

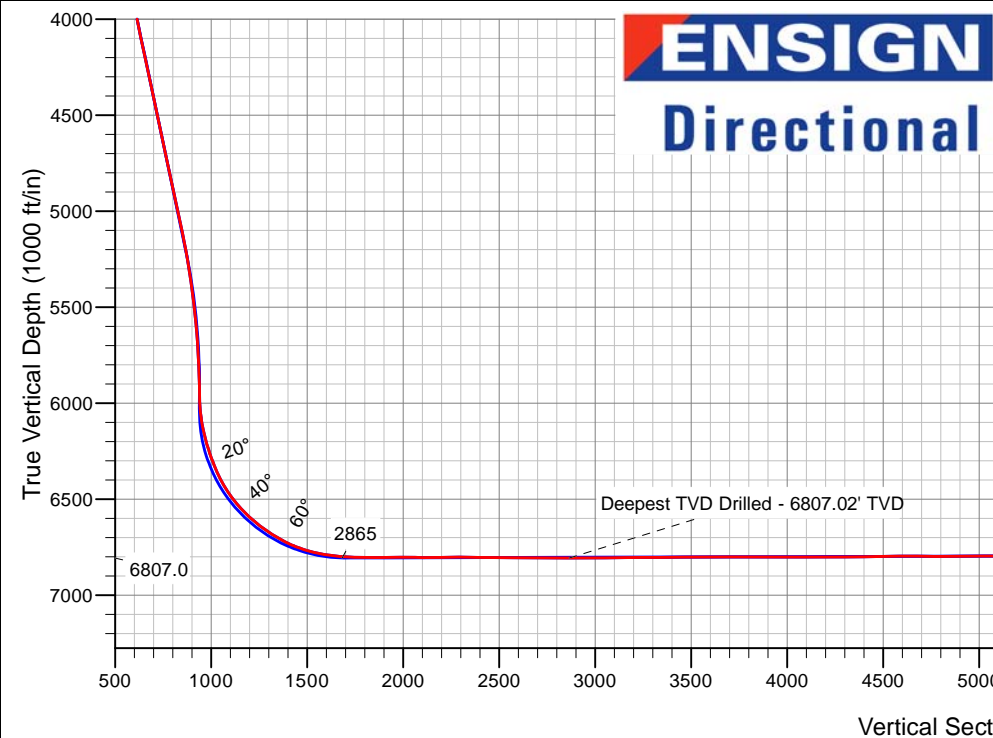
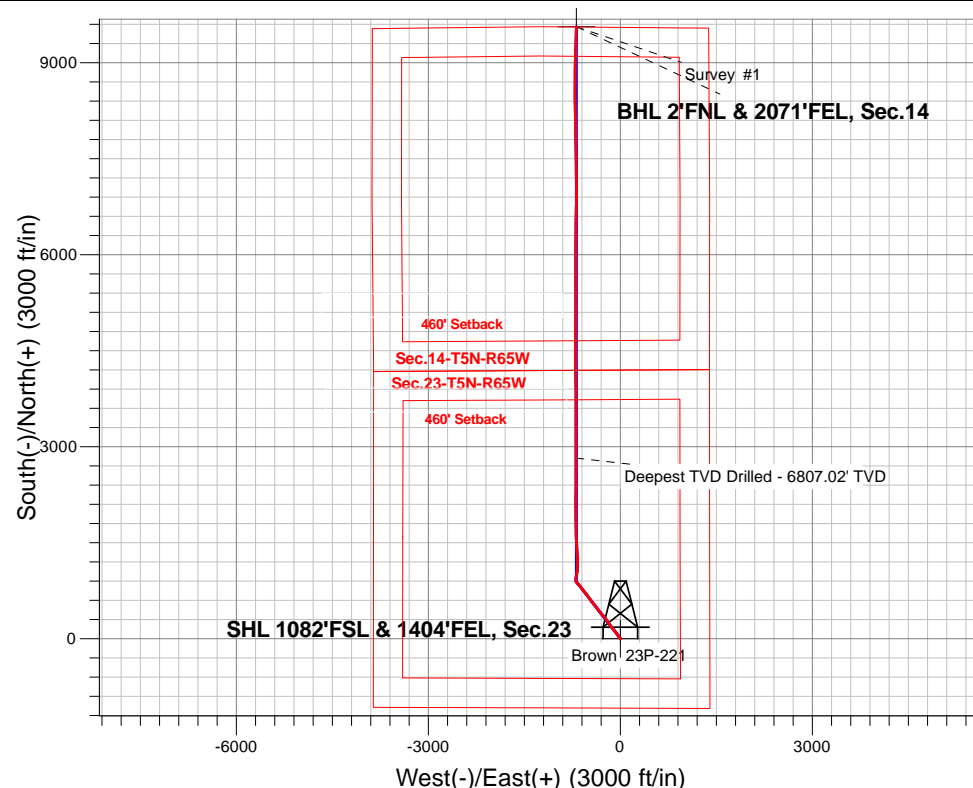
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Brown 23P-221**

Surface Location: Brown 5N65W23 Pad Sec.23-T5N-R65W  
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
Ground Elevation: 4643.0  
+N/-S+E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1382631.93 243465.70 40.380433 -104.626067  
RKB - 23' WELL @ 4666.0ft (RKB - 23')

## FINAL SURVEY

**Projected Bottom Hole Location**  
**15,257'MD 6801'TVD 9560'N & 686'W of SHL**  
**90.7 degree Incl @ 1.5 degree AZM**



**ENSIGN**  
**Directional**

Brown 5N65W23 Pad Sec.23-T5N-R65W  
Brown 23P-221  
Wellbore #1  
12:48, January 16 2017

### ANNOTATIONS

TVD	MD	Annotation
6807.0	8518.0	Deepest TVD Drilled - 6807.02' TVD

### LEGEND

- △ Brown 23P-221, Wellbore #1, Plan #2 (1-05-17)R V0
- Wellbore #1
- Survey #1

BHL 2'FNL & 2071'FEL, Sec.14

Brown 23P-221/Survey #1



# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.23-T5N-R65W**

**Brown 5N65W23 Pad Sec.23-T5N-R65W**

**Brown 23P-221**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**16 January, 2017**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Brown 23P-221
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Well:</b>	Brown 23P-221	<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>	US_EDM

<b>Project</b>	SEC.23-T5N-R65W		
<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 5N65W23 Pad Sec.23-T5N-R65W				
Site Position:		Northing:	1,382,632.10 usft	Latitude:	40.380433
From:	Lat/Long	Easting:	3,243,480.75 usft	Longitude:	-104.626013
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.56 °

Well	Brown 23P-221					
Well Position	+N/-S	0.0 ft	Northing:	1,382,631.93 usft	Latitude:	40.380433
	+E/-W	0.0 ft	Easting:	3,243,465.70 usft	Longitude:	-104.626067
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,643.0 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	1/5/2017	8.04	66.86	52,551

<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	355.88	

<b>Survey Program</b>	<b>Date</b>	1/16/2017			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
251.0	15,257.0	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 (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
251.0	0.10	19.30	251.0	0.2	0.1	0.2	0.04	0.04	0.00	
346.0	0.30	235.50	346.0	0.1	-0.1	0.2	0.41	0.21	-151.37	
442.0	0.30	301.40	442.0	0.1	-0.5	0.2	0.34	0.00	68.65	
538.0	1.00	321.50	538.0	0.9	-1.3	1.0	0.76	0.73	20.94	
633.0	1.80	304.40	633.0	2.4	-3.0	2.6	0.94	0.84	-18.00	
729.0	2.70	316.40	728.9	4.9	-5.8	5.3	1.05	0.94	12.50	
824.0	4.30	326.00	823.7	9.5	-9.3	10.1	1.79	1.68	10.11	
920.0	4.80	325.50	919.4	15.8	-13.6	16.7	0.52	0.52	-0.52	
1,016.0	5.60	327.40	1,015.0	23.0	-18.4	24.3	0.85	0.83	1.98	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Brown 23P-221
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Well:</b>	Brown 23P-221	<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>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,112.0	6.50	326.60	1,110.5	31.5	-23.9	33.1	0.94	0.94	-0.83
1,208.0	8.30	327.80	1,205.7	41.9	-30.6	44.0	1.88	1.88	1.25
1,304.0	10.20	324.40	1,300.4	54.7	-39.3	57.4	2.06	1.98	-3.54
1,400.0	12.00	323.90	1,394.6	69.7	-50.1	73.1	1.88	1.88	-0.52
1,507.0	12.60	322.20	1,499.2	87.9	-63.8	92.2	0.65	0.56	-1.59
1,591.0	12.10	320.20	1,581.2	101.9	-75.1	107.0	0.78	-0.60	-2.38
1,686.0	14.10	322.70	1,673.7	118.7	-88.4	124.8	2.19	2.11	2.63
1,782.0	13.80	319.30	1,766.9	136.7	-103.0	143.8	0.91	-0.31	-3.54
1,878.0	14.30	321.60	1,860.0	154.7	-117.8	162.8	0.78	0.52	2.40
1,974.0	13.80	317.40	1,953.2	172.4	-132.9	181.5	1.18	-0.52	-4.38
2,069.0	14.30	322.20	2,045.3	190.0	-147.8	200.1	1.33	0.53	5.05
2,165.0	14.50	326.40	2,138.3	209.4	-161.7	220.5	1.11	0.21	4.38
2,261.0	13.80	325.50	2,231.4	228.8	-174.9	240.8	0.76	-0.73	-0.94
2,356.0	14.80	326.90	2,323.5	248.3	-187.9	261.2	1.11	1.05	1.47
2,451.0	14.20	326.20	2,415.4	268.2	-201.0	281.9	0.66	-0.63	-0.74
2,547.0	15.30	324.10	2,508.3	288.2	-215.0	302.9	1.27	1.15	-2.19
2,643.0	15.50	322.70	2,600.8	308.7	-230.2	324.4	0.44	0.21	-1.46
2,739.0	15.70	321.80	2,693.3	329.1	-246.0	345.9	0.33	0.21	-0.94
2,835.0	15.60	321.50	2,785.7	349.4	-262.1	367.4	0.13	-0.10	-0.31
2,932.0	15.60	321.10	2,879.2	369.8	-278.4	388.8	0.11	0.00	-0.41
3,028.0	15.20	319.90	2,971.7	389.5	-294.6	409.6	0.53	-0.42	-1.25
3,123.0	14.70	320.20	3,063.5	408.2	-310.3	429.5	0.53	-0.53	0.32
3,219.0	13.60	319.70	3,156.6	426.2	-325.4	448.5	1.15	-1.15	-0.52
3,316.0	14.30	320.10	3,250.7	444.1	-340.5	467.4	0.73	0.72	0.41
3,412.0	13.40	319.90	3,343.9	461.7	-355.3	486.0	0.94	-0.94	-0.21
3,508.0	13.50	319.90	3,437.3	478.8	-369.6	504.1	0.10	0.10	0.00
3,604.0	12.60	325.90	3,530.8	496.0	-382.7	522.2	1.69	-0.94	6.25
3,699.0	13.30	323.70	3,623.4	513.4	-395.0	540.5	0.90	0.74	-2.32
3,795.0	13.50	322.70	3,716.8	531.2	-408.3	559.2	0.32	0.21	-1.04
3,890.0	13.50	322.50	3,809.2	548.8	-421.8	577.7	0.05	0.00	-0.21
3,986.0	13.40	321.60	3,902.5	566.4	-435.5	596.3	0.24	-0.10	-0.94
4,081.0	12.80	323.40	3,995.1	583.5	-448.6	614.3	0.76	-0.63	1.89
4,177.0	13.70	323.20	4,088.5	601.2	-461.8	632.8	0.94	0.94	-0.21
4,273.0	14.80	322.70	4,181.5	620.0	-476.0	652.6	1.15	1.15	-0.52
4,370.0	13.90	322.00	4,275.5	639.1	-490.7	672.7	0.94	-0.93	-0.72
4,466.0	14.50	321.60	4,368.6	657.6	-505.3	692.2	0.63	0.63	-0.42
4,562.0	14.40	320.90	4,461.5	676.2	-520.3	711.9	0.21	-0.10	-0.73
4,658.0	14.40	323.60	4,554.5	695.1	-534.9	731.8	0.70	0.00	2.81
4,754.0	13.80	321.60	4,647.6	713.7	-549.1	751.3	0.81	-0.63	-2.08
4,850.0	14.40	322.00	4,740.7	732.1	-563.5	770.7	0.63	0.63	0.42
4,945.0	14.20	321.50	4,832.8	750.5	-578.1	790.1	0.25	-0.21	-0.53
5,042.0	15.40	322.20	4,926.6	770.0	-593.4	810.6	1.25	1.24	0.72
5,138.0	14.60	321.80	5,019.3	789.6	-608.7	831.3	0.84	-0.83	-0.42
5,234.0	13.70	321.60	5,112.4	808.0	-623.2	850.7	0.94	-0.94	-0.21

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Brown 23P-221
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<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Well:</b>	Brown 23P-221	<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>	US_EDM

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,330.0	12.60	320.80	5,205.9	825.0	-636.9	868.7	1.16	-1.15	-0.83	
5,426.0	11.20	320.20	5,299.8	840.3	-649.5	884.8	1.46	-1.46	-0.63	
5,522.0	9.80	318.10	5,394.2	853.5	-660.9	898.8	1.51	-1.46	-2.19	
5,617.0	8.20	320.10	5,488.0	864.8	-670.6	910.7	1.72	-1.68	2.11	
5,713.0	6.80	319.20	5,583.2	874.3	-678.8	920.8	1.46	-1.46	-0.94	
5,809.0	4.70	319.90	5,678.7	881.6	-685.0	928.6	2.19	-2.19	0.73	
5,933.0	3.50	311.10	5,802.4	888.0	-691.1	935.4	1.09	-0.97	-7.10	
6,028.0	1.70	309.90	5,897.3	890.8	-694.4	938.4	1.90	-1.89	-1.26	
6,125.0	2.20	322.50	5,994.2	893.2	-696.6	941.0	0.68	0.52	12.99	
6,220.0	8.90	354.90	6,088.8	902.0	-698.4	949.8	7.52	7.05	34.11	
6,316.0	14.50	1.50	6,182.7	921.4	-698.7	969.2	5.99	5.83	6.88	
6,411.0	20.30	7.90	6,273.4	949.6	-696.2	997.2	6.42	6.11	6.74	
6,507.0	24.90	13.80	6,362.0	985.8	-689.0	1,032.8	5.34	4.79	6.15	
6,603.0	32.40	10.30	6,446.2	1,030.8	-679.6	1,077.0	8.00	7.81	-3.65	
6,698.0	40.10	3.80	6,522.7	1,086.5	-673.0	1,132.0	9.05	8.11	-6.84	
6,794.0	48.40	0.50	6,591.5	1,153.3	-670.7	1,198.6	8.97	8.65	-3.44	
6,889.0	53.30	1.70	6,651.4	1,227.0	-669.2	1,271.9	5.25	5.16	1.26	
6,985.0	59.50	356.30	6,704.5	1,306.8	-670.7	1,351.7	7.98	6.46	-5.63	
7,081.0	68.70	355.70	6,746.4	1,392.9	-676.8	1,437.9	9.60	9.58	-0.63	
7,177.0	75.60	355.20	6,775.8	1,483.9	-684.0	1,529.2	7.20	7.19	-0.52	
7,273.0	82.90	357.50	6,793.7	1,578.0	-690.0	1,623.5	7.96	7.60	2.40	
7,369.0	87.80	359.60	6,801.5	1,673.6	-692.4	1,719.0	5.55	5.10	2.19	
7,464.0	89.40	359.10	6,803.8	1,768.6	-693.5	1,813.8	1.76	1.68	-0.53	
7,560.0	90.70	358.70	6,803.8	1,864.5	-695.3	1,909.7	1.42	1.35	-0.42	
7,656.0	89.30	359.10	6,803.8	1,960.5	-697.2	2,005.5	1.52	-1.46	0.42	
7,751.0	90.00	0.30	6,804.3	2,055.5	-697.7	2,100.3	1.46	0.74	1.26	
7,847.0	91.10	0.50	6,803.4	2,151.5	-697.0	2,196.0	1.16	1.15	0.21	
7,943.0	90.00	0.50	6,802.5	2,247.5	-696.2	2,291.7	1.15	-1.15	0.00	
8,040.0	89.30	0.30	6,803.1	2,344.5	-695.5	2,388.4	0.75	-0.72	-0.21	
8,135.0	89.80	0.00	6,803.8	2,439.5	-695.3	2,483.1	0.61	0.53	-0.32	
8,231.0	88.80	0.80	6,805.0	2,535.5	-694.6	2,578.8	1.33	-1.04	0.83	
8,327.0	90.00	0.30	6,806.0	2,631.5	-693.7	2,674.5	1.35	1.25	-0.52	
8,423.0	89.20	0.70	6,806.7	2,727.5	-692.8	2,770.2	0.93	-0.83	0.42	
8,518.0	90.40	359.40	6,807.0	2,822.4	-692.7	2,864.9	1.86	1.26	-1.37	
Deepest TVD Drilled - 6807.02' TVD										
8,614.0	90.00	359.60	6,806.7	2,918.4	-693.6	2,960.7	0.47	-0.42	0.21	
8,710.0	91.00	0.00	6,805.8	3,014.4	-693.9	3,056.5	1.12	1.04	0.42	
8,806.0	90.70	0.00	6,804.4	3,110.4	-693.9	3,152.3	0.31	-0.31	0.00	
8,902.0	90.40	359.40	6,803.5	3,206.4	-694.4	3,248.0	0.70	-0.31	-0.63	
8,997.0	89.60	0.10	6,803.5	3,301.4	-694.8	3,342.8	1.12	-0.84	0.74	
9,092.0	90.20	0.10	6,803.7	3,396.4	-694.7	3,437.6	0.63	0.63	0.00	
9,188.0	91.40	0.10	6,802.3	3,492.4	-694.5	3,533.3	1.25	1.25	0.00	
9,284.0	90.60	0.30	6,800.6	3,588.4	-694.2	3,629.0	0.86	-0.83	0.21	

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<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Well:</b>	Brown 23P-221	<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>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,379.0	89.70	359.60	6,800.4	3,683.4	-694.2	3,723.8	1.20	-0.95	-0.74
9,475.0	89.00	359.80	6,801.5	3,779.4	-694.7	3,819.5	0.76	-0.73	0.21
9,571.0	89.70	359.60	6,802.6	3,875.4	-695.2	3,915.3	0.76	0.73	-0.21
9,667.0	90.60	359.30	6,802.3	3,971.4	-696.2	4,011.1	0.99	0.94	-0.31
9,762.0	90.50	0.30	6,801.4	4,066.4	-696.5	4,105.9	1.06	-0.11	1.05
9,858.0	89.40	359.40	6,801.5	4,162.4	-696.8	4,201.7	1.48	-1.15	-0.94
9,954.0	90.20	359.40	6,801.8	4,258.3	-697.8	4,297.5	0.83	0.83	0.00
10,050.0	91.10	358.50	6,800.7	4,354.3	-699.5	4,393.3	1.33	0.94	-0.94
10,145.0	91.40	359.40	6,798.7	4,449.3	-701.3	4,488.2	1.00	0.32	0.95
10,241.0	90.50	0.10	6,797.1	4,545.3	-701.7	4,583.9	1.19	-0.94	0.73
10,337.0	89.30	0.10	6,797.2	4,641.3	-701.5	4,679.7	1.25	-1.25	0.00
10,433.0	89.80	0.00	6,798.0	4,737.3	-701.4	4,775.4	0.53	0.52	-0.10
10,528.0	90.60	359.60	6,797.7	4,832.3	-701.8	4,870.2	0.94	0.84	-0.42
10,624.0	89.80	0.80	6,797.3	4,928.3	-701.4	4,965.9	1.50	-0.83	1.25
10,720.0	90.10	1.40	6,797.4	5,024.2	-699.6	5,061.5	0.70	0.31	0.63
10,816.0	90.50	0.80	6,796.9	5,120.2	-697.7	5,157.1	0.75	0.42	-0.63
10,912.0	90.30	1.20	6,796.2	5,216.2	-696.1	5,252.7	0.47	-0.21	0.42
11,008.0	90.20	0.30	6,795.8	5,312.2	-694.8	5,348.4	0.94	-0.10	-0.94
11,103.0	89.10	359.80	6,796.4	5,407.2	-694.7	5,443.1	1.27	-1.16	-0.53
11,199.0	89.90	358.90	6,797.2	5,503.2	-695.8	5,539.0	1.25	0.83	-0.94
11,295.0	88.80	359.10	6,798.3	5,599.2	-697.5	5,634.8	1.16	-1.15	0.21
11,391.0	89.60	359.30	6,799.7	5,695.1	-698.8	5,730.6	0.86	0.83	0.21
11,486.0	90.50	359.10	6,799.6	5,790.1	-700.2	5,825.5	0.97	0.95	-0.21
11,582.0	89.50	0.00	6,799.6	5,886.1	-700.9	5,921.3	1.40	-1.04	0.94
11,678.0	89.70	0.70	6,800.3	5,982.1	-700.3	6,017.0	0.76	0.21	0.73
11,773.0	90.30	0.30	6,800.3	6,077.1	-699.5	6,111.7	0.76	0.63	-0.42
11,868.0	89.90	1.40	6,800.1	6,172.1	-698.1	6,206.3	1.23	-0.42	1.16
11,965.0	90.70	0.80	6,799.6	6,269.1	-696.2	6,302.9	1.03	0.82	-0.62
12,060.0	89.70	1.70	6,799.3	6,364.1	-694.1	6,397.5	1.42	-1.05	0.95
12,156.0	89.40	1.50	6,800.0	6,460.0	-691.5	6,493.0	0.38	-0.31	-0.21
12,251.0	90.30	1.50	6,800.3	6,555.0	-689.0	6,587.5	0.95	0.95	0.00
12,347.0	90.00	0.70	6,800.0	6,651.0	-687.1	6,683.1	0.89	-0.31	-0.83
12,443.0	90.40	0.30	6,799.7	6,747.0	-686.3	6,778.8	0.59	0.42	-0.42
12,538.0	90.00	0.10	6,799.3	6,842.0	-686.0	6,873.6	0.47	-0.42	-0.21
12,634.0	90.70	359.60	6,798.8	6,938.0	-686.2	6,969.3	0.90	0.73	-0.52
12,729.0	90.20	0.00	6,798.0	7,032.9	-686.5	7,064.1	0.67	-0.53	0.42
12,824.0	90.00	359.60	6,797.8	7,127.9	-686.9	7,158.9	0.47	-0.21	-0.42
12,920.0	90.80	359.80	6,797.2	7,223.9	-687.4	7,254.7	0.86	0.83	0.21
13,016.0	90.30	359.30	6,796.3	7,319.9	-688.1	7,350.5	0.74	-0.52	-0.52
13,111.0	90.80	358.90	6,795.3	7,414.9	-689.6	7,445.3	0.67	0.53	-0.42
13,207.0	90.00	359.30	6,794.7	7,510.9	-691.1	7,541.2	0.93	-0.83	0.42
13,302.0	89.10	358.90	6,795.4	7,605.9	-692.6	7,636.0	1.04	-0.95	-0.42
13,398.0	89.90	358.40	6,796.3	7,701.9	-694.9	7,731.9	0.98	0.83	-0.52
13,494.0	89.70	358.70	6,796.6	7,797.8	-697.3	7,827.8	0.38	-0.21	0.31

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Brown 23P-221
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4666.0ft (RKB - 23')
<b>Well:</b>	Brown 23P-221	<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>	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,589.0	90.10	358.40	6,796.8	7,892.8	-699.7	7,922.7	0.53	0.42	-0.32
13,685.0	89.80	358.90	6,796.8	7,988.8	-702.0	8,018.6	0.61	-0.31	0.52
13,781.0	90.50	359.10	6,796.6	8,084.7	-703.7	8,114.4	0.76	0.73	0.21
13,879.0	90.80	358.70	6,795.5	8,182.7	-705.5	8,212.3	0.51	0.31	-0.41
13,975.0	89.10	359.10	6,795.6	8,278.7	-707.4	8,308.1	1.82	-1.77	0.42
14,070.0	89.10	358.70	6,797.0	8,373.7	-709.2	8,403.0	0.42	0.00	-0.42
14,167.0	88.20	0.00	6,799.3	8,470.6	-710.3	8,499.8	1.63	-0.93	1.34
14,262.0	88.90	0.10	6,801.7	8,565.6	-710.2	8,594.5	0.74	0.74	0.11
14,358.0	89.20	0.10	6,803.3	8,661.6	-710.1	8,690.2	0.31	0.31	0.00
14,454.0	88.90	1.20	6,804.9	8,757.6	-709.0	8,785.9	1.19	-0.31	1.15
14,550.0	89.40	1.20	6,806.3	8,853.5	-707.0	8,881.5	0.52	0.52	0.00
14,646.0	90.70	1.90	6,806.3	8,949.5	-704.4	8,977.0	1.54	1.35	0.73
14,742.0	90.50	1.50	6,805.3	9,045.5	-701.5	9,072.5	0.47	-0.21	-0.42
14,837.0	90.30	1.50	6,804.6	9,140.4	-699.0	9,167.0	0.21	-0.21	0.00
14,933.0	90.20	1.90	6,804.2	9,236.4	-696.2	9,262.5	0.43	-0.10	0.42
15,029.0	90.50	1.70	6,803.6	9,332.3	-693.2	9,358.0	0.38	0.31	-0.21
15,125.0	90.40	2.10	6,802.8	9,428.3	-690.0	9,453.5	0.43	-0.10	0.42
15,196.0	90.70	1.50	6,802.2	9,499.2	-687.8	9,524.1	0.94	0.42	-0.85
15,257.0	90.70	1.50	6,801.4	9,560.2	-686.2	9,584.8	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 1082'FSL & 1404'FI	0.00	0.00	1.0	0.0	0.0	1,382,631.96	3,243,465.70	40.380433	-104.626067
- survey hits target center									
- Point									
BHL 0'FNL & 2074'FEL,	0.00	0.00	6,782.0	9,562.1	-689.0	1,392,186.40	3,242,682.54	40.406680	-104.628541
- survey misses target center by 19.7ft at 15257.0ft MD (6801.4 TVD, 9560.2 N, -686.2 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,518.0	6,807.0	2,822.4	-692.7	Deepest TVD Drilled - 6807.02' TVD

Checked By: _____	Approved By: _____	Date: _____
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