

PETROLEUM DEVELOPMENT CORP Weld County CO

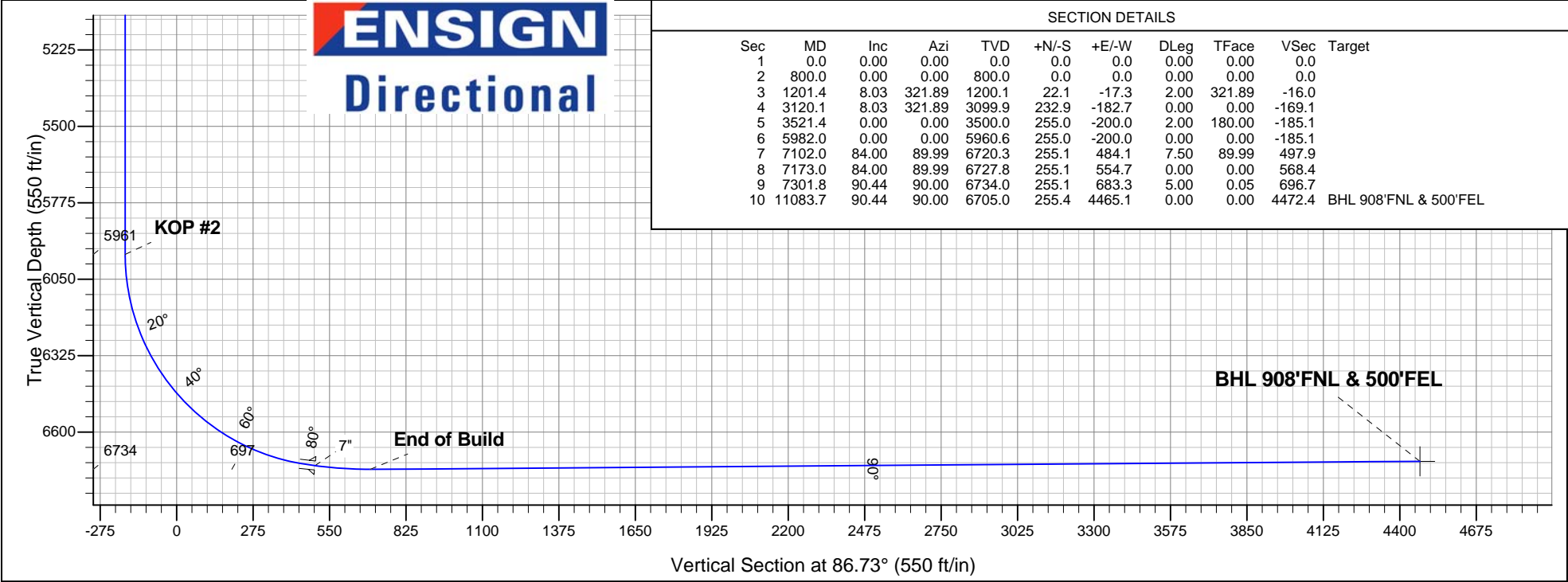
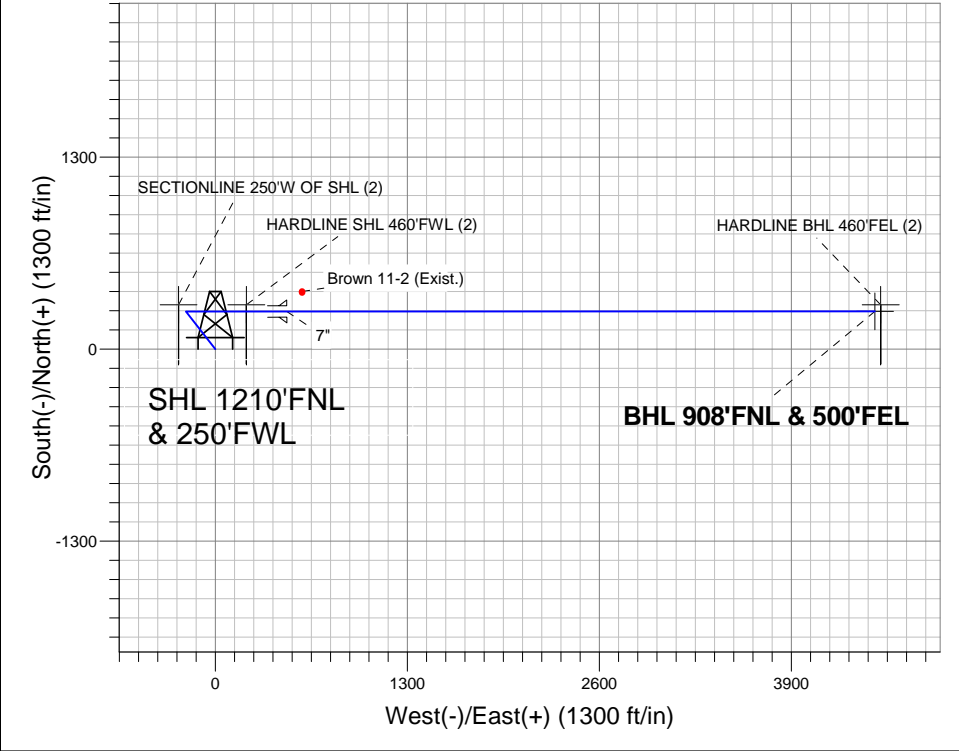
Well Name: **Brown 2F-412**  
Surface Location: Brown Pad Sec.2-T6N-R63W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4710.0  
+N/-S    +E/-W    Northing    Easting    Latitude    Longitude    Slot  
0.0       0.0       1433989.60    3302429.78    40.519610    -104.412170  
RKB Ensign 32 - 15'    WELL @ 4725.0ft (RKB Ensign 32 - 15')

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HARDLINE BHL 460'FEL (2)	1.0	300.0	4505.1	1434344.83	3306930.71	40.520432	-104.395966	Polygon
HARDLINE SHL 460'FWL (2)	1.0	300.0	210.0	1434292.14	3302636.08	40.520433	-104.411415	Polygon
SECTIONLINE 250'W OF SHL (2)	1.0	300.0	-250.0	1434286.50	3302176.13	40.520433	-104.413069	Polygon
BHL 908'FNL & 500'FEL	6705.0	255.4	4465.1	1434299.79	3306891.25	40.520310	-104.396110	Point

Azimuths to True North  
Magnetic North: 8.55°  
Magnetic Field Strength: 53131.4snT  
Dip Angle: 67.17°  
Date: 5/29/2012  
Model: IGRF2010

ANNOTATIONS		
TVD	MD	Annotation
800.0	800.0	KOP #1
5960.6	5982.0	KOP #2
6734.0	7301.8	End of Build

Brown Pad Sec.2-T6N-R63W  
Brown 2F-412  
Plan #1 (5-29-12)  
11:44, June 04 2012





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T6N-R63W**

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

**Brown 2F-412**

**Wellbore #1**

**Plan: Plan #1 (5-29-12)**

## **Standard Planning Report**

**04 June, 2012**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

<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

<b>Site</b>	Brown Pad Sec.2-T6N-R63W		
<b>Site Position:</b>		<b>Northing:</b>	1,433,964.08 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,302,427.32 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.519540
		<b>Longitude:</b>	-104.412180
		<b>Grid Convergence:</b>	0.70 °

<b>Well</b>	Brown 2F-412		
<b>Well Position</b>	<b>+N/-S</b>	25.5 ft	<b>Northing:</b>
	<b>+E/-W</b>	2.8 ft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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	5/29/2012	8.56	67.17	53,131

<b>Design</b>	Plan #1 (5-29-12)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<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	86.73

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,201.4	8.03	321.89	1,200.1	22.1	-17.3	2.00	2.00	0.00	321.89	
3,120.1	8.03	321.89	3,099.9	232.9	-182.7	0.00	0.00	0.00	0.00	
3,521.4	0.00	0.00	3,500.0	255.0	-200.0	2.00	-2.00	0.00	180.00	
5,982.0	0.00	0.00	5,960.6	255.0	-200.0	0.00	0.00	0.00	0.00	
7,102.0	84.00	89.99	6,720.3	255.1	484.1	7.50	7.50	0.00	89.99	
7,173.0	84.00	89.99	6,727.8	255.1	554.7	0.00	0.00	0.00	0.00	
7,301.8	90.44	90.00	6,734.0	255.1	683.3	5.00	5.00	0.00	0.05	
11,083.7	90.44	90.00	6,705.0	255.4	4,465.1	0.00	0.00	0.00	0.00	BHL 908'FNL & 50C

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
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<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>HARDLINE SHL 460'FWL (2) - SECTIONLINE 250'W OF SHL (2) - HARDLINE BHL 460'FEL (2)</b>									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
840.0	0.80	321.89	840.0	0.2	-0.2	-0.2	2.00	2.00	0.00
880.0	1.60	321.89	880.0	0.9	-0.7	-0.6	2.00	2.00	0.00
920.0	2.40	321.89	920.0	2.0	-1.6	-1.4	2.00	2.00	0.00
960.0	3.20	321.89	959.9	3.5	-2.8	-2.6	2.00	2.00	0.00
1,000.0	4.00	321.89	999.8	5.5	-4.3	-4.0	2.00	2.00	0.00
1,040.0	4.80	321.89	1,039.7	7.9	-6.2	-5.7	2.00	2.00	0.00
1,080.0	5.60	321.89	1,079.6	10.8	-8.4	-7.8	2.00	2.00	0.00
1,120.0	6.40	321.89	1,119.3	14.0	-11.0	-10.2	2.00	2.00	0.00
1,160.0	7.20	321.89	1,159.1	17.8	-13.9	-12.9	2.00	2.00	0.00
1,200.0	8.00	321.89	1,198.7	21.9	-17.2	-15.9	2.00	2.00	0.00
1,201.4	8.03	321.89	1,200.1	22.1	-17.3	-16.0	2.00	2.00	0.00
1,240.0	8.03	321.89	1,238.3	26.3	-20.7	-19.1	0.00	0.00	0.00
1,280.0	8.03	321.89	1,277.9	30.7	-24.1	-22.3	0.00	0.00	0.00
1,320.0	8.03	321.89	1,317.5	35.1	-27.5	-25.5	0.00	0.00	0.00
1,360.0	8.03	321.89	1,357.1	39.5	-31.0	-28.7	0.00	0.00	0.00
1,400.0	8.03	321.89	1,396.7	43.9	-34.4	-31.9	0.00	0.00	0.00
1,440.0	8.03	321.89	1,436.4	48.3	-37.9	-35.1	0.00	0.00	0.00
1,480.0	8.03	321.89	1,476.0	52.7	-41.3	-38.3	0.00	0.00	0.00
1,520.0	8.03	321.89	1,515.6	57.1	-44.8	-41.4	0.00	0.00	0.00
1,560.0	8.03	321.89	1,555.2	61.5	-48.2	-44.6	0.00	0.00	0.00
1,600.0	8.03	321.89	1,594.8	65.9	-51.7	-47.8	0.00	0.00	0.00
1,640.0	8.03	321.89	1,634.4	70.3	-55.1	-51.0	0.00	0.00	0.00
1,680.0	8.03	321.89	1,674.0	74.7	-58.6	-54.2	0.00	0.00	0.00
1,720.0	8.03	321.89	1,713.6	79.1	-62.0	-57.4	0.00	0.00	0.00
1,760.0	8.03	321.89	1,753.2	83.5	-65.5	-60.6	0.00	0.00	0.00
1,800.0	8.03	321.89	1,792.8	87.9	-68.9	-63.8	0.00	0.00	0.00
1,840.0	8.03	321.89	1,832.4	92.3	-72.4	-67.0	0.00	0.00	0.00
1,880.0	8.03	321.89	1,872.0	96.7	-75.8	-70.2	0.00	0.00	0.00
1,920.0	8.03	321.89	1,911.6	101.1	-79.3	-73.4	0.00	0.00	0.00

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<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
1,960.0	8.03	321.89	1,951.3	105.4	-82.7	-76.5	0.00	0.00	0.00
2,000.0	8.03	321.89	1,990.9	109.8	-86.1	-79.7	0.00	0.00	0.00
2,040.0	8.03	321.89	2,030.5	114.2	-89.6	-82.9	0.00	0.00	0.00
2,080.0	8.03	321.89	2,070.1	118.6	-93.0	-86.1	0.00	0.00	0.00
2,120.0	8.03	321.89	2,109.7	123.0	-96.5	-89.3	0.00	0.00	0.00
2,160.0	8.03	321.89	2,149.3	127.4	-99.9	-92.5	0.00	0.00	0.00
2,200.0	8.03	321.89	2,188.9	131.8	-103.4	-95.7	0.00	0.00	0.00
2,240.0	8.03	321.89	2,228.5	136.2	-106.8	-98.9	0.00	0.00	0.00
2,280.0	8.03	321.89	2,268.1	140.6	-110.3	-102.1	0.00	0.00	0.00
2,320.0	8.03	321.89	2,307.7	145.0	-113.7	-105.3	0.00	0.00	0.00
2,360.0	8.03	321.89	2,347.3	149.4	-117.2	-108.5	0.00	0.00	0.00
2,400.0	8.03	321.89	2,386.9	153.8	-120.6	-111.6	0.00	0.00	0.00
2,440.0	8.03	321.89	2,426.6	158.2	-124.1	-114.8	0.00	0.00	0.00
2,480.0	8.03	321.89	2,466.2	162.6	-127.5	-118.0	0.00	0.00	0.00
2,520.0	8.03	321.89	2,505.8	167.0	-131.0	-121.2	0.00	0.00	0.00
2,560.0	8.03	321.89	2,545.4	171.4	-134.4	-124.4	0.00	0.00	0.00
2,600.0	8.03	321.89	2,585.0	175.8	-137.9	-127.6	0.00	0.00	0.00
2,640.0	8.03	321.89	2,624.6	180.2	-141.3	-130.8	0.00	0.00	0.00
2,680.0	8.03	321.89	2,664.2	184.6	-144.8	-134.0	0.00	0.00	0.00
2,720.0	8.03	321.89	2,703.8	189.0	-148.2	-137.2	0.00	0.00	0.00
2,760.0	8.03	321.89	2,743.4	193.3	-151.6	-140.4	0.00	0.00	0.00
2,800.0	8.03	321.89	2,783.0	197.7	-155.1	-143.5	0.00	0.00	0.00
2,840.0	8.03	321.89	2,822.6	202.1	-158.5	-146.7	0.00	0.00	0.00
2,880.0	8.03	321.89	2,862.2	206.5	-162.0	-149.9	0.00	0.00	0.00
2,920.0	8.03	321.89	2,901.8	210.9	-165.4	-153.1	0.00	0.00	0.00
2,960.0	8.03	321.89	2,941.5	215.3	-168.9	-156.3	0.00	0.00	0.00
3,000.0	8.03	321.89	2,981.1	219.7	-172.3	-159.5	0.00	0.00	0.00
3,040.0	8.03	321.89	3,020.7	224.1	-175.8	-162.7	0.00	0.00	0.00
3,080.0	8.03	321.89	3,060.3	228.5	-179.2	-165.9	0.00	0.00	0.00
3,120.0	8.03	321.89	3,099.9	232.9	-182.7	-169.1	0.00	0.00	0.00
3,120.1	8.03	321.89	3,099.9	232.9	-182.7	-169.1	0.00	0.00	0.00
3,160.0	7.23	321.89	3,139.5	237.1	-185.9	-172.1	2.00	-2.00	0.00
3,200.0	6.43	321.89	3,179.3	240.8	-188.9	-174.8	2.00	-2.00	0.00
3,240.0	5.63	321.89	3,219.0	244.1	-191.5	-177.2	2.00	-2.00	0.00
3,280.0	4.83	321.89	3,258.9	247.0	-193.7	-179.3	2.00	-2.00	0.00
3,320.0	4.03	321.89	3,298.7	249.4	-195.6	-181.1	2.00	-2.00	0.00
3,360.0	3.23	321.89	3,338.7	251.4	-197.2	-182.5	2.00	-2.00	0.00
3,400.0	2.43	321.89	3,378.6	253.0	-198.4	-183.6	2.00	-2.00	0.00
3,440.0	1.63	321.89	3,418.6	254.1	-199.3	-184.4	2.00	-2.00	0.00
3,480.0	0.83	321.89	3,458.6	254.8	-199.8	-184.9	2.00	-2.00	0.00
3,520.0	0.03	321.89	3,498.6	255.0	-200.0	-185.1	2.00	-2.00	0.00
3,521.4	0.00	0.00	3,500.0	255.0	-200.0	-185.1	2.00	-2.00	0.00
3,560.0	0.00	0.00	3,538.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,600.0	0.00	0.00	3,578.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,640.0	0.00	0.00	3,618.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,680.0	0.00	0.00	3,658.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,720.0	0.00	0.00	3,698.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,760.0	0.00	0.00	3,738.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,800.0	0.00	0.00	3,778.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,840.0	0.00	0.00	3,818.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,880.0	0.00	0.00	3,858.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,920.0	0.00	0.00	3,898.6	255.0	-200.0	-185.1	0.00	0.00	0.00
3,960.0	0.00	0.00	3,938.6	255.0	-200.0	-185.1	0.00	0.00	0.00

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<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
4,000.0	0.00	0.00	3,978.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,040.0	0.00	0.00	4,018.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,080.0	0.00	0.00	4,058.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,120.0	0.00	0.00	4,098.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,160.0	0.00	0.00	4,138.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,200.0	0.00	0.00	4,178.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,240.0	0.00	0.00	4,218.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,280.0	0.00	0.00	4,258.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,320.0	0.00	0.00	4,298.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,360.0	0.00	0.00	4,338.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,400.0	0.00	0.00	4,378.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,440.0	0.00	0.00	4,418.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,480.0	0.00	0.00	4,458.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,520.0	0.00	0.00	4,498.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,560.0	0.00	0.00	4,538.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,600.0	0.00	0.00	4,578.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,640.0	0.00	0.00	4,618.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,680.0	0.00	0.00	4,658.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,720.0	0.00	0.00	4,698.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,760.0	0.00	0.00	4,738.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,800.0	0.00	0.00	4,778.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,840.0	0.00	0.00	4,818.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,880.0	0.00	0.00	4,858.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,920.0	0.00	0.00	4,898.6	255.0	-200.0	-185.1	0.00	0.00	0.00
4,960.0	0.00	0.00	4,938.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,000.0	0.00	0.00	4,978.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,040.0	0.00	0.00	5,018.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,080.0	0.00	0.00	5,058.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,120.0	0.00	0.00	5,098.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,160.0	0.00	0.00	5,138.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,178.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,240.0	0.00	0.00	5,218.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,280.0	0.00	0.00	5,258.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,320.0	0.00	0.00	5,298.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,360.0	0.00	0.00	5,338.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,378.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,440.0	0.00	0.00	5,418.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,480.0	0.00	0.00	5,458.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,520.0	0.00	0.00	5,498.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,560.0	0.00	0.00	5,538.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,600.0	0.00	0.00	5,578.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,640.0	0.00	0.00	5,618.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,680.0	0.00	0.00	5,658.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,720.0	0.00	0.00	5,698.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,760.0	0.00	0.00	5,738.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,778.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,840.0	0.00	0.00	5,818.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,880.0	0.00	0.00	5,858.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,920.0	0.00	0.00	5,898.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,960.0	0.00	0.00	5,938.6	255.0	-200.0	-185.1	0.00	0.00	0.00
5,982.0	0.00	0.00	5,960.6	255.0	-200.0	-185.1	0.00	0.00	0.00
KOP #2									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
6,000.0	1.35	89.99	5,978.6	255.0	-199.8	-184.9	7.50	7.50	0.00
6,040.0	4.35	89.99	6,018.5	255.0	-197.8	-182.9	7.50	7.50	0.00
6,080.0	7.35	89.99	6,058.3	255.0	-193.7	-178.8	7.50	7.50	0.00
6,120.0	10.35	89.99	6,097.8	255.0	-187.6	-172.7	7.50	7.50	0.00
6,160.0	13.35	89.99	6,137.0	255.0	-179.4	-164.5	7.50	7.50	0.00
6,200.0	16.35	89.99	6,175.6	255.0	-169.1	-154.3	7.50	7.50	0.00
6,240.0	19.35	89.99	6,213.7	255.0	-156.8	-142.0	7.50	7.50	0.00
6,280.0	22.35	89.99	6,251.1	255.0	-142.6	-127.8	7.50	7.50	0.00
6,320.0	25.35	89.99	6,287.7	255.0	-126.4	-111.7	7.50	7.50	0.00
6,360.0	28.35	89.99	6,323.3	255.0	-108.4	-93.6	7.50	7.50	0.00
6,400.0	31.35	89.99	6,358.0	255.0	-88.5	-73.8	7.50	7.50	0.00
6,440.0	34.35	89.99	6,391.6	255.0	-66.8	-52.1	7.50	7.50	0.00
6,480.0	37.35	89.99	6,424.0	255.0	-43.3	-28.7	7.50	7.50	0.00
6,520.0	40.35	89.99	6,455.2	255.0	-18.3	-3.7	7.50	7.50	0.00
6,560.0	43.35	89.99	6,485.0	255.0	8.4	23.0	7.50	7.50	0.00
6,600.0	46.35	89.99	6,513.3	255.0	36.6	51.1	7.50	7.50	0.00
6,640.0	49.35	89.99	6,540.2	255.0	66.3	80.7	7.50	7.50	0.00
6,680.0	52.35	89.99	6,565.4	255.1	97.3	111.7	7.50	7.50	0.00
6,720.0	55.35	89.99	6,589.0	255.1	129.6	143.9	7.50	7.50	0.00
6,760.0	58.35	89.99	6,610.9	255.1	163.1	177.4	7.50	7.50	0.00
6,800.0	61.35	89.99	6,631.0	255.1	197.7	211.9	7.50	7.50	0.00
6,840.0	64.35	89.99	6,649.2	255.1	233.3	247.4	7.50	7.50	0.00
6,880.0	67.35	89.99	6,665.6	255.1	269.7	283.9	7.50	7.50	0.00
6,920.0	70.35	89.99	6,680.0	255.1	307.0	321.1	7.50	7.50	0.00
6,960.0	73.35	89.99	6,692.5	255.1	345.1	359.1	7.50	7.50	0.00
7,000.0	76.35	89.99	6,702.9	255.1	383.7	397.6	7.50	7.50	0.00
7,040.0	79.35	89.99	6,711.4	255.1	422.8	436.6	7.50	7.50	0.00
7,080.0	82.35	89.99	6,717.7	255.1	462.2	476.1	7.50	7.50	0.00
7,102.0	84.00	89.99	6,720.3	255.1	484.1	497.9	7.50	7.50	0.00
7"									
7,120.0	84.00	89.99	6,722.2	255.1	502.0	515.7	0.00	0.00	0.00
7,160.0	84.00	89.99	6,726.4	255.1	541.8	555.5	0.00	0.00	0.00
7,173.0	84.00	89.99	6,727.8	255.1	554.7	568.4	0.00	0.00	0.00
7,200.0	85.35	89.99	6,730.3	255.1	581.6	595.2	5.00	5.00	0.00
7,240.0	87.35	89.99	6,732.8	255.1	621.5	635.1	5.00	5.00	0.00
7,280.0	89.35	89.99	6,734.0	255.1	661.5	675.0	5.00	5.00	0.00
7,301.8	90.44	90.00	6,734.0	255.1	683.3	696.7	5.00	5.00	0.00
End of Build									
7,320.0	90.44	90.00	6,733.9	255.1	701.5	714.9	0.00	0.00	0.00
7,360.0	90.44	90.00	6,733.6	255.2	741.5	754.8	0.00	0.00	0.00
7,400.0	90.44	90.00	6,733.2	255.2	781.5	794.8	0.00	0.00	0.00
7,440.0	90.44	90.00	6,732.9	255.2	821.5	834.7	0.00	0.00	0.00
7,480.0	90.44	90.00	6,732.6	255.2	861.5	874.6	0.00	0.00	0.00
7,520.0	90.44	90.00	6,732.3	255.2	901.5	914.6	0.00	0.00	0.00
7,560.0	90.44	90.00	6,732.0	255.2	941.5	954.5	0.00	0.00	0.00
7,600.0	90.44	90.00	6,731.7	255.2	981.5	994.4	0.00	0.00	0.00
7,640.0	90.44	90.00	6,731.4	255.2	1,021.5	1,034.4	0.00	0.00	0.00
7,680.0	90.44	90.00	6,731.1	255.2	1,061.5	1,074.3	0.00	0.00	0.00
7,720.0	90.44	90.00	6,730.8	255.2	1,101.5	1,114.2	0.00	0.00	0.00
7,760.0	90.44	90.00	6,730.5	255.2	1,141.5	1,154.2	0.00	0.00	0.00
7,800.0	90.44	90.00	6,730.2	255.2	1,181.5	1,194.1	0.00	0.00	0.00
7,840.0	90.44	90.00	6,729.9	255.2	1,221.5	1,234.0	0.00	0.00	0.00
7,880.0	90.44	90.00	6,729.6	255.2	1,261.5	1,274.0	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
7,920.0	90.44	90.00	6,729.3	255.2	1,301.5	1,313.9	0.00	0.00	0.00
7,960.0	90.44	90.00	6,729.0	255.2	1,341.5	1,353.8	0.00	0.00	0.00
8,000.0	90.44	90.00	6,728.6	255.2	1,381.5	1,393.8	0.00	0.00	0.00
8,040.0	90.44	90.00	6,728.3	255.2	1,421.5	1,433.7	0.00	0.00	0.00
8,080.0	90.44	90.00	6,728.0	255.2	1,461.5	1,473.6	0.00	0.00	0.00
8,120.0	90.44	90.00	6,727.7	255.2	1,501.5	1,513.6	0.00	0.00	0.00
8,160.0	90.44	90.00	6,727.4	255.2	1,541.5	1,553.5	0.00	0.00	0.00
8,200.0	90.44	90.00	6,727.1	255.2	1,581.5	1,593.4	0.00	0.00	0.00
8,240.0	90.44	90.00	6,726.8	255.2	1,621.5	1,633.4	0.00	0.00	0.00
8,280.0	90.44	90.00	6,726.5	255.2	1,661.5	1,673.3	0.00	0.00	0.00
8,320.0	90.44	90.00	6,726.2	255.2	1,701.5	1,713.3	0.00	0.00	0.00
8,360.0	90.44	90.00	6,725.9	255.2	1,741.4	1,753.2	0.00	0.00	0.00
8,400.0	90.44	90.00	6,725.6	255.2	1,781.4	1,793.1	0.00	0.00	0.00
8,440.0	90.44	90.00	6,725.3	255.2	1,821.4	1,833.1	0.00	0.00	0.00
8,480.0	90.44	90.00	6,725.0	255.2	1,861.4	1,873.0	0.00	0.00	0.00
8,520.0	90.44	90.00	6,724.7	255.2	1,901.4	1,912.9	0.00	0.00	0.00
8,560.0	90.44	90.00	6,724.4	255.2	1,941.4	1,952.9	0.00	0.00	0.00
8,600.0	90.44	90.00	6,724.0	255.3	1,981.4	1,992.8	0.00	0.00	0.00
8,640.0	90.44	90.00	6,723.7	255.3	2,021.4	2,032.7	0.00	0.00	0.00
8,680.0	90.44	90.00	6,723.4	255.3	2,061.4	2,072.7	0.00	0.00	0.00
8,720.0	90.44	90.00	6,723.1	255.3	2,101.4	2,112.6	0.00	0.00	0.00
8,760.0	90.44	90.00	6,722.8	255.3	2,141.4	2,152.5	0.00	0.00	0.00
8,800.0	90.44	90.00	6,722.5	255.3	2,181.4	2,192.5	0.00	0.00	0.00
8,840.0	90.44	90.00	6,722.2	255.3	2,221.4	2,232.4	0.00	0.00	0.00
8,880.0	90.44	90.00	6,721.9	255.3	2,261.4	2,272.3	0.00	0.00	0.00
8,920.0	90.44	90.00	6,721.6	255.3	2,301.4	2,312.3	0.00	0.00	0.00
8,960.0	90.44	90.00	6,721.3	255.3	2,341.4	2,352.2	0.00	0.00	0.00
9,000.0	90.44	90.00	6,721.0	255.3	2,381.4	2,392.1	0.00	0.00	0.00
9,040.0	90.44	90.00	6,720.7	255.3	2,421.4	2,432.1	0.00	0.00	0.00
9,080.0	90.44	90.00	6,720.4	255.3	2,461.4	2,472.0	0.00	0.00	0.00
9,120.0	90.44	90.00	6,720.1	255.3	2,501.4	2,511.9	0.00	0.00	0.00
9,160.0	90.44	90.00	6,719.8	255.3	2,541.4	2,551.9	0.00	0.00	0.00
9,200.0	90.44	90.00	6,719.4	255.3	2,581.4	2,591.8	0.00	0.00	0.00
9,240.0	90.44	90.00	6,719.1	255.3	2,621.4	2,631.7	0.00	0.00	0.00
9,280.0	90.44	90.00	6,718.8	255.3	2,661.4	2,671.7	0.00	0.00	0.00
9,320.0	90.44	90.00	6,718.5	255.3	2,701.4	2,711.6	0.00	0.00	0.00
9,360.0	90.44	90.00	6,718.2	255.3	2,741.4	2,751.5	0.00	0.00	0.00
9,400.0	90.44	90.00	6,717.9	255.3	2,781.4	2,791.5	0.00	0.00	0.00
9,440.0	90.44	90.00	6,717.6	255.3	2,821.4	2,831.4	0.00	0.00	0.00
9,480.0	90.44	90.00	6,717.3	255.3	2,861.4	2,871.3	0.00	0.00	0.00
9,520.0	90.44	90.00	6,717.0	255.3	2,901.4	2,911.3	0.00	0.00	0.00
9,560.0	90.44	90.00	6,716.7	255.3	2,941.4	2,951.2	0.00	0.00	0.00
9,600.0	90.44	90.00	6,716.4	255.3	2,981.4	2,991.1	0.00	0.00	0.00
9,640.0	90.44	90.00	6,716.1	255.3	3,021.4	3,031.1	0.00	0.00	0.00
9,680.0	90.44	90.00	6,715.8	255.3	3,061.4	3,071.0	0.00	0.00	0.00
9,720.0	90.44	90.00	6,715.5	255.3	3,101.4	3,110.9	0.00	0.00	0.00
9,760.0	90.44	90.00	6,715.2	255.3	3,141.4	3,150.9	0.00	0.00	0.00
9,800.0	90.44	90.00	6,714.8	255.3	3,181.4	3,190.8	0.00	0.00	0.00
9,840.0	90.44	90.00	6,714.5	255.3	3,221.4	3,230.7	0.00	0.00	0.00
9,880.0	90.44	90.00	6,714.2	255.4	3,261.4	3,270.7	0.00	0.00	0.00
9,920.0	90.44	90.00	6,713.9	255.4	3,301.4	3,310.6	0.00	0.00	0.00
9,960.0	90.44	90.00	6,713.6	255.4	3,341.4	3,350.5	0.00	0.00	0.00
10,000.0	90.44	90.00	6,713.3	255.4	3,381.4	3,390.5	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

Planned 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)
10,040.0	90.44	90.00	6,713.0	255.4	3,421.4	3,430.4	0.00	0.00	0.00
10,080.0	90.44	90.00	6,712.7	255.4	3,461.4	3,470.3	0.00	0.00	0.00
10,120.0	90.44	90.00	6,712.4	255.4	3,501.4	3,510.3	0.00	0.00	0.00
10,160.0	90.44	90.00	6,712.1	255.4	3,541.4	3,550.2	0.00	0.00	0.00
10,200.0	90.44	90.00	6,711.8	255.4	3,581.4	3,590.1	0.00	0.00	0.00
10,240.0	90.44	90.00	6,711.5	255.4	3,621.4	3,630.1	0.00	0.00	0.00
10,280.0	90.44	90.00	6,711.2	255.4	3,661.4	3,670.0	0.00	0.00	0.00
10,320.0	90.44	90.00	6,710.9	255.4	3,701.4	3,709.9	0.00	0.00	0.00
10,360.0	90.44	90.00	6,710.5	255.4	3,741.4	3,749.9	0.00	0.00	0.00
10,400.0	90.44	90.00	6,710.2	255.4	3,781.4	3,789.8	0.00	0.00	0.00
10,440.0	90.44	90.00	6,709.9	255.4	3,821.4	3,829.7	0.00	0.00	0.00
10,480.0	90.44	90.00	6,709.6	255.4	3,861.4	3,869.7	0.00	0.00	0.00
10,520.0	90.44	90.00	6,709.3	255.4	3,901.4	3,909.6	0.00	0.00	0.00
10,560.0	90.44	90.00	6,709.0	255.4	3,941.4	3,949.5	0.00	0.00	0.00
10,600.0	90.44	90.00	6,708.7	255.4	3,981.4	3,989.5	0.00	0.00	0.00
10,640.0	90.44	90.00	6,708.4	255.4	4,021.4	4,029.4	0.00	0.00	0.00
10,680.0	90.44	90.00	6,708.1	255.4	4,061.4	4,069.3	0.00	0.00	0.00
10,720.0	90.44	90.00	6,707.8	255.4	4,101.4	4,109.3	0.00	0.00	0.00
10,760.0	90.44	90.00	6,707.5	255.4	4,141.4	4,149.2	0.00	0.00	0.00
10,800.0	90.44	90.00	6,707.2	255.4	4,181.4	4,189.1	0.00	0.00	0.00
10,840.0	90.44	90.00	6,706.9	255.4	4,221.4	4,229.1	0.00	0.00	0.00
10,880.0	90.44	90.00	6,706.6	255.4	4,261.4	4,269.0	0.00	0.00	0.00
10,920.0	90.44	90.00	6,706.3	255.4	4,301.4	4,308.9	0.00	0.00	0.00
10,960.0	90.44	90.00	6,705.9	255.4	4,341.4	4,348.9	0.00	0.00	0.00
11,000.0	90.44	90.00	6,705.6	255.4	4,381.4	4,388.8	0.00	0.00	0.00
11,040.0	90.44	90.00	6,705.3	255.4	4,421.4	4,428.7	0.00	0.00	0.00
11,080.0	90.44	90.00	6,705.0	255.4	4,461.4	4,468.7	0.00	0.00	0.00
11,083.7	90.44	90.00	6,705.0	255.4	4,465.1	4,472.4	0.00	0.00	0.00
BHL 908'FNL & 500'FEL									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-29-12)		

## Targets

### Target Name

- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
HARDLINE SHL 460'F	0.00	0.00	1.0	300.0	210.0	1,434,292.14	3,302,636.08	40.520433	-104.411415
- plan misses target center by 366.2ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,434,292.14	3,302,636.08		
Point 2			1.0	-400.0	0.0	1,433,892.18	3,302,640.99		
SECTIONLINE 250'W	0.00	0.00	1.0	300.0	-250.0	1,434,286.50	3,302,176.13	40.520433	-104.413069
- plan misses target center by 390.5ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,434,286.50	3,302,176.13		
Point 2			1.0	-400.0	0.0	1,433,886.54	3,302,181.04		
HARDLINE BHL 460'F	0.00	0.00	1.0	300.0	4,505.1	1,434,344.83	3,306,930.71	40.520432	-104.395966
- plan misses target center by 4515.1ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,434,344.83	3,306,930.71		
Point 2			1.0	-400.0	0.0	1,433,944.87	3,306,935.62		
BHL 908'FNL & 500'F	0.00	0.00	6,705.0	255.4	4,465.1	1,434,299.79	3,306,891.25	40.520310	-104.396110
- plan hits target center									
- Point									

## Casing Points

Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(")	(")
7,102.0	6,720.3	7"	7	7-1/2

## Plan Annotations

Measured Depth	Vertical Depth	Local Coordinates		
(ft)	(ft)	+N/-S	+E/-W	Comment
(ft)	(ft)	(ft)	(ft)	
800.0	800.0	0.0	0.0	KOP #1
5,982.0	5,960.6	255.0	-200.0	KOP #2
7,301.8	6,734.0	255.1	683.3	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.2-T6N-R63W**

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

**Brown 2F-412**

**Wellbore #1**

**Plan #1 (5-29-12)**

## **Anticollision Report**

**04 June, 2012**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (5-29-12)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 6/4/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,083.7	Plan #1 (5-29-12) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Brown Pad Sec.2-T6N-R63W						
Brown 11-2 (Exist.) - Wellbore #1 - Design #1	7,205.0	6,730.7	134.7	96.3	3.505	CC, ES, SF
Brown 2E-232 - Wellbore #1 - Plan #1 (5-29-12)	200.0	200.0	32.8	32.1	48.645	CC, ES
Brown 2E-232 - Wellbore #1 - Plan #1 (5-29-12)	11,084.1	10,961.3	388.8	157.4	1.680	SF
Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)	800.0	800.0	29.1	25.8	8.641	CC, ES
Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)	11,084.1	10,917.3	437.3	202.8	1.865	SF

Offset Design		Brown Pad Sec.2-T6N-R63W - Brown 11-2 (Exist.) - Wellbore #1 - Design #1										Offset Site Error:		0.0 ft	
Survey Program:		0-MWD										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	56.39	389.8	586.6	704.4						
100.0	100.0	100.0	100.0	0.1	0.1	56.39	389.8	586.6	704.4	704.1	0.22	3,133.712			
200.0	200.0	200.0	200.0	0.3	0.3	56.39	389.8	586.6	704.4	703.7	0.67	1,044.571			
300.0	300.0	300.0	300.0	0.6	0.6	56.39	389.8	586.6	704.4	703.2	1.12	626.742			
400.0	400.0	400.0	400.0	0.8	0.8	56.39	389.8	586.6	704.4	702.8	1.57	447.673			
500.0	500.0	500.0	500.0	1.0	1.0	56.39	389.8	586.6	704.4	702.3	2.02	348.190			
600.0	600.0	600.0	600.0	1.2	1.2	56.39	389.8	586.6	704.4	701.9	2.47	284.883			
700.0	700.0	700.0	700.0	1.5	1.5	56.39	389.8	586.6	704.4	701.4	2.92	241.055			
800.0	800.0	800.0	800.0	1.7	1.7	56.39	389.8	586.6	704.4	701.0	3.37	208.914			
900.0	900.0	900.0	900.0	1.9	1.9	94.64	389.8	586.6	704.5	700.7	3.82	184.519			
1,000.0	999.8	999.8	999.8	2.1	2.1	95.06	389.8	586.6	704.9	700.7	4.26	165.298			
1,100.0	1,099.5	1,099.5	1,099.5	2.4	2.4	95.74	389.8	586.6	705.8	701.0	4.72	149.499			
1,201.4	1,200.1	1,200.1	1,200.1	2.6	2.6	96.70	389.8	586.6	707.1	701.9	5.20	135.939			
1,300.0	1,297.7	1,297.7	1,297.7	2.9	2.8	97.80	389.8	586.6	708.9	703.2	5.69	124.595			
1,400.0	1,396.7	1,396.7	1,396.7	3.2	3.0	98.90	389.8	586.6	710.9	704.7	6.20	114.732			
1,500.0	1,495.8	1,495.8	1,495.8	3.5	3.2	100.00	389.8	586.6	713.2	706.5	6.71	106.259			
1,600.0	1,594.8	1,594.8	1,594.8	3.8	3.5	101.09	389.8	586.6	715.8	708.6	7.23	98.943			
1,700.0	1,693.8	1,693.8	1,693.8	4.1	3.7	102.17	389.8	586.6	718.7	710.9	7.76	92.593			
1,800.0	1,792.8	1,792.8	1,792.8	4.4	3.9	103.25	389.8	586.6	721.8	713.5	8.29	87.048			
1,900.0	1,891.8	1,891.8	1,891.8	4.7	4.1	104.31	389.8	586.6	725.1	716.3	8.82	82.180			
2,000.0	1,990.9	1,990.9	1,990.9	5.1	4.4	105.37	389.8	586.6	728.7	719.4	9.36	77.883			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 11-2 (Exist.) - Wellbore #1 - Design #1												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
2,100.0	2,089.9	2,089.9	2,089.9	5.4	4.6	106.41	389.8	586.6	732.6	722.7	9.89	74.071	
2,200.0	2,188.9	2,188.9	2,188.9	5.7	4.8	107.44	389.8	586.6	736.7	726.3	10.42	70.672	
2,300.0	2,287.9	2,287.9	2,287.9	6.0	5.0	108.46	389.8	586.6	741.0	730.1	10.96	67.630	
2,400.0	2,386.9	2,386.9	2,386.9	6.4	5.3	109.47	389.8	586.6	745.6	734.1	11.49	64.895	
2,500.0	2,486.0	2,486.0	2,486.0	6.7	5.5	110.47	389.8	586.6	750.4	738.4	12.02	62.427	
2,600.0	2,585.0	2,585.0	2,585.0	7.0	5.7	111.45	389.8	586.6	755.5	742.9	12.55	60.192	
2,700.0	2,684.0	2,684.0	2,684.0	7.4	5.9	112.42	389.8	586.6	760.7	747.6	13.08	58.163	
2,800.0	2,783.0	2,783.0	2,783.0	7.7	6.1	113.38	389.8	586.6	766.2	752.6	13.61	56.314	
2,900.0	2,882.0	2,882.0	2,882.0	8.0	6.4	114.33	389.8	586.6	771.9	757.8	14.13	54.625	
3,000.0	2,981.1	2,981.1	2,981.1	8.4	6.6	115.26	389.8	586.6	777.8	763.1	14.65	53.078	
3,100.0	3,080.1	3,080.1	3,080.1	8.7	6.8	116.17	389.8	586.6	783.9	768.7	15.17	51.658	
3,120.1	3,099.9	3,099.9	3,099.9	8.8	6.9	116.35	389.8	586.6	785.2	769.9	15.28	51.387	
3,200.0	3,179.3	3,179.3	3,179.3	9.0	7.0	117.08	389.8	586.6	789.7	774.0	15.67	50.411	
3,300.0	3,278.8	3,278.8	3,278.8	9.2	7.3	117.77	389.8	586.6	794.1	778.0	16.10	49.331	
3,400.0	3,378.6	3,378.6	3,378.6	9.4	7.5	118.20	389.8	586.6	796.9	780.4	16.51	48.279	
3,500.0	3,478.6	3,478.6	3,478.6	9.6	7.7	118.37	389.8	586.6	798.1	781.2	16.89	47.245	
3,521.4	3,500.0	3,500.0	3,500.0	9.6	7.8	80.27	389.8	586.6	798.1	782.0	16.10	49.560	
3,600.0	3,578.6	3,578.6	3,578.6	9.8	7.9	80.27	389.8	586.6	798.1	781.7	16.42	48.598	
3,700.0	3,678.6	3,678.6	3,678.6	9.9	8.2	80.27	389.8	586.6	798.1	781.3	16.85	47.367	
3,800.0	3,778.6	3,778.6	3,778.6	10.1	8.4	80.27	389.8	586.6	798.1	780.8	17.28	46.194	
3,900.0	3,878.6	3,878.6	3,878.6	10.3	8.6	80.27	389.8	586.6	798.1	780.4	17.71	45.075	
4,000.0	3,978.6	3,978.6	3,978.6	10.5	8.8	80.27	389.8	586.6	798.1	780.0	18.14	44.007	
4,100.0	4,078.6	4,078.6	4,078.6	10.7	9.1	80.27	389.8	586.6	798.1	779.5	18.57	42.986	
4,200.0	4,178.6	4,178.6	4,178.6	10.8	9.3	80.27	389.8	586.6	798.1	779.1	19.00	42.009	
4,300.0	4,278.6	4,278.6	4,278.6	11.0	9.5	80.27	389.8	586.6	798.1	778.7	19.43	41.074	
4,400.0	4,378.6	4,378.6	4,378.6	11.2	9.7	80.27	389.8	586.6	798.1	778.2	19.86	40.179	
4,500.0	4,478.6	4,478.6	4,478.6	11.4	10.0	80.27	389.8	586.6	798.1	777.8	20.30	39.320	
4,600.0	4,578.6	4,578.6	4,578.6	11.6	10.2	80.27	389.8	586.6	798.1	777.4	20.73	38.496	
4,700.0	4,678.6	4,678.6	4,678.6	11.8	10.4	80.27	389.8	586.6	798.1	776.9	21.17	37.705	
4,800.0	4,778.6	4,778.6	4,778.6	12.0	10.6	80.27	389.8	586.6	798.1	776.5	21.60	36.945	
4,900.0	4,878.6	4,878.6	4,878.6	12.2	10.9	80.27	389.8	586.6	798.1	776.1	22.04	36.213	
5,000.0	4,978.6	4,978.6	4,978.6	12.4	11.1	80.27	389.8	586.6	798.1	775.6	22.48	35.510	
5,100.0	5,078.6	5,078.6	5,078.6	12.6	11.3	80.27	389.8	586.6	798.1	775.2	22.91	34.832	
5,200.0	5,178.6	5,178.6	5,178.6	12.7	11.5	80.27	389.8	586.6	798.1	774.8	23.35	34.180	
5,300.0	5,278.6	5,278.6	5,278.6	12.9	11.8	80.27	389.8	586.6	798.1	774.3	23.79	33.550	
5,400.0	5,378.6	5,378.6	5,378.6	13.1	12.0	80.27	389.8	586.6	798.1	773.9	24.23	32.943	
5,500.0	5,478.6	5,478.6	5,478.6	13.3	12.2	80.27	389.8	586.6	798.1	773.4	24.67	32.357	
5,600.0	5,578.6	5,578.6	5,578.6	13.5	12.4	80.27	389.8	586.6	798.1	773.0	25.10	31.791	
5,700.0	5,678.6	5,678.6	5,678.6	13.7	12.7	80.27	389.8	586.6	798.1	772.6	25.54	31.244	
5,800.0	5,778.6	5,778.6	5,778.6	13.9	12.9	80.27	389.8	586.6	798.1	772.1	25.98	30.715	
5,900.0	5,878.6	5,878.6	5,878.6	14.1	13.1	80.27	389.8	586.6	798.1	771.7	26.42	30.203	
5,982.0	5,960.6	5,960.6	5,960.6	14.3	13.3	80.27	389.8	586.6	798.1	771.3	26.79	29.796	
6,000.0	5,978.6	5,978.6	5,978.6	14.3	13.3	-9.72	389.8	586.6	797.9	770.5	27.35	29.176	
6,050.0	6,028.5	6,028.5	6,028.5	14.4	13.4	-9.79	389.8	586.6	795.1	767.7	27.45	28.964	
6,100.0	6,078.1	6,078.1	6,078.1	14.5	13.5	-9.94	389.8	586.6	789.1	761.7	27.46	28.738	
6,150.0	6,127.2	6,127.2	6,127.2	14.6	13.7	-10.19	389.8	586.6	780.0	752.6	27.37	28.494	
6,200.0	6,175.6	6,175.6	6,175.6	14.6	13.8	-10.52	389.8	586.6	767.7	740.5	27.19	28.230	
6,250.0	6,223.1	6,223.1	6,223.1	14.6	13.9	-10.97	389.8	586.6	752.3	725.4	26.92	27.942	
6,300.0	6,269.5	6,269.5	6,269.5	14.7	14.0	-11.54	389.8	586.6	733.9	707.3	26.57	27.622	
6,350.0	6,314.5	6,314.5	6,314.5	14.7	14.1	-12.26	389.8	586.6	712.6	686.4	26.14	27.260	
6,400.0	6,358.0	6,358.0	6,358.0	14.7	14.2	-13.15	389.8	586.6	688.4	662.8	25.65	26.844	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 11-2 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,450.0	6,399.8	6,399.8	6,399.8	14.8	14.3	-14.26	389.8	586.6	661.6	636.5	25.10	26.355		
6,500.0	6,439.8	6,439.8	6,439.8	14.8	14.4	-15.64	389.8	586.6	632.2	607.6	24.54	25.764		
6,550.0	6,477.7	6,477.7	6,477.7	14.9	14.4	-17.37	389.8	586.6	600.4	576.4	23.98	25.034		
6,600.0	6,513.3	6,513.3	6,513.3	15.0	14.5	-19.53	389.8	586.6	566.3	542.8	23.49	24.110		
6,650.0	6,546.6	6,546.6	6,546.6	15.2	14.6	-22.27	389.8	586.6	530.1	507.0	23.13	22.917		
6,700.0	6,577.4	6,577.4	6,577.4	15.6	14.7	-25.75	389.8	586.6	492.2	469.1	23.03	21.371		
6,750.0	6,605.6	6,605.6	6,605.6	16.0	14.7	-30.19	389.8	586.6	452.6	429.2	23.33	19.399		
6,800.0	6,631.0	6,631.0	6,631.0	16.6	14.8	-35.84	389.8	586.6	411.7	387.4	24.21	17.004		
6,850.0	6,653.5	6,653.5	6,653.5	17.2	14.8	-42.89	389.8	586.6	369.8	344.0	25.80	14.332		
6,900.0	6,673.1	6,673.1	6,673.1	17.9	14.9	-51.37	389.8	586.6	327.4	299.3	28.05	11.670		
6,950.0	6,689.6	6,689.6	6,689.6	18.6	14.9	-60.86	389.8	586.6	285.0	254.4	30.63	9.304		
7,000.0	6,702.9	6,702.9	6,702.9	19.5	15.0	-70.42	389.8	586.6	243.6	210.6	33.03	7.375		
7,050.0	6,713.1	6,713.1	6,713.1	20.4	15.0	-78.88	389.8	586.6	204.6	169.8	34.89	5.866		
7,102.0	6,720.3	6,720.3	6,720.3	21.4	15.0	-85.45	389.8	586.6	169.3	133.0	36.26	4.669		
7,173.0	6,727.8	6,727.8	6,727.8	22.8	15.0	-88.58	389.8	586.6	138.4	100.7	37.75	3.667		
7,200.0	6,730.3	6,730.3	6,730.3	23.4	15.0	-89.83	389.8	586.6	134.8	96.5	38.32	3.518		
7,205.0	6,730.7	6,730.7	6,730.7	23.5	15.0	-90.00	389.8	586.6	134.7	96.3	38.43	3.505 CC, ES, SF		
7,301.8	6,734.0	6,734.0	6,734.0	25.6	15.0	-89.68	389.8	586.6	165.8	125.2	40.54	4.090		
7,400.0	6,733.2	6,733.2	6,733.2	27.8	15.0	-89.36	389.8	586.6	236.9	194.1	42.77	5.538		
7,500.0	6,732.5	6,732.5	6,732.5	30.2	15.0	-89.04	389.8	586.6	324.1	279.0	45.13	7.183		
7,600.0	6,731.7	6,731.7	6,731.7	32.6	15.0	-88.71	389.8	586.6	417.2	369.6	47.56	8.771		
7,700.0	6,730.9	6,730.9	6,730.9	35.1	15.0	-88.39	389.8	586.6	512.8	462.8	50.05	10.247		
7,800.0	6,730.2	6,730.2	6,730.2	37.6	15.0	-88.06	389.8	586.6	609.9	557.3	52.58	11.600		
7,900.0	6,729.4	6,729.4	6,729.4	40.2	15.0	-87.73	389.8	586.6	707.8	652.6	55.14	12.836		
8,000.0	6,728.6	6,728.6	6,728.6	42.8	15.0	-87.41	389.8	586.6	806.2	748.4	57.73	13.965		
8,100.0	6,727.9	6,727.9	6,727.9	45.4	15.0	-87.08	389.8	586.6	904.9	844.6	60.34	14.997		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2E-232 - Wellbore #1 - Plan #1 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	32.8	0.0	32.8					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	32.8	0.0	32.8	32.6	0.22	145.934		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	32.8	0.0	32.8	32.1	0.67	48.645 CC, ES		
300.0	300.0	298.9	298.9	0.6	0.6	-0.94	34.4	-0.6	34.4	33.3	1.12	30.692		
400.0	400.0	397.5	397.4	0.8	0.8	-3.28	39.2	-2.2	39.4	37.8	1.58	24.964		
500.0	500.0	495.7	495.2	1.0	1.0	-6.09	47.2	-5.0	47.7	45.7	2.05	23.318		
600.0	600.0	593.3	592.0	1.2	1.3	-8.68	58.2	-8.9	59.5	56.9	2.53	23.481		
700.0	700.0	692.3	690.2	1.5	1.6	-10.65	71.0	-13.3	72.9	69.9	3.03	24.063		
800.0	800.0	791.4	788.3	1.7	1.9	-12.01	83.7	-17.8	86.4	82.8	3.53	24.489		
900.0	900.0	890.7	886.7	1.9	2.2	25.44	96.5	-22.3	98.3	94.5	3.87	25.383		
1,000.0	999.8	990.3	985.4	2.1	2.6	25.73	109.3	-26.7	107.2	102.8	4.33	24.749		
1,100.0	1,099.5	1,090.1	1,084.2	2.4	2.9	26.76	122.1	-31.2	112.9	108.1	4.80	23.538		
1,201.4	1,200.1	1,191.4	1,184.5	2.6	3.2	28.55	135.1	-35.8	115.6	110.3	5.28	21.884		
1,300.0	1,297.7	1,289.9	1,282.2	2.9	3.6	30.67	147.8	-40.2	116.8	111.0	5.78	20.216		
1,400.0	1,396.7	1,389.8	1,381.1	3.2	3.9	32.76	160.6	-44.7	118.2	111.9	6.30	18.772		
1,500.0	1,495.8	1,489.7	1,480.1	3.5	4.2	34.81	173.5	-49.2	119.8	112.9	6.83	17.536		
1,600.0	1,594.8	1,589.6	1,579.1	3.8	4.6	36.80	186.3	-53.7	121.5	114.1	7.38	16.467		
1,700.0	1,693.8	1,689.5	1,678.0	4.1	4.9	38.73	199.2	-58.2	123.3	115.4	7.94	15.538		
1,800.0	1,792.8	1,789.4	1,777.0	4.4	5.2	40.60	212.0	-62.7	125.3	116.8	8.51	14.725		
1,900.0	1,891.8	1,889.3	1,876.0	4.7	5.6	42.42	224.8	-67.1	127.4	118.3	9.09	14.009		
2,000.0	1,990.9	1,989.2	1,974.9	5.1	5.9	44.17	237.7	-71.6	129.7	120.0	9.69	13.377		
2,100.0	2,089.9	2,089.1	2,073.9	5.4	6.2	45.86	250.5	-76.1	132.0	121.7	10.30	12.816		
2,200.0	2,188.9	2,189.0	2,172.9	5.7	6.6	47.49	263.4	-80.6	134.5	123.6	10.92	12.317		
2,300.0	2,287.9	2,288.9	2,271.8	6.0	6.9	49.07	276.2	-85.1	137.0	125.5	11.55	11.870		
2,400.0	2,386.9	2,388.8	2,370.8	6.4	7.2	50.58	289.1	-89.6	139.7	127.5	12.18	11.470		
2,500.0	2,486.0	2,488.7	2,469.8	6.7	7.6	52.03	301.9	-94.1	142.5	129.7	12.82	11.110		
2,600.0	2,585.0	2,588.6	2,568.7	7.0	7.9	53.43	314.7	-98.6	145.3	131.9	13.47	10.786		
2,700.0	2,684.0	2,688.5	2,667.7	7.4	8.2	54.78	327.6	-103.1	148.3	134.1	14.13	10.493		
2,800.0	2,783.0	2,788.4	2,766.7	7.7	8.6	56.07	340.4	-107.6	151.3	136.5	14.79	10.227		
2,900.0	2,882.0	2,888.2	2,865.6	8.0	8.9	57.31	353.3	-112.1	154.4	138.9	15.46	9.986		
3,000.0	2,981.1	2,988.1	2,964.6	8.4	9.2	58.50	366.1	-116.5	157.5	141.4	16.13	9.766		
3,100.0	3,080.1	3,088.0	3,063.6	8.7	9.6	59.64	379.0	-121.0	160.7	143.9	16.80	9.566		
3,120.1	3,099.9	3,108.1	3,083.4	8.8	9.6	59.87	381.5	-121.9	161.4	144.5	16.94	9.528		
3,200.0	3,179.3	3,187.9	3,162.5	9.0	9.9	60.46	391.8	-125.5	164.6	147.2	17.42	9.446		
3,300.0	3,278.8	3,287.8	3,261.4	9.2	10.3	60.27	404.6	-130.0	170.1	152.2	17.90	9.501		
3,400.0	3,378.6	3,387.4	3,360.2	9.4	10.6	59.15	417.4	-134.5	177.4	159.1	18.29	9.699		
3,500.0	3,478.6	3,486.8	3,458.6	9.6	10.9	57.26	430.2	-139.0	186.7	168.1	18.59	10.041		
3,521.4	3,500.0	3,508.0	3,479.6	9.6	11.0	18.66	432.9	-139.9	188.9	170.5	18.38	10.281		
3,600.0	3,578.6	3,585.9	3,556.8	9.8	11.3	16.76	443.0	-143.4	197.5	178.6	18.89	10.453		
3,700.0	3,678.6	3,684.9	3,654.9	9.9	11.6	14.56	455.7	-147.9	208.7	189.1	19.56	10.672		
3,800.0	3,778.6	3,784.0	3,753.0	10.1	11.9	12.59	468.4	-152.3	220.2	200.0	20.20	10.898		
3,900.0	3,878.6	3,883.1	3,851.2	10.3	12.3	10.82	481.2	-156.8	231.9	211.0	20.84	11.128		
4,000.0	3,978.6	3,982.1	3,949.3	10.5	12.6	9.22	493.9	-161.2	243.8	222.3	21.46	11.359		
4,100.0	4,078.6	4,081.2	4,047.5	10.7	12.9	7.77	506.6	-165.7	255.9	233.8	22.08	11.590		
4,200.0	4,178.6	4,180.3	4,145.6	10.8	13.3	6.45	519.4	-170.1	268.1	245.4	22.68	11.819		
4,300.0	4,278.6	4,279.3	4,243.8	11.0	13.6	5.24	532.1	-174.6	280.4	257.2	23.28	12.046		
4,400.0	4,378.6	4,378.4	4,341.9	11.2	13.9	4.14	544.8	-179.0	292.9	269.0	23.87	12.269		
4,500.0	4,478.6	4,477.5	4,440.1	11.4	14.3	3.12	557.6	-183.5	305.5	281.0	24.46	12.488		
4,600.0	4,578.6	4,576.6	4,538.2	11.6	14.6	2.19	570.3	-187.9	318.1	293.1	25.04	12.703		
4,700.0	4,678.6	4,678.9	4,639.6	11.8	14.9	1.31	583.3	-192.5	330.7	305.1	25.62	12.909		
4,800.0	4,778.6	4,790.6	4,750.7	12.0	15.2	0.61	594.5	-196.4	340.7	314.6	26.13	13.038		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2E-232 - Wellbore #1 - Plan #1 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,900.0	4,878.6	4,903.1	4,862.9	12.2	15.4	0.18	601.7	-198.9	347.1	320.5	26.58	13.058		
5,000.0	4,978.6	5,016.0	4,975.8	12.4	15.6	0.01	604.7	-200.0	349.7	322.7	26.97	12.968		
5,100.0	5,078.6	5,118.8	5,078.6	12.6	15.7	0.00	604.8	-200.0	349.8	322.5	27.32	12.805		
5,200.0	5,178.6	5,218.8	5,178.6	12.7	15.9	0.00	604.8	-200.0	349.8	322.1	27.68	12.638		
5,300.0	5,278.6	5,318.8	5,278.6	12.9	16.0	0.00	604.8	-200.0	349.8	321.8	28.04	12.474		
5,400.0	5,378.6	5,418.8	5,378.6	13.1	16.2	0.00	604.8	-200.0	349.8	321.4	28.41	12.314		
5,500.0	5,478.6	5,518.8	5,478.6	13.3	16.4	0.00	604.8	-200.0	349.8	321.0	28.77	12.157		
5,600.0	5,578.6	5,618.8	5,578.6	13.5	16.5	0.00	604.8	-200.0	349.8	320.7	29.14	12.003		
5,700.0	5,678.6	5,718.8	5,678.6	13.7	16.7	0.00	604.8	-200.0	349.8	320.3	29.52	11.852		
5,800.0	5,778.6	5,818.8	5,778.6	13.9	16.8	0.00	604.8	-200.0	349.8	319.9	29.89	11.703		
5,847.5	5,826.1	5,866.3	5,826.1	14.0	16.9	0.00	604.8	-200.0	349.8	319.7	30.07	11.634		
5,900.0	5,878.6	5,918.7	5,878.4	14.1	17.0	0.35	604.8	-197.9	349.8	319.6	30.24	11.569		
5,982.0	5,960.6	5,999.3	5,958.3	14.3	17.1	2.02	604.8	-187.6	350.0	319.6	30.43	11.502		
6,000.0	5,978.6	6,016.7	5,975.4	14.3	17.1	-87.45	604.8	-184.3	350.2	322.1	28.02	12.497		
6,050.0	6,028.5	6,064.6	6,022.0	14.4	17.1	-86.02	604.8	-173.2	350.7	322.4	28.24	12.416		
6,100.0	6,078.1	6,112.1	6,067.4	14.5	17.2	-84.63	604.8	-159.3	351.4	322.9	28.45	12.352		
6,150.0	6,127.2	6,159.0	6,111.3	14.6	17.2	-83.26	604.8	-142.9	352.3	323.7	28.63	12.305		
6,200.0	6,175.6	6,205.5	6,153.8	14.6	17.2	-81.94	604.8	-123.9	353.4	324.6	28.79	12.273		
6,250.0	6,223.1	6,250.0	6,193.3	14.6	17.2	-80.69	604.8	-103.4	354.6	325.7	28.94	12.256		
6,300.0	6,269.5	6,297.3	6,233.8	14.7	17.2	-79.42	604.8	-79.2	356.0	326.9	29.08	12.243		
6,350.0	6,314.5	6,342.5	6,271.2	14.7	17.3	-78.24	604.8	-53.6	357.5	328.2	29.22	12.235		
6,400.0	6,358.0	6,387.5	6,306.7	14.7	17.3	-77.11	604.8	-26.1	359.0	329.6	29.37	12.224		
6,450.0	6,399.8	6,432.1	6,340.3	14.8	17.3	-76.05	604.8	3.2	360.6	331.1	29.55	12.205		
6,500.0	6,439.8	6,476.4	6,371.9	14.8	17.3	-75.04	604.8	34.2	362.2	332.5	29.76	12.171		
6,550.0	6,477.7	6,520.4	6,401.5	14.9	17.4	-74.11	604.8	66.8	363.9	333.8	30.06	12.104		
6,600.0	6,513.3	6,564.2	6,429.0	15.0	17.4	-73.23	604.8	100.9	365.5	335.1	30.41	12.017		
6,650.0	6,546.6	6,607.7	6,454.4	15.2	17.5	-72.43	604.8	136.2	367.1	336.2	30.87	11.891		
6,700.0	6,577.4	6,650.0	6,477.1	15.6	17.6	-71.71	604.8	171.9	368.6	337.1	31.43	11.728		
6,750.0	6,605.6	6,694.1	6,498.7	16.0	17.8	-71.03	604.8	210.4	370.0	337.8	32.14	11.512		
6,800.0	6,631.0	6,737.1	6,517.5	16.6	18.2	-70.44	604.8	249.0	371.3	338.3	32.98	11.258		
6,850.0	6,653.5	6,779.9	6,534.0	17.2	18.6	-69.92	604.8	288.5	372.5	338.5	33.97	10.966		
6,900.0	6,673.1	6,822.5	6,548.3	17.9	19.2	-69.47	604.8	328.7	373.5	338.4	35.10	10.642		
6,950.0	6,689.6	6,865.1	6,560.2	18.6	19.8	-69.09	604.8	369.5	374.4	338.1	36.38	10.293		
7,000.0	6,702.9	6,907.5	6,569.9	19.5	20.5	-68.79	604.9	410.8	375.2	337.4	37.79	9.928		
7,050.0	6,713.1	6,950.0	6,577.2	20.4	21.3	-68.56	604.9	452.7	375.8	336.4	39.34	9.553		
7,102.0	6,720.3	6,994.0	6,582.4	21.4	22.1	-68.40	604.9	496.3	376.2	335.1	41.07	9.159		
7,173.0	6,727.8	7,053.9	6,585.4	22.8	23.3	-67.93	604.9	556.1	377.6	334.2	43.39	8.702		
7,200.0	6,730.3	7,077.4	6,585.3	23.4	23.8	-67.57	604.9	579.7	378.6	334.3	44.31	8.544		
7,301.8	6,734.0	7,179.1	6,583.9	25.6	25.9	-66.78	604.9	681.3	380.6	332.3	48.31	7.878		
7,400.0	6,733.2	7,277.3	6,582.7	27.8	28.1	-66.70	604.9	779.5	380.8	328.4	52.38	7.269		
7,500.0	6,732.5	7,377.3	6,581.4	30.2	30.4	-66.63	604.9	879.5	381.0	324.3	56.69	6.720		
7,600.0	6,731.7	7,477.3	6,580.1	32.6	32.8	-66.56	604.9	979.5	381.2	320.1	61.13	6.235		
7,700.0	6,730.9	7,577.3	6,578.8	35.1	35.3	-66.49	604.9	1,079.5	381.4	315.7	65.68	5.807		
7,800.0	6,730.2	7,677.3	6,577.5	37.6	37.8	-66.42	604.9	1,179.5	381.6	311.3	70.30	5.428		
7,900.0	6,729.4	7,777.3	6,576.2	40.2	40.4	-66.34	604.9	1,279.5	381.8	306.8	74.99	5.091		
8,000.0	6,728.6	7,877.3	6,574.9	42.8	42.9	-66.27	604.9	1,379.4	382.0	302.3	79.74	4.791		
8,100.0	6,727.9	7,977.3	6,573.6	45.4	45.5	-66.20	604.9	1,479.4	382.2	297.7	84.52	4.522		
8,200.0	6,727.1	8,077.3	6,572.3	48.1	48.2	-66.13	605.0	1,579.4	382.5	293.1	89.34	4.281		
8,300.0	6,726.3	8,177.3	6,571.1	50.7	50.8	-66.06	605.0	1,679.4	382.7	288.5	94.19	4.063		
8,400.0	6,725.6	8,277.2	6,569.8	53.4	53.5	-65.98	605.0	1,779.4	382.9	283.8	99.07	3.865		
8,500.0	6,724.8	8,377.2	6,568.5	56.1	56.2	-65.91	605.0	1,879.4	383.1	279.1	103.96	3.685		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2E-232 - Wellbore #1 - Plan #1 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,600.0	6,724.0	8,477.2	6,567.2	58.8	58.9	-65.84	605.0	1,979.4	383.3	274.4	108.87	3.521		
8,700.0	6,723.3	8,577.2	6,565.9	61.5	61.6	-65.77	605.0	2,079.4	383.5	269.7	113.79	3.371		
8,800.0	6,722.5	8,677.2	6,564.6	64.2	64.3	-65.70	605.0	2,179.4	383.7	265.0	118.72	3.232		
8,900.0	6,721.7	8,777.2	6,563.3	66.9	67.0	-65.63	605.0	2,279.4	384.0	260.3	123.66	3.105		
9,000.0	6,721.0	8,877.2	6,562.0	69.7	69.7	-65.55	605.0	2,379.3	384.2	255.6	128.61	2.987		
9,100.0	6,720.2	8,977.2	6,560.7	72.4	72.4	-65.48	605.0	2,479.3	384.4	250.8	133.56	2.878		
9,200.0	6,719.4	9,077.2	6,559.4	75.2	75.2	-65.41	605.0	2,579.3	384.6	246.1	138.52	2.777		
9,300.0	6,718.7	9,177.2	6,558.1	77.9	77.9	-65.34	605.0	2,679.3	384.8	241.3	143.49	2.682		
9,400.0	6,717.9	9,277.2	6,556.8	80.7	80.7	-65.27	605.1	2,779.3	385.1	236.6	148.45	2.594		
9,500.0	6,717.1	9,377.2	6,555.6	83.4	83.4	-65.20	605.1	2,879.3	385.3	231.9	153.42	2.511		
9,600.0	6,716.4	9,477.2	6,554.3	86.2	86.2	-65.13	605.1	2,979.3	385.5	227.1	158.39	2.434		
9,700.0	6,715.6	9,577.2	6,553.0	88.9	88.9	-65.06	605.1	3,079.3	385.7	222.4	163.35	2.361		
9,800.0	6,714.8	9,677.2	6,551.7	91.7	91.7	-64.99	605.1	3,179.3	385.9	217.6	168.32	2.293		
9,900.0	6,714.1	9,777.2	6,550.4	94.5	94.5	-64.92	605.1	3,279.3	386.2	212.9	173.29	2.228		
10,000.0	6,713.3	9,877.2	6,549.1	97.3	97.2	-64.85	605.1	3,379.3	386.4	208.1	178.26	2.168		
10,100.0	6,712.5	9,977.2	6,547.8	100.0	100.0	-64.78	605.1	3,479.2	386.6	203.4	183.22	2.110		
10,200.0	6,711.8	10,077.2	6,546.5	102.8	102.8	-64.71	605.1	3,579.2	386.8	198.6	188.18	2.056		
10,300.0	6,711.0	10,177.2	6,545.2	105.6	105.5	-64.64	605.1	3,679.2	387.1	193.9	193.15	2.004		
10,400.0	6,710.2	10,277.2	6,543.9	108.4	108.3	-64.57	605.1	3,779.2	387.3	189.2	198.10	1.955		
10,500.0	6,709.5	10,377.2	6,542.6	111.1	111.1	-64.50	605.1	3,879.2	387.5	184.4	203.06	1.908		
10,600.0	6,708.7	10,477.2	6,541.3	113.9	113.9	-64.43	605.2	3,979.2	387.7	179.7	208.02	1.864		
10,700.0	6,707.9	10,577.2	6,540.1	116.7	116.6	-64.36	605.2	4,079.2	388.0	175.0	212.97	1.822		
10,800.0	6,707.2	10,677.2	6,538.8	119.5	119.4	-64.29	605.2	4,179.2	388.2	170.3	217.91	1.781		
10,900.0	6,706.4	10,777.2	6,537.5	122.3	122.2	-64.22	605.2	4,279.2	388.4	165.6	222.86	1.743		
11,000.0	6,705.6	10,877.2	6,536.2	125.1	125.0	-64.15	605.2	4,379.2	388.6	160.8	227.80	1.706		
11,083.7	6,705.0	10,960.9	6,535.1	127.4	126.7	-64.09	605.2	4,462.9	388.8	157.5	231.38	1.680		
11,084.1	6,705.0	10,961.3	6,535.1	127.4	126.7	-64.09	605.2	4,463.3	388.8	157.4	231.39	1.680 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-180.00	-29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-180.00	-29.1	0.0	29.1	28.9	0.22	129.617	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-180.00	-29.1	0.0	29.1	28.5	0.67	43.206	
300.0	300.0	300.0	300.0	0.6	0.6	-180.00	-180.00	-29.1	0.0	29.1	28.0	1.12	25.923	
400.0	400.0	400.0	400.0	0.8	0.8	-180.00	-180.00	-29.1	0.0	29.1	27.6	1.57	18.517	
500.0	500.0	500.0	500.0	1.0	1.0	-180.00	-180.00	-29.1	0.0	29.1	27.1	2.02	14.402	
600.0	600.0	600.0	600.0	1.2	1.2	-180.00	-180.00	-29.1	0.0	29.1	26.7	2.47	11.783	
700.0	700.0	700.0	700.0	1.5	1.5	-180.00	-180.00	-29.1	0.0	29.1	26.2	2.92	9.971	
800.0	800.0	800.0	800.0	1.7	1.7	-180.00	-180.00	-29.1	0.0	29.1	25.8	3.37	8.641 CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	-143.90	-143.90	-29.1	0.0	30.5	26.7	3.82	7.993	
1,000.0	999.8	999.8	999.8	2.1	2.1	-148.92	-148.92	-29.1	0.0	34.9	30.6	4.26	8.182	
1,100.0	1,099.5	1,099.5	1,099.5	2.4	2.4	-154.91	-154.91	-29.1	0.0	42.6	37.9	4.71	9.045	
1,201.4	1,200.1	1,200.1	1,200.1	2.6	2.6	-160.40	-160.40	-29.1	0.0	54.1	48.9	5.16	10.484	
1,300.0	1,297.7	1,297.7	1,297.7	2.9	2.8	-164.34	-164.34	-29.1	0.0	67.2	61.6	5.60	12.000	
1,400.0	1,396.7	1,396.7	1,396.7	3.2	3.0	-167.01	-167.01	-29.1	0.0	80.8	74.7	6.05	13.342	
1,500.0	1,495.8	1,495.8	1,495.8	3.5	3.2	-168.92	-168.92	-29.1	0.0	94.4	87.9	6.51	14.513	
1,600.0	1,594.8	1,594.8	1,594.8	3.8	3.5	-170.34	-170.34	-29.1	0.0	108.2	101.2	6.96	15.538	
1,700.0	1,693.8	1,693.8	1,693.8	4.1	3.7	-171.44	-171.44	-29.1	0.0	122.0	114.5	7.42	16.442	
1,800.0	1,792.8	1,792.8	1,792.8	4.4	3.9	-172.32	-172.32	-29.1	0.0	135.8	127.9	7.87	17.243	
1,900.0	1,891.8	1,891.8	1,891.8	4.7	4.1	-173.03	-173.03	-29.1	0.0	149.6	141.3	8.33	17.957	
2,000.0	1,990.9	1,990.9	1,990.9	5.1	4.4	-173.63	-173.63	-29.1	0.0	163.5	154.7	8.79	18.597	
2,100.0	2,089.9	2,089.9	2,089.9	5.4	4.6	-174.13	-174.13	-29.1	0.0	177.4	168.1	9.25	19.174	
2,200.0	2,188.9	2,188.9	2,188.9	5.7	4.8	-174.55	-174.55	-29.1	0.0	191.3	181.6	9.71	19.696	
2,300.0	2,287.9	2,287.9	2,287.9	6.0	5.0	-174.92	-174.92	-29.1	0.0	205.2	195.0	10.17	20.171	
2,400.0	2,386.9	2,386.9	2,386.9	6.4	5.3	-175.25	-175.25	-29.1	0.0	219.1	208.5	10.63	20.604	
2,500.0	2,486.0	2,486.0	2,486.0	6.7	5.5	-175.53	-175.53	-29.1	0.0	233.0	221.9	11.10	21.001	
2,600.0	2,585.0	2,585.0	2,585.0	7.0	5.7	-175.78	-175.78	-29.1	0.0	247.0	235.4	11.56	21.366	
2,700.0	2,684.0	2,684.0	2,684.0	7.4	5.9	-176.01	-176.01	-29.1	0.0	260.9	248.9	12.02	21.702	
2,800.0	2,783.0	2,783.0	2,783.0	7.7	6.1	-176.21	-176.21	-29.1	0.0	274.8	262.3	12.48	22.014	
2,900.0	2,882.0	2,882.0	2,882.0	8.0	6.4	-176.19	-176.19	-29.1	-1.3	288.1	275.1	12.95	22.248	
3,000.0	2,981.1	2,982.4	2,992.2	8.4	6.6	-175.56	-175.56	-29.1	-6.5	299.3	285.9	13.40	22.326	
3,100.0	3,080.1	3,097.9	3,097.4	8.7	6.8	-174.37	-174.37	-29.1	-15.5	308.5	294.7	13.87	22.239	
3,120.1	3,099.9	3,118.0	3,117.3	8.8	6.8	-174.09	-174.09	-29.1	-17.6	310.2	296.2	13.97	22.208	
3,200.0	3,179.3	3,197.5	3,196.4	9.0	7.0	-173.01	-173.01	-29.1	-25.9	315.8	301.5	14.34	22.016	
3,300.0	3,278.8	3,297.1	3,295.5	9.2	7.2	-171.63	-171.63	-29.1	-36.3	319.9	305.1	14.78	21.644	
3,400.0	3,378.6	3,396.8	3,394.6	9.4	7.5	-170.16	-170.16	-29.1	-46.8	320.7	305.5	15.20	21.095	
3,500.0	3,478.6	3,496.3	3,493.6	9.6	7.7	-168.58	-168.58	-29.1	-57.2	318.3	302.7	15.61	20.386	
3,521.4	3,500.0	3,517.6	3,514.8	9.6	7.7	153.68	153.68	-29.1	-59.4	317.3	300.1	17.20	18.447	
3,600.0	3,578.6	3,595.8	3,592.5	9.8	7.9	155.02	155.02	-29.1	-67.6	313.8	296.3	17.47	17.956	
3,700.0	3,678.6	3,695.2	3,691.4	9.9	8.2	156.77	156.77	-29.1	-78.0	309.5	291.6	17.83	17.352	
3,800.0	3,778.6	3,794.7	3,790.3	10.1	8.4	158.57	158.57	-29.1	-88.4	305.5	287.3	18.19	16.790	
3,900.0	3,878.6	3,894.1	3,889.2	10.3	8.7	160.41	160.41	-29.1	-98.9	301.8	283.2	18.55	16.266	
4,000.0	3,978.6	3,993.6	3,988.1	10.5	8.9	162.29	162.29	-29.1	-109.3	298.4	279.5	18.91	15.780	
4,100.0	4,078.6	4,093.0	4,087.0	10.7	9.2	164.22	164.22	-29.1	-119.7	295.4	276.1	19.27	15.329	
4,200.0	4,178.6	4,192.5	4,185.9	10.8	9.4	166.18	166.18	-29.1	-130.1	292.7	273.1	19.63	14.912	
4,300.0	4,278.6	4,291.9	4,284.8	11.0	9.7	168.18	168.18	-29.1	-140.5	290.4	270.4	19.99	14.528	
4,400.0	4,378.6	4,391.4	4,383.7	11.2	9.9	170.20	170.20	-29.1	-150.9	288.4	268.0	20.35	14.174	
4,500.0	4,478.6	4,490.8	4,482.6	11.4	10.2	172.26	172.26	-29.1	-161.4	286.8	266.1	20.71	13.850	
4,600.0	4,578.6	4,590.3	4,581.5	11.6	10.5	174.33	174.33	-29.1	-171.8	285.5	264.5	21.07	13.553	
4,700.0	4,678.6	4,689.7	4,680.5	11.8	10.7	176.41	176.41	-29.1	-182.2	284.7	263.3	21.43	13.283	
4,800.0	4,778.6	4,789.0	4,779.2	12.0	11.0	178.28	178.28	-29.1	-191.5	284.3	262.5	21.80	13.042	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
4,900.0	4,878.6	4,888.6	4,878.7	12.2	11.2	179.48	-29.1	-197.4	284.1	262.0	22.16	12.821			
4,986.6	4,965.1	4,975.1	4,965.2	12.3	11.4	179.96	-29.1	-199.8	284.1	261.6	22.49	12.634			
5,000.0	4,978.6	4,988.5	4,978.6	12.4	11.4	179.98	-29.1	-199.9	284.1	261.6	22.54	12.605			
5,037.3	5,015.9	5,025.9	5,015.9	12.4	11.4	180.00	-29.1	-200.0	284.1	261.4	22.69	12.523			
5,100.0	5,078.6	5,088.5	5,078.6	12.6	11.6	180.00	-29.1	-200.0	284.1	261.2	22.94	12.385			
5,200.0	5,178.6	5,188.5	5,178.6	12.7	11.8	180.00	-29.1	-200.0	284.1	260.8	23.36	12.163			
5,300.0	5,278.6	5,288.5	5,278.6	12.9	12.0	180.00	-29.1	-200.0	284.1	260.4	23.78	11.947			
5,400.0	5,378.6	5,388.5	5,378.6	13.1	12.2	180.00	-29.1	-200.0	284.1	259.9	24.21	11.738			
5,500.0	5,478.6	5,488.5	5,478.6	13.3	12.4	180.00	-29.1	-200.0	284.1	259.5	24.63	11.536			
5,600.0	5,578.6	5,588.5	5,578.6	13.5	12.6	180.00	-29.1	-200.0	284.1	259.1	25.05	11.341			
5,700.0	5,678.6	5,688.5	5,678.6	13.7	12.8	180.00	-29.1	-200.0	284.1	258.7	25.48	11.151			
5,800.0	5,778.6	5,788.5	5,778.6	13.9	13.0	180.00	-29.1	-200.0	284.1	258.2	25.91	10.968			
5,827.2	5,805.8	5,815.7	5,805.8	14.0	13.1	180.00	-29.1	-200.0	284.1	258.1	26.02	10.919			
5,900.0	5,878.6	5,887.8	5,877.8	14.1	13.2	179.50	-29.2	-197.5	284.2	257.9	26.33	10.796			
5,982.0	5,960.6	5,967.6	5,956.8	14.3	13.3	177.38	-29.5	-187.0	284.8	258.1	26.69	10.672			
6,000.0	5,978.6	5,984.8	5,973.7	14.3	13.4	86.74	-29.5	-183.6	285.0	258.0	27.02	10.551			
6,050.0	6,028.5	6,032.2	6,019.7	14.4	13.4	84.95	-29.8	-172.4	286.0	258.9	27.12	10.548			
6,100.0	6,078.1	6,079.1	6,064.6	14.5	13.5	83.20	-30.2	-158.6	287.3	260.1	27.20	10.563			
6,150.0	6,127.2	6,125.5	6,108.0	14.6	13.5	81.51	-30.6	-142.1	288.9	261.7	27.28	10.592			
6,200.0	6,175.6	6,171.5	6,150.0	14.6	13.6	79.87	-31.0	-123.3	290.8	263.5	27.35	10.634			
6,250.0	6,223.1	6,217.1	6,190.3	14.6	13.6	78.30	-31.6	-102.2	293.0	265.5	27.42	10.684			
6,300.0	6,269.5	6,262.3	6,229.1	14.7	13.7	76.80	-32.2	-79.0	295.3	267.8	27.50	10.738			
6,350.0	6,314.5	6,307.1	6,266.0	14.7	13.8	75.38	-32.8	-53.7	297.8	270.2	27.60	10.791			
6,400.0	6,358.0	6,350.0	6,300.0	14.7	14.0	74.08	-33.4	-27.5	300.5	272.8	27.72	10.841			
6,450.0	6,399.8	6,395.7	6,334.5	14.8	14.1	72.79	-34.2	2.5	303.2	275.4	27.89	10.874			
6,500.0	6,439.8	6,439.6	6,365.9	14.8	14.4	71.62	-34.9	33.2	306.1	278.0	28.10	10.891			
6,550.0	6,477.7	6,483.2	6,395.2	14.9	14.6	70.55	-35.7	65.4	308.9	280.5	28.38	10.884			
6,600.0	6,513.3	6,526.5	6,422.6	15.0	14.9	69.56	-36.6	99.0	311.7	283.0	28.74	10.848			
6,650.0	6,546.6	6,569.7	6,447.8	15.2	15.3	68.66	-37.5	133.9	314.5	285.3	29.18	10.779			
6,700.0	6,577.4	6,612.6	6,471.0	15.6	15.7	67.85	-38.4	170.0	317.3	287.5	29.73	10.672			
6,750.0	6,605.6	6,655.3	6,492.0	16.0	16.2	67.13	-39.3	207.3	319.9	289.5	30.38	10.528			
6,800.0	6,631.0	6,700.0	6,511.6	16.6	16.8	66.48	-40.3	247.4	322.4	291.2	31.19	10.339			
6,850.0	6,653.5	6,740.3	6,527.4	17.2	17.4	65.96	-41.2	284.5	324.8	292.7	32.08	10.124			
6,900.0	6,673.1	6,782.6	6,541.8	17.9	18.0	65.51	-42.2	324.3	327.0	293.9	33.12	9.873			
6,950.0	6,689.6	6,824.9	6,553.9	18.6	18.7	65.14	-43.2	364.7	329.0	294.7	34.29	9.596			
7,000.0	6,702.9	6,867.0	6,563.7	19.5	19.5	64.86	-44.2	405.7	330.9	295.3	35.58	9.300			
7,050.0	6,713.1	6,909.1	6,571.3	20.4	20.3	64.67	-45.3	447.0	332.5	295.5	36.98	8.990			
7,102.0	6,720.3	6,950.0	6,576.5	21.4	21.1	64.55	-46.3	487.6	334.0	295.5	38.51	8.673			
7,173.0	6,727.8	7,012.4	6,580.1	22.8	22.3	64.23	-47.8	549.8	337.0	296.2	40.86	8.248			
7,200.0	6,730.3	7,036.1	6,580.2	23.4	22.8	63.87	-48.4	573.6	338.7	297.0	41.69	8.125			
7,301.8	6,734.0	7,136.3	6,578.9	25.6	25.0	63.12	-50.9	673.6	343.2	297.9	45.33	7.572			
7,400.0	6,733.2	7,234.4	6,577.6	27.8	27.3	63.23	-53.4	771.8	345.7	296.3	49.39	6.999			
7,500.0	6,732.5	7,334.4	6,576.4	30.2	29.7	63.33	-55.9	871.7	348.1	294.4	53.69	6.484			
7,600.0	6,731.7	7,434.4	6,575.1	32.6	32.1	63.44	-58.3	971.6	350.6	292.5	58.13	6.031			
7,700.0	6,730.9	7,534.3	6,573.8	35.1	34.6	63.55	-60.8	1,071.6	353.1	290.4	62.68	5.633			
7,800.0	6,730.2	7,634.3	6,572.5	37.6	37.2	63.65	-63.3	1,171.5	355.6	288.2	67.32	5.282			
7,900.0	6,729.4	7,734.3	6,571.2	40.2	39.8	63.75	-65.8	1,271.4	358.0	286.0	72.02	4.971			
8,000.0	6,728.6	7,834.2	6,569.9	42.8	42.4	63.85	-68.3	1,371.3	360.5	283.7	76.79	4.694			
8,100.0	6,727.9	7,934.2	6,568.6	45.4	45.0	63.95	-70.8	1,471.3	363.0	281.4	81.61	4.448			
8,200.0	6,727.1	8,034.2	6,567.3	48.1	47.7	64.05	-73.3	1,571.2	365.5	279.0	86.48	4.226			
8,300.0	6,726.3	8,134.1	6,566.0	50.7	50.3	64.15	-75.8	1,671.1	367.9	276.6	91.38	4.026			

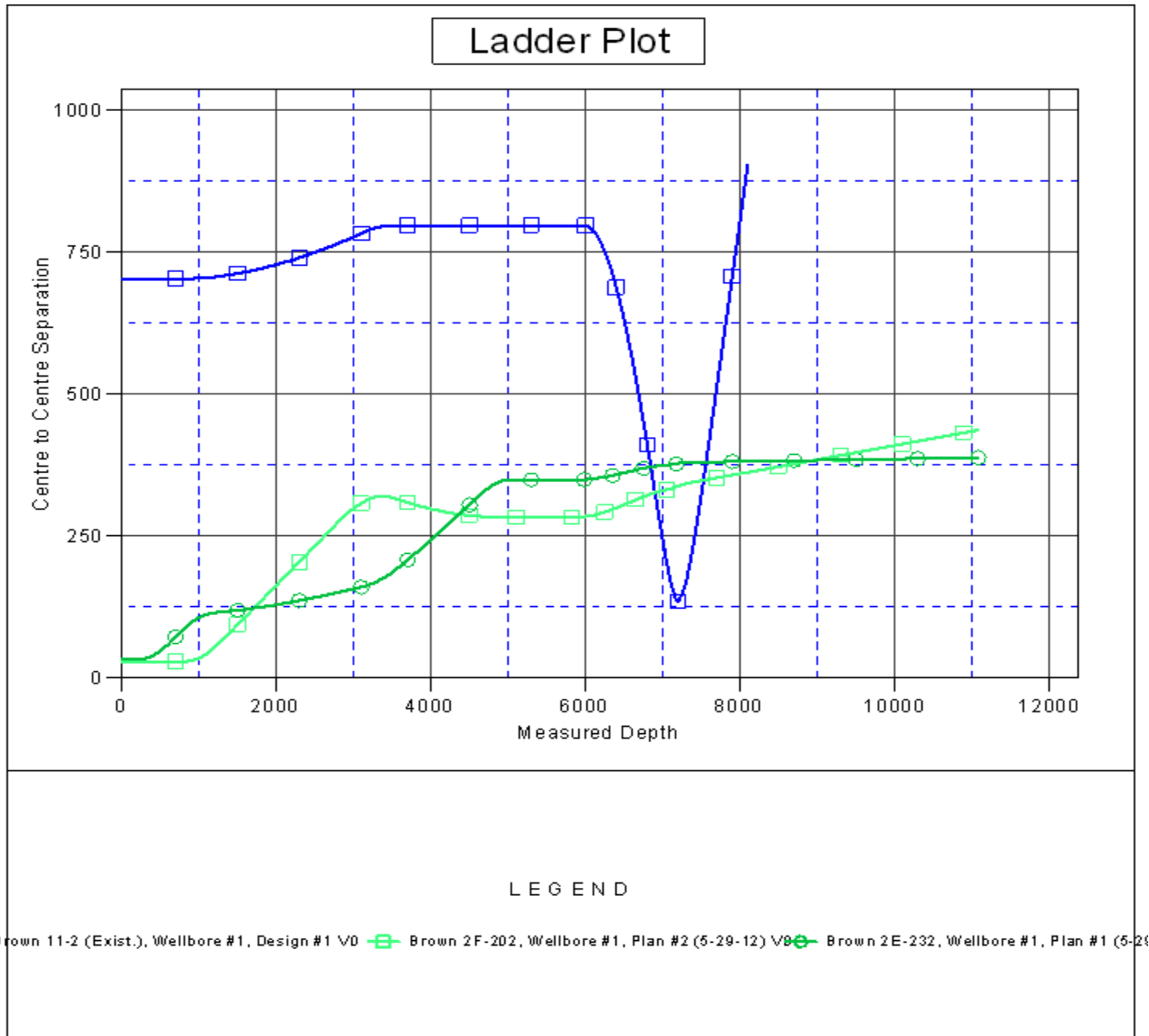
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,400.0	6,725.6	8,234.1	6,564.7	53.4	53.0	64.24	-78.3	1,771.1	370.4	274.1	96.32	3.846		
8,500.0	6,724.8	8,334.1	6,563.4	56.1	55.7	64.34	-80.8	1,871.0	372.9	271.6	101.28	3.682		
8,600.0	6,724.0	8,434.0	6,562.2	58.8	58.5	64.43	-83.3	1,970.9	375.4	269.1	106.27	3.532		
8,700.0	6,723.3	8,534.0	6,560.9	61.5	61.2	64.52	-85.7	2,070.8	377.9	266.6	111.28	3.396		
8,800.0	6,722.5	8,634.0	6,559.6	64.2	63.9	64.61	-88.2	2,170.8	380.3	264.0	116.31	3.270		
8,900.0	6,721.7	8,733.9	6,558.3	66.9	66.6	64.70	-90.7	2,270.7	382.8	261.5	121.37	3.154		
9,000.0	6,721.0	8,833.9	6,557.0	69.7	69.4	64.79	-93.2	2,370.6	385.3	258.9	126.43	3.048		
9,100.0	6,720.2	8,933.9	6,555.7	72.4	72.1	64.88	-95.7	2,470.6	387.8	256.3	131.52	2.949		
9,200.0	6,719.4	9,033.8	6,554.4	75.2	74.9	64.96	-98.2	2,570.5	390.3	253.7	136.62	2.857		
9,300.0	6,718.7	9,133.8	6,553.1	77.9	77.6	65.05	-100.7	2,670.4	392.8	251.0	141.73	2.771		
9,400.0	6,717.9	9,233.8	6,551.8	80.7	80.4	65.13	-103.2	2,770.3	395.3	248.4	146.85	2.692		
9,500.0	6,717.1	9,333.7	6,550.5	83.4	83.2	65.22	-105.7	2,870.3	397.8	245.8	151.99	2.617		
9,600.0	6,716.4	9,433.7	6,549.2	86.2	85.9	65.30	-108.2	2,970.2	400.2	243.1	157.13	2.547		
9,700.0	6,715.6	9,533.7	6,548.0	88.9	88.7	65.38	-110.7	3,070.1	402.7	240.4	162.29	2.482		
9,800.0	6,714.8	9,633.6	6,546.7	91.7	91.5	65.46	-113.2	3,170.0	405.2	237.8	167.46	2.420		
9,900.0	6,714.1	9,733.6	6,545.4	94.5	94.3	65.54	-115.6	3,270.0	407.7	235.1	172.63	2.362		
10,000.0	6,713.3	9,833.6	6,544.1	97.3	97.0	65.61	-118.1	3,369.9	410.2	232.4	177.81	2.307		
10,100.0	6,712.5	9,933.5	6,542.8	100.0	99.8	65.69	-120.6	3,469.8	412.7	229.7	183.00	2.255		
10,200.0	6,711.8	10,033.5	6,541.5	102.8	102.6	65.77	-123.1	3,569.8	415.2	227.0	188.20	2.206		
10,300.0	6,711.0	10,133.5	6,540.2	105.6	105.4	65.84	-125.6	3,669.7	417.7	224.3	193.41	2.160		
10,400.0	6,710.2	10,233.4	6,538.9	108.4	108.2	65.92	-128.1	3,769.6	420.2	221.6	198.62	2.116		
10,500.0	6,709.5	10,333.4	6,537.6	111.1	110.9	65.99	-130.6	3,869.5	422.7	218.8	203.84	2.074		
10,600.0	6,708.7	10,433.4	6,536.3	113.9	113.7	66.06	-133.1	3,969.5	425.2	216.1	209.07	2.034		
10,700.0	6,707.9	10,533.4	6,535.0	116.7	116.5	66.13	-135.6	4,069.4	427.7	213.4	214.30	1.996		
10,800.0	6,707.2	10,633.3	6,533.8	119.5	119.3	66.20	-138.1	4,169.3	430.2	210.6	219.54	1.960		
10,900.0	6,706.4	10,733.3	6,532.5	122.3	122.1	66.27	-140.6	4,269.3	432.7	207.9	224.78	1.925		
11,000.0	6,705.6	10,833.3	6,531.2	125.1	124.9	66.34	-143.0	4,369.2	435.2	205.2	230.03	1.892		
11,083.7	6,705.0	10,916.9	6,530.1	127.4	127.2	66.40	-145.1	4,452.8	437.3	202.9	234.43	1.865		
11,084.1	6,705.0	10,917.3	6,530.1	127.4	127.2	66.40	-145.1	4,453.2	437.3	202.8	234.44	1.865 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4725.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Brown 2F-412  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.70°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 2F-412
<b>Project:</b>	SEC.2-T6N-R63W	<b>TVD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Brown Pad Sec.2-T6N-R63W	<b>MD Reference:</b>	WELL @ 4725.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 2F-412	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-29-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4725.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Brown 2F-412  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.70°

