

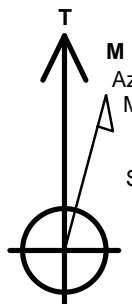
# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Brown 23X-241**

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 1382631.96 3243540.65 40.380431 -104.625798  
 Original Well Elev WELL @ 4656.0ft (Original Well Elev)

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' E/W Hardline (23X-241)	1.0	5471.2	1068.3	Rectangle (Sides: L8149.0 W100.0)
SHL 1082'FSL & 1329'FEL, Sec.23	1.0	0.0	0.0	Point
BHL 0'FNL & 242'FEL, Sec.14	6782.0	9545.7	1068.3	Point



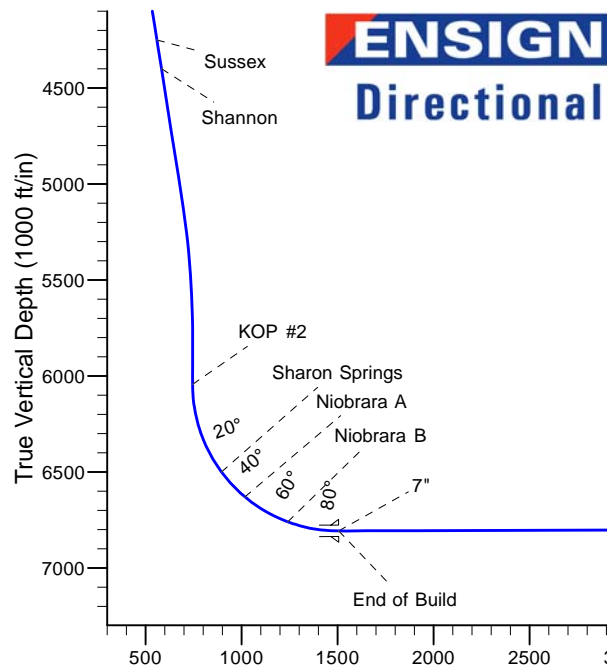
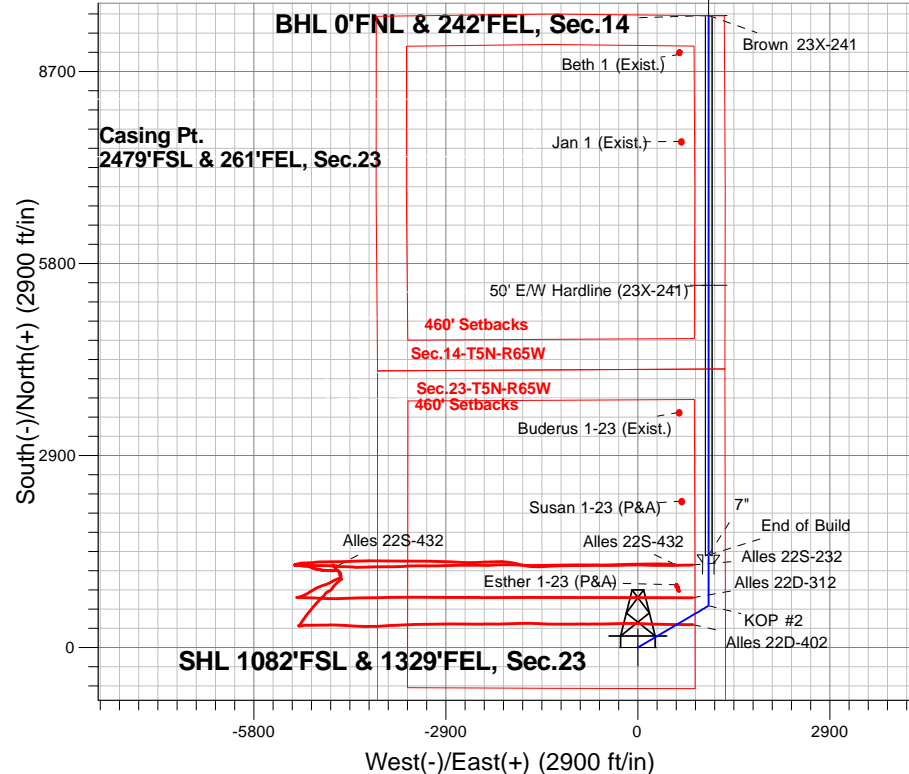
Azimuths to True North  
 Magnetic North: 8.22°

Magnetic Field  
 Strength: 52692.7snT  
 Dip Angle: 66.91°  
 Date: 9/2/2015  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD Annotation
200.0	200.0 KOP #1
6043.7	6193.9 KOP #2
6807.6	7396.3 End of Build

Brown 5N65W23 Pad Sec.23-T5N-R65W  
 Brown 23X-241  
 Plan #1 (9-2-15)  
 11:03, September 04 2015



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1177.7	14.67	59.45	1167.1	63.2	107.2	1.50	59.45	74.8	
4	5216.9	14.67	59.45	5074.7	583.0	987.9	0.00	0.00	689.2	
5	5950.2	0.00	0.00	5800.0	630.4	1068.3	2.00	180.00	745.3	
6	6193.9	0.00	0.00	6043.7	630.4	1068.3	0.00	0.00	745.3	
7	7396.3	90.18	0.00	6807.6	1396.7	1068.3	7.50	0.00	1506.9	
8	15545.3	90.18	0.00	6782.0	9545.7	1068.3	0.00	0.00	9605.3	BHL 0'FNL & 242'FEL, Sec.14

BHL 0'FNL & 242'FEL, Sec.14

Vertical Section at 6.39° (1000 ft/in)

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.23-T5N-R65W**

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

**Brown 23X-241**

**Wellbore #1**

**Plan: Plan #1 (9-2-15)**

## **Standard Planning Report**

**04 September, 2015**

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

<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

<b>Site</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	1,382,632.17 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,243,450.66 usft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40.380434
		<b>Longitude:</b>	-104.626121
		<b>Grid Convergence:</b>	0.56 °

<b>Well</b>	Brown 23X-241		
<b>Well Position</b>	<b>+N/-S</b>	-1.1 ft	<b>Northing:</b>
	<b>+E/-W</b>	90.0 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>
	IGRF2010	9/2/2015	8.22
			<b>Dip Angle (°)</b>
			66.91
			<b>Field Strength (nT)</b>
			52,693

<b>Design</b>	Plan #1 (9-2-15)		
<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			<b>Direction (°)</b>
			6.39

<b>Plan Sections</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	<b>TFO</b>	<b>Target</b>
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,177.7	14.67	59.45	1,167.1	63.2	107.2	1.50	1.50	0.00	59.45	
5,216.9	14.67	59.45	5,074.7	583.0	987.9	0.00	0.00	0.00	0.00	
5,950.2	0.00	0.00	5,800.0	630.4	1,068.3	2.00	-2.00	0.00	180.00	
6,193.9	0.00	0.00	6,043.7	630.4	1,068.3	0.00	0.00	0.00	0.00	
7,396.3	90.18	0.00	6,807.6	1,396.7	1,068.3	7.50	7.50	0.00	0.00	
15,545.3	90.18	0.00	6,782.0	9,545.7	1,068.3	0.00	0.00	0.00	0.00	BHL 0'FNL & 242'FEL

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

Planned 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)
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>50' E/W Hardline (23X-241) - SHL 1082'FSL &amp; 1329'FEL, Sec.23</b>									
100.0	0.00	0.00	100.0	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
<b>KOP #1</b>									
300.0	1.50	59.45	300.0	0.7	1.1	0.8	1.50	1.50	0.00
400.0	3.00	59.45	399.9	2.7	4.5	3.1	1.50	1.50	0.00
500.0	4.50	59.45	499.7	6.0	10.1	7.1	1.50	1.50	0.00
600.0	6.00	59.45	599.3	10.6	18.0	12.6	1.50	1.50	0.00
700.0	7.50	59.45	698.6	16.6	28.1	19.6	1.50	1.50	0.00
800.0	9.00	59.45	797.5	23.9	40.5	28.3	1.50	1.50	0.00
900.0	10.50	59.45	896.1	32.5	55.1	38.4	1.50	1.50	0.00
1,000.0	12.00	59.45	994.2	42.4	71.9	50.2	1.50	1.50	0.00
1,100.0	13.50	59.45	1,091.7	53.6	90.9	63.4	1.50	1.50	0.00
1,177.7	14.67	59.45	1,167.1	63.2	107.2	74.8	1.50	1.50	0.00
1,200.0	14.67	59.45	1,188.6	66.1	112.0	78.2	0.00	0.00	0.00
1,300.0	14.67	59.45	1,285.4	79.0	133.8	93.4	0.00	0.00	0.00
1,400.0	14.67	59.45	1,382.1	91.8	155.6	108.6	0.00	0.00	0.00
1,500.0	14.67	59.45	1,478.9	104.7	177.4	123.8	0.00	0.00	0.00
1,600.0	14.67	59.45	1,575.6	117.6	199.3	139.0	0.00	0.00	0.00
1,700.0	14.67	59.45	1,672.3	130.4	221.1	154.2	0.00	0.00	0.00
1,800.0	14.67	59.45	1,769.1	143.3	242.9	169.4	0.00	0.00	0.00
1,900.0	14.67	59.45	1,865.8	156.2	264.7	184.6	0.00	0.00	0.00
2,000.0	14.67	59.45	1,962.6	169.0	286.5	199.9	0.00	0.00	0.00
2,100.0	14.67	59.45	2,059.3	181.9	308.3	215.1	0.00	0.00	0.00
2,200.0	14.67	59.45	2,156.1	194.8	330.1	230.3	0.00	0.00	0.00
2,300.0	14.67	59.45	2,252.8	207.6	351.9	245.5	0.00	0.00	0.00
2,400.0	14.67	59.45	2,349.5	220.5	373.7	260.7	0.00	0.00	0.00
2,500.0	14.67	59.45	2,446.3	233.4	395.5	275.9	0.00	0.00	0.00
2,600.0	14.67	59.45	2,543.0	246.3	417.3	291.1	0.00	0.00	0.00
2,700.0	14.67	59.45	2,639.8	259.1	439.1	306.3	0.00	0.00	0.00
2,800.0	14.67	59.45	2,736.5	272.0	460.9	321.6	0.00	0.00	0.00
2,900.0	14.67	59.45	2,833.2	284.9	482.7	336.8	0.00	0.00	0.00
3,000.0	14.67	59.45	2,930.0	297.7	504.5	352.0	0.00	0.00	0.00
3,100.0	14.67	59.45	3,026.7	310.6	526.3	367.2	0.00	0.00	0.00
3,200.0	14.67	59.45	3,123.5	323.5	548.1	382.4	0.00	0.00	0.00
3,300.0	14.67	59.45	3,220.2	336.3	569.9	397.6	0.00	0.00	0.00
3,400.0	14.67	59.45	3,317.0	349.2	591.7	412.8	0.00	0.00	0.00
3,500.0	14.67	59.45	3,413.7	362.1	613.5	428.0	0.00	0.00	0.00
3,589.2	14.67	59.45	3,500.0	373.5	633.0	441.6	0.00	0.00	0.00
<b>Parkman</b>									
3,600.0	14.67	59.45	3,510.4	374.9	635.3	443.3	0.00	0.00	0.00
3,700.0	14.67	59.45	3,607.2	387.8	657.1	458.5	0.00	0.00	0.00
3,800.0	14.67	59.45	3,703.9	400.7	678.9	473.7	0.00	0.00	0.00
3,900.0	14.67	59.45	3,800.7	413.5	700.7	488.9	0.00	0.00	0.00
4,000.0	14.67	59.45	3,897.4	426.4	722.5	504.1	0.00	0.00	0.00
4,100.0	14.67	59.45	3,994.2	439.3	744.4	519.3	0.00	0.00	0.00
4,200.0	14.67	59.45	4,090.9	452.1	766.2	534.5	0.00	0.00	0.00
4,300.0	14.67	59.45	4,187.6	465.0	788.0	549.7	0.00	0.00	0.00
4,364.5	14.67	59.45	4,250.0	473.3	802.0	559.5	0.00	0.00	0.00
<b>Sussex</b>									
4,400.0	14.67	59.45	4,284.4	477.9	809.8	565.0	0.00	0.00	0.00

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<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

Planned 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)
4,500.0	14.67	59.45	4,381.1	490.7	831.6	580.2	0.00	0.00	0.00
4,519.5	14.67	59.45	4,400.0	493.2	835.8	583.1	0.00	0.00	0.00
<b>Shannon</b>									
4,600.0	14.67	59.45	4,477.9	503.6	853.4	595.4	0.00	0.00	0.00
4,700.0	14.67	59.45	4,574.6	516.5	875.2	610.6	0.00	0.00	0.00
4,800.0	14.67	59.45	4,671.3	529.3	897.0	625.8	0.00	0.00	0.00
4,900.0	14.67	59.45	4,768.1	542.2	918.8	641.0	0.00	0.00	0.00
5,000.0	14.67	59.45	4,864.8	555.1	940.6	656.2	0.00	0.00	0.00
5,100.0	14.67	59.45	4,961.6	567.9	962.4	671.4	0.00	0.00	0.00
5,200.0	14.67	59.45	5,058.3	580.8	984.2	686.6	0.00	0.00	0.00
5,216.9	14.67	59.45	5,074.7	583.0	987.9	689.2	0.00	0.00	0.00
5,300.0	13.00	59.45	5,155.4	593.1	1,005.0	701.2	2.00	-2.00	0.00
5,400.0	11.00	59.45	5,253.2	603.6	1,022.9	713.7	2.00	-2.00	0.00
5,500.0	9.00	59.45	5,351.6	612.5	1,037.9	724.1	2.00	-2.00	0.00
5,600.0	7.00	59.45	5,450.7	619.5	1,049.9	732.5	2.00	-2.00	0.00
5,700.0	5.00	59.45	5,550.1	624.9	1,058.9	738.7	2.00	-2.00	0.00
5,800.0	3.00	59.45	5,649.9	628.4	1,064.9	742.9	2.00	-2.00	0.00
5,900.0	1.00	59.45	5,749.8	630.2	1,067.9	745.0	2.00	-2.00	0.00
5,950.2	0.00	0.00	5,800.0	630.4	1,068.3	745.3	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,849.8	630.4	1,068.3	745.3	0.00	0.00	0.00
6,100.0	0.00	0.00	5,949.8	630.4	1,068.3	745.3	0.00	0.00	0.00
6,193.9	0.00	0.00	6,043.7	630.4	1,068.3	745.3	0.00	0.00	0.00
<b>KOP #2</b>									
6,200.0	0.46	0.00	6,049.8	630.4	1,068.3	745.3	7.53	7.53	0.00
6,300.0	7.96	0.00	6,149.4	637.8	1,068.3	752.6	7.50	7.50	0.00
6,400.0	15.46	0.00	6,247.3	658.0	1,068.3	772.8	7.50	7.50	0.00
6,500.0	22.96	0.00	6,341.7	690.9	1,068.3	805.4	7.50	7.50	0.00
6,600.0	30.46	0.00	6,430.9	735.8	1,068.3	850.1	7.50	7.50	0.00
6,682.9	36.68	0.00	6,500.0	781.7	1,068.3	895.6	7.50	7.50	0.00
<b>Sharon Springs</b>									
6,700.0	37.96	0.00	6,513.6	792.0	1,068.3	905.9	7.50	7.50	0.00
6,800.0	45.46	0.00	6,588.2	858.5	1,068.3	972.0	7.50	7.50	0.00
6,862.3	50.13	0.00	6,630.0	904.6	1,068.3	1,017.8	7.50	7.50	0.00
<b>Niobrara A</b>									
6,900.0	52.96	0.00	6,653.4	934.2	1,068.3	1,047.2	7.50	7.50	0.00
7,000.0	60.46	0.00	6,708.3	1,017.7	1,068.3	1,130.2	7.50	7.50	0.00
7,100.0	67.96	0.00	6,751.8	1,107.7	1,068.3	1,219.6	7.50	7.50	0.00
7,122.8	69.67	0.00	6,760.0	1,128.9	1,068.3	1,240.7	7.50	7.50	0.00
<b>Niobrara B</b>									
7,200.0	75.46	0.00	6,783.1	1,202.5	1,068.3	1,313.9	7.50	7.50	0.00
7,300.0	82.96	0.00	6,801.8	1,300.7	1,068.3	1,411.4	7.50	7.50	0.00
7,396.3	90.18	0.00	6,807.6	1,396.8	1,068.3	1,506.9	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,400.0	90.18	0.00	6,807.6	1,400.5	1,068.3	1,510.6	0.00	0.00	0.00
7,500.0	90.18	0.00	6,807.3	1,500.5	1,068.3	1,610.0	0.00	0.00	0.00
7,600.0	90.18	0.00	6,807.0	1,600.5	1,068.3	1,709.4	0.00	0.00	0.00
7,700.0	90.18	0.00	6,806.6	1,700.5	1,068.3	1,808.7	0.00	0.00	0.00
7,800.0	90.18	0.00	6,806.3	1,800.5	1,068.3	1,908.1	0.00	0.00	0.00
7,900.0	90.18	0.00	6,806.0	1,900.5	1,068.3	2,007.5	0.00	0.00	0.00
8,000.0	90.18	0.00	6,805.7	2,000.5	1,068.3	2,106.9	0.00	0.00	0.00
8,100.0	90.18	0.00	6,805.4	2,100.5	1,068.3	2,206.2	0.00	0.00	0.00
8,200.0	90.18	0.00	6,805.1	2,200.5	1,068.3	2,305.6	0.00	0.00	0.00

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<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

Planned 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)
8,300.0	90.18	0.00	6,804.8	2,300.5	1,068.3	2,405.0	0.00	0.00	0.00
8,400.0	90.18	0.00	6,804.4	2,400.5	1,068.3	2,504.4	0.00	0.00	0.00
8,500.0	90.18	0.00	6,804.1	2,500.5	1,068.3	2,603.8	0.00	0.00	0.00
8,600.0	90.18	0.00	6,803.8	2,600.5	1,068.3	2,703.1	0.00	0.00	0.00
8,700.0	90.18	0.00	6,803.5	2,700.5	1,068.3	2,802.5	0.00	0.00	0.00
8,800.0	90.18	0.00	6,803.2	2,800.5	1,068.3	2,901.9	0.00	0.00	0.00
8,900.0	90.18	0.00	6,802.9	2,900.5	1,068.3	3,001.3	0.00	0.00	0.00
9,000.0	90.18	0.00	6,802.6	3,000.5	1,068.3	3,100.7	0.00	0.00	0.00
9,100.0	90.18	0.00	6,802.2	3,100.5	1,068.3	3,200.0	0.00	0.00	0.00
9,200.0	90.18	0.00	6,801.9	3,200.5	1,068.3	3,299.4	0.00	0.00	0.00
9,300.0	90.18	0.00	6,801.6	3,300.5	1,068.3	3,398.8	0.00	0.00	0.00
9,400.0	90.18	0.00	6,801.3	3,400.5	1,068.3	3,498.2	0.00	0.00	0.00
9,500.0	90.18	0.00	6,801.0	3,500.5	1,068.3	3,597.6	0.00	0.00	0.00
9,600.0	90.18	0.00	6,800.7	3,600.5	1,068.3	3,696.9	0.00	0.00	0.00
9,700.0	90.18	0.00	6,800.4	3,700.5	1,068.3	3,796.3	0.00	0.00	0.00
9,800.0	90.18	0.00	6,800.0	3,800.5	1,068.3	3,895.7	0.00	0.00	0.00
9,900.0	90.18	0.00	6,799.7	3,900.5	1,068.3	3,995.1	0.00	0.00	0.00
10,000.0	90.18	0.00	6,799.4	4,000.5	1,068.3	4,094.5	0.00	0.00	0.00
10,100.0	90.18	0.00	6,799.1	4,100.5	1,068.3	4,193.8	0.00	0.00	0.00
10,200.0	90.18	0.00	6,798.8	4,200.5	1,068.3	4,293.2	0.00	0.00	0.00
10,300.0	90.18	0.00	6,798.5	4,300.5	1,068.3	4,392.6	0.00	0.00	0.00
10,400.0	90.18	0.00	6,798.2	4,400.5	1,068.3	4,492.0	0.00	0.00	0.00
10,500.0	90.18	0.00	6,797.9	4,500.5	1,068.3	4,591.3	0.00	0.00	0.00
10,600.0	90.18	0.00	6,797.5	4,600.5	1,068.3	4,690.7	0.00	0.00	0.00
10,700.0	90.18	0.00	6,797.2	4,700.5	1,068.3	4,790.1	0.00	0.00	0.00
10,800.0	90.18	0.00	6,796.9	4,800.5	1,068.3	4,889.5	0.00	0.00	0.00
10,900.0	90.18	0.00	6,796.6	4,900.5	1,068.3	4,988.9	0.00	0.00	0.00
11,000.0	90.18	0.00	6,796.3	5,000.5	1,068.3	5,088.2	0.00	0.00	0.00
11,100.0	90.18	0.00	6,796.0	5,100.4	1,068.3	5,187.6	0.00	0.00	0.00
11,200.0	90.18	0.00	6,795.7	5,200.4	1,068.3	5,287.0	0.00	0.00	0.00
11,300.0	90.18	0.00	6,795.3	5,300.4	1,068.3	5,386.4	0.00	0.00	0.00
11,400.0	90.18	0.00	6,795.0	5,400.4	1,068.3	5,485.8	0.00	0.00	0.00
11,500.0	90.18	0.00	6,794.7	5,500.4	1,068.3	5,585.1	0.00	0.00	0.00
11,600.0	90.18	0.00	6,794.4	5,600.4	1,068.3	5,684.5	0.00	0.00	0.00
11,700.0	90.18	0.00	6,794.1	5,700.4	1,068.3	5,783.9	0.00	0.00	0.00
11,800.0	90.18	0.00	6,793.8	5,800.4	1,068.3	5,883.3	0.00	0.00	0.00
11,900.0	90.18	0.00	6,793.5	5,900.4	1,068.3	5,982.7	0.00	0.00	0.00
12,000.0	90.18	0.00	6,793.1	6,000.4	1,068.3	6,082.0	0.00	0.00	0.00
12,100.0	90.18	0.00	6,792.8	6,100.4	1,068.3	6,181.4	0.00	0.00	0.00
12,200.0	90.18	0.00	6,792.5	6,200.4	1,068.3	6,280.8	0.00	0.00	0.00
12,300.0	90.18	0.00	6,792.2	6,300.4	1,068.3	6,380.2	0.00	0.00	0.00
12,400.0	90.18	0.00	6,791.9	6,400.4	1,068.3	6,479.5	0.00	0.00	0.00
12,500.0	90.18	0.00	6,791.6	6,500.4	1,068.3	6,578.9	0.00	0.00	0.00
12,600.0	90.18	0.00	6,791.3	6,600.4	1,068.3	6,678.3	0.00	0.00	0.00
12,700.0	90.18	0.00	6,790.9	6,700.4	1,068.3	6,777.7	0.00	0.00	0.00
12,800.0	90.18	0.00	6,790.6	6,800.4	1,068.3	6,877.1	0.00	0.00	0.00
12,900.0	90.18	0.00	6,790.3	6,900.4	1,068.3	6,976.4	0.00	0.00	0.00
13,000.0	90.18	0.00	6,790.0	7,000.4	1,068.3	7,075.8	0.00	0.00	0.00
13,100.0	90.18	0.00	6,789.7	7,100.4	1,068.3	7,175.2	0.00	0.00	0.00
13,200.0	90.18	0.00	6,789.4	7,200.4	1,068.3	7,274.6	0.00	0.00	0.00
13,300.0	90.18	0.00	6,789.1	7,300.4	1,068.3	7,374.0	0.00	0.00	0.00
13,400.0	90.18	0.00	6,788.7	7,400.4	1,068.3	7,473.3	0.00	0.00	0.00
13,500.0	90.18	0.00	6,788.4	7,500.4	1,068.3	7,572.7	0.00	0.00	0.00

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

Planned 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)
13,600.0	90.18	0.00	6,788.1	7,600.4	1,068.3	7,672.1	0.00	0.00	0.00
13,700.0	90.18	0.00	6,787.8	7,700.4	1,068.3	7,771.5	0.00	0.00	0.00
13,800.0	90.18	0.00	6,787.5	7,800.4	1,068.3	7,870.9	0.00	0.00	0.00
13,900.0	90.18	0.00	6,787.2	7,900.4	1,068.3	7,970.2	0.00	0.00	0.00
14,000.0	90.18	0.00	6,786.9	8,000.4	1,068.3	8,069.6	0.00	0.00	0.00
14,100.0	90.18	0.00	6,786.5	8,100.4	1,068.3	8,169.0	0.00	0.00	0.00
14,200.0	90.18	0.00	6,786.2	8,200.4	1,068.3	8,268.4	0.00	0.00	0.00
14,300.0	90.18	0.00	6,785.9	8,300.4	1,068.3	8,367.8	0.00	0.00	0.00
14,400.0	90.18	0.00	6,785.6	8,400.4	1,068.3	8,467.1	0.00	0.00	0.00
14,500.0	90.18	0.00	6,785.3	8,500.4	1,068.3	8,566.5	0.00	0.00	0.00
14,600.0	90.18	0.00	6,785.0	8,600.4	1,068.3	8,665.9	0.00	0.00	0.00
14,700.0	90.18	0.00	6,784.7	8,700.4	1,068.3	8,765.3	0.00	0.00	0.00
14,800.0	90.18	0.00	6,784.3	8,800.4	1,068.3	8,864.6	0.00	0.00	0.00
14,900.0	90.18	0.00	6,784.0	8,900.4	1,068.3	8,964.0	0.00	0.00	0.00
15,000.0	90.18	0.00	6,783.7	9,000.4	1,068.3	9,063.4	0.00	0.00	0.00
15,100.0	90.18	0.00	6,783.4	9,100.4	1,068.3	9,162.8	0.00	0.00	0.00
15,200.0	90.18	0.00	6,783.1	9,200.4	1,068.3	9,262.2	0.00	0.00	0.00
15,300.0	90.18	0.00	6,782.8	9,300.4	1,068.3	9,361.5	0.00	0.00	0.00
15,400.0	90.18	0.00	6,782.5	9,400.4	1,068.3	9,460.9	0.00	0.00	0.00
15,500.0	90.18	0.00	6,782.1	9,500.4	1,068.3	9,560.3	0.00	0.00	0.00
15,545.3	90.18	0.00	6,782.0	9,545.7	1,068.3	9,605.3	0.00	0.00	0.00
BHL 0°FNL & 242°FEL, Sec.14									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
50' E/W Hardline (23X-2	0.00	0.00	1.0	5,471.2	1,068.3	1,388,113.19	3,244,554.92	40.395449	-104.621963
- plan misses target center by 5574.5ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W100.0 H8,149.0 D0.0)									
SHL 1082'FSL & 1329'FI	0.00	0.00	1.0	0.0	0.0	1,382,631.97	3,243,540.65	40.380431	-104.625798
- plan hits target center									
- Point									
BHL 0°FNL & 242°FEL, S	0.00	0.00	6,782.0	9,545.7	1,068.3	1,392,187.35	3,244,514.76	40.406633	-104.621962
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,396.3	6,807.6	7"	7	7-1/2	

<b>Database:</b>	US_EDM	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Project:</b>	SEC.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-2-15)		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,589.2	3,500.0	Parkman		0.00	
4,364.5	4,250.0	Sussex		0.00	
4,519.5	4,400.0	Shannon		0.00	
6,682.9	6,500.0	Sharon Springs		0.00	
6,862.3	6,630.0	Niobrara A		0.00	
7,122.8	6,760.0	Niobrara B		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1
6,193.9	6,043.7	63.2	107.2	KOP #2
7,396.3	6,807.6	583.0	987.9	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.23-T5N-R65W**

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

**Brown 23X-241**

**Wellbore #1**

**Plan #1 (9-2-15)**

## **Anticollision Report**

**04 September, 2015**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (9-2-15)		
<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 1,000.0 ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b> 9/4/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	15,545.3	Plan #1 (9-2-15) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,800.0	12,613.0	356.8	255.4	3.519	SF
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,850.0	12,613.0	348.5	251.4	3.590	ES
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,869.1	12,613.0	347.8	252.6	3.653	CC
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,600.0	12,701.0	692.5	542.7	4.624	SF
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,700.0	12,701.0	669.1	529.9	4.806	ES
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,737.9	12,701.0	667.1	532.6	4.959	CC
Alles 22S-232 - Wellbore #1 - Wellbore #1	6,500.0	11,888.0	751.6	611.7	5.373	SF
Alles 22S-232 - Wellbore #1 - Wellbore #1	7,243.8	11,888.0	241.9	198.1	5.526	CC
Alles 22S-232 - Wellbore #1 - Wellbore #1	7,250.0	11,888.0	241.9	198.1	5.518	ES
Alles 22S-432 - Wellbore #1 - Wellbore #1						Out of range
Alles 22S-432 - Wellbore #2 - Wellbore #2	6,500.0	12,411.0	974.2	879.2	10.247	SF
Alles 22S-432 - Wellbore #2 - Wellbore #2	7,277.1	12,411.0	529.1	480.4	10.872	CC, ES
Brown 5N65W23 Pad Sec.23-T5N-R65W						
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	200.0	200.0	44.9	44.2	66.523	CC, ES
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	700.0	698.6	74.8	71.8	25.116	SF
Brown 23D-341 - Wellbore #1 - Plan #1 (9-2-15)	200.0	200.0	59.9	59.2	88.839	CC, ES
Brown 23D-341 - Wellbore #1 - Plan #1 (9-2-15)	800.0	797.5	103.0	99.6	29.885	SF
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	200.0	200.0	29.8	29.1	44.213	CC, ES
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	15,545.3	15,232.4	756.0	400.2	2.125	SF
Brown 23X-341 - Wellbore #1 - Plan #1 (9-2-15)	200.0	200.0	15.0	14.4	22.318	CC
Brown 23X-341 - Wellbore #1 - Plan #1 (9-2-15)	15,545.3	15,569.0	299.3	-57.8	0.838	Level 1, ES, SF
Existing Sec. 23-T5N-R65W						
Beth 1 (Exist.) - Wellbore #1 - Wellbore #1	14,961.4	6,757.9	438.3	253.9	2.377	CC, ES
Beth 1 (Exist.) - Wellbore #1 - Wellbore #1	15,000.0	6,756.9	440.0	254.8	2.377	SF
Buderus 1-23 (Exist.) - Wellbore #1 - Wellbore #1	9,550.5	6,783.8	445.7	241.5	2.182	CC, ES, SF
Jan 1 (Exist.) - Wellbore #1 - Wellbore #1	13,643.6	6,747.0	412.4	131.5	1.468	Level 3, CC, ES, SF
Susan 1-23 (P&A) - Wellbore #1 - Wellbore #1	8,212.4	6,785.0	407.8	227.9	2.267	CC, ES, SF
Lofland 22T & Alles 22S-HZ Existing Wells						
Esther 1-23 (P&A) - Wellbore #1 - Wellbore #1	4,476.6	4,354.9	477.3	447.7	16.114	CC
Esther 1-23 (P&A) - Wellbore #1 - Wellbore #1	6,918.8	6,669.8	481.6	444.4	12.942	ES
Esther 1-23 (P&A) - Wellbore #1 - Wellbore #1	7,000.0	6,713.6	486.5	448.6	12.846	SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-312 - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 60-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
6,100.0	5,949.8	12,613.0	6,831.6	26.9	159.8	-63.43	751.4	826.4	918.5	823.7	94.85	9.684	
6,193.9	6,043.7	12,613.0	6,831.6	27.0	159.8	-63.43	751.4	826.4	829.3	734.3	94.96	8.733	
6,200.0	6,049.8	12,613.0	6,831.6	27.0	159.8	-64.63	751.4	826.4	823.5	731.6	91.84	8.966	
6,250.0	6,099.7	12,613.0	6,831.6	27.0	159.8	-74.92	751.4	826.4	776.2	711.8	64.37	12.057	
6,300.0	6,149.4	12,613.0	6,831.6	27.1	159.8	-85.60	751.4	826.4	728.9	689.7	39.20	18.594	
6,350.0	6,198.7	12,613.0	6,831.6	27.3	159.8	-95.84	751.4	826.4	681.9	639.2	42.74	15.954	
6,400.0	6,247.3	12,613.0	6,831.6	27.4	159.8	-104.98	751.4	826.4	635.6	573.4	62.13	10.229	
6,450.0	6,295.0	12,613.0	6,831.6	27.6	159.8	-112.69	751.4	826.4	590.2	511.2	79.01	7.469	
6,500.0	6,341.7	12,613.0	6,831.6	27.8	159.8	-118.96	751.4	826.4	546.2	454.7	91.49	5.970	
6,550.0	6,387.0	12,613.0	6,831.6	28.0	159.8	-123.93	751.4	826.4	504.1	404.3	99.82	5.051	
6,600.0	6,430.9	12,613.0	6,831.6	28.2	159.8	-127.80	751.4	826.4	464.9	360.2	104.67	4.441	
6,650.0	6,473.2	12,613.0	6,831.6	28.5	159.8	-130.76	751.4	826.4	429.2	322.5	106.71	4.022	
6,700.0	6,513.6	12,613.0	6,831.6	28.8	159.8	-132.95	751.4	826.4	398.5	291.9	106.55	3.740	
6,750.0	6,552.0	12,613.0	6,831.6	29.1	159.8	-134.49	751.4	826.4	373.9	269.2	104.65	3.572	
6,800.0	6,588.2	12,613.0	6,831.6	29.4	159.8	-135.46	751.4	826.4	356.8	255.4	101.39	3.519 SF	
6,850.0	6,622.0	12,613.0	6,831.6	29.8	159.8	-135.90	751.4	826.4	348.5	251.4	97.07	3.590 ES	
6,869.1	6,634.3	12,613.0	6,831.6	29.9	159.8	-135.93	751.4	826.4	347.8	252.6	95.21	3.653 CC	
6,900.0	6,653.4	12,613.0	6,831.6	30.2	159.8	-135.84	751.4	826.4	349.6	257.7	91.97	3.802	
6,950.0	6,682.2	12,613.0	6,831.6	30.6	159.8	-135.28	751.4	826.4	360.1	273.8	86.32	4.172	
7,000.0	6,708.3	12,613.0	6,831.6	31.1	159.8	-134.18	751.4	826.4	379.0	298.7	80.32	4.719	
7,050.0	6,731.5	12,613.0	6,831.6	31.6	159.8	-132.50	751.4	826.4	405.2	331.0	74.19	5.462	
7,100.0	6,751.8	12,613.0	6,831.6	32.1	159.8	-130.14	751.4	826.4	437.3	369.1	68.13	6.418	
7,150.0	6,769.0	12,613.0	6,831.6	32.6	159.8	-126.98	751.4	826.4	473.8	411.5	62.34	7.600	
7,200.0	6,783.1	12,613.0	6,831.6	33.2	159.8	-122.87	751.4	826.4	513.8	456.8	57.04	9.008	
7,250.0	6,794.1	12,613.0	6,831.6	33.8	159.8	-117.60	751.4	826.4	556.4	503.9	52.46	10.605	
7,300.0	6,801.8	12,613.0	6,831.6	34.4	159.8	-111.00	751.4	826.4	600.8	551.9	48.90	12.285	
7,350.0	6,806.3	12,613.0	6,831.6	35.0	159.8	-102.94	751.4	826.4	646.4	599.7	46.78	13.819	
7,396.3	6,807.6	12,613.0	6,831.6	35.6	159.8	-94.24	751.4	826.4	689.5	642.9	46.64	14.784	
7,400.0	6,807.6	12,613.0	6,831.6	35.6	159.8	-94.24	751.4	826.4	693.0	646.3	46.70	14.840	
7,500.0	6,807.3	12,613.0	6,831.6	37.0	159.8	-94.24	751.4	826.4	787.4	739.1	48.29	16.306	
7,600.0	6,807.0	12,613.0	6,831.6	38.4	159.8	-94.24	751.4	826.4	883.1	833.2	49.92	17.690	
7,700.0	6,806.6	12,613.0	6,831.6	39.8	159.8	-94.24	751.4	826.4	979.6	928.1	51.58	18.994	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-402 - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program:		121-MWD											Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis				Distance						Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
6,193.9	6,043.7	12,701.0	6,953.7	27.0	159.0	-139.96	344.9	828.4	979.8	836.6	143.19	6.842					
6,200.0	6,049.8	12,701.0	6,953.7	27.0	159.0	-140.67	344.9	828.4	974.1	829.6	144.49	6.742					
6,250.0	6,099.7	12,701.0	6,953.7	27.0	159.0	-145.51	344.9	828.4	928.8	776.1	152.63	6.085					
6,300.0	6,149.4	12,701.0	6,953.7	27.1	159.0	-149.10	344.9	828.4	885.3	727.9	157.39	5.625					
6,350.0	6,198.7	12,701.0	6,953.7	27.3	159.0	-151.81	344.9	828.4	844.0	684.3	159.73	5.284					
6,400.0	6,247.3	12,701.0	6,953.7	27.4	159.0	-153.87	344.9	828.4	805.6	645.3	160.22	5.028					
6,450.0	6,295.0	12,701.0	6,953.7	27.6	159.0	-155.45	344.9	828.4	770.5	611.3	159.26	4.838					
6,500.0	6,341.7	12,701.0	6,953.7	27.8	159.0	-156.65	344.9	828.4	739.6	582.5	157.09	4.708					
6,550.0	6,387.0	12,701.0	6,953.7	28.0	159.0	-157.56	344.9	828.4	713.3	559.4	153.88	4.636					
6,600.0	6,430.9	12,701.0	6,953.7	28.2	159.0	-158.21	344.9	828.4	692.5	542.7	149.77	4.624 SF					
6,650.0	6,473.2	12,701.0	6,953.7	28.5	159.0	-158.64	344.9	828.4	677.5	532.7	144.85	4.678					
6,700.0	6,513.6	12,701.0	6,953.7	28.8	159.0	-158.87	344.9	828.4	669.1	529.9	139.22	4.806 ES					
6,737.9	6,542.9	12,701.0	6,953.7	29.0	159.0	-158.92	344.9	828.4	667.1	532.6	134.53	4.959 CC					
6,750.0	6,552.0	12,701.0	6,953.7	29.1	159.0	-158.92	344.9	828.4	667.3	534.4	132.97	5.019					
6,800.0	6,588.2	12,701.0	6,953.7	29.4	159.0	-158.78	344.9	828.4	672.3	546.2	126.17	5.329					
6,850.0	6,622.0	12,701.0	6,953.7	29.8	159.0	-158.45	344.9	828.4	684.0	565.0	118.93	5.751					
6,900.0	6,653.4	12,701.0	6,953.7	30.2	159.0	-157.92	344.9	828.4	701.8	590.5	111.34	6.304					
6,950.0	6,682.2	12,701.0	6,953.7	30.6	159.0	-157.15	344.9	828.4	725.4	621.8	103.52	7.007					
7,000.0	6,708.3	12,701.0	6,953.7	31.1	159.0	-156.11	344.9	828.4	754.0	658.3	95.64	7.884					
7,050.0	6,731.5	12,701.0	6,953.7	31.6	159.0	-154.74	344.9	828.4	787.0	699.1	87.86	8.958					
7,100.0	6,751.8	12,701.0	6,953.7	32.1	159.0	-152.94	344.9	828.4	823.7	743.4	80.39	10.247					
7,150.0	6,769.0	12,701.0	6,953.7	32.6	159.0	-150.59	344.9	828.4	863.6	790.1	73.49	11.752					
7,200.0	6,783.1	12,701.0	6,953.7	33.2	159.0	-147.50	344.9	828.4	906.0	838.6	67.40	13.443					
7,250.0	6,794.1	12,701.0	6,953.7	33.8	159.0	-143.36	344.9	828.4	950.5	888.1	62.38	15.238					
7,300.0	6,801.8	12,701.0	6,953.7	34.4	159.0	-137.72	344.9	828.4	996.5	937.9	58.58	17.011					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-232 - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b> 123-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	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	
6,193.9	6,043.7	11,888.0	6,790.4	27.0	148.6	-21.42	1,246.6	826.5	994.8	828.8	165.99	5.993	
6,200.0	6,049.8	11,888.0	6,790.4	27.0	148.6	-21.61	1,246.6	826.5	990.3	824.4	165.84	5.971	
6,250.0	6,099.7	11,888.0	6,790.4	27.0	148.6	-23.27	1,246.6	826.5	952.4	788.3	164.05	5.805	
6,300.0	6,149.4	11,888.0	6,790.4	27.1	148.6	-25.16	1,246.6	826.5	913.6	752.3	161.31	5.664	
6,350.0	6,198.7	11,888.0	6,790.4	27.3	148.6	-27.29	1,246.6	826.5	874.1	716.6	157.56	5.548	
6,400.0	6,247.3	11,888.0	6,790.4	27.4	148.6	-29.72	1,246.6	826.5	833.9	681.1	152.77	5.458	
6,450.0	6,295.0	11,888.0	6,790.4	27.6	148.6	-32.46	1,246.6	826.5	793.0	646.1	146.89	5.399	
6,500.0	6,341.7	11,888.0	6,790.4	27.8	148.6	-35.56	1,246.6	826.5	751.6	611.7	139.89	5.373 SF	
6,550.0	6,387.0	11,888.0	6,790.4	28.0	148.6	-39.04	1,246.6	826.5	709.8	578.0	131.78	5.386	
6,600.0	6,430.9	11,888.0	6,790.4	28.2	148.6	-42.91	1,246.6	826.5	667.5	545.0	122.59	5.445	
6,650.0	6,473.2	11,888.0	6,790.4	28.5	148.6	-47.16	1,246.6	826.5	625.1	512.7	112.47	5.558	
6,700.0	6,513.6	11,888.0	6,790.4	28.8	148.6	-51.75	1,246.6	826.5	582.6	481.0	101.63	5.733	
6,750.0	6,552.0	11,888.0	6,790.4	29.1	148.6	-56.59	1,246.6	826.5	540.3	449.8	90.45	5.973	
6,800.0	6,588.2	11,888.0	6,790.4	29.4	148.6	-61.56	1,246.6	826.5	498.3	418.9	79.40	6.276	
6,850.0	6,622.0	11,888.0	6,790.4	29.8	148.6	-66.51	1,246.6	826.5	457.0	387.9	69.06	6.617	
6,900.0	6,653.4	11,888.0	6,790.4	30.2	148.6	-71.25	1,246.6	826.5	416.8	356.8	59.99	6.947	
6,950.0	6,682.2	11,888.0	6,790.4	30.6	148.6	-75.62	1,246.6	826.5	378.2	325.5	52.69	7.177	
7,000.0	6,708.3	11,888.0	6,790.4	31.1	148.6	-79.47	1,246.6	826.5	341.9	294.5	47.48	7.201	
7,050.0	6,731.5	11,888.0	6,790.4	31.6	148.6	-82.71	1,246.6	826.5	309.1	264.7	44.38	6.964	
7,100.0	6,751.8	11,888.0	6,790.4	32.1	148.6	-85.26	1,246.6	826.5	281.0	237.9	43.04	6.528	
7,150.0	6,769.0	11,888.0	6,790.4	32.6	148.6	-87.07	1,246.6	826.5	259.2	216.4	42.83	6.052	
7,200.0	6,783.1	11,888.0	6,790.4	33.2	148.6	-88.12	1,246.6	826.5	245.8	202.5	43.22	5.686	
7,243.8	6,792.9	11,888.0	6,790.4	33.7	148.6	-88.42	1,246.6	826.5	241.9	198.1	43.76	5.526 CC	
7,250.0	6,794.1	11,888.0	6,790.4	33.8	148.6	-88.41	1,246.6	826.5	241.9	198.1	43.85	5.518 ES	
7,300.0	6,801.8	11,888.0	6,790.4	34.4	148.6	-87.93	1,246.6	826.5	248.2	203.7	44.54	5.574	
7,350.0	6,806.3	11,888.0	6,790.4	35.0	148.6	-86.69	1,246.6	826.5	263.9	218.7	45.18	5.841	
7,396.3	6,807.6	11,888.0	6,790.4	35.6	148.6	-84.87	1,246.6	826.5	285.4	239.7	45.69	6.247	
7,400.0	6,807.6	11,888.0	6,790.4	35.6	148.6	-84.87	1,246.6	826.5	287.4	241.6	45.75	6.282	
7,500.0	6,807.3	11,888.0	6,790.4	37.0	148.6	-84.87	1,246.6	826.5	351.2	303.9	47.33	7.420	
7,600.0	6,807.0	11,888.0	6,790.4	38.4	148.6	-84.87	1,246.6	826.5	429.1	380.1	48.95	8.765	
7,700.0	6,806.6	11,888.0	6,790.4	39.8	148.6	-84.87	1,246.6	826.5	514.7	464.1	50.61	10.170	
7,800.0	6,806.3	11,888.0	6,790.4	41.3	148.6	-84.87	1,246.6	826.5	604.7	552.4	52.28	11.566	
7,900.0	6,806.0	11,888.0	6,790.4	42.8	148.6	-84.87	1,246.6	826.5	697.4	643.5	53.98	12.920	
8,000.0	6,805.7	11,888.0	6,790.4	44.4	148.6	-84.87	1,246.6	826.5	792.0	736.3	55.70	14.219	
8,100.0	6,805.4	11,888.0	6,790.4	45.9	148.6	-84.87	1,246.6	826.5	887.7	830.2	57.43	15.456	
8,200.0	6,805.1	11,888.0	6,790.4	47.5	148.6	-84.87	1,246.6	826.5	984.2	925.1	59.18	16.631	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-432 - Wellbore #2 - Wellbore #2												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 125-MWD, 6034-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
6,500.0	6,341.7	12,411.0	6,960.5	27.8	153.0	-61.11	1,253.7	563.9	974.2	879.2	95.08	10.247 SF	
6,550.0	6,387.0	12,411.0	6,960.5	28.0	153.0	-65.68	1,253.7	563.9	933.9	850.7	83.25	11.219	
6,600.0	6,430.9	12,411.0	6,960.5	28.2	153.0	-70.37	1,253.7	563.9	893.8	822.4	71.39	12.520	
6,650.0	6,473.2	12,411.0	6,960.5	28.5	153.0	-75.08	1,253.7	563.9	853.9	793.8	60.10	14.209	
6,700.0	6,513.6	12,411.0	6,960.5	28.8	153.0	-79.72	1,253.7	563.9	814.7	764.6	50.14	16.249	
6,750.0	6,552.0	12,411.0	6,960.5	29.1	153.0	-84.17	1,253.7	563.9	776.3	733.8	42.53	18.252	
6,800.0	6,588.2	12,411.0	6,960.5	29.4	153.0	-88.34	1,253.7	563.9	739.1	700.5	38.57	19.163	
6,850.0	6,622.0	12,411.0	6,960.5	29.8	153.0	-92.17	1,253.7	563.9	703.4	664.8	38.60	18.220	
6,900.0	6,653.4	12,411.0	6,960.5	30.2	153.0	-95.60	1,253.7	563.9	669.6	628.7	40.88	16.380	
6,950.0	6,682.2	12,411.0	6,960.5	30.6	153.0	-98.61	1,253.7	563.9	638.2	594.6	43.53	14.661	
7,000.0	6,708.3	12,411.0	6,960.5	31.1	153.0	-101.17	1,253.7	563.9	609.7	564.0	45.72	13.335	
7,050.0	6,731.5	12,411.0	6,960.5	31.6	153.0	-103.30	1,253.7	563.9	584.6	537.4	47.22	12.379	
7,100.0	6,751.8	12,411.0	6,960.5	32.1	153.0	-104.99	1,253.7	563.9	563.6	515.5	48.09	11.720	
7,150.0	6,769.0	12,411.0	6,960.5	32.6	153.0	-106.25	1,253.7	563.9	547.2	498.7	48.47	11.289	
7,200.0	6,783.1	12,411.0	6,960.5	33.2	153.0	-107.09	1,253.7	563.9	535.8	487.2	48.56	11.033	
7,250.0	6,794.1	12,411.0	6,960.5	33.8	153.0	-107.51	1,253.7	563.9	529.9	481.3	48.60	10.904	
7,277.1	6,798.7	12,411.0	6,960.5	34.1	153.0	-107.57	1,253.7	563.9	529.1	480.4	48.66	10.872 CC, ES	
7,300.0	6,801.8	12,411.0	6,960.5	34.4	153.0	-107.53	1,253.7	563.9	529.7	480.9	48.76	10.862	
7,350.0	6,806.3	12,411.0	6,960.5	35.0	153.0	-107.14	1,253.7	563.9	535.1	485.9	49.19	10.878	
7,396.3	6,807.6	12,411.0	6,960.5	35.6	153.0	-106.41	1,253.7	563.9	545.0	495.2	49.86	10.931	
7,400.0	6,807.6	12,411.0	6,960.5	35.6	153.0	-106.41	1,253.7	563.9	546.0	496.1	49.92	10.939	
7,500.0	6,807.3	12,411.0	6,960.5	37.0	153.0	-106.41	1,253.7	563.9	581.0	529.6	51.47	11.289	
7,600.0	6,807.0	12,411.0	6,960.5	38.4	153.0	-106.41	1,253.7	563.9	630.1	577.1	53.05	11.878	
7,700.0	6,806.6	12,411.0	6,960.5	39.8	153.0	-106.41	1,253.7	563.9	690.3	635.6	54.66	12.629	
7,800.0	6,806.3	12,411.0	6,960.5	41.3	153.0	-106.41	1,253.7	563.9	758.9	702.6	56.29	13.482	
7,900.0	6,806.0	12,411.0	6,960.5	42.8	153.0	-106.41	1,253.7	563.9	833.9	776.0	57.95	14.391	
8,000.0	6,805.7	12,411.0	6,960.5	44.4	153.0	-106.41	1,253.7	563.9	913.7	854.1	59.62	15.327	
8,100.0	6,805.4	12,411.0	6,960.5	45.9	153.0	-106.41	1,253.7	563.9	997.2	935.9	61.30	16.266	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.53	0.4	-44.9	44.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.53	0.4	-44.9	44.9	44.6	0.22	199.570		
200.0	200.0	200.0	200.0	0.3	0.3	-89.53	0.4	-44.9	44.9	44.2	0.67	66.523 CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	-149.82	0.4	-44.9	46.0	44.9	1.13	40.867		
400.0	399.9	399.9	399.9	0.8	0.8	-152.09	0.4	-44.9	49.4	47.8	1.58	31.250		
500.0	499.7	499.7	499.7	1.0	1.0	-155.22	0.4	-44.9	55.3	53.2	2.04	27.051		
600.0	599.3	599.3	599.3	1.3	1.2	-158.62	0.4	-44.9	63.7	61.2	2.51	25.386		
700.0	698.6	698.6	698.6	1.6	1.5	-161.85	0.4	-44.9	74.8	71.8	2.98	25.116 SF		
800.0	797.5	797.5	797.5	1.9	1.7	-164.69	0.4	-44.9	88.5	85.1	3.45	25.694		
900.0	896.1	896.1	896.1	2.2	1.9	-167.07	0.4	-44.9	105.0	101.1	3.91	26.817		
1,000.0	994.2	994.2	994.2	2.6	2.1	-169.03	0.4	-44.9	124.1	119.7	4.38	28.308		
1,100.0	1,091.7	1,091.7	1,091.7	3.1	2.3	-170.63	0.4	-44.9	145.8	141.0	4.85	30.053		
1,177.7	1,167.1	1,167.1	1,167.1	3.4	2.5	-171.66	0.4	-44.9	164.5	159.3	5.22	31.536		
1,200.0	1,188.6	1,188.6	1,188.6	3.5	2.6	-171.93	0.4	-44.9	170.1	164.8	5.32	31.972		
1,300.0	1,285.4	1,285.4	1,285.4	4.0	2.8	-172.97	0.4	-44.9	195.2	189.4	5.79	33.722		
1,400.0	1,382.1	1,382.1	1,382.1	4.5	3.0	-173.78	0.4	-44.9	220.4	214.1	6.26	35.193		
1,500.0	1,478.9	1,480.8	1,480.8	5.1	3.2	-174.24	1.2	-44.9	245.3	238.5	6.74	36.379		
1,600.0	1,575.6	1,580.4	1,580.3	5.6	3.4	-174.10	4.6	-45.1	269.2	262.0	7.23	37.252		
1,700.0	1,672.3	1,680.3	1,680.0	6.1	3.7	-173.50	10.6	-45.4	292.3	284.6	7.72	37.851		
1,800.0	1,769.1	1,780.5	1,779.8	6.6	3.9	-172.52	19.3	-45.9	314.5	306.2	8.23	38.209		
1,900.0	1,865.8	1,880.8	1,879.5	7.2	4.1	-171.25	30.5	-46.5	335.9	327.1	8.76	38.352		
2,000.0	1,962.6	1,981.0	1,978.8	7.7	4.4	-169.72	44.4	-47.3	356.7	347.4	9.31	38.296		
2,100.0	2,059.3	2,081.1	2,077.5	8.2	4.7	-167.98	60.8	-48.2	377.0	367.1	9.91	38.058		
2,200.0	2,156.1	2,180.9	2,175.5	8.7	5.0	-166.05	79.8	-49.3	396.9	386.4	10.54	37.653		
2,300.0	2,252.8	2,280.2	2,272.4	9.3	5.3	-163.97	101.2	-50.5	416.7	405.5	11.23	37.106		
2,400.0	2,349.5	2,378.2	2,367.6	9.8	5.6	-161.80	124.5	-51.8	436.6	424.6	11.97	36.467		
2,500.0	2,446.3	2,474.8	2,461.3	10.3	6.0	-159.80	147.9	-53.1	456.9	444.2	12.75	35.842		
2,600.0	2,543.0	2,571.5	2,555.1	10.9	6.4	-157.96	171.4	-54.5	477.8	464.3	13.55	35.258		
2,700.0	2,639.8	2,668.2	2,648.9	11.4	6.8	-156.28	194.8	-55.8	499.1	484.7	14.38	34.717		
2,800.0	2,736.5	2,764.8	2,742.7	11.9	7.2	-154.73	218.2	-57.1	520.8	505.6	15.22	34.220		
2,900.0	2,833.2	2,861.5	2,836.5	12.5	7.6	-153.31	241.6	-58.4	542.8	526.8	16.08	33.766		
3,000.0	2,930.0	2,958.2	2,930.2	13.0	8.1	-151.99	265.0	-59.7	565.2	548.2	16.95	33.352		
3,100.0	3,026.7	3,054.8	3,024.0	13.5	8.5	-150.78	288.5	-61.0	587.8	569.9	17.82	32.976		
3,200.0	3,123.5	3,151.5	3,117.8	14.1	8.9	-149.65	311.9	-62.3	610.6	591.9	18.71	32.635		
3,300.0	3,220.2	3,248.2	3,211.6	14.6	9.4	-148.60	335.3	-63.7	633.6	614.0	19.60	32.325		
3,400.0	3,317.0	3,344.9	3,305.4	15.1	9.8	-147.63	358.7	-65.0	656.9	636.4	20.50	32.044		
3,500.0	3,413.7	3,441.5	3,399.1	15.7	10.3	-146.72	382.2	-66.3	680.3	658.9	21.40	31.788		
3,600.0	3,510.4	3,538.2	3,492.9	16.2	10.7	-145.88	405.6	-67.6	703.8	681.5	22.30	31.556		
3,700.0	3,607.2	3,634.9	3,586.7	16.7	11.2	-145.08	429.0	-68.9	727.5	704.3	23.21	31.344		
3,800.0	3,703.9	3,731.5	3,680.5	17.3	11.6	-144.34	452.4	-70.2	751.3	727.2	24.12	31.150		
3,900.0	3,800.7	3,828.2	3,774.3	17.8	12.1	-143.64	475.9	-71.5	775.3	750.2	25.03	30.973		
4,000.0	3,897.4	3,924.9	3,868.1	18.3	12.6	-142.99	499.3	-72.9	799.3	773.3	25.94	30.810		
4,100.0	3,994.2	4,021.6	3,961.8	18.9	13.0	-142.37	522.7	-74.2	823.4	796.6	26.85	30.661		
4,200.0	4,090.9	4,118.2	4,055.6	19.4	13.5	-141.78	546.1	-75.5	847.6	819.8	27.77	30.525		
4,300.0	4,187.6	4,214.9	4,149.4	19.9	14.0	-141.23	569.5	-76.8	871.9	843.2	28.68	30.398		
4,400.0	4,284.4	4,311.6	4,243.2	20.5	14.4	-140.71	593.0	-78.1	896.3	866.7	29.60	30.282		
4,500.0	4,381.1	4,408.2	4,337.0	21.0	14.9	-140.22	616.4	-79.4	920.7	890.2	30.51	30.174		
4,600.0	4,477.9	4,504.9	4,430.7	21.5	15.4	-139.75	639.8	-80.8	945.2	913.8	31.43	30.075		
4,700.0	4,574.6	4,601.6	4,524.5	22.1	15.8	-139.31	663.2	-82.1	969.7	937.4	32.34	29.982		
4,800.0	4,671.3	4,698.3	4,618.3	22.6	16.3	-138.88	686.7	-83.4	994.3	961.1	33.26	29.897		

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-89.30	0.7	-59.9	59.9				
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.7	-59.9	59.9	59.7	0.22	266.517	
200.0	200.0	200.0	200.0	0.3	0.3	-89.30	0.7	-59.9	59.9	59.2	0.67	88.839 CC, ES	
300.0	300.0	300.0	300.0	0.6	0.6	-149.39	0.7	-59.9	61.0	59.9	1.13	54.239	
400.0	399.9	399.9	399.9	0.8	0.8	-151.14	0.7	-59.9	64.4	62.9	1.58	40.756	
500.0	499.7	499.7	499.7	1.0	1.0	-153.68	0.7	-59.9	70.2	68.2	2.04	34.378	
600.0	599.3	599.3	599.3	1.3	1.2	-156.58	0.7	-59.9	78.5	76.0	2.51	31.303	
700.0	698.6	698.6	698.6	1.6	1.5	-159.52	0.7	-59.9	89.5	86.5	2.98	30.042	
800.0	797.5	797.5	797.5	1.9	1.7	-162.25	0.7	-59.9	103.0	99.6	3.45	29.885 SF	
900.0	896.1	896.1	896.1	2.2	1.9	-164.66	0.7	-59.9	119.3	115.4	3.92	30.448	
1,000.0	994.2	994.2	994.2	2.6	2.1	-166.73	0.7	-59.9	138.2	133.8	4.39	31.499	
1,100.0	1,091.7	1,091.6	1,091.6	3.1	2.3	-168.07	1.8	-60.3	159.8	155.0	4.86	32.894	
1,177.7	1,167.1	1,167.0	1,167.0	3.4	2.5	-168.43	4.2	-61.1	178.4	173.2	5.23	34.130	
1,200.0	1,188.6	1,188.6	1,188.5	3.5	2.6	-168.46	5.1	-61.5	183.9	178.6	5.33	34.497	
1,300.0	1,285.4	1,285.4	1,285.1	4.0	2.8	-168.15	10.7	-63.5	208.9	203.0	5.81	35.921	
1,400.0	1,382.1	1,382.0	1,381.4	4.5	3.0	-167.28	18.7	-66.4	233.8	227.5	6.31	37.028	
1,500.0	1,478.9	1,478.4	1,477.2	5.1	3.2	-166.03	28.8	-70.1	259.0	252.1	6.84	37.860	
1,600.0	1,575.6	1,574.4	1,572.3	5.6	3.5	-164.50	41.2	-74.7	284.4	277.0	7.40	38.450	
1,700.0	1,672.3	1,669.9	1,666.5	6.1	3.8	-162.77	55.8	-80.0	310.2	302.2	7.99	38.831	
1,800.0	1,769.1	1,764.8	1,759.7	6.6	4.1	-160.91	72.4	-86.0	336.6	327.9	8.62	39.033	
1,900.0	1,865.8	1,859.0	1,851.8	7.2	4.4	-158.94	91.1	-92.8	363.6	354.3	9.30	39.092	
2,000.0	1,962.6	1,952.4	1,942.6	7.7	4.8	-156.92	111.7	-100.3	391.5	381.5	10.03	39.050	
2,100.0	2,059.3	2,046.4	2,033.4	8.2	5.1	-154.89	134.1	-108.5	420.3	409.5	10.80	38.915	
2,200.0	2,156.1	2,141.1	2,125.0	8.7	5.6	-153.08	156.9	-116.8	449.6	438.0	11.60	38.762	
2,300.0	2,252.8	2,235.8	2,216.5	9.3	6.0	-151.50	179.7	-125.1	479.2	466.8	12.41	38.614	
2,400.0	2,349.5	2,330.5	2,308.1	9.8	6.4	-150.09	202.4	-133.4	509.1	495.9	13.23	38.476	
2,500.0	2,446.3	2,425.2	2,399.7	10.3	6.9	-148.84	225.2	-141.7	539.3	525.2	14.06	38.351	
2,600.0	2,543.0	2,519.9	2,491.2	10.9	7.3	-147.72	247.9	-150.0	569.6	554.7	14.90	38.239	
2,700.0	2,639.8	2,614.6	2,582.8	11.4	7.8	-146.71	270.7	-158.3	600.2	584.5	15.74	38.139	
2,800.0	2,736.5	2,709.3	2,674.3	11.9	8.3	-145.80	293.5	-166.6	630.9	614.3	16.58	38.051	
2,900.0	2,833.2	2,804.0	2,765.9	12.5	8.7	-144.98	316.2	-174.9	661.8	644.3	17.43	37.972	
3,000.0	2,930.0	2,898.7	2,857.4	13.0	9.2	-144.22	339.0	-183.2	692.7	674.4	18.28	37.903	
3,100.0	3,026.7	2,993.4	2,949.0	13.5	9.7	-143.53	361.7	-191.4	723.8	704.6	19.13	37.842	
3,200.0	3,123.5	3,088.1	3,040.6	14.1	10.2	-142.90	384.5	-199.7	754.9	734.9	19.98	37.788	
3,300.0	3,220.2	3,182.8	3,132.1	14.6	10.6	-142.32	407.3	-208.0	786.1	765.3	20.83	37.741	
3,400.0	3,317.0	3,277.5	3,223.7	15.1	11.1	-141.78	430.0	-216.3	817.4	795.7	21.68	37.699	
3,500.0	3,413.7	3,372.2	3,315.2	15.7	11.6	-141.28	452.8	-224.6	848.8	826.2	22.54	37.662	
3,600.0	3,510.4	3,467.0	3,406.8	16.2	12.1	-140.82	475.5	-232.9	880.2	856.8	23.39	37.629	
3,700.0	3,607.2	3,561.7	3,498.3	16.7	12.6	-140.38	498.3	-241.2	911.6	887.4	24.25	37.600	
3,800.0	3,703.9	3,656.4	3,589.9	17.3	13.1	-139.98	521.1	-249.5	943.1	918.0	25.10	37.574	
3,900.0	3,800.7	3,751.1	3,681.4	17.8	13.6	-139.60	543.8	-257.8	974.7	948.7	25.96	37.551	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	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	-89.30	0.4	-29.8	29.8				
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.4	-29.8	29.8	29.6	0.22	132.639	
200.0	200.0	200.0	200.0	0.3	0.3	-89.30	0.4	-29.8	29.8	29.1	0.67	44.213 CC, ES	
300.0	300.0	300.0	300.0	0.6	0.6	-150.00	0.4	-29.8	30.9	29.8	1.13	27.496	
400.0	399.9	399.9	399.9	0.8	0.8	-153.25	0.4	-29.8	34.4	32.8	1.58	21.745	
500.0	499.7	499.7	499.7	1.0	1.0	-157.40	0.4	-29.8	40.3	38.3	2.04	19.734	
600.0	599.3	599.3	599.3	1.3	1.2	-161.48	0.4	-29.8	48.9	46.4	2.51	19.489	
700.0	698.6	698.6	698.6	1.6	1.5	-164.99	0.4	-29.8	60.2	57.2	2.98	20.216	
800.0	797.5	797.5	797.5	1.9	1.7	-167.82	0.4	-29.8	74.1	70.7	3.44	21.527	
900.0	896.1	896.1	896.1	2.2	1.9	-170.03	0.4	-29.8	90.8	86.9	3.91	23.207	
1,000.0	994.2	994.2	994.2	2.6	2.1	-171.74	0.4	-29.8	110.1	105.7	4.38	25.130	
1,100.0	1,091.7	1,093.9	1,093.8	3.1	2.3	-172.73	1.5	-29.4	131.2	126.3	4.85	27.060	
1,177.7	1,167.1	1,171.6	1,171.5	3.4	2.5	-172.85	4.0	-28.6	148.2	143.0	5.21	28.432	
1,200.0	1,188.6	1,193.9	1,193.8	3.5	2.6	-172.81	5.0	-28.3	153.1	147.8	5.32	28.799	
1,300.0	1,285.4	1,294.6	1,294.3	4.0	2.8	-172.28	11.1	-26.2	174.1	168.3	5.79	30.043	
1,400.0	1,382.1	1,395.8	1,395.1	4.5	3.0	-171.25	19.8	-23.3	193.4	187.1	6.29	30.741	
1,500.0	1,478.9	1,497.6	1,496.2	5.1	3.3	-169.84	31.1	-19.6	211.1	204.2	6.81	30.992	
1,600.0	1,575.6	1,599.7	1,597.2	5.6	3.6	-168.10	44.9	-15.0	227.2	219.9	7.36	30.870	
1,700.0	1,672.3	1,702.0	1,698.1	6.1	3.9	-166.07	61.4	-9.5	242.0	234.1	7.95	30.429	
1,800.0	1,769.1	1,804.4	1,798.5	6.6	4.2	-163.77	80.4	-3.1	255.6	247.0	8.60	29.719	
1,900.0	1,865.8	1,906.7	1,898.2	7.2	4.6	-161.20	102.0	4.1	268.1	258.8	9.31	28.790	
2,000.0	1,962.6	2,008.8	1,997.1	7.7	5.0	-158.40	126.0	12.1	279.9	269.8	10.11	27.694	
2,100.0	2,059.3	2,109.7	2,094.2	8.2	5.4	-155.39	152.2	20.8	291.1	280.1	10.98	26.501	
2,200.0	2,156.1	2,207.9	2,188.5	8.7	5.9	-152.54	178.4	29.5	302.7	290.8	11.91	25.411	
2,300.0	2,252.8	2,306.2	2,282.7	9.3	6.4	-149.91	204.5	38.3	315.1	302.2	12.88	24.454	
2,400.0	2,349.5	2,404.4	2,377.0	9.8	6.8	-147.47	230.7	47.0	328.0	314.1	13.89	23.620	
2,500.0	2,446.3	2,502.6	2,471.2	10.3	7.3	-145.22	256.9	55.7	341.5	326.6	14.91	22.898	
2,600.0	2,543.0	2,600.8	2,565.5	10.9	7.9	-143.14	283.1	64.5	355.5	339.5	15.96	22.273	
2,700.0	2,639.8	2,699.0	2,659.7	11.4	8.4	-141.22	309.3	73.2	369.9	352.9	17.02	21.732	
2,800.0	2,736.5	2,797.2	2,754.0	11.9	8.9	-139.45	335.5	81.9	384.7	366.6	18.09	21.263	
2,900.0	2,833.2	2,895.4	2,848.2	12.5	9.4	-137.80	361.7	90.6	399.8	380.6	19.17	20.858	
3,000.0	2,930.0	2,993.6	2,942.5	13.0	9.9	-136.27	387.8	99.4	415.2	395.0	20.25	20.505	
3,100.0	3,026.7	3,091.8	3,036.7	13.5	10.5	-134.86	414.0	108.1	430.9	409.6	21.34	20.198	
3,200.0	3,123.5	3,190.1	3,131.0	14.1	11.0	-133.54	440.2	116.8	446.9	424.4	22.42	19.930	
3,300.0	3,220.2	3,288.3	3,225.2	14.6	11.5	-132.31	466.4	125.6	463.0	439.5	23.51	19.695	
3,400.0	3,317.0	3,386.5	3,319.5	15.1	12.1	-131.17	492.6	134.3	479.4	454.8	24.60	19.489	
3,500.0	3,413.7	3,484.7	3,413.7	15.7	12.6	-130.10	518.8	143.0	495.9	470.2	25.68	19.308	
3,600.0	3,510.4	3,582.9	3,508.0	16.2	13.2	-129.10	545.0	151.8	512.6	485.8	26.77	19.148	
3,700.0	3,607.2	3,681.1	3,602.2	16.7	13.7	-128.16	571.1	160.5	529.4	501.6	27.86	19.007	
3,800.0	3,703.9	3,779.3	3,696.5	17.3	14.2	-127.28	597.3	169.2	546.4	517.5	28.94	18.881	
3,900.0	3,800.7	3,877.5	3,790.8	17.8	14.8	-126.45	623.5	178.0	563.5	533.5	30.02	18.770	
4,000.0	3,897.4	3,975.8	3,885.0	18.3	15.3	-125.67	649.7	186.7	580.7	549.6	31.10	18.671	
4,100.0	3,994.2	4,074.0	3,979.3	18.9	15.9	-124.94	675.9	195.4	598.0	565.8	32.18	18.582	
4,200.0	4,090.9	4,172.2	4,073.5	19.4	16.4	-124.24	702.1	204.1	615.3	582.1	33.26	18.503	
4,300.0	4,187.6	4,270.4	4,167.8	19.9	17.0	-123.59	728.3	212.9	632.8	598.5	34.33	18.432	
4,400.0	4,284.4	4,368.6	4,262.0	20.5	17.5	-122.97	754.4	221.6	650.3	614.9	35.40	18.369	
4,500.0	4,381.1	4,466.8	4,356.3	21.0	18.1	-122.38	780.6	230.3	667.9	631.5	36.48	18.312	
4,600.0	4,477.9	4,565.0	4,450.5	21.5	18.6	-121.82	806.8	239.1	685.6	648.1	37.55	18.261	
4,700.0	4,574.6	4,663.2	4,544.8	22.1	19.2	-121.29	833.0	247.8	703.3	664.7	38.61	18.214	
4,800.0	4,671.3	4,761.4	4,639.0	22.6	19.7	-120.79	859.2	256.5	721.1	681.5	39.68	18.173	
4,900.0	4,768.1	4,859.7	4,733.3	23.1	20.3	-120.31	885.4	265.3	739.0	698.2	40.75	18.135	

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
5,000.0	4,864.8	4,957.9	4,827.5	23.7	20.8	-119.85	911.6	274.0	756.9	715.0	41.81	18.101			
5,100.0	4,961.6	5,056.1	4,921.8	24.2	21.4	-119.42	937.7	282.7	774.8	731.9	42.88	18.071			
5,200.0	5,058.3	5,154.3	5,016.0	24.7	21.9	-119.00	963.9	291.5	792.8	748.8	43.94	18.043			
5,216.9	5,074.7	5,170.9	5,032.0	24.8	22.0	-118.93	968.4	292.9	795.8	751.7	44.12	18.038			
5,300.0	5,155.4	5,253.5	5,111.3	25.2	22.5	-118.78	990.3	300.3	810.2	765.2	44.97	18.016			
5,400.0	5,253.2	5,358.1	5,212.3	25.6	22.9	-118.53	1,015.9	308.8	825.6	779.8	45.83	18.016			
5,500.0	5,351.6	5,463.4	5,315.0	25.9	23.3	-118.28	1,038.1	316.2	838.7	792.1	46.57	18.009			
5,600.0	5,450.7	5,569.5	5,419.2	26.1	23.7	-118.04	1,056.8	322.4	849.3	802.1	47.22	17.987			
5,700.0	5,550.1	5,676.1	5,524.6	26.4	24.0	-117.80	1,071.9	327.5	857.6	809.8	47.78	17.950			
5,800.0	5,649.9	5,783.2	5,631.0	26.5	24.2	-117.56	1,083.4	331.3	863.4	815.2	48.24	17.900			
5,900.0	5,749.8	5,890.7	5,738.2	26.7	24.5	-117.32	1,091.0	333.8	866.8	818.2	48.60	17.836			
5,950.2	5,800.0	5,944.7	5,792.2	26.7	24.5	-57.74	1,093.4	334.6	867.6	818.8	48.74	17.799			
6,000.0	5,849.8	5,998.4	5,845.8	26.8	24.6	-57.64	1,094.9	335.1	867.9	819.0	48.88	17.757			
6,100.0	5,949.8	6,102.3	5,949.8	26.9	24.7	-57.61	1,095.4	335.3	868.0	818.9	49.10	17.678			
6,193.9	6,043.7	6,196.2	6,043.7	27.0	24.8	-57.61	1,095.4	335.3	868.0	818.7	49.31	17.603			
6,200.0	6,049.8	6,202.3	6,049.8	27.0	24.8	-57.61	1,095.4	335.3	868.0	818.7	49.32	17.598			
6,250.0	6,099.7	6,252.3	6,099.7	27.0	24.9	-57.80	1,095.4	335.3	866.9	817.5	49.39	17.553			
6,300.0	6,149.4	6,302.0	6,149.4	27.1	24.9	-58.27	1,095.4	335.3	864.1	814.7	49.40	17.491			
6,350.0	6,198.7	6,350.0	6,197.4	27.3	25.0	-59.03	1,095.4	335.3	859.6	810.3	49.36	17.414			
6,400.0	6,247.3	6,380.3	6,227.7	27.4	25.1	-59.75	1,096.1	335.3	854.2	804.9	49.30	17.325			
6,450.0	6,295.0	6,411.3	6,258.7	27.6	25.1	-60.57	1,098.1	335.3	848.2	798.9	49.23	17.230			
6,500.0	6,341.7	6,450.0	6,297.1	27.8	25.2	-61.60	1,102.4	335.3	841.8	792.6	49.17	17.120			
6,550.0	6,387.0	6,473.8	6,320.6	28.0	25.3	-62.48	1,106.0	335.3	834.9	785.8	49.11	17.000			
6,600.0	6,430.9	6,500.0	6,346.4	28.2	25.4	-63.46	1,110.8	335.3	827.7	778.6	49.06	16.869			
6,650.0	6,473.2	6,536.8	6,382.3	28.5	25.6	-64.74	1,119.0	335.3	820.1	771.0	49.10	16.703			
6,700.0	6,513.6	6,568.7	6,413.0	28.8	25.7	-66.00	1,127.5	335.3	812.4	763.2	49.17	16.521			
6,750.0	6,552.0	6,600.0	6,442.8	29.1	25.9	-67.32	1,137.1	335.3	804.5	755.2	49.30	16.317			
6,800.0	6,588.2	6,633.1	6,473.8	29.4	26.1	-68.76	1,148.6	335.3	796.6	747.0	49.53	16.081			
6,850.0	6,622.0	6,665.7	6,503.9	29.8	26.3	-70.25	1,161.2	335.3	788.6	738.8	49.84	15.822			
6,900.0	6,653.4	6,700.0	6,534.9	30.2	26.6	-71.86	1,175.8	335.3	780.9	730.6	50.26	15.535			
6,950.0	6,682.2	6,731.8	6,563.1	30.6	26.9	-73.44	1,190.6	335.3	773.3	722.5	50.77	15.230			
7,000.0	6,708.3	6,765.5	6,592.2	31.1	27.1	-75.13	1,207.6	335.3	766.0	714.6	51.40	14.903			
7,050.0	6,731.5	6,800.0	6,621.2	31.6	27.5	-76.89	1,226.2	335.3	759.2	707.1	52.15	14.560			
7,100.0	6,751.8	6,834.1	6,649.1	32.1	27.8	-78.65	1,246.0	335.3	753.0	700.0	53.00	14.207			
7,150.0	6,769.0	6,869.3	6,676.8	32.6	28.1	-80.47	1,267.5	335.3	747.4	693.4	53.96	13.849			
7,200.0	6,783.1	6,905.0	6,703.9	33.2	28.5	-82.32	1,290.8	335.3	742.5	687.5	55.03	13.494			
7,250.0	6,794.1	6,941.4	6,730.5	33.8	29.0	-84.19	1,315.8	335.3	738.6	682.4	56.19	13.144			
7,300.0	6,801.8	6,978.7	6,756.3	34.4	29.4	-86.07	1,342.5	335.3	735.6	678.2	57.45	12.805			
7,350.0	6,806.3	7,016.8	6,781.4	35.0	29.9	-87.96	1,371.2	335.3	733.7	674.9	58.78	12.482			
7,396.3	6,807.6	7,052.9	6,803.8	35.6	30.3	-89.70	1,399.6	335.3	733.0	672.9	60.08	12.200			
7,400.0	6,807.6	7,055.9	6,805.6	35.6	30.4	-89.84	1,402.0	335.3	733.0	672.8	60.19	12.178			
7,404.2	6,807.6	7,059.2	6,807.6	35.7	30.4	-90.00	1,404.7	335.3	733.0	672.7	60.32	12.153			
7,500.0	6,807.3	7,142.0	6,853.1	37.0	31.6	-93.57	1,473.7	335.3	734.9	671.8	63.12	11.644			
7,600.0	6,807.0	7,241.1	6,897.5	38.4	33.1	-97.03	1,562.3	335.3	739.6	673.4	66.12	11.186			
7,700.0	6,806.6	7,352.5	6,933.2	39.8	34.8	-99.79	1,667.7	335.3	744.6	675.3	69.27	10.749			
7,800.0	6,806.3	7,473.1	6,954.1	41.3	36.8	-101.39	1,786.3	335.3	747.9	675.2	72.70	10.288			
7,900.0	6,806.0	7,587.2	6,957.7	42.8	38.8	-101.69	1,900.3	335.3	748.5	672.3	76.27	9.815			
8,000.0	6,805.7	7,687.2	6,957.8	44.4	40.5	-101.72	2,000.3	335.3	748.6	668.9	79.68	9.396			
8,100.0	6,805.4	7,787.2	6,957.9	45.9	42.2	-101.75	2,100.3	335.3	748.7	665.6	83.12	9.008			
8,200.0	6,805.1	7,887.2	6,958.0	47.5	44.0	-101.79	2,200.3	335.3	748.8	662.2	86.58	8.648			
8,300.0	6,804.8	7,987.2	6,958.1	49.2	45.8	-101.82	2,300.3	335.3	748.9	658.8	90.07	8.314			

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,804.4	8,087.2	6,958.3	50.8	47.6	-101.85	2,400.3	335.3	749.0	655.4	93.58	8.003	
8,500.0	6,804.1	8,187.2	6,958.4	52.5	49.4	-101.88	2,500.3	335.3	749.1	651.9	97.11	7.713	
8,600.0	6,803.8	8,287.2	6,958.5	54.2	51.2	-101.92	2,600.3	335.3	749.1	648.5	100.66	7.443	
8,700.0	6,803.5	8,387.2	6,958.6	55.9	53.0	-101.95	2,700.3	335.3	749.2	645.0	104.21	7.189	
8,800.0	6,803.2	8,487.2	6,958.8	57.6	54.8	-101.98	2,800.3	335.3	749.3	641.5	107.79	6.952	
8,900.0	6,802.9	8,587.2	6,958.9	59.3	56.6	-102.01	2,900.3	335.3	749.4	638.0	111.37	6.729	
9,000.0	6,802.6	8,687.2	6,959.0	61.1	58.4	-102.05	3,000.3	335.3	749.5	634.5	114.97	6.519	
9,100.0	6,802.2	8,787.2	6,959.1	62.8	60.3	-102.08	3,100.3	335.3	749.6	631.0	118.57	6.322	
9,200.0	6,801.9	8,887.2	6,959.2	64.6	62.1	-102.11	3,200.3	335.3	749.7	627.5	122.18	6.136	
9,300.0	6,801.6	8,987.2	6,959.4	66.4	64.0	-102.14	3,300.3	335.3	749.8	624.0	125.80	5.960	
9,400.0	6,801.3	9,087.2	6,959.5	68.2	65.8	-102.18	3,400.3	335.3	749.9	620.4	129.43	5.794	
9,500.0	6,801.0	9,187.2	6,959.6	69.9	67.7	-102.21	3,500.3	335.3	750.0	616.9	133.06	5.636	
9,600.0	6,800.7	9,287.2	6,959.7	71.7	69.5	-102.24	3,600.3	335.3	750.1	613.4	136.70	5.487	
9,700.0	6,800.4	9,387.2	6,959.8	73.5	71.4	-102.28	3,700.3	335.3	750.1	609.8	140.35	5.345	
9,800.0	6,800.0	9,487.2	6,960.0	75.3	73.2	-102.31	3,800.3	335.3	750.2	606.2	144.00	5.210	
9,900.0	6,799.7	9,587.2	6,960.1	77.2	75.1	-102.34	3,900.3	335.3	750.3	602.7	147.65	5.082	
10,000.0	6,799.4	9,687.2	6,960.2	79.0	77.0	-102.37	4,000.3	335.3	750.4	599.1	151.31	4.960	
10,100.0	6,799.1	9,787.2	6,960.3	80.8	78.9	-102.41	4,100.3	335.3	750.5	595.6	154.97	4.843	
10,200.0	6,798.8	9,887.2	6,960.5	82.6	80.7	-102.44	4,200.3	335.3	750.6	592.0	158.63	4.732	
10,300.0	6,798.5	9,987.2	6,960.6	84.5	82.6	-102.47	4,300.3	335.3	750.7	588.4	162.30	4.625	
10,400.0	6,798.2	10,087.2	6,960.7	86.3	84.5	-102.50	4,400.3	335.3	750.8	584.8	165.97	4.524	
10,500.0	6,797.9	10,187.2	6,960.8	88.1	86.4	-102.54	4,500.3	335.3	750.9	581.3	169.64	4.426	
10,600.0	6,797.5	10,287.2	6,960.9	90.0	88.2	-102.57	4,600.3	335.3	751.0	577.7	173.32	4.333	
10,700.0	6,797.2	10,387.2	6,961.1	91.8	90.1	-102.60	4,700.3	335.3	751.1	574.1	177.00	4.244	
10,800.0	6,796.9	10,487.2	6,961.2	93.7	92.0	-102.63	4,800.3	335.3	751.2	570.5	180.68	4.158	
10,900.0	6,796.6	10,587.2	6,961.3	95.5	93.9	-102.67	4,900.3	335.3	751.3	566.9	184.36	4.075	
11,000.0	6,796.3	10,687.2	6,961.4	97.4	95.8	-102.70	5,000.3	335.3	751.4	563.3	188.04	3.996	
11,100.0	6,796.0	10,787.2	6,961.6	99.2	97.7	-102.73	5,100.3	335.3	751.5	559.7	191.72	3.920	
11,200.0	6,795.7	10,887.2	6,961.7	101.1	99.6	-102.76	5,200.2	335.3	751.6	556.2	195.41	3.846	
11,300.0	6,795.3	10,987.2	6,961.8	103.0	101.5	-102.80	5,300.2	335.3	751.7	552.6	199.10	3.775	
11,400.0	6,795.0	11,087.2	6,961.9	104.8	103.4	-102.83	5,400.2	335.3	751.8	549.0	202.78	3.707	
11,500.0	6,794.7	11,187.2	6,962.0	106.7	105.2	-102.86	5,500.2	335.3	751.9	545.4	206.47	3.641	
11,600.0	6,794.4	11,287.2	6,962.2	108.6	107.1	-102.89	5,600.2	335.3	752.0	541.8	210.16	3.578	
11,700.0	6,794.1	11,387.2	6,962.3	110.4	109.0	-102.92	5,700.2	335.3	752.1	538.2	213.85	3.517	
11,800.0	6,793.8	11,487.1	6,962.4	112.3	110.9	-102.96	5,800.2	335.3	752.2	534.6	217.55	3.457	
11,900.0	6,793.5	11,587.1	6,962.5	114.2	112.8	-102.99	5,900.2	335.3	752.2	531.0	221.24	3.400	
12,000.0	6,793.1	11,687.1	6,962.7	116.0	114.7	-103.02	6,000.2	335.3	752.3	527.4	224.93	3.345	
12,100.0	6,792.8	11,787.1	6,962.8	117.9	116.6	-103.05	6,100.2	335.3	752.4	523.8	228.62	3.291	
12,200.0	6,792.5	11,887.1	6,962.9	119.8	118.5	-103.09	6,200.2	335.3	752.5	520.2	232.32	3.239	
12,300.0	6,792.2	11,987.1	6,963.0	121.7	120.4	-103.12	6,300.2	335.3	752.6	516.6	236.01	3.189	
12,400.0	6,791.9	12,087.1	6,963.1	123.6	122.3	-103.15	6,400.2	335.3	752.7	513.0	239.70	3.140	
12,500.0	6,791.6	12,187.1	6,963.3	125.4	124.2	-103.18	6,500.2	335.3	752.8	509.4	243.40	3.093	
12,600.0	6,791.3	12,287.1	6,963.4	127.3	126.1	-103.22	6,600.2	335.3	752.9	505.8	247.09	3.047	
12,700.0	6,790.9	12,387.1	6,963.5	129.2	128.0	-103.25	6,700.2	335.3	753.0	502.3	250.79	3.003	
12,800.0	6,790.6	12,487.1	6,963.6	131.1	129.9	-103.28	6,800.2	335.3	753.1	498.7	254.48	2.960	
12,900.0	6,790.3	12,587.1	6,963.8	133.0	131.8	-103.31	6,900.2	335.3	753.2	495.1	258.18	2.918	
13,000.0	6,790.0	12,687.1	6,963.9	134.9	133.7	-103.35	7,000.2	335.3	753.3	491.5	261.87	2.877	
13,100.0	6,789.7	12,787.1	6,964.0	136.7	135.6	-103.38	7,100.2	335.3	753.4	487.9	265.56	2.837	
13,200.0	6,789.4	12,887.1	6,964.1	138.6	137.5	-103.41	7,200.2	335.3	753.5	484.3	269.26	2.799	
13,300.0	6,789.1	12,987.1	6,964.2	140.5	139.4	-103.44	7,300.2	335.3	753.6	480.7	272.95	2.761	
13,400.0	6,788.7	13,087.1	6,964.4	142.4	141.4	-103.47	7,400.2	335.3	753.7	477.1	276.65	2.725	

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
13,500.0	6,788.4	13,187.1	6,964.5	144.3	143.3	-103.51	7,500.2	335.3	753.8	473.5	280.34	2.689		
13,600.0	6,788.1	13,287.1	6,964.6	146.2	145.2	-103.54	7,600.2	335.3	754.0	469.9	284.03	2.654		
13,700.0	6,787.8	13,387.1	6,964.7	148.1	147.1	-103.57	7,700.2	335.3	754.1	466.3	287.73	2.621		
13,800.0	6,787.5	13,487.1	6,964.9	150.0	149.0	-103.60	7,800.2	335.3	754.2	462.7	291.42	2.588		
13,900.0	6,787.2	13,587.1	6,965.0	151.9	150.9	-103.64	7,900.2	335.3	754.3	459.1	295.11	2.556		
14,000.0	6,786.9	13,687.1	6,965.1	153.8	152.8	-103.67	8,000.2	335.3	754.4	455.6	298.81	2.525		
14,100.0	6,786.5	13,787.1	6,965.2	155.7	154.7	-103.70	8,100.2	335.3	754.5	452.0	302.50	2.494		
14,200.0	6,786.2	13,887.1	6,965.3	157.6	156.6	-103.73	8,200.2	335.3	754.6	448.4	306.19	2.464		
14,300.0	6,785.9	13,987.1	6,965.5	159.5	158.5	-103.76	8,300.2	335.3	754.7	444.8	309.88	2.435		
14,400.0	6,785.6	14,087.1	6,965.6	161.4	160.4	-103.80	8,400.2	335.3	754.8	441.2	313.57	2.407		
14,500.0	6,785.3	14,187.1	6,965.7	163.3	162.3	-103.83	8,500.2	335.3	754.9	437.6	317.26	2.379		
14,600.0	6,785.0	14,287.1	6,965.8	165.2	164.2	-103.86	8,600.2	335.3	755.0	434.0	320.95	2.352		
14,700.0	6,784.7	14,387.1	6,966.0	167.1	166.2	-103.89	8,700.2	335.3	755.1	430.4	324.64	2.326		
14,800.0	6,784.3	14,487.1	6,966.1	169.0	168.1	-103.92	8,800.2	335.3	755.2	426.9	328.33	2.300		
14,900.0	6,784.0	14,587.1	6,966.2	170.9	170.0	-103.96	8,900.2	335.3	755.3	423.3	332.02	2.275		
15,000.0	6,783.7	14,687.1	6,966.3	172.8	171.9	-103.99	9,000.2	335.3	755.4	419.7	335.71	2.250		
15,100.0	6,783.4	14,787.1	6,966.4	174.7	173.8	-104.02	9,100.2	335.3	755.5	416.1	339.39	2.226		
15,200.0	6,783.1	14,887.1	6,966.6	176.6	175.7	-104.05	9,200.2	335.3	755.6	412.5	343.08	2.202		
15,300.0	6,782.8	14,987.1	6,966.7	178.5	177.6	-104.09	9,300.2	335.3	755.7	409.0	346.77	2.179		
15,400.0	6,782.5	15,087.1	6,966.8	180.4	179.5	-104.12	9,400.2	335.3	755.8	405.4	350.45	2.157		
15,500.0	6,782.1	15,187.1	6,966.9	182.3	181.4	-104.15	9,500.2	335.3	755.9	401.8	354.14	2.135		
15,545.3	6,782.0	15,232.4	6,967.0	183.1	182.3	-104.16	9,545.5	335.3	756.0	400.2	355.81	2.125 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-88.61	0.4	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-88.61	0.4	-15.0	15.0	14.8	0.22	66.954		
200.0	200.0	200.0	200.0	0.3	0.3	-88.61	0.4	-15.0	15.0	14.4	0.67	22.318 CC		
300.0	300.0	300.0	300.0	0.6	0.6	-150.51	0.4	-15.0	16.2	15.0	1.13	14.374		
400.0	399.9	399.9	399.9	0.8	0.8	-156.12	0.4	-15.0	19.7	18.1	1.58	12.440		
500.0	499.7	500.1	500.1	1.0	1.0	-161.12	0.9	-14.4	25.0	23.0	2.04	12.273		
600.0	599.3	600.3	600.3	1.3	1.2	-164.35	2.5	-12.3	31.4	28.9	2.49	12.595		
700.0	698.6	700.6	700.5	1.6	1.5	-166.44	5.3	-8.9	38.8	35.8	2.95	13.129		
800.0	797.5	801.0	800.6	1.9	1.7	-167.78	9.1	-4.1	47.1	43.7	3.42	13.776		
900.0	896.1	901.4	900.7	2.2	1.9	-168.65	14.0	2.1	56.3	52.4	3.89	14.485		
1,000.0	994.2	1,001.9	1,000.8	2.6	2.2	-169.21	20.1	9.6	66.5	62.1	4.37	15.225		
1,100.0	1,091.7	1,102.5	1,100.7	3.1	2.5	-169.54	27.2	18.6	77.5	72.7	4.85	15.979		
1,177.7	1,167.1	1,180.7	1,178.2	3.4	2.7	-169.70	33.5	26.5	86.7	81.5	5.24	16.564		
1,200.0	1,188.6	1,203.1	1,200.5	3.5	2.8	-169.74	35.4	28.9	89.4	84.1	5.35	16.722		
1,300.0	1,285.4	1,304.1	1,300.4	4.0	3.1	-169.67	44.8	40.6	100.4	94.6	5.86	17.147		
1,400.0	1,382.1	1,405.4	1,400.3	4.5	3.4	-169.32	55.2	53.7	109.8	103.4	6.38	17.198		
1,500.0	1,478.9	1,507.0	1,500.2	5.1	3.8	-168.74	66.9	68.3	117.5	110.6	6.93	16.955		
1,600.0	1,575.6	1,608.9	1,599.9	5.6	4.2	-167.96	79.6	84.3	123.5	116.0	7.49	16.484		
1,700.0	1,672.3	1,709.0	1,697.8	6.1	4.6	-167.08	92.8	100.8	128.5	120.5	8.07	15.922		
1,800.0	1,769.1	1,808.9	1,795.4	6.6	5.0	-166.27	106.0	117.3	133.6	124.9	8.66	15.417		
1,900.0	1,865.8	1,908.7	1,893.0	7.2	5.4	-165.52	119.2	133.9	138.6	129.3	9.27	14.961		
2,000.0	1,962.6	2,008.6	1,990.6	7.7	5.9	-164.82	132.4	150.4	143.7	133.8	9.88	14.549		
2,100.0	2,059.3	2,108.4	2,088.2	8.2	6.3	-164.17	145.6	166.9	148.8	138.3	10.50	14.174		
2,200.0	2,156.1	2,208.3	2,185.7	8.7	6.8	-163.57	158.7	183.4	153.9	142.8	11.12	13.834		
2,300.0	2,252.8	2,308.1	2,283.3	9.3	7.2	-163.00	171.9	200.0	159.0	147.3	11.76	13.523		
2,400.0	2,349.5	2,408.0	2,380.9	9.8	7.6	-162.46	185.1	216.5	164.2	151.8	12.40	13.237		
2,500.0	2,446.3	2,507.8	2,478.5	10.3	8.1	-161.96	198.3	233.0	169.3	156.3	13.05	12.975		
2,600.0	2,543.0	2,607.7	2,576.1	10.9	8.5	-161.49	211.5	249.5	174.5	160.8	13.70	12.734		
2,700.0	2,639.8	2,707.6	2,673.7	11.4	9.0	-161.05	224.7	266.0	179.7	165.3	14.36	12.510		
2,800.0	2,736.5	2,807.4	2,771.3	11.9	9.4	-160.63	237.8	282.6	184.9	169.9	15.03	12.304		
2,900.0	2,833.2	2,907.3	2,868.9	12.5	9.9	-160.24	251.0	299.1	190.1	174.4	15.69	12.112		
3,000.0	2,930.0	3,007.1	2,966.5	13.0	10.3	-159.86	264.2	315.6	195.3	178.9	16.37	11.933		
3,100.0	3,026.7	3,107.0	3,064.1	13.5	10.8	-159.51	277.4	332.1	200.5	183.5	17.04	11.767		
3,200.0	3,123.5	3,206.8	3,161.7	14.1	11.2	-159.17	290.6	348.7	205.7	188.0	17.72	11.611		
3,300.0	3,220.2	3,306.7	3,259.3	14.6	11.7	-158.85	303.8	365.2	211.0	192.6	18.40	11.465		
3,400.0	3,317.0	3,406.6	3,356.9	15.1	12.1	-158.55	316.9	381.7	216.2	197.1	19.08	11.329		
3,500.0	3,413.7	3,506.4	3,454.5	15.7	12.6	-158.25	330.1	398.2	221.4	201.7	19.77	11.200		
3,600.0	3,510.4	3,606.3	3,552.1	16.2	13.0	-157.98	343.3	414.7	226.7	206.2	20.46	11.079		
3,700.0	3,607.2	3,706.1	3,649.7	16.7	13.5	-157.71	356.5	431.3	232.0	210.8	21.15	10.965		
3,800.0	3,703.9	3,806.0	3,747.2	17.3	13.9	-157.46	369.7	447.8	237.2	215.4	21.85	10.858		
3,900.0	3,800.7	3,905.8	3,844.8	17.8	14.4	-157.22	382.9	464.3	242.5	219.9	22.54	10.756		
4,000.0	3,897.4	4,005.7	3,942.4	18.3	14.8	-156.99	396.0	480.8	247.7	224.5	23.24	10.660		
4,100.0	3,994.2	4,105.5	4,040.0	18.9	15.3	-156.77	409.2	497.4	253.0	229.1	23.94	10.568		
4,200.0	4,090.9	4,205.4	4,137.6	19.4	15.8	-156.55	422.4	513.9	258.3	233.6	24.64	10.482		
4,300.0	4,187.6	4,305.3	4,235.2	19.9	16.2	-156.35	435.6	530.4	263.6	238.2	25.34	10.399		
4,400.0	4,284.4	4,405.1	4,332.8	20.5	16.7	-156.15	448.8	546.9	268.8	242.8	26.05	10.321		
4,500.0	4,381.1	4,505.0	4,430.4	21.0	17.1	-155.96	462.0	563.4	274.1	247.4	26.75	10.246		
4,600.0	4,477.9	4,604.8	4,528.0	21.5	17.6	-155.78	475.1	580.0	279.4	252.0	27.46	10.175		
4,700.0	4,574.6	4,704.7	4,625.6	22.1	18.0	-155.61	488.3	596.5	284.7	256.5	28.17	10.107		
4,800.0	4,671.3	4,804.5	4,723.2	22.6	18.5	-155.44	501.5	613.0	290.0	261.1	28.88	10.042		
4,900.0	4,768.1	4,904.4	4,820.8	23.1	18.9	-155.28	514.7	629.5	295.3	265.7	29.59	9.980		

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23X-341 - Wellbore #1 - Plan #1 (9-2-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.0	4,864.8	5,004.3	4,918.4	23.7	19.4	-155.12	527.9	646.0	300.6	270.3	30.30	9.921		
5,100.0	4,961.6	5,104.1	5,016.0	24.2	19.9	-154.97	541.1	662.6	305.9	274.9	31.01	9.864		
5,200.0	5,058.3	5,204.0	5,113.6	24.7	20.3	-154.82	554.2	679.1	311.2	279.5	31.72	9.809		
5,216.9	5,074.7	5,220.9	5,130.1	24.8	20.4	-154.80	556.5	681.9	312.1	280.2	31.85	9.800		
5,300.0	5,155.4	5,303.9	5,211.2	25.2	20.8	-154.62	567.4	695.6	315.4	283.0	32.46	9.717		
5,400.0	5,253.2	5,403.8	5,308.9	25.6	21.2	-154.13	580.6	712.2	316.5	283.3	33.21	9.530		
5,500.0	5,351.6	5,500.0	5,402.9	25.9	21.7	-153.37	593.3	728.1	314.6	280.6	34.00	9.254		
5,600.0	5,450.7	5,594.2	5,495.4	26.1	22.0	-152.52	604.6	742.2	311.2	276.5	34.70	8.969		
5,700.0	5,550.1	5,686.0	5,585.9	26.4	22.2	-151.72	613.8	753.7	307.4	272.1	35.32	8.703		
5,800.0	5,649.9	5,778.0	5,677.1	26.5	22.5	-150.92	621.2	763.0	303.2	267.3	35.88	8.450		
5,900.0	5,749.8	5,870.1	5,768.8	26.7	22.7	-150.14	626.7	769.9	298.6	262.2	36.38	8.208		
5,950.2	5,800.0	5,916.4	5,815.0	26.7	22.8	-90.30	628.8	772.6	296.1	259.5	36.60	8.089		
6,000.0	5,849.8	5,962.4	5,860.9	26.8	22.8	-89.99	630.5	774.6	293.9	257.0	36.85	7.975		
6,100.0	5,949.8	6,055.0	5,953.5	26.9	23.0	-89.62	632.3	776.9	291.4	254.1	37.26	7.820		
6,167.3	6,017.0	6,118.6	6,017.0	26.9	23.1	-89.57	632.6	777.2	291.0	253.6	37.46	7.770		
6,193.9	6,043.7	6,145.2	6,043.7	27.0	23.1	-89.57	632.6	777.2	291.0	253.5	37.53	7.754		
6,200.0	6,049.8	6,151.3	6,049.8	27.0	23.1	-89.58	632.6	777.2	291.0	253.5	37.55	7.751		
6,250.0	6,099.7	6,201.3	6,099.7	27.0	23.2	-89.98	632.6	777.2	291.0	253.4	37.58	7.744		
6,251.4	6,101.1	6,202.6	6,101.1	27.0	23.2	-90.00	632.6	777.2	291.0	253.4	37.58	7.745		
6,300.0	6,149.4	6,251.2	6,149.6	27.1	23.2	-90.89	633.2	777.2	291.1	253.6	37.50	7.762		
6,350.0	6,198.7	6,301.4	6,199.7	27.3	23.3	-91.84	637.0	777.2	291.2	253.7	37.49	7.767		
6,400.0	6,247.3	6,351.9	6,249.7	27.4	23.4	-92.79	644.0	777.2	291.4	253.8	37.57	7.755		
6,450.0	6,295.0	6,402.8	6,299.5	27.6	23.6	-93.72	654.5	777.2	291.6	253.9	37.75	7.726		
6,500.0	6,341.7	6,454.0	6,348.8	27.8	23.8	-94.64	668.3	777.2	292.0	254.0	38.02	7.680		
6,550.0	6,387.0	6,505.6	6,397.4	28.0	24.0	-95.54	685.5	777.2	292.4	254.0	38.38	7.619		
6,600.0	6,430.9	6,557.4	6,445.0	28.2	24.3	-96.42	706.1	777.2	292.9	254.0	38.84	7.541		
6,650.0	6,473.2	6,609.7	6,491.4	28.5	24.5	-97.27	730.1	777.2	293.4	254.0	39.39	7.448		
6,700.0	6,513.6	6,662.2	6,536.3	28.8	24.9	-98.09	757.3	777.2	294.0	253.9	40.05	7.340		
6,750.0	6,552.0	6,715.0	6,579.5	29.1	25.2	-98.87	787.7	777.2	294.6	253.8	40.81	7.219		
6,800.0	6,588.2	6,768.2	6,620.7	29.4	25.6	-99.61	821.3	777.2	295.2	253.5	41.67	7.084		
6,850.0	6,622.0	6,821.6	6,659.7	29.8	26.0	-100.30	857.9	777.2	295.8	253.2	42.64	6.938		
6,900.0	6,653.4	6,875.4	6,696.2	30.2	26.5	-100.95	897.3	777.2	296.5	252.7	43.72	6.781		
6,950.0	6,682.2	6,929.4	6,730.0	30.6	27.0	-101.55	939.4	777.2	297.1	252.2	44.91	6.615		
7,000.0	6,708.3	6,983.6	6,760.9	31.1	27.5	-102.10	983.9	777.2	297.7	251.5	46.21	6.442		
7,050.0	6,731.5	7,038.1	6,788.7	31.6	28.1	-102.59	1,030.8	777.2	298.2	250.6	47.62	6.263		
7,100.0	6,751.8	7,092.8	6,813.1	32.1	28.7	-103.03	1,079.7	777.2	298.7	249.6	49.14	6.079		
7,150.0	6,769.0	7,147.7	6,834.0	32.6	29.4	-103.40	1,130.4	777.2	299.2	248.4	50.76	5.894		
7,200.0	6,783.1	7,202.7	6,851.3	33.2	30.1	-103.71	1,182.7	777.2	299.6	247.1	52.48	5.708		
7,250.0	6,794.1	7,257.9	6,864.8	33.8	30.8	-103.96	1,236.1	777.2	299.9	245.6	54.29	5.524		
7,300.0	6,801.8	7,313.1	6,874.5	34.4	31.6	-104.14	1,290.5	777.2	300.1	244.0	56.18	5.343		
7,350.0	6,806.3	7,368.5	6,880.2	35.0	32.3	-104.26	1,345.6	777.2	300.3	242.2	58.13	5.166		
7,396.3	6,807.6	7,419.7	6,881.9	35.6	33.1	-104.32	1,396.8	777.2	300.4	240.4	59.98	5.008		
7,400.0	6,807.6	7,423.7	6,881.9	35.6	33.1	-104.32	1,400.7	777.2	300.4	240.3	60.10	4.998		
7,500.0	6,807.3	7,523.7	6,881.5	37.0	34.6	-104.31	1,500.7	777.2	300.3	237.1	63.25	4.749		
7,600.0	6,807.0	7,623.7	6,881.1	38.4	36.1	-104.30	1,600.7	777.2	300.3	233.9	66.46	4.519		
7,700.0	6,806.6	7,723.7	6,880.8	39.8	37.7	-104.29	1,700.7	777.2	300.3	230.6	69.73	4.307		
7,800.0	6,806.3	7,823.7	6,880.4	41.3	39.3	-104.28	1,800.7	777.2	300.3	227.3	73.04	4.112		
7,900.0	6,806.0	7,923.7	6,880.0	42.8	40.9	-104.27	1,900.7	777.2	300.3	223.9	76.39	3.931		
8,000.0	6,805.7	8,023.7	6,879.7	44.4	42.5	-104.26	2,000.7	777.3	300.3	220.5	79.77	3.764		
8,100.0	6,805.4	8,123.7	6,879.3	45.9	44.2	-104.25	2,100.7	777.3	300.3	217.1	83.19	3.610		
8,200.0	6,805.1	8,223.7	6,878.9	47.5	45.9	-104.24	2,200.7	777.3	300.3	213.6	86.63	3.466		

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23X-341 - Wellbore #1 - Plan #1 (9-2-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,300.0	6,804.8	8,323.7	6,878.6	49.2	47.6	-104.23	2,300.7	777.3	300.2	210.1	90.10	3.332	
8,400.0	6,804.4	8,423.7	6,878.2	50.8	49.3	-104.22	2,400.7	777.3	300.2	206.6	93.59	3.208	
8,500.0	6,804.1	8,523.7	6,877.8	52.5	51.0	-104.21	2,500.7	777.3	300.2	203.1	97.09	3.092	
8,600.0	6,803.8	8,623.7	6,877.5	54.2	52.8	-104.20	2,600.7	777.3	300.2	199.6	100.62	2.984	
8,700.0	6,803.5	8,723.7	6,877.1	55.9	54.6	-104.19	2,700.7	777.3	300.2	196.0	104.16	2.882	
8,800.0	6,803.2	8,823.7	6,876.7	57.6	56.3	-104.18	2,800.7	777.3	300.2	192.5	107.72	2.787	
8,900.0	6,802.9	8,923.7	6,876.4	59.3	58.1	-104.17	2,900.7	777.3	300.2	188.9	111.28	2.697	
9,000.0	6,802.6	9,023.7	6,876.0	61.1	59.9	-104.16	3,000.7	777.3	300.1	185.3	114.86	2.613	
9,100.0	6,802.2	9,123.7	6,875.6	62.8	61.7	-104.15	3,100.7	777.3	300.1	181.7	118.45	2.534	
9,200.0	6,801.9	9,223.7	6,875.3	64.6	63.5	-104.14	3,200.7	777.3	300.1	178.1	122.05	2.459	
9,300.0	6,801.6	9,323.7	6,874.9	66.4	65.3	-104.13	3,300.7	777.3	300.1	174.5	125.66	2.388	
9,400.0	6,801.3	9,423.7	6,874.5	68.2	67.1	-104.12	3,400.7	777.3	300.1	170.8	129.27	2.321	
9,500.0	6,801.0	9,523.7	6,874.2	69.9	69.0	-104.11	3,500.7	777.3	300.1	167.2	132.90	2.258	
9,600.0	6,800.7	9,623.7	6,873.8	71.7	70.8	-104.10	3,600.7	777.3	300.1	163.5	136.53	2.198	
9,700.0	6,800.4	9,723.7	6,873.4	73.5	72.6	-104.09	3,700.7	777.3	300.1	159.9	140.17	2.141	
9,800.0	6,800.0	9,823.7	6,873.1	75.3	74.4	-104.08	3,800.7	777.3	300.0	156.2	143.81	2.086	
9,900.0	6,799.7	9,923.7	6,872.7	77.2	76.3	-104.08	3,900.7	777.3	300.0	152.6	147.46	2.035	
10,000.0	6,799.4	10,023.7	6,872.3	79.0	78.1	-104.07	4,000.7	777.3	300.0	148.9	151.11	1.985	
10,100.0	6,799.1	10,123.7	6,872.0	80.8	80.0	-104.06	4,100.7	777.3	300.0	145.2	154.77	1.938	
10,200.0	6,798.8	10,223.7	6,871.6	82.6	81.8	-104.05	4,200.7	777.3	300.0	141.6	158.43	1.894	
10,300.0	6,798.5	10,323.7	6,871.2	84.5	83.7	-104.04	4,300.7	777.3	300.0	137.9	162.10	1.851	
10,400.0	6,798.2	10,423.7	6,870.9	86.3	85.6	-104.03	4,400.7	777.3	300.0	134.2	165.77	1.810	
10,500.0	6,797.9	10,523.7	6,870.5	88.1	87.4	-104.02	4,500.7	777.3	300.0	130.5	169.44	1.770	
10,600.0	6,797.5	10,623.7	6,870.1	90.0	89.3	-104.01	4,600.7	777.3	299.9	126.8	173.12	1.733	
10,700.0	6,797.2	10,723.7	6,869.8	91.8	91.1	-104.00	4,700.7	777.3	299.9	123.1	176.80	1.696	
10,800.0	6,796.9	10,823.7	6,869.4	93.7	93.0	-103.99	4,800.7	777.3	299.9	119.4	180.48	1.662	
10,900.0	6,796.6	10,923.7	6,869.0	95.5	94.9	-103.98	4,900.7	777.3	299.9	115.7	184.17	1.628	
11,000.0	6,796.3	11,023.7	6,868.7	97.4	96.8	-103.97	5,000.7	777.3	299.9	112.0	187.86	1.596	
11,100.0	6,796.0	11,123.7	6,868.3	99.2	98.6	-103.96	5,100.7	777.3	299.9	108.3	191.55	1.566	
11,200.0	6,795.7	11,223.7	6,867.9	101.1	100.5	-103.95	5,200.7	777.3	299.9	104.6	195.25	1.536	
11,300.0	6,795.3	11,323.7	6,867.6	103.0	102.4	-103.94	5,300.7	777.3	299.9	100.9	198.94	1.507	
11,400.0	6,795.0	11,423.7	6,867.2	104.8	104.3	-103.93	5,400.7	777.3	299.8	97.2	202.64	1.480 Level 3	
11,500.0	6,794.7	11,523.7	6,866.8	106.7	106.1	-103.92	5,500.7	777.3	299.8	93.5	206.34	1.453 Level 3	
11,600.0	6,794.4	11,623.7	6,866.5	108.6	108.0	-103.91	5,600.7	777.3	299.8	89.8	210.05	1.427 Level 3	
11,700.0	6,794.1	11,723.7	6,866.1	110.4	109.9	-103.90	5,700.7	777.3	299.8	86.1	213.75	1.403 Level 3	
11,800.0	6,793.8	11,823.7	6,865.7	112.3	111.8	-103.89	5,800.7	777.3	299.8	82.3	217.46	1.379 Level 3	
11,900.0	6,793.5	11,923.7	6,865.4	114.2	113.7	-103.88	5,900.7	777.3	299.8	78.6	221.17	1.355 Level 3	
12,000.0	6,793.1	12,023.7	6,865.0	116.0	115.6	-103.87	6,000.7	777.3	299.8	74.9	224.88	1.333 Level 3	
12,100.0	6,792.8	12,123.7	6,864.6	117.9	117.4	-103.86	6,100.7	777.3	299.8	71.2	228.59	1.311 Level 3	
12,200.0	6,792.5	12,223.7	6,864.3	119.8	119.3	-103.85	6,200.7	777.3	299.7	67.4	232.31	1.290 Level 3	
12,300.0	6,792.2	12,323.7	6,863.9	121.7	121.2	-103.84	6,300.7	777.3	299.7	63.7	236.02	1.270 Level 3	
12,400.0	6,791.9	12,423.7	6,863.5	123.6	123.1	-103.83	6,400.7	777.3	299.7	60.0	239.74	1.250 Level 3	
12,500.0	6,791.6	12,523.7	6,863.2	125.4	125.0	-103.82	6,500.7	777.3	299.7	56.3	243.46	1.231 Level 2	
12,600.0	6,791.3	12,623.7	6,862.8	127.3	126.9	-103.81	6,600.7	777.3	299.7	52.5	247.18	1.212 Level 2	
12,700.0	6,790.9	12,723.7	6,862.4	129.2	128.8	-103.80	6,700.7	777.3	299.7	48.8	250.90	1.194 Level 2	
12,800.0	6,790.6	12,823.7	6,862.1	131.1	130.7	-103.79	6,800.7	777.3	299.7	45.1	254.62	1.177 Level 2	
12,900.0	6,790.3	12,923.7	6,861.7	133.0	132.6	-103.78	6,900.7	777.3	299.7	41.3	258.34	1.160 Level 2	
13,000.0	6,790.0	13,023.7	6,861.3	134.9	134.5	-103.77	7,000.7	777.3	299.6	37.6	262.07	1.143 Level 2	
13,100.0	6,789.7	13,123.7	6,861.0	136.7	136.4	-103.76	7,100.7	777.3	299.6	33.8	265.79	1.127 Level 2	
13,200.0	6,789.4	13,223.7	6,860.6	138.6	138.3	-103.75	7,200.7	777.3	299.6	30.1	269.52	1.112 Level 2	
13,300.0	6,789.1	13,323.7	6,860.2	140.5	140.2	-103.74	7,300.7	777.3	299.6	26.4	273.25	1.096 Level 2	

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23X-341 - Wellbore #1 - Plan #1 (9-2-15)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
13,400.0	6,788.7	13,423.7	6,859.9	142.4	142.1	-103.74	7,400.7	777.3	299.6	22.6	276.97	1.082	Level 2	
13,500.0	6,788.4	13,523.7	6,859.5	144.3	144.0	-103.73	7,500.7	777.3	299.6	18.9	280.70	1.067	Level 2	
13,600.0	6,788.1	13,623.7	6,859.1	146.2	145.9	-103.72	7,600.7	777.3	299.6	15.1	284.43	1.053	Level 2	
13,700.0	6,787.8	13,723.7	6,858.8	148.1	147.8	-103.71	7,700.7	777.3	299.6	11.4	288.17	1.040	Level 2	
13,800.0	6,787.5	13,823.7	6,858.4	150.0	149.7	-103.70	7,800.7	777.3	299.5	7.6	291.90	1.026	Level 2	
13,900.0	6,787.2	13,923.7	6,858.0	151.9	151.6	-103.69	7,900.7	777.3	299.5	3.9	295.63	1.013	Level 2	
14,000.0	6,786.9	14,023.7	6,857.7	153.8	153.5	-103.68	8,000.7	777.3	299.5	0.2	299.37	1.001	Level 2	
14,100.0	6,786.5	14,123.7	6,857.3	155.7	155.4	-103.67	8,100.7	777.3	299.5	-3.6	303.10	0.988	Level 1	
14,200.0	6,786.2	14,223.7	6,856.9	157.6	157.3	-103.66	8,200.7	777.3	299.5	-7.3	306.84	0.976	Level 1	
14,300.0	6,785.9	14,323.7	6,856.6	159.5	159.2	-103.65	8,300.7	777.3	299.5	-11.1	310.57	0.964	Level 1	
14,400.0	6,785.6	14,423.7	6,856.2	161.4	161.1	-103.64	8,400.7	777.3	299.5	-14.8	314.31	0.953	Level 1	
14,500.0	6,785.3	14,523.7	6,855.8	163.3	163.0	-103.63	8,500.7	777.3	299.5	-18.6	318.05	0.942	Level 1	
14,600.0	6,785.0	14,623.7	6,855.5	165.2	164.9	-103.62	8,600.7	777.3	299.4	-22.3	321.79	0.931	Level 1	
14,700.0	6,784.7	14,723.7	6,855.1	167.1	166.8	-103.61	8,700.7	777.3	299.4	-26.1	325.53	0.920	Level 1	
14,800.0	6,784.3	14,823.7	6,854.7	169.0	168.7	-103.60	8,800.7	777.3	299.4	-29.8	329.27	0.909	Level 1	
14,900.0	6,784.0	14,923.7	6,854.4	170.9	170.6	-103.59	8,900.7	777.3	299.4	-33.6	333.01	0.899	Level 1	
15,000.0	6,783.7	15,023.7	6,854.0	172.8	172.5	-103.58	9,000.7	777.3	299.4	-37.4	336.75	0.889	Level 1	
15,100.0	6,783.4	15,123.7	6,853.6	174.7	174.4	-103.57	9,100.7	777.3	299.4	-41.1	340.49	0.879	Level 1	
15,200.0	6,783.1	15,223.7	6,853.3	176.6	176.3	-103.56	9,200.7	777.3	299.4	-44.9	344.24	0.870	Level 1	
15,300.0	6,782.8	15,323.7	6,852.9	178.5	178.2	-103.55	9,300.7	777.3	299.4	-48.6	347.98	0.860	Level 1	
15,400.0	6,782.5	15,423.7	6,852.5	180.4	180.1	-103.54	9,400.7	777.3	299.3	-52.4	351.72	0.851	Level 1	
15,500.0	6,782.1	15,523.7	6,852.2	182.3	182.0	-103.53	9,500.7	777.3	299.3	-56.1	355.47	0.842	Level 1	
15,545.3	6,782.0	15,569.0	6,852.0	183.1	182.9	-103.53	9,546.0	777.3	299.3	-57.8	357.17	0.838	Level 1, ES, SF	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Sec. 23-T5N-R65W - Beth 1 (Exist.) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b> 100-NS-GYRO-MS													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
14,100.0	6,786.5	6,778.6	6,777.1	155.7	13.3	-94.74	8,961.4	631.0	966.3	798.6	167.69	5.762		
14,200.0	6,786.2	6,776.2	6,774.7	157.6	13.3	-94.42	8,961.5	631.0	878.3	708.7	169.64	5.177		
14,300.0	6,785.9	6,773.8	6,772.3	159.5	13.3	-94.11	8,961.5	630.9	793.3	621.7	171.59	4.623		
14,400.0	6,785.6	6,771.4	6,769.9	161.4	13.3	-93.80	8,961.6	630.8	712.1	538.5	173.53	4.103		
14,500.0	6,785.3	6,769.0	6,767.5	163.3	13.3	-93.48	8,961.6	630.7	636.3	460.8	175.47	3.626		
14,600.0	6,785.0	6,766.6	6,765.1	165.2	13.3	-93.17	8,961.7	630.6	568.0	390.6	177.41	3.202		
14,700.0	6,784.7	6,764.2	6,762.7	167.1	13.3	-92.86	8,961.7	630.5	510.3	330.9	179.34	2.845		
14,800.0	6,784.3	6,761.8	6,760.3	169.0	13.3	-92.54	8,961.8	630.5	467.0	285.7	181.27	2.576		
14,900.0	6,784.0	6,759.4	6,757.9	170.9	13.3	-92.23	8,961.8	630.4	442.5	259.3	183.20	2.416		
14,961.4	6,783.8	6,757.9	6,756.4	172.0	13.3	-92.03	8,961.9	630.3	438.3	253.9	184.38	2.377 CC, ES		
15,000.0	6,783.7	6,756.9	6,755.5	172.8	13.3	-91.91	8,961.9	630.3	440.0	254.8	185.12	2.377 SF		
15,100.0	6,783.4	6,754.5	6,753.0	174.7	13.3	-91.60	8,962.0	630.2	459.6	272.6	187.04	2.457		
15,200.0	6,783.1	6,752.1	6,750.6	176.6	13.3	-91.28	8,962.0	630.1	499.0	310.0	188.95	2.641		
15,300.0	6,782.8	6,749.7	6,748.2	178.5	13.3	-90.97	8,962.1	630.0	553.8	362.9	190.86	2.901		
15,400.0	6,782.5	6,747.3	6,745.8	180.4	13.3	-90.65	8,962.1	629.9	619.9	427.2	192.76	3.216		
15,500.0	6,782.1	6,744.9	6,743.4	182.3	13.3	-90.34	8,962.2	629.9	694.3	499.6	194.66	3.566		
15,545.3	6,782.0	6,743.8	6,742.3	183.1	13.3	-90.19	8,962.2	629.8	729.9	534.4	195.52	3.733		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Sec. 23-T5N-R65W - Buderus 1-23 (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7104-UNKNOWN												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,700.0	6,803.5	6,786.5	6,786.5	55.9	135.7	-90.34	3,550.9	622.6	960.2	771.5	188.67	5.089	
8,800.0	6,803.2	6,786.2	6,786.2	57.6	135.7	-90.30	3,550.9	622.6	872.9	682.4	190.48	4.582	
8,900.0	6,802.9	6,785.9	6,785.9	59.3	135.7	-90.26	3,550.9	622.6	788.5	596.2	192.30	4.101	
9,000.0	6,802.6	6,785.6	6,785.6	61.1	135.7	-90.22	3,550.9	622.6	708.3	514.2	194.12	3.649	
9,100.0	6,802.2	6,785.2	6,785.2	62.8	135.7	-90.18	3,550.9	622.6	633.7	437.8	195.95	3.234	
9,200.0	6,801.9	6,784.9	6,784.9	64.6	135.7	-90.14	3,550.9	622.6	567.0	369.2	197.78	2.867	
9,300.0	6,801.6	6,784.6	6,784.6	66.4	135.7	-90.10	3,550.9	622.6	511.3	311.6	199.62	2.561	
9,400.0	6,801.3	6,784.3	6,784.3	68.2	135.7	-90.06	3,550.9	622.6	470.4	269.0	201.46	2.335	
9,500.0	6,801.0	6,784.0	6,784.0	69.9	135.7	-90.02	3,550.9	622.6	448.5	245.2	203.31	2.206	
9,550.5	6,800.8	6,783.8	6,783.8	70.8	135.7	-90.00	3,550.9	622.6	445.7	241.5	204.24	2.182	CC, ES, SF
9,600.0	6,800.7	6,783.7	6,783.7	71.7	135.7	-89.98	3,550.9	622.6	448.4	243.3	205.15	2.186	
9,700.0	6,800.4	6,783.4	6,783.4	73.5	135.7	-89.94	3,550.9	622.6	470.1	263.1	207.01	2.271	
9,800.0	6,800.0	6,783.0	6,783.0	75.3	135.7	-89.90	3,550.9	622.6	510.8	301.9	208.86	2.446	
9,900.0	6,799.7	6,782.7	6,782.7	77.2	135.7	-89.86	3,550.9	622.6	566.4	355.7	210.72	2.688	
10,000.0	6,799.4	6,782.4	6,782.4	79.0	135.6	-89.82	3,550.9	622.6	633.0	420.4	212.58	2.978	
10,100.0	6,799.1	6,782.1	6,782.1	80.8	135.6	-89.78	3,550.9	622.6	707.5	493.1	214.44	3.299	
10,200.0	6,798.8	6,781.8	6,781.8	82.6	135.6	-89.74	3,550.9	622.6	787.7	571.4	216.31	3.642	
10,300.0	6,798.5	6,781.5	6,781.5	84.5	135.6	-89.70	3,550.9	622.6	872.0	653.8	218.18	3.997	
10,400.0	6,798.2	6,781.2	6,781.2	86.3	135.6	-89.66	3,550.9	622.6	959.3	739.3	220.04	4.360	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Sec. 23-T5N-R65W - Jan 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7100-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,800.0	6,790.6	6,749.6	6,749.6	131.1	135.0	-90.37	7,644.0	655.9	939.0	674.1	264.90	3.545		
12,900.0	6,790.3	6,749.3	6,749.3	133.0	135.0	-90.32	7,644.0	655.9	850.3	583.5	266.79	3.187		
13,000.0	6,790.0	6,749.0	6,749.0	134.9	135.0	-90.28	7,644.0	655.9	764.3	495.7	268.69	2.845		
13,100.0	6,789.7	6,748.7	6,748.7	136.7	135.0	-90.24	7,644.0	655.9	682.3	411.7	270.58	2.522		
13,200.0	6,789.4	6,748.4	6,748.4	138.6	135.0	-90.19	7,644.0	655.9	605.6	333.2	272.48	2.223		
13,300.0	6,789.1	6,748.1	6,748.1	140.5	135.0	-90.15	7,644.0	655.9	536.7	262.4	274.38	1.956		
13,400.0	6,788.7	6,747.7	6,747.7	142.4	135.0	-90.11	7,644.0	655.9	478.9	202.7	276.27	1.734		
13,500.0	6,788.4	6,747.4	6,747.4	144.3	134.9	-90.06	7,644.0	655.9	436.7	158.5	278.17	1.570		
13,600.0	6,788.1	6,747.1	6,747.1	146.2	134.9	-90.02	7,644.0	655.9	414.7	134.6	280.07	1.481 Level 3		
13,643.6	6,788.0	6,747.0	6,747.0	147.0	134.9	-90.00	7,644.0	655.9	412.4	131.5	280.90	1.468 Level 3, CC, ES, SF		
13,700.0	6,787.8	6,746.8	6,746.8	148.1	134.9	-89.98	7,644.0	655.9	416.2	134.3	281.97	1.476 Level 3		
13,800.0	6,787.5	6,746.5	6,746.5	150.0	134.9	-89.93	7,644.0	655.9	441.1	157.2	283.87	1.554		
13,900.0	6,787.2	6,746.2	6,746.2	151.9	134.9	-89.89	7,644.0	655.9	485.6	199.9	285.76	1.699		
14,000.0	6,786.9	6,745.9	6,745.9	153.8	134.9	-89.84	7,644.0	655.9	545.1	257.4	287.66	1.895		
14,100.0	6,786.5	6,745.5	6,745.5	155.7	134.9	-89.80	7,644.0	655.9	615.1	325.6	289.56	2.124		
14,200.0	6,786.2	6,745.2	6,745.2	157.6	134.9	-89.76	7,644.0	655.9	692.6	401.1	291.46	2.376		
14,300.0	6,785.9	6,744.9	6,744.9	159.5	134.9	-89.71	7,644.0	655.9	775.2	481.9	293.36	2.643		
14,400.0	6,785.6	6,744.6	6,744.6	161.4	134.9	-89.67	7,644.0	655.9	861.6	566.3	295.26	2.918		
14,500.0	6,785.3	6,744.3	6,744.3	163.3	134.9	-89.63	7,644.0	655.9	950.6	653.4	297.16	3.199		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Sec. 23-T5N-R65W - Susan 1-23 (P&A) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7085-UNKNOWN												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,300.0	6,801.8	6,781.8	6,781.8	34.4	135.6	-74.67	2,212.8	660.5	999.1	840.5	158.63	6.298	
7,350.0	6,806.3	6,786.3	6,786.3	35.0	135.7	-83.08	2,212.8	660.5	953.9	789.9	164.01	5.816	
7,396.3	6,807.6	6,787.6	6,787.6	35.6	135.8	-90.36	2,212.8	660.5	912.3	746.1	166.18	5.490	
7,400.0	6,807.6	6,787.6	6,787.6	35.6	135.8	-90.36	2,212.8	660.5	909.0	742.7	166.24	5.468	
7,500.0	6,807.3	6,787.3	6,787.3	37.0	135.7	-90.31	2,212.8	660.5	820.8	653.0	167.83	4.891	
7,600.0	6,807.0	6,787.0	6,787.0	38.4	135.7	-90.27	2,212.8	660.5	735.7	566.3	169.45	4.342	
7,700.0	6,806.6	6,786.6	6,786.6	39.8	135.7	-90.23	2,212.8	660.5	654.8	483.7	171.10	3.827	
7,800.0	6,806.3	6,786.3	6,786.3	41.3	135.7	-90.18	2,212.8	660.5	579.9	407.2	172.78	3.357	
7,900.0	6,806.0	6,786.0	6,786.0	42.8	135.7	-90.14	2,212.8	660.5	513.7	339.2	174.47	2.944	
8,000.0	6,805.7	6,785.7	6,785.7	44.4	135.7	-90.09	2,212.8	660.5	459.8	283.6	176.19	2.609	
8,100.0	6,805.4	6,785.4	6,785.4	45.9	135.7	-90.05	2,212.8	660.5	423.0	245.0	177.93	2.377	
8,200.0	6,805.1	6,785.1	6,785.1	47.5	135.7	-90.01	2,212.8	660.5	408.0	228.3	179.67	2.271	
8,212.4	6,805.0	6,785.0	6,785.0	47.7	135.7	-90.00	2,212.8	660.5	407.8	227.9	179.89	2.267	CC, ES, SF
8,300.0	6,804.8	6,784.8	6,784.8	49.2	135.7	-89.96	2,212.8	660.5	417.1	235.6	181.44	2.299	
8,400.0	6,804.4	6,784.4	6,784.4	50.8	135.7	-89.92	2,212.8	660.5	448.9	265.7	183.21	2.450	
8,500.0	6,804.1	6,784.1	6,784.1	52.5	135.7	-89.87	2,212.8	660.5	499.0	314.0	184.99	2.697	
8,600.0	6,803.8	6,783.8	6,783.8	54.2	135.7	-89.83	2,212.8	660.5	562.6	375.8	186.78	3.012	
8,700.0	6,803.5	6,783.5	6,783.5	55.9	135.7	-89.78	2,212.8	660.5	635.7	447.1	188.58	3.371	
8,800.0	6,803.2	6,783.2	6,783.2	57.6	135.7	-89.74	2,212.8	660.5	715.3	524.9	190.39	3.757	
8,900.0	6,802.9	6,782.9	6,782.9	59.3	135.7	-89.70	2,212.8	660.5	799.4	607.2	192.21	4.159	
9,000.0	6,802.6	6,782.6	6,782.6	61.1	135.7	-89.65	2,212.8	660.5	886.9	692.9	194.03	4.571	
9,100.0	6,802.2	6,782.2	6,782.2	62.8	135.6	-89.61	2,212.8	660.5	976.8	781.0	195.85	4.987	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
900.0	896.1	900.7	900.7	2.2	2.0	-25.11	851.6	622.9	996.7	992.6	4.05	246.247		
1,000.0	994.2	998.4	998.4	2.6	2.2	-25.73	851.4	622.5	978.6	974.0	4.53	215.856		
1,100.0	1,091.7	1,096.0	1,095.9	3.1	2.4	-26.46	851.2	622.0	958.2	953.2	5.03	190.580		
1,177.7	1,167.1	1,172.2	1,172.2	3.4	2.6	-27.12	851.1	621.4	940.9	935.4	5.42	173.598		
1,200.0	1,188.6	1,194.0	1,194.0	3.5	2.6	-27.29	851.1	621.2	935.7	930.1	5.54	169.015		
1,300.0	1,285.4	1,290.5	1,290.5	4.0	2.8	-28.07	851.2	620.1	912.5	906.5	6.05	150.727		
1,400.0	1,382.1	1,387.6	1,387.5	4.5	3.0	-28.95	851.5	618.4	889.6	883.0	6.58	135.146		
1,500.0	1,478.9	1,478.9	1,478.8	5.1	3.1	-29.87	852.5	616.2	867.0	859.9	7.10	122.067		
1,600.0	1,575.6	1,571.4	1,571.3	5.6	3.3	-30.90	854.4	613.5	845.2	837.6	7.63	110.750		
1,700.0	1,672.3	1,663.9	1,663.7	6.1	3.4	-32.01	856.7	610.7	824.2	816.0	8.17	100.823		
1,800.0	1,769.1	1,755.8	1,755.5	6.6	3.6	-33.16	859.5	608.1	804.0	795.3	8.73	92.093		
1,900.0	1,865.8	1,847.3	1,846.9	7.2	3.7	-34.37	862.8	605.7	784.8	775.5	9.30	84.404		
2,000.0	1,962.6	1,939.1	1,938.6	7.7	3.9	-35.62	866.5	603.8	766.6	756.7	9.88	77.619		
2,100.0	2,059.3	2,032.5	2,031.9	8.2	4.0	-36.90	870.5	602.5	749.3	738.9	10.47	71.595		
2,200.0	2,156.1	2,127.7	2,127.1	8.7	4.1	-38.22	874.7	602.0	732.8	721.7	11.07	66.218		
2,300.0	2,252.8	2,223.1	2,222.3	9.3	4.3	-39.54	878.8	602.1	716.9	705.2	11.68	61.388		
2,400.0	2,349.5	2,318.3	2,317.4	9.8	4.4	-40.88	883.1	602.7	701.8	689.5	12.30	57.042		
2,500.0	2,446.3	2,417.1	2,416.1	10.3	4.5	-42.28	887.4	604.0	687.1	674.1	12.95	53.059		
2,600.0	2,543.0	2,517.3	2,516.3	10.9	4.7	-43.73	891.3	605.5	672.4	658.8	13.62	49.385		
2,700.0	2,639.8	2,615.8	2,614.7	11.4	4.8	-45.20	894.8	607.1	658.0	643.7	14.30	46.015		
2,800.0	2,736.5	2,719.9	2,718.7	11.9	5.0	-46.83	898.1	608.6	643.6	628.5	15.03	42.821		
2,900.0	2,833.2	2,829.5	2,828.3	12.5	5.2	-48.72	899.8	608.8	627.8	611.9	15.84	39.643		
3,000.0	2,930.0	2,927.9	2,926.7	13.0	5.4	-50.55	900.5	608.4	611.7	595.1	16.66	36.726		
3,100.0	3,026.7	3,025.0	3,023.8	13.5	5.7	-52.44	901.1	608.0	596.1	578.6	17.50	34.067		
3,200.0	3,123.5	3,120.6	3,119.4	14.1	5.9	-54.41	901.7	607.5	581.3	563.0	18.35	31.674		
3,300.0	3,220.2	3,217.5	3,216.3	14.6	6.1	-56.50	902.4	607.0	567.3	548.1	19.23	29.502		
3,400.0	3,317.0	3,314.4	3,313.2	15.1	6.3	-58.68	903.1	606.6	554.2	534.0	20.12	27.536		
3,500.0	3,413.7	3,411.2	3,410.0	15.7	6.6	-60.96	903.8	606.1	541.8	520.8	21.03	25.758		
3,600.0	3,510.4	3,506.6	3,505.4	16.2	6.8	-63.31	904.5	605.6	530.5	508.5	21.95	24.171		
3,700.0	3,607.2	3,604.1	3,602.9	16.7	7.1	-65.80	905.4	605.1	520.2	497.3	22.88	22.740		
3,800.0	3,703.9	3,700.2	3,698.9	17.3	7.3	-68.34	906.2	604.6	511.0	487.2	23.80	21.468		
3,900.0	3,800.7	3,797.3	3,796.1	17.8	7.5	-70.99	907.0	604.2	502.9	478.2	24.73	20.336		
4,000.0	3,897.4	3,894.5	3,893.3	18.3	7.8	-73.72	907.8	603.7	495.9	470.2	25.65	19.331		
4,100.0	3,994.2	3,995.2	3,993.9	18.9	8.0	-76.64	908.1	603.2	489.7	463.1	26.55	18.440		
4,200.0	4,090.9	4,091.7	4,090.4	19.4	8.2	-79.51	908.0	602.7	484.3	456.9	27.40	17.673		
4,300.0	4,187.6	4,189.1	4,187.9	19.9	8.4	-82.50	907.8	601.9	480.3	452.0	28.23	17.014		
4,400.0	4,284.4	4,282.4	4,281.1	20.5	8.6	-85.42	907.6	601.0	477.8	448.8	29.02	16.465		
4,476.6	4,358.4	4,354.9	4,353.7	20.9	8.8	-87.73	907.7	599.8	477.3	447.7	29.62	16.114 CC		
4,500.0	4,381.1	4,377.3	4,376.0	21.0	8.8	-88.44	907.8	599.5	477.3	447.5	29.80	16.017		
4,600.0	4,477.9	4,474.2	4,472.9	21.5	9.0	-91.54	908.0	597.8	478.5	447.9	30.55	15.661		
4,700.0	4,574.6	4,567.5	4,566.2	22.1	9.3	-94.49	908.4	596.2	481.2	449.9	31.26	15.394		
4,800.0	4,671.3	4,662.3	4,661.0	22.6	9.5	-97.43	909.3	594.2	486.0	454.1	31.93	15.223		
4,900.0	4,768.1	4,758.0	4,756.7	23.1	9.8	-100.35	910.4	592.2	492.3	459.8	32.55	15.123		
5,000.0	4,864.8	4,853.1	4,851.7	23.7	10.0	-103.19	911.4	589.8	500.2	467.0	33.14	15.094		
5,100.0	4,961.6	4,948.2	4,946.8	24.2	10.2	-105.95	912.6	587.3	509.6	475.9	33.68	15.130		
5,200.0	5,058.3	5,043.0	5,041.6	24.7	10.5	-108.63	913.7	584.5	520.5	486.3	34.19	15.225		
5,216.9	5,074.7	5,059.0	5,057.5	24.8	10.5	-109.07	913.9	584.0	522.5	488.2	34.27	15.246		
5,300.0	5,155.4	5,138.8	5,137.3	25.2	10.7	-111.26	915.2	581.5	532.4	497.8	34.61	15.384		
5,400.0	5,253.2	5,238.8	5,237.2	25.6	11.0	-113.51	917.4	579.1	543.8	508.8	34.95	15.559		
5,500.0	5,351.6	5,341.3	5,339.7	25.9	11.2	-115.26	919.9	577.7	553.5	518.3	35.28	15.690		
5,600.0	5,450.7	5,442.1	5,440.4	26.1	11.4	-116.46	923.0	577.4	561.6	526.0	35.60	15.774		

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 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Lofland 22T & Alles 22S-HZ Existing Wells - Esther 1-23 (P&A) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 100-NS-GYRO-MS												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,700.0	5,550.1	5,543.0	5,541.3	26.4	11.7	-117.22	926.5	577.6	568.1	532.2	35.92	15.814	
5,800.0	5,649.9	5,644.2	5,642.4	26.5	11.9	-117.61	929.9	578.1	572.7	536.4	36.24	15.800	
5,900.0	5,749.8	5,743.8	5,742.0	26.7	12.1	-117.63	933.5	578.7	575.7	539.1	36.57	15.742	
5,950.2	5,800.0	5,794.3	5,792.4	26.7	12.2	-58.08	935.2	579.0	576.5	539.8	36.73	15.695	
6,000.0	5,849.8	5,846.1	5,844.2	26.8	12.3	-57.92	936.9	579.3	577.1	540.2	36.91	15.637	
6,100.0	5,949.8	5,951.9	5,950.0	26.9	12.4	-57.57	940.2	580.7	577.6	540.4	37.25	15.508	
6,193.9	6,043.7	6,047.3	6,045.3	27.0	12.6	-57.38	941.6	582.0	577.3	539.8	37.53	15.384	
6,200.0	6,049.8	6,053.2	6,051.2	27.0	12.6	-57.38	941.6	582.1	577.3	539.7	37.54	15.378	
6,250.0	6,099.7	6,101.4	6,099.4	27.0	12.7	-57.56	942.1	582.4	576.1	538.5	37.61	15.320	
6,300.0	6,149.4	6,150.1	6,148.1	27.1	12.8	-58.11	942.6	582.7	573.4	535.7	37.62	15.242	
6,350.0	6,198.7	6,198.4	6,196.4	27.3	12.9	-59.02	943.4	583.0	569.0	531.5	37.56	15.149	
6,400.0	6,247.3	6,248.6	6,246.6	27.4	12.9	-60.37	944.1	583.3	563.1	525.7	37.44	15.040	
6,450.0	6,295.0	6,297.9	6,295.9	27.6	13.0	-62.12	944.7	583.6	555.7	518.4	37.28	14.907	
6,500.0	6,341.7	6,345.2	6,343.2	27.8	13.1	-64.26	945.2	584.0	547.0	509.9	37.08	14.753	
6,550.0	6,387.0	6,391.2	6,389.1	28.0	13.2	-66.76	945.6	584.4	537.4	500.5	36.88	14.572	
6,600.0	6,430.9	6,435.5	6,433.4	28.2	13.2	-69.59	946.0	584.8	527.2	490.5	36.70	14.365	
6,650.0	6,473.2	6,478.0	6,475.9	28.5	13.3	-72.71	946.3	585.1	516.9	480.3	36.57	14.133	
6,700.0	6,513.6	6,518.7	6,516.7	28.8	13.4	-76.06	946.5	585.4	507.0	470.5	36.51	13.884	
6,750.0	6,552.0	6,557.6	6,555.5	29.1	13.4	-79.53	946.7	585.8	497.9	461.3	36.53	13.630	
6,800.0	6,588.2	6,594.2	6,592.2	29.4	13.5	-83.01	946.8	586.1	490.2	453.6	36.63	13.383	
6,850.0	6,622.0	6,627.8	6,625.8	29.8	13.5	-86.32	947.0	586.4	484.7	447.9	36.82	13.164	
6,900.0	6,653.4	6,658.8	6,656.7	30.2	13.5	-89.39	947.1	586.6	481.9	444.8	37.09	12.992	
6,918.8	6,664.6	6,669.8	6,667.8	30.3	13.6	-90.46	947.1	586.7	481.6	444.4	37.21	12.942 ES	
6,950.0	6,682.2	6,687.4	6,685.4	30.6	13.6	-92.13	947.1	586.8	482.3	444.9	37.44	12.883	
7,000.0	6,708.3	6,713.6	6,711.6	31.1	13.6	-94.46	947.2	586.9	486.5	448.6	37.87	12.846 SF	
7,050.0	6,731.5	6,736.9	6,734.9	31.6	13.6	-96.28	947.3	587.1	494.7	456.3	38.40	12.883	
7,100.0	6,751.8	6,757.3	6,755.3	32.1	13.7	-97.51	947.3	587.2	507.1	468.0	39.03	12.992	
7,150.0	6,769.0	6,774.7	6,772.7	32.6	13.7	-98.11	947.4	587.3	523.7	483.9	39.77	13.167	
7,200.0	6,783.1	6,789.0	6,786.9	33.2	13.7	-98.02	947.4	587.4	544.3	503.7	40.63	13.399	
7,250.0	6,794.1	6,800.1	6,798.0	33.8	13.7	-97.20	947.5	587.5	568.8	527.2	41.56	13.684	
7,300.0	6,801.8	6,808.0	6,805.9	34.4	13.7	-95.62	947.5	587.5	596.6	554.0	42.54	14.024	
7,350.0	6,806.3	6,812.6	6,810.6	35.0	13.7	-93.26	947.5	587.6	627.3	583.8	43.47	14.432	
7,396.3	6,807.6	6,814.0	6,812.0	35.6	13.7	-90.35	947.5	587.6	658.0	613.8	44.18	14.894	
7,400.0	6,807.6	6,814.0	6,812.0	35.6	13.7	-90.35	947.5	587.6	660.5	616.3	44.24	14.931	
7,500.0	6,807.3	6,814.0	6,811.9	37.0	13.7	-90.35	947.5	587.6	732.7	686.9	45.83	15.987	
7,600.0	6,807.0	6,814.0	6,811.9	38.4	13.7	-90.35	947.5	587.6	810.8	763.4	47.46	17.084	
7,700.0	6,806.6	6,813.9	6,811.9	39.8	13.7	-90.34	947.5	587.6	893.3	844.2	49.12	18.187	
7,800.0	6,806.3	6,813.9	6,811.9	41.3	13.7	-90.34	947.5	587.6	979.1	928.3	50.80	19.272	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4656.0ft (Original Well Elev)

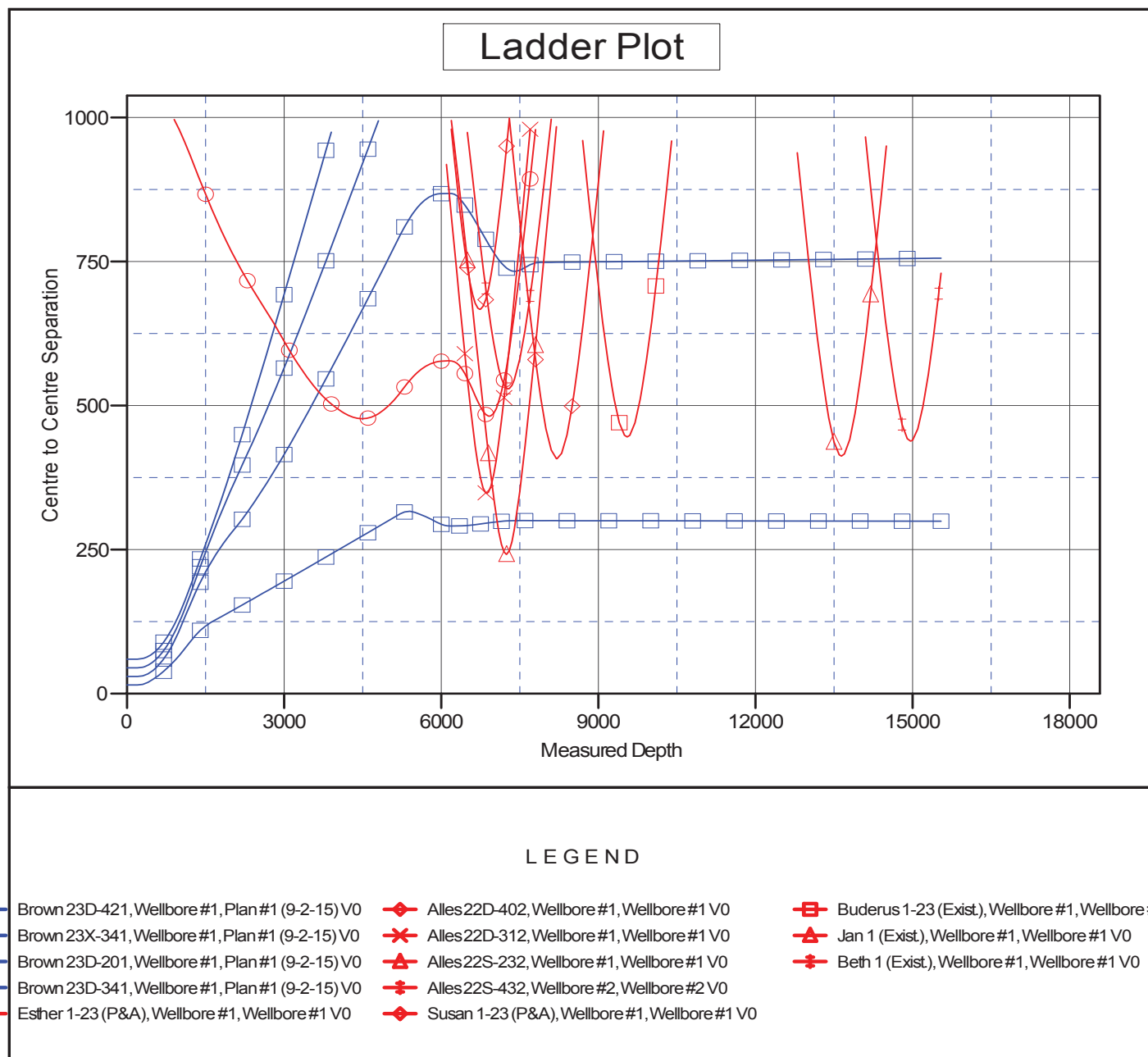
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: Brown 23X-241

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.56°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Brown 23X-241
<b>Project:</b>	SEC.23-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Reference Site:</b>	Brown 5N65W23 Pad Sec.23-T5N-R65W	<b>MD Reference:</b>	WELL @ 4656.0ft (Original Well Elev)
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Brown 23X-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (9-2-15)	<b>Offset TVD Reference:</b>	Offset Datum

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