.3	0.33	-0.16	1.26
2,073.0	13.40	270.00	2,049.6	39.7	-247.1	19.9	1.30	0.24	5.59
2,200.0	15.00	276.50	2,172.7	41.5	-278.1	25.5	1.78	1.26	5.12
2,327.0	15.20	275.20	2,295.3	44.9	-311.0	30.0	0.31	0.16	-1.02
2,454.0	16.90	280.30	2,417.4	49.7	-345.8	33.5	1.74	1.34	4.02
2,582.0	16.80	281.20	2,539.9	56.6	-382.2	35.4	0.22	-0.08	0.70
2,708.0	16.00	278.60	2,660.7	62.8	-417.3	37.7	0.86	-0.63	-2.06
2,835.0	15.10	276.30	2,783.1	67.2	-451.0	41.4	0.86	-0.71	-1.81
2,962.0	15.80	275.40	2,905.5	70.6	-484.7	46.0	0.58	0.55	-0.71
3,088.0	17.50	276.30	3,026.2	74.3	-520.6	50.9	1.36	1.35	0.71
3,215.0	15.80	278.90	3,147.9	79.1	-556.6	54.8	1.46	-1.34	2.05
3,342.0	15.50	278.00	3,270.2	84.1	-590.5	58.0	0.30	-0.24	-0.71
3,469.0	15.20	275.20	3,392.6	88.0	-623.9	62.1	0.63	-0.24	-2.20
3,596.0	13.80	278.20	3,515.6	91.7	-655.5	66.0	1.25	-1.10	2.36
3,723.0	14.10	275.40	3,638.9	95.3	-685.9	69.7	0.58	0.24	-2.20
3,787.0	14.10	279.30	3,700.9	97.3	-701.3	71.4	1.48	0.00	6.09
3,914.0	14.90	278.90	3,823.9	102.3	-732.7	73.9	0.63	0.63	-0.31
4,041.0	14.20	277.70	3,946.8	106.9	-764.3	76.9	0.60	-0.55	-0.94
4,167.0	16.90	279.90	4,068.2	112.1	-797.7	79.7	2.19	2.14	1.75
4,263.0	17.40	279.10	4,159.9	116.8	-825.6	81.8	0.58	0.52	-0.83
4,392.0	16.80	275.90	4,283.2	121.8	-863.2	85.9	0.86	-0.47	-2.48
4,516.0	15.00	274.90	4,402.5	125.0	-897.0	90.8	1.47	-1.45	-0.81
4,611.0	14.40	273.80	4,494.4	126.8	-921.0	94.7	0.70	-0.63	-1.16
4,737.0	13.00	273.10	4,616.8	128.6	-950.8	100.0	1.12	-1.11	-0.56
4,865.0	11.80	271.40	4,741.8	129.7	-978.3	105.4	0.98	-0.94	-1.33
4,991.0	10.60	271.50	4,865.4	130.3	-1,002.7	110.6	0.95	-0.95	0.08
5,118.0	9.30	271.00	4,990.5	130.8	-1,024.7	115.3	1.03	-1.02	-0.39
5,245.0	8.60	269.20	5,115.9	130.9	-1,044.4	119.9	0.59	-0.55	-1.42
5,372.0	9.70	282.00	5,241.3	133.0	-1,064.4	122.6	1.82	0.87	10.08
5,499.0	8.00	281.40	5,366.8	136.9	-1,083.5	123.3	1.34	-1.34	-0.47
5,627.0	6.20	285.70	5,493.8	140.6	-1,098.9	123.4	1.47	-1.41	3.36
5,754.0	5.00	284.00	5,620.2	143.8	-1,110.9	123.1	0.95	-0.94	-1.34
5,880.0	4.00	304.20	5,745.8	147.6	-1,119.9	121.5	1.48	-0.79	16.03
6,006.0	2.70	340.40	5,871.6	152.8	-1,124.5	117.5	1.92	-1.03	28.73
6,133.0	1.30	286.10	5,998.5	156.0	-1,126.9	115.0	1.74	-1.10	-42.76
6,261.0	0.60	326.90	6,126.5	157.0	-1,128.6	114.4	0.73	-0.55	31.88
6,387.0	0.50	352.20	6,252.5	158.1	-1,129.1	113.5	0.21	-0.08	20.08
6,451.0	0.30	352.90	6,316.5	158.6	-1,129.1	113.1	0.31	-0.31	1.09
6,483.0	0.50	30.40	6,348.5	158.8	-1,129.1	112.9	1.00	0.63	117.19
6,514.0	0.90	150.40	6,379.5	158.7	-1,128.9	112.9	3.96	1.29	387.10
6,546.0	3.50	153.10	6,411.5	157.6	-1,128.3	113.8	8.13	8.13	8.44
6,578.0	5.60	168.20	6,443.4	155.2	-1,127.5	116.0	7.50	6.56	47.19
6,609.0	7.50	177.30	6,474.2	151.7	-1,127.1	119.3	6.97	6.13	29.35
6,641.0	9.10	171.20	6,505.9	147.1	-1,126.7	123.6	5.70	5.00	-19.06

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Well:	Tracy 23M-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)
6,673.0	10.60	169.80	6,537.4	141.7	-1,125.8	128.7	4.75	4.69	-4.38
6,705.0	12.20	176.30	6,568.8	135.4	-1,125.0	134.6	6.41	5.00	20.31
6,737.0	11.20	177.30	6,600.1	128.9	-1,124.6	140.8	3.19	-3.13	3.13
6,769.0	11.00	185.90	6,631.5	122.8	-1,124.8	146.8	5.21	-0.63	26.88
6,800.0	12.10	185.40	6,661.9	116.6	-1,125.4	152.9	3.56	3.55	-1.61
6,832.0	14.60	181.90	6,693.0	109.2	-1,125.9	160.2	8.21	7.81	-10.94
6,864.0	16.40	182.40	6,723.8	100.7	-1,126.2	168.6	5.64	5.63	1.56
6,896.0	18.60	179.10	6,754.3	91.1	-1,126.3	178.0	7.54	6.88	-10.31
6,927.0	21.40	175.70	6,783.5	80.5	-1,125.8	188.1	9.78	9.03	-10.97
6,959.0	24.70	172.70	6,812.9	68.0	-1,124.5	199.9	10.94	10.31	-9.38
6,991.0	27.80	169.80	6,841.6	54.1	-1,122.3	213.0	10.48	9.69	-9.06
7,023.0	30.80	169.40	6,869.5	38.7	-1,119.5	227.3	9.39	9.38	-1.25
7,055.0	34.00	169.10	6,896.5	21.8	-1,116.3	242.9	10.01	10.00	-0.94
7,087.0	37.30	168.90	6,922.5	3.5	-1,112.8	259.8	10.32	10.31	-0.63
7,119.0	38.80	169.80	6,947.7	-15.9	-1,109.1	277.8	5.00	4.69	2.81
7,150.0	41.90	169.60	6,971.4	-35.6	-1,105.5	296.1	10.01	10.00	-0.65
7,182.0	43.70	170.10	6,994.8	-57.0	-1,101.7	316.0	5.72	5.63	1.56
7,214.0	46.00	174.90	7,017.5	-79.4	-1,098.8	337.1	12.79	7.19	15.00
7,246.0	48.80	178.70	7,039.2	-102.9	-1,097.5	359.6	12.37	8.75	11.88
7,277.0	51.10	180.50	7,059.1	-126.6	-1,097.3	382.6	8.65	7.42	5.81
7,309.0	53.70	180.80	7,078.7	-152.0	-1,097.6	407.3	8.16	8.13	0.94
7,341.0	55.80	181.00	7,097.1	-178.1	-1,098.0	432.8	6.58	6.56	0.63
7,373.0	57.80	180.50	7,114.6	-204.9	-1,098.4	458.9	6.39	6.25	-1.56
7,404.0	59.40	181.00	7,130.8	-231.3	-1,098.7	484.7	5.34	5.16	1.61
7,436.0	61.00	180.30	7,146.7	-259.1	-1,099.0	511.7	5.35	5.00	-2.19
7,468.0	62.50	180.50	7,161.8	-287.3	-1,099.2	539.2	4.72	4.69	0.63
7,500.0	64.10	180.50	7,176.2	-315.9	-1,099.5	567.0	5.00	5.00	0.00
7,532.0	66.40	180.50	7,189.6	-344.9	-1,099.7	595.3	7.19	7.19	0.00
7,563.0	68.40	181.20	7,201.5	-373.5	-1,100.1	623.2	6.78	6.45	2.26
7,595.0	70.20	182.90	7,212.8	-403.4	-1,101.2	652.5	7.51	5.63	5.31
7,627.0	72.50	182.80	7,223.1	-433.7	-1,102.7	682.3	7.19	7.19	-0.31
7,659.0	75.00	182.20	7,232.0	-464.4	-1,104.1	712.4	8.02	7.81	-1.88
7,690.0	77.60	182.60	7,239.4	-494.5	-1,105.3	742.0	8.48	8.39	1.29
7,722.0	80.20	182.60	7,245.5	-525.9	-1,106.8	772.8	8.13	8.13	0.00
7,754.0	83.40	182.40	7,250.1	-557.5	-1,108.1	803.8	10.02	10.00	-0.63
7,782.0	86.20	181.70	7,252.6	-585.4	-1,109.1	831.1	10.31	10.00	-2.50
7,841.0	90.50	182.10	7,254.3	-644.3	-1,111.1	888.9	7.32	7.29	0.68
7,872.0	90.80	181.90	7,254.0	-675.3	-1,112.2	919.2	1.16	0.97	-0.65
7,904.0	91.00	181.40	7,253.5	-707.3	-1,113.1	950.5	1.68	0.63	-1.56
7,936.0	90.60	181.50	7,253.0	-739.3	-1,113.9	981.8	1.29	-1.25	0.31
7,967.0	90.60	181.40	7,252.7	-770.2	-1,114.7	1,012.1	0.32	0.00	-0.32
7,999.0	90.90	180.80	7,252.3	-802.2	-1,115.3	1,043.3	2.10	0.94	-1.88
8,031.0	90.40	180.80	7,251.9	-834.2	-1,115.7	1,074.5	1.56	-1.56	0.00
8,063.0	90.00	181.70	7,251.8	-866.2	-1,116.4	1,105.7	3.08	-1.25	2.81
8,095.0	89.90	182.40	7,251.8	-898.2	-1,117.6	1,137.1	2.21	-0.31	2.19
8,126.0	89.90	181.50	7,251.9	-929.2	-1,118.6	1,167.4	2.90	0.00	-2.90
8,158.0	88.20	181.40	7,252.4	-961.2	-1,119.5	1,198.7	5.32	-5.31	-0.31
8,190.0	88.80	181.70	7,253.3	-993.1	-1,120.3	1,230.0	2.10	1.88	0.94
8,222.0	89.60	181.40	7,253.7	-1,025.1	-1,121.2	1,261.3	2.67	2.50	-0.94
8,254.0	90.40	181.50	7,253.7	-1,057.1	-1,122.0	1,292.5	2.52	2.50	0.31
8,285.0	90.00	182.80	7,253.6	-1,088.1	-1,123.2	1,322.9	4.39	-1.29	4.19
8,317.0	90.70	182.80	7,253.4	-1,120.1	-1,124.7	1,354.3	2.19	2.19	0.00
8,349.0	91.40	182.60	7,252.8	-1,152.0	-1,126.2	1,385.7	2.28	2.19	-0.63

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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)
8,381.0	90.50	182.20	7,252.3	-1,184.0	-1,127.6	1,417.1	3.08	-2.81	-1.25
8,412.0	90.40	180.80	7,252.0	-1,215.0	-1,128.4	1,447.4	4.53	-0.32	-4.52
8,444.0	90.30	179.40	7,251.8	-1,247.0	-1,128.4	1,478.5	4.39	-0.31	-4.38
8,476.0	90.30	178.20	7,251.7	-1,279.0	-1,127.8	1,509.4	3.75	0.00	-3.75
8,508.0	90.30	176.40	7,251.5	-1,310.9	-1,126.3	1,540.1	5.62	0.00	-5.63
8,539.0	90.30	175.70	7,251.4	-1,341.8	-1,124.1	1,569.7	2.26	0.00	-2.26
8,571.0	90.00	175.20	7,251.3	-1,373.7	-1,121.6	1,600.1	1.82	-0.94	-1.56
8,603.0	90.80	175.20	7,251.0	-1,405.6	-1,118.9	1,630.4	2.50	2.50	0.00
8,634.0	91.00	176.60	7,250.6	-1,436.5	-1,116.7	1,659.9	4.56	0.65	4.52
8,666.0	92.20	178.00	7,249.7	-1,468.5	-1,115.2	1,690.6	5.76	3.75	4.38
8,698.0	92.40	179.80	7,248.4	-1,500.5	-1,114.6	1,721.5	5.66	0.63	5.63
8,729.0	92.80	180.80	7,247.0	-1,531.4	-1,114.7	1,751.7	3.47	1.29	3.23
8,761.0	92.20	181.50	7,245.6	-1,563.4	-1,115.4	1,782.9	2.88	-1.88	2.19
8,793.0	91.30	181.70	7,244.6	-1,595.4	-1,116.3	1,814.2	2.88	-2.81	0.63
8,825.0	90.60	181.70	7,244.1	-1,627.3	-1,117.2	1,845.5	2.19	-2.19	0.00
8,857.0	89.70	180.70	7,244.0	-1,659.3	-1,117.9	1,876.7	4.20	-2.81	-3.13
8,888.0	89.60	179.60	7,244.2	-1,690.3	-1,118.0	1,906.8	3.56	-0.32	-3.55
8,920.0	89.70	179.20	7,244.4	-1,722.3	-1,117.6	1,937.8	1.29	0.31	-1.25
8,952.0	89.80	179.60	7,244.5	-1,754.3	-1,117.3	1,968.9	1.29	0.31	1.25
8,983.0	90.10	180.10	7,244.5	-1,785.3	-1,117.2	1,999.0	1.88	0.97	1.61
9,015.0	90.00	180.70	7,244.5	-1,817.3	-1,117.4	2,030.1	1.90	-0.31	1.88
9,047.0	90.00	181.00	7,244.5	-1,849.3	-1,117.9	2,061.3	0.94	0.00	0.94
9,079.0	90.10	181.20	7,244.5	-1,881.3	-1,118.5	2,092.5	0.70	0.31	0.63
9,110.0	90.40	181.90	7,244.3	-1,912.3	-1,119.4	2,122.8	2.46	0.97	2.26
9,142.0	90.10	182.20	7,244.2	-1,944.3	-1,120.5	2,154.2	1.33	-0.94	0.94
9,174.0	90.60	183.10	7,244.0	-1,976.3	-1,122.0	2,185.6	3.22	1.56	2.81
9,206.0	90.70	182.90	7,243.6	-2,008.2	-1,123.7	2,217.0	0.70	0.31	-0.63
9,237.0	90.90	182.40	7,243.2	-2,039.2	-1,125.1	2,247.5	1.74	0.65	-1.61
9,269.0	91.00	182.60	7,242.7	-2,071.1	-1,126.5	2,278.8	0.70	0.31	0.63
9,301.0	91.00	182.10	7,242.1	-2,103.1	-1,127.8	2,310.2	1.56	0.00	-1.56
9,332.0	91.50	181.90	7,241.4	-2,134.1	-1,128.9	2,340.6	1.74	1.61	-0.65
9,364.0	92.10	181.70	7,240.4	-2,166.0	-1,129.9	2,371.9	1.98	1.88	-0.63
9,396.0	91.00	180.70	7,239.6	-2,198.0	-1,130.6	2,403.1	4.64	-3.44	-3.13
9,428.0	90.00	180.00	7,239.3	-2,230.0	-1,130.8	2,434.2	3.81	-3.13	-2.19
9,459.0	90.20	180.00	7,239.2	-2,261.0	-1,130.8	2,464.3	0.65	0.65	0.00
9,491.0	90.70	180.10	7,239.0	-2,293.0	-1,130.8	2,495.4	1.59	1.56	0.31
9,523.0	90.70	179.60	7,238.6	-2,325.0	-1,130.7	2,526.5	1.56	0.00	-1.56
9,555.0	91.50	180.10	7,238.0	-2,357.0	-1,130.6	2,557.6	2.95	2.50	1.56
9,587.0	92.00	179.80	7,237.0	-2,389.0	-1,130.6	2,588.7	1.82	1.56	-0.94
9,618.0	91.30	179.40	7,236.1	-2,420.0	-1,130.4	2,618.7	2.60	-2.26	-1.29
9,651.0	90.60	179.60	7,235.6	-2,453.0	-1,130.1	2,650.7	2.21	-2.12	0.61
9,683.0	90.80	179.40	7,235.2	-2,485.0	-1,129.8	2,681.7	0.88	0.63	-0.63
9,714.0	91.30	178.70	7,234.6	-2,516.0	-1,129.3	2,711.7	2.77	1.61	-2.26
9,746.0	91.40	178.00	7,233.9	-2,547.9	-1,128.4	2,742.6	2.21	0.31	-2.19
9,778.0	90.80	178.00	7,233.2	-2,579.9	-1,127.3	2,773.4	1.88	-1.88	0.00
9,809.0	90.40	178.50	7,232.9	-2,610.9	-1,126.3	2,803.2	2.07	-1.29	1.61
9,841.0	90.90	179.10	7,232.6	-2,642.9	-1,125.6	2,834.2	2.44	1.56	1.88
9,873.0	90.70	180.00	7,232.1	-2,674.9	-1,125.4	2,865.2	2.88	-0.63	2.81
9,905.0	91.30	180.10	7,231.6	-2,706.9	-1,125.4	2,896.3	1.90	1.88	0.31
9,937.0	92.10	180.00	7,230.6	-2,738.9	-1,125.4	2,927.4	2.52	2.50	-0.31
9,969.0	92.20	180.70	7,229.4	-2,770.8	-1,125.6	2,958.5	2.21	0.31	2.19
10,001.0	91.50	180.50	7,228.4	-2,802.8	-1,126.0	2,989.6	2.27	-2.19	-0.63
10,032.0	91.00	181.50	7,227.7	-2,833.8	-1,126.5	3,019.9	3.61	-1.61	3.23

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tracy 23M-203
Project:	SEC.23-T7N-R66W	TVD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Site:	Tracy 23M-203 Pad Sec.23-T7N-R66W	MD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Well:	Tracy 23M-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)
10,064.0	89.90	181.20	7,227.4	-2,865.8	-1,127.3	3,051.1	3.56	-3.44	-0.94
10,096.0	89.00	181.20	7,227.7	-2,897.8	-1,127.9	3,082.4	2.81	-2.81	0.00
10,128.0	89.30	180.80	7,228.2	-2,929.8	-1,128.5	3,113.6	1.56	0.94	-1.25
10,160.0	89.20	180.80	7,228.6	-2,961.8	-1,128.9	3,144.8	0.31	-0.31	0.00
10,191.0	89.60	180.80	7,229.0	-2,992.8	-1,129.4	3,175.0	1.29	1.29	0.00
10,223.0	90.10	181.00	7,229.0	-3,024.8	-1,129.9	3,206.2	1.68	1.56	0.63
10,255.0	90.60	181.20	7,228.9	-3,056.8	-1,130.5	3,237.4	1.68	1.56	0.63
10,287.0	90.00	180.70	7,228.7	-3,088.8	-1,131.0	3,268.7	2.44	-1.88	-1.56
10,319.0	89.60	180.00	7,228.8	-3,120.8	-1,131.2	3,299.8	2.52	-1.25	-2.19
10,350.0	89.70	180.50	7,229.0	-3,151.8	-1,131.4	3,329.9	1.64	0.32	1.61
10,382.0	90.30	180.50	7,229.0	-3,183.8	-1,131.6	3,361.1	1.88	1.88	0.00
10,414.0	90.70	180.00	7,228.7	-3,215.8	-1,131.8	3,392.2	2.00	1.25	-1.56
10,446.0	90.40	179.10	7,228.4	-3,247.8	-1,131.5	3,423.2	2.96	-0.94	-2.81
10,477.0	90.50	177.80	7,228.2	-3,278.7	-1,130.7	3,453.2	4.21	0.32	-4.19
10,509.0	90.90	177.70	7,227.8	-3,310.7	-1,129.4	3,483.9	1.29	1.25	-0.31
10,541.0	90.70	178.00	7,227.3	-3,342.7	-1,128.2	3,514.7	1.13	-0.63	0.94
10,573.0	91.20	177.70	7,226.8	-3,374.7	-1,127.0	3,545.5	1.82	1.56	-0.94
10,604.0	90.80	178.20	7,226.2	-3,405.6	-1,125.9	3,575.3	2.07	-1.29	1.61
10,636.0	91.30	178.70	7,225.7	-3,437.6	-1,125.1	3,606.2	2.21	1.56	1.56
10,668.0	90.60	178.70	7,225.1	-3,469.6	-1,124.3	3,637.1	2.19	-2.19	0.00
10,699.0	91.30	179.80	7,224.6	-3,500.6	-1,123.9	3,667.1	4.21	2.26	3.55
10,731.0	91.50	181.20	7,223.8	-3,532.6	-1,124.2	3,698.3	4.42	0.63	4.38
10,763.0	92.20	181.90	7,222.8	-3,564.6	-1,125.1	3,729.5	3.09	2.19	2.19
10,795.0	91.80	182.20	7,221.7	-3,596.5	-1,126.2	3,760.9	1.56	-1.25	0.94
10,827.0	91.10	182.40	7,220.9	-3,628.5	-1,127.5	3,792.2	2.27	-2.19	0.63
10,859.0	90.50	182.40	7,220.4	-3,660.5	-1,128.8	3,823.6	1.88	-1.88	0.00
10,891.0	89.70	182.20	7,220.4	-3,692.4	-1,130.1	3,855.0	2.58	-2.50	-0.63
10,922.0	89.70	182.20	7,220.5	-3,723.4	-1,131.3	3,885.3	0.00	0.00	0.00
10,954.0	89.70	181.90	7,220.7	-3,755.4	-1,132.4	3,916.7	0.94	0.00	-0.94
10,986.0	90.10	181.50	7,220.8	-3,787.4	-1,133.4	3,948.0	1.77	1.25	-1.25
11,018.0	90.40	181.70	7,220.6	-3,819.4	-1,134.3	3,979.3	1.13	0.94	0.63
11,049.0	90.70	180.80	7,220.3	-3,850.3	-1,135.0	4,009.6	3.06	0.97	-2.90
11,081.0	90.30	180.50	7,220.0	-3,882.3	-1,135.3	4,040.7	1.56	-1.25	-0.94
11,113.0	90.20	180.70	7,219.9	-3,914.3	-1,135.7	4,071.9	0.70	-0.31	0.63
11,144.0	90.10	180.50	7,219.8	-3,945.3	-1,136.0	4,102.1	0.72	-0.32	-0.65
11,176.0	89.90	180.80	7,219.8	-3,977.3	-1,136.4	4,133.3	1.13	-0.63	0.94
11,208.0	89.30	180.80	7,220.0	-4,009.3	-1,136.8	4,164.5	1.88	-1.88	0.00
11,240.0	89.80	180.30	7,220.3	-4,041.3	-1,137.1	4,195.6	2.21	1.56	-1.56
11,271.0	89.70	180.10	7,220.4	-4,072.3	-1,137.2	4,225.8	0.72	-0.32	-0.65
11,302.0	90.30	181.50	7,220.4	-4,103.3	-1,137.6	4,256.0	4.91	1.94	4.52
11,334.0	90.90	180.30	7,220.1	-4,135.3	-1,138.2	4,287.2	4.19	1.88	-3.75
11,366.0	90.50	179.60	7,219.7	-4,167.3	-1,138.1	4,318.3	2.52	-1.25	-2.19
11,397.0	90.70	179.60	7,219.4	-4,198.3	-1,137.9	4,348.3	0.65	0.65	0.00
11,430.0	90.10	180.50	7,219.2	-4,231.3	-1,137.9	4,380.4	3.28	-1.82	2.73
11,462.0	89.30	180.30	7,219.3	-4,263.3	-1,138.2	4,411.5	2.58	-2.50	-0.63
11,493.0	88.90	180.10	7,219.8	-4,294.3	-1,138.3	4,441.7	1.44	-1.29	-0.65
11,525.0	89.10	179.40	7,220.4	-4,326.3	-1,138.1	4,472.7	2.27	0.63	-2.19
11,557.0	89.40	179.60	7,220.8	-4,358.3	-1,137.8	4,503.8	1.13	0.94	0.63
11,589.0	90.00	179.20	7,221.0	-4,390.3	-1,137.5	4,534.8	2.25	1.88	-1.25
11,620.0	90.80	179.60	7,220.7	-4,421.3	-1,137.2	4,564.8	2.89	2.58	1.29
11,652.0	90.60	179.40	7,220.3	-4,453.3	-1,136.9	4,595.8	0.88	-0.63	-0.63
11,684.0	89.90	179.80	7,220.2	-4,485.3	-1,136.7	4,626.9	2.52	-2.19	1.25
11,716.0	89.90	179.80	7,220.3	-4,517.3	-1,136.6	4,657.9	0.00	0.00	0.00
11,747.0	89.20	179.60	7,220.5	-4,548.3	-1,136.4	4,688.0	2.35	-2.26	-0.65

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Tracy 23M-203
Project:	SEC.23-T7N-R66W	TVD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Site:	Tracy 23M-203 Pad Sec.23-T7N-R66W	MD Reference:	WELL @ 4905.0ft (RKB Ensign 32 - 15')
Well:	Tracy 23M-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)
11,792.0	89.20	180.00	7,221.1	-4,593.3	-1,136.3	4,731.7	0.89	0.00	0.89
11,843.0	89.20	180.00	7,221.8	-4,644.3	-1,136.3	4,781.2	0.00	0.00	0.00
BHL 500'FSL & 2640'FEL									

Checked By: _____	Approved By: _____	Date: _____
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