

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **TRACY 31-23H**

Surface Location: TRACY 31-21H SEC.23-T6N-64W

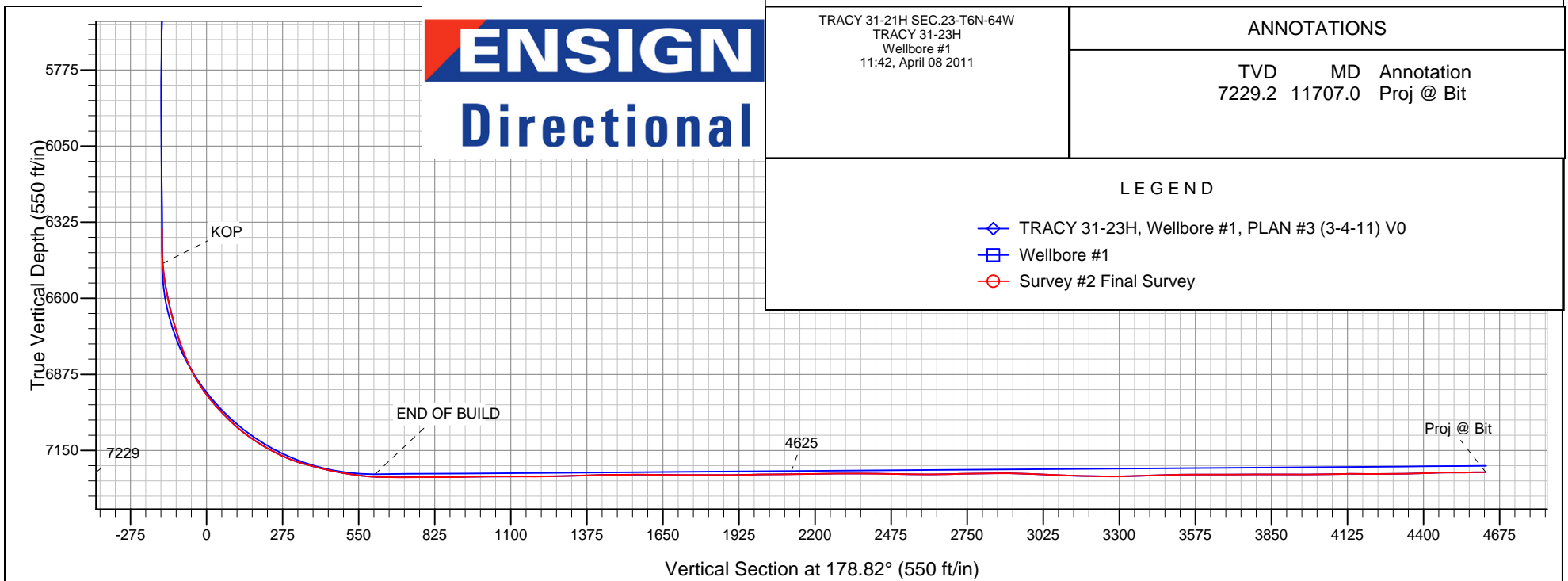
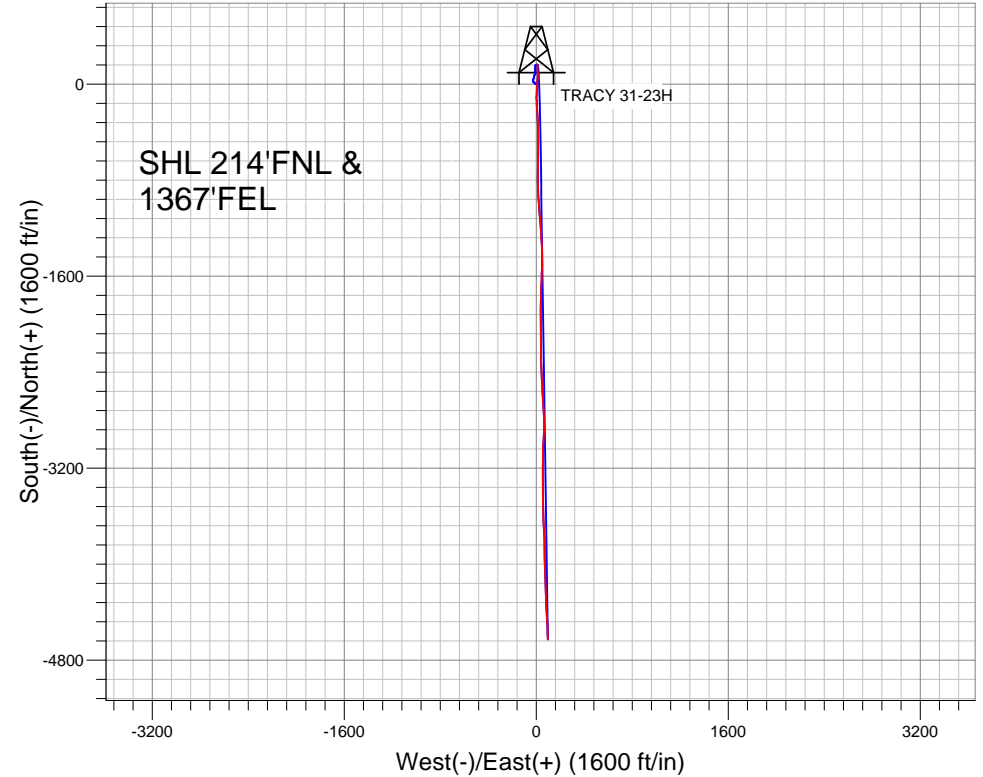
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4890.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1450518.33	3211072.56	40° 34' 3.324 N	104° 44' 24.900 W	
RKB ENSIGN 32 -14' RKB @ 4904.0ft (RKB ENSIGN 32 -14')						

## FINAL SURVEY

Projected Bottom Hole Location  
11707' MD 7229' TVD 4624' S & 97' E of  
SHL  
90.5 degree Incl @ 177.4 degree AZM





## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.23-T6N-R64W**

**TRACY 31-21H SEC.23-T6N-64W**

**TRACY 31-23H**

**Wellbore #1**

**Survey: Survey #2 Final Survey**

## **Standard Survey Report**

**08 April, 2011**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well TRACY 31-23H
<b>Project:</b>	SEC.23-T6N-R64W	<b>TVD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Site:</b>	TRACY 31-21H SEC.23-T6N-64W	<b>MD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Well:</b>	TRACY 31-23H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.23-T6N-R64W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	TRACY 31-21H SEC.23-T6N-64W				
Site Position:		Northing:	1,450,518.33ft	Latitude:	40° 34' 3.324 N
From:	Lat/Long	Easting:	3,211,072.56ft	Longitude:	104° 44' 24.900 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.49 °

Well	TRACY 31-23H					
Well Position	+N-S	0.0 ft	Northing:	1,450,518.33 ft	Latitude:	40° 34' 3.324 N
	+E-W	0.0 ft	Easting:	3,211,072.56 ft	Longitude:	104° 44' 24.900 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,890.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/23/2010	8.93	67.21	53,272

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	178.82	

<b>Survey Program</b>	<b>Date</b>	4/8/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
978.0	6,355.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	
6,381.0	11,707.0	Survey #2 Final Survey (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
6,355.0	1.10	101.10	6,349.3	161.4	9.8	-161.2	0.00	0.00	0.00	
<b>HARDLINE 460'FNL - HARDLINE SHL 460'FNL</b>										
6,381.0	1.10	112.30	6,375.3	161.2	10.2	-161.0	0.83	0.00	43.08	
6,412.0	0.80	103.50	6,406.2	161.1	10.7	-160.8	1.07	-0.97	-28.39	
6,443.0	1.50	141.80	6,437.2	160.7	11.2	-160.4	3.24	2.26	123.55	
6,474.0	3.30	173.80	6,468.2	159.5	11.5	-159.2	7.03	5.81	103.23	
6,505.0	5.90	181.00	6,499.1	157.0	11.6	-156.8	8.58	8.39	23.23	
6,536.0	8.40	185.80	6,529.9	153.2	11.3	-152.9	8.28	8.06	15.48	
6,566.0	10.80	185.80	6,559.4	148.2	10.8	-147.9	8.00	8.00	0.00	
6,597.0	12.10	184.40	6,589.8	142.1	10.3	-141.8	4.29	4.19	-4.52	
6,629.0	12.50	182.60	6,621.1	135.3	9.9	-135.0	1.73	1.25	-5.63	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well TRACY 31-23H
<b>Project:</b>	SEC.23-T6N-R64W	<b>TVD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Site:</b>	TRACY 31-21H SEC.23-T6N-64W	<b>MD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Well:</b>	TRACY 31-23H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
6,660.0	13.70	180.30	6,651.3	128.2	9.7	-128.0	4.22	3.87	-7.42
6,691.0	14.90	177.30	6,681.3	120.6	9.9	-120.4	4.55	3.87	-9.68
6,722.0	16.40	177.80	6,711.2	112.2	10.2	-112.0	4.86	4.84	1.61
6,752.0	18.00	176.60	6,739.8	103.4	10.7	-103.1	5.46	5.33	-4.00
6,784.0	20.30	176.20	6,770.1	92.9	11.3	-92.7	7.20	7.19	-1.25
6,815.0	21.30	177.20	6,799.0	81.9	12.0	-81.7	3.42	3.23	3.23
6,845.0	23.30	179.11	6,826.8	70.5	12.3	-70.3	7.09	6.67	6.37
6,876.0	26.10	184.40	6,855.0	57.6	11.9	-57.3	11.50	9.03	17.06
6,907.0	29.20	186.32	6,882.4	43.3	10.5	-43.1	10.40	10.00	6.19
6,938.0	32.80	186.20	6,909.0	27.4	8.8	-27.2	11.61	11.61	-0.39
6,969.0	35.40	184.40	6,934.7	10.1	7.2	-10.0	9.00	8.39	-5.81
7,000.0	38.10	182.50	6,959.5	-8.4	6.1	8.5	9.45	8.71	-6.13
7,031.0	40.90	182.50	6,983.4	-28.1	5.2	28.2	9.03	9.03	0.00
7,062.0	43.00	182.50	7,006.5	-48.8	4.3	48.9	6.77	6.77	0.00
7,092.0	45.30	182.70	7,028.0	-69.7	3.4	69.7	7.68	7.67	0.67
7,124.0	46.80	182.20	7,050.2	-92.7	2.4	92.7	4.82	4.69	-1.56
7,154.0	49.50	179.80	7,070.2	-115.0	2.0	115.0	10.79	9.00	-8.00
7,185.0	52.70	178.10	7,089.7	-139.1	2.5	139.2	11.17	10.32	-5.48
7,216.0	55.80	176.90	7,107.8	-164.3	3.6	164.3	10.48	10.00	-3.87
7,247.0	57.90	175.90	7,124.7	-190.2	5.2	190.2	7.29	6.77	-3.23
7,278.0	60.20	176.12	7,140.7	-216.7	7.0	216.8	7.44	7.42	0.71
7,309.0	62.60	176.90	7,155.5	-243.9	8.7	244.0	8.05	7.74	2.52
7,340.0	65.10	177.60	7,169.2	-271.7	10.0	271.8	8.32	8.06	2.26
7,371.0	68.60	177.40	7,181.4	-300.1	11.3	300.3	11.31	11.29	-0.65
7,402.0	72.20	177.40	7,191.8	-329.3	12.6	329.5	11.61	11.61	0.00
7,433.0	74.70	178.20	7,200.6	-359.0	13.7	359.2	8.44	8.06	2.58
7,464.0	75.90	178.50	7,208.5	-389.0	14.6	389.2	3.98	3.87	0.97
7,495.0	76.20	178.00	7,215.9	-419.0	15.5	419.3	1.84	0.97	-1.61
7,526.0	77.00	179.20	7,223.1	-449.2	16.3	449.4	4.56	2.58	3.87
7,557.0	79.10	179.10	7,229.5	-479.5	16.7	479.7	6.78	6.77	-0.32
7,588.0	81.10	180.50	7,234.9	-510.0	16.8	510.3	7.84	6.45	4.52
7,619.0	82.20	180.70	7,239.4	-540.7	16.5	540.9	3.61	3.55	0.65
7,650.0	84.00	181.90	7,243.1	-571.5	15.8	571.7	6.96	5.81	3.87
7,681.0	86.60	181.80	7,245.6	-602.3	14.8	602.5	8.39	8.39	-0.32
7,697.0	88.40	182.50	7,246.3	-618.3	14.2	618.5	12.07	11.25	4.38
7,735.0	89.90	182.30	7,246.9	-656.3	12.6	656.4	3.98	3.95	-0.53
7,766.0	90.10	181.50	7,246.9	-687.3	11.6	687.4	2.66	0.65	-2.58
7,801.0	89.80	179.30	7,246.9	-722.3	11.3	722.3	6.34	-0.86	-6.29
7,833.0	89.60	179.30	7,247.1	-754.3	11.7	754.3	0.63	-0.63	0.00
7,865.0	90.00	179.40	7,247.2	-786.3	12.1	786.3	1.29	1.25	0.31
7,897.0	90.30	178.10	7,247.1	-818.2	12.8	818.3	4.17	0.94	-4.06
7,929.0	90.00	178.80	7,247.0	-850.2	13.7	850.3	2.38	-0.94	2.19
7,960.0	90.40	178.10	7,246.9	-881.2	14.5	881.3	2.60	1.29	-2.26
7,992.0	90.80	176.80	7,246.6	-913.2	15.9	913.3	4.25	1.25	-4.06
8,024.0	90.90	176.10	7,246.1	-945.1	17.9	945.3	2.21	0.31	-2.19
8,056.0	91.00	175.90	7,245.6	-977.0	20.1	977.2	0.70	0.31	-0.63
8,088.0	91.10	176.80	7,245.0	-1,009.0	22.2	1,009.2	2.83	0.31	2.81
8,121.0	90.70	175.20	7,244.5	-1,041.9	24.5	1,042.2	5.00	-1.21	-4.85
8,153.0	90.20	175.90	7,244.2	-1,073.8	26.9	1,074.1	2.69	-1.56	2.19
8,184.0	89.90	175.90	7,244.2	-1,104.7	29.2	1,105.1	0.97	-0.97	0.00
8,216.0	89.70	175.40	7,244.3	-1,136.6	31.6	1,137.0	1.68	-0.63	-1.56
8,247.0	90.10	175.50	7,244.4	-1,167.5	34.0	1,168.0	1.33	1.29	0.32
8,279.0	90.20	174.00	7,244.3	-1,199.4	37.0	1,199.9	4.70	0.31	-4.69
8,311.0	90.70	175.20	7,244.0	-1,231.2	40.0	1,231.8	4.06	1.56	3.75

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well TRACY 31-23H
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<b>Well:</b>	TRACY 31-23H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
8,343.0	91.30	176.70	7,243.5	-1,263.2	42.2	1,263.8	5.05	1.88	4.69
8,375.0	91.30	177.40	7,242.7	-1,295.1	43.9	1,295.7	2.19	0.00	2.19
8,406.0	91.90	176.70	7,241.9	-1,326.0	45.5	1,326.7	2.97	1.94	-2.26
8,438.0	91.90	178.00	7,240.8	-1,358.0	47.0	1,358.7	4.06	0.00	4.06
8,470.0	91.90	178.00	7,239.8	-1,390.0	48.1	1,390.7	0.00	0.00	0.00
8,502.0	91.20	179.30	7,238.9	-1,421.9	48.8	1,422.6	4.61	-2.19	4.06
8,534.0	90.40	181.40	7,238.4	-1,453.9	48.6	1,454.6	7.02	-2.50	6.56
8,566.0	90.10	182.50	7,238.3	-1,485.9	47.6	1,486.6	3.56	-0.94	3.44
8,598.0	90.90	181.80	7,238.0	-1,517.9	46.4	1,518.5	3.32	2.50	-2.19
8,630.0	90.50	182.00	7,237.6	-1,549.9	45.3	1,550.5	1.40	-1.25	0.63
8,662.0	88.80	180.90	7,237.8	-1,581.9	44.5	1,582.4	6.33	-5.31	-3.44
8,694.0	88.80	181.80	7,238.5	-1,613.8	43.7	1,614.4	2.81	0.00	2.81
8,726.0	90.00	182.40	7,238.8	-1,645.8	42.6	1,646.3	4.19	3.75	1.88
8,756.0	90.10	182.20	7,238.8	-1,675.8	41.4	1,676.3	0.75	0.33	-0.67
8,788.0	89.90	181.70	7,238.8	-1,707.8	40.3	1,708.2	1.68	-0.63	-1.56
8,820.0	89.50	182.70	7,239.0	-1,739.7	39.0	1,740.2	3.37	-1.25	3.13
8,852.0	89.50	182.50	7,239.3	-1,771.7	37.6	1,772.1	0.62	0.00	-0.63
8,884.0	89.90	181.20	7,239.4	-1,803.7	36.6	1,804.1	4.25	1.25	-4.06
8,916.0	90.30	180.90	7,239.4	-1,835.7	36.0	1,836.0	1.56	1.25	-0.94
8,948.0	90.40	178.70	7,239.2	-1,867.7	36.1	1,868.0	6.88	0.31	-6.88
8,980.0	90.20	179.80	7,239.0	-1,899.7	36.5	1,900.0	3.49	-0.63	3.44
9,011.0	91.20	178.70	7,238.6	-1,930.7	36.9	1,931.0	4.80	3.23	-3.55
9,043.0	91.30	178.80	7,237.9	-1,962.7	37.6	1,963.0	0.44	0.31	0.31
9,074.0	91.30	180.20	7,237.2	-1,993.7	37.9	1,994.0	4.51	0.00	4.52
9,106.0	90.80	180.40	7,236.6	-2,025.6	37.7	2,026.0	1.68	-1.56	0.63
9,138.0	90.10	180.90	7,236.4	-2,057.6	37.3	2,058.0	2.69	-2.19	1.56
9,169.0	90.00	178.80	7,236.4	-2,088.6	37.4	2,089.0	6.78	-0.32	-6.77
9,201.0	90.50	179.20	7,236.2	-2,120.6	38.0	2,121.0	2.00	1.56	1.25
9,233.0	90.60	180.10	7,235.9	-2,152.6	38.2	2,153.0	2.83	0.31	2.81
9,265.0	91.00	180.30	7,235.5	-2,184.6	38.1	2,184.9	1.40	1.25	0.63
9,297.0	91.60	178.60	7,234.7	-2,216.6	38.4	2,216.9	5.63	1.88	-5.31
9,329.0	90.40	179.00	7,234.2	-2,248.6	39.0	2,248.9	3.95	-3.75	1.25
9,361.0	90.30	179.00	7,234.0	-2,280.6	39.6	2,280.9	0.31	-0.31	0.00
9,394.0	90.60	178.80	7,233.7	-2,313.6	40.2	2,313.9	1.09	0.91	-0.61
9,425.0	90.20	178.50	7,233.5	-2,344.6	41.0	2,344.9	1.61	-1.29	-0.97
9,457.0	89.10	178.20	7,233.7	-2,376.6	41.9	2,376.9	3.56	-3.44	-0.94
9,489.0	88.90	178.40	7,234.3	-2,408.5	42.8	2,408.9	0.88	-0.63	0.63
9,521.0	89.50	178.10	7,234.7	-2,440.5	43.8	2,440.9	2.10	1.88	-0.94
9,553.0	89.60	176.70	7,235.0	-2,472.5	45.3	2,472.9	4.39	0.31	-4.38
9,586.0	88.30	175.40	7,235.6	-2,505.4	47.5	2,505.9	5.57	-3.94	-3.94
9,617.0	88.70	175.70	7,236.4	-2,536.3	49.9	2,536.8	1.61	1.29	0.97
9,649.0	89.20	176.10	7,237.0	-2,568.2	52.2	2,568.7	2.00	1.56	1.25
9,681.0	90.40	175.60	7,237.1	-2,600.1	54.5	2,600.7	4.06	3.75	-1.56
9,713.0	91.30	175.90	7,236.6	-2,632.0	56.9	2,632.7	2.96	2.81	0.94
9,745.0	91.40	176.30	7,235.9	-2,664.0	59.1	2,664.6	1.29	0.31	1.25
9,777.0	91.10	176.70	7,235.2	-2,695.9	61.0	2,696.6	1.56	-0.94	1.25
9,809.0	90.80	177.40	7,234.6	-2,727.8	62.7	2,728.6	2.38	-0.94	2.19
9,840.0	90.80	179.50	7,234.2	-2,758.8	63.5	2,759.6	6.77	0.00	6.77
9,872.0	91.00	179.20	7,233.7	-2,790.8	63.9	2,791.5	1.13	0.63	-0.94
9,904.0	90.50	179.80	7,233.3	-2,822.8	64.2	2,823.5	2.44	-1.56	1.88
9,936.0	90.70	181.60	7,232.9	-2,854.8	63.8	2,855.5	5.66	0.63	5.63
9,968.0	90.10	182.10	7,232.7	-2,886.8	62.7	2,887.5	2.44	-1.88	1.56
10,000.0	88.90	182.70	7,233.0	-2,918.8	61.4	2,919.4	4.19	-3.75	1.88

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well TRACY 31-23H
<b>Project:</b>	SEC.23-T6N-R64W	<b>TVD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Site:</b>	TRACY 31-21H SEC.23-T6N-64W	<b>MD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Well:</b>	TRACY 31-23H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
10,032.0	87.90	182.80	7,233.9	-2,950.7	59.9	2,951.3	3.14	-3.13	0.31
10,064.0	87.40	183.20	7,235.2	-2,982.6	58.2	2,983.2	2.00	-1.56	1.25
10,096.0	87.00	181.80	7,236.8	-3,014.6	56.8	3,015.1	4.55	-1.25	-4.38
10,128.0	87.30	180.80	7,238.3	-3,046.5	56.1	3,047.0	3.26	0.94	-3.13
10,160.0	87.40	181.80	7,239.8	-3,078.5	55.4	3,079.0	3.14	0.31	3.13
10,192.0	88.30	181.20	7,241.0	-3,110.5	54.5	3,110.9	3.38	2.81	-1.88
10,224.0	88.90	179.70	7,241.8	-3,142.4	54.3	3,142.9	5.05	1.88	-4.69
10,256.0	88.80	180.40	7,242.5	-3,174.4	54.2	3,174.9	2.21	-0.31	2.19
10,288.0	88.70	179.60	7,243.2	-3,206.4	54.2	3,206.9	2.52	-0.31	-2.50
10,320.0	89.00	180.20	7,243.8	-3,238.4	54.3	3,238.8	2.10	0.94	1.88
10,352.0	89.90	179.00	7,244.1	-3,270.4	54.5	3,270.8	4.69	2.81	-3.75
10,383.0	90.50	180.50	7,244.0	-3,301.4	54.6	3,301.8	5.21	1.94	4.84
10,415.0	91.70	178.80	7,243.4	-3,333.4	54.8	3,333.8	6.50	3.75	-5.31
10,447.0	91.70	180.20	7,242.4	-3,365.4	55.1	3,365.8	4.37	0.00	4.38
10,479.0	92.50	180.30	7,241.3	-3,397.4	55.0	3,397.8	2.52	2.50	0.31
10,511.0	92.10	179.80	7,240.0	-3,429.3	55.0	3,429.7	2.00	-1.25	-1.56
10,543.0	91.00	178.90	7,239.1	-3,461.3	55.3	3,461.7	4.44	-3.44	-2.81
10,575.0	91.00	179.50	7,238.5	-3,493.3	55.8	3,493.7	1.87	0.00	1.88
10,607.0	91.10	179.30	7,238.0	-3,525.3	56.1	3,525.7	0.70	0.31	-0.63
10,639.0	89.80	178.50	7,237.7	-3,557.3	56.7	3,557.7	4.77	-4.06	-2.50
10,671.0	90.30	178.70	7,237.7	-3,589.3	57.5	3,589.7	1.68	1.56	0.63
10,703.0	90.00	177.40	7,237.6	-3,621.3	58.6	3,621.7	4.17	-0.94	-4.06
10,734.0	90.20	177.40	7,237.5	-3,652.2	60.0	3,652.7	0.65	0.65	0.00
10,766.0	90.10	176.40	7,237.5	-3,684.2	61.7	3,684.7	3.14	-0.31	-3.13
10,798.0	90.00	176.80	7,237.4	-3,716.1	63.6	3,716.7	1.29	-0.31	1.25
10,830.0	90.40	177.70	7,237.3	-3,748.1	65.2	3,748.6	3.08	1.25	2.81
10,862.0	89.60	178.30	7,237.3	-3,780.1	66.3	3,780.6	3.12	-2.50	1.88
10,894.0	90.40	178.00	7,237.3	-3,812.1	67.3	3,812.6	2.67	2.50	-0.94
10,926.0	90.30	179.00	7,237.1	-3,844.1	68.1	3,844.6	3.14	-0.31	3.13
10,958.0	89.60	179.10	7,237.2	-3,876.0	68.7	3,876.6	2.21	-2.19	0.31
10,990.0	90.40	178.60	7,237.2	-3,908.0	69.3	3,908.6	2.95	2.50	-1.56
11,023.0	89.90	179.20	7,237.1	-3,941.0	70.0	3,941.6	2.37	-1.52	1.82
11,055.0	89.50	178.90	7,237.2	-3,973.0	70.5	3,973.6	1.56	-1.25	-0.94
11,087.0	90.90	178.20	7,237.1	-4,005.0	71.3	4,005.6	4.89	4.38	-2.19
11,119.0	91.10	178.10	7,236.6	-4,037.0	72.3	4,037.6	0.70	0.63	-0.31
11,151.0	91.00	179.00	7,236.0	-4,069.0	73.1	4,069.6	2.83	-0.31	2.81
11,183.0	91.30	179.00	7,235.3	-4,101.0	73.7	4,101.6	0.94	0.94	0.00
11,215.0	90.50	179.30	7,234.8	-4,133.0	74.2	4,133.6	2.67	-2.50	0.94
11,247.0	90.30	177.50	7,234.6	-4,164.9	75.1	4,165.6	5.66	-0.63	-5.63
11,279.0	89.60	177.40	7,234.6	-4,196.9	76.5	4,197.6	2.21	-2.19	-0.31
11,311.0	88.70	177.40	7,235.1	-4,228.9	77.9	4,229.6	2.81	-2.81	0.00
11,343.0	89.90	178.20	7,235.5	-4,260.9	79.2	4,261.6	4.51	3.75	2.50
11,375.0	90.60	177.20	7,235.4	-4,292.8	80.4	4,293.6	3.81	2.19	-3.13
11,407.0	91.80	177.20	7,234.7	-4,324.8	82.0	4,325.5	3.75	3.75	0.00
11,439.0	91.80	176.30	7,233.7	-4,356.7	83.8	4,357.5	2.81	0.00	-2.81
11,470.0	91.70	175.90	7,232.7	-4,387.6	85.9	4,388.5	1.33	-0.32	-1.29
11,502.0	92.30	176.70	7,231.6	-4,419.5	88.0	4,420.4	3.12	1.88	2.50
11,536.0	91.30	177.40	7,230.6	-4,453.5	89.7	4,454.4	3.59	-2.94	2.06
11,567.0	90.40	177.60	7,230.1	-4,484.4	91.1	4,485.4	2.97	-2.90	0.65
11,599.0	90.10	176.90	7,230.0	-4,516.4	92.6	4,517.4	2.38	-0.94	-2.19
11,632.0	90.30	179.20	7,229.8	-4,549.4	93.8	4,550.3	7.00	0.61	6.97
11,662.0	90.50	177.40	7,229.6	-4,579.4	94.6	4,580.3	6.04	0.67	-6.00
11,707.0	90.50	177.40	7,229.2	-4,624.3	96.7	4,625.3	0.00	0.00	0.00

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well TRACY 31-23H
<b>Project:</b>	SEC.23-T6N-R64W	<b>TVD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Site:</b>	TRACY 31-21H SEC.23-T6N-64W	<b>MD Reference:</b>	RKB @ 4904.0ft (RKB ENSIGN 32 -14')
<b>Well:</b>	TRACY 31-23H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
Proj @ Bit - HARDLINE TD - HARDLINE BHL 460'FSL - BHL 500'FSL & 1326'FEL									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,707.0	7,229.2	-4,624.3	96.7	Proj @ Bit

Checked By: _____	Approved By: _____	Date: _____
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