

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Brown 2G-212**

Surface Location: Brown Pad Sec.2-T6N-R63W

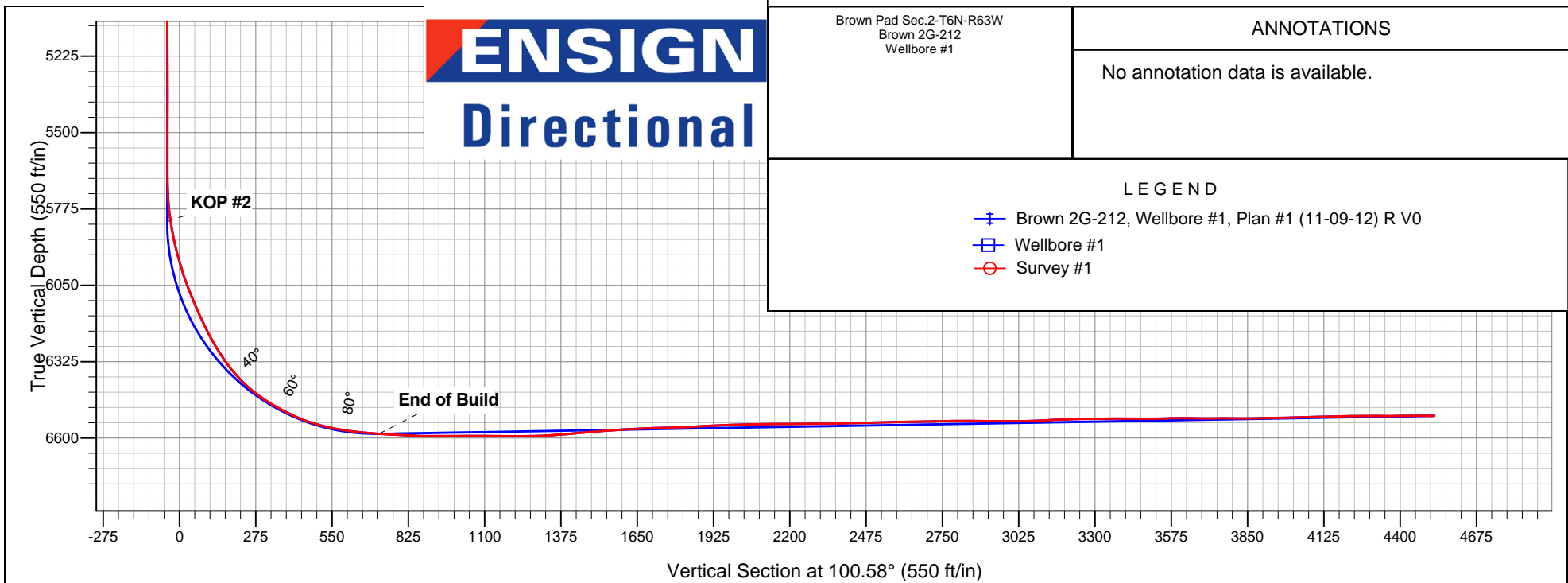
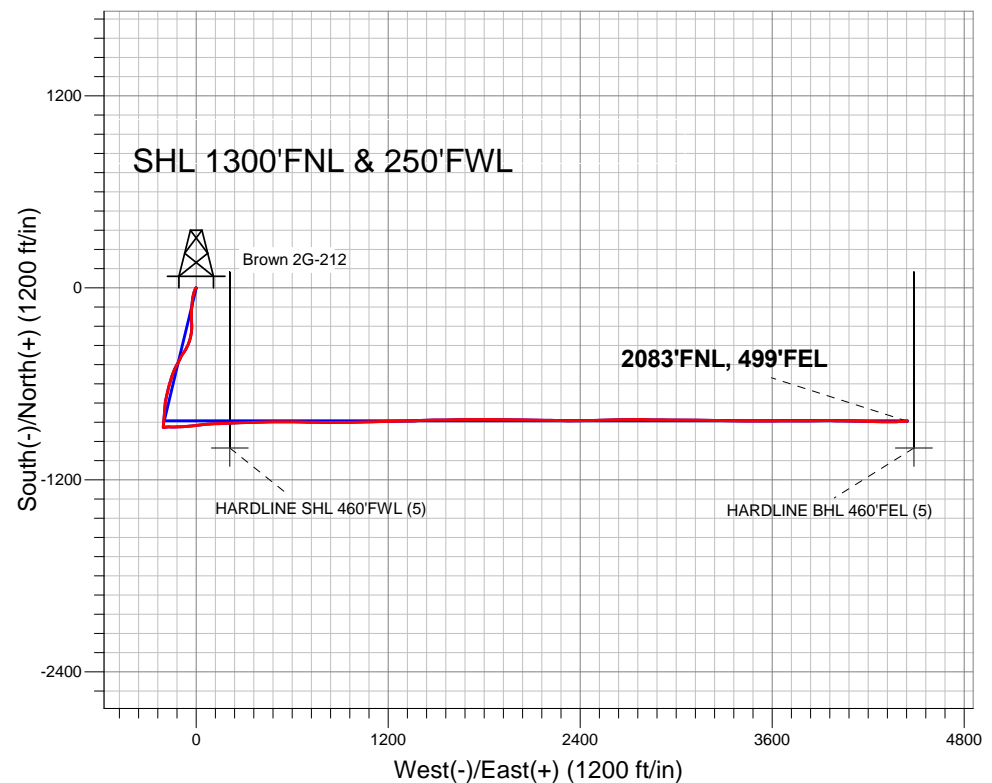
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4710.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1433902.18	3302430.86	40.519370	-104.412170	
RKB Ensign 32 - 15' WELL @ 4725.0ft (RKB Ensign 32 - 15')						

## FINAL SURVEY

Projected Bottom Hole Location  
10,992' MD 6520' TVD 834'S & 4445'E  
of SHL  
89.8 degree Incl @ 88.5 degree AZM



Brown Pad Sec.2-T6N-R63W  
Brown 2G-212  
Wellbore #1

### ANNOTATIONS

No annotation data is available.

### LEGEND

- +— Brown 2G-212, Wellbore #1, Plan #1 (11-09-12) R V0
- Wellbore #1
- Survey #1



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T6N-R63W**

**Brown Pad Sec.2-T6N-R63W**

**Brown 2G-212**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**26 November, 2012**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2G-212
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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.2-T6N-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		Brown Pad Sec.2-T6N-R63W			
Site Position:		Northing:	1,433,964.08 ft	Latitude:	40.519540
From:	Lat/Long	Easting:	3,302,427.32 ft	Longitude:	-104.412180
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.70 °

Well	Brown 2G-212					
Well Position	+N-S	0.0 ft	Northing:	1,433,902.18 ft	Latitude:	40.519370
	+E-W	0.0 ft	Easting:	3,302,430.86 ft	Longitude:	-104.412170
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,710.0 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	11/9/2012	8.49	67.16	53,084

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	100.58	

<b>Survey Program</b>	<b>Date</b>	11/26/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
127.0	10,992.0	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	
0.8	0.00	253.70	0.8	0.0	0.0	0.0	0.47	0.47	0.00	
<b>HARDLINE BHL 460'FEL (5)</b>										
1.4	0.01	253.70	1.4	0.0	0.0	0.0	0.47	0.47	0.00	
<b>HARDLINE SHL 460'FWL (5)</b>										
3.8	0.02	253.70	3.8	0.0	0.0	0.0	0.47	0.47	0.00	
<b>SECTIONLINE 250'W OF SHL (5)</b>										
127.0	0.60	253.70	127.0	-0.2	-0.6	-0.6	0.47	0.47	0.00	
216.0	1.30	232.70	216.0	-0.9	-1.9	-1.7	0.87	0.79	-23.60	
305.0	2.60	222.10	304.9	-3.0	-4.0	-3.4	1.51	1.46	-11.91	
399.0	3.50	201.70	398.8	-7.3	-6.5	-5.1	1.49	0.96	-21.70	
491.0	3.70	200.00	490.6	-12.7	-8.6	-6.1	0.25	0.22	-1.85	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2G-212
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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)
584.0	6.50	201.40	583.2	-20.4	-11.5	-7.6	3.01	3.01	1.51
677.0	8.80	194.50	675.4	-32.2	-15.2	-9.1	2.66	2.47	-7.42
770.0	10.10	192.40	767.1	-47.1	-18.8	-9.8	1.45	1.40	-2.26
887.0	12.80	187.80	881.8	-69.9	-22.7	-9.5	2.43	2.31	-3.93
958.0	13.40	187.10	951.0	-85.9	-24.8	-8.6	0.87	0.85	-0.99
1,081.0	14.50	184.70	1,070.3	-115.4	-27.8	-6.2	1.01	0.89	-1.95
1,205.0	16.30	182.40	1,189.9	-148.2	-29.8	-2.1	1.53	1.45	-1.85
1,327.0	15.20	178.70	1,307.3	-181.3	-30.2	3.6	1.22	-0.90	-3.03
1,449.0	16.70	175.50	1,424.6	-214.8	-28.5	11.5	1.42	1.23	-2.62
1,571.0	15.40	181.50	1,541.8	-248.5	-27.5	18.6	1.73	-1.07	4.92
1,693.0	11.80	191.90	1,660.4	-276.9	-30.5	20.8	3.56	-2.95	8.52
1,816.0	9.10	191.00	1,781.4	-298.7	-35.0	20.5	2.20	-2.20	-0.73
1,943.0	9.20	189.80	1,906.8	-318.6	-38.6	20.5	0.17	0.08	-0.94
2,070.0	7.90	197.00	2,032.3	-336.9	-42.9	19.7	1.32	-1.02	5.67
2,165.0	7.60	204.40	2,126.5	-348.9	-47.4	17.5	1.10	-0.32	7.79
2,260.0	8.80	208.70	2,220.5	-361.0	-53.5	13.7	1.42	1.26	4.53
2,356.0	8.80	212.10	2,315.4	-373.7	-60.9	8.7	0.54	0.00	3.54
2,451.0	8.80	212.80	2,409.3	-385.9	-68.7	3.3	0.11	0.00	0.74
2,544.0	9.80	211.90	2,501.0	-398.6	-76.7	-2.3	1.09	1.08	-0.97
2,642.0	10.60	210.30	2,597.5	-413.5	-85.7	-8.3	0.87	0.82	-1.63
2,737.0	11.30	208.70	2,690.8	-429.2	-94.6	-14.2	0.80	0.74	-1.68
2,832.0	12.40	206.50	2,783.7	-446.5	-103.6	-19.9	1.25	1.16	-2.32
2,960.0	13.80	207.50	2,908.4	-472.3	-116.8	-28.1	1.11	1.09	0.78
3,086.0	14.90	206.80	3,030.5	-500.1	-131.0	-37.0	0.88	0.87	-0.56
3,181.0	15.20	202.10	3,122.2	-522.6	-141.2	-42.9	1.32	0.32	-4.95
3,308.0	14.60	197.80	3,244.9	-553.2	-152.4	-48.2	0.99	-0.47	-3.39
3,435.0	13.10	195.70	3,368.3	-582.3	-161.2	-51.5	1.25	-1.18	-1.65
3,562.0	11.60	195.00	3,492.3	-608.5	-168.3	-53.8	1.19	-1.18	-0.55
3,689.0	14.80	196.40	3,615.9	-636.4	-176.2	-56.4	2.53	2.52	1.10
3,816.0	19.00	192.70	3,737.4	-672.2	-185.4	-58.8	3.41	3.31	-2.91
3,942.0	21.50	187.30	3,855.6	-715.1	-192.8	-58.3	2.48	1.98	-4.29
4,069.0	17.90	183.80	3,975.2	-757.7	-197.1	-54.6	2.98	-2.83	-2.76
4,196.0	13.70	182.90	4,097.4	-792.2	-199.1	-50.3	3.31	-3.31	-0.71
4,323.0	9.50	188.00	4,221.7	-817.6	-201.3	-47.8	3.40	-3.31	4.02
4,450.0	7.50	188.20	4,347.3	-836.2	-204.0	-47.0	1.57	-1.57	0.16
4,577.0	4.70	187.50	4,473.6	-849.5	-205.8	-46.4	2.21	-2.20	-0.55
4,704.0	2.10	170.60	4,600.4	-857.0	-206.1	-45.3	2.17	-2.05	-13.31
4,832.0	1.00	191.30	4,728.3	-860.4	-206.0	-44.5	0.95	-0.86	16.17
4,959.0	1.00	184.50	4,855.3	-862.6	-206.3	-44.4	0.09	0.00	-5.35
5,086.0	1.10	179.40	4,982.3	-864.9	-206.4	-44.1	0.11	0.08	-4.02
5,213.0	0.80	183.30	5,109.3	-867.0	-206.4	-43.7	0.24	-0.24	3.07
5,339.0	0.70	160.10	5,235.3	-868.6	-206.2	-43.2	0.25	-0.08	-18.41
5,466.0	0.50	202.60	5,362.3	-869.9	-206.1	-42.9	0.37	-0.16	33.46
5,594.0	0.60	213.70	5,490.3	-870.9	-206.7	-43.3	0.11	0.08	8.67
5,752.0	0.40	126.10	5,648.3	-871.9	-206.7	-43.2	0.45	-0.13	-55.44
5,784.0	0.20	125.00	5,680.3	-872.0	-206.6	-43.0	0.63	-0.63	-3.44
5,816.0	1.90	99.90	5,712.2	-872.2	-206.0	-42.4	5.38	5.31	-78.44
5,848.0	4.10	90.80	5,744.2	-872.3	-204.4	-40.8	7.01	6.88	-28.44
5,879.0	6.80	82.80	5,775.1	-872.1	-201.4	-37.9	9.03	8.71	-25.81
5,911.0	8.90	78.50	5,806.8	-871.3	-197.1	-33.8	6.81	6.56	-13.44
5,943.0	10.10	79.20	5,838.3	-870.3	-191.9	-28.9	3.77	3.75	2.19
5,974.0	11.20	83.70	5,868.8	-869.5	-186.3	-23.5	4.45	3.55	14.52
6,005.0	13.10	86.50	5,899.1	-868.9	-179.8	-17.2	6.42	6.13	9.03

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<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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)
6,037.0	15.10	89.20	5,930.1	-868.6	-172.0	-9.6	6.58	6.25	8.44
6,069.0	16.40	92.50	5,960.9	-868.8	-163.3	-1.0	4.93	4.06	10.31
6,102.0	17.10	92.70	5,992.5	-869.2	-153.8	8.4	2.13	2.12	0.61
6,133.0	19.00	88.60	6,022.0	-869.3	-144.2	17.8	7.37	6.13	-13.23
6,165.0	21.00	87.20	6,052.1	-868.9	-133.3	28.5	6.43	6.25	-4.38
6,197.0	22.90	88.30	6,081.7	-868.4	-121.3	40.2	6.07	5.94	3.44
6,229.0	23.40	90.80	6,111.2	-868.3	-108.7	52.5	3.45	1.56	7.81
6,260.0	24.40	87.80	6,139.5	-868.2	-96.2	64.8	5.08	3.23	-9.68
6,292.0	25.20	85.10	6,168.6	-867.3	-82.8	77.8	4.33	2.50	-8.44
6,324.0	26.10	84.60	6,197.4	-866.1	-69.0	91.2	2.89	2.81	-1.56
6,356.0	28.90	84.40	6,225.8	-864.7	-54.3	105.4	8.75	8.75	-0.63
6,388.0	31.50	84.10	6,253.4	-863.1	-38.3	120.8	8.14	8.13	-0.94
6,420.0	33.20	83.90	6,280.5	-861.3	-21.3	137.2	5.32	5.31	-0.63
6,451.0	34.20	83.50	6,306.3	-859.4	-4.2	153.7	3.30	3.23	-1.29
6,483.0	37.20	83.70	6,332.2	-857.3	14.4	171.5	9.38	9.38	0.63
6,515.0	40.40	83.90	6,357.2	-855.1	34.3	190.7	10.01	10.00	0.63
6,546.0	44.00	84.40	6,380.1	-853.0	55.0	210.7	11.66	11.61	1.61
6,578.0	46.90	84.80	6,402.6	-850.9	77.7	232.6	9.11	9.06	1.25
6,609.0	50.20	86.40	6,423.1	-849.1	100.9	255.1	11.33	10.65	5.16
6,641.0	54.30	87.90	6,442.7	-847.9	126.2	279.7	13.34	12.81	4.69
6,673.0	57.20	89.30	6,460.7	-847.2	152.6	305.5	9.76	9.06	4.38
6,705.0	59.30	88.80	6,477.5	-846.8	179.8	332.2	6.70	6.56	-1.56
6,736.0	61.30	88.30	6,492.9	-846.1	206.7	358.5	6.60	6.45	-1.61
6,768.0	64.10	86.90	6,507.6	-844.9	235.1	386.2	9.57	8.75	-4.38
6,800.0	67.10	86.40	6,520.8	-843.2	264.2	414.5	9.48	9.38	-1.56
6,832.0	69.60	86.50	6,532.6	-841.3	293.9	443.4	7.82	7.81	0.31
6,864.0	71.20	87.40	6,543.3	-839.7	324.0	472.7	5.66	5.00	2.81
6,895.0	74.00	88.10	6,552.6	-838.6	353.6	501.5	9.29	9.03	2.26
6,928.0	77.50	88.80	6,560.7	-837.7	385.5	532.8	10.80	10.61	2.12
6,960.0	80.00	89.00	6,567.0	-837.1	416.9	563.5	7.84	7.81	0.63
6,991.0	81.40	89.70	6,572.0	-836.8	447.5	593.5	5.04	4.52	2.26
7,023.0	82.90	89.90	6,576.3	-836.7	479.2	624.6	4.73	4.69	0.63
7,061.0	85.20	90.10	6,580.3	-836.7	517.0	661.8	6.08	6.05	0.53
7,130.0	86.50	90.80	6,585.3	-837.2	585.8	729.5	2.14	1.88	1.01
7,160.0	86.50	90.60	6,587.1	-837.6	615.7	759.0	0.67	0.00	-0.67
7,190.0	86.80	91.10	6,588.9	-838.0	645.7	788.6	1.94	1.00	1.67
7,221.0	87.10	91.10	6,590.5	-838.6	676.6	819.1	0.97	0.97	0.00
7,251.0	87.60	91.30	6,591.9	-839.2	706.6	848.7	1.79	1.67	0.67
7,281.0	89.00	91.30	6,592.8	-839.9	736.6	878.3	4.67	4.67	0.00
7,312.0	89.70	91.10	6,593.1	-840.6	767.6	908.8	2.35	2.26	-0.65
7,343.0	90.20	90.90	6,593.2	-841.1	798.6	939.4	1.74	1.61	-0.65
7,373.0	90.20	90.20	6,593.1	-841.4	828.6	968.9	2.33	0.00	-2.33
7,404.0	90.90	89.20	6,592.8	-841.2	859.6	999.4	3.94	2.26	-3.23
7,434.0	90.70	88.60	6,592.3	-840.7	889.6	1,028.8	2.11	-0.67	-2.00
7,465.0	89.80	88.30	6,592.2	-839.8	920.5	1,059.1	3.06	-2.90	-0.97
7,495.0	89.40	88.50	6,592.4	-839.0	950.5	1,088.4	1.49	-1.33	0.67
7,526.0	89.30	88.60	6,592.8	-838.2	981.5	1,118.7	0.46	-0.32	0.32
7,556.0	89.00	88.60	6,593.2	-837.5	1,011.5	1,148.1	1.00	-1.00	0.00
7,588.0	89.10	88.50	6,593.8	-836.7	1,043.5	1,179.3	0.44	0.31	-0.31
7,620.0	90.00	88.80	6,594.0	-835.9	1,075.5	1,210.7	2.96	2.81	0.94
7,652.0	91.40	89.50	6,593.6	-835.4	1,107.5	1,242.0	4.89	4.38	2.19
7,684.0	91.80	89.70	6,592.7	-835.2	1,139.5	1,273.4	1.40	1.25	0.63
7,716.0	92.20	89.50	6,591.6	-835.0	1,171.4	1,304.8	1.40	1.25	-0.63

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<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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)
7,748.0	93.20	89.50	6,590.1	-834.7	1,203.4	1,336.2	3.13	3.13	0.00
7,780.0	93.90	89.00	6,588.1	-834.3	1,235.3	1,367.5	2.69	2.19	-1.56
7,811.0	94.50	89.20	6,585.8	-833.8	1,266.3	1,397.8	2.04	1.94	0.65
7,843.0	94.90	88.10	6,583.2	-833.0	1,298.1	1,429.0	3.65	1.25	-3.44
7,877.0	95.30	87.60	6,580.2	-831.8	1,332.0	1,462.0	1.88	1.18	-1.47
7,907.0	95.10	87.20	6,577.5	-830.4	1,361.8	1,491.1	1.49	-0.67	-1.33
7,938.0	94.90	87.90	6,574.8	-829.1	1,392.7	1,521.2	2.34	-0.65	2.26
7,970.0	94.00	87.80	6,572.3	-827.9	1,424.6	1,552.3	2.83	-2.81	-0.31
8,002.0	93.30	87.80	6,570.3	-826.7	1,456.5	1,583.5	2.19	-2.19	0.00
8,034.0	92.70	88.30	6,568.6	-825.6	1,488.4	1,614.7	2.44	-1.88	1.56
8,066.0	93.00	89.20	6,567.0	-824.9	1,520.4	1,646.0	2.96	0.94	2.81
8,097.0	92.60	89.70	6,565.5	-824.6	1,551.3	1,676.3	2.06	-1.29	1.61
8,129.0	91.60	89.90	6,564.3	-824.5	1,583.3	1,707.7	3.19	-3.13	0.63
8,161.0	91.30	89.00	6,563.5	-824.2	1,615.3	1,739.1	2.96	-0.94	-2.81
8,193.0	91.50	89.50	6,562.7	-823.8	1,647.3	1,770.5	1.68	0.63	1.56
8,224.0	92.00	89.20	6,561.8	-823.4	1,678.3	1,800.9	1.88	1.61	-0.97
8,256.0	92.80	89.00	6,560.4	-822.9	1,710.2	1,832.2	2.58	2.50	-0.63
8,288.0	92.90	89.20	6,558.8	-822.4	1,742.2	1,863.5	0.70	0.31	0.63
8,319.0	93.00	89.90	6,557.2	-822.2	1,773.1	1,893.9	2.28	0.32	2.26
8,350.0	93.00	89.20	6,555.6	-821.9	1,804.1	1,924.3	2.25	0.00	-2.26
8,382.0	92.70	89.30	6,554.0	-821.5	1,836.1	1,955.7	0.99	-0.94	0.31
8,414.0	92.40	90.60	6,552.6	-821.5	1,868.0	1,987.1	4.17	-0.94	4.06
8,446.0	91.70	91.50	6,551.5	-822.1	1,900.0	2,018.6	3.56	-2.19	2.81
8,478.0	91.30	91.80	6,550.6	-823.0	1,932.0	2,050.2	1.56	-1.25	0.94
8,510.0	90.70	91.30	6,550.1	-823.8	1,964.0	2,081.8	2.44	-1.88	-1.56
8,542.0	90.00	91.30	6,549.9	-824.6	1,995.9	2,113.4	2.19	-2.19	0.00
8,573.0	90.10	90.80	6,549.8	-825.1	2,026.9	2,144.0	1.64	0.32	-1.61
8,605.0	90.00	90.60	6,549.8	-825.5	2,058.9	2,175.5	0.70	-0.31	-0.63
8,637.0	91.10	90.80	6,549.5	-825.9	2,090.9	2,207.0	3.49	3.44	0.63
8,669.0	91.30	90.40	6,548.8	-826.3	2,122.9	2,238.5	1.40	0.63	-1.25
8,700.0	91.20	90.80	6,548.2	-826.6	2,153.9	2,269.0	1.33	-0.32	1.29
8,732.0	90.50	91.10	6,547.7	-827.1	2,185.9	2,300.6	2.38	-2.19	0.94
8,764.0	89.60	91.10	6,547.7	-827.7	2,217.9	2,332.2	2.81	-2.81	0.00
8,796.0	90.10	90.90	6,547.7	-828.3	2,249.9	2,363.7	1.68	1.56	-0.63
8,827.0	90.70	91.80	6,547.5	-829.0	2,280.9	2,394.3	3.49	1.94	2.90
8,859.0	92.10	91.60	6,546.7	-830.0	2,312.9	2,425.9	4.42	4.38	-0.63
8,891.0	92.00	90.80	6,545.6	-830.6	2,344.8	2,457.5	2.52	-0.31	-2.50
8,923.0	91.80	89.50	6,544.5	-830.7	2,376.8	2,488.9	4.11	-0.63	-4.06
8,955.0	91.20	88.60	6,543.7	-830.2	2,408.8	2,520.3	3.38	-1.88	-2.81
8,987.0	91.30	87.40	6,543.0	-829.1	2,440.8	2,551.5	3.76	0.31	-3.75
9,019.0	91.20	87.20	6,542.3	-827.6	2,472.7	2,582.6	0.70	-0.31	-0.63
9,050.0	90.80	87.60	6,541.8	-826.2	2,503.7	2,612.8	1.82	-1.29	1.29
9,082.0	90.80	88.80	6,541.3	-825.1	2,535.7	2,644.1	3.75	0.00	3.75
9,114.0	91.00	89.30	6,540.8	-824.6	2,567.7	2,675.4	1.68	0.63	1.56
9,146.0	90.90	89.90	6,540.3	-824.4	2,599.7	2,706.8	1.90	-0.31	1.88
9,178.0	91.40	89.30	6,539.6	-824.2	2,631.7	2,738.2	2.44	1.56	-1.88
9,209.0	91.50	89.70	6,538.9	-823.9	2,662.6	2,768.6	1.33	0.32	1.29
9,241.0	90.50	89.20	6,538.3	-823.6	2,694.6	2,800.0	3.49	-3.13	-1.56
9,273.0	89.70	89.20	6,538.2	-823.1	2,726.6	2,831.4	2.50	-2.50	0.00
9,305.0	88.70	90.10	6,538.7	-822.9	2,758.6	2,862.8	4.20	-3.13	2.81
9,337.0	89.30	89.90	6,539.2	-822.9	2,790.6	2,894.3	1.98	1.88	-0.63
9,368.0	90.00	90.40	6,539.4	-823.0	2,821.6	2,924.8	2.77	2.26	1.61
9,400.0	89.80	90.80	6,539.5	-823.4	2,853.6	2,956.3	1.40	-0.63	1.25
9,432.0	90.20	90.80	6,539.5	-823.8	2,885.6	2,987.8	1.25	1.25	0.00

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2G-212
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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)
9,464.0	90.20	90.80	6,539.4	-824.3	2,917.6	3,019.3	0.00	0.00	0.00
9,495.0	91.00	90.80	6,539.1	-824.7	2,948.6	3,049.9	2.58	2.58	0.00
9,527.0	92.30	90.90	6,538.1	-825.2	2,980.6	3,081.4	4.07	4.06	0.31
9,559.0	92.40	90.80	6,536.8	-825.6	3,012.6	3,112.9	0.44	0.31	-0.31
9,590.0	92.80	90.60	6,535.4	-826.0	3,043.5	3,143.4	1.44	1.29	-0.65
9,622.0	92.50	90.60	6,533.9	-826.4	3,075.5	3,174.9	0.94	-0.94	0.00
9,654.0	92.50	90.10	6,532.5	-826.5	3,107.5	3,206.4	1.56	0.00	-1.56
9,685.0	91.90	90.20	6,531.3	-826.6	3,138.4	3,236.8	1.96	-1.94	0.32
9,717.0	90.80	90.60	6,530.6	-826.9	3,170.4	3,268.3	3.66	-3.44	1.25
9,749.0	90.20	90.90	6,530.3	-827.3	3,202.4	3,299.9	2.10	-1.88	0.94
9,781.0	90.20	90.80	6,530.2	-827.7	3,234.4	3,331.4	0.31	0.00	-0.31
9,812.0	90.10	90.80	6,530.1	-828.2	3,265.4	3,362.0	0.32	-0.32	0.00
9,845.0	90.20	91.10	6,530.0	-828.7	3,298.4	3,394.5	0.96	0.30	0.91
9,877.0	89.50	90.80	6,530.1	-829.3	3,330.4	3,426.0	2.38	-2.19	-0.94
9,907.0	89.70	90.20	6,530.3	-829.5	3,360.4	3,455.6	2.11	0.67	-2.00
9,939.0	90.00	90.60	6,530.4	-829.7	3,392.4	3,487.1	1.56	0.94	1.25
9,971.0	90.90	91.30	6,530.2	-830.3	3,424.4	3,518.6	3.56	2.81	2.19
10,003.0	91.30	91.60	6,529.5	-831.1	3,456.4	3,550.2	1.56	1.25	0.94
10,035.0	91.10	90.60	6,528.9	-831.7	3,488.4	3,581.8	3.19	-0.63	-3.13
10,066.0	90.40	89.40	6,528.5	-831.7	3,519.4	3,612.2	4.48	-2.26	-3.87
10,098.0	89.20	89.20	6,528.6	-831.3	3,551.4	3,643.6	3.80	-3.75	-0.63
10,130.0	89.40	89.50	6,529.0	-830.9	3,583.4	3,675.0	1.13	0.63	0.94
10,162.0	89.80	89.30	6,529.2	-830.6	3,615.4	3,706.4	1.40	1.25	-0.63
10,193.0	90.60	89.30	6,529.1	-830.2	3,646.3	3,736.8	2.58	2.58	0.00
10,225.0	90.10	89.50	6,528.9	-829.9	3,678.3	3,768.2	1.68	-1.56	0.63
10,257.0	89.20	89.90	6,529.1	-829.7	3,710.3	3,799.6	3.08	-2.81	1.25
10,288.0	89.70	90.20	6,529.4	-829.8	3,741.3	3,830.1	1.88	1.61	0.97
10,320.0	90.50	90.10	6,529.3	-829.8	3,773.3	3,861.6	2.52	2.50	-0.31
10,352.0	91.10	89.90	6,528.9	-829.8	3,805.3	3,893.0	1.98	1.88	-0.63
10,384.0	91.10	89.90	6,528.3	-829.8	3,837.3	3,924.4	0.00	0.00	0.00
10,415.0	91.40	89.70	6,527.6	-829.7	3,868.3	3,954.9	1.16	0.97	-0.65
10,447.0	91.60	89.50	6,526.8	-829.4	3,900.3	3,986.3	0.88	0.63	-0.63
10,479.0	91.70	89.50	6,525.8	-829.2	3,932.3	4,017.7	0.31	0.31	0.00
10,511.0	91.10	90.40	6,525.1	-829.1	3,964.3	4,049.1	3.38	-1.88	2.81
10,542.0	91.30	91.10	6,524.4	-829.5	3,995.3	4,079.7	2.35	0.65	2.26
10,574.0	91.70	90.90	6,523.6	-830.1	4,027.3	4,111.2	1.40	1.25	-0.63
10,606.0	92.10	91.30	6,522.5	-830.7	4,059.2	4,142.8	1.77	1.25	1.25
10,638.0	91.30	91.30	6,521.6	-831.4	4,091.2	4,174.3	2.50	-2.50	0.00
10,669.0	90.50	91.50	6,521.1	-832.2	4,122.2	4,204.9	2.66	-2.58	0.65
10,701.0	89.90	91.60	6,521.0	-833.1	4,154.2	4,236.5	1.90	-1.88	0.31
10,733.0	90.60	91.60	6,520.8	-834.0	4,186.2	4,268.1	2.19	2.19	0.00
10,765.0	90.10	91.80	6,520.6	-834.9	4,218.2	4,299.7	1.68	-1.56	0.63
10,796.0	89.80	90.10	6,520.6	-835.4	4,249.2	4,330.3	5.57	-0.97	-5.48
10,829.0	90.00	89.90	6,520.7	-835.4	4,282.2	4,362.7	0.86	0.61	-0.61
10,860.0	90.70	90.60	6,520.5	-835.6	4,313.2	4,393.2	3.19	2.26	2.26
10,892.0	90.70	89.70	6,520.1	-835.6	4,345.2	4,424.7	2.81	0.00	-2.81
10,924.0	89.90	88.80	6,520.0	-835.2	4,377.2	4,456.1	3.76	-2.50	-2.81
10,941.0	89.80	88.50	6,520.0	-834.8	4,394.1	4,472.7	1.86	-0.59	-1.76
10,992.0	89.80	88.50	6,520.2	-833.5	4,445.1	4,522.6	0.00	0.00	0.00

BHL 2080'FNL & 500'FEL



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2G-212
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Well:</b>	Brown 2G-212	<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

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
HARDLINE SHL 460'f	0.00	0.00	1.0	-1,000.0	210.0	1,432,904.87	3,302,653.10	40.516625	-104.411415
- survey misses target center by 1021.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,432,904.87	3,302,653.10		
Point 2			1.0	1,100.0	0.0	1,434,004.75	3,302,639.61		
HARDLINE BHL 460'f	0.00	0.00	1.0	-1,000.0	4,485.8	1,432,957.32	3,306,928.43	40.516624	-104.396036
- survey misses target center by 4595.9ft at 0.8ft MD (0.8 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,432,957.32	3,306,928.43		
Point 2			1.0	1,100.0	0.0	1,434,057.20	3,306,914.94		

Checked By: _____	Approved By: _____	Date: _____
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