

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Green 13-24H**

Surface Location: Green 13-24H Pad Sec.24-T7N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

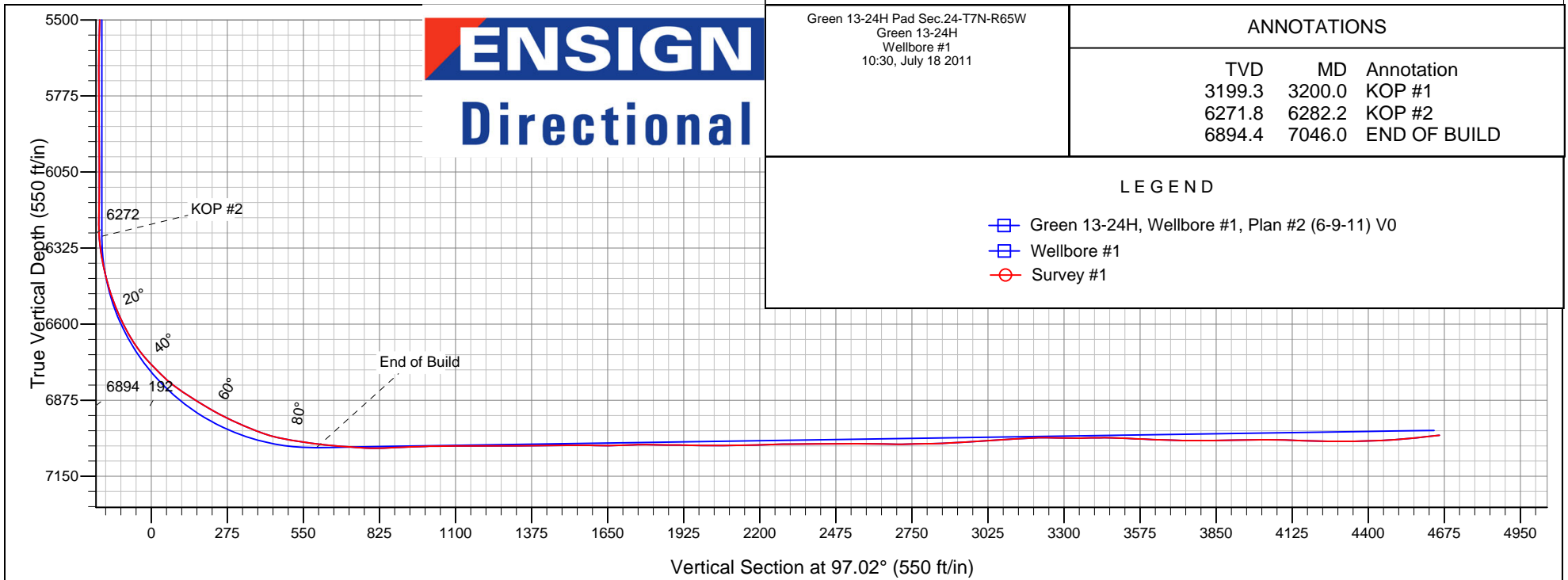
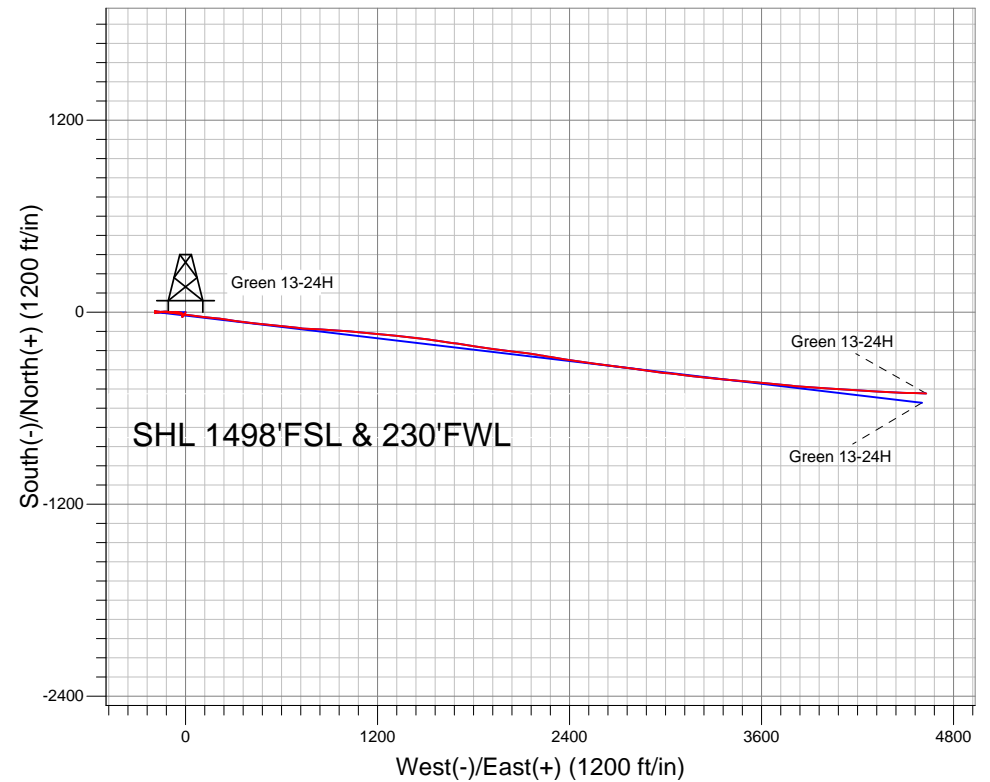
Ground Elevation: 4890.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1446762.63	3244614.03	40.556430	-104.619660	

RKB Ensign 32 - 15' WELL @ 4905.0ft (RKB Ensign 32 - 15')

## FINAL SURVEY

Projected Bottom Hole Location  
11545' MD 7002' TVD 509'S & 4630' E of  
SHL  
96.5 degree Incl @ 92.2 degree AZM



Green 13-24H Pad Sec.24-T7N-R65W  
Green 13-24H  
Wellbore #1  
10:30, July 18 2011

### ANNOTATIONS

TVD	MD	Annotation
3199.3	3200.0	KOP #1
6271.8	6282.2	KOP #2
6894.4	7046.0	END OF BUILD

### LEGEND

Green 13-24H, Wellbore #1, Plan #2 (6-9-11) V0  
Wellbore #1  
Survey #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R65W**

**Green 13-24H Pad Sec.24-T7N-R65W**

**Green 13-24H**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**18 July, 2011**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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.24-T7N-R65W, 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	Green 13-24H Pad Sec.24-T7N-R65W				
Site Position:		Northing:	1,446,762.64 ft	Latitude:	40.556430
From:	Lat/Long	Easting:	3,244,614.03 ft	Longitude:	-104.619660
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.57 °

Well	Green 13-24H					
Well Position	+N-S	0.0 ft	Northing:	1,446,762.63 ft	Latitude:	40.556430
	+E-W	0.0 ft	Easting:	3,244,614.03 ft	Longitude:	-104.619660
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	6/27/2011	8.80	67.20	53,225

<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>	
	6,984.0	0.0	0.0	97.02	

<b>Survey Program</b>	<b>Date</b>	7/18/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
1,129.0	11,545.0	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	
1.0	0.00	205.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00	
<b>HARDLINE BHL 460'FEL</b>										
3.9	0.00	205.00	3.9	0.0	0.0	0.0	0.15	0.15	0.00	
<b>HARDLINE SHL 460'FWL</b>										
1,129.0	1.30	205.00	1,128.9	-11.6	-5.4	-4.0	0.12	0.12	0.00	
1,220.0	1.50	208.90	1,219.9	-13.6	-6.4	-4.7	0.24	0.22	4.29	
1,313.0	1.50	204.70	1,312.8	-15.8	-7.5	-5.5	0.12	0.00	-4.52	
1,406.0	1.50	217.50	1,405.8	-17.8	-8.8	-6.5	0.36	0.00	13.76	
1,499.0	1.80	212.90	1,498.8	-20.0	-10.3	-7.8	0.35	0.32	-4.95	
1,592.0	1.80	222.30	1,591.7	-22.3	-12.1	-9.3	0.32	0.00	10.11	
1,685.0	1.80	222.20	1,684.7	-24.5	-14.0	-10.9	0.00	0.00	-0.11	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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)
1,777.0	1.80	219.80	1,776.6	-26.7	-15.9	-12.6	0.08	0.00	-2.61
1,870.0	1.80	223.00	1,869.6	-28.9	-17.9	-14.2	0.11	0.00	3.44
1,964.0	0.90	236.60	1,963.6	-30.3	-19.5	-15.6	1.01	-0.96	14.47
2,057.0	0.40	71.50	2,056.6	-30.6	-19.8	-15.9	1.39	-0.54	-177.53
2,150.0	0.80	350.80	2,149.6	-29.9	-19.6	-15.8	0.90	0.43	-86.77
2,243.0	1.00	347.80	2,242.5	-28.5	-19.9	-16.2	0.22	0.22	-3.23
2,336.0	1.30	345.40	2,335.5	-26.7	-20.3	-16.9	0.33	0.32	-2.58
2,429.0	1.30	348.10	2,428.5	-24.6	-20.8	-17.6	0.07	0.00	2.90
2,523.0	1.30	1.50	2,522.5	-22.5	-21.0	-18.1	0.32	0.00	14.26
2,616.0	1.20	349.50	2,615.5	-20.5	-21.1	-18.5	0.30	-0.11	-12.90
2,710.0	1.10	0.50	2,709.4	-18.6	-21.3	-18.9	0.26	-0.11	11.70
2,803.0	1.10	6.90	2,802.4	-16.8	-21.2	-19.0	0.13	0.00	6.88
2,895.0	1.20	3.80	2,894.4	-15.0	-21.0	-19.0	0.13	0.11	-3.37
2,989.0	1.10	13.80	2,988.4	-13.1	-20.7	-19.0	0.24	-0.11	10.64
3,082.0	1.20	10.90	3,081.4	-11.3	-20.3	-18.8	0.12	0.11	-3.12
3,175.0	2.40	337.90	3,174.3	-8.6	-20.9	-19.7	1.66	1.29	-35.48
3,200.0	2.85	320.30	3,199.3	-7.6	-21.5	-20.4	3.67	1.80	-70.40
<b>KOP #1</b>									
3,268.0	4.80	296.00	3,267.1	-5.0	-25.1	-24.3	3.67	2.87	-35.73
3,362.0	5.90	283.00	3,360.7	-2.2	-33.4	-32.8	1.73	1.17	-13.83
3,455.0	7.00	278.30	3,453.1	-0.3	-43.6	-43.3	1.31	1.18	-5.05
3,549.0	7.10	274.90	3,546.4	1.0	-55.1	-54.8	0.46	0.11	-3.62
3,641.0	6.90	265.40	3,637.8	1.0	-66.3	-65.9	1.28	-0.22	-10.33
3,734.0	7.80	263.50	3,730.0	-0.1	-78.1	-77.5	1.00	0.97	-2.04
3,827.0	6.40	266.80	3,822.3	-1.1	-89.5	-88.7	1.57	-1.51	3.55
3,920.0	6.40	275.30	3,914.7	-0.9	-99.9	-99.0	1.02	0.00	9.14
4,013.0	8.00	285.40	4,007.0	1.3	-111.3	-110.6	2.19	1.72	10.86
4,106.0	9.10	272.00	4,098.9	3.2	-124.9	-124.3	2.44	1.18	-14.41
4,200.0	8.30	263.40	4,191.9	2.7	-139.0	-138.3	1.62	-0.85	-9.15
4,293.0	7.00	255.90	4,284.0	0.6	-151.2	-150.1	1.76	-1.40	-8.06
4,387.0	5.50	256.40	4,377.5	-1.9	-161.1	-159.7	1.60	-1.60	0.53
4,480.0	4.40	263.30	4,470.1	-3.4	-169.0	-167.3	1.34	-1.18	7.42
4,573.0	2.20	272.30	4,563.0	-3.7	-174.3	-172.6	2.42	-2.37	9.68
4,666.0	1.70	272.60	4,655.9	-3.6	-177.5	-175.7	0.54	-0.54	0.32
4,759.0	2.10	280.50	4,748.9	-3.2	-180.6	-178.8	0.51	0.43	8.49
4,852.0	2.10	289.40	4,841.8	-2.3	-183.8	-182.2	0.35	0.00	9.57
4,945.0	0.30	314.40	4,934.8	-1.6	-185.6	-184.0	1.97	-1.94	26.88
5,038.0	0.20	164.20	5,027.8	-1.6	-185.8	-184.2	0.52	-0.11	-161.51
5,130.0	0.30	195.00	5,119.8	-2.0	-185.8	-184.1	0.18	0.11	33.48
5,224.0	0.50	225.90	5,213.8	-2.5	-186.1	-184.4	0.31	0.21	32.87
5,317.0	0.70	215.50	5,306.8	-3.2	-186.8	-185.0	0.24	0.22	-11.18
5,410.0	0.80	212.20	5,399.8	-4.2	-187.4	-185.5	0.12	0.11	-3.55
5,503.0	1.30	238.70	5,492.7	-5.3	-188.7	-186.6	0.74	0.54	28.49
5,597.0	1.50	273.10	5,586.7	-5.8	-190.8	-188.7	0.90	0.21	36.60
5,689.0	1.50	18.00	5,678.7	-4.6	-191.6	-189.6	2.59	0.00	114.02
5,783.0	1.60	14.40	5,772.7	-2.2	-190.9	-189.2	0.15	0.11	-3.83
5,876.0	1.10	34.00	5,865.6	-0.2	-190.1	-188.7	0.72	-0.54	21.08
5,970.0	1.10	26.70	5,959.6	1.4	-189.2	-188.0	0.15	0.00	-7.77
6,063.0	0.90	358.20	6,052.6	2.9	-188.8	-187.8	0.57	-0.22	-30.65
6,158.0	1.00	336.00	6,147.6	4.4	-189.2	-188.3	0.40	0.11	-23.37
6,189.0	1.10	323.20	6,178.6	4.9	-189.5	-188.7	0.82	0.32	-41.29
6,220.0	1.40	302.30	6,209.6	5.3	-190.0	-189.2	1.74	0.97	-67.42
6,251.0	1.10	2.20	6,240.6	5.8	-190.3	-189.6	4.11	-0.97	193.23

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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)
6,282.0	3.10	81.90	6,271.6	6.2	-189.4	-188.8	9.99	6.45	257.10
6,282.2	3.10	81.90	6,271.8	6.2	-189.4	-188.8	0.00	0.00	0.00
<b>KOP #2</b>									
6,313.0	5.50	98.60	6,302.5	6.1	-187.1	-186.5	8.71	7.79	54.22
6,345.0	8.10	103.40	6,334.2	5.4	-183.4	-182.7	8.31	8.13	15.00
6,376.0	10.20	103.00	6,364.8	4.3	-178.6	-177.8	6.78	6.77	-1.29
6,407.0	11.90	100.00	6,395.3	3.1	-172.8	-171.9	5.79	5.48	-9.68
6,438.0	14.00	97.90	6,425.5	2.0	-165.9	-164.9	6.94	6.77	-6.77
6,469.0	16.10	93.60	6,455.4	1.2	-157.9	-156.9	7.67	6.77	-13.87
6,500.0	17.90	95.70	6,485.1	0.5	-148.9	-147.9	6.13	5.81	6.77
6,532.0	19.90	92.90	6,515.3	-0.3	-138.6	-137.5	6.86	6.25	-8.75
6,563.0	22.50	91.50	6,544.2	-0.7	-127.4	-126.3	8.54	8.39	-4.52
6,594.0	24.50	92.60	6,572.7	-1.1	-115.0	-114.0	6.60	6.45	3.55
6,625.0	26.50	97.10	6,600.6	-2.3	-101.7	-100.7	8.98	6.45	14.52
6,656.0	28.90	98.60	6,628.1	-4.3	-87.5	-86.3	8.06	7.74	4.84
6,687.0	31.60	97.90	6,654.9	-6.5	-72.0	-70.7	8.78	8.71	-2.26
6,718.0	34.70	98.20	6,680.8	-8.9	-55.2	-53.7	10.01	10.00	0.97
6,749.0	38.40	97.20	6,705.7	-11.3	-36.9	-35.3	12.09	11.94	-3.23
6,780.0	42.20	97.70	6,729.4	-13.9	-17.1	-15.2	12.30	12.26	1.61
6,811.0	43.90	99.30	6,752.0	-17.1	3.9	5.9	6.52	5.48	5.16
6,842.0	44.70	97.90	6,774.2	-20.3	25.3	27.6	4.08	2.58	-4.52
6,873.0	47.50	97.40	6,795.7	-23.3	47.4	49.9	9.11	9.03	-1.61
6,904.0	51.30	96.60	6,815.9	-26.1	70.8	73.4	12.41	12.26	-2.58
6,935.0	54.90	95.10	6,834.5	-28.7	95.4	98.2	12.24	11.61	-4.84
6,966.0	56.70	95.40	6,851.9	-31.0	121.0	123.8	5.86	5.81	0.97
6,997.0	57.70	95.60	6,868.7	-33.5	146.9	149.9	3.27	3.23	0.65
7,028.0	58.40	96.40	6,885.1	-36.3	173.1	176.2	3.15	2.26	2.58
7,046.0	59.04	96.63	6,894.4	-38.0	188.3	191.6	3.72	3.55	1.30
<b>END OF BUILD</b>									
7,059.0	59.50	96.80	6,901.1	-39.3	199.4	202.7	3.72	3.55	1.28
7,090.0	61.00	97.90	6,916.5	-42.8	226.1	229.7	5.74	4.84	3.55
7,121.0	62.50	99.10	6,931.1	-46.8	253.1	257.0	5.92	4.84	3.87
7,152.0	65.30	97.70	6,944.8	-50.9	280.7	284.8	9.90	9.03	-4.52
7,183.0	65.60	98.40	6,957.6	-54.8	308.6	313.0	2.27	0.97	2.26
7,214.0	66.80	97.90	6,970.2	-58.8	336.7	341.3	4.14	3.87	-1.61
7,245.0	68.30	97.90	6,982.0	-62.8	365.0	370.0	4.84	4.84	0.00
7,276.0	70.30	97.30	6,993.0	-66.6	393.8	399.0	6.70	6.45	-1.94
7,307.0	73.10	96.40	7,002.7	-70.1	423.0	428.4	9.44	9.03	-2.90
7,339.0	77.60	94.60	7,010.8	-73.1	453.8	459.3	15.08	14.06	-5.63
7,370.0	80.50	94.80	7,016.7	-75.6	484.1	489.7	9.38	9.35	0.65
7,401.0	80.50	95.00	7,021.8	-78.2	514.6	520.3	0.64	0.00	0.65
7,432.0	81.10	96.40	7,026.7	-81.2	545.1	550.9	4.86	1.94	4.52
7,462.0	82.80	97.10	7,030.9	-84.7	574.5	580.6	6.12	5.67	2.33
7,494.0	83.30	97.00	7,034.8	-88.6	606.1	612.4	1.59	1.56	-0.31
7,525.0	85.00	96.70	7,038.0	-92.3	636.7	643.2	5.57	5.48	-0.97
7,571.0	85.40	95.70	7,041.8	-97.2	682.3	689.0	2.33	0.87	-2.17
7,603.0	85.50	95.60	7,044.4	-100.4	714.0	720.9	0.44	0.31	-0.31
7,634.0	86.30	94.60	7,046.6	-103.1	744.8	751.8	4.12	2.58	-3.23
7,666.0	88.40	94.00	7,048.1	-105.5	776.7	783.8	6.82	6.56	-1.88
7,698.0	90.40	93.20	7,048.4	-107.5	808.6	815.7	6.73	6.25	-2.50
7,730.0	92.00	92.80	7,047.7	-109.2	840.6	847.6	5.15	5.00	-1.25
7,762.0	93.10	92.10	7,046.3	-110.6	872.5	879.5	4.07	3.44	-2.19
7,794.0	92.70	92.50	7,044.7	-111.8	904.4	911.3	1.77	-1.25	1.25

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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)
7,825.0	92.00	92.60	7,043.4	-113.2	935.4	942.2	2.28	-2.26	0.32
7,857.0	91.80	94.20	7,042.3	-115.1	967.3	974.1	5.04	-0.63	5.00
7,889.0	90.80	95.10	7,041.6	-117.7	999.2	1,006.1	4.20	-3.13	2.81
7,921.0	90.70	95.80	7,041.2	-120.8	1,031.0	1,038.1	2.21	-0.31	2.19
7,953.0	90.90	96.50	7,040.8	-124.2	1,062.8	1,070.1	2.27	0.63	2.19
7,985.0	90.00	96.20	7,040.5	-127.7	1,094.7	1,102.1	2.96	-2.81	-0.94
8,017.0	90.40	95.70	7,040.4	-131.0	1,126.5	1,134.0	2.00	1.25	-1.56
8,049.0	89.30	95.00	7,040.5	-134.0	1,158.3	1,166.0	4.07	-3.44	-2.19
8,080.0	90.30	94.90	7,040.6	-136.7	1,189.2	1,197.0	3.24	3.23	-0.32
8,112.0	90.90	94.90	7,040.2	-139.4	1,221.1	1,229.0	1.88	1.88	0.00
8,144.0	91.20	94.30	7,039.7	-142.0	1,253.0	1,261.0	2.10	0.94	-1.88
8,176.0	90.60	95.00	7,039.2	-144.6	1,284.9	1,292.9	2.88	-1.88	2.19
8,208.0	90.00	95.60	7,039.0	-147.5	1,316.7	1,324.9	2.65	-1.88	1.88
8,240.0	89.60	96.30	7,039.1	-150.9	1,348.6	1,356.9	2.52	-1.25	2.19
8,272.0	89.90	97.20	7,039.2	-154.6	1,380.4	1,388.9	2.96	0.94	2.81
8,304.0	90.50	96.80	7,039.1	-158.5	1,412.1	1,420.9	2.25	1.88	-1.25
8,336.0	90.60	96.30	7,038.8	-162.2	1,443.9	1,452.9	1.59	0.31	-1.56
8,368.0	90.70	96.80	7,038.5	-165.8	1,475.7	1,484.9	1.59	0.31	1.56
8,399.0	90.50	96.90	7,038.1	-169.5	1,506.5	1,515.9	0.72	-0.65	0.32
8,431.0	90.00	98.30	7,038.0	-173.8	1,538.2	1,547.9	4.65	-1.56	4.38
8,463.0	89.00	98.70	7,038.3	-178.5	1,569.8	1,579.9	3.37	-3.13	1.25
8,496.0	89.20	98.70	7,038.8	-183.5	1,602.4	1,612.9	0.61	0.61	0.00
8,528.0	90.30	98.60	7,038.9	-188.3	1,634.1	1,644.8	3.45	3.44	-0.31
8,561.0	91.30	98.10	7,038.5	-193.1	1,666.7	1,677.8	3.39	3.03	-1.52
8,593.0	92.20	97.70	7,037.5	-197.5	1,698.4	1,709.8	3.08	2.81	-1.25
8,624.0	91.70	97.80	7,036.4	-201.6	1,729.1	1,740.8	1.64	-1.61	0.32
8,656.0	90.80	99.30	7,035.7	-206.4	1,760.7	1,772.8	5.47	-2.81	4.69
8,688.0	89.40	99.70	7,035.7	-211.7	1,792.3	1,804.7	4.55	-4.38	1.25
8,720.0	88.80	98.90	7,036.2	-216.9	1,823.9	1,836.7	3.12	-1.88	-2.50
8,752.0	89.30	98.20	7,036.7	-221.6	1,855.5	1,868.7	2.69	1.56	-2.19
8,784.0	89.70	98.70	7,037.0	-226.3	1,887.2	1,900.7	2.00	1.25	1.56
8,816.0	87.90	96.90	7,037.7	-230.7	1,918.9	1,932.7	7.95	-5.63	-5.63
8,849.0	89.20	97.20	7,038.5	-234.7	1,951.6	1,965.7	4.04	3.94	0.91
8,880.0	89.70	97.20	7,038.8	-238.6	1,982.4	1,996.7	1.61	1.61	0.00
8,912.0	89.80	97.20	7,038.9	-242.6	2,014.1	2,028.7	0.31	0.31	0.00
8,944.0	90.70	96.90	7,038.8	-246.5	2,045.9	2,060.7	2.96	2.81	-0.94
8,976.0	90.00	96.80	7,038.6	-250.3	2,077.6	2,092.7	2.21	-2.19	-0.31
9,008.0	90.90	97.10	7,038.4	-254.2	2,109.4	2,124.7	2.96	2.81	0.94
9,040.0	91.30	98.40	7,037.7	-258.5	2,141.1	2,156.6	4.25	1.25	4.06
9,071.0	91.70	98.80	7,036.9	-263.2	2,171.7	2,187.6	1.82	1.29	1.29
9,103.0	91.50	98.60	7,036.0	-268.0	2,203.4	2,219.6	0.88	-0.63	-0.63
9,135.0	92.60	100.30	7,034.9	-273.3	2,234.9	2,251.5	6.32	3.44	5.31
9,167.0	91.00	100.10	7,033.9	-278.9	2,266.4	2,283.5	5.04	-5.00	-0.63
9,199.0	89.80	98.70	7,033.7	-284.1	2,298.0	2,315.5	5.76	-3.75	-4.38
9,231.0	89.70	98.60	7,033.8	-289.0	2,329.6	2,347.4	0.44	-0.31	-0.31
9,263.0	90.60	99.00	7,033.7	-293.9	2,361.2	2,379.4	3.08	2.81	1.25
9,295.0	90.90	98.20	7,033.3	-298.6	2,392.8	2,411.4	2.67	0.94	-2.50
9,327.0	91.20	99.00	7,032.7	-303.4	2,424.5	2,443.4	2.67	0.94	2.50
9,359.0	90.70	98.30	7,032.2	-308.2	2,456.1	2,475.4	2.69	-1.56	-2.19
9,391.0	89.50	97.90	7,032.1	-312.7	2,487.8	2,507.4	3.95	-3.75	-1.25
9,423.0	89.10	97.90	7,032.5	-317.1	2,519.5	2,539.4	1.25	-1.25	0.00
9,454.0	89.50	97.80	7,032.9	-321.4	2,550.2	2,570.4	1.33	1.29	-0.32
9,486.0	89.80	97.60	7,033.1	-325.7	2,581.9	2,602.4	1.13	0.94	-0.63

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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)
9,518.0	89.60	97.50	7,033.3	-329.9	2,613.6	2,634.3	0.70	-0.63	-0.31
9,550.0	89.10	97.20	7,033.6	-334.0	2,645.4	2,666.3	1.82	-1.56	-0.94
9,582.0	89.50	97.10	7,034.0	-337.9	2,677.1	2,698.3	1.29	1.25	-0.31
9,614.0	90.80	97.20	7,033.9	-341.9	2,708.9	2,730.3	4.07	4.06	0.31
9,645.0	91.20	97.80	7,033.4	-346.0	2,739.6	2,761.3	2.33	1.29	1.94
9,677.0	91.30	97.90	7,032.7	-350.3	2,771.3	2,793.3	0.44	0.31	0.31
9,709.0	91.90	97.80	7,031.8	-354.7	2,803.0	2,825.3	1.90	1.88	-0.31
9,741.0	92.00	98.00	7,030.7	-359.1	2,834.6	2,857.3	0.70	0.31	0.63
9,772.0	92.70	97.60	7,029.4	-363.3	2,865.3	2,888.3	2.60	2.26	-1.29
9,804.0	93.10	97.70	7,027.8	-367.6	2,897.0	2,920.2	1.29	1.25	0.31
9,836.0	93.80	97.80	7,025.9	-371.9	2,928.7	2,952.2	2.21	2.19	0.31
9,868.0	94.00	97.90	7,023.7	-376.2	2,960.3	2,984.1	0.70	0.63	0.31
9,899.0	93.80	96.40	7,021.6	-380.1	2,991.0	3,015.0	4.87	-0.65	-4.84
9,931.0	93.20	95.90	7,019.7	-383.5	3,022.7	3,046.9	2.44	-1.88	-1.56
9,963.0	93.50	95.70	7,017.8	-386.7	3,054.5	3,078.9	1.13	0.94	-0.63
9,995.0	93.20	97.20	7,015.9	-390.3	3,086.3	3,110.8	4.77	-0.94	4.69
10,027.0	94.10	97.10	7,013.9	-394.3	3,117.9	3,142.8	2.83	2.81	-0.31
10,059.0	93.20	97.20	7,011.8	-398.3	3,149.6	3,174.7	2.83	-2.81	0.31
10,091.0	91.00	97.60	7,010.7	-402.4	3,181.3	3,206.7	6.99	-6.88	1.25
10,122.0	89.40	95.50	7,010.6	-405.9	3,212.1	3,237.7	8.52	-5.16	-6.77
10,154.0	88.90	95.20	7,011.0	-408.9	3,244.0	3,269.6	1.82	-1.56	-0.94
10,186.0	89.30	95.60	7,011.5	-411.9	3,275.8	3,301.6	1.77	1.25	1.25
10,218.0	89.80	95.20	7,011.8	-414.9	3,307.7	3,333.6	2.00	1.56	-1.25
10,250.0	90.40	95.60	7,011.7	-417.9	3,339.6	3,365.6	2.25	1.88	1.25
10,282.0	91.10	95.50	7,011.3	-421.0	3,371.4	3,397.6	2.21	2.19	-0.31
10,314.0	90.50	95.50	7,010.9	-424.1	3,403.3	3,429.6	1.88	-1.88	0.00
10,346.0	89.30	95.10	7,010.9	-427.1	3,435.1	3,461.6	3.95	-3.75	-1.25
10,378.0	88.10	95.00	7,011.6	-429.9	3,467.0	3,493.5	3.76	-3.75	-0.31
10,410.0	87.40	95.30	7,012.9	-432.7	3,498.8	3,525.5	2.38	-2.19	0.94
10,442.0	87.50	95.20	7,014.3	-435.7	3,530.7	3,557.4	0.44	0.31	-0.31
10,473.0	87.40	95.90	7,015.7	-438.7	3,561.5	3,588.4	2.28	-0.32	2.26
10,505.0	87.60	95.30	7,017.1	-441.8	3,593.3	3,620.4	1.97	0.63	-1.88
10,537.0	87.60	95.80	7,018.4	-444.9	3,625.1	3,652.3	1.56	0.00	1.56
10,569.0	88.70	95.30	7,019.5	-448.0	3,657.0	3,684.3	3.78	3.44	-1.56
10,601.0	89.00	95.20	7,020.1	-450.9	3,688.8	3,716.3	0.99	0.94	-0.31
10,633.0	89.30	95.10	7,020.6	-453.8	3,720.7	3,748.3	0.99	0.94	-0.31
10,664.0	89.70	95.50	7,020.9	-456.6	3,751.6	3,779.2	1.82	1.29	1.29
10,696.0	89.80	95.80	7,021.0	-459.8	3,783.4	3,811.2	0.99	0.31	0.94
10,728.0	90.50	95.80	7,020.9	-463.0	3,815.2	3,843.2	2.19	2.19	0.00
10,760.0	91.10	95.40	7,020.5	-466.1	3,847.1	3,875.2	2.25	1.88	-1.25
10,793.0	91.80	94.20	7,019.6	-468.9	3,879.9	3,908.2	4.21	2.12	-3.64
10,824.0	90.90	92.90	7,018.9	-470.8	3,910.9	3,939.1	5.10	-2.90	-4.19
10,857.0	90.70	93.10	7,018.4	-472.5	3,943.8	3,972.0	0.86	-0.61	0.61
10,889.0	90.60	93.90	7,018.1	-474.5	3,975.8	4,004.0	2.52	-0.31	2.50
10,921.0	90.00	94.00	7,017.9	-476.7	4,007.7	4,035.9	1.90	-1.88	0.31
10,952.0	88.70	94.10	7,018.3	-478.9	4,038.6	4,066.9	4.21	-4.19	0.32
10,984.0	88.90	93.90	7,018.9	-481.1	4,070.5	4,098.8	0.88	0.63	-0.63
11,016.0	87.60	92.20	7,019.9	-482.8	4,102.5	4,130.7	6.69	-4.06	-5.31
11,047.0	87.60	93.50	7,021.2	-484.4	4,133.4	4,161.6	4.19	0.00	4.19
11,079.0	88.30	93.70	7,022.4	-486.4	4,165.3	4,193.5	2.27	2.19	0.63
11,111.0	88.90	93.90	7,023.1	-488.5	4,197.2	4,225.5	1.98	1.88	0.63
11,143.0	89.60	94.00	7,023.6	-490.7	4,229.2	4,257.4	2.21	2.19	0.31
11,175.0	89.90	94.10	7,023.7	-493.0	4,261.1	4,289.4	0.99	0.94	0.31
11,207.0	90.50	93.70	7,023.6	-495.1	4,293.0	4,321.3	2.25	1.88	-1.25



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Green 13-24H
<b>Project:</b>	SEC.24-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Green 13-24H Pad Sec.24-T7N-R65W	<b>MD Reference:</b>	WELL @ 4905.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Green 13-24H	<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)
11,238.0	91.10	93.20	7,023.2	-497.0	4,323.9	4,352.3	2.52	1.94	-1.61
11,270.0	91.40	92.80	7,022.5	-498.7	4,355.9	4,384.2	1.56	0.94	-1.25
11,302.0	92.00	92.80	7,021.5	-500.2	4,387.8	4,416.1	1.88	1.88	0.00
11,334.0	92.50	92.10	7,020.3	-501.6	4,419.8	4,448.0	2.69	1.56	-2.19
11,366.0	93.20	91.80	7,018.7	-502.7	4,451.7	4,479.8	2.38	2.19	-0.94
11,398.0	94.30	92.00	7,016.6	-503.7	4,483.6	4,511.6	3.49	3.44	0.63
11,430.0	95.20	92.10	7,013.9	-504.9	4,515.5	4,543.4	2.83	2.81	0.31
11,461.0	95.80	92.20	7,010.9	-506.0	4,546.3	4,574.1	1.96	1.94	0.32
11,493.0	96.50	92.20	7,007.5	-507.3	4,578.1	4,605.8	2.19	2.19	0.00
11,522.8	96.50	92.20	7,004.1	-508.4	4,607.7	4,635.3	0.00	0.00	0.00
<b>BHL 1314'FSL, 501'FEL</b>									
11,545.0	96.50	92.20	7,001.6	-509.3	4,629.8	4,657.3	0.00	0.00	0.00

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,200.0	3,199.3	-7.6	-21.5	KOP #1
6,282.2	6,271.8	6.2	-189.4	KOP #2
7,046.0	6,894.4	-38.0	188.3	END OF BUILD

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