PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Stroh 13K-223**

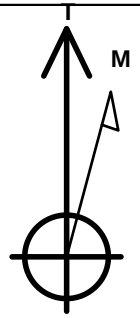
Surface Location: Stroh 13GK-HZ Pad Sec. 13-T4N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4805.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1356828.43	3183286.69	40.311030	-104.842760	

Original Well Elev WELL @ 4820.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2353'FSL & 1646'FWL, Sec.13	1.0	0.0	0.0	Point
BHL 500'FSL & 1741'FWL, Sec.24	7025.0	-7114.9	112.1	Point



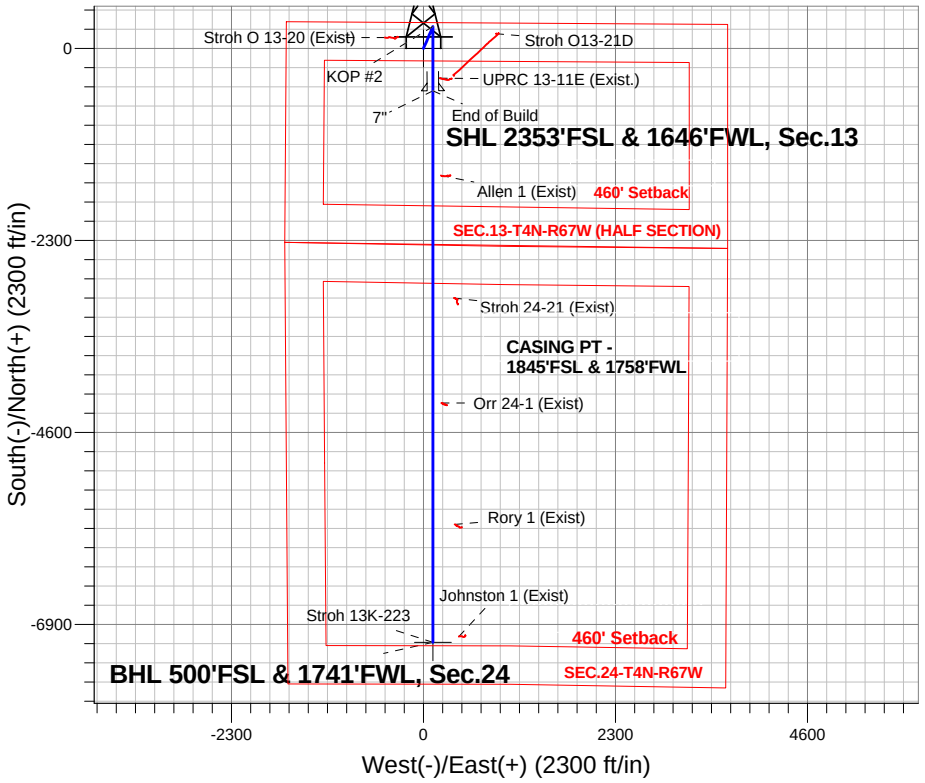
Azimuths to True North
Magnetic North: 8.42°

Magnetic Field
Strength: 52703.3snT
Dip Angle: 66.84°
Date: 12/31/2014
Model: IGRF2010

Stroh 13GK-HZ Pad Sec. 13-T4N-R67W
Stroh 13K-223
Plan #3 (1-28-15)

ANNOTATIONS

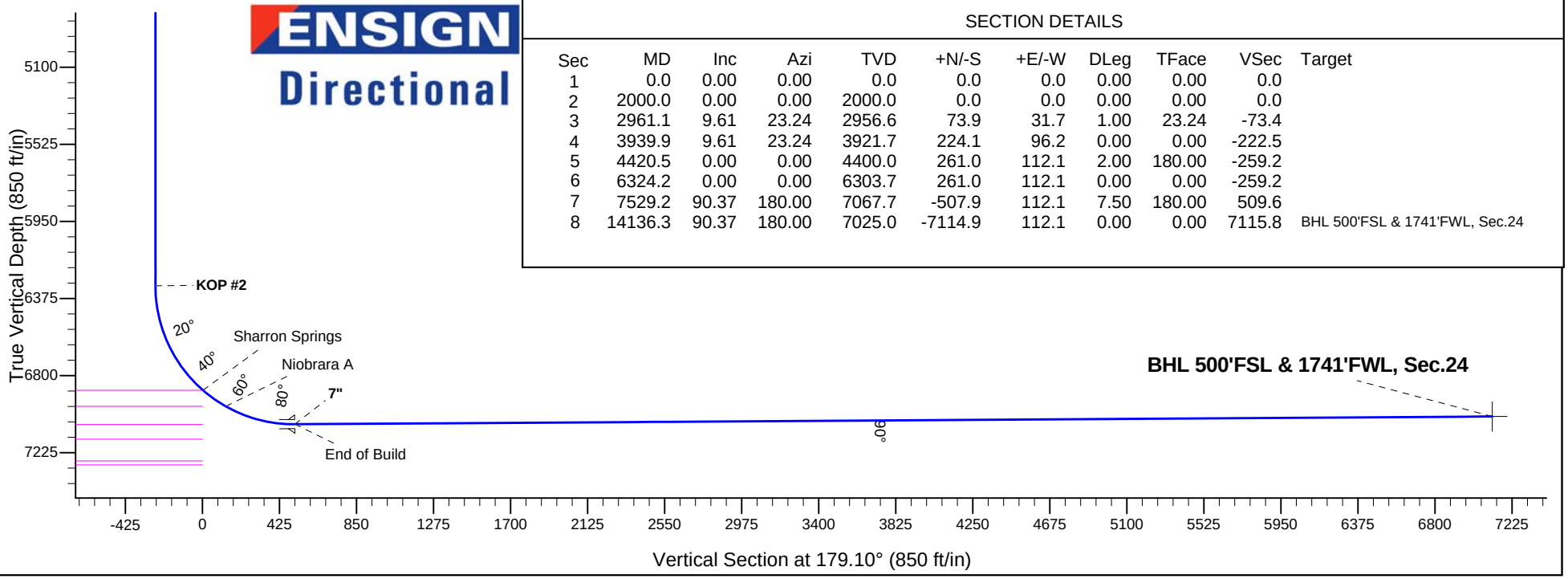
TVD	MD	Annotation
2000.0	2000.0	KOP #1
6303.7	6324.2	KOP #2
7067.7	7529.2	End of Build



ENSIGN Directional

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	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2961.1	9.61	23.24	2956.6	73.9	31.7	1.00	23.24	-73.4	
4	3939.9	9.61	23.24	3921.7	224.1	96.2	0.00	0.00	-222.5	
5	4420.5	0.00	0.00	4400.0	261.0	112.1	2.00	180.00	-259.2	
6	6324.2	0.00	0.00	6303.7	261.0	112.1	0.00	0.00	-259.2	
7	7529.2	90.37	180.00	7067.7	-507.9	112.1	7.50	180.00	509.6	
8	14136.3	90.37	180.00	7025.0	-7114.9	112.1	0.00	0.00	7115.8	BHL 500'FSL & 1741'FWL, Sec.24



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W
Stroh 13GK-HZ Pad Sec. 13-T4N-R67W
Stroh 13K-223

Wellbore #1

Plan: Plan #3 (1-28-15)

Standard Planning Report

30 January, 2015

Database:	landmark	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Project:	SEC.13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**North Reference:**	True
Well:	Stroh 13K-223	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (1-28-15)		

Project SEC.13-T4N-R67W, Weld County, Colorado

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 Stroh 13GK-HZ Pad Sec. 13-T4N-R67W

Site Position:		**Northing:**	1,356,827.56 ft	**Latitude:**	40.311030
From:	Lat/Long	**Easting:**	3,183,166.78 ft	**Longitude:**	-104.843190
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	0.42 °

Well Stroh 13K-223

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,356,828.43 ft	**Latitude:**	40.311030
	+E/-W	119.9 ft	**Easting:**	3,183,286.69 ft	**Longitude:**	-104.842760
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,805.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/31/2014	8.42	66.84	52,703

Design Plan #3 (1-28-15)

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	179.10

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,961.1	9.61	23.24	2,956.6	73.9	31.7	1.00	1.00	0.00	23.24	
3,939.9	9.61	23.24	3,921.7	224.1	96.2	0.00	0.00	0.00	0.00	
4,420.5	0.00	0.00	4,400.0	261.0	112.1	2.00	-2.00	0.00	180.00	
6,324.2	0.00	0.00	6,303.7	261.0	112.1	0.00	0.00	0.00	0.00	
7,529.2	90.37	180.00	7,067.7	-507.9	112.1	7.50	7.50	0.00	180.00	
14,136.3	90.37	180.00	7,025.0	-7,114.9	112.1	0.00	0.00	0.00	0.00	BHL 500'FSL & 174

Database:	landmark	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Project:	SEC.13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**North Reference:**	True
Well:	Stroh 13K-223	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (1-28-15)		

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
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
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
2,100.0	1.00	23.24	2,100.0	0.8	0.3	-0.8	1.00	1.00	0.00
2,200.0	2.00	23.24	2,200.0	3.2	1.4	-3.2	1.00	1.00	0.00
2,300.0	3.00	23.24	2,299.9	7.2	3.1	-7.2	1.00	1.00	0.00
2,400.0	4.00	23.24	2,399.7	12.8	5.5	-12.7	1.00	1.00	0.00
2,500.0	5.00	23.24	2,499.4	20.0	8.6	-19.9	1.00	1.00	0.00
2,600.0	6.00	23.24	2,598.9	28.8	12.4	-28.6	1.00	1.00	0.00
2,700.0	7.00	23.24	2,698.3	39.2	16.9	-39.0	1.00	1.00	0.00
2,800.0	8.00	23.24	2,797.4	51.2	22.0	-50.9	1.00	1.00	0.00
2,900.0	9.00	23.24	2,896.3	64.8	27.8	-64.4	1.00	1.00	0.00
2,961.1	9.61	23.24	2,956.6	73.9	31.7	-73.4	1.00	1.00	0.00
3,000.0	9.61	23.24	2,995.0	79.9	34.3	-79.3	0.00	0.00	0.00
3,100.0	9.61	23.24	3,093.5	95.2	40.9	-94.5	0.00	0.00	0.00
3,200.0	9.61	23.24	3,192.1	110.5	47.5	-109.8	0.00	0.00	0.00
3,300.0	9.61	23.24	3,290.7	125.9	54.1	-125.0	0.00	0.00	0.00
3,400.0	9.61	23.24	3,389.3	141.2	60.7	-140.3	0.00	0.00	0.00
3,500.0	9.61	23.24	3,487.9	156.6	67.2	-155.5	0.00	0.00	0.00
3,600.0	9.61	23.24	3,586.5	171.9	73.8	-170.7	0.00	0.00	0.00
3,700.0	9.61	23.24	3,685.1	187.2	80.4	-186.0	0.00	0.00	0.00
3,800.0	9.61	23.24	3,783.7	202.6	87.0	-201.2	0.00	0.00	0.00
3,900.0	9.61	23.24	3,882.3	217.9	93.6	-216.4	0.00	0.00	0.00
3,939.9	9.61	23.24	3,921.7	224.1	96.2	-222.5	0.00	0.00	0.00
4,000.0	8.41	23.24	3,981.0	232.7	99.9	-231.1	2.00	-2.00	0.00
4,100.0	6.41	23.24	4,080.2	244.5	105.0	-242.9	2.00	-2.00	0.00
4,200.0	4.41	23.24	4,179.7	253.2	108.8	-251.5	2.00	-2.00	0.00
4,300.0	2.41	23.24	4,279.5	258.7	111.1	-256.9	2.00	-2.00	0.00
4,400.0	0.41	23.24	4,379.5	260.9	112.1	-259.1	2.00	-2.00	0.00
4,420.5	0.00	0.00	4,400.0	261.0	112.1	-259.2	2.00	-2.00	0.00
4,500.0	0.00	0.00	4,479.5	261.0	112.1	-259.2	0.00	0.00	0.00
4,600.0	0.00	0.00	4,579.5	261.0	112.1	-259.2	0.00	0.00	0.00
4,700.0	0.00	0.00	4,679.5	261.0	112.1	-259.2	0.00	0.00	0.00
4,800.0	0.00	0.00	4,779.5	261.0	112.1	-259.2	0.00	0.00	0.00

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Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**North Reference:**	True
Well:	Stroh 13K-223	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (1-28-15)		

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)
4,900.0	0.00	0.00	4,879.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,000.0	0.00	0.00	4,979.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,100.0	0.00	0.00	5,079.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,200.0	0.00	0.00	5,179.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,300.0	0.00	0.00	5,279.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,400.0	0.00	0.00	5,379.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,500.0	0.00	0.00	5,479.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,600.0	0.00	0.00	5,579.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,679.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,779.5	261.0	112.1	-259.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,879.5	261.0	112.1	-259.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,979.5	261.0	112.1	-259.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,079.5	261.0	112.1	-259.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,179.5	261.0	112.1	-259.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,279.5	261.0	112.1	-259.2	0.00	0.00	0.00
6,324.2	0.00	0.00	6,303.7	261.0	112.1	-259.2	0.00	0.00	0.00
KOP #2									
6,400.0	5.68	180.00	6,379.4	257.2	112.1	-255.4	7.50	7.50	0.00
6,500.0	13.18	180.00	6,478.0	240.9	112.1	-239.1	7.50	7.50	0.00
6,600.0	20.68	180.00	6,573.6	211.8	112.1	-210.0	7.50	7.50	0.00
6,700.0	28.18	180.00	6,664.5	170.4	112.1	-168.6	7.50	7.50	0.00
6,800.0	35.68	180.00	6,749.3	117.6	112.1	-115.8	7.50	7.50	0.00
6,900.0	43.18	180.00	6,826.5	54.1	112.1	-52.3	7.50	7.50	0.00
6,977.1	48.97	180.00	6,880.0	-1.4	112.1	3.2	7.50	7.50	0.00
Sharron Springs									
7,000.0	50.68	180.00	6,894.8	-18.9	112.1	20.7	7.50	7.50	0.00
7,100.0	58.18	180.00	6,952.9	-100.2	112.1	101.9	7.50	7.50	0.00
7,131.6	60.55	180.00	6,969.0	-127.4	112.1	129.1	7.50	7.50	0.00
Niobrara A									
7,200.0	65.68	180.00	6,999.9	-188.4	112.1	190.1	7.50	7.50	0.00
7,300.0	73.18	180.00	7,035.0	-281.9	112.1	283.7	7.50	7.50	0.00
7,400.0	80.68	180.00	7,057.6	-379.3	112.1	381.0	7.50	7.50	0.00
7,500.0	88.18	180.00	7,067.3	-478.7	112.1	480.4	7.50	7.50	0.00
7,529.2	90.37	180.00	7,067.7	-507.9	112.1	509.6	7.49	7.49	0.00
End of Build - 7"									
7,600.0	90.37	180.00	7,067.2	-578.7	112.1	580.4	0.00	0.00	0.00
7,700.0	90.37	180.00	7,066.6	-678.7	112.1	680.4	0.00	0.00	0.00
7,800.0	90.37	180.00	7,065.9	-778.7	112.1	780.4	0.00	0.00	0.00
7,900.0	90.37	180.00	7,065.3	-878.7	112.1	880.4	0.00	0.00	0.00
8,000.0	90.37	180.00	7,064.6	-978.7	112.1	980.3	0.00	0.00	0.00
8,100.0	90.37	180.00	7,064.0	-1,078.7	112.1	1,080.3	0.00	0.00	0.00
8,200.0	90.37	180.00	7,063.3	-1,178.7	112.1	1,180.3	0.00	0.00	0.00
8,300.0	90.37	180.00	7,062.7	-1,278.7	112.1	1,280.3	0.00	0.00	0.00
8,400.0	90.37	180.00	7,062.0	-1,378.7	112.1	1,380.3	0.00	0.00	0.00
8,500.0	90.37	180.00	7,061.4	-1,478.7	112.1	1,480.3	0.00	0.00	0.00
8,600.0	90.37	180.00	7,060.8	-1,578.7	112.1	1,580.3	0.00	0.00	0.00
8,700.0	90.37	180.00	7,060.1	-1,678.7	112.1	1,680.2	0.00	0.00	0.00
8,800.0	90.37	180.00	7,059.5	-1,778.7	112.1	1,780.2	0.00	0.00	0.00
8,900.0	90.37	180.00	7,058.8	-1,878.7	112.1	1,880.2	0.00	0.00	0.00
9,000.0	90.37	180.00	7,058.2	-1,978.7	112.1	1,980.2	0.00	0.00	0.00
9,100.0	90.37	180.00	7,057.5	-2,078.7	112.1	2,080.2	0.00	0.00	0.00
9,200.0	90.37	180.00	7,056.9	-2,178.7	112.1	2,180.2	0.00	0.00	0.00

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Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**North Reference:**	True
Well:	Stroh 13K-223	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (1-28-15)		

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)
9,300.0	90.37	180.00	7,056.2	-2,278.7	112.1	2,280.2	0.00	0.00	0.00
9,400.0	90.37	180.00	7,055.6	-2,378.7	112.1	2,380.1	0.00	0.00	0.00
9,500.0	90.37	180.00	7,054.9	-2,478.7	112.1	2,480.1	0.00	0.00	0.00
9,600.0	90.37	180.00	7,054.3	-2,578.7	112.1	2,580.1	0.00	0.00	0.00
9,700.0	90.37	180.00	7,053.6	-2,678.7	112.1	2,680.1	0.00	0.00	0.00
9,800.0	90.37	180.00	7,053.0	-2,778.7	112.1	2,780.1	0.00	0.00	0.00
9,900.0	90.37	180.00	7,052.4	-2,878.7	112.1	2,880.1	0.00	0.00	0.00
10,000.0	90.37	180.00	7,051.7	-2,978.7	112.1	2,980.1	0.00	0.00	0.00
10,100.0	90.37	180.00	7,051.1	-3,078.7	112.1	3,080.0	0.00	0.00	0.00
10,200.0	90.37	180.00	7,050.4	-3,178.7	112.1	3,180.0	0.00	0.00	0.00
10,300.0	90.37	180.00	7,049.8	-3,278.7	112.1	3,280.0	0.00	0.00	0.00
10,400.0	90.37	180.00	7,049.1	-3,378.7	112.1	3,380.0	0.00	0.00	0.00
10,500.0	90.37	180.00	7,048.5	-3,478.7	112.1	3,480.0	0.00	0.00	0.00
10,600.0	90.37	180.00	7,047.8	-3,578.7	112.1	3,580.0	0.00	0.00	0.00
10,700.0	90.37	180.00	7,047.2	-3,678.6	112.1	3,680.0	0.00	0.00	0.00
10,800.0	90.37	180.00	7,046.5	-3,778.6	112.1	3,779.9	0.00	0.00	0.00
10,900.0	90.37	180.00	7,045.9	-3,878.6	112.1	3,879.9	0.00	0.00	0.00
11,000.0	90.37	180.00	7,045.3	-3,978.6	112.1	3,979.9	0.00	0.00	0.00
11,100.0	90.37	180.00	7,044.6	-4,078.6	112.1	4,079.9	0.00	0.00	0.00
11,200.0	90.37	180.00	7,044.0	-4,178.6	112.1	4,179.9	0.00	0.00	0.00
11,300.0	90.37	180.00	7,043.3	-4,278.6	112.1	4,279.9	0.00	0.00	0.00
11,400.0	90.37	180.00	7,042.7	-4,378.6	112.1	4,379.9	0.00	0.00	0.00
11,500.0	90.37	180.00	7,042.0	-4,478.6	112.1	4,479.8	0.00	0.00	0.00
11,600.0	90.37	180.00	7,041.4	-4,578.6	112.1	4,579.8	0.00	0.00	0.00
11,700.0	90.37	180.00	7,040.7	-4,678.6	112.1	4,679.8	0.00	0.00	0.00
11,800.0	90.37	180.00	7,040.1	-4,778.6	112.1	4,779.8	0.00	0.00	0.00
11,900.0	90.37	180.00	7,039.4	-4,878.6	112.1	4,879.8	0.00	0.00	0.00
12,000.0	90.37	180.00	7,038.8	-4,978.6	112.1	4,979.8	0.00	0.00	0.00
12,100.0	90.37	180.00	7,038.1	-5,078.6	112.1	5,079.8	0.00	0.00	0.00
12,200.0	90.37	180.00	7,037.5	-5,178.6	112.1	5,179.7	0.00	0.00	0.00
12,300.0	90.37	180.00	7,036.9	-5,278.6	112.1	5,279.7	0.00	0.00	0.00
12,400.0	90.37	180.00	7,036.2	-5,378.6	112.1	5,379.7	0.00	0.00	0.00
12,500.0	90.37	180.00	7,035.6	-5,478.6	112.1	5,479.7	0.00	0.00	0.00
12,600.0	90.37	180.00	7,034.9	-5,578.6	112.1	5,579.7	0.00	0.00	0.00
12,700.0	90.37	180.00	7,034.3	-5,678.6	112.1	5,679.7	0.00	0.00	0.00
12,800.0	90.37	180.00	7,033.6	-5,778.6	112.1	5,779.7	0.00	0.00	0.00
12,900.0	90.37	180.00	7,033.0	-5,878.6	112.1	5,879.6	0.00	0.00	0.00
13,000.0	90.37	180.00	7,032.3	-5,978.6	112.1	5,979.6	0.00	0.00	0.00
13,100.0	90.37	180.00	7,031.7	-6,078.6	112.1	6,079.6	0.00	0.00	0.00
13,200.0	90.37	180.00	7,031.0	-6,178.6	112.1	6,179.6	0.00	0.00	0.00
13,300.0	90.37	180.00	7,030.4	-6,278.6	112.1	6,279.6	0.00	0.00	0.00
13,400.0	90.37	180.00	7,029.8	-6,378.6	112.1	6,379.6	0.00	0.00	0.00
13,500.0	90.37	180.00	7,029.1	-6,478.6	112.1	6,479.6	0.00	0.00	0.00
13,600.0	90.37	180.00	7,028.5	-6,578.6	112.1	6,579.5	0.00	0.00	0.00
13,700.0	90.37	180.00	7,027.8	-6,678.6	112.1	6,679.5	0.00	0.00	0.00
13,800.0	90.37	180.00	7,027.2	-6,778.6	112.1	6,779.5	0.00	0.00	0.00
13,900.0	90.37	180.00	7,026.5	-6,878.6	112.1	6,879.5	0.00	0.00	0.00
14,000.0	90.37	180.00	7,025.9	-6,978.6	112.1	6,979.5	0.00	0.00	0.00
14,100.0	90.37	180.00	7,025.2	-7,078.6	112.1	7,079.5	0.00	0.00	0.00
14,136.3	90.37	180.00	7,025.0	-7,114.9	112.1	7,115.8	0.00	0.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Project:	SEC.13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**North Reference:**	True
Well:	Stroh 13K-223	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (1-28-15)		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHL 2353'FSL & 1646 - plan hits target - Point	0.00	0.00	1.0	0.0	0.0	1,356,828.44	3,183,286.69	40.311030	-104.842760
BHL 500'FSL & 1741'I - plan hits target - Point	0.00	0.00	7,025.0	-7,114.9	112.1	1,349,714.90	3,183,451.52	40.291500	-104.842358

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,529.2	7,067.7	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,977.1	6,880.0	Sharron Springs		0.00	
7,131.6	6,969.0	Niobrara A		0.00	
	7,069.0	Niobrara B		0.00	
	7,150.0	Niobrara C		0.00	
	7,270.0	Ft Hays		0.00	
	7,292.0	Codell		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,000.0	2,000.0	0.0	0.0	KOP #1
6,324.2	6,303.7	261.0	112.1	KOP #2
7,529.2	7,067.7	-507.9	112.1	End of Build

ENSIGN Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W
Stroh 13GK-HZ Pad Sec. 13-T4N-R67W
Stroh 13K-223

Wellbore #1
Plan #3 (1-28-15)

Anticollision Report

30 January, 2015

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Reference Plan #3 (1-28-15)

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	**Error Surface:**	Elliptical Conic

Warning Levels Evaluated at: 2.00 **Sigma**

Survey Tool Program **Date** 1/30/2015

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,136.3	Plan #3 (1-28-15) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Existing Wells - Sec.13-T4N-R67W						
Allen 1 (Exist) - Wellbore #1 - Wellbore #1	8,546.5	7,048.6	103.6	53.9	2.084	CC, ES, SF
Johnston 1 (Exist) - Wellbore #1 - Wellbore #1	14,064.4	6,939.6	317.1	165.4	2.091	CC, ES, SF
Orr 24-1 (Exist) - Wellbore #1 - Wellbore #1	11,270.2	6,951.8	103.7	3.3	1.033	Level 2, CC, ES, SF
Rory 1 (Exist) - Wellbore #1 - Wellbore #1	12,724.2	6,947.1	265.5	138.3	2.087	CC, ES, SF
Stroh 24-21 (Exist) - Wellbore #1 - Wellbore #1	10,011.2	6,985.6	255.2	180.4	3.410	CC, ES, SF
Existing Wells Sec.13-T4N-R67W (Grid North)						
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	100.0	88.9	333.6	333.3	1,447.745	CC
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	600.0	587.1	334.4	331.8	130.424	ES
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	6,800.0	6,727.0	563.7	532.9	18.311	SF
UPRC 13-11E (Exist.) - Wellbore #1 - Wellbore #1	7,377.2	7,045.2	86.5	52.0	2.508	CC, ES, SF
Stroh 13GK-HZ Pad Sec. 13-T4N-R67W						
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	166.3	167.3	119.9	119.4	228.341	CC
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	200.0	200.0	119.9	119.3	177.853	ES
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	1,300.0	1,266.3	221.7	216.0	38.830	SF
Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)	400.0	400.0	89.2	87.7	56.722	CC, ES
Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)	1,200.0	1,183.0	143.5	138.3	27.920	SF
Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)	1,400.0	1,400.0	58.6	52.5	9.651	CC, ES
Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)	14,136.3	13,988.0	845.4	569.7	3.067	SF
Stroh 13K-303 - Wellbore #1 - Plan #2 (1-28-15)	1,600.0	1,600.0	30.7	23.7	4.403	CC, ES
Stroh 13K-303 - Wellbore #1 - Plan #2 (1-28-15)	14,136.3	14,223.8	323.0	55.8	1.209	Level 2, SF
Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)	1,200.0	1,199.0	30.7	25.5	5.937	CC, ES
Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)	14,136.3	14,325.8	570.3	298.6	2.099	SF
Stroh O13-21D Sec.13-T4N-R67W						
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	1,588.2	1,589.3	479.2	472.9	75.286	CC
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	1,600.0	1,599.8	479.2	472.8	74.744	ES
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	6,700.0	6,772.1	765.4	734.2	24.500	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Allen 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
7,600.0	7,067.2	7,061.5	7,060.1	19.4	16.0	-97.71	-1,525.1	215.5	952.1	917.0	35.08	27.139	
7,700.0	7,066.6	7,060.2	7,058.8	20.7	16.0	-96.99	-1,525.1	215.5	852.8	816.4	36.36	23.456	
7,800.0	7,065.9	7,058.9	7,057.5	22.0	16.0	-96.27	-1,525.1	215.6	753.6	715.9	37.73	19.975	
7,900.0	7,065.3	7,057.5	7,056.1	23.4	16.0	-95.54	-1,525.2	215.6	654.7	615.5	39.18	16.711	
8,000.0	7,064.6	7,056.2	7,054.8	24.9	16.0	-94.80	-1,525.2	215.6	556.2	515.5	40.70	13.667	
8,100.0	7,064.0	7,054.8	7,053.4	26.4	16.0	-94.05	-1,525.2	215.6	458.3	416.1	42.27	10.844	
8,200.0	7,063.3	7,053.5	7,052.1	28.0	16.0	-93.30	-1,525.2	215.6	361.6	317.8	43.88	8.241	
8,300.0	7,062.7	7,052.1	7,050.7	29.6	16.0	-92.54	-1,525.2	215.6	267.4	221.8	45.53	5.872	
8,400.0	7,062.0	7,050.7	7,049.3	31.3	16.0	-91.77	-1,525.2	215.7	179.4	132.2	47.21	3.801	
8,500.0	7,061.4	7,049.3	7,047.9	33.0	16.0	-91.00	-1,525.2	215.7	113.5	64.6	48.91	2.322	
8,546.5	7,061.1	7,048.6	7,047.2	33.8	16.0	-90.64	-1,525.2	215.7	103.6	53.9	49.71	2.084	CC, ES, SF
8,600.0	7,060.8	7,047.9	7,046.5	34.7	16.0	-90.22	-1,525.2	215.7	116.6	65.9	50.62	2.303	
8,700.0	7,060.1	7,046.5	7,045.1	36.4	16.0	-89.43	-1,525.2	215.7	185.1	132.8	52.35	3.536	
8,800.0	7,059.5	7,045.0	7,043.6	38.2	16.0	-88.64	-1,525.3	215.7	273.8	219.7	54.09	5.062	
8,900.0	7,058.8	7,043.6	7,042.2	39.9	16.0	-87.84	-1,525.3	215.7	368.3	312.5	55.84	6.596	
9,000.0	7,058.2	7,042.1	7,040.7	41.7	16.0	-87.04	-1,525.3	215.7	465.1	407.5	57.58	8.077	
9,100.0	7,057.5	7,040.7	7,039.3	43.5	16.0	-86.23	-1,525.3	215.8	563.0	503.7	59.33	9.490	
9,200.0	7,056.9	7,039.2	7,037.8	45.3	16.0	-85.42	-1,525.3	215.8	661.6	600.5	61.07	10.833	
9,300.0	7,056.2	7,037.7	7,036.3	47.1	16.0	-84.60	-1,525.3	215.8	760.5	697.7	62.81	12.108	
9,400.0	7,055.6	7,036.2	7,034.8	48.9	16.0	-83.78	-1,525.3	215.8	859.7	795.1	64.54	13.320	
9,500.0	7,054.9	7,034.7	7,033.3	50.8	16.0	-82.96	-1,525.3	215.8	959.0	892.7	66.26	14.473	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Johnston 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
13,200.0	7,031.0	6,943.0	6,942.2	120.4	14.9	-91.40	-7,043.0	429.1	920.7	785.5	135.19	6.811	
13,300.0	7,030.4	6,942.6	6,941.8	122.3	14.9	-91.32	-7,043.0	429.2	827.6	690.5	137.10	6.036	
13,400.0	7,029.8	6,942.2	6,941.4	124.2	14.9	-91.25	-7,043.0	429.2	736.2	597.2	139.01	5.296	
13,500.0	7,029.1	6,941.8	6,941.0	126.1	14.9	-91.18	-7,043.0	429.2	647.4	506.5	140.91	4.594	
13,600.0	7,028.5	6,941.4	6,940.6	128.0	14.9	-91.10	-7,043.0	429.2	562.3	419.5	142.82	3.937	
13,700.0	7,027.8	6,941.0	6,940.2	129.9	14.9	-91.03	-7,043.0	429.2	483.1	338.3	144.73	3.338	
13,800.0	7,027.2	6,940.6	6,939.8	131.8	14.9	-90.96	-7,043.0	429.2	412.9	266.3	146.64	2.816	
13,900.0	7,026.5	6,940.2	6,939.4	133.7	14.9	-90.89	-7,043.0	429.2	357.2	208.7	148.54	2.405	
14,000.0	7,025.9	6,939.8	6,939.0	135.6	14.9	-90.82	-7,043.0	429.2	323.6	173.1	150.45	2.151	
14,064.4	7,025.5	6,939.6	6,938.7	136.9	14.9	-90.77	-7,043.0	429.2	317.1	165.4	151.68	2.091	CC, ES, SF
14,100.0	7,025.2	6,939.4	6,938.6	137.5	14.9	-90.75	-7,043.0	429.2	319.1	166.8	152.36	2.094	
14,136.3	7,025.0	6,939.3	6,938.5	138.2	14.9	-90.72	-7,043.0	429.2	325.2	172.1	153.06	2.125	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Orr 24-1 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
10,300.0	7,049.8	6,961.5	6,960.9	65.6	16.7	-95.74	-4,248.8	215.7	975.7	893.9	81.84	11.922	
10,400.0	7,049.1	6,960.5	6,959.9	67.4	16.7	-95.19	-4,248.8	215.7	876.3	792.6	83.77	10.462	
10,500.0	7,048.5	6,959.5	6,958.9	69.3	16.7	-94.65	-4,248.8	215.8	777.1	691.4	85.69	9.069	
10,600.0	7,047.8	6,958.5	6,957.9	71.2	16.7	-94.10	-4,248.8	215.8	678.2	590.6	87.62	7.740	
10,700.0	7,047.2	6,957.5	6,956.9	73.1	16.7	-93.55	-4,248.8	215.8	579.6	490.0	89.54	6.473	
10,800.0	7,046.5	6,956.5	6,955.9	74.9	16.7	-93.00	-4,248.9	215.8	481.5	390.1	91.45	5.265	
10,900.0	7,045.9	6,955.5	6,954.9	76.8	16.7	-92.45	-4,248.9	215.8	384.5	291.1	93.37	4.118	
11,000.0	7,045.3	6,954.5	6,954.0	78.7	16.7	-91.90	-4,248.9	215.8	289.4	194.2	95.28	3.038	
11,100.0	7,044.6	6,953.5	6,953.0	80.6	16.7	-91.35	-4,248.9	215.8	199.3	102.1	97.18	2.051	
11,200.0	7,044.0	6,952.5	6,952.0	82.5	16.7	-90.80	-4,248.9	215.8	125.3	26.2	99.08	1.264	Level 3
11,270.2	7,043.5	6,951.8	6,951.3	83.8	16.7	-90.42	-4,248.9	215.8	103.7	3.3	100.41	1.033	Level 2, CC, ES, SF
11,300.0	7,043.3	6,951.5	6,951.0	84.3	16.7	-90.25	-4,248.9	215.8	107.9	6.9	100.98	1.069	Level 2
11,400.0	7,042.7	6,950.5	6,950.0	86.2	16.7	-89.71	-4,248.9	215.8	166.1	63.3	102.87	1.615	
11,500.0	7,042.0	6,949.5	6,949.0	88.1	16.6	-89.16	-4,248.9	215.8	252.1	147.3	104.75	2.407	
11,600.0	7,041.4	6,948.5	6,948.0	90.0	16.6	-88.61	-4,248.9	215.8	345.7	239.1	106.62	3.242	
11,700.0	7,040.7	6,947.6	6,947.0	91.9	16.6	-88.06	-4,248.9	215.8	442.1	333.6	108.49	4.075	
11,800.0	7,040.1	6,946.6	6,946.0	93.8	16.6	-87.52	-4,248.9	215.9	539.8	429.5	110.34	4.892	
11,900.0	7,039.4	6,945.6	6,945.0	95.7	16.6	-86.97	-4,248.9	215.9	638.2	526.0	112.19	5.689	
12,000.0	7,038.8	6,944.6	6,944.0	97.6	16.6	-86.43	-4,248.9	215.9	737.1	623.0	114.03	6.464	
12,100.0	7,038.1	6,943.6	6,943.0	99.5	16.6	-85.88	-4,248.9	215.9	836.2	720.3	115.86	7.217	
12,200.0	7,037.5	6,942.6	6,942.1	101.4	16.6	-85.34	-4,248.9	215.9	935.5	817.8	117.68	7.950	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Rory 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
11,800.0	7,040.1	6,958.1	6,957.2	93.8	15.9	-93.24	-5,702.8	377.4	961.6	852.0	109.54	8.778	
11,900.0	7,039.4	6,956.9	6,956.0	95.7	15.9	-92.98	-5,702.8	377.5	865.9	754.4	111.46	7.769	
12,000.0	7,038.8	6,955.7	6,954.8	97.6	15.9	-92.73	-5,702.8	377.5	771.3	658.0	113.37	6.804	
12,100.0	7,038.1	6,954.5	6,953.6	99.5	15.9	-92.47	-5,702.8	377.5	678.3	563.0	115.28	5.884	
12,200.0	7,037.5	6,953.3	6,952.4	101.4	15.9	-92.21	-5,702.8	377.5	587.6	470.4	117.19	5.014	
12,300.0	7,036.9	6,952.1	6,951.2	103.3	15.9	-91.95	-5,702.8	377.5	500.5	381.3	119.11	4.202	
12,400.0	7,036.2	6,950.9	6,950.0	105.2	15.9	-91.69	-5,702.8	377.5	419.1	298.1	121.02	3.463	
12,500.0	7,035.6	6,949.7	6,948.8	107.1	15.9	-91.43	-5,702.8	377.6	347.5	224.6	122.93	2.827	
12,600.0	7,034.9	6,948.5	6,947.6	109.0	15.9	-91.17	-5,702.9	377.6	293.2	168.3	124.83	2.348	
12,700.0	7,034.3	6,947.3	6,946.4	110.9	15.9	-90.92	-5,702.9	377.6	266.6	139.9	126.74	2.104	
12,724.2	7,034.1	6,947.1	6,946.1	111.3	15.9	-90.85	-5,702.9	377.6	265.5	138.3	127.20	2.087	CC, ES, SF
12,800.0	7,033.6	6,946.1	6,945.2	112.8	15.9	-90.66	-5,702.9	377.6	276.1	147.5	128.65	2.146	
12,900.0	7,033.0	6,944.9	6,944.0	114.7	15.9	-90.40	-5,702.9	377.6	318.4	187.9	130.55	2.439	
13,000.0	7,032.3	6,943.7	6,942.8	116.6	15.9	-90.14	-5,702.9	377.7	382.8	250.4	132.45	2.890	
13,100.0	7,031.7	6,942.5	6,941.6	118.5	15.9	-89.88	-5,702.9	377.7	460.1	325.7	134.35	3.425	
13,200.0	7,031.0	6,941.3	6,940.4	120.4	15.9	-89.62	-5,702.9	377.7	544.8	408.6	136.25	3.999	
13,300.0	7,030.4	6,940.1	6,939.2	122.3	15.9	-89.36	-5,702.9	377.7	634.0	495.9	138.15	4.589	
13,400.0	7,029.8	6,938.9	6,938.0	124.2	15.9	-89.10	-5,702.9	377.7	726.0	586.0	140.05	5.184	
13,500.0	7,029.1	6,937.7	6,936.8	126.1	15.9	-88.84	-5,702.9	377.7	819.9	678.0	141.94	5.776	
13,600.0	7,028.5	6,936.5	6,935.6	128.0	15.9	-88.58	-5,702.9	377.8	915.1	771.3	143.83	6.362	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Stroh 24-21 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
9,100.0	7,057.5	6,992.4	6,990.9	43.5	14.7	-92.30	-2,989.9	367.2	946.3	888.1	58.13	16.277	
9,200.0	7,056.9	6,991.7	6,990.1	45.3	14.7	-92.13	-2,989.9	367.2	850.4	790.4	59.94	14.187	
9,300.0	7,056.2	6,991.0	6,989.4	47.1	14.7	-91.97	-2,989.9	367.3	755.6	693.8	61.75	12.236	
9,400.0	7,055.6	6,990.2	6,988.7	48.9	14.7	-91.80	-2,989.9	367.3	662.3	598.8	63.58	10.418	
9,500.0	7,054.9	6,989.5	6,987.9	50.8	14.7	-91.63	-2,989.9	367.3	571.4	506.0	65.41	8.736	
9,600.0	7,054.3	6,988.7	6,987.2	52.6	14.7	-91.46	-2,989.9	367.3	484.0	416.7	67.24	7.197	
9,700.0	7,053.6	6,988.0	6,986.4	54.4	14.7	-91.29	-2,989.9	367.3	402.5	333.4	69.09	5.826	
9,800.0	7,053.0	6,987.2	6,985.6	56.3	14.7	-91.12	-2,989.9	367.3	331.3	260.4	70.93	4.670	
9,900.0	7,052.4	6,986.4	6,984.9	58.1	14.7	-90.95	-2,989.9	367.3	278.4	205.6	72.79	3.825	
10,000.0	7,051.7	6,985.7	6,984.1	60.0	14.7	-90.78	-2,989.9	367.3	255.5	180.9	74.64	3.423	
10,011.2	7,051.6	6,985.6	6,984.0	60.2	14.7	-90.76	-2,989.9	367.3	255.2	180.4	74.85	3.410	CC, ES, SF
10,100.0	7,051.1	6,984.9	6,983.3	61.8	14.7	-90.60	-2,989.9	367.3	270.3	193.8	76.50	3.533	
10,200.0	7,050.4	6,984.1	6,982.5	63.7	14.7	-90.42	-2,989.9	367.3	317.5	239.1	78.36	4.051	
10,300.0	7,049.8	6,983.3	6,981.7	65.6	14.7	-90.25	-2,989.9	367.4	385.4	305.2	80.23	4.804	
10,400.0	7,049.1	6,982.5	6,980.9	67.4	14.7	-90.07	-2,989.9	367.4	465.1	383.0	82.10	5.665	
10,500.0	7,048.5	6,981.7	6,980.1	69.3	14.7	-89.88	-2,989.9	367.4	551.4	467.5	83.96	6.567	
10,600.0	7,047.8	6,980.9	6,979.3	71.2	14.7	-89.70	-2,989.9	367.4	641.7	555.9	85.84	7.476	
10,700.0	7,047.2	6,980.1	6,978.5	73.1	14.7	-89.52	-2,989.9	367.4	734.6	646.8	87.71	8.375	
10,800.0	7,046.5	6,979.2	6,977.7	74.9	14.7	-89.33	-2,989.9	367.4	829.0	739.5	89.58	9.254	
10,900.0	7,045.9	6,978.4	6,976.8	76.8	14.7	-89.15	-2,989.9	367.4	924.7	833.2	91.46	10.110	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells Sec.13-T4N-R67W (Grid North) - Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	-66.16	134.8	-305.1	333.7				
100.0	100.0	88.9	88.9	0.1	0.1	-66.20	134.6	-305.2	333.6	333.3	0.23	1,447.745	CC
200.0	200.0	188.5	188.5	0.3	0.4	-66.27	134.3	-305.4	333.7	333.0	0.70	478.856	
300.0	300.0	288.6	288.5	0.6	0.6	-66.35	133.9	-305.8	333.8	332.6	1.18	282.706	
400.0	400.0	388.6	388.6	0.8	0.9	-66.49	133.2	-306.2	333.9	332.3	1.67	200.073	
500.0	500.0	488.5	488.5	1.0	1.1	-66.60	132.7	-306.6	334.1	331.9	2.16	154.757	
600.0	600.0	587.1	587.1	1.2	1.3	-66.64	132.6	-307.0	334.4	331.8	2.56	130.424	ES
700.0	700.0	686.5	686.5	1.5	1.4	-66.54	133.4	-307.4	335.1	332.2	2.90	115.659	
800.0	800.0	787.4	787.4	1.7	1.6	-66.43	134.2	-307.7	335.7	332.5	3.25	103.162	
900.0	900.0	887.0	887.0	1.9	1.7	-66.38	134.7	-308.1	336.2	332.6	3.66	91.936	
1,000.0	1,000.0	986.3	986.3	2.1	2.0	-66.32	135.3	-308.6	336.9	332.9	4.09	82.471	
1,100.0	1,100.0	1,085.8	1,085.8	2.4	2.2	-66.25	136.1	-309.2	337.8	333.3	4.53	74.576	
1,200.0	1,200.0	1,184.3	1,184.3	2.6	2.4	-66.20	136.8	-310.1	339.0	334.0	4.99	67.923	
1,300.0	1,300.0	1,284.7	1,284.7	2.8	2.7	-66.15	137.6	-311.3	340.3	334.9	5.46	62.288	
1,400.0	1,400.0	1,386.0	1,385.9	3.0	2.9	-66.11	138.3	-312.2	341.4	335.5	5.94	57.443	
1,500.0	1,500.0	1,486.9	1,486.8	3.3	3.2	-66.10	138.6	-312.9	342.2	335.8	6.43	53.237	
1,600.0	1,600.0	1,587.1	1,587.1	3.5	3.4	-66.09	138.9	-313.4	342.8	335.9	6.91	49.599	
1,700.0	1,700.0	1,687.1	1,687.0	3.7	3.7	-66.07	139.2	-313.9	343.4	336.0	7.39	46.444	
1,800.0	1,800.0	1,785.9	1,785.8	3.9	3.9	-66.10	139.4	-314.6	344.1	336.2	7.87	43.742	
1,900.0	1,900.0	1,885.4	1,885.4	4.2	4.2	-66.21	139.2	-315.8	345.1	336.8	8.34	41.391	
2,000.0	2,000.0	1,986.3	1,986.2	4.4	4.4	-66.34	138.9	-317.0	346.1	337.3	8.81	39.301	
2,100.0	2,100.0	2,086.6	2,086.6	4.6	4.6	-89.92	138.1	-318.1	346.8	337.5	9.25	37.495	
2,200.0	2,200.0	2,186.9	2,186.8	4.8	4.8	-90.65	136.6	-319.4	347.5	337.8	9.67	35.917	
2,300.0	2,299.9	2,285.1	2,284.9	5.1	5.1	-91.65	135.2	-320.9	348.4	338.3	10.11	34.473	
2,400.0	2,399.7	2,384.1	2,384.0	5.3	5.3	-92.99	133.6	-322.9	349.9	339.3	10.55	33.167	
2,500.0	2,499.4	2,484.3	2,484.1	5.5	5.5	-94.78	131.0	-325.2	351.7	340.8	10.99	32.002	
2,600.0	2,598.9	2,583.4	2,583.1	5.7	5.7	-96.80	128.3	-327.3	354.0	342.6	11.43	30.959	
2,700.0	2,698.3	2,680.9	2,680.6	6.0	5.9	-99.04	125.7	-329.6	357.2	345.3	11.89	30.044	
2,800.0	2,797.4	2,781.3	2,780.9	6.2	6.2	-101.52	123.2	-332.0	361.3	349.0	12.36	29.234	
2,900.0	2,896.3	2,878.9	2,878.5	6.5	6.4	-104.08	121.1	-334.0	366.3	353.4	12.84	28.528	
3,000.0	2,995.0	2,976.8	2,976.4	6.8	6.6	-106.72	119.5	-336.2	372.7	359.3	13.34	27.934	
3,100.0	3,093.5	3,077.1	3,076.6	7.0	6.9	-109.35	118.3	-338.2	379.8	365.9	13.86	27.400	
3,200.0	3,192.1	3,175.9	3,175.4	7.3	7.1	-111.82	117.4	-339.6	387.2	372.8	14.38	26.921	
3,300.0	3,290.7	3,276.3	3,275.8	7.6	7.4	-114.21	116.5	-340.9	395.1	380.2	14.90	26.513	
3,400.0	3,389.3	3,377.0	3,376.4	8.0	7.6	-116.51	115.7	-341.6	403.1	387.7	15.42	26.141	
3,500.0	3,487.9	3,476.5	3,476.0	8.3	7.8	-118.53	116.1	-342.0	411.2	395.3	15.90	25.858	
3,600.0	3,586.5	3,572.5	3,571.9	8.6	8.0	-120.32	117.1	-342.5	420.0	403.6	16.36	25.665	
3,700.0	3,685.1	3,667.9	3,667.3	8.9	8.2	-122.02	118.0	-343.9	430.0	413.1	16.85	25.515	
3,800.0	3,783.7	3,764.4	3,763.8	9.2	8.4	-123.63	119.1	-345.9	441.0	423.6	17.36	25.401	
3,900.0	3,882.3	3,861.1	3,860.5	9.6	8.7	-125.13	120.3	-348.3	452.7	434.8	17.87	25.330	
4,000.0	3,981.0	3,957.6	3,956.9	9.9	8.9	-126.57	121.7	-351.2	464.8	446.4	18.38	25.287	
4,100.0	4,080.2	4,053.1	4,052.3	10.1	9.1	-127.68	123.2	-354.7	475.8	456.9	18.85	25.239	
4,200.0	4,179.7	4,148.1	4,147.2	10.4	9.4	-128.39	124.5	-359.0	485.6	466.3	19.31	25.150	
4,300.0	4,279.5	4,244.5	4,243.4	10.6	9.6	-128.74	125.8	-364.1	494.1	474.3	19.75	25.014	
4,400.0	4,379.5	4,343.4	4,342.2	10.7	9.9	-128.74	127.1	-369.9	500.9	480.7	20.19	24.809	
4,500.0	4,479.5	4,443.2	4,441.8	10.9	10.2	-105.23	128.2	-375.6	506.1	485.5	20.63	24.531	
4,600.0	4,579.5	4,543.2	4,541.6	11.1	10.4	-104.98	129.0	-381.3	511.5	490.4	21.10	24.237	
4,700.0	4,679.5	4,645.8	4,644.1	11.3	10.7	-104.74	129.8	-386.9	516.5	494.9	21.58	23.936	
4,800.0	4,779.5	4,749.8	4,748.0	11.5	11.0	-104.48	130.8	-391.8	520.8	498.8	22.06	23.611	
4,900.0	4,879.5	4,851.7	4,849.8	11.7	11.2	-104.25	132.0	-395.9	524.5	502.0	22.53	23.277	
5,000.0	4,979.5	4,953.6	4,951.6	11.9	11.5	-104.04	132.9	-399.8	528.0	504.9	23.01	22.947	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells Sec.13-T4N-R67W (Grid North) - Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,100.0	5,079.5	5,055.7	5,053.7	12.1	11.8	-103.90	133.5	-403.0	530.9	507.4	23.48	22.608	
5,200.0	5,179.5	5,156.1	5,154.0	12.3	12.0	-103.73	134.4	-406.1	533.6	509.7	23.95	22.277	
5,300.0	5,279.5	5,256.3	5,254.2	12.5	12.3	-103.60	135.0	-409.0	536.3	511.9	24.43	21.957	
5,400.0	5,379.5	5,356.6	5,354.4	12.7	12.5	-103.53	135.0	-411.7	539.0	514.1	24.90	21.645	
5,500.0	5,479.5	5,458.3	5,456.1	12.9	12.8	-103.47	134.9	-414.4	541.5	516.1	25.38	21.337	
5,600.0	5,579.5	5,558.9	5,556.7	13.1	13.1	-103.47	134.4	-416.4	543.6	517.8	25.84	21.037	
5,700.0	5,679.5	5,655.5	5,653.3	13.3	13.3	-103.59	132.7	-418.4	546.0	519.7	26.28	20.779	
5,800.0	5,779.5	5,751.4	5,749.1	13.5	13.5	-103.76	130.4	-421.0	549.2	522.5	26.71	20.563	
5,900.0	5,879.5	5,849.6	5,847.2	13.7	13.8	-103.86	128.6	-424.4	553.0	525.8	27.16	20.360	
6,000.0	5,979.5	5,950.1	5,947.7	13.9	14.0	-103.86	127.7	-428.1	556.8	529.2	27.63	20.151	
6,100.0	6,079.5	6,051.8	6,049.3	14.2	14.3	-103.83	127.1	-431.7	560.4	532.3	28.11	19.935	
6,200.0	6,179.5	6,153.1	6,150.5	14.4	14.6	-103.77	126.9	-435.1	563.7	535.1	28.59	19.715	
6,300.0	6,279.5	6,254.7	6,252.1	14.6	14.8	-103.69	126.9	-438.4	566.8	537.7	29.07	19.494	
6,400.0	6,379.4	6,356.9	6,354.2	14.7	15.1	76.67	126.9	-441.2	568.6	539.1	29.51	19.266	
6,500.0	6,478.0	6,454.4	6,451.7	14.8	15.4	78.38	127.1	-443.7	567.5	537.7	29.87	19.002	
6,600.0	6,573.6	6,549.1	6,546.4	14.9	15.6	81.38	127.4	-446.5	565.2	535.0	30.19	18.723	
6,700.0	6,664.5	6,641.4	6,638.6	14.9	15.9	85.43	127.5	-449.1	563.0	532.5	30.50	18.461	
6,738.0	6,697.6	6,675.0	6,672.2	14.9	15.9	87.15	127.6	-450.0	562.8	532.1	30.61	18.382	
6,800.0	6,749.3	6,727.0	6,724.2	14.9	16.1	90.01	127.9	-451.3	563.7	532.9	30.78	18.311	SF
6,900.0	6,826.5	6,804.0	6,801.2	14.9	16.3	94.49	128.4	-453.2	570.3	539.3	31.02	18.387	
7,000.0	6,894.8	6,870.5	6,867.7	15.0	16.5	98.14	128.8	-454.9	586.1	554.9	31.22	18.773	
7,100.0	6,952.9	6,928.1	6,925.2	15.3	16.6	100.63	129.1	-456.5	613.3	581.8	31.48	19.479	
7,200.0	6,999.9	6,975.1	6,972.2	15.8	16.7	101.47	129.4	-457.7	652.6	620.7	31.95	20.428	
7,300.0	7,035.0	7,010.1	7,007.2	16.5	16.8	100.24	129.7	-458.5	703.8	671.1	32.75	21.492	
7,400.0	7,057.6	7,033.3	7,030.4	17.3	16.9	96.63	129.9	-459.1	765.3	731.4	33.88	22.586	
7,500.0	7,067.3	7,043.0	7,040.1	18.3	16.9	90.31	129.9	-459.3	835.0	799.9	35.11	23.785	
7,600.0	7,067.2	7,042.4	7,039.5	19.4	16.9	87.86	129.9	-459.3	910.5	874.3	36.20	25.149	
7,700.0	7,066.6	7,041.1	7,038.2	20.7	16.9	87.74	129.9	-459.3	990.3	952.8	37.43	26.455	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells Sec.13-T4N-R67W (Grid North) - UPRC 13-11E (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	136.90	-360.7	337.5	494.1				
100.0	100.0	88.2	88.2	0.1	0.1	136.91	-360.7	337.4	493.9	493.7	0.23	2,152.392	
200.0	200.0	189.1	189.1	0.3	0.4	136.95	-360.8	337.1	493.8	493.1	0.71	699.108	
269.8	269.8	257.8	257.8	0.5	0.5	136.99	-361.0	336.7	493.7	492.6	1.04	475.761	
300.0	300.0	287.4	287.4	0.6	0.6	137.01	-361.1	336.6	493.7	492.5	1.18	418.321	
400.0	400.0	389.9	389.9	0.8	0.9	137.07	-361.4	336.2	493.6	492.0	1.65	299.264	
469.4	469.4	457.4	457.4	0.9	1.0	137.09	-361.4	336.0	493.4	491.5	1.92	257.079	
500.0	500.0	486.9	486.9	1.0	1.0	137.09	-361.4	336.0	493.5	491.4	2.03	242.533	
600.0	600.0	586.7	586.7	1.2	1.2	137.11	-361.7	336.1	493.8	491.3	2.43	202.982	
700.0	700.0	689.4	689.4	1.5	1.4	137.14	-362.0	335.9	493.8	490.9	2.86	172.396	
800.0	800.0	789.6	789.6	1.7	1.6	137.18	-361.9	335.4	493.5	490.2	3.30	149.358	
857.3	857.3	845.3	845.3	1.8	1.7	137.21	-362.0	335.1	493.3	489.8	3.56	138.695	
900.0	900.0	886.6	886.5	1.9	1.8	137.23	-362.2	335.1	493.4	489.7	3.75	131.726	
1,000.0	1,000.0	987.4	987.4	2.1	2.1	137.29	-362.7	334.9	493.7	489.5	4.20	117.473	
1,100.0	1,100.0	1,087.6	1,087.6	2.4	2.3	137.36	-363.2	334.5	493.8	489.1	4.68	105.428	
1,200.0	1,200.0	1,189.4	1,189.4	2.6	2.6	137.43	-363.6	334.0	493.7	488.5	5.17	95.506	
1,300.0	1,300.0	1,291.2	1,291.2	2.8	2.8	137.52	-363.8	333.1	493.2	487.6	5.65	87.354	
1,400.0	1,400.0	1,390.6	1,390.6	3.0	3.1	137.62	-363.9	332.1	492.6	486.5	6.11	80.564	
1,500.0	1,500.0	1,491.4	1,491.4	3.3	3.3	137.71	-364.0	331.1	492.0	485.4	6.59	74.678	
1,600.0	1,600.0	1,592.6	1,592.6	3.5	3.6	137.82	-364.0	329.8	491.2	484.2	7.06	69.568	
1,700.0	1,700.0	1,692.0	1,692.0	3.7	3.8	137.94	-364.0	328.5	490.3	482.8	7.53	65.104	
1,800.0	1,800.0	1,793.2	1,793.2	3.9	4.1	138.07	-364.1	327.0	489.4	481.4	8.01	61.100	
1,900.0	1,900.0	1,892.7	1,892.6	4.2	4.3	138.20	-364.1	325.5	488.4	479.9	8.49	57.560	
2,000.0	2,000.0	1,991.8	1,991.7	4.4	4.6	138.34	-364.3	324.0	487.6	478.6	8.96	54.386	
2,100.0	2,100.0	2,092.9	2,092.8	4.6	4.8	115.36	-364.5	322.4	487.1	477.6	9.45	51.534	
2,128.4	2,128.4	2,121.2	2,121.1	4.7	4.9	115.47	-364.6	321.9	487.0	477.4	9.59	50.796	
2,200.0	2,200.0	2,192.0	2,191.9	4.8	5.1	115.79	-364.7	320.8	487.3	477.3	9.93	49.071	
2,300.0	2,299.9	2,290.9	2,290.8	5.1	5.4	116.40	-365.1	319.3	488.5	478.1	10.41	46.922	
2,400.0	2,399.7	2,392.4	2,392.2	5.3	5.6	117.24	-365.7	317.4	490.5	479.6	10.90	44.997	
2,500.0	2,499.4	2,489.7	2,489.5	5.5	5.9	118.28	-366.7	315.1	493.5	482.1	11.38	43.355	
2,600.0	2,598.9	2,588.1	2,587.9	5.7	6.1	119.52	-368.1	312.7	497.8	485.9	11.87	41.947	
2,700.0	2,698.3	2,686.6	2,686.3	6.0	6.4	120.90	-369.8	310.4	503.4	491.1	12.36	40.743	
2,800.0	2,797.4	2,784.9	2,784.6	6.2	6.7	122.42	-371.5	308.0	510.4	497.5	12.85	39.725	
2,900.0	2,896.3	2,881.6	2,881.2	6.5	6.9	123.98	-373.3	305.9	518.9	505.5	13.34	38.903	
3,000.0	2,995.0	2,982.7	2,982.3	6.8	7.2	125.74	-375.2	303.6	528.8	514.9	13.85	38.181	
3,100.0	3,093.5	3,083.6	3,083.1	7.0	7.4	127.50	-376.5	301.1	538.7	524.3	14.37	37.477	
3,200.0	3,192.1	3,184.2	3,183.7	7.3	7.7	129.21	-377.5	298.2	548.7	533.8	14.90	36.818	
3,300.0	3,290.7	3,285.7	3,285.2	7.6	8.0	130.91	-378.2	294.9	558.6	543.2	15.43	36.200	
3,400.0	3,389.3	3,389.5	3,388.9	8.0	8.2	132.58	-378.2	291.0	568.3	552.3	15.96	35.608	
3,500.0	3,487.9	3,489.1	3,488.4	8.3	8.5	134.15	-377.6	286.9	577.7	561.2	16.47	35.077	
3,600.0	3,586.5	3,590.8	3,590.1	8.6	8.7	135.70	-376.7	282.6	587.2	570.2	16.98	34.581	
3,700.0	3,685.1	3,686.3	3,685.4	8.9	9.0	137.14	-375.9	278.1	596.9	579.5	17.48	34.154	
3,800.0	3,783.7	3,786.6	3,785.6	9.2	9.2	138.62	-375.2	273.4	607.3	589.3	17.99	33.762	
3,900.0	3,882.3	3,884.1	3,883.0	9.6	9.5	139.97	-374.3	269.2	617.8	599.3	18.49	33.418	
4,000.0	3,981.0	3,981.4	3,980.3	9.9	9.7	141.31	-373.5	265.1	628.4	609.4	18.99	33.085	
4,100.0	4,080.2	4,081.1	4,079.8	10.1	9.9	142.46	-372.7	261.2	636.8	617.3	19.46	32.720	
4,200.0	4,179.7	4,179.7	4,178.4	10.4	10.2	143.31	-371.8	257.8	642.6	622.7	19.91	32.273	
4,300.0	4,279.5	4,279.0	4,277.6	10.6	10.4	143.92	-370.9	254.5	645.8	625.4	20.34	31.746	
4,400.0	4,379.5	4,379.1	4,377.6	10.7	10.7	144.30	-370.0	251.5	646.2	625.5	20.75	31.140	
4,500.0	4,479.5	4,477.7	4,476.2	10.9	10.9	167.75	-369.0	248.9	644.8	623.6	21.17	30.457	
4,600.0	4,579.5	4,575.5	4,574.0	11.1	11.2	167.95	-368.4	246.5	643.6	622.0	21.62	29.767	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Existing Wells Sec.13-T4N-R67W (Grid North) - UPRC 13-11E (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 100-NS-GYRO-MS

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
4,700.0	4,679.5	4,674.9	4,673.3	11.3	11.4	168.12	-367.9	244.4	642.7	620.6	22.08	29.110	
4,800.0	4,779.5	4,774.9	4,773.3	11.5	11.7	168.26	-367.3	242.7	641.8	619.2	22.53	28.481	
4,900.0	4,879.5	4,873.7	4,872.2	11.7	11.9	168.39	-366.8	241.0	640.9	617.9	22.99	27.878	
5,000.0	4,979.5	4,972.5	4,970.9	11.9	12.2	168.56	-366.6	239.1	640.3	616.8	23.46	27.299	
5,100.0	5,079.5	5,073.6	5,072.0	12.1	12.4	168.73	-366.4	237.1	639.7	615.8	23.93	26.735	
5,200.0	5,179.5	5,173.6	5,172.0	12.3	12.7	168.92	-366.1	234.9	639.0	614.6	24.40	26.190	
5,300.0	5,279.5	5,275.3	5,273.7	12.5	12.9	169.10	-365.7	232.8	638.2	613.3	24.87	25.660	
5,400.0	5,379.5	5,373.6	5,371.9	12.7	13.2	169.29	-365.2	230.5	637.3	612.0	25.34	25.154	
5,500.0	5,479.5	5,473.1	5,471.4	12.9	13.4	169.45	-364.9	228.7	636.7	610.9	25.81	24.671	
5,600.0	5,579.5	5,573.2	5,571.5	13.1	13.7	169.65	-364.7	226.4	636.1	609.8	26.28	24.202	
5,700.0	5,679.5	5,671.7	5,670.0	13.3	14.0	169.83	-364.6	224.3	635.5	608.8	26.75	23.755	
5,800.0	5,779.5	5,773.5	5,771.8	13.5	14.2	169.97	-364.4	222.7	635.1	607.9	27.23	23.322	
5,900.0	5,879.5	5,872.4	5,870.6	13.7	14.5	170.10	-364.0	221.1	634.4	606.7	27.70	22.904	
6,000.0	5,979.5	5,973.3	5,971.5	13.9	14.7	170.26	-363.8	219.3	634.0	605.8	28.18	22.498	
6,100.0	6,079.5	6,075.3	6,073.5	14.2	15.0	170.45	-363.4	217.1	633.2	604.5	28.65	22.096	
6,200.0	6,179.5	6,176.5	6,174.7	14.4	15.3	170.61	-362.6	215.2	632.1	603.0	29.12	21.705	
6,300.0	6,279.5	6,276.2	6,274.3	14.6	15.5	170.76	-361.8	213.4	631.0	601.4	29.58	21.328	
6,400.0	6,379.4	6,377.1	6,375.3	14.7	15.8	-9.19	-360.9	211.5	626.1	596.3	29.84	20.982	
6,500.0	6,478.0	6,473.5	6,471.6	14.8	16.0	-9.49	-360.0	209.7	608.8	579.2	29.62	20.556	
6,600.0	6,573.6	6,568.1	6,566.2	14.9	16.2	-10.19	-359.6	207.9	579.3	550.4	28.95	20.010	
6,700.0	6,664.5	6,660.3	6,658.4	14.9	16.5	-11.44	-359.0	206.0	537.8	509.9	27.88	19.291	
6,800.0	6,749.3	6,745.0	6,743.1	14.9	16.7	-13.53	-358.3	204.3	484.8	458.3	26.47	18.317	
6,900.0	6,826.5	6,821.0	6,819.0	14.9	16.9	-16.97	-357.8	202.8	421.8	396.8	24.92	16.924	
7,000.0	6,894.8	6,888.3	6,886.3	15.0	17.0	-22.91	-357.3	201.6	350.1	326.3	23.74	14.745	
7,100.0	6,952.9	6,945.9	6,943.9	15.3	17.2	-33.65	-357.0	200.5	271.7	247.4	24.22	11.216	
7,200.0	6,999.9	6,992.5	6,990.5	15.8	17.3	-52.57	-356.8	199.6	189.8	161.6	28.19	6.734	
7,300.0	7,035.0	7,027.1	7,025.1	16.5	17.4	-77.25	-356.6	198.9	114.6	81.5	33.11	3.461	
7,377.2	7,053.6	7,045.2	7,043.2	17.1	17.5	-91.10	-356.5	198.6	86.5	52.0	34.49	2.508	CC, ES, SF
7,400.0	7,057.6	7,049.1	7,047.1	17.3	17.5	-93.42	-356.5	198.5	89.4	54.7	34.64	2.580	
7,500.0	7,067.3	7,058.3	7,056.3	18.3	17.5	-93.24	-356.5	198.3	149.6	114.0	35.65	4.196	
7,600.0	7,067.2	7,057.8	7,055.7	19.4	17.5	-89.41	-356.5	198.4	238.4	201.6	36.82	6.475	
7,700.0	7,066.6	7,056.6	7,054.6	20.7	17.5	-88.67	-356.5	198.4	333.6	295.5	38.04	8.768	
7,800.0	7,065.9	7,055.5	7,053.5	22.0	17.5	-87.93	-356.5	198.4	430.9	391.6	39.36	10.948	
7,900.0	7,065.3	7,054.4	7,052.4	23.4	17.5	-87.19	-356.5	198.4	529.3	488.5	40.76	12.986	
8,000.0	7,064.6	7,053.3	7,051.3	24.9	17.5	-86.46	-356.5	198.4	628.2	586.0	42.21	14.881	
8,100.0	7,064.0	7,052.2	7,050.2	26.4	17.5	-85.73	-356.5	198.5	727.3	683.6	43.72	16.638	
8,200.0	7,063.3	7,051.1	7,049.1	28.0	17.5	-84.99	-356.5	198.5	826.7	781.5	45.26	18.267	
8,300.0	7,062.7	7,050.0	7,048.0	29.6	17.5	-84.27	-356.5	198.5	926.2	879.4	46.83	19.779	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	1.0	1.0	0.0	0.0	-90.00	0.0	-119.9	119.9	119.9	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	0.0	-119.9	119.9	119.7	0.23	528.259	
166.3	166.3	167.3	167.3	0.3	0.3	-90.00	0.0	-119.9	119.9	119.4	0.53	228.341	CC
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-119.9	119.9	119.3	0.67	177.853	ES
300.0	300.0	299.0	299.0	0.6	0.6	-89.92	0.2	-120.8	120.8	119.7	1.11	108.563	
400.0	400.0	396.9	396.8	0.8	0.8	-89.70	0.6	-123.2	123.3	121.8	1.55	79.604	
500.0	500.0	494.7	494.5	1.0	1.0	-89.35	1.4	-127.4	127.5	125.5	1.99	64.025	
600.0	600.0	592.3	592.0	1.2	1.2	-88.90	2.5	-133.1	133.4	131.0	2.44	54.699	
700.0	700.0	689.7	689.1	1.5	1.5	-88.38	4.0	-140.5	141.0	138.1	2.89	48.775	
800.0	800.0	786.8	785.8	1.7	1.7	-87.82	5.7	-149.4	150.3	146.9	3.35	44.892	
900.0	900.0	883.6	882.0	1.9	2.0	-87.23	7.7	-159.9	161.2	157.4	3.81	42.328	
1,000.0	1,000.0	980.0	977.6	2.1	2.3	-86.65	10.1	-172.0	173.8	169.6	4.28	40.661	
1,100.0	1,100.0	1,076.0	1,072.6	2.4	2.6	-86.09	12.7	-185.5	188.1	183.4	4.75	39.628	
1,200.0	1,200.0	1,171.4	1,166.8	2.6	2.9	-85.56	15.6	-200.6	204.1	198.9	5.23	39.057	
1,300.0	1,300.0	1,266.3	1,260.2	2.8	3.3	-85.06	18.8	-217.1	221.7	216.0	5.71	38.830	SF
1,400.0	1,400.0	1,360.7	1,352.8	3.0	3.7	-84.59	22.2	-235.0	240.9	234.7	6.20	38.864	
1,500.0	1,500.0	1,454.4	1,444.4	3.3	4.1	-84.17	26.0	-254.2	261.7	255.0	6.69	39.098	
1,600.0	1,600.0	1,548.3	1,535.9	3.5	4.5	-83.78	30.0	-274.9	284.1	276.9	7.20	39.470	
1,700.0	1,700.0	1,645.7	1,630.6	3.7	5.0	-83.43	34.2	-296.9	307.0	299.3	7.71	39.802	
1,800.0	1,800.0	1,743.0	1,725.4	3.9	5.4	-83.12	38.5	-318.8	329.9	321.7	8.23	40.085	
1,900.0	1,900.0	1,840.3	1,820.1	4.2	5.9	-82.86	42.7	-340.8	352.9	344.1	8.75	40.326	
2,000.0	2,000.0	1,937.6	1,914.8	4.4	6.4	-82.63	47.0	-362.8	375.8	366.5	9.27	40.535	
2,100.0	2,100.0	2,034.9	2,009.5	4.6	6.8	-105.56	51.2	-384.7	399.0	389.6	9.37	42.567	
2,200.0	2,200.0	2,132.1	2,104.0	4.8	7.3	-105.49	55.4	-406.6	422.6	412.8	9.85	42.921	
2,300.0	2,299.9	2,229.1	2,198.5	5.1	7.8	-105.61	59.7	-428.5	446.7	436.4	10.32	43.287	
2,400.0	2,399.7	2,325.9	2,292.7	5.3	8.3	-105.91	63.9	-450.4	471.3	460.5	10.79	43.660	
2,500.0	2,499.4	2,422.6	2,386.8	5.5	8.7	-106.34	68.1	-472.2	496.3	485.1	11.27	44.037	
2,600.0	2,598.9	2,519.0	2,480.6	5.7	9.2	-106.90	72.3	-493.9	522.0	510.2	11.75	44.413	
2,700.0	2,698.3	2,615.1	2,574.2	6.0	9.7	-107.55	76.5	-515.6	548.2	536.0	12.24	44.784	
2,800.0	2,797.4	2,711.0	2,667.4	6.2	10.2	-108.27	80.7	-537.2	575.1	562.4	12.74	45.146	
2,900.0	2,896.3	2,806.5	2,760.4	6.5	10.6	-109.07	84.9	-558.8	602.7	589.5	13.25	45.496	
3,000.0	2,995.0	2,901.7	2,853.1	6.8	11.1	-110.01	89.0	-580.3	631.0	617.2	13.77	45.813	
3,100.0	3,093.5	2,996.8	2,945.7	7.0	11.6	-111.06	93.2	-601.7	659.6	645.3	14.32	46.063	
3,200.0	3,192.1	3,092.0	3,038.3	7.3	12.0	-112.02	97.3	-623.2	688.4	673.6	14.88	46.275	
3,300.0	3,290.7	3,187.1	3,130.9	7.6	12.5	-112.90	101.5	-644.7	717.4	702.0	15.44	46.454	
3,400.0	3,389.3	3,282.3	3,223.5	8.0	13.0	-113.72	105.6	-666.1	746.5	730.5	16.02	46.606	
3,500.0	3,487.9	3,377.4	3,316.1	8.3	13.5	-114.47	109.8	-687.6	775.8	759.2	16.60	46.736	
3,600.0	3,586.5	3,472.5	3,408.7	8.6	13.9	-115.17	113.9	-709.0	805.1	788.0	17.19	46.847	
3,700.0	3,685.1	3,567.7	3,501.2	8.9	14.4	-115.82	118.1	-730.5	834.6	816.8	17.78	46.942	
3,800.0	3,783.7	3,662.8	3,593.8	9.2	14.9	-116.43	122.2	-752.0	864.2	845.8	18.38	47.024	
3,900.0	3,882.3	3,758.0	3,686.4	9.6	15.4	-117.00	126.4	-773.4	893.8	874.8	18.98	47.095	
4,000.0	3,981.0	3,853.2	3,779.2	9.9	15.8	-117.82	130.5	-794.9	923.3	903.7	19.60	47.094	
4,100.0	4,080.2	3,949.1	3,872.5	10.1	16.3	-118.62	134.7	-816.6	951.3	931.1	20.20	47.099	
4,200.0	4,179.7	4,045.5	3,966.3	10.4	16.8	-119.19	138.9	-838.3	977.7	957.0	20.76	47.087	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	-90.00	0.0	-89.2	89.2				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-89.2	89.2	89.0	0.22	397.054	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-89.2	89.2	88.6	0.67	132.351	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-89.2	89.2	88.1	1.12	79.411	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-89.2	89.2	87.7	1.57	56.722	CC, ES
500.0	500.0	498.5	498.5	1.0	1.0	-89.90	0.2	-90.1	90.1	88.1	2.01	44.841	
600.0	600.0	596.9	596.9	1.2	1.2	-89.63	0.6	-92.6	92.6	90.2	2.44	37.944	
700.0	700.0	695.2	695.1	1.5	1.4	-89.21	1.3	-96.7	96.9	94.0	2.88	33.643	
800.0	800.0	793.3	793.0	1.7	1.7	-88.67	2.4	-102.5	102.8	99.5	3.32	30.945	
900.0	900.0	891.2	890.6	1.9	1.9	-88.07	3.7	-110.0	110.4	106.7	3.77	29.297	
1,000.0	1,000.0	988.9	987.8	2.1	2.1	-87.44	5.3	-119.0	119.7	115.5	4.22	28.371	
1,100.0	1,100.0	1,086.1	1,084.5	2.4	2.4	-86.82	7.2	-129.6	130.8	126.1	4.68	27.958	
1,200.0	1,200.0	1,183.0	1,180.6	2.6	2.7	-86.22	9.4	-141.8	143.5	138.3	5.14	27.920	SF
1,300.0	1,300.0	1,279.4	1,276.0	2.8	3.0	-85.65	11.8	-155.6	157.8	152.2	5.60	28.162	
1,400.0	1,400.0	1,375.6	1,370.9	3.0	3.3	-85.13	14.6	-170.8	173.9	167.8	6.08	28.612	
1,500.0	1,500.0	1,474.2	1,468.1	3.3	3.7	-84.67	17.5	-187.1	190.6	184.1	6.56	29.069	
1,600.0	1,600.0	1,572.8	1,565.2	3.5	4.0	-84.28	20.4	-203.4	207.4	200.3	7.04	29.459	
1,700.0	1,700.0	1,671.3	1,662.4	3.7	4.4	-83.95	23.3	-219.7	224.1	216.6	7.52	29.791	
1,800.0	1,800.0	1,769.9	1,759.6	3.9	4.8	-83.67	26.2	-236.0	240.9	232.9	8.01	30.079	
1,900.0	1,900.0	1,868.5	1,856.8	4.2	5.1	-83.42	29.1	-252.4	257.7	249.2	8.50	30.329	
2,000.0	2,000.0	1,967.1	1,954.0	4.4	5.5	-83.21	32.0	-268.7	274.5	265.5	8.98	30.549	
2,100.0	2,100.0	2,065.6	2,051.1	4.6	5.9	-106.26	34.9	-285.0	291.5	282.2	9.25	31.520	
2,200.0	2,200.0	2,164.1	2,148.1	4.8	6.2	-106.38	37.8	-301.3	309.0	299.3	9.71	31.828	
2,300.0	2,299.9	2,262.4	2,245.1	5.1	6.6	-106.77	40.7	-317.5	327.0	316.8	10.17	32.158	
2,400.0	2,399.7	2,360.5	2,341.8	5.3	7.0	-107.37	43.6	-333.8	345.5	334.9	10.63	32.506	
2,500.0	2,499.4	2,458.5	2,438.4	5.5	7.4	-108.15	46.5	-350.0	364.7	353.6	11.09	32.871	
2,600.0	2,598.9	2,556.3	2,534.8	5.7	7.7	-109.08	49.4	-366.1	384.5	372.9	11.56	33.249	
2,700.0	2,698.3	2,653.8	2,630.9	6.0	8.1	-110.12	52.3	-382.3	405.0	392.9	12.04	33.639	
2,800.0	2,797.4	2,751.0	2,726.7	6.2	8.5	-111.26	55.1	-398.4	426.3	413.8	12.52	34.039	
2,900.0	2,896.3	2,847.9	2,822.3	6.5	8.9	-112.48	58.0	-414.4	448.4	435.4	13.02	34.447	
3,000.0	2,995.0	2,944.6	2,917.5	6.8	9.2	-113.81	60.8	-430.4	471.5	457.9	13.53	34.847	
3,100.0	3,093.5	3,041.1	3,012.7	7.0	9.6	-115.18	63.7	-446.4	494.9	480.9	14.06	35.202	
3,200.0	3,192.1	3,137.7	3,107.9	7.3	10.0	-116.43	66.5	-462.3	518.6	504.0	14.60	35.526	
3,300.0	3,290.7	3,234.2	3,203.1	7.6	10.4	-117.56	69.4	-478.3	542.5	527.4	15.14	35.822	
3,400.0	3,389.3	3,330.8	3,298.3	8.0	10.7	-118.61	72.2	-494.3	566.6	550.9	15.70	36.095	
3,500.0	3,487.9	3,427.3	3,393.5	8.3	11.1	-119.56	75.1	-510.3	590.8	574.6	16.26	36.346	
3,600.0	3,586.5	3,523.9	3,488.6	8.6	11.5	-120.45	77.9	-526.2	615.2	598.4	16.82	36.578	
3,700.0	3,685.1	3,620.5	3,583.8	8.9	11.9	-121.26	80.8	-542.2	639.7	622.4	17.39	36.794	
3,800.0	3,783.7	3,717.0	3,679.0	9.2	12.3	-122.02	83.6	-558.2	664.4	646.4	17.96	36.996	
3,900.0	3,882.3	3,813.6	3,774.2	9.6	12.6	-122.72	86.5	-574.2	689.1	670.6	18.53	37.184	
4,000.0	3,981.0	3,910.2	3,869.5	9.9	13.0	-123.58	89.3	-590.2	713.6	694.5	19.12	37.318	
4,100.0	4,080.2	4,007.5	3,965.4	10.1	13.4	-124.33	92.2	-606.2	736.4	716.7	19.67	37.431	
4,200.0	4,179.7	4,105.3	4,061.7	10.4	13.8	-124.79	95.1	-622.4	757.3	737.1	20.20	37.491	
4,300.0	4,279.5	4,203.4	4,158.5	10.6	14.2	-125.00	98.0	-638.7	776.3	755.6	20.70	37.509	
4,400.0	4,379.5	4,301.9	4,255.6	10.7	14.5	-124.98	100.9	-655.0	793.3	772.1	21.16	37.492	
4,500.0	4,479.5	4,400.5	4,352.7	10.9	14.9	-101.35	103.8	-671.3	809.0	787.4	21.59	37.464	
4,600.0	4,579.5	4,499.0	4,449.9	11.1	15.3	-100.92	106.7	-687.6	824.7	802.6	22.04	37.409	
4,700.0	4,679.5	4,597.6	4,547.1	11.3	15.7	-100.51	109.6	-703.9	840.4	817.9	22.50	37.359	
4,800.0	4,779.5	4,696.2	4,644.3	11.5	16.1	-100.12	112.5	-720.2	856.2	833.2	22.95	37.311	
4,900.0	4,879.5	4,794.8	4,741.4	11.7	16.5	-99.73	115.4	-736.5	872.0	848.6	23.40	37.267	
5,000.0	4,979.5	4,893.4	4,838.6	11.9	16.9	-99.37	118.3	-752.8	887.8	864.0	23.85	37.225	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,100.0	5,079.5	4,991.9	4,935.8	12.1	17.2	-99.01	121.2	-769.1	903.7	879.4	24.30	37.186	
5,200.0	5,179.5	5,090.5	5,033.0	12.3	17.6	-98.67	124.2	-785.4	919.6	894.9	24.76	37.149	
5,300.0	5,279.5	5,189.1	5,130.1	12.5	18.0	-98.34	127.1	-801.7	935.6	910.4	25.21	37.115	
5,400.0	5,379.5	5,287.7	5,227.3	12.7	18.4	-98.02	130.0	-818.0	951.6	925.9	25.66	37.082	
5,500.0	5,479.5	5,386.2	5,324.5	12.9	18.8	-97.71	132.9	-834.4	967.6	941.5	26.11	37.051	
5,600.0	5,579.5	5,484.8	5,421.7	13.1	19.2	-97.41	135.8	-850.7	983.6	957.0	26.57	37.022	
5,700.0	5,679.5	5,583.4	5,518.9	13.3	19.6	-97.12	138.7	-867.0	999.7	972.6	27.02	36.994	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	-90.00	0.0	-58.6	58.6				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-58.6	58.6	58.3	0.22	260.567	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-58.6	58.6	57.9	0.67	86.856	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-58.6	58.6	57.4	1.12	52.113	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-58.6	58.6	57.0	1.57	37.224	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-58.6	58.6	56.5	2.02	28.952	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-58.6	58.6	56.1	2.47	23.688	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-58.6	58.6	55.6	2.92	20.044	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-58.6	58.6	55.2	3.37	17.371	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-58.6	58.6	54.7	3.82	15.327	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-58.6	58.6	54.3	4.27	13.714	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	0.0	-58.6	58.6	53.8	4.72	12.408	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	0.0	-58.6	58.6	53.4	5.17	11.329	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-58.6	58.6	52.9	5.62	10.423	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-58.6	58.6	52.5	6.07	9.651	CC, ES
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.2	-89.91	0.1	-59.4	59.4	52.9	6.50	9.137	
1,600.0	1,600.0	1,597.9	1,597.9	3.5	3.4	-89.63	0.4	-62.0	62.0	55.1	6.93	8.948	
1,700.0	1,700.0	1,696.7	1,696.6	3.7	3.7	-89.22	0.9	-66.2	66.3	58.9	7.36	9.010	
1,800.0	1,800.0	1,795.4	1,795.0	3.9	3.9	-88.73	1.6	-72.1	72.3	64.5	7.79	9.282	
1,900.0	1,900.0	1,893.7	1,893.1	4.2	4.1	-88.20	2.5	-79.7	80.0	71.8	8.22	9.731	
2,000.0	2,000.0	1,991.9	1,990.8	4.4	4.3	-87.69	3.6	-88.9	89.4	80.8	8.66	10.329	
2,100.0	2,100.0	2,089.6	2,087.9	4.6	4.6	-110.80	4.9	-99.7	100.9	91.8	9.09	11.102	
2,200.0	2,200.0	2,186.8	2,184.3	4.8	4.8	-111.39	6.3	-112.1	114.6	105.1	9.52	12.041	
2,300.0	2,299.9	2,283.4	2,279.9	5.1	5.1	-112.44	8.0	-126.1	130.7	120.7	9.95	13.131	
2,400.0	2,399.7	2,380.3	2,375.5	5.3	5.4	-113.75	9.8	-141.5	149.0	138.6	10.39	14.342	
2,500.0	2,499.4	2,478.2	2,472.2	5.5	5.7	-115.28	11.7	-157.4	168.5	157.6	10.83	15.552	
2,600.0	2,598.9	2,576.0	2,568.6	5.7	6.0	-116.93	13.6	-173.3	188.8	177.5	11.28	16.738	
2,700.0	2,698.3	2,673.5	2,664.8	6.0	6.3	-118.64	15.5	-189.2	210.1	198.4	11.73	17.906	
2,800.0	2,797.4	2,770.7	2,760.7	6.2	6.6	-120.37	17.4	-205.0	232.4	220.2	12.19	19.061	
2,900.0	2,896.3	2,867.6	2,856.2	6.5	6.9	-122.10	19.2	-220.7	255.9	243.2	12.66	20.205	
3,000.0	2,995.0	2,964.1	2,951.5	6.8	7.3	-123.85	21.1	-236.4	280.4	267.3	13.15	21.328	
3,100.0	3,093.5	3,060.6	3,046.7	7.0	7.6	-125.49	23.0	-252.1	305.4	291.8	13.65	22.376	
3,200.0	3,192.1	3,157.1	3,141.9	7.3	7.9	-126.88	24.8	-267.8	330.6	316.4	14.16	23.349	
3,300.0	3,290.7	3,253.6	3,237.0	7.6	8.3	-128.07	26.7	-283.5	355.9	341.3	14.68	24.254	
3,400.0	3,389.3	3,350.1	3,332.2	8.0	8.6	-129.10	28.5	-299.2	381.4	366.2	15.20	25.096	
3,500.0	3,487.9	3,446.6	3,427.4	8.3	9.0	-130.00	30.4	-314.9	407.0	391.2	15.73	25.878	
3,600.0	3,586.5	3,543.1	3,522.6	8.6	9.3	-130.80	32.3	-330.6	432.6	416.3	16.26	26.608	
3,700.0	3,685.1	3,639.5	3,617.8	8.9	9.7	-131.51	34.1	-346.3	458.3	441.5	16.80	27.288	
3,800.0	3,783.7	3,736.0	3,713.0	9.2	10.0	-132.14	36.0	-362.0	484.1	466.7	17.34	27.923	
3,900.0	3,882.3	3,832.5	3,808.2	9.6	10.4	-132.71	37.8	-377.7	509.9	492.0	17.88	28.518	
4,000.0	3,981.0	3,929.1	3,903.5	9.9	10.7	-133.40	39.7	-393.4	535.4	516.9	18.44	29.034	
4,100.0	4,080.2	4,026.4	3,999.4	10.1	11.1	-133.93	41.6	-409.2	558.7	539.7	18.96	29.460	
4,200.0	4,179.7	4,124.1	4,095.8	10.4	11.4	-134.15	43.5	-425.1	579.6	560.2	19.47	29.775	
4,300.0	4,279.5	4,222.3	4,192.7	10.6	11.8	-134.09	45.4	-441.0	598.2	578.3	19.95	29.992	
4,400.0	4,379.5	4,320.8	4,289.9	10.7	12.2	-133.78	47.3	-457.1	614.5	594.1	20.40	30.124	
4,500.0	4,479.5	4,419.5	4,387.2	10.9	12.5	-109.90	49.2	-473.1	629.2	608.3	20.84	30.195	
4,600.0	4,579.5	4,518.1	4,484.5	11.1	12.9	-109.25	51.1	-489.1	643.9	622.6	21.29	30.236	
4,700.0	4,679.5	4,616.8	4,581.8	11.3	13.3	-108.62	53.0	-505.2	658.7	636.9	21.75	30.280	
4,800.0	4,779.5	4,715.4	4,679.2	11.5	13.6	-108.03	54.9	-521.2	673.5	651.3	22.21	30.326	
4,900.0	4,879.5	4,814.1	4,776.5	11.7	14.0	-107.46	56.8	-537.3	688.5	665.8	22.67	30.374	
5,000.0	4,979.5	4,912.7	4,873.8	11.9	14.4	-106.91	58.7	-553.3	703.5	680.3	23.12	30.423	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,100.0	5,079.5	5,011.4	4,971.1	12.1	14.7	-106.39	60.6	-569.3	718.5	694.9	23.58	30.474	
5,200.0	5,179.5	5,110.0	5,068.4	12.3	15.1	-105.89	62.5	-585.4	733.6	709.6	24.03	30.525	
5,300.0	5,279.5	5,208.7	5,165.7	12.5	15.5	-105.41	64.4	-601.4	748.8	724.3	24.49	30.576	
5,400.0	5,379.5	5,307.3	5,263.1	12.7	15.9	-104.94	66.3	-617.5	764.0	739.1	24.95	30.627	
5,500.0	5,479.5	5,406.0	5,360.4	12.9	16.2	-104.50	68.2	-633.5	779.3	753.9	25.40	30.679	
5,600.0	5,579.5	5,504.6	5,457.7	13.1	16.6	-104.07	70.1	-649.5	794.6	768.7	25.86	30.731	
5,700.0	5,679.5	5,603.3	5,555.0	13.3	17.0	-103.66	72.0	-665.6	809.9	783.6	26.31	30.782	
5,800.0	5,779.5	5,701.9	5,652.3	13.5	17.4	-103.26	73.9	-681.6	825.3	798.6	26.77	30.833	
5,900.0	5,879.5	5,807.9	5,756.9	13.7	17.7	-102.86	75.9	-698.7	840.7	813.4	27.23	30.869	
6,000.0	5,979.5	5,945.4	5,893.2	13.9	18.1	-102.45	78.1	-716.6	853.0	825.3	27.72	30.777	
6,100.0	6,079.5	6,084.3	6,031.7	14.2	18.4	-102.20	79.4	-728.1	860.9	832.7	28.19	30.540	
6,200.0	6,179.5	6,224.1	6,171.3	14.4	18.6	-102.09	80.0	-732.8	864.1	835.5	28.65	30.164	
6,300.0	6,279.5	6,332.3	6,279.5	14.6	18.8	-102.09	80.0	-733.0	864.2	835.2	29.06	29.741	
6,400.0	6,379.4	6,417.9	6,365.0	14.7	18.9	77.96	77.6	-733.0	864.1	834.7	29.38	29.408	
6,500.0	6,478.0	6,500.0	6,446.4	14.8	19.0	78.18	66.7	-733.0	863.4	833.8	29.56	29.204	
6,600.0	6,573.6	6,580.2	6,524.2	14.9	19.1	78.56	47.6	-733.0	862.3	832.6	29.65	29.081	
6,700.0	6,664.5	6,661.9	6,601.1	14.9	19.2	79.11	20.0	-733.0	860.7	831.0	29.70	28.983	
6,800.0	6,749.3	6,744.3	6,675.1	14.9	19.3	79.81	-16.1	-733.0	858.8	829.0	29.78	28.837	
6,900.0	6,826.5	6,827.5	6,745.5	14.9	19.4	80.67	-60.3	-733.0	856.6	826.7	29.96	28.593	
7,000.0	6,894.8	6,911.7	6,811.5	15.0	19.6	81.66	-112.7	-733.0	854.3	824.0	30.33	28.171	
7,100.0	6,952.9	7,000.0	6,874.0	15.3	19.8	82.82	-175.0	-733.0	852.0	821.1	30.96	27.522	
7,200.0	6,999.9	7,084.2	6,926.5	15.8	20.0	84.02	-240.7	-733.0	849.9	818.0	31.88	26.658	
7,300.0	7,035.0	7,172.8	6,973.6	16.5	20.3	85.36	-315.7	-733.0	848.0	814.8	33.14	25.587	
7,400.0	7,057.6	7,263.4	7,012.5	17.3	20.8	86.78	-397.5	-733.0	846.5	811.7	34.72	24.381	
7,500.0	7,067.3	7,356.3	7,042.0	18.3	21.4	88.27	-485.5	-733.0	845.5	808.9	36.58	23.111	
7,600.0	7,067.2	7,452.3	7,061.0	19.4	22.2	89.58	-579.6	-733.0	845.1	806.4	38.70	21.836	
7,659.4	7,066.8	7,511.2	7,066.8	20.2	22.8	90.00	-638.1	-733.0	845.1	805.0	40.11	21.070	
7,700.0	7,066.6	7,551.8	7,068.2	20.7	23.2	90.11	-678.7	-733.0	845.1	804.0	41.10	20.564	
7,800.0	7,065.9	7,651.8	7,067.9	22.0	24.3	90.13	-778.7	-733.0	845.1	801.3	43.72	19.329	
7,900.0	7,065.3	7,751.8	7,067.6	23.4	25.5	90.16	-878.7	-733.0	845.1	798.6	46.50	18.173	
8,000.0	7,064.6	7,851.8	7,067.3	24.9	26.8	90.18	-978.7	-733.0	845.1	795.6	49.42	17.098	
8,100.0	7,064.0	7,951.8	7,067.0	26.4	28.2	90.20	-1,078.7	-733.0	845.1	792.6	52.47	16.107	
8,200.0	7,063.3	8,051.8	7,066.6	28.0	29.6	90.22	-1,178.7	-733.0	845.1	789.5	55.61	15.198	
8,300.0	7,062.7	8,151.8	7,066.3	29.6	31.1	90.25	-1,278.7	-733.0	845.1	786.2	58.83	14.365	
8,400.0	7,062.0	8,251.8	7,066.0	31.3	32.6	90.27	-1,378.7	-733.0	845.1	783.0	62.12	13.604	
8,500.0	7,061.4	8,351.8	7,065.7	33.0	34.2	90.29	-1,478.7	-733.0	845.1	779.6	65.47	12.907	
8,600.0	7,060.8	8,451.8	7,065.4	34.7	35.8	90.31	-1,578.7	-733.0	845.1	776.2	68.88	12.269	
8,700.0	7,060.1	8,551.8	7,065.1	36.4	37.5	90.34	-1,678.7	-733.0	845.1	772.8	72.32	11.685	
8,800.0	7,059.5	8,651.8	7,064.8	38.2	39.1	90.36	-1,778.7	-733.0	845.1	769.3	75.81	11.148	
8,900.0	7,058.8	8,751.8	7,064.4	39.9	40.8	90.38	-1,878.7	-733.0	845.1	765.8	79.33	10.653	
9,000.0	7,058.2	8,851.8	7,064.1	41.7	42.5	90.40	-1,978.7	-733.0	845.1	762.2	82.87	10.197	
9,100.0	7,057.5	8,951.8	7,063.8	43.5	44.3	90.43	-2,078.7	-733.0	845.1	758.6	86.44	9.776	
9,200.0	7,056.9	9,051.8	7,063.5	45.3	46.0	90.45	-2,178.7	-733.0	845.1	755.1	90.04	9.386	
9,300.0	7,056.2	9,151.8	7,063.2	47.1	47.8	90.47	-2,278.7	-733.0	845.1	751.4	93.65	9.024	
9,400.0	7,055.6	9,251.8	7,062.9	48.9	49.5	90.49	-2,378.7	-733.0	845.1	747.8	97.28	8.688	
9,500.0	7,054.9	9,351.8	7,062.6	50.8	51.3	90.52	-2,478.7	-733.0	845.1	744.2	100.92	8.374	
9,600.0	7,054.3	9,451.8	7,062.3	52.6	53.1	90.54	-2,578.7	-733.0	845.1	740.5	104.58	8.081	
9,700.0	7,053.6	9,551.8	7,061.9	54.4	54.9	90.56	-2,678.7	-733.0	845.1	736.9	108.25	7.807	
9,800.0	7,053.0	9,651.8	7,061.6	56.3	56.7	90.58	-2,778.7	-733.0	845.1	733.2	111.93	7.550	
9,900.0	7,052.4	9,751.8	7,061.3	58.1	58.5	90.61	-2,878.7	-733.0	845.1	729.5	115.63	7.309	
10,000.0	7,051.7	9,851.8	7,061.0	60.0	60.3	90.63	-2,978.7	-733.0	845.1	725.8	119.33	7.082	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
10,100.0	7,051.1	9,951.8	7,060.7	61.8	62.2	90.65	-3,078.7	-733.0	845.1	722.1	123.04	6.869	
10,200.0	7,050.4	10,051.8	7,060.4	63.7	64.0	90.67	-3,178.7	-733.0	845.1	718.4	126.76	6.667	
10,300.0	7,049.8	10,151.8	7,060.1	65.6	65.8	90.70	-3,278.7	-733.0	845.1	714.6	130.48	6.477	
10,400.0	7,049.1	10,251.8	7,059.7	67.4	67.7	90.72	-3,378.7	-733.0	845.1	710.9	134.21	6.297	
10,500.0	7,048.5	10,351.8	7,059.4	69.3	69.5	90.74	-3,478.7	-733.0	845.1	707.2	137.95	6.127	
10,600.0	7,047.8	10,451.8	7,059.1	71.2	71.4	90.76	-3,578.7	-733.0	845.1	703.5	141.69	5.965	
10,700.0	7,047.2	10,551.8	7,058.8	73.1	73.2	90.79	-3,678.7	-733.0	845.1	699.7	145.44	5.811	
10,800.0	7,046.5	10,651.8	7,058.5	74.9	75.1	90.81	-3,778.7	-733.0	845.2	696.0	149.19	5.665	
10,900.0	7,045.9	10,751.8	7,058.2	76.8	76.9	90.83	-3,878.7	-733.0	845.2	692.2	152.94	5.526	
11,000.0	7,045.3	10,851.8	7,057.9	78.7	78.8	90.85	-3,978.7	-733.0	845.2	688.5	156.70	5.393	
11,100.0	7,044.6	10,951.8	7,057.5	80.6	80.7	90.88	-4,078.7	-733.0	845.2	684.7	160.47	5.267	
11,200.0	7,044.0	11,051.8	7,057.2	82.5	82.5	90.90	-4,178.7	-733.0	845.2	680.9	164.23	5.146	
11,300.0	7,043.3	11,151.8	7,056.9	84.3	84.4	90.92	-4,278.7	-733.0	845.2	677.2	168.00	5.031	
11,400.0	7,042.7	11,251.8	7,056.6	86.2	86.3	90.94	-4,378.7	-733.0	845.2	673.4	171.77	4.920	
11,500.0	7,042.0	11,351.8	7,056.3	88.1	88.1	90.97	-4,478.7	-733.0	845.2	669.6	175.55	4.815	
11,600.0	7,041.4	11,451.8	7,056.0	90.0	90.0	90.99	-4,578.7	-733.0	845.2	665.9	179.33	4.713	
11,700.0	7,040.7	11,551.8	7,055.7	91.9	91.9	91.01	-4,678.7	-733.0	845.2	662.1	183.11	4.616	
11,800.0	7,040.1	11,651.8	7,055.3	93.8	93.8	91.03	-4,778.7	-733.0	845.2	658.3	186.89	4.522	
11,900.0	7,039.4	11,751.8	7,055.0	95.7	95.7	91.06	-4,878.7	-733.0	845.2	654.5	190.67	4.433	
12,000.0	7,038.8	11,851.8	7,054.7	97.6	97.5	91.08	-4,978.7	-733.0	845.2	650.8	194.46	4.346	
12,100.0	7,038.1	11,951.8	7,054.4	99.5	99.4	91.10	-5,078.7	-733.0	845.2	647.0	198.25	4.263	
12,200.0	7,037.5	12,051.8	7,054.1	101.4	101.3	91.12	-5,178.7	-733.0	845.2	643.2	202.04	4.183	
12,300.0	7,036.9	12,151.8	7,053.8	103.3	103.2	91.15	-5,278.7	-733.0	845.2	639.4	205.83	4.106	
12,400.0	7,036.2	12,251.8	7,053.5	105.2	105.1	91.17	-5,378.7	-733.0	845.2	635.6	209.63	4.032	
12,500.0	7,035.6	12,351.8	7,053.1	107.1	107.0	91.19	-5,478.7	-733.0	845.2	631.8	213.42	3.960	
12,600.0	7,034.9	12,451.8	7,052.8	109.0	108.9	91.21	-5,578.7	-733.0	845.3	628.0	217.22	3.891	
12,700.0	7,034.3	12,551.8	7,052.5	110.9	110.7	91.24	-5,678.7	-733.0	845.3	624.2	221.01	3.824	
12,800.0	7,033.6	12,651.8	7,052.2	112.8	112.6	91.26	-5,778.7	-733.0	845.3	620.5	224.81	3.760	
12,900.0	7,033.0	12,751.8	7,051.9	114.7	114.5	91.28	-5,878.7	-733.0	845.3	616.7	228.61	3.697	
13,000.0	7,032.3	12,851.8	7,051.6	116.6	116.4	91.30	-5,978.7	-733.0	845.3	612.9	232.41	3.637	
13,100.0	7,031.7	12,951.8	7,051.3	118.5	118.3	91.33	-6,078.7	-733.0	845.3	609.1	236.22	3.578	
13,200.0	7,031.0	13,051.8	7,050.9	120.4	120.2	91.35	-6,178.7	-733.0	845.3	605.3	240.02	3.522	
13,300.0	7,030.4	13,151.8	7,050.6	122.3	122.1	91.37	-6,278.7	-733.0	845.3	601.5	243.82	3.467	
13,400.0	7,029.8	13,251.8	7,050.3	124.2	124.0	91.39	-6,378.7	-733.0	845.3	597.7	247.63	3.414	
13,500.0	7,029.1	13,351.8	7,050.0	126.1	125.9	91.42	-6,478.7	-733.0	845.3	593.9	251.43	3.362	
13,600.0	7,028.5	13,451.8	7,049.7	128.0	127.8	91.44	-6,578.7	-733.0	845.3	590.1	255.24	3.312	
13,700.0	7,027.8	13,551.8	7,049.4	129.9	129.7	91.46	-6,678.7	-733.0	845.3	586.3	259.05	3.263	
13,800.0	7,027.2	13,651.8	7,049.1	131.8	131.6	91.48	-6,778.7	-733.0	845.3	582.5	262.86	3.216	
13,900.0	7,026.5	13,751.8	7,048.7	133.7	133.5	91.51	-6,878.7	-733.0	845.4	578.7	266.66	3.170	
14,000.0	7,025.9	13,851.8	7,048.4	135.6	135.4	91.53	-6,978.7	-733.0	845.4	574.9	270.47	3.126	
14,100.0	7,025.2	13,951.8	7,048.1	137.5	137.3	91.55	-7,078.7	-733.0	845.4	571.1	274.28	3.082	
14,136.3	7,025.0	13,988.0	7,048.0	138.2	138.0	91.56	-7,114.9	-733.0	845.4	569.7	275.67	3.067	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-303 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	-90.00	0.0	-30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-30.7	30.7	30.5	0.22	136.487	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.7	30.7	30.0	0.67	45.496	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-30.7	30.7	29.6	1.12	27.297	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-30.7	30.7	29.1	1.57	19.498	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-30.7	30.7	28.7	2.02	15.165	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-30.7	30.7	28.2	2.47	12.408	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-30.7	30.7	27.8	2.92	10.499	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-30.7	30.7	27.3	3.37	9.099	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-30.7	30.7	26.9	3.82	8.029	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-30.7	30.7	26.4	4.27	7.184	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	0.0	-30.7	30.7	26.0	4.72	6.499	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	0.0	-30.7	30.7	25.5	5.17	5.934	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-30.7	30.7	25.1	5.62	5.459	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-30.7	30.7	24.6	6.07	5.055	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-90.00	0.0	-30.7	30.7	24.2	6.52	4.706	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-90.00	0.0	-30.7	30.7	23.7	6.97	4.403	CC, ES
1,700.0	1,700.0	1,699.7	1,699.7	3.7	3.7	-88.66	0.7	-31.2	31.2	23.7	7.41	4.203	
1,800.0	1,800.0	1,799.3	1,799.3	3.9	3.9	-84.90	2.9	-32.6	32.7	24.8	7.86	4.162	
1,900.0	1,900.0	1,898.9	1,898.7	4.2	4.1	-79.41	6.5	-34.9	35.6	27.3	8.30	4.283	
2,000.0	2,000.0	1,998.2	1,997.9	4.4	4.4	-73.13	11.6	-38.2	40.0	31.3	8.75	4.572	
2,100.0	2,100.0	2,097.3	2,096.7	4.6	4.6	-91.19	18.1	-42.4	46.3	37.1	9.19	5.034	
2,200.0	2,200.0	2,196.3	2,195.2	4.8	4.8	-88.13	26.0	-47.6	54.2	44.6	9.64	5.627	
2,300.0	2,299.9	2,294.9	2,293.2	5.1	5.1	-86.63	35.3	-53.6	63.7	53.6	10.08	6.313	
2,400.0	2,399.7	2,393.3	2,390.8	5.3	5.3	-86.16	45.9	-60.6	74.5	63.9	10.53	7.071	
2,500.0	2,499.4	2,491.4	2,487.8	5.5	5.6	-86.36	58.0	-68.4	86.7	75.7	10.99	7.885	
2,600.0	2,598.9	2,589.1	2,584.2	5.7	5.9	-86.97	71.4	-77.2	100.2	88.8	11.46	8.744	
2,700.0	2,698.3	2,686.4	2,679.9	6.0	6.2	-87.81	86.0	-86.7	115.1	103.2	11.94	9.639	
2,800.0	2,797.4	2,784.7	2,776.4	6.2	6.5	-88.91	101.8	-97.0	131.0	118.6	12.45	10.526	
2,900.0	2,896.3	2,883.3	2,873.2	6.5	6.8	-90.42	117.7	-107.3	147.0	134.0	12.97	11.330	
3,000.0	2,995.0	2,981.9	2,969.9	6.8	7.2	-92.24	133.6	-117.7	163.1	149.6	13.53	12.061	
3,100.0	3,093.5	3,080.4	3,066.6	7.0	7.5	-93.91	149.5	-128.0	179.4	165.3	14.10	12.730	
3,200.0	3,192.1	3,179.0	3,163.3	7.3	7.9	-95.31	165.3	-138.3	195.9	181.2	14.68	13.341	
3,300.0	3,290.7	3,277.5	3,260.0	7.6	8.2	-96.49	181.2	-148.7	212.4	197.1	15.28	13.900	
3,400.0	3,389.3	3,376.1	3,356.7	8.0	8.6	-97.50	197.0	-159.0	229.0	213.1	15.89	14.410	
3,500.0	3,487.9	3,474.8	3,453.7	8.3	9.0	-98.37	212.9	-169.4	245.6	229.1	16.51	14.878	
3,600.0	3,586.5	3,580.3	3,557.6	8.6	9.3	-99.50	228.2	-179.3	260.9	243.8	17.11	15.253	
3,700.0	3,685.1	3,686.3	3,662.5	8.9	9.5	-101.09	240.3	-187.2	273.7	256.0	17.70	15.467	
3,800.0	3,783.7	3,792.4	3,768.2	9.2	9.8	-103.11	249.1	-192.9	284.2	265.9	18.28	15.545	
3,900.0	3,882.3	3,898.5	3,874.0	9.6	10.0	-105.55	254.7	-196.5	292.6	273.7	18.86	15.516	
4,000.0	3,981.0	4,004.3	3,979.7	9.9	10.2	-108.37	256.9	-198.0	299.0	279.6	19.39	15.416	
4,100.0	4,080.2	4,104.7	4,080.2	10.1	10.4	-110.77	257.0	-198.1	303.3	283.5	19.85	15.281	
4,200.0	4,179.7	4,204.3	4,179.7	10.4	10.6	-112.48	257.0	-198.1	306.8	286.5	20.29	15.120	
4,300.0	4,279.5	4,304.1	4,279.5	10.6	10.7	-113.53	257.0	-198.1	309.2	288.5	20.70	14.932	
4,400.0	4,379.5	4,404.1	4,379.5	10.7	10.9	-113.97	257.0	-198.1	310.2	289.1	21.09	14.709	
4,500.0	4,479.5	4,504.1	4,479.5	10.9	11.1	-90.74	257.0	-198.1	310.2	288.7	21.46	14.454	
4,600.0	4,579.5	4,604.1	4,579.5	11.1	11.3	-90.74	257.0	-198.1	310.2	288.3	21.86	14.190	
4,700.0	4,679.5	4,704.1	4,679.5	11.3	11.5	-90.74	257.0	-198.1	310.2	287.9	22.26	13.936	
4,800.0	4,779.5	4,804.1	4,779.5	11.5	11.7	-90.74	257.0	-198.1	310.2	287.5	22.66	13.689	
4,900.0	4,879.5	4,904.1	4,879.5	11.7	11.9	-90.74	257.0	-198.1	310.2	287.1	23.06	13.449	
5,000.0	4,979.5	5,004.1	4,979.5	11.9	12.1	-90.74	257.0	-198.1	310.2	286.7	23.47	13.217	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-303 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,100.0	5,079.5	5,104.1	5,079.5	12.1	12.3	-90.74	257.0	-198.1	310.2	286.3	23.88	12.992	
5,200.0	5,179.5	5,204.1	5,179.5	12.3	12.5	-90.74	257.0	-198.1	310.2	285.9	24.28	12.773	
5,300.0	5,279.5	5,304.1	5,279.5	12.5	12.7	-90.74	257.0	-198.1	310.2	285.5	24.69	12.561	
5,400.0	5,379.5	5,404.1	5,379.5	12.7	12.9	-90.74	257.0	-198.1	310.2	285.1	25.10	12.356	
5,500.0	5,479.5	5,504.1	5,479.5	12.9	13.1	-90.74	257.0	-198.1	310.2	284.7	25.52	12.156	
5,600.0	5,579.5	5,604.1	5,579.5	13.1	13.3	-90.74	257.0	-198.1	310.2	284.3	25.93	11.962	
5,700.0	5,679.5	5,704.1	5,679.5	13.3	13.5	-90.74	257.0	-198.1	310.2	283.8	26.35	11.774	
5,800.0	5,779.5	5,804.1	5,779.5	13.5	13.7	-90.74	257.0	-198.1	310.2	283.4	26.76	11.591	
5,900.0	5,879.5	5,904.1	5,879.5	13.7	13.9	-90.74	257.0	-198.1	310.2	283.0	27.18	11.413	
6,000.0	5,979.5	6,004.1	5,979.5	13.9	14.1	-90.74	257.0	-198.1	310.2	282.6	27.60	11.240	
6,100.0	6,079.5	6,104.1	6,079.5	14.2	14.3	-90.74	257.0	-198.1	310.2	282.2	28.01	11.072	
6,200.0	6,179.5	6,204.1	6,179.5	14.4	14.5	-90.74	257.0	-198.1	310.2	281.7	28.43	10.909	
6,300.0	6,279.5	6,304.1	6,279.5	14.6	14.7	-90.74	257.0	-198.1	310.2	281.3	28.86	10.750	
6,400.0	6,379.4	6,403.9	6,379.4	14.7	14.9	89.95	257.0	-198.1	310.2	280.9	29.23	10.613	
6,402.4	6,381.8	6,406.4	6,381.8	14.7	14.9	90.00	257.0	-198.1	310.2	280.9	29.23	10.610	
6,500.0	6,478.0	6,503.7	6,479.1	14.8	15.1	92.49	254.4	-198.1	310.5	281.0	29.46	10.537	
6,600.0	6,573.6	6,605.7	6,579.8	14.9	15.2	95.03	238.6	-198.1	311.4	281.8	29.56	10.535	
6,700.0	6,664.5	6,709.8	6,679.2	14.9	15.3	97.34	207.9	-198.1	312.8	283.2	29.55	10.584	
6,800.0	6,749.3	6,816.0	6,774.9	14.9	15.3	99.34	162.1	-198.1	314.4	284.9	29.51	10.654	
6,900.0	6,826.5	6,924.1	6,864.2	14.9	15.3	101.00	101.5	-198.1	316.0	286.5	29.51	10.707	
7,000.0	6,894.8	7,033.6	6,944.4	15.0	15.3	102.28	27.0	-198.1	317.4	287.8	29.68	10.697	
7,100.0	6,952.9	7,144.4	7,013.0	15.3	15.3	103.14	-59.8	-198.1	318.5	288.4	30.11	10.578	
7,200.0	6,999.9	7,255.9	7,067.8	15.8	15.8	103.57	-156.8	-198.1	319.1	288.1	30.92	10.319	
7,300.0	7,035.0	7,367.5	7,106.8	16.5	16.5	103.55	-261.3	-198.1	319.0	286.9	32.17	9.917	
7,400.0	7,057.6	7,479.0	7,129.2	17.3	17.4	103.09	-370.3	-198.1	318.4	284.6	33.86	9.404	
7,500.0	7,067.3	7,587.8	7,134.7	18.3	18.4	102.25	-478.9	-198.1	317.4	281.5	35.93	8.834	
7,544.9	7,068.3	7,632.7	7,134.6	18.8	18.9	102.05	-523.8	-198.1	317.1	280.2	36.92	8.589	
7,600.0	7,067.2	7,687.8	7,134.4	19.4	19.6	102.22	-578.9	-198.1	317.4	279.2	38.11	8.326	
7,700.0	7,066.6	7,787.8	7,134.1	20.7	20.8	102.28	-678.9	-198.1	317.4	276.9	40.52	7.834	
7,800.0	7,065.9	7,887.8	7,133.8	22.0	22.1	102.35	-778.9	-198.1	317.5	274.4	43.12	7.363	
7,900.0	7,065.3	7,987.8	7,133.5	23.4	23.5	102.41	-878.9	-198.1	317.6	271.7	45.88	6.922	
8,000.0	7,064.6	8,087.8	7,133.2	24.9	25.0	102.47	-978.9	-198.1	317.7	268.9	48.77	6.513	
8,100.0	7,064.0	8,187.8	7,132.9	26.4	26.5	102.53	-1,078.9	-198.1	317.7	266.0	51.77	6.137	
8,200.0	7,063.3	8,287.8	7,132.6	28.0	28.1	102.59	-1,178.9	-198.1	317.8	262.9	54.87	5.792	
8,300.0	7,062.7	8,387.8	7,132.3	29.6	29.7	102.65	-1,278.9	-198.1	317.9	259.8	58.04	5.477	
8,400.0	7,062.0	8,487.8	7,132.0	31.3	31.4	102.71	-1,378.9	-198.1	318.0	256.7	61.27	5.189	
8,500.0	7,061.4	8,587.8	7,131.7	33.0	33.1	102.78	-1,478.9	-198.1	318.0	253.5	64.56	4.926	
8,600.0	7,060.8	8,687.8	7,131.4	34.7	34.8	102.84	-1,578.9	-198.1	318.1	250.2	67.89	4.686	
8,700.0	7,060.1	8,787.8	7,131.1	36.4	36.5	102.90	-1,678.9	-198.1	318.2	246.9	71.27	4.465	
8,800.0	7,059.5	8,887.8	7,130.8	38.2	38.2	102.96	-1,778.9	-198.1	318.3	243.6	74.67	4.262	
8,900.0	7,058.8	8,987.8	7,130.5	39.9	40.0	103.02	-1,878.9	-198.1	318.3	240.2	78.11	4.076	
9,000.0	7,058.2	9,087.8	7,130.2	41.7	41.8	103.08	-1,978.9	-198.1	318.4	236.8	81.57	3.904	
9,100.0	7,057.5	9,187.8	7,129.9	43.5	43.6	103.14	-2,078.9	-198.1	318.5	233.4	85.06	3.745	
9,200.0	7,056.9	9,287.8	7,129.6	45.3	45.4	103.20	-2,178.9	-198.1	318.6	230.0	88.56	3.597	
9,300.0	7,056.2	9,387.8	7,129.3	47.1	47.2	103.26	-2,278.9	-198.1	318.7	226.6	92.08	3.461	
9,400.0	7,055.6	9,487.8	7,129.1	48.9	49.0	103.33	-2,378.9	-198.1	318.7	223.1	95.62	3.334	
9,500.0	7,054.9	9,587.8	7,128.8	50.8	50.8	103.39	-2,478.9	-198.1	318.8	219.7	99.16	3.215	
9,600.0	7,054.3	9,687.8	7,128.5	52.6	52.6	103.45	-2,578.9	-198.1	318.9	216.2	102.72	3.105	
9,700.0	7,053.6	9,787.8	7,128.2	54.4	54.5	103.51	-2,678.9	-198.1	319.0	212.7	106.29	3.001	
9,800.0	7,053.0	9,887.8	7,127.9	56.3	56.3	103.57	-2,778.9	-198.1	319.1	209.2	109.87	2.904	
9,900.0	7,052.4	9,987.8	7,127.6	58.1	58.2	103.63	-2,878.9	-198.1	319.1	205.7	113.46	2.813	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-303 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	7,051.7	10,087.8	7,127.3	60.0	60.0	103.69	-2,978.9	-198.1	319.2	202.2	117.05	2.727	
10,100.0	7,051.1	10,187.8	7,127.0	61.8	61.9	103.75	-3,078.9	-198.1	319.3	198.7	120.65	2.647	
10,200.0	7,050.4	10,287.8	7,126.7	63.7	63.7	103.81	-3,178.9	-198.1	319.4	195.1	124.25	2.571	
10,300.0	7,049.8	10,387.8	7,126.4	65.6	65.6	103.87	-3,278.9	-198.1	319.5	191.6	127.86	2.499	
10,400.0	7,049.1	10,487.8	7,126.1	67.4	67.5	103.93	-3,378.9	-198.1	319.6	188.1	131.48	2.431	
10,500.0	7,048.5	10,587.8	7,125.8	69.3	69.3	104.00	-3,478.9	-198.1	319.6	184.6	135.09	2.366	
10,600.0	7,047.8	10,687.8	7,125.5	71.2	71.2	104.06	-3,578.9	-198.1	319.7	181.0	138.72	2.305	
10,700.0	7,047.2	10,787.8	7,125.2	73.1	73.1	104.12	-3,678.9	-198.1	319.8	177.5	142.34	2.247	
10,800.0	7,046.5	10,887.8	7,124.9	74.9	74.9	104.18	-3,778.9	-198.1	319.9	173.9	145.97	2.192	
10,900.0	7,045.9	10,987.8	7,124.6	76.8	76.8	104.24	-3,878.9	-198.1	320.0	170.4	149.60	2.139	
11,000.0	7,045.3	11,087.8	7,124.3	78.7	78.7	104.30	-3,978.9	-198.1	320.1	166.8	153.23	2.089	
11,100.0	7,044.6	11,187.8	7,124.0	80.6	80.6	104.36	-4,078.9	-198.1	320.2	163.3	156.86	2.041	
11,200.0	7,044.0	11,287.8	7,123.7	82.5	82.5	104.42	-4,178.9	-198.1	320.2	159.8	160.49	1.995	
11,300.0	7,043.3	11,387.8	7,123.4	84.3	84.4	104.48	-4,278.9	-198.1	320.3	156.2	164.13	1.952	
11,400.0	7,042.7	11,487.8	7,123.1	86.2	86.2	104.54	-4,378.9	-198.1	320.4	152.7	167.76	1.910	
11,500.0	7,042.0	11,587.8	7,122.8	88.1	88.1	104.60	-4,478.9	-198.1	320.5	149.1	171.40	1.870	
11,600.0	7,041.4	11,687.8	7,122.5	90.0	90.0	104.66	-4,578.9	-198.1	320.6	145.6	175.04	1.832	
11,700.0	7,040.7	11,787.8	7,122.2	91.9	91.9	104.72	-4,678.9	-198.1	320.7	142.0	178.68	1.795	
11,800.0	7,040.1	11,887.8	7,121.9	93.8	93.8	104.78	-4,778.9	-198.1	320.8	138.5	182.32	1.759	
11,900.0	7,039.4	11,987.8	7,121.6	95.7	95.7	104.84	-4,878.9	-198.1	320.9	134.9	185.95	1.726	
12,000.0	7,038.8	12,087.8	7,121.3	97.6	97.6	104.90	-4,978.9	-198.1	321.0	131.4	189.59	1.693	
12,100.0	7,038.1	12,187.8	7,121.0	99.5	99.5	104.96	-5,078.9	-198.1	321.0	127.8	193.23	1.661	
12,200.0	7,037.5	12,287.8	7,120.7	101.4	101.4	105.02	-5,178.9	-198.1	321.1	124.3	196.87	1.631	
12,300.0	7,036.9	12,387.8	7,120.4	103.3	103.3	105.08	-5,278.9	-198.1	321.2	120.7	200.51	1.602	
12,400.0	7,036.2	12,487.8	7,120.2	105.2	105.2	105.14	-5,378.9	-198.1	321.3	117.2	204.15	1.574	
12,500.0	7,035.6	12,587.8	7,119.9	107.1	107.1	105.20	-5,478.9	-198.1	321.4	113.6	207.78	1.547	
12,600.0	7,034.9	12,687.8	7,119.6	109.0	109.0	105.26	-5,578.9	-198.1	321.5	110.1	211.42	1.521	
12,700.0	7,034.3	12,787.8	7,119.3	110.9	110.9	105.32	-5,678.9	-198.1	321.6	106.5	215.06	1.495	Level 3
12,800.0	7,033.6	12,887.8	7,119.0	112.8	112.8	105.38	-5,778.9	-198.1	321.7	103.0	218.69	1.471	Level 3
12,900.0	7,033.0	12,987.8	7,118.7	114.7	114.7	105.44	-5,878.9	-198.1	321.8	99.5	222.33	1.447	Level 3
13,000.0	7,032.3	13,087.8	7,118.4	116.6	116.6	105.50	-5,978.9	-198.1	321.9	95.9	225.96	1.424	Level 3
13,100.0	7,031.7	13,187.8	7,118.1	118.5	118.5	105.56	-6,078.9	-198.1	322.0	92.4	229.59	1.402	Level 3
13,200.0	7,031.0	13,287.8	7,117.8	120.4	120.4	105.62	-6,178.9	-198.1	322.1	88.8	233.22	1.381	Level 3
13,300.0	7,030.4	13,387.8	7,117.5	122.3	122.3	105.68	-6,278.9	-198.1	322.2	85.3	236.85	1.360	Level 3
13,400.0	7,029.8	13,487.8	7,117.2	124.2	124.2	105.74	-6,378.9	-198.1	322.2	81.8	240.48	1.340	Level 3
13,500.0	7,029.1	13,587.8	7,116.9	126.1	126.1	105.80	-6,478.9	-198.1	322.3	78.2	244.11	1.320	Level 3
13,600.0	7,028.5	13,687.8	7,116.6	128.0	128.0	105.86	-6,578.9	-198.1	322.4	74.7	247.74	1.302	Level 3
13,700.0	7,027.8	13,787.8	7,116.3	129.9	129.9	105.92	-6,678.8	-198.1	322.5	71.2	251.37	1.283	Level 3
13,800.0	7,027.2	13,887.8	7,116.0	131.8	131.8	105.98	-6,778.8	-198.1	322.6	67.6	254.99	1.265	Level 3
13,900.0	7,026.5	13,987.8	7,115.7	133.7	133.7	106.04	-6,878.8	-198.1	322.7	64.1	258.62	1.248	Level 2
14,000.0	7,025.9	14,087.8	7,115.4	135.6	135.6	106.10	-6,978.8	-198.1	322.8	60.6	262.24	1.231	Level 2
14,100.0	7,025.2	14,187.8	7,115.1	137.5	137.5	106.16	-7,078.8	-198.1	322.9	57.1	265.86	1.215	Level 2
14,136.3	7,025.0	14,223.8	7,115.0	138.2	138.2	106.18	-7,114.9	-198.1	323.0	55.8	267.17	1.209	Level 2, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	89.99	0.0	30.7	30.7				
100.0	100.0	99.0	99.0	0.1	0.1	89.99	0.0	30.7	30.7	30.5	0.22	137.172	
200.0	200.0	199.0	199.0	0.3	0.3	89.99	0.0	30.7	30.7	30.0	0.67	45.648	
300.0	300.0	299.0	299.0	0.6	0.6	89.99	0.0	30.7	30.7	29.6	1.12	27.352	
400.0	400.0	399.0	399.0	0.8	0.8	89.99	0.0	30.7	30.7	29.1	1.57	19.526	
500.0	500.0	499.0	499.0	1.0	1.0	89.99	0.0	30.7	30.7	28.7	2.02	15.182	
600.0	600.0	599.0	599.0	1.2	1.2	89.99	0.0	30.7	30.7	28.2	2.47	12.419	
700.0	700.0	699.0	699.0	1.5	1.5	89.99	0.0	30.7	30.7	27.8	2.92	10.507	
800.0	800.0	799.0	799.0	1.7	1.7	89.99	0.0	30.7	30.7	27.3	3.37	9.105	
900.0	900.0	899.0	899.0	1.9	1.9	89.99	0.0	30.7	30.7	26.9	3.82	8.033	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	89.99	0.0	30.7	30.7	26.4	4.27	7.187	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	89.99	0.0	30.7	30.7	26.0	4.72	6.502	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	89.99	0.0	30.7	30.7	25.5	5.17	5.937	CC, ES
1,300.0	1,300.0	1,298.5	1,298.5	2.8	2.8	89.40	0.3	31.5	31.5	25.9	5.61	5.611	
1,400.0	1,400.0	1,397.9	1,397.9	3.0	3.0	87.77	1.3	33.8	33.9	27.8	6.04	5.608	
1,500.0	1,500.0	1,497.3	1,497.1	3.3	3.2	85.51	3.0	37.8	38.0	31.5	6.48	5.860	
1,600.0	1,600.0	1,596.4	1,596.1	3.5	3.4	83.07	5.3	43.3	43.7	36.8	6.92	6.327	
1,700.0	1,700.0	1,695.3	1,694.7	3.7	3.7	80.74	8.2	50.4	51.3	43.9	7.36	6.971	
1,800.0	1,800.0	1,793.9	1,792.9	3.9	3.9	78.69	11.8	59.1	60.6	52.8	7.80	7.764	
1,900.0	1,900.0	1,892.2	1,890.5	4.2	4.1	76.95	16.0	69.2	71.6	63.3	8.25	8.681	
2,000.0	2,000.0	1,990.0	1,987.5	4.4	4.4	75.51	20.9	80.9	84.3	75.6	8.69	9.699	
2,100.0	2,100.0	2,087.5	2,084.0	4.6	4.7	51.38	26.4	94.0	98.2	89.1	9.12	10.774	
2,200.0	2,200.0	2,184.7	2,179.8	4.8	5.0	51.26	32.4	108.6	112.8	103.2	9.56	11.794	
2,300.0	2,299.9	2,281.5	2,275.1	5.1	5.3	51.65	39.1	124.6	127.9	117.9	10.01	12.780	
2,400.0	2,399.7	2,378.0	2,369.7	5.3	5.6	52.37	46.4	142.1	143.6	133.1	10.45	13.735	
2,500.0	2,499.4	2,474.1	2,463.6	5.5	6.0	53.32	54.2	160.9	159.9	149.0	10.91	14.661	
2,600.0	2,598.9	2,572.1	2,559.1	5.7	6.4	54.48	62.6	181.2	176.4	165.0	11.38	15.509	
2,700.0	2,698.3	2,670.7	2,655.3	6.0	6.8	55.87	71.1	201.5	192.1	180.2	11.86	16.199	
2,800.0	2,797.4	2,769.5	2,751.5	6.2	7.2	57.43	79.6	221.9	206.9	194.5	12.35	16.747	
2,900.0	2,896.3	2,868.2	2,847.8	6.5	7.6	59.17	88.1	242.4	221.0	208.1	12.87	17.166	
3,000.0	2,995.0	2,967.0	2,944.0	6.8	8.0	61.07	96.6	262.8	234.5	221.0	13.42	17.474	
3,100.0	3,093.5	3,065.8	3,040.3	7.0	8.4	62.90	105.1	283.2	248.1	234.1	13.99	17.733	
3,200.0	3,192.1	3,164.6	3,136.6	7.3	8.9	64.53	113.6	303.6	261.9	247.3	14.58	17.967	
3,300.0	3,290.7	3,263.3	3,232.8	7.6	9.3	66.00	122.1	324.0	275.9	260.7	15.18	18.175	
3,400.0	3,389.3	3,362.1	3,329.1	8.0	9.8	67.33	130.6	344.4	290.1	274.3	15.80	18.360	
3,500.0	3,487.9	3,460.9	3,425.4	8.3	10.2	68.54	139.1	364.8	304.4	288.0	16.43	18.525	
3,600.0	3,586.5	3,559.7	3,521.6	8.6	10.7	69.63	147.6	385.3	318.8	301.8	17.08	18.672	
3,700.0	3,685.1	3,658.4	3,617.9	8.9	11.1	70.64	156.1	405.7	333.4	315.7	17.73	18.803	
3,800.0	3,783.7	3,757.2	3,714.2	9.2	11.6	71.55	164.5	426.1	348.0	329.6	18.39	18.920	
3,900.0	3,882.3	3,856.0	3,810.4	9.6	12.0	72.40	173.0	446.5	362.7	343.7	19.07	19.024	
4,000.0	3,981.0	3,954.8	3,906.7	9.9	12.5	73.26	181.5	466.9	377.7	358.0	19.73	19.147	
4,100.0	4,080.2	4,053.5	4,002.9	10.1	12.9	73.75	190.0	487.3	393.6	373.3	20.31	19.385	
4,200.0	4,179.7	4,152.0	4,099.0	10.4	13.4	73.77	198.5	507.7	410.5	389.7	20.83	19.703	
4,300.0	4,279.5	4,250.2	4,194.7	10.6	13.8	73.38	207.0	528.0	428.4	407.1	21.31	20.102	
4,400.0	4,379.5	4,348.1	4,290.0	10.7	14.3	72.64	215.4	548.2	447.3	425.6	21.73	20.586	
4,500.0	4,479.5	4,445.5	4,385.0	10.9	14.8	94.67	223.7	568.4	467.2	445.1	22.12	21.126	
4,600.0	4,579.5	4,543.0	4,480.0	11.1	15.2	93.47	232.1	588.5	487.3	464.8	22.52	21.639	
4,700.0	4,679.5	4,643.7	4,578.2	11.3	15.7	92.33	240.8	609.2	507.6	484.6	22.93	22.135	
4,800.0	4,779.5	4,761.1	4,693.3	11.5	16.1	91.25	249.6	630.6	525.6	502.2	23.34	22.515	
4,900.0	4,879.5	4,880.2	4,810.9	11.7	16.5	90.45	256.8	647.8	540.0	516.2	23.75	22.735	
5,000.0	4,979.5	5,000.7	4,930.6	11.9	16.8	89.88	262.1	660.6	550.6	526.4	24.16	22.789	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,100.0	5,079.5	5,122.2	5,051.8	12.1	17.0	89.53	265.5	668.8	557.3	532.8	24.56	22.688	
5,200.0	5,179.5	5,244.3	5,173.8	12.3	17.2	89.39	267.0	672.2	560.1	535.2	24.97	22.434	
5,300.0	5,279.5	5,349.0	5,278.5	12.5	17.3	89.39	267.0	672.3	560.2	534.9	25.36	22.092	
5,400.0	5,379.5	5,449.0	5,378.5	12.7	17.5	89.39	267.0	672.3	560.2	534.5	25.75	21.756	
5,500.0	5,479.5	5,549.0	5,478.5	12.9	17.6	89.39	267.0	672.3	560.2	534.1	26.14	21.429	
5,600.0	5,579.5	5,649.0	5,578.5	13.1	17.8	89.39	267.0	672.3	560.2	533.7	26.54	21.111	
5,700.0	5,679.5	5,749.0	5,678.5	13.3	17.9	89.39	267.0	672.3	560.2	533.3	26.93	20.800	
5,800.0	5,779.5	5,849.0	5,778.5	13.5	18.1	89.39	267.0	672.3	560.2	532.9	27.33	20.497	
5,900.0	5,879.5	5,949.0	5,878.5	13.7	18.2	89.39	267.0	672.3	560.2	532.5	27.73	20.202	
6,000.0	5,979.5	6,049.0	5,978.5	13.9	18.4	89.39	267.0	672.3	560.2	532.1	28.13	19.914	
6,100.0	6,079.5	6,149.0	6,078.5	14.2	18.5	89.39	267.0	672.3	560.2	531.7	28.54	19.633	
6,200.0	6,179.5	6,249.0	6,178.5	14.4	18.7	89.39	267.0	672.3	560.2	531.3	28.94	19.359	
6,300.0	6,279.5	6,349.0	6,278.5	14.6	18.8	89.39	267.0	672.3	560.2	530.9	29.34	19.092	
6,308.4	6,287.9	6,357.4	6,286.9	14.6	18.9	-90.62	267.0	672.3	560.2	530.9	29.37	19.072	
6,400.0	6,379.4	6,448.9	6,378.4	14.7	19.0	-90.99	267.0	672.3	560.3	530.6	29.68	18.880	
6,500.0	6,478.0	6,548.0	6,477.5	14.8	19.2	-92.60	266.9	672.3	560.8	531.0	29.84	18.794	
6,600.0	6,573.6	6,651.1	6,580.1	14.9	19.3	-94.64	257.5	672.3	562.1	532.3	29.87	18.822	
6,700.0	6,664.5	6,757.6	6,683.5	14.9	19.3	-96.53	232.4	672.3	564.0	534.2	29.82	18.910	
6,800.0	6,749.3	6,867.5	6,785.1	14.9	19.3	-98.22	190.8	672.3	566.2	536.4	29.78	19.014	
6,900.0	6,826.5	6,980.6	6,881.8	14.9	19.3	-99.67	132.3	672.3	568.4	538.6	29.80	19.075	
7,000.0	6,894.8	7,096.5	6,970.0	15.0	19.3	-100.84	57.4	672.3	570.5	540.5	29.98	19.029	
7,100.0	6,952.9	7,214.7	7,046.3	15.3	19.3	-101.68	-32.7	672.3	572.1	541.7	30.43	18.803	
7,200.0	6,999.9	7,334.4	7,107.5	15.8	19.5	-102.16	-135.4	672.3	573.1	541.9	31.22	18.358	
7,300.0	7,035.0	7,454.9	7,150.9	16.5	19.8	-102.27	-247.6	672.3	573.3	540.9	32.41	17.687	
7,400.0	7,057.6	7,575.1	7,174.9	17.3	20.4	-102.00	-365.3	672.3	572.7	538.7	34.04	16.828	
7,500.0	7,067.3	7,689.5	7,179.7	18.3	21.2	-101.43	-479.6	672.3	571.6	535.6	35.98	15.887	
7,554.1	7,068.5	7,743.6	7,179.3	18.9	21.7	-101.29	-533.6	672.3	571.3	534.1	37.14	15.383	
7,600.0	7,067.2	7,789.5	7,178.9	19.4	22.1	-101.38	-579.5	672.3	571.4	533.3	38.09	15.001	
7,700.0	7,066.6	7,889.5	7,178.2	20.7	23.2	-101.37	-679.5	672.3	571.4	530.9	40.48	14.117	
7,800.0	7,065.9	7,989.5	7,177.5	22.0	24.4	-101.36	-779.5	672.3	571.4	528.3	43.06	13.270	
7,900.0	7,065.3	8,089.5	7,176.7	23.4	25.6	-101.35	-879.5	672.3	571.4	525.6	45.81	12.473	
8,000.0	7,064.6	8,189.5	7,176.0	24.9	27.0	-101.34	-979.5	672.3	571.4	522.7	48.69	11.734	
8,100.0	7,064.0	8,289.5	7,175.3	26.4	28.4	-101.33	-1,079.5	672.3	571.3	519.7	51.70	11.052	
8,200.0	7,063.3	8,389.5	7,174.5	28.0	29.9	-101.33	-1,179.5	672.3	571.3	516.5	54.79	10.427	
8,300.0	7,062.7	8,489.5	7,173.8	29.6	31.4	-101.32	-1,279.5	672.3	571.3	513.3	57.97	9.855	
8,400.0	7,062.0	8,589.5	7,173.1	31.3	33.0	-101.31	-1,379.5	672.3	571.3	510.1	61.22	9.332	
8,500.0	7,061.4	8,689.5	7,172.3	33.0	34.6	-101.30	-1,479.5	672.3	571.3	506.8	64.52	8.854	
8,600.0	7,060.8	8,789.5	7,171.6	34.7	36.2	-101.29	-1,579.5	672.3	571.3	503.4	67.88	8.416	
8,700.0	7,060.1	8,889.5	7,170.9	36.4	37.9	-101.28	-1,679.5	672.3	571.2	500.0	71.27	8.015	
8,800.0	7,059.5	8,989.5	7,170.1	38.2	39.5	-101.27	-1,779.5	672.3	571.2	496.5	74.71	7.646	
8,900.0	7,058.8	9,089.5	7,169.4	39.9	41.2	-101.27	-1,879.5	672.3	571.2	493.0	78.17	7.307	
9,000.0	7,058.2	9,189.5	7,168.7	41.7	43.0	-101.26	-1,979.5	672.3	571.2	489.5	81.66	6.994	
9,100.0	7,057.5	9,289.5	7,167.9	43.5	44.7	-101.25	-2,079.5	672.3	571.2	486.0	85.18	6.705	
9,200.0	7,056.9	9,389.5	7,167.2	45.3	46.5	-101.24	-2,179.5	672.3	571.2	482.4	88.72	6.438	
9,300.0	7,056.2	9,489.5	7,166.5	47.1	48.2	-101.23	-2,279.5	672.3	571.1	478.9	92.28	6.189	
9,400.0	7,055.6	9,589.5	7,165.7	48.9	50.0	-101.22	-2,379.5	672.3	571.1	475.3	95.85	5.958	
9,500.0	7,054.9	9,689.5	7,165.0	50.8	51.8	-101.21	-2,479.5	672.3	571.1	471.7	99.45	5.743	
9,600.0	7,054.3	9,789.5	7,164.3	52.6	53.6	-101.21	-2,579.5	672.3	571.1	468.0	103.05	5.542	
9,700.0	7,053.6	9,889.5	7,163.5	54.4	55.4	-101.20	-2,679.5	672.3	571.1	464.4	106.67	5.354	
9,800.0	7,053.0	9,989.5	7,162.8	56.3	57.2	-101.19	-2,779.5	672.3	571.1	460.8	110.29	5.178	
9,900.0	7,052.4	10,089.5	7,162.1	58.1	59.0	-101.18	-2,879.5	672.3	571.0	457.1	113.93	5.012	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	7,051.7	10,189.5	7,161.3	60.0	60.8	-101.17	-2,979.5	672.3	571.0	453.4	117.58	4.857	
10,100.0	7,051.1	10,289.5	7,160.6	61.8	62.7	-101.16	-3,079.5	672.3	571.0	449.8	121.23	4.710	
10,200.0	7,050.4	10,389.5	7,159.9	63.7	64.5	-101.15	-3,179.5	672.3	571.0	446.1	124.89	4.572	
10,300.0	7,049.8	10,489.5	7,159.1	65.6	66.3	-101.15	-3,279.5	672.3	571.0	442.4	128.56	4.441	
10,400.0	7,049.1	10,589.5	7,158.4	67.4	68.2	-101.14	-3,379.5	672.3	571.0	438.7	132.24	4.318	
10,500.0	7,048.5	10,689.5	7,157.7	69.3	70.0	-101.13	-3,479.5	672.3	570.9	435.0	135.92	4.200	
10,600.0	7,047.8	10,789.5	7,156.9	71.2	71.9	-101.12	-3,579.5	672.3	570.9	431.3	139.61	4.089	
10,700.0	7,047.2	10,889.5	7,156.2	73.1	73.7	-101.11	-3,679.5	672.3	570.9	427.6	143.30	3.984	
10,800.0	7,046.5	10,989.5	7,155.5	74.9	75.6	-101.10	-3,779.5	672.3	570.9	423.9	147.00	3.884	
10,900.0	7,045.9	11,089.5	7,154.7	76.8	77.4	-101.09	-3,879.5	672.3	570.9	420.2	150.70	3.788	
11,000.0	7,045.3	11,189.5	7,154.0	78.7	79.3	-101.09	-3,979.4	672.3	570.9	416.5	154.41	3.697	
11,100.0	7,044.6	11,289.5	7,153.3	80.6	81.2	-101.08	-4,079.4	672.3	570.8	412.7	158.12	3.610	
11,200.0	7,044.0	11,389.5	7,152.5	82.5	83.0	-101.07	-4,179.4	672.3	570.8	409.0	161.83	3.527	
11,300.0	7,043.3	11,489.5	7,151.8	84.3	84.9	-101.06	-4,279.4	672.3	570.8	405.3	165.54	3.448	
11,400.0	7,042.7	11,589.5	7,151.1	86.2	86.8	-101.05	-4,379.4	672.3	570.8	401.5	169.26	3.372	
11,500.0	7,042.0	11,689.5	7,150.3	88.1	88.7	-101.04	-4,479.4	672.3	570.8	397.8	172.99	3.300	
11,600.0	7,041.4	11,789.5	7,149.6	90.0	90.5	-101.03	-4,579.4	672.3	570.8	394.0	176.71	3.230	
11,700.0	7,040.7	11,889.5	7,148.9	91.9	92.4	-101.03	-4,679.4	672.3	570.7	390.3	180.44	3.163	
11,800.0	7,040.1	11,989.5	7,148.1	93.8	94.3	-101.02	-4,779.4	672.3	570.7	386.6	184.17	3.099	
11,900.0	7,039.4	12,089.5	7,147.4	95.7	96.2	-101.01	-4,879.4	672.3	570.7	382.8	187.90	3.037	
12,000.0	7,038.8	12,189.5	7,146.7	97.6	98.1	-101.00	-4,979.4	672.3	570.7	379.1	191.63	2.978	
12,100.0	7,038.1	12,289.5	7,145.9	99.5	100.0	-100.99	-5,079.4	672.3	570.7	375.3	195.37	2.921	
12,200.0	7,037.5	12,389.5	7,145.2	101.4	101.8	-100.98	-5,179.4	672.3	570.7	371.5	199.11	2.866	
12,300.0	7,036.9	12,489.5	7,144.5	103.3	103.7	-100.97	-5,279.4	672.3	570.6	367.8	202.85	2.813	
12,400.0	7,036.2	12,589.5	7,143.7	105.2	105.6	-100.97	-5,379.4	672.3	570.6	364.0	206.59	2.762	
12,500.0	7,035.6	12,689.5	7,143.0	107.1	107.5	-100.96	-5,479.4	672.3	570.6	360.3	210.33	2.713	
12,600.0	7,034.9	12,789.5	7,142.3	109.0	109.4	-100.95	-5,579.4	672.3	570.6	356.5	214.08	2.665	
12,700.0	7,034.3	12,889.5	7,141.5	110.9	111.3	-100.94	-5,679.4	672.3	570.6	352.7	217.83	2.619	
12,800.0	7,033.6	12,989.5	7,140.8	112.8	113.2	-100.93	-5,779.4	672.3	570.6	349.0	221.58	2.575	
12,900.0	7,033.0	13,089.5	7,140.1	114.7	115.1	-100.92	-5,879.4	672.3	570.5	345.2	225.32	2.532	
13,000.0	7,032.3	13,189.5	7,139.4	116.6	117.0	-100.91	-5,979.4	672.3	570.5	341.4	229.08	2.491	
13,100.0	7,031.7	13,289.5	7,138.6	118.5	118.9	-100.90	-6,079.4	672.3	570.5	337.7	232.83	2.450	
13,200.0	7,031.0	13,389.5	7,137.9	120.4	120.8	-100.90	-6,179.4	672.3	570.5	333.9	236.58	2.411	
13,300.0	7,030.4	13,489.5	7,137.2	122.3	122.7	-100.89	-6,279.4	672.3	570.5	330.1	240.34	2.374	
13,400.0	7,029.8	13,589.5	7,136.4	124.2	124.5	-100.88	-6,379.4	672.3	570.5	326.4	244.09	2.337	
13,500.0	7,029.1	13,689.5	7,135.7	126.1	126.4	-100.87	-6,479.4	672.3	570.4	322.6	247.85	2.302	
13,600.0	7,028.5	13,789.5	7,135.0	128.0	128.3	-100.86	-6,579.4	672.3	570.4	318.8	251.61	2.267	
13,700.0	7,027.8	13,889.5	7,134.2	129.9	130.2	-100.85	-6,679.4	672.3	570.4	315.0	255.37	2.234	
13,800.0	7,027.2	13,989.5	7,133.5	131.8	132.1	-100.84	-6,779.4	672.3	570.4	311.3	259.13	2.201	
13,900.0	7,026.5	14,089.5	7,132.8	133.7	134.0	-100.84	-6,879.4	672.3	570.4	307.5	262.89	2.170	
14,000.0	7,025.9	14,189.5	7,132.0	135.6	135.9	-100.83	-6,979.4	672.3	570.4	303.7	266.65	2.139	
14,100.0	7,025.2	14,289.5	7,131.3	137.5	137.8	-100.82	-7,079.4	672.3	570.3	299.9	270.41	2.109	
14,136.3	7,025.0	14,325.8	7,131.0	138.2	138.5	-100.82	-7,115.7	672.3	570.3	298.6	271.78	2.099	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh O13-21D Sec.13-T4N-R67W - Stroh O13-21D - Stroh O13-21D - Stroh O13-21D

Offset Site Error: 0.0 ft

Survey Program: 475- **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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	1.0	1.0	0.0	0.0	131.69	-327.9	368.1	493.0				
100.0	100.0	101.3	101.3	0.1	0.1	131.69	-327.8	368.1	492.9	492.7	0.23	2,177.550	
200.0	200.0	201.7	201.7	0.3	0.2	131.68	-327.7	368.1	492.8	492.3	0.56	874.129	
300.0	300.0	302.0	302.0	0.6	0.3	131.68	-327.6	368.0	492.7	491.8	0.90	546.656	
400.0	400.0	402.4	402.4	0.8	0.5	131.66	-327.3	367.9	492.4	491.2	1.24	397.544	
500.0	500.0	503.0	503.0	1.0	0.6	131.65	-327.1	367.7	492.1	490.5	1.61	306.483	
600.0	600.0	604.2	604.2	1.2	0.8	131.66	-326.8	367.2	491.6	489.5	2.05	239.787	
700.0	700.0	704.4	704.4	1.5	1.0	131.68	-326.4	366.7	490.9	488.4	2.48	197.550	
800.0	800.0	804.9	804.9	1.7	1.2	131.67	-325.9	366.1	490.2	487.3	2.92	167.696	
900.0	900.0	905.6	905.5	1.9	1.5	131.68	-325.4	365.4	489.3	485.9	3.36	145.437	
1,000.0	1,000.0	1,006.2	1,006.1	2.1	1.7	131.70	-324.8	364.6	488.3	484.5	3.81	128.225	
1,100.0	1,100.0	1,106.6	1,106.6	2.4	1.9	131.73	-324.3	363.6	487.2	483.0	4.25	114.608	
1,200.0	1,200.0	1,207.7	1,207.7	2.6	2.1	131.80	-323.9	362.3	486.0	481.3	4.69	103.518	
1,300.0	1,300.0	1,310.0	1,310.0	2.8	2.3	131.88	-323.3	360.6	484.4	479.2	5.14	94.275	
1,400.0	1,400.0	1,412.2	1,412.2	3.0	2.6	131.86	-321.7	359.1	482.2	476.7	5.58	86.402	
1,500.0	1,500.0	1,509.2	1,509.1	3.3	2.8	131.80	-319.9	357.8	480.1	474.0	6.01	79.877	
1,588.2	1,588.2	1,589.3	1,589.2	3.5	2.9	131.66	-318.5	358.0	479.2	472.9	6.37	75.286	CC
1,600.0	1,600.0	1,599.8	1,599.7	3.5	2.9	131.63	-318.4	358.2	479.2	472.8	6.41	74.744	ES
1,700.0	1,700.0	1,694.4	1,694.2	3.7	3.1	131.27	-316.7	361.0	480.3	473.4	6.82	70.399	
1,800.0	1,800.0	1,799.0	1,798.7	3.9	3.3	130.60	-313.3	365.5	481.4	474.1	7.27	66.242	
1,900.0	1,900.0	1,894.0	1,893.5	4.2	3.5	129.84	-309.0	370.4	482.4	474.7	7.69	62.688	
2,000.0	2,000.0	1,989.0	1,988.2	4.4	3.7	128.97	-304.6	376.6	484.5	476.4	8.12	59.657	
2,100.0	2,100.0	2,087.3	2,085.9	4.6	4.0	104.61	-298.6	385.0	487.7	479.1	8.57	56.882	
2,200.0	2,200.0	2,190.9	2,188.7	4.8	4.2	103.50	-291.0	394.7	491.3	482.2	9.05	54.293	
2,300.0	2,299.9	2,290.9	2,288.0	5.1	4.5	102.60	-282.9	403.4	494.6	485.0	9.52	51.948	
2,400.0	2,399.7	2,387.7	2,384.0	5.3	4.7	101.78	-274.4	413.0	498.8	488.8	10.00	49.902	
2,500.0	2,499.4	2,490.6	2,485.8	5.5	5.0	100.96	-264.2	424.0	503.5	493.0	10.51	47.926	
2,600.0	2,598.9	2,585.8	2,579.6	5.7	5.3	100.11	-252.8	435.5	508.6	497.6	11.02	46.148	
2,700.0	2,698.3	2,677.9	2,669.6	6.0	5.6	99.09	-239.6	449.5	515.6	504.0	11.57	44.567	
2,800.0	2,797.4	2,774.4	2,763.0	6.2	6.0	97.76	-222.7	467.0	523.7	511.5	12.17	43.033	
2,900.0	2,896.3	2,875.7	2,861.0	6.5	6.4	96.57	-205.0	485.8	532.8	520.0	12.80	41.633	
3,000.0	2,995.0	2,975.3	2,957.9	6.8	6.7	95.84	-188.9	502.6	541.3	527.8	13.43	40.291	
3,100.0	3,093.5	3,064.1	3,043.8	7.0	7.1	95.16	-173.9	519.0	551.0	536.9	14.07	39.148	
3,200.0	3,192.1	3,169.1	3,144.9	7.3	7.6	94.20	-155.1	540.1	561.7	546.9	14.80	37.942	
3,300.0	3,290.7	3,265.9	3,237.9	7.6	8.0	93.22	-136.3	559.4	571.9	556.4	15.53	36.830	
3,400.0	3,389.3	3,360.0	3,328.0	8.0	8.5	92.19	-117.5	579.4	583.0	566.7	16.27	35.841	
3,500.0	3,487.9	3,458.3	3,421.8	8.3	9.0	91.12	-97.6	600.5	594.5	577.5	17.03	34.920	
3,600.0	3,586.5	3,552.4	3,511.8	8.6	9.5	90.19	-79.2	621.0	606.7	589.0	17.76	34.168	
3,700.0	3,685.1	3,653.5	3,608.5	8.9	10.0	89.25	-59.9	643.3	619.6	601.1	18.53	33.447	
3,800.0	3,783.7	3,753.4	3,703.8	9.2	10.5	88.24	-39.4	665.2	632.0	612.6	19.32	32.717	
3,900.0	3,882.3	3,846.0	3,791.5	9.6	11.0	87.15	-18.6	686.5	644.9	624.8	20.10	32.082	
4,000.0	3,981.0	3,945.9	3,885.5	9.9	11.6	85.99	5.1	710.4	658.6	637.7	20.92	31.488	
4,100.0	4,080.2	4,040.3	3,974.3	10.1	12.2	84.80	27.8	733.2	673.1	651.5	21.62	31.136	
4,200.0	4,179.7	4,144.5	4,073.0	10.4	12.8	83.42	50.7	757.2	687.9	665.6	22.28	30.869	
4,300.0	4,279.5	4,257.8	4,181.9	10.6	13.3	82.04	71.5	781.0	702.5	679.6	22.90	30.683	
4,400.0	4,379.5	4,361.4	4,282.4	10.7	13.8	80.81	88.1	799.7	715.8	692.4	23.40	30.586	
4,500.0	4,479.5	4,475.8	4,394.2	10.9	14.3	102.53	104.2	817.9	728.1	704.2	23.88	30.485	
4,600.0	4,579.5	4,570.8	4,487.2	11.1	14.7	101.33	116.7	832.5	740.6	716.3	24.32	30.447	
4,700.0	4,679.5	4,682.0	4,596.5	11.3	15.1	100.09	129.9	848.4	752.6	727.8	24.79	30.361	
4,800.0	4,779.5	4,796.0	4,709.0	11.5	15.5	99.07	141.3	862.1	762.9	737.6	25.24	30.226	
4,900.0	4,879.5	4,908.6	4,820.6	11.7	15.8	98.21	151.1	873.1	771.2	745.6	25.67	30.042	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Offset Design Stroh O13-21D Sec.13-T4N-R67W - Stroh O13-21D - Stroh O13-21D - Stroh O13-21D

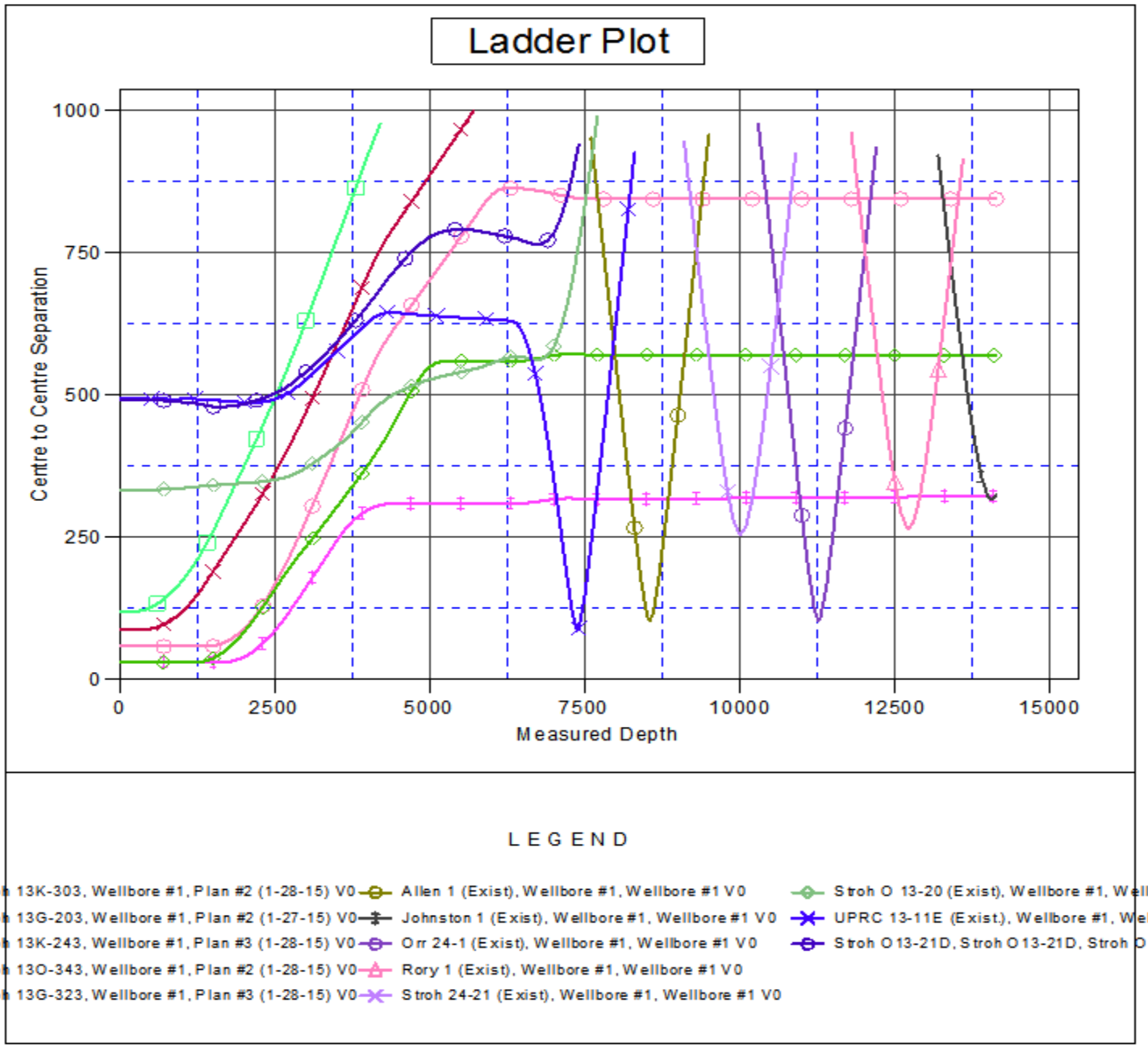
Offset Site Error: 0.0 ft

Survey Program: 475- **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset 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
5,000.0	4,979.5	5,018.5	4,929.8	11.9	16.1	97.46	160.1	882.5	778.6	752.5	26.09	29.839	
5,100.0	5,079.5	5,136.5	5,047.3	12.1	16.4	96.83	167.8	889.8	784.0	757.4	26.52	29.564	
5,200.0	5,179.5	5,245.7	5,156.3	12.3	16.6	96.45	172.6	894.4	787.6	760.7	26.91	29.268	
5,300.0	5,279.5	5,355.6	5,266.2	12.5	16.8	96.15	176.4	897.5	790.1	762.8	27.30	28.941	
5,400.0	5,379.5	5,462.3	5,372.8	12.7	17.0	95.95	179.0	899.2	791.4	763.7	27.68	28.593	
5,500.0	5,479.5	5,571.0	5,481.4	12.9	17.2	95.85	180.4	899.8	791.8	763.8	28.05	28.226	
5,600.0	5,579.5	5,675.0	5,585.5	13.1	17.3	95.86	180.2	899.5	791.5	763.1	28.41	27.856	
5,700.0	5,679.5	5,783.4	5,693.8	13.3	17.4	96.01	178.2	898.0	790.4	761.6	28.78	27.464	
5,800.0	5,779.5	5,884.3	5,794.7	13.5	17.5	96.19	176.1	895.9	788.5	759.4	29.13	27.068	
5,900.0	5,879.5	5,987.5	5,897.8	13.7	17.7	96.31	174.6	893.7	786.5	757.1	29.49	26.674	
6,000.0	5,979.5	6,086.6	5,996.9	13.9	17.8	96.36	174.1	891.5	784.4	754.6	29.85	26.282	
6,100.0	6,079.5	6,187.1	6,097.4	14.2	17.9	96.40	173.8	889.3	782.3	752.0	30.21	25.895	
6,200.0	6,179.5	6,287.1	6,197.4	14.4	18.0	96.41	173.9	887.2	780.1	749.6	30.57	25.516	
6,300.0	6,279.5	6,385.0	6,295.2	14.6	18.2	96.38	174.5	885.1	778.0	747.1	30.94	25.147	
6,400.0	6,379.4	6,488.1	6,398.3	14.7	18.3	-84.08	175.1	883.2	775.7	744.4	31.23	24.834	
6,500.0	6,478.0	6,583.2	6,493.4	14.8	18.4	-85.53	175.7	881.2	772.0	740.6	31.35	24.625	
6,600.0	6,573.6	6,679.4	6,589.6	14.9	18.6	-87.91	176.2	879.4	768.3	736.9	31.34	24.518	
6,700.0	6,664.5	6,772.1	6,682.3	14.9	18.7	-91.00	176.6	877.3	765.4	734.2	31.24	24.500 SF	
6,730.4	6,691.0	6,794.2	6,704.4	14.9	18.7	-91.82	176.5	876.9	765.2	733.9	31.21	24.513	
6,800.0	6,749.3	6,843.9	6,754.0	14.9	18.8	-93.71	175.9	876.4	766.5	735.4	31.15	24.605	
6,900.0	6,826.5	6,934.2	6,844.4	14.9	18.9	-97.46	175.4	875.2	772.8	741.8	31.05	24.892	
7,000.0	6,894.8	7,000.9	6,911.0	15.0	19.0	-100.07	175.8	873.7	786.2	755.1	31.09	25.290	
7,100.0	6,952.9	7,051.3	6,961.5	15.3	19.1	-101.30	176.0	872.8	809.3	778.0	31.36	25.804	
7,200.0	6,999.9	7,092.3	7,002.4	15.8	19.1	-101.24	175.6	872.8	843.2	811.3	31.95	26.394	
7,300.0	7,035.0	7,132.2	7,042.3	16.5	19.2	-100.29	175.0	872.9	887.5	854.7	32.82	27.037	
7,400.0	7,057.6	7,158.3	7,068.4	17.3	19.2	-97.45	174.8	872.7	941.1	907.1	34.04	27.646	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4820.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinates are relative to: Stroh 13K-223
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.42°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	**Local Co-ordinate Reference:**	Well Stroh 13K-223
Project:	SEC.13-T4N-R67W	**TVD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Reference Site:	Stroh 13GK-HZ Pad Sec. 13-T4N-R67W	**MD Reference:**	WELL @ 4820.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Stroh 13K-223	**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 #3 (1-28-15)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4820.0ft (Original Well Elev) Coordinates are relative to: Stroh 13K-223
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.42°