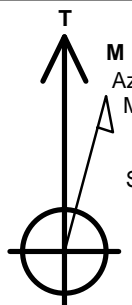


PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Brown 23P-221**
 Surface Location: Brown 5N65W23 Pad Sec.23-T5N-R65W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4643.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1382631.95 3243465.70 40.380433 -104.626067
 Original Well Elev WELL @ 4656.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' E/W Hardline (23P-221)	1.0	5622.6	-689.0	Rectangle (Sides: L7928.6 W100.0)
SHL 1082'FSL & 1404'FEL, Sec.23	1.0	0.0	0.0	Point
BHL 0'FNL & 2074'FEL, Sec.14	6782.0	9562.1	-689.0	Point

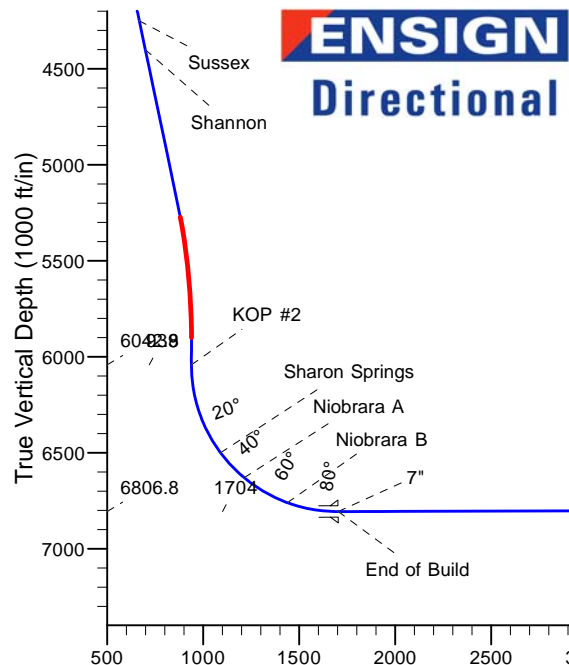
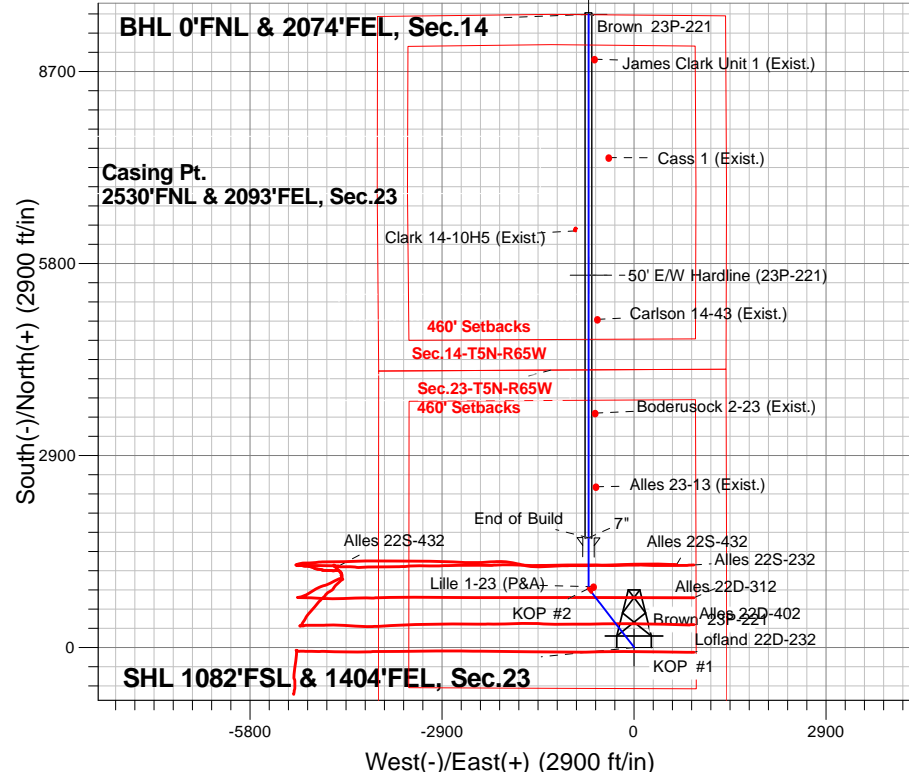


Azimuths to True North
 Magnetic North: 8.22°
 Magnetic Field
 Strength: 52692.7snT
 Dip Angle: 66.91°
 Date: 9/2/2015
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP #1
6042.9	6174.3	KOP #2
6806.8	7376.8	End of Build

Brown 5N65W23 Pad Sec.23-T5N-R65W
 Brown 23P-221
 Plan #1 (9-2-15)
 8:16, 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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1543.4	14.15	322.32	1533.9	91.7	-70.9	1.50	322.32	96.6	
4	5323.9	14.15	322.32	5199.6	823.2	-635.9	0.00	0.00	866.8	
5	6031.5	0.00	0.00	5900.0	892.0	-689.0	2.00	180.00	939.2	
6	6174.3	0.00	0.00	6042.9	892.0	-689.0	0.00	0.00	939.2	
7	7376.8	90.18	0.00	6806.8	1658.3	-689.0	7.50	0.00	1703.6	
8	15280.6	90.18	0.00	6782.0	9562.1	-689.0	0.00	0.00	9586.9	BHL 0'FNL & 2074'FEL, Sec.14

BHL 0'FNL & 2074'FEL, Sec.14

Vertical Section at 355.88° (1000 ft/in)

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.23-T5N-R65W

Brown 5N65W23 Pad Sec.23-T5N-R65W

Brown 23P-221

Wellbore #1

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

Standard Planning Report

04 September, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23P-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-2-15)		

Project	SEC.23-T5N-R65W		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

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

Well	Brown 23P-221		
Well Position	+N/-S	-0.4 ft	Northing:
	+E/-W	15.0 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	9/2/2015	8.22
			Dip Angle (°)
			66.91
			Field Strength (nT)
			52,693

Design	Plan #1 (9-2-15)		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction (°)
			355.88

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,543.4	14.15	322.32	1,533.9	91.7	-70.9	1.50	1.50	0.00	322.32	
5,323.9	14.15	322.32	5,199.6	823.2	-635.9	0.00	0.00	0.00	0.00	
6,031.5	0.00	0.00	5,900.0	892.0	-689.0	2.00	-2.00	0.00	180.00	
6,174.3	0.00	0.00	6,042.9	892.0	-689.0	0.00	0.00	0.00	0.00	
7,376.8	90.18	0.00	6,806.8	1,658.3	-689.0	7.50	7.50	0.00	0.00	
15,280.6	90.18	0.00	6,782.0	9,562.1	-689.0	0.00	0.00	0.00	0.00	BHL 0'FNL & 2074'FE

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23P-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
SHL 1082'FSL & 1404'FEL, Sec.23 - 50' E/W Hardline (23P-221)									
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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
700.0	1.50	322.32	700.0	1.0	-0.8	1.1	1.50	1.50	0.00
800.0	3.00	322.32	799.9	4.1	-3.2	4.4	1.50	1.50	0.00
900.0	4.50	322.32	899.7	9.3	-7.2	9.8	1.50	1.50	0.00
1,000.0	6.00	322.32	999.3	16.6	-12.8	17.4	1.50	1.50	0.00
1,100.0	7.50	322.32	1,098.6	25.9	-20.0	27.2	1.50	1.50	0.00
1,200.0	9.00	322.32	1,197.5	37.2	-28.7	39.2	1.50	1.50	0.00
1,300.0	10.50	322.32	1,296.1	50.6	-39.1	53.3	1.50	1.50	0.00
1,400.0	12.00	322.32	1,394.2	66.1	-51.0	69.6	1.50	1.50	0.00
1,500.0	13.50	322.32	1,491.7	83.5	-64.5	87.9	1.50	1.50	0.00
1,543.4	14.15	322.32	1,533.9	91.7	-70.9	96.6	1.50	1.50	0.00
1,600.0	14.15	322.32	1,588.7	102.7	-79.3	108.1	0.00	0.00	0.00
1,700.0	14.15	322.32	1,685.7	122.0	-94.3	128.5	0.00	0.00	0.00
1,800.0	14.15	322.32	1,782.7	141.4	-109.2	148.9	0.00	0.00	0.00
1,900.0	14.15	322.32	1,879.6	160.7	-124.2	169.2	0.00	0.00	0.00
2,000.0	14.15	322.32	1,976.6	180.1	-139.1	189.6	0.00	0.00	0.00
2,100.0	14.15	322.32	2,073.5	199.4	-154.0	210.0	0.00	0.00	0.00
2,200.0	14.15	322.32	2,170.5	218.8	-169.0	230.4	0.00	0.00	0.00
2,300.0	14.15	322.32	2,267.5	238.1	-183.9	250.7	0.00	0.00	0.00
2,400.0	14.15	322.32	2,364.4	257.5	-198.9	271.1	0.00	0.00	0.00
2,500.0	14.15	322.32	2,461.4	276.8	-213.8	291.5	0.00	0.00	0.00
2,600.0	14.15	322.32	2,558.4	296.2	-228.8	311.8	0.00	0.00	0.00
2,700.0	14.15	322.32	2,655.3	315.5	-243.7	332.2	0.00	0.00	0.00
2,800.0	14.15	322.32	2,752.3	334.9	-258.7	352.6	0.00	0.00	0.00
2,900.0	14.15	322.32	2,849.3	354.2	-273.6	373.0	0.00	0.00	0.00
3,000.0	14.15	322.32	2,946.2	373.6	-288.5	393.3	0.00	0.00	0.00
3,100.0	14.15	322.32	3,043.2	392.9	-303.5	413.7	0.00	0.00	0.00
3,200.0	14.15	322.32	3,140.2	412.3	-318.4	434.1	0.00	0.00	0.00
3,300.0	14.15	322.32	3,237.1	431.6	-333.4	454.4	0.00	0.00	0.00
3,400.0	14.15	322.32	3,334.1	451.0	-348.3	474.8	0.00	0.00	0.00
3,500.0	14.15	322.32	3,431.1	470.3	-363.3	495.2	0.00	0.00	0.00
3,571.1	14.15	322.32	3,500.0	484.1	-373.9	509.7	0.00	0.00	0.00
Parkman									
3,600.0	14.15	322.32	3,528.0	489.7	-378.2	515.6	0.00	0.00	0.00
3,700.0	14.15	322.32	3,625.0	509.0	-393.2	535.9	0.00	0.00	0.00
3,800.0	14.15	322.32	3,722.0	528.3	-408.1	556.3	0.00	0.00	0.00
3,900.0	14.15	322.32	3,818.9	547.7	-423.1	576.7	0.00	0.00	0.00
4,000.0	14.15	322.32	3,915.9	567.0	-438.0	597.1	0.00	0.00	0.00
4,100.0	14.15	322.32	4,012.9	586.4	-452.9	617.4	0.00	0.00	0.00
4,200.0	14.15	322.32	4,109.8	605.7	-467.9	637.8	0.00	0.00	0.00
4,300.0	14.15	322.32	4,206.8	625.1	-482.8	658.2	0.00	0.00	0.00
4,344.6	14.15	322.32	4,250.0	633.7	-489.5	667.3	0.00	0.00	0.00
Sussex									
4,400.0	14.15	322.32	4,303.7	644.4	-497.8	678.5	0.00	0.00	0.00

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Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
4,499.3	14.15	322.32	4,400.0	663.6	-512.6	698.8	0.00	0.00	0.00
Shannon									
4,500.0	14.15	322.32	4,400.7	663.8	-512.7	698.9	0.00	0.00	0.00
4,600.0	14.15	322.32	4,497.7	683.1	-527.7	719.3	0.00	0.00	0.00
4,700.0	14.15	322.32	4,594.6	702.5	-542.6	739.7	0.00	0.00	0.00
4,800.0	14.15	322.32	4,691.6	721.8	-557.6	760.0	0.00	0.00	0.00
4,900.0	14.15	322.32	4,788.6	741.2	-572.5	780.4	0.00	0.00	0.00
5,000.0	14.15	322.32	4,885.5	760.5	-587.5	800.8	0.00	0.00	0.00
5,100.0	14.15	322.32	4,982.5	779.9	-602.4	821.2	0.00	0.00	0.00
5,200.0	14.15	322.32	5,079.5	799.2	-617.3	841.5	0.00	0.00	0.00
5,300.0	14.15	322.32	5,176.4	818.6	-632.3	861.9	0.00	0.00	0.00
5,323.9	14.15	322.32	5,199.6	823.2	-635.9	866.8	0.00	0.00	0.00
5,400.0	12.63	322.32	5,273.6	837.1	-646.6	881.5	2.00	-2.00	0.00
5,500.0	10.63	322.32	5,371.6	853.1	-659.0	898.3	2.00	-2.00	0.00
5,600.0	8.63	322.32	5,470.2	866.3	-669.2	912.2	2.00	-2.00	0.00
5,700.0	6.63	322.32	5,569.3	876.8	-677.3	923.3	2.00	-2.00	0.00
5,800.0	4.63	322.32	5,668.8	884.6	-683.3	931.4	2.00	-2.00	0.00
5,900.0	2.63	322.32	5,768.6	889.6	-687.2	936.7	2.00	-2.00	0.00
6,000.0	0.63	322.32	5,868.5	891.9	-688.9	939.1	2.00	-2.00	0.00
6,031.5	0.00	0.00	5,900.0	892.0	-689.0	939.2	2.00	-2.00	0.00
6,100.0	0.00	0.00	5,968.5	892.0	-689.0	939.2	0.00	0.00	0.00
6,174.3	0.00	0.00	6,042.8	892.0	-689.0	939.2	0.00	0.00	0.00
KOP #2									
6,200.0	1.92	0.00	6,068.5	892.4	-689.0	939.6	7.49	7.49	0.00
6,300.0	9.42	0.00	6,168.0	902.3	-689.0	949.5	7.50	7.50	0.00
6,400.0	16.92	0.00	6,265.3	925.1	-689.0	972.2	7.50	7.50	0.00
6,500.0	24.42	0.00	6,358.8	960.4	-689.0	1,007.4	7.50	7.50	0.00
6,600.0	31.92	0.00	6,446.9	1,007.5	-689.0	1,054.5	7.50	7.50	0.00
6,664.4	36.75	0.00	6,500.0	1,043.8	-689.0	1,090.7	7.50	7.50	0.00
Sharon Springs									
6,700.0	39.42	0.00	6,528.0	1,065.8	-689.0	1,112.6	7.50	7.50	0.00
6,800.0	46.92	0.00	6,600.9	1,134.2	-689.0	1,180.8	7.50	7.50	0.00
6,844.0	50.22	0.00	6,630.0	1,167.2	-689.0	1,213.7	7.50	7.50	0.00
Niobrara A									
6,900.0	54.42	0.00	6,664.2	1,211.5	-689.0	1,257.9	7.50	7.50	0.00
7,000.0	61.92	0.00	6,716.9	1,296.4	-689.0	1,342.6	7.50	7.50	0.00
7,100.0	69.42	0.00	6,758.1	1,387.5	-689.0	1,433.4	7.50	7.50	0.00
7,105.5	69.83	0.00	6,760.0	1,392.6	-689.0	1,438.5	7.50	7.50	0.00
Niobrara B									
7,200.0	76.92	0.00	6,787.0	1,483.1	-689.0	1,528.8	7.50	7.50	0.00
7,300.0	84.42	0.00	6,803.2	1,581.7	-689.0	1,627.1	7.50	7.50	0.00
7,376.8	90.18	0.00	6,806.8	1,658.4	-689.0	1,703.6	7.50	7.50	0.00
End of Build - 7"									
7,400.0	90.18	0.00	6,806.8	1,681.6	-689.0	1,726.8	0.00	0.00	0.00
7,500.0	90.18	0.00	6,806.4	1,781.6	-689.0	1,826.5	0.00	0.00	0.00
7,600.0	90.18	0.00	6,806.1	1,881.6	-689.0	1,926.2	0.00	0.00	0.00
7,700.0	90.18	0.00	6,805.8	1,981.6	-689.0	2,026.0	0.00	0.00	0.00
7,800.0	90.18	0.00	6,805.5	2,081.6	-689.0	2,125.7	0.00	0.00	0.00
7,900.0	90.18	0.00	6,805.2	2,181.6	-689.0	2,225.5	0.00	0.00	0.00
8,000.0	90.18	0.00	6,804.9	2,281.6	-689.0	2,325.2	0.00	0.00	0.00
8,100.0	90.18	0.00	6,804.6	2,381.6	-689.0	2,425.0	0.00	0.00	0.00
8,200.0	90.18	0.00	6,804.2	2,481.6	-689.0	2,524.7	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23P-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	6,803.9	2,581.6	-689.0	2,624.4	0.00	0.00	0.00
8,400.0	90.18	0.00	6,803.6	2,681.6	-689.0	2,724.2	0.00	0.00	0.00
8,500.0	90.18	0.00	6,803.3	2,781.6	-689.0	2,823.9	0.00	0.00	0.00
8,600.0	90.18	0.00	6,803.0	2,881.6	-689.0	2,923.7	0.00	0.00	0.00
8,700.0	90.18	0.00	6,802.7	2,981.6	-689.0	3,023.4	0.00	0.00	0.00
8,800.0	90.18	0.00	6,802.4	3,081.6	-689.0	3,123.1	0.00	0.00	0.00
8,900.0	90.18	0.00	6,802.0	3,181.6	-689.0	3,222.9	0.00	0.00	0.00
9,000.0	90.18	0.00	6,801.7	3,281.6	-689.0	3,322.6	0.00	0.00	0.00
9,100.0	90.18	0.00	6,801.4	3,381.6	-689.0	3,422.4	0.00	0.00	0.00
9,200.0	90.18	0.00	6,801.1	3,481.6	-689.0	3,522.1	0.00	0.00	0.00
9,300.0	90.18	0.00	6,800.8	3,581.6	-689.0	3,621.8	0.00	0.00	0.00
9,400.0	90.18	0.00	6,800.5	3,681.6	-689.0	3,721.6	0.00	0.00	0.00
9,500.0	90.18	0.00	6,800.2	3,781.6	-689.0	3,821.3	0.00	0.00	0.00
9,600.0	90.18	0.00	6,799.8	3,881.6	-689.0	3,921.1	0.00	0.00	0.00
9,700.0	90.18	0.00	6,799.5	3,981.6	-689.0	4,020.8	0.00	0.00	0.00
9,800.0	90.18	0.00	6,799.2	4,081.6	-689.0	4,120.5	0.00	0.00	0.00
9,900.0	90.18	0.00	6,798.9	4,181.6	-689.0	4,220.3	0.00	0.00	0.00
10,000.0	90.18	0.00	6,798.6	4,281.6	-689.0	4,320.0	0.00	0.00	0.00
10,100.0	90.18	0.00	6,798.3	4,381.6	-689.0	4,419.8	0.00	0.00	0.00
10,200.0	90.18	0.00	6,798.0	4,481.6	-689.0	4,519.5	0.00	0.00	0.00
10,300.0	90.18	0.00	6,797.6	4,581.6	-689.0	4,619.3	0.00	0.00	0.00
10,400.0	90.18	0.00	6,797.3	4,681.6	-689.0	4,719.0	0.00	0.00	0.00
10,500.0	90.18	0.00	6,797.0	4,781.6	-689.0	4,818.7	0.00	0.00	0.00
10,600.0	90.18	0.00	6,796.7	4,881.6	-689.0	4,918.5	0.00	0.00	0.00
10,700.0	90.18	0.00	6,796.4	4,981.6	-689.0	5,018.2	0.00	0.00	0.00
10,800.0	90.18	0.00	6,796.1	5,081.6	-689.0	5,118.0	0.00	0.00	0.00
10,900.0	90.18	0.00	6,795.8	5,181.6	-689.0	5,217.7	0.00	0.00	0.00
11,000.0	90.18	0.00	6,795.4	5,281.6	-689.0	5,317.4	0.00	0.00	0.00
11,100.0	90.18	0.00	6,795.1	5,381.6	-689.0	5,417.2	0.00	0.00	0.00
11,200.0	90.18	0.00	6,794.8	5,481.6	-689.0	5,516.9	0.00	0.00	0.00
11,300.0	90.18	0.00	6,794.5	5,581.6	-689.0	5,616.7	0.00	0.00	0.00
11,400.0	90.18	0.00	6,794.2	5,681.6	-689.0	5,716.4	0.00	0.00	0.00
11,500.0	90.18	0.00	6,793.9	5,781.6	-689.0	5,816.1	0.00	0.00	0.00
11,600.0	90.18	0.00	6,793.6	5,881.6	-689.0	5,915.9	0.00	0.00	0.00
11,700.0	90.18	0.00	6,793.2	5,981.6	-689.0	6,015.6	0.00	0.00	0.00
11,800.0	90.18	0.00	6,792.9	6,081.6	-689.0	6,115.4	0.00	0.00	0.00
11,900.0	90.18	0.00	6,792.6	6,181.6	-689.0	6,215.1	0.00	0.00	0.00
12,000.0	90.18	0.00	6,792.3	6,281.6	-689.0	6,314.8	0.00	0.00	0.00
12,100.0	90.18	0.00	6,792.0	6,381.6	-689.0	6,414.6	0.00	0.00	0.00
12,200.0	90.18	0.00	6,791.7	6,481.6	-689.0	6,514.3	0.00	0.00	0.00
12,300.0	90.18	0.00	6,791.4	6,581.6	-689.0	6,614.1	0.00	0.00	0.00
12,400.0	90.18	0.00	6,791.0	6,681.6	-689.0	6,713.8	0.00	0.00	0.00
12,500.0	90.18	0.00	6,790.7	6,781.6	-689.0	6,813.6	0.00	0.00	0.00
12,600.0	90.18	0.00	6,790.4	6,881.6	-689.0	6,913.3	0.00	0.00	0.00
12,700.0	90.18	0.00	6,790.1	6,981.6	-689.0	7,013.0	0.00	0.00	0.00
12,800.0	90.18	0.00	6,789.8	7,081.6	-689.0	7,112.8	0.00	0.00	0.00
12,900.0	90.18	0.00	6,789.5	7,181.6	-689.0	7,212.5	0.00	0.00	0.00
13,000.0	90.18	0.00	6,789.2	7,281.6	-689.0	7,312.3	0.00	0.00	0.00
13,100.0	90.18	0.00	6,788.9	7,381.6	-689.0	7,412.0	0.00	0.00	0.00
13,200.0	90.18	0.00	6,788.5	7,481.6	-689.0	7,511.7	0.00	0.00	0.00
13,300.0	90.18	0.00	6,788.2	7,581.6	-689.0	7,611.5	0.00	0.00	0.00
13,400.0	90.18	0.00	6,787.9	7,681.6	-689.0	7,711.2	0.00	0.00	0.00
13,500.0	90.18	0.00	6,787.6	7,781.6	-689.0	7,811.0	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23P-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	6,787.3	7,881.6	-689.0	7,910.7	0.00	0.00	0.00	
13,700.0	90.18	0.00	6,787.0	7,981.6	-689.0	8,010.4	0.00	0.00	0.00	
13,800.0	90.18	0.00	6,786.7	8,081.6	-689.0	8,110.2	0.00	0.00	0.00	
13,900.0	90.18	0.00	6,786.3	8,181.6	-689.0	8,209.9	0.00	0.00	0.00	
14,000.0	90.18	0.00	6,786.0	8,281.6	-689.0	8,309.7	0.00	0.00	0.00	
14,100.0	90.18	0.00	6,785.7	8,381.6	-689.0	8,409.4	0.00	0.00	0.00	
14,200.0	90.18	0.00	6,785.4	8,481.6	-689.0	8,509.1	0.00	0.00	0.00	
14,300.0	90.18	0.00	6,785.1	8,581.6	-689.0	8,608.9	0.00	0.00	0.00	
14,400.0	90.18	0.00	6,784.8	8,681.6	-689.0	8,708.6	0.00	0.00	0.00	
14,500.0	90.18	0.00	6,784.5	8,781.6	-689.0	8,808.4	0.00	0.00	0.00	
14,600.0	90.18	0.00	6,784.1	8,881.6	-689.0	8,908.1	0.00	0.00	0.00	
14,700.0	90.18	0.00	6,783.8	8,981.6	-689.0	9,007.9	0.00	0.00	0.00	
14,800.0	90.18	0.00	6,783.5	9,081.6	-689.0	9,107.6	0.00	0.00	0.00	
14,900.0	90.18	0.00	6,783.2	9,181.6	-689.0	9,207.3	0.00	0.00	0.00	
15,000.0	90.18	0.00	6,782.9	9,281.6	-689.0	9,307.1	0.00	0.00	0.00	
15,100.0	90.18	0.00	6,782.6	9,381.6	-689.0	9,406.8	0.00	0.00	0.00	
15,200.0	90.18	0.00	6,782.3	9,481.6	-689.0	9,506.6	0.00	0.00	0.00	
15,280.6	90.18	0.00	6,782.0	9,562.1	-689.0	9,586.9	0.00	0.00	0.00	
BHL 0'FNL & 2074'FEL, Sec.14										

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL 1082'FSL & 1404'FI - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,382,631.96	3,243,465.70	40.380433	-104.626067
50' E/W Hardline (23P-2) - plan misses target center by 5664.7ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E) - Rectangle (sides W100.0 H7,928.6 D0.0)	0.00	0.00	1.0	5,622.6	-689.0	1,388,247.25	3,242,721.36	40.395867	-104.628541
BHL 0'FNL & 2074'FEL, - plan hits target center - Point	0.00	0.00	6,782.0	9,562.1	-689.0	1,392,186.40	3,242,682.54	40.406680	-104.628541

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,376.8	6,806.8	7"		7	7-1/2

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23P-221
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Project:	SEC.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-2-15)		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,571.1	3,500.0	Parkman		0.00	
4,344.6	4,250.0	Sussex		0.00	
4,499.3	4,400.0	Shannon		0.00	
6,664.4	6,500.0	Sharon Springs		0.00	
6,844.0	6,630.0	Niobrara A		0.00	
7,105.5	6,760.0	Niobrara B		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP #1
6,174.3	6,042.9	91.7	-70.9	KOP #2
7,376.8	6,806.8	823.2	-635.9	End of Build

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.23-T5N-R65W

Brown 5N65W23 Pad Sec.23-T5N-R65W

Brown 23P-221

Wellbore #1

Plan #1 (9-2-15)

Anticollision Report

04 September, 2015

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (9-2-15)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	9/4/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	15,280.6	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
Offset Well - Wellbore - Design						
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,650.0	11,029.1	471.5	357.8	4.147	SF
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,700.0	11,028.6	460.6	351.6	4.225	ES
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,738.7	11,028.2	458.0	352.8	4.357	CC
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,500.0	11,059.7	857.9	734.5	6.949	SF
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,600.0	11,067.5	834.7	718.3	7.173	ES
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,644.6	11,071.2	832.2	719.6	7.388	CC
Alles 22S-232 - Wellbore #1 - Wellbore #1	6,998.2	10,293.2	102.7	33.7	1.489	Level 3, CC, ES, SF
Alles 22S-432 - Wellbore #1 - Wellbore #1						Out of range
Alles 22S-432 - Wellbore #2 - Wellbore #2	6,950.0	11,088.4	284.7	203.3	3.499	SF
Alles 22S-432 - Wellbore #2 - Wellbore #2	7,050.0	11,087.9	258.4	189.7	3.759	ES
Alles 22S-432 - Wellbore #2 - Wellbore #2	7,053.4	11,087.9	258.4	190.1	3.782	CC
Brown 5N65W23 Pad Sec.23-T5N-R65W						
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	600.0	600.0	30.1	27.6	12.171	CC, ES
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	15,280.6	15,243.9	669.0	303.0	1.828	SF
Brown 23D-341 - Wellbore #1 - Plan #1 (9-2-15)	600.0	600.0	15.0	12.6	6.085	CC
Brown 23D-341 - Wellbore #1 - Plan #1 (9-2-15)	15,280.6	15,239.9	349.4	-7.6	0.979	Level 1, ES, SF
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	600.0	600.0	45.1	42.7	18.255	CC, ES
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	900.0	899.7	53.2	49.4	13.941	SF
Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)	200.0	200.0	30.1	29.4	44.626	CC, ES
Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)	15,280.6	15,386.1	607.4	241.6	1.660	SF
Brown 23P-321 - Wellbore #1 - Plan #1 (9-2-15)	400.0	400.0	15.0	13.5	9.565	CC
Brown 23P-321 - Wellbore #1 - Plan #1 (9-2-15)	15,280.6	15,625.4	328.4	-25.9	0.927	Level 1, ES, SF
Existing Sec. 23-T5N-R65W						
Alles 23-13 (Exist.) - Wellbore #1 - Wellbore #1	8,147.6	6,787.4	112.4	-71.6	0.611	Level 1, CC, ES, SF
Boderusock 2-23 (Exist.) - Wellbore #1 - Wellbore #1	9,258.8	6,784.9	99.6	-104.8	0.487	Level 1, CC, ES, SF
Carlson 14-43 (Exist.) - Wellbore #1 - Wellbore #1	10,673.4	6,759.5	135.0	-95.5	0.586	Level 1, CC, ES, SF
Cass 1 (Exist.) - Wellbore #1 - Wellbore #1	13,116.9	6,747.8	304.9	28.2	1.102	Level 2, CC, ES, SF
Clark 14-10H5 (Exist.) - Wellbore #1 - Wellbore #1	12,009.7	6,758.0	194.0	60.7	1.456	Level 3, CC, ES, SF
James Clark Unit 1 (Exist.) - Wellbore #1 - Wellbore #1	14,603.6	6,744.1	91.3	-213.7	0.299	Level 1, CC, ES, SF
Lofland 22T & Alles 22S-HZ Existing Wells						
Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1	5,643.4	5,515.1	74.8	-59.6	0.557	Level 1, CC
Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1	6,370.2	6,238.6	75.3	-71.8	0.512	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lofland 22T-HZ Pad Sec.22-T5N-R65W						
Lofland 22D-232 - Wellbore #1 - Wellbore #1						Out of range

Offset Design		Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-312 - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft
Survey Program:		60-MWD											Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
6,031.5	5,900.0	11,037.1	6,869.5	24.8	116.0	173.80	752.7	-673.9	975.6	842.2	133.41	7.313			
6,100.0	5,968.5	11,036.2	6,869.5	24.9	116.0	174.20	752.7	-674.8	907.9	774.2	133.64	6.793			
6,174.3	6,042.9	11,035.1	6,869.5	25.0	116.0	174.64	752.7	-675.9	834.5	700.6	133.90	6.232			
6,200.0	6,068.5	11,034.7	6,869.5	25.0	115.9	175.64	752.6	-676.3	809.3	675.0	134.30	6.026			
6,250.0	6,118.4	11,034.0	6,869.6	25.1	115.9	176.83	752.6	-677.0	760.8	626.5	134.32	5.664			
6,300.0	6,168.0	11,033.3	6,869.6	25.3	115.9	177.53	752.6	-677.7	713.6	579.9	133.63	5.340			
6,350.0	6,217.0	11,032.6	6,869.6	25.4	115.9	178.00	752.6	-678.4	668.0	535.7	132.33	5.048			
6,400.0	6,265.3	11,032.0	6,869.6	25.6	115.9	178.32	752.6	-679.0	624.7	494.2	130.47	4.788			
6,450.0	6,312.6	11,031.3	6,869.6	25.9	115.8	178.56	752.6	-679.7	584.3	456.3	128.08	4.562			
6,500.0	6,358.8	11,030.7	6,869.6	26.2	115.8	178.75	752.6	-680.3	547.8	422.6	125.19	4.376			
6,550.0	6,403.6	11,030.1	6,869.6	26.5	115.8	178.89	752.6	-680.9	516.1	394.3	121.81	4.237			
6,600.0	6,446.9	11,029.6	6,869.6	26.9	115.8	179.01	752.6	-681.4	490.3	372.4	117.96	4.156			
6,650.0	6,488.4	11,029.1	6,869.6	27.3	115.8	179.10	752.6	-681.9	471.5	357.8	113.69	4.147 SF			
6,700.0	6,528.0	11,028.6	6,869.6	27.7	115.8	179.17	752.6	-682.4	460.6	351.6	109.00	4.225 ES			
6,738.7	6,557.3	11,028.2	6,869.6	28.1	115.8	179.22	752.6	-682.8	458.0	352.8	105.12	4.357 CC			
6,750.0	6,565.6	11,028.1	6,869.6	28.2	115.8	179.23	752.6	-682.9	458.2	354.2	103.94	4.408			
6,800.0	6,600.9	11,027.7	6,869.7	28.7	115.7	179.27	752.6	-683.3	464.5	365.9	98.54	4.713			
6,850.0	6,633.8	11,027.4	6,869.7	29.3	115.7	179.31	752.6	-683.6	479.1	386.2	92.85	5.159			
6,900.0	6,664.2	11,027.1	6,869.7	29.9	115.7	179.33	752.6	-683.9	501.2	414.3	86.91	5.767			
6,950.0	6,692.0	11,026.8	6,869.7	30.5	115.7	179.33	752.6	-684.2	529.8	449.0	80.78	6.558			
7,000.0	6,716.9	11,026.6	6,869.7	31.1	115.7	179.32	752.6	-684.4	563.8	489.2	74.54	7.563			
7,050.0	6,739.0	11,026.4	6,869.7	31.8	115.7	179.29	752.6	-684.6	602.1	533.8	68.28	8.818			
7,100.0	6,758.1	11,026.3	6,869.7	32.5	115.7	179.24	752.6	-684.7	643.9	581.8	62.12	10.365			
7,150.0	6,774.1	11,026.3	6,869.7	33.2	115.7	179.14	752.6	-684.7	688.3	632.1	56.23	12.242			
7,200.0	6,787.0	11,026.3	6,869.7	34.0	115.7	178.99	752.6	-684.7	734.7	683.9	50.82	14.458			
7,250.0	6,796.7	11,026.3	6,869.7	34.7	115.7	178.73	752.6	-684.7	782.6	736.4	46.19	16.943			
7,300.0	6,803.2	11,026.4	6,869.7	35.5	115.7	178.21	752.6	-684.6	831.5	788.7	42.74	19.453			
7,350.0	6,806.4	11,026.6	6,869.7	36.3	115.7	176.96	752.6	-684.4	881.0	840.0	41.02	21.476			
7,376.8	6,806.8	11,026.8	6,869.7	36.7	115.7	175.14	752.6	-684.2	907.7	866.4	41.26	21.999			
7,400.0	6,806.8	11,026.9	6,869.7	37.1	115.7	175.02	752.6	-684.1	930.9	889.4	41.45	22.460			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
6,300.0	6,168.0	11,042.7	6,966.0	25.3	112.9	-174.47	353.6	-754.0	967.4	835.4	131.94	7.332				
6,350.0	6,217.0	11,047.1	6,966.3	25.4	113.1	-175.14	353.6	-749.6	933.4	802.8	130.57	7.148				
6,400.0	6,265.3	11,051.4	6,966.7	25.6	113.2	-175.70	353.5	-745.3	903.4	774.7	128.70	7.020				
6,450.0	6,312.6	11,055.6	6,967.0	25.9	113.3	-176.17	353.5	-741.1	878.1	751.8	126.32	6.951				
6,500.0	6,358.8	11,059.7	6,967.3	26.2	113.4	-176.57	353.5	-737.0	857.9	734.5	123.47	6.949	SF			
6,550.0	6,403.6	11,063.7	6,967.6	26.5	113.5	-176.92	353.5	-733.1	843.3	723.2	120.15	7.019				
6,600.0	6,446.9	11,067.5	6,967.9	26.9	113.6	-177.22	353.5	-729.2	834.7	718.3	116.37	7.173	ES			
6,644.6	6,484.0	11,071.2	6,968.1	27.2	113.7	-177.48	353.5	-725.6	832.2	719.6	112.65	7.388	CC			
6,650.0	6,488.4	11,071.6	6,968.2	27.3	113.7	-177.51	353.5	-725.1	832.2	720.1	112.18	7.419				
6,700.0	6,528.0	11,075.4	6,968.4	27.7	113.8	-177.76	353.5	-721.4	836.0	728.5	107.58	7.771				
6,750.0	6,565.6	11,078.7	6,968.7	28.2	113.9	-177.96	353.5	-718.1	846.0	743.4	102.61	8.245				
6,800.0	6,600.9	11,081.6	6,968.9	28.7	114.0	-178.13	353.4	-715.1	861.8	764.5	97.30	8.858				
6,850.0	6,633.8	11,084.3	6,969.1	29.3	114.1	-178.26	353.4	-712.5	883.2	791.5	91.70	9.631				
6,900.0	6,664.2	11,086.6	6,969.2	29.9	114.2	-178.37	353.4	-710.2	909.6	823.7	85.85	10.595				
6,950.0	6,692.0	11,088.6	6,969.3	30.5	114.2	-178.44	353.4	-708.2	940.5	860.6	79.83	11.781				
7,000.0	6,716.9	11,090.4	6,969.4	31.1	114.3	-178.49	353.4	-706.5	975.3	901.6	73.69	13.235				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-232 - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 123-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	
6,031.5	5,900.0	10,269.0	6,809.8	24.8	103.5	-4.48	1,246.8	-716.8	973.2	851.2	121.96	7.980	
6,100.0	5,968.5	10,273.2	6,809.9	24.9	103.6	-3.79	1,246.7	-712.5	909.7	787.4	122.35	7.436	
6,174.3	6,042.9	10,277.4	6,810.1	25.0	103.7	-3.12	1,246.6	-708.3	841.8	719.1	122.74	6.858	
6,200.0	6,068.5	10,278.8	6,810.1	25.0	103.8	-3.13	1,246.6	-707.0	818.4	695.6	122.83	6.663	
6,250.0	6,118.4	10,281.2	6,810.2	25.1	103.8	-3.17	1,246.6	-704.6	772.3	649.6	122.64	6.297	
6,300.0	6,168.0	10,283.3	6,810.3	25.3	103.9	-3.27	1,246.5	-702.4	725.3	603.4	121.93	5.948	
6,350.0	6,217.0	10,285.2	6,810.3	25.4	103.9	-3.46	1,246.5	-700.6	677.7	557.0	120.73	5.614	
6,400.0	6,265.3	10,286.9	6,810.4	25.6	104.0	-3.77	1,246.5	-698.9	629.4	510.4	119.00	5.289	
6,450.0	6,312.6	10,288.3	6,810.4	25.9	104.0	-4.34	1,246.4	-697.4	580.6	463.9	116.74	4.973	
6,500.0	6,358.8	10,289.6	6,810.5	26.2	104.1	-5.45	1,246.4	-696.2	531.3	417.4	113.88	4.666	
6,550.0	6,403.6	10,290.6	6,810.5	26.5	104.1	-8.24	1,246.4	-695.1	481.7	371.6	110.04	4.377	
6,600.0	6,446.9	10,291.5	6,810.5	26.9	104.1	-22.82	1,246.4	-694.3	431.8	331.9	99.88	4.323	
6,650.0	6,488.4	10,292.2	6,810.5	27.3	104.1	-162.16	1,246.3	-693.6	381.8	278.8	103.01	3.706	
6,700.0	6,528.0	10,292.8	6,810.6	27.7	104.2	-173.90	1,246.3	-693.0	331.9	231.3	100.67	3.297	
6,750.0	6,565.6	10,293.1	6,810.6	28.2	104.2	-176.39	1,246.3	-692.6	282.6	186.6	96.01	2.943	
6,800.0	6,600.9	10,293.4	6,810.6	28.7	104.2	-177.38	1,246.3	-692.4	234.3	143.3	91.01	2.574	
6,850.0	6,633.8	10,293.5	6,810.6	29.3	104.2	-177.85	1,246.3	-692.3	188.2	102.4	85.74	2.194	
6,900.0	6,664.2	10,293.5	6,810.6	29.9	104.2	-178.06	1,246.3	-692.2	146.6	66.3	80.25	1.827	
6,950.0	6,692.0	10,293.4	6,810.6	30.5	104.2	-178.10	1,246.3	-692.3	114.9	40.3	74.57	1.540	
6,998.2	6,716.1	10,293.2	6,810.6	31.1	104.2	-178.02	1,246.3	-692.6	102.7	33.7	68.99	1.489 Level 3, CC, ES, SF	
7,000.0	6,716.9	10,293.2	6,810.6	31.1	104.2	-178.01	1,246.3	-692.6	102.7	34.0	68.78	1.494 Level 3	
7,050.0	6,739.0	10,292.9	6,810.6	31.8	104.2	-177.78	1,246.3	-692.9	116.6	53.6	62.95	1.852	
7,100.0	6,758.1	10,292.4	6,810.6	32.5	104.2	-177.38	1,246.3	-693.3	149.3	92.1	57.18	2.610	
7,150.0	6,774.1	10,291.9	6,810.5	33.2	104.1	-176.73	1,246.3	-693.9	191.3	139.7	51.63	3.705	
7,200.0	6,787.0	10,291.2	6,810.5	34.0	104.1	-175.63	1,246.4	-694.5	237.6	191.1	46.49	5.111	
7,250.0	6,796.7	10,290.5	6,810.5	34.7	104.1	-173.59	1,246.4	-695.3	286.0	243.9	42.14	6.787	
7,300.0	6,803.2	10,289.6	6,810.5	35.5	104.1	-168.76	1,246.4	-696.1	335.4	295.9	39.50	8.492	
7,350.0	6,806.4	10,288.7	6,810.4	36.3	104.0	-146.75	1,246.4	-697.0	385.3	340.9	44.42	8.674	
7,376.8	6,806.8	10,288.2	6,810.4	36.7	104.0	-78.83	1,246.4	-697.6	412.0	362.5	49.53	8.319	
7,400.0	6,806.8	10,287.7	6,810.4	37.1	104.0	-79.32	1,246.4	-698.1	435.3	385.3	49.93	8.718	
7,500.0	6,806.4	10,285.7	6,810.4	38.7	104.0	-80.93	1,246.5	-700.1	535.2	483.6	51.66	10.361	
7,600.0	6,806.1	10,283.7	6,810.3	40.4	103.9	-82.03	1,246.5	-702.1	635.2	581.8	53.40	11.894	
7,700.0	6,805.8	10,281.7	6,810.2	42.0	103.9	-82.83	1,246.6	-704.1	735.2	680.0	55.17	13.327	
7,800.0	6,805.5	10,279.7	6,810.2	43.7	103.8	-83.43	1,246.6	-706.1	835.2	778.2	56.94	14.667	
7,900.0	6,805.2	10,277.7	6,810.1	45.4	103.7	-83.90	1,246.6	-708.0	935.1	876.4	58.73	15.924	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 125-MWD, 6034-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		
6,174.3	6,042.9	11,100.3	6,980.0	25.0	116.6	2.96	1,239.1	-671.0	995.7	859.2	136.51	7.294		
6,200.0	6,068.5	11,099.7	6,980.0	25.0	116.6	3.15	1,239.1	-671.6	971.6	835.0	136.54	7.116		
6,250.0	6,118.4	11,098.6	6,980.0	25.1	116.5	3.64	1,239.1	-672.7	923.9	787.7	136.21	6.783		
6,300.0	6,168.0	11,097.6	6,980.0	25.3	116.5	4.37	1,239.1	-673.7	875.6	740.2	135.34	6.470		
6,350.0	6,217.0	11,096.6	6,980.1	25.4	116.5	5.61	1,239.1	-674.7	826.6	692.7	133.91	6.173		
6,400.0	6,265.3	11,095.6	6,980.1	25.6	116.5	8.09	1,239.1	-675.7	777.2	645.4	131.81	5.896		
6,450.0	6,312.6	11,094.7	6,980.1	25.9	116.4	15.53	1,239.1	-676.7	727.4	599.8	127.66	5.698		
6,500.0	6,358.8	11,093.8	6,980.1	26.2	116.4	97.48	1,239.1	-677.5	677.5	634.9	42.60	15.903		
6,550.0	6,403.6	11,092.9	6,980.1	26.5	116.4	166.50	1,239.1	-678.4	627.5	509.2	118.26	5.306		
6,600.0	6,446.9	11,092.1	6,980.2	26.9	116.4	173.28	1,239.1	-679.2	577.8	460.4	117.38	4.923		
6,650.0	6,488.4	11,091.4	6,980.2	27.3	116.3	175.63	1,239.1	-679.9	528.7	414.9	113.80	4.646		
6,700.0	6,528.0	11,090.7	6,980.2	27.7	116.3	176.81	1,239.1	-680.6	480.5	371.2	109.40	4.393		
6,750.0	6,565.6	11,090.1	6,980.2	28.2	116.3	177.50	1,239.0	-681.2	434.0	329.5	104.47	4.154		
6,800.0	6,600.9	11,089.6	6,980.2	28.7	116.3	177.95	1,239.0	-681.7	389.7	290.6	99.13	3.932		
6,850.0	6,633.8	11,089.1	6,980.2	29.3	116.3	178.25	1,239.0	-682.2	349.0	255.5	93.46	3.734		
6,900.0	6,664.2	11,088.7	6,980.2	29.9	116.3	178.46	1,239.0	-682.6	313.3	225.8	87.51	3.580		
6,950.0	6,692.0	11,088.4	6,980.2	30.5	116.3	178.61	1,239.0	-683.0	284.7	203.3	81.36	3.499 SF		
7,000.0	6,716.9	11,088.1	6,980.2	31.1	116.3	178.71	1,239.0	-683.2	265.6	190.6	75.07	3.539		
7,050.0	6,739.0	11,087.9	6,980.3	31.8	116.2	178.76	1,239.0	-683.4	258.4	189.7	68.74	3.759 ES		
7,053.4	6,740.4	11,087.9	6,980.3	31.8	116.2	178.77	1,239.0	-683.4	258.4	190.1	68.30	3.782 CC		
7,100.0	6,758.1	11,087.8	6,980.3	32.5	116.2	178.78	1,239.0	-683.5	263.9	201.4	62.48	4.224		
7,150.0	6,774.1	11,087.7	6,980.3	33.2	116.2	178.76	1,239.0	-683.6	281.4	225.0	56.46	4.985		
7,200.0	6,787.0	11,087.7	6,980.3	34.0	116.2	178.70	1,239.0	-683.6	308.9	258.0	50.89	6.070		
7,250.0	6,796.7	11,087.8	6,980.3	34.7	116.2	178.60	1,239.0	-683.5	343.8	297.7	46.05	7.465		
7,300.0	6,803.2	11,088.0	6,980.3	35.5	116.3	178.42	1,239.0	-683.3	383.9	341.6	42.32	9.072		
7,350.0	6,806.4	11,088.2	6,980.2	36.3	116.3	178.15	1,239.0	-683.1	427.8	387.6	40.10	10.667		
7,376.8	6,806.8	11,088.3	6,980.2	36.7	116.3	177.95	1,239.0	-683.0	452.3	412.6	39.65	11.406		
7,400.0	6,806.8	11,088.5	6,980.2	37.1	116.3	177.90	1,239.0	-682.8	473.9	434.1	39.81	11.906		
7,500.0	6,806.4	11,089.0	6,980.2	38.7	116.3	177.71	1,239.0	-682.3	568.5	528.1	40.48	14.046		
7,600.0	6,806.1	11,089.6	6,980.2	40.4	116.3	177.53	1,239.0	-681.7	664.7	623.6	41.16	16.149		
7,700.0	6,805.8	11,090.1	6,980.2	42.0	116.3	177.34	1,239.0	-681.2	761.9	720.0	41.86	18.200		
7,800.0	6,805.5	11,090.6	6,980.2	43.7	116.3	177.16	1,239.1	-680.7	859.7	817.1	42.57	20.195		
7,900.0	6,805.2	11,091.2	6,980.2	45.4	116.3	176.99	1,239.1	-680.2	958.0	914.7	43.29	22.129		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	90.69	-0.4	30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.69	-0.4	30.1	30.1	29.9	0.22	133.878	
200.0	200.0	200.0	200.0	0.3	0.3	90.69	-0.4	30.1	30.1	29.4	0.67	44.626	
300.0	300.0	300.0	300.0	0.6	0.6	90.69	-0.4	30.1	30.1	29.0	1.12	26.776	
400.0	400.0	400.0	400.0	0.8	0.8	90.69	-0.4	30.1	30.1	28.5	1.57	19.125	
500.0	500.0	500.0	500.0	1.0	1.0	90.69	-0.4	30.1	30.1	28.1	2.02	14.875	
600.0	600.0	600.0	600.0	1.2	1.2	90.69	-0.4	30.1	30.1	27.6	2.47	12.171 CC, ES	
700.0	700.0	700.0	700.0	1.5	1.5	130.27	-0.4	30.1	30.9	28.0	2.92	10.590	
800.0	799.9	799.9	799.9	1.7	1.7	135.35	-0.4	30.1	33.6	30.2	3.37	9.977	
900.0	899.7	899.7	899.7	1.9	1.9	142.16	-0.4	30.1	38.5	34.7	3.82	10.090	
1,000.0	999.3	999.3	999.3	2.2	2.1	149.08	-0.4	30.1	46.1	41.8	4.27	10.793	
1,100.0	1,098.6	1,098.6	1,098.6	2.4	2.4	155.14	-0.4	30.1	56.5	51.8	4.72	11.963	
1,200.0	1,197.5	1,197.5	1,197.5	2.7	2.6	160.02	-0.4	30.1	69.8	64.6	5.18	13.488	
1,300.0	1,296.1	1,296.1	1,296.1	3.0	2.8	163.81	-0.4	30.1	85.9	80.3	5.63	15.276	
1,400.0	1,394.2	1,394.2	1,394.2	3.4	3.0	166.72	-0.4	30.1	104.8	98.8	6.07	17.260	
1,500.0	1,491.7	1,493.9	1,493.9	3.8	3.2	168.61	0.8	30.0	125.6	119.1	6.52	19.262	
1,543.4	1,533.9	1,537.3	1,537.3	4.0	3.3	169.07	2.1	30.0	134.9	128.2	6.72	20.085	
1,600.0	1,588.7	1,594.1	1,594.0	4.2	3.5	169.42	4.6	29.8	146.9	139.9	6.98	21.033	
1,700.0	1,685.7	1,695.1	1,694.8	4.7	3.7	169.42	11.0	29.5	166.5	159.0	7.46	22.319	
1,800.0	1,782.7	1,796.8	1,796.1	5.1	3.9	168.81	20.2	28.9	184.3	176.3	7.95	23.176	
1,900.0	1,879.6	1,899.0	1,897.6	5.6	4.2	167.75	32.1	28.3	200.2	191.8	8.46	23.665	
2,000.0	1,976.6	2,001.7	1,999.2	6.1	4.4	166.29	46.9	27.4	214.5	205.5	9.00	23.837	
2,100.0	2,073.5	2,104.6	2,100.6	6.6	4.7	164.50	64.3	26.5	227.1	217.5	9.57	23.734	
2,200.0	2,170.5	2,207.6	2,201.6	7.1	5.0	162.37	84.6	25.3	238.2	228.0	10.18	23.392	
2,300.0	2,267.5	2,310.6	2,302.0	7.6	5.4	159.93	107.5	24.0	248.0	237.1	10.85	22.848	
2,400.0	2,364.4	2,410.5	2,399.0	8.1	5.8	157.39	131.6	22.7	257.1	245.6	11.58	22.209	
2,500.0	2,461.4	2,509.5	2,495.0	8.6	6.2	155.04	155.6	21.3	266.7	254.3	12.34	21.612	
2,600.0	2,558.4	2,608.5	2,591.0	9.1	6.6	152.85	179.6	20.0	276.6	263.5	13.14	21.059	
2,700.0	2,655.3	2,707.4	2,687.0	9.6	7.0	150.81	203.6	18.6	287.0	273.0	13.97	20.550	
2,800.0	2,752.3	2,806.4	2,783.0	10.1	7.4	148.92	227.5	17.3	297.7	282.9	14.82	20.083	
2,900.0	2,849.3	2,905.3	2,879.0	10.6	7.8	147.15	251.5	15.9	308.7	293.0	15.70	19.658	
3,000.0	2,946.2	3,004.3	2,975.0	11.1	8.3	145.51	275.5	14.6	319.9	303.3	16.60	19.272	
3,100.0	3,043.2	3,103.3	3,071.0	11.6	8.7	143.98	299.5	13.3	331.4	313.9	17.51	18.922	
3,200.0	3,140.2	3,202.2	3,167.0	12.1	9.2	142.56	323.4	11.9	343.1	324.7	18.44	18.605	
3,300.0	3,237.1	3,301.2	3,263.0	12.6	9.6	141.23	347.4	10.6	355.0	335.7	19.38	18.317	
3,400.0	3,334.1	3,400.1	3,359.0	13.1	10.1	139.98	371.4	9.2	367.1	346.8	20.33	18.057	
3,500.0	3,431.1	3,499.1	3,455.0	13.6	10.5	138.81	395.4	7.9	379.4	358.1	21.29	17.821	
3,600.0	3,528.0	3,598.0	3,551.0	14.2	11.0	137.72	419.4	6.5	391.8	369.5	22.25	17.606	
3,700.0	3,625.0	3,697.0	3,647.0	14.7	11.5	136.70	443.3	5.2	404.3	381.1	23.22	17.411	
3,800.0	3,722.0	3,796.0	3,743.0	15.2	11.9	135.73	467.3	3.8	417.0	392.8	24.20	17.233	
3,900.0	3,818.9	3,894.9	3,839.0	15.7	12.4	134.82	491.3	2.5	429.7	404.6	25.17	17.071	
4,000.0	3,915.9	3,993.9	3,935.0	16.2	12.9	133.97	515.3	1.1	442.6	416.4	26.15	16.923	
4,100.0	4,012.9	4,092.8	4,031.0	16.7	13.4	133.16	539.2	-0.2	455.6	428.4	27.14	16.788	
4,200.0	4,109.8	4,191.8	4,127.0	17.2	13.9	132.40	563.2	-1.5	468.6	440.5	28.12	16.663	
4,300.0	4,206.8	4,290.8	4,223.0	17.8	14.3	131.68	587.2	-2.9	481.7	452.6	29.11	16.549	
4,400.0	4,303.7	4,389.7	4,319.0	18.3	14.8	131.00	611.2	-4.2	494.9	464.8	30.10	16.444	
4,500.0	4,400.7	4,488.7	4,415.0	18.8	15.3	130.35	635.1	-5.6	508.1	477.1	31.08	16.347	
4,600.0	4,497.7	4,587.6	4,511.0	19.3	15.8	129.73	659.1	-6.9	521.5	489.4	32.07	16.258	
4,700.0	4,594.6	4,686.6	4,607.0	19.8	16.3	129.15	683.1	-8.3	534.8	501.8	33.07	16.175	
4,800.0	4,691.6	4,785.5	4,703.0	20.3	16.7	128.59	707.1	-9.6	548.3	514.2	34.06	16.098	
4,900.0	4,788.6	4,884.5	4,799.0	20.8	17.2	128.06	731.1	-11.0	561.7	526.7	35.05	16.027	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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				
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
5,000.0	4,885.5	4,983.5	4,895.0	21.4	17.7	127.56	755.0	-12.3	575.2	539.2	36.04	15.961	
5,100.0	4,982.5	5,082.4	4,991.0	21.9	18.2	127.08	779.0	-13.7	588.8	551.8	37.03	15.900	
5,200.0	5,079.5	5,181.4	5,087.0	22.4	18.7	126.62	803.0	-15.0	602.4	564.4	38.02	15.843	
5,300.0	5,176.4	5,279.6	5,182.5	22.9	19.1	126.29	825.7	-16.3	616.1	577.1	38.94	15.821	
5,323.9	5,199.6	5,303.0	5,205.4	23.0	19.2	126.26	830.6	-16.6	619.4	580.2	39.15	15.822	
5,400.0	5,273.6	5,377.7	5,278.7	23.4	19.5	126.36	845.2	-17.4	629.3	589.6	39.71	15.847	
5,500.0	5,371.6	5,476.1	5,375.7	23.7	19.8	126.52	861.4	-18.3	640.7	600.4	40.34	15.882	
5,600.0	5,470.2	5,574.7	5,473.4	24.0	20.0	126.70	874.3	-19.0	650.2	609.3	40.89	15.902	
5,700.0	5,569.3	5,673.4	5,571.7	24.3	20.2	126.91	883.8	-19.5	657.8	616.4	41.34	15.910	
5,800.0	5,668.8	5,772.1	5,670.2	24.5	20.4	127.14	890.0	-19.9	663.4	621.7	41.71	15.906	
5,900.0	5,768.6	5,870.9	5,769.0	24.7	20.6	127.38	892.8	-20.0	667.1	625.1	41.98	15.891	
6,000.0	5,868.5	5,970.5	5,868.5	24.8	20.7	127.59	892.9	-20.1	668.8	626.6	42.19	15.851	
6,031.5	5,900.0	6,002.0	5,900.0	24.8	20.7	89.92	892.9	-20.1	668.9	626.7	42.26	15.829	
6,100.0	5,968.5	6,070.5	5,968.5	24.9	20.8	89.92	892.9	-20.1	668.9	626.5	42.43	15.765	
6,149.6	6,018.1	6,120.1	6,018.1	25.0	20.9	89.92	892.9	-20.1	668.9	626.4	42.56	15.717	
6,174.3	6,042.9	6,144.8	6,042.9	25.0	20.9	89.92	892.9	-20.1	668.9	626.3	42.63	15.693	
6,200.0	6,068.5	6,170.5	6,068.5	25.0	21.0	89.92	893.4	-20.1	668.9	626.2	42.71	15.662	
6,250.0	6,118.4	6,220.4	6,118.3	25.1	21.1	89.92	896.7	-20.1	668.9	626.0	42.94	15.579	
6,300.0	6,168.0	6,270.3	6,167.8	25.3	21.3	89.92	903.2	-20.1	668.9	625.7	43.26	15.465	
6,350.0	6,217.0	6,320.3	6,216.8	25.4	21.5	89.92	913.0	-20.1	668.9	625.3	43.66	15.320	
6,400.0	6,265.3	6,370.2	6,265.0	25.6	21.7	89.92	925.9	-20.1	668.9	624.8	44.16	15.147	
6,450.0	6,312.6	6,420.2	6,312.3	25.9	22.0	89.92	942.0	-20.1	668.9	624.2	44.75	14.948	
6,500.0	6,358.8	6,470.1	6,358.4	26.2	22.4	89.93	961.1	-20.1	668.9	623.5	45.43	14.726	
6,550.0	6,403.6	6,520.1	6,403.2	26.5	22.8	89.93	983.2	-20.1	668.9	622.8	46.19	14.483	
6,600.0	6,446.9	6,570.0	6,446.4	26.9	23.2	89.93	1,008.2	-20.1	668.9	621.9	47.03	14.222	
6,650.0	6,488.4	6,619.9	6,487.9	27.3	23.7	89.93	1,036.0	-20.1	668.9	621.0	47.97	13.946	
6,700.0	6,528.0	6,669.9	6,527.6	27.7	24.2	89.94	1,066.4	-20.1	668.9	620.0	48.98	13.658	
6,750.0	6,565.6	6,719.9	6,565.1	28.2	24.7	89.94	1,099.3	-20.1	668.9	618.9	50.07	13.360	
6,800.0	6,600.9	6,769.8	6,600.4	28.7	25.3	89.94	1,134.6	-20.1	668.9	617.7	51.24	13.056	
6,850.0	6,633.8	6,819.8	6,633.4	29.3	25.9	89.95	1,172.2	-20.1	668.9	616.5	52.48	12.747	
6,900.0	6,664.2	6,869.7	6,663.8	29.9	26.6	89.95	1,211.8	-20.1	668.9	615.2	53.79	12.436	
6,950.0	6,692.0	6,919.7	6,691.5	30.5	27.3	89.96	1,253.4	-20.1	668.9	613.8	55.17	12.125	
7,000.0	6,716.9	6,969.7	6,716.5	31.1	28.0	89.96	1,296.6	-20.1	668.9	612.3	56.61	11.817	
7,050.0	6,739.0	7,019.6	6,738.6	31.8	28.8	89.97	1,341.4	-20.1	668.9	610.8	58.10	11.513	
7,100.0	6,758.1	7,069.6	6,757.8	32.5	29.6	89.97	1,387.6	-20.1	668.9	609.3	59.65	11.215	
7,150.0	6,774.1	7,119.6	6,773.8	33.2	30.4	89.97	1,434.9	-20.1	668.9	607.7	61.24	10.924	
7,200.0	6,787.0	7,169.6	6,786.8	34.0	31.2	89.98	1,483.2	-20.1	668.9	606.1	62.87	10.641	
7,250.0	6,796.7	7,219.6	6,796.6	34.7	32.0	89.99	1,532.2	-20.1	668.9	604.4	64.52	10.367	
7,300.0	6,803.2	7,269.5	6,803.1	35.5	32.9	89.99	1,581.7	-20.1	668.9	602.7	66.21	10.104	
7,337.0	6,805.9	7,306.5	6,805.9	36.1	33.5	89.99	1,618.6	-20.1	668.9	601.5	67.46	9.916	
7,350.0	6,806.4	7,319.5	6,806.4	36.3	33.7	90.00	1,631.6	-20.1	668.9	601.0	67.90	9.851	
7,376.8	6,806.8	7,346.3	6,806.8	36.7	34.2	90.00	1,658.3	-20.1	668.9	600.1	68.82	9.721	
7,400.0	6,806.8	7,369.5	6,806.7	37.1	34.6	90.00	1,681.6	-20.1	668.9	599.3	69.61	9.609	
7,500.0	6,806.4	7,469.5	6,806.4	38.7	36.3	90.00	1,781.6	-20.1	668.9	595.9	73.06	9.156	
7,600.0	6,806.1	7,569.5	6,806.1	40.4	38.1	90.00	1,881.6	-20.1	668.9	592.4	76.55	8.739	
7,700.0	6,805.8	7,669.5	6,805.8	42.0	39.8	90.00	1,981.6	-20.1	668.9	588.9	80.07	8.355	
7,800.0	6,805.5	7,769.5	6,805.5	43.7	41.6	90.00	2,081.6	-20.1	668.9	585.3	83.61	8.000	
7,900.0	6,805.2	7,869.5	6,805.2	45.4	43.4	90.00	2,181.6	-20.1	668.9	581.8	87.19	7.673	
8,000.0	6,804.9	7,969.5	6,804.9	47.2	45.2	90.00	2,281.6	-20.1	668.9	578.2	90.78	7.369	
8,100.0	6,804.6	8,069.5	6,804.5	48.9	47.0	90.00	2,381.6	-20.1	668.9	574.6	94.39	7.087	
8,200.0	6,804.2	8,169.5	6,804.2	50.7	48.9	90.00	2,481.6	-20.1	668.9	570.9	98.02	6.824	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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							
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	6,803.9	8,269.5	6,803.9	52.4	50.7	90.00	2,581.6	-20.1	668.9	567.3	101.67	6.580	
8,400.0	6,803.6	8,369.5	6,803.6	54.2	52.5	90.00	2,681.6	-20.1	668.9	563.6	105.33	6.351	
8,500.0	6,803.3	8,469.5	6,803.3	56.0	54.4	90.00	2,781.6	-20.1	668.9	559.9	109.00	6.137	
8,600.0	6,803.0	8,569.5	6,803.0	57.8	56.2	90.00	2,881.6	-20.1	668.9	556.3	112.68	5.937	
8,700.0	6,802.7	8,669.5	6,802.7	59.6	58.1	90.00	2,981.6	-20.1	668.9	552.6	116.38	5.748	
8,800.0	6,802.4	8,769.5	6,802.3	61.4	59.9	90.00	3,081.6	-20.1	668.9	548.9	120.08	5.571	
8,900.0	6,802.0	8,869.5	6,802.0	63.2	61.8	90.00	3,181.6	-20.1	668.9	545.2	123.79	5.404	
9,000.0	6,801.7	8,969.5	6,801.7	65.0	63.6	90.00	3,281.6	-20.1	668.9	541.4	127.51	5.246	
9,100.0	6,801.4	9,069.5	6,801.4	66.9	65.5	90.00	3,381.6	-20.1	668.9	537.7	131.23	5.097	
9,200.0	6,801.1	9,169.5	6,801.1	68.7	67.4	90.00	3,481.6	-20.1	668.9	534.0	134.97	4.956	
9,300.0	6,800.8	9,269.5	6,800.8	70.5	69.2	90.00	3,581.6	-20.1	668.9	530.2	138.70	4.823	
9,400.0	6,800.5	9,369.5	6,800.5	72.4	71.1	90.00	3,681.6	-20.1	668.9	526.5	142.45	4.696	
9,500.0	6,800.2	9,469.5	6,800.1	74.2	73.0	90.00	3,781.6	-20.1	668.9	522.7	146.20	4.576	
9,600.0	6,799.8	9,569.5	6,799.8	76.1	74.9	90.00	3,881.6	-20.1	668.9	519.0	149.95	4.461	
9,700.0	6,799.5	9,669.5	6,799.5	77.9	76.8	90.00	3,981.6	-20.1	668.9	515.2	153.71	4.352	
9,800.0	6,799.2	9,769.5	6,799.2	79.8	78.6	90.00	4,081.6	-20.1	668.9	511.5	157.47	4.248	
9,900.0	6,798.9	9,869.5	6,798.9	81.6	80.5	90.00	4,181.6	-20.1	668.9	507.7	161.23	4.149	
10,000.0	6,798.6	9,969.5	6,798.6	83.5	82.4	90.00	4,281.6	-20.1	668.9	503.9	165.00	4.054	
10,100.0	6,798.3	10,069.5	6,798.3	85.4	84.3	90.00	4,381.6	-20.1	668.9	500.2	168.77	3.964	
10,200.0	6,798.0	10,169.5	6,797.9	87.2	86.2	90.00	4,481.6	-20.1	668.9	496.4	172.55	3.877	
10,300.0	6,797.6	10,269.5	6,797.6	89.1	88.1	90.00	4,581.6	-20.1	668.9	492.6	176.33	3.794	
10,400.0	6,797.3	10,369.5	6,797.3	91.0	90.0	90.00	4,681.6	-20.1	668.9	488.8	180.11	3.714	
10,500.0	6,797.0	10,469.5	6,797.0	92.8	91.9	90.00	4,781.6	-20.1	668.9	485.1	183.89	3.638	
10,600.0	6,796.7	10,569.5	6,796.7	94.7	93.8	90.00	4,881.6	-20.1	668.9	481.3	187.67	3.564	
10,700.0	6,796.4	10,669.5	6,796.4	96.6	95.7	90.00	4,981.6	-20.1	668.9	477.5	191.46	3.494	
10,800.0	6,796.1	10,769.5	6,796.1	98.5	97.6	90.00	5,081.6	-20.1	668.9	473.7	195.25	3.426	
10,900.0	6,795.8	10,869.5	6,795.7	100.4	99.4	90.00	5,181.6	-20.1	668.9	469.9	199.04	3.361	
11,000.0	6,795.4	10,969.5	6,795.4	102.2	101.3	90.00	5,281.6	-20.1	668.9	466.1	202.84	3.298	
11,100.0	6,795.1	11,069.5	6,795.1	104.1	103.2	90.00	5,381.6	-20.1	668.9	462.3	206.63	3.237	
11,200.0	6,794.8	11,169.5	6,794.8	106.0	105.1	90.00	5,481.6	-20.1	668.9	458.5	210.43	3.179	
11,300.0	6,794.5	11,269.5	6,794.5	107.9	107.0	90.00	5,581.6	-20.1	668.9	454.7	214.23	3.123	
11,400.0	6,794.2	11,369.5	6,794.2	109.8	108.9	90.00	5,681.6	-20.1	668.9	450.9	218.03	3.068	
11,500.0	6,793.9	11,469.5	6,793.9	111.7	110.8	90.00	5,781.6	-20.1	668.9	447.1	221.83	3.016	
11,600.0	6,793.6	11,569.5	6,793.5	113.6	112.8	90.00	5,881.6	-20.1	668.9	443.3	225.63	2.965	
11,700.0	6,793.2	11,669.5	6,793.2	115.4	114.7	90.00	5,981.6	-20.1	668.9	439.5	229.43	2.916	
11,800.0	6,792.9	11,769.5	6,792.9	117.3	116.6	90.00	6,081.6	-20.1	668.9	435.7	233.24	2.868	
11,900.0	6,792.6	11,869.5	6,792.6	119.2	118.5	90.00	6,181.6	-20.1	668.9	431.9	237.04	2.822	
12,000.0	6,792.3	11,969.5	6,792.3	121.1	120.4	90.00	6,281.6	-20.1	668.9	428.1	240.85	2.777	
12,100.0	6,792.0	12,069.5	6,792.0	123.0	122.3	90.00	6,381.6	-20.1	668.9	424.3	244.66	2.734	
12,200.0	6,791.7	12,169.5	6,791.7	124.9	124.2	90.00	6,481.6	-20.1	668.9	420.5	248.47	2.692	
12,300.0	6,791.4	12,269.5	6,791.3	126.8	126.1	90.00	6,581.6	-20.1	668.9	416.7	252.28	2.652	
12,400.0	6,791.0	12,369.5	6,791.0	128.7	128.0	90.00	6,681.6	-20.1	668.9	412.9	256.09	2.612	
12,500.0	6,790.7	12,469.5	6,790.7	130.6	129.9	90.00	6,781.6	-20.1	668.9	409.0	259.90	2.574	
12,600.0	6,790.4	12,569.5	6,790.4	132.5	131.8	90.00	6,881.6	-20.1	668.9	405.2	263.71	2.537	
12,700.0	6,790.1	12,669.5	6,790.1	134.4	133.7	90.00	6,981.6	-20.1	668.9	401.4	267.53	2.500	
12,800.0	6,789.8	12,769.5	6,789.8	136.3	135.6	90.00	7,081.6	-20.1	668.9	397.6	271.34	2.465	
12,900.0	6,789.5	12,869.5	6,789.5	138.2	137.5	90.00	7,181.6	-20.1	668.9	393.8	275.16	2.431	
13,000.0	6,789.2	12,969.5	6,789.1	140.1	139.4	90.00	7,281.6	-20.1	668.9	390.0	278.97	2.398	
13,100.0	6,788.9	13,069.5	6,788.8	142.0	141.3	90.00	7,381.6	-20.1	668.9	386.2	282.79	2.366	
13,200.0	6,788.5	13,169.5	6,788.5	143.9	143.3	90.00	7,481.6	-20.1	668.9	382.3	286.61	2.334	
13,300.0	6,788.2	13,269.5	6,788.2	145.8	145.2	90.00	7,581.6	-20.1	668.9	378.5	290.42	2.303	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design		Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-201 - 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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
							+N/-S (ft)	+E/-W (ft)							
13,400.0	6,787.9	13,369.5	6,787.9	147.7	147.1	90.00	7,681.6	-20.1	668.9	374.7	294.24	2.273			
13,500.0	6,787.6	13,469.5	6,787.6	149.6	149.0	90.00	7,781.6	-20.1	668.9	370.9	298.06	2.244			
13,600.0	6,787.3	13,569.5	6,787.3	151.5	150.9	90.00	7,881.6	-20.1	668.9	367.1	301.88	2.216			
13,700.0	6,787.0	13,669.5	6,786.9	153.4	152.8	90.00	7,981.6	-20.1	668.9	363.2	305.70	2.188			
13,800.0	6,786.7	13,769.5	6,786.6	155.3	154.7	90.00	8,081.6	-20.1	668.9	359.4	309.52	2.161			
13,900.0	6,786.3	13,869.5	6,786.3	157.2	156.6	90.00	8,181.6	-20.1	668.9	355.6	313.34	2.135			
14,000.0	6,786.0	13,969.5	6,786.0	159.1	158.5	90.00	8,281.6	-20.1	668.9	351.8	317.16	2.109			
14,100.0	6,785.7	14,069.5	6,785.7	161.0	160.4	90.00	8,381.6	-20.1	668.9	348.0	320.98	2.084			
14,200.0	6,785.4	14,169.5	6,785.4	162.9	162.4	90.00	8,481.6	-20.1	668.9	344.1	324.81	2.060			
14,300.0	6,785.1	14,269.5	6,785.1	164.8	164.3	90.00	8,581.6	-20.1	668.9	340.3	328.63	2.036			
14,400.0	6,784.8	14,369.5	6,784.7	166.7	166.2	90.00	8,681.6	-20.1	668.9	336.5	332.45	2.012			
14,500.0	6,784.5	14,469.5	6,784.4	168.6	168.1	90.00	8,781.6	-20.1	668.9	332.7	336.28	1.989			
14,600.0	6,784.1	14,569.5	6,784.1	170.5	170.0	90.00	8,881.6	-20.1	668.9	328.8	340.10	1.967			
14,700.0	6,783.8	14,669.5	6,783.8	172.4	171.9	90.00	8,981.6	-20.1	668.9	325.0	343.92	1.945			
14,800.0	6,783.5	14,769.5	6,783.5	174.4	173.8	90.00	9,081.6	-20.1	668.9	321.2	347.75	1.924			
14,900.0	6,783.2	14,869.5	6,783.2	176.3	175.7	90.00	9,181.6	-20.1	668.9	317.4	351.57	1.903			
15,000.0	6,782.9	14,969.5	6,782.9	178.2	177.7	90.00	9,281.6	-20.1	668.9	313.5	355.40	1.882			
15,100.0	6,782.6	15,069.5	6,782.5	180.1	179.6	90.00	9,381.6	-20.1	668.9	309.7	359.22	1.862			
15,200.0	6,782.3	15,169.5	6,782.2	182.0	181.5	90.00	9,481.6	-20.1	668.9	305.9	363.05	1.843			
15,245.9	6,782.1	15,215.4	6,782.1	182.9	182.4	90.00	9,527.5	-20.1	668.9	304.1	364.81	1.834			
15,280.6	6,782.0	15,243.9	6,782.0	183.5	182.9	90.00	9,555.9	-20.1	669.0	303.0	366.01	1.828 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	90.00	0.0	15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	15.0	15.0	14.8	0.22	66.934		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	15.0	15.0	14.4	0.67	22.311		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	15.0	15.0	13.9	1.12	13.387		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	15.0	15.0	13.5	1.57	9.562		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	15.0	15.0	13.0	2.02	7.437		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	15.0	15.0	12.6	2.47	6.085 CC		
700.0	700.0	700.0	700.0	1.5	1.5	131.41	0.0	15.0	15.9	13.0	2.92	5.438		
800.0	799.9	799.9	799.9	1.7	1.7	140.44	0.0	15.0	18.7	15.3	3.37	5.556		
900.0	899.7	899.7	899.7	1.9	1.9	150.34	0.0	15.0	24.1	20.3	3.82	6.315		
1,000.0	999.3	999.3	999.3	2.2	2.1	158.32	0.0	15.0	32.4	28.1	4.27	7.584		
1,100.0	1,098.6	1,099.5	1,099.5	2.4	2.4	163.07	1.2	14.6	42.5	37.8	4.72	8.998		
1,200.0	1,197.5	1,200.0	1,199.9	2.7	2.6	165.17	4.9	13.3	53.0	47.9	5.17	10.264		
1,300.0	1,296.1	1,300.7	1,300.4	3.0	2.8	165.89	11.1	11.0	63.9	58.3	5.62	11.382		
1,400.0	1,394.2	1,401.6	1,400.9	3.4	3.1	165.81	19.8	7.8	75.1	69.1	6.08	12.367		
1,500.0	1,491.7	1,502.8	1,501.3	3.8	3.3	165.23	31.0	3.7	86.6	80.1	6.55	13.235		
1,543.4	1,533.9	1,546.8	1,544.9	4.0	3.4	164.88	36.7	1.7	91.7	85.0	6.76	13.574		
1,600.0	1,588.7	1,604.2	1,601.7	4.2	3.6	164.30	44.8	-1.3	98.0	91.0	7.04	13.916		
1,700.0	1,685.7	1,706.0	1,702.0	4.7	3.9	162.81	61.1	-7.2	107.5	99.9	7.58	14.181		
1,800.0	1,782.7	1,808.0	1,802.0	5.1	4.2	160.77	80.0	-14.1	114.8	106.7	8.15	14.081		
1,900.0	1,879.6	1,910.2	1,901.7	5.6	4.6	158.17	101.4	-21.9	120.2	111.4	8.79	13.683		
2,000.0	1,976.6	2,011.9	2,000.1	6.1	5.0	155.02	125.1	-30.5	123.9	114.4	9.49	13.054		
2,100.0	2,073.5	2,111.5	2,096.5	6.6	5.4	151.86	149.1	-39.3	127.4	117.1	10.26	12.419		
2,200.0	2,170.5	2,211.2	2,192.8	7.1	5.9	148.88	173.0	-48.0	131.2	120.2	11.08	11.847		
2,300.0	2,267.5	2,310.9	2,289.2	7.6	6.3	146.07	197.0	-56.7	135.4	123.5	11.95	11.336		
2,400.0	2,364.4	2,410.6	2,385.6	8.1	6.8	143.44	221.0	-65.5	139.9	127.1	12.86	10.883		
2,500.0	2,461.4	2,510.3	2,482.0	8.6	7.3	140.97	244.9	-74.2	144.7	130.9	13.80	10.483		
2,600.0	2,558.4	2,610.0	2,578.4	9.1	7.8	138.67	268.9	-82.9	149.7	134.9	14.78	10.131		
2,700.0	2,655.3	2,709.7	2,674.7	9.6	8.3	136.52	292.8	-91.7	155.0	139.2	15.78	9.822		
2,800.0	2,752.3	2,809.4	2,771.1	10.1	8.8	134.51	316.8	-100.4	160.4	143.6	16.80	9.550		
2,900.0	2,849.3	2,909.1	2,867.5	10.6	9.3	132.64	340.8	-109.1	166.0	148.2	17.83	9.312		
3,000.0	2,946.2	3,008.8	2,963.9	11.1	9.8	130.89	364.7	-117.9	171.8	153.0	18.88	9.104		
3,100.0	3,043.2	3,108.5	3,060.3	11.6	10.3	129.25	388.7	-126.6	177.8	157.8	19.93	8.920		
3,200.0	3,140.2	3,208.2	3,156.7	12.1	10.8	127.72	412.6	-135.3	183.9	162.9	20.99	8.758		
3,300.0	3,237.1	3,307.9	3,253.0	12.6	11.3	126.29	436.6	-144.0	190.1	168.0	22.06	8.616		
3,400.0	3,334.1	3,407.6	3,349.4	13.1	11.8	124.96	460.6	-152.8	196.4	173.3	23.13	8.490		
3,500.0	3,431.1	3,507.3	3,445.8	13.6	12.3	123.70	484.5	-161.5	202.8	178.6	24.21	8.378		
3,600.0	3,528.0	3,607.0	3,542.2	14.2	12.8	122.52	508.5	-170.2	209.3	184.0	25.28	8.279		
3,700.0	3,625.0	3,706.7	3,638.6	14.7	13.3	121.42	532.4	-179.0	215.9	189.5	26.36	8.191		
3,800.0	3,722.0	3,806.4	3,735.0	15.2	13.8	120.38	556.4	-187.7	222.6	195.1	27.44	8.112		
3,900.0	3,818.9	3,906.1	3,831.3	15.7	14.4	119.40	580.4	-196.4	229.3	200.8	28.51	8.042		
4,000.0	3,915.9	4,005.8	3,927.7	16.2	14.9	118.47	604.3	-205.2	236.1	206.5	29.59	7.979		
4,100.0	4,012.9	4,105.5	4,024.1	16.7	15.4	117.60	628.3	-213.9	243.0	212.3	30.67	7.923		
4,200.0	4,109.8	4,205.2	4,120.5	17.2	15.9	116.78	652.2	-222.6	249.9	218.1	31.74	7.872		
4,300.0	4,206.8	4,304.9	4,216.9	17.8	16.4	116.00	676.2	-231.4	256.8	224.0	32.82	7.826		
4,400.0	4,303.7	4,404.6	4,313.2	18.3	17.0	115.26	700.2	-240.1	263.8	229.9	33.89	7.785		
4,500.0	4,400.7	4,504.3	4,409.6	18.8	17.5	114.56	724.1	-248.8	270.9	235.9	34.96	7.748		
4,600.0	4,497.7	4,604.0	4,506.0	19.3	18.0	113.90	748.1	-257.5	277.9	241.9	36.03	7.714		
4,700.0	4,594.6	4,703.7	4,602.4	19.8	18.5	113.27	772.0	-266.3	285.1	248.0	37.10	7.683		
4,800.0	4,691.6	4,803.4	4,698.8	20.3	19.0	112.67	796.0	-275.0	292.2	254.0	38.17	7.655		
4,900.0	4,788.6	4,903.1	4,795.2	20.8	19.6	112.09	820.0	-283.7	299.4	260.2	39.24	7.630		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-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	4,885.5	5,002.8	4,891.5	21.4	20.1	111.55	843.9	-292.5	306.6	266.3	40.31	7.607		
5,100.0	4,982.5	5,102.5	4,987.9	21.9	20.6	111.03	867.9	-301.2	313.8	272.5	41.37	7.586		
5,200.0	5,079.5	5,202.2	5,084.3	22.4	21.1	110.53	891.8	-309.9	321.1	278.7	42.43	7.567		
5,300.0	5,176.4	5,301.8	5,180.6	22.9	21.7	110.06	915.8	-318.6	328.4	284.9	43.49	7.551		
5,323.9	5,199.6	5,325.5	5,203.6	23.0	21.7	109.99	921.3	-320.7	330.1	286.4	43.70	7.554		
5,400.0	5,273.6	5,401.0	5,277.0	23.4	22.0	109.93	937.6	-326.6	335.4	291.1	44.34	7.565		
5,500.0	5,371.6	5,500.3	5,374.3	23.7	22.4	109.86	956.3	-333.4	341.5	296.5	45.05	7.581		
5,600.0	5,470.2	5,599.7	5,472.3	24.0	22.7	109.80	971.8	-339.1	346.6	300.9	45.67	7.589		
5,700.0	5,569.3	5,699.1	5,570.8	24.3	22.9	109.76	984.2	-343.6	350.6	304.4	46.20	7.588		
5,800.0	5,668.8	5,798.6	5,669.8	24.5	23.2	109.73	993.3	-346.9	353.5	306.9	46.64	7.579		
5,900.0	5,768.6	5,898.1	5,769.2	24.7	23.3	109.71	999.2	-349.1	355.4	308.4	47.00	7.563		
6,000.0	5,868.5	5,997.7	5,868.7	24.8	23.5	109.70	1,001.8	-350.0	356.3	309.0	47.26	7.538		
6,031.5	5,900.0	6,029.0	5,900.0	24.8	23.5	72.02	1,002.0	-350.1	356.3	309.0	47.33	7.529		
6,100.0	5,968.5	6,097.5	5,968.5	24.9	23.6	72.02	1,002.0	-350.1	356.3	308.9	47.48	7.505		
6,174.3	6,042.9	6,171.9	6,042.9	25.0	23.7	72.02	1,002.0	-350.1	356.3	308.7	47.65	7.478		
6,200.0	6,068.5	6,197.5	6,068.5	25.0	23.7	72.09	1,002.0	-350.1	356.2	308.5	47.70	7.467		
6,250.0	6,118.4	6,247.4	6,118.4	25.1	23.8	72.67	1,002.0	-350.1	355.2	307.4	47.77	7.436		
6,300.0	6,168.0	6,291.2	6,162.1	25.3	23.8	73.47	1,003.3	-350.1	353.7	305.9	47.84	7.393		
6,350.0	6,217.0	6,335.2	6,206.0	25.4	24.0	74.34	1,007.1	-350.1	352.2	304.2	47.96	7.342		
6,400.0	6,265.3	6,379.5	6,249.8	25.6	24.1	75.28	1,013.5	-350.1	350.6	302.5	48.15	7.282		
6,450.0	6,312.6	6,424.0	6,293.4	25.9	24.3	76.28	1,022.4	-350.1	349.0	300.7	48.40	7.212		
6,500.0	6,358.8	6,468.9	6,336.8	26.2	24.5	77.34	1,034.0	-350.1	347.5	298.8	48.71	7.134		
6,550.0	6,403.6	6,514.0	6,379.6	26.5	24.8	78.46	1,048.2	-350.1	346.1	297.0	49.11	7.047		
6,600.0	6,446.9	6,559.6	6,421.9	26.9	25.1	79.63	1,065.1	-350.1	344.7	295.1	49.58	6.951		
6,650.0	6,488.4	6,605.5	6,463.5	27.3	25.4	80.86	1,084.6	-350.1	343.4	293.2	50.15	6.848		
6,700.0	6,528.0	6,651.7	6,504.1	27.7	25.8	82.14	1,106.7	-350.1	342.2	291.4	50.80	6.737		
6,750.0	6,565.6	6,698.4	6,543.6	28.2	26.2	83.45	1,131.5	-350.1	341.2	289.7	51.55	6.619		
6,800.0	6,600.9	6,745.6	6,581.9	28.7	26.6	84.81	1,159.0	-350.1	340.4	288.0	52.39	6.497		
6,850.0	6,633.8	6,793.2	6,618.8	29.3	27.1	86.20	1,189.1	-350.1	339.7	286.4	53.33	6.370		
6,900.0	6,664.2	6,841.3	6,654.2	29.9	27.7	87.61	1,221.7	-350.1	339.2	284.9	54.36	6.240		
6,950.0	6,692.0	6,889.9	6,687.7	30.5	28.3	89.04	1,256.9	-350.1	339.0	283.5	55.48	6.110		
6,983.3	6,708.9	6,922.6	6,708.9	30.9	28.7	90.00	1,281.7	-350.1	338.9	282.6	56.28	6.022		
7,000.0	6,716.9	6,939.1	6,719.2	31.1	28.9	90.48	1,294.6	-350.1	338.9	282.2	56.69	5.979		
7,050.0	6,739.0	6,988.8	6,748.6	31.8	29.5	91.93	1,334.7	-350.1	339.1	281.1	57.98	5.849		
7,100.0	6,758.1	7,039.1	6,775.6	32.5	30.2	93.38	1,377.1	-350.1	339.5	280.2	59.35	5.721		
7,150.0	6,774.1	7,089.9	6,800.0	33.2	31.0	94.82	1,421.7	-350.1	340.2	279.4	60.79	5.595		
7,200.0	6,787.0	7,141.4	6,821.7	34.0	31.8	96.24	1,468.5	-350.1	341.0	278.7	62.30	5.474		
7,250.0	6,796.7	7,193.6	6,840.3	34.7	32.6	97.63	1,517.1	-350.1	342.0	278.2	63.86	5.356		
7,300.0	6,803.2	7,246.4	6,855.8	35.5	33.4	99.00	1,567.6	-350.1	343.3	277.8	65.47	5.243		
7,350.0	6,806.4	7,299.8	6,867.8	36.3	34.3	100.32	1,619.6	-350.1	344.6	277.5	67.13	5.134		
7,376.8	6,806.8	7,328.6	6,872.8	36.7	34.8	101.01	1,648.0	-350.1	345.4	277.4	68.04	5.077		
7,400.0	6,806.8	7,353.9	6,876.3	37.1	35.2	101.59	1,673.1	-350.1	346.1	277.4	68.74	5.035		
7,500.0	6,806.4	7,462.8	6,881.9	38.7	37.1	102.56	1,781.7	-350.1	347.2	275.2	72.07	4.818		
7,600.0	6,806.1	7,562.8	6,881.7	40.4	38.8	102.58	1,881.7	-350.1	347.3	271.8	75.47	4.601		
7,700.0	6,805.8	7,662.8	6,881.5	42.0	40.5	102.60	1,981.7	-350.1	347.3	268.4	78.91	4.401		
7,800.0	6,805.5	7,762.8	6,881.4	43.7	42.3	102.62	2,081.7	-350.1	347.3	264.9	82.38	4.216		
7,900.0	6,805.2	7,862.8	6,881.2	45.4	44.0	102.63	2,181.7	-350.1	347.3	261.5	85.87	4.045		
8,000.0	6,804.9	7,962.8	6,881.0	47.2	45.8	102.65	2,281.7	-350.1	347.4	258.0	89.38	3.887		
8,100.0	6,804.6	8,062.8	6,880.8	48.9	47.6	102.67	2,381.7	-350.1	347.4	254.5	92.90	3.739		
8,200.0	6,804.2	8,162.8	6,880.6	50.7	49.4	102.69	2,481.7	-350.1	347.4	251.0	96.45	3.602		
8,300.0	6,803.9	8,262.8	6,880.4	52.4	51.2	102.71	2,581.7	-350.1	347.4	247.4	100.01	3.474		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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							
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	6,803.6	8,362.8	6,880.2	54.2	53.0	102.73	2,681.7	-350.1	347.5	243.9	103.58	3.354	
8,500.0	6,803.3	8,462.8	6,880.0	56.0	54.8	102.75	2,781.7	-350.1	347.5	240.3	107.17	3.243	
8,600.0	6,803.0	8,562.8	6,879.8	57.8	56.7	102.77	2,881.7	-350.1	347.5	236.8	110.77	3.138	
8,700.0	6,802.7	8,662.8	6,879.6	59.6	58.5	102.79	2,981.7	-350.1	347.6	233.2	114.37	3.039	
8,800.0	6,802.4	8,762.8	6,879.4	61.4	60.4	102.81	3,081.7	-350.1	347.6	229.6	117.99	2.946	
8,900.0	6,802.0	8,862.8	6,879.2	63.2	62.2	102.83	3,181.7	-350.1	347.6	226.0	121.61	2.858	
9,000.0	6,801.7	8,962.8	6,879.1	65.0	64.0	102.85	3,281.7	-350.1	347.6	222.4	125.24	2.776	
9,100.0	6,801.4	9,062.8	6,878.9	66.9	65.9	102.87	3,381.7	-350.1	347.7	218.8	128.87	2.698	
9,200.0	6,801.1	9,162.8	6,878.7	68.7	67.8	102.89	3,481.7	-350.1	347.7	215.2	132.51	2.624	
9,300.0	6,800.8	9,262.8	6,878.5	70.5	69.6	102.91	3,581.7	-350.1	347.7	211.6	136.16	2.554	
9,400.0	6,800.5	9,362.8	6,878.3	72.4	71.5	102.93	3,681.7	-350.1	347.7	207.9	139.81	2.487	
9,500.0	6,800.2	9,462.8	6,878.1	74.2	73.4	102.95	3,781.7	-350.1	347.8	204.3	143.47	2.424	
9,600.0	6,799.9	9,562.8	6,877.9	76.1	75.2	102.97	3,881.7	-350.1	347.8	200.7	147.13	2.364	
9,700.0	6,799.6	9,662.8	6,877.7	77.9	77.1	102.99	3,981.7	-350.1	347.8	197.0	150.79	2.307	
9,800.0	6,799.2	9,762.8	6,877.5	79.8	79.0	103.01	4,081.7	-350.1	347.9	193.4	154.46	2.252	
9,900.0	6,798.9	9,862.8	6,877.3	81.6	80.8	103.03	4,181.7	-350.1	347.9	189.8	158.13	2.200	
10,000.0	6,798.6	9,962.8	6,877.1	83.5	82.7	103.05	4,281.7	-350.1	347.9	186.1	161.80	2.150	
10,100.0	6,798.3	10,062.8	6,876.9	85.4	84.6	103.07	4,381.7	-350.1	347.9	182.5	165.48	2.103	
10,200.0	6,798.0	10,162.8	6,876.7	87.2	86.5	103.09	4,481.7	-350.1	348.0	178.8	169.16	2.057	
10,300.0	6,797.6	10,262.8	6,876.6	89.1	88.4	103.11	4,581.7	-350.1	348.0	175.2	172.84	2.013	
10,400.0	6,797.3	10,362.8	6,876.4	91.0	90.3	103.13	4,681.7	-350.1	348.0	171.5	176.52	1.972	
10,500.0	6,797.0	10,462.8	6,876.2	92.8	92.1	103.15	4,781.7	-350.1	348.0	167.8	180.21	1.931	
10,600.0	6,796.7	10,562.8	6,876.0	94.7	94.0	103.16	4,881.7	-350.1	348.1	164.2	183.90	1.893	
10,700.0	6,796.4	10,662.8	6,875.8	96.6	95.9	103.18	4,981.7	-350.1	348.1	160.5	187.58	1.856	
10,800.0	6,796.1	10,762.8	6,875.6	98.5	97.8	103.20	5,081.7	-350.1	348.1	156.9	191.27	1.820	
10,900.0	6,795.8	10,862.8	6,875.4	100.4	99.7	103.22	5,181.7	-350.1	348.2	153.2	194.97	1.786	
11,000.0	6,795.4	10,962.8	6,875.2	102.2	101.6	103.24	5,281.7	-350.1	348.2	149.5	198.66	1.753	
11,100.0	6,795.1	11,062.8	6,875.0	104.1	103.5	103.26	5,381.7	-350.1	348.2	145.9	202.35	1.721	
11,200.0	6,794.8	11,162.8	6,874.8	106.0	105.4	103.28	5,481.7	-350.1	348.2	142.2	206.05	1.690	
11,300.0	6,794.5	11,262.8	6,874.6	107.9	107.3	103.30	5,581.7	-350.1	348.3	138.5	209.74	1.660	
11,400.0	6,794.2	11,362.8	6,874.4	109.8	109.2	103.32	5,681.7	-350.1	348.3	134.9	213.44	1.632	
11,500.0	6,793.9	11,462.8	6,874.3	111.7	111.1	103.34	5,781.7	-350.1	348.3	131.2	217.14	1.604	
11,600.0	6,793.6	11,562.8	6,874.1	113.6	113.0	103.36	5,881.7	-350.1	348.4	127.5	220.84	1.577	
11,700.0	6,793.2	11,662.8	6,873.9	115.4	114.9	103.38	5,981.7	-350.1	348.4	123.8	224.54	1.552	
11,800.0	6,792.9	11,762.8	6,873.7	117.3	116.8	103.40	6,081.7	-350.1	348.4	120.2	228.24	1.527	
11,900.0	6,792.6	11,862.8	6,873.5	119.2	118.7	103.42	6,181.7	-350.1	348.4	116.5	231.94	1.502	
12,000.0	6,792.3	11,962.8	6,873.3	121.1	120.6	103.44	6,281.7	-350.1	348.5	112.8	235.64	1.479 Level 3	
12,100.0	6,792.0	12,062.8	6,873.1	123.0	122.5	103.46	6,381.7	-350.1	348.5	109.2	239.34	1.456 Level 3	
12,200.0	6,791.7	12,162.8	6,872.9	124.9	124.4	103.48	6,481.7	-350.1	348.5	105.5	243.04	1.434 Level 3	
12,300.0	6,791.4	12,262.8	6,872.7	126.8	126.3	103.50	6,581.7	-350.1	348.6	101.8	246.75	1.413 Level 3	
12,400.0	6,791.0	12,362.8	6,872.5	128.7	128.2	103.52	6,681.7	-350.1	348.6	98.1	250.45	1.392 Level 3	
12,500.0	6,790.7	12,462.8	6,872.3	130.6	130.1	103.54	6,781.7	-350.1	348.6	94.5	254.15	1.372 Level 3	
12,600.0	6,790.4	12,562.8	6,872.1	132.5	132.0	103.56	6,881.7	-350.1	348.6	90.8	257.86	1.352 Level 3	
12,700.0	6,790.1	12,662.8	6,871.9	134.4	133.9	103.58	6,981.7	-350.1	348.7	87.1	261.56	1.333 Level 3	
12,800.0	6,789.8	12,762.8	6,871.8	136.3	135.8	103.59	7,081.7	-350.1	348.7	83.4	265.27	1.315 Level 3	
12,900.0	6,789.5	12,862.8	6,871.6	138.2	137.7	103.61	7,181.7	-350.1	348.7	79.8	268.97	1.297 Level 3	
13,000.0	6,789.2	12,962.8	6,871.4	140.1	139.6	103.63	7,281.7	-350.1	348.8	76.1	272.67	1.279 Level 3	
13,100.0	6,788.9	13,062.8	6,871.2	142.0	141.5	103.65	7,381.7	-350.1	348.8	72.4	276.38	1.262 Level 3	
13,200.0	6,788.5	13,162.8	6,871.0	143.9	143.4	103.67	7,481.7	-350.1	348.8	68.7	280.08	1.245 Level 2	
13,300.0	6,788.2	13,262.8	6,870.8	145.8	145.3	103.69	7,581.7	-350.1	348.8	65.1	283.79	1.229 Level 2	
13,400.0	6,787.9	13,362.8	6,870.6	147.7	147.2	103.71	7,681.7	-350.1	348.9	61.4	287.49	1.213 Level 2	

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

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Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23D-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		
13,500.0	6,787.6	13,462.8	6,870.4	149.6	149.1	103.73	7,781.7	-350.1	348.9	57.7	291.20	1.198	Level 2	
13,600.0	6,787.3	13,562.8	6,870.2	151.5	151.1	103.75	7,881.7	-350.1	348.9	54.0	294.90	1.183	Level 2	
13,700.0	6,787.0	13,662.8	6,870.0	153.4	153.0	103.77	7,981.7	-350.1	349.0	50.4	298.61	1.169	Level 2	
13,800.0	6,786.7	13,762.8	6,869.8	155.3	154.9	103.79	8,081.7	-350.1	349.0	46.7	302.31	1.154	Level 2	
13,900.0	6,786.3	13,862.8	6,869.6	157.2	156.8	103.81	8,181.7	-350.1	349.0	43.0	306.02	1.141	Level 2	
14,000.0	6,786.0	13,962.8	6,869.5	159.1	158.7	103.83	8,281.7	-350.1	349.0	39.3	309.72	1.127	Level 2	
14,100.0	6,785.7	14,062.8	6,869.3	161.0	160.6	103.85	8,381.7	-350.1	349.1	35.6	313.43	1.114	Level 2	
14,200.0	6,785.4	14,162.8	6,869.1	162.9	162.5	103.87	8,481.7	-350.1	349.1	32.0	317.13	1.101	Level 2	
14,300.0	6,785.1	14,262.8	6,868.9	164.8	164.4	103.89	8,581.7	-350.1	349.1	28.3	320.83	1.088	Level 2	
14,400.0	6,784.8	14,362.8	6,868.7	166.7	166.3	103.91	8,681.7	-350.1	349.2	24.6	324.54	1.076	Level 2	
14,500.0	6,784.5	14,462.8	6,868.5	168.6	168.2	103.93	8,781.7	-350.1	349.2	20.9	328.24	1.064	Level 2	
14,600.0	6,784.1	14,562.8	6,868.3	170.5	170.1	103.95	8,881.7	-350.1	349.2	17.3	331.95	1.052	Level 2	
14,700.0	6,783.8	14,662.8	6,868.1	172.4	172.1	103.96	8,981.7	-350.1	349.3	13.6	335.65	1.041	Level 2	
14,800.0	6,783.5	14,762.8	6,867.9	174.4	174.0	103.98	9,081.7	-350.1	349.3	9.9	339.35	1.029	Level 2	
14,900.0	6,783.2	14,862.8	6,867.7	176.3	175.9	104.00	9,181.7	-350.1	349.3	6.3	343.06	1.018	Level 2	
15,000.0	6,782.9	14,962.8	6,867.5	178.2	177.8	104.02	9,281.7	-350.1	349.3	2.6	346.76	1.007	Level 2	
15,100.0	6,782.6	15,062.8	6,867.3	180.1	179.7	104.04	9,381.7	-350.1	349.4	-1.1	350.46	0.997	Level 1	
15,200.0	6,782.3	15,162.8	6,867.1	182.0	181.6	104.06	9,481.7	-350.1	349.4	-4.8	354.16	0.987	Level 1	
15,245.6	6,782.1	15,208.4	6,867.1	182.9	182.5	104.07	9,527.3	-350.1	349.4	-6.4	355.85	0.982	Level 1	
15,280.6	6,782.0	15,239.9	6,867.0	183.5	183.1	104.08	9,558.8	-350.1	349.4	-7.6	357.08	0.979	Level 1, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	90.46	-0.4	45.1	45.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.46	-0.4	45.1	45.1	44.9	0.22	200.809	
200.0	200.0	200.0	200.0	0.3	0.3	90.46	-0.4	45.1	45.1	44.5	0.67	66.936	
300.0	300.0	300.0	300.0	0.6	0.6	90.46	-0.4	45.1	45.1	44.0	1.12	40.162	
400.0	400.0	400.0	400.0	0.8	0.8	90.46	-0.4	45.1	45.1	43.6	1.57	28.687	
500.0	500.0	500.0	500.0	1.0	1.0	90.46	-0.4	45.1	45.1	43.1	2.02	22.312	
600.0	600.0	600.0	600.0	1.2	1.2	90.46	-0.4	45.1	45.1	42.7	2.47	18.255 CC, ES	
700.0	700.0	700.0	700.0	1.5	1.5	129.42	-0.4	45.1	46.0	43.0	2.92	15.739	
800.0	799.9	799.9	799.9	1.7	1.7	132.97	-0.4	45.1	48.5	45.2	3.37	14.418	
900.0	899.7	899.7	899.7	1.9	1.9	138.08	-0.4	45.1	53.2	49.4	3.82	13.941 SF	
1,000.0	999.3	999.3	999.3	2.2	2.1	143.82	-0.4	45.1	60.3	56.1	4.27	14.127	
1,100.0	1,098.6	1,098.6	1,098.6	2.4	2.4	148.72	0.4	45.4	70.1	65.4	4.73	14.841	
1,200.0	1,197.5	1,197.9	1,197.8	2.7	2.6	152.02	2.9	46.2	82.5	77.3	5.18	15.911	
1,300.0	1,296.1	1,296.9	1,296.8	3.0	2.8	154.09	6.9	47.6	97.1	91.4	5.64	17.203	
1,400.0	1,394.2	1,395.8	1,395.5	3.4	3.0	155.28	12.6	49.5	113.8	107.7	6.11	18.632	
1,500.0	1,491.7	1,494.3	1,493.7	3.8	3.3	155.85	19.9	51.9	132.7	126.1	6.59	20.138	
1,543.4	1,533.9	1,537.0	1,536.3	4.0	3.4	155.97	23.5	53.1	141.5	134.7	6.80	20.803	
1,600.0	1,588.7	1,592.7	1,591.6	4.2	3.5	156.03	28.7	54.8	153.2	146.1	7.09	21.604	
1,700.0	1,685.7	1,691.0	1,689.4	4.7	3.7	155.67	39.1	58.3	173.7	166.0	7.62	22.778	
1,800.0	1,782.7	1,789.5	1,787.0	5.1	4.0	154.89	51.2	62.3	193.8	185.7	8.19	23.681	
1,900.0	1,879.6	1,887.9	1,884.4	5.6	4.3	153.80	64.8	66.9	213.8	205.0	8.78	24.354	
2,000.0	1,976.6	1,986.4	1,981.5	6.1	4.6	152.48	80.0	71.9	233.6	224.2	9.41	24.832	
2,100.0	2,073.5	2,084.6	2,078.2	6.6	4.9	150.98	96.7	77.5	253.3	243.3	10.08	25.144	
2,200.0	2,170.5	2,182.8	2,174.4	7.1	5.2	149.34	115.0	83.6	273.1	262.3	10.79	25.321	
2,300.0	2,267.5	2,280.7	2,270.0	7.6	5.6	147.60	134.9	90.2	293.0	281.4	11.54	25.392	
2,400.0	2,364.4	2,378.3	2,365.0	8.1	6.0	145.77	156.1	97.3	313.0	300.7	12.33	25.379	
2,500.0	2,461.4	2,475.6	2,459.3	8.6	6.4	143.87	178.9	104.9	333.4	320.3	13.18	25.307	
2,600.0	2,558.4	2,572.5	2,552.8	9.1	6.8	141.93	203.1	113.0	354.2	340.2	14.06	25.195	
2,700.0	2,655.3	2,668.9	2,645.4	9.6	7.3	139.96	228.6	121.5	375.5	360.5	14.98	25.061	
2,800.0	2,752.3	2,764.9	2,737.1	10.1	7.8	137.98	255.5	130.4	397.4	381.4	15.95	24.920	
2,900.0	2,849.3	2,860.9	2,828.4	10.6	8.3	136.00	283.6	139.8	419.9	403.0	16.94	24.786	
3,000.0	2,946.2	2,957.3	2,920.0	11.1	8.8	134.20	312.0	149.3	442.9	425.0	17.95	24.674	
3,100.0	3,043.2	3,053.7	3,011.7	11.6	9.4	132.57	340.4	158.8	466.3	447.3	18.96	24.590	
3,200.0	3,140.2	3,150.1	3,103.3	12.1	9.9	131.09	368.9	168.2	490.0	470.0	19.98	24.528	
3,300.0	3,237.1	3,246.5	3,194.9	12.6	10.5	129.75	397.3	177.7	514.0	493.0	20.99	24.484	
3,400.0	3,334.1	3,342.9	3,286.6	13.1	11.0	128.53	425.7	187.2	538.2	516.2	22.01	24.456	
3,500.0	3,431.1	3,439.3	3,378.2	13.6	11.6	127.41	454.1	196.7	562.7	539.6	23.02	24.440	
3,600.0	3,528.0	3,535.7	3,469.8	14.2	12.1	126.39	482.5	206.1	587.3	563.2	24.04	24.433	
3,700.0	3,625.0	3,632.1	3,561.4	14.7	12.7	125.45	510.9	215.6	612.1	587.0	25.05	24.435	
3,800.0	3,722.0	3,728.5	3,653.1	15.2	13.3	124.58	539.3	225.1	637.0	611.0	26.06	24.443	
3,900.0	3,818.9	3,824.9	3,744.7	15.7	13.8	123.77	567.8	234.6	662.1	635.0	27.07	24.457	
4,000.0	3,915.9	3,921.3	3,836.3	16.2	14.4	123.03	596.2	244.0	687.3	659.2	28.08	24.474	
4,100.0	4,012.9	4,017.7	3,928.0	16.7	15.0	122.33	624.6	253.5	712.6	683.5	29.09	24.495	
4,200.0	4,109.8	4,114.1	4,019.6	17.2	15.6	121.69	653.0	263.0	737.9	707.8	30.10	24.519	
4,300.0	4,206.8	4,210.5	4,111.2	17.8	16.1	121.08	681.4	272.4	763.4	732.3	31.10	24.544	
4,400.0	4,303.7	4,306.9	4,202.8	18.3	16.7	120.52	709.8	281.9	788.9	756.8	32.11	24.571	
4,500.0	4,400.7	4,403.3	4,294.5	18.8	17.3	119.99	738.3	291.4	814.5	781.4	33.11	24.600	
4,600.0	4,497.7	4,499.7	4,386.1	19.3	17.9	119.49	766.7	300.9	840.2	806.1	34.11	24.629	
4,700.0	4,594.6	4,596.1	4,477.7	19.8	18.5	119.02	795.1	310.3	865.9	830.8	35.12	24.658	
4,800.0	4,691.6	4,692.5	4,569.4	20.3	19.1	118.58	823.5	319.8	891.7	855.6	36.12	24.688	
4,900.0	4,788.6	4,788.9	4,661.0	20.8	19.6	118.17	851.9	329.3	917.5	880.4	37.12	24.718	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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 (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	4,885.5	4,885.3	4,752.6	21.4	20.2	117.77	880.3	338.8	943.3	905.2	38.12	24.749	
5,100.0	4,982.5	4,981.7	4,844.2	21.9	20.8	117.40	908.8	348.2	969.2	930.1	39.12	24.779	
5,200.0	5,079.5	5,078.1	4,935.9	22.4	21.4	117.05	937.2	357.7	995.2	955.1	40.11	24.809	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	-89.31	0.4	-30.1	30.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.31	0.4	-30.1	30.1	29.9	0.22	133.878		
200.0	200.0	200.0	200.0	0.3	0.3	-89.31	0.4	-30.1	30.1	29.4	0.67	44.626 CC, ES		
300.0	300.0	299.3	299.3	0.6	0.6	-87.95	1.1	-31.1	31.2	30.0	1.12	27.853		
400.0	400.0	398.5	398.4	0.8	0.8	-84.41	3.4	-34.3	34.5	32.9	1.57	21.993		
500.0	500.0	497.5	497.2	1.0	1.0	-79.85	7.1	-39.5	40.3	38.2	2.02	19.901		
600.0	600.0	596.0	595.3	1.2	1.3	-75.33	12.2	-46.8	48.6	46.1	2.48	19.580		
700.0	700.0	694.2	692.8	1.5	1.6	-73.36	18.9	-56.1	58.6	55.6	2.93	19.996		
800.0	799.9	792.0	789.7	1.7	1.9	-72.59	26.9	-67.4	68.9	65.5	3.38	20.352		
900.0	899.7	889.6	885.9	1.9	2.2	-71.79	36.3	-80.7	79.5	75.7	3.85	20.648		
1,000.0	999.3	987.0	981.4	2.2	2.6	-71.61	47.2	-95.9	90.4	86.0	4.33	20.877		
1,100.0	1,098.6	1,084.0	1,076.1	2.4	3.0	-71.84	59.4	-113.1	101.5	96.6	4.82	21.035		
1,200.0	1,197.5	1,180.7	1,170.0	2.7	3.5	-72.37	72.9	-132.1	112.8	107.5	5.34	21.119		
1,300.0	1,296.1	1,277.2	1,262.9	3.0	4.0	-73.10	87.8	-153.1	124.4	118.5	5.89	21.126		
1,400.0	1,394.2	1,373.3	1,354.9	3.4	4.5	-73.98	104.0	-175.8	136.2	129.7	6.46	21.065		
1,500.0	1,491.7	1,470.1	1,446.9	3.8	5.1	-74.99	121.6	-200.5	148.2	141.1	7.09	20.890		
1,543.4	1,533.9	1,513.2	1,487.7	4.0	5.4	-75.53	129.5	-211.8	153.0	145.6	7.39	20.719		
1,600.0	1,588.7	1,569.4	1,541.0	4.2	5.7	-76.30	140.0	-226.4	159.1	151.3	7.78	20.440		
1,700.0	1,685.7	1,668.8	1,635.1	4.7	6.4	-77.53	158.4	-252.3	169.9	161.4	8.51	19.963		
1,800.0	1,782.7	1,768.1	1,729.3	5.1	7.0	-78.61	176.8	-278.2	180.7	171.5	9.26	19.513		
1,900.0	1,879.6	1,867.5	1,823.4	5.6	7.7	-79.57	195.2	-304.1	191.6	181.6	10.04	19.093		
2,000.0	1,976.6	1,966.9	1,917.5	6.1	8.3	-80.42	213.6	-330.0	202.6	191.8	10.83	18.706		
2,100.0	2,073.5	2,066.2	2,011.7	6.6	9.0	-81.19	232.0	-355.9	213.6	202.0	11.64	18.351		
2,200.0	2,170.5	2,165.6	2,105.8	7.1	9.6	-81.88	250.4	-381.7	224.6	212.2	12.46	18.025		
2,300.0	2,267.5	2,264.9	2,200.0	7.6	10.3	-82.51	268.8	-407.6	235.7	222.4	13.30	17.727		
2,400.0	2,364.4	2,364.3	2,294.1	8.1	11.0	-83.08	287.2	-433.5	246.8	232.6	14.14	17.453		
2,500.0	2,461.4	2,463.6	2,388.2	8.6	11.6	-83.60	305.6	-459.4	257.9	242.9	14.99	17.203		
2,600.0	2,558.4	2,563.0	2,482.4	9.1	12.3	-84.08	324.0	-485.3	269.0	253.2	15.85	16.972		
2,700.0	2,655.3	2,662.3	2,576.5	9.6	12.9	-84.52	342.4	-511.2	280.2	263.4	16.72	16.760		
2,800.0	2,752.3	2,761.7	2,670.7	10.1	13.6	-84.93	360.9	-537.1	291.3	273.7	17.59	16.565		
2,900.0	2,849.3	2,861.0	2,764.8	10.6	14.3	-85.31	379.3	-563.0	302.5	284.0	18.46	16.384		
3,000.0	2,946.2	2,960.4	2,858.9	11.1	14.9	-85.66	397.7	-588.9	313.7	294.3	19.34	16.217		
3,100.0	3,043.2	3,059.8	2,953.1	11.6	15.6	-85.99	416.1	-614.8	324.9	304.6	20.23	16.062		
3,200.0	3,140.2	3,159.1	3,047.2	12.1	16.3	-86.29	434.5	-640.6	336.1	315.0	21.11	15.918		
3,300.0	3,237.1	3,258.5	3,141.3	12.6	16.9	-86.57	452.9	-666.5	347.3	325.3	22.00	15.783		
3,400.0	3,334.1	3,357.8	3,235.5	13.1	17.6	-86.84	471.3	-692.4	358.5	335.6	22.90	15.658		
3,500.0	3,431.1	3,457.2	3,329.6	13.6	18.3	-87.09	489.7	-718.3	369.8	346.0	23.79	15.541		
3,600.0	3,528.0	3,556.5	3,423.8	14.2	18.9	-87.33	508.1	-744.2	381.0	356.3	24.69	15.431		
3,700.0	3,625.0	3,655.9	3,517.9	14.7	19.6	-87.55	526.5	-770.1	392.2	366.6	25.59	15.327		
3,800.0	3,722.0	3,755.2	3,612.0	15.2	20.2	-87.76	544.9	-796.0	403.5	377.0	26.49	15.230		
3,900.0	3,818.9	3,854.6	3,706.2	15.7	20.9	-87.96	563.3	-821.9	414.7	387.3	27.40	15.139		
4,000.0	3,915.9	3,953.9	3,800.3	16.2	21.6	-88.15	581.8	-847.8	426.0	397.7	28.30	15.053		
4,100.0	4,012.9	4,053.3	3,894.5	16.7	22.2	-88.33	600.2	-873.6	437.3	408.1	29.21	14.972		
4,200.0	4,109.8	4,152.7	3,988.6	17.2	22.9	-88.50	618.6	-899.5	448.5	418.4	30.11	14.895		
4,300.0	4,206.8	4,252.0	4,082.7	17.8	23.6	-88.66	637.0	-925.4	459.8	428.8	31.02	14.822		
4,400.0	4,303.7	4,351.4	4,176.9	18.3	24.2	-88.81	655.4	-951.3	471.1	439.1	31.93	14.752		
4,500.0	4,400.7	4,450.7	4,271.0	18.8	24.9	-88.96	673.8	-977.2	482.3	449.5	32.84	14.687		
4,600.0	4,497.7	4,550.1	4,365.2	19.3	25.6	-89.10	692.2	-1,003.1	493.6	459.9	33.75	14.624		
4,700.0	4,594.6	4,649.4	4,459.3	19.8	26.2	-89.23	710.6	-1,029.0	504.9	470.2	34.67	14.565		
4,800.0	4,691.6	4,748.8	4,553.4	20.3	26.9	-89.36	729.0	-1,054.9	516.2	480.6	35.58	14.508		
4,900.0	4,788.6	4,848.1	4,647.6	20.8	27.6	-89.48	747.4	-1,080.8	527.5	491.0	36.49	14.454		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)													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	4,885.5	4,947.5	4,741.7	21.4	28.2	-49.60	765.8	-1,106.7	538.8	501.4	37.41	14.402		
5,100.0	4,982.5	5,046.9	4,835.9	21.9	28.9	-49.71	784.2	-1,132.5	550.1	511.7	38.32	14.353		
5,200.0	5,079.5	5,146.2	4,930.0	22.4	29.6	-49.82	802.7	-1,158.4	561.4	522.1	39.24	14.306		
5,300.0	5,176.4	5,254.0	5,032.3	22.9	30.3	-49.95	822.4	-1,186.2	572.3	532.2	40.18	14.243		
5,323.9	5,199.6	5,282.5	5,059.5	23.0	30.4	-50.02	827.3	-1,193.1	574.6	534.2	40.43	14.213		
5,400.0	5,273.6	5,373.6	5,147.0	23.4	30.9	-50.33	842.0	-1,213.7	581.1	540.0	41.13	14.130		
5,500.0	5,371.6	5,493.6	5,263.4	23.7	31.4	-50.69	858.9	-1,237.5	588.6	546.7	41.91	14.044		
5,600.0	5,470.2	5,613.9	5,381.2	24.0	31.8	-50.98	872.9	-1,257.2	594.8	552.2	42.58	13.968		
5,700.0	5,569.3	5,734.5	5,500.3	24.3	32.1	-51.20	884.1	-1,273.0	599.7	556.6	43.14	13.901		
5,800.0	5,668.8	5,855.4	5,620.3	24.5	32.4	-51.37	892.4	-1,284.7	603.4	559.8	43.60	13.840		
5,900.0	5,768.6	5,976.4	5,740.9	24.7	32.6	-51.48	897.8	-1,292.2	605.8	561.8	43.94	13.785		
6,000.0	5,868.5	6,097.5	5,861.9	24.8	32.8	-51.52	900.2	-1,295.6	606.8	562.7	44.18	13.735		
6,031.5	5,900.0	6,135.6	5,900.0	24.8	32.8	-89.21	900.4	-1,295.8	606.9	562.7	44.24	13.720		
6,100.0	5,968.5	6,204.1	5,968.5	24.9	32.8	-89.21	900.4	-1,295.8	606.9	562.5	44.39	13.671		
6,174.3	6,042.9	6,278.5	6,042.9	25.0	32.9	-89.21	900.4	-1,295.8	606.9	562.3	44.57	13.615		
6,200.0	6,068.5	6,303.9	6,068.4	25.0	32.9	-89.24	900.5	-1,295.8	606.9	562.2	44.66	13.589		
6,250.0	6,118.4	6,353.4	6,117.8	25.1	33.0	-89.30	903.1	-1,295.8	606.9	562.0	44.89	13.519		
6,300.0	6,168.0	6,403.0	6,167.0	25.3	33.1	-89.37	909.0	-1,295.8	606.9	561.7	45.21	13.423		
6,350.0	6,217.0	6,452.6	6,215.7	25.4	33.2	-89.43	918.0	-1,295.8	606.9	561.3	45.62	13.303		
6,400.0	6,265.3	6,502.2	6,263.8	25.6	33.4	-89.51	930.1	-1,295.8	606.9	560.8	46.11	13.161		
6,450.0	6,312.6	6,551.9	6,311.1	25.9	33.6	-89.58	945.4	-1,295.8	606.9	560.2	46.69	12.998		
6,500.0	6,358.8	6,601.6	6,357.3	26.2	33.8	-89.65	963.7	-1,295.8	606.9	559.5	47.35	12.816		
6,550.0	6,403.6	6,651.4	6,402.3	26.5	34.0	-89.73	985.0	-1,295.8	606.9	558.8	48.09	12.618		
6,600.0	6,446.9	6,701.2	6,445.8	26.9	34.3	-89.81	1,009.3	-1,295.8	606.8	557.9	48.92	12.405		
6,650.0	6,488.4	6,751.1	6,487.7	27.3	34.6	-89.89	1,036.3	-1,295.8	606.8	557.0	49.83	12.179		
6,700.0	6,528.0	6,801.0	6,527.8	27.7	34.9	-89.97	1,066.1	-1,295.8	606.8	556.0	50.81	11.943		
6,720.6	6,543.7	6,821.6	6,543.8	27.9	35.1	-90.00	1,079.1	-1,295.8	606.8	555.6	51.25	11.841		
6,750.0	6,565.6	6,851.0	6,565.9	28.2	35.3	-90.05	1,098.4	-1,295.8	606.8	555.0	51.88	11.698		
6,800.0	6,600.9	6,901.1	6,601.9	28.7	35.7	-90.13	1,133.3	-1,295.8	606.8	553.8	53.01	11.447		
6,850.0	6,633.8	6,951.2	6,635.5	29.3	36.1	-90.21	1,170.4	-1,295.8	606.8	552.6	54.22	11.193		
6,900.0	6,664.2	7,001.4	6,666.7	29.9	36.6	-90.28	1,209.7	-1,295.8	606.9	551.4	55.49	10.936		
6,950.0	6,692.0	7,051.6	6,695.2	30.5	37.1	-90.36	1,251.0	-1,295.8	606.9	550.0	56.83	10.678		
7,000.0	6,716.9	7,101.9	6,721.0	31.1	37.6	-90.44	1,294.2	-1,295.8	606.9	548.6	58.23	10.422		
7,050.0	6,739.0	7,152.2	6,743.9	31.8	38.1	-90.51	1,338.9	-1,295.8	606.9	547.2	59.68	10.169		
7,100.0	6,758.1	7,202.6	6,763.8	32.5	38.7	-90.58	1,385.2	-1,295.8	606.9	545.7	61.17	9.920		
7,150.0	6,774.1	7,253.0	6,780.7	33.2	39.3	-90.65	1,432.7	-1,295.8	606.9	544.2	62.71	9.677		
7,200.0	6,787.0	7,303.5	6,794.4	34.0	39.9	-90.72	1,481.3	-1,295.8	606.9	542.6	64.29	9.440		
7,250.0	6,796.7	7,354.0	6,804.9	34.7	40.6	-90.78	1,530.7	-1,295.8	606.9	541.0	65.89	9.211		
7,300.0	6,803.2	7,404.5	6,812.1	35.5	41.2	-90.84	1,580.7	-1,295.8	606.9	539.4	67.52	8.989		
7,350.0	6,806.4	7,455.2	6,815.9	36.3	41.9	-90.90	1,631.2	-1,295.8	606.9	537.8	69.15	8.776		
7,376.8	6,806.8	7,482.2	6,816.6	36.7	42.3	-90.93	1,658.3	-1,295.8	606.9	536.9	70.03	8.666		
7,400.0	6,806.8	7,505.6	6,816.6	37.1	42.6	-90.93	1,681.6	-1,295.8	606.9	536.1	70.82	8.570		
7,500.0	6,806.4	7,605.6	6,816.5	38.7	44.0	-90.95	1,781.6	-1,295.8	606.9	532.7	74.20	8.180		
7,600.0	6,806.1	7,705.6	6,816.4	40.4	45.4	-90.97	1,881.6	-1,295.8	606.9	529.3	77.62	7.820		
7,700.0	6,805.8	7,805.6	6,816.3	42.0	46.9	-90.99	1,981.6	-1,295.8	606.9	525.9	81.08	7.486		
7,800.0	6,805.5	7,905.6	6,816.1	43.7	48.4	-91.00	2,081.6	-1,295.8	606.9	522.4	84.57	7.177		
7,900.0	6,805.2	8,005.6	6,816.0	45.4	50.0	-91.02	2,181.6	-1,295.8	606.9	518.9	88.09	6.890		
8,000.0	6,804.9	8,105.6	6,815.9	47.2	51.5	-91.04	2,281.6	-1,295.8	606.9	515.3	91.64	6.623		
8,100.0	6,804.6	8,205.6	6,815.8	48.9	53.1	-91.06	2,381.6	-1,295.8	606.9	511.7	95.20	6.375		
8,200.0	6,804.2	8,305.6	6,815.7	50.7	54.7	-91.08	2,481.6	-1,295.8	607.0	508.2	98.79	6.144		
8,300.0	6,803.9	8,405.6	6,815.5	52.4	56.3	-91.10	2,581.6	-1,295.8	607.0	504.6	102.40	5.927		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)													
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	6,803.6	8,505.6	6,815.4	54.2	58.0	-91.11	2,681.6	-1,295.8	607.0	500.9	106.02	5.725	
8,500.0	6,803.3	8,605.6	6,815.3	56.0	59.7	-91.13	2,781.6	-1,295.8	607.0	497.3	109.66	5.535	
8,600.0	6,803.0	8,705.6	6,815.2	57.8	61.3	-91.15	2,881.6	-1,295.8	607.0	493.7	113.31	5.357	
8,700.0	6,802.7	8,805.6	6,815.0	59.6	63.0	-91.17	2,981.6	-1,295.8	607.0	490.0	116.97	5.189	
8,800.0	6,802.4	8,905.6	6,814.9	61.4	64.7	-91.19	3,081.6	-1,295.8	607.0	486.3	120.65	5.031	
8,900.0	6,802.0	9,005.6	6,814.8	63.2	66.5	-91.20	3,181.6	-1,295.8	607.0	482.6	124.33	4.882	
9,000.0	6,801.7	9,105.6	6,814.7	65.0	68.2	-91.22	3,281.6	-1,295.8	607.0	479.0	128.02	4.741	
9,100.0	6,801.4	9,205.6	6,814.6	66.9	69.9	-91.24	3,381.6	-1,295.8	607.0	475.3	131.72	4.608	
9,200.0	6,801.1	9,305.6	6,814.4	68.7	71.7	-91.26	3,481.6	-1,295.8	607.0	471.6	135.43	4.482	
9,300.0	6,800.8	9,405.6	6,814.3	70.5	73.4	-91.28	3,581.6	-1,295.8	607.0	467.8	139.15	4.362	
9,400.0	6,800.5	9,505.6	6,814.2	72.4	75.2	-91.29	3,681.6	-1,295.8	607.0	464.1	142.87	4.249	
9,500.0	6,800.2	9,605.6	6,814.1	74.2	77.0	-91.31	3,781.6	-1,295.8	607.0	460.4	146.59	4.141	
9,600.0	6,799.8	9,705.6	6,813.9	76.1	78.7	-91.33	3,881.6	-1,295.8	607.0	456.7	150.33	4.038	
9,700.0	6,799.5	9,805.6	6,813.8	77.9	80.5	-91.35	3,981.6	-1,295.8	607.0	452.9	154.07	3.940	
9,800.0	6,799.2	9,905.6	6,813.7	79.8	82.3	-91.37	4,081.6	-1,295.8	607.0	449.2	157.81	3.847	
9,900.0	6,798.9	10,005.6	6,813.6	81.6	84.1	-91.39	4,181.6	-1,295.8	607.0	445.5	161.55	3.757	
10,000.0	6,798.6	10,105.6	6,813.5	83.5	85.9	-91.40	4,281.6	-1,295.8	607.0	441.7	165.31	3.672	
10,100.0	6,798.3	10,205.6	6,813.3	85.4	87.7	-91.42	4,381.6	-1,295.8	607.0	438.0	169.06	3.591	
10,200.0	6,798.0	10,305.6	6,813.2	87.2	89.6	-91.44	4,481.6	-1,295.8	607.0	434.2	172.82	3.513	
10,300.0	6,797.6	10,405.6	6,813.1	89.1	91.4	-91.46	4,581.6	-1,295.8	607.0	430.5	176.58	3.438	
10,400.0	6,797.3	10,505.6	6,813.0	91.0	93.2	-91.48	4,681.6	-1,295.8	607.0	426.7	180.35	3.366	
10,500.0	6,797.0	10,605.6	6,812.8	92.8	95.0	-91.49	4,781.6	-1,295.8	607.0	422.9	184.11	3.297	
10,600.0	6,796.7	10,705.6	6,812.7	94.7	96.9	-91.51	4,881.6	-1,295.8	607.1	419.2	187.88	3.231	
10,700.0	6,796.4	10,805.6	6,812.6	96.6	98.7	-91.53	4,981.6	-1,295.8	607.1	415.4	191.66	3.167	
10,800.0	6,796.1	10,905.6	6,812.5	98.5	100.5	-91.55	5,081.6	-1,295.8	607.1	411.6	195.43	3.106	
10,900.0	6,795.8	11,005.6	6,812.4	100.4	102.4	-91.57	5,181.6	-1,295.8	607.1	407.9	199.21	3.047	
11,000.0	6,795.4	11,105.6	6,812.2	102.2	104.2	-91.58	5,281.6	-1,295.8	607.1	404.1	202.99	2.991	
11,100.0	6,795.1	11,205.6	6,812.1	104.1	106.0	-91.60	5,381.6	-1,295.8	607.1	400.3	206.77	2.936	
11,200.0	6,794.8	11,305.6	6,812.0	106.0	107.9	-91.62	5,481.6	-1,295.8	607.1	396.5	210.55	2.883	
11,300.0	6,794.5	11,405.6	6,811.9	107.9	109.7	-91.64	5,581.6	-1,295.8	607.1	392.8	214.34	2.832	
11,400.0	6,794.2	11,505.6	6,811.7	109.8	111.6	-91.66	5,681.6	-1,295.8	607.1	389.0	218.13	2.783	
11,500.0	6,793.9	11,605.6	6,811.6	111.7	113.5	-91.68	5,781.6	-1,295.8	607.1	385.2	221.91	2.736	
11,600.0	6,793.6	11,705.6	6,811.5	113.6	115.3	-91.69	5,881.6	-1,295.8	607.1	381.4	225.70	2.690	
11,700.0	6,793.2	11,805.6	6,811.4	115.4	117.2	-91.71	5,981.6	-1,295.8	607.1	377.6	229.50	2.645	
11,800.0	6,792.9	11,905.6	6,811.3	117.3	119.0	-91.73	6,081.6	-1,295.8	607.1	373.8	233.29	2.602	
11,900.0	6,792.6	12,005.6	6,811.1	119.2	120.9	-91.75	6,181.6	-1,295.8	607.1	370.0	237.08	2.561	
12,000.0	6,792.3	12,105.6	6,811.0	121.1	122.8	-91.77	6,281.6	-1,295.8	607.1	366.3	240.88	2.520	
12,100.0	6,792.0	12,205.6	6,810.9	123.0	124.6	-91.78	6,381.6	-1,295.8	607.1	362.5	244.67	2.481	
12,200.0	6,791.7	12,305.6	6,810.8	124.9	126.5	-91.80	6,481.6	-1,295.8	607.1	358.7	248.47	2.443	
12,300.0	6,791.4	12,405.6	6,810.6	126.8	128.4	-91.82	6,581.6	-1,295.8	607.1	354.9	252.27	2.407	
12,400.0	6,791.0	12,505.6	6,810.5	128.7	130.2	-91.84	6,681.6	-1,295.8	607.2	351.1	256.07	2.371	
12,500.0	6,790.7	12,605.6	6,810.4	130.6	132.1	-91.86	6,781.6	-1,295.8	607.2	347.3	259.87	2.336	
12,600.0	6,790.4	12,705.6	6,810.3	132.5	134.0	-91.87	6,881.6	-1,295.8	607.2	343.5	263.67	2.303	
12,700.0	6,790.1	12,805.6	6,810.2	134.4	135.9	-91.89	6,981.6	-1,295.8	607.2	339.7	267.48	2.270	
12,800.0	6,789.8	12,905.6	6,810.0	136.3	137.7	-91.91	7,081.6	-1,295.8	607.2	335.9	271.28	2.238	
12,900.0	6,789.5	13,005.6	6,809.9	138.2	139.6	-91.93	7,181.6	-1,295.8	607.2	332.1	275.08	2.207	
13,000.0	6,789.2	13,105.6	6,809.8	140.1	141.5	-91.95	7,281.6	-1,295.8	607.2	328.3	278.89	2.177	
13,100.0	6,788.9	13,205.6	6,809.7	142.0	143.4	-91.96	7,381.6	-1,295.8	607.2	324.5	282.69	2.148	
13,200.0	6,788.5	13,305.6	6,809.5	143.9	145.3	-91.98	7,481.6	-1,295.8	607.2	320.7	286.50	2.119	
13,300.0	6,788.2	13,405.6	6,809.4	145.8	147.1	-92.00	7,581.6	-1,295.8	607.2	316.9	290.31	2.092	
13,400.0	6,787.9	13,505.6	6,809.3	147.7	149.0	-92.02	7,681.6	-1,295.8	607.2	313.1	294.11	2.065	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)													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		
13,500.0	6,787.6	13,605.6	6,809.2	149.6	150.9	-92.04	7,781.6	-1,295.8	607.2	309.3	297.92	2.038		
13,600.0	6,787.3	13,705.6	6,809.1	151.5	152.8	-92.06	7,881.6	-1,295.8	607.2	305.5	301.73	2.012		
13,700.0	6,787.0	13,805.6	6,808.9	153.4	154.7	-92.07	7,981.6	-1,295.8	607.2	301.7	305.54	1.987		
13,800.0	6,786.7	13,905.6	6,808.8	155.3	156.6	-92.09	8,081.6	-1,295.8	607.2	297.9	309.35	1.963		
13,900.0	6,786.3	14,005.6	6,808.7	157.2	158.4	-92.11	8,181.6	-1,295.8	607.3	294.1	313.16	1.939		
14,000.0	6,786.0	14,105.6	6,808.6	159.1	160.3	-92.13	8,281.6	-1,295.8	607.3	290.3	316.97	1.916		
14,100.0	6,785.7	14,205.6	6,808.4	161.0	162.2	-92.15	8,381.6	-1,295.8	607.3	286.5	320.78	1.893		
14,200.0	6,785.4	14,305.6	6,808.3	162.9	164.1	-92.16	8,481.6	-1,295.8	607.3	282.7	324.59	1.871		
14,300.0	6,785.1	14,405.6	6,808.2	164.8	166.0	-92.18	8,581.6	-1,295.8	607.3	278.9	328.40	1.849		
14,400.0	6,784.8	14,505.6	6,808.1	166.7	167.9	-92.20	8,681.6	-1,295.8	607.3	275.1	332.22	1.828		
14,500.0	6,784.5	14,605.6	6,808.0	168.6	169.8	-92.22	8,781.6	-1,295.8	607.3	271.3	336.03	1.807		
14,600.0	6,784.1	14,705.6	6,807.8	170.5	171.7	-92.24	8,881.6	-1,295.8	607.3	267.5	339.84	1.787		
14,700.0	6,783.8	14,805.6	6,807.7	172.4	173.6	-92.25	8,981.6	-1,295.8	607.3	263.7	343.65	1.767		
14,800.0	6,783.5	14,905.6	6,807.6	174.4	175.5	-92.27	9,081.6	-1,295.8	607.3	259.8	347.47	1.748		
14,900.0	6,783.2	15,005.6	6,807.5	176.3	177.4	-92.29	9,181.6	-1,295.8	607.3	256.0	351.28	1.729		
15,000.0	6,782.9	15,105.6	6,807.3	178.2	179.3	-92.31	9,281.6	-1,295.8	607.3	252.2	355.10	1.710		
15,100.0	6,782.6	15,205.6	6,807.2	180.1	181.2	-92.33	9,381.6	-1,295.8	607.3	248.4	358.91	1.692		
15,200.0	6,782.3	15,305.6	6,807.1	182.0	183.0	-92.35	9,481.6	-1,295.8	607.3	244.6	362.73	1.674		
15,280.6	6,782.0	15,386.1	6,807.0	183.5	184.6	-92.36	9,562.1	-1,295.8	607.4	241.6	365.80	1.660 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23P-321 - 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		
0.0	0.0	0.0	0.0	0.0	0.0	-88.60	0.4	-15.0	15.0	15.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-88.60	0.4	-15.0	15.0	14.8	0.22	66.954		
200.0	200.0	200.0	200.0	0.3	0.3	-88.60	0.4	-15.0	15.0	14.4	0.67	22.318		
300.0	300.0	300.0	300.0	0.6	0.6	-88.60	0.4	-15.0	15.0	13.9	1.12	13.391		
400.0	400.0	400.0	400.0	0.8	0.8	-88.60	0.4	-15.0	15.0	13.5	1.57	9.565 CC		
500.0	500.0	499.6	499.6	1.0	1.0	-86.18	1.1	-16.1	16.2	14.2	2.02	8.019		
600.0	600.0	599.2	599.1	1.2	1.2	-80.64	3.2	-19.4	19.7	17.2	2.46	7.994		
700.0	700.0	698.5	698.2	1.5	1.5	-38.93	6.7	-24.8	24.7	21.8	2.90	8.526		
800.0	799.9	797.6	796.9	1.7	1.7	-37.76	11.6	-32.4	30.3	26.9	3.35	9.043		
900.0	899.7	896.7	895.3	1.9	2.0	-38.16	17.9	-42.1	36.2	32.4	3.80	9.523		
1,000.0	999.3	995.5	993.1	2.2	2.3	-39.47	25.6	-53.9	42.5	38.3	4.27	9.963		
1,100.0	1,098.6	1,094.1	1,090.3	2.4	2.6	-41.29	34.7	-67.8	49.3	44.5	4.76	10.361		
1,200.0	1,197.5	1,192.6	1,186.9	2.7	3.0	-43.39	45.0	-83.7	56.5	51.3	5.28	10.711		
1,300.0	1,296.1	1,290.9	1,282.8	3.0	3.4	-45.62	56.8	-101.7	64.3	58.5	5.85	11.003		
1,400.0	1,394.2	1,389.6	1,378.6	3.4	3.8	-47.99	69.7	-121.7	72.5	66.0	6.47	11.196		
1,500.0	1,491.7	1,489.3	1,475.2	3.8	4.3	-51.18	83.1	-142.2	79.5	72.3	7.19	11.057		
1,543.4	1,533.9	1,532.6	1,517.2	4.0	4.5	-52.84	88.9	-151.2	82.1	74.5	7.53	10.901		
1,600.0	1,588.7	1,588.9	1,571.9	4.2	4.8	-55.07	96.4	-162.8	85.4	77.4	8.00	10.670		
1,700.0	1,685.7	1,688.6	1,668.5	4.7	5.3	-58.60	109.8	-183.3	91.5	82.6	8.88	10.306		
1,800.0	1,782.7	1,788.3	1,765.1	5.1	5.8	-61.67	123.1	-203.8	97.9	88.1	9.80	9.994		
1,900.0	1,879.6	1,887.9	1,861.7	5.6	6.3	-64.37	136.5	-224.3	104.6	93.9	10.75	9.731		
2,000.0	1,976.6	1,987.6	1,958.3	6.1	6.8	-66.73	149.8	-244.9	111.5	99.8	11.73	9.508		
2,100.0	2,073.5	2,087.3	2,054.9	6.6	7.3	-68.82	163.2	-265.4	118.6	105.8	12.72	9.321		
2,200.0	2,170.5	2,186.9	2,151.5	7.1	7.8	-70.67	176.5	-285.9	125.8	112.0	13.72	9.163		
2,300.0	2,267.5	2,286.6	2,248.1	7.6	8.3	-72.32	189.9	-306.4	133.1	118.3	14.74	9.029		
2,400.0	2,364.4	2,386.2	2,344.7	8.1	8.8	-73.80	203.2	-326.9	140.5	124.7	15.76	8.914		
2,500.0	2,461.4	2,485.9	2,441.3	8.6	9.4	-75.13	216.6	-347.5	148.0	131.2	16.78	8.816		
2,600.0	2,558.4	2,585.6	2,538.0	9.1	9.9	-76.33	229.9	-368.0	155.5	137.7	17.81	8.731		
2,700.0	2,655.3	2,685.2	2,634.6	9.6	10.4	-77.42	243.2	-388.5	163.1	144.3	18.84	8.658		
2,800.0	2,752.3	2,784.9	2,731.2	10.1	10.9	-78.41	256.6	-409.0	170.8	150.9	19.88	8.594		
2,900.0	2,849.3	2,884.6	2,827.8	10.6	11.4	-79.31	269.9	-429.5	178.6	157.6	20.91	8.539		
3,000.0	2,946.2	2,984.2	2,924.4	11.1	12.0	-80.15	283.3	-450.1	186.3	164.4	21.95	8.490		
3,100.0	3,043.2	3,083.9	3,021.0	11.6	12.5	-80.91	296.6	-470.6	194.1	171.1	22.98	8.446		
3,200.0	3,140.2	3,183.6	3,117.6	12.1	13.0	-81.61	310.0	-491.1	201.9	177.9	24.02	8.408		
3,300.0	3,237.1	3,283.2	3,214.2	12.6	13.5	-82.27	323.3	-511.6	209.8	184.8	25.06	8.374		
3,400.0	3,334.1	3,382.9	3,310.8	13.1	14.0	-82.87	336.7	-532.1	217.7	191.6	26.09	8.343		
3,500.0	3,431.1	3,482.5	3,407.5	13.6	14.6	-83.43	350.0	-552.7	225.6	198.5	27.13	8.315		
3,600.0	3,528.0	3,582.2	3,504.1	14.2	15.1	-83.96	363.4	-573.2	233.5	205.4	28.17	8.291		
3,700.0	3,625.0	3,681.9	3,600.7	14.7	15.6	-84.45	376.7	-593.7	241.5	212.3	29.20	8.268		
3,800.0	3,722.0	3,781.5	3,697.3	15.2	16.1	-84.91	390.0	-614.2	249.4	219.2	30.24	8.248		
3,900.0	3,818.9	3,881.2	3,793.9	15.7	16.6	-85.34	403.4	-634.7	257.4	226.1	31.28	8.230		
4,000.0	3,915.9	3,980.9	3,890.5	16.2	17.2	-85.74	416.7	-655.3	265.4	233.1	32.32	8.213		
4,100.0	4,012.9	4,080.5	3,987.1	16.7	17.7	-86.12	430.1	-675.8	273.4	240.1	33.35	8.198		
4,200.0	4,109.8	4,180.2	4,083.7	17.2	18.2	-86.48	443.4	-696.3	281.4	247.0	34.39	8.184		
4,300.0	4,206.8	4,279.8	4,180.3	17.8	18.7	-86.82	456.8	-716.8	289.5	254.0	35.43	8.171		
4,400.0	4,303.7	4,379.5	4,276.9	18.3	19.3	-87.14	470.1	-737.3	297.5	261.0	36.46	8.159		
4,500.0	4,400.7	4,479.2	4,373.6	18.8	19.8	-87.45	483.5	-757.9	305.5	268.0	37.50	8.148		
4,600.0	4,497.7	4,578.8	4,470.2	19.3	20.3	-87.73	496.8	-778.4	313.6	275.1	38.53	8.138		
4,700.0	4,594.6	4,678.5	4,566.8	19.8	20.8	-88.01	510.2	-798.9	321.6	282.1	39.57	8.129		
4,800.0	4,691.6	4,778.2	4,663.4	20.3	21.3	-88.27	523.5	-819.4	329.7	289.1	40.61	8.120		
4,900.0	4,788.6	4,877.8	4,760.0	20.8	21.9	-88.52	536.8	-840.0	337.8	296.1	41.64	8.112		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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	
5,000.0	4,885.5	4,977.5	4,856.6	21.4	22.4	-88.75	550.2	-860.5	345.9	303.2	42.68	8.104	
5,100.0	4,982.5	5,077.2	4,953.2	21.9	22.9	-88.98	563.5	-881.0	353.9	310.2	43.71	8.097	
5,200.0	5,079.5	5,176.8	5,049.8	22.4	23.4	-89.20	576.9	-901.5	362.0	317.3	44.75	8.091	
5,300.0	5,176.4	5,276.5	5,146.4	22.9	24.0	-89.40	590.2	-922.0	370.1	324.3	45.78	8.085	
5,323.9	5,199.6	5,300.3	5,169.5	23.0	24.1	-89.45	593.4	-926.9	372.1	326.0	46.03	8.083	
5,400.0	5,273.6	5,378.3	5,245.3	23.4	24.5	-89.63	603.6	-942.6	378.1	331.4	46.74	8.090	
5,500.0	5,371.6	5,482.6	5,347.2	23.7	24.8	-89.81	615.6	-961.1	385.1	337.6	47.48	8.110	
5,600.0	5,470.2	5,587.1	5,450.1	24.0	25.2	-89.95	625.6	-976.4	390.8	342.7	48.12	8.122	
5,700.0	5,569.3	5,691.7	5,553.7	24.3	25.4	-90.07	633.5	-988.6	395.4	346.8	48.67	8.125	
5,800.0	5,668.8	5,796.4	5,657.8	24.5	25.7	-90.15	639.4	-997.6	398.8	349.7	49.12	8.119	
5,900.0	5,768.6	5,901.1	5,782.3	24.7	25.9	-90.20	643.2	-1,003.4	401.0	351.5	49.48	8.104	
6,000.0	5,868.5	6,005.9	5,867.0	24.8	26.0	-90.23	644.9	-1,006.0	402.0	352.2	49.75	8.080	
6,031.5	5,900.0	6,038.9	5,900.0	24.8	26.0	-127.91	645.0	-1,006.2	402.0	352.2	49.81	8.071	
6,100.0	5,968.5	6,107.4	5,968.5	24.9	26.1	-127.91	645.0	-1,006.2	402.0	352.1	49.96	8.048	
6,174.3	6,042.9	6,181.8	6,042.9	25.0	26.2	-127.91	645.0	-1,006.2	402.0	351.9	50.12	8.021	
6,200.0	6,068.5	6,207.4	6,068.5	25.0	26.2	-127.94	645.0	-1,006.2	402.3	352.1	50.17	8.019	
6,250.0	6,118.4	6,257.3	6,118.4	25.1	26.3	-128.19	645.0	-1,006.2	404.4	354.1	50.24	8.049	
6,300.0	6,168.0	6,324.6	6,185.6	25.3	26.3	-128.79	646.8	-1,006.2	407.7	357.4	50.32	8.102	
6,350.0	6,217.0	6,399.9	6,260.4	25.4	26.5	-129.29	655.7	-1,006.2	410.2	359.8	50.41	8.137	
6,400.0	6,265.3	6,475.8	6,334.5	25.6	26.7	-129.58	672.0	-1,006.2	411.6	361.1	50.51	8.150	
6,450.0	6,312.6	6,552.0	6,406.9	25.9	27.0	-129.65	695.8	-1,006.2	412.0	361.4	50.60	8.142	
6,500.0	6,358.8	6,628.1	6,476.5	26.2	27.3	-129.51	726.6	-1,006.2	411.3	360.5	50.72	8.109	
6,550.0	6,403.6	6,703.9	6,542.3	26.5	27.7	-129.15	763.9	-1,006.2	409.5	358.6	50.85	8.052	
6,600.0	6,446.9	6,778.9	6,603.6	26.9	28.2	-128.57	807.2	-1,006.2	406.6	355.6	51.03	7.968	
6,650.0	6,488.4	6,852.9	6,659.6	27.3	28.7	-127.79	855.5	-1,006.2	402.8	351.6	51.26	7.859	
6,700.0	6,528.0	6,925.6	6,709.8	27.7	29.3	-126.80	908.0	-1,006.2	398.2	346.6	51.57	7.722	
6,750.0	6,565.6	6,996.8	6,753.9	28.2	29.9	-125.62	963.9	-1,006.2	392.8	340.8	51.96	7.559	
6,800.0	6,600.9	7,066.3	6,791.8	28.7	30.6	-124.24	1,022.2	-1,006.2	386.8	334.3	52.47	7.371	
6,850.0	6,633.8	7,134.1	6,823.4	29.3	31.3	-122.69	1,082.1	-1,006.2	380.3	327.2	53.11	7.161	
6,900.0	6,664.2	7,200.0	6,849.0	29.9	32.1	-120.96	1,142.8	-1,006.2	373.5	319.6	53.88	6.931	
6,950.0	6,692.0	7,264.2	6,868.8	30.5	32.8	-119.06	1,203.8	-1,006.2	366.5	311.7	54.82	6.685	
7,000.0	6,716.9	7,326.4	6,883.1	31.1	33.6	-117.01	1,264.4	-1,006.2	359.5	303.6	55.92	6.429	
7,050.0	6,739.0	7,386.9	6,892.2	31.8	34.4	-114.81	1,324.2	-1,006.2	352.7	295.5	57.19	6.166	
7,100.0	6,758.1	7,445.6	6,896.4	32.5	35.2	-112.47	1,382.7	-1,006.2	346.1	287.5	58.62	5.904	
7,150.0	6,774.1	7,498.2	6,896.8	33.2	35.9	-110.29	1,435.3	-1,006.2	340.1	280.0	60.06	5.663	
7,200.0	6,787.0	7,546.4	6,896.6	34.0	36.6	-108.59	1,483.5	-1,006.2	335.6	274.2	61.44	5.463	
7,250.0	6,796.7	7,595.4	6,896.4	34.7	37.3	-107.22	1,532.5	-1,006.2	332.5	269.7	62.83	5.293	
7,300.0	6,803.2	7,645.0	6,896.3	35.5	38.0	-106.27	1,582.1	-1,006.2	330.6	266.4	64.19	5.150	
7,350.0	6,806.4	7,694.9	6,896.1	36.3	38.8	-105.77	1,631.9	-1,006.2	329.6	264.1	65.48	5.034	
7,376.8	6,806.8	7,721.6	6,896.0	36.7	39.1	-105.70	1,658.7	-1,006.2	329.5	263.4	66.11	4.984	
7,400.0	6,806.8	7,744.8	6,895.9	37.1	39.5	-105.70	1,681.9	-1,006.2	329.5	262.6	66.87	4.927	
7,500.0	6,806.4	7,844.8	6,895.5	38.7	41.0	-105.69	1,781.9	-1,006.2	329.5	259.3	70.16	4.696	
7,600.0	6,806.1	7,944.8	6,895.2	40.4	42.6	-105.68	1,881.9	-1,006.2	329.5	256.0	73.49	4.483	
7,700.0	6,805.8	8,044.8	6,894.8	42.0	44.1	-105.67	1,981.9	-1,006.2	329.4	252.6	76.85	4.287	
7,800.0	6,805.5	8,144.8	6,894.4	43.7	45.8	-105.66	2,081.9	-1,006.2	329.4	249.2	80.25	4.105	
7,900.0	6,805.2	8,244.8	6,894.1	45.4	47.4	-105.65	2,181.9	-1,006.2	329.4	245.7	83.68	3.937	
8,000.0	6,804.9	8,344.8	6,893.7	47.2	49.0	-105.64	2,281.9	-1,006.2	329.4	242.3	87.13	3.781	
8,100.0	6,804.6	8,444.8	6,893.3	48.9	50.7	-105.63	2,381.9	-1,006.2	329.4	238.8	90.60	3.636	
8,200.0	6,804.2	8,544.8	6,893.0	50.7	52.4	-105.63	2,481.9	-1,006.2	329.4	235.3	94.09	3.501	
8,300.0	6,803.9	8,644.8	6,892.6	52.4	54.1	-105.62	2,581.9	-1,006.2	329.4	231.8	97.60	3.375	
8,400.0	6,803.6	8,744.8	6,892.2	54.2	55.8	-105.61	2,681.9	-1,006.2	329.3	228.2	101.13	3.257	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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		
8,500.0	6,803.3	8,844.8	6,891.9	56.0	57.6	-105.60	2,781.9	-1,006.2	329.3	224.7	104.66	3.147		
8,600.0	6,803.0	8,944.8	6,891.5	57.8	59.3	-105.59	2,881.9	-1,006.2	329.3	221.1	108.22	3.043		
8,700.0	6,802.7	9,044.8	6,891.1	59.6	61.1	-105.58	2,981.9	-1,006.2	329.3	217.5	111.78	2.946		
8,800.0	6,802.4	9,144.8	6,890.8	61.4	62.8	-105.57	3,081.9	-1,006.2	329.3	213.9	115.35	2.855		
8,900.0	6,802.0	9,244.8	6,890.4	63.2	64.6	-105.56	3,181.9	-1,006.2	329.3	210.3	118.94	2.769		
9,000.0	6,801.7	9,344.8	6,890.0	65.0	66.4	-105.56	3,281.9	-1,006.2	329.3	206.7	122.53	2.687		
9,100.0	6,801.4	9,444.8	6,889.7	66.9	68.2	-105.55	3,381.9	-1,006.2	329.3	203.1	126.13	2.610		
9,200.0	6,801.1	9,544.8	6,889.3	68.7	70.0	-105.54	3,481.9	-1,006.2	329.2	199.5	129.74	2.538		
9,300.0	6,800.8	9,644.8	6,888.9	70.5	71.8	-105.53	3,581.9	-1,006.2	329.2	195.9	133.35	2.469		
9,400.0	6,800.5	9,744.8	6,888.6	72.4	73.6	-105.52	3,681.9	-1,006.2	329.2	192.2	136.97	2.403		
9,500.0	6,800.2	9,844.8	6,888.2	74.2	75.4	-105.51	3,781.9	-1,006.2	329.2	188.6	140.60	2.341		
9,600.0	6,799.8	9,944.8	6,887.8	76.1	77.2	-105.50	3,881.9	-1,006.2	329.2	185.0	144.23	2.282		
9,700.0	6,799.5	10,044.8	6,887.5	77.9	79.1	-105.49	3,981.9	-1,006.2	329.2	181.3	147.87	2.226		
9,800.0	6,799.2	10,144.8	6,887.1	79.8	80.9	-105.49	4,081.9	-1,006.2	329.2	177.6	151.51	2.173		
9,900.0	6,798.9	10,244.8	6,886.7	81.6	82.7	-105.48	4,181.9	-1,006.2	329.1	174.0	155.16	2.121		
10,000.0	6,798.6	10,344.8	6,886.4	83.5	84.6	-105.47	4,281.9	-1,006.2	329.1	170.3	158.81	2.073		
10,100.0	6,798.3	10,444.8	6,886.0	85.4	86.4	-105.46	4,381.9	-1,006.2	329.1	166.7	162.46	2.026		
10,200.0	6,798.0	10,544.8	6,885.6	87.2	88.2	-105.45	4,481.9	-1,006.2	329.1	163.0	166.12	1.981		
10,300.0	6,797.6	10,644.8	6,885.3	89.1	90.1	-105.44	4,581.9	-1,006.2	329.1	159.3	169.78	1.938		
10,400.0	6,797.3	10,744.8	6,884.9	91.0	91.9	-105.43	4,681.9	-1,006.2	329.1	155.6	173.44	1.897		
10,500.0	6,797.0	10,844.8	6,884.5	92.8	93.8	-105.42	4,781.9	-1,006.2	329.1	151.9	177.11	1.858		
10,600.0	6,796.7	10,944.8	6,884.2	94.7	95.7	-105.41	4,881.9	-1,006.2	329.0	148.3	180.78	1.820		
10,700.0	6,796.4	11,044.8	6,883.8	96.6	97.5	-105.41	4,981.9	-1,006.2	329.0	144.6	184.45	1.784		
10,800.0	6,796.1	11,144.8	6,883.4	98.5	99.4	-105.40	5,081.9	-1,006.2	329.0	140.9	188.13	1.749		
10,900.0	6,795.8	11,244.8	6,883.1	100.4	101.2	-105.39	5,181.9	-1,006.2	329.0	137.2	191.81	1.715		
11,000.0	6,795.4	11,344.8	6,882.7	102.2	103.1	-105.38	5,281.9	-1,006.2	329.0	133.5	195.49	1.683		
11,100.0	6,795.1	11,444.8	6,882.3	104.1	105.0	-105.37	5,381.9	-1,006.2	329.0	129.8	199.17	1.652		
11,200.0	6,794.8	11,544.8	6,882.0	106.0	106.8	-105.36	5,481.9	-1,006.2	329.0	126.1	202.85	1.622		
11,300.0	6,794.5	11,644.8	6,881.6	107.9	108.7	-105.35	5,581.9	-1,006.2	328.9	122.4	206.54	1.593		
11,400.0	6,794.2	11,744.8	6,881.2	109.8	110.6	-105.34	5,681.9	-1,006.2	328.9	118.7	210.23	1.565		
11,500.0	6,793.9	11,844.8	6,880.9	111.7	112.5	-105.34	5,781.9	-1,006.2	328.9	115.0	213.92	1.538		
11,600.0	6,793.6	11,944.8	6,880.5	113.6	114.3	-105.33	5,881.9	-1,006.2	328.9	111.3	217.61	1.511		
11,700.0	6,793.2	12,044.8	6,880.1	115.4	116.2	-105.32	5,981.9	-1,006.2	328.9	107.6	221.30	1.486 Level 3		
11,800.0	6,792.9	12,144.8	6,879.8	117.3	118.1	-105.31	6,081.9	-1,006.2	328.9	103.9	225.00	1.462 Level 3		
11,900.0	6,792.6	12,244.8	6,879.4	119.2	120.0	-105.30	6,181.9	-1,006.2	328.9	100.2	228.69	1.438 Level 3		
12,000.0	6,792.3	12,344.8	6,879.0	121.1	121.8	-105.29	6,281.9	-1,006.2	328.8	96.5	232.39	1.415 Level 3		
12,100.0	6,792.0	12,444.8	6,878.7	123.0	123.7	-105.28	6,381.9	-1,006.2	328.8	92.7	236.09	1.393 Level 3		
12,200.0	6,791.7	12,544.8	6,878.3	124.9	125.6	-105.27	6,481.9	-1,006.2	328.8	89.0	239.79	1.371 Level 3		
12,300.0	6,791.4	12,644.8	6,877.9	126.8	127.5	-105.27	6,581.9	-1,006.2	328.8	85.3	243.49	1.350 Level 3		
12,400.0	6,791.0	12,744.8	6,877.6	128.7	129.4	-105.26	6,681.9	-1,006.2	328.8	81.6	247.20	1.330 Level 3		
12,500.0	6,790.7	12,844.8	6,877.2	130.6	131.3	-105.25	6,781.9	-1,006.2	328.8	77.9	250.90	1.310 Level 3		
12,600.0	6,790.4	12,944.8	6,876.8	132.5	133.2	-105.24	6,881.9	-1,006.2	328.8	74.2	254.61	1.291 Level 3		
12,700.0	6,790.1	13,044.8	6,876.5	134.4	135.0	-105.23	6,981.9	-1,006.2	328.8	70.4	258.31	1.273 Level 3		
12,800.0	6,789.8	13,144.8	6,876.1	136.3	136.9	-105.22	7,081.9	-1,006.2	328.7	66.7	262.02	1.255 Level 3		
12,900.0	6,789.5	13,244.8	6,875.7	138.2	138.8	-105.21	7,181.9	-1,006.2	328.7	63.0	265.73	1.237 Level 2		
13,000.0	6,789.2	13,344.8	6,875.4	140.1	140.7	-105.20	7,281.9	-1,006.2	328.7	59.3	269.44	1.220 Level 2		
13,100.0	6,788.9	13,444.8	6,875.0	142.0	142.6	-105.19	7,381.9	-1,006.2	328.7	55.5	273.15	1.203 Level 2		
13,200.0	6,788.5	13,544.8	6,874.6	143.9	144.5	-105.19	7,481.9	-1,006.2	328.7	51.8	276.86	1.187 Level 2		
13,300.0	6,788.2	13,644.8	6,874.3	145.8	146.4	-105.18	7,581.9	-1,006.2	328.7	48.1	280.57	1.171 Level 2		
13,400.0	6,787.9	13,744.8	6,873.9	147.7	148.3	-105.17	7,681.9	-1,006.2	328.7	44.4	284.29	1.156 Level 2		
13,500.0	6,787.6	13,844.8	6,873.5	149.6	150.2	-105.16	7,781.9	-1,006.2	328.6	40.6	288.00	1.141 Level 2		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design		Brown 5N65W23 Pad Sec.23-T5N-R65W - Brown 23P-321 - 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 Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation		Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
13,600.0	6,787.3	13,944.8	6,873.2	151.5	152.1	-105.15	7,881.9	-1,006.2	328.6	36.9	291.72	1.127	Level 2		
13,700.0	6,787.0	14,044.8	6,872.8	153.4	154.0	-105.14	7,981.9	-1,006.2	328.6	33.2	295.43	1.112	Level 2		
13,800.0	6,786.7	14,144.8	6,872.4	155.3	155.9	-105.13	8,081.9	-1,006.2	328.6	29.5	299.15	1.098	Level 2		
13,900.0	6,786.3	14,244.8	6,872.1	157.2	157.8	-105.12	8,181.9	-1,006.2	328.6	25.7	302.87	1.085	Level 2		
14,000.0	6,786.0	14,344.8	6,871.7	159.1	159.7	-105.12	8,281.9	-1,006.2	328.6	22.0	306.59	1.072	Level 2		
14,100.0	6,785.7	14,444.8	6,871.3	161.0	161.6	-105.11	8,381.9	-1,006.2	328.6	18.3	310.31	1.059	Level 2		
14,200.0	6,785.4	14,544.8	6,871.0	162.9	163.5	-105.10	8,481.9	-1,006.2	328.5	14.5	314.03	1.046	Level 2		
14,300.0	6,785.1	14,644.8	6,870.6	164.8	165.4	-105.09	8,581.9	-1,006.2	328.5	10.8	317.75	1.034	Level 2		
14,400.0	6,784.8	14,744.8	6,870.2	166.7	167.3	-105.08	8,681.9	-1,006.2	328.5	7.1	321.47	1.022	Level 2		
14,500.0	6,784.5	14,844.8	6,869.9	168.6	169.2	-105.07	8,781.9	-1,006.2	328.5	3.3	325.19	1.010	Level 2		
14,600.0	6,784.1	14,944.8	6,869.5	170.5	171.1	-105.06	8,881.9	-1,006.2	328.5	-0.4	328.91	0.999	Level 1		
14,700.0	6,783.8	15,044.8	6,869.1	172.4	173.0	-105.05	8,981.9	-1,006.2	328.5	-4.2	332.64	0.987	Level 1		
14,800.0	6,783.5	15,144.8	6,868.8	174.4	174.9	-105.04	9,081.9	-1,006.2	328.5	-7.9	336.36	0.977	Level 1		
14,900.0	6,783.2	15,244.8	6,868.4	176.3	176.8	-105.04	9,181.9	-1,006.2	328.5	-11.6	340.09	0.966	Level 1		
15,000.0	6,782.9	15,344.8	6,868.0	178.2	178.7	-105.03	9,281.9	-1,006.2	328.4	-15.4	343.81	0.955	Level 1		
15,100.0	6,782.6	15,444.8	6,867.7	180.1	180.6	-105.02	9,381.9	-1,006.2	328.4	-19.1	347.54	0.945	Level 1		
15,200.0	6,782.3	15,544.8	6,867.3	182.0	182.5	-105.01	9,481.9	-1,006.2	328.4	-22.9	351.26	0.935	Level 1		
15,280.6	6,782.0	15,625.4	6,867.0	183.5	184.0	-105.00	9,562.4	-1,006.2	328.4	-25.9	354.27	0.927	Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - Alles 23-13 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7114-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	
7,200.0	6,787.0	6,770.0	6,770.0	34.0	135.4	27.69	2,429.2	-576.7	952.8	866.4	86.39	11.029	
7,250.0	6,796.7	6,779.7	6,779.7	34.7	135.6	37.70	2,429.2	-576.7	904.1	798.0	106.07	8.523	
7,300.0	6,803.2	6,786.2	6,786.2	35.5	135.7	53.76	2,429.2	-576.7	854.9	718.1	136.85	6.247	
7,350.0	6,806.4	6,789.4	6,789.4	36.3	135.8	77.25	2,429.2	-576.7	805.5	639.9	165.59	4.864	
7,376.8	6,806.8	6,789.8	6,789.8	36.7	135.8	91.23	2,429.2	-576.7	779.0	608.6	170.44	4.571	
7,400.0	6,806.8	6,789.8	6,789.8	37.1	135.8	91.20	2,429.2	-576.7	756.0	585.2	170.83	4.426	
7,500.0	6,806.4	6,789.4	6,789.4	38.7	135.8	91.04	2,429.2	-576.7	657.3	484.8	172.54	3.810	
7,600.0	6,806.1	6,789.1	6,789.1	40.4	135.8	90.88	2,429.2	-576.7	559.0	384.8	174.27	3.208	
7,700.0	6,805.8	6,788.8	6,788.8	42.0	135.8	90.72	2,429.2	-576.7	461.5	285.5	176.02	2.622	
7,800.0	6,805.5	6,788.5	6,788.5	43.7	135.8	90.56	2,429.2	-576.7	365.3	187.6	177.78	2.055	
7,900.0	6,805.2	6,788.2	6,788.2	45.4	135.8	90.40	2,429.2	-576.7	271.9	92.4	179.55	1.515	
8,000.0	6,804.9	6,787.9	6,787.9	47.2	135.8	90.24	2,429.2	-576.7	185.5	4.2	181.33	1.023	Level 2
8,100.0	6,804.6	6,787.6	6,787.6	48.9	135.8	90.08	2,429.2	-576.7	122.0	-61.1	183.12	0.666	Level 1
8,147.6	6,804.4	6,787.4	6,787.4	49.8	135.7	90.00	2,429.2	-576.7	112.4	-71.6	183.98	0.611	Level 1, CC, ES, SF
8,200.0	6,804.2	6,787.2	6,787.2	50.7	135.7	89.92	2,429.2	-576.7	124.0	-61.0	184.92	0.670	Level 1
8,300.0	6,803.9	6,786.9	6,786.9	52.4	135.7	89.76	2,429.2	-576.7	189.3	2.6	186.72	1.014	Level 2
8,400.0	6,803.6	6,786.6	6,786.6	54.2	135.7	89.60	2,429.2	-576.7	276.2	87.7	188.53	1.465	Level 3
8,500.0	6,803.3	6,786.3	6,786.3	56.0	135.7	89.44	2,429.2	-576.7	369.8	179.5	190.35	1.943	
8,600.0	6,803.0	6,786.0	6,786.0	57.8	135.7	89.28	2,429.2	-576.7	466.1	273.9	192.17	2.426	
8,700.0	6,802.7	6,785.7	6,785.7	59.6	135.7	89.12	2,429.2	-576.7	563.7	369.7	193.99	2.906	
8,800.0	6,802.4	6,785.4	6,785.4	61.4	135.7	88.95	2,429.2	-576.7	662.0	466.1	195.82	3.381	
8,900.0	6,802.0	6,785.0	6,785.0	63.2	135.7	88.79	2,429.2	-576.7	760.7	563.1	197.65	3.849	
9,000.0	6,801.7	6,784.7	6,784.7	65.0	135.7	88.63	2,429.2	-576.7	859.7	660.3	199.48	4.310	
9,100.0	6,801.4	6,784.4	6,784.4	66.9	135.7	88.47	2,429.2	-576.7	959.0	757.7	201.31	4.764	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - Boderusock 2-23 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7138-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	
8,300.0	6,803.9	6,787.9	6,787.9	52.4	135.8	91.73	3,540.4	-589.4	963.9	777.2	186.72	5.163	
8,400.0	6,803.6	6,787.6	6,787.6	54.2	135.8	91.55	3,540.4	-589.4	864.5	676.0	188.55	4.585	
8,500.0	6,803.3	6,787.3	6,787.3	56.0	135.7	91.37	3,540.4	-589.4	765.3	574.9	190.38	4.020	
8,600.0	6,803.0	6,787.0	6,787.0	57.8	135.7	91.19	3,540.4	-589.4	666.3	474.1	192.22	3.466	
8,700.0	6,802.7	6,786.7	6,786.7	59.6	135.7	91.01	3,540.4	-589.4	567.6	373.5	194.06	2.925	
8,800.0	6,802.4	6,786.4	6,786.4	61.4	135.7	90.83	3,540.4	-589.4	469.5	273.6	195.90	2.396	
8,900.0	6,802.0	6,786.0	6,786.0	63.2	135.7	90.65	3,540.4	-589.4	372.3	174.6	197.75	1.883	
9,000.0	6,801.7	6,785.7	6,785.7	65.0	135.7	90.47	3,540.4	-589.4	277.3	77.7	199.60	1.389	Level 3
9,100.0	6,801.4	6,785.4	6,785.4	66.9	135.7	90.29	3,540.4	-589.4	187.4	-14.0	201.45	0.930	Level 1
9,200.0	6,801.1	6,785.1	6,785.1	68.7	135.7	90.11	3,540.4	-589.4	115.6	-87.7	203.31	0.569	Level 1
9,258.8	6,800.9	6,784.9	6,784.9	69.8	135.7	90.00	3,540.4	-589.4	99.6	-104.8	204.40	0.487	Level 1, CC, ES, SF
9,300.0	6,800.8	6,784.8	6,784.8	70.5	135.7	89.93	3,540.4	-589.4	107.8	-97.4	205.16	0.525	Level 1
9,400.0	6,800.5	6,784.5	6,784.5	72.4	135.7	89.74	3,540.4	-589.4	172.8	-34.2	207.01	0.835	Level 1
9,500.0	6,800.2	6,784.2	6,784.2	74.2	135.7	89.56	3,540.4	-589.4	260.9	52.1	208.87	1.249	Level 2
9,600.0	6,799.8	6,783.8	6,783.8	76.1	135.7	89.38	3,540.4	-589.4	355.4	144.7	210.73	1.687	
9,700.0	6,799.5	6,783.5	6,783.5	77.9	135.7	89.20	3,540.4	-589.4	452.3	239.7	212.58	2.128	
9,800.0	6,799.2	6,783.2	6,783.2	79.8	135.7	89.02	3,540.4	-589.4	550.3	335.8	214.44	2.566	
9,900.0	6,798.9	6,782.9	6,782.9	81.6	135.7	88.84	3,540.4	-589.4	648.9	432.6	216.29	3.000	
10,000.0	6,798.6	6,782.6	6,782.6	83.5	135.7	88.66	3,540.4	-589.4	747.9	529.7	218.15	3.428	
10,100.0	6,798.3	6,782.3	6,782.3	85.4	135.6	88.48	3,540.4	-589.4	847.1	627.1	220.00	3.850	
10,200.0	6,798.0	6,782.0	6,782.0	87.2	135.6	88.30	3,540.4	-589.4	946.5	724.6	221.86	4.266	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - Carlson 14-43 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7080-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,700.0	6,799.5	6,762.5	6,762.5		135.3	91.30	4,955.0	-554.0	982.7	770.5	212.19	4.631		
9,800.0	6,799.2	6,762.2	6,762.2	79.8	135.2	91.16	4,955.0	-554.0	883.8	669.7	214.07	4.128		
9,900.0	6,798.9	6,761.9	6,761.9	81.6	135.2	91.03	4,955.0	-554.0	785.1	569.2	215.95	3.636		
10,000.0	6,798.6	6,761.6	6,761.6	83.5	135.2	90.90	4,955.0	-554.0	686.8	469.0	217.83	3.153		
10,100.0	6,798.3	6,761.3	6,761.3	85.4	135.2	90.76	4,955.0	-554.0	589.1	369.4	219.71	2.681		
10,200.0	6,798.0	6,761.0	6,761.0	87.2	135.2	90.63	4,955.0	-554.0	492.3	270.7	221.59	2.222		
10,300.0	6,797.6	6,760.6	6,760.6	89.1	135.2	90.50	4,955.0	-554.0	397.1	173.6	223.47	1.777		
10,400.0	6,797.3	6,760.3	6,760.3	91.0	135.2	90.36	4,955.0	-554.0	304.9	79.6	225.35	1.353	Level 3	
10,500.0	6,797.0	6,760.0	6,760.0	92.8	135.2	90.23	4,955.0	-554.0	219.8	-7.5	227.23	0.967	Level 1	
10,600.0	6,796.7	6,759.7	6,759.7	94.7	135.2	90.10	4,955.0	-554.0	153.6	-75.5	229.12	0.671	Level 1	
10,673.4	6,796.5	6,759.5	6,759.5	96.1	135.2	90.00	4,955.0	-554.0	135.0	-95.5	230.50	0.586	Level 1, CC, ES, SF	
10,700.0	6,796.4	6,759.4	6,759.4	96.6	135.2	89.96	4,955.0	-554.0	137.6	-93.4	231.00	0.596	Level 1	
10,800.0	6,796.1	6,759.1	6,759.1	98.5	135.2	89.83	4,955.0	-554.0	185.0	-47.8	232.88	0.795	Level 1	
10,900.0	6,795.8	6,758.8	6,758.8	100.4	135.2	89.70	4,955.0	-554.0	263.7	29.0	234.76	1.123	Level 2	
11,000.0	6,795.4	6,758.4	6,758.4	102.2	135.2	89.56	4,955.0	-554.0	353.4	116.7	236.64	1.493	Level 3	
11,100.0	6,795.1	6,758.1	6,758.1	104.1	135.2	89.43	4,955.0	-554.0	447.4	208.9	238.52	1.876		
11,200.0	6,794.8	6,757.8	6,757.8	106.0	135.2	89.30	4,955.0	-554.0	543.6	303.2	240.40	2.261		
11,300.0	6,794.5	6,757.5	6,757.5	107.9	135.2	89.16	4,955.0	-554.0	640.9	398.7	242.28	2.645		
11,400.0	6,794.2	6,757.2	6,757.2	109.8	135.1	89.03	4,955.0	-554.0	739.0	494.8	244.16	3.027		
11,500.0	6,793.9	6,756.9	6,756.9	111.7	135.1	88.90	4,955.0	-554.0	837.5	591.5	246.04	3.404		
11,600.0	6,793.6	6,756.6	6,756.6	113.6	135.1	88.76	4,955.0	-554.0	936.4	688.4	247.92	3.777		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - Cass 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7121-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		
12,200.0	6,791.7	6,750.7	6,750.7	124.9	135.0	90.54	7,398.4	-384.1	966.2	706.9	259.31	3.726		
12,300.0	6,791.4	6,750.4	6,750.4	126.8	135.0	90.48	7,398.4	-384.1	871.9	610.7	261.21	3.338		
12,400.0	6,791.0	6,750.0	6,750.0	128.7	135.0	90.42	7,398.4	-384.1	779.0	515.9	263.11	2.961		
12,500.0	6,790.7	6,749.7	6,749.7	130.6	135.0	90.36	7,398.4	-384.1	688.1	423.1	265.01	2.597		
12,600.0	6,790.4	6,749.4	6,749.4	132.5	135.0	90.31	7,398.4	-384.1	600.1	333.2	266.91	2.248		
12,700.0	6,790.1	6,749.1	6,749.1	134.4	135.0	90.25	7,398.4	-384.1	516.5	247.7	268.81	1.921		
12,800.0	6,789.8	6,748.8	6,748.8	136.3	135.0	90.19	7,398.4	-384.1	439.8	169.0	270.71	1.624		
12,900.0	6,789.5	6,748.5	6,748.5	138.2	135.0	90.13	7,398.4	-384.1	374.2	101.6	272.61	1.373	Level 3	
13,000.0	6,789.2	6,748.2	6,748.2	140.1	135.0	90.07	7,398.4	-384.1	326.6	52.0	274.50	1.190	Level 2	
13,100.0	6,788.9	6,747.9	6,747.9	142.0	135.0	90.01	7,398.4	-384.1	305.4	29.0	276.40	1.105	Level 2	
13,116.9	6,788.8	6,747.8	6,747.8	142.3	135.0	90.00	7,398.4	-384.1	304.9	28.2	276.72	1.102	Level 2, CC, ES, SF	
13,200.0	6,788.5	6,747.5	6,747.5	143.9	135.0	89.95	7,398.4	-384.1	316.0	37.7	278.30	1.136	Level 2	
13,300.0	6,788.2	6,747.2	6,747.2	145.8	134.9	89.89	7,398.4	-384.1	355.7	75.5	280.20	1.269	Level 3	
13,400.0	6,787.9	6,746.9	6,746.9	147.7	134.9	89.83	7,398.4	-384.1	416.1	134.0	282.10	1.475	Level 3	
13,500.0	6,787.6	6,746.6	6,746.6	149.6	134.9	89.77	7,398.4	-384.1	489.7	205.7	284.00	1.724		
13,600.0	6,787.3	6,746.3	6,746.3	151.5	134.9	89.71	7,398.4	-384.1	571.3	285.4	285.90	1.998		
13,700.0	6,787.0	6,746.0	6,746.0	153.4	134.9	89.66	7,398.4	-384.1	658.0	370.2	287.80	2.286		
13,800.0	6,786.7	6,745.7	6,745.7	155.3	134.9	89.60	7,398.4	-384.1	748.1	458.4	289.70	2.582		
13,900.0	6,786.3	6,745.3	6,745.3	157.2	134.9	89.54	7,398.4	-384.1	840.4	548.8	291.60	2.882		
14,000.0	6,786.0	6,745.0	6,745.0	159.1	134.9	89.48	7,398.4	-384.1	934.3	640.8	293.50	3.183		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - Clark 14-10H5 (Exist.) - Wellbore #1 - Wellbore #1												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	
11,100.0	6,795.1	6,761.8	6,761.1	104.1	12.6	-91.72	6,291.2	-882.9	930.1	814.2	115.93	8.023	
11,200.0	6,794.8	6,761.4	6,760.7	106.0	12.6	-91.60	6,291.2	-883.0	832.6	714.7	117.83	7.066	
11,300.0	6,794.5	6,760.9	6,760.3	107.9	12.6	-91.47	6,291.2	-883.0	735.7	616.0	119.74	6.144	
11,400.0	6,794.2	6,760.5	6,759.8	109.8	12.6	-91.35	6,291.2	-883.0	639.8	518.1	121.65	5.259	
11,500.0	6,793.9	6,760.1	6,759.4	111.7	12.6	-91.22	6,291.2	-883.0	545.3	421.8	123.55	4.414	
11,600.0	6,793.6	6,759.7	6,759.0	113.6	12.6	-91.10	6,291.3	-883.0	453.3	327.8	125.46	3.613	
11,700.0	6,793.2	6,759.3	6,758.6	115.4	12.6	-90.98	6,291.3	-883.0	365.4	238.0	127.37	2.869	
11,800.0	6,792.9	6,758.8	6,758.2	117.3	12.6	-90.85	6,291.3	-883.0	285.7	156.4	129.28	2.210	
11,900.0	6,792.6	6,758.4	6,757.7	119.2	12.6	-90.73	6,291.3	-883.0	222.9	91.7	131.19	1.699	
12,000.0	6,792.3	6,758.0	6,757.3	121.1	12.6	-90.60	6,291.3	-883.0	194.2	61.1	133.09	1.459 Level 3	
12,009.7	6,792.3	6,758.0	6,757.3	121.3	12.6	-90.59	6,291.3	-883.0	194.0	60.7	133.28	1.456 Level 3, CC, ES, SF	
12,100.0	6,792.0	6,757.6	6,756.9	123.0	12.6	-90.48	6,291.3	-883.0	214.0	79.0	135.00	1.585	
12,200.0	6,791.7	6,757.2	6,756.5	124.9	12.6	-90.36	6,291.3	-883.0	271.8	134.9	136.91	1.985	
12,300.0	6,791.4	6,756.8	6,756.1	126.8	12.6	-90.24	6,291.3	-883.0	349.2	210.4	138.82	2.515	
12,400.0	6,791.0	6,756.3	6,755.7	128.7	12.6	-90.11	6,291.3	-883.0	435.9	295.1	140.73	3.097	
12,500.0	6,790.7	6,755.9	6,755.2	130.6	12.6	-89.99	6,291.3	-883.0	527.3	384.7	142.64	3.697	
12,600.0	6,790.4	6,755.5	6,754.8	132.5	12.6	-89.87	6,291.3	-883.0	621.4	476.8	144.54	4.299	
12,700.0	6,790.1	6,755.1	6,754.4	134.4	12.6	-89.75	6,291.3	-883.0	717.1	570.6	146.45	4.896	
12,800.0	6,789.8	6,754.7	6,754.0	136.3	12.6	-89.62	6,291.3	-883.0	813.8	665.4	148.36	5.485	
12,900.0	6,789.5	6,754.3	6,753.6	138.2	12.6	-89.50	6,291.3	-883.0	911.2	760.9	150.27	6.064	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Sec. 23-T5N-R65W - James Clark Unit 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7620-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		
13,700.0	6,787.0	6,747.0	6,747.0	153.4	134.9	91.78	8,885.2	-597.7	908.2	620.5	287.76	3.156		
13,800.0	6,786.7	6,746.7	6,746.7	155.3	134.9	91.58	8,885.2	-597.7	808.8	519.1	289.69	2.792		
13,900.0	6,786.3	6,746.3	6,746.3	157.2	134.9	91.39	8,885.2	-597.7	709.5	417.9	291.61	2.433		
14,000.0	6,786.0	6,746.0	6,746.0	159.1	134.9	91.19	8,885.2	-597.7	610.5	317.0	293.53	2.080		
14,100.0	6,785.7	6,745.7	6,745.7	161.0	134.9	90.99	8,885.2	-597.7	511.9	216.4	295.44	1.733		
14,200.0	6,785.4	6,745.4	6,745.4	162.9	134.9	90.80	8,885.2	-597.7	413.8	116.5	297.35	1.392	Level 3	
14,300.0	6,785.1	6,745.1	6,745.1	164.8	134.9	90.60	8,885.2	-597.7	317.1	17.8	299.26	1.060	Level 2	
14,400.0	6,784.8	6,744.8	6,744.8	166.7	134.9	90.40	8,885.2	-597.7	223.2	-78.0	301.17	0.741	Level 1	
14,500.0	6,784.5	6,744.5	6,744.5	168.6	134.9	90.20	8,885.2	-597.7	138.1	-164.9	303.07	0.456	Level 1	
14,600.0	6,784.1	6,744.1	6,744.1	170.5	134.9	90.01	8,885.2	-597.7	91.4	-213.6	304.98	0.300	Level 1	
14,603.6	6,784.1	6,744.1	6,744.1	170.6	134.9	90.00	8,885.2	-597.7	91.3	-213.7	305.04	0.299	Level 1, CC, ES, SF	
14,700.0	6,783.8	6,743.8	6,743.8	172.4	134.9	89.81	8,885.2	-597.7	132.8	-174.1	306.87	0.433	Level 1	
14,800.0	6,783.5	6,743.5	6,743.5	174.4	134.9	89.61	8,885.2	-597.7	216.6	-92.2	308.77	0.701	Level 1	
14,900.0	6,783.2	6,743.2	6,743.2	176.3	134.9	89.42	8,885.2	-597.7	310.1	-0.6	310.66	0.998	Level 1	
15,000.0	6,782.9	6,742.9	6,742.9	178.2	134.9	89.22	8,885.2	-597.7	406.7	94.2	312.55	1.301	Level 3	
15,100.0	6,782.6	6,742.6	6,742.6	180.1	134.9	89.02	8,885.2	-597.7	504.7	190.3	314.43	1.605		
15,200.0	6,782.3	6,742.3	6,742.3	182.0	134.8	88.82	8,885.2	-597.7	603.3	287.0	316.31	1.907		
15,280.6	6,782.0	6,742.0	6,742.0	183.5	134.8	88.67	8,885.2	-597.7	683.0	365.2	317.82	2.149		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN												Offset Well Error:	0.0 ft
Reference													
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
1,500.0	1,491.7	1,493.7	1,493.7	3.8	29.9	4.42	917.0	-613.7	998.1	965.8	32.35	30.850	
1,543.4	1,533.9	1,535.9	1,535.9	4.0	30.7	4.48	917.0	-613.7	987.8	954.6	33.20	29.754	
1,600.0	1,588.7	1,590.7	1,590.7	4.2	31.8	4.54	917.0	-613.7	974.0	939.6	34.41	28.306	
1,700.0	1,685.7	1,687.7	1,687.7	4.7	33.8	4.66	917.0	-613.7	949.6	913.1	36.55	25.980	
1,800.0	1,782.7	1,784.7	1,784.7	5.1	35.7	4.78	917.0	-613.7	925.3	886.6	38.70	23.909	
1,900.0	1,879.6	1,881.6	1,881.6	5.6	37.6	4.91	917.0	-613.7	900.9	860.0	40.85	22.055	
2,000.0	1,976.6	1,978.6	1,978.6	6.1	39.6	5.05	917.0	-613.7	876.5	833.5	43.00	20.384	
2,100.0	2,073.5	2,075.5	2,075.5	6.6	41.5	5.19	917.0	-613.7	852.2	807.0	45.16	18.872	
2,200.0	2,170.5	2,172.5	2,172.5	7.1	43.5	5.35	917.0	-613.7	827.8	780.5	47.31	17.497	
2,300.0	2,267.5	2,269.5	2,269.5	7.6	45.4	5.51	917.0	-613.7	803.5	754.0	49.47	16.241	
2,400.0	2,364.4	2,366.4	2,366.4	8.1	47.3	5.68	917.0	-613.7	779.1	727.5	51.63	15.090	
2,500.0	2,461.4	2,463.4	2,463.4	8.6	49.3	5.87	917.0	-613.7	754.8	701.0	53.80	14.031	
2,600.0	2,558.4	2,560.4	2,560.4	9.1	51.2	6.06	917.0	-613.7	730.5	674.5	55.96	13.053	
2,700.0	2,655.3	2,657.3	2,657.3	9.6	53.1	6.27	917.0	-613.7	706.2	648.0	58.13	12.149	
2,800.0	2,752.3	2,754.3	2,754.3	10.1	55.1	6.50	917.0	-613.7	681.9	621.6	60.30	11.309	
2,900.0	2,849.3	2,851.3	2,851.3	10.6	57.0	6.74	917.0	-613.7	657.6	595.1	62.47	10.527	
3,000.0	2,946.2	2,948.2	2,948.2	11.1	59.0	7.00	917.0	-613.7	633.3	568.6	64.64	9.797	
3,100.0	3,043.2	3,045.2	3,045.2	11.6	60.9	7.28	917.0	-613.7	609.0	542.2	66.81	9.115	
3,200.0	3,140.2	3,142.2	3,142.2	12.1	62.8	7.58	917.0	-613.7	584.8	515.8	68.99	8.476	
3,300.0	3,237.1	3,239.1	3,239.1	12.6	64.8	7.91	917.0	-613.7	560.5	489.3	71.17	7.875	
3,400.0	3,334.1	3,336.1	3,336.1	13.1	66.7	8.27	917.0	-613.7	536.3	462.9	73.36	7.311	
3,500.0	3,431.1	3,433.1	3,433.1	13.6	68.7	8.66	917.0	-613.7	512.1	436.6	75.54	6.779	
3,600.0	3,528.0	3,530.0	3,530.0	14.2	70.6	9.09	917.0	-613.7	487.9	410.2	77.74	6.277	
3,700.0	3,625.0	3,627.0	3,627.0	14.7	72.5	9.57	917.0	-613.7	463.8	383.8	79.94	5.802	
3,800.0	3,722.0	3,724.0	3,724.0	15.2	74.5	10.10	917.0	-613.7	439.7	357.5	82.14	5.353	
3,900.0	3,818.9	3,820.9	3,820.9	15.7	76.4	10.69	917.0	-613.7	415.6	331.2	84.35	4.927	
4,000.0	3,915.9	3,917.9	3,917.9	16.2	78.4	11.35	917.0	-613.7	391.6	305.0	86.58	4.523	
4,100.0	4,012.9	4,014.9	4,014.9	16.7	80.3	12.10	917.0	-613.7	367.6	278.8	88.81	4.139	
4,200.0	4,109.8	4,111.8	4,111.8	17.2	82.2	12.96	917.0	-613.7	343.7	252.6	91.07	3.774	
4,300.0	4,206.8	4,208.8	4,208.8	17.8	84.2	13.94	917.0	-613.7	319.9	226.6	93.34	3.427	
4,400.0	4,303.7	4,305.7	4,305.7	18.3	86.1	15.07	917.0	-613.7	296.2	200.5	95.64	3.097	
4,500.0	4,400.7	4,402.7	4,402.7	18.8	88.1	16.41	917.0	-613.7	272.6	174.6	97.98	2.782	
4,600.0	4,497.7	4,499.7	4,499.7	19.3	90.0	17.99	917.0	-613.7	249.2	148.8	100.37	2.483	
4,700.0	4,594.6	4,596.6	4,596.6	19.8	91.9	19.90	917.0	-613.7	226.0	123.1	102.83	2.198	
4,800.0	4,691.6	4,693.6	4,693.6	20.3	93.9	22.23	917.0	-613.7	203.1	97.7	105.39	1.927	
4,900.0	4,788.6	4,790.6	4,790.6	20.8	95.8	25.16	917.0	-613.7	180.6	72.5	108.08	1.671	
5,000.0	4,885.5	4,887.5	4,887.5	21.4	97.8	28.89	917.0	-613.7	158.6	47.7	110.99	1.429 Level 3	
5,100.0	4,982.5	4,984.5	4,984.5	21.9	99.7	33.76	917.0	-613.7	137.6	23.4	114.19	1.205 Level 2	
5,200.0	5,079.5	5,081.5	5,081.5	22.4	101.6	40.30	917.0	-613.7	117.8	0.0	117.81	1.000 Level 1	
5,300.0	5,176.4	5,178.4	5,178.4	22.9	103.6	49.23	917.0	-613.7	100.1	-21.8	121.97	0.821 Level 1	
5,323.9	5,199.6	5,201.6	5,201.6	23.0	104.0	51.82	917.0	-613.7	96.3	-26.7	123.04	0.783 Level 1	
5,400.0	5,273.6	5,275.6	5,275.6	23.4	105.5	60.68	917.0	-613.7	86.3	-40.2	126.55	0.682 Level 1	
5,500.0	5,371.6	5,373.6	5,373.6	23.7	107.5	73.25	917.0	-613.7	78.3	-52.2	130.48	0.600 Level 1	
5,600.0	5,470.2	5,472.2	5,472.2	24.0	109.4	85.33	917.0	-613.7	75.1	-58.3	133.42	0.563 Level 1	
5,643.4	5,513.1	5,515.1	5,515.1	24.1	110.3	90.00	917.0	-613.7	74.8	-59.6	134.43	0.557 Level 1, CC	
5,700.0	5,569.3	5,571.3	5,571.3	24.3	111.4	95.38	917.0	-613.7	75.2	-60.4	135.60	0.554 Level 1	
5,800.0	5,668.8	5,670.8	5,670.8	24.5	113.4	102.69	917.0	-613.7	76.7	-60.7	137.45	0.558 Level 1	
5,900.0	5,768.6	5,770.6	5,770.6	24.7	115.4	107.23	917.0	-613.7	78.4	-60.9	139.29	0.563 Level 1	
6,000.0	5,868.5	5,870.5	5,870.5	24.8	117.4	109.21	917.0	-613.7	79.2	-62.0	141.25	0.561 Level 1	
6,031.5	5,900.0	5,902.0	5,902.0	24.8	118.0	71.64	917.0	-613.7	79.3	-62.6	141.90	0.559 Level 1	
6,100.0	5,968.5	5,970.5	5,970.5	24.9	119.4	71.64	917.0	-613.7	79.3	-64.0	143.35	0.553 Level 1	

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

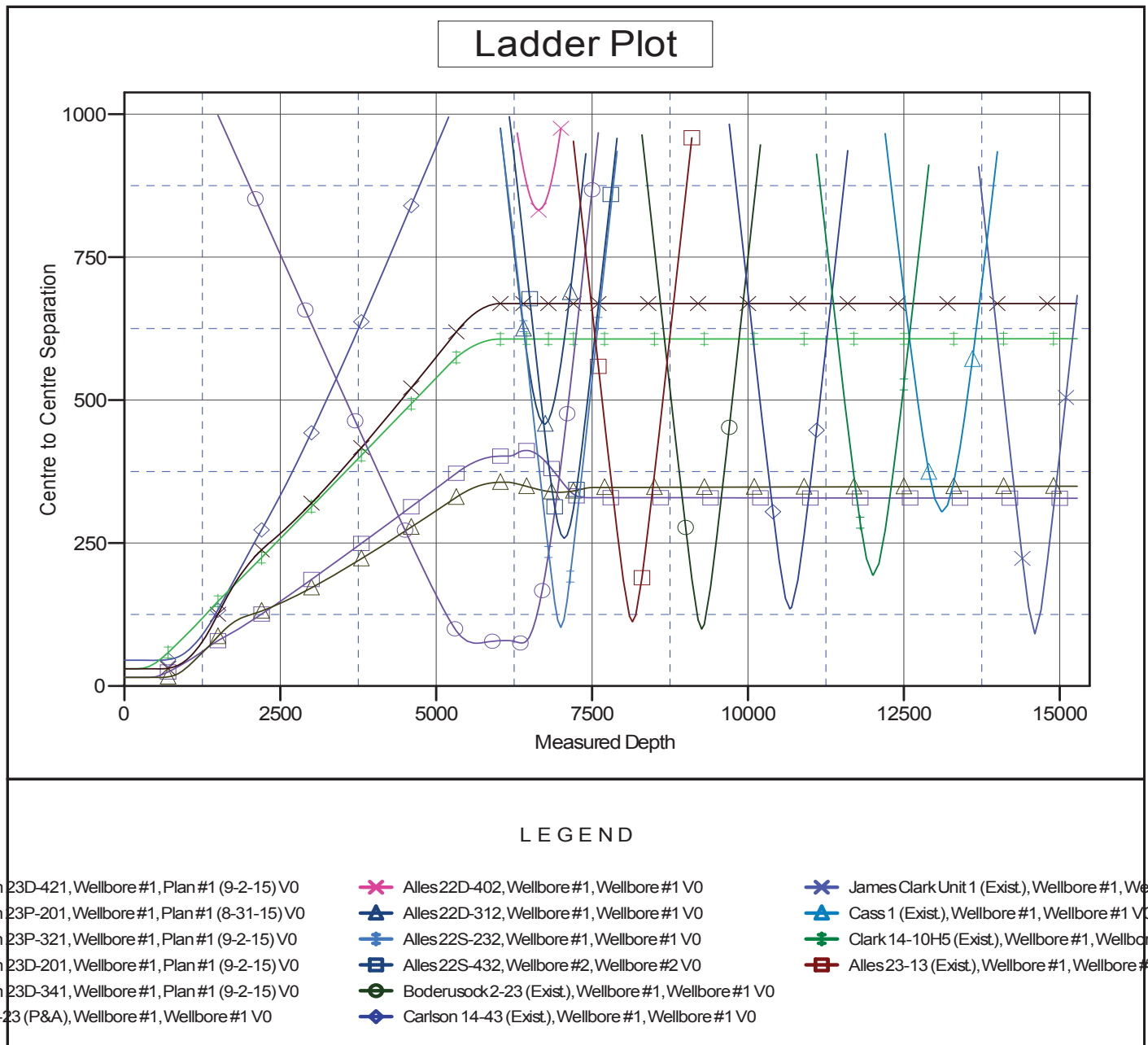
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,174.3	6,042.9	6,044.9	6,044.9	25.0	120.9	71.64	917.0	-613.7	79.3	-65.6	144.92	0.547	Level 1	
6,200.0	6,068.5	6,070.5	6,070.5	25.0	121.4	71.95	917.0	-613.7	79.2	-66.3	145.43	0.544	Level 1	
6,250.0	6,118.4	6,120.4	6,120.4	25.1	122.4	74.32	917.0	-613.7	78.2	-68.0	146.23	0.535	Level 1	
6,300.0	6,168.0	6,170.0	6,170.0	25.3	123.4	79.12	917.0	-613.7	76.7	-70.1	146.80	0.522	Level 1	
6,350.0	6,217.0	6,219.0	6,219.0	25.4	124.4	86.40	917.0	-613.7	75.4	-71.7	147.08	0.513	Level 1	
6,370.2	6,236.6	6,238.6	6,238.6	25.5	124.8	90.00	917.0	-613.7	75.3	-71.8	147.08	0.512	Level 1, ES, SF	
6,400.0	6,265.3	6,267.3	6,267.3	25.6	125.3	95.89	917.0	-613.7	75.7	-71.2	146.87	0.515	Level 1	
6,450.0	6,312.6	6,314.6	6,314.6	25.9	126.3	106.76	917.0	-613.7	79.1	-66.7	145.81	0.542	Level 1	
6,500.0	6,358.8	6,360.8	6,360.8	26.2	127.2	117.70	917.0	-613.7	86.9	-56.8	143.64	0.605	Level 1	
6,550.0	6,403.6	6,405.6	6,405.6	26.5	128.1	127.51	917.0	-613.7	99.8	-40.6	140.42	0.711	Level 1	
6,600.0	6,446.9	6,448.9	6,448.9	26.9	129.0	135.61	917.0	-613.7	117.8	-18.6	136.39	0.863	Level 1	
6,650.0	6,488.4	6,490.4	6,490.4	27.3	129.8	141.95	917.0	-613.7	140.3	8.5	131.79	1.064	Level 2	
6,700.0	6,528.0	6,530.0	6,530.0	27.7	130.6	146.79	917.0	-613.7	166.8	40.0	126.75	1.316	Level 3	
6,750.0	6,565.6	6,567.6	6,567.6	28.2	131.4	150.42	917.0	-613.7	196.8	75.5	121.33	1.622		
6,800.0	6,600.9	6,602.9	6,602.9	28.7	132.1	153.10	917.0	-613.7	229.9	114.3	115.62	1.988		
6,850.0	6,633.8	6,635.8	6,635.8	29.3	132.7	155.01	917.0	-613.7	265.7	156.0	109.72	2.422		
6,900.0	6,664.2	6,666.2	6,666.2	29.9	133.3	156.29	917.0	-613.7	304.0	200.2	103.75	2.930		
6,950.0	6,692.0	6,694.0	6,694.0	30.5	133.9	156.99	917.0	-613.7	344.4	246.5	97.94	3.517		
7,000.0	6,716.9	6,718.9	6,718.9	31.1	134.4	157.15	917.0	-613.7	386.8	294.2	92.58	4.178		
7,050.0	6,739.0	6,741.0	6,741.0	31.8	134.8	156.70	917.0	-613.7	430.9	342.7	88.19	4.886		
7,100.0	6,758.1	6,760.1	6,760.1	32.5	135.2	155.53	917.0	-613.7	476.5	390.9	85.55	5.570		
7,150.0	6,774.1	6,776.1	6,776.1	33.2	135.5	153.34	917.0	-613.7	523.3	437.4	85.89	6.092		
7,200.0	6,787.0	6,789.0	6,789.0	34.0	135.8	149.56	917.0	-613.7	571.1	479.9	91.21	6.262		
7,250.0	6,796.7	6,798.7	6,798.7	34.7	136.0	142.95	917.0	-613.7	619.8	515.2	104.51	5.930		
7,300.0	6,803.2	6,805.2	6,805.2	35.5	136.1	130.64	917.0	-613.7	669.0	539.2	129.80	5.154		
7,350.0	6,806.4	6,808.4	6,808.4	36.3	136.2	106.84	917.0	-613.7	718.6	555.1	163.46	4.396		
7,376.8	6,806.8	6,808.8	6,808.8	36.7	136.2	88.23	917.0	-613.7	745.2	574.5	170.70	4.366		
7,400.0	6,806.8	6,808.8	6,808.8	37.1	136.2	88.17	917.0	-613.7	768.3	597.2	171.08	4.491		
7,500.0	6,806.4	6,808.4	6,808.4	38.7	136.2	87.93	917.0	-613.7	867.9	695.1	172.76	5.024		
7,600.0	6,806.1	6,808.1	6,808.1	40.4	136.2	87.69	917.0	-613.7	967.6	793.1	174.45	5.546		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23P-221	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (9-2-15)	Offset TVD Reference:	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 23P-221
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23P-221
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
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Site Error:	0.0 ft	North Reference:	True
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