

# PETROLEUM DEVELOPMENT CORP Weld County CO

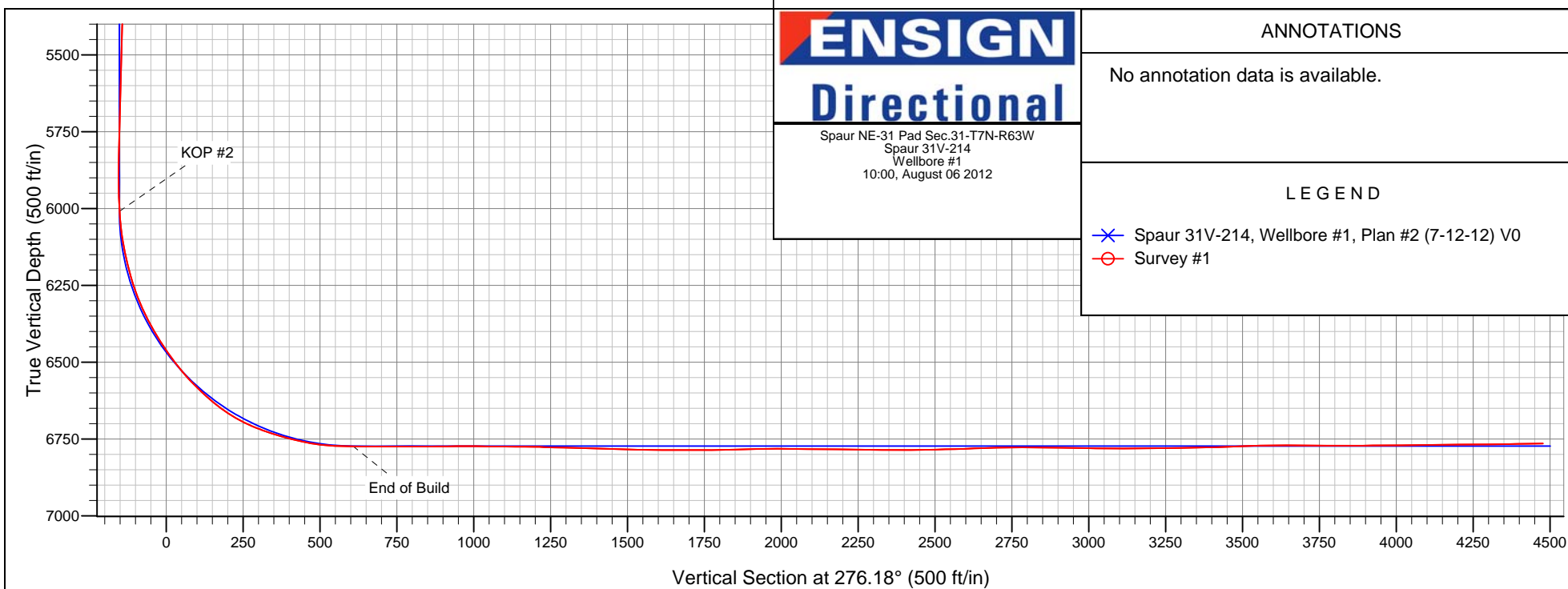
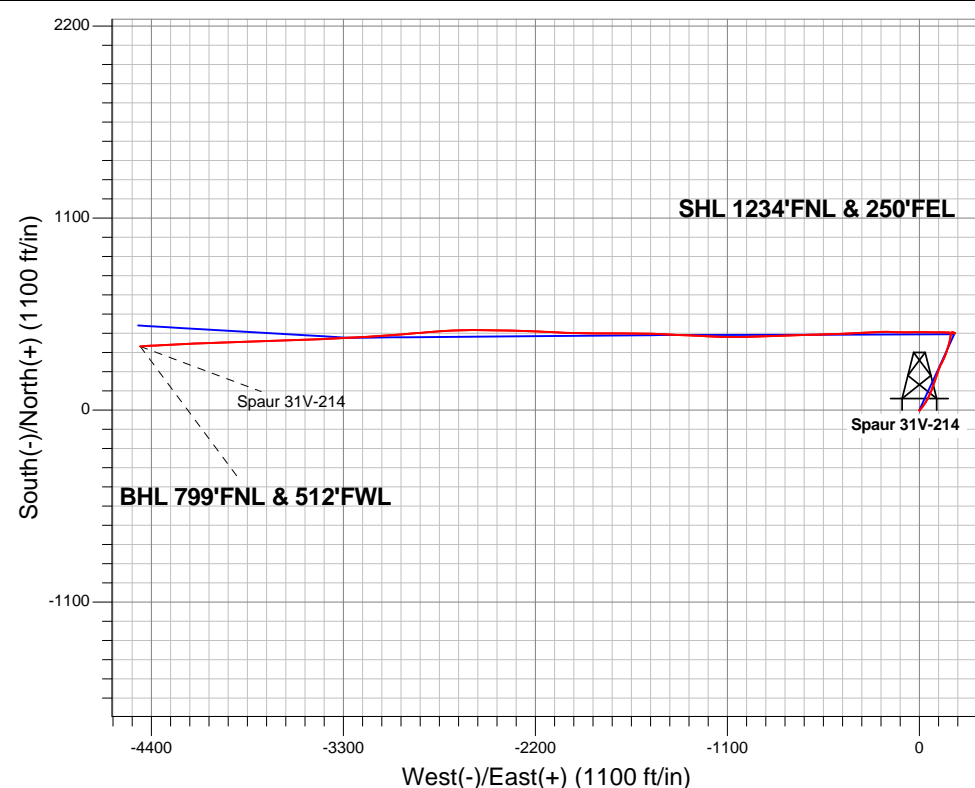
## Well Name: Spaur 31V-214

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 1439083.04 3285949.79 40.534130 -104.471230  
 RKB Ensign 32 - 15' WELL @ 4773.0ft (RKB Ensign 32 - 15')

## FINAL SURVEY

Projected Bottom Hole Location  
 11149' MD 6765' TVD 366' N & 4463' W of SHL

91.30 degree Incl @ 267.20 degree AZM



Spaur NE-31 Pad Sec.31-T7N-R63W  
 Spaur 31V-214  
 Wellbore #1  
 10:00, August 06 2012

### ANNOTATIONS

No annotation data is available.

### LEGEND

- Spaur 31V-214, Wellbore #1, Plan #2 (7-12-12) V0
- Survey #1



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.31-T7N-R63W**

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

**Spaur 31V-214**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**06 August, 2012**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-214
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-214	<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-214					
Well Position	+N-S	0.0 ft	Northing:	1,439,083.04 ft	Latitude:	40.534130
	+E-W	0.0 ft	Easting:	3,285,949.79 ft	Longitude:	-104.471230
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,758.0 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	7/17/2012	8.57	67.17	53,118

<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	276.18	

<b>Survey Program</b>	<b>Date</b> 8/6/2012				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
118.0	11,149.0	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	64.50	0.3	0.0	0.0	0.0	0.85	0.85	0.00	
<b>HARDLINES BHL 460'FWL</b>										
0.9	0.01	64.50	0.9	0.0	0.0	0.0	0.85	0.85	0.00	
<b>HARDLINES SHL 460'FEL</b>										
2.2	0.02	64.50	2.2	0.0	0.0	0.0	0.85	0.85	0.00	
<b>SECTION HARDLINES 250'E OF SHL</b>										
118.0	1.00	64.50	118.0	0.4	0.9	-0.9	0.85	0.85	0.00	
211.0	0.50	198.20	211.0	0.4	1.5	-1.5	1.50	-0.54	143.76	
302.0	0.20	175.00	302.0	-0.1	1.4	-1.4	0.36	-0.33	-25.49	
394.0	0.20	190.90	394.0	-0.4	1.4	-1.4	0.06	0.00	17.28	
485.0	0.20	190.70	485.0	-0.8	1.3	-1.4	0.00	0.00	-0.22	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-214
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-214	<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)
577.0	0.10	154.80	577.0	-1.0	1.4	-1.5	0.14	-0.11	-39.02
669.0	0.40	138.70	669.0	-1.3	1.6	-1.7	0.33	0.33	-17.50
761.0	0.20	107.00	761.0	-1.6	2.0	-2.1	0.27	-0.22	-34.46
853.0	0.20	110.70	853.0	-1.7	2.3	-2.4	0.01	0.00	4.02
951.0	0.50	285.90	951.0	-1.6	2.0	-2.2	0.71	0.31	178.78
1,046.0	0.50	294.70	1,046.0	-1.4	1.2	-1.4	0.08	0.00	9.26
1,141.0	0.80	55.10	1,141.0	-0.8	1.4	-1.5	1.20	0.32	126.74
1,237.0	1.90	39.20	1,236.9	0.8	3.0	-2.9	1.20	1.15	-16.56
1,333.0	2.90	39.50	1,332.9	3.9	5.5	-5.1	1.04	1.04	0.31
1,429.0	4.30	36.60	1,428.7	8.7	9.2	-8.2	1.47	1.46	-3.02
1,525.0	5.40	41.50	1,524.3	15.0	14.3	-12.7	1.22	1.15	5.10
1,620.0	6.60	40.40	1,618.8	22.5	20.8	-18.3	1.27	1.26	-1.16
1,716.0	6.80	32.00	1,714.2	31.5	27.4	-23.9	1.04	0.21	-8.75
1,812.0	6.70	28.10	1,809.5	41.2	33.1	-28.4	0.49	-0.10	-4.06
1,908.0	7.00	30.70	1,904.8	51.2	38.7	-33.0	0.45	0.31	2.71
2,003.0	7.60	30.40	1,999.0	61.6	44.8	-37.9	0.63	0.63	-0.32
2,099.0	6.80	30.00	2,094.3	72.0	50.9	-42.8	0.83	-0.83	-0.42
2,195.0	7.00	25.70	2,189.6	82.2	56.3	-47.1	0.58	0.21	-4.48
2,291.0	7.90	22.80	2,284.8	93.6	61.4	-50.9	1.02	0.94	-3.02
2,387.0	7.50	18.80	2,379.9	105.6	65.9	-54.2	0.70	-0.42	-4.17
2,482.0	7.50	20.10	2,474.1	117.3	70.1	-57.0	0.18	0.00	1.37
2,577.0	8.00	22.50	2,568.2	129.2	74.7	-60.4	0.63	0.53	2.53
2,673.0	8.50	21.20	2,663.2	142.0	79.9	-64.1	0.56	0.52	-1.35
2,769.0	8.60	17.30	2,758.2	155.4	84.6	-67.3	0.61	0.10	-4.06
2,864.0	8.70	19.10	2,852.1	169.0	89.0	-70.3	0.30	0.11	1.89
2,959.0	8.90	20.00	2,946.0	182.7	93.9	-73.7	0.26	0.21	0.95
3,054.0	9.90	21.00	3,039.7	197.2	99.3	-77.5	1.07	1.05	1.05
3,149.0	9.30	19.50	3,133.4	212.1	104.8	-81.4	0.68	-0.63	-1.58
3,245.0	9.60	19.30	3,228.1	227.0	110.0	-85.0	0.31	0.31	-0.21
3,341.0	9.00	19.50	3,322.8	241.6	115.2	-88.5	0.63	-0.63	0.21
3,436.0	7.90	22.30	3,416.8	254.7	120.2	-92.0	1.24	-1.16	2.95
3,531.0	7.10	29.10	3,510.9	265.8	125.5	-96.1	1.26	-0.84	7.16
3,626.0	6.80	29.50	3,605.2	275.8	131.1	-100.6	0.32	-0.32	0.42
3,722.0	7.80	25.60	3,700.5	286.7	136.7	-105.0	1.16	1.04	-4.06
3,817.0	8.80	20.90	3,794.5	299.3	142.1	-109.0	1.27	1.05	-4.95
3,912.0	9.80	20.60	3,888.2	313.6	147.5	-112.9	1.05	1.05	-0.32
4,007.0	10.90	21.50	3,981.7	329.6	153.7	-117.3	1.17	1.16	0.95
4,103.0	11.10	18.10	4,075.9	346.8	159.9	-121.6	0.71	0.21	-3.54
4,199.0	10.00	16.20	4,170.3	363.6	165.1	-124.9	1.20	-1.15	-1.98
4,295.0	8.90	13.60	4,265.0	378.8	169.1	-127.4	1.23	-1.15	-2.71
4,391.0	7.60	13.90	4,360.0	392.2	172.4	-129.2	1.35	-1.35	0.31
4,486.0	6.20	12.50	4,454.3	403.3	175.0	-130.6	1.48	-1.47	-1.47
4,582.0	5.30	10.90	4,549.8	412.7	177.0	-131.5	0.95	-0.94	-1.67
4,677.0	4.40	7.70	4,644.5	420.6	178.3	-132.0	0.99	-0.95	-3.37
4,773.0	2.60	10.20	4,740.3	426.4	179.2	-132.2	1.88	-1.88	2.60
4,868.0	2.60	358.80	4,835.2	430.7	179.5	-132.1	0.54	0.00	-12.00
4,964.0	3.00	8.40	4,931.1	435.3	179.9	-131.9	0.64	0.42	10.00
5,059.0	2.70	24.00	5,026.0	439.8	181.1	-132.7	0.87	-0.32	16.42
5,154.0	2.30	43.50	5,120.9	443.3	183.3	-134.5	0.98	-0.42	20.53
5,250.0	2.20	60.60	5,216.8	445.6	186.3	-137.2	0.70	-0.10	17.81
5,346.0	2.20	85.40	5,312.7	446.6	189.7	-140.5	0.98	0.00	25.83
5,441.0	1.40	108.30	5,407.7	446.4	192.6	-143.4	1.12	-0.84	24.11
5,537.0	1.60	114.20	5,503.7	445.5	195.0	-145.8	0.26	0.21	6.15

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<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-214	<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)
5,633.0	1.70	122.50	5,599.6	444.2	197.4	-148.4	0.27	0.10	8.65
5,729.0	1.70	122.10	5,695.6	442.7	199.8	-151.0	0.01	0.00	-0.42
5,824.0	1.70	123.60	5,790.5	441.1	202.2	-153.5	0.05	0.00	1.58
5,920.0	0.40	170.90	5,886.5	440.0	203.4	-154.8	1.52	-1.35	49.27
5,969.0	1.40	256.20	5,935.5	439.7	202.9	-154.3	2.91	2.04	174.08
6,001.0	1.80	262.70	5,967.5	439.5	202.0	-153.5	1.37	1.25	20.31
6,034.0	3.00	276.70	6,000.5	439.6	200.6	-152.1	4.02	3.64	42.42
6,065.0	4.70	282.40	6,031.4	439.9	198.6	-150.0	5.61	5.48	18.39
6,098.0	6.60	281.40	6,064.2	440.6	195.4	-146.8	5.77	5.76	-3.03
6,129.0	8.60	280.10	6,095.0	441.4	191.4	-142.7	6.48	6.45	-4.19
6,161.0	10.70	278.20	6,126.5	442.2	186.1	-137.3	6.64	6.56	-5.94
6,193.0	12.40	276.30	6,157.9	443.0	179.7	-130.9	5.44	5.31	-5.94
6,225.0	14.00	276.70	6,189.0	443.8	172.4	-123.6	5.01	5.00	1.25
6,256.0	15.70	273.60	6,219.0	444.5	164.5	-115.7	6.05	5.48	-10.00
6,288.0	18.20	271.40	6,249.6	444.9	155.2	-106.4	8.06	7.81	-6.88
6,321.0	20.50	271.30	6,280.7	445.2	144.3	-95.5	6.97	6.97	-0.30
6,352.0	22.90	271.20	6,309.5	445.4	132.8	-84.1	7.74	7.74	-0.32
6,384.0	25.50	270.40	6,338.7	445.6	119.7	-71.0	8.19	8.13	-2.50
6,416.0	27.90	271.10	6,367.3	445.8	105.3	-56.7	7.56	7.50	2.19
6,448.0	30.30	269.40	6,395.2	445.9	89.8	-41.2	7.93	7.50	-5.31
6,481.0	32.30	271.90	6,423.4	446.1	72.6	-24.2	7.23	6.06	7.58
6,512.0	33.00	271.50	6,449.5	446.6	55.9	-7.5	2.36	2.26	-1.29
6,542.0	34.80	270.80	6,474.4	446.9	39.2	9.2	6.14	6.00	-2.33
6,574.0	37.20	270.40	6,500.3	447.1	20.4	27.9	7.54	7.50	-1.25
6,605.0	39.60	268.90	6,524.6	447.0	1.1	47.0	8.30	7.74	-4.84
6,636.0	42.50	268.40	6,548.0	446.5	-19.2	67.2	9.41	9.35	-1.61
6,666.0	44.90	268.30	6,569.7	445.9	-39.9	87.7	8.00	8.00	-0.33
6,697.0	45.90	269.90	6,591.5	445.6	-62.0	109.6	4.89	3.23	5.16
6,728.0	48.00	270.90	6,612.6	445.7	-84.7	132.2	7.17	6.77	3.23
6,758.0	50.80	271.80	6,632.1	446.3	-107.4	154.9	9.61	9.33	3.00
6,789.0	53.70	272.10	6,651.1	447.1	-131.9	179.3	9.39	9.35	0.97
6,820.0	57.40	272.10	6,668.6	448.0	-157.5	204.8	11.94	11.94	0.00
6,851.0	60.80	270.50	6,684.6	448.6	-184.0	231.3	11.83	10.97	-5.16
6,881.0	64.40	268.80	6,698.4	448.5	-210.7	257.8	13.01	12.00	-5.67
6,912.0	67.50	267.40	6,711.0	447.5	-239.0	285.8	10.82	10.00	-4.52
6,942.0	70.20	266.50	6,721.8	446.0	-266.9	313.4	9.42	9.00	-3.00
6,973.0	72.20	266.50	6,731.8	444.2	-296.2	342.3	6.45	6.45	0.00
7,003.0	73.80	267.10	6,740.6	442.6	-324.8	370.6	5.67	5.33	2.00
7,034.0	75.60	268.60	6,748.8	441.5	-354.7	400.2	7.45	5.81	4.84
7,065.0	77.80	268.00	6,755.9	440.6	-384.9	430.1	7.34	7.10	-1.94
7,097.0	79.20	267.10	6,762.3	439.3	-416.2	461.1	5.17	4.38	-2.81
7,126.0	81.80	266.90	6,767.1	437.8	-444.8	489.3	8.99	8.97	-0.69
7,156.0	84.70	266.70	6,770.6	436.1	-474.5	518.7	9.69	9.67	-0.67
7,204.0	88.50	268.70	6,773.4	434.2	-522.4	566.1	8.94	7.92	4.17
7,236.0	89.30	268.90	6,774.1	433.5	-554.3	597.8	2.58	2.50	0.63
7,268.0	89.60	268.70	6,774.4	432.9	-586.3	629.6	1.13	0.94	-0.63
7,300.0	89.80	268.60	6,774.5	432.1	-618.3	661.3	0.70	0.63	-0.31
7,332.0	89.80	268.10	6,774.6	431.2	-650.3	693.0	1.56	0.00	-1.56
7,364.0	89.50	267.80	6,774.8	430.0	-682.3	724.7	1.33	-0.94	-0.94
7,396.0	90.00	268.00	6,775.0	428.9	-714.3	756.3	1.68	1.56	0.63
7,427.0	90.10	267.90	6,774.9	427.8	-745.3	787.0	0.46	0.32	-0.32
7,459.0	90.50	268.00	6,774.8	426.6	-777.2	818.7	1.29	1.25	0.31
7,490.0	90.30	268.00	6,774.6	425.5	-808.2	849.4	0.65	-0.65	0.00

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<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)
7,522.0	90.40	267.70	6,774.4	424.3	-840.2	881.0	0.99	0.31	-0.94
7,554.0	90.50	267.80	6,774.1	423.1	-872.2	912.7	0.44	0.31	0.31
7,586.0	90.50	267.60	6,773.8	421.8	-904.1	944.3	0.62	0.00	-0.63
7,618.0	89.80	268.40	6,773.8	420.7	-936.1	976.0	3.32	-2.19	2.50
7,650.0	89.40	268.10	6,774.0	419.7	-968.1	1,007.7	1.56	-1.25	-0.94
7,682.0	89.00	269.40	6,774.4	419.0	-1,000.1	1,039.4	4.25	-1.25	4.06
7,714.0	89.50	269.70	6,774.8	418.7	-1,032.1	1,071.2	1.82	1.56	0.94
7,745.0	90.00	270.10	6,775.0	418.7	-1,063.1	1,102.0	2.07	1.61	1.29
7,778.0	89.60	271.70	6,775.1	419.2	-1,096.1	1,134.9	5.00	-1.21	4.85
7,809.0	89.70	272.30	6,775.3	420.3	-1,127.1	1,165.8	1.96	0.32	1.94
7,841.0	89.00	272.50	6,775.6	421.6	-1,159.0	1,197.7	2.28	-2.19	0.63
7,873.0	87.90	272.30	6,776.5	423.0	-1,191.0	1,229.6	3.49	-3.44	-0.63
7,905.0	88.40	272.30	6,777.5	424.2	-1,222.9	1,261.5	1.56	1.56	0.00
7,937.0	88.50	272.40	6,778.4	425.6	-1,254.9	1,293.5	0.44	0.31	0.31
7,968.0	88.40	272.30	6,779.2	426.8	-1,285.9	1,324.4	0.46	-0.32	-0.32
8,000.0	88.50	272.30	6,780.1	428.1	-1,317.8	1,356.3	0.31	0.31	0.00
8,032.0	88.60	272.40	6,780.9	429.4	-1,349.8	1,388.2	0.44	0.31	0.31
8,064.0	88.70	272.60	6,781.7	430.8	-1,381.8	1,420.1	0.70	0.31	0.63
8,096.0	88.50	272.60	6,782.5	432.3	-1,413.7	1,452.1	0.63	-0.63	0.00
8,128.0	88.40	272.70	6,783.3	433.8	-1,445.7	1,484.0	0.44	-0.31	0.31
8,160.0	88.10	272.60	6,784.3	435.2	-1,477.6	1,515.9	0.99	-0.94	-0.31
8,162.2	88.08	272.61	6,784.4	435.3	-1,479.8	1,518.1	0.99	-0.94	0.31
WP 1									
8,192.0	87.80	272.70	6,785.4	436.7	-1,509.6	1,547.8	0.99	-0.94	0.31
8,224.0	89.60	271.80	6,786.2	438.0	-1,541.5	1,579.7	6.29	5.63	-2.81
8,256.0	90.10	270.90	6,786.3	438.7	-1,573.5	1,611.6	3.22	1.56	-2.81
8,288.0	89.90	270.30	6,786.3	439.1	-1,605.5	1,643.5	1.98	-0.63	-1.88
8,320.0	89.80	270.30	6,786.3	439.2	-1,637.5	1,675.3	0.31	-0.31	0.00
8,352.0	90.30	270.10	6,786.3	439.3	-1,669.5	1,707.1	1.68	1.56	-0.63
8,383.0	90.60	270.20	6,786.1	439.4	-1,700.5	1,738.0	1.02	0.97	0.32
8,415.0	90.10	269.80	6,785.9	439.4	-1,732.5	1,769.8	2.00	-1.56	-1.25
8,447.0	90.50	269.30	6,785.7	439.2	-1,764.5	1,801.6	2.00	1.25	-1.56
8,479.0	90.90	269.50	6,785.3	438.8	-1,796.5	1,833.3	1.40	1.25	0.63
8,511.0	92.30	270.20	6,784.4	438.7	-1,828.5	1,865.1	4.89	4.38	2.19
8,543.0	91.70	270.40	6,783.3	438.9	-1,860.5	1,896.9	1.98	-1.88	0.63
8,575.0	91.60	271.10	6,782.4	439.3	-1,892.5	1,928.8	2.21	-0.31	2.19
8,606.0	90.30	271.60	6,781.9	440.1	-1,923.4	1,959.7	4.49	-4.19	1.61
8,638.0	89.10	272.20	6,782.0	441.1	-1,955.4	1,991.6	4.19	-3.75	1.88
8,670.0	89.30	272.20	6,782.5	442.4	-1,987.4	2,023.5	0.63	0.63	0.00
8,702.0	89.40	272.40	6,782.8	443.6	-2,019.4	2,055.4	0.70	0.31	0.63
8,734.0	89.50	272.90	6,783.2	445.1	-2,051.3	2,087.4	1.59	0.31	1.56
8,766.0	89.80	272.50	6,783.3	446.6	-2,083.3	2,119.3	1.56	0.94	-1.25
8,798.0	89.40	272.30	6,783.6	448.0	-2,115.3	2,151.2	1.40	-1.25	-0.63
8,830.0	89.20	272.30	6,784.0	449.2	-2,147.2	2,183.1	0.63	-0.63	0.00
8,862.0	89.10	272.40	6,784.4	450.6	-2,179.2	2,215.1	0.44	-0.31	0.31
8,894.0	89.40	271.90	6,784.9	451.8	-2,211.2	2,247.0	1.82	0.94	-1.56
8,925.0	89.30	272.00	6,785.2	452.8	-2,242.2	2,277.9	0.46	-0.32	0.32
8,957.0	88.90	271.30	6,785.7	453.7	-2,274.2	2,309.8	2.52	-1.25	-2.19
8,989.0	89.60	271.40	6,786.1	454.5	-2,306.1	2,341.7	2.21	2.19	0.31
9,021.0	90.30	271.50	6,786.2	455.3	-2,338.1	2,373.6	2.21	2.19	0.31
9,053.0	90.50	271.60	6,785.9	456.2	-2,370.1	2,405.5	0.70	0.63	0.31
9,085.0	90.60	271.20	6,785.6	456.9	-2,402.1	2,437.4	1.29	0.31	-1.25
9,117.0	90.90	271.50	6,785.2	457.7	-2,434.1	2,469.2	1.33	0.94	0.94

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-214
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-214	<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)
9,149.0	91.20	271.50	6,784.6	458.5	-2,466.1	2,501.1	0.94	0.94	0.00
9,181.0	91.30	270.10	6,783.9	459.0	-2,498.1	2,533.0	4.39	0.31	-4.38
9,212.0	91.60	269.50	6,783.1	458.9	-2,529.1	2,563.8	2.16	0.97	-1.94
9,244.0	92.20	269.30	6,782.1	458.5	-2,561.0	2,595.5	1.98	1.88	-0.63
9,276.0	92.10	269.70	6,780.9	458.3	-2,593.0	2,627.3	1.29	-0.31	1.25
9,309.0	92.00	268.50	6,779.7	457.7	-2,626.0	2,660.0	3.65	-0.30	-3.64
9,341.0	91.40	267.70	6,778.7	456.7	-2,658.0	2,691.7	3.12	-1.88	-2.50
9,373.0	90.90	267.20	6,778.1	455.3	-2,689.9	2,723.3	2.21	-1.56	-1.56
9,405.0	90.90	266.90	6,777.6	453.6	-2,721.9	2,754.9	0.94	0.00	-0.94
9,438.0	90.10	265.80	6,777.3	451.5	-2,754.8	2,787.4	4.12	-2.42	-3.33
9,470.0	88.80	265.30	6,777.6	449.0	-2,786.7	2,818.9	4.35	-4.06	-1.56
9,501.0	89.40	265.10	6,778.1	446.4	-2,817.6	2,849.3	2.04	1.94	-0.65
9,533.0	89.50	265.10	6,778.4	443.7	-2,849.5	2,880.7	0.31	0.31	0.00
9,566.0	89.50	264.70	6,778.7	440.8	-2,882.3	2,913.0	1.21	0.00	-1.21
9,598.0	89.10	266.30	6,779.1	438.3	-2,914.2	2,944.5	5.15	-1.25	5.00
9,629.0	89.40	266.50	6,779.5	436.3	-2,945.2	2,975.0	1.16	0.97	0.65
9,662.0	88.40	264.90	6,780.1	433.8	-2,978.1	3,007.5	5.72	-3.03	-4.85
9,695.0	89.50	265.80	6,780.7	431.2	-3,011.0	3,039.9	4.31	3.33	2.73
9,727.0	89.50	265.80	6,781.0	428.8	-3,042.9	3,071.4	0.00	0.00	0.00
9,759.0	90.10	266.20	6,781.1	426.6	-3,074.8	3,102.9	2.25	1.88	1.25
9,791.0	90.30	266.50	6,781.0	424.6	-3,106.7	3,134.4	1.13	0.63	0.94
9,822.0	90.40	266.30	6,780.8	422.6	-3,137.7	3,164.9	0.72	0.32	-0.65
9,854.0	90.60	266.10	6,780.5	420.5	-3,169.6	3,196.4	0.88	0.63	-0.63
9,887.0	90.80	266.20	6,780.1	418.3	-3,202.5	3,228.9	0.68	0.61	0.30
9,893.1	90.86	266.22	6,780.1	417.9	-3,208.6	3,234.9	0.99	0.94	0.31
WP 2									
9,919.0	91.10	266.30	6,779.6	416.2	-3,234.4	3,260.5	0.99	0.94	0.31
9,951.0	91.10	266.50	6,779.0	414.2	-3,266.4	3,292.0	0.62	0.00	0.63
9,984.0	90.60	266.50	6,778.5	412.2	-3,299.3	3,324.5	1.52	-1.52	0.00
10,015.0	91.00	267.00	6,778.1	410.4	-3,330.3	3,355.1	2.07	1.29	1.61
10,047.0	91.30	267.40	6,777.4	408.8	-3,362.2	3,386.7	1.56	0.94	1.25
10,079.0	91.70	267.30	6,776.6	407.4	-3,394.2	3,418.3	1.29	1.25	-0.31
10,111.0	92.20	267.70	6,775.5	406.0	-3,426.1	3,449.9	2.00	1.56	1.25
10,143.0	92.00	267.90	6,774.3	404.7	-3,458.1	3,481.5	0.88	-0.63	0.63
10,175.0	92.00	267.90	6,773.2	403.6	-3,490.0	3,513.2	0.00	0.00	0.00
10,207.0	91.90	267.80	6,772.1	402.4	-3,522.0	3,544.8	0.44	-0.31	-0.31
10,239.0	90.80	268.70	6,771.4	401.4	-3,554.0	3,576.5	4.44	-3.44	2.81
10,271.0	90.60	268.80	6,771.0	400.7	-3,586.0	3,608.3	0.70	-0.63	0.31
10,303.0	89.70	268.60	6,770.9	400.0	-3,617.9	3,640.0	2.88	-2.81	-0.63
10,334.0	89.80	267.70	6,771.0	399.0	-3,648.9	3,670.7	2.92	0.32	-2.90
10,365.0	89.80	268.20	6,771.1	397.8	-3,679.9	3,701.4	1.61	0.00	1.61
10,398.0	89.40	267.80	6,771.4	396.7	-3,712.9	3,734.0	1.71	-1.21	-1.21
10,429.0	89.70	268.30	6,771.6	395.6	-3,743.9	3,764.7	1.88	0.97	1.61
10,461.0	89.90	268.30	6,771.7	394.7	-3,775.9	3,796.4	0.63	0.63	0.00
10,493.0	89.90	268.10	6,771.8	393.7	-3,807.8	3,828.1	0.63	0.00	-0.63
10,526.0	90.10	268.30	6,771.8	392.7	-3,840.8	3,860.8	0.86	0.61	0.61
10,557.0	90.40	268.10	6,771.7	391.7	-3,871.8	3,891.5	1.16	0.97	-0.65
10,589.0	90.30	268.00	6,771.5	390.6	-3,903.8	3,923.1	0.44	-0.31	-0.31
10,621.0	90.60	268.00	6,771.2	389.5	-3,935.8	3,954.8	0.94	0.94	0.00
10,653.0	90.90	267.80	6,770.8	388.3	-3,967.7	3,986.5	1.13	0.94	-0.63
10,685.0	90.60	268.20	6,770.4	387.2	-3,999.7	4,018.2	1.56	-0.94	1.25
10,717.0	90.10	267.80	6,770.2	386.1	-4,031.7	4,049.8	2.00	-1.56	-1.25
10,749.0	90.60	267.80	6,770.0	384.8	-4,063.7	4,081.5	1.56	1.56	0.00



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Spaur 31V-214
<b>Project:</b>	SEC.31-T7N-R63W	<b>TVD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Spaur NE-31 Pad Sec.31-T7N-R63W	<b>MD Reference:</b>	WELL @ 4773.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Spaur 31V-214	<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)	
10,781.0	90.70	267.40	6,769.6	383.5	-4,095.6	4,113.1	1.29	0.31	-1.25	
10,812.0	90.60	267.70	6,769.3	382.2	-4,126.6	4,143.8	1.02	-0.32	0.97	
10,844.0	91.00	267.90	6,768.8	380.9	-4,158.6	4,175.4	1.40	1.25	0.63	
10,875.0	90.90	267.40	6,768.3	379.7	-4,189.6	4,206.1	1.64	-0.32	-1.61	
10,906.0	90.60	266.60	6,767.9	378.1	-4,220.5	4,236.7	2.76	-0.97	-2.58	
10,938.0	90.10	267.20	6,767.7	376.3	-4,252.5	4,268.3	2.44	-1.56	1.88	
10,970.0	90.50	267.50	6,767.5	374.8	-4,284.4	4,299.9	1.56	1.25	0.94	
11,002.0	90.50	267.30	6,767.3	373.4	-4,316.4	4,331.5	0.62	0.00	-0.63	
11,034.0	90.80	266.70	6,766.9	371.7	-4,348.4	4,363.1	2.10	0.94	-1.88	
11,065.0	91.10	266.80	6,766.4	370.0	-4,379.3	4,393.7	1.02	0.97	0.32	
11,098.0	91.30	267.20	6,765.7	368.2	-4,412.2	4,426.2	1.35	0.61	1.21	
11,149.0	91.30	267.20	6,764.5	365.7	-4,463.2	4,476.6	0.00	0.00	0.00	
BHL 680'FNL, 500'FWL										

Checked By: _____	Approved By: _____	Date: _____
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