

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Brown 23D-341**

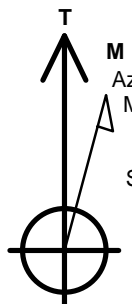
Surface Location: Brown 5N65W23 Pad Sec.23-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4643.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1382632.09	3243480.75	40.380433	-104.626013	

Original Well Elev WELL @ 4656.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' E/W Hardline (23D-341)	1.0	5673.0	-365.1	Rectangle (Sides: L7785.7 W100.0)
SHL 1082'FSL & 1389'FEL, Sec.23	1.0	0.0	0.0	Point
BHL 0'FNL & 1735'FEL, Sec.14	6867.0	9558.8	-365.1	Point



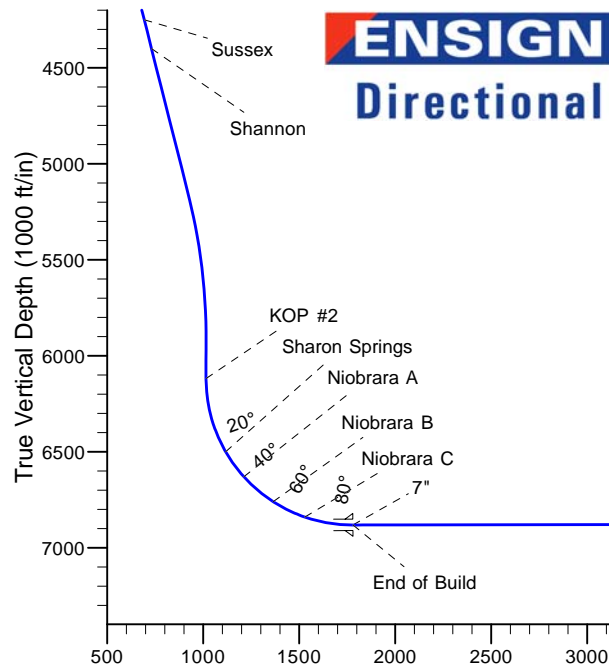
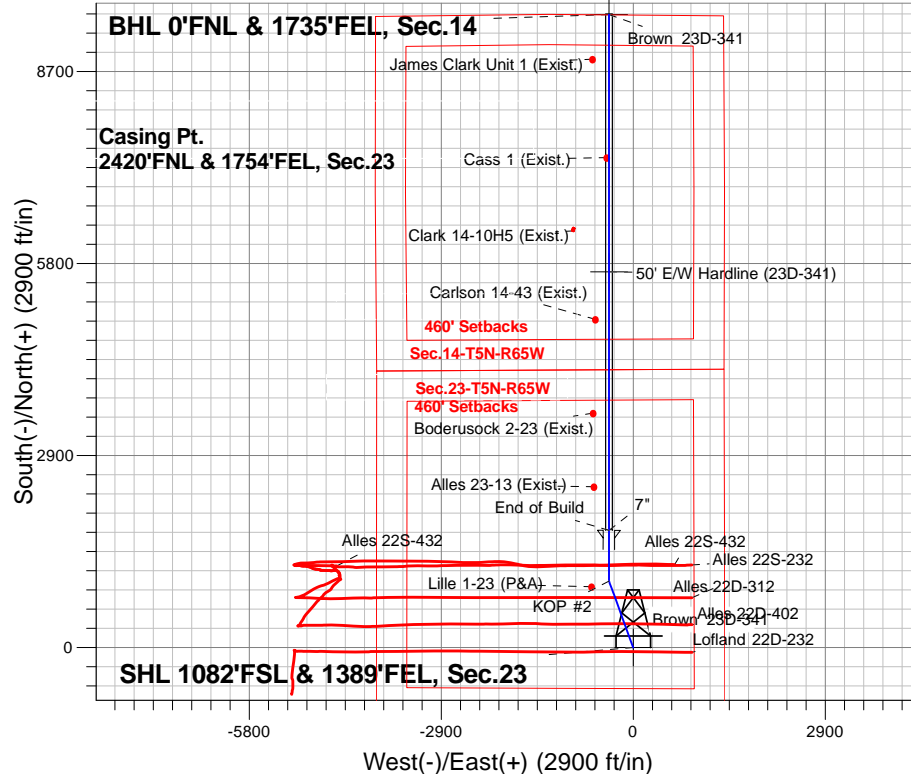
Azimuths to True North
Magnetic North: 8.22°

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

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6118.0	6247.0	KOP #2
6882.0	7448.5	End of Build

Brown 5N65W23 Pad Sec.23-T5N-R65W
Brown 23D-341
Plan #1 (9-2-15)
8:50, 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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1988.0	14.82	339.98	1977.0	119.4	-43.5	1.50	339.98	121.0	
4	5288.0	14.82	339.98	5167.2	912.5	-332.5	0.00	0.00	924.5	
5	6029.0	0.00	0.00	5900.0	1002.0	-365.1	2.00	180.00	1015.2	
6	6247.0	0.00	0.00	6118.0	1002.0	-365.1	0.00	0.00	1015.2	
7	7448.5	90.11	0.00	6882.0	1767.4	-365.1	7.50	0.00	1780.1	
8	15239.9	90.11	0.00	6867.0	9558.8	-365.1	0.00	0.00	9565.8	BHL 0'FNL & 1735'FEL, Sec.14

BHL 0'FNL & 1735'FEL, Sec.14

Vertical Section at 357.81° (1000 ft/in)

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.23-T5N-R65W

Brown 5N65W23 Pad Sec.23-T5N-R65W

Brown 23D-341

Wellbore #1

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

Standard Planning Report

04 September, 2015

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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 23D-341		
Well Position	+N/-S	-0.4 ft	Northing:
	+E/-W	30.1 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 (°)
			357.81

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,988.0	14.82	339.98	1,977.0	119.4	-43.5	1.50	1.50	0.00	339.98	
5,288.0	14.82	339.98	5,167.2	912.5	-332.5	0.00	0.00	0.00	0.00	
6,029.0	0.00	0.00	5,900.0	1,002.0	-365.1	2.00	-2.00	0.00	180.00	
6,247.0	0.00	0.00	6,118.0	1,002.0	-365.1	0.00	0.00	0.00	0.00	
7,448.5	90.11	0.00	6,882.0	1,767.4	-365.1	7.50	7.50	0.00	0.00	
15,239.9	90.11	0.00	6,867.0	9,558.8	-365.1	0.00	0.00	0.00	0.00	BHL 0'FNL & 1735'FE

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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 23D-341	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 & 1389'FEL, Sec.23 - 50' E/W Hardline (23D-341)									
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,100.0	1.50	339.98	1,100.0	1.2	-0.4	1.2	1.50	1.50	0.00
1,200.0	3.00	339.98	1,199.9	4.9	-1.8	5.0	1.50	1.50	0.00
1,300.0	4.50	339.98	1,299.7	11.1	-4.0	11.2	1.50	1.50	0.00
1,400.0	6.00	339.98	1,399.3	19.7	-7.2	19.9	1.50	1.50	0.00
1,500.0	7.50	339.98	1,498.6	30.7	-11.2	31.1	1.50	1.50	0.00
1,600.0	9.00	339.98	1,597.5	44.2	-16.1	44.8	1.50	1.50	0.00
1,700.0	10.50	339.98	1,696.1	60.1	-21.9	60.9	1.50	1.50	0.00
1,800.0	12.00	339.98	1,794.2	78.4	-28.6	79.5	1.50	1.50	0.00
1,900.0	13.50	339.98	1,891.7	99.2	-36.1	100.5	1.50	1.50	0.00
1,988.0	14.82	339.98	1,977.0	119.4	-43.5	121.0	1.50	1.50	0.00
2,000.0	14.82	339.98	1,988.6	122.3	-44.6	123.9	0.00	0.00	0.00
2,100.0	14.82	339.98	2,085.3	146.3	-53.3	148.2	0.00	0.00	0.00
2,200.0	14.82	339.98	2,182.0	170.3	-62.1	172.6	0.00	0.00	0.00
2,300.0	14.82	339.98	2,278.6	194.4	-70.8	196.9	0.00	0.00	0.00
2,400.0	14.82	339.98	2,375.3	218.4	-79.6	221.3	0.00	0.00	0.00
2,500.0	14.82	339.98	2,472.0	242.4	-88.3	245.6	0.00	0.00	0.00
2,600.0	14.82	339.98	2,568.7	266.5	-97.1	270.0	0.00	0.00	0.00
2,700.0	14.82	339.98	2,665.3	290.5	-105.9	294.3	0.00	0.00	0.00
2,800.0	14.82	339.98	2,762.0	314.5	-114.6	318.7	0.00	0.00	0.00
2,900.0	14.82	339.98	2,858.7	338.6	-123.4	343.0	0.00	0.00	0.00
3,000.0	14.82	339.98	2,955.4	362.6	-132.1	367.4	0.00	0.00	0.00
3,100.0	14.82	339.98	3,052.0	386.6	-140.9	391.7	0.00	0.00	0.00
3,200.0	14.82	339.98	3,148.7	410.7	-149.6	416.1	0.00	0.00	0.00
3,300.0	14.82	339.98	3,245.4	434.7	-158.4	440.4	0.00	0.00	0.00
3,400.0	14.82	339.98	3,342.0	458.7	-167.2	464.8	0.00	0.00	0.00
3,500.0	14.82	339.98	3,438.7	482.8	-175.9	489.1	0.00	0.00	0.00
3,563.4	14.82	339.98	3,500.0	498.0	-181.5	504.6	0.00	0.00	0.00
Parkman									
3,600.0	14.82	339.98	3,535.4	506.8	-184.7	513.5	0.00	0.00	0.00
3,700.0	14.82	339.98	3,632.1	530.8	-193.4	537.8	0.00	0.00	0.00
3,800.0	14.82	339.98	3,728.7	554.9	-202.2	562.2	0.00	0.00	0.00
3,900.0	14.82	339.98	3,825.4	578.9	-210.9	586.5	0.00	0.00	0.00
4,000.0	14.82	339.98	3,922.1	602.9	-219.7	610.9	0.00	0.00	0.00
4,100.0	14.82	339.98	4,018.8	627.0	-228.5	635.2	0.00	0.00	0.00
4,200.0	14.82	339.98	4,115.4	651.0	-237.2	659.6	0.00	0.00	0.00
4,300.0	14.82	339.98	4,212.1	675.0	-246.0	683.9	0.00	0.00	0.00
4,339.2	14.82	339.98	4,250.0	684.4	-249.4	693.5	0.00	0.00	0.00
Sussex									
4,400.0	14.82	339.98	4,308.8	699.1	-254.7	708.3	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 23D-341	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)
4,494.4	14.82	339.98	4,400.0	721.7	-263.0	731.2	0.00	0.00	0.00
Shannon									
4,500.0	14.82	339.98	4,405.5	723.1	-263.5	732.6	0.00	0.00	0.00
4,600.0	14.82	339.98	4,502.1	747.1	-272.2	757.0	0.00	0.00	0.00
4,700.0	14.82	339.98	4,598.8	771.2	-281.0	781.3	0.00	0.00	0.00
4,800.0	14.82	339.98	4,695.5	795.2	-289.8	805.7	0.00	0.00	0.00
4,900.0	14.82	339.98	4,792.1	819.2	-298.5	830.0	0.00	0.00	0.00
5,000.0	14.82	339.98	4,888.8	843.2	-307.3	854.4	0.00	0.00	0.00
5,100.0	14.82	339.98	4,985.5	867.3	-316.0	878.7	0.00	0.00	0.00
5,200.0	14.82	339.98	5,082.2	891.3	-324.8	903.1	0.00	0.00	0.00
5,288.0	14.82	339.98	5,167.2	912.5	-332.5	924.5	0.00	0.00	0.00
5,300.0	14.58	339.98	5,178.8	915.3	-333.5	927.4	2.00	-2.00	0.00
5,400.0	12.58	339.98	5,276.0	937.4	-341.6	949.7	2.00	-2.00	0.00
5,500.0	10.58	339.98	5,374.0	956.2	-348.4	968.8	2.00	-2.00	0.00
5,600.0	8.58	339.98	5,472.6	971.9	-354.1	984.7	2.00	-2.00	0.00
5,700.0	6.58	339.98	5,571.7	984.3	-358.7	997.2	2.00	-2.00	0.00
5,800.0	4.58	339.98	5,671.3	993.4	-362.0	1,006.5	2.00	-2.00	0.00
5,900.0	2.58	339.98	5,771.1	999.3	-364.1	1,012.4	2.00	-2.00	0.00
6,000.0	0.58	339.98	5,871.0	1,001.9	-365.1	1,015.1	2.00	-2.00	0.00
6,029.0	0.00	0.00	5,900.0	1,002.0	-365.1	1,015.2	2.00	-2.00	0.00
6,100.0	0.00	0.00	5,971.0	1,002.0	-365.1	1,015.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,071.0	1,002.0	-365.1	1,015.2	0.00	0.00	0.00
6,247.0	0.00	0.00	6,118.0	1,002.0	-365.1	1,015.2	0.00	0.00	0.00
KOP #2									
6,300.0	3.97	0.00	6,171.0	1,003.8	-365.1	1,017.0	7.50	7.50	0.00
6,400.0	11.47	0.00	6,270.0	1,017.3	-365.1	1,030.5	7.50	7.50	0.00
6,500.0	18.97	0.00	6,366.4	1,043.5	-365.1	1,056.7	7.50	7.50	0.00
6,600.0	26.47	0.00	6,458.6	1,082.1	-365.1	1,095.3	7.50	7.50	0.00
6,647.0	30.00	0.00	6,500.0	1,104.4	-365.1	1,117.5	7.50	7.50	0.00
Sharon Springs									
6,700.0	33.97	0.00	6,544.9	1,132.4	-365.1	1,145.5	7.50	7.50	0.00
6,800.0	41.47	0.00	6,624.0	1,193.6	-365.1	1,206.6	7.50	7.50	0.00
6,808.1	42.08	0.00	6,630.0	1,199.0	-365.1	1,212.0	7.50	7.50	0.00
Niobrara A									
6,900.0	48.97	0.00	6,694.3	1,264.5	-365.1	1,277.5	7.50	7.50	0.00
7,000.0	56.47	0.00	6,754.9	1,344.0	-365.1	1,357.0	7.50	7.50	0.00
7,009.4	57.18	0.00	6,760.0	1,351.9	-365.1	1,364.8	7.50	7.50	0.00
Niobrara B									
7,100.0	63.97	0.00	6,804.5	1,430.7	-365.1	1,443.6	7.50	7.50	0.00
7,192.6	70.92	0.00	6,840.0	1,516.2	-365.1	1,529.1	7.50	7.50	0.00
Niobrara C									
7,200.0	71.47	0.00	6,842.4	1,523.2	-365.1	1,536.0	7.50	7.50	0.00
7,300.0	78.97	0.00	6,867.9	1,619.8	-365.1	1,632.6	7.50	7.50	0.00
7,400.0	86.47	0.00	6,880.5	1,719.0	-365.1	1,731.6	7.50	7.50	0.00
7,448.5	90.11	0.00	6,882.0	1,767.4	-365.1	1,780.1	7.50	7.50	0.00
End of Build - 7"									
7,500.0	90.11	0.00	6,881.9	1,818.9	-365.1	1,831.5	0.00	0.00	0.00
7,600.0	90.11	0.00	6,881.7	1,918.9	-365.1	1,931.5	0.00	0.00	0.00
7,700.0	90.11	0.00	6,881.5	2,018.9	-365.1	2,031.4	0.00	0.00	0.00
7,800.0	90.11	0.00	6,881.3	2,118.9	-365.1	2,131.3	0.00	0.00	0.00
7,900.0	90.11	0.00	6,881.1	2,218.9	-365.1	2,231.3	0.00	0.00	0.00
8,000.0	90.11	0.00	6,880.9	2,318.9	-365.1	2,331.2	0.00	0.00	0.00

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Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	North Reference:	True
Well:	Brown 23D-341	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)
8,100.0	90.11	0.00	6,880.7	2,418.9	-365.1	2,431.1	0.00	0.00	0.00
8,200.0	90.11	0.00	6,880.5	2,518.9	-365.1	2,531.0	0.00	0.00	0.00
8,300.0	90.11	0.00	6,880.3	2,618.9	-365.1	2,631.0	0.00	0.00	0.00
8,400.0	90.11	0.00	6,880.1	2,718.9	-365.1	2,730.9	0.00	0.00	0.00
8,500.0	90.11	0.00	6,879.9	2,818.9	-365.1	2,830.8	0.00	0.00	0.00
8,600.0	90.11	0.00	6,879.7	2,918.9	-365.1	2,930.7	0.00	0.00	0.00
8,700.0	90.11	0.00	6,879.6	3,018.9	-365.1	3,030.7	0.00	0.00	0.00
8,800.0	90.11	0.00	6,879.4	3,118.9	-365.1	3,130.6	0.00	0.00	0.00
8,900.0	90.11	0.00	6,879.2	3,218.9	-365.1	3,230.5	0.00	0.00	0.00
9,000.0	90.11	0.00	6,879.0	3,318.9	-365.1	3,330.5	0.00	0.00	0.00
9,100.0	90.11	0.00	6,878.8	3,418.9	-365.1	3,430.4	0.00	0.00	0.00
9,200.0	90.11	0.00	6,878.6	3,518.9	-365.1	3,530.3	0.00	0.00	0.00
9,300.0	90.11	0.00	6,878.4	3,618.9	-365.1	3,630.2	0.00	0.00	0.00
9,400.0	90.11	0.00	6,878.2	3,718.9	-365.1	3,730.2	0.00	0.00	0.00
9,500.0	90.11	0.00	6,878.0	3,818.9	-365.1	3,830.1	0.00	0.00	0.00
9,600.0	90.11	0.00	6,877.8	3,918.9	-365.1	3,930.0	0.00	0.00	0.00
9,700.0	90.11	0.00	6,877.6	4,018.9	-365.1	4,029.9	0.00	0.00	0.00
9,800.0	90.11	0.00	6,877.4	4,118.9	-365.1	4,129.9	0.00	0.00	0.00
9,900.0	90.11	0.00	6,877.3	4,218.9	-365.1	4,229.8	0.00	0.00	0.00
10,000.0	90.11	0.00	6,877.1	4,318.9	-365.1	4,329.7	0.00	0.00	0.00
10,100.0	90.11	0.00	6,876.9	4,418.9	-365.1	4,429.6	0.00	0.00	0.00
10,200.0	90.11	0.00	6,876.7	4,518.9	-365.1	4,529.6	0.00	0.00	0.00
10,300.0	90.11	0.00	6,876.5	4,618.9	-365.1	4,629.5	0.00	0.00	0.00
10,400.0	90.11	0.00	6,876.3	4,718.9	-365.1	4,729.4	0.00	0.00	0.00
10,500.0	90.11	0.00	6,876.1	4,818.9	-365.1	4,829.4	0.00	0.00	0.00
10,600.0	90.11	0.00	6,875.9	4,918.9	-365.1	4,929.3	0.00	0.00	0.00
10,700.0	90.11	0.00	6,875.7	5,018.9	-365.1	5,029.2	0.00	0.00	0.00
10,800.0	90.11	0.00	6,875.5	5,118.9	-365.1	5,129.1	0.00	0.00	0.00
10,900.0	90.11	0.00	6,875.3	5,218.9	-365.1	5,229.1	0.00	0.00	0.00
11,000.0	90.11	0.00	6,875.1	5,318.9	-365.1	5,329.0	0.00	0.00	0.00
11,100.0	90.11	0.00	6,874.9	5,418.9	-365.1	5,428.9	0.00	0.00	0.00
11,200.0	90.11	0.00	6,874.8	5,518.9	-365.1	5,528.8	0.00	0.00	0.00
11,300.0	90.11	0.00	6,874.6	5,618.9	-365.1	5,628.8	0.00	0.00	0.00
11,400.0	90.11	0.00	6,874.4	5,718.9	-365.1	5,728.7	0.00	0.00	0.00
11,500.0	90.11	0.00	6,874.2	5,818.9	-365.1	5,828.6	0.00	0.00	0.00
11,600.0	90.11	0.00	6,874.0	5,918.9	-365.1	5,928.6	0.00	0.00	0.00
11,700.0	90.11	0.00	6,873.8	6,018.9	-365.1	6,028.5	0.00	0.00	0.00
11,800.0	90.11	0.00	6,873.6	6,118.9	-365.1	6,128.4	0.00	0.00	0.00
11,900.0	90.11	0.00	6,873.4	6,218.9	-365.1	6,228.3	0.00	0.00	0.00
12,000.0	90.11	0.00	6,873.2	6,318.9	-365.1	6,328.3	0.00	0.00	0.00
12,100.0	90.11	0.00	6,873.0	6,418.9	-365.1	6,428.2	0.00	0.00	0.00
12,200.0	90.11	0.00	6,872.8	6,518.9	-365.1	6,528.1	0.00	0.00	0.00
12,300.0	90.11	0.00	6,872.6	6,618.9	-365.1	6,628.0	0.00	0.00	0.00
12,400.0	90.11	0.00	6,872.5	6,718.9	-365.1	6,728.0	0.00	0.00	0.00
12,500.0	90.11	0.00	6,872.3	6,818.9	-365.1	6,827.9	0.00	0.00	0.00
12,600.0	90.11	0.00	6,872.1	6,918.9	-365.1	6,927.8	0.00	0.00	0.00
12,700.0	90.11	0.00	6,871.9	7,018.9	-365.1	7,027.7	0.00	0.00	0.00
12,800.0	90.11	0.00	6,871.7	7,118.9	-365.1	7,127.7	0.00	0.00	0.00
12,900.0	90.11	0.00	6,871.5	7,218.9	-365.1	7,227.6	0.00	0.00	0.00
13,000.0	90.11	0.00	6,871.3	7,318.9	-365.1	7,327.5	0.00	0.00	0.00
13,100.0	90.11	0.00	6,871.1	7,418.9	-365.1	7,427.5	0.00	0.00	0.00
13,200.0	90.11	0.00	6,870.9	7,518.9	-365.1	7,527.4	0.00	0.00	0.00
13,300.0	90.11	0.00	6,870.7	7,618.9	-365.1	7,627.3	0.00	0.00	0.00

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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)
13,400.0	90.11	0.00	6,870.5	7,718.9	-365.1	7,727.2	0.00	0.00	0.00
13,500.0	90.11	0.00	6,870.3	7,818.9	-365.1	7,827.2	0.00	0.00	0.00
13,600.0	90.11	0.00	6,870.1	7,918.9	-365.1	7,927.1	0.00	0.00	0.00
13,700.0	90.11	0.00	6,870.0	8,018.9	-365.1	8,027.0	0.00	0.00	0.00
13,800.0	90.11	0.00	6,869.8	8,118.9	-365.1	8,126.9	0.00	0.00	0.00
13,900.0	90.11	0.00	6,869.6	8,218.9	-365.1	8,226.9	0.00	0.00	0.00
14,000.0	90.11	0.00	6,869.4	8,318.9	-365.1	8,326.8	0.00	0.00	0.00
14,100.0	90.11	0.00	6,869.2	8,418.9	-365.1	8,426.7	0.00	0.00	0.00
14,200.0	90.11	0.00	6,869.0	8,518.9	-365.1	8,526.7	0.00	0.00	0.00
14,300.0	90.11	0.00	6,868.8	8,618.9	-365.1	8,626.6	0.00	0.00	0.00
14,400.0	90.11	0.00	6,868.6	8,718.9	-365.1	8,726.5	0.00	0.00	0.00
14,500.0	90.11	0.00	6,868.4	8,818.9	-365.1	8,826.4	0.00	0.00	0.00
14,600.0	90.11	0.00	6,868.2	8,918.9	-365.1	8,926.4	0.00	0.00	0.00
14,700.0	90.11	0.00	6,868.0	9,018.9	-365.1	9,026.3	0.00	0.00	0.00
14,800.0	90.11	0.00	6,867.8	9,118.9	-365.1	9,126.2	0.00	0.00	0.00
14,900.0	90.11	0.00	6,867.7	9,218.9	-365.1	9,226.1	0.00	0.00	0.00
15,000.0	90.11	0.00	6,867.5	9,318.9	-365.1	9,326.1	0.00	0.00	0.00
15,100.0	90.11	0.00	6,867.3	9,418.9	-365.1	9,426.0	0.00	0.00	0.00
15,200.0	90.11	0.00	6,867.1	9,518.9	-365.1	9,525.9	0.00	0.00	0.00
15,239.9	90.11	0.00	6,867.0	9,558.8	-365.1	9,565.8	0.00	0.00	0.00
BHL 0°FNL & 1735°FEL, Sec.14									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 1082°FSL & 1389°F	0.00	0.00	1.0	0.0	0.0	1,382,632.10	3,243,480.75	40.380433	-104.626013
- plan hits target center									
- Point									
50' E/W Hardline (23D-3)	0.00	0.00	1.0	5,672.9	-365.1	1,388,300.93	3,243,059.77	40.396005	-104.627324
- plan misses target center by 5684.7ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W100.0 H7,785.7 D0.0)									
BHL 0°FNL & 1735°FEL,	0.00	0.00	6,867.0	9,558.8	-365.1	1,392,186.45	3,243,021.47	40.406671	-104.627324
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,448.5	6,882.0	7"		7	7-1/2

Database:	US_EDM	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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 (°)
3,563.4	3,500.0	Parkman		0.00	
4,339.2	4,250.0	Sussex		0.00	
4,494.4	4,400.0	Shannon		0.00	
6,647.0	6,500.0	Sharon Springs		0.00	
6,808.1	6,630.0	Niobrara A		0.00	
7,009.4	6,760.0	Niobrara B		0.00	
7,192.6	6,840.0	Niobrara C		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,247.0	6,118.0	119.4	-43.5	KOP #2
7,448.5	6,882.0	912.5	-332.5	End of Build

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.23-T5N-R65W

Brown 5N65W23 Pad Sec.23-T5N-R65W

Brown 23D-341

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 23D-341
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 23D-341	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	15,239.9	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	11,362.4	502.7	377.0	3.998	SF
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,700.0	11,361.4	493.5	372.0	4.062	ES
Alles 22D-312 - Wellbore #1 - Wellbore #1	6,731.1	11,360.9	491.9	373.2	4.146	CC
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,500.0	11,484.0	914.1	779.3	6.782	SF
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,650.0	11,481.3	882.9	758.0	7.070	ES
Alles 22D-402 - Wellbore #1 - Wellbore #1	6,661.9	11,481.1	882.7	758.8	7.124	CC
Alles 22S-232 - Wellbore #1 - Wellbore #1	6,945.4	10,636.0	100.4	12.4	1.141	Level 2, CC, ES, SF
Alles 22S-432 - Wellbore #1 - Wellbore #1						Out of range
Alles 22S-432 - Wellbore #1 - Wellbore #1						Out of range
Alles 22S-432 - Wellbore #1 - Wellbore #1						Out of range
Alles 22S-432 - Wellbore #2 - Wellbore #2	6,950.0	11,422.0	253.5	158.3	2.664	SF
Alles 22S-432 - Wellbore #2 - Wellbore #2	7,000.0	11,422.5	238.7	149.9	2.688	ES
Alles 22S-432 - Wellbore #2 - Wellbore #2	7,030.4	11,422.8	236.2	151.3	2.784	CC
Brown 5N65W23 Pad Sec.23-T5N-R65W						
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	1,000.0	1,000.0	15.0	10.8	3.524	CC
Brown 23D-201 - Wellbore #1 - Plan #1 (9-2-15)	15,239.9	15,243.9	340.8	-14.7	0.959	Level 1, ES, SF
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	1,000.0	1,000.0	30.1	25.8	7.046	CC, ES
Brown 23D-421 - Wellbore #1 - Plan #1 (9-2-15)	15,239.9	15,248.0	766.9	404.5	2.116	SF
Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)	200.0	200.0	45.1	44.5	66.936	CC, ES
Brown 23P-201 - Wellbore #1 - Plan #1 (8-31-15)	15,239.9	15,382.7	947.7	582.0	2.591	SF
Brown 23P-221 - Wellbore #1 - Plan #1 (9-2-15)	600.0	600.0	15.0	12.6	6.085	CC
Brown 23P-221 - Wellbore #1 - Plan #1 (9-2-15)	15,239.9	15,277.0	349.4	-7.6	0.979	Level 1, ES, SF
Brown 23P-321 - Wellbore #1 - Plan #1 (9-2-15)	400.0	400.0	30.1	28.5	19.125	CC, ES
Brown 23P-321 - Wellbore #1 - Plan #1 (9-2-15)	15,239.9	15,621.8	656.1	290.1	1.792	SF
Brown 23X-241 - Wellbore #1 - Plan #1 (9-2-15)	200.0	200.0	59.9	59.2	88.839	CC, ES
Brown 23X-241 - Wellbore #1 - Plan #1 (9-2-15)	800.0	787.4	102.3	98.9	29.866	SF
Existing Sec. 23-T5N-R65W						
Alles 23-13 (Exist.) - Wellbore #1 - Wellbore #1	8,110.3	6,863.7	226.6	41.3	1.223	Level 2, CC, ES, SF
Boderusock 2-23 (Exist.) - Wellbore #1 - Wellbore #1	9,221.4	6,862.6	239.4	33.6	1.163	Level 2, CC, ES, SF
Carlson 14-43 (Exist.) - Wellbore #1 - Wellbore #1	10,636.1	6,838.8	204.0	-28.0	0.879	Level 1, CC, ES, SF
Cass 1 (Exist.) - Wellbore #1 - Wellbore #1	13,079.5	6,830.1	34.0	-244.3	0.122	Level 1, CC, ES, SF
Clark 14-10H5 (Exist.) - Wellbore #1 - Wellbore #1	11,972.2	6,842.0	532.1	398.7	3.990	CC, ES
Clark 14-10H5 (Exist.) - Wellbore #1 - Wellbore #1	12,000.0	6,841.9	532.8	398.9	3.980	SF
James Clark Unit 1 (Exist.) - Wellbore #1 - Wellbore #1	14,566.3	6,828.3	247.6	-59.1	0.807	Level 1, CC, ES, SF

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 23D-341
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 23D-341	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)	Distance Between Ellipses (ft)	Separation Factor	Warning
Lofland 22T & Alles 22S-HZ Existing Wells						
Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1	6,247.0	6,120.0	277.0	130.9	1.895	CC
Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1	6,300.0	6,173.0	277.6	130.3	1.885	ES
Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1	6,350.0	6,222.7	279.2	130.9	1.883	SF
Lofland 22T-HZ Pad Sec.22-T5N-R65W						
Lofland 22D-232 - Wellbore #1 - Wellbore #1						Out of range
Lofland 22D-232 - Wellbore #1 - Wellbore #1						Out of range
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)				
6,029.0	5,900.0	11,375.4	6,865.4	23.5	125.4	176.66	753.7	-350.6	993.0	852.3	140.72	7.057			
6,100.0	5,971.0	11,373.6	6,865.4	23.6	125.3	177.08	753.7	-352.4	924.4	783.5	140.89	6.561			
6,200.0	6,071.0	11,371.3	6,865.4	23.7	125.3	177.62	753.8	-354.8	828.6	687.4	141.14	5.871			
6,247.0	6,118.0	11,370.2	6,865.5	23.8	125.3	177.86	753.8	-355.9	783.8	642.6	141.25	5.549			
6,250.0	6,121.0	11,370.2	6,865.5	23.8	125.3	177.90	753.8	-355.9	781.0	639.7	141.27	5.528			
6,300.0	6,171.0	11,369.1	6,865.5	23.9	125.2	178.44	753.8	-357.0	734.4	593.2	141.28	5.198			
6,350.0	6,220.7	11,369.0	6,865.5	24.0	125.2	178.64	753.8	-357.1	689.7	549.1	140.69	4.903			
6,400.0	6,270.0	11,367.2	6,865.5	24.2	125.2	179.05	753.9	-358.9	647.6	508.0	139.53	4.641			
6,450.0	6,318.6	11,366.3	6,865.5	24.4	125.1	179.25	753.9	-359.8	608.6	470.8	137.82	4.416			
6,500.0	6,366.4	11,365.3	6,865.5	24.7	125.1	179.43	753.9	-360.8	573.6	438.1	135.57	4.231			
6,550.0	6,413.1	11,364.3	6,865.6	25.0	125.1	179.58	753.9	-361.7	543.7	410.9	132.79	4.094			
6,600.0	6,458.6	11,363.4	6,865.6	25.3	125.1	179.71	753.9	-362.7	519.7	390.2	129.51	4.013			
6,650.0	6,502.6	11,362.4	6,865.6	25.8	125.0	179.83	753.9	-363.7	502.7	377.0	125.73	3.998	SF		
6,700.0	6,544.9	11,361.4	6,865.6	26.2	125.0	179.94	753.9	-364.6	493.5	372.0	121.50	4.062	ES		
6,731.1	6,570.4	11,360.9	6,865.6	26.5	125.0	-179.99	753.9	-365.2	491.9	373.2	118.64	4.146	CC		
6,750.0	6,585.4	11,360.5	6,865.6	26.7	125.0	-179.95	753.9	-365.6	492.5	375.7	116.82	4.216			
6,800.0	6,624.0	11,359.6	6,865.6	27.2	125.0	-179.84	754.0	-366.5	499.7	388.0	111.74	4.472			
6,850.0	6,660.3	11,358.7	6,865.7	27.8	124.9	-179.73	754.0	-367.4	514.9	408.6	106.28	4.845			
6,900.0	6,694.3	11,357.8	6,865.7	28.4	124.9	-179.61	754.0	-368.2	537.2	436.8	100.50	5.346			
6,950.0	6,725.9	11,357.0	6,865.7	29.0	124.9	-179.49	754.0	-369.1	565.8	471.4	94.42	5.992			
7,000.0	6,754.9	11,356.3	6,865.7	29.7	124.9	-179.35	754.0	-369.8	599.6	511.5	88.13	6.804			
7,050.0	6,781.1	11,355.5	6,865.7	30.4	124.8	-179.19	754.0	-370.6	637.7	556.0	81.67	7.809			
7,100.0	6,804.5	11,354.8	6,865.7	31.1	124.8	-178.99	754.0	-371.3	679.2	604.0	75.13	9.040			
7,150.0	6,824.9	11,354.2	6,865.7	31.9	124.8	-178.74	754.0	-371.9	723.3	654.7	68.63	10.540			
7,200.0	6,842.4	11,353.6	6,865.7	32.7	124.8	-178.39	754.0	-372.5	769.5	707.2	62.30	12.351			
7,250.0	6,856.7	11,353.0	6,865.8	33.5	124.8	-177.87	754.0	-373.0	817.1	760.8	56.35	14.502			
7,300.0	6,867.9	11,352.5	6,865.8	34.3	124.8	-176.98	754.0	-373.5	865.9	814.8	51.03	16.967			
7,350.0	6,875.8	11,352.1	6,865.8	35.1	124.7	-175.03	754.0	-374.0	915.3	868.5	46.76	19.574			
7,400.0	6,880.5	11,351.7	6,865.8	36.0	124.7	-167.16	754.0	-374.4	965.2	920.1	45.09	21.403			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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 (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		
6,350.0	6,220.7	11,487.4	6,972.5	24.0	125.2	176.91	356.9	-324.8	993.0	853.0	139.98	7.093		
6,400.0	6,270.0	11,486.2	6,972.6	24.2	125.2	177.15	356.9	-326.0	962.1	823.3	138.80	6.932		
6,450.0	6,318.6	11,485.1	6,972.6	24.4	125.2	177.34	356.9	-327.1	935.6	798.6	137.06	6.826		
6,500.0	6,366.4	11,484.0	6,972.6	24.7	125.2	177.50	356.9	-328.2	914.1	779.3	134.78	6.782 SF		
6,550.0	6,413.1	11,483.0	6,972.7	25.0	125.1	177.62	356.8	-329.1	897.9	765.9	131.98	6.803		
6,600.0	6,458.6	11,482.1	6,972.7	25.3	125.1	177.71	356.8	-330.1	887.4	758.7	128.67	6.897		
6,650.0	6,502.6	11,481.3	6,972.7	25.8	125.1	177.78	356.8	-330.9	882.9	758.0	124.88	7.070 ES		
6,661.9	6,512.8	11,481.1	6,972.7	25.9	125.1	177.79	356.8	-331.1	882.7	758.8	123.91	7.124 CC		
6,700.0	6,544.9	11,480.5	6,972.7	26.2	125.1	177.82	356.8	-331.6	884.5	763.9	120.63	7.333		
6,750.0	6,585.4	11,479.9	6,972.8	26.7	125.0	177.84	356.8	-332.3	892.2	776.2	115.94	7.695		
6,800.0	6,624.0	11,479.4	6,972.8	27.2	125.0	177.84	356.7	-332.8	905.6	794.8	110.84	8.170		
6,850.0	6,660.3	11,479.0	6,972.8	27.8	125.0	177.81	356.7	-333.2	924.7	819.3	105.39	8.774		
6,900.0	6,694.3	11,478.7	6,972.8	28.4	125.0	177.74	356.7	-333.5	948.9	849.3	99.60	9.527		
6,950.0	6,725.9	11,478.5	6,972.8	29.0	125.0	177.65	356.7	-333.7	977.7	884.2	93.54	10.452		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	
6,000.0	5,871.0	10,642.0	6,806.6	23.5	113.9	22.33	1,238.3	-359.1	961.2	831.2	130.01	7.393	
6,029.0	5,900.0	10,642.0	6,806.6	23.5	113.9	1.46	1,238.3	-359.1	933.1	803.1	130.00	7.178	
6,100.0	5,971.0	10,642.0	6,806.6	23.6	113.9	1.46	1,238.3	-359.1	864.6	734.5	130.11	6.645	
6,200.0	6,071.0	10,642.0	6,806.6	23.7	113.9	1.46	1,238.3	-359.1	768.9	638.6	130.28	5.901	
6,247.0	6,118.0	10,642.0	6,806.6	23.8	113.9	1.46	1,238.3	-359.1	724.3	593.9	130.37	5.556	
6,250.0	6,121.0	10,642.0	6,806.6	23.8	113.9	1.47	1,238.3	-359.1	721.4	591.1	130.38	5.533	
6,300.0	6,171.0	10,642.0	6,806.6	23.9	113.9	1.81	1,238.3	-359.1	673.8	543.4	130.39	5.168	
6,350.0	6,220.7	10,642.0	6,806.6	24.0	113.9	2.31	1,238.3	-359.1	625.5	495.7	129.89	4.816	
6,400.0	6,270.0	10,635.6	6,806.6	24.2	113.7	-0.22	1,238.3	-365.5	576.7	448.1	128.57	4.485	
6,450.0	6,318.6	10,635.6	6,806.6	24.4	113.7	-0.32	1,238.3	-365.5	527.4	400.3	127.04	4.151	
6,500.0	6,366.4	10,635.6	6,806.6	24.7	113.7	-0.53	1,238.3	-365.5	477.7	352.7	125.01	3.821	
6,550.0	6,413.1	10,635.6	6,806.6	25.0	113.7	-1.63	1,238.3	-365.5	427.8	305.4	122.39	3.495	
6,600.0	6,458.6	10,635.7	6,806.6	25.3	113.7	-178.59	1,238.3	-365.5	377.8	258.2	119.66	3.157	
6,650.0	6,502.6	10,635.7	6,806.6	25.8	113.7	-179.53	1,238.3	-365.4	328.0	211.8	116.19	2.823	
6,700.0	6,544.9	10,635.7	6,806.6	26.2	113.7	-179.74	1,238.3	-365.4	278.6	166.3	112.32	2.480	
6,750.0	6,585.4	10,635.8	6,806.6	26.7	113.7	-179.83	1,238.3	-365.3	230.3	122.2	108.04	2.131	
6,800.0	6,624.0	10,635.8	6,806.6	27.2	113.7	-179.89	1,238.3	-365.3	184.2	80.8	103.38	1.781	
6,850.0	6,660.3	10,635.9	6,806.6	27.8	113.7	-179.94	1,238.3	-365.2	142.7	44.3	98.36	1.450 Level 3	
6,900.0	6,694.3	10,636.0	6,806.6	28.4	113.7	-179.98	1,238.3	-365.2	111.4	18.3	93.02	1.197 Level 2	
6,945.4	6,723.1	10,636.0	6,806.6	29.0	113.7	179.99	1,238.3	-365.1	100.4	12.4	87.93	1.141 Level 2, CC, ES, SF	
6,950.0	6,725.9	10,636.0	6,806.6	29.0	113.7	179.98	1,238.3	-365.1	100.5	13.1	87.40	1.150 Level 2	
7,000.0	6,754.9	10,636.1	6,806.6	29.7	113.7	179.94	1,238.3	-365.0	116.0	34.4	81.56	1.422 Level 3	
7,050.0	6,781.1	10,636.2	6,806.6	30.4	113.7	179.88	1,238.3	-364.9	149.8	74.3	75.54	1.983	
7,100.0	6,804.5	10,636.3	6,806.6	31.1	113.7	179.81	1,238.3	-364.8	192.4	123.0	69.42	2.772	
7,150.0	6,824.9	10,636.4	6,806.6	31.9	113.7	179.69	1,238.3	-364.7	239.1	175.8	63.30	3.777	
7,200.0	6,842.4	10,636.5	6,806.6	32.7	113.7	179.48	1,238.3	-364.6	287.7	230.4	57.30	5.021	
7,250.0	6,856.7	10,636.6	6,806.6	33.5	113.7	178.97	1,238.3	-364.5	337.2	285.6	51.59	6.536	
7,300.0	6,867.9	10,636.7	6,806.6	34.3	113.7	175.52	1,238.3	-364.4	387.1	340.5	46.58	8.310	
7,350.0	6,875.8	10,636.8	6,806.6	35.1	113.7	2.57	1,238.3	-364.3	437.0	394.8	42.26	10.343	
7,400.0	6,880.5	10,636.9	6,806.6	36.0	113.7	1.10	1,238.3	-364.2	486.9	447.9	39.05	12.468	
7,448.5	6,882.0	10,637.0	6,806.6	36.8	113.7	0.74	1,238.3	-364.1	535.0	497.5	37.55	14.249	
7,500.0	6,881.9	10,637.1	6,806.6	37.7	113.7	0.82	1,238.3	-364.0	586.0	548.1	37.87	15.474	
7,600.0	6,881.7	10,637.4	6,806.6	39.4	113.7	1.00	1,238.3	-363.7	685.2	646.7	38.51	17.791	
7,700.0	6,881.5	10,637.7	6,806.6	41.2	113.7	1.19	1,238.3	-363.4	784.6	745.4	39.17	20.029	
7,800.0	6,881.3	10,638.0	6,806.6	42.9	113.8	1.41	1,238.3	-363.1	884.1	844.3	39.85	22.188	
7,900.0	6,881.1	10,638.3	6,806.6	44.7	113.8	1.65	1,238.3	-362.8	983.7	943.2	40.53	24.270	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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-432 - Wellbore #2 - Wellbore #2												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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
6,200.0	6,071.0	11,417.0	6,977.1	23.7	125.4	-1.02	1,247.1	-369.5	934.8	793.2	141.59	6.602	
6,247.0	6,118.0	11,417.1	6,977.1	23.8	125.4	-1.00	1,247.1	-369.4	889.5	747.8	141.68	6.278	
6,250.0	6,121.0	11,417.1	6,977.1	23.8	125.4	-1.01	1,247.1	-369.4	886.6	744.9	141.69	6.257	
6,300.0	6,171.0	11,417.3	6,977.1	23.9	125.4	-1.26	1,247.1	-369.2	838.2	696.6	141.63	5.918	
6,350.0	6,220.7	11,417.5	6,977.1	24.0	125.4	-1.67	1,247.1	-369.1	789.2	648.2	140.99	5.598	
6,400.0	6,270.0	11,417.7	6,977.1	24.2	125.4	-2.49	1,247.1	-368.8	739.7	600.0	139.72	5.294	
6,450.0	6,318.6	11,418.0	6,977.1	24.4	125.4	-5.06	1,247.1	-368.6	689.9	552.4	137.48	5.018	
6,500.0	6,366.4	11,418.3	6,977.1	24.7	125.4	-146.38	1,247.1	-368.2	639.9	518.9	121.00	5.289	
6,550.0	6,413.1	11,418.6	6,977.1	25.0	125.4	-176.46	1,247.1	-367.9	590.0	456.4	133.60	4.416	
6,600.0	6,458.6	11,419.0	6,977.1	25.3	125.4	-178.32	1,247.1	-367.5	540.3	410.0	130.32	4.146	
6,650.0	6,502.6	11,419.4	6,977.1	25.8	125.4	-179.00	1,247.2	-367.1	491.3	364.7	126.54	3.882	
6,700.0	6,544.9	11,419.8	6,977.1	26.2	125.5	-179.37	1,247.2	-366.7	443.3	321.0	122.30	3.624	
6,750.0	6,585.4	11,420.2	6,977.1	26.7	125.5	-179.61	1,247.2	-366.3	396.9	279.3	117.62	3.375	
6,800.0	6,624.0	11,420.7	6,977.1	27.2	125.5	-179.78	1,247.2	-365.8	353.2	240.7	112.53	3.139	
6,850.0	6,660.3	11,421.1	6,977.1	27.8	125.5	-179.92	1,247.2	-365.4	313.4	206.3	107.07	2.927	
6,900.0	6,694.3	11,421.6	6,977.1	28.4	125.5	179.95	1,247.2	-364.9	279.3	178.0	101.26	2.758	
6,950.0	6,725.9	11,422.0	6,977.1	29.0	125.5	179.84	1,247.2	-364.5	253.5	158.3	95.15	2.664 SF	
7,000.0	6,754.9	11,422.5	6,977.1	29.7	125.5	179.74	1,247.2	-364.0	238.7	149.9	88.80	2.688 ES	
7,030.4	6,771.2	11,422.8	6,977.1	30.1	125.5	179.67	1,247.2	-363.8	236.2	151.3	84.85	2.784 CC	
7,050.0	6,781.1	11,422.9	6,977.1	30.4	125.5	179.63	1,247.2	-363.6	237.2	155.0	82.27	2.884	
7,100.0	6,804.5	11,423.4	6,977.1	31.1	125.6	179.51	1,247.2	-363.1	249.2	173.6	75.66	3.294	
7,150.0	6,824.9	11,423.8	6,977.1	31.9	125.6	179.38	1,247.2	-362.7	272.9	203.8	69.05	3.952	
7,200.0	6,842.4	11,424.3	6,977.1	32.7	125.6	179.23	1,247.2	-362.3	305.4	242.8	62.60	4.879	
7,250.0	6,856.7	11,424.7	6,977.1	33.5	125.6	179.04	1,247.2	-361.8	344.2	287.7	56.50	6.092	
7,300.0	6,867.9	11,425.1	6,977.1	34.3	125.6	178.78	1,247.2	-361.4	387.2	336.2	51.01	7.591	
7,350.0	6,875.8	11,425.5	6,977.1	35.1	125.6	178.43	1,247.2	-361.0	433.1	386.6	46.49	9.316	
7,400.0	6,880.5	11,428.0	6,977.1	36.0	125.7	176.89	1,247.2	-358.5	480.8	437.3	43.47	11.061	
7,448.5	6,882.0	11,428.0	6,977.1	36.8	125.7	175.82	1,247.2	-358.5	528.1	485.9	42.28	12.491	
7,500.0	6,881.9	11,428.0	6,977.1	37.7	125.7	175.82	1,247.2	-358.5	579.0	536.4	42.61	13.589	
7,600.0	6,881.7	11,428.0	6,977.1	39.4	125.7	175.82	1,247.2	-358.5	677.9	634.7	43.25	15.676	
7,700.0	6,881.5	11,428.2	6,977.1	41.2	125.7	175.71	1,247.2	-358.4	777.1	733.2	43.92	17.693	
7,800.0	6,881.3	11,429.0	6,977.1	42.9	125.7	175.16	1,247.2	-357.5	876.5	831.8	44.72	19.602	
7,900.0	6,881.1	11,429.9	6,977.1	44.7	125.7	174.61	1,247.3	-356.6	976.1	930.5	45.53	21.437	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	91.39	-0.4	15.0	15.0	15.0	0.00	N/A			
100.0	100.0	100.0	100.0	0.1	0.1	91.39	-0.4	15.0	15.0	14.8	0.22	66.954			
200.0	200.0	200.0	200.0	0.3	0.3	91.39	-0.4	15.0	15.0	14.4	0.67	22.318			
300.0	300.0	300.0	300.0	0.6	0.6	91.39	-0.4	15.0	15.0	13.9	1.12	13.391			
400.0	400.0	400.0	400.0	0.8	0.8	91.39	-0.4	15.0	15.0	13.5	1.57	9.565			
500.0	500.0	500.0	500.0	1.0	1.0	91.39	-0.4	15.0	15.0	13.0	2.02	7.439			
600.0	600.0	600.0	600.0	1.2	1.2	91.39	-0.4	15.0	15.0	12.6	2.47	6.087			
700.0	700.0	700.0	700.0	1.5	1.5	91.39	-0.4	15.0	15.0	12.1	2.92	5.150			
800.0	800.0	800.0	800.0	1.7	1.7	91.39	-0.4	15.0	15.0	11.7	3.37	4.464			
900.0	900.0	900.0	900.0	1.9	1.9	91.39	-0.4	15.0	15.0	11.2	3.82	3.938			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	91.39	-0.4	15.0	15.0	10.8	4.27	3.524 CC			
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	115.89	-0.4	15.0	15.6	10.9	4.72	3.301			
1,200.0	1,199.9	1,199.9	1,199.9	2.6	2.6	127.40	-0.4	15.0	17.6	12.5	5.17	3.416			
1,300.0	1,299.7	1,299.7	1,299.7	2.8	2.8	140.86	-0.4	15.0	22.2	16.6	5.61	3.962			
1,400.0	1,399.3	1,399.3	1,399.3	3.0	3.0	151.93	-0.4	15.0	29.9	23.8	6.06	4.937			
1,500.0	1,498.6	1,499.4	1,499.4	3.3	3.3	158.61	0.9	15.0	39.6	33.1	6.50	6.100			
1,600.0	1,597.5	1,599.8	1,599.7	3.6	3.5	161.82	4.9	14.8	50.0	43.1	6.94	7.212			
1,700.0	1,696.1	1,700.4	1,700.1	3.9	3.7	163.25	11.4	14.4	60.8	53.5	7.38	8.247			
1,800.0	1,794.2	1,801.2	1,800.5	4.2	3.9	163.68	20.7	13.9	72.0	64.1	7.82	9.201			
1,900.0	1,891.7	1,902.3	1,900.9	4.5	4.2	163.48	32.6	13.2	83.4	75.1	8.27	10.078			
1,988.0	1,977.0	1,991.4	1,989.1	4.9	4.4	162.98	45.3	12.5	93.7	85.0	8.68	10.788			
2,000.0	1,988.6	2,003.6	2,001.1	4.9	4.4	162.90	47.2	12.4	95.1	86.3	8.74	10.874			
2,100.0	2,085.3	2,105.2	2,101.2	5.4	4.7	161.82	64.5	11.4	105.6	96.3	9.27	11.391			
2,200.0	2,182.0	2,207.2	2,201.2	5.8	5.0	160.15	84.5	10.3	113.9	104.1	9.82	11.595			
2,300.0	2,278.6	2,309.4	2,300.8	6.3	5.4	157.91	107.2	9.0	120.3	109.8	10.43	11.531			
2,400.0	2,375.3	2,409.8	2,398.3	6.8	5.8	155.35	131.4	7.6	125.3	114.2	11.08	11.304			
2,500.0	2,472.0	2,509.5	2,495.0	7.2	6.2	152.98	155.6	6.3	130.5	118.7	11.78	11.078			
2,600.0	2,568.7	2,609.3	2,591.7	7.7	6.6	150.80	179.8	4.9	135.9	123.4	12.51	10.862			
2,700.0	2,665.3	2,709.0	2,688.5	8.2	7.0	148.79	203.9	3.6	141.4	128.2	13.27	10.657			
2,800.0	2,762.0	2,808.7	2,785.2	8.7	7.4	146.93	228.1	2.2	147.2	133.1	14.07	10.462			
2,900.0	2,858.7	2,908.4	2,882.0	9.2	7.8	145.21	252.3	0.9	153.1	138.2	14.89	10.279			
3,000.0	2,955.4	3,008.2	2,978.7	9.7	8.3	143.62	276.4	-0.5	159.1	143.3	15.73	10.109			
3,100.0	3,052.0	3,107.9	3,075.5	10.2	8.7	142.14	300.6	-1.8	165.2	148.6	16.60	9.950			
3,200.0	3,148.7	3,207.6	3,172.2	10.7	9.2	140.78	324.8	-3.2	171.4	153.9	17.49	9.802			
3,300.0	3,245.4	3,307.3	3,269.0	11.2	9.6	139.50	348.9	-4.6	177.7	159.3	18.39	9.666			
3,400.0	3,342.0	3,407.1	3,365.7	11.8	10.1	138.32	373.1	-5.9	184.1	164.8	19.30	9.539			
3,500.0	3,438.7	3,506.8	3,462.4	12.3	10.6	137.22	397.2	-7.3	190.6	170.3	20.22	9.423			
3,600.0	3,535.4	3,606.5	3,559.2	12.8	11.0	136.18	421.4	-8.6	197.1	175.9	21.16	9.315			
3,700.0	3,632.1	3,706.2	3,655.9	13.3	11.5	135.22	445.6	-10.0	203.7	181.6	22.10	9.215			
3,800.0	3,728.7	3,806.0	3,752.7	13.8	12.0	134.31	469.7	-11.3	210.3	187.3	23.06	9.123			
3,900.0	3,825.4	3,905.7	3,849.4	14.3	12.5	133.47	493.9	-12.7	217.0	193.0	24.01	9.037			
4,000.0	3,922.1	4,005.4	3,946.2	14.9	13.0	132.67	518.1	-14.1	223.8	198.8	24.98	8.958			
4,100.0	4,018.8	4,105.1	4,042.9	15.4	13.4	131.92	542.2	-15.4	230.5	204.6	25.95	8.885			
4,200.0	4,115.4	4,204.9	4,139.7	15.9	13.9	131.21	566.4	-16.8	237.4	210.4	26.92	8.817			
4,300.0	4,212.1	4,304.6	4,236.4	16.4	14.4	130.54	590.5	-18.1	244.2	216.3	27.90	8.753			
4,400.0	4,308.8	4,404.3	4,333.1	16.9	14.9	129.91	614.7	-19.5	251.1	222.2	28.88	8.694			
4,500.0	4,405.5	4,504.0	4,429.9	17.5	15.4	129.31	638.9	-20.8	258.0	228.1	29.87	8.639			
4,600.0	4,502.1	4,603.8	4,526.6	18.0	15.9	128.74	663.0	-22.2	264.9	234.1	30.85	8.587			
4,700.0	4,598.8	4,703.5	4,623.4	18.5	16.3	128.20	687.2	-23.6	271.9	240.1	31.84	8.539			
4,800.0	4,695.5	4,803.2	4,720.1	19.0	16.8	127.69	711.4	-24.9	278.9	246.1	32.83	8.494			
4,900.0	4,792.1	4,902.9	4,816.9	19.6	17.3	127.21	735.5	-26.3	285.9	252.1	33.83	8.452			

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

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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 23D-341	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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
5,000.0	4,888.8	5,002.7	4,913.6	20.1	17.8	126.74	759.7	-27.6	292.9	258.1	34.82	8.412			
5,100.0	4,985.5	5,102.4	5,010.4	20.6	18.3	126.30	783.9	-29.0	300.0	264.1	35.82	8.374			
5,200.0	5,082.2	5,202.0	5,107.0	21.1	18.8	125.88	808.0	-30.3	307.0	270.2	36.81	8.340			
5,288.0	5,167.2	5,286.7	5,189.5	21.6	19.2	125.77	827.2	-31.4	313.7	276.1	37.58	8.348			
5,300.0	5,178.8	5,300.0	5,202.5	21.6	19.2	125.80	830.0	-31.6	314.7	277.0	37.68	8.351			
5,400.0	5,276.0	5,394.4	5,295.1	22.0	19.5	126.07	848.2	-32.6	322.2	283.9	38.31	8.409			
5,500.0	5,374.0	5,490.5	5,390.0	22.4	19.8	126.38	863.5	-33.4	328.8	289.9	38.87	8.458			
5,600.0	5,472.6	5,586.5	5,485.2	22.7	20.1	126.71	875.6	-34.1	334.4	295.1	39.34	8.501			
5,700.0	5,571.7	5,682.5	5,580.8	23.0	20.3	127.09	884.5	-34.6	339.1	299.4	39.72	8.538			
5,800.0	5,671.3	5,778.4	5,676.5	23.2	20.4	127.49	890.3	-35.0	342.9	302.9	40.02	8.570			
5,900.0	5,771.1	5,874.2	5,772.3	23.4	20.6	127.93	892.8	-35.1	345.8	305.6	40.22	8.597			
6,000.0	5,871.0	5,973.0	5,871.0	23.5	20.7	128.29	892.9	-35.1	347.5	307.1	40.39	8.603			
6,029.0	5,900.0	6,002.0	5,900.0	23.5	20.7	108.29	892.9	-35.1	347.6	307.1	40.45	8.593			
6,100.0	5,971.0	6,073.0	5,971.0	23.6	20.8	108.29	892.9	-35.1	347.6	306.9	40.63	8.554			
6,200.0	6,071.0	6,177.6	6,075.7	23.7	21.0	108.18	893.6	-35.1	347.4	306.4	40.95	8.483			
6,247.0	6,118.0	6,232.1	6,130.0	23.8	21.1	107.50	897.9	-35.1	346.2	305.0	41.29	8.386			
6,250.0	6,121.0	6,235.5	6,133.4	23.8	21.1	107.45	898.3	-35.1	346.1	304.8	41.32	8.378			
6,300.0	6,171.0	6,292.8	6,189.9	23.9	21.3	106.49	907.2	-35.1	344.4	302.6	41.83	8.233			
6,350.0	6,220.7	6,349.4	6,245.1	24.0	21.6	105.45	920.2	-35.1	342.6	300.2	42.45	8.070			
6,400.0	6,270.0	6,405.5	6,298.5	24.2	21.9	104.34	937.0	-35.1	340.8	297.7	43.18	7.893			
6,450.0	6,318.6	6,460.9	6,350.0	24.4	22.3	103.16	957.4	-35.1	339.1	295.1	44.01	7.705			
6,500.0	6,366.4	6,515.6	6,399.3	24.7	22.7	101.92	981.2	-35.1	337.5	292.5	44.94	7.510			
6,550.0	6,413.1	6,569.7	6,446.2	25.0	23.2	100.62	1,008.1	-35.1	335.9	290.0	45.95	7.310			
6,600.0	6,458.6	6,623.2	6,490.6	25.3	23.7	99.27	1,037.9	-35.1	334.5	287.4	47.06	7.109			
6,650.0	6,502.6	6,676.0	6,532.3	25.8	24.2	97.88	1,070.3	-35.1	333.3	285.0	48.24	6.908			
6,700.0	6,544.9	6,728.1	6,571.1	26.2	24.8	96.46	1,105.0	-35.1	332.2	282.7	49.50	6.711			
6,750.0	6,585.4	6,779.7	6,607.1	26.7	25.4	95.01	1,141.9	-35.1	331.3	280.5	50.82	6.520			
6,800.0	6,624.0	6,830.6	6,640.2	27.2	26.1	93.54	1,180.6	-35.1	330.7	278.5	52.19	6.336			
6,850.0	6,660.3	6,880.9	6,670.2	27.8	26.8	92.07	1,221.0	-35.1	330.2	276.6	53.60	6.161			
6,900.0	6,694.3	6,930.7	6,697.3	28.4	27.5	90.59	1,262.7	-35.1	330.0	275.0	55.04	5.996			
6,919.8	6,707.1	6,950.2	6,707.1	28.6	27.7	90.00	1,279.6	-35.1	330.0	274.4	55.62	5.933			
6,950.0	6,725.9	6,979.9	6,721.3	29.0	28.2	89.11	1,305.7	-35.1	330.1	273.6	56.50	5.842			
7,000.0	6,754.9	7,028.5	6,742.3	29.7	28.9	87.65	1,349.5	-35.1	330.3	272.3	57.96	5.699			
7,050.0	6,781.1	7,076.7	6,760.2	30.4	29.7	86.20	1,394.2	-35.1	330.8	271.3	59.42	5.567			
7,100.0	6,804.5	7,124.3	6,775.2	31.1	30.4	84.78	1,439.4	-35.1	331.4	270.6	60.86	5.446			
7,150.0	6,824.9	7,171.5	6,787.2	31.9	31.2	83.40	1,485.1	-35.1	332.3	270.0	62.27	5.336			
7,200.0	6,842.4	7,218.3	6,796.4	32.7	32.0	82.05	1,530.9	-35.1	333.3	269.6	63.65	5.236			
7,250.0	6,856.7	7,264.6	6,802.6	33.5	32.8	80.75	1,576.8	-35.1	334.5	269.5	64.99	5.146			
7,300.0	6,867.9	7,310.5	6,806.0	34.3	33.6	79.49	1,622.6	-35.1	335.8	269.5	66.29	5.065			
7,350.0	6,875.8	7,356.9	6,806.8	35.1	34.4	78.28	1,669.0	-35.1	337.2	269.6	67.56	4.990			
7,400.0	6,880.5	7,406.7	6,806.6	36.0	35.2	77.40	1,718.7	-35.1	338.2	269.3	68.92	4.907			
7,448.5	6,882.0	7,455.1	6,806.5	36.8	36.1	77.12	1,767.2	-35.1	338.5	268.2	70.38	4.810			
7,500.0	6,881.9	7,506.6	6,806.3	37.7	37.0	77.11	1,818.7	-35.1	338.6	266.4	72.12	4.694			
7,600.0	6,881.7	7,606.6	6,806.0	39.4	38.7	77.08	1,918.7	-35.1	338.6	263.0	75.55	4.482			
7,700.0	6,881.5	7,706.6	6,805.7	41.2	40.5	77.06	2,018.7	-35.1	338.6	259.6	79.00	4.286			
7,800.0	6,881.3	7,806.6	6,805.4	42.9	42.3	77.04	2,118.7	-35.1	338.6	256.2	82.47	4.106			
7,900.0	6,881.1	7,906.6	6,805.1	44.7	44.1	77.02	2,218.7	-35.1	338.7	252.7	85.97	3.939			
8,000.0	6,880.9	8,006.6	6,804.7	46.5	45.9	77.00	2,318.7	-35.1	338.7	249.2	89.49	3.785			
8,100.0	6,880.7	8,106.6	6,804.4	48.3	47.7	76.98	2,418.7	-35.1	338.7	245.7	93.03	3.641			
8,200.0	6,880.5	8,206.6	6,804.1	50.1	49.5	76.96	2,518.7	-35.1	338.7	242.2	96.58	3.507			
8,300.0	6,880.3	8,306.6	6,803.8	51.9	51.4	76.94	2,618.7	-35.1	338.8	238.6	100.14	3.383			

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Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor			
8,400.0	6,880.1	8,406.6	6,803.5	53.7	53.2	76.92	2,718.7	-35.1	338.8	235.1	103.72	3.266			
8,500.0	6,879.9	8,506.6	6,803.2	55.5	55.0	76.90	2,818.7	-35.1	338.8	231.5	107.31	3.157			
8,600.0	6,879.7	8,606.6	6,802.9	57.4	56.9	76.88	2,918.7	-35.1	338.9	227.9	110.91	3.055			
8,700.0	6,879.6	8,706.6	6,802.5	59.2	58.7	76.86	3,018.7	-35.1	338.9	224.4	114.52	2.959			
8,800.0	6,879.4	8,806.6	6,802.2	61.0	60.6	76.84	3,118.7	-35.1	338.9	220.8	118.14	2.869			
8,900.0	6,879.2	8,906.6	6,801.9	62.9	62.5	76.82	3,218.7	-35.1	338.9	217.2	121.76	2.784			
9,000.0	6,879.0	9,006.6	6,801.6	64.7	64.3	76.80	3,318.7	-35.1	339.0	213.6	125.39	2.703			
9,100.0	6,878.8	9,106.6	6,801.3	66.6	66.2	76.78	3,418.7	-35.1	339.0	210.0	129.03	2.627			
9,200.0	6,878.6	9,206.6	6,801.0	68.5	68.1	76.76	3,518.7	-35.1	339.0	206.4	132.67	2.555			
9,300.0	6,878.4	9,306.6	6,800.7	70.3	69.9	76.74	3,618.7	-35.1	339.1	202.7	136.32	2.487			
9,400.0	6,878.2	9,406.6	6,800.3	72.2	71.8	76.72	3,718.7	-35.1	339.1	199.1	139.97	2.423			
9,500.0	6,878.0	9,506.6	6,800.0	74.0	73.7	76.70	3,818.7	-35.1	339.1	195.5	143.62	2.361			
9,600.0	6,877.8	9,606.6	6,799.7	75.9	75.6	76.68	3,918.7	-35.1	339.1	191.9	147.28	2.303			
9,700.0	6,877.6	9,706.6	6,799.4	77.8	77.5	76.66	4,018.7	-35.1	339.2	188.2	150.95	2.247			
9,800.0	6,877.4	9,806.6	6,799.1	79.7	79.3	76.64	4,118.7	-35.1	339.2	184.6	154.61	2.194			
9,900.0	6,877.3	9,906.6	6,798.8	81.5	81.2	76.62	4,218.7	-35.1	339.2	180.9	158.28	2.143			
10,000.0	6,877.1	10,006.6	6,798.5	83.4	83.1	76.60	4,318.7	-35.1	339.2	177.3	161.95	2.095			
10,100.0	6,876.9	10,106.6	6,798.1	85.3	85.0	76.58	4,418.7	-35.1	339.3	173.6	165.63	2.048			
10,200.0	6,876.7	10,206.6	6,797.8	87.2	86.9	76.56	4,518.7	-35.1	339.3	170.0	169.31	2.004			
10,300.0	6,876.5	10,306.6	6,797.5	89.1	88.8	76.54	4,618.7	-35.1	339.3	166.3	172.99	1.962			
10,400.0	6,876.3	10,406.6	6,797.2	91.0	90.7	76.52	4,718.7	-35.1	339.4	162.7	176.67	1.921			
10,500.0	6,876.1	10,506.6	6,796.9	92.8	92.6	76.50	4,818.7	-35.1	339.4	159.0	180.35	1.882			
10,600.0	6,875.9	10,606.6	6,796.6	94.7	94.5	76.48	4,918.7	-35.1	339.4	155.4	184.03	1.844			
10,700.0	6,875.7	10,706.6	6,796.3	96.6	96.4	76.46	5,018.7	-35.1	339.4	151.7	187.72	1.808			
10,800.0	6,875.5	10,806.6	6,795.9	98.5	98.3	76.44	5,118.7	-35.1	339.5	148.1	191.41	1.774			
10,900.0	6,875.3	10,906.6	6,795.6	100.4	100.2	76.42	5,218.7	-35.1	339.5	144.4	195.09	1.740			
11,000.0	6,875.1	11,006.6	6,795.3	102.3	102.1	76.40	5,318.7	-35.1	339.5	140.7	198.78	1.708			
11,100.0	6,874.9	11,106.6	6,795.0	104.2	104.0	76.38	5,418.7	-35.1	339.6	137.1	202.47	1.677			
11,200.0	6,874.8	11,206.6	6,794.7	106.1	105.9	76.36	5,518.7	-35.1	339.6	133.4	206.17	1.647			
11,300.0	6,874.6	11,306.6	6,794.4	108.0	107.8	76.34	5,618.7	-35.1	339.6	129.8	209.86	1.618			
11,400.0	6,874.4	11,406.6	6,794.1	109.9	109.7	76.32	5,718.7	-35.1	339.6	126.1	213.55	1.590			
11,500.0	6,874.2	11,506.6	6,793.7	111.8	111.6	76.30	5,818.7	-35.1	339.7	122.4	217.25	1.564			
11,600.0	6,874.0	11,606.6	6,793.4	113.7	113.5	76.28	5,918.7	-35.1	339.7	118.8	220.94	1.538			
11,700.0	6,873.8	11,706.6	6,793.1	115.6	115.4	76.26	6,018.7	-35.1	339.7	115.1	224.64	1.512			
11,800.0	6,873.6	11,806.6	6,792.8	117.5	117.3	76.24	6,118.7	-35.1	339.8	111.4	228.33	1.488 Level 3			
11,900.0	6,873.4	11,906.6	6,792.5	119.4	119.2	76.22	6,218.7	-35.1	339.8	107.8	232.03	1.464 Level 3			
12,000.0	6,873.2	12,006.6	6,792.2	121.3	121.1	76.20	6,318.7	-35.1	339.8	104.1	235.73	1.442 Level 3			
12,100.0	6,873.0	12,106.6	6,791.9	123.2	123.0	76.18	6,418.7	-35.1	339.9	100.4	239.43	1.419 Level 3			
12,200.0	6,872.8	12,206.6	6,791.5	125.1	124.9	76.16	6,518.7	-35.1	339.9	96.8	243.12	1.398 Level 3			
12,300.0	6,872.6	12,306.6	6,791.2	127.0	126.8	76.14	6,618.7	-35.1	339.9	93.1	246.82	1.377 Level 3			
12,400.0	6,872.5	12,406.6	6,790.9	128.9	128.7	76.12	6,718.7	-35.1	339.9	89.4	250.52	1.357 Level 3			
12,500.0	6,872.3	12,506.6	6,790.6	130.8	130.6	76.10	6,818.7	-35.1	340.0	85.8	254.22	1.337 Level 3			
12,600.0	6,872.1	12,606.6	6,790.3	132.7	132.5	76.08	6,918.7	-35.1	340.0	82.1	257.92	1.318 Level 3			
12,700.0	6,871.9	12,706.6	6,790.0	134.6	134.4	76.06	7,018.7	-35.1	340.0	78.4	261.62	1.300 Level 3			
12,800.0	6,871.7	12,806.6	6,789.7	136.5	136.3	76.04	7,118.7	-35.1	340.1	74.7	265.32	1.282 Level 3			
12,900.0	6,871.5	12,906.6	6,789.3	138.4	138.2	76.02	7,218.7	-35.1	340.1	71.1	269.02	1.264 Level 3			
13,000.0	6,871.3	13,006.6	6,789.0	140.3	140.1	76.00	7,318.7	-35.1	340.1	67.4	272.72	1.247 Level 2			
13,100.0	6,871.1	13,106.6	6,788.7	142.2	142.1	75.98	7,418.7	-35.1	340.1	63.7	276.42	1.231 Level 2			
13,200.0	6,870.9	13,206.6	6,788.4	144.1	144.0	75.96	7,518.7	-35.1	340.2	60.1	280.12	1.214 Level 2			
13,300.0	6,870.7	13,306.6	6,788.1	146.0	145.9	75.94	7,618.7	-35.1	340.2	56.4	283.81	1.199 Level 2			
13,400.0	6,870.5	13,406.6	6,787.8	147.9	147.8	75.92	7,718.7	-35.1	340.2	52.7	287.51	1.183 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 23D-341
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 23D-341	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							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	6,870.3	13,506.6	6,787.5	149.9	149.7	75.90	7,818.7	-35.1	340.3	49.1	291.21	1.168	Level 2	
13,600.0	6,870.1	13,606.6	6,787.1	151.8	151.6	75.88	7,918.7	-35.1	340.3	45.4	294.91	1.154	Level 2	
13,700.0	6,870.0	13,706.6	6,786.8	153.7	153.5	75.86	8,018.7	-35.1	340.3	41.7	298.61	1.140	Level 2	
13,800.0	6,869.8	13,806.6	6,786.5	155.6	155.4	75.84	8,118.7	-35.1	340.4	38.0	302.31	1.126	Level 2	
13,900.0	6,869.6	13,906.6	6,786.2	157.5	157.3	75.82	8,218.7	-35.1	340.4	34.4	306.01	1.112	Level 2	
14,000.0	6,869.4	14,006.6	6,785.9	159.4	159.2	75.80	8,318.7	-35.1	340.4	30.7	309.71	1.099	Level 2	
14,100.0	6,869.2	14,106.6	6,785.6	161.3	161.2	75.78	8,418.7	-35.1	340.4	27.0	313.41	1.086	Level 2	
14,200.0	6,869.0	14,206.6	6,785.3	163.2	163.1	75.76	8,518.7	-35.1	340.5	23.4	317.11	1.074	Level 2	
14,300.0	6,868.8	14,306.6	6,784.9	165.1	165.0	75.74	8,618.7	-35.1	340.5	19.7	320.81	1.061	Level 2	
14,400.0	6,868.6	14,406.6	6,784.6	167.0	166.9	75.72	8,718.7	-35.1	340.5	16.0	324.51	1.049	Level 2	
14,500.0	6,868.4	14,506.6	6,784.3	168.9	168.8	75.70	8,818.7	-35.1	340.6	12.4	328.20	1.038	Level 2	
14,600.0	6,868.2	14,606.6	6,784.0	170.9	170.7	75.68	8,918.7	-35.1	340.6	8.7	331.90	1.026	Level 2	
14,700.0	6,868.0	14,706.6	6,783.7	172.8	172.6	75.66	9,018.7	-35.1	340.6	5.0	335.60	1.015	Level 2	
14,800.0	6,867.8	14,806.6	6,783.4	174.7	174.5	75.64	9,118.7	-35.1	340.7	1.4	339.30	1.004	Level 2	
14,900.0	6,867.7	14,906.6	6,783.1	176.6	176.5	75.62	9,218.7	-35.1	340.7	-2.3	342.99	0.993	Level 1	
15,000.0	6,867.5	15,006.6	6,782.7	178.5	178.4	75.60	9,318.7	-35.1	340.7	-6.0	346.69	0.983	Level 1	
15,100.0	6,867.3	15,106.6	6,782.4	180.4	180.3	75.58	9,418.7	-35.1	340.7	-9.6	350.39	0.972	Level 1	
15,200.0	6,867.1	15,206.6	6,782.1	182.3	182.2	75.56	9,518.7	-35.1	340.8	-13.3	354.08	0.962	Level 1	
15,219.2	6,867.0	15,225.8	6,782.1	182.7	182.6	75.56	9,537.9	-35.1	340.8	-14.0	354.79	0.961	Level 1	
15,239.9	6,867.0	15,243.9	6,782.0	183.1	182.9	75.56	9,555.9	-35.1	340.8	-14.7	355.51	0.959	Level 1, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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
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	
700.0	700.0	700.0	700.0	1.5	1.5	90.69	-0.4	30.1	30.1	27.2	2.92	10.298	
800.0	800.0	800.0	800.0	1.7	1.7	90.69	-0.4	30.1	30.1	26.7	3.37	8.925	
900.0	900.0	900.0	900.0	1.9	1.9	90.69	-0.4	30.1	30.1	26.3	3.82	7.875	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.69	-0.4	30.1	30.1	25.8	4.27	7.046 CC, ES	
1,100.0	1,100.0	1,099.8	1,099.8	2.4	2.4	111.44	0.5	30.4	30.8	26.1	4.72	6.534	
1,200.0	1,199.9	1,199.7	1,199.6	2.6	2.6	113.41	2.9	31.2	33.0	27.9	5.16	6.401	
1,300.0	1,299.7	1,299.4	1,299.3	2.8	2.8	116.16	7.1	32.6	36.8	31.2	5.61	6.563	
1,400.0	1,399.3	1,399.1	1,398.8	3.0	3.0	119.16	12.8	34.5	42.2	36.1	6.07	6.959	
1,500.0	1,498.6	1,498.7	1,498.1	3.3	3.3	122.03	20.2	37.0	49.3	42.7	6.53	7.540	
1,600.0	1,597.5	1,598.2	1,597.2	3.6	3.5	124.57	29.2	40.0	58.0	51.0	7.02	8.264	
1,700.0	1,696.1	1,697.6	1,695.9	3.9	3.8	126.71	39.9	43.5	68.5	60.9	7.53	9.091	
1,800.0	1,794.2	1,796.9	1,794.3	4.2	4.0	128.47	52.1	47.6	80.6	72.5	8.07	9.989	
1,900.0	1,891.7	1,895.9	1,892.3	4.5	4.3	129.90	65.9	52.2	94.4	85.7	8.64	10.927	
1,988.0	1,977.0	1,982.9	1,978.1	4.9	4.6	130.92	79.4	56.7	107.9	98.7	9.17	11.767	
2,000.0	1,988.6	1,994.8	1,989.8	4.9	4.6	131.06	81.4	57.3	109.8	100.6	9.24	11.879	
2,100.0	2,085.3	2,093.6	2,087.0	5.4	4.9	131.61	98.3	63.0	125.8	115.9	9.90	12.703	
2,200.0	2,182.0	2,192.5	2,183.9	5.8	5.3	131.35	116.9	69.2	141.7	131.1	10.61	13.354	
2,300.0	2,278.6	2,291.4	2,280.5	6.3	5.6	130.51	137.1	75.9	157.5	146.2	11.37	13.856	
2,400.0	2,375.3	2,390.2	2,376.6	6.8	6.0	129.25	158.8	83.2	173.3	161.1	12.18	14.233	
2,500.0	2,472.0	2,488.8	2,472.1	7.2	6.4	127.69	182.1	90.9	189.1	176.1	13.03	14.512	
2,600.0	2,568.7	2,587.3	2,567.1	7.7	6.9	125.89	206.9	99.2	205.1	191.2	13.94	14.716	
2,700.0	2,665.3	2,685.5	2,661.3	8.2	7.4	123.91	233.1	107.9	221.4	206.5	14.89	14.867	
2,800.0	2,762.0	2,783.5	2,754.8	8.7	7.9	121.80	260.8	117.2	238.0	222.1	15.89	14.984	
2,900.0	2,858.7	2,881.5	2,848.0	9.2	8.4	119.69	289.7	126.8	255.1	238.2	16.91	15.086	
3,000.0	2,955.4	2,979.6	2,941.2	9.7	8.9	117.83	318.6	136.4	272.5	254.6	17.95	15.185	
3,100.0	3,052.0	3,077.7	3,034.5	10.2	9.5	116.19	347.5	146.1	290.1	271.2	18.98	15.283	
3,200.0	3,148.7	3,175.8	3,127.7	10.7	10.0	114.74	376.4	155.7	308.0	288.0	20.03	15.379	
3,300.0	3,245.4	3,273.9	3,221.0	11.2	10.6	113.45	405.4	165.4	326.0	304.9	21.07	15.471	
3,400.0	3,342.0	3,372.0	3,314.3	11.8	11.2	112.29	434.3	175.0	344.2	322.0	22.12	15.561	
3,500.0	3,438.7	3,470.1	3,407.5	12.3	11.7	111.25	463.2	184.6	362.4	339.3	23.16	15.647	
3,600.0	3,535.4	3,568.3	3,500.8	12.8	12.3	110.31	492.1	194.3	380.8	356.6	24.21	15.729	
3,700.0	3,632.1	3,666.4	3,594.0	13.3	12.9	109.45	521.0	203.9	399.3	374.0	25.26	15.808	
3,800.0	3,728.7	3,764.5	3,687.3	13.8	13.5	108.67	550.0	213.6	417.8	391.5	26.31	15.883	
3,900.0	3,825.4	3,862.6	3,780.5	14.3	14.1	107.96	578.9	223.2	436.5	409.1	27.36	15.954	
4,000.0	3,922.1	3,960.7	3,873.8	14.9	14.7	107.31	607.8	232.9	455.1	426.7	28.41	16.023	
4,100.0	4,018.8	4,058.8	3,967.0	15.4	15.2	106.70	636.7	242.5	473.9	444.4	29.46	16.088	
4,200.0	4,115.4	4,156.9	4,060.3	15.9	15.8	106.15	665.6	252.1	492.7	462.2	30.51	16.150	
4,300.0	4,212.1	4,255.0	4,153.6	16.4	16.4	105.63	694.6	261.8	511.5	479.9	31.55	16.210	
4,400.0	4,308.8	4,353.1	4,246.8	16.9	17.0	105.15	723.5	271.4	530.4	497.7	32.60	16.266	
4,500.0	4,405.5	4,451.3	4,340.1	17.5	17.6	104.70	752.4	281.1	549.2	515.6	33.65	16.320	
4,600.0	4,502.1	4,549.4	4,433.3	18.0	18.2	104.29	781.3	290.7	568.2	533.5	34.70	16.372	
4,700.0	4,598.8	4,647.5	4,526.6	18.5	18.8	103.90	810.2	300.4	587.1	551.4	35.75	16.421	
4,800.0	4,695.5	4,745.6	4,619.8	19.0	19.4	103.53	839.2	310.0	606.1	569.3	36.80	16.468	
4,900.0	4,792.1	4,843.7	4,713.1	19.6	20.0	103.19	868.1	319.6	625.1	587.2	37.85	16.514	

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 23D-341
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 23D-341	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
5,000.0	4,888.8	4,941.8	4,806.3	20.1	20.6	102.86	897.0	329.3	644.1	605.2	38.90	16.557	
5,100.0	4,985.5	5,039.9	4,899.6	20.6	21.2	102.56	925.9	338.9	663.2	623.2	39.95	16.598	
5,200.0	5,082.2	5,138.0	4,992.8	21.1	21.8	102.27	954.8	348.6	682.2	641.2	41.00	16.638	
5,288.0	5,167.2	5,232.3	5,082.7	21.6	22.3	102.08	981.7	357.5	698.6	656.7	41.90	16.675	
5,300.0	5,178.8	5,245.5	5,095.4	21.6	22.3	102.12	985.2	358.7	700.7	658.7	42.01	16.681	
5,400.0	5,276.0	5,355.7	5,201.7	22.0	22.8	102.37	1,012.7	367.8	717.3	674.4	42.86	16.735	
5,500.0	5,374.0	5,466.6	5,309.8	22.4	23.2	102.58	1,036.3	375.7	731.4	687.8	43.63	16.763	
5,600.0	5,472.6	5,578.1	5,419.4	22.7	23.6	102.75	1,056.1	382.3	743.2	698.9	44.32	16.770	
5,700.0	5,571.7	5,690.2	5,530.2	23.0	23.9	102.89	1,071.9	387.6	752.5	707.6	44.91	16.756	
5,800.0	5,671.3	5,802.7	5,642.0	23.2	24.2	102.98	1,083.6	391.5	759.4	714.0	45.41	16.724	
5,900.0	5,771.1	5,915.4	5,754.4	23.4	24.4	103.05	1,091.1	394.0	763.8	718.0	45.81	16.675	
6,000.0	5,871.0	6,028.3	5,867.3	23.5	24.5	103.07	1,094.5	395.1	765.8	719.7	46.11	16.608	
6,029.0	5,900.0	6,061.1	5,900.0	23.5	24.6	83.05	1,094.6	395.2	765.9	719.7	46.18	16.584	
6,100.0	5,971.0	6,132.1	5,971.0	23.6	24.6	83.05	1,094.6	395.2	765.9	719.6	46.34	16.527	
6,200.0	6,071.0	6,232.1	6,071.0	23.7	24.8	83.05	1,094.6	395.2	765.9	719.3	46.58	16.443	
6,247.0	6,118.0	6,279.1	6,118.0	23.8	24.8	83.05	1,094.6	395.2	765.9	719.2	46.69	16.403	
6,250.0	6,121.0	6,282.1	6,121.0	23.8	24.8	83.05	1,094.6	395.2	765.9	719.2	46.70	16.400	
6,300.0	6,171.0	6,332.0	6,171.0	23.9	24.9	83.21	1,094.6	395.2	765.7	718.8	46.86	16.340	
6,350.0	6,220.7	6,379.0	6,218.0	24.0	24.9	83.57	1,095.0	395.2	765.2	718.1	47.09	16.250	
6,400.0	6,270.0	6,423.8	6,262.7	24.2	25.0	83.97	1,097.8	395.2	764.6	717.2	47.39	16.134	
6,450.0	6,318.6	6,468.9	6,307.4	24.4	25.2	84.39	1,103.2	395.2	764.0	716.2	47.78	15.992	
6,500.0	6,366.4	6,514.3	6,352.1	24.7	25.3	84.84	1,111.2	395.2	763.4	715.2	48.25	15.823	
6,550.0	6,413.1	6,559.9	6,396.4	25.0	25.5	85.30	1,122.0	395.2	762.9	714.1	48.81	15.630	
6,600.0	6,458.6	6,605.9	6,440.3	25.3	25.8	85.79	1,135.6	395.2	762.4	712.9	49.45	15.416	
6,650.0	6,502.6	6,652.2	6,483.7	25.8	26.1	86.29	1,151.8	395.2	761.9	711.7	50.19	15.182	
6,700.0	6,544.9	6,700.0	6,527.3	26.2	26.4	86.83	1,171.3	395.2	761.5	710.5	51.01	14.928	
6,750.0	6,585.4	6,746.0	6,568.0	26.7	26.8	87.35	1,192.7	395.2	761.1	709.2	51.91	14.663	
6,800.0	6,624.0	6,793.5	6,608.7	27.2	27.2	87.90	1,217.2	395.2	760.8	707.9	52.89	14.384	
6,850.0	6,660.3	6,841.4	6,648.0	27.8	27.7	88.46	1,244.5	395.2	760.6	706.6	53.96	14.096	
6,900.0	6,694.3	6,889.7	6,686.0	28.4	28.2	89.03	1,274.4	395.2	760.4	705.3	55.10	13.800	
6,950.0	6,725.9	6,938.5	6,722.3	29.0	28.7	89.61	1,307.1	395.2	760.3	704.0	56.32	13.500	
6,983.8	6,745.8	6,971.8	6,745.8	29.5	29.1	90.00	1,330.6	395.2	760.3	703.1	57.19	13.294	
7,000.0	6,754.9	6,987.8	6,756.7	29.7	29.3	90.19	1,342.3	395.2	760.3	702.7	57.61	13.197	
7,050.0	6,781.1	7,037.6	6,789.2	30.4	29.9	90.77	1,380.1	395.2	760.4	701.4	58.97	12.894	
7,100.0	6,804.5	7,087.9	6,819.4	31.1	30.6	91.35	1,420.3	395.2	760.5	700.1	60.40	12.592	
7,150.0	6,824.9	7,138.8	6,847.2	31.9	31.3	91.93	1,462.9	395.2	760.7	698.9	61.88	12.294	
7,200.0	6,842.4	7,190.2	6,872.3	32.7	32.0	92.51	1,507.8	395.2	761.0	697.6	63.42	12.000	
7,250.0	6,856.7	7,242.2	6,894.6	33.5	32.8	93.07	1,554.7	395.2	761.4	696.4	65.01	11.713	
7,300.0	6,867.9	7,294.7	6,913.8	34.3	33.6	93.63	1,603.6	395.2	761.8	695.2	66.64	11.432	
7,350.0	6,875.8	7,347.8	6,929.8	35.1	34.5	94.17	1,654.2	395.2	762.3	694.0	68.31	11.160	
7,400.0	6,880.5	7,401.5	6,942.3	36.0	35.4	94.69	1,706.4	395.2	762.9	692.9	70.01	10.897	
7,448.5	6,882.0	7,454.1	6,951.0	36.8	36.3	95.19	1,758.3	395.2	763.5	691.8	71.68	10.651	
7,500.0	6,881.9	7,510.8	6,956.3	37.7	37.2	95.59	1,814.6	395.2	763.9	690.4	73.49	10.395	
7,600.0	6,881.7	7,615.0	6,957.7	39.4	39.0	95.71	1,918.8	395.2	764.1	687.1	77.02	9.921	
7,700.0	6,881.5	7,715.0	6,957.8	41.2	40.7	95.73	2,018.8	395.2	764.1	683.6	80.51	9.490	
7,800.0	6,881.3	7,815.0	6,957.9	42.9	42.5	95.76	2,118.8	395.2	764.1	680.1	84.04	9.093	
7,900.0	6,881.1	7,915.0	6,958.0	44.7	44.2	95.78	2,218.8	395.2	764.2	676.6	87.59	8.725	
8,000.0	6,880.9	8,015.0	6,958.2	46.5	46.0	95.80	2,318.8	395.2	764.2	673.1	91.16	8.384	
8,100.0	6,880.7	8,115.0	6,958.3	48.3	47.8	95.83	2,418.8	395.2	764.2	669.5	94.74	8.066	
8,200.0	6,880.5	8,215.0	6,958.4	50.1	49.6	95.85	2,518.8	395.2	764.3	665.9	98.35	7.771	
8,300.0	6,880.3	8,315.0	6,958.5	51.9	51.4	95.87	2,618.8	395.2	764.3	662.3	101.97	7.495	

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 23D-341
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 23D-341	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	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)				
8,400.0	6,880.1	8,415.0	6,958.7	53.7	53.2	95.90	2,718.8	395.2	764.3	658.7	105.61	7.238			
8,500.0	6,879.9	8,515.0	6,958.8	55.5	55.0	95.92	2,818.8	395.2	764.4	655.1	109.25	6.996			
8,600.0	6,879.7	8,615.0	6,958.9	57.4	56.8	95.94	2,918.8	395.2	764.4	651.5	112.91	6.770			
8,700.0	6,879.6	8,715.0	6,959.0	59.2	58.7	95.97	3,018.8	395.2	764.4	647.8	116.58	6.557			
8,800.0	6,879.4	8,815.0	6,959.1	61.0	60.5	95.99	3,118.8	395.2	764.5	644.2	120.26	6.357			
8,900.0	6,879.2	8,915.0	6,959.3	62.9	62.3	96.01	3,218.8	395.2	764.5	640.6	123.94	6.168			
9,000.0	6,879.0	9,015.0	6,959.4	64.7	64.2	96.04	3,318.8	395.2	764.5	636.9	127.64	5.990			
9,100.0	6,878.8	9,115.0	6,959.5	66.6	66.0	96.06	3,418.8	395.2	764.6	633.2	131.34	5.821			
9,200.0	6,878.6	9,215.0	6,959.6	68.5	67.9	96.08	3,518.8	395.2	764.6	629.6	135.04	5.662			
9,300.0	6,878.4	9,315.0	6,959.8	70.3	69.8	96.11	3,618.8	395.2	764.6	625.9	138.76	5.511			
9,400.0	6,878.2	9,415.0	6,959.9	72.2	71.6	96.13	3,718.8	395.2	764.7	622.2	142.47	5.367			
9,500.0	6,878.0	9,515.0	6,960.0	74.0	73.5	96.15	3,818.8	395.2	764.7	618.5	146.19	5.231			
9,600.0	6,877.8	9,615.0	6,960.1	75.9	75.3	96.18	3,918.8	395.2	764.7	614.8	149.92	5.101			
9,700.0	6,877.6	9,715.0	6,960.2	77.8	77.2	96.20	4,018.8	395.2	764.8	611.1	153.65	4.977			
9,800.0	6,877.4	9,815.0	6,960.4	79.7	79.1	96.22	4,118.8	395.2	764.8	607.4	157.38	4.859			
9,900.0	6,877.3	9,915.0	6,960.5	81.5	81.0	96.25	4,218.8	395.2	764.8	603.7	161.12	4.747			
10,000.0	6,877.1	10,015.0	6,960.6	83.4	82.8	96.27	4,318.8	395.2	764.9	600.0	164.86	4.639			
10,100.0	6,876.9	10,115.0	6,960.7	85.3	84.7	96.29	4,418.8	395.2	764.9	596.3	168.61	4.537			
10,200.0	6,876.7	10,215.0	6,960.9	87.2	86.6	96.32	4,518.8	395.2	764.9	592.6	172.35	4.438			
10,300.0	6,876.5	10,315.0	6,961.0	89.1	88.5	96.34	4,618.8	395.2	765.0	588.9	176.10	4.344			
10,400.0	6,876.3	10,415.0	6,961.1	91.0	90.4	96.36	4,718.8	395.2	765.0	585.2	179.85	4.253			
10,500.0	6,876.1	10,515.0	6,961.2	92.8	92.2	96.39	4,818.8	395.2	765.0	581.4	183.61	4.167			
10,600.0	6,875.9	10,615.0	6,961.3	94.7	94.1	96.41	4,918.8	395.2	765.1	577.7	187.36	4.083			
10,700.0	6,875.7	10,715.0	6,961.5	96.6	96.0	96.43	5,018.8	395.2	765.1	574.0	191.12	4.003			
10,800.0	6,875.5	10,815.0	6,961.6	98.5	97.9	96.46	5,118.8	395.2	765.1	570.3	194.88	3.926			
10,900.0	6,875.3	10,915.0	6,961.7	100.4	99.8	96.48	5,218.8	395.2	765.2	566.5	198.64	3.852			
11,000.0	6,875.1	11,015.0	6,961.8	102.3	101.7	96.50	5,318.8	395.2	765.2	562.8	202.40	3.781			
11,100.0	6,874.9	11,115.0	6,962.0	104.2	103.6	96.53	5,418.8	395.2	765.3	559.1	206.17	3.712			
11,200.0	6,874.8	11,215.0	6,962.1	106.1	105.5	96.55	5,518.8	395.2	765.3	555.4	209.93	3.645			
11,300.0	6,874.6	11,315.0	6,962.2	108.0	107.4	96.57	5,618.8	395.2	765.3	551.6	213.70	3.581			
11,400.0	6,874.4	11,415.0	6,962.3	109.9	109.3	96.60	5,718.8	395.2	765.4	547.9	217.47	3.519			
11,500.0	6,874.2	11,515.0	6,962.4	111.8	111.2	96.62	5,818.8	395.2	765.4	544.2	221.24	3.460			
11,600.0	6,874.0	11,615.0	6,962.6	113.7	113.1	96.64	5,918.8	395.2	765.4	540.4	225.01	3.402			
11,700.0	6,873.8	11,715.0	6,962.7	115.6	115.0	96.67	6,018.8	395.2	765.5	536.7	228.78	3.346			
11,800.0	6,873.6	11,815.0	6,962.8	117.5	116.9	96.69	6,118.8	395.2	765.5	533.0	232.55	3.292			
11,900.0	6,873.4	11,915.0	6,962.9	119.4	118.8	96.71	6,218.8	395.2	765.5	529.2	236.32	3.239			
12,000.0	6,873.2	12,015.0	6,963.0	121.3	120.7	96.74	6,318.8	395.2	765.6	525.5	240.09	3.189			
12,100.0	6,873.0	12,115.0	6,963.2	123.2	122.6	96.76	6,418.8	395.2	765.6	521.7	243.87	3.139			
12,200.0	6,872.8	12,215.0	6,963.3	125.1	124.5	96.79	6,518.8	395.2	765.7	518.0	247.64	3.092			
12,300.0	6,872.6	12,315.0	6,963.4	127.0	126.4	96.81	6,618.8	395.2	765.7	514.3	251.42	3.045			
12,400.0	6,872.5	12,415.0	6,963.5	128.9	128.3	96.83	6,718.8	395.2	765.7	510.5	255.19	3.001			
12,500.0	6,872.3	12,515.0	6,963.7	130.8	130.2	96.86	6,818.8	395.2	765.8	506.8	258.97	2.957			
12,600.0	6,872.1	12,615.0	6,963.8	132.7	132.1	96.88	6,918.8	395.2	765.8	503.1	262.75	2.915			
12,700.0	6,871.9	12,715.0	6,963.9	134.6	134.0	96.90	7,018.8	395.2	765.8	499.3	266.52	2.873			
12,800.0	6,871.7	12,815.0	6,964.0	136.5	135.9	96.93	7,118.8	395.2	765.9	495.6	270.30	2.833			
12,900.0	6,871.5	12,915.0	6,964.1	138.4	137.8	96.95	7,218.8	395.2	765.9	491.8	274.08	2.794			
13,000.0	6,871.3	13,015.0	6,964.3	140.3	139.7	96.97	7,318.8	395.2	766.0	488.1	277.86	2.757			
13,100.0	6,871.1	13,115.0	6,964.4	142.2	141.6	97.00	7,418.8	395.2	766.0	484.4	281.64	2.720			
13,200.0	6,870.9	13,215.0	6,964.5	144.1	143.5	97.02	7,518.8	395.2	766.0	480.6	285.42	2.684			
13,300.0	6,870.7	13,314.9	6,964.6	146.0	145.4	97.04	7,618.8	395.2	766.1	476.9	289.20	2.649			
13,400.0	6,870.5	13,414.9	6,964.8	147.9	147.3	97.07	7,718.8	395.2	766.1	473.1	292.98	2.615			

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 23D-341
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 23D-341	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							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,500.0	6,870.3	13,514.9	6,964.9	149.9	149.2	97.09	7,818.8	395.2	766.1	469.4	296.76	2.582	
13,600.0	6,870.1	13,614.9	6,965.0	151.8	151.1	97.11	7,918.8	395.2	766.2	465.6	300.54	2.549	
13,700.0	6,870.0	13,714.9	6,965.1	153.7	153.0	97.13	8,018.8	395.2	766.2	461.9	304.32	2.518	
13,800.0	6,869.8	13,814.9	6,965.2	155.6	154.9	97.16	8,118.8	395.2	766.3	458.2	308.10	2.487	
13,900.0	6,869.6	13,914.9	6,965.4	157.5	156.8	97.18	8,218.8	395.2	766.3	454.4	311.88	2.457	
14,000.0	6,869.4	14,014.9	6,965.5	159.4	158.8	97.20	8,318.8	395.2	766.3	450.7	315.66	2.428	
14,100.0	6,869.2	14,114.9	6,965.6	161.3	160.7	97.23	8,418.8	395.2	766.4	446.9	319.44	2.399	
14,200.0	6,869.0	14,214.9	6,965.7	163.2	162.6	97.25	8,518.8	395.2	766.4	443.2	323.22	2.371	
14,300.0	6,868.8	14,314.9	6,965.9	165.1	164.5	97.27	8,618.8	395.2	766.5	439.5	327.00	2.344	
14,400.0	6,868.6	14,414.9	6,966.0	167.0	166.4	97.30	8,718.8	395.2	766.5	435.7	330.78	2.317	
14,500.0	6,868.4	14,514.9	6,966.1	168.9	168.3	97.32	8,818.8	395.2	766.5	432.0	334.56	2.291	
14,600.0	6,868.2	14,614.9	6,966.2	170.9	170.2	97.34	8,918.8	395.2	766.6	428.2	338.34	2.266	
14,700.0	6,868.0	14,714.9	6,966.3	172.8	172.1	97.37	9,018.8	395.2	766.6	424.5	342.12	2.241	
14,800.0	6,867.8	14,814.9	6,966.5	174.7	174.0	97.39	9,118.8	395.2	766.7	420.8	345.90	2.216	
14,900.0	6,867.7	14,914.9	6,966.6	176.6	175.9	97.41	9,218.8	395.2	766.7	417.0	349.68	2.193	
15,000.0	6,867.5	15,014.9	6,966.7	178.5	177.9	97.44	9,318.8	395.2	766.7	413.3	353.46	2.169	
15,100.0	6,867.3	15,114.9	6,966.8	180.4	179.8	97.46	9,418.8	395.2	766.8	409.5	357.25	2.146	
15,200.0	6,867.1	15,214.9	6,967.0	182.3	181.7	97.48	9,518.8	395.2	766.8	405.8	361.03	2.124	
15,217.0	6,867.0	15,231.9	6,967.0	182.7	182.0	97.49	9,535.8	395.2	766.8	405.2	361.67	2.120	
15,239.9	6,867.0	15,248.0	6,967.0	183.1	182.3	97.49	9,551.9	395.2	766.9	404.5	362.41	2.116 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	-89.54	0.4	-45.1	45.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.54	0.4	-45.1	45.1	44.9	0.22	200.809		
200.0	200.0	200.0	200.0	0.3	0.3	-89.54	0.4	-45.1	45.1	44.5	0.67	66.936 CC, ES		
300.0	300.0	299.0	299.0	0.6	0.6	-88.63	1.1	-46.2	46.2	45.1	1.12	41.325		
400.0	400.0	397.9	397.8	0.8	0.8	-86.13	3.3	-49.3	49.5	47.9	1.57	31.595		
500.0	500.0	496.5	496.2	1.0	1.0	-82.65	7.0	-54.5	55.1	53.1	2.02	27.302		
600.0	600.0	594.8	594.0	1.2	1.3	-78.85	12.2	-61.7	63.2	60.7	2.47	25.563		
700.0	700.0	692.5	691.1	1.5	1.5	-75.21	18.7	-71.0	73.9	71.0	2.93	25.229		
800.0	800.0	789.5	787.2	1.7	1.9	-72.01	26.7	-82.1	87.3	83.9	3.39	25.736		
900.0	900.0	885.8	882.1	1.9	2.2	-69.31	35.9	-95.2	103.3	99.4	3.86	26.767		
1,000.0	1,000.0	981.2	975.8	2.1	2.6	-67.09	46.5	-110.0	121.9	117.5	4.33	28.132		
1,100.0	1,100.0	1,075.9	1,068.3	2.4	3.0	-45.40	58.3	-126.6	142.1	137.3	4.79	29.643		
1,200.0	1,199.9	1,170.0	1,159.6	2.6	3.4	-44.59	71.4	-145.0	162.9	157.6	5.26	30.943		
1,300.0	1,299.7	1,263.5	1,249.8	2.8	3.9	-44.34	85.6	-165.0	184.3	178.5	5.75	32.069		
1,400.0	1,399.3	1,356.4	1,338.8	3.0	4.4	-44.47	101.0	-186.7	206.2	199.9	6.24	33.042		
1,500.0	1,498.6	1,449.0	1,426.9	3.3	5.0	-44.86	117.6	-210.1	228.6	221.8	6.76	33.840		
1,600.0	1,597.5	1,546.6	1,519.3	3.6	5.6	-45.57	135.7	-235.5	250.3	243.0	7.30	34.265		
1,700.0	1,696.1	1,644.4	1,612.0	3.9	6.2	-46.55	153.8	-261.0	270.2	262.3	7.88	34.279		
1,800.0	1,794.2	1,742.5	1,704.9	4.2	6.9	-47.76	172.0	-286.5	288.6	280.1	8.50	33.932		
1,900.0	1,891.7	1,840.7	1,798.0	4.5	7.5	-49.20	190.2	-312.1	305.4	296.2	9.18	33.277		
1,988.0	1,977.0	1,927.2	1,880.0	4.9	8.1	-50.63	206.2	-334.7	319.0	309.2	9.82	32.483		
2,000.0	1,988.6	1,939.0	1,891.1	4.9	8.1	-50.85	208.4	-337.8	320.8	310.9	9.91	32.360		
2,100.0	2,085.3	2,037.3	1,984.3	5.4	8.8	-52.64	226.6	-363.4	335.8	325.1	10.71	31.367		
2,200.0	2,182.0	2,135.7	2,077.5	5.8	9.4	-54.27	244.9	-389.0	351.2	339.7	11.54	30.439		
2,300.0	2,278.6	2,234.0	2,170.7	6.3	10.1	-55.76	263.1	-414.6	366.9	354.5	12.40	29.580		
2,400.0	2,375.3	2,332.3	2,263.8	6.8	10.7	-57.13	281.3	-440.2	382.7	369.4	13.29	28.790		
2,500.0	2,472.0	2,430.7	2,357.0	7.2	11.4	-58.40	299.5	-465.9	398.8	384.6	14.21	28.067		
2,600.0	2,568.7	2,529.0	2,450.2	7.7	12.0	-59.56	317.7	-491.5	415.0	399.9	15.14	27.406		
2,700.0	2,665.3	2,627.3	2,543.3	8.2	12.7	-60.64	336.0	-517.1	431.4	415.3	16.09	26.803		
2,800.0	2,762.0	2,725.7	2,636.5	8.7	13.4	-61.64	354.2	-542.7	447.9	430.8	17.06	26.253		
2,900.0	2,858.7	2,824.0	2,729.7	9.2	14.0	-62.57	372.4	-568.4	464.5	446.5	18.04	25.751		
3,000.0	2,955.4	2,922.3	2,822.9	9.7	14.7	-63.43	390.6	-594.0	481.3	462.3	19.03	25.291		
3,100.0	3,052.0	3,020.7	2,916.0	10.2	15.3	-64.24	408.8	-619.6	498.2	478.1	20.03	24.870		
3,200.0	3,148.7	3,119.0	3,009.2	10.7	16.0	-64.99	427.1	-645.2	515.1	494.1	21.04	24.484		
3,300.0	3,245.4	3,217.3	3,102.4	11.2	16.6	-65.70	445.3	-670.9	532.1	510.1	22.05	24.129		
3,400.0	3,342.0	3,315.7	3,195.5	11.8	17.3	-66.36	463.5	-696.5	549.2	526.2	23.08	23.802		
3,500.0	3,438.7	3,414.0	3,288.7	12.3	18.0	-66.98	481.7	-722.1	566.4	542.3	24.10	23.500		
3,600.0	3,535.4	3,512.3	3,381.9	12.8	18.6	-67.57	499.9	-747.7	583.6	558.5	25.13	23.221		
3,700.0	3,632.1	3,610.7	3,475.1	13.3	19.3	-68.12	518.2	-773.4	600.9	574.8	26.17	22.962		
3,800.0	3,728.7	3,709.0	3,568.2	13.8	19.9	-68.64	536.4	-799.0	618.3	591.1	27.21	22.722		
3,900.0	3,825.4	3,807.3	3,661.4	14.3	20.6	-69.13	554.6	-824.6	635.7	607.4	28.25	22.498		
4,000.0	3,922.1	3,905.7	3,754.6	14.9	21.3	-69.60	572.8	-850.2	653.1	623.8	29.30	22.290		
4,100.0	4,018.8	4,004.0	3,847.7	15.4	21.9	-70.04	591.0	-875.8	670.6	640.2	30.35	22.095		
4,200.0	4,115.4	4,102.3	3,940.9	15.9	22.6	-70.46	609.3	-901.5	688.1	656.7	31.40	21.913		
4,300.0	4,212.1	4,200.7	4,034.1	16.4	23.2	-70.86	627.5	-927.1	705.6	673.2	32.45	21.742		
4,400.0	4,308.8	4,299.0	4,127.3	16.9	23.9	-71.24	645.7	-952.7	723.2	689.7	33.51	21.582		
4,500.0	4,405.5	4,397.3	4,220.4	17.5	24.6	-71.60	663.9	-978.3	740.8	706.2	34.57	21.431		
4,600.0	4,502.1	4,495.7	4,313.6	18.0	25.2	-71.94	682.1	-1,004.0	758.4	722.8	35.62	21.289		
4,700.0	4,598.8	4,594.0	4,406.8	18.5	25.9	-72.27	700.3	-1,029.6	776.1	739.4	36.68	21.156		
4,800.0	4,695.5	4,692.3	4,500.0	19.0	26.5	-72.59	718.6	-1,055.2	793.7	756.0	37.74	21.029		
4,900.0	4,792.1	4,790.7	4,593.1	19.6	27.2	-72.89	736.8	-1,080.8	811.4	772.6	38.81	20.910		

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 23D-341
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 23D-341	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	4,888.8	4,889.0	4,686.3	20.1	27.9	-73.18	755.0	-1,106.5	829.2	789.3	39.87	20.796		
5,100.0	4,985.5	4,987.3	4,779.5	20.6	28.5	-73.45	773.2	-1,132.1	846.9	806.0	40.93	20.689		
5,200.0	5,082.2	5,085.7	4,872.6	21.1	29.2	-73.72	791.4	-1,157.7	864.7	822.7	42.00	20.587		
5,288.0	5,167.2	5,172.2	4,954.6	21.6	29.8	-73.94	807.5	-1,180.2	880.3	837.4	42.94	20.502		
5,300.0	5,178.8	5,184.0	4,965.8	21.6	29.8	-74.01	809.7	-1,183.3	882.4	839.4	43.07	20.490		
5,400.0	5,276.0	5,306.8	5,082.7	22.0	30.6	-74.56	831.4	-1,213.9	899.7	855.6	44.12	20.394		
5,500.0	5,374.0	5,436.6	5,207.9	22.4	31.1	-75.03	851.2	-1,241.7	914.7	869.6	45.03	20.313		
5,600.0	5,472.6	5,567.4	5,335.5	22.7	31.6	-75.40	867.8	-1,265.1	927.1	881.3	45.82	20.232		
5,700.0	5,571.7	5,699.0	5,465.1	23.0	32.0	-75.70	881.1	-1,283.8	937.0	890.5	46.50	20.149		
5,800.0	5,671.3	5,831.3	5,596.3	23.2	32.3	-75.91	891.0	-1,297.7	944.3	897.3	47.05	20.070		
5,900.0	5,771.1	5,964.0	5,728.5	23.4	32.6	-76.05	897.4	-1,306.7	949.0	901.5	47.48	19.988		
6,000.0	5,871.0	6,097.0	5,861.4	23.5	32.8	-76.11	900.2	-1,310.7	951.1	903.3	47.79	19.902		
6,029.0	5,900.0	6,135.6	5,900.0	23.5	32.8	-96.13	900.4	-1,310.9	951.2	903.4	47.85	19.877		
6,100.0	5,971.0	6,206.6	5,971.0	23.6	32.8	-96.13	900.4	-1,310.9	951.2	903.2	48.01	19.814		
6,200.0	6,071.0	6,309.4	6,073.8	23.7	32.9	-96.12	900.7	-1,310.9	951.2	903.0	48.24	19.718		
6,247.0	6,118.0	6,363.4	6,127.7	23.8	33.0	-95.91	904.1	-1,310.9	950.9	902.5	48.33	19.674		
6,250.0	6,121.0	6,366.8	6,131.1	23.8	33.0	-95.89	904.4	-1,310.9	950.8	902.5	48.34	19.671		
6,300.0	6,171.0	6,423.6	6,187.4	23.9	33.1	-95.58	912.3	-1,310.9	950.3	901.9	48.46	19.609		
6,350.0	6,220.7	6,480.0	6,242.4	24.0	33.3	-95.24	924.3	-1,310.9	949.8	901.1	48.68	19.512		
6,400.0	6,270.0	6,535.8	6,295.9	24.2	33.5	-94.88	940.1	-1,310.9	949.3	900.3	48.98	19.382		
6,450.0	6,318.6	6,591.0	6,347.6	24.4	33.7	-94.50	959.6	-1,310.9	948.7	899.4	49.36	19.220		
6,500.0	6,366.4	6,645.7	6,397.3	24.7	34.0	-94.10	982.5	-1,310.9	948.2	898.4	49.84	19.027		
6,550.0	6,413.1	6,699.8	6,444.6	25.0	34.3	-93.68	1,008.6	-1,310.9	947.8	897.4	50.40	18.805		
6,600.0	6,458.6	6,753.4	6,489.6	25.3	34.6	-93.25	1,037.6	-1,310.9	947.3	896.3	51.05	18.556		
6,650.0	6,502.6	6,806.3	6,532.0	25.8	35.0	-92.80	1,069.4	-1,310.9	946.9	895.1	51.79	18.283		
6,700.0	6,544.9	6,858.7	6,571.6	26.2	35.4	-92.35	1,103.6	-1,310.9	946.6	894.0	52.62	17.989		
6,750.0	6,585.4	6,910.5	6,608.4	26.7	35.8	-91.89	1,140.1	-1,310.9	946.3	892.8	53.53	17.677		
6,800.0	6,624.0	6,961.7	6,642.3	27.2	36.2	-91.42	1,178.5	-1,310.9	946.1	891.5	54.53	17.349		
6,850.0	6,660.3	7,012.4	6,673.2	27.8	36.7	-90.95	1,218.6	-1,310.9	945.9	890.3	55.61	17.010		
6,900.0	6,694.3	7,062.6	6,701.1	28.4	37.2	-90.47	1,260.3	-1,310.9	945.8	889.0	56.77	16.661		
6,950.0	6,725.9	7,112.2	6,725.9	29.0	37.7	-90.00	1,303.2	-1,310.9	945.8	887.8	58.00	16.305		
6,950.3	6,726.1	7,112.5	6,726.1	29.0	37.7	-90.00	1,303.5	-1,310.9	945.8	887.8	58.01	16.303		
7,000.0	6,754.9	7,161.3	6,747.8	29.7	38.2	-89.53	1,347.3	-1,310.9	945.8	886.5	59.31	15.946		
7,050.0	6,781.1	7,210.0	6,766.5	30.4	38.8	-89.07	1,392.1	-1,310.9	945.9	885.2	60.69	15.586		
7,100.0	6,804.5	7,258.2	6,782.3	31.1	39.4	-88.61	1,437.7	-1,310.9	946.1	883.9	62.13	15.227		
7,150.0	6,824.9	7,305.9	6,795.0	31.9	40.0	-88.15	1,483.7	-1,310.9	946.3	882.6	63.63	14.872		
7,200.0	6,842.4	7,353.2	6,804.7	32.7	40.6	-87.71	1,529.9	-1,310.9	946.5	881.4	65.18	14.522		
7,250.0	6,856.7	7,400.0	6,811.6	33.5	41.2	-87.28	1,576.2	-1,310.9	946.9	880.1	66.78	14.179		
7,300.0	6,867.9	7,446.7	6,815.5	34.3	41.8	-86.86	1,622.7	-1,310.9	947.2	878.8	68.42	13.844		
7,350.0	6,875.8	7,493.1	6,816.6	35.1	42.4	-86.45	1,669.1	-1,310.9	947.6	877.5	70.10	13.519		
7,400.0	6,880.5	7,542.9	6,816.6	36.0	43.1	-86.14	1,718.9	-1,310.9	947.9	876.1	71.87	13.189		
7,448.5	6,882.0	7,591.3	6,816.5	36.8	43.8	-86.04	1,767.3	-1,310.9	948.0	874.4	73.62	12.877		
7,500.0	6,881.9	7,642.8	6,816.5	37.7	44.5	-86.04	1,818.9	-1,310.9	948.0	872.6	75.38	12.576		
7,600.0	6,881.7	7,742.8	6,816.3	39.4	46.0	-86.05	1,918.9	-1,310.9	948.0	869.2	78.83	12.026		
7,700.0	6,881.5	7,842.8	6,816.2	41.2	47.5	-86.05	2,018.9	-1,310.9	948.0	865.7	82.31	11.518		
7,800.0	6,881.3	7,942.8	6,816.1	42.9	49.0	-86.06	2,118.9	-1,310.9	948.0	862.2	85.82	11.047		
7,900.0	6,881.1	8,042.8	6,816.0	44.7	50.5	-86.06	2,218.9	-1,310.9	948.0	858.7	89.36	10.609		
8,000.0	6,880.9	8,142.8	6,815.9	46.5	52.1	-86.07	2,318.9	-1,310.9	948.0	855.1	92.92	10.203		
8,100.0	6,880.7	8,242.8	6,815.7	48.3	53.7	-86.07	2,418.9	-1,310.9	948.0	851.5	96.50	9.824		
8,200.0	6,880.5	8,342.8	6,815.6	50.1	55.3	-86.07	2,518.9	-1,310.9	948.0	847.9	100.10	9.471		
8,300.0	6,880.3	8,442.8	6,815.5	51.9	57.0	-86.08	2,618.9	-1,310.9	948.0	844.3	103.72	9.140		

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 23D-341
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 23D-341	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 23P-201 - Wellbore #1 - Plan #1 (8-31-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,880.1	8,542.8	6,815.4	53.7	58.6	-86.08	2,718.9	-1,310.9	948.0	840.6	107.35	8.831	
8,500.0	6,879.9	8,642.8	6,815.2	55.5	60.3	-86.09	2,818.9	-1,310.9	948.0	837.0	110.99	8.541	
8,600.0	6,879.7	8,742.8	6,815.1	57.4	62.0	-86.09	2,918.9	-1,310.9	948.0	833.3	114.65	8.268	
8,700.0	6,879.6	8,842.8	6,815.0	59.2	63.7	-86.10	3,018.9	-1,310.9	948.0	829.7	118.32	8.012	
8,800.0	6,879.4	8,942.8	6,814.9	61.0	65.4	-86.10	3,118.9	-1,310.9	948.0	826.0	122.00	7.770	
8,900.0	6,879.2	9,042.8	6,814.8	62.9	67.1	-86.10	3,218.9	-1,310.9	948.0	822.3	125.69	7.542	
9,000.0	6,879.0	9,142.8	6,814.6	64.7	68.8	-86.11	3,318.9	-1,310.9	948.0	818.6	129.38	7.327	
9,100.0	6,878.8	9,242.8	6,814.5	66.6	70.6	-86.11	3,418.9	-1,310.9	948.0	814.9	133.09	7.123	
9,200.0	6,878.6	9,342.8	6,814.4	68.5	72.3	-86.12	3,518.9	-1,310.9	947.9	811.1	136.80	6.930	
9,300.0	6,878.4	9,442.8	6,814.3	70.3	74.1	-86.12	3,618.9	-1,310.9	947.9	807.4	140.52	6.746	
9,400.0	6,878.2	9,542.8	6,814.1	72.2	75.9	-86.12	3,718.9	-1,310.9	947.9	803.7	144.24	6.572	
9,500.0	6,878.0	9,642.8	6,814.0	74.0	77.6	-86.13	3,818.9	-1,310.9	947.9	800.0	147.97	6.406	
9,600.0	6,877.8	9,742.8	6,813.9	75.9	79.4	-86.13	3,918.9	-1,310.9	947.9	796.2	151.70	6.249	
9,700.0	6,877.6	9,842.8	6,813.8	77.8	81.2	-86.14	4,018.9	-1,310.9	947.9	792.5	155.44	6.098	
9,800.0	6,877.4	9,942.8	6,813.7	79.7	83.0	-86.14	4,118.9	-1,310.9	947.9	788.7	159.19	5.955	
9,900.0	6,877.3	10,042.8	6,813.5	81.5	84.8	-86.15	4,218.9	-1,310.9	947.9	785.0	162.94	5.818	
10,000.0	6,877.1	10,142.8	6,813.4	83.4	86.6	-86.15	4,318.9	-1,310.9	947.9	781.2	166.69	5.687	
10,100.0	6,876.9	10,242.8	6,813.3	85.3	88.4	-86.15	4,418.9	-1,310.9	947.9	777.5	170.44	5.561	
10,200.0	6,876.7	10,342.8	6,813.2	87.2	90.2	-86.16	4,518.9	-1,310.9	947.9	773.7	174.20	5.441	
10,300.0	6,876.5	10,442.8	6,813.0	89.1	92.1	-86.16	4,618.9	-1,310.9	947.9	769.9	177.97	5.326	
10,400.0	6,876.3	10,542.8	6,812.9	91.0	93.9	-86.17	4,718.9	-1,310.9	947.9	766.2	181.73	5.216	
10,500.0	6,876.1	10,642.8	6,812.8	92.8	95.7	-86.17	4,818.9	-1,310.9	947.9	762.4	185.50	5.110	
10,600.0	6,875.9	10,742.8	6,812.7	94.7	97.5	-86.18	4,918.9	-1,310.9	947.9	758.6	189.27	5.008	
10,700.0	6,875.7	10,842.8	6,812.6	96.6	99.4	-86.18	5,018.9	-1,310.9	947.9	754.8	193.04	4.910	
10,800.0	6,875.5	10,942.8	6,812.4	98.5	101.2	-86.18	5,118.9	-1,310.9	947.9	751.1	196.82	4.816	
10,900.0	6,875.3	11,042.8	6,812.3	100.4	103.0	-86.19	5,218.9	-1,310.9	947.9	747.3	200.60	4.725	
11,000.0	6,875.1	11,142.8	6,812.2	102.3	104.9	-86.19	5,318.9	-1,310.9	947.9	743.5	204.38	4.638	
11,100.0	6,874.9	11,242.8	6,812.1	104.2	106.7	-86.20	5,418.9	-1,310.9	947.9	739.7	208.16	4.554	
11,200.0	6,874.8	11,342.8	6,811.9	106.1	108.6	-86.20	5,518.9	-1,310.9	947.9	735.9	211.94	4.472	
11,300.0	6,874.6	11,442.8	6,811.8	108.0	110.4	-86.20	5,618.9	-1,310.9	947.8	732.1	215.73	4.394	
11,400.0	6,874.4	11,542.8	6,811.7	109.9	112.3	-86.21	5,718.9	-1,310.9	947.8	728.3	219.52	4.318	
11,500.0	6,874.2	11,642.8	6,811.6	111.8	114.1	-86.21	5,818.9	-1,310.9	947.8	724.5	223.30	4.245	
11,600.0	6,874.0	11,742.8	6,811.5	113.7	116.0	-86.22	5,918.9	-1,310.9	947.8	720.7	227.10	4.174	
11,700.0	6,873.8	11,842.8	6,811.3	115.6	117.9	-86.22	6,018.9	-1,310.9	947.8	716.9	230.89	4.105	
11,800.0	6,873.6	11,942.8	6,811.2	117.5	119.7	-86.23	6,118.9	-1,310.9	947.8	713.1	234.68	4.039	
11,900.0	6,873.4	12,042.8	6,811.1	119.4	121.6	-86.23	6,218.9	-1,310.9	947.8	709.3	238.48	3.975	
12,000.0	6,873.2	12,142.8	6,811.0	121.3	123.5	-86.23	6,318.9	-1,310.9	947.8	705.5	242.27	3.912	
12,100.0	6,873.0	12,242.8	6,810.8	123.2	125.3	-86.24	6,418.9	-1,310.9	947.8	701.7	246.07	3.852	
12,200.0	6,872.8	12,342.8	6,810.7	125.1	127.2	-86.24	6,518.9	-1,310.9	947.8	697.9	249.87	3.793	
12,300.0	6,872.6	12,442.8	6,810.6	127.0	129.1	-86.25	6,618.9	-1,310.9	947.8	694.1	253.67	3.736	
12,400.0	6,872.5	12,542.8	6,810.5	128.9	130.9	-86.25	6,718.9	-1,310.9	947.8	690.3	257.47	3.681	
12,500.0	6,872.3	12,642.8	6,810.4	130.8	132.8	-86.26	6,818.9	-1,310.9	947.8	686.5	261.27	3.628	
12,600.0	6,872.1	12,742.8	6,810.2	132.7	134.7	-86.26	6,918.9	-1,310.9	947.8	682.7	265.07	3.576	
12,700.0	6,871.9	12,842.8	6,810.1	134.6	136.6	-86.26	7,018.9	-1,310.9	947.8	678.9	268.87	3.525	
12,800.0	6,871.7	12,942.8	6,810.0	136.5	138.4	-86.27	7,118.9	-1,310.9	947.8	675.1	272.68	3.476	
12,900.0	6,871.5	13,042.8	6,809.9	138.4	140.3	-86.27	7,218.9	-1,310.9	947.8	671.3	276.48	3.428	
13,000.0	6,871.3	13,142.8	6,809.7	140.3	142.2	-86.28	7,318.9	-1,310.9	947.8	667.5	280.29	3.381	
13,100.0	6,871.1	13,242.8	6,809.6	142.2	144.1	-86.28	7,418.9	-1,310.9	947.8	663.7	284.10	3.336	
13,200.0	6,870.9	13,342.8	6,809.5	144.1	146.0	-86.28	7,518.9	-1,310.9	947.8	659.9	287.90	3.292	
13,300.0	6,870.7	13,442.8	6,809.4	146.0	147.8	-86.29	7,618.9	-1,310.9	947.8	656.0	291.71	3.249	
13,400.0	6,870.5	13,542.8	6,809.3	147.9	149.7	-86.29	7,718.9	-1,310.9	947.8	652.2	295.52	3.207	

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 23D-341
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 23D-341	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	6,870.3	13,642.8	6,809.1	149.9	151.6	-86.30	7,818.9	-1,310.9	947.7	648.4	299.33	3.166		
13,600.0	6,870.1	13,742.8	6,809.0	151.8	153.5	-86.30	7,918.9	-1,310.9	947.7	644.6	303.14	3.126		
13,700.0	6,870.0	13,842.8	6,808.9	153.7	155.4	-86.31	8,018.9	-1,310.9	947.7	640.8	306.95	3.088		
13,800.0	6,869.8	13,942.8	6,808.8	155.6	157.3	-86.31	8,118.9	-1,310.9	947.7	637.0	310.76	3.050		
13,900.0	6,869.6	14,042.8	6,808.6	157.5	159.2	-86.31	8,218.9	-1,310.9	947.7	633.2	314.57	3.013		
14,000.0	6,869.4	14,142.8	6,808.5	159.4	161.0	-86.32	8,318.9	-1,310.9	947.7	629.3	318.39	2.977		
14,100.0	6,869.2	14,242.8	6,808.4	161.3	162.9	-86.32	8,418.9	-1,310.9	947.7	625.5	322.20	2.941		
14,200.0	6,869.0	14,342.8	6,808.3	163.2	164.8	-86.33	8,518.9	-1,310.9	947.7	621.7	326.01	2.907		
14,300.0	6,868.8	14,442.8	6,808.2	165.1	166.7	-86.33	8,618.9	-1,310.9	947.7	617.9	329.83	2.873		
14,400.0	6,868.6	14,542.8	6,808.0	167.0	168.6	-86.34	8,718.9	-1,310.9	947.7	614.1	333.64	2.840		
14,500.0	6,868.4	14,642.8	6,807.9	168.9	170.5	-86.34	8,818.9	-1,310.9	947.7	610.2	337.46	2.808		
14,600.0	6,868.2	14,742.8	6,807.8	170.9	172.4	-86.34	8,918.9	-1,310.9	947.7	606.4	341.27	2.777		
14,700.0	6,868.0	14,842.8	6,807.7	172.8	174.3	-86.35	9,018.9	-1,310.9	947.7	602.6	345.09	2.746		
14,800.0	6,867.8	14,942.8	6,807.5	174.7	176.2	-86.35	9,118.9	-1,310.9	947.7	598.8	348.91	2.716		
14,900.0	6,867.7	15,042.8	6,807.4	176.6	178.1	-86.36	9,218.9	-1,310.9	947.7	595.0	352.72	2.687		
15,000.0	6,867.5	15,142.8	6,807.3	178.5	180.0	-86.36	9,318.8	-1,310.9	947.7	591.1	356.54	2.658		
15,100.0	6,867.3	15,242.8	6,807.2	180.4	181.9	-86.36	9,418.8	-1,310.9	947.7	587.3	360.36	2.630		
15,200.0	6,867.1	15,342.8	6,807.1	182.3	183.8	-86.37	9,518.8	-1,310.9	947.7	583.5	364.18	2.602		
15,239.9	6,867.0	15,382.7	6,807.0	183.1	184.5	-86.37	9,558.8	-1,310.9	947.7	582.0	365.70	2.591 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	699.7	699.7	1.5	1.5	-86.28	1.0	-15.8	15.9	13.0	2.92	5.440		
800.0	800.0	799.3	799.2	1.7	1.7	-77.27	4.1	-18.2	18.7	15.3	3.37	5.556		
900.0	900.0	898.7	898.4	1.9	1.9	-67.39	9.2	-22.2	24.1	20.3	3.81	6.313		
1,000.0	1,000.0	997.6	996.9	2.1	2.1	-59.42	16.4	-27.7	32.3	28.0	4.27	7.572		
1,100.0	1,100.0	1,096.1	1,094.7	2.4	2.4	-34.61	25.5	-34.7	42.3	37.6	4.71	8.973		
1,200.0	1,199.9	1,194.4	1,192.0	2.6	2.7	-32.45	36.5	-43.3	52.7	47.6	5.17	10.210		
1,300.0	1,299.7	1,292.4	1,288.6	2.8	3.0	-31.66	49.5	-53.3	63.5	57.9	5.62	11.294		
1,400.0	1,399.3	1,390.1	1,384.4	3.0	3.3	-31.65	64.4	-64.8	74.5	68.4	6.08	12.242		
1,500.0	1,498.6	1,487.4	1,479.5	3.3	3.7	-32.11	81.2	-77.8	85.7	79.2	6.56	13.069		
1,600.0	1,597.5	1,585.5	1,574.7	3.6	4.1	-32.92	99.9	-92.2	97.0	90.0	7.06	13.752		
1,700.0	1,696.1	1,685.0	1,671.2	3.9	4.6	-34.28	119.1	-107.1	106.6	99.0	7.57	14.072		
1,800.0	1,794.2	1,784.7	1,767.8	4.2	5.1	-36.18	138.4	-122.0	114.1	105.9	8.13	14.030		
1,900.0	1,891.7	1,884.4	1,864.5	4.5	5.5	-38.62	157.7	-136.9	119.6	110.9	8.74	13.693		
1,988.0	1,977.0	1,972.2	1,949.6	4.9	6.0	-41.25	174.7	-150.0	123.1	113.7	9.33	13.192		
2,000.0	1,988.6	1,984.1	1,961.2	4.9	6.0	-41.64	177.0	-151.8	123.5	114.0	9.42	13.111		
2,100.0	2,085.3	2,083.8	2,057.8	5.4	6.5	-44.82	196.3	-166.7	126.9	116.7	10.18	12.469		
2,200.0	2,182.0	2,183.5	2,154.5	5.8	7.0	-47.83	215.6	-181.6	130.7	119.7	10.99	11.891		
2,300.0	2,278.6	2,283.2	2,251.2	6.3	7.5	-50.66	234.9	-196.5	134.8	123.0	11.85	11.375		
2,400.0	2,375.3	2,382.9	2,347.9	6.8	8.0	-53.31	254.2	-211.4	139.3	126.5	12.76	10.917		
2,500.0	2,472.0	2,482.6	2,444.5	7.2	8.5	-55.80	273.5	-226.3	144.0	130.3	13.70	10.513		
2,600.0	2,568.7	2,582.3	2,541.2	7.7	9.0	-58.13	292.7	-241.2	149.0	134.3	14.67	10.157		
2,700.0	2,665.3	2,682.0	2,637.9	8.2	9.5	-60.30	312.0	-256.1	154.2	138.5	15.67	9.844		
2,800.0	2,762.0	2,781.7	2,734.6	8.7	10.0	-62.33	331.3	-271.0	159.6	143.0	16.68	9.570		
2,900.0	2,858.7	2,881.4	2,831.2	9.2	10.5	-64.22	350.6	-285.9	165.2	147.5	17.71	9.329		
3,000.0	2,955.4	2,981.1	2,927.9	9.7	11.0	-65.99	369.9	-300.8	171.0	152.3	18.76	9.118		
3,100.0	3,052.0	3,080.8	3,024.6	10.2	11.5	-67.64	389.2	-315.7	176.9	157.1	19.81	8.933		
3,200.0	3,148.7	3,180.5	3,121.3	10.7	12.0	-69.18	408.5	-330.6	183.0	162.1	20.87	8.770		
3,300.0	3,245.4	3,280.2	3,217.9	11.2	12.5	-70.62	427.8	-345.5	189.2	167.3	21.93	8.626		
3,400.0	3,342.0	3,379.9	3,314.6	11.8	13.0	-71.97	447.1	-360.4	195.5	172.5	23.00	8.498		
3,500.0	3,438.7	3,479.6	3,411.3	12.3	13.5	-73.24	466.4	-375.3	201.9	177.8	24.08	8.386		
3,600.0	3,535.4	3,579.3	3,507.9	12.8	14.1	-74.43	485.6	-390.2	208.4	183.2	25.15	8.286		
3,700.0	3,632.1	3,679.0	3,604.6	13.3	14.6	-75.54	504.9	-405.1	215.0	188.8	26.23	8.197		
3,800.0	3,728.7	3,778.7	3,701.3	13.8	15.1	-76.59	524.2	-420.0	221.6	194.3	27.30	8.117		
3,900.0	3,825.4	3,878.4	3,798.0	14.3	15.6	-77.58	543.5	-434.9	228.4	200.0	28.38	8.047		
4,000.0	3,922.1	3,978.1	3,894.6	14.9	16.1	-78.51	562.8	-449.8	235.1	205.7	29.46	7.983		
4,100.0	4,018.8	4,077.8	3,991.3	15.4	16.6	-79.39	582.1	-464.7	242.0	211.5	30.53	7.926		
4,200.0	4,115.4	4,177.5	4,088.0	15.9	17.1	-80.22	601.4	-479.6	248.9	217.3	31.61	7.875		
4,300.0	4,212.1	4,277.2	4,184.7	16.4	17.6	-81.00	620.7	-494.5	255.8	223.2	32.68	7.829		
4,400.0	4,308.8	4,376.9	4,281.3	16.9	18.1	-81.75	640.0	-509.4	262.8	229.1	33.75	7.787		
4,500.0	4,405.5	4,476.6	4,378.0	17.5	18.7	-82.45	659.3	-524.3	269.9	235.1	34.82	7.750		
4,600.0	4,502.1	4,576.3	4,474.7	18.0	19.2	-83.12	678.5	-539.2	277.0	241.1	35.90	7.716		
4,700.0	4,598.8	4,676.0	4,571.3	18.5	19.7	-83.76	697.8	-554.1	284.1	247.1	36.96	7.685		
4,800.0	4,695.5	4,775.7	4,668.0	19.0	20.2	-84.36	717.1	-569.0	291.2	253.2	38.03	7.657		
4,900.0	4,792.1	4,875.4	4,764.7	19.6	20.7	-84.94	736.4	-583.9	298.4	259.3	39.10	7.631		

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 23D-341
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 23D-341	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-221 - 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	4,888.8	4,975.1	4,861.4	20.1	21.2	-85.49	755.7	-598.8	305.6	265.4	40.17	7.608		
5,100.0	4,985.5	5,074.8	4,958.0	20.6	21.7	-86.01	775.0	-613.7	312.8	271.6	41.23	7.587		
5,200.0	5,082.2	5,174.5	5,054.7	21.1	22.3	-86.51	794.3	-628.6	320.1	277.8	42.30	7.568		
5,288.0	5,167.2	5,262.2	5,139.8	21.6	22.7	-86.93	811.3	-641.7	326.5	283.3	43.23	7.552		
5,300.0	5,178.8	5,274.2	5,151.4	21.6	22.8	-87.00	813.6	-643.5	327.4	284.0	43.35	7.551		
5,400.0	5,276.0	5,376.0	5,250.2	22.0	23.3	-87.31	832.9	-658.4	334.6	290.4	44.23	7.565		
5,500.0	5,374.0	5,479.9	5,351.9	22.4	23.6	-87.50	850.1	-671.7	340.9	296.0	44.97	7.581		
5,600.0	5,472.6	5,584.0	5,454.4	22.7	24.0	-87.66	864.4	-682.7	346.2	300.6	45.61	7.590		
5,700.0	5,571.7	5,688.2	5,557.6	23.0	24.2	-87.79	875.7	-691.5	350.4	304.2	46.16	7.590		
5,800.0	5,671.3	5,792.5	5,661.3	23.2	24.5	-87.88	884.1	-698.0	353.4	306.8	46.62	7.581		
5,900.0	5,771.1	5,896.8	5,765.4	23.4	24.7	-87.93	889.5	-702.1	355.4	308.4	46.99	7.564		
6,000.0	5,871.0	6,001.2	5,869.7	23.5	24.8	-87.96	891.9	-703.9	356.3	309.0	47.27	7.538		
6,029.0	5,900.0	6,031.5	5,900.0	23.5	24.8	-107.98	892.0	-704.0	356.3	309.0	47.33	7.529		
6,100.0	5,971.0	6,102.5	5,971.0	23.6	24.9	-107.98	892.0	-704.0	356.3	308.8	47.48	7.504		
6,200.0	6,071.0	6,207.2	6,075.7	23.7	25.0	-107.87	892.7	-704.0	356.1	308.4	47.73	7.462		
6,247.0	6,118.0	6,261.7	6,130.1	23.8	25.1	-107.21	897.0	-704.0	355.0	307.2	47.84	7.422		
6,250.0	6,121.0	6,265.2	6,133.5	23.8	25.2	-107.16	897.4	-704.0	354.9	307.1	47.84	7.418		
6,300.0	6,171.0	6,322.5	6,190.1	23.9	25.3	-106.22	906.3	-704.0	353.2	305.2	47.99	7.360		
6,350.0	6,220.7	6,379.2	6,245.3	24.0	25.6	-105.21	919.3	-704.0	351.4	303.2	48.20	7.291		
6,400.0	6,270.0	6,435.3	6,298.8	24.2	25.8	-104.12	936.1	-704.0	349.7	301.2	48.48	7.212		
6,450.0	6,318.6	6,490.8	6,350.4	24.4	26.1	-102.96	956.6	-704.0	348.0	299.1	48.84	7.125		
6,500.0	6,366.4	6,545.6	6,399.7	24.7	26.5	-101.74	980.5	-704.0	346.3	297.1	49.28	7.029		
6,550.0	6,413.1	6,599.8	6,446.7	25.0	26.9	-100.47	1,007.4	-704.0	344.8	295.0	49.79	6.925		
6,600.0	6,458.6	6,653.3	6,491.1	25.3	27.3	-99.15	1,037.3	-704.0	343.4	293.0	50.39	6.815		
6,650.0	6,502.6	6,706.1	6,532.8	25.8	27.8	-97.80	1,069.7	-704.0	342.2	291.1	51.08	6.699		
6,700.0	6,544.9	6,758.3	6,571.6	26.2	28.3	-96.40	1,104.6	-704.0	341.1	289.3	51.85	6.579		
6,750.0	6,585.4	6,809.9	6,607.6	26.7	28.8	-94.99	1,141.5	-704.0	340.3	287.5	52.71	6.456		
6,800.0	6,624.0	6,860.9	6,640.7	27.2	29.4	-93.55	1,180.3	-704.0	339.6	286.0	53.64	6.331		
6,850.0	6,660.3	6,911.2	6,670.7	27.8	30.0	-92.10	1,220.7	-704.0	339.2	284.5	54.66	6.204		
6,900.0	6,694.3	6,961.0	6,697.7	28.4	30.6	-90.65	1,262.5	-704.0	339.0	283.2	55.76	6.079		
6,922.6	6,708.9	6,983.3	6,708.9	28.7	30.9	-90.00	1,281.7	-704.0	338.9	282.6	56.28	6.022		
6,950.0	6,725.9	7,010.2	6,721.7	29.0	31.3	-89.21	1,305.4	-704.0	339.0	282.0	56.93	5.954		
7,000.0	6,754.9	7,058.9	6,742.6	29.7	31.9	-87.77	1,349.4	-704.0	339.2	281.0	58.16	5.832		
7,050.0	6,781.1	7,107.1	6,760.5	30.4	32.6	-86.36	1,394.1	-704.0	339.6	280.2	59.45	5.713		
7,100.0	6,804.5	7,154.7	6,775.5	31.1	33.3	-84.97	1,439.3	-704.0	340.3	279.5	60.80	5.597		
7,150.0	6,824.9	7,201.9	6,787.5	31.9	34.0	-83.61	1,485.0	-704.0	341.1	278.9	62.19	5.485		
7,200.0	6,842.4	7,250.0	6,796.7	32.7	34.7	-82.25	1,532.1	-704.0	342.1	278.5	63.64	5.376		
7,250.0	6,856.7	7,295.0	6,802.7	33.5	35.4	-81.01	1,576.7	-704.0	343.2	278.2	65.09	5.273		
7,300.0	6,867.9	7,340.9	6,806.1	34.3	36.2	-79.78	1,622.5	-704.0	344.5	277.9	66.59	5.174		
7,350.0	6,875.8	7,387.4	6,806.8	35.1	36.9	-78.59	1,669.0	-704.0	345.9	277.8	68.12	5.077		
7,400.0	6,880.5	7,437.1	6,806.6	36.0	37.7	-77.73	1,718.7	-704.0	346.9	277.1	69.80	4.969		
7,448.5	6,882.0	7,485.6	6,806.5	36.8	38.5	-77.45	1,767.2	-704.0	347.2	275.7	71.58	4.851		
7,500.0	6,881.9	7,537.1	6,806.3	37.7	39.3	-77.44	1,818.7	-704.0	347.2	273.9	73.33	4.736		
7,600.0	6,881.7	7,637.1	6,806.0	39.4	41.0	-77.42	1,918.7	-704.0	347.3	270.5	76.74	4.525		
7,700.0	6,881.5	7,737.1	6,805.7	41.2	42.7	-77.40	2,018.7	-704.0	347.3	267.1	80.19	4.331		
7,800.0	6,881.3	7,837.1	6,805.4	42.9	44.4	-77.38	2,118.7	-704.0	347.3	263.7	83.67	4.151		
7,900.0	6,881.1	7,937.1	6,805.1	44.7	46.1	-77.36	2,218.7	-704.0	347.3	260.2	87.16	3.985		
8,000.0	6,880.9	8,037.1	6,804.8	46.5	47.8	-77.34	2,318.7	-704.0	347.4	256.7	90.68	3.831		
8,100.0	6,880.7	8,137.1	6,804.4	48.3	49.6	-77.32	2,418.7	-704.0	347.4	253.2	94.22	3.687		
8,200.0	6,880.5	8,237.1	6,804.1	50.1	51.3	-77.30	2,518.7	-704.0	347.4	249.7	97.77	3.554		
8,300.0	6,880.3	8,337.1	6,803.8	51.9	53.1	-77.28	2,618.7	-704.0	347.5	246.1	101.33	3.429		

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 23D-341
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 23D-341	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 23P-221 - Wellbore #1 - Plan #1 (9-2-15)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
Reference				Offset			Semi Major Axis			Distance			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,880.1	8,437.1	6,803.5	53.7	54.9	-77.26	2,718.7	-704.0	347.5	242.6	104.91	3.312	
8,500.0	6,879.9	8,537.1	6,803.2	55.5	56.7	-77.24	2,818.7	-704.0	347.5	239.0	108.50	3.203	
8,600.0	6,879.7	8,637.1	6,802.9	57.4	58.5	-77.22	2,918.7	-704.0	347.5	235.4	112.10	3.100	
8,700.0	6,879.6	8,737.1	6,802.6	59.2	60.3	-77.20	3,018.7	-704.0	347.6	231.9	115.71	3.004	
8,800.0	6,879.4	8,837.1	6,802.2	61.0	62.1	-77.18	3,118.7	-704.0	347.6	228.3	119.33	2.913	
8,900.0	6,879.2	8,937.1	6,801.9	62.9	63.9	-77.16	3,218.7	-704.0	347.6	224.7	122.95	2.827	
9,000.0	6,879.0	9,037.1	6,801.6	64.7	65.7	-77.14	3,318.7	-704.0	347.6	221.1	126.58	2.746	
9,100.0	6,878.8	9,137.1	6,801.3	66.6	67.5	-77.12	3,418.7	-704.0	347.7	217.5	130.22	2.670	
9,200.0	6,878.6	9,237.1	6,801.0	68.5	69.4	-77.10	3,518.7	-704.0	347.7	213.8	133.86	2.597	
9,300.0	6,878.4	9,337.1	6,800.7	70.3	71.2	-77.08	3,618.7	-704.0	347.7	210.2	137.51	2.529	
9,400.0	6,878.2	9,437.1	6,800.4	72.2	73.1	-77.06	3,718.7	-704.0	347.8	206.6	141.16	2.463	
9,500.0	6,878.0	9,537.1	6,800.0	74.0	74.9	-77.04	3,818.7	-704.0	347.8	203.0	144.82	2.401	
9,600.0	6,877.8	9,637.1	6,799.7	75.9	76.8	-77.02	3,918.7	-704.0	347.8	199.3	148.48	2.342	
9,700.0	6,877.6	9,737.1	6,799.4	77.8	78.6	-77.00	4,018.7	-704.0	347.8	195.7	152.15	2.286	
9,800.0	6,877.4	9,837.1	6,799.1	79.7	80.5	-76.98	4,118.7	-704.0	347.9	192.0	155.82	2.233	
9,900.0	6,877.3	9,937.1	6,798.8	81.5	82.3	-76.97	4,218.7	-704.0	347.9	188.4	159.49	2.181	
10,000.0	6,877.1	10,037.1	6,798.5	83.4	84.2	-76.95	4,318.7	-704.0	347.9	184.8	163.16	2.132	
10,100.0	6,876.9	10,137.1	6,798.2	85.3	86.1	-76.93	4,418.7	-704.0	347.9	181.1	166.84	2.085	
10,200.0	6,876.7	10,237.1	6,797.8	87.2	87.9	-76.91	4,518.7	-704.0	348.0	177.5	170.52	2.041	
10,300.0	6,876.5	10,337.1	6,797.5	89.1	89.8	-76.89	4,618.7	-704.0	348.0	173.8	174.20	1.998	
10,400.0	6,876.3	10,437.1	6,797.2	91.0	91.7	-76.87	4,718.7	-704.0	348.0	170.1	177.89	1.956	
10,500.0	6,876.1	10,537.1	6,796.9	92.8	93.5	-76.85	4,818.7	-704.0	348.1	166.5	181.57	1.917	
10,600.0	6,875.9	10,637.1	6,796.6	94.7	95.4	-76.83	4,918.7	-704.0	348.1	162.8	185.26	1.879	
10,700.0	6,875.7	10,737.1	6,796.3	96.6	97.3	-76.81	5,018.7	-704.0	348.1	159.2	188.95	1.842	
10,800.0	6,875.5	10,837.1	6,796.0	98.5	99.2	-76.79	5,118.7	-704.0	348.1	155.5	192.64	1.807	
10,900.0	6,875.3	10,937.1	6,795.6	100.4	101.1	-76.77	5,218.7	-704.0	348.2	151.8	196.33	1.773	
11,000.0	6,875.1	11,037.1	6,795.3	102.3	102.9	-76.75	5,318.7	-704.0	348.2	148.2	200.03	1.741	
11,100.0	6,874.9	11,137.1	6,795.0	104.2	104.8	-76.73	5,418.7	-704.0	348.2	144.5	203.72	1.709	
11,200.0	6,874.8	11,237.1	6,794.7	106.1	106.7	-76.71	5,518.7	-704.0	348.3	140.8	207.42	1.679	
11,300.0	6,874.6	11,337.1	6,794.4	108.0	108.6	-76.69	5,618.7	-704.0	348.3	137.2	211.11	1.650	
11,400.0	6,874.4	11,437.1	6,794.1	109.9	110.5	-76.67	5,718.7	-704.0	348.3	133.5	214.81	1.621	
11,500.0	6,874.2	11,537.1	6,793.8	111.8	112.4	-76.65	5,818.7	-704.0	348.3	129.8	218.51	1.594	
11,600.0	6,874.0	11,637.1	6,793.4	113.7	114.3	-76.63	5,918.7	-704.0	348.4	126.2	222.21	1.568	
11,700.0	6,873.8	11,737.1	6,793.1	115.6	116.1	-76.61	6,018.7	-704.0	348.4	122.5	225.91	1.542	
11,800.0	6,873.6	11,837.1	6,792.8	117.5	118.0	-76.59	6,118.7	-704.0	348.4	118.8	229.61	1.517	
11,900.0	6,873.4	11,937.1	6,792.5	119.4	119.9	-76.57	6,218.7	-704.0	348.5	115.1	233.31	1.494 Level 3	
12,000.0	6,873.2	12,037.1	6,792.2	121.3	121.8	-76.55	6,318.7	-704.0	348.5	111.5	237.01	1.470 Level 3	
12,100.0	6,873.0	12,137.1	6,791.9	123.2	123.7	-76.53	6,418.7	-704.0	348.5	107.8	240.71	1.448 Level 3	
12,200.0	6,872.8	12,237.1	6,791.6	125.1	125.6	-76.52	6,518.7	-704.0	348.5	104.1	244.42	1.426 Level 3	
12,300.0	6,872.6	12,337.1	6,791.2	127.0	127.5	-76.50	6,618.7	-704.0	348.6	100.4	248.12	1.405 Level 3	
12,400.0	6,872.5	12,437.1	6,790.9	128.9	129.4	-76.48	6,718.7	-704.0	348.6	96.8	251.82	1.384 Level 3	
12,500.0	6,872.3	12,537.1	6,790.6	130.8	131.3	-76.46	6,818.7	-704.0	348.6	93.1	255.52	1.364 Level 3	
12,600.0	6,872.1	12,637.1	6,790.3	132.7	133.2	-76.44	6,918.7	-704.0	348.7	89.4	259.23	1.345 Level 3	
12,700.0	6,871.9	12,737.1	6,790.0	134.6	135.1	-76.42	7,018.7	-704.0	348.7	85.7	262.93	1.326 Level 3	
12,800.0	6,871.7	12,837.1	6,789.7	136.5	137.0	-76.40	7,118.7	-704.0	348.7	82.1	266.64	1.308 Level 3	
12,900.0	6,871.5	12,937.1	6,789.4	138.4	138.9	-76.38	7,218.7	-704.0	348.7	78.4	270.34	1.290 Level 3	
13,000.0	6,871.3	13,037.1	6,789.0	140.3	140.8	-76.36	7,318.7	-704.0	348.8	74.7	274.05	1.273 Level 3	
13,100.0	6,871.1	13,137.1	6,788.7	142.2	142.7	-76.34	7,418.7	-704.0	348.8	71.0	277.75	1.256 Level 3	
13,200.0	6,870.9	13,237.1	6,788.4	144.1	144.6	-76.32	7,518.7	-704.0	348.8	67.4	281.45	1.239 Level 2	
13,300.0	6,870.7	13,337.1	6,788.1	146.0	146.5	-76.30	7,618.7	-704.0	348.9	63.7	285.16	1.223 Level 2	
13,400.0	6,870.5	13,437.1	6,787.8	147.9	148.4	-76.28	7,718.7	-704.0	348.9	60.0	288.86	1.208 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 23D-341
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 23D-341	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-221 - 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	
13,500.0	6,870.3	13,537.1	6,787.5	149.9	150.3	-76.26	7,818.7	-704.0	348.9	56.3	292.57	1.193	Level 2
13,600.0	6,870.1	13,637.1	6,787.2	151.8	152.2	-76.24	7,918.7	-704.0	348.9	52.7	296.27	1.178	Level 2
13,700.0	6,870.0	13,737.1	6,786.8	153.7	154.1	-76.22	8,018.7	-704.0	349.0	49.0	299.98	1.163	Level 2
13,800.0	6,869.8	13,837.1	6,786.5	155.6	156.0	-76.20	8,118.7	-704.0	349.0	45.3	303.68	1.149	Level 2
13,900.0	6,869.6	13,937.1	6,786.2	157.5	157.9	-76.18	8,218.7	-704.0	349.0	41.6	307.39	1.135	Level 2
14,000.0	6,869.4	14,037.1	6,785.9	159.4	159.8	-76.16	8,318.7	-704.0	349.1	38.0	311.09	1.122	Level 2
14,100.0	6,869.2	14,137.1	6,785.6	161.3	161.7	-76.14	8,418.7	-704.0	349.1	34.3	314.80	1.109	Level 2
14,200.0	6,869.0	14,237.1	6,785.3	163.2	163.6	-76.13	8,518.7	-704.0	349.1	30.6	318.50	1.096	Level 2
14,300.0	6,868.8	14,337.1	6,785.0	165.1	165.5	-76.11	8,618.7	-704.0	349.1	26.9	322.21	1.084	Level 2
14,400.0	6,868.6	14,437.1	6,784.6	167.0	167.4	-76.09	8,718.7	-704.0	349.2	23.3	325.91	1.071	Level 2
14,500.0	6,868.4	14,537.1	6,784.3	168.9	169.3	-76.07	8,818.7	-704.0	349.2	19.6	329.61	1.059	Level 2
14,600.0	6,868.2	14,637.1	6,784.0	170.9	171.2	-76.05	8,918.7	-704.0	349.2	15.9	333.32	1.048	Level 2
14,700.0	6,868.0	14,737.1	6,783.7	172.8	173.2	-76.03	9,018.7	-704.0	349.3	12.2	337.02	1.036	Level 2
14,800.0	6,867.8	14,837.1	6,783.4	174.7	175.1	-76.01	9,118.7	-704.0	349.3	8.6	340.72	1.025	Level 2
14,900.0	6,867.7	14,937.1	6,783.1	176.6	177.0	-75.99	9,218.7	-704.0	349.3	4.9	344.43	1.014	Level 2
15,000.0	6,867.5	15,037.1	6,782.8	178.5	178.9	-75.97	9,318.7	-704.0	349.4	1.2	348.13	1.004	Level 2
15,100.0	6,867.3	15,137.1	6,782.5	180.4	180.8	-75.95	9,418.7	-704.0	349.4	-2.5	351.83	0.993	Level 1
15,200.0	6,867.1	15,237.1	6,782.1	182.3	182.7	-75.93	9,518.7	-704.0	349.4	-6.1	355.53	0.983	Level 1
15,239.9	6,867.0	15,277.0	6,782.0	183.1	183.5	-75.92	9,558.6	-704.0	349.4	-7.6	357.01	0.979	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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
0.0	0.0	0.0	0.0	0.0	0.0	-89.30	0.4	-30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	-89.30	0.4	-30.1	30.1	29.9	0.22	133.878	
200.0	200.0	200.0	200.0	0.3	0.3	-89.30	0.4	-30.1	30.1	29.4	0.67	44.626	
300.0	300.0	300.0	300.0	0.6	0.6	-89.30	0.4	-30.1	30.1	29.0	1.12	26.776	
400.0	400.0	400.0	400.0	0.8	0.8	-89.30	0.4	-30.1	30.1	28.5	1.57	19.125 CC, ES	
500.0	500.0	499.3	499.3	1.0	1.0	-88.03	1.1	-31.2	31.2	29.2	2.02	15.474	
600.0	600.0	598.5	598.4	1.2	1.2	-84.72	3.2	-34.4	34.6	32.1	2.46	14.067	
700.0	700.0	697.4	697.1	1.5	1.5	-80.47	6.7	-39.8	40.5	37.5	2.91	13.916	
800.0	800.0	795.9	795.2	1.7	1.7	-76.28	11.5	-47.3	48.9	45.5	3.36	14.563	
900.0	900.0	893.9	892.5	1.9	2.0	-72.65	17.8	-56.8	60.0	56.2	3.81	15.736	
1,000.0	1,000.0	991.3	988.9	2.1	2.3	-69.72	25.3	-68.4	73.7	69.5	4.27	17.260	
1,100.0	1,100.0	1,088.0	1,084.3	2.4	2.6	-47.84	34.1	-81.9	89.2	84.5	4.72	18.894	
1,200.0	1,199.9	1,184.3	1,178.8	2.6	2.9	-47.27	44.1	-97.3	105.4	100.2	5.18	20.350	
1,300.0	1,299.7	1,280.0	1,272.3	2.8	3.3	-47.47	55.4	-114.7	122.3	116.7	5.65	21.658	
1,400.0	1,399.3	1,376.2	1,365.7	3.0	3.8	-48.18	68.0	-134.0	139.8	133.7	6.13	22.805	
1,500.0	1,498.6	1,474.8	1,461.2	3.3	4.2	-49.40	81.2	-154.3	156.3	149.7	6.64	23.554	
1,600.0	1,597.5	1,573.5	1,556.9	3.6	4.7	-51.04	94.4	-174.6	171.2	164.0	7.17	23.886	
1,700.0	1,696.1	1,672.4	1,652.8	3.9	5.2	-53.06	107.6	-195.0	184.7	176.9	7.74	23.864	
1,800.0	1,794.2	1,771.3	1,748.6	4.2	5.7	-55.41	120.9	-215.4	196.9	188.5	8.36	23.548	
1,900.0	1,891.7	1,870.2	1,844.5	4.5	6.2	-58.07	134.1	-235.7	208.0	199.0	9.05	22.991	
1,988.0	1,977.0	1,957.1	1,928.8	4.9	6.6	-60.68	145.7	-253.6	217.2	207.5	9.72	22.342	
2,000.0	1,988.6	1,969.0	1,940.2	4.9	6.7	-61.06	147.3	-256.1	218.4	208.6	9.82	22.245	
2,100.0	2,085.3	2,067.7	2,035.9	5.4	7.2	-64.10	160.5	-276.4	228.9	218.3	10.66	21.479	
2,200.0	2,182.0	2,166.4	2,131.7	5.8	7.7	-66.87	173.8	-296.7	240.0	228.5	11.54	20.798	
2,300.0	2,278.6	2,265.2	2,227.4	6.3	8.2	-69.40	187.0	-317.0	251.6	239.2	12.46	20.199	
2,400.0	2,375.3	2,363.9	2,323.1	6.8	8.7	-71.70	200.2	-337.4	263.7	250.3	13.40	19.674	
2,500.0	2,472.0	2,462.6	2,418.8	7.2	9.2	-73.80	213.4	-357.7	276.1	261.7	14.37	19.217	
2,600.0	2,568.7	2,561.4	2,514.5	7.7	9.8	-75.72	226.7	-378.0	288.9	273.5	15.35	18.819	
2,700.0	2,665.3	2,660.1	2,610.2	8.2	10.3	-77.47	239.9	-398.4	301.9	285.6	16.34	18.473	
2,800.0	2,762.0	2,758.8	2,705.9	8.7	10.8	-79.08	253.1	-418.7	315.3	297.9	17.35	18.171	
2,900.0	2,858.7	2,857.6	2,801.6	9.2	11.3	-80.56	266.3	-439.0	328.8	310.4	18.36	17.908	
3,000.0	2,955.4	2,956.3	2,897.3	9.7	11.8	-81.92	279.5	-459.4	342.6	323.2	19.38	17.677	
3,100.0	3,052.0	3,055.0	2,993.0	10.2	12.3	-83.17	292.8	-479.7	356.5	336.1	20.40	17.475	
3,200.0	3,148.7	3,153.8	3,088.7	10.7	12.8	-84.33	306.0	-500.0	370.6	349.1	21.42	17.297	
3,300.0	3,245.4	3,252.5	3,184.4	11.2	13.4	-85.41	319.2	-520.3	384.8	362.3	22.45	17.140	
3,400.0	3,342.0	3,351.2	3,280.2	11.8	13.9	-86.41	332.4	-540.7	399.1	375.6	23.48	17.001	
3,500.0	3,438.7	3,450.0	3,375.9	12.3	14.4	-87.34	345.6	-561.0	413.6	389.1	24.50	16.877	
3,600.0	3,535.4	3,548.7	3,471.6	12.8	14.9	-88.21	358.9	-581.3	428.1	402.6	25.53	16.767	
3,700.0	3,632.1	3,647.4	3,567.3	13.3	15.4	-89.02	372.1	-601.7	442.8	416.2	26.56	16.669	
3,800.0	3,728.7	3,746.2	3,663.0	13.8	15.9	-89.78	385.3	-622.0	457.5	429.9	27.59	16.581	
3,900.0	3,825.4	3,844.9	3,758.7	14.3	16.5	-90.49	398.5	-642.3	472.3	443.7	28.62	16.503	
4,000.0	3,922.1	3,943.6	3,854.4	14.9	17.0	-91.16	411.7	-662.6	487.2	457.5	29.65	16.432	
4,100.0	4,018.8	4,042.4	3,950.1	15.4	17.5	-91.79	425.0	-683.0	502.1	471.4	30.68	16.368	
4,200.0	4,115.4	4,141.1	4,045.8	15.9	18.0	-92.38	438.2	-703.3	517.1	485.4	31.70	16.310	
4,300.0	4,212.1	4,239.8	4,141.5	16.4	18.5	-92.94	451.4	-723.6	532.1	499.4	32.73	16.257	
4,400.0	4,308.8	4,338.6	4,237.2	16.9	19.0	-93.47	464.6	-744.0	547.2	513.4	33.76	16.210	
4,500.0	4,405.5	4,437.3	4,333.0	17.5	19.6	-93.97	477.9	-764.3	562.3	527.5	34.78	16.166	
4,600.0	4,502.1	4,536.0	4,428.7	18.0	20.1	-94.44	491.1	-784.6	577.5	541.7	35.81	16.127	
4,700.0	4,598.8	4,634.8	4,524.4	18.5	20.6	-94.89	504.3	-804.9	592.7	555.8	36.83	16.091	
4,800.0	4,695.5	4,733.5	4,620.1	19.0	21.1	-95.32	517.5	-825.3	607.9	570.1	37.86	16.058	
4,900.0	4,792.1	4,832.2	4,715.8	19.6	21.6	-95.72	530.7	-845.6	623.2	584.3	38.88	16.028	

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 23D-341
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 23D-341	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 23P-321 - 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	4,888.8	4,931.0	4,811.5	20.1	22.1	-96.11	544.0	-865.9	638.5	598.6	39.90	16.000	
5,100.0	4,985.5	5,029.7	4,907.2	20.6	22.7	-96.48	557.2	-886.3	653.8	612.9	40.93	15.975	
5,200.0	5,082.2	5,128.4	5,002.9	21.1	23.2	-96.83	570.4	-906.6	669.2	627.2	41.95	15.951	
5,288.0	5,167.2	5,215.3	5,087.1	21.6	23.6	-97.13	582.0	-924.5	682.7	639.8	42.85	15.932	
5,300.0	5,178.8	5,227.2	5,098.6	21.6	23.7	-97.20	583.6	-926.9	684.5	641.6	42.97	15.930	
5,400.0	5,276.0	5,326.0	5,194.4	22.0	24.2	-97.65	596.9	-947.3	699.6	655.8	43.88	15.944	
5,500.0	5,374.0	5,437.9	5,303.4	22.4	24.7	-97.91	610.7	-968.6	713.4	668.7	44.70	15.961	
5,600.0	5,472.6	5,550.7	5,414.2	22.7	25.1	-98.13	622.3	-986.5	724.9	679.5	45.39	15.971	
5,700.0	5,571.7	5,664.0	5,526.2	23.0	25.4	-98.30	631.6	-1,000.7	733.9	688.0	45.98	15.962	
5,800.0	5,671.3	5,777.7	5,639.2	23.2	25.6	-98.42	638.5	-1,011.3	740.7	694.2	46.48	15.936	
5,900.0	5,771.1	5,891.7	5,752.8	23.4	25.8	-98.50	642.9	-1,018.1	745.0	698.1	46.87	15.893	
6,000.0	5,871.0	6,005.8	5,866.9	23.5	26.0	-98.53	644.9	-1,021.1	746.9	699.7	47.17	15.834	
6,029.0	5,900.0	6,038.9	5,900.0	23.5	26.0	-118.55	645.0	-1,021.3	747.0	699.7	47.24	15.813	
6,100.0	5,971.0	6,109.9	5,971.0	23.6	26.1	-118.55	645.0	-1,021.3	747.0	699.6	47.39	15.761	
6,200.0	6,071.0	6,209.9	6,071.0	23.7	26.2	-118.55	645.0	-1,021.3	747.0	699.4	47.63	15.683	
6,247.0	6,118.0	6,256.9	6,118.0	23.8	26.3	-118.55	645.0	-1,021.3	747.0	699.2	47.74	15.646	
6,250.0	6,121.0	6,259.9	6,121.0	23.8	26.3	-118.55	645.0	-1,021.3	747.0	699.2	47.75	15.644	
6,300.0	6,171.0	6,343.3	6,204.3	23.9	26.4	-118.55	648.3	-1,021.3	747.0	699.1	47.92	15.587	
6,350.0	6,220.7	6,436.8	6,296.7	24.0	26.6	-118.30	662.7	-1,021.3	745.8	697.5	48.20	15.470	
6,400.0	6,270.0	6,529.0	6,385.3	24.2	26.9	-117.79	687.8	-1,021.3	743.2	694.6	48.58	15.299	
6,450.0	6,318.6	6,619.0	6,468.3	24.4	27.3	-117.04	722.5	-1,021.3	739.4	690.4	49.04	15.079	
6,500.0	6,366.4	6,706.2	6,544.3	24.7	27.8	-116.07	765.2	-1,021.3	734.6	685.0	49.58	14.816	
6,550.0	6,413.1	6,790.1	6,612.4	25.0	28.3	-114.93	814.1	-1,021.3	728.9	678.7	50.21	14.516	
6,600.0	6,458.6	6,870.5	6,672.2	25.3	28.9	-113.63	867.8	-1,021.3	722.5	671.6	50.93	14.188	
6,650.0	6,502.6	6,947.2	6,723.7	25.8	29.5	-112.22	924.5	-1,021.3	715.7	664.0	51.72	13.839	
6,700.0	6,544.9	7,020.3	6,767.3	26.2	30.2	-110.71	983.2	-1,021.3	708.7	656.1	52.59	13.474	
6,750.0	6,585.4	7,089.8	6,803.4	26.7	30.9	-109.12	1,042.6	-1,021.3	701.5	648.0	53.54	13.103	
6,800.0	6,624.0	7,156.1	6,832.6	27.2	31.6	-107.49	1,102.1	-1,021.3	694.5	640.0	54.57	12.729	
6,850.0	6,660.3	7,219.2	6,855.5	27.8	32.3	-105.81	1,160.9	-1,021.3	687.8	632.2	55.66	12.357	
6,900.0	6,694.3	7,279.5	6,872.8	28.4	33.0	-104.10	1,218.6	-1,021.3	681.5	624.7	56.83	11.992	
6,950.0	6,725.9	7,337.1	6,885.0	29.0	33.8	-102.36	1,274.9	-1,021.3	675.7	617.7	58.06	11.639	
7,000.0	6,754.9	7,392.4	6,892.8	29.7	34.5	-100.61	1,329.6	-1,021.3	670.6	611.3	59.35	11.299	
7,050.0	6,781.1	7,445.5	6,896.4	30.4	35.2	-98.84	1,382.6	-1,021.3	666.2	605.5	60.70	10.976	
7,100.0	6,804.5	7,494.0	6,896.8	31.1	35.9	-97.19	1,431.1	-1,021.3	662.6	600.5	62.05	10.678	
7,150.0	6,824.9	7,539.5	6,896.6	31.9	36.5	-95.77	1,476.6	-1,021.3	660.0	596.6	63.43	10.405	
7,200.0	6,842.4	7,586.3	6,896.5	32.7	37.2	-94.46	1,523.4	-1,021.3	658.4	593.5	64.89	10.145	
7,250.0	6,856.7	7,634.2	6,896.3	33.5	37.9	-93.34	1,571.3	-1,021.2	657.3	590.9	66.43	9.894	
7,300.0	6,867.9	7,682.9	6,896.1	34.3	38.6	-92.42	1,619.9	-1,021.2	656.7	588.7	68.04	9.653	
7,350.0	6,875.8	7,732.2	6,895.9	35.1	39.3	-91.74	1,669.3	-1,021.2	656.4	586.8	69.69	9.420	
7,400.0	6,880.5	7,781.9	6,895.8	36.0	40.1	-91.33	1,719.0	-1,021.2	656.3	584.9	71.37	9.196	
7,448.5	6,882.0	7,830.4	6,895.6	36.8	40.8	-91.19	1,767.5	-1,021.2	656.3	583.3	73.01	8.989	
7,500.0	6,881.9	7,881.9	6,895.4	37.7	41.6	-91.18	1,819.0	-1,021.2	656.3	581.5	74.79	8.775	
7,600.0	6,881.7	7,981.9	6,895.0	39.4	43.2	-91.17	1,919.0	-1,021.2	656.3	578.0	78.26	8.386	
7,700.0	6,881.5	8,081.9	6,894.7	41.2	44.7	-91.15	2,019.0	-1,021.2	656.3	574.5	81.77	8.026	
7,800.0	6,881.3	8,181.9	6,894.3	42.9	46.4	-91.14	2,119.0	-1,021.2	656.3	571.0	85.30	7.693	
7,900.0	6,881.1	8,281.9	6,893.9	44.7	48.0	-91.12	2,219.0	-1,021.2	656.3	567.4	88.86	7.385	
8,000.0	6,880.9	8,381.9	6,893.6	46.5	49.7	-91.11	2,319.0	-1,021.2	656.3	563.8	92.45	7.099	
8,100.0	6,880.7	8,481.9	6,893.2	48.3	51.3	-91.09	2,419.0	-1,021.2	656.3	560.2	96.05	6.832	
8,200.0	6,880.5	8,581.9	6,892.8	50.1	53.0	-91.07	2,519.0	-1,021.2	656.2	556.6	99.67	6.584	
8,300.0	6,880.3	8,681.9	6,892.5	51.9	54.8	-91.06	2,619.0	-1,021.2	656.2	552.9	103.31	6.352	
8,400.0	6,880.1	8,781.9	6,892.1	53.7	56.5	-91.04	2,719.0	-1,021.2	656.2	549.3	106.96	6.135	

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 23D-341
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 23D-341	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		
8,500.0	6,879.9	8,881.9	6,891.7	55.5	58.2	-91.03	2,819.0	-1,021.2	656.2	545.6	110.62	5.932		
8,600.0	6,879.7	8,981.9	6,891.4	57.4	60.0	-91.01	2,919.0	-1,021.2	656.2	541.9	114.30	5.741		
8,700.0	6,879.6	9,081.9	6,891.0	59.2	61.7	-91.00	3,019.0	-1,021.2	656.2	538.2	117.99	5.562		
8,800.0	6,879.4	9,181.9	6,890.6	61.0	63.5	-90.98	3,119.0	-1,021.2	656.2	534.5	121.68	5.393		
8,900.0	6,879.2	9,281.9	6,890.3	62.9	65.3	-90.97	3,219.0	-1,021.2	656.2	530.8	125.39	5.234		
9,000.0	6,879.0	9,381.9	6,889.9	64.7	67.1	-90.95	3,319.0	-1,021.2	656.2	527.1	129.10	5.083		
9,100.0	6,878.8	9,481.9	6,889.5	66.6	68.9	-90.94	3,419.0	-1,021.2	656.2	523.4	132.82	4.941		
9,200.0	6,878.6	9,581.9	6,889.2	68.5	70.7	-90.92	3,519.0	-1,021.2	656.2	519.7	136.55	4.806		
9,300.0	6,878.4	9,681.9	6,888.8	70.3	72.5	-90.91	3,619.0	-1,021.2	656.2	515.9	140.28	4.678		
9,400.0	6,878.2	9,781.9	6,888.4	72.2	74.3	-90.89	3,719.0	-1,021.2	656.2	512.2	144.02	4.556		
9,500.0	6,878.0	9,881.9	6,888.1	74.0	76.1	-90.88	3,819.0	-1,021.2	656.2	508.4	147.76	4.441		
9,600.0	6,877.8	9,981.9	6,887.7	75.9	77.9	-90.86	3,919.0	-1,021.2	656.2	504.7	151.51	4.331		
9,700.0	6,877.6	10,081.9	6,887.3	77.8	79.7	-90.85	4,019.0	-1,021.2	656.2	500.9	155.27	4.226		
9,800.0	6,877.4	10,181.9	6,887.0	79.7	81.6	-90.83	4,119.0	-1,021.2	656.2	497.2	159.02	4.126		
9,900.0	6,877.3	10,281.9	6,886.6	81.5	83.4	-90.82	4,219.0	-1,021.2	656.2	493.4	162.79	4.031		
10,000.0	6,877.1	10,381.9	6,886.2	83.4	85.2	-90.80	4,319.0	-1,021.2	656.2	489.6	166.55	3.940		
10,100.0	6,876.9	10,481.9	6,885.9	85.3	87.1	-90.79	4,419.0	-1,021.2	656.2	485.9	170.32	3.853		
10,200.0	6,876.7	10,581.9	6,885.5	87.2	88.9	-90.77	4,519.0	-1,021.2	656.2	482.1	174.09	3.769		
10,300.0	6,876.5	10,681.9	6,885.1	89.1	90.8	-90.75	4,619.0	-1,021.2	656.2	478.3	177.87	3.689		
10,400.0	6,876.3	10,781.9	6,884.8	91.0	92.6	-90.74	4,719.0	-1,021.2	656.2	474.5	181.64	3.612		
10,500.0	6,876.1	10,881.9	6,884.4	92.8	94.5	-90.72	4,819.0	-1,021.2	656.2	470.8	185.42	3.539		
10,600.0	6,875.9	10,981.9	6,884.0	94.7	96.3	-90.71	4,919.0	-1,021.2	656.2	467.0	189.21	3.468		
10,700.0	6,875.7	11,081.9	6,883.7	96.6	98.2	-90.69	5,019.0	-1,021.2	656.2	463.2	192.99	3.400		
10,800.0	6,875.5	11,181.9	6,883.3	98.5	100.1	-90.68	5,119.0	-1,021.2	656.2	459.4	196.78	3.335		
10,900.0	6,875.3	11,281.9	6,882.9	100.4	101.9	-90.66	5,219.0	-1,021.2	656.2	455.6	200.57	3.272		
11,000.0	6,875.1	11,381.9	6,882.6	102.3	103.8	-90.65	5,319.0	-1,021.2	656.2	451.8	204.36	3.211		
11,100.0	6,874.9	11,481.9	6,882.2	104.2	105.7	-90.63	5,419.0	-1,021.2	656.2	448.0	208.15	3.152		
11,200.0	6,874.8	11,581.9	6,881.8	106.1	107.5	-90.62	5,519.0	-1,021.2	656.2	444.2	211.95	3.096		
11,300.0	6,874.6	11,681.9	6,881.5	108.0	109.4	-90.60	5,619.0	-1,021.2	656.2	440.4	215.75	3.041		
11,400.0	6,874.4	11,781.9	6,881.1	109.9	111.3	-90.59	5,719.0	-1,021.2	656.2	436.6	219.54	2.989		
11,500.0	6,874.2	11,881.9	6,880.7	111.8	113.1	-90.57	5,819.0	-1,021.2	656.2	432.8	223.34	2.938		
11,600.0	6,874.0	11,981.9	6,880.4	113.7	115.0	-90.56	5,919.0	-1,021.2	656.2	429.0	227.15	2.889		
11,700.0	6,873.8	12,081.9	6,880.0	115.6	116.9	-90.54	6,019.0	-1,021.2	656.2	425.2	230.95	2.841		
11,800.0	6,873.6	12,181.9	6,879.6	117.5	118.8	-90.53	6,119.0	-1,021.2	656.2	421.4	234.75	2.795		
11,900.0	6,873.4	12,281.9	6,879.3	119.4	120.7	-90.51	6,218.9	-1,021.2	656.2	417.6	238.56	2.751		
12,000.0	6,873.2	12,381.9	6,878.9	121.3	122.5	-90.50	6,318.9	-1,021.2	656.2	413.8	242.36	2.707		
12,100.0	6,873.0	12,481.9	6,878.5	123.2	124.4	-90.48	6,418.9	-1,021.2	656.2	410.0	246.17	2.665		
12,200.0	6,872.8	12,581.9	6,878.2	125.1	126.3	-90.47	6,518.9	-1,021.2	656.2	406.2	249.98	2.625		
12,300.0	6,872.6	12,681.9	6,877.8	127.0	128.2	-90.45	6,618.9	-1,021.2	656.2	402.4	253.79	2.585		
12,400.0	6,872.5	12,781.9	6,877.4	128.9	130.1	-90.43	6,718.9	-1,021.2	656.2	398.6	257.60	2.547		
12,500.0	6,872.3	12,881.9	6,877.1	130.8	132.0	-90.42	6,818.9	-1,021.2	656.2	394.7	261.41	2.510		
12,600.0	6,872.1	12,981.9	6,876.7	132.7	133.9	-90.40	6,918.9	-1,021.2	656.1	390.9	265.22	2.474		
12,700.0	6,871.9	13,081.9	6,876.3	134.6	135.7	-90.39	7,018.9	-1,021.2	656.1	387.1	269.03	2.439		
12,800.0	6,871.7	13,181.9	6,876.0	136.5	137.6	-90.37	7,118.9	-1,021.2	656.1	383.3	272.85	2.405		
12,900.0	6,871.5	13,281.9	6,875.6	138.4	139.5	-90.36	7,218.9	-1,021.2	656.1	379.5	276.66	2.372		
13,000.0	6,871.3	13,381.9	6,875.2	140.3	141.4	-90.34	7,318.9	-1,021.2	656.1	375.7	280.48	2.339		
13,100.0	6,871.1	13,481.9	6,874.9	142.2	143.3	-90.33	7,418.9	-1,021.2	656.1	371.8	284.29	2.308		
13,200.0	6,870.9	13,581.9	6,874.5	144.1	145.2	-90.31	7,518.9	-1,021.2	656.1	368.0	288.11	2.277		
13,300.0	6,870.7	13,681.9	6,874.1	146.0	147.1	-90.30	7,618.9	-1,021.2	656.1	364.2	291.93	2.248		
13,400.0	6,870.5	13,781.9	6,873.8	147.9	149.0	-90.28	7,718.9	-1,021.2	656.1	360.4	295.75	2.219		
13,500.0	6,870.3	13,881.9	6,873.4	149.9	150.9	-90.27	7,818.9	-1,021.2	656.1	356.6	299.56	2.190		

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 23D-341
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 23D-341	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	6,870.1	13,981.9	6,873.0	151.8	152.8	-90.25	7,918.9	-1,021.2	656.1	352.8	303.38	2.163		
13,700.0	6,870.0	14,081.9	6,872.7	153.7	154.7	-90.24	8,018.9	-1,021.2	656.1	348.9	307.20	2.136		
13,800.0	6,869.8	14,181.9	6,872.3	155.6	156.6	-90.22	8,118.9	-1,021.2	656.1	345.1	311.02	2.110		
13,900.0	6,869.6	14,281.9	6,871.9	157.5	158.5	-90.21	8,218.9	-1,021.2	656.1	341.3	314.84	2.084		
14,000.0	6,869.4	14,381.9	6,871.6	159.4	160.4	-90.19	8,318.9	-1,021.2	656.1	337.5	318.67	2.059		
14,100.0	6,869.2	14,481.9	6,871.2	161.3	162.3	-90.18	8,418.9	-1,021.2	656.1	333.6	322.49	2.035		
14,200.0	6,869.0	14,581.9	6,870.8	163.2	164.2	-90.16	8,518.9	-1,021.2	656.1	329.8	326.31	2.011		
14,300.0	6,868.8	14,681.9	6,870.5	165.1	166.1	-90.15	8,618.9	-1,021.2	656.1	326.0	330.13	1.987		
14,400.0	6,868.6	14,781.9	6,870.1	167.0	168.0	-90.13	8,718.9	-1,021.2	656.1	322.2	333.95	1.965		
14,500.0	6,868.4	14,881.9	6,869.7	168.9	169.9	-90.11	8,818.9	-1,021.2	656.1	318.4	337.78	1.943		
14,600.0	6,868.2	14,981.9	6,869.4	170.9	171.8	-90.10	8,918.9	-1,021.2	656.1	314.5	341.60	1.921		
14,700.0	6,868.0	15,081.9	6,869.0	172.8	173.7	-90.08	9,018.9	-1,021.2	656.1	310.7	345.43	1.899		
14,800.0	6,867.8	15,181.9	6,868.6	174.7	175.6	-90.07	9,118.9	-1,021.2	656.1	306.9	349.25	1.879		
14,900.0	6,867.7	15,281.9	6,868.3	176.6	177.5	-90.05	9,218.9	-1,021.2	656.1	303.1	353.08	1.858		
15,000.0	6,867.5	15,381.9	6,867.9	178.5	179.4	-90.04	9,318.9	-1,021.2	656.1	299.2	356.90	1.838		
15,100.0	6,867.3	15,481.9	6,867.5	180.4	181.3	-90.02	9,418.9	-1,021.2	656.1	295.4	360.73	1.819		
15,200.0	6,867.1	15,581.9	6,867.2	182.3	183.2	-90.01	9,518.9	-1,021.2	656.1	291.6	364.55	1.800		
15,222.2	6,867.0	15,604.1	6,867.1	182.8	183.6	-90.00	9,541.1	-1,021.2	656.1	290.7	365.40	1.796		
15,239.9	6,867.0	15,621.8	6,867.0	183.1	183.9	-90.00	9,558.8	-1,021.2	656.1	290.1	366.08	1.792 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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
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	90.70	-0.7	59.9	59.9				
100.0	100.0	100.0	100.0	0.1	0.1	90.70	-0.7	59.9	59.9	59.7	0.22	266.517	
200.0	200.0	200.0	200.0	0.3	0.3	90.70	-0.7	59.9	59.9	59.2	0.67	88.839 CC, ES	
300.0	300.0	298.7	298.6	0.6	0.6	90.08	-0.1	61.0	61.0	59.9	1.12	54.686	
400.0	400.0	397.2	397.1	0.8	0.8	88.34	1.9	64.3	64.4	62.8	1.56	41.264	
500.0	500.0	495.4	495.1	1.0	1.0	85.84	5.1	69.7	70.1	68.1	2.01	34.819	
600.0	600.0	593.3	592.6	1.2	1.3	82.96	9.6	77.3	78.3	75.8	2.47	31.625	
700.0	700.0	690.7	689.3	1.5	1.5	80.05	15.3	87.0	89.0	86.0	2.95	30.209	
800.0	800.0	787.4	785.1	1.7	1.8	77.34	22.2	98.7	102.3	98.9	3.42	29.866 SF	
900.0	900.0	883.4	879.7	1.9	2.2	74.94	30.3	112.4	118.2	114.2	3.91	30.210	
1,000.0	1,000.0	978.5	973.1	2.1	2.5	72.87	39.4	128.0	136.6	132.2	4.41	31.008	
1,100.0	1,100.0	1,072.6	1,065.1	2.4	2.9	91.29	49.7	145.4	157.6	152.8	4.79	32.915	
1,200.0	1,199.9	1,165.8	1,155.5	2.6	3.4	90.63	61.0	164.5	181.0	175.7	5.26	34.409	
1,300.0	1,299.7	1,262.1	1,248.7	2.8	3.8	90.66	73.4	185.5	205.9	200.2	5.75	35.817	
1,400.0	1,399.3	1,358.8	1,342.3	3.0	4.3	91.28	85.8	206.6	230.9	224.6	6.25	36.951	
1,500.0	1,498.6	1,455.5	1,435.8	3.3	4.8	92.30	98.3	227.6	256.0	249.2	6.77	37.812	
1,600.0	1,597.5	1,551.9	1,529.0	3.6	5.3	93.61	110.7	248.7	281.4	274.1	7.32	38.432	
1,700.0	1,696.1	1,648.0	1,622.0	3.9	5.8	95.12	123.0	269.6	307.3	299.4	7.91	38.840	
1,800.0	1,794.2	1,743.8	1,714.7	4.2	6.3	96.79	135.4	290.5	333.7	325.2	8.54	39.069	
1,900.0	1,891.7	1,839.1	1,806.9	4.5	6.8	98.55	147.6	311.3	360.9	351.7	9.22	39.152	
1,988.0	1,977.0	1,922.7	1,887.8	4.9	7.3	100.16	158.4	329.5	385.5	375.7	9.85	39.132	
2,000.0	1,988.6	1,934.0	1,898.8	4.9	7.3	100.43	159.8	332.0	388.9	379.0	9.94	39.116	
2,100.0	2,085.3	2,028.7	1,990.4	5.4	7.8	102.53	172.0	352.6	417.7	407.0	10.72	38.974	
2,200.0	2,182.0	2,123.5	2,082.0	5.8	8.3	104.36	184.2	373.3	446.9	435.4	11.51	38.824	
2,300.0	2,278.6	2,218.2	2,173.6	6.3	8.8	105.97	196.4	393.9	476.5	464.2	12.32	38.679	
2,400.0	2,375.3	2,312.9	2,265.2	6.8	9.3	107.39	208.6	414.6	506.4	493.2	13.14	38.543	
2,500.0	2,472.0	2,407.6	2,356.9	7.2	9.8	108.65	220.8	435.2	536.5	522.6	13.97	38.419	
2,600.0	2,568.7	2,502.3	2,448.5	7.7	10.3	109.78	232.9	455.9	566.9	552.1	14.80	38.307	
2,700.0	2,665.3	2,597.0	2,540.1	8.2	10.8	110.80	245.1	476.5	597.4	581.8	15.64	38.208	
2,800.0	2,762.0	2,691.7	2,631.7	8.7	11.3	111.72	257.3	497.2	628.1	611.6	16.48	38.120	
2,900.0	2,858.7	2,786.4	2,723.4	9.2	11.8	112.55	269.5	517.8	659.0	641.6	17.32	38.042	
3,000.0	2,955.4	2,881.1	2,815.0	9.7	12.4	113.31	281.7	538.5	689.9	671.7	18.17	37.973	
3,100.0	3,052.0	2,975.8	2,906.6	10.2	12.9	114.00	293.9	559.1	721.0	701.9	19.02	37.912	
3,200.0	3,148.7	3,070.5	2,998.2	10.7	13.4	114.64	306.1	579.8	752.1	732.2	19.87	37.858	
3,300.0	3,245.4	3,165.2	3,089.8	11.2	13.9	115.23	318.2	600.4	783.3	762.6	20.72	37.810	
3,400.0	3,342.0	3,259.9	3,181.5	11.8	14.4	115.77	330.4	621.1	814.6	793.0	21.57	37.768	
3,500.0	3,438.7	3,354.6	3,273.1	12.3	14.9	116.27	342.6	641.7	845.9	823.5	22.42	37.730	
3,600.0	3,535.4	3,449.3	3,364.7	12.8	15.4	116.74	354.8	662.4	877.3	854.1	23.27	37.697	
3,700.0	3,632.1	3,544.1	3,456.3	13.3	15.9	117.17	367.0	683.0	908.8	884.7	24.13	37.667	
3,800.0	3,728.7	3,638.8	3,547.9	13.8	16.4	117.58	379.2	703.7	940.3	915.3	24.98	37.641	
3,900.0	3,825.4	3,733.5	3,639.6	14.3	16.9	117.96	391.4	724.3	971.8	946.0	25.83	37.617	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	
7,150.0	6,824.9	6,807.9	6,807.9	31.9	136.2	-32.10	2,429.2	-591.7	979.4	876.7	102.76	9.531	
7,200.0	6,842.4	6,825.4	6,825.4	32.7	136.5	-38.21	2,429.2	-591.7	933.9	822.1	111.84	8.351	
7,250.0	6,856.7	6,839.7	6,839.7	33.5	136.8	-45.99	2,429.2	-591.7	887.5	762.0	125.51	7.071	
7,300.0	6,867.9	6,850.9	6,850.9	34.3	137.0	-55.66	2,429.2	-591.7	840.5	698.3	142.22	5.910	
7,350.0	6,875.8	6,858.8	6,858.8	35.1	137.2	-66.98	2,429.2	-591.7	793.1	634.7	158.42	5.006	
7,400.0	6,880.5	6,863.5	6,863.5	36.0	137.3	-79.09	2,429.2	-591.7	745.5	575.9	169.67	4.394	
7,448.5	6,882.0	6,865.0	6,865.0	36.8	137.3	-90.32	2,429.2	-591.7	699.5	526.0	173.54	4.031	
7,500.0	6,881.9	6,864.9	6,864.9	37.7	137.3	-90.30	2,429.2	-591.7	651.0	476.6	174.43	3.732	
7,600.0	6,881.7	6,864.7	6,864.7	39.4	137.3	-90.25	2,429.2	-591.7	558.3	382.2	176.18	3.169	
7,700.0	6,881.5	6,864.5	6,864.5	41.2	137.3	-90.20	2,429.2	-591.7	468.7	290.8	177.94	2.634	
7,800.0	6,881.3	6,864.3	6,864.3	42.9	137.3	-90.15	2,429.2	-591.7	384.2	204.5	179.71	2.138	
7,900.0	6,881.1	6,864.1	6,864.1	44.7	137.3	-90.10	2,429.2	-591.7	309.1	127.6	181.50	1.703	
8,000.0	6,880.9	6,863.9	6,863.9	46.5	137.3	-90.05	2,429.2	-591.7	252.0	68.7	183.30	1.375	Level 3
8,100.0	6,880.7	6,863.7	6,863.7	48.3	137.3	-90.00	2,429.2	-591.7	226.8	41.7	185.11	1.225	Level 2
8,110.3	6,880.7	6,863.7	6,863.7	48.5	137.3	-90.00	2,429.2	-591.7	226.6	41.3	185.29	1.223	Level 2, CC, ES, SF
8,200.0	6,880.5	6,863.5	6,863.5	50.1	137.3	-89.96	2,429.2	-591.7	243.7	56.8	186.92	1.304	Level 3
8,300.0	6,880.3	6,863.3	6,863.3	51.9	137.3	-89.91	2,429.2	-591.7	295.5	106.8	188.74	1.566	
8,400.0	6,880.1	6,863.1	6,863.1	53.7	137.3	-89.86	2,429.2	-591.7	367.8	177.2	190.57	1.930	
8,500.0	6,879.9	6,862.9	6,862.9	55.5	137.3	-89.81	2,429.2	-591.7	450.8	258.4	192.41	2.343	
8,600.0	6,879.7	6,862.7	6,862.7	57.4	137.3	-89.76	2,429.2	-591.7	539.6	345.3	194.25	2.778	
8,700.0	6,879.6	6,862.6	6,862.6	59.2	137.3	-89.71	2,429.2	-591.7	631.7	435.6	196.09	3.222	
8,800.0	6,879.4	6,862.4	6,862.4	61.0	137.2	-89.67	2,429.2	-591.7	726.0	528.0	197.94	3.668	
8,900.0	6,879.2	6,862.2	6,862.2	62.9	137.2	-89.62	2,429.2	-591.7	821.6	621.8	199.79	4.112	
9,000.0	6,879.0	6,862.0	6,862.0	64.7	137.2	-89.57	2,429.2	-591.7	918.1	716.4	201.65	4.553	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	6,880.3	6,864.3	6,864.3	51.9	137.3	-90.42	3,540.4	-604.5	952.0	763.3	188.75	5.044	
8,400.0	6,880.1	6,864.1	6,864.1	53.7	137.3	-90.38	3,540.4	-604.5	855.6	665.0	190.58	4.489	
8,500.0	6,879.9	6,863.9	6,863.9	55.5	137.3	-90.33	3,540.4	-604.5	760.1	567.7	192.42	3.950	
8,600.0	6,879.7	6,863.7	6,863.7	57.4	137.3	-90.29	3,540.4	-604.5	666.0	471.7	194.26	3.428	
8,700.0	6,879.6	6,863.6	6,863.6	59.2	137.3	-90.24	3,540.4	-604.5	573.8	377.7	196.11	2.926	
8,800.0	6,879.4	6,863.4	6,863.4	61.0	137.3	-90.19	3,540.4	-604.5	484.7	286.7	197.96	2.448	
8,900.0	6,879.2	6,863.2	6,863.2	62.9	137.3	-90.15	3,540.4	-604.5	400.8	201.0	199.81	2.006	
9,000.0	6,879.0	6,863.0	6,863.0	64.7	137.3	-90.10	3,540.4	-604.5	326.1	124.4	201.67	1.617	
9,100.0	6,878.8	6,862.8	6,862.8	66.6	137.3	-90.06	3,540.4	-604.5	268.4	64.9	203.53	1.319	Level 3
9,200.0	6,878.6	6,862.6	6,862.6	68.5	137.3	-90.01	3,540.4	-604.5	240.3	34.9	205.39	1.170	Level 2
9,221.4	6,878.6	6,862.6	6,862.6	68.9	137.3	-90.00	3,540.4	-604.5	239.4	33.6	205.79	1.163	Level 2, CC, ES, SF
9,300.0	6,878.4	6,862.4	6,862.4	70.3	137.2	-89.96	3,540.4	-604.5	251.9	44.7	207.26	1.215	Level 2
9,400.0	6,878.2	6,862.2	6,862.2	72.2	137.2	-89.92	3,540.4	-604.5	298.6	89.5	209.13	1.428	Level 3
9,500.0	6,878.0	6,862.0	6,862.0	74.0	137.2	-89.87	3,540.4	-604.5	367.3	156.3	211.00	1.741	
9,600.0	6,877.8	6,861.8	6,861.8	75.9	137.2	-89.83	3,540.4	-604.5	447.9	235.0	212.88	2.104	
9,700.0	6,877.6	6,861.6	6,861.6	77.8	137.2	-89.78	3,540.4	-604.5	535.1	320.3	214.75	2.492	
9,800.0	6,877.4	6,861.4	6,861.4	79.7	137.2	-89.73	3,540.4	-604.5	626.1	409.5	216.63	2.890	
9,900.0	6,877.3	6,861.3	6,861.3	81.5	137.2	-89.69	3,540.4	-604.5	719.5	501.0	218.51	3.293	
10,000.0	6,877.1	6,861.1	6,861.1	83.4	137.2	-89.64	3,540.4	-604.5	814.5	594.1	220.39	3.696	
10,100.0	6,876.9	6,860.9	6,860.9	85.3	137.2	-89.60	3,540.4	-604.5	910.6	688.3	222.27	4.097	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	6,877.6	6,840.6	6,840.6	77.8	136.8	-90.50	4,955.0	-569.1	958.0	743.7	214.32	4.470		
9,800.0	6,877.4	6,840.4	6,840.4	79.7	136.8	-90.45	4,955.0	-569.1	860.6	644.4	216.20	3.981		
9,900.0	6,877.3	6,840.3	6,840.3	81.5	136.8	-90.40	4,955.0	-569.1	763.8	545.7	218.08	3.502		
10,000.0	6,877.1	6,840.1	6,840.1	83.4	136.8	-90.34	4,955.0	-569.1	668.0	448.0	219.96	3.037		
10,100.0	6,876.9	6,839.9	6,839.9	85.3	136.8	-90.29	4,955.0	-569.1	573.6	351.7	221.84	2.585		
10,200.0	6,876.7	6,839.7	6,839.7	87.2	136.8	-90.24	4,955.0	-569.1	481.4	257.7	223.73	2.152		
10,300.0	6,876.5	6,839.5	6,839.5	89.1	136.8	-90.18	4,955.0	-569.1	393.1	167.5	225.62	1.742		
10,400.0	6,876.3	6,839.3	6,839.3	91.0	136.8	-90.13	4,955.0	-569.1	312.0	84.5	227.51	1.371	Level 3	
10,500.0	6,876.1	6,839.1	6,839.1	92.8	136.8	-90.07	4,955.0	-569.1	245.2	15.8	229.40	1.069	Level 2	
10,600.0	6,875.9	6,838.9	6,838.9	94.7	136.8	-90.02	4,955.0	-569.1	207.1	-24.2	231.29	0.896	Level 1	
10,636.1	6,875.8	6,838.8	6,838.8	95.4	136.8	-90.00	4,955.0	-569.1	204.0	-28.0	231.97	0.879	Level 1, CC, ES, SF	
10,700.0	6,875.7	6,838.7	6,838.7	96.6	136.8	-89.97	4,955.0	-569.1	213.7	-19.4	233.18	0.917	Level 1	
10,800.0	6,875.5	6,838.5	6,838.5	98.5	136.8	-89.91	4,955.0	-569.1	261.7	26.6	235.07	1.113	Level 2	
10,900.0	6,875.3	6,838.3	6,838.3	100.4	136.8	-89.86	4,955.0	-569.1	333.6	96.6	236.96	1.408	Level 3	
11,000.0	6,875.1	6,838.1	6,838.1	102.3	136.8	-89.80	4,955.0	-569.1	417.2	178.3	238.86	1.747		
11,100.0	6,874.9	6,837.9	6,837.9	104.2	136.8	-89.75	4,955.0	-569.1	506.8	266.0	240.75	2.105		
11,200.0	6,874.8	6,837.8	6,837.8	106.1	136.8	-89.70	4,955.0	-569.1	599.7	357.0	242.64	2.471		
11,300.0	6,874.6	6,837.6	6,837.6	108.0	136.8	-89.64	4,955.0	-569.1	694.5	450.0	244.54	2.840		
11,400.0	6,874.4	6,837.4	6,837.4	109.9	136.7	-89.59	4,955.0	-569.1	790.7	544.3	246.44	3.208		
11,500.0	6,874.2	6,837.2	6,837.2	111.8	136.7	-89.53	4,955.0	-569.1	887.7	639.3	248.33	3.575		
11,600.0	6,874.0	6,837.0	6,837.0	113.7	136.7	-89.48	4,955.0	-569.1	985.3	735.0	250.23	3.937		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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		
12,100.0	6,873.0	6,832.0	6,832.0	123.2	136.6	-93.17	7,398.4	-399.1	980.1	720.9	259.22	3.781		
12,200.0	6,872.8	6,831.8	6,831.8	125.1	136.6	-92.84	7,398.4	-399.1	880.2	619.0	261.20	3.370		
12,300.0	6,872.6	6,831.6	6,831.6	127.0	136.6	-92.52	7,398.4	-399.1	780.3	517.1	263.17	2.965		
12,400.0	6,872.5	6,831.5	6,831.5	128.9	136.6	-92.20	7,398.4	-399.1	680.4	415.2	265.13	2.566		
12,500.0	6,872.3	6,831.3	6,831.3	130.8	136.6	-91.87	7,398.4	-399.1	580.5	313.4	267.09	2.173		
12,600.0	6,872.1	6,831.1	6,831.1	132.7	136.6	-91.55	7,398.4	-399.1	480.7	211.7	269.04	1.787		
12,700.0	6,871.9	6,830.9	6,830.9	134.6	136.6	-91.23	7,398.4	-399.1	381.0	110.1	270.98	1.406 Level 3		
12,800.0	6,871.7	6,830.7	6,830.7	136.5	136.6	-90.90	7,398.4	-399.1	281.6	8.7	272.92	1.032 Level 2		
12,900.0	6,871.5	6,830.5	6,830.5	138.4	136.6	-90.58	7,398.4	-399.1	182.7	-92.1	274.84	0.665 Level 1		
13,000.0	6,871.3	6,830.3	6,830.3	140.3	136.6	-90.26	7,398.4	-399.1	86.5	-190.3	276.76	0.312 Level 1		
13,079.5	6,871.1	6,830.1	6,830.1	141.8	136.6	-90.00	7,398.4	-399.1	34.0	-244.3	278.29	0.122 Level 1, CC, ES, SF		
13,100.0	6,871.1	6,830.1	6,830.1	142.2	136.6	-89.93	7,398.4	-399.1	39.7	-239.0	278.68	0.142 Level 1		
13,200.0	6,870.9	6,829.9	6,829.9	144.1	136.6	-89.61	7,398.4	-399.1	125.2	-155.4	280.58	0.446 Level 1		
13,300.0	6,870.7	6,829.7	6,829.7	146.0	136.6	-89.29	7,398.4	-399.1	223.1	-59.4	282.48	0.790 Level 1		
13,400.0	6,870.5	6,829.5	6,829.5	147.9	136.6	-88.96	7,398.4	-399.1	322.3	37.9	284.36	1.133 Level 2		
13,500.0	6,870.3	6,829.3	6,829.3	149.9	136.6	-88.64	7,398.4	-399.1	421.9	135.6	286.24	1.474 Level 3		
13,600.0	6,870.1	6,829.1	6,829.1	151.8	136.6	-88.32	7,398.4	-399.1	521.6	233.5	288.11	1.810		
13,700.0	6,870.0	6,829.0	6,829.0	153.7	136.6	-87.99	7,398.4	-399.1	621.4	331.4	289.97	2.143		
13,800.0	6,869.8	6,828.8	6,828.8	155.6	136.6	-87.67	7,398.4	-399.1	721.3	429.5	291.82	2.472		
13,900.0	6,869.6	6,828.6	6,828.6	157.5	136.6	-87.35	7,398.4	-399.1	821.2	527.5	293.67	2.796		
14,000.0	6,869.4	6,828.4	6,828.4	159.4	136.6	-87.03	7,398.4	-399.1	921.1	625.6	295.50	3.117		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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	
11,200.0	6,874.8	6,845.8	6,845.1	106.1	12.8	-90.95	6,291.1	-897.2	937.7	819.1	118.67	7.902	
11,300.0	6,874.6	6,845.3	6,844.6	108.0	12.8	-90.90	6,291.1	-897.2	857.3	736.7	120.57	7.110	
11,400.0	6,874.4	6,844.8	6,844.1	109.9	12.8	-90.84	6,291.1	-897.2	781.3	658.9	122.47	6.380	
11,500.0	6,874.2	6,844.3	6,843.6	111.8	12.8	-90.79	6,291.1	-897.2	711.4	587.0	124.37	5.720	
11,600.0	6,874.0	6,843.8	6,843.1	113.7	12.8	-90.74	6,291.1	-897.2	649.3	523.1	126.27	5.142	
11,700.0	6,873.8	6,843.3	6,842.6	115.6	12.8	-90.68	6,291.1	-897.2	597.7	469.5	128.18	4.663	
11,800.0	6,873.6	6,842.8	6,842.1	117.5	12.8	-90.63	6,291.1	-897.2	559.3	429.2	130.08	4.299	
11,900.0	6,873.4	6,842.3	6,841.7	119.4	12.8	-90.58	6,291.1	-897.2	537.0	405.0	131.98	4.068	
11,972.2	6,873.3	6,842.0	6,841.3	120.7	12.8	-90.54	6,291.1	-897.2	532.1	398.7	133.36	3.990 CC, ES	
12,000.0	6,873.2	6,841.9	6,841.2	121.3	12.8	-90.53	6,291.1	-897.2	532.8	398.9	133.89	3.980 SF	
12,100.0	6,873.0	6,841.4	6,840.7	123.2	12.8	-90.48	6,291.1	-897.2	547.2	411.4	135.79	4.030	
12,200.0	6,872.8	6,840.9	6,840.2	125.1	12.8	-90.43	6,291.1	-897.2	578.8	441.1	137.70	4.204	
12,300.0	6,872.6	6,840.5	6,839.8	127.0	12.8	-90.38	6,291.1	-897.2	625.0	485.4	139.60	4.477	
12,400.0	6,872.5	6,840.0	6,839.3	128.9	12.8	-90.33	6,291.1	-897.2	682.8	541.3	141.51	4.825	
12,500.0	6,872.3	6,839.5	6,838.8	130.8	12.8	-90.28	6,291.1	-897.2	749.5	606.1	143.42	5.226	
12,600.0	6,872.1	6,839.1	6,838.4	132.7	12.8	-90.23	6,291.1	-897.2	823.0	677.7	145.32	5.663	
12,700.0	6,871.9	6,838.6	6,837.9	134.6	12.8	-90.18	6,291.1	-897.2	901.6	754.4	147.23	6.124	
12,800.0	6,871.7	6,838.2	6,837.5	136.5	12.8	-90.13	6,291.1	-897.2	984.1	834.9	149.14	6.598	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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		
13,600.0	6,870.1	6,830.1	6,830.1	151.8	136.6	-90.43	8,885.2	-612.7	997.5	709.3	288.21	3.461		
13,700.0	6,870.0	6,830.0	6,830.0	153.7	136.6	-90.38	8,885.2	-612.7	901.0	610.9	290.12	3.106		
13,800.0	6,869.8	6,829.8	6,829.8	155.6	136.6	-90.34	8,885.2	-612.7	805.3	513.3	292.03	2.758		
13,900.0	6,869.6	6,829.6	6,829.6	157.5	136.6	-90.30	8,885.2	-612.7	710.8	416.9	293.93	2.418		
14,000.0	6,869.4	6,829.4	6,829.4	159.4	136.6	-90.25	8,885.2	-612.7	618.0	322.2	295.84	2.089		
14,100.0	6,869.2	6,829.2	6,829.2	161.3	136.6	-90.21	8,885.2	-612.7	527.9	230.2	297.75	1.773		
14,200.0	6,869.0	6,829.0	6,829.0	163.2	136.6	-90.16	8,885.2	-612.7	442.1	142.5	299.66	1.475	Level 3	
14,300.0	6,868.8	6,828.8	6,828.8	165.1	136.6	-90.12	8,885.2	-612.7	363.6	62.0	301.57	1.206	Level 2	
14,400.0	6,868.6	6,828.6	6,828.6	167.0	136.6	-90.07	8,885.2	-612.7	298.3	-5.2	303.48	0.983	Level 1	
14,500.0	6,868.4	6,828.4	6,828.4	168.9	136.6	-90.03	8,885.2	-612.7	256.3	-49.1	305.39	0.839	Level 1	
14,566.3	6,868.3	6,828.3	6,828.3	170.2	136.6	-90.00	8,885.2	-612.7	247.6	-59.1	306.65	0.807	Level 1, CC, ES, SF	
14,600.0	6,868.2	6,828.2	6,828.2	170.9	136.6	-89.99	8,885.2	-612.7	249.9	-57.4	307.30	0.813	Level 1	
14,700.0	6,868.0	6,828.0	6,828.0	172.8	136.6	-89.94	8,885.2	-612.7	281.4	-27.8	309.20	0.910	Level 1	
14,800.0	6,867.8	6,827.8	6,827.8	174.7	136.6	-89.90	8,885.2	-612.7	340.5	29.4	311.11	1.094	Level 2	
14,900.0	6,867.7	6,827.7	6,827.7	176.6	136.6	-89.85	8,885.2	-612.7	415.5	102.5	313.02	1.328	Level 3	
15,000.0	6,867.5	6,827.5	6,827.5	178.5	136.5	-89.81	8,885.2	-612.7	499.4	184.5	314.93	1.586		
15,100.0	6,867.3	6,827.3	6,827.3	180.4	136.5	-89.76	8,885.2	-612.7	588.4	271.5	316.84	1.857		
15,200.0	6,867.1	6,827.1	6,827.1	182.3	136.5	-89.72	8,885.2	-612.7	680.4	361.6	318.75	2.135		
15,239.9	6,867.0	6,827.0	6,827.0	183.1	136.5	-89.70	8,885.2	-612.7	717.7	398.2	319.51	2.246		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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						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	
1,988.0	1,977.0	1,979.0	1,979.0	4.9	39.6	-16.78	917.0	-628.8	989.3	946.5	42.76	23.134	
2,000.0	1,988.6	1,990.6	1,990.6	4.9	39.8	-16.83	917.0	-628.8	986.3	943.3	43.02	22.927	
2,100.0	2,085.3	2,087.3	2,087.3	5.4	41.7	-17.27	917.0	-628.8	961.8	916.6	45.17	21.292	
2,200.0	2,182.0	2,184.0	2,184.0	5.8	43.7	-17.73	917.0	-628.8	937.4	890.0	47.33	19.803	
2,300.0	2,278.6	2,280.6	2,280.6	6.3	45.6	-18.22	917.0	-628.8	912.9	863.4	49.50	18.443	
2,400.0	2,375.3	2,377.3	2,377.3	6.8	47.5	-18.73	917.0	-628.8	888.6	836.9	51.68	17.195	
2,500.0	2,472.0	2,474.0	2,474.0	7.2	49.5	-19.28	917.0	-628.8	864.3	810.5	53.86	16.047	
2,600.0	2,568.7	2,570.7	2,570.7	7.7	51.4	-19.85	917.0	-628.8	840.1	784.1	56.06	14.987	
2,700.0	2,665.3	2,667.3	2,667.3	8.2	53.3	-20.46	917.0	-628.8	816.0	757.8	58.26	14.007	
2,800.0	2,762.0	2,764.0	2,764.0	8.7	55.3	-21.10	917.0	-628.8	792.0	731.6	60.47	13.098	
2,900.0	2,858.7	2,860.7	2,860.7	9.2	57.2	-21.79	917.0	-628.8	768.1	705.4	62.69	12.252	
3,000.0	2,955.4	2,957.4	2,957.4	9.7	59.1	-22.51	917.0	-628.8	744.3	679.4	64.92	11.465	
3,100.0	3,052.0	3,054.0	3,054.0	10.2	61.1	-23.29	917.0	-628.8	720.6	653.5	67.17	10.729	
3,200.0	3,148.7	3,150.7	3,150.7	10.7	63.0	-24.11	917.0	-628.8	697.1	627.7	69.42	10.041	
3,300.0	3,245.4	3,247.4	3,247.4	11.2	64.9	-25.00	917.0	-628.8	673.7	602.0	71.69	9.397	
3,400.0	3,342.0	3,344.0	3,344.0	11.8	66.9	-25.94	917.0	-628.8	650.5	576.5	73.98	8.792	
3,500.0	3,438.7	3,440.7	3,440.7	12.3	68.8	-26.96	917.0	-628.8	627.4	551.1	76.29	8.224	
3,600.0	3,535.4	3,537.4	3,537.4	12.8	70.7	-28.05	917.0	-628.8	604.6	525.9	78.61	7.690	
3,700.0	3,632.1	3,634.1	3,634.1	13.3	72.7	-29.23	917.0	-628.8	581.9	501.0	80.96	7.188	
3,800.0	3,728.7	3,730.7	3,730.7	13.8	74.6	-30.49	917.0	-628.8	559.6	476.2	83.33	6.715	
3,900.0	3,825.4	3,827.4	3,827.4	14.3	76.5	-31.86	917.0	-628.8	537.5	451.8	85.73	6.269	
4,000.0	3,922.1	3,924.1	3,924.1	14.9	78.5	-33.35	917.0	-628.8	515.7	427.6	88.17	5.850	
4,100.0	4,018.8	4,020.8	4,020.8	15.4	80.4	-34.96	917.0	-628.8	494.3	403.7	90.64	5.454	
4,200.0	4,115.4	4,117.4	4,117.4	15.9	82.3	-36.72	917.0	-628.8	473.4	380.2	93.15	5.082	
4,300.0	4,212.1	4,214.1	4,214.1	16.4	84.3	-38.63	917.0	-628.8	452.9	357.2	95.70	4.732	
4,400.0	4,308.8	4,310.8	4,310.8	16.9	86.2	-40.71	917.0	-628.8	432.9	334.6	98.30	4.404	
4,500.0	4,405.5	4,407.5	4,407.5	17.5	88.1	-42.99	917.0	-628.8	413.6	312.6	100.96	4.096	
4,600.0	4,502.1	4,504.1	4,504.1	18.0	90.1	-45.47	917.0	-628.8	394.9	291.3	103.68	3.809	
4,700.0	4,598.8	4,600.8	4,600.8	18.5	92.0	-48.20	917.0	-628.8	377.1	270.7	106.45	3.543	
4,800.0	4,695.5	4,697.5	4,697.5	19.0	93.9	-51.17	917.0	-628.8	360.2	251.0	109.28	3.296	
4,900.0	4,792.1	4,794.1	4,794.1	19.6	95.9	-54.41	917.0	-628.8	344.4	232.3	112.17	3.071	
5,000.0	4,888.8	4,890.8	4,890.8	20.1	97.8	-57.94	917.0	-628.8	329.9	214.7	115.11	2.866	
5,100.0	4,985.5	4,987.5	4,987.5	20.6	99.7	-61.77	917.0	-628.8	316.7	198.6	118.09	2.682	
5,200.0	5,082.2	5,084.2	5,084.2	21.1	101.7	-65.88	917.0	-628.8	305.1	184.0	121.07	2.520	
5,288.0	5,167.2	5,169.2	5,169.2	21.6	103.4	-69.74	917.0	-628.8	296.3	172.6	123.69	2.396	
5,300.0	5,178.8	5,180.8	5,180.8	21.6	103.6	-70.26	917.0	-628.8	295.3	171.2	124.05	2.380	
5,400.0	5,276.0	5,278.0	5,278.0	22.0	105.6	-74.41	917.0	-628.8	287.9	161.1	126.87	2.270	
5,500.0	5,374.0	5,376.0	5,376.0	22.4	107.5	-78.15	917.0	-628.8	283.1	153.6	129.50	2.186	
5,600.0	5,472.6	5,474.6	5,474.6	22.7	109.5	-81.38	917.0	-628.8	280.1	148.1	131.97	2.122	
5,700.0	5,571.7	5,573.7	5,573.7	23.0	111.5	-84.01	917.0	-628.8	278.4	144.1	134.32	2.072	
5,800.0	5,671.3	5,673.3	5,673.3	23.2	113.5	-85.98	917.0	-628.8	277.5	140.9	136.59	2.032	
5,900.0	5,771.1	5,773.1	5,773.1	23.4	115.5	-87.25	917.0	-628.8	277.2	138.4	138.79	1.997	
6,000.0	5,871.0	5,873.0	5,873.0	23.5	117.5	-87.82	917.0	-628.8	277.0	136.1	140.93	1.966	
6,029.0	5,900.0	5,902.0	5,902.0	23.5	118.0	-107.87	917.0	-628.8	277.0	135.5	141.54	1.957	
6,100.0	5,971.0	5,973.0	5,973.0	23.6	119.5	-107.87	917.0	-628.8	277.0	134.0	143.04	1.937	
6,200.0	6,071.0	6,073.0	6,073.0	23.7	121.5	-107.87	917.0	-628.8	277.0	131.9	145.16	1.909	
6,247.0	6,118.0	6,120.0	6,120.0	23.8	122.4	-107.87	917.0	-628.8	277.0	130.9	146.15	1.895 CC	
6,250.0	6,121.0	6,123.0	6,123.0	23.8	122.5	-107.87	917.0	-628.8	277.0	130.8	146.22	1.895	
6,300.0	6,171.0	6,173.0	6,173.0	23.9	123.5	-108.19	917.0	-628.8	277.6	130.3	147.27	1.885 ES	
6,350.0	6,220.7	6,222.7	6,222.7	24.0	124.5	-109.07	917.0	-628.8	279.2	130.9	148.30	1.883 SF	
6,400.0	6,270.0	6,272.0	6,272.0	24.2	125.4	-110.44	917.0	-628.8	282.1	132.8	149.26	1.890	

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

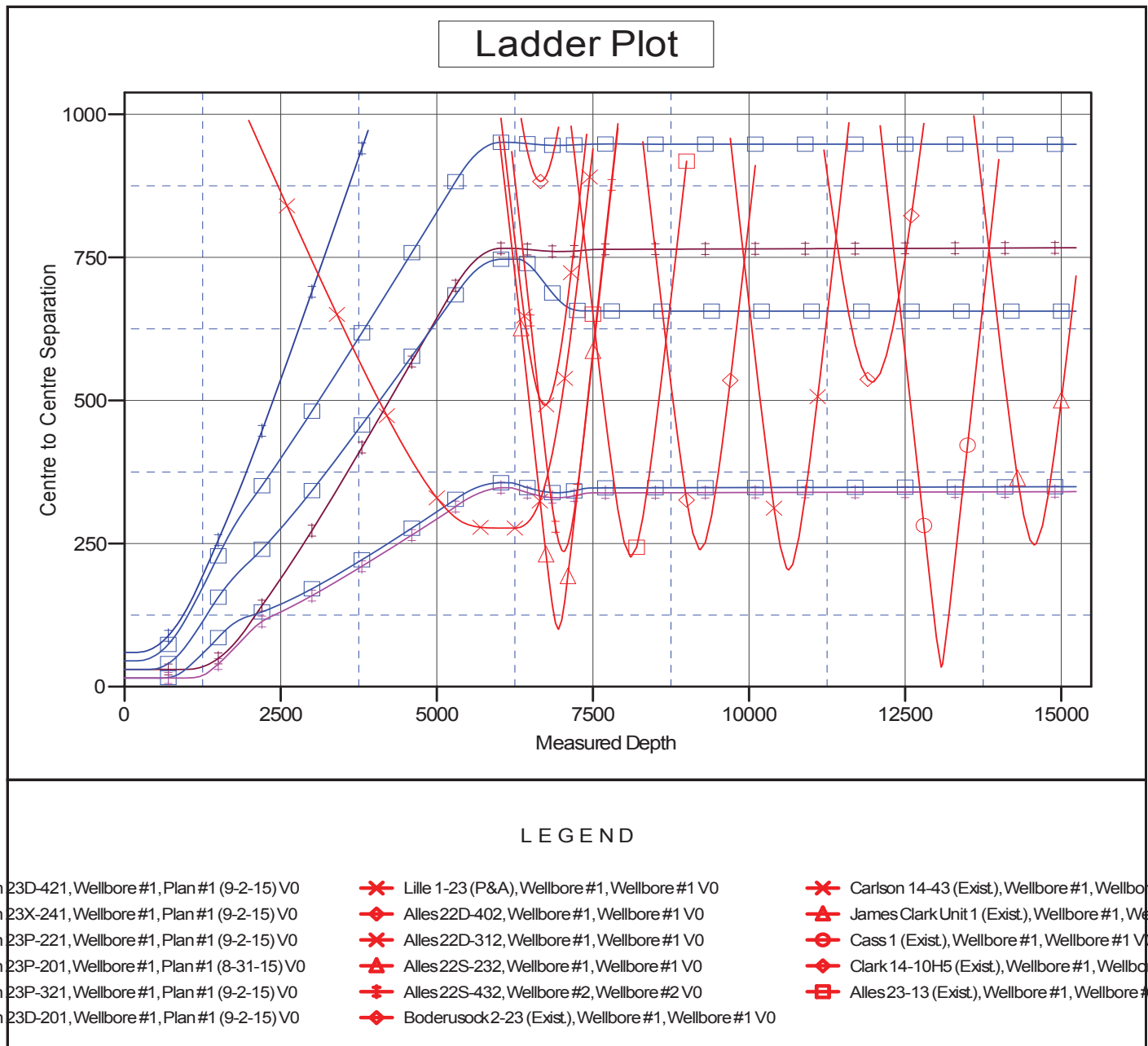
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
Project:	SEC.23-T5N-R65W	TVD Reference:	WELL @ 4656.0ft (Original Well Elev)
Reference Site:	Brown 5N65W23 Pad Sec.23-T5N-R65W	MD Reference:	WELL @ 4656.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Brown 23D-341	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 Lofland 22T & Alles 22S-HZ Existing Wells - Lille 1-23 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7300-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)			
6,450.0	6,318.6	6,320.6	6,320.6	24.4	126.4	-112.26	917.0	-628.8	286.4	136.3	150.07	1.908		
6,500.0	6,366.4	6,368.4	6,368.4	24.7	127.4	-114.41	917.0	-628.8	292.5	141.8	150.66	1.941		
6,550.0	6,413.1	6,415.1	6,415.1	25.0	128.3	-116.79	917.0	-628.8	300.6	149.6	150.93	1.991		
6,600.0	6,458.6	6,460.6	6,460.6	25.3	129.2	-119.28	917.0	-628.8	311.1	160.3	150.80	2.063		
6,650.0	6,502.6	6,504.6	6,504.6	25.8	130.1	-121.76	917.0	-628.8	324.3	174.1	150.20	2.159		
6,700.0	6,544.9	6,546.9	6,546.9	26.2	130.9	-124.12	917.0	-628.8	340.5	191.4	149.11	2.283		
6,750.0	6,585.4	6,587.4	6,587.4	26.7	131.7	-126.28	917.0	-628.8	359.7	212.2	147.56	2.438		
6,800.0	6,624.0	6,626.0	6,626.0	27.2	132.5	-128.17	917.0	-628.8	382.1	236.5	145.62	2.624		
6,850.0	6,660.3	6,662.3	6,662.3	27.8	133.2	-129.71	917.0	-628.8	407.6	264.2	143.42	2.842		
6,900.0	6,694.3	6,696.3	6,696.3	28.4	133.9	-130.86	917.0	-628.8	436.2	295.1	141.12	3.091		
6,950.0	6,725.9	6,727.9	6,727.9	29.0	134.6	-131.58	917.0	-628.8	467.7	328.8	138.94	3.366		
7,000.0	6,754.9	6,756.9	6,756.9	29.7	135.1	-131.81	917.0	-628.8	501.9	364.7	137.15	3.659		
7,050.0	6,781.1	6,783.1	6,783.1	30.4	135.7	-131.49	917.0	-628.8	538.5	402.5	136.06	3.958		
7,100.0	6,804.5	6,806.5	6,806.5	31.1	136.1	-130.53	917.0	-628.8	577.5	441.4	136.03	4.245		
7,150.0	6,824.9	6,826.9	6,826.9	31.9	136.5	-128.81	917.0	-628.8	618.4	480.9	137.46	4.499		
7,200.0	6,842.4	6,844.4	6,844.4	32.7	136.9	-126.15	917.0	-628.8	661.1	520.4	140.73	4.698		
7,250.0	6,856.7	6,858.7	6,858.7	33.5	137.2	-122.32	917.0	-628.8	705.3	559.2	146.09	4.828		
7,300.0	6,867.9	6,869.9	6,869.9	34.3	137.4	-117.01	917.0	-628.8	750.7	597.2	153.47	4.891		
7,350.0	6,875.8	6,877.8	6,877.8	35.1	137.6	-109.87	917.0	-628.8	797.1	635.0	162.13	4.916		
7,400.0	6,880.5	6,882.5	6,882.5	36.0	137.7	-100.59	917.0	-628.8	844.2	674.1	170.08	4.964		
7,448.5	6,882.0	6,884.0	6,884.0	36.8	137.7	-89.65	917.0	-628.8	890.4	716.4	173.92	5.119		
7,500.0	6,881.9	6,883.9	6,883.9	37.7	137.7	-89.62	917.0	-628.8	939.7	764.9	174.82	5.375		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 23D-341
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 23D-341	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 23D-341
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 23D-341
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
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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 23D-341
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°

