

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Fitzsimmons 9J-443**

Surface Location: Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

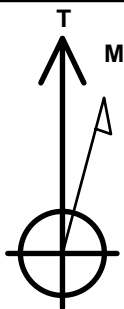
Ground Elevation: 4992.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1269289.40	3199874.25	40.070380	-104.785810	

RKB - 13' WELL @ 5005.0ft (RKB - 13')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
50' E & W Hardline (9J-443)	1.0	-1859.3	-641.0	Rectangle (Sides: L3967.8 W100.0)
SHL 941'FNL & 1643'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 978'FWL	7490.0	-3843.2	-641.0	Point



Azimuths to True North
Magnetic North: 8.33°

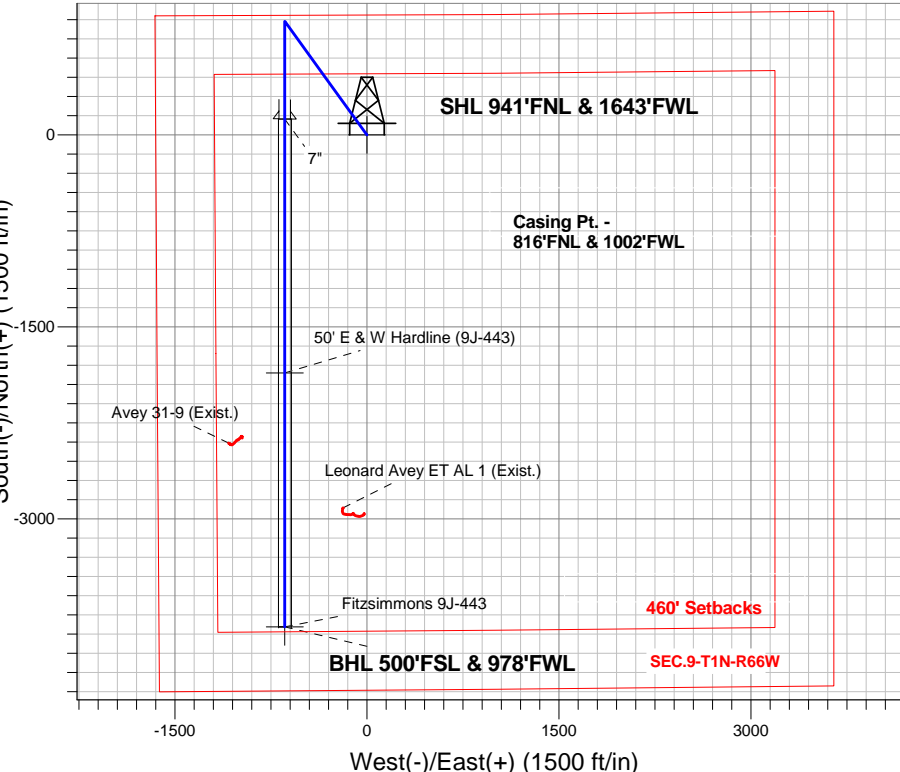
Magnetic Field
Strength: 52546.4snT
Dip Angle: 66.65°
Date: 5/1/2015
Model: IGRF2010

Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W
Fitzsimmons 9J-443
Plan #2 (5-01-15)
11:36, May 01 2015

ANNOTATIONS

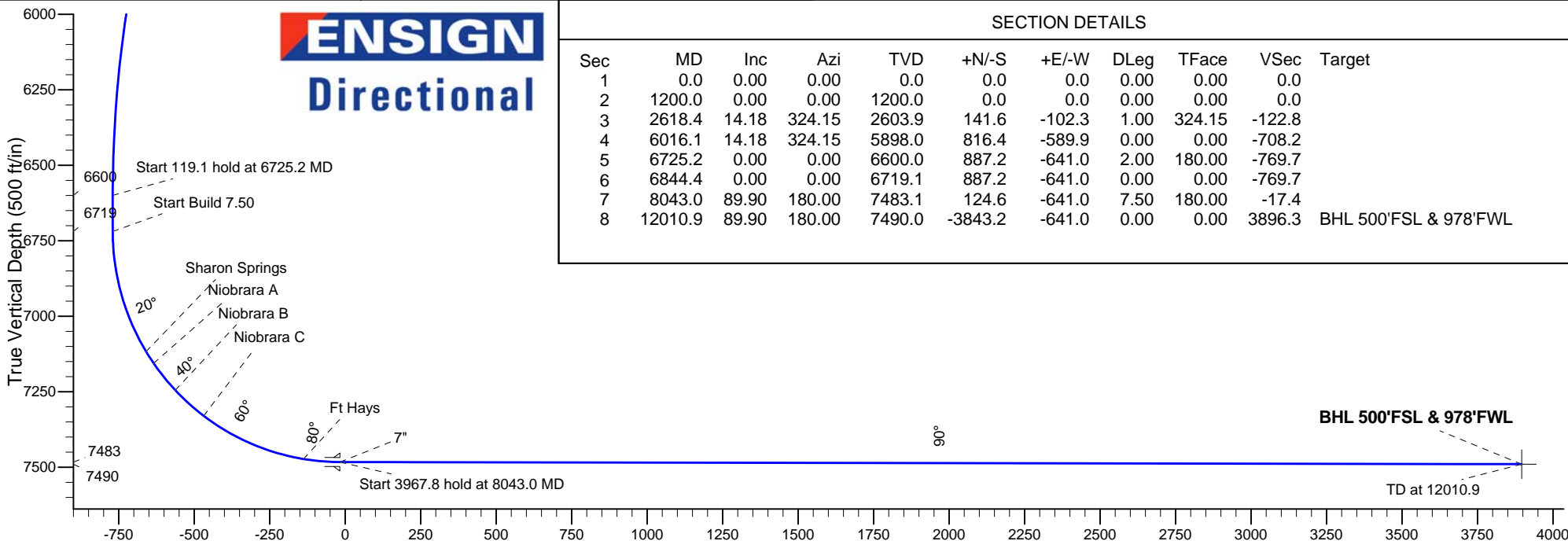
TVD	MD	Annotation
1200.0	1200.0	KOP - Start Build 1.00
5898.1	6016.1	Start Drop -2.00
6600.0	6725.2	Start 119.1 hold at 6725.2 MD
6719.2	6844.4	Start Build 7.50
7483.1	8043.0	Start 3967.8 hold at 8043.0 MD
7490.0	12010.9	TD at 12010.9

South(-)/North(+) (1500 ft/in)



West(-)/East(+) (1500 ft/in)

ENSIGN
Directional



Vertical Section at 189.47° (500 ft/in)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	2618.4	14.18	324.15	2603.9	141.6	-102.3	1.00	324.15	-122.8	
4	6016.1	14.18	324.15	5898.0	816.4	-589.9	0.00	0.00	-708.2	
5	6725.2	0.00	0.00	6600.0	887.2	-641.0	2.00	180.00	-769.7	
6	6844.4	0.00	0.00	6719.1	887.2	-641.0	0.00	0.00	-769.7	
7	8043.0	89.90	180.00	7483.1	124.6	-641.0	7.50	180.00	-17.4	
8	12010.9	89.90	180.00	7490.0	-3843.2	-641.0	0.00	0.00	3896.3	BHL 500'FSL & 978'FWL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.9-T1N-R66W

Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W

Fitzsimmons 9J-443

Wellbore #1

Plan: Plan #2 (5-01-15)

Standard Planning Report

01 May, 2015

Database:	Landmark	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Project:	SEC.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	North Reference:	True
Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (5-01-15)		

Project	SEC.9-T1N-R66W, Weld County, CO		
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						Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W											
Site Position:						Northing:			1,269,248.97 ft			Latitude:			40.070270		
From:			Lat/Long			Easting:			3,199,826.99 ft			Longitude:			-104.785980		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.46 °		

Well	Fitzsimmons 9J-443					
Well Position	+N-S	40.1 ft	Northing:	1,269,289.40 ft	Latitude:	40.070380
	+E-W	47.6 ft	Easting:	3,199,874.25 ft	Longitude:	-104.785810
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,992.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/1/2015	8.33	66.65	52,546

Design	Plan #2 (5-01-15)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	189.47

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,618.4	14.18	324.15	2,603.9	141.6	-102.3	1.00	1.00	0.00	324.15	
6,016.1	14.18	324.15	5,898.0	816.4	-589.9	0.00	0.00	0.00	0.00	
6,725.2	0.00	0.00	6,600.0	887.2	-641.0	2.00	-2.00	0.00	180.00	
6,844.4	0.00	0.00	6,719.1	887.2	-641.0	0.00	0.00	0.00	0.00	
8,043.0	89.90	180.00	7,483.1	124.6	-641.0	7.50	7.50	0.00	180.00	
12,010.9	89.90	180.00	7,490.0	-3,843.2	-641.0	0.00	0.00	0.00	0.00	BHL 500'FSL & 97E

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Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Project:	SEC.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	North Reference:	True
Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (5-01-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
50' E & W Hardline (9J-443) - SHL 941'FNL & 1643'FWL									
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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 1.00									
1,300.0	1.00	324.15	1,300.0	0.7	-0.5	-0.6	1.00	1.00	0.00
1,400.0	2.00	324.15	1,400.0	2.8	-2.0	-2.5	1.00	1.00	0.00
1,500.0	3.00	324.15	1,499.9	6.4	-4.6	-5.5	1.00	1.00	0.00
1,600.0	4.00	324.15	1,599.7	11.3	-8.2	-9.8	1.00	1.00	0.00
1,700.0	5.00	324.15	1,699.4	17.7	-12.8	-15.3	1.00	1.00	0.00
1,800.0	6.00	324.15	1,798.9	25.4	-18.4	-22.1	1.00	1.00	0.00
1,900.0	7.00	324.15	1,898.3	34.6	-25.0	-30.0	1.00	1.00	0.00
2,000.0	8.00	324.15	1,997.4	45.2	-32.7	-39.2	1.00	1.00	0.00
2,100.0	9.00	324.15	2,096.3	57.2	-41.3	-49.6	1.00	1.00	0.00
2,200.0	10.00	324.15	2,194.9	70.6	-51.0	-61.2	1.00	1.00	0.00
2,300.0	11.00	324.15	2,293.3	85.3	-61.6	-74.0	1.00	1.00	0.00
2,400.0	12.00	324.15	2,391.2	101.5	-73.3	-88.0	1.00	1.00	0.00
2,500.0	13.00	324.15	2,488.9	119.0	-86.0	-103.3	1.00	1.00	0.00
2,600.0	14.00	324.15	2,586.1	138.0	-99.7	-119.7	1.00	1.00	0.00
2,618.4	14.18	324.15	2,603.9	141.6	-102.3	-122.8	1.00	1.00	0.00
2,700.0	14.18	324.15	2,683.1	157.8	-114.0	-136.9	0.00	0.00	0.00
2,800.0	14.18	324.15	2,780.0	177.7	-128.4	-154.1	0.00	0.00	0.00
2,900.0	14.18	324.15	2,877.0	197.5	-142.7	-171.3	0.00	0.00	0.00
3,000.0	14.18	324.15	2,973.9	217.4	-157.1	-188.6	0.00	0.00	0.00
3,100.0	14.18	324.15	3,070.9	237.2	-171.4	-205.8	0.00	0.00	0.00
3,200.0	14.18	324.15	3,167.8	257.1	-185.8	-223.0	0.00	0.00	0.00
3,300.0	14.18	324.15	3,264.8	277.0	-200.1	-240.3	0.00	0.00	0.00
3,400.0	14.18	324.15	3,361.7	296.8	-214.5	-257.5	0.00	0.00	0.00
3,500.0	14.18	324.15	3,458.7	316.7	-228.8	-274.7	0.00	0.00	0.00
3,600.0	14.18	324.15	3,555.6	336.5	-243.2	-292.0	0.00	0.00	0.00
3,700.0	14.18	324.15	3,652.6	356.4	-257.5	-309.2	0.00	0.00	0.00
3,800.0	14.18	324.15	3,749.5	376.3	-271.9	-326.4	0.00	0.00	0.00
3,900.0	14.18	324.15	3,846.5	396.1	-286.2	-343.6	0.00	0.00	0.00
4,000.0	14.18	324.15	3,943.4	416.0	-300.6	-360.9	0.00	0.00	0.00
4,100.0	14.18	324.15	4,040.4	435.9	-314.9	-378.1	0.00	0.00	0.00
4,200.0	14.18	324.15	4,137.3	455.7	-329.3	-395.3	0.00	0.00	0.00
4,264.6	14.18	324.15	4,200.0	468.6	-338.5	-406.5	0.00	0.00	0.00
Parkman									
4,300.0	14.18	324.15	4,234.3	475.6	-343.6	-412.6	0.00	0.00	0.00
4,400.0	14.18	324.15	4,331.2	495.4	-358.0	-429.8	0.00	0.00	0.00
4,500.0	14.18	324.15	4,428.2	515.3	-372.3	-447.0	0.00	0.00	0.00

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Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	North Reference:	True
Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (5-01-15)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,600.0	14.18	324.15	4,525.1	535.2	-386.7	-464.3	0.00	0.00	0.00
4,700.0	14.18	324.15	4,622.1	555.0	-401.0	-481.5	0.00	0.00	0.00
4,708.1	14.18	324.15	4,630.0	556.6	-402.2	-482.9	0.00	0.00	0.00
Sussex									
4,800.0	14.18	324.15	4,719.1	574.9	-415.4	-498.7	0.00	0.00	0.00
4,900.0	14.18	324.15	4,816.0	594.7	-429.7	-515.9	0.00	0.00	0.00
5,000.0	14.18	324.15	4,913.0	614.6	-444.1	-533.2	0.00	0.00	0.00
5,100.0	14.18	324.15	5,009.9	634.5	-458.4	-550.4	0.00	0.00	0.00
5,192.9	14.18	324.15	5,100.0	652.9	-471.7	-566.4	0.00	0.00	0.00
Shannon									
5,200.0	14.18	324.15	5,106.9	654.3	-472.8	-567.6	0.00	0.00	0.00
5,300.0	14.18	324.15	5,203.8	674.2	-487.1	-584.9	0.00	0.00	0.00
5,400.0	14.18	324.15	5,300.8	694.1	-501.5	-602.1	0.00	0.00	0.00
5,500.0	14.18	324.15	5,397.7	713.9	-515.8	-619.3	0.00	0.00	0.00
5,600.0	14.18	324.15	5,494.7	733.8	-530.2	-636.6	0.00	0.00	0.00
5,700.0	14.18	324.15	5,591.6	753.6	-544.5	-653.8	0.00	0.00	0.00
5,800.0	14.18	324.15	5,688.6	773.5	-558.9	-671.0	0.00	0.00	0.00
5,900.0	14.18	324.15	5,785.5	793.4	-573.2	-688.2	0.00	0.00	0.00
6,000.0	14.18	324.15	5,882.5	813.2	-587.6	-705.5	0.00	0.00	0.00
6,016.1	14.18	324.15	5,898.1	816.4	-589.9	-708.3	0.00	0.00	0.00
Start Drop -2.00									
6,100.0	12.50	324.15	5,979.7	832.1	-601.2	-721.9	2.00	-2.00	0.00
6,200.0	10.50	324.15	6,077.7	848.3	-612.9	-735.9	2.00	-2.00	0.00
6,300.0	8.50	324.15	6,176.3	861.7	-622.6	-747.5	2.00	-2.00	0.00
6,400.0	6.50	324.15	6,275.5	872.3	-630.2	-756.7	2.00	-2.00	0.00
6,500.0	4.50	324.15	6,375.0	880.0	-635.8	-763.4	2.00	-2.00	0.00
6,600.0	2.50	324.15	6,474.8	885.0	-639.4	-767.7	2.00	-2.00	0.00
6,700.0	0.50	324.15	6,574.8	887.1	-640.9	-769.6	2.00	-2.00	0.00
6,725.2	0.00	324.15	6,600.0	887.2	-641.0	-769.7	2.00	-2.00	0.00
Start 119.1 hold at 6725.2 MD									
6,800.0	0.00	0.00	6,674.8	887.2	-641.0	-769.7	0.00	0.00	0.00
6,844.4	0.00	0.00	6,719.2	887.2	-641.0	-769.7	0.00	0.00	0.00
Start Build 7.50									
6,900.0	4.17	180.00	6,774.7	885.2	-641.0	-767.7	7.50	7.50	0.00
7,000.0	11.67	180.00	6,873.7	871.4	-641.0	-754.1	7.50	7.50	0.00
7,100.0	19.17	180.00	6,970.0	844.8	-641.0	-727.9	7.50	7.50	0.00
7,200.0	26.67	180.00	7,062.1	805.9	-641.0	-689.5	7.50	7.50	0.00
7,262.9	31.39	180.00	7,117.0	775.4	-641.0	-659.4	7.50	7.50	0.00
Sharon Springs									
7,300.0	34.17	180.00	7,148.2	755.3	-641.0	-639.6	7.50	7.50	0.00
7,309.4	34.88	180.00	7,156.0	750.0	-641.0	-634.3	7.50	7.50	0.00
Niobrara A									
7,400.0	41.67	180.00	7,227.1	693.9	-641.0	-579.0	7.50	7.50	0.00
7,424.4	43.50	180.00	7,245.0	677.4	-641.0	-562.7	7.50	7.50	0.00
Niobrara B									
7,500.0	49.17	180.00	7,297.2	622.7	-641.0	-508.8	7.50	7.50	0.00
7,552.3	53.09	180.00	7,330.0	582.0	-641.0	-468.6	7.50	7.50	0.00
Niobrara C									
7,600.0	56.67	180.00	7,357.4	543.0	-641.0	-430.1	7.50	7.50	0.00
7,700.0	64.17	180.00	7,406.8	456.1	-641.0	-344.4	7.50	7.50	0.00
7,800.0	71.67	180.00	7,444.3	363.5	-641.0	-253.1	7.50	7.50	0.00

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Project:	SEC.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	North Reference:	True
Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (5-01-15)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,900.0	79.17	180.00	7,469.5	266.8	-641.0	-157.7	7.50	7.50	0.00
7,920.2	80.68	180.00	7,473.0	246.9	-641.0	-138.1	7.50	7.50	0.00
Ft Hays									
8,000.0	86.67	180.00	7,481.8	167.6	-641.0	-59.9	7.50	7.50	0.00
8,043.0	89.90	180.00	7,483.1	124.6	-641.0	-17.5	7.50	7.50	0.00
Start 3967.8 hold at 8043.0 MD - 7"									
8,100.0	89.90	180.00	7,483.2	67.6	-641.0	38.7	0.01	0.01	0.00
8,200.0	89.90	180.00	7,483.3	-32.4	-641.0	137.4	0.00	0.00	0.00
8,300.0	89.90	180.00	7,483.5	-132.4	-641.0	236.0	0.00	0.00	0.00
8,400.0	89.90	180.00	7,483.7	-232.4	-641.0	334.7	0.00	0.00	0.00
8,500.0	89.90	180.00	7,483.9	-332.4	-641.0	433.3	0.00	0.00	0.00
8,600.0	89.90	180.00	7,484.0	-432.4	-641.0	531.9	0.00	0.00	0.00
8,700.0	89.90	180.00	7,484.2	-532.4	-641.0	630.6	0.00	0.00	0.00
8,800.0	89.90	180.00	7,484.4	-632.4	-641.0	729.2	0.00	0.00	0.00
8,900.0	89.90	180.00	7,484.6	-732.4	-641.0	827.8	0.00	0.00	0.00
9,000.0	89.90	180.00	7,484.7	-832.4	-641.0	926.5	0.00	0.00	0.00
9,100.0	89.90	180.00	7,484.9	-932.4	-641.0	1,025.1	0.00	0.00	0.00
9,200.0	89.90	180.00	7,485.1	-1,032.4	-641.0	1,123.8	0.00	0.00	0.00
9,300.0	89.90	180.00	7,485.3	-1,132.4	-641.0	1,222.4	0.00	0.00	0.00
9,400.0	89.90	180.00	7,485.4	-1,232.4	-641.0	1,321.0	0.00	0.00	0.00
9,500.0	89.90	180.00	7,485.6	-1,332.4	-641.0	1,419.7	0.00	0.00	0.00
9,600.0	89.90	180.00	7,485.8	-1,432.4	-641.0	1,518.3	0.00	0.00	0.00
9,700.0	89.90	180.00	7,486.0	-1,532.4	-641.0	1,616.9	0.00	0.00	0.00
9,800.0	89.90	180.00	7,486.1	-1,632.4	-641.0	1,715.6	0.00	0.00	0.00
9,900.0	89.90	180.00	7,486.3	-1,732.4	-641.0	1,814.2	0.00	0.00	0.00
10,000.0	89.90	180.00	7,486.5	-1,832.4	-641.0	1,912.9	0.00	0.00	0.00
10,100.0	89.90	180.00	7,486.7	-1,932.4	-641.0	2,011.5	0.00	0.00	0.00
10,200.0	89.90	180.00	7,486.8	-2,032.4	-641.0	2,110.1	0.00	0.00	0.00
10,300.0	89.90	180.00	7,487.0	-2,132.4	-641.0	2,208.8	0.00	0.00	0.00
10,400.0	89.90	180.00	7,487.2	-2,232.4	-641.0	2,307.4	0.00	0.00	0.00
10,500.0	89.90	180.00	7,487.4	-2,332.4	-641.0	2,406.0	0.00	0.00	0.00
10,600.0	89.90	180.00	7,487.5	-2,432.4	-641.0	2,504.7	0.00	0.00	0.00
10,700.0	89.90	180.00	7,487.7	-2,532.4	-641.0	2,603.3	0.00	0.00	0.00
10,800.0	89.90	180.00	7,487.9	-2,632.4	-641.0	2,702.0	0.00	0.00	0.00
10,900.0	89.90	180.00	7,488.1	-2,732.4	-641.0	2,800.6	0.00	0.00	0.00
11,000.0	89.90	180.00	7,488.2	-2,832.4	-641.0	2,899.2	0.00	0.00	0.00
11,100.0	89.90	180.00	7,488.4	-2,932.4	-641.0	2,997.9	0.00	0.00	0.00
11,200.0	89.90	180.00	7,488.6	-3,032.4	-641.0	3,096.5	0.00	0.00	0.00
11,300.0	89.90	180.00	7,488.8	-3,132.4	-641.0	3,195.1	0.00	0.00	0.00
11,400.0	89.90	180.00	7,488.9	-3,232.4	-641.0	3,293.8	0.00	0.00	0.00
11,500.0	89.90	180.00	7,489.1	-3,332.4	-641.0	3,392.4	0.00	0.00	0.00
11,600.0	89.90	180.00	7,489.3	-3,432.4	-641.0	3,491.1	0.00	0.00	0.00
11,700.0	89.90	180.00	7,489.5	-3,532.4	-641.0	3,589.7	0.00	0.00	0.00
11,800.0	89.90	180.00	7,489.6	-3,632.4	-641.0	3,688.3	0.00	0.00	0.00
11,900.0	89.90	180.00	7,489.8	-3,732.4	-641.0	3,787.0	0.00	0.00	0.00
12,000.0	89.90	180.00	7,490.0	-3,832.4	-641.0	3,885.6	0.00	0.00	0.00
12,010.9	89.90	180.00	7,490.0	-3,843.2	-641.0	3,896.3	0.00	0.00	0.00
BHL 500'FSL & 978'FWL									

Database:	Landmark	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Project:	SEC.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	North Reference:	True
Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (5-01-15)		

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude
	- Shape								Longitude
50' E & W Hardline (9.	- plan misses target center by 1966.7ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	-1,859.3	-641.0	1,267,425.08	3,199,248.27	40.065276
	- Rectangle (sides W3,967.8 H100.0 D0.0)								-104.788100
BHL 500'FSL & 978'F	- plan hits target center	0.00	0.00	7,490.0	-3,843.2	-641.0	1,265,441.28	3,199,264.23	40.059830
	- Point								-104.788100
SHL 941'FNL & 1643'	- plan hits target center	0.00	0.00	1.0	0.0	0.0	1,269,289.42	3,199,874.25	40.070380
	- Point								-104.785810

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
8,043.0	7,483.1	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,264.6	4,200.0	Parkman		0.00		
4,708.1	4,630.0	Sussex		0.00		
5,192.9	5,100.0	Shannon		0.00		
7,262.9	7,117.0	Sharon Springs		0.00		
7,309.4	7,156.0	Niobrara A		0.00		
7,424.4	7,245.0	Niobrara B		0.00		
7,552.3	7,330.0	Niobrara C		0.00		
7,920.2	7,473.0	Ft Hays		0.00		
	7,495.0	Codell		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 1.00	
6,016.1	5,898.1	816.4	-589.9	Start Drop -2.00	
6,725.2	6,600.0	887.2	-641.0	Start 119.1 hold at 6725.2 MD	
6,844.4	6,719.2	887.2	-641.0	Start Build 7.50	
8,043.0	7,483.1	124.6	-641.0	Start 3967.8 hold at 8043.0 MD	
12,010.9	7,490.0	-3,843.3	-641.0	TD at 12010.9	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.9-T1N-R66W

Fitzsimmons 1N66W9JM (West) Pad

Sec.9-T1N-R66W

Fitzsimmons 9J-443

Wellbore #1

Plan #2 (5-01-15)

Anticollision Report

01 May, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (5-01-15)		
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 800.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 5/1/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,010.9	Plan #2 (5-01-15) (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						
Existing Wells Sec.9-T1N-R66W						
Avey 31-9 (Exist.) - Wellbore #1 - Wellbore #1	10,580.1	7,468.8	433.9	363.7	6.177	CC, ES
Avey 31-9 (Exist.) - Wellbore #1 - Wellbore #1	10,600.0	7,468.7	434.4	363.8	6.152	SF
Leonard Avey ET AL 1 (Exist.) - Wellbore #1 - Wellbore #	11,082.8	7,488.8	455.1	376.1	5.759	CC, ES
Leonard Avey ET AL 1 (Exist.) - Wellbore #1 - Wellbore #	11,100.0	7,488.8	455.5	376.1	5.740	SF
Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W						
Fitzsimmons 9J-223 - Wellbore #1 - Plan #2 (5-01-15)	3,595.2	3,586.1	567.9	547.0	27.191	CC
Fitzsimmons 9J-223 - Wellbore #1 - Plan #2 (5-01-15)	12,010.9	11,724.3	690.9	534.9	4.429	ES, SF
Fitzsimmons 9J-303 - Wellbore #1 - Plan #2 (4-30-15)	6,100.0	6,100.0	292.6	252.3	7.252	CC
Fitzsimmons 9J-303 - Wellbore #1 - Plan #2 (4-30-15)	12,010.9	11,856.0	344.9	197.9	2.346	ES, SF
Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W						
Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (5-01-15)	400.0	400.0	91.1	89.5	57.878	CC
Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (5-01-15)	500.0	499.4	91.4	89.4	45.330	ES
Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (5-01-15)	12,010.9	11,926.1	792.9	636.9	5.081	SF
Fitzsimmons 9E-323 - Wellbore #1 - Plan #2 (4-30-15)	600.0	600.0	62.2	59.7	25.162	CC
Fitzsimmons 9E-323 - Wellbore #1 - Plan #2 (4-30-15)	700.0	699.7	62.5	59.6	21.422	ES
Fitzsimmons 9E-323 - Wellbore #1 - Plan #2 (4-30-15)	12,010.9	11,969.9	572.3	415.8	3.658	SF
Fitzsimmons 9E-403 - Wellbore #1 - Plan #2 (4-30-15)	200.0	200.0	122.1	121.4	181.079	CC
Fitzsimmons 9E-403 - Wellbore #1 - Plan #2 (4-30-15)	300.0	299.0	122.5	121.4	109.653	ES
Fitzsimmons 9E-403 - Wellbore #1 - Plan #2 (4-30-15)	4,900.0	4,796.4	789.1	756.1	23.961	SF
Fitzsimmons 9J-243 - Wellbore #1 - Plan #2 (4-30-15)	800.0	800.0	28.9	25.5	8.561	CC
Fitzsimmons 9J-243 - Wellbore #1 - Plan #2 (4-30-15)	1,000.0	999.8	29.4	25.1	6.897	ES
Fitzsimmons 9J-243 - Wellbore #1 - Plan #2 (4-30-15)	12,010.9	11,852.8	351.6	218.3	2.638	SF

Offset Design	Existing Wells Sec.9-T1N-R66W - Avey 31-9 (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:	0.0 ft
Survey Program:	100-NS-GYRO-MS											Offset Well Error:	0.0 ft
Reference	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,486.5	7,472.4	7,470.5	44.4	16.2	89.73	-2,412.4	-1,075.0	724.4	664.3	60.07	12.060	
10,100.0	7,486.7	7,471.8	7,469.8	46.1	16.2	89.65	-2,412.4	-1,075.0	647.1	585.3	61.79	10.473	
10,200.0	7,486.8	7,471.1	7,469.2	47.9	16.2	89.57	-2,412.4	-1,075.0	576.8	513.3	63.53	9.080	

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.9-T1N-R66W - Avey 31-9 (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											
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		
10,300.0	7,487.0	7,470.5	7,468.6	49.6	16.2	89.49	-2,412.4	-1,074.9	516.5	451.2	65.28	7.911			
10,400.0	7,487.2	7,469.9	7,468.0	51.4	16.2	89.40	-2,412.4	-1,074.9	469.8	402.8	67.05	7.007			
10,500.0	7,487.4	7,469.3	7,467.4	53.1	16.2	89.32	-2,412.4	-1,074.9	441.3	372.4	68.82	6.412			
10,580.1	7,487.5	7,468.8	7,466.9	54.6	16.2	89.26	-2,412.4	-1,074.9	433.9	363.7	70.25	6.177 CC, ES			
10,600.0	7,487.5	7,468.7	7,466.7	54.9	16.2	89.24	-2,412.4	-1,074.9	434.4	363.8	70.61	6.152 SF			
10,700.0	7,487.7	7,468.0	7,466.1	56.7	16.2	89.16	-2,412.4	-1,074.9	450.2	377.8	72.40	6.219			
10,800.0	7,487.9	7,467.4	7,465.5	58.5	16.2	89.08	-2,412.5	-1,074.9	486.5	412.3	74.20	6.557			
10,900.0	7,488.1	7,466.8	7,464.9	60.3	16.2	88.99	-2,412.5	-1,074.9	539.1	463.1	76.01	7.093			
11,000.0	7,488.2	7,466.2	7,464.3	62.1	16.2	88.91	-2,412.5	-1,074.9	603.9	526.0	77.82	7.760			
11,100.0	7,488.4	7,465.5	7,463.6	63.9	16.2	88.83	-2,412.5	-1,074.9	677.2	597.6	79.64	8.504			
11,200.0	7,488.6	7,464.9	7,463.0	65.7	16.2	88.75	-2,412.5	-1,074.9	756.7	675.2	81.46	9.289			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.9-T1N-R66W - Leonard Avey ET AL 1 (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	
10,500.0	7,487.4	7,489.9	7,485.1	53.1	16.0	-90.34	-2,915.1	-185.9	739.5	670.9	68.54	10.788	
10,600.0	7,487.5	7,489.7	7,484.9	54.9	16.0	-90.32	-2,915.1	-185.9	663.5	593.2	70.32	9.435	
10,700.0	7,487.7	7,489.5	7,484.7	56.7	16.0	-90.29	-2,915.1	-185.9	594.7	522.6	72.12	8.247	
10,800.0	7,487.9	7,489.3	7,484.5	58.5	16.0	-90.27	-2,915.1	-185.9	535.8	461.9	73.91	7.250	
10,900.0	7,488.1	7,489.1	7,484.3	60.3	16.0	-90.24	-2,915.1	-185.9	490.5	414.8	75.72	6.478	
11,000.0	7,488.2	7,489.0	7,484.1	62.1	16.0	-90.22	-2,915.1	-185.9	462.6	385.1	77.53	5.967	
11,082.8	7,488.4	7,488.8	7,484.0	63.6	16.0	-90.20	-2,915.1	-185.9	455.1	376.1	79.04	5.759 CC, ES	
11,100.0	7,488.4	7,488.8	7,483.9	63.9	16.0	-90.20	-2,915.1	-185.9	455.5	376.1	79.35	5.740 SF	
11,200.0	7,488.6	7,488.6	7,483.7	65.7	16.0	-90.17	-2,915.2	-185.9	470.0	388.8	81.17	5.790	
11,300.0	7,488.8	7,488.4	7,483.5	67.5	16.0	-90.15	-2,915.2	-185.9	504.3	421.3	83.00	6.076	
11,400.0	7,488.9	7,488.2	7,483.4	69.4	16.0	-90.12	-2,915.2	-185.9	554.8	469.9	84.83	6.540	
11,500.0	7,489.1	7,488.0	7,483.2	71.2	16.0	-90.10	-2,915.2	-185.9	617.4	530.8	86.67	7.124	
11,600.0	7,489.3	7,487.8	7,483.0	73.0	16.0	-90.08	-2,915.2	-185.9	689.0	600.4	88.51	7.784	
11,700.0	7,489.5	7,487.6	7,482.8	74.9	16.0	-90.05	-2,915.2	-185.9	766.9	676.5	90.36	8.487	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design											Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-223 - Wellbore #1 - Plan #2 (5			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	51.79	367.9	467.4	594.8							
100.0	100.0	98.0	98.0	0.1	0.1	51.79	367.9	467.4	594.8	594.6	0.22	2,673.145				
200.0	200.0	198.0	198.0	0.3	0.3	51.79	367.9	467.4	594.8	594.2	0.67	888.074				
300.0	300.0	298.0	298.0	0.6	0.6	51.79	367.9	467.4	594.8	593.7	1.12	531.418				
400.0	400.0	398.0	398.0	0.8	0.8	51.79	367.9	467.4	594.8	593.3	1.57	379.149				
500.0	500.0	498.0	498.0	1.0	1.0	51.79	367.9	467.4	594.8	592.8	2.02	294.706				
600.0	600.0	598.0	598.0	1.2	1.2	51.79	367.9	467.4	594.8	592.4	2.47	241.026				
700.0	700.0	698.0	698.0	1.5	1.5	51.79	367.9	467.4	594.8	591.9	2.92	203.888				
800.0	800.0	798.0	798.0	1.7	1.7	51.79	367.9	467.4	594.8	591.5	3.37	176.666				
900.0	900.0	898.5	898.5	1.9	1.9	51.71	368.6	466.8	594.8	591.0	3.81	155.946				
1,000.0	1,000.0	999.0	998.9	2.1	2.1	51.46	370.5	465.1	594.7	590.4	4.26	139.632				
1,100.0	1,100.0	1,099.3	1,099.2	2.4	2.4	51.04	373.8	462.2	594.5	589.8	4.71	126.339				
1,200.0	1,200.0	1,199.5	1,199.1	2.6	2.6	50.45	378.4	458.2	594.3	589.1	5.16	115.278				
1,300.0	1,300.0	1,299.4	1,298.8	2.8	2.8	85.63	384.3	453.1	594.1	588.4	5.62	105.712				
1,400.0	1,400.0	1,399.3	1,398.2	3.0	3.1	84.96	391.5	446.8	593.8	587.7	6.09	97.553				
1,500.0	1,499.9	1,499.0	1,497.3	3.3	3.3	84.29	400.0	439.4	593.4	586.8	6.57	90.331				
1,600.0	1,599.7	1,598.6	1,596.1	3.5	3.6	83.62	409.8	430.9	592.9	585.8	7.07	83.851				
1,700.0	1,699.4	1,698.5	1,694.9	3.7	3.9	83.05	420.1	421.8	592.3	584.7	7.59	78.016				
1,800.0	1,798.9	1,798.4	1,793.9	4.0	4.2	82.65	430.5	412.8	591.6	583.5	8.13	72.766				
1,900.0	1,898.3	1,898.3	1,892.9	4.2	4.5	82.42	440.8	403.8	590.7	582.0	8.69	68.008				
2,000.0	1,997.4	1,998.3	1,992.0	4.5	4.8	82.35	451.1	394.8	589.5	580.2	9.26	63.669				
2,100.0	2,096.3	2,098.3	2,091.0	4.7	5.1	82.46	461.5	385.8	588.1	578.3	9.85	59.690				
2,200.0	2,194.9	2,198.3	2,190.0	5.1	5.4	82.74	471.8	376.7	586.5	576.0	10.47	56.023				
2,300.0	2,293.3	2,298.1	2,288.9	5.4	5.7	83.19	482.2	367.7	584.7	573.6	11.11	52.632				
2,400.0	2,391.2	2,397.9	2,387.8	5.7	6.1	83.81	492.5	358.7	582.7	570.9	11.77	49.489				
2,500.0	2,488.9	2,497.6	2,486.5	6.1	6.4	84.61	502.8	349.7	580.6	568.2	12.47	46.572				
2,600.0	2,586.1	2,597.1	2,585.1	6.5	6.7	85.58	513.1	340.7	578.5	565.3	13.19	43.865				
2,618.4	2,603.9	2,615.4	2,603.2	6.6	6.8	85.78	515.0	339.1	578.1	564.8	13.32	43.389				
2,700.0	2,683.1	2,696.5	2,683.5	6.9	7.0	86.66	523.4	331.8	576.5	562.6	13.93	41.374				
2,800.0	2,780.0	2,795.9	2,782.0	7.4	7.4	87.74	533.6	322.8	574.7	560.0	14.69	39.118				
2,900.0	2,877.0	2,895.3	2,880.4	7.8	7.7	88.83	543.9	313.8	573.1	557.7	15.46	37.075				
3,000.0	2,973.9	2,994.6	2,978.8	8.3	8.0	89.93	554.2	304.9	571.7	555.5	16.23	35.223				
3,100.0	3,070.9	3,094.0	3,077.3	8.7	8.3	91.03	564.5	295.9	570.5	553.5	17.01	33.542				
3,200.0	3,167.8	3,193.4	3,175.7	9.2	8.7	92.13	574.8	286.9	569.6	551.8	17.79	32.014				
3,300.0	3,264.8	3,292.8	3,274.2	9.7	9.0	93.24	585.0	277.9	568.8	550.3	18.58	30.624				
3,400.0	3,361.7	3,392.2	3,372.6	10.1	9.3	94.35	595.3	269.0	568.3	549.0	19.36	29.356				
3,500.0	3,458.7	3,491.6	3,471.0	10.6	9.7	95.46	605.6	260.0	568.0	547.9	20.14	28.199				
3,595.2	3,550.9	3,586.1	3,564.7	11.1	10.0	96.51	615.4	251.5	567.9	547.0	20.89	27.191 CC				
3,600.0	3,555.6	3,590.9	3,569.5	11.1	10.0	96.57	615.9	251.0	567.9	547.0	20.92	27.142				
3,700.0	3,652.6	3,690.3	3,667.9	11.6	10.3	97.68	626.2	242.1	568.0	546.3	21.70	26.174				
3,800.0	3,749.5	3,789.7	3,766.4	12.1	10.7	98.79	636.5	233.1	568.4	545.9	22.48	25.287				
3,900.0	3,846.5	3,889.1	3,864.8	12.6	11.0	99.90	646.7	224.1	568.9	545.7	23.25	24.473				
4,000.0	3,943.4	3,988.5	3,963.3	13.1	11.3	101.01	657.0	215.2	569.7	545.7	24.01	23.725				
4,100.0	4,040.4	4,087.9	4,061.7	13.5	11.6	102.11	667.3	206.2	570.7	545.9	24.77	23.038				
4,200.0	4,137.3	4,187.2	4,160.1	14.0	12.0	103.21	677.6	197.2	571.8	546.3	25.52	22.406				
4,300.0	4,234.3	4,286.6	4,258.6	14.5	12.3	104.30	687.9	188.2	573.3	547.0	26.27	21.824				
4,400.0	4,331.2	4,386.0	4,357.0	15.0	12.7	105.39	698.1	179.3	574.9	547.9	27.01	21.287				
4,500.0	4,428.2	4,485.4	4,455.5	15.5	13.0	106.47	708.4	170.3	576.7	549.0	27.74	20.793				
4,600.0	4,525.1	4,584.8	4,553.9	16.0	13.3	107.55	718.7	161.3	578.7	550.3	28.46	20.337				
4,700.0	4,622.1	4,684.2	4,652.4	16.5	13.7	108.62	729.0	152.4	581.0	551.8	29.17	19.917				
4,800.0	4,719.1	4,783.5	4,750.8	17.0	14.0	109.67	739.3	143.4	583.4	553.5	29.87	19.529				

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-223 - Wellbore #1 - Plan #2 (5										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		
4,900.0	4,816.0	4,882.9	4,849.2	17.6	14.3	110.72	749.5	134.4	586.0	555.5	30.57	19.172		
5,000.0	4,913.0	4,982.3	4,947.7	18.1	14.7	111.76	759.8	125.5	588.9	557.6	31.25	18.842		
5,100.0	5,009.9	5,081.7	5,046.1	18.6	15.0	112.79	770.1	116.5	591.9	560.0	31.93	18.538		
5,200.0	5,106.9	5,181.1	5,144.6	19.1	15.3	113.81	780.4	107.5	595.1	562.5	32.60	18.258		
5,300.0	5,203.8	5,280.5	5,243.0	19.6	15.7	114.82	790.7	98.5	598.5	565.3	33.25	17.999		
5,400.0	5,300.8	5,379.8	5,341.5	20.1	16.0	115.82	800.9	89.6	602.1	568.2	33.90	17.761		
5,500.0	5,397.7	5,479.2	5,439.9	20.6	16.3	116.80	811.2	80.6	605.9	571.4	34.54	17.542		
5,600.0	5,494.7	5,578.6	5,538.3	21.1	16.7	117.77	821.5	71.6	609.9	574.7	35.17	17.341		
5,700.0	5,591.6	5,678.0	5,636.8	21.6	17.0	118.73	831.8	62.7	614.0	578.2	35.79	17.156		
5,800.0	5,688.6	5,777.4	5,735.2	22.1	17.3	119.68	842.1	53.7	618.3	581.9	36.40	16.986		
5,900.0	5,785.5	5,876.8	5,833.7	22.6	17.7	120.61	852.3	44.7	622.8	585.8	37.00	16.830		
6,000.0	5,882.5	5,976.1	5,932.1	23.1	18.0	121.53	862.6	35.7	627.4	589.8	37.60	16.688		
6,016.1	5,898.0	5,992.1	5,947.9	23.2	18.1	121.68	864.3	34.3	628.2	590.5	37.69	16.666		
6,100.0	5,979.7	6,072.8	6,027.8	23.6	18.3	122.39	872.6	27.1	631.6	593.5	38.14	16.562		
6,200.0	6,077.7	6,160.5	6,114.9	23.9	18.6	123.07	880.1	20.5	635.4	596.8	38.54	16.488		
6,300.0	6,176.3	6,247.9	6,202.1	24.2	18.7	123.71	885.7	15.6	639.2	600.4	38.87	16.444		
6,400.0	6,275.5	6,335.3	6,289.3	24.5	18.9	124.30	889.2	12.5	643.2	604.0	39.16	16.425		
6,500.0	6,375.0	6,422.4	6,376.4	24.7	19.0	124.83	890.8	11.2	647.1	607.7	39.39	16.428		
6,600.0	6,474.8	6,518.8	6,472.8	24.9	19.2	125.31	890.8	11.1	650.6	610.9	39.61	16.426		
6,700.0	6,574.8	6,618.9	6,572.9	25.0	19.3	125.71	888.7	11.1	652.1	612.3	39.78	16.391		
6,725.2	6,600.0	6,644.1	6,597.9	25.1	19.3	90.07	886.4	11.1	652.1	612.4	39.78	16.394		
6,800.0	6,674.8	6,717.3	6,670.2	25.1	19.3	91.07	875.0	11.1	652.3	612.6	39.68	16.438		
6,844.4	6,719.1	6,759.5	6,711.3	25.2	19.3	91.92	865.3	11.1	652.5	613.0	39.55	16.499		
6,850.0	6,724.8	6,764.8	6,716.4	25.2	19.3	-87.95	863.9	11.1	652.6	613.1	39.53	16.510		
6,900.0	6,774.7	6,811.3	6,760.9	25.2	19.3	-86.87	850.3	11.1	653.2	613.9	39.30	16.620		
6,950.0	6,824.4	6,857.2	6,803.8	25.2	19.2	-85.81	834.3	11.1	654.0	615.0	39.03	16.758		
7,000.0	6,873.7	6,902.4	6,845.2	25.2	19.2	-84.78	816.0	11.1	655.0	616.3	38.72	16.919		
7,050.0	6,922.3	6,947.0	6,884.9	25.2	19.1	-83.77	795.6	11.1	656.2	617.9	38.37	17.101		
7,100.0	6,970.0	6,991.1	6,922.8	25.1	19.0	-82.79	773.1	11.1	657.6	619.6	38.01	17.301		
7,150.0	7,016.7	7,034.7	6,959.0	25.0	18.9	-81.84	748.9	11.1	659.1	621.5	37.63	17.515		
7,200.0	7,062.1	7,077.8	6,993.4	24.8	18.8	-80.93	722.8	11.1	660.8	623.5	37.25	17.741		
7,250.0	7,106.0	7,120.6	7,026.0	24.7	18.8	-80.05	695.2	11.1	662.5	625.6	36.86	17.974		
7,300.0	7,148.2	7,162.9	7,056.6	24.5	18.7	-79.22	666.1	11.1	664.3	627.8	36.48	18.211		
7,350.0	7,188.6	7,204.8	7,085.4	24.3	18.6	-78.43	635.5	11.1	666.1	630.0	36.11	18.447		
7,400.0	7,227.1	7,250.0	7,114.5	24.1	18.5	-77.64	601.0	11.1	667.9	632.2	35.75	18.686		
7,450.0	7,263.3	7,287.7	7,137.1	23.9	18.4	-76.99	570.8	11.1	669.7	634.3	35.44	18.900		
7,500.0	7,297.2	7,328.7	7,160.1	23.6	18.3	-76.35	536.8	11.1	671.5	636.4	35.15	19.106		
7,550.0	7,328.6	7,369.5	7,181.0	23.4	18.2	-75.75	501.8	11.1	673.2	638.3	34.89	19.292		
7,600.0	7,357.4	7,410.1	7,200.0	23.2	18.1	-75.21	466.0	11.1	674.8	640.1	34.69	19.455		
7,650.0	7,383.5	7,450.0	7,216.8	22.9	18.0	-74.72	429.8	11.1	676.3	641.8	34.53	19.588		
7,700.0	7,406.8	7,490.6	7,231.9	22.7	18.0	-74.28	392.1	11.1	677.7	643.3	34.43	19.683		
7,750.0	7,427.1	7,530.6	7,244.8	22.5	17.9	-73.90	354.2	11.1	678.9	644.5	34.39	19.740		
7,800.0	7,444.3	7,570.5	7,255.6	22.3	17.8	-73.58	315.8	11.1	680.0	645.6	34.42	19.756		
7,850.0	7,458.5	7,610.3	7,264.5	22.0	17.8	-73.31	277.0	11.1	680.9	646.4	34.51	19.730		
7,900.0	7,469.5	7,650.0	7,271.2	21.8	17.8	-73.10	237.9	11.1	681.6	647.0	34.67	19.663		
7,950.0	7,477.3	7,689.6	7,276.0	21.6	18.0	-72.94	198.6	11.1	682.2	647.3	34.90	19.547		
8,000.0	7,481.8	7,729.2	7,278.7	21.5	18.3	-72.85	159.1	11.1	682.5	647.3	35.20	19.390		
8,043.0	7,483.1	7,763.2	7,279.4	21.3	18.5	-72.81	125.1	11.1	682.6	647.1	35.50	19.227		
8,100.0	7,483.2	7,819.7	7,279.1	21.1	19.0	-72.78	68.6	11.1	682.7	646.7	36.02	18.952		
8,200.0	7,483.3	7,919.7	7,278.6	20.9	20.0	-72.73	-31.4	11.1	682.9	645.7	37.19	18.365		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,300.0	7,483.5	8,019.7	7,278.1	20.8	21.1	-72.68	-131.4	11.1	683.1	644.5	38.66	17.671		
8,400.0	7,483.7	8,119.7	7,277.6	21.4	22.2	-72.62	-231.4	11.1	683.3	642.9	40.40	16.912		
8,500.0	7,483.9	8,219.7	7,277.1	22.3	23.5	-72.57	-331.4	11.1	683.5	641.1	42.40	16.122		
8,600.0	7,484.0	8,319.7	7,276.6	23.4	24.8	-72.52	-431.4	11.1	683.7	639.1	44.60	15.331		
8,700.0	7,484.2	8,419.7	7,276.1	24.6	26.3	-72.46	-531.4	11.1	683.9	636.9	46.98	14.557		
8,800.0	7,484.4	8,519.7	7,275.7	25.9	27.7	-72.41	-631.4	11.1	684.1	634.6	49.52	13.814		
8,900.0	7,484.6	8,619.7	7,275.2	27.2	29.2	-72.36	-731.4	11.1	684.3	632.1	52.20	13.110		
9,000.0	7,484.7	8,719.7	7,274.7	28.6	30.8	-72.30	-831.4	11.1	684.5	629.5	54.98	12.449		
9,100.0	7,484.9	8,819.7	7,274.2	30.0	32.4	-72.25	-931.3	11.1	684.7	626.9	57.87	11.832		
9,200.0	7,485.1	8,919.7	7,273.7	31.5	34.0	-72.20	-1,031.3	11.1	684.9	624.1	60.84	11.259		
9,300.0	7,485.3	9,019.7	7,273.2	33.0	35.7	-72.15	-1,131.3	11.1	685.1	621.3	63.87	10.726		
9,400.0	7,485.4	9,119.7	7,272.7	34.6	37.4	-72.09	-1,231.3	11.1	685.3	618.4	66.98	10.233		
9,500.0	7,485.6	9,219.7	7,272.2	36.1	39.1	-72.04	-1,331.3	11.1	685.5	615.4	70.13	9.776		
9,600.0	7,485.8	9,319.7	7,271.8	37.8	40.8	-71.99	-1,431.3	11.1	685.7	612.4	73.33	9.352		
9,700.0	7,486.0	9,419.7	7,271.3	39.4	42.5	-71.94	-1,531.3	11.1	685.9	609.4	76.56	8.959		
9,800.0	7,486.1	9,519.6	7,270.8	41.1	44.3	-71.88	-1,631.3	11.1	686.2	606.3	79.84	8.594		
9,900.0	7,486.3	9,619.6	7,270.3	42.7	46.0	-71.83	-1,731.3	11.1	686.4	603.2	83.14	8.255		
10,000.0	7,486.5	9,719.6	7,269.8	44.4	47.8	-71.78	-1,831.3	11.1	686.6	600.1	86.47	7.940		
10,100.0	7,486.7	9,819.6	7,269.3	46.1	49.6	-71.73	-1,931.3	11.1	686.8	596.9	89.82	7.646		
10,200.0	7,486.8	9,919.6	7,268.8	47.9	51.4	-71.67	-2,031.3	11.1	687.0	593.8	93.20	7.371		
10,300.0	7,487.0	10,019.6	7,268.3	49.6	53.2	-71.62	-2,131.3	11.1	687.2	590.6	96.59	7.115		
10,400.0	7,487.2	10,119.6	7,267.8	51.4	55.0	-71.57	-2,231.3	11.1	687.4	587.4	99.99	6.874		
10,500.0	7,487.4	10,219.6	7,267.4	53.1	56.8	-71.52	-2,331.3	11.1	687.6	584.2	103.42	6.649		
10,600.0	7,487.5	10,319.6	7,266.9	54.9	58.6	-71.46	-2,431.3	11.1	687.8	581.0	106.85	6.437		
10,700.0	7,487.7	10,419.6	7,266.4	56.7	60.4	-71.41	-2,531.3	11.1	688.0	577.7	110.30	6.238		
10,800.0	7,487.9	10,519.6	7,265.9	58.5	62.3	-71.36	-2,631.3	11.1	688.2	574.5	113.75	6.050		
10,900.0	7,488.1	10,619.6	7,265.4	60.3	64.1	-71.31	-2,731.3	11.1	688.5	571.2	117.22	5.873		
11,000.0	7,488.2	10,719.6	7,264.9	62.1	66.0	-71.25	-2,831.3	11.1	688.7	568.0	120.69	5.706		
11,100.0	7,488.4	10,819.6	7,264.4	63.9	67.8	-71.20	-2,931.3	11.1	688.9	564.7	124.17	5.548		
11,200.0	7,488.6	10,919.6	7,263.9	65.7	69.7	-71.15	-3,031.3	11.1	689.1	561.4	127.66	5.398		
11,300.0	7,488.8	11,019.6	7,263.4	67.5	71.5	-71.10	-3,131.3	11.1	689.3	558.2	131.15	5.256		
11,400.0	7,488.9	11,119.6	7,263.0	69.4	73.4	-71.04	-3,231.3	11.1	689.5	554.9	134.64	5.121		
11,500.0	7,489.1	11,219.6	7,262.5	71.2	75.2	-70.99	-3,331.3	11.1	689.7	551.6	138.15	4.993		
11,600.0	7,489.3	11,319.6	7,262.0	73.0	77.1	-70.94	-3,431.3	11.1	690.0	548.3	141.65	4.871		
11,700.0	7,489.5	11,419.6	7,261.5	74.9	78.9	-70.89	-3,531.3	11.1	690.2	545.0	145.16	4.755		
11,800.0	7,489.6	11,519.6	7,261.0	76.7	80.8	-70.84	-3,631.3	11.1	690.4	541.7	148.67	4.644		
11,900.0	7,489.8	11,619.6	7,260.5	78.5	82.7	-70.78	-3,731.3	11.1	690.6	538.4	152.19	4.538		
12,000.0	7,490.0	11,719.6	7,260.0	80.4	84.6	-70.73	-3,831.2	11.1	690.8	535.1	155.71	4.437		
12,010.9	7,490.0	11,724.3	7,260.0	80.6	84.6	-70.73	-3,836.0	11.1	690.9	534.9	155.98	4.429 ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design										Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-303 - Wellbore #1 - Plan #2 (4				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	51.84	349.7	445.0	566.0							
100.0	100.0	98.0	98.0	0.1	0.1	51.84	349.7	445.0	566.0	565.8	0.22	2,543.466				
200.0	200.0	198.0	198.0	0.3	0.3	51.84	349.7	445.0	566.0	565.3	0.67	844.992				
300.0	300.0	298.0	298.0	0.6	0.6	51.84	349.7	445.0	566.0	564.9	1.12	505.638				
400.0	400.0	398.0	398.0	0.8	0.8	51.84	349.7	445.0	566.0	564.4	1.57	360.756				
500.0	500.0	498.0	498.0	1.0	1.0	51.84	349.7	445.0	566.0	564.0	2.02	280.409				
600.0	600.0	598.0	598.0	1.2	1.2	51.84	349.7	445.0	566.0	563.5	2.47	229.333				
700.0	700.0	698.0	698.0	1.5	1.5	51.84	349.7	445.0	566.0	563.1	2.92	193.997				
800.0	800.0	798.0	798.0	1.7	1.7	51.84	349.7	445.0	566.0	562.6	3.37	168.096				
900.0	900.0	898.0	898.0	1.9	1.9	51.84	349.7	445.0	566.0	562.2	3.82	148.297				
1,000.0	1,000.0	998.0	998.0	2.1	2.1	51.84	349.7	445.0	566.0	561.7	4.27	132.670				
1,100.0	1,100.0	1,100.9	1,100.9	2.4	2.4	51.75	350.2	444.3	565.7	561.0	4.72	119.961				
1,200.0	1,200.0	1,203.8	1,203.8	2.6	2.6	51.48	351.8	442.0	565.0	559.8	5.16	109.457				
1,300.0	1,300.0	1,306.6	1,306.5	2.8	2.8	86.99	354.4	438.3	563.7	558.0	5.61	100.484				
1,400.0	1,400.0	1,409.3	1,409.0	3.0	3.0	86.66	358.1	433.0	561.8	555.7	6.06	92.700				
1,500.0	1,499.9	1,512.0	1,511.3	3.3	3.3	86.33	362.8	426.2	559.3	552.8	6.52	85.776				
1,600.0	1,599.7	1,614.5	1,613.3	3.5	3.5	86.00	368.5	418.0	556.3	549.3	7.00	79.522				
1,700.0	1,699.4	1,717.0	1,715.1	3.7	3.8	85.68	375.3	408.2	552.7	545.2	7.49	73.799				
1,800.0	1,798.9	1,819.3	1,816.5	4.0	4.1	85.36	383.2	397.0	548.5	540.5	8.01	68.505				
1,900.0	1,898.3	1,921.6	1,917.6	4.2	4.4	85.04	392.0	384.3	543.8	535.2	8.55	63.566				
2,000.0	1,997.4	2,023.7	2,018.3	4.5	4.7	84.72	401.9	370.2	538.5	529.4	9.14	58.933				
2,100.0	2,096.3	2,125.7	2,118.5	4.7	5.0	84.40	412.7	354.5	532.6	522.9	9.76	54.573				
2,200.0	2,194.9	2,226.9	2,217.6	5.1	5.4	84.09	424.5	337.7	526.2	515.8	10.42	50.489				
2,300.0	2,293.3	2,326.7	2,315.2	5.4	5.8	83.93	436.3	320.8	519.6	508.5	11.12	46.739				
2,400.0	2,391.2	2,426.4	2,412.8	5.7	6.2	83.96	448.1	303.8	512.7	500.9	11.84	43.295				
2,500.0	2,488.9	2,526.2	2,510.4	6.1	6.6	84.19	459.9	286.9	505.7	493.1	12.60	40.133				
2,600.0	2,586.1	2,625.9	2,607.9	6.5	7.0	84.62	471.6	270.0	498.6	485.2	13.39	37.230				
2,618.4	2,603.9	2,644.2	2,625.8	6.6	7.1	84.72	473.8	266.9	497.2	483.7	13.54	36.722				
2,700.0	2,683.1	2,725.5	2,705.4	6.9	7.4	85.14	483.4	253.1	491.3	477.1	14.21	34.577				
2,800.0	2,780.0	2,825.2	2,802.9	7.4	7.8	85.66	495.2	236.1	484.1	469.0	15.04	32.182				
2,900.0	2,877.0	2,924.8	2,900.4	7.8	8.2	86.21	507.0	219.2	476.9	461.0	15.89	30.018				
3,000.0	2,973.9	3,024.4	2,997.8	8.3	8.7	86.76	518.8	202.3	469.7	453.0	16.74	28.059				
3,100.0	3,070.9	3,124.1	3,095.3	8.7	9.1	87.34	530.6	185.4	462.7	445.0	17.60	26.281				
3,200.0	3,167.8	3,223.7	3,192.8	9.2	9.5	87.93	542.3	168.5	455.6	437.1	18.47	24.664				
3,300.0	3,264.8	3,323.4	3,290.3	9.7	9.9	88.54	554.1	151.6	448.6	429.3	19.35	23.190				
3,400.0	3,361.7	3,423.0	3,387.8	10.1	10.4	89.17	565.9	134.7	441.7	421.5	20.22	21.842				
3,500.0	3,458.7	3,522.6	3,485.3	10.6	10.8	89.83	577.7	117.8	434.8	413.7	21.10	20.607				
3,600.0	3,555.6	3,622.3	3,582.8	11.1	11.2	90.50	589.5	100.8	428.0	406.0	21.98	19.473				
3,700.0	3,652.6	3,721.9	3,680.2	11.6	11.7	91.19	601.2	83.9	421.2	398.3	22.85	18.429				
3,800.0	3,749.5	3,821.5	3,777.7	12.1	12.1	91.91	613.0	67.0	414.5	390.8	23.73	17.465				
3,900.0	3,846.5	3,921.2	3,875.2	12.6	12.6	92.64	624.8	50.1	407.8	383.2	24.61	16.575				
4,000.0	3,943.4	4,020.8	3,972.7	13.1	13.0	93.41	636.6	33.2	401.3	375.8	25.48	15.751				
4,100.0	4,040.4	4,120.5	4,070.2	13.5	13.4	94.20	648.4	16.3	394.8	368.4	26.34	14.986				
4,200.0	4,137.3	4,220.1	4,167.7	14.0	13.9	95.01	660.1	-0.6	388.4	361.2	27.20	14.276				
4,300.0	4,234.3	4,319.7	4,265.1	14.5	14.3	95.85	671.9	-17.6	382.0	354.0	28.06	13.616				
4,400.0	4,331.2	4,419.4	4,362.6	15.0	14.8	96.72	683.7	-34.5	375.8	346.9	28.90	13.001				
4,500.0	4,428.2	4,519.0	4,460.1	15.5	15.2	97.62	695.5	-51.4	369.6	339.9	29.74	12.428				
4,600.0	4,525.1	4,618.7	4,557.6	16.0	15.7	98.55	707.3	-68.3	363.5	333.0	30.57	11.893				
4,700.0	4,622.1	4,718.3	4,655.1	16.5	16.1	99.51	719.0	-85.2	357.6	326.2	31.39	11.393				
4,800.0	4,719.1	4,817.9	4,752.6	17.0	16.5	100.50	730.8	-102.1	351.7	319.5	32.19	10.927				
4,900.0	4,816.0	4,917.6	4,850.0	17.6	17.0	101.53	742.6	-119.0	346.0	313.0	32.98	10.490				

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-303 - Wellbore #1 - Plan #2 (4										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	4,913.0	5,017.2	4,947.5	18.1	17.4	102.59	754.4	-135.9	340.3	306.6	33.75	10.083		
5,100.0	5,009.9	5,116.8	5,045.0	18.6	17.9	103.68	766.2	-152.9	334.8	300.3	34.51	9.701		
5,200.0	5,106.9	5,216.5	5,142.5	19.1	18.3	104.81	778.0	-169.8	329.4	294.1	35.25	9.345		
5,300.0	5,203.8	5,316.1	5,240.0	19.6	18.8	105.98	789.7	-186.7	324.1	288.2	35.97	9.012		
5,400.0	5,300.8	5,415.8	5,337.5	20.1	19.2	107.19	801.5	-203.6	319.0	282.3	36.66	8.701		
5,500.0	5,397.7	5,515.4	5,434.9	20.6	19.7	108.43	813.3	-220.5	314.0	276.7	37.34	8.411		
5,600.0	5,494.7	5,615.0	5,532.4	21.1	20.1	109.72	825.1	-237.4	309.2	271.2	37.98	8.141		
5,700.0	5,591.6	5,714.7	5,629.9	21.6	20.6	111.04	836.9	-254.3	304.5	265.9	38.60	7.889		
5,800.0	5,688.6	5,814.3	5,727.4	22.1	21.0	112.40	848.6	-271.3	300.1	260.9	39.19	7.656		
5,900.0	5,785.5	5,912.8	5,823.7	22.6	21.4	113.80	860.3	-287.9	295.8	256.0	39.74	7.443		
6,000.0	5,882.5	6,005.8	5,915.1	23.1	21.7	115.43	870.1	-302.1	293.2	253.0	40.13	7.306		
6,016.1	5,898.0	6,020.7	5,929.8	23.2	21.8	115.74	871.5	-304.1	293.0	252.8	40.17	7.293		
6,100.0	5,979.7	6,100.0	6,008.2	23.6	22.0	117.32	878.3	-313.9	292.6	252.3	40.35	7.252 CC		
6,112.5	5,991.9	6,110.1	6,018.2	23.6	22.0	117.51	879.1	-315.0	292.6	252.3	40.36	7.249		
6,200.0	6,077.7	6,191.1	6,098.7	23.9	22.2	119.02	884.6	-322.9	293.1	252.7	40.47	7.244		
6,300.0	6,176.3	6,283.6	6,190.8	24.2	22.4	120.58	889.4	-329.7	294.6	254.1	40.54	7.267		
6,400.0	6,275.5	6,375.9	6,282.9	24.5	22.6	121.97	892.4	-334.0	297.0	256.4	40.59	7.319		
6,500.0	6,375.0	6,468.1	6,375.1	24.7	22.7	123.19	893.7	-335.9	300.3	259.7	40.61	7.394		
6,600.0	6,474.8	6,565.8	6,472.8	24.9	22.8	124.17	893.7	-336.0	303.6	262.9	40.65	7.467		
6,700.0	6,574.8	6,665.8	6,572.8	25.0	23.0	124.60	893.7	-336.0	305.0	264.2	40.81	7.475		
6,725.2	6,600.0	6,691.1	6,598.0	25.1	23.0	88.78	893.7	-336.0	305.1	264.2	40.86	7.466		
6,800.0	6,674.8	6,766.2	6,673.0	25.1	23.1	89.55	889.6	-336.0	305.0	264.2	40.83	7.471		
6,820.4	6,695.2	6,786.5	6,693.2	25.2	23.1	90.00	887.2	-336.0	305.0	264.3	40.75	7.485		
6,844.4	6,719.1	6,810.1	6,716.6	25.2	23.1	90.65	883.8	-336.0	305.1	264.4	40.62	7.510		
6,850.0	6,724.8	6,815.6	6,722.0	25.2	23.1	-89.18	882.8	-336.0	305.1	264.5	40.59	7.517		
6,900.0	6,774.7	6,864.5	6,769.8	25.2	23.1	-87.70	873.1	-336.0	305.3	265.1	40.23	7.589		
6,950.0	6,824.4	6,912.8	6,816.5	25.2	23.1	-86.23	860.5	-336.0	305.7	265.9	39.82	7.677		
7,000.0	6,873.7	6,960.7	6,861.8	25.2	23.0	-84.79	845.1	-336.0	306.3	267.0	39.37	7.780		
7,050.0	6,922.3	7,008.1	6,905.7	25.2	23.0	-83.39	827.0	-336.0	307.1	268.2	38.90	7.895		
7,100.0	6,970.0	7,055.1	6,948.0	25.1	22.9	-82.02	806.5	-336.0	308.1	269.7	38.41	8.021		
7,150.0	7,016.7	7,101.7	6,988.6	25.0	22.8	-80.70	783.7	-336.0	309.2	271.3	37.91	8.156		
7,200.0	7,062.1	7,147.9	7,027.4	24.8	22.7	-79.42	758.6	-336.0	310.4	273.0	37.41	8.298		
7,250.0	7,106.0	7,193.8	7,064.3	24.7	22.6	-78.20	731.4	-336.0	311.7	274.8	36.91	8.446		
7,300.0	7,148.2	7,239.4	7,099.4	24.5	22.5	-77.04	702.3	-336.0	313.1	276.7	36.43	8.596		
7,350.0	7,188.6	7,284.6	7,132.3	24.3	22.4	-75.94	671.3	-336.0	314.6	278.6	35.96	8.748		
7,400.0	7,227.1	7,329.6	7,163.3	24.1	22.3	-74.90	638.7	-336.0	316.1	280.6	35.52	8.898		
7,450.0	7,263.3	7,374.2	7,192.0	23.9	22.2	-73.93	604.5	-336.0	317.6	282.5	35.11	9.044		
7,500.0	7,297.2	7,418.7	7,218.6	23.6	22.1	-73.03	568.9	-336.0	319.1	284.3	34.74	9.185		
7,550.0	7,328.6	7,462.9	7,243.0	23.4	22.0	-72.20	532.0	-336.0	320.5	286.1	34.41	9.315		
7,600.0	7,357.4	7,506.9	7,265.1	23.2	21.9	-71.44	494.0	-336.0	321.9	287.8	34.12	9.434		
7,650.0	7,383.5	7,550.0	7,284.5	22.9	21.9	-70.76	455.5	-336.0	323.2	289.3	33.89	9.537		
7,700.0	7,406.8	7,594.4	7,302.3	22.7	21.8	-70.14	414.9	-336.0	324.4	290.7	33.73	9.620		
7,750.0	7,427.1	7,637.9	7,317.4	22.5	21.7	-69.60	374.1	-336.0	325.5	291.9	33.63	9.681		
7,800.0	7,444.3	7,681.3	7,330.1	22.3	21.7	-69.13	332.6	-336.0	326.5	292.9	33.60	9.718		
7,850.0	7,458.5	7,724.6	7,340.4	22.0	21.6	-68.74	290.5	-336.0	327.3	293.7	33.64	9.730		
7,900.0	7,469.5	7,767.8	7,348.2	21.8	21.6	-68.43	248.1	-336.0	328.0	294.3	33.76	9.716		
7,950.0	7,477.3	7,810.9	7,353.7	21.6	21.6	-68.19	205.3	-336.0	328.6	294.6	33.95	9.678		
8,000.0	7,481.8	7,853.9	7,356.8	21.5	21.6	-68.02	162.4	-336.0	329.0	294.7	34.22	9.612		
8,043.0	7,483.1	7,892.4	7,357.4	21.3	21.7	-67.94	123.9	-336.0	329.1	294.6	34.53	9.533		
8,043.5	7,483.1	7,892.4	7,357.4	21.3	21.7	-67.94	123.9	-336.0	329.1	294.6	34.53	9.533		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design										Fitzsimmons 1N66W9JM (East) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-303 - Wellbore #1 - Plan #2 (4				Offset Site Error:		0.0 ft
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis				Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
8,100.0	7,483.2	7,947.7	7,357.0	21.1	21.9	-67.85	68.6	-336.0	329.3	294.4	34.98	9.414				
8,200.0	7,483.3	8,047.7	7,356.2	20.9	22.4	-67.70	-31.4	-336.0	329.7	293.7	36.02	9.152				
8,300.0	7,483.5	8,147.7	7,355.5	20.8	23.1	-67.55	-131.4	-336.0	330.1	292.7	37.37	8.832				
8,400.0	7,483.7	8,247.7	7,354.7	21.4	24.1	-67.40	-231.4	-336.0	330.4	291.4	38.99	8.474				
8,500.0	7,483.9	8,347.7	7,353.9	22.3	25.2	-67.25	-331.4	-336.0	330.8	289.9	40.86	8.096				
8,600.0	7,484.0	8,447.7	7,353.2	23.4	26.4	-67.10	-431.4	-336.0	331.1	288.2	42.93	7.714				
8,700.0	7,484.2	8,547.7	7,352.4	24.6	27.7	-66.95	-531.4	-336.0	331.5	286.3	45.18	7.337				
8,800.0	7,484.4	8,647.7	7,351.6	25.9	29.1	-66.80	-631.4	-336.0	331.9	284.3	47.59	6.974				
8,900.0	7,484.6	8,747.7	7,350.9	27.2	30.5	-66.65	-731.4	-336.0	332.3	282.1	50.12	6.629				
9,000.0	7,484.7	8,847.7	7,350.1	28.6	32.0	-66.50	-831.3	-336.0	332.6	279.9	52.77	6.304				
9,100.0	7,484.9	8,947.7	7,349.3	30.0	33.6	-66.35	-931.3	-336.0	333.0	277.5	55.50	6.000				
9,200.0	7,485.1	9,047.7	7,348.6	31.5	35.1	-66.20	-1,031.3	-336.0	333.4	275.1	58.32	5.717				
9,300.0	7,485.3	9,147.7	7,347.8	33.0	36.7	-66.05	-1,131.3	-336.0	333.8	272.6	61.20	5.454				
9,400.0	7,485.4	9,247.7	7,347.0	34.6	38.3	-65.91	-1,231.3	-336.0	334.2	270.0	64.14	5.210				
9,500.0	7,485.6	9,347.7	7,346.3	36.1	40.0	-65.76	-1,331.3	-336.0	334.5	267.4	67.13	4.984				
9,600.0	7,485.8	9,447.7	7,345.5	37.8	41.7	-65.61	-1,431.3	-336.0	334.9	264.8	70.16	4.774				
9,700.0	7,486.0	9,547.7	7,344.7	39.4	43.4	-65.47	-1,531.3	-336.0	335.3	262.1	73.22	4.580				
9,800.0	7,486.1	9,647.7	7,344.0	41.1	45.1	-65.32	-1,631.3	-336.0	335.7	259.4	76.31	4.399				
9,900.0	7,486.3	9,747.7	7,343.2	42.7	46.8	-65.17	-1,731.3	-336.0	336.1	256.7	79.43	4.231				
10,000.0	7,486.5	9,847.6	7,342.4	44.4	48.5	-65.03	-1,831.3	-336.0	336.5	253.9	82.57	4.075				
10,100.0	7,486.7	9,947.6	7,341.7	46.1	50.3	-64.88	-1,931.3	-336.0	336.9	251.2	85.73	3.930				
10,200.0	7,486.8	10,047.6	7,340.9	47.9	52.0	-64.74	-2,031.3	-336.0	337.3	248.4	88.90	3.794				
10,300.0	7,487.0	10,147.6	7,340.1	49.6	53.8	-64.59	-2,131.3	-336.0	337.7	245.6	92.08	3.667				
10,400.0	7,487.2	10,247.6	7,339.4	51.4	55.6	-64.45	-2,231.2	-336.0	338.1	242.8	95.28	3.549				
10,500.0	7,487.4	10,347.6	7,338.6	53.1	57.4	-64.30	-2,331.2	-336.0	338.5	240.0	98.49	3.437				
10,600.0	7,487.5	10,447.6	7,337.8	54.9	59.2	-64.16	-2,431.2	-336.0	338.9	237.2	101.70	3.333				
10,700.0	7,487.7	10,547.6	7,337.0	56.7	61.0	-64.02	-2,531.2	-336.0	339.3	234.4	104.92	3.234				
10,800.0	7,487.9	10,647.6	7,336.3	58.5	62.8	-63.87	-2,631.2	-336.0	339.8	231.6	108.14	3.142				
10,900.0	7,488.1	10,747.6	7,335.5	60.3	64.6	-63.73	-2,731.2	-336.0	340.2	228.8	111.37	3.054				
11,000.0	7,488.2	10,847.6	7,334.7	62.1	66.4	-63.59	-2,831.2	-336.0	340.6	226.0	114.60	2.972				
11,100.0	7,488.4	10,947.6	7,334.0	63.9	68.2	-63.45	-2,931.2	-336.0	341.0	223.2	117.83	2.894				
11,200.0	7,488.6	11,047.6	7,333.2	65.7	70.1	-63.31	-3,031.2	-336.0	341.4	220.4	121.06	2.820				
11,300.0	7,488.8	11,147.6	7,332.4	67.5	71.9	-63.17	-3,131.2	-336.0	341.9	217.6	124.30	2.750				
11,400.0	7,488.9	11,247.6	7,331.7	69.4	73.8	-63.02	-3,231.2	-336.0	342.3	214.7	127.53	2.684				
11,500.0	7,489.1	11,347.6	7,330.9	71.2	75.6	-62.88	-3,331.2	-336.0	342.7	211.9	130.76	2.621				
11,600.0	7,489.3	11,447.6	7,330.1	73.0	77.4	-62.74	-3,431.2	-336.0	343.1	209.1	133.99	2.561				
11,700.0	7,489.5	11,547.6	7,329.4	74.9	79.3	-62.60	-3,531.1	-336.0	343.6	206.4	137.22	2.504				
11,800.0	7,489.6	11,647.6	7,328.6	76.7	81.1	-62.47	-3,631.1	-336.0	344.0	203.6	140.45	2.449				
11,900.0	7,489.8	11,747.6	7,327.8	78.5	83.0	-62.33	-3,731.1	-336.0	344.4	200.8	143.67	2.397				
12,000.0	7,490.0	11,847.6	7,327.1	80.4	84.7	-62.19	-3,831.1	-336.0	344.9	198.2	146.73	2.350				
12,010.9	7,490.0	11,856.0	7,327.0	80.6	84.9	-62.18	-3,839.6	-336.0	344.9	197.9	147.01	2.346 ES, SF				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (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	-129.79	-58.3	-70.0	91.1					
100.0	100.0	100.0	100.0	0.1	0.1	-129.79	-58.3	-70.0	91.1	90.8	0.22	405.147		
200.0	200.0	200.0	200.0	0.3	0.3	-129.79	-58.3	-70.0	91.1	90.4	0.67	135.049		
300.0	300.0	300.0	300.0	0.6	0.6	-129.79	-58.3	-70.0	91.1	89.9	1.12	81.029		
400.0	400.0	400.0	400.0	0.8	0.8	-129.79	-58.3	-70.0	91.1	89.5	1.57	57.878 CC		
500.0	500.0	499.4	499.4	1.0	1.0	-129.01	-57.5	-71.0	91.4	89.4	2.02	45.330 ES		
600.0	600.0	598.6	598.5	1.2	1.2	-126.70	-55.3	-74.2	92.5	90.1	2.46	37.620		
700.0	700.0	697.6	697.3	1.5	1.5	-122.99	-51.6	-79.4	94.7	91.8	2.91	32.573		
800.0	800.0	796.2	795.5	1.7	1.7	-118.14	-46.4	-86.7	98.4	95.0	3.36	29.283		
900.0	900.0	894.2	892.8	1.9	2.0	-112.49	-39.7	-96.0	104.1	100.3	3.82	27.283		
1,000.0	1,000.0	991.6	989.3	2.1	2.3	-106.48	-31.7	-107.2	112.3	108.0	4.27	26.287		
1,100.0	1,100.0	1,088.2	1,084.5	2.4	2.6	-100.53	-22.4	-120.3	123.3	118.6	4.73	26.083		
1,200.0	1,200.0	1,184.0	1,178.5	2.6	2.9	-94.95	-11.7	-135.2	137.4	132.2	5.19	26.489		
1,300.0	1,300.0	1,278.9	1,271.2	2.8	3.3	-54.19	0.2	-151.9	154.1	148.3	5.79	26.606		
1,400.0	1,400.0	1,373.2	1,362.7	3.0	3.8	-50.25	13.4	-170.3	172.7	166.4	6.28	27.519		
1,500.0	1,499.9	1,466.7	1,452.9	3.3	4.2	-47.09	27.7	-190.4	192.8	186.1	6.76	28.520		
1,600.0	1,599.7	1,559.6	1,541.9	3.5	4.7	-44.55	43.2	-212.1	214.4	207.1	7.25	29.552		
1,700.0	1,699.4	1,653.4	1,631.1	3.7	5.3	-42.48	60.1	-235.8	237.0	229.3	7.76	30.548		
1,800.0	1,798.9	1,750.8	1,723.5	4.0	5.9	-40.91	77.8	-260.7	259.1	250.8	8.28	31.293		
1,900.0	1,898.3	1,848.5	1,816.2	4.2	6.5	-39.81	95.7	-285.7	280.0	271.2	8.81	31.775		
2,000.0	1,997.4	1,946.5	1,909.3	4.5	7.1	-39.06	113.6	-310.8	299.6	290.3	9.36	32.016		
2,100.0	2,096.3	2,044.8	2,002.6	4.7	7.7	-38.60	131.5	-335.9	318.0	308.0	9.92	32.045		
2,200.0	2,194.9	2,143.3	2,096.1	5.1	8.3	-38.37	149.5	-361.1	334.9	324.4	10.50	31.887		
2,300.0	2,293.3	2,242.1	2,189.9	5.4	9.0	-38.35	167.6	-386.4	350.6	339.5	11.11	31.562		
2,400.0	2,391.2	2,341.0	2,283.8	5.7	9.6	-38.50	185.6	-411.7	364.9	353.1	11.74	31.091		
2,500.0	2,488.9	2,440.2	2,377.9	6.1	10.2	-38.80	203.7	-437.1	377.8	365.4	12.39	30.489		
2,600.0	2,586.1	2,539.4	2,472.2	6.5	10.9	-39.25	221.9	-462.5	389.4	376.4	13.08	29.774		
2,618.4	2,603.9	2,557.7	2,489.5	6.6	11.0	-39.35	225.2	-467.2	391.4	378.2	13.21	29.631		
2,700.0	2,683.1	2,638.7	2,566.5	6.9	11.5	-39.84	240.0	-487.9	400.2	386.4	13.81	28.987		
2,800.0	2,780.0	2,738.1	2,660.7	7.4	12.2	-40.42	258.2	-513.3	411.0	396.4	14.55	28.244		
2,900.0	2,877.0	2,837.4	2,755.0	7.8	12.8	-40.96	276.3	-538.8	421.8	406.5	15.31	27.550		
3,000.0	2,973.9	2,936.8	2,849.3	8.3	13.5	-41.48	294.4	-564.2	432.7	416.6	16.08	26.900		
3,100.0	3,070.9	3,036.1	2,943.6	8.7	14.1	-41.97	312.6	-589.6	443.6	426.7	16.87	26.293		
3,200.0	3,167.8	3,135.4	3,037.9	9.2	14.8	-42.43	330.7	-615.0	454.5	436.8	17.67	25.726		
3,300.0	3,264.8	3,234.8	3,132.2	9.7	15.4	-42.88	348.9	-640.4	465.4	447.0	18.47	25.195		
3,400.0	3,361.7	3,334.1	3,226.5	10.1	16.1	-43.30	367.0	-665.9	476.4	457.1	19.29	24.698		
3,500.0	3,458.7	3,433.4	3,320.8	10.6	16.7	-43.71	385.2	-691.3	487.4	467.3	20.11	24.232		
3,600.0	3,555.6	3,532.8	3,415.1	11.1	17.4	-44.10	403.3	-716.7	498.4	477.5	20.95	23.795		
3,700.0	3,652.6	3,632.1	3,509.4	11.6	18.0	-44.47	421.5	-742.1	509.5	487.7	21.79	23.384		
3,800.0	3,749.5	3,731.4	3,603.7	12.1	18.7	-44.82	439.6	-767.5	520.5	497.9	22.63	22.998		
3,900.0	3,846.5	3,830.8	3,698.0	12.6	19.3	-45.16	457.7	-793.0	531.6	508.1	23.49	22.635		
4,000.0	3,943.4	3,930.1	3,792.3	13.1	20.0	-45.49	475.9	-818.4	542.7	518.4	24.35	22.293		
4,100.0	4,040.4	4,029.4	3,886.6	13.5	20.6	-45.80	494.0	-843.8	553.9	528.6	25.21	21.970		
4,200.0	4,137.3	4,128.8	3,980.9	14.0	21.3	-46.11	512.2	-869.2	565.0	538.9	26.08	21.665		
4,300.0	4,234.3	4,228.1	4,075.2	14.5	21.9	-46.40	530.3	-894.6	576.1	549.2	26.95	21.376		
4,400.0	4,331.2	4,327.4	4,169.5	15.0	22.6	-46.67	548.5	-920.1	587.3	559.5	27.83	21.103		
4,500.0	4,428.2	4,426.8	4,263.8	15.5	23.2	-46.94	566.6	-945.5	598.5	569.8	28.71	20.844		
4,600.0	4,525.1	4,526.1	4,358.1	16.0	23.9	-47.20	584.7	-970.9	609.7	580.1	29.60	20.599		
4,700.0	4,622.1	4,625.5	4,452.4	16.5	24.5	-47.45	602.9	-996.3	620.9	590.4	30.49	20.365		
4,800.0	4,719.1	4,724.8	4,546.7	17.0	25.2	-47.69	621.0	-1,021.7	632.1	600.7	31.38	20.144		
4,900.0	4,816.0	4,824.1	4,641.0	17.6	25.9	-47.92	639.2	-1,047.2	643.3	611.0	32.27	19.933		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (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	4,913.0	4,923.5	4,735.3	18.1	26.5	-48.15	657.3	-1,072.6	654.5	621.4	33.17	19.732		
5,100.0	5,009.9	5,022.8	4,829.6	18.6	27.2	-48.36	675.5	-1,098.0	665.8	631.7	34.07	19.540		
5,200.0	5,106.9	5,122.1	4,923.9	19.1	27.8	-48.57	693.6	-1,123.4	677.0	642.1	34.98	19.357		
5,300.0	5,203.8	5,221.5	5,018.2	19.6	28.5	-48.77	711.8	-1,148.8	688.3	652.4	35.88	19.182		
5,400.0	5,300.8	5,320.8	5,112.5	20.1	29.1	-48.97	729.9	-1,174.3	699.6	662.8	36.79	19.015		
5,500.0	5,397.7	5,420.1	5,206.8	20.6	29.8	-49.16	748.0	-1,199.7	710.8	673.1	37.70	18.855		
5,600.0	5,494.7	5,519.5	5,301.1	21.1	30.4	-49.34	766.2	-1,225.1	722.1	683.5	38.61	18.702		
5,700.0	5,591.6	5,618.8	5,395.4	21.6	31.1	-49.52	784.3	-1,250.5	733.4	693.9	39.53	18.555		
5,800.0	5,688.6	5,718.1	5,489.7	22.1	31.7	-49.69	802.5	-1,275.9	744.7	704.3	40.44	18.414		
5,900.0	5,785.5	5,843.1	5,609.0	22.6	32.4	-50.00	824.0	-1,306.1	754.5	713.1	41.45	18.202		
6,000.0	5,882.5	5,971.5	5,733.2	23.1	33.0	-50.53	843.0	-1,332.7	760.6	718.1	42.50	17.896		
6,016.1	5,898.0	5,992.1	5,753.2	23.2	33.0	-50.63	845.7	-1,336.6	761.2	718.5	42.68	17.837		
6,100.0	5,979.7	6,100.0	5,858.7	23.6	33.4	-51.23	858.7	-1,354.8	763.7	720.2	43.50	17.557		
6,200.0	6,077.7	6,228.4	5,985.3	23.9	33.8	-51.88	871.2	-1,372.2	765.3	720.9	44.34	17.258		
6,300.0	6,176.3	6,356.7	6,112.7	24.2	34.1	-52.49	880.3	-1,385.0	765.3	720.3	45.08	16.976		
6,400.0	6,275.5	6,484.8	6,240.3	24.5	34.3	-53.05	886.1	-1,393.2	763.9	718.2	45.72	16.706		
6,500.0	6,375.0	6,612.5	6,368.0	24.7	34.5	-53.56	888.6	-1,396.6	760.9	714.6	46.26	16.448		
6,600.0	6,474.8	6,719.3	6,474.8	24.9	34.6	-53.89	888.7	-1,396.8	757.4	710.7	46.64	16.240		
6,700.0	6,574.8	6,819.3	6,574.7	25.0	34.7	-54.21	886.4	-1,396.8	755.8	708.9	46.93	16.105		
6,723.2	6,597.9	6,842.3	6,597.6	25.1	34.7	-54.37	884.3	-1,396.8	755.8	708.8	47.02	16.074		
6,725.2	6,600.0	6,844.3	6,599.6	25.1	34.7	-90.24	884.0	-1,396.8	755.8	708.8	47.03	16.071		
6,800.0	6,674.8	6,917.3	6,671.7	25.1	34.6	-91.11	872.5	-1,396.8	755.9	708.5	47.44	15.933		
6,844.4	6,719.1	6,959.4	6,712.6	25.2	34.6	-91.85	862.8	-1,396.8	756.2	708.4	47.76	15.835		
6,850.0	6,724.8	6,964.6	6,717.7	25.2	34.6	88.04	861.4	-1,396.8	756.2	708.4	47.80	15.822		
6,900.0	6,774.7	7,011.0	6,761.9	25.2	34.5	87.10	847.8	-1,396.8	756.8	708.7	48.14	15.722		
6,950.0	6,824.4	7,056.6	6,804.7	25.2	34.4	86.18	831.7	-1,396.8	757.6	709.2	48.40	15.652		
7,000.0	6,873.7	7,100.0	6,844.3	25.2	34.3	85.31	814.2	-1,396.8	758.5	709.9	48.57	15.615		
7,050.0	6,922.3	7,146.1	6,885.4	25.2	34.2	84.40	793.0	-1,396.8	759.6	710.9	48.68	15.605		
7,100.0	6,970.0	7,190.1	6,923.2	25.1	34.1	83.55	770.7	-1,396.8	760.8	712.2	48.69	15.627		
7,150.0	7,016.7	7,233.5	6,959.2	25.0	34.0	82.73	746.4	-1,396.8	762.2	713.6	48.62	15.678		
7,200.0	7,062.1	7,276.5	6,993.5	24.8	33.8	81.93	720.5	-1,396.8	763.7	715.2	48.46	15.759		
7,250.0	7,106.0	7,319.0	7,025.9	24.7	33.7	81.17	692.9	-1,396.8	765.2	717.0	48.22	15.869		
7,300.0	7,148.2	7,361.2	7,056.4	24.5	33.5	80.45	663.9	-1,396.8	766.8	718.9	47.91	16.005		
7,350.0	7,188.6	7,400.0	7,083.1	24.3	33.4	79.80	635.7	-1,396.8	768.4	720.9	47.53	16.167		
7,400.0	7,227.1	7,444.5	7,111.9	24.1	33.2	79.11	601.8	-1,396.8	770.0	722.9	47.08	16.355		
7,450.0	7,263.3	7,485.6	7,136.7	23.9	33.0	78.51	569.0	-1,396.8	771.6	725.0	46.59	16.563		
7,500.0	7,297.2	7,526.5	7,159.6	23.6	32.8	77.94	535.1	-1,396.8	773.2	727.1	46.05	16.789		
7,550.0	7,328.6	7,567.2	7,180.5	23.4	32.7	77.43	500.2	-1,396.8	774.7	729.2	45.49	17.028		
7,600.0	7,357.4	7,607.6	7,199.4	23.2	32.5	76.95	464.5	-1,396.8	776.1	731.2	44.92	17.275		
7,650.0	7,383.5	7,650.0	7,217.2	22.9	32.3	76.51	426.0	-1,396.8	777.4	733.1	44.35	17.528		
7,700.0	7,406.8	7,687.9	7,231.3	22.7	32.2	76.15	390.9	-1,396.8	778.6	734.8	43.82	17.770		
7,750.0	7,427.1	7,727.8	7,244.2	22.5	32.0	75.82	353.1	-1,396.8	779.7	736.4	43.31	18.002		
7,800.0	7,444.3	7,767.6	7,255.1	22.3	31.8	75.54	314.9	-1,396.8	780.6	737.8	42.86	18.214		
7,850.0	7,458.5	7,807.2	7,264.0	22.0	31.7	75.31	276.2	-1,396.8	781.4	738.9	42.47	18.397		
7,900.0	7,469.5	7,850.0	7,271.3	21.8	31.5	75.12	234.1	-1,396.8	782.0	739.9	42.17	18.546		
7,950.0	7,477.3	7,886.4	7,275.6	21.6	31.4	75.00	198.0	-1,396.8	782.5	740.5	41.96	18.649		
8,000.0	7,481.8	7,925.9	7,278.4	21.5	31.2	74.92	158.6	-1,396.8	782.7	740.9	41.84	18.705		
8,043.0	7,483.1	7,959.8	7,279.1	21.3	31.1	74.90	124.6	-1,396.8	782.8	741.0	41.83	18.716		
8,100.0	7,483.2	8,015.3	7,278.7	21.1	30.9	74.86	69.1	-1,396.8	782.9	740.8	42.10	18.598		
8,200.0	7,483.3	8,115.3	7,278.0	20.9	30.7	74.80	-30.9	-1,396.8	783.2	740.4	42.82	18.291		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-223 - Wellbore #1 - Plan #2 (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		
8,300.0	7,483.5	8,215.3	7,277.3	20.8	30.5	74.74	-130.9	-1,396.8	783.4	739.6	43.84	17.870		
8,400.0	7,483.7	8,315.3	7,276.5	21.4	30.3	74.67	-230.9	-1,396.8	783.7	738.5	45.15	17.358		
8,500.0	7,483.9	8,415.3	7,275.8	22.3	30.3	74.61	-330.8	-1,396.8	783.9	737.2	46.71	16.781		
8,600.0	7,484.0	8,515.3	7,275.1	23.4	30.4	74.54	-430.8	-1,396.8	784.1	735.6	48.51	16.163		
8,700.0	7,484.2	8,615.3	7,274.3	24.6	30.7	74.48	-530.8	-1,396.8	784.4	733.9	50.52	15.525		
8,800.0	7,484.4	8,715.3	7,273.6	25.9	31.1	74.42	-630.8	-1,396.8	784.6	731.9	52.72	14.884		
8,900.0	7,484.6	8,815.3	7,272.9	27.2	31.8	74.35	-730.8	-1,396.8	784.9	729.8	55.07	14.252		
9,000.0	7,484.7	8,915.3	7,272.1	28.6	32.7	74.29	-830.8	-1,396.8	785.1	727.5	57.57	13.638		
9,100.0	7,484.9	9,015.3	7,271.4	30.0	33.8	74.22	-930.8	-1,396.8	785.4	725.2	60.19	13.049		
9,200.0	7,485.1	9,115.3	7,270.7	31.5	34.9	74.16	-1,030.8	-1,396.8	785.6	722.7	62.91	12.487		
9,300.0	7,485.3	9,215.3	7,269.9	33.0	36.2	74.10	-1,130.8	-1,396.8	785.9	720.1	65.73	11.955		
9,400.0	7,485.4	9,315.3	7,269.2	34.6	37.6	74.03	-1,230.8	-1,396.8	786.1	717.5	68.64	11.453		
9,500.0	7,485.6	9,415.3	7,268.5	36.1	39.0	73.97	-1,330.8	-1,396.8	786.3	714.7	71.61	10.981		
9,600.0	7,485.8	9,515.3	7,267.7	37.8	40.4	73.91	-1,430.8	-1,396.8	786.6	712.0	74.65	10.537		
9,700.0	7,486.0	9,615.3	7,267.0	39.4	41.9	73.84	-1,530.8	-1,396.8	786.9	709.1	77.74	10.121		
9,800.0	7,486.1	9,715.3	7,266.3	41.1	43.5	73.78	-1,630.8	-1,396.8	787.1	706.2	80.88	9.731		
9,900.0	7,486.3	9,815.3	7,265.5	42.7	45.0	73.72	-1,730.7	-1,396.8	787.4	703.3	84.07	9.366		
10,000.0	7,486.5	9,915.3	7,264.8	44.4	46.6	73.65	-1,830.7	-1,396.8	787.6	700.3	87.29	9.023		
10,100.0	7,486.7	10,015.2	7,264.1	46.1	48.3	73.59	-1,930.7	-1,396.8	787.9	697.3	90.55	8.701		
10,200.0	7,486.8	10,115.2	7,263.3	47.9	49.9	73.53	-2,030.7	-1,396.8	788.1	694.3	93.83	8.399		
10,300.0	7,487.0	10,215.2	7,262.6	49.6	51.5	73.46	-2,130.7	-1,396.8	788.4	691.2	97.15	8.116		
10,400.0	7,487.2	10,315.2	7,261.9	51.4	53.2	73.40	-2,230.7	-1,396.8	788.6	688.2	100.48	7.849		
10,500.0	7,487.4	10,415.2	7,261.1	53.1	54.9	73.34	-2,330.7	-1,396.8	788.9	685.1	103.84	7.597		
10,600.0	7,487.5	10,515.2	7,260.4	54.9	56.6	73.27	-2,430.7	-1,396.8	789.2	681.9	107.22	7.361		
10,700.0	7,487.7	10,615.2	7,259.7	56.7	58.3	73.21	-2,530.7	-1,396.8	789.4	678.8	110.61	7.137		
10,800.0	7,487.9	10,715.2	7,258.9	58.5	60.1	73.15	-2,630.7	-1,396.8	789.7	675.7	114.02	6.926		
10,900.0	7,488.1	10,815.2	7,258.2	60.3	61.8	73.08	-2,730.7	-1,396.8	790.0	672.5	117.44	6.726		
11,000.0	7,488.2	10,915.2	7,257.5	62.1	63.5	73.02	-2,830.7	-1,396.8	790.2	669.3	120.88	6.537		
11,100.0	7,488.4	11,015.2	7,256.7	63.9	65.3	72.96	-2,930.7	-1,396.8	790.5	666.2	124.32	6.358		
11,200.0	7,488.6	11,115.2	7,256.0	65.7	67.0	72.90	-3,030.7	-1,396.8	790.7	663.0	127.78	6.188		
11,300.0	7,488.8	11,215.2	7,255.3	67.5	68.8	72.83	-3,130.7	-1,396.8	791.0	659.8	131.24	6.027		
11,400.0	7,488.9	11,315.2	7,254.5	69.4	70.6	72.77	-3,230.6	-1,396.8	791.3	656.6	134.72	5.874		
11,500.0	7,489.1	11,415.2	7,253.8	71.2	72.4	72.71	-3,330.6	-1,396.8	791.6	653.4	138.20	5.728		
11,600.0	7,489.3	11,515.2	7,253.1	73.0	74.2	72.64	-3,430.6	-1,396.8	791.8	650.1	141.69	5.589		
11,700.0	7,489.5	11,615.2	7,252.3	74.9	76.0	72.58	-3,530.6	-1,396.8	792.1	646.9	145.18	5.456		
11,800.0	7,489.6	11,715.2	7,251.6	76.7	77.8	72.52	-3,630.6	-1,396.8	792.4	643.7	148.68	5.329		
11,900.0	7,489.8	11,815.2	7,250.9	78.5	79.6	72.46	-3,730.6	-1,396.8	792.6	640.5	152.18	5.208		
12,000.0	7,490.0	11,915.2	7,250.1	80.4	81.4	72.39	-3,830.6	-1,396.8	792.9	637.2	155.69	5.093		
12,010.9	7,490.0	11,926.1	7,250.1	80.6	81.6	72.39	-3,841.5	-1,396.8	792.9	636.9	156.07	5.081 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-323 - Wellbore #1 - Plan #2 (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	-130.11	-40.1	-47.6	62.2					
100.0	100.0	100.0	100.0	0.1	0.1	-130.11	-40.1	-47.6	62.2	62.0	0.22	276.781		
200.0	200.0	200.0	200.0	0.3	0.3	-130.11	-40.1	-47.6	62.2	61.5	0.67	92.260		
300.0	300.0	300.0	300.0	0.6	0.6	-130.11	-40.1	-47.6	62.2	61.1	1.12	55.356		
400.0	400.0	400.0	400.0	0.8	0.8	-130.11	-40.1	-47.6	62.2	60.6	1.57	39.540		
500.0	500.0	500.0	500.0	1.0	1.0	-130.11	-40.1	-47.6	62.2	60.2	2.02	30.753		
600.0	600.0	600.0	600.0	1.2	1.2	-130.11	-40.1	-47.6	62.2	59.7	2.47	25.162 CC		
700.0	700.0	699.7	699.7	1.5	1.5	-128.94	-39.3	-48.6	62.5	59.6	2.92	21.422 ES		
800.0	800.0	799.2	799.1	1.7	1.7	-125.50	-36.8	-51.6	63.4	60.0	3.36	18.879		
900.0	900.0	898.5	898.2	1.9	1.9	-120.04	-32.8	-56.6	65.5	61.6	3.80	17.203		
1,000.0	1,000.0	997.3	996.6	2.1	2.1	-113.07	-27.1	-63.6	69.2	65.0	4.25	16.276		
1,100.0	1,100.0	1,095.7	1,094.3	2.4	2.4	-105.33	-19.9	-72.5	75.4	70.7	4.71	16.031		
1,200.0	1,200.0	1,193.3	1,191.0	2.6	2.7	-97.63	-11.2	-83.3	84.6	79.4	5.16	16.394		
1,300.0	1,300.0	1,290.4	1,286.6	2.8	3.0	-55.04	-1.0	-96.0	96.4	90.7	5.67	17.002		
1,400.0	1,400.0	1,386.9	1,381.3	3.0	3.3	-49.75	10.7	-110.4	110.2	104.1	6.14	17.958		
1,500.0	1,499.9	1,482.8	1,475.0	3.3	3.7	-45.63	23.8	-126.6	125.7	119.1	6.61	19.018		
1,600.0	1,599.7	1,578.2	1,567.5	3.5	4.1	-42.42	38.2	-144.4	142.6	135.5	7.09	20.123		
1,700.0	1,699.4	1,672.9	1,658.8	3.7	4.6	-39.90	54.0	-164.0	160.7	153.1	7.57	21.230		
1,800.0	1,798.9	1,769.6	1,751.6	4.0	5.1	-37.93	71.3	-185.4	179.5	171.5	8.06	22.260		
1,900.0	1,898.3	1,867.9	1,845.8	4.2	5.6	-36.58	89.0	-207.2	197.2	188.7	8.58	23.001		
2,000.0	1,997.4	1,966.6	1,940.3	4.5	6.2	-35.73	106.7	-229.1	213.7	204.6	9.10	23.484		
2,100.0	2,096.3	2,065.4	2,035.0	4.7	6.7	-35.25	124.5	-251.1	228.7	219.0	9.63	23.735		
2,200.0	2,194.9	2,164.5	2,130.0	5.1	7.3	-35.06	142.3	-273.1	242.3	232.1	10.19	23.780		
2,300.0	2,293.3	2,263.7	2,225.1	5.4	7.8	-35.12	160.1	-295.2	254.5	243.8	10.76	23.644		
2,400.0	2,391.2	2,363.1	2,320.3	5.7	8.4	-35.40	178.0	-317.3	265.3	253.9	11.36	23.350		
2,500.0	2,488.9	2,462.6	2,415.7	6.1	9.0	-35.87	195.9	-339.4	274.7	262.7	11.99	22.915		
2,600.0	2,586.1	2,562.3	2,511.2	6.5	9.6	-36.53	213.8	-361.5	282.7	270.1	12.65	22.357		
2,618.4	2,603.9	2,580.6	2,528.7	6.6	9.7	-36.67	217.1	-365.6	284.1	271.3	12.77	22.242		
2,700.0	2,683.1	2,661.9	2,606.7	6.9	10.1	-37.32	231.7	-383.7	289.9	276.5	13.35	21.720		
2,800.0	2,780.0	2,761.6	2,702.2	7.4	10.7	-38.09	249.6	-405.8	297.0	283.0	14.07	21.116		
2,900.0	2,877.0	2,861.3	2,797.7	7.8	11.3	-38.82	267.5	-428.0	304.2	289.4	14.80	20.551		
3,000.0	2,973.9	2,960.9	2,893.2	8.3	11.9	-39.51	285.5	-450.1	311.5	296.0	15.56	20.022		
3,100.0	3,070.9	3,060.6	2,988.7	8.7	12.5	-40.18	303.4	-472.3	318.8	302.5	16.33	19.527		
3,200.0	3,167.8	3,160.3	3,084.2	9.2	13.1	-40.81	321.3	-494.4	326.2	309.1	17.11	19.064		
3,300.0	3,264.8	3,259.9	3,179.7	9.7	13.7	-41.42	339.2	-516.6	333.6	315.7	17.90	18.631		
3,400.0	3,361.7	3,359.6	3,275.2	10.1	14.3	-42.00	357.1	-538.7	341.0	322.3	18.71	18.225		
3,500.0	3,458.7	3,459.3	3,370.7	10.6	14.8	-42.56	375.0	-560.9	348.4	328.9	19.53	17.845		
3,600.0	3,555.6	3,558.9	3,466.2	11.1	15.4	-43.09	392.9	-583.0	355.9	335.6	20.35	17.488		
3,700.0	3,652.6	3,658.6	3,561.7	11.6	16.0	-43.60	410.9	-605.2	363.4	342.3	21.19	17.154		
3,800.0	3,749.5	3,758.3	3,657.2	12.1	16.6	-44.09	428.8	-627.3	371.0	349.0	22.03	16.839		
3,900.0	3,846.5	3,857.9	3,752.8	12.6	17.2	-44.56	446.7	-649.5	378.6	355.7	22.88	16.543		
4,000.0	3,943.4	3,957.6	3,848.3	13.1	17.8	-45.01	464.6	-671.6	386.1	362.4	23.74	16.265		
4,100.0	4,040.4	4,057.3	3,943.8	13.5	18.4	-45.45	482.5	-693.8	393.8	369.2	24.61	16.002		
4,200.0	4,137.3	4,156.9	4,039.3	14.0	19.0	-45.86	500.4	-715.9	401.4	375.9	25.48	15.755		
4,300.0	4,234.3	4,256.6	4,134.8	14.5	19.6	-46.27	518.3	-738.1	409.1	382.7	26.36	15.521		
4,400.0	4,331.2	4,356.3	4,230.3	15.0	20.2	-46.65	536.2	-760.2	416.7	389.5	27.24	15.299		
4,500.0	4,428.2	4,455.9	4,325.8	15.5	20.8	-47.03	554.2	-782.4	424.4	396.3	28.13	15.090		
4,600.0	4,525.1	4,555.6	4,421.3	16.0	21.4	-47.39	572.1	-804.5	432.2	403.1	29.02	14.892		
4,700.0	4,622.1	4,655.2	4,516.8	16.5	22.0	-47.73	590.0	-826.7	439.9	410.0	29.92	14.704		
4,800.0	4,719.1	4,754.9	4,612.3	17.0	22.6	-48.07	607.9	-848.8	447.6	416.8	30.82	14.525		
4,900.0	4,816.0	4,854.6	4,707.8	17.6	23.2	-48.39	625.8	-871.0	455.4	423.7	31.72	14.355		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-323 - Wellbore #1 - Plan #2 (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	4,913.0	4,954.2	4,803.3	18.1	23.8	-48.71	643.7	-893.1	463.2	430.5	32.63	14.194		
5,100.0	5,009.9	5,053.9	4,898.8	18.6	24.4	-49.01	661.6	-915.3	471.0	437.4	33.54	14.040		
5,200.0	5,106.9	5,153.6	4,994.4	19.1	25.0	-49.30	679.6	-937.4	478.8	444.3	34.46	13.893		
5,300.0	5,203.8	5,253.2	5,089.9	19.6	25.5	-49.59	697.5	-959.6	486.6	451.2	35.38	13.754		
5,400.0	5,300.8	5,352.9	5,185.4	20.1	26.1	-49.86	715.4	-981.7	494.4	458.1	36.30	13.620		
5,500.0	5,397.7	5,452.6	5,280.9	20.6	26.7	-50.13	733.3	-1,003.9	502.2	465.0	37.22	13.493		
5,600.0	5,494.7	5,552.2	5,376.4	21.1	27.3	-50.39	751.2	-1,026.0	510.1	471.9	38.15	13.371		
5,700.0	5,591.6	5,651.9	5,471.9	21.6	27.9	-50.64	769.1	-1,048.2	517.9	478.9	39.08	13.254		
5,800.0	5,688.6	5,751.6	5,567.4	22.1	28.5	-50.88	787.0	-1,070.3	525.8	485.8	40.01	13.142		
5,900.0	5,785.5	5,851.2	5,662.9	22.6	29.1	-51.11	804.9	-1,092.5	533.7	492.7	40.94	13.035		
6,000.0	5,882.5	5,965.3	5,772.6	23.1	29.7	-51.48	824.5	-1,116.7	540.5	498.6	41.92	12.895		
6,016.1	5,898.0	5,984.1	5,790.9	23.2	29.8	-51.56	827.5	-1,120.3	541.3	499.2	42.08	12.863		
6,100.0	5,979.7	6,082.9	5,886.9	23.6	30.1	-52.07	841.8	-1,138.0	544.9	502.0	42.87	12.711		
6,200.0	6,077.7	6,200.5	6,002.4	23.9	30.5	-52.63	856.1	-1,155.8	548.1	504.5	43.68	12.549		
6,300.0	6,176.3	6,318.2	6,118.7	24.2	30.9	-53.13	867.5	-1,169.8	550.3	505.9	44.39	12.397		
6,400.0	6,275.5	6,435.9	6,235.6	24.5	31.1	-53.58	875.8	-1,180.1	551.4	506.4	45.01	12.252		
6,500.0	6,375.0	6,553.6	6,352.9	24.7	31.3	-53.97	881.1	-1,186.7	551.3	505.8	45.52	12.111		
6,600.0	6,474.8	6,671.1	6,470.4	24.9	31.5	-54.32	883.4	-1,189.5	550.1	504.2	45.94	11.975		
6,700.0	6,574.8	6,775.5	6,574.8	25.0	31.6	-54.53	883.5	-1,189.6	548.7	502.5	46.23	11.869		
6,725.2	6,600.0	6,800.7	6,600.0	25.1	31.6	-90.38	883.5	-1,189.6	548.6	502.4	46.28	11.855		
6,800.0	6,674.8	6,875.0	6,674.2	25.1	31.7	-90.68	880.6	-1,189.6	548.7	502.1	46.54	11.790		
6,844.4	6,719.1	6,918.5	6,717.5	25.2	31.6	-91.21	875.6	-1,189.6	548.8	502.0	46.79	11.728		
6,850.0	6,724.8	6,924.0	6,722.9	25.2	31.6	88.71	874.8	-1,189.6	548.8	501.9	46.83	11.719		
6,900.0	6,774.7	6,972.5	6,770.5	25.2	31.6	87.97	866.0	-1,189.6	549.0	501.9	47.10	11.655		
6,950.0	6,824.4	7,020.5	6,817.1	25.2	31.6	87.25	854.3	-1,189.6	549.3	502.0	47.30	11.612		
7,000.0	6,873.7	7,068.2	6,862.5	25.2	31.5	86.54	839.9	-1,189.6	549.7	502.2	47.42	11.591		
7,050.0	6,922.3	7,115.5	6,906.6	25.2	31.4	85.85	822.7	-1,189.6	550.1	502.6	47.46	11.591		
7,100.0	6,970.0	7,162.4	6,949.2	25.1	31.3	85.18	803.1	-1,189.6	550.6	503.2	47.42	11.612		
7,150.0	7,016.7	7,209.0	6,990.2	25.0	31.2	84.53	781.0	-1,189.6	551.2	503.9	47.30	11.653		
7,200.0	7,062.1	7,255.2	7,029.5	24.8	31.0	83.91	756.7	-1,189.6	551.8	504.7	47.10	11.714		
7,250.0	7,106.0	7,300.0	7,066.1	24.7	30.9	83.32	730.9	-1,189.6	552.4	505.6	46.84	11.794		
7,300.0	7,148.2	7,346.8	7,102.7	24.5	30.7	82.74	701.7	-1,189.6	553.1	506.6	46.51	11.893		
7,350.0	7,188.6	7,392.2	7,136.4	24.3	30.5	82.20	671.3	-1,189.6	553.8	507.7	46.12	12.009		
7,400.0	7,227.1	7,437.3	7,168.0	24.1	30.3	81.69	639.2	-1,189.6	554.5	508.8	45.68	12.140		
7,450.0	7,263.3	7,482.2	7,197.6	23.9	30.2	81.22	605.3	-1,189.6	555.2	510.0	45.20	12.284		
7,500.0	7,297.2	7,527.0	7,225.0	23.6	30.0	80.78	570.0	-1,189.6	555.9	511.2	44.69	12.438		
7,550.0	7,328.6	7,571.5	7,250.2	23.4	29.8	80.38	533.3	-1,189.6	556.5	512.3	44.17	12.599		
7,600.0	7,357.4	7,615.8	7,273.1	23.2	29.6	80.01	495.4	-1,189.6	557.1	513.5	43.65	12.764		
7,650.0	7,383.5	7,660.0	7,293.8	22.9	29.4	79.69	456.3	-1,189.6	557.7	514.5	43.14	12.928		
7,700.0	7,406.8	7,704.1	7,312.0	22.7	29.2	79.40	416.2	-1,189.6	558.2	515.5	42.65	13.086		
7,750.0	7,427.1	7,750.0	7,328.6	22.5	29.0	79.15	373.4	-1,189.6	558.6	516.4	42.21	13.235		
7,800.0	7,444.3	7,791.9	7,341.4	22.3	28.8	78.95	333.5	-1,189.6	559.0	517.2	41.83	13.364		
7,850.0	7,458.5	7,835.7	7,352.4	22.0	28.6	78.79	291.1	-1,189.6	559.3	517.8	41.51	13.474		
7,900.0	7,469.5	7,879.4	7,361.0	21.8	28.5	78.66	248.2	-1,189.6	559.6	518.3	41.27	13.557		
7,950.0	7,477.3	7,923.1	7,367.2	21.6	28.3	78.58	205.0	-1,189.6	559.7	518.6	41.12	13.611		
8,000.0	7,481.8	7,966.8	7,370.8	21.5	28.1	78.55	161.5	-1,189.6	559.8	518.7	41.06	13.632		
8,043.0	7,483.1	8,004.3	7,371.9	21.3	28.0	78.55	124.0	-1,189.6	559.8	518.7	41.09	13.624		
8,046.5	7,483.1	8,007.4	7,371.9	21.3	28.0	78.55	120.9	-1,189.6	559.8	518.7	41.10	13.620		
8,100.0	7,483.2	8,059.4	7,371.4	21.1	27.8	78.49	68.9	-1,189.6	559.9	518.5	41.36	13.538		
8,200.0	7,483.3	8,159.4	7,370.3	20.9	27.5	78.36	-31.1	-1,189.6	560.2	518.1	42.08	13.312		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
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	7,483.5	8,259.4	7,369.2	20.8	27.3	78.23	-131.1	-1,189.6	560.4	517.3	43.11	12.999		
8,400.0	7,483.7	8,359.4	7,368.0	21.4	27.2	78.09	-231.1	-1,189.6	560.7	516.3	44.45	12.615		
8,500.0	7,483.9	8,459.4	7,366.9	22.3	27.3	77.96	-331.0	-1,189.6	561.0	514.9	46.05	12.183		
8,600.0	7,484.0	8,559.3	7,365.8	23.4	27.5	77.83	-431.0	-1,189.6	561.2	513.4	47.89	11.720		
8,700.0	7,484.2	8,659.3	7,364.6	24.6	28.0	77.70	-531.0	-1,189.6	561.5	511.6	49.94	11.243		
8,800.0	7,484.4	8,759.3	7,363.5	25.9	28.8	77.57	-631.0	-1,189.6	561.8	509.6	52.19	10.765		
8,900.0	7,484.6	8,859.3	7,362.4	27.2	29.8	77.44	-731.0	-1,189.6	562.1	507.5	54.60	10.295		
9,000.0	7,484.7	8,959.3	7,361.2	28.6	31.0	77.31	-831.0	-1,189.6	562.4	505.2	57.15	9.840		
9,100.0	7,484.9	9,059.3	7,360.1	30.0	32.2	77.18	-931.0	-1,189.6	562.7	502.8	59.82	9.405		
9,200.0	7,485.1	9,159.3	7,358.9	31.5	33.6	77.05	-1,030.9	-1,189.6	563.0	500.3	62.61	8.992		
9,300.0	7,485.3	9,259.3	7,357.8	33.0	35.0	76.92	-1,130.9	-1,189.6	563.2	497.8	65.48	8.602		
9,400.0	7,485.4	9,359.3	7,356.7	34.6	36.4	76.79	-1,230.9	-1,189.6	563.5	495.1	68.44	8.234		
9,500.0	7,485.6	9,459.3	7,355.5	36.1	37.9	76.66	-1,330.9	-1,189.6	563.8	492.4	71.47	7.890		
9,600.0	7,485.8	9,559.3	7,354.4	37.8	39.4	76.53	-1,430.9	-1,189.6	564.1	489.6	74.55	7.567		
9,700.0	7,486.0	9,659.3	7,353.3	39.4	41.0	76.40	-1,530.9	-1,189.6	564.5	486.8	77.69	7.265		
9,800.0	7,486.1	9,759.2	7,352.1	41.1	42.6	76.27	-1,630.8	-1,189.6	564.8	483.9	80.88	6.983		
9,900.0	7,486.3	9,859.2	7,351.0	42.7	44.2	76.15	-1,730.8	-1,189.6	565.1	481.0	84.11	6.718		
10,000.0	7,486.5	9,959.2	7,349.9	44.4	45.8	76.02	-1,830.8	-1,189.6	565.4	478.0	87.37	6.471		
10,100.0	7,486.7	10,059.2	7,348.7	46.1	47.5	75.89	-1,930.8	-1,189.6	565.7	475.0	90.67	6.239		
10,200.0	7,486.8	10,159.2	7,347.6	47.9	49.1	75.76	-2,030.8	-1,189.6	566.0	472.0	93.99	6.022		
10,300.0	7,487.0	10,259.2	7,346.5	49.6	50.8	75.63	-2,130.8	-1,189.6	566.4	469.0	97.34	5.819		
10,400.0	7,487.2	10,359.2	7,345.3	51.4	52.5	75.50	-2,230.8	-1,189.6	566.7	466.0	100.70	5.627		
10,500.0	7,487.4	10,459.2	7,344.2	53.1	54.2	75.38	-2,330.7	-1,189.6	567.0	462.9	104.09	5.447		
10,600.0	7,487.5	10,559.2	7,343.1	54.9	56.0	75.25	-2,430.7	-1,189.6	567.3	459.8	107.49	5.278		
10,700.0	7,487.7	10,659.2	7,341.9	56.7	57.7	75.12	-2,530.7	-1,189.6	567.7	456.8	110.91	5.118		
10,800.0	7,487.9	10,759.2	7,340.8	58.5	59.5	74.99	-2,630.7	-1,189.6	568.0	453.7	114.34	4.968		
10,900.0	7,488.1	10,859.1	7,339.7	60.3	61.2	74.86	-2,730.7	-1,189.6	568.4	450.6	117.79	4.825		
11,000.0	7,488.2	10,959.1	7,338.5	62.1	63.0	74.74	-2,830.7	-1,189.6	568.7	447.5	121.24	4.691		
11,100.0	7,488.4	11,059.1	7,337.4	63.9	64.7	74.61	-2,930.7	-1,189.6	569.0	444.3	124.70	4.563		
11,200.0	7,488.6	11,159.1	7,336.3	65.7	66.5	74.48	-3,030.6	-1,189.6	569.4	441.2	128.17	4.442		
11,300.0	7,488.8	11,259.1	7,335.1	67.5	68.3	74.36	-3,130.6	-1,189.6	569.7	438.1	131.64	4.328		
11,400.0	7,488.9	11,359.1	7,334.0	69.4	70.1	74.23	-3,230.6	-1,189.6	570.1	435.0	135.13	4.219		
11,500.0	7,489.1	11,459.1	7,332.9	71.2	71.9	74.10	-3,330.6	-1,189.6	570.5	431.8	138.61	4.115		
11,600.0	7,489.3	11,559.1	7,331.7	73.0	73.7	73.98	-3,430.6	-1,189.6	570.8	428.7	142.10	4.017		
11,700.0	7,489.5	11,659.1	7,330.6	74.9	75.5	73.85	-3,530.6	-1,189.6	571.2	425.6	145.60	3.923		
11,800.0	7,489.6	11,759.1	7,329.5	76.7	77.3	73.72	-3,630.5	-1,189.6	571.5	422.4	149.09	3.833		
11,900.0	7,489.8	11,859.1	7,328.3	78.5	79.2	73.60	-3,730.5	-1,189.6	571.9	419.3	152.59	3.748		
12,000.0	7,490.0	11,959.1	7,327.2	80.4	81.0	73.47	-3,830.5	-1,189.6	572.3	416.2	156.09	3.666		
12,010.9	7,490.0	11,969.9	7,327.1	80.6	81.2	73.46	-3,841.4	-1,189.6	572.3	415.8	156.47	3.658 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design											Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-403 - Wellbore #1 - Plan #2 (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	-128.80	-76.5	-95.2	122.1						
100.0	100.0	100.0	100.0	0.1	0.1	-128.80	-76.5	-95.2	122.1	121.9	0.22	543.238			
200.0	200.0	200.0	200.0	0.3	0.3	-128.80	-76.5	-95.2	122.1	121.4	0.67	181.079 CC			
300.0	300.0	299.0	299.0	0.6	0.6	-128.23	-75.8	-96.2	122.5	121.4	1.12	109.653 ES			
400.0	400.0	397.9	397.8	0.8	0.8	-126.54	-73.7	-99.4	123.8	122.2	1.56	79.179			
500.0	500.0	496.5	496.2	1.0	1.0	-123.83	-70.2	-104.8	126.2	124.2	2.02	62.592			
600.0	600.0	594.7	594.0	1.2	1.3	-120.22	-65.4	-112.2	130.0	127.5	2.47	52.552			
700.0	700.0	692.4	691.0	1.5	1.5	-115.93	-59.2	-121.7	135.6	132.7	2.93	46.209			
800.0	800.0	789.4	787.1	1.7	1.8	-111.21	-51.7	-133.1	143.4	140.0	3.40	42.222			
900.0	900.0	885.7	882.0	1.9	2.2	-106.32	-42.9	-146.5	153.7	149.9	3.86	39.851			
1,000.0	1,000.0	981.1	975.7	2.1	2.6	-101.51	-32.9	-161.8	166.9	162.5	4.32	38.631			
1,100.0	1,100.0	1,075.5	1,067.9	2.4	3.0	-96.95	-21.8	-178.8	182.9	178.1	4.78	38.237			
1,200.0	1,200.0	1,168.9	1,158.5	2.6	3.4	-92.78	-9.6	-197.4	202.0	196.7	5.26	38.427			
1,300.0	1,300.0	1,261.3	1,247.7	2.8	3.9	-53.17	3.7	-217.7	223.4	217.5	5.99	37.301			
1,400.0	1,400.0	1,352.9	1,335.5	3.0	4.4	-50.09	18.0	-239.6	246.7	240.2	6.48	38.037			
1,500.0	1,499.9	1,443.7	1,421.8	3.3	4.9	-47.56	33.4	-263.1	271.4	264.4	6.98	38.865			
1,600.0	1,599.7	1,537.7	1,510.6	3.5	5.5	-45.43	50.2	-288.8	296.9	289.5	7.50	39.607			
1,700.0	1,699.4	1,634.2	1,601.9	3.7	6.2	-43.79	67.6	-315.3	321.8	313.7	8.02	40.108			
1,800.0	1,798.9	1,731.2	1,693.4	4.0	6.8	-42.57	85.0	-342.0	345.5	336.9	8.56	40.369			
1,900.0	1,898.3	1,828.5	1,785.4	4.2	7.5	-41.69	102.5	-368.7	368.1	359.0	9.11	40.413			
2,000.0	1,997.4	1,926.2	1,877.6	4.5	8.1	-41.07	120.1	-395.5	389.4	379.7	9.67	40.261			
2,100.0	2,096.3	2,024.1	1,970.1	4.7	8.8	-40.67	137.7	-422.4	409.5	399.2	10.25	39.934			
2,200.0	2,194.9	2,122.3	2,062.9	5.1	9.5	-40.46	155.4	-449.4	428.2	417.4	10.85	39.451			
2,300.0	2,293.3	2,220.8	2,155.9	5.4	10.1	-40.42	173.1	-476.5	445.7	434.2	11.48	38.831			
2,400.0	2,391.2	2,319.5	2,249.1	5.7	10.8	-40.52	190.8	-503.6	461.9	449.7	12.13	38.087			
2,500.0	2,488.9	2,418.3	2,342.4	6.1	11.5	-40.75	208.6	-530.7	476.7	463.9	12.80	37.235			
2,600.0	2,586.1	2,517.3	2,436.0	6.5	12.1	-41.11	226.4	-558.0	490.3	476.8	13.51	36.286			
2,618.4	2,603.9	2,535.5	2,453.2	6.6	12.3	-41.19	229.7	-563.0	492.6	479.0	13.65	36.102			
2,700.0	2,683.1	2,616.4	2,529.6	6.9	12.8	-41.61	244.2	-585.2	503.0	488.8	14.26	35.285			
2,800.0	2,780.0	2,715.5	2,623.1	7.4	13.5	-42.10	262.0	-612.4	515.8	500.8	15.02	34.345			
2,900.0	2,877.0	2,814.6	2,716.7	7.8	14.2	-42.56	279.8	-639.6	528.6	512.8	15.79	33.468			
3,000.0	2,973.9	2,913.7	2,810.3	8.3	14.9	-43.01	297.7	-666.9	541.4	524.8	16.58	32.651			
3,100.0	3,070.9	3,012.8	2,903.9	8.7	15.5	-43.43	315.5	-694.1	554.2	536.9	17.38	31.889			
3,200.0	3,167.8	3,111.8	2,997.5	9.2	16.2	-43.83	333.3	-721.3	567.1	548.9	18.19	31.178			
3,300.0	3,264.8	3,210.9	3,091.1	9.7	16.9	-44.22	351.1	-748.5	580.0	561.0	19.01	30.514			
3,400.0	3,361.7	3,310.0	3,184.7	10.1	17.6	-44.59	368.9	-775.8	593.0	573.1	19.84	29.893			
3,500.0	3,458.7	3,409.1	3,278.3	10.6	18.3	-44.94	386.8	-803.0	605.9	585.2	20.67	29.311			
3,600.0	3,555.6	3,508.2	3,371.9	11.1	18.9	-45.28	404.6	-830.2	618.9	597.4	21.51	28.766			
3,700.0	3,652.6	3,607.3	3,465.5	11.6	19.6	-45.60	422.4	-857.4	631.9	609.5	22.36	28.255			
3,800.0	3,749.5	3,706.4	3,559.1	12.1	20.3	-45.91	440.2	-884.7	644.9	621.7	23.22	27.774			
3,900.0	3,846.5	3,805.5	3,652.7	12.6	21.0	-46.21	458.0	-911.9	657.9	633.9	24.08	27.322			
4,000.0	3,943.4	3,904.6	3,746.3	13.1	21.7	-46.50	475.9	-939.1	671.0	646.0	24.95	26.896			
4,100.0	4,040.4	4,003.6	3,839.9	13.5	22.4	-46.78	493.7	-966.4	684.1	658.2	25.82	26.495			
4,200.0	4,137.3	4,102.7	3,933.5	14.0	23.0	-47.04	511.5	-993.6	697.1	670.4	26.69	26.115			
4,300.0	4,234.3	4,201.8	4,027.1	14.5	23.7	-47.30	529.3	-1,020.8	710.2	682.7	27.57	25.756			
4,400.0	4,331.2	4,300.9	4,120.7	15.0	24.4	-47.54	547.1	-1,048.0	723.3	694.9	28.46	25.417			
4,500.0	4,428.2	4,400.0	4,214.3	15.5	25.1	-47.78	565.0	-1,075.3	736.5	707.1	29.35	25.095			
4,600.0	4,525.1	4,499.1	4,307.8	16.0	25.8	-48.01	582.8	-1,102.5	749.6	719.4	30.24	24.790			
4,700.0	4,622.1	4,598.2	4,401.4	16.5	26.4	-48.23	600.6	-1,129.7	762.7	731.6	31.13	24.500			
4,800.0	4,719.1	4,697.3	4,495.0	17.0	27.1	-48.45	618.4	-1,156.9	775.9	743.9	32.03	24.224			
4,900.0	4,816.0	4,796.4	4,588.6	17.6	27.8	-48.66	636.2	-1,184.2	789.1	756.1	32.93	23.961 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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design													
Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9E-403 - Wellbore #1 - Plan #2 (
Survey Program: 0-MWD												Offset Site Error:	0.0 ft
Reference												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-129.13	-18.2	-22.4	28.9					
100.0	100.0	100.0	100.0	0.1	0.1	-129.13	-18.2	-22.4	28.9	28.6	0.22	128.415		
200.0	200.0	200.0	200.0	0.3	0.3	-129.13	-18.2	-22.4	28.9	28.2	0.67	42.805		
300.0	300.0	300.0	300.0	0.6	0.6	-129.13	-18.2	-22.4	28.9	27.7	1.12	25.683		
400.0	400.0	400.0	400.0	0.8	0.8	-129.13	-18.2	-22.4	28.9	27.3	1.57	18.345		
500.0	500.0	500.0	500.0	1.0	1.0	-129.13	-18.2	-22.4	28.9	26.8	2.02	14.268		
600.0	600.0	600.0	600.0	1.2	1.2	-129.13	-18.2	-22.4	28.9	26.4	2.47	11.674		
700.0	700.0	700.0	700.0	1.5	1.5	-129.13	-18.2	-22.4	28.9	25.9	2.92	9.878		
800.0	800.0	800.0	800.0	1.7	1.7	-129.13	-18.2	-22.4	28.9	25.5	3.37	8.561 CC		
900.0	900.0	899.9	899.9	1.9	1.9	-127.41	-17.6	-23.0	29.0	25.1	3.82	7.586		
1,000.0	1,000.0	999.8	999.8	2.1	2.1	-122.34	-15.7	-24.8	29.4	25.1	4.26	6.897 ES		
1,100.0	1,100.0	1,099.6	1,099.5	2.4	2.3	-114.34	-12.6	-27.8	30.6	25.9	4.70	6.499		
1,200.0	1,200.0	1,199.2	1,198.9	2.6	2.6	-104.42	-8.2	-32.1	33.1	28.0	5.15	6.435		
1,300.0	1,300.0	1,298.6	1,298.0	2.8	2.8	-59.32	-2.7	-37.5	37.2	31.6	5.60	6.641		
1,400.0	1,400.0	1,397.9	1,396.8	3.0	3.1	-52.27	4.1	-44.1	42.2	36.2	6.05	6.979		
1,500.0	1,499.9	1,497.0	1,495.3	3.3	3.3	-47.01	12.2	-51.9	47.9	41.4	6.50	7.368		
1,600.0	1,599.7	1,596.1	1,593.5	3.5	3.6	-43.09	21.4	-60.9	54.0	47.1	6.95	7.769		
1,700.0	1,699.4	1,695.0	1,691.4	3.7	3.9	-40.19	31.8	-71.0	60.5	53.1	7.41	8.160		
1,800.0	1,798.9	1,793.8	1,788.8	4.0	4.2	-38.03	43.4	-82.3	67.2	59.3	7.88	8.529		
1,900.0	1,898.3	1,892.5	1,885.9	4.2	4.5	-36.42	56.2	-94.8	74.1	65.7	8.35	8.871		
2,000.0	1,997.4	1,991.0	1,982.5	4.5	4.9	-35.25	70.2	-108.4	81.1	72.3	8.83	9.184		
2,100.0	2,096.3	2,089.5	2,078.6	4.7	5.3	-34.41	85.4	-123.1	88.3	79.0	9.33	9.465		
2,200.0	2,194.9	2,187.8	2,174.3	5.1	5.7	-33.82	101.7	-139.0	95.6	85.8	9.84	9.715		
2,300.0	2,293.3	2,286.0	2,269.4	5.4	6.1	-33.44	119.2	-155.9	103.0	92.6	10.37	9.933		
2,400.0	2,391.2	2,384.0	2,363.9	5.7	6.6	-33.23	137.8	-174.0	110.5	99.6	10.92	10.121		
2,500.0	2,488.9	2,482.3	2,458.2	6.1	7.1	-33.15	157.6	-193.3	118.0	106.6	11.49	10.277		
2,600.0	2,586.1	2,582.1	2,553.8	6.5	7.6	-33.40	178.1	-213.2	124.7	112.6	12.09	10.311		
2,618.4	2,603.9	2,600.4	2,571.4	6.6	7.7	-33.49	181.9	-216.9	125.7	113.5	12.21	10.301		
2,700.0	2,683.1	2,681.9	2,649.5	6.9	8.2	-33.94	198.6	-233.2	130.4	117.6	12.74	10.229		
2,800.0	2,780.0	2,781.7	2,745.1	7.4	8.7	-34.45	219.1	-253.1	136.0	122.6	13.42	10.138		
2,900.0	2,877.0	2,881.6	2,840.8	7.8	9.3	-34.92	239.7	-273.0	141.7	127.6	14.10	10.047		
3,000.0	2,973.9	2,981.4	2,936.4	8.3	9.8	-35.35	260.2	-293.0	147.4	132.6	14.80	9.955		
3,100.0	3,070.9	3,081.2	3,032.0	8.7	10.4	-35.75	280.7	-312.9	153.1	137.5	15.52	9.865		
3,200.0	3,167.8	3,181.1	3,127.7	9.2	11.0	-36.12	301.2	-332.9	158.8	142.5	16.24	9.777		
3,300.0	3,264.8	3,280.9	3,223.3	9.7	11.5	-36.46	321.7	-352.8	164.5	147.5	16.97	9.691		
3,400.0	3,361.7	3,380.7	3,319.0	10.1	12.1	-36.78	342.2	-372.8	170.2	152.4	17.71	9.608		
3,500.0	3,458.7	3,480.6	3,414.6	10.6	12.7	-37.08	362.8	-392.7	175.9	157.4	18.46	9.528		
3,600.0	3,555.6	3,580.4	3,510.3	11.1	13.3	-37.36	383.3	-412.7	181.6	162.4	19.21	9.451		
3,700.0	3,652.6	3,680.2	3,605.9	11.6	13.8	-37.63	403.8	-432.6	187.3	167.3	19.98	9.377		
3,800.0	3,749.5	3,780.1	3,701.6	12.1	14.4	-37.88	424.3	-452.5	193.0	172.3	20.74	9.306		
3,900.0	3,846.5	3,879.9	3,797.2	12.6	15.0	-38.11	444.8	-472.5	198.7	177.2	21.52	9.238		
4,000.0	3,943.4	3,979.7	3,892.8	13.1	15.6	-38.33	465.4	-492.4	204.5	182.2	22.29	9.172		
4,100.0	4,040.4	4,079.6	3,988.5	13.5	16.2	-38.54	485.9	-512.4	210.2	187.1	23.07	9.110		
4,200.0	4,137.3	4,179.4	4,084.1	14.0	16.8	-38.74	506.4	-532.3	215.9	192.1	23.86	9.050		
4,300.0	4,234.3	4,279.2	4,179.8	14.5	17.3	-38.93	526.9	-552.3	221.7	197.0	24.65	8.993		
4,400.0	4,331.2	4,379.1	4,275.4	15.0	17.9	-39.11	547.4	-572.2	227.4	202.0	25.44	8.939		
4,500.0	4,428.2	4,478.9	4,371.1	15.5	18.5	-39.28	567.9	-592.2	233.2	206.9	26.24	8.886		
4,600.0	4,525.1	4,578.7	4,466.7	16.0	19.1	-39.44	588.5	-612.1	238.9	211.9	27.04	8.836		
4,700.0	4,622.1	4,678.6	4,562.3	16.5	19.7	-39.59	609.0	-632.0	244.7	216.8	27.84	8.788		
4,800.0	4,719.1	4,778.4	4,658.0	17.0	20.3	-39.74	629.5	-652.0	250.4	221.8	28.64	8.742		
4,900.0	4,816.0	4,878.2	4,753.6	17.6	20.9	-39.88	650.0	-671.9	256.1	226.7	29.45	8.698		

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design		Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W - Fitzsimmons 9J-243 - Wellbore #1 - Plan #2 (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	4,913.0	4,978.1	4,849.3	18.1	21.5	-40.01	670.5	-691.9	261.9	231.6	30.26	8.656			
5,100.0	5,009.9	5,077.9	4,944.9	18.6	22.1	-40.14	691.1	-711.8	267.6	236.6	31.07	8.615			
5,200.0	5,106.9	5,177.7	5,040.6	19.1	22.6	-40.26	711.6	-731.8	273.4	241.5	31.88	8.576			
5,300.0	5,203.8	5,277.6	5,136.2	19.6	23.2	-40.38	732.1	-751.7	279.2	246.5	32.69	8.539			
5,400.0	5,300.8	5,377.4	5,231.9	20.1	23.8	-40.50	752.6	-771.6	284.9	251.4	33.51	8.503			
5,500.0	5,397.7	5,477.2	5,327.5	20.6	24.4	-40.60	773.1	-791.6	290.7	256.3	34.32	8.468			
5,600.0	5,494.7	5,577.0	5,423.1	21.1	25.0	-40.71	793.6	-811.5	296.4	261.3	35.14	8.435			
5,700.0	5,591.6	5,680.9	5,522.8	21.6	25.6	-40.85	814.7	-832.0	301.9	265.9	35.97	8.392			
5,800.0	5,688.6	5,790.6	5,628.9	22.1	26.1	-41.35	834.6	-851.4	304.7	267.9	36.87	8.264			
5,900.0	5,785.5	5,900.2	5,735.9	22.6	26.5	-42.28	851.6	-867.8	304.4	266.5	37.88	8.035			
6,000.0	5,882.5	6,009.4	5,843.3	23.1	26.8	-43.66	865.5	-881.4	301.0	262.0	39.02	7.713			
6,016.1	5,898.0	6,026.9	5,860.6	23.2	26.9	-43.92	867.5	-883.3	300.2	261.0	39.22	7.654			
6,100.0	5,979.7	6,118.1	5,950.9	23.6	27.1	-45.29	876.5	-892.1	295.6	255.4	40.19	7.356			
6,200.0	6,077.7	6,226.3	6,058.6	23.9	27.3	-46.94	884.5	-899.8	289.8	248.6	41.25	7.027			
6,300.0	6,176.3	6,334.2	6,166.2	24.2	27.5	-48.60	889.5	-904.8	283.7	241.5	42.24	6.717			
6,400.0	6,275.5	6,441.6	6,273.5	24.5	27.7	-50.28	891.7	-906.8	277.3	234.1	43.18	6.423			
6,500.0	6,375.0	6,543.0	6,375.0	24.7	27.8	-51.75	891.8	-906.9	271.4	227.4	43.97	6.171			
6,600.0	6,474.8	6,642.8	6,474.8	24.9	27.9	-52.72	891.8	-906.9	267.6	223.0	44.56	6.005			
6,700.0	6,574.8	6,743.0	6,574.9	25.0	28.0	-53.66	889.4	-906.9	266.0	220.9	45.06	5.903			
6,724.9	6,599.7	6,767.9	6,599.7	25.1	28.0	-54.18	887.1	-906.9	265.9	220.7	45.26	5.876			
6,725.2	6,600.0	6,768.2	6,600.0	25.1	28.0	-90.04	887.0	-906.9	265.9	220.7	45.26	5.876			
6,800.0	6,674.8	6,841.4	6,672.3	25.1	27.9	-92.55	875.4	-906.9	266.2	220.1	46.12	5.772			
6,844.4	6,719.1	6,883.6	6,713.3	25.2	27.9	-94.66	865.5	-906.9	266.9	220.1	46.77	5.705			
6,850.0	6,724.8	6,888.9	6,718.4	25.2	27.9	85.04	864.1	-906.9	267.0	220.1	46.87	5.697			
6,900.0	6,774.7	6,935.4	6,762.8	25.2	27.8	82.39	850.4	-906.9	268.4	220.9	47.60	5.640			
6,950.0	6,824.4	6,981.2	6,805.6	25.2	27.7	79.81	834.2	-906.9	270.5	222.3	48.19	5.613			
7,000.0	6,873.7	7,026.3	6,846.9	25.2	27.6	77.31	815.8	-906.9	273.0	224.4	48.62	5.615			
7,050.0	6,922.3	7,070.9	6,886.4	25.2	27.5	74.92	795.3	-906.9	275.9	227.1	48.88	5.646			
7,100.0	6,970.0	7,115.0	6,924.3	25.1	27.3	72.65	772.8	-906.9	279.3	230.3	48.96	5.704			
7,150.0	7,016.7	7,158.5	6,960.3	25.0	27.2	70.49	748.4	-906.9	282.9	234.1	48.87	5.789			
7,200.0	7,062.1	7,200.0	6,993.4	24.8	27.0	68.52	723.3	-906.9	286.8	238.2	48.61	5.901			
7,250.0	7,106.0	7,244.2	7,027.0	24.7	26.8	66.55	694.6	-906.9	290.8	242.7	48.17	6.037			
7,300.0	7,148.2	7,286.4	7,057.5	24.5	26.6	64.77	665.5	-906.9	295.0	247.4	47.59	6.198			
7,350.0	7,188.6	7,328.3	7,086.1	24.3	26.5	63.13	634.9	-906.9	299.2	252.3	46.87	6.382			
7,400.0	7,227.1	7,369.8	7,112.8	24.1	26.3	61.61	603.1	-906.9	303.3	257.3	46.04	6.588			
7,450.0	7,263.3	7,411.0	7,137.6	23.9	26.1	60.22	570.2	-906.9	307.4	262.3	45.11	6.814			
7,500.0	7,297.2	7,450.0	7,159.4	23.6	25.9	59.00	537.8	-906.9	311.3	267.2	44.12	7.055			
7,550.0	7,328.6	7,492.6	7,181.2	23.4	25.7	57.81	501.3	-906.9	315.1	272.0	43.08	7.314			
7,600.0	7,357.4	7,533.1	7,200.1	23.2	25.5	56.79	465.5	-906.9	318.6	276.6	42.03	7.581			
7,650.0	7,383.5	7,573.3	7,216.9	22.9	25.3	55.88	428.9	-906.9	321.8	280.9	41.00	7.851			
7,700.0	7,406.8	7,613.4	7,231.7	22.7	25.1	55.08	391.7	-906.9	324.8	284.8	40.01	8.118			
7,750.0	7,427.1	7,650.0	7,243.5	22.5	25.0	54.43	357.0	-906.9	327.5	288.4	39.13	8.370			
7,800.0	7,444.3	7,693.1	7,255.3	22.3	24.8	53.81	315.6	-906.9	329.8	291.4	38.32	8.605			
7,850.0	7,458.5	7,732.8	7,264.0	22.0	24.6	53.34	276.9	-906.9	331.7	294.0	37.67	8.806			
7,900.0	7,469.5	7,772.4	7,270.7	21.8	24.4	52.97	237.9	-906.9	333.2	296.1	37.17	8.964			
7,950.0	7,477.3	7,811.9	7,275.4	21.6	24.3	52.70	198.6	-906.9	334.4	297.5	36.86	9.072			
8,000.0	7,481.8	7,850.0	7,278.0	21.5	24.1	52.53	160.6	-906.9	335.1	298.4	36.73	9.124			
8,043.0	7,483.1	7,886.4	7,278.7	21.3	24.0	52.46	124.2	-906.9	335.4	298.6	36.78	9.120			
8,100.0	7,483.2	7,942.0	7,278.4	21.1	23.8	52.41	68.6	-906.9	335.6	298.4	37.16	9.031			
8,200.0	7,483.3	8,042.0	7,278.0	20.9	23.5	52.32	-31.4	-906.9	336.0	298.0	38.02	8.837			

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 Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,300.0	7,483.5	8,142.0	7,277.5	20.8	23.2	52.23	-131.4	-906.9	336.4	297.3	39.11	8.600		
8,400.0	7,483.7	8,242.0	7,277.0	21.4	23.1	52.15	-231.4	-906.9	336.8	296.4	40.42	8.331		
8,500.0	7,483.9	8,342.0	7,276.5	22.3	23.4	52.06	-331.4	-906.9	337.2	295.3	41.93	8.042		
8,600.0	7,484.0	8,442.0	7,276.1	23.4	24.2	51.97	-431.4	-906.9	337.6	294.0	43.61	7.742		
8,700.0	7,484.2	8,542.0	7,275.6	24.6	25.3	51.89	-531.4	-906.9	338.0	292.5	45.44	7.439		
8,800.0	7,484.4	8,642.0	7,275.1	25.9	26.6	51.80	-631.4	-906.9	338.4	291.0	47.40	7.139		
8,900.0	7,484.6	8,742.0	7,274.7	27.2	27.8	51.71	-731.4	-906.9	338.8	289.3	49.48	6.847		
9,000.0	7,484.7	8,842.0	7,274.2	28.6	29.2	51.63	-831.4	-906.9	339.2	287.5	51.67	6.565		
9,100.0	7,484.9	8,942.0	7,273.7	30.0	30.6	51.54	-931.4	-906.9	339.6	285.6	53.94	6.296		
9,200.0	7,485.1	9,042.0	7,273.3	31.5	32.1	51.46	-1,031.4	-906.9	340.0	283.7	56.28	6.040		
9,300.0	7,485.3	9,142.0	7,272.8	33.0	33.6	51.37	-1,131.4	-906.9	340.4	281.7	58.70	5.799		
9,400.0	7,485.4	9,242.0	7,272.3	34.6	35.1	51.29	-1,231.4	-906.9	340.8	279.6	61.17	5.571		
9,500.0	7,485.6	9,342.0	7,271.8	36.1	36.7	51.20	-1,331.4	-906.9	341.2	277.5	63.70	5.357		
9,600.0	7,485.8	9,442.0	7,271.4	37.8	38.3	51.12	-1,431.4	-906.9	341.6	275.3	66.26	5.155		
9,700.0	7,486.0	9,542.0	7,270.9	39.4	39.9	51.03	-1,531.4	-906.9	342.0	273.1	68.87	4.966		
9,800.0	7,486.1	9,642.0	7,270.4	41.1	41.5	50.95	-1,631.4	-906.9	342.4	270.9	71.50	4.789		
9,900.0	7,486.3	9,742.0	7,270.0	42.7	43.2	50.87	-1,731.3	-906.9	342.8	268.7	74.17	4.622		
10,000.0	7,486.5	9,842.0	7,269.5	44.4	44.9	50.78	-1,831.3	-906.9	343.2	266.4	76.86	4.466		
10,100.0	7,486.7	9,942.0	7,269.0	46.1	46.6	50.70	-1,931.3	-906.9	343.6	264.1	79.58	4.318		
10,200.0	7,486.8	10,042.0	7,268.5	47.9	48.3	50.62	-2,031.3	-906.9	344.0	261.7	82.31	4.180		
10,300.0	7,487.0	10,142.0	7,268.1	49.6	50.0	50.53	-2,131.3	-906.9	344.5	259.4	85.06	4.050		
10,400.0	7,487.2	10,242.0	7,267.6	51.4	51.7	50.45	-2,231.3	-906.9	344.9	257.0	87.82	3.927		
10,500.0	7,487.4	10,342.0	7,267.1	53.1	53.5	50.37	-2,331.3	-906.9	345.3	254.7	90.60	3.811		
10,600.0	7,487.5	10,442.0	7,266.7	54.9	55.2	50.29	-2,431.3	-906.9	345.7	252.3	93.39	3.702		
10,700.0	7,487.7	10,542.0	7,266.2	56.7	57.0	50.20	-2,531.3	-906.9	346.1	249.9	96.19	3.598		
10,800.0	7,487.9	10,642.0	7,265.7	58.5	58.8	50.12	-2,631.3	-906.9	346.5	247.5	98.99	3.500		
10,900.0	7,488.1	10,742.0	7,265.2	60.3	60.6	50.04	-2,731.3	-906.9	346.9	245.1	101.81	3.408		
11,000.0	7,488.2	10,842.0	7,264.8	62.1	62.4	49.96	-2,831.3	-906.9	347.3	242.7	104.62	3.320		
11,100.0	7,488.4	10,942.0	7,264.3	63.9	64.2	49.88	-2,931.3	-906.9	347.8	240.3	107.45	3.237		
11,200.0	7,488.6	11,042.0	7,263.8	65.7	66.0	49.80	-3,031.3	-906.9	348.2	237.9	110.28	3.157		
11,300.0	7,488.8	11,142.0	7,263.4	67.5	67.8	49.71	-3,131.3	-906.9	348.6	235.5	113.11	3.082		
11,400.0	7,488.9	11,242.0	7,262.9	69.4	69.6	49.63	-3,231.3	-906.9	349.0	233.1	115.94	3.010		
11,500.0	7,489.1	11,342.0	7,262.4	71.2	71.4	49.55	-3,331.3	-906.9	349.4	230.7	118.78	2.942		
11,600.0	7,489.3	11,442.0	7,261.9	73.0	73.2	49.47	-3,431.3	-906.9	349.9	228.2	121.62	2.877		
11,700.0	7,489.5	11,542.0	7,261.5	74.9	75.1	49.39	-3,531.3	-906.9	350.3	225.8	124.46	2.814		
11,800.0	7,489.6	11,642.0	7,261.0	76.7	76.9	49.31	-3,631.3	-906.9	350.7	223.4	127.29	2.755		
11,900.0	7,489.8	11,741.9	7,260.5	78.5	78.7	49.23	-3,731.3	-906.9	351.1	221.0	130.13	2.698		
12,000.0	7,490.0	11,841.9	7,260.1	80.4	80.6	49.15	-3,831.3	-906.9	351.5	218.6	132.97	2.644		
12,010.9	7,490.0	11,852.8	7,260.0	80.6	80.8	49.14	-3,842.2	-906.9	351.6	218.3	133.28	2.638 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5005.0ft (RKB - 13')

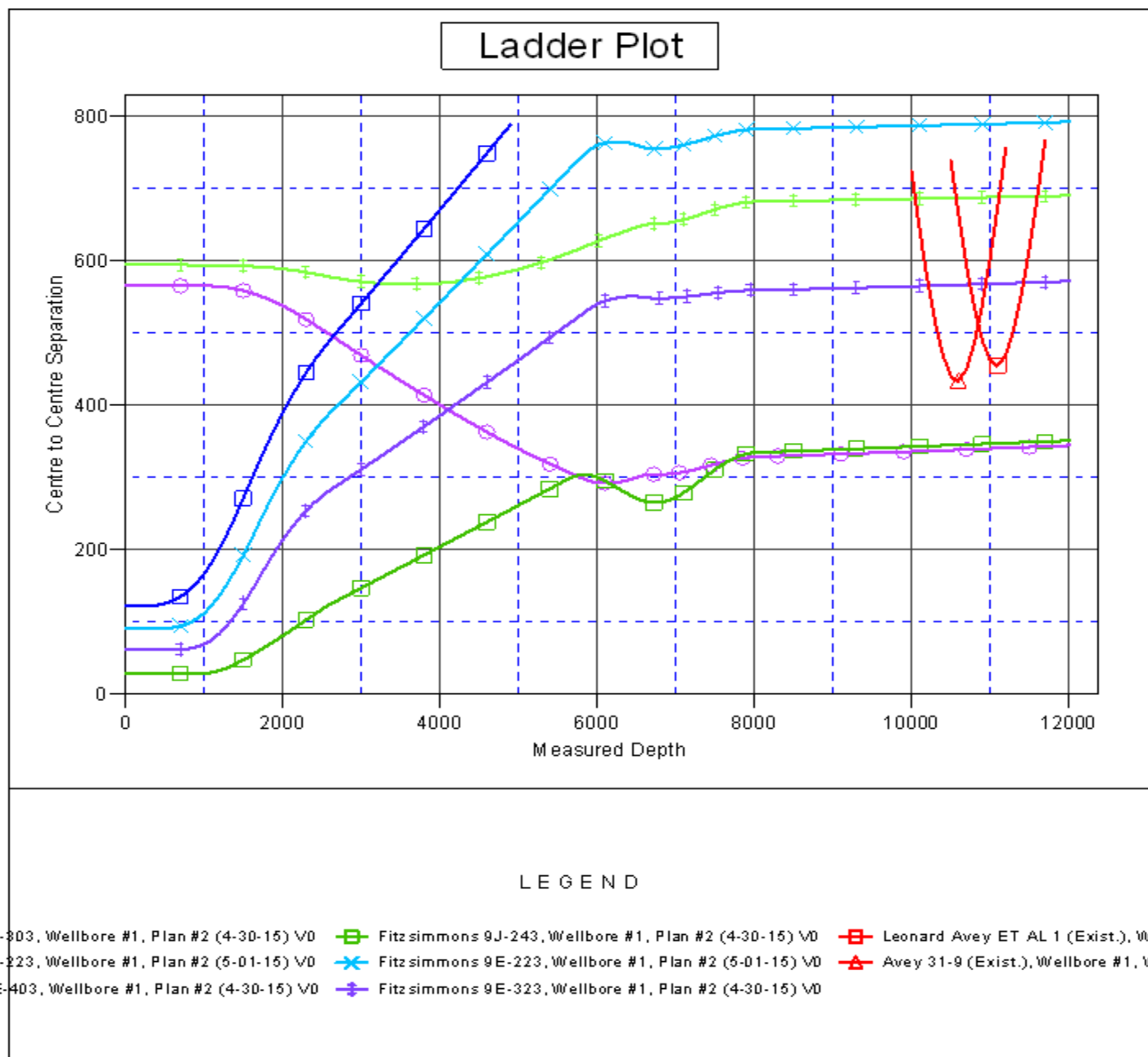
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Fitzsimmons 9J-443

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.46°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Fitzsimmons 9J-443
Project:	SEC.9-T1N-R66W	TVD Reference:	WELL @ 5005.0ft (RKB - 13')
Reference Site:	Fitzsimmons 1N66W9JM (West) Pad Sec.9-T1N-R66W	MD Reference:	WELL @ 5005.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Fitzsimmons 9J-443	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (5-01-15)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5005.0ft (RKB - 13')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Fitzsimmons 9J-443
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.46°

