

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Spaur 31V-204

Surface Location: Spaur NE-31 Pad Sec.31-T7N-R63W  
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4758.0

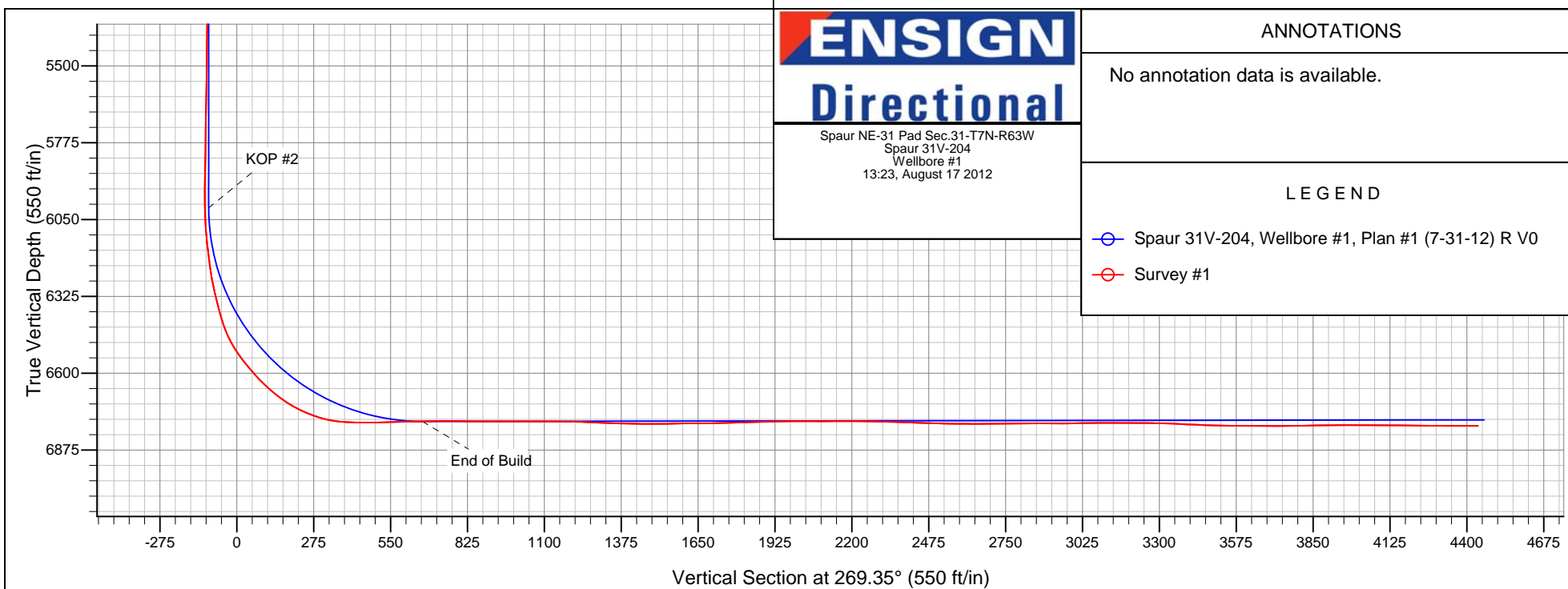
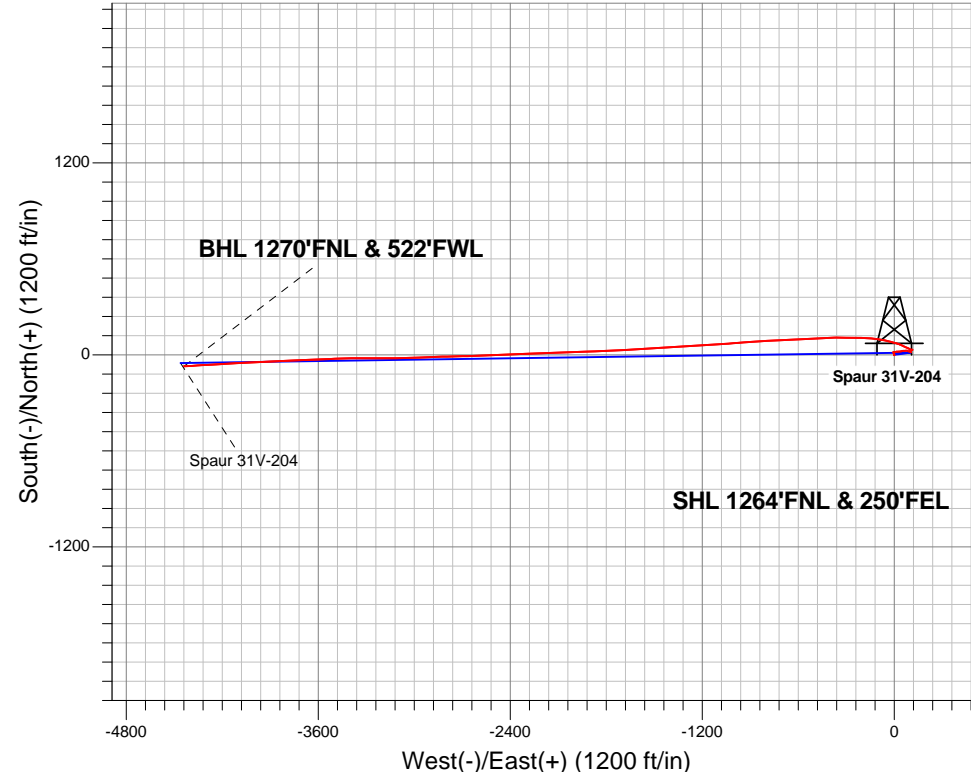
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1439050.26	3285950.17	40.534040	-104.471230	

RKB Ensign 32 - 15' WELL @ 4773.0ft (RKB Ensign 32 - 15')

## FINAL SURVEY

Projected Bottom Hole Location  
11084' MD 6788' TVD 71' S & 4440' W of SHL

89.70 degree Incl @ 266.60 degree AZM





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.31-T7N-R63W**

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

**Spaur 31V-204**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**17 August, 2012**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-204
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-204	<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.31-T7N-R63W, 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		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 31V-204					
Well Position	+N-S	0.0 ft	Northing:	1,439,050.26 ft	Latitude:	40.534040
	+E-W	0.0 ft	Easting:	3,285,950.17 ft	Longitude:	-104.471230
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,757.0 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	7/31/2012	8.57	67.17	53,114

<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	269.35	

<b>Survey Program</b>	<b>Date</b> 8/17/2012				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
116.0	11,084.0	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	
0.3	0.00	173.40	0.3	0.0	0.0	0.0	0.00	0.00	0.00	
<b>HARD LINE BHL 460'FWL</b>										
1.0	0.00	173.40	1.0	0.0	0.0	0.0	0.43	0.43	0.00	
<b>HARD LINE SHL 460'FEL</b>										
2.9	0.01	173.40	2.9	0.0	0.0	0.0	0.43	0.43	0.00	
<b>SECTION HARD LINE 250'E OF SHL</b>										
116.0	0.50	173.40	116.0	-0.5	0.1	-0.1	0.43	0.43	0.00	
208.0	0.30	180.50	208.0	-1.1	0.1	-0.1	0.22	-0.22	7.72	
300.0	0.30	166.20	300.0	-1.6	0.2	-0.1	0.08	0.00	-15.54	
392.0	0.40	278.50	392.0	-1.8	-0.1	0.1	0.63	0.11	122.07	
483.0	0.70	327.20	483.0	-1.3	-0.7	0.7	0.58	0.33	53.52	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-204
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-204	<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)
575.0	1.30	342.80	575.0	0.2	-1.3	1.3	0.71	0.65	16.96
667.0	1.80	350.70	666.9	2.6	-1.9	1.8	0.59	0.54	8.59
759.0	1.80	353.00	758.9	5.5	-2.3	2.2	0.08	0.00	2.50
850.0	1.30	350.60	849.9	7.9	-2.6	2.5	0.55	-0.55	-2.64
945.0	1.60	341.50	944.8	10.2	-3.2	3.1	0.40	0.32	-9.58
1,037.0	1.60	343.30	1,036.8	12.7	-4.0	3.9	0.05	0.00	1.96
1,128.0	1.60	339.00	1,127.8	15.1	-4.8	4.6	0.13	0.00	-4.73
1,223.0	0.80	315.70	1,222.7	16.8	-5.8	5.6	0.97	-0.84	-24.53
1,319.0	0.50	121.00	1,318.7	17.0	-5.9	5.7	1.34	-0.31	172.19
1,415.0	1.50	95.20	1,414.7	16.7	-4.3	4.1	1.12	1.04	-26.88
1,510.0	2.40	80.60	1,509.7	16.9	-1.1	0.9	1.07	0.95	-15.37
1,606.0	2.40	82.80	1,605.6	17.5	2.9	-3.1	0.10	0.00	2.29
1,702.0	2.30	77.40	1,701.5	18.2	6.8	-7.0	0.25	-0.10	-5.63
1,798.0	2.00	74.20	1,797.4	19.1	10.3	-10.5	0.34	-0.31	-3.33
1,893.0	2.00	91.10	1,892.4	19.5	13.5	-13.8	0.62	0.00	17.79
1,989.0	2.10	88.00	1,988.3	19.5	17.0	-17.2	0.16	0.10	-3.23
2,085.0	1.90	88.40	2,084.3	19.6	20.3	-20.5	0.21	-0.21	0.42
2,180.0	1.80	84.50	2,179.2	19.8	23.4	-23.6	0.17	-0.11	-4.11
2,275.0	1.50	76.80	2,274.2	20.2	26.1	-26.3	0.39	-0.32	-8.11
2,370.0	2.20	81.20	2,369.1	20.8	29.1	-29.3	0.75	0.74	4.63
2,464.0	2.00	85.90	2,463.1	21.2	32.5	-32.7	0.28	-0.21	5.00
2,560.0	1.90	75.20	2,559.0	21.7	35.7	-36.0	0.39	-0.10	-11.15
2,654.0	2.20	79.60	2,652.9	22.4	39.0	-39.3	0.36	0.32	4.68
2,750.0	2.00	82.50	2,748.9	23.0	42.5	-42.7	0.24	-0.21	3.02
2,845.0	2.10	80.50	2,843.8	23.5	45.8	-46.1	0.13	0.11	-2.11
2,939.0	2.40	81.00	2,937.7	24.1	49.5	-49.7	0.32	0.32	0.53
3,035.0	2.50	86.50	3,033.7	24.5	53.6	-53.8	0.27	0.10	5.73
3,130.0	2.40	83.90	3,128.6	24.9	57.6	-57.9	0.16	-0.11	-2.74
3,226.0	2.40	87.20	3,224.5	25.2	61.6	-61.9	0.14	0.00	3.44
3,321.0	2.40	87.90	3,319.4	25.3	65.6	-65.9	0.03	0.00	0.74
3,416.0	2.50	84.40	3,414.3	25.6	69.6	-69.9	0.19	0.11	-3.68
3,512.0	2.90	85.80	3,510.2	26.0	74.1	-74.4	0.42	0.42	1.46
3,607.0	2.90	101.90	3,605.1	25.7	78.9	-79.2	0.85	0.00	16.95
3,703.0	3.30	105.10	3,700.9	24.5	83.9	-84.2	0.45	0.42	3.33
3,798.0	3.70	105.20	3,795.8	22.9	89.5	-89.8	0.42	0.42	0.11
3,893.0	3.40	106.70	3,890.6	21.3	95.2	-95.4	0.33	-0.32	1.58
3,988.0	2.50	116.80	3,985.5	19.6	99.7	-99.9	1.09	-0.95	10.63
4,084.0	1.40	144.50	4,081.4	17.7	102.3	-102.5	1.48	-1.15	28.85
4,180.0	0.40	64.00	4,177.4	16.9	103.3	-103.4	1.45	-1.04	-83.85
4,276.0	0.80	15.60	4,273.4	17.7	103.7	-103.9	0.64	0.42	-50.42
4,371.0	1.20	350.60	4,368.4	19.3	103.8	-104.0	0.61	0.42	-26.32
4,467.0	1.50	349.80	4,464.3	21.5	103.4	-103.6	0.31	0.31	-0.83
4,565.0	1.90	344.10	4,562.3	24.3	102.7	-103.0	0.44	0.41	-5.82
4,660.0	1.50	310.20	4,657.3	26.7	101.3	-101.6	1.12	-0.42	-35.68
4,756.0	1.00	344.40	4,753.2	28.3	100.1	-100.4	0.91	-0.52	35.63
4,851.0	1.20	342.80	4,848.2	30.0	99.6	-99.9	0.21	0.21	-1.68
4,947.0	0.60	83.40	4,944.2	31.0	99.8	-100.2	1.50	-0.63	104.79
5,042.0	0.80	109.40	5,039.2	30.9	100.9	-101.3	0.39	0.21	27.37
5,137.0	0.70	99.40	5,134.2	30.6	102.1	-102.5	0.17	-0.11	-10.53
5,233.0	0.90	88.80	5,230.2	30.5	103.5	-103.8	0.26	0.21	-11.04
5,329.0	0.80	75.60	5,326.2	30.7	104.9	-105.2	0.23	-0.10	-13.75
5,424.0	0.90	57.50	5,421.2	31.2	106.1	-106.5	0.30	0.11	-19.05
5,520.0	0.80	65.10	5,517.2	31.9	107.4	-107.7	0.16	-0.10	7.92

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<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-204	<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)
5,616.0	1.00	79.70	5,613.2	32.4	108.8	-109.2	0.32	0.21	15.21
5,712.0	0.90	103.30	5,709.1	32.3	110.4	-110.7	0.42	-0.10	24.58
5,810.0	0.70	85.50	5,807.1	32.2	111.7	-112.1	0.32	-0.20	-18.16
5,905.0	0.90	94.50	5,902.1	32.2	113.0	-113.4	0.25	0.21	9.47
5,971.0	0.50	112.80	5,968.1	32.0	113.8	-114.2	0.69	-0.61	27.73
6,002.0	0.60	213.80	5,999.1	31.9	113.9	-114.2	2.75	0.32	325.81
6,035.0	2.20	246.90	6,032.1	31.5	113.2	-113.5	5.24	4.85	100.30
6,066.0	4.00	261.30	6,063.1	31.1	111.6	-111.9	6.28	5.81	46.45
6,099.0	4.70	272.20	6,096.0	30.9	109.1	-109.4	3.27	2.12	33.03
6,130.0	5.80	285.90	6,126.8	31.4	106.3	-106.6	5.36	3.55	44.19
6,161.0	7.30	293.70	6,157.6	32.6	103.0	-103.4	5.62	4.84	25.16
6,193.0	8.40	295.50	6,189.3	34.5	99.0	-99.4	3.52	3.44	5.63
6,225.0	8.70	300.50	6,221.0	36.7	94.8	-95.2	2.50	0.94	15.63
6,256.0	10.50	297.30	6,251.5	39.2	90.3	-90.7	6.05	5.81	-10.32
6,288.0	12.70	292.70	6,282.9	41.9	84.5	-84.9	7.45	6.88	-14.38
6,320.0	14.50	292.70	6,314.0	44.8	77.5	-78.0	5.63	5.63	0.00
6,352.0	15.50	295.50	6,344.9	48.2	70.0	-70.5	3.86	3.13	8.75
6,383.0	16.80	297.00	6,374.7	52.0	62.2	-62.8	4.40	4.19	4.84
6,415.0	18.90	296.50	6,405.1	56.4	53.5	-54.1	6.58	6.56	-1.56
6,447.0	21.50	293.60	6,435.2	61.1	43.5	-44.1	8.70	8.13	-9.06
6,479.0	25.40	290.40	6,464.5	65.8	31.6	-32.4	12.82	12.19	-10.00
6,511.0	30.00	287.90	6,492.8	70.7	17.6	-18.4	14.82	14.38	-7.81
6,543.0	34.60	285.40	6,519.9	75.5	1.2	-2.1	14.97	14.38	-7.81
6,575.0	38.20	284.50	6,545.6	80.4	-17.1	16.2	11.37	11.25	-2.81
6,606.0	40.10	282.80	6,569.7	85.0	-36.2	35.2	7.04	6.13	-5.48
6,636.0	41.30	281.70	6,592.4	89.2	-55.3	54.3	4.66	4.00	-3.67
6,667.0	43.40	280.60	6,615.3	93.2	-75.8	74.7	7.18	6.77	-3.55
6,698.0	46.20	279.30	6,637.3	97.0	-97.3	96.2	9.50	9.03	-4.19
6,729.0	49.30	277.40	6,658.2	100.3	-120.0	118.8	10.98	10.00	-6.13
6,759.0	51.80	275.40	6,677.2	102.9	-143.0	141.8	9.79	8.33	-6.67
6,790.0	54.90	273.00	6,695.7	104.7	-167.8	166.6	11.77	10.00	-7.74
6,821.0	58.90	271.50	6,712.7	105.7	-193.7	192.5	13.52	12.90	-4.84
6,851.0	62.70	270.80	6,727.3	106.2	-219.9	218.7	12.83	12.67	-2.33
6,881.0	66.60	270.20	6,740.1	106.5	-247.0	245.8	13.12	13.00	-2.00
6,911.0	70.20	271.20	6,751.2	106.8	-274.9	273.7	12.39	12.00	3.33
6,942.0	74.10	271.10	6,760.7	107.4	-304.4	303.2	12.58	12.58	-0.32
6,972.0	78.90	270.40	6,767.7	107.8	-333.6	332.3	16.16	16.00	-2.33
7,003.0	83.80	269.10	6,772.3	107.6	-364.2	363.0	16.34	15.81	-4.19
7,033.0	87.70	267.20	6,774.6	106.7	-394.1	392.9	14.45	13.00	-6.33
7,053.0	88.80	266.80	6,775.2	105.6	-414.1	412.8	5.85	5.50	-2.00
7,100.0	88.80	266.80	6,776.2	103.0	-461.0	459.8	0.00	0.00	0.00
7,106.0	89.50	268.40	6,776.2	102.8	-467.0	465.8	29.10	11.67	26.67
7,138.0	91.20	268.00	6,776.0	101.7	-498.9	497.8	5.46	5.31	-1.25
7,170.0	91.20	267.50	6,775.4	100.5	-530.9	529.7	1.56	0.00	-1.56
7,201.0	91.60	267.40	6,774.6	99.1	-561.9	560.7	1.33	1.29	-0.32
7,233.0	92.00	267.20	6,773.6	97.6	-593.8	592.7	1.40	1.25	-0.63
7,265.0	90.90	267.70	6,772.8	96.2	-625.8	624.6	3.78	-3.44	1.56
7,297.0	91.10	267.30	6,772.2	94.8	-657.7	656.6	1.40	0.63	-1.25
7,329.0	91.50	267.00	6,771.5	93.2	-689.7	688.6	1.56	1.25	-0.94
7,360.0	90.20	267.10	6,771.1	91.6	-720.7	719.6	4.21	-4.19	0.32
7,392.0	90.50	267.00	6,770.9	90.0	-752.6	751.5	0.99	0.94	-0.31
7,424.0	89.40	266.50	6,770.9	88.1	-784.6	783.5	3.78	-3.44	-1.56
7,456.0	89.10	266.30	6,771.3	86.1	-816.5	815.5	1.13	-0.94	-0.63

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<b>Well:</b>	Spaur 31V-204	<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)
7,488.0	89.10	265.90	6,771.8	84.0	-848.4	847.4	1.25	0.00	-1.25
7,520.0	89.60	265.90	6,772.2	81.7	-880.3	879.3	1.56	1.56	0.00
7,552.0	89.80	265.90	6,772.3	79.4	-912.2	911.3	0.63	0.63	0.00
7,583.0	90.10	265.80	6,772.4	77.1	-943.2	942.2	1.02	0.97	-0.32
7,615.0	90.60	265.70	6,772.2	74.8	-975.1	974.2	1.59	1.56	-0.31
7,647.0	90.10	265.80	6,772.0	72.4	-1,007.0	1,006.1	1.59	-1.56	0.31
7,678.0	90.50	265.90	6,771.8	70.1	-1,037.9	1,037.0	1.33	1.29	0.32
7,711.0	89.10	266.50	6,771.9	68.0	-1,070.8	1,070.0	4.62	-4.24	1.82
7,743.0	88.80	266.50	6,772.5	66.0	-1,102.8	1,101.9	0.94	-0.94	0.00
7,775.0	89.50	266.70	6,773.0	64.1	-1,134.7	1,133.9	2.28	2.19	0.63
7,807.0	89.90	266.90	6,773.2	62.3	-1,166.7	1,165.9	1.40	1.25	0.63
7,839.0	89.90	266.80	6,773.2	60.6	-1,198.6	1,197.8	0.31	0.00	-0.31
7,872.0	87.80	266.50	6,773.9	58.6	-1,231.5	1,230.8	6.43	-6.36	-0.91
7,903.0	87.60	266.30	6,775.1	56.7	-1,262.5	1,261.7	0.91	-0.65	-0.65
7,935.0	88.00	266.30	6,776.4	54.6	-1,294.4	1,293.7	1.25	1.25	0.00
7,967.0	87.20	265.90	6,777.7	52.5	-1,326.3	1,325.6	2.79	-2.50	-1.25
7,999.0	87.60	266.10	6,779.1	50.2	-1,358.2	1,357.5	1.40	1.25	0.63
8,032.0	89.00	266.30	6,780.1	48.0	-1,391.1	1,390.4	4.29	4.24	0.61
8,064.0	88.90	266.30	6,780.7	46.0	-1,423.0	1,422.4	0.31	-0.31	0.00
8,096.0	89.20	266.60	6,781.2	44.0	-1,454.9	1,454.3	1.33	0.94	0.94
8,127.0	90.20	266.20	6,781.4	42.0	-1,485.9	1,485.3	3.47	3.23	-1.29
8,160.0	90.90	266.40	6,781.1	39.9	-1,518.8	1,518.2	2.21	2.12	0.61
8,192.0	91.30	266.50	6,780.5	37.9	-1,550.7	1,550.2	1.29	1.25	0.31
8,225.0	91.30	266.50	6,779.7	35.9	-1,583.7	1,583.1	0.00	0.00	0.00
8,257.0	90.20	267.20	6,779.3	34.2	-1,615.6	1,615.1	4.07	-3.44	2.19
8,288.0	90.20	267.20	6,779.2	32.7	-1,646.6	1,646.1	0.00	0.00	0.00
8,321.0	90.70	267.30	6,778.9	31.1	-1,679.5	1,679.1	1.55	1.52	0.30
8,352.0	91.00	267.20	6,778.5	29.6	-1,710.5	1,710.0	1.02	0.97	-0.32
8,385.0	91.40	267.10	6,777.8	27.9	-1,743.4	1,743.0	1.25	1.21	-0.30
8,417.0	92.20	267.10	6,776.8	26.3	-1,775.4	1,775.0	2.50	2.50	0.00
8,449.0	91.40	267.80	6,775.8	24.9	-1,807.3	1,806.9	3.32	-2.50	2.19
8,481.0	91.30	267.70	6,775.0	23.6	-1,839.3	1,838.9	0.44	-0.31	-0.31
8,512.0	91.50	267.70	6,774.3	22.4	-1,870.3	1,869.9	0.65	0.65	0.00
8,544.0	92.00	267.70	6,773.3	21.1	-1,902.2	1,901.9	1.56	1.56	0.00
8,576.0	90.90	268.00	6,772.5	19.9	-1,934.2	1,933.8	3.56	-3.44	0.94
8,607.0	90.80	268.00	6,772.0	18.8	-1,965.2	1,964.8	0.32	-0.32	0.00
8,640.0	91.10	268.10	6,771.5	17.7	-1,998.1	1,997.8	0.96	0.91	0.30
8,672.0	89.50	268.10	6,771.3	16.7	-2,030.1	2,029.8	5.00	-5.00	0.00
8,704.0	89.30	267.90	6,771.6	15.5	-2,062.1	2,061.8	0.88	-0.63	-0.63
8,736.0	89.50	267.90	6,772.0	14.4	-2,094.1	2,093.8	0.63	0.63	0.00
8,768.0	90.00	268.00	6,772.1	13.2	-2,126.1	2,125.8	1.59	1.56	0.31
8,800.0	90.50	268.00	6,772.0	12.1	-2,158.0	2,157.8	1.56	1.56	0.00
8,831.0	91.30	268.00	6,771.5	11.0	-2,189.0	2,188.8	2.58	2.58	0.00
8,863.0	89.90	268.20	6,771.2	10.0	-2,221.0	2,220.7	4.42	-4.38	0.63
8,895.0	89.60	267.70	6,771.3	8.8	-2,253.0	2,252.7	1.82	-0.94	-1.56
8,927.0	87.80	267.50	6,772.0	7.5	-2,284.9	2,284.7	5.66	-5.63	-0.63
8,959.0	87.50	267.10	6,773.3	6.0	-2,316.9	2,316.7	1.56	-0.94	-1.25
8,991.0	87.70	267.30	6,774.7	4.4	-2,348.8	2,348.6	0.88	0.63	0.63
9,023.0	88.10	267.60	6,775.8	3.0	-2,380.8	2,380.6	1.56	1.25	0.94
9,055.0	88.10	267.60	6,776.9	1.6	-2,412.7	2,412.5	0.00	0.00	0.00
9,086.0	88.70	267.70	6,777.8	0.4	-2,443.7	2,443.5	1.96	1.94	0.32
9,118.0	88.50	267.60	6,778.5	-0.9	-2,475.6	2,475.5	0.70	-0.63	-0.31
9,150.0	88.70	268.00	6,779.3	-2.2	-2,507.6	2,507.5	1.40	0.63	1.25
9,182.0	88.70	268.00	6,780.1	-3.3	-2,539.6	2,539.5	0.00	0.00	0.00

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-204
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-204	<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)
9,215.0	89.10	268.40	6,780.7	-4.3	-2,572.6	2,572.4	1.71	1.21	1.21
9,247.0	89.50	268.40	6,781.1	-5.2	-2,604.5	2,604.4	1.25	1.25	0.00
9,279.0	89.80	268.30	6,781.3	-6.1	-2,636.5	2,636.4	0.99	0.94	-0.31
9,310.0	90.30	268.40	6,781.3	-7.0	-2,667.5	2,667.4	1.64	1.61	0.32
9,341.0	90.50	268.30	6,781.0	-7.9	-2,698.5	2,698.4	0.72	0.65	-0.32
9,373.0	90.90	268.30	6,780.6	-8.9	-2,730.5	2,730.4	1.25	1.25	0.00
9,405.0	91.40	268.30	6,780.0	-9.8	-2,762.5	2,762.4	1.56	1.56	0.00
9,437.0	91.50	268.40	6,779.2	-10.7	-2,794.4	2,794.4	0.44	0.31	0.31
9,469.0	89.30	268.30	6,779.0	-11.7	-2,826.4	2,826.4	6.88	-6.88	-0.31
9,501.0	89.10	268.00	6,779.4	-12.7	-2,858.4	2,858.4	1.13	-0.63	-0.94
9,533.0	89.40	268.00	6,779.8	-13.8	-2,890.4	2,890.4	0.94	0.94	0.00
9,565.0	90.40	268.00	6,779.9	-14.9	-2,922.4	2,922.3	3.13	3.13	0.00
9,597.0	90.70	268.00	6,779.6	-16.0	-2,954.3	2,954.3	0.94	0.94	0.00
9,628.0	90.80	267.90	6,779.2	-17.2	-2,985.3	2,985.3	0.46	0.32	-0.32
9,660.0	91.40	267.90	6,778.6	-18.3	-3,017.3	3,017.3	1.88	1.88	0.00
9,692.0	90.10	268.70	6,778.1	-19.3	-3,049.3	3,049.3	4.77	-4.06	2.50
9,724.0	90.20	268.80	6,778.1	-20.0	-3,081.3	3,081.3	0.44	0.31	0.31
9,756.0	90.70	269.00	6,777.8	-20.6	-3,113.3	3,113.3	1.68	1.56	0.63
9,788.0	89.70	269.80	6,777.7	-20.9	-3,145.3	3,145.3	4.00	-3.13	2.50
9,820.0	90.00	269.90	6,777.8	-21.0	-3,177.3	3,177.3	0.99	0.94	0.31
9,852.0	90.10	269.80	6,777.8	-21.1	-3,209.3	3,209.3	0.44	0.31	-0.31
9,883.0	89.30	270.50	6,777.9	-21.0	-3,240.3	3,240.3	3.43	-2.58	2.26
9,915.0	89.00	270.50	6,778.4	-20.7	-3,272.2	3,272.3	0.94	-0.94	0.00
9,947.0	89.10	270.50	6,778.9	-20.5	-3,304.2	3,304.3	0.31	0.31	0.00
9,979.0	87.40	269.50	6,779.9	-20.4	-3,336.2	3,336.2	6.16	-5.31	-3.13
10,011.0	87.50	269.40	6,781.3	-20.8	-3,368.2	3,368.2	0.44	0.31	-0.31
10,043.0	87.30	269.40	6,782.8	-21.1	-3,400.2	3,400.2	0.63	-0.63	0.00
10,075.0	87.60	268.40	6,784.2	-21.7	-3,432.1	3,432.1	3.26	0.94	-3.13
10,107.0	87.70	268.10	6,785.5	-22.7	-3,464.1	3,464.1	0.99	0.31	-0.94
10,138.0	88.90	267.60	6,786.4	-23.8	-3,495.0	3,495.1	4.19	3.87	-1.61
10,170.0	88.50	267.70	6,787.2	-25.2	-3,527.0	3,527.1	1.29	-1.25	0.31
10,202.0	89.80	267.90	6,787.6	-26.4	-3,559.0	3,559.1	4.11	4.06	0.63
10,234.0	89.20	267.30	6,787.9	-27.7	-3,591.0	3,591.0	2.65	-1.88	-1.88
10,266.0	89.80	267.90	6,788.2	-29.1	-3,622.9	3,623.0	2.65	1.88	1.88
10,298.0	89.80	268.20	6,788.3	-30.2	-3,654.9	3,655.0	0.94	0.00	0.94
10,330.0	89.80	267.90	6,788.4	-31.2	-3,686.9	3,687.0	0.94	0.00	-0.94
10,363.0	90.00	266.90	6,788.5	-32.7	-3,719.8	3,720.0	3.09	0.61	-3.03
10,394.0	90.40	266.60	6,788.4	-34.5	-3,750.8	3,750.9	1.61	1.29	-0.97
10,426.0	91.00	266.90	6,788.0	-36.3	-3,782.7	3,782.9	2.10	1.88	0.94
10,458.0	90.90	266.70	6,787.4	-38.1	-3,814.7	3,814.9	0.70	-0.31	-0.63
10,490.0	91.00	267.00	6,786.9	-39.9	-3,846.6	3,846.8	0.99	0.31	0.94
10,522.0	90.40	267.60	6,786.5	-41.4	-3,878.6	3,878.8	2.65	-1.88	1.88
10,554.0	90.50	267.70	6,786.3	-42.7	-3,910.6	3,910.8	0.44	0.31	0.31
10,585.0	90.50	267.60	6,786.0	-43.9	-3,941.5	3,941.8	0.32	0.00	-0.32
10,617.0	90.80	267.30	6,785.6	-45.4	-3,973.5	3,973.8	1.33	0.94	-0.94
10,650.0	89.60	267.20	6,785.5	-47.0	-4,006.5	4,006.7	3.65	-3.64	-0.30
10,681.0	89.70	267.60	6,785.7	-48.4	-4,037.4	4,037.7	1.33	0.32	1.29
10,713.0	89.80	267.60	6,785.8	-49.7	-4,069.4	4,069.7	0.31	0.31	0.00
10,745.0	90.00	267.40	6,785.9	-51.1	-4,101.4	4,101.7	0.88	0.63	-0.63
10,777.0	89.30	266.70	6,786.1	-52.7	-4,133.3	4,133.7	3.09	-2.19	-2.19
10,809.0	89.00	266.40	6,786.6	-54.7	-4,165.3	4,165.6	1.33	-0.94	-0.94
10,841.0	89.40	266.50	6,787.0	-56.6	-4,197.2	4,197.6	1.29	1.25	0.31
10,873.0	89.60	266.50	6,787.3	-58.6	-4,229.2	4,229.5	0.63	0.63	0.00



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-204
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4772.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-204	<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)
10,905.0	89.60	266.50	6,787.5	-60.6	-4,261.1	4,261.5	0.00	0.00	0.00
10,937.0	89.80	266.50	6,787.7	-62.5	-4,293.0	4,293.5	0.63	0.63	0.00
10,969.0	89.90	266.40	6,787.8	-64.5	-4,325.0	4,325.4	0.44	0.31	-0.31
11,001.0	90.00	266.60	6,787.8	-66.4	-4,356.9	4,357.4	0.70	0.31	0.63
11,033.0	89.70	266.60	6,787.9	-68.3	-4,388.9	4,389.3	0.94	-0.94	0.00
11,084.0	89.70	266.60	6,788.2	-71.4	-4,439.8	4,440.3	0.00	0.00	0.00
BHL 1250'FNL, 500'FWL									

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_