

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Carmichael 26U-243

Surface Location: Carmichael 26U-243 Sec.26-T7N-R63W  
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4769.0

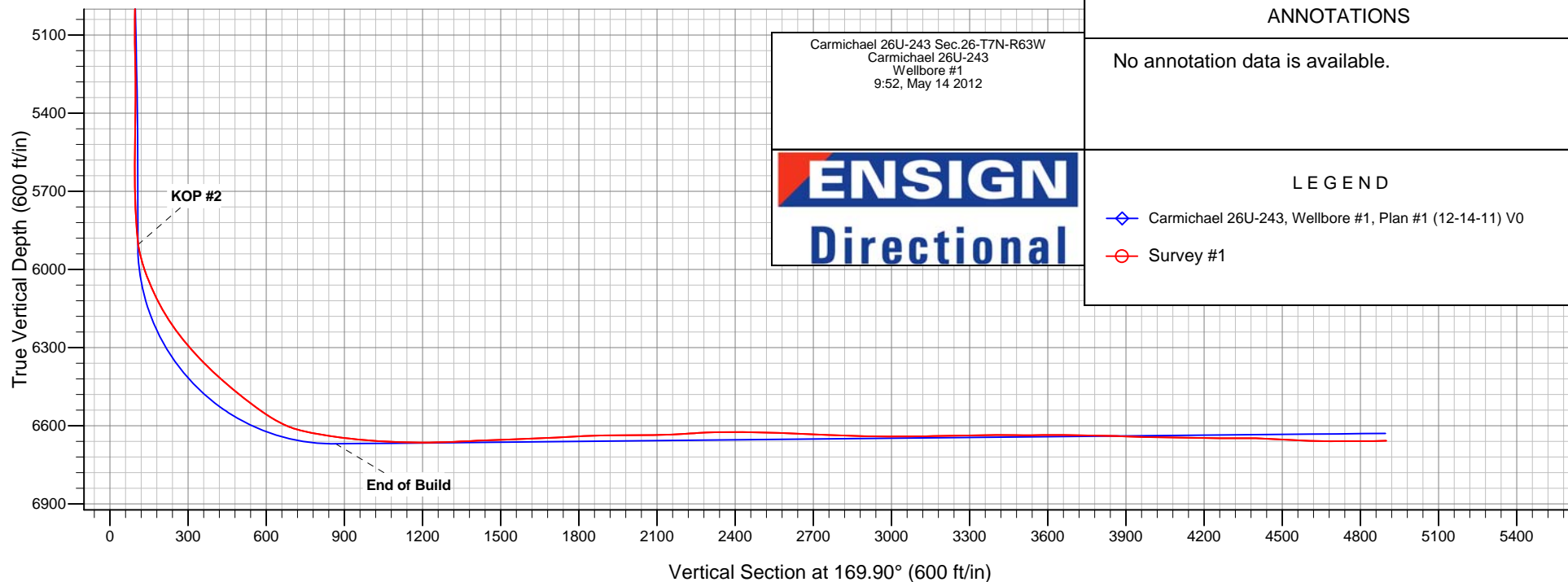
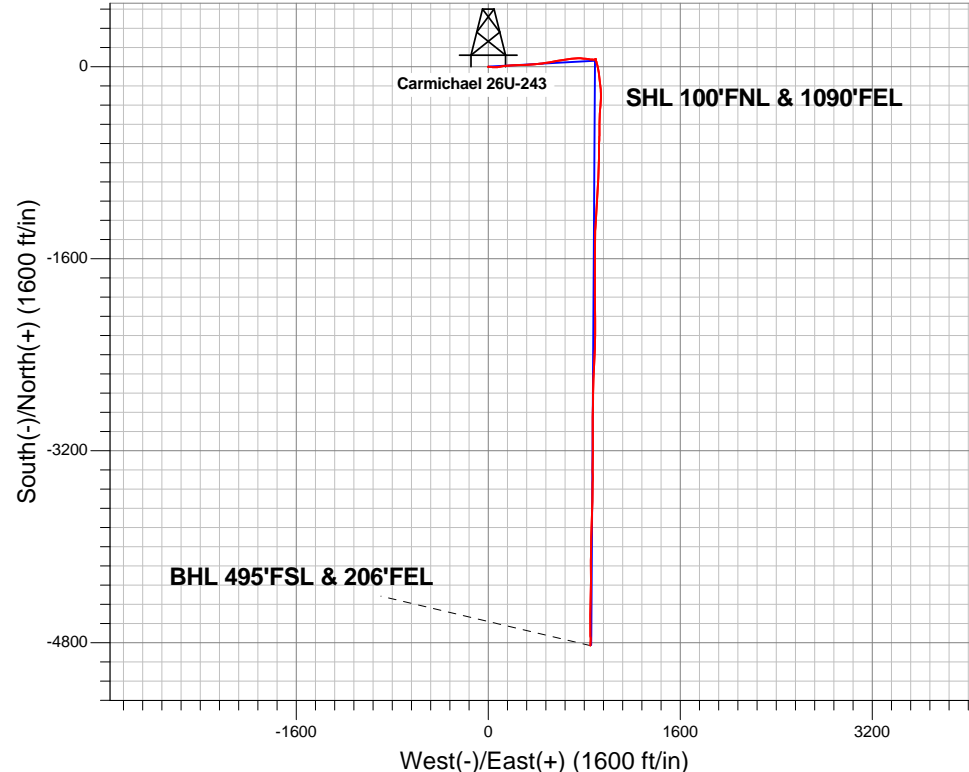
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445816.23	3306286.55	40.551940	-104.397770	

RKB Ensign 32 - 15' WELL @ 4784.0ft (RKB Ensign 32 - 15')

## FINAL SURVEY

Projected Bottom Hole Location  
11245' MD 6658' TVD 4824'S & 853' E of SHL

90.70 degree Incl @ 180.30 degree AZM





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.26-T7N-R63W**

**Carmichael 26U-243 Sec.26-T7N-R63W**

**Carmichael 26U-243**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**14 May, 2012**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Carmichael 26U-243
<b>Project:</b>	SEC.26-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Carmichael 26U-243 Sec.26-T7N-R63W	<b>MD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Carmichael 26U-243	<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.26-T7N-R63W, Weld County, CO		
<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		Carmichael 26U-243 Sec.26-T7N-R63W			
Site Position:		Northing:	1,445,816.24ft	Latitude:	40.551940
From:	Lat/Long	Easting:	3,306,286.55ft	Longitude:	-104.397770
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.71 °

Well	Carmichael 26U-243					
Well Position	+N-S	0.0 ft	Northing:	1,445,816.23 ft	Latitude:	40.551940
	+E-W	0.0 ft	Easting:	3,306,286.55 ft	Longitude:	-104.397770
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,769.0 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	4/10/2012	8.57	67.21	53,163

<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>	
	6,629.0	0.0	0.0	169.90	

<b>Survey Program</b>	<b>Date</b> 5/14/2012				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
178.0	11,245.0	Survey #1 (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>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>HARD LINE BHL 460'FSL - HARD LINES SHL 460'FNL - SECTION LINE 1090'E OF SHL - SECTION LINE 100'N OF SHL</b>									
178.0	0.30	293.10	178.0	0.2	-0.4	-0.3	0.17	0.17	0.00
270.0	0.60	116.40	270.0	0.1	-0.2	-0.1	0.98	0.33	-192.07
362.0	1.80	93.40	362.0	-0.2	1.7	0.5	1.38	1.30	-25.00
454.0	2.70	98.50	453.9	-0.6	5.2	1.6	1.00	0.98	5.54
546.0	4.10	98.10	545.7	-1.4	10.6	3.3	1.52	1.52	-0.43
638.0	4.80	94.30	637.5	-2.2	17.7	5.3	0.83	0.76	-4.13
730.0	5.80	94.60	729.1	-2.8	26.2	7.4	1.09	1.09	0.33
822.0	7.30	95.20	820.5	-3.7	36.7	10.1	1.63	1.63	0.65
883.0	8.70	92.60	880.9	-4.3	45.1	12.2	2.37	2.30	-4.26
946.0	9.00	88.90	943.1	-4.4	54.8	14.0	1.02	0.48	-5.87

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Carmichael 26U-243
<b>Project:</b>	SEC.26-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Carmichael 26U-243 Sec.26-T7N-R63W	<b>MD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Carmichael 26U-243	<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)
1,038.0	11.80	87.60	1,033.6	-3.9	71.4	16.4	3.05	3.04	-1.41
1,130.0	13.40	79.00	1,123.4	-1.5	91.3	17.5	2.68	1.74	-9.35
1,222.0	13.80	81.70	1,212.8	2.2	112.6	17.6	0.82	0.43	2.93
1,316.0	14.20	82.50	1,304.0	5.3	135.1	18.5	0.47	0.43	0.85
1,409.0	15.00	82.40	1,394.0	8.4	158.4	19.6	0.86	0.86	-0.11
1,502.0	15.50	86.70	1,483.7	10.7	182.7	21.6	1.33	0.54	4.62
1,595.0	14.80	88.40	1,573.5	11.7	207.0	24.8	0.89	-0.75	1.83
1,689.0	15.30	88.80	1,664.3	12.3	231.4	28.5	0.54	0.53	0.43
1,782.0	13.90	89.50	1,754.3	12.7	254.8	32.2	1.52	-1.51	0.75
1,875.0	13.80	87.90	1,844.6	13.2	277.1	35.6	0.43	-0.11	-1.72
1,969.0	13.90	87.30	1,935.8	14.1	299.6	38.7	0.19	0.11	-0.64
2,062.0	13.80	86.40	2,026.1	15.3	321.8	41.4	0.26	-0.11	-0.97
2,155.0	13.80	85.80	2,116.5	16.8	343.9	43.8	0.15	0.00	-0.65
2,248.0	13.60	85.80	2,206.8	18.5	365.9	46.0	0.22	-0.22	0.00
2,341.0	13.30	85.60	2,297.3	20.1	387.5	48.2	0.33	-0.32	-0.22
2,434.0	12.90	83.80	2,387.8	22.0	408.4	50.0	0.61	-0.43	-1.94
2,527.0	12.70	82.90	2,478.5	24.4	428.9	51.2	0.30	-0.22	-0.97
2,621.0	12.80	82.10	2,570.2	27.1	449.5	52.2	0.22	0.11	-0.85
2,714.0	12.60	81.20	2,660.9	30.1	469.7	52.8	0.30	-0.22	-0.97
2,807.0	12.30	80.40	2,751.7	33.3	489.5	53.1	0.37	-0.32	-0.86
2,900.0	12.30	79.70	2,842.6	36.7	509.0	53.2	0.16	0.00	-0.75
2,993.0	12.60	79.90	2,933.4	40.3	528.7	53.1	0.33	0.32	0.22
3,086.0	13.50	80.40	3,024.0	43.8	549.4	53.2	0.98	0.97	0.54
3,179.0	13.80	80.00	3,114.4	47.6	571.1	53.3	0.34	0.32	-0.43
3,272.0	13.80	79.90	3,204.7	51.5	592.9	53.4	0.03	0.00	-0.11
3,365.0	13.70	80.00	3,295.0	55.3	614.7	53.4	0.11	-0.11	0.11
3,458.0	12.00	84.50	3,385.7	58.1	635.1	54.2	2.12	-1.83	4.84
3,550.0	10.90	83.20	3,475.9	60.1	653.3	55.4	1.23	-1.20	-1.41
3,644.0	10.70	81.60	3,568.2	62.4	670.8	56.2	0.38	-0.21	-1.70
3,737.0	11.90	81.00	3,659.4	65.2	688.8	56.7	1.30	1.29	-0.65
3,830.0	12.10	83.80	3,750.4	67.7	707.9	57.5	0.66	0.22	3.01
3,924.0	12.80	86.50	3,842.2	69.4	728.1	59.4	0.97	0.74	2.87
4,018.0	12.80	90.50	3,933.8	70.0	748.9	62.5	0.94	0.00	4.26
4,108.0	12.20	92.80	4,021.7	69.4	768.4	66.4	0.87	-0.67	2.56
4,201.0	12.10	94.50	4,112.6	68.2	787.9	71.1	0.40	-0.11	1.83
4,294.0	10.40	97.10	4,203.8	66.4	806.0	76.0	1.91	-1.83	2.80
4,387.0	9.90	96.70	4,295.4	64.4	822.2	80.8	0.54	-0.54	-0.43
4,480.0	8.50	97.50	4,387.2	62.6	837.0	85.2	1.51	-1.51	0.86
4,573.0	7.20	96.30	4,479.3	61.0	849.6	88.9	1.41	-1.40	-1.29
4,667.0	5.50	93.20	4,572.7	60.1	860.0	91.6	1.84	-1.81	-3.30
4,760.0	5.40	92.10	4,665.3	59.7	868.8	93.6	0.16	-0.11	-1.18
4,853.0	4.10	92.60	4,758.0	59.4	876.5	95.3	1.40	-1.40	0.54
4,946.0	3.10	89.30	4,850.8	59.3	882.3	96.4	1.10	-1.08	-3.55
5,039.0	2.40	65.20	4,943.7	60.2	886.6	96.3	1.44	-0.75	-25.91
5,133.0	2.50	63.80	5,037.6	61.9	890.2	95.2	0.12	0.11	-1.49
5,226.0	1.40	120.50	5,130.6	62.2	893.0	95.4	2.25	-1.18	60.97
5,319.0	1.30	124.60	5,223.5	61.0	894.9	96.9	0.15	-0.11	4.41
5,412.0	0.40	335.40	5,316.5	60.7	895.6	97.3	1.78	-0.97	-160.43
5,505.0	0.30	23.30	5,409.5	61.2	895.6	96.8	0.32	-0.11	51.51
5,598.0	0.30	308.30	5,502.5	61.6	895.5	96.4	0.39	0.00	-80.65
5,692.0	0.20	17.70	5,596.5	61.9	895.3	96.1	0.32	-0.11	73.83
5,785.0	0.20	159.10	5,689.5	61.9	895.4	96.1	0.41	0.00	152.04
5,971.0	5.30	163.60	5,875.2	53.4	898.0	105.0	2.74	2.74	2.42
6,002.0	8.90	166.20	5,906.0	49.7	898.9	108.8	11.66	11.61	8.39

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Carmichael 26U-243
<b>Project:</b>	SEC.26-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Carmichael 26U-243 Sec.26-T7N-R63W	<b>MD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Carmichael 26U-243	<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)
6,033.0	12.40	164.40	5,936.5	44.1	900.4	114.5	11.34	11.29	-5.81
6,064.0	15.90	162.50	5,966.5	36.9	902.6	122.0	11.39	11.29	-6.13
6,095.0	18.50	163.40	5,996.1	28.1	905.3	131.1	8.43	8.39	2.90
6,126.0	20.80	165.00	6,025.3	18.1	908.1	141.5	7.62	7.42	5.16
6,157.0	22.70	167.00	6,054.1	6.9	910.9	153.0	6.58	6.13	6.45
6,189.0	24.70	169.20	6,083.4	-5.6	913.5	165.8	6.83	6.25	6.88
6,220.0	26.50	169.30	6,111.4	-18.8	916.0	179.2	5.81	5.81	0.32
6,250.0	28.40	170.70	6,138.0	-32.4	918.4	193.0	6.69	6.33	4.67
6,281.0	30.10	172.10	6,165.0	-47.4	920.7	208.2	5.91	5.48	4.52
6,312.0	32.20	171.50	6,191.6	-63.3	923.0	224.2	6.85	6.77	-1.94
6,344.0	34.70	172.20	6,218.3	-80.7	925.5	241.8	7.90	7.81	2.19
6,374.0	37.50	172.50	6,242.5	-98.2	927.8	259.5	9.35	9.33	1.00
6,406.0	39.50	173.80	6,267.6	-118.0	930.2	279.4	6.74	6.25	4.06
6,437.0	40.10	174.00	6,291.4	-137.8	932.3	299.2	1.98	1.94	0.65
6,468.0	41.80	173.80	6,314.8	-158.0	934.4	319.4	5.50	5.48	-0.65
6,499.0	43.60	174.60	6,337.6	-178.9	936.6	340.4	6.06	5.81	2.58
6,530.0	45.00	176.50	6,359.7	-200.5	938.2	361.9	6.22	4.52	6.13
6,561.0	46.10	177.30	6,381.5	-222.6	939.4	383.9	4.00	3.55	2.58
6,592.0	47.60	180.10	6,402.7	-245.2	939.9	406.2	8.17	4.84	9.03
6,623.0	49.50	182.80	6,423.2	-268.4	939.3	429.0	8.95	6.13	8.71
6,654.0	50.30	183.70	6,443.1	-292.1	938.0	452.1	3.40	2.58	2.90
6,686.0	51.40	184.80	6,463.4	-316.8	936.2	476.1	4.35	3.44	3.44
6,717.0	52.00	184.30	6,482.6	-341.1	934.2	499.7	2.31	1.94	-1.61
6,748.0	53.30	184.60	6,501.4	-365.6	932.3	523.5	4.26	4.19	0.97
6,779.0	53.80	183.00	6,519.8	-390.5	930.7	547.7	4.45	1.61	-5.16
6,810.0	55.50	183.00	6,537.7	-415.7	929.3	572.3	5.48	5.48	0.00
6,841.0	56.90	181.60	6,555.0	-441.5	928.3	597.5	5.87	4.52	-4.52
6,872.0	59.30	181.40	6,571.4	-467.8	927.6	623.3	7.76	7.74	-0.65
6,903.0	62.60	180.80	6,586.4	-494.9	927.1	649.8	10.78	10.65	-1.94
6,934.0	67.10	180.20	6,599.6	-522.9	926.9	677.4	14.62	14.52	-1.94
6,964.0	72.00	180.30	6,610.1	-551.0	926.7	705.1	16.34	16.33	0.33
6,995.0	76.70	181.60	6,618.4	-580.9	926.2	734.4	15.69	15.16	4.19
7,027.0	78.40	181.80	6,625.3	-612.1	925.3	764.9	5.35	5.31	0.63
7,058.0	80.40	181.80	6,631.0	-642.6	924.4	794.8	6.45	6.45	0.00
7,117.0	81.80	179.80	6,640.1	-700.8	923.5	852.0	4.10	2.37	-3.39
7,149.0	82.00	180.60	6,644.7	-732.5	923.4	883.2	2.55	0.63	2.50
7,181.0	83.30	181.70	6,648.7	-764.3	922.8	914.3	5.30	4.06	3.44
7,213.0	84.10	180.80	6,652.3	-796.0	922.1	945.5	3.75	2.50	-2.81
7,245.0	85.90	182.60	6,655.0	-827.9	921.2	976.7	7.94	5.63	5.63
7,276.0	86.70	181.80	6,657.0	-858.8	920.0	1,006.9	3.65	2.58	-2.58
7,308.0	87.00	181.80	6,658.8	-890.8	919.0	1,038.2	0.94	0.94	0.00
7,340.0	87.30	183.10	6,660.4	-922.7	917.6	1,069.4	4.16	0.94	4.06
7,372.0	87.40	182.60	6,661.9	-954.6	916.0	1,100.5	1.59	0.31	-1.56
7,404.0	87.60	182.40	6,663.3	-986.6	914.6	1,131.7	0.88	0.63	-0.63
7,436.0	89.20	183.00	6,664.2	-1,018.5	913.1	1,162.9	5.34	5.00	1.88
7,468.0	90.20	183.70	6,664.3	-1,050.4	911.2	1,194.0	3.81	3.13	2.19
7,500.0	90.50	183.20	6,664.1	-1,082.4	909.3	1,225.1	1.82	0.94	-1.56
7,532.0	91.00	183.70	6,663.7	-1,114.3	907.4	1,256.2	2.21	1.56	1.56
7,564.0	91.60	183.40	6,663.0	-1,146.3	905.4	1,287.3	2.10	1.88	-0.94
7,597.0	92.60	184.20	6,661.8	-1,179.2	903.2	1,319.3	3.88	3.03	2.42
7,629.0	93.10	183.70	6,660.2	-1,211.0	901.0	1,350.3	2.21	1.56	-1.56
7,661.0	92.80	183.10	6,658.5	-1,243.0	899.1	1,381.4	2.09	-0.94	-1.88
7,692.0	93.00	183.60	6,657.0	-1,273.9	897.3	1,411.5	1.74	0.65	1.61

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<b>Well:</b>	Carmichael 26U-243	<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)
7,724.0	92.10	183.80	6,655.6	-1,305.8	895.3	1,442.6	2.88	-2.81	0.63
7,756.0	92.00	182.90	6,654.4	-1,337.7	893.4	1,473.7	2.83	-0.31	-2.81
7,788.0	91.80	182.40	6,653.3	-1,369.6	891.9	1,504.9	1.68	-0.63	-1.56
7,820.0	91.70	181.10	6,652.4	-1,401.6	890.9	1,536.2	4.07	-0.31	-4.06
7,851.0	91.50	180.60	6,651.5	-1,432.6	890.5	1,566.6	1.74	-0.65	-1.61
7,883.0	91.80	179.70	6,650.6	-1,464.6	890.4	1,598.1	2.96	0.94	-2.81
7,915.0	92.50	179.80	6,649.4	-1,496.5	890.5	1,629.6	2.21	2.19	0.31
7,947.0	93.10	179.70	6,647.8	-1,528.5	890.7	1,661.1	1.90	1.88	-0.31
7,979.0	93.80	181.00	6,645.9	-1,560.5	890.5	1,692.5	4.61	2.19	4.06
8,011.0	92.60	181.00	6,644.1	-1,592.4	889.9	1,723.8	3.75	-3.75	0.00
8,043.0	92.50	180.20	6,642.7	-1,624.4	889.6	1,755.2	2.52	-0.31	-2.50
8,075.0	93.20	181.10	6,641.1	-1,656.3	889.2	1,786.6	3.56	2.19	2.81
8,107.0	92.10	180.40	6,639.6	-1,688.3	888.8	1,818.0	4.07	-3.44	-2.19
8,139.0	92.70	180.40	6,638.3	-1,720.3	888.6	1,849.5	1.88	1.88	0.00
8,171.0	91.10	179.70	6,637.2	-1,752.2	888.5	1,880.9	5.46	-5.00	-2.19
8,202.0	90.70	180.10	6,636.7	-1,783.2	888.6	1,911.5	1.82	-1.29	1.29
8,234.0	89.80	178.90	6,636.6	-1,815.2	888.9	1,943.0	4.69	-2.81	-3.75
8,266.0	90.20	180.00	6,636.6	-1,847.2	889.2	1,974.6	3.66	1.25	3.44
8,298.0	90.30	179.60	6,636.4	-1,879.2	889.3	2,006.1	1.29	0.31	-1.25
8,330.0	90.50	179.60	6,636.2	-1,911.2	889.5	2,037.6	0.63	0.63	0.00
8,362.0	90.90	179.00	6,635.8	-1,943.2	889.9	2,069.2	2.25	1.25	-1.88
8,394.0	91.30	178.90	6,635.2	-1,975.2	890.5	2,100.8	1.29	1.25	-0.31
8,426.0	91.90	179.20	6,634.3	-2,007.2	891.0	2,132.4	2.10	1.88	0.94
8,458.0	92.40	179.30	6,633.1	-2,039.2	891.4	2,163.9	1.59	1.56	0.31
8,490.0	93.20	179.60	6,631.6	-2,071.1	891.8	2,195.4	2.67	2.50	0.94
8,522.0	94.00	179.90	6,629.6	-2,103.1	891.9	2,226.9	2.67	2.50	0.94
8,554.0	92.90	179.70	6,627.6	-2,135.0	892.0	2,258.4	3.49	-3.44	-0.63
8,585.0	93.30	179.40	6,625.9	-2,166.0	892.2	2,288.9	1.61	1.29	-0.97
8,617.0	91.70	179.90	6,624.6	-2,197.9	892.4	2,320.4	5.24	-5.00	1.56
8,649.0	89.70	181.80	6,624.2	-2,229.9	892.0	2,351.8	8.62	-6.25	5.94
8,681.0	89.50	181.70	6,624.4	-2,261.9	891.0	2,383.1	0.70	-0.63	-0.31
8,713.0	89.80	181.10	6,624.6	-2,293.9	890.2	2,414.5	2.10	0.94	-1.88
8,745.0	90.30	182.20	6,624.6	-2,325.9	889.3	2,445.8	3.78	1.56	3.44
8,777.0	88.70	181.60	6,624.8	-2,357.9	888.2	2,477.1	5.34	-5.00	-1.88
8,809.0	89.10	181.70	6,625.4	-2,389.8	887.3	2,508.4	1.29	1.25	0.31
8,841.0	88.50	183.00	6,626.1	-2,421.8	886.0	2,539.7	4.47	-1.88	4.06
8,873.0	87.20	183.30	6,627.3	-2,453.7	884.2	2,570.8	4.17	-4.06	0.94
8,905.0	87.20	181.90	6,628.9	-2,485.7	882.8	2,602.0	4.37	0.00	-4.38
8,937.0	87.50	182.70	6,630.4	-2,517.6	881.5	2,633.2	2.67	0.94	2.50
8,969.0	88.00	183.10	6,631.6	-2,549.5	879.9	2,664.3	2.00	1.56	1.25
9,000.0	88.30	183.10	6,632.6	-2,580.5	878.2	2,694.5	0.97	0.97	0.00
9,032.0	87.20	181.10	6,633.9	-2,612.4	877.0	2,725.8	7.13	-3.44	-6.25
9,064.0	87.50	182.20	6,635.4	-2,644.4	876.1	2,757.1	3.56	0.94	3.44
9,096.0	88.00	181.10	6,636.6	-2,676.3	875.2	2,788.4	3.77	1.56	-3.44
9,128.0	88.70	182.10	6,637.5	-2,708.3	874.3	2,819.7	3.81	2.19	3.13
9,159.0	88.10	180.10	6,638.4	-2,739.3	873.7	2,850.1	6.73	-1.94	-6.45
9,191.0	88.40	180.20	6,639.4	-2,771.3	873.6	2,881.6	0.99	0.94	0.31
9,223.0	88.80	181.00	6,640.2	-2,803.3	873.3	2,913.0	2.79	1.25	2.50
9,255.0	89.50	181.30	6,640.6	-2,835.3	872.6	2,944.4	2.38	2.19	0.94
9,286.0	90.00	181.80	6,640.8	-2,866.2	871.8	2,974.7	2.28	1.61	1.61
9,317.0	90.40	181.10	6,640.7	-2,897.2	871.0	3,005.1	2.60	1.29	-2.26
9,348.0	89.90	180.90	6,640.6	-2,928.2	870.5	3,035.5	1.74	-1.61	-0.65
9,380.0	90.10	179.20	6,640.6	-2,960.2	870.5	3,067.0	5.35	0.63	-5.31

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Carmichael 26U-243
<b>Project:</b>	SEC.26-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Carmichael 26U-243 Sec.26-T7N-R63W	<b>MD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Carmichael 26U-243	<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)
9,411.0	90.60	179.50	6,640.4	-2,991.2	870.8	3,097.6	1.88	1.61	0.97
9,442.0	91.40	179.40	6,639.8	-3,022.2	871.1	3,128.2	2.60	2.58	-0.32
9,474.0	90.50	180.40	6,639.3	-3,054.2	871.2	3,159.7	4.20	-2.81	3.13
9,506.0	90.60	180.20	6,639.0	-3,086.2	871.0	3,191.1	0.70	0.31	-0.63
9,538.0	90.70	179.70	6,638.6	-3,118.2	871.0	3,222.7	1.59	0.31	-1.56
9,570.0	91.20	180.80	6,638.1	-3,150.2	870.9	3,254.1	3.78	1.56	3.44
9,602.0	91.90	180.10	6,637.2	-3,182.2	870.6	3,285.6	3.09	2.19	-2.19
9,634.0	90.80	179.20	6,636.5	-3,214.2	870.8	3,317.1	4.44	-3.44	-2.81
9,665.0	91.00	180.40	6,636.0	-3,245.2	870.9	3,347.6	3.92	0.65	3.87
9,697.0	89.80	179.60	6,635.8	-3,277.2	870.9	3,379.1	4.51	-3.75	-2.50
9,729.0	90.20	181.30	6,635.8	-3,309.2	870.7	3,410.6	5.46	1.25	5.31
9,761.0	90.30	180.70	6,635.6	-3,341.2	870.1	3,442.0	1.90	0.31	-1.88
9,793.0	88.90	178.90	6,635.9	-3,373.2	870.2	3,473.5	7.13	-4.38	-5.63
9,825.0	89.10	179.60	6,636.4	-3,405.2	870.7	3,505.1	2.27	0.63	2.19
9,857.0	90.00	180.40	6,636.7	-3,437.2	870.7	3,536.6	3.76	2.81	2.50
9,889.0	90.50	181.40	6,636.5	-3,469.1	870.2	3,568.0	3.49	1.56	3.13
9,921.0	91.00	180.40	6,636.1	-3,501.1	869.6	3,599.4	3.49	1.56	-3.13
9,953.0	90.30	180.50	6,635.8	-3,533.1	869.4	3,630.9	2.21	-2.19	0.31
9,985.0	90.70	180.70	6,635.5	-3,565.1	869.1	3,662.3	1.40	1.25	0.63
10,017.0	89.50	181.80	6,635.4	-3,597.1	868.4	3,693.7	5.09	-3.75	3.44
10,049.0	88.20	181.10	6,636.1	-3,629.1	867.6	3,725.0	4.61	-4.06	-2.19
10,081.0	88.00	180.80	6,637.1	-3,661.1	867.0	3,756.4	1.13	-0.63	-0.94
10,113.0	88.40	182.00	6,638.1	-3,693.1	866.2	3,787.7	3.95	1.25	3.75
10,144.0	88.70	181.30	6,638.9	-3,724.0	865.4	3,818.1	2.46	0.97	-2.26
10,176.0	89.40	182.40	6,639.4	-3,756.0	864.3	3,849.4	4.07	2.19	3.44
10,208.0	87.90	182.50	6,640.2	-3,788.0	863.0	3,880.6	4.70	-4.69	0.31
10,240.0	88.00	182.00	6,641.3	-3,819.9	861.7	3,911.9	1.59	0.31	-1.56
10,272.0	88.40	180.80	6,642.3	-3,851.9	860.9	3,943.2	3.95	1.25	-3.75
10,304.0	88.80	181.40	6,643.1	-3,883.9	860.3	3,974.6	2.25	1.25	1.88
10,336.0	89.30	182.60	6,643.7	-3,915.9	859.2	4,005.9	4.06	1.56	3.75
10,368.0	89.60	181.50	6,644.0	-3,947.8	858.0	4,037.1	3.56	0.94	-3.44
10,400.0	88.60	181.30	6,644.5	-3,979.8	857.3	4,068.5	3.19	-3.13	-0.63
10,432.0	88.60	180.90	6,645.3	-4,011.8	856.6	4,099.9	1.25	0.00	-1.25
10,465.0	88.70	180.10	6,646.0	-4,044.8	856.4	4,132.3	2.44	0.30	-2.42
10,497.0	89.30	180.90	6,646.6	-4,076.8	856.1	4,163.8	3.12	1.88	2.50
10,529.0	89.80	180.80	6,646.8	-4,108.8	855.6	4,195.2	1.59	1.56	-0.31
10,561.0	89.20	180.30	6,647.1	-4,140.8	855.3	4,226.6	2.44	-1.88	-1.56
10,593.0	89.20	180.50	6,647.6	-4,172.8	855.1	4,258.1	0.62	0.00	0.63
10,624.0	89.50	178.90	6,647.9	-4,203.8	855.2	4,288.6	5.25	0.97	-5.16
10,656.0	90.20	179.20	6,648.0	-4,235.8	855.8	4,320.2	2.38	2.19	0.94
10,689.0	90.60	179.60	6,647.8	-4,268.8	856.1	4,352.8	1.71	1.21	1.21
10,720.0	89.80	180.90	6,647.7	-4,299.8	856.0	4,383.3	4.92	-2.58	4.19
10,751.0	88.30	181.90	6,648.2	-4,330.8	855.2	4,413.6	5.82	-4.84	3.23
10,784.0	86.60	180.70	6,649.6	-4,363.7	854.5	4,445.9	6.30	-5.15	-3.64
10,816.0	87.10	181.40	6,651.4	-4,395.7	853.9	4,477.3	2.69	1.56	2.19
10,848.0	86.30	180.90	6,653.2	-4,427.6	853.2	4,508.6	2.95	-2.50	-1.56
10,879.0	86.60	180.30	6,655.2	-4,458.5	852.9	4,539.0	2.16	0.97	-1.94
10,911.0	88.10	180.70	6,656.6	-4,490.5	852.6	4,570.4	4.85	4.69	1.25
10,943.0	88.70	179.70	6,657.5	-4,522.5	852.5	4,601.9	3.64	1.88	-3.13
10,975.0	89.20	180.80	6,658.1	-4,554.5	852.4	4,633.4	3.78	1.56	3.44
11,007.0	89.30	180.10	6,658.5	-4,586.5	852.1	4,664.8	2.21	0.31	-2.19
11,039.0	89.70	180.40	6,658.8	-4,618.5	852.0	4,696.3	1.56	1.25	0.94
11,070.0	89.90	180.00	6,658.9	-4,649.5	851.9	4,726.8	1.44	0.65	-1.29
11,103.0	90.20	180.30	6,658.9	-4,682.5	851.8	4,759.3	1.29	0.91	0.91



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Carmichael 26U-243
<b>Project:</b>	SEC.26-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Carmichael 26U-243 Sec.26-T7N-R63W	<b>MD Reference:</b>	WELL @ 4784.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Carmichael 26U-243	<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)
11,135.0	90.10	178.90	6,658.8	-4,714.5	852.0	4,790.8	4.39	-0.31	-4.38
11,167.0	90.40	179.00	6,658.7	-4,746.5	852.6	4,822.4	0.99	0.94	0.31
11,194.0	90.70	180.30	6,658.4	-4,773.5	852.8	4,849.0	4.94	1.11	4.81
11,240.8	90.70	180.30	6,657.8	-4,820.3	852.5	4,895.1	0.00	0.00	0.00
<b>BHL 500'FSL, 200'FEL</b>									
11,245.0	90.70	180.30	6,657.8	-4,824.5	852.5	4,899.2	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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