

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Spaur 31W-214						
Surface Location: Spaur NE-31 Pad Sec.31-T7N-R63W						
North American Datum 1983 , US State Plane 1983Colorado Northern Zone						
Ground Elevation: 4756.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1438991.98	3285950.84	40.533880	-104.471230	
Original Well Elev			WELL @ 4771.0ft (Original Well Elev)			

Ground Elevation: 4756.0

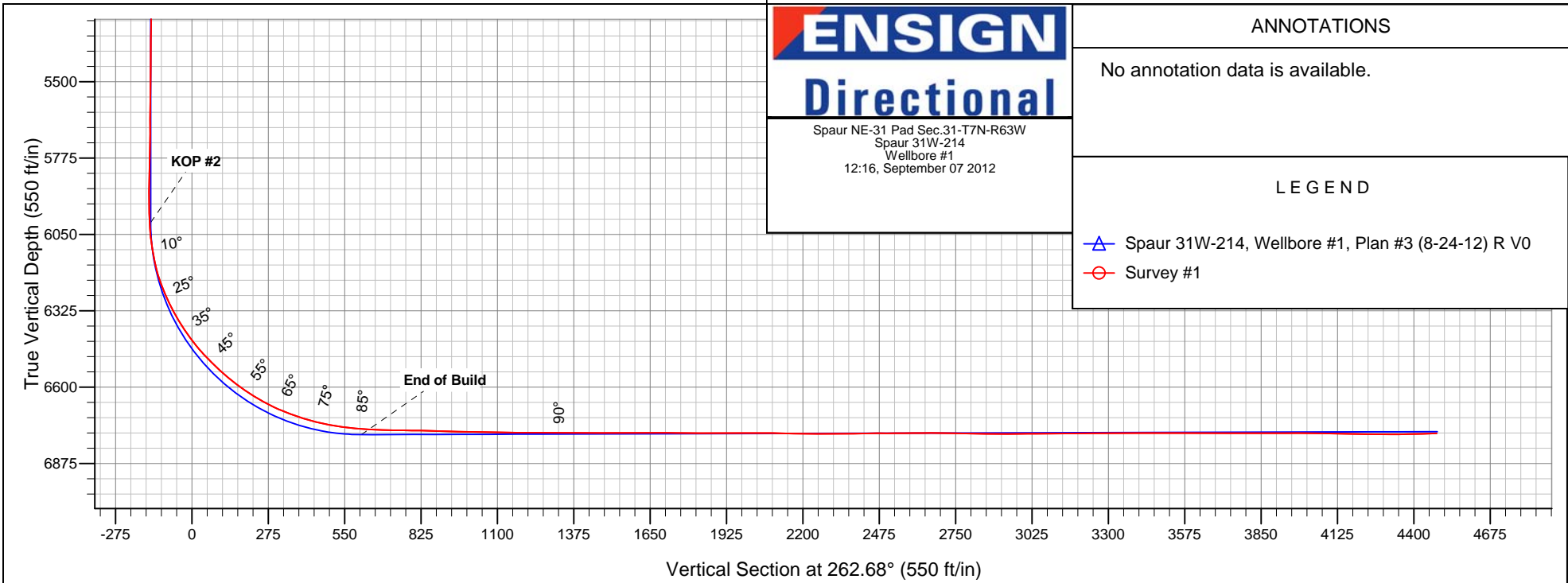
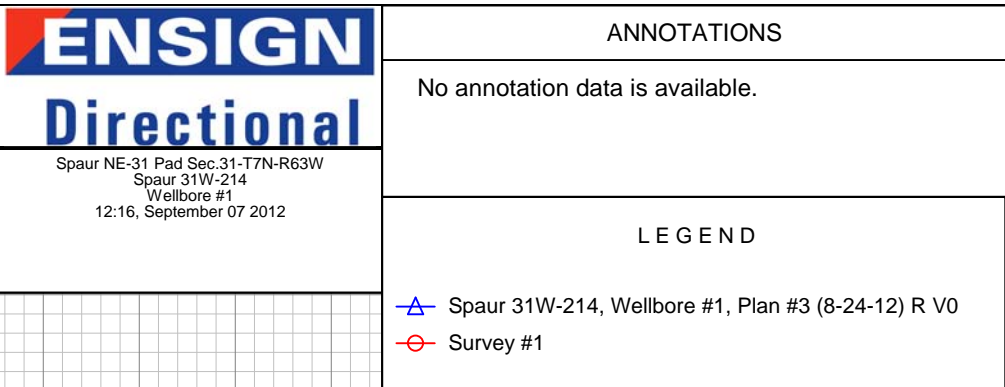
Original Well Elev WELL @ 4771.0ft (Original Well Elev)

FINAL SURVEY

Projected Bottom Hole Location
11100' MD 6767' TVD 596' S & 4442' W of SHL

91.80 degree Incl @ 259.10 degree AZM

91.80 degree Incl @ 259.10 degree AZM





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.31-T7N-R63W

Spaur NE-31 Pad Sec.31-T7N-R63W

Spaur 31W-214

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 September, 2012

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31W-214
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Spaur 31W-214	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.31-T7N-R63W, Weld County, Colorado		
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		Spaur NE-31 Pad Sec.31-T7N-R63W			
Site Position:		Northing:	1,439,050.27 ft	Latitude:	40.534040
From:	Lat/Long	Easting:	3,285,950.17 ft	Longitude:	-104.471230
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.66 °

Well	Spaur 31W-214					
Well Position	+N-S	0.0 ft	Northing:	1,438,991.98 ft	Latitude:	40.533880
	+E-W	0.0 ft	Easting:	3,285,950.84 ft	Longitude:	-104.471230
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,756.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/24/2012	8.56	67.17	53,107

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	262.68	

Survey Program	Date	9/7/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
113.0	11,100.0	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	
HARD LINES BHL 460'FWL										
1.0	0.00	144.60	1.0	0.0	0.0	0.0	0.18	0.18	0.00	
HARD LINES SHL 460' FEL										
2.4	0.00	144.60	2.4	0.0	0.0	0.0	0.18	0.18	0.00	
SECTION HARDLINES 250'E OF SHL										
113.0	0.20	144.60	113.0	-0.2	0.1	-0.1	0.18	0.18	0.00	
203.0	0.10	100.40	203.0	-0.3	0.3	-0.2	0.16	-0.11	-49.11	
295.0	0.10	130.90	295.0	-0.4	0.4	-0.4	0.06	0.00	33.15	
386.0	0.10	75.70	386.0	-0.4	0.6	-0.5	0.10	0.00	-60.66	
478.0	0.30	127.90	478.0	-0.5	0.8	-0.8	0.27	0.22	56.74	
570.0	0.50	129.20	570.0	-0.9	1.3	-1.2	0.22	0.22	1.41	

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Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Spaur 31W-214	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)
661.0	0.70	152.20	661.0	-1.7	1.9	-1.7	0.34	0.22	25.27
753.0	0.70	149.90	753.0	-2.7	2.4	-2.1	0.03	0.00	-2.50
855.0	0.50	152.10	855.0	-3.6	3.0	-2.5	0.20	-0.20	2.16
975.0	0.60	198.90	975.0	-4.6	3.0	-2.4	0.37	0.08	39.00
1,066.0	1.30	174.30	1,066.0	-6.1	2.9	-2.1	0.87	0.77	-27.03
1,158.0	2.40	158.50	1,157.9	-9.0	3.8	-2.6	1.31	1.20	-17.17
1,253.0	4.00	163.20	1,252.8	-14.0	5.4	-3.6	1.71	1.68	4.95
1,349.0	5.40	153.50	1,348.4	-21.2	8.4	-5.7	1.67	1.46	-10.10
1,447.0	6.90	150.70	1,445.9	-30.5	13.4	-9.4	1.56	1.53	-2.86
1,544.0	7.60	153.90	1,542.1	-41.3	19.0	-13.6	0.83	0.72	3.30
1,639.0	8.00	153.70	1,636.2	-52.9	24.7	-17.8	0.42	0.42	-0.21
1,735.0	7.60	153.70	1,731.3	-64.6	30.5	-22.0	0.42	-0.42	0.00
1,831.0	7.10	153.30	1,826.5	-75.6	36.0	-26.1	0.52	-0.52	-0.42
1,926.0	6.60	155.00	1,920.9	-85.8	40.9	-29.7	0.57	-0.53	1.79
2,021.0	6.20	153.30	2,015.3	-95.3	45.5	-33.0	0.47	-0.42	-1.79
2,116.0	5.10	158.20	2,109.8	-103.8	49.4	-35.8	1.26	-1.16	5.16
2,212.0	5.80	156.60	2,205.4	-112.2	52.9	-38.2	0.75	0.73	-1.67
2,308.0	7.20	156.90	2,300.8	-122.2	57.2	-41.2	1.46	1.46	0.31
2,406.0	6.30	157.40	2,398.1	-132.8	61.7	-44.3	0.92	-0.92	0.51
2,503.0	6.50	153.50	2,494.5	-142.6	66.2	-47.5	0.49	0.21	-4.02
2,599.0	7.20	154.80	2,589.8	-152.9	71.2	-51.1	0.75	0.73	1.35
2,695.0	6.60	154.40	2,685.1	-163.4	76.1	-54.7	0.63	-0.63	-0.42
2,792.0	6.90	154.00	2,781.4	-173.6	81.1	-58.3	0.31	0.31	-0.41
2,888.0	6.50	154.50	2,876.8	-183.7	85.9	-61.8	0.42	-0.42	0.52
2,984.0	7.30	155.60	2,972.1	-194.2	90.8	-65.3	0.84	0.83	1.15
3,080.0	7.30	157.00	3,067.3	-205.3	95.7	-68.8	0.19	0.00	1.46
3,175.0	7.00	155.10	3,161.5	-216.1	100.5	-72.1	0.40	-0.32	-2.00
3,272.0	6.60	154.70	3,257.9	-226.6	105.4	-75.6	0.42	-0.41	-0.41
3,368.0	6.00	155.30	3,353.3	-236.1	109.8	-78.8	0.63	-0.63	0.63
3,463.0	4.60	150.40	3,447.9	-243.9	113.8	-81.8	1.55	-1.47	-5.16
3,559.0	4.90	150.80	3,543.5	-250.8	117.7	-84.8	0.31	0.31	0.42
3,654.0	4.30	146.70	3,638.2	-257.4	121.6	-87.8	0.72	-0.63	-4.32
3,749.0	5.50	150.40	3,732.9	-264.3	125.8	-91.1	1.31	1.26	3.89
3,844.0	6.60	151.50	3,827.4	-273.1	130.7	-94.8	1.16	1.16	1.16
3,940.0	7.60	151.90	3,922.6	-283.5	136.3	-99.1	1.04	1.04	0.42
4,036.0	8.40	151.00	4,017.7	-295.2	142.7	-103.9	0.84	0.83	-0.94
4,132.0	8.00	151.20	4,112.7	-307.2	149.3	-108.9	0.42	-0.42	0.21
4,227.0	7.50	150.40	4,206.8	-318.4	155.6	-113.7	0.54	-0.53	-0.84
4,323.0	6.70	151.30	4,302.1	-328.8	161.3	-118.1	0.84	-0.83	0.94
4,419.0	5.80	142.30	4,397.5	-337.5	167.0	-122.6	1.38	-0.94	-9.38
4,515.0	5.80	141.90	4,493.0	-345.2	173.0	-127.5	0.04	0.00	-0.42
4,610.0	5.30	147.50	4,587.6	-352.7	178.3	-131.9	0.78	-0.53	5.89
4,706.0	5.00	150.30	4,683.2	-360.0	182.7	-135.4	0.41	-0.31	2.92
4,801.0	5.40	152.60	4,777.8	-367.6	186.8	-138.5	0.47	0.42	2.42
4,897.0	4.70	157.30	4,873.4	-375.2	190.4	-141.1	0.85	-0.73	4.90
4,992.0	3.40	156.70	4,968.2	-381.4	193.1	-142.9	1.37	-1.37	-0.63
5,087.0	2.90	158.10	5,063.1	-386.2	195.1	-144.2	0.53	-0.53	1.47
5,182.0	2.30	155.50	5,158.0	-390.2	196.8	-145.4	0.64	-0.63	-2.74
5,278.0	2.00	143.00	5,253.9	-393.3	198.6	-146.8	0.58	-0.31	-13.02
5,373.0	0.40	120.20	5,348.9	-394.8	199.8	-147.9	1.72	-1.68	-24.00
5,469.0	0.40	98.80	5,444.9	-395.0	200.5	-148.5	0.15	0.00	-22.29
5,565.0	0.60	90.20	5,540.9	-395.0	201.3	-149.3	0.22	0.21	-8.96
5,660.0	1.00	99.50	5,635.9	-395.2	202.6	-150.6	0.44	0.42	9.79

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5,756.0	0.70	105.20	5,731.8	-395.5	204.0	-151.9	0.32	-0.31	5.94
5,851.0	0.70	78.80	5,826.8	-395.5	205.1	-153.0	0.34	0.00	-27.79
5,946.0	0.40	25.50	5,921.8	-395.1	205.8	-153.8	0.59	-0.32	-56.11
5,980.0	0.60	322.10	5,955.8	-394.9	205.8	-153.8	1.62	0.59	-186.47
6,011.0	1.30	282.60	5,986.8	-394.6	205.3	-153.4	2.97	2.26	-127.42
6,043.0	3.70	283.30	6,018.8	-394.3	204.0	-152.1	7.50	7.50	2.19
6,076.0	6.90	292.40	6,051.7	-393.3	201.1	-149.3	10.00	9.70	27.58
6,107.0	9.80	294.30	6,082.3	-391.5	197.0	-145.5	9.40	9.35	6.13
6,139.0	11.60	298.20	6,113.8	-388.9	191.7	-140.5	6.06	5.63	12.19
6,171.0	13.70	298.50	6,145.0	-385.6	185.5	-134.8	6.57	6.56	0.94
6,203.0	16.90	293.60	6,175.8	-381.9	177.9	-127.8	10.78	10.00	-15.31
6,235.0	20.30	292.20	6,206.2	-377.9	168.5	-119.0	10.72	10.63	-4.38
6,267.0	23.50	291.30	6,235.9	-373.5	157.4	-108.5	10.05	10.00	-2.81
6,298.0	26.10	291.10	6,264.0	-368.8	145.3	-97.1	8.39	8.39	-0.65
6,330.0	28.00	289.00	6,292.5	-363.8	131.6	-84.2	6.64	5.94	-6.56
6,362.0	30.10	287.80	6,320.5	-358.9	116.9	-70.2	6.81	6.56	-3.75
6,393.0	32.30	286.50	6,347.0	-354.2	101.5	-55.6	7.42	7.10	-4.19
6,425.0	34.10	286.10	6,373.8	-349.3	84.7	-39.5	5.67	5.63	-1.25
6,457.0	36.30	285.10	6,399.9	-344.3	67.0	-22.5	7.11	6.88	-3.13
6,488.0	38.20	282.80	6,424.6	-339.8	48.7	-5.0	7.60	6.13	-7.42
6,521.0	40.30	279.90	6,450.1	-335.7	28.3	14.7	8.45	6.36	-8.79
6,552.0	42.90	277.90	6,473.3	-332.6	7.9	34.5	9.42	8.39	-6.45
6,585.0	45.10	276.40	6,497.1	-329.7	-14.8	56.7	7.38	6.67	-4.55
6,615.0	46.40	273.80	6,518.0	-327.8	-36.2	77.7	7.57	4.33	-8.67
6,646.0	47.60	272.00	6,539.1	-326.7	-58.8	100.0	5.75	3.87	-5.81
6,676.0	49.30	270.60	6,559.0	-326.2	-81.3	122.2	6.66	5.67	-4.67
6,707.0	52.00	269.40	6,578.7	-326.2	-105.3	146.0	9.21	8.71	-3.87
6,738.0	54.10	267.20	6,597.3	-326.9	-130.0	170.6	8.83	6.77	-7.10
6,768.0	56.00	266.20	6,614.5	-328.3	-154.6	195.1	6.90	6.33	-3.33
6,799.0	57.60	265.50	6,631.5	-330.2	-180.4	221.0	5.50	5.16	-2.26
6,829.0	60.30	264.50	6,647.0	-332.4	-206.0	246.7	9.44	9.00	-3.33
6,860.0	63.00	265.20	6,661.7	-334.9	-233.2	274.0	8.93	8.71	2.26
6,891.0	65.40	265.10	6,675.2	-337.2	-261.0	301.9	7.75	7.74	-0.32
6,921.0	67.80	264.90	6,687.1	-339.6	-288.4	329.4	8.02	8.00	-0.67
6,952.0	69.60	264.80	6,698.3	-342.2	-317.2	358.2	5.81	5.81	-0.32
6,982.0	72.00	264.20	6,708.2	-345.0	-345.4	386.5	8.22	8.00	-2.00
7,013.0	74.00	264.80	6,717.3	-347.8	-374.9	416.2	6.71	6.45	1.94
7,044.0	75.70	265.00	6,725.4	-350.5	-404.7	446.1	5.52	5.48	0.65
7,074.0	77.50	265.10	6,732.3	-353.0	-433.8	475.2	6.01	6.00	0.33
7,105.0	80.00	265.20	6,738.4	-355.5	-464.1	505.6	8.07	8.06	0.32
7,136.0	82.30	265.30	6,743.1	-358.1	-494.6	536.2	7.43	7.42	0.32
7,166.0	84.50	266.00	6,746.6	-360.3	-524.3	566.0	7.69	7.33	2.33
7,178.0	85.20	266.30	6,747.7	-361.1	-536.2	577.9	6.34	5.83	2.50
7,225.0	86.00	266.30	6,751.3	-364.2	-583.0	624.7	1.70	1.70	0.00
7,233.0	86.70	268.50	6,751.8	-364.5	-591.0	632.6	28.81	8.75	27.50
7,265.0	86.90	268.30	6,753.6	-365.4	-622.9	664.4	0.88	0.63	-0.63
7,296.0	88.00	268.00	6,754.9	-366.4	-653.9	695.2	3.68	3.55	-0.97
7,328.0	89.20	268.30	6,755.7	-367.4	-685.8	727.1	3.87	3.75	0.94
7,360.0	89.60	268.50	6,756.1	-368.3	-717.8	758.9	1.40	1.25	0.63
7,392.0	89.90	268.30	6,756.2	-369.2	-749.8	790.8	1.13	0.94	-0.63
7,425.0	88.40	267.60	6,756.7	-370.4	-782.8	823.6	5.02	-4.55	-2.12
7,456.0	88.00	266.20	6,757.7	-372.1	-813.7	854.5	4.69	-1.29	-4.52
7,488.0	88.30	266.10	6,758.7	-374.2	-845.6	886.4	0.99	0.94	-0.31

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7,520.0	88.50	266.50	6,759.6	-376.3	-877.6	918.4	1.40	0.63	1.25
7,553.0	88.60	266.10	6,760.4	-378.4	-910.5	951.3	1.25	0.30	-1.21
7,585.0	89.10	265.60	6,761.1	-380.7	-942.4	983.2	2.21	1.56	-1.56
7,616.0	89.20	266.20	6,761.5	-383.0	-973.3	1,014.2	1.96	0.32	1.94
7,648.0	88.70	265.80	6,762.1	-385.2	-1,005.2	1,046.1	2.00	-1.56	-1.25
7,680.0	88.80	265.90	6,762.8	-387.5	-1,037.1	1,078.1	0.44	0.31	0.31
7,712.0	89.20	265.70	6,763.4	-389.9	-1,069.0	1,110.0	1.40	1.25	-0.63
7,744.0	89.10	265.80	6,763.8	-392.2	-1,100.9	1,142.0	0.44	-0.31	0.31
7,775.0	88.90	267.00	6,764.4	-394.2	-1,131.9	1,172.9	3.92	-0.65	3.87
7,807.0	89.40	267.90	6,764.9	-395.6	-1,163.8	1,204.8	3.22	1.56	2.81
7,839.0	89.50	267.80	6,765.2	-396.8	-1,195.8	1,236.6	0.44	0.31	-0.31
7,870.0	89.80	267.50	6,765.4	-398.1	-1,226.8	1,267.5	1.37	0.97	-0.97
7,902.0	90.20	268.00	6,765.4	-399.3	-1,258.8	1,299.4	2.00	1.25	1.56
7,934.0	90.50	267.80	6,765.2	-400.5	-1,290.7	1,331.3	1.13	0.94	-0.63
7,966.0	90.70	267.70	6,764.8	-401.8	-1,322.7	1,363.1	0.70	0.63	-0.31
7,998.0	89.60	268.20	6,764.7	-402.9	-1,354.7	1,395.0	3.78	-3.44	1.56
8,030.0	89.50	268.00	6,765.0	-404.0	-1,386.7	1,426.9	0.70	-0.31	-0.63
8,061.0	89.90	263.30	6,765.2	-406.3	-1,417.6	1,457.8	15.22	1.29	-15.16
8,093.0	90.40	267.90	6,765.1	-408.8	-1,449.5	1,489.8	14.46	1.56	14.38
8,125.0	90.80	267.70	6,764.7	-410.0	-1,481.4	1,521.6	1.40	1.25	-0.63
8,157.0	89.80	267.30	6,764.6	-411.4	-1,513.4	1,553.5	3.37	-3.13	-1.25
8,189.0	89.50	267.30	6,764.8	-412.9	-1,545.4	1,585.4	0.94	-0.94	0.00
8,221.0	89.80	267.30	6,765.0	-414.4	-1,577.3	1,617.3	0.94	0.94	0.00
8,235.1	90.02	267.48	6,765.0	-415.0	-1,591.4	1,631.4	2.00	1.56	1.25
WP 1									
8,253.0	90.30	267.70	6,764.9	-415.8	-1,609.3	1,649.2	2.00	1.56	1.25
8,285.0	90.50	267.30	6,764.7	-417.2	-1,641.3	1,681.1	1.40	0.63	-1.25
8,317.0	89.40	267.50	6,764.7	-418.6	-1,673.3	1,713.0	3.49	-3.44	0.63
8,348.0	89.40	267.90	6,765.1	-419.9	-1,704.2	1,743.8	1.29	0.00	1.29
8,380.0	89.20	268.60	6,765.5	-420.9	-1,736.2	1,775.7	2.27	-0.63	2.19
8,412.0	89.50	269.20	6,765.8	-421.5	-1,768.2	1,807.5	2.10	0.94	1.88
8,444.0	89.50	270.40	6,766.1	-421.6	-1,800.2	1,839.3	3.75	0.00	3.75
8,476.0	89.80	270.30	6,766.3	-421.4	-1,832.2	1,871.0	0.99	0.94	-0.31
8,508.0	90.50	271.60	6,766.2	-420.9	-1,864.2	1,902.6	4.61	2.19	4.06
8,540.0	91.00	271.20	6,765.8	-420.1	-1,896.2	1,934.3	2.00	1.56	-1.25
8,572.0	89.80	270.20	6,765.6	-419.7	-1,928.2	1,965.9	4.88	-3.75	-3.13
8,603.0	89.70	270.10	6,765.7	-419.6	-1,959.2	1,996.7	0.46	-0.32	-0.32
8,635.0	90.10	270.10	6,765.8	-419.6	-1,991.2	2,028.4	1.25	1.25	0.00
8,667.0	90.50	270.20	6,765.6	-419.5	-2,023.2	2,060.1	1.29	1.25	0.31
8,699.0	88.60	270.40	6,765.8	-419.3	-2,055.2	2,091.9	5.97	-5.94	0.63
8,731.0	88.50	269.90	6,766.6	-419.2	-2,087.2	2,123.6	1.59	-0.31	-1.56
8,763.0	89.00	270.70	6,767.3	-419.1	-2,119.2	2,155.3	2.95	1.56	2.50
8,795.0	89.30	271.20	6,767.8	-418.5	-2,151.1	2,186.9	1.82	0.94	1.56
8,827.0	89.40	270.80	6,768.2	-418.0	-2,183.1	2,218.6	1.29	0.31	-1.25
8,858.0	89.60	270.70	6,768.5	-417.6	-2,214.1	2,249.3	0.72	0.65	-0.32
8,890.0	90.10	270.10	6,768.5	-417.3	-2,246.1	2,281.0	2.44	1.56	-1.88
8,922.0	90.30	270.20	6,768.4	-417.3	-2,278.1	2,312.7	0.70	0.63	0.31
8,954.0	90.50	270.20	6,768.2	-417.1	-2,310.1	2,344.5	0.63	0.63	0.00
8,986.0	90.70	269.50	6,767.9	-417.2	-2,342.1	2,376.2	2.27	0.63	-2.19
9,018.0	91.20	270.00	6,767.3	-417.4	-2,374.1	2,408.0	2.21	1.56	1.56
9,049.0	91.10	269.10	6,766.7	-417.6	-2,405.1	2,438.7	2.92	-0.32	-2.90
9,080.0	89.60	269.30	6,766.5	-418.0	-2,436.1	2,469.5	4.88	-4.84	0.65
9,112.0	90.10	269.80	6,766.6	-418.3	-2,468.1	2,501.3	2.21	1.56	1.56

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31W-214
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Spaur 31W-214	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)
9,144.0	90.70	269.30	6,766.4	-418.5	-2,500.1	2,533.1	2.44	1.88	-1.56
9,176.0	90.20	270.20	6,766.1	-418.7	-2,532.1	2,564.8	3.22	-1.56	2.81
9,209.0	90.40	270.80	6,766.0	-418.4	-2,565.1	2,597.5	1.92	0.61	1.82
9,240.0	90.50	270.20	6,765.7	-418.1	-2,596.1	2,628.2	1.96	0.32	-1.94
9,273.0	90.60	269.50	6,765.4	-418.2	-2,629.1	2,661.0	2.14	0.30	-2.12
9,305.0	89.10	271.00	6,765.5	-418.1	-2,661.1	2,692.7	6.63	-4.69	4.69
9,337.0	88.70	270.30	6,766.1	-417.7	-2,693.1	2,724.4	2.52	-1.25	-2.19
9,369.0	88.80	270.30	6,766.8	-417.5	-2,725.1	2,756.1	0.31	0.31	0.00
9,401.0	88.90	269.70	6,767.4	-417.5	-2,757.1	2,787.8	1.90	0.31	-1.88
9,433.0	89.00	269.20	6,768.0	-417.8	-2,789.1	2,819.6	1.59	0.31	-1.56
9,465.0	89.30	269.30	6,768.5	-418.3	-2,821.1	2,851.4	0.99	0.94	0.31
9,497.0	89.70	269.60	6,768.8	-418.6	-2,853.1	2,883.1	1.56	1.25	0.94
9,529.0	90.10	269.50	6,768.8	-418.8	-2,885.1	2,914.9	1.29	1.25	-0.31
9,561.0	90.50	269.40	6,768.7	-419.1	-2,917.1	2,946.7	1.29	1.25	-0.31
9,592.0	90.90	269.40	6,768.3	-419.5	-2,948.1	2,977.5	1.29	1.29	0.00
9,624.0	90.10	268.50	6,768.0	-420.0	-2,980.0	3,009.3	3.76	-2.50	-2.81
9,655.0	90.50	269.10	6,767.8	-420.7	-3,011.0	3,040.1	2.33	1.29	1.94
9,687.0	90.50	268.90	6,767.6	-421.2	-3,043.0	3,071.9	0.62	0.00	-0.63
9,719.0	90.30	267.50	6,767.3	-422.3	-3,075.0	3,103.8	4.42	-0.63	-4.38
9,751.0	90.20	268.30	6,767.2	-423.4	-3,107.0	3,135.6	2.52	-0.31	2.50
9,783.0	89.90	268.60	6,767.2	-424.3	-3,139.0	3,167.5	1.33	-0.94	0.94
9,815.0	90.50	269.20	6,767.1	-424.9	-3,171.0	3,199.3	2.65	1.88	1.88
9,818.1	90.51	269.18	6,767.0	-425.0	-3,174.1	3,202.3	0.70	0.31	-0.62
WP 2									
9,847.0	90.60	269.00	6,766.8	-425.4	-3,203.0	3,231.1	0.70	0.31	-0.63
9,879.0	90.00	267.90	6,766.6	-426.3	-3,235.0	3,262.9	3.92	-1.88	-3.44
9,912.0	90.30	267.60	6,766.5	-427.6	-3,267.9	3,295.8	1.29	0.91	-0.91
9,944.0	90.60	267.40	6,766.3	-429.0	-3,299.9	3,327.7	1.13	0.94	-0.63
9,976.0	91.10	266.80	6,765.8	-430.6	-3,331.9	3,359.6	2.44	1.56	-1.88
10,008.0	90.20	266.70	6,765.4	-432.4	-3,363.8	3,391.5	2.83	-2.81	-0.31
10,039.0	89.30	265.70	6,765.6	-434.5	-3,394.7	3,422.4	4.34	-2.90	-3.23
10,071.0	89.60	265.10	6,765.9	-437.0	-3,426.6	3,454.4	2.10	0.94	-1.88
10,103.0	90.00	265.70	6,766.0	-439.6	-3,458.5	3,486.3	2.25	1.25	1.88
10,135.0	90.50	265.70	6,765.8	-442.0	-3,490.4	3,518.3	1.56	1.56	0.00
10,167.0	89.60	264.40	6,765.8	-444.7	-3,522.3	3,550.3	4.94	-2.81	-4.06
10,200.0	89.70	264.20	6,766.0	-448.0	-3,555.1	3,583.3	0.68	0.30	-0.61
10,232.0	89.90	264.10	6,766.1	-451.3	-3,587.0	3,615.2	0.70	0.63	-0.31
10,264.0	90.60	263.60	6,766.0	-454.7	-3,618.8	3,647.2	2.69	2.19	-1.56
10,296.0	89.60	263.00	6,765.9	-458.4	-3,650.6	3,679.2	3.64	-3.13	-1.88
10,328.0	89.50	262.90	6,766.2	-462.4	-3,682.3	3,711.2	0.44	-0.31	-0.31
10,359.0	89.50	262.30	6,766.4	-466.4	-3,713.1	3,742.2	1.94	0.00	-1.94
10,392.0	89.90	262.00	6,766.6	-470.9	-3,745.8	3,775.2	1.52	1.21	-0.91
10,424.0	90.30	262.00	6,766.6	-475.3	-3,777.5	3,807.2	1.25	1.25	0.00
10,456.0	89.80	261.30	6,766.5	-480.0	-3,809.1	3,839.2	2.69	-1.56	-2.19
10,488.0	90.00	260.70	6,766.6	-485.0	-3,840.7	3,871.2	1.98	0.63	-1.88
10,520.0	90.60	260.80	6,766.4	-490.1	-3,872.3	3,903.2	1.90	1.88	0.31
10,552.0	89.50	260.90	6,766.4	-495.2	-3,903.9	3,935.2	3.45	-3.44	0.31
10,583.0	89.50	260.70	6,766.7	-500.2	-3,934.5	3,966.2	0.65	0.00	-0.65
10,615.0	90.00	260.70	6,766.8	-505.3	-3,966.1	3,998.1	1.56	1.56	0.00
10,648.0	90.40	260.00	6,766.7	-510.9	-3,998.6	4,031.1	2.44	1.21	-2.12
10,680.0	89.80	259.60	6,766.6	-516.5	-4,030.1	4,063.1	2.25	-1.88	-1.25
10,712.0	89.50	259.40	6,766.8	-522.4	-4,061.6	4,095.0	1.13	-0.94	-0.63
10,743.0	88.40	259.60	6,767.4	-528.0	-4,092.0	4,126.0	3.61	-3.55	0.65

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Spaur 31W-214
Project:	SEC.31-T7N-R63W	TVD Reference:	WELL @ 4771.0ft (Original Well Elev)
Site:	Spaur NE-31 Pad Sec.31-T7N-R63W	MD Reference:	WELL @ 4771.0ft (Original Well Elev)
Well:	Spaur 31W-214	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)	
10,774.0	88.30	258.80	6,768.3	-533.8	-4,122.5	4,156.9	2.60	-0.32	-2.58	
10,805.0	88.70	259.00	6,769.1	-539.8	-4,152.9	4,187.8	1.44	1.29	0.65	
10,837.0	88.90	258.60	6,769.8	-546.0	-4,184.3	4,219.7	1.40	0.63	-1.25	
10,868.0	89.40	258.60	6,770.2	-552.1	-4,214.7	4,250.7	1.61	1.61	0.00	
10,900.0	89.80	258.60	6,770.5	-558.5	-4,246.0	4,282.6	1.25	1.25	0.00	
10,933.0	90.30	258.60	6,770.4	-565.0	-4,278.4	4,315.5	1.52	1.52	0.00	
10,965.0	90.50	258.80	6,770.2	-571.2	-4,309.7	4,347.4	0.88	0.63	0.63	
10,997.0	91.20	258.70	6,769.7	-577.5	-4,341.1	4,379.3	2.21	2.19	-0.31	
11,028.0	91.60	258.80	6,769.0	-583.5	-4,371.5	4,410.2	1.33	1.29	0.32	
11,049.0	91.80	259.10	6,768.3	-587.6	-4,392.1	4,431.2	1.72	0.95	1.43	
11,100.0	91.80	259.10	6,766.7	-597.2	-4,442.2	4,482.1	0.00	0.00	0.00	
BHL 1830'FNL, 500'FWL										

Checked By: _____	Approved By: _____	Date: _____
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