

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Stroh 13K-303**

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

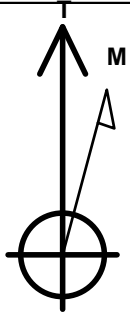
Ground Elevation: 4805.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1356828.21	3183256.02	40.311030	-104.842870	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2353'FSL & 1616'FWL, Sec.13	1.0	0.0	-167.3	Point
BHL 500'FSL & 1430'FWL, Sec.24	7115.0	-7114.9	-167.4	Point



Azimuths to True North
Magnetic North: 8.42°

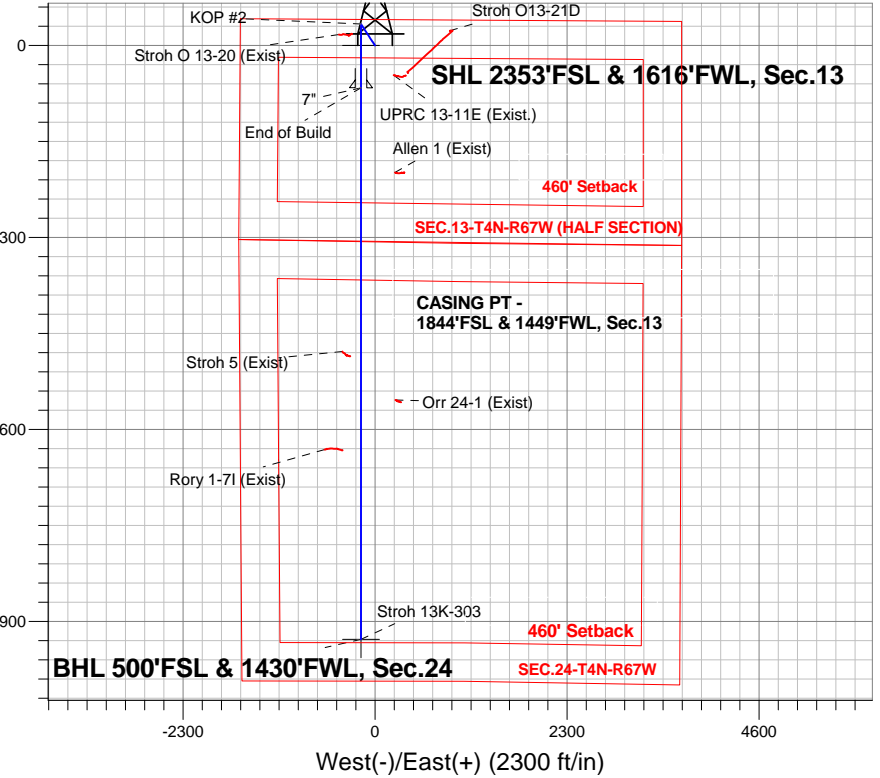
Magnetic Field
Strength: 52703.2nT
Dip Angle: 66.84°
Date: 12/31/2014
Model: IGRF2010

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

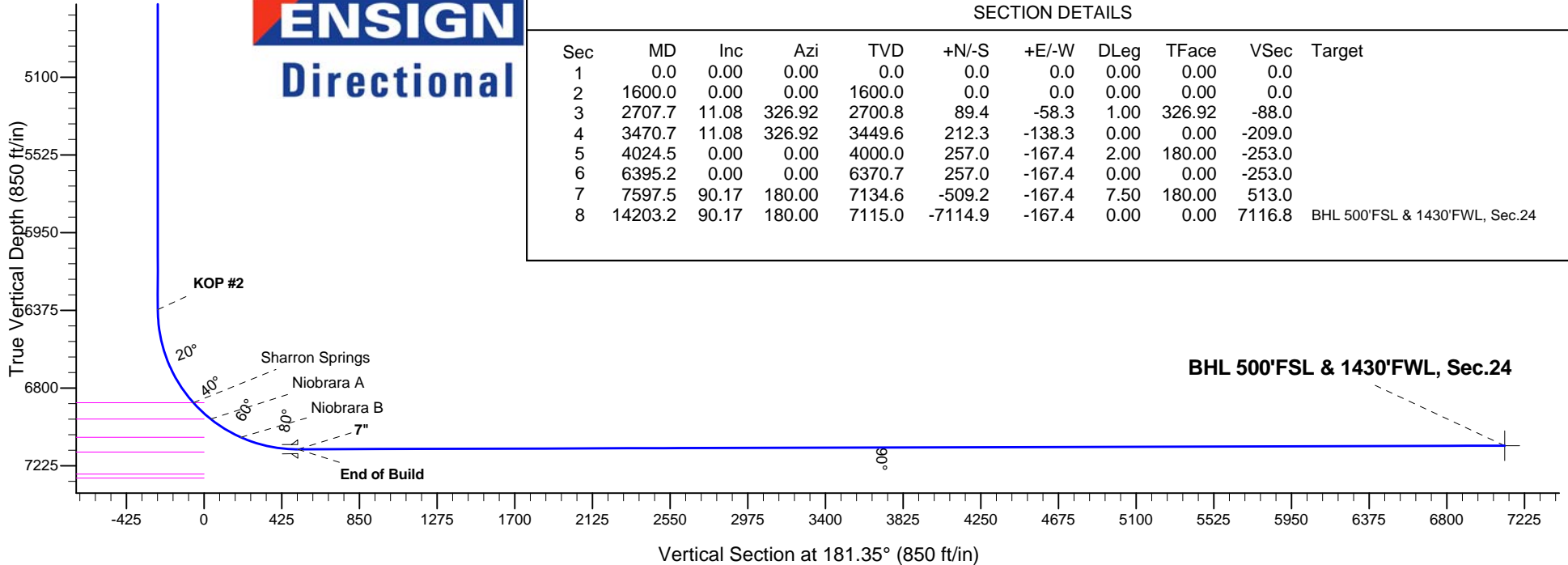
ANNOTATIONS

TVD	MD	Annotation
1600.0	1600.0	KOP #1
6370.7	6395.2	KOP #2
7134.6	7597.5	End of Build

South(-)/North(+) (2300 ft/in)



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	1600.0	0.00	0.00	1600.0	0.0	0.0	0.00	0.00	0.0	
3	2707.7	11.08	326.92	2700.8	89.4	-58.3	1.00	326.92	-88.0	
4	3470.7	11.08	326.92	3449.6	212.3	-138.3	0.00	0.00	-209.0	
5	4024.5	0.00	0.00	4000.0	257.0	-167.4	2.00	180.00	-253.0	
6	6395.2	0.00	0.00	6370.7	257.0	-167.4	0.00	0.00	-253.0	
7	7597.5	90.17	180.00	7134.6	-509.2	-167.4	7.50	180.00	513.0	
8	14203.2	90.17	180.00	7115.0	-7114.9	-167.4	0.00	0.00	7116.8	BHL 500'FSL & 1430'FWL, Sec.24



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

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

Stroh 13K-303

Wellbore #1

Plan: Plan #2 (1-28-15)

Standard Planning Report

30 January, 2015

Database:	landmark	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (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
From:	Lat/Long	Easting:	3,183,166.78 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.311030
		Longitude:	-104.843190
		Grid Convergence:	0.42 °

Well	Stroh 13K-303		
Well Position	+N/-S	0.0 ft	Northing: 1,356,828.21 ft
	+E/-W	89.2 ft	Easting: 3,183,256.02 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40.311030
			Longitude: -104.842870
			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 #2 (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	181.35

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,707.7	11.08	326.92	2,700.8	89.4	-58.3	1.00	1.00	0.00	326.92	
3,470.7	11.08	326.92	3,449.6	212.3	-138.3	0.00	0.00	0.00	0.00	
4,024.5	0.00	0.00	4,000.0	257.0	-167.4	2.00	-2.00	0.00	180.00	
6,395.2	0.00	0.00	6,370.7	257.0	-167.4	0.00	0.00	0.00	0.00	
7,597.5	90.17	180.00	7,134.6	-509.2	-167.4	7.50	7.50	0.00	180.00	
14,203.2	90.17	180.00	7,115.0	-7,114.9	-167.4	0.00	0.00	0.00	0.00	BHL 500'FSL & 143

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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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (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
KOP #1									
1,700.0	1.00	326.92	1,700.0	0.7	-0.5	-0.7	1.00	1.00	0.00
1,800.0	2.00	326.92	1,800.0	2.9	-1.9	-2.9	1.00	1.00	0.00
1,900.0	3.00	326.92	1,899.9	6.6	-4.3	-6.5	1.00	1.00	0.00
2,000.0	4.00	326.92	1,999.7	11.7	-7.6	-11.5	1.00	1.00	0.00
2,100.0	5.00	326.92	2,099.4	18.3	-11.9	-18.0	1.00	1.00	0.00
2,200.0	6.00	326.92	2,198.9	26.3	-17.1	-25.9	1.00	1.00	0.00
2,300.0	7.00	326.92	2,298.3	35.8	-23.3	-35.2	1.00	1.00	0.00
2,400.0	8.00	326.92	2,397.4	46.7	-30.4	-46.0	1.00	1.00	0.00
2,500.0	9.00	326.92	2,496.3	59.1	-38.5	-58.2	1.00	1.00	0.00
2,600.0	10.00	326.92	2,594.9	72.9	-47.5	-71.8	1.00	1.00	0.00
2,700.0	11.00	326.92	2,693.3	88.2	-57.4	-86.8	1.00	1.00	0.00
2,707.7	11.08	326.92	2,700.8	89.4	-58.3	-88.0	1.00	1.00	0.00
2,800.0	11.08	326.92	2,791.4	104.3	-67.9	-102.7	0.00	0.00	0.00
2,900.0	11.08	326.92	2,889.5	120.4	-78.4	-118.5	0.00	0.00	0.00
3,000.0	11.08	326.92	2,987.7	136.5	-88.9	-134.4	0.00	0.00	0.00
3,100.0	11.08	326.92	3,085.8	152.6	-99.4	-150.2	0.00	0.00	0.00
3,200.0	11.08	326.92	3,183.9	168.7	-109.9	-166.1	0.00	0.00	0.00
3,300.0	11.08	326.92	3,282.1	184.8	-120.4	-181.9	0.00	0.00	0.00
3,400.0	11.08	326.92	3,380.2	200.9	-130.8	-197.8	0.00	0.00	0.00
3,470.7	11.08	326.92	3,449.6	212.3	-138.3	-209.0	0.00	0.00	0.00
3,500.0	10.49	326.92	3,478.4	216.9	-141.2	-213.5	2.00	-2.00	0.00
3,600.0	8.49	326.92	3,577.0	230.7	-150.2	-227.1	2.00	-2.00	0.00
3,700.0	6.49	326.92	3,676.1	241.6	-157.4	-237.8	2.00	-2.00	0.00
3,800.0	4.49	326.92	3,775.7	249.6	-162.6	-245.7	2.00	-2.00	0.00
3,900.0	2.49	326.92	3,875.5	254.7	-165.9	-250.8	2.00	-2.00	0.00
4,000.0	0.49	326.92	3,975.5	256.9	-167.3	-252.9	2.00	-2.00	0.00
4,024.5	0.00	0.00	4,000.0	257.0	-167.4	-253.0	2.00	-2.00	0.00
4,100.0	0.00	0.00	4,075.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,175.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,275.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,375.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,475.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,575.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,675.5	257.0	-167.4	-253.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,775.5	257.0	-167.4	-253.0	0.00	0.00	0.00

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Well:	Stroh 13K-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (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	4,875.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,975.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,075.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,175.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,275.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,375.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,475.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,575.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,675.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,775.5	257.0	-167.4	-253.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,875.5	257.0	-167.4	-253.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,975.5	257.0	-167.4	-253.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,075.5	257.0	-167.4	-253.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,175.5	257.0	-167.4	-253.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,275.5	257.0	-167.4	-253.0	0.00	0.00	0.00
6,395.2	0.00	0.00	6,370.7	257.0	-167.4	-253.0	0.00	0.00	0.00
KOP #2									
6,400.0	0.36	180.00	6,375.5	257.0	-167.4	-253.0	7.50	7.50	0.00
6,500.0	7.86	180.00	6,475.1	249.8	-167.4	-245.8	7.50	7.50	0.00
6,600.0	15.36	180.00	6,573.0	229.7	-167.4	-225.7	7.50	7.50	0.00
6,700.0	22.86	180.00	6,667.4	197.0	-167.4	-193.0	7.50	7.50	0.00
6,800.0	30.36	180.00	6,756.8	152.2	-167.4	-148.3	7.50	7.50	0.00
6,900.0	37.86	180.00	6,839.5	96.2	-167.4	-92.2	7.50	7.50	0.00
6,952.7	41.81	180.00	6,880.0	62.4	-167.4	-58.5	7.50	7.50	0.00
Sharron Springs									
7,000.0	45.36	180.00	6,914.2	29.8	-167.4	-25.9	7.50	7.50	0.00
7,082.6	51.56	180.00	6,969.0	-32.0	-167.4	35.9	7.50	7.50	0.00
Niobrara A									
7,100.0	52.86	180.00	6,979.6	-45.7	-167.4	49.6	7.50	7.50	0.00
7,200.0	60.36	180.00	7,034.6	-129.1	-167.4	133.0	7.50	7.50	0.00
7,276.3	66.08	180.00	7,069.0	-197.2	-167.4	201.1	7.50	7.50	0.00
Niobrara B									
7,300.0	67.86	180.00	7,078.3	-219.0	-167.4	222.9	7.50	7.50	0.00
7,400.0	75.36	180.00	7,109.8	-313.9	-167.4	317.7	7.50	7.50	0.00
7,500.0	82.86	180.00	7,128.7	-412.0	-167.4	415.8	7.50	7.50	0.00
7,597.5	90.17	180.00	7,134.6	-509.2	-167.4	513.0	7.50	7.50	0.00
End of Build - 7"									
7,600.0	90.17	180.00	7,134.6	-511.7	-167.4	515.5	0.00	0.00	0.00
7,700.0	90.17	180.00	7,134.3	-611.7	-167.4	615.5	0.00	0.00	0.00
7,800.0	90.17	180.00	7,134.0	-711.7	-167.4	715.5	0.00	0.00	0.00
7,900.0	90.17	180.00	7,133.7	-811.7	-167.4	815.5	0.00	0.00	0.00
8,000.0	90.17	180.00	7,133.4	-911.7	-167.4	915.4	0.00	0.00	0.00
8,100.0	90.17	180.00	7,133.1	-1,011.7	-167.4	1,015.4	0.00	0.00	0.00
8,200.0	90.17	180.00	7,132.8	-1,111.7	-167.4	1,115.4	0.00	0.00	0.00
8,300.0	90.17	180.00	7,132.5	-1,211.7	-167.4	1,215.3	0.00	0.00	0.00
8,400.0	90.17	180.00	7,132.2	-1,311.7	-167.4	1,315.3	0.00	0.00	0.00
8,500.0	90.17	180.00	7,131.9	-1,411.7	-167.4	1,415.3	0.00	0.00	0.00
8,600.0	90.17	180.00	7,131.6	-1,511.7	-167.4	1,515.3	0.00	0.00	0.00
8,700.0	90.17	180.00	7,131.3	-1,611.7	-167.4	1,615.2	0.00	0.00	0.00
8,800.0	90.17	180.00	7,131.0	-1,711.7	-167.4	1,715.2	0.00	0.00	0.00
8,900.0	90.17	180.00	7,130.7	-1,811.7	-167.4	1,815.2	0.00	0.00	0.00
9,000.0	90.17	180.00	7,130.4	-1,911.7	-167.4	1,915.1	0.00	0.00	0.00
9,100.0	90.17	180.00	7,130.1	-2,011.7	-167.4	2,015.1	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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (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)
9,200.0	90.17	180.00	7,129.8	-2,111.7	-167.4	2,115.1	0.00	0.00	0.00
9,300.0	90.17	180.00	7,129.5	-2,211.7	-167.4	2,215.1	0.00	0.00	0.00
9,400.0	90.17	180.00	7,129.3	-2,311.7	-167.4	2,315.0	0.00	0.00	0.00
9,500.0	90.17	180.00	7,129.0	-2,411.7	-167.4	2,415.0	0.00	0.00	0.00
9,600.0	90.17	180.00	7,128.7	-2,511.7	-167.4	2,515.0	0.00	0.00	0.00
9,700.0	90.17	180.00	7,128.4	-2,611.7	-167.4	2,614.9	0.00	0.00	0.00
9,800.0	90.17	180.00	7,128.1	-2,711.7	-167.4	2,714.9	0.00	0.00	0.00
9,900.0	90.17	180.00	7,127.8	-2,811.7	-167.4	2,814.9	0.00	0.00	0.00
10,000.0	90.17	180.00	7,127.5	-2,911.7	-167.4	2,914.9	0.00	0.00	0.00
10,100.0	90.17	180.00	7,127.2	-3,011.7	-167.4	3,014.8	0.00	0.00	0.00
10,200.0	90.17	180.00	7,126.9	-3,111.7	-167.4	3,114.8	0.00	0.00	0.00
10,300.0	90.17	180.00	7,126.6	-3,211.7	-167.4	3,214.8	0.00	0.00	0.00
10,400.0	90.17	180.00	7,126.3	-3,311.7	-167.4	3,314.7	0.00	0.00	0.00
10,500.0	90.17	180.00	7,126.0	-3,411.7	-167.4	3,414.7	0.00	0.00	0.00
10,600.0	90.17	180.00	7,125.7	-3,511.7	-167.4	3,514.7	0.00	0.00	0.00
10,700.0	90.17	180.00	7,125.4	-3,611.7	-167.4	3,614.7	0.00	0.00	0.00
10,800.0	90.17	180.00	7,125.1	-3,711.7	-167.4	3,714.6	0.00	0.00	0.00
10,900.0	90.17	180.00	7,124.8	-3,811.7	-167.4	3,814.6	0.00	0.00	0.00
11,000.0	90.17	180.00	7,124.5	-3,911.7	-167.4	3,914.6	0.00	0.00	0.00
11,100.0	90.17	180.00	7,124.2	-4,011.7	-167.4	4,014.6	0.00	0.00	0.00
11,200.0	90.17	180.00	7,123.9	-4,111.7	-167.4	4,114.5	0.00	0.00	0.00
11,300.0	90.17	180.00	7,123.6	-4,211.7	-167.4	4,214.5	0.00	0.00	0.00
11,400.0	90.17	180.00	7,123.3	-4,311.7	-167.4	4,314.5	0.00	0.00	0.00
11,500.0	90.17	180.00	7,123.0	-4,411.7	-167.4	4,414.4	0.00	0.00	0.00
11,600.0	90.17	180.00	7,122.7	-4,511.7	-167.4	4,514.4	0.00	0.00	0.00
11,700.0	90.17	180.00	7,122.4	-4,611.7	-167.4	4,614.4	0.00	0.00	0.00
11,800.0	90.17	180.00	7,122.1	-4,711.7	-167.4	4,714.4	0.00	0.00	0.00
11,900.0	90.17	180.00	7,121.8	-4,811.7	-167.4	4,814.3	0.00	0.00	0.00
12,000.0	90.17	180.00	7,121.5	-4,911.7	-167.4	4,914.3	0.00	0.00	0.00
12,100.0	90.17	180.00	7,121.2	-5,011.7	-167.4	5,014.3	0.00	0.00	0.00
12,200.0	90.17	180.00	7,120.9	-5,111.7	-167.4	5,114.2	0.00	0.00	0.00
12,300.0	90.17	180.00	7,120.6	-5,211.7	-167.4	5,214.2	0.00	0.00	0.00
12,400.0	90.17	180.00	7,120.4	-5,311.7	-167.4	5,314.2	0.00	0.00	0.00
12,500.0	90.17	180.00	7,120.1	-5,411.7	-167.4	5,414.2	0.00	0.00	0.00
12,600.0	90.17	180.00	7,119.8	-5,511.7	-167.4	5,514.1	0.00	0.00	0.00
12,700.0	90.17	180.00	7,119.5	-5,611.7	-167.4	5,614.1	0.00	0.00	0.00
12,800.0	90.17	180.00	7,119.2	-5,711.7	-167.4	5,714.1	0.00	0.00	0.00
12,900.0	90.17	180.00	7,118.9	-5,811.7	-167.4	5,814.0	0.00	0.00	0.00
13,000.0	90.17	180.00	7,118.6	-5,911.7	-167.4	5,914.0	0.00	0.00	0.00
13,100.0	90.17	180.00	7,118.3	-6,011.7	-167.4	6,014.0	0.00	0.00	0.00
13,200.0	90.17	180.00	7,118.0	-6,111.7	-167.4	6,114.0	0.00	0.00	0.00
13,300.0	90.17	180.00	7,117.7	-6,211.7	-167.4	6,213.9	0.00	0.00	0.00
13,400.0	90.17	180.00	7,117.4	-6,311.7	-167.4	6,313.9	0.00	0.00	0.00
13,500.0	90.17	180.00	7,117.1	-6,411.7	-167.4	6,413.9	0.00	0.00	0.00
13,600.0	90.17	180.00	7,116.8	-6,511.7	-167.4	6,513.8	0.00	0.00	0.00
13,700.0	90.17	180.00	7,116.5	-6,611.7	-167.4	6,613.8	0.00	0.00	0.00
13,800.0	90.17	180.00	7,116.2	-6,711.7	-167.4	6,713.8	0.00	0.00	0.00
13,900.0	90.17	180.00	7,115.9	-6,811.7	-167.4	6,813.8	0.00	0.00	0.00
14,000.0	90.17	180.00	7,115.6	-6,911.7	-167.4	6,913.7	0.00	0.00	0.00
14,100.0	90.17	180.00	7,115.3	-7,011.7	-167.4	7,013.7	0.00	0.00	0.00
14,200.0	90.17	180.00	7,115.0	-7,111.7	-167.4	7,113.7	0.00	0.00	0.00
14,203.2	90.17	180.00	7,115.0	-7,114.9	-167.4	7,116.8	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (1-28-15)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude	Longitude
BHL 500'FSL & 1430'l - plan hits target - Point	0.00	0.00	7,115.0	-7,114.9	-167.4	1,349,712.60	3,183,141.37	40.291500	-104.843470
SHL 2353'FSL & 1616'€ - plan misses by 167.3ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E) - Point	0.00	0.00	1.0	0.0	-167.3	1,356,826.98	3,183,088.70	40.311030	-104.843470

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,597.5	7,134.6	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,952.7	6,880.0	Sharron Springs		0.00		
7,082.6	6,969.0	Niobrara A		0.00		
7,276.3	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		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,600.0	1,600.0	0.0	0.0	KOP #1	
6,395.2	6,370.7	89.4	-58.3	KOP #2	
7,597.5	7,134.6	212.3	-138.3	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.13-T4N-R67W

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

Stroh 13K-303

Wellbore #1

Plan #2 (1-28-15)

Anticollision Report

30 January, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (1-28-15)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	1/30/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	14,203.2	Plan #2 (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)	Between Ellipses (ft)	Separation Factor	Warning
Existing Wells - Sec.13-T4N-R67W						
Allen 1 (Exist) - Wellbore #1 - Wellbore #1	8,613.0	7,122.5	413.0	363.1	8.276	CC, ES
Allen 1 (Exist) - Wellbore #1 - Wellbore #1	8,700.0	7,121.7	422.1	370.7	8.213	SF
Orr 24-1 (Exist) - Wellbore #1 - Wellbore #1	11,336.8	7,033.7	413.3	312.7	4.108	CC, ES
Orr 24-1 (Exist) - Wellbore #1 - Wellbore #1	11,400.0	7,033.3	418.1	316.3	4.107	SF
Rory 1-7I (Exist) - Wellbore #1 - Wellbore #1	11,929.3	7,024.0	431.0	318.0	3.813	CC, ES, SF
Stroh 5 (Exist) - Wellbore #1 - Wellbore #1	10,758.2	7,106.2	223.1	133.6	2.492	CC, ES, SF
Existing Wells Sec.13-T4N-R67W (Grid North)						
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	3,559.9	3,527.2	197.4	180.3	11.533	CC
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	3,600.0	3,566.2	197.6	180.2	11.418	ES
Stroh O 13-20 (Exist) - Wellbore #1 - Wellbore #1	6,827.5	6,765.9	254.5	223.4	8.202	SF
UPRC 13-11E (Exist.) - Wellbore #1 - Wellbore #1	7,444.7	7,115.7	395.5	360.7	11.370	CC, ES
UPRC 13-11E (Exist.) - Wellbore #1 - Wellbore #1	7,500.0	7,124.0	399.3	364.0	11.313	SF
Stroh 13GK-HZ Pad Sec. 13-T4N-R67W						
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	166.3	167.3	89.2	88.7	169.928	CC
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	200.0	201.0	89.2	88.6	131.936	ES
Stroh 13G-203 - Wellbore #1 - Plan #2 (1-27-15)	3,700.0	3,621.9	581.0	561.7	30.116	SF
Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)	400.0	400.0	58.6	57.0	37.224	CC, ES
Stroh 13G-323 - Wellbore #1 - Plan #3 (1-28-15)	14,203.2	14,201.6	945.9	670.2	3.432	SF
Stroh 13K-223 - Wellbore #1 - Plan #3 (1-28-15)	1,600.0	1,600.0	30.7	23.7	4.403	CC, ES
Stroh 13K-223 - Wellbore #1 - Plan #3 (1-28-15)	14,203.2	14,135.7	323.0	55.8	1.209	Level 2, SF
Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)	1,400.0	1,400.0	27.9	21.8	4.596	CC, ES
Stroh 13K-243 - Wellbore #1 - Plan #3 (1-28-15)	14,203.2	13,987.8	539.1	264.9	1.966	SF
Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)	1,200.0	1,199.0	61.4	56.2	11.874	CC, ES
Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)	14,203.2	14,325.2	870.5	594.3	3.151	SF
Stroh O13-21D Sec.13-T4N-R67W						
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	1,585.1	1,586.2	502.6	496.2	79.069	CC
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	1,600.0	1,599.3	502.6	496.2	78.356	ES
Stroh O13-21D - Stroh O13-21D - Stroh O13-21D	4,300.0	4,170.3	998.0	976.1	45.705	SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.0	7,134.0	7,129.6	7,128.2	21.2	16.2	-91.61	-1,524.7	245.5	911.9	874.6	37.27	24.465	
7,900.0	7,133.7	7,128.7	7,127.3	22.6	16.2	-91.49	-1,524.7	245.5	824.0	785.3	38.63	21.332	
8,000.0	7,133.4	7,127.9	7,126.5	24.0	16.2	-91.37	-1,524.7	245.5	739.1	699.1	40.06	18.452	
8,100.0	7,133.1	7,127.0	7,125.6	25.5	16.2	-91.25	-1,524.7	245.6	658.6	617.0	41.55	15.849	
8,200.0	7,132.8	7,126.1	7,124.7	27.0	16.2	-91.13	-1,524.7	245.6	584.1	541.0	43.10	13.551	
8,300.0	7,132.5	7,125.2	7,123.8	28.6	16.2	-91.00	-1,524.7	245.6	518.2	473.5	44.70	11.594	
8,400.0	7,132.2	7,124.3	7,122.9	30.3	16.2	-90.88	-1,524.7	245.6	464.7	418.4	46.33	10.031	
8,500.0	7,131.9	7,123.4	7,122.1	31.9	16.2	-90.76	-1,524.7	245.6	428.2	380.2	47.99	8.923	
8,600.0	7,131.6	7,122.6	7,121.2	33.6	16.2	-90.64	-1,524.8	245.6	413.2	363.5	49.68	8.318	
8,613.0	7,131.6	7,122.5	7,121.1	33.8	16.2	-90.62	-1,524.8	245.6	413.0	363.1	49.90	8.276 CC, ES	
8,700.0	7,131.3	7,121.7	7,120.3	35.3	16.2	-90.51	-1,524.8	245.6	422.1	370.7	51.39	8.213 SF	
8,800.0	7,131.0	7,120.8	7,119.4	37.1	16.2	-90.39	-1,524.8	245.6	453.4	400.2	53.13	8.534	
8,900.0	7,130.7	7,119.9	7,118.5	38.8	16.2	-90.27	-1,524.8	245.6	502.9	448.0	54.88	9.165	
9,000.0	7,130.4	7,119.0	7,117.6	40.6	16.2	-90.15	-1,524.8	245.6	566.0	509.3	56.64	9.992	
9,100.0	7,130.1	7,118.2	7,116.8	42.3	16.2	-90.02	-1,524.8	245.6	638.5	580.1	58.42	10.930	
9,200.0	7,129.8	7,117.3	7,115.9	44.1	16.2	-89.90	-1,524.8	245.7	717.7	657.5	60.21	11.920	
9,300.0	7,129.5	7,116.4	7,115.0	45.9	16.2	-89.78	-1,524.8	245.7	801.6	739.6	62.01	12.927	
9,400.0	7,129.3	7,115.5	7,114.1	47.8	16.1	-89.66	-1,524.8	245.7	888.8	824.9	63.82	13.927	
9,500.0	7,129.0	7,114.6	7,113.2	49.6	16.1	-89.53	-1,524.8	245.7	978.4	912.8	65.63	14.907	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,500.0	7,126.0	7,039.0	7,038.4	68.1	16.9	-91.09	-4,248.6	245.9	933.3	848.4	84.90	10.994	
10,600.0	7,125.7	7,038.3	7,037.8	69.9	16.9	-91.01	-4,248.6	245.9	844.8	758.1	86.77	9.737	
10,700.0	7,125.4	7,037.7	7,037.1	71.8	16.9	-90.92	-4,248.6	245.9	759.2	670.6	88.64	8.565	
10,800.0	7,125.1	7,037.1	7,036.5	73.7	16.9	-90.83	-4,248.6	245.9	677.5	587.0	90.51	7.485	
10,900.0	7,124.8	7,036.4	7,035.9	75.6	16.9	-90.74	-4,248.6	245.9	601.4	509.0	92.39	6.509	
11,000.0	7,124.5	7,035.8	7,035.2	77.4	16.9	-90.66	-4,248.6	245.9	533.2	438.9	94.27	5.656	
11,100.0	7,124.2	7,035.2	7,034.6	79.3	16.9	-90.57	-4,248.6	245.9	476.4	380.2	96.15	4.955	
11,200.0	7,123.9	7,034.5	7,034.0	81.2	16.9	-90.48	-4,248.6	245.9	435.4	337.4	98.03	4.441	
11,300.0	7,123.6	7,033.9	7,033.3	83.1	16.9	-90.39	-4,248.6	245.9	415.0	315.1	99.92	4.153	
11,336.8	7,123.5	7,033.7	7,033.1	83.8	16.9	-90.36	-4,248.6	245.9	413.3	312.7	100.61	4.108 CC, ES	
11,400.0	7,123.3	7,033.3	7,032.7	85.0	16.9	-90.30	-4,248.6	245.9	418.1	316.3	101.80	4.107 SF	
11,500.0	7,123.0	7,032.6	7,032.1	86.9	16.9	-90.22	-4,248.6	246.0	444.4	340.7	103.69	4.286	
11,600.0	7,122.7	7,032.0	7,031.4	88.8	16.9	-90.13	-4,248.6	246.0	490.0	384.4	105.58	4.641	
11,700.0	7,122.4	7,031.3	7,030.8	90.6	16.9	-90.04	-4,248.6	246.0	550.2	442.7	107.46	5.120	
11,800.0	7,122.1	7,030.7	7,030.1	92.5	16.9	-89.95	-4,248.6	246.0	620.8	511.4	109.35	5.677	
11,900.0	7,121.8	7,030.1	7,029.5	94.4	16.9	-89.86	-4,248.6	246.0	698.6	587.3	111.24	6.279	
12,000.0	7,121.5	7,029.4	7,028.9	96.3	16.9	-89.77	-4,248.6	246.0	781.4	668.3	113.14	6.907	
12,100.0	7,121.2	7,028.8	7,028.2	98.2	16.9	-89.68	-4,248.6	246.0	867.9	752.9	115.03	7.545	
12,200.0	7,120.9	7,028.1	7,027.6	100.1	16.9	-89.59	-4,248.6	246.0	957.0	840.1	116.92	8.185	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Rory 1-7I (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,100.0	7,124.2	7,022.5	7,018.7	79.3	18.1	88.80		-4,840.9	-598.3	934.6	837.2	97.36	9.600	
11,200.0	7,123.9	7,022.7	7,018.9	81.2	18.1	88.82		-4,840.9	-598.3	847.1	747.9	99.24	8.536	
11,300.0	7,123.6	7,022.9	7,019.1	83.1	18.1	88.85		-4,840.9	-598.3	762.7	661.6	101.13	7.542	
11,400.0	7,123.3	7,023.1	7,019.2	85.0	18.2	88.87		-4,840.9	-598.3	682.6	579.5	103.01	6.626	
11,500.0	7,123.0	7,023.2	7,019.4	86.9	18.2	88.89		-4,840.9	-598.3	608.3	503.4	104.90	5.799	
11,600.0	7,122.7	7,023.4	7,019.6	88.8	18.2	88.92		-4,840.9	-598.3	542.4	435.6	106.79	5.079	
11,700.0	7,122.4	7,023.6	7,019.8	90.6	18.2	88.94		-4,840.9	-598.3	488.2	379.5	108.68	4.492	
11,800.0	7,122.1	7,023.8	7,019.9	92.5	18.2	88.96		-4,840.9	-598.3	450.0	339.4	110.58	4.069	
11,900.0	7,121.8	7,023.9	7,020.1	94.4	18.2	88.99		-4,840.9	-598.3	432.0	319.5	112.47	3.841	
11,929.3	7,121.7	7,024.0	7,020.2	95.0	18.2	88.99		-4,840.9	-598.3	431.0	318.0	113.02	3.813 CC, ES, SF	
12,000.0	7,121.5	7,024.1	7,020.3	96.3	18.2	89.01		-4,840.9	-598.3	436.8	322.4	114.37	3.819	
12,100.0	7,121.2	7,024.3	7,020.5	98.2	18.2	89.03		-4,841.0	-598.3	463.6	347.3	116.26	3.988	
12,200.0	7,120.9	7,024.5	7,020.6	100.1	18.2	89.06		-4,841.0	-598.3	509.0	390.8	118.16	4.308	
12,300.0	7,120.6	7,024.6	7,020.8	102.0	18.2	89.08		-4,841.0	-598.3	568.5	448.5	120.06	4.736	
12,400.0	7,120.4	7,024.8	7,021.0	103.9	18.2	89.10		-4,841.0	-598.3	638.3	516.3	121.95	5.234	
12,500.0	7,120.1	7,025.0	7,021.2	105.8	18.2	89.13		-4,841.0	-598.3	715.2	591.4	123.85	5.775	
12,600.0	7,119.8	7,025.2	7,021.4	107.7	18.2	89.15		-4,841.0	-598.4	797.3	671.5	125.75	6.340	
12,700.0	7,119.5	7,025.4	7,021.6	109.6	18.2	89.18		-4,841.0	-598.4	883.1	755.4	127.65	6.918	
12,800.0	7,119.2	7,025.6	7,021.7	111.5	18.2	89.20		-4,841.0	-598.4	971.6	842.0	129.56	7.499	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells - Sec.13-T4N-R67W - Stroh 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	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
9,800.0	7,128.1	7,122.7	7,121.4	55.1	16.7	93.64		-3,669.6	-390.6	983.6	912.1	71.53	13.751	
9,900.0	7,127.8	7,121.1	7,119.8	56.9	16.7	93.22		-3,669.7	-390.6	886.6	813.2	73.41	12.077	
10,000.0	7,127.5	7,119.4	7,118.1	58.8	16.7	92.80		-3,669.7	-390.6	790.2	714.9	75.28	10.497	
10,100.0	7,127.2	7,117.7	7,116.5	60.6	16.7	92.37		-3,669.7	-390.6	694.8	617.7	77.16	9.006	
10,200.0	7,126.9	7,116.0	7,114.8	62.5	16.7	91.94		-3,669.7	-390.6	601.0	522.0	79.04	7.604	
10,300.0	7,126.6	7,114.3	7,113.1	64.3	16.7	91.50		-3,669.8	-390.6	509.5	428.6	80.91	6.297	
10,400.0	7,126.3	7,112.6	7,111.3	66.2	16.7	91.05		-3,669.8	-390.5	421.9	339.1	82.79	5.096	
10,500.0	7,126.0	7,110.8	7,109.6	68.1	16.7	90.60		-3,669.8	-390.5	341.2	256.5	84.67	4.029	
10,600.0	7,125.7	7,109.0	7,107.8	69.9	16.7	90.14		-3,669.8	-390.5	273.5	186.9	86.55	3.160	
10,700.0	7,125.4	7,107.3	7,106.0	71.8	16.7	89.68		-3,669.9	-390.5	230.6	142.1	88.42	2.607	
10,758.2	7,125.2	7,106.2	7,104.9	72.9	16.7	89.41		-3,669.9	-390.5	223.1	133.6	89.51	2.492 CC, ES, SF	
10,800.0	7,125.1	7,105.4	7,104.2	73.7	16.7	89.22		-3,669.9	-390.5	227.0	136.7	90.30	2.514	
10,900.0	7,124.8	7,103.6	7,102.3	75.6	16.7	88.74		-3,669.9	-390.4	264.4	172.2	92.16	2.868	
11,000.0	7,124.5	7,101.7	7,100.5	77.4	16.7	88.27		-3,669.9	-390.4	329.0	235.0	94.03	3.499	
11,100.0	7,124.2	7,099.8	7,098.6	79.3	16.7	87.78		-3,670.0	-390.4	408.2	312.3	95.89	4.257	
11,200.0	7,123.9	7,098.0	7,096.8	81.2	16.6	87.31		-3,670.0	-390.4	494.9	397.2	97.74	5.063	
11,300.0	7,123.6	7,096.2	7,094.9	83.1	16.6	86.84		-3,670.0	-390.4	585.9	486.3	99.59	5.883	
11,400.0	7,123.3	7,094.3	7,093.1	85.0	16.6	86.37		-3,670.1	-390.3	679.4	578.0	101.43	6.698	
11,500.0	7,123.0	7,092.5	7,091.2	86.9	16.6	85.89		-3,670.1	-390.3	774.5	671.3	103.27	7.500	
11,600.0	7,122.7	7,090.6	7,089.3	88.8	16.6	85.42		-3,670.1	-390.3	870.8	765.7	105.10	8.285	
11,700.0	7,122.4	7,088.7	7,087.5	90.6	16.6	84.94		-3,670.1	-390.3	967.8	860.8	106.92	9.051	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-63.84	-63.84	134.8	-274.4	305.9				
100.0	100.0	89.0	89.0	0.1	0.1	-63.88	-63.88	134.6	-274.5	305.7	305.5	0.23	1,326.472	
200.0	200.0	188.5	188.5	0.3	0.4	-63.96	-63.96	134.3	-274.8	305.8	305.1	0.70	438.790	
300.0	300.0	288.7	288.7	0.6	0.6	-64.05	-64.05	133.9	-275.1	306.0	304.8	1.18	259.037	
400.0	400.0	388.7	388.7	0.8	0.9	-64.20	-64.20	133.2	-275.6	306.1	304.4	1.67	183.328	
500.0	500.0	488.6	488.6	1.0	1.1	-64.32	-64.32	132.7	-275.9	306.2	304.0	2.16	141.805	
600.0	600.0	587.2	587.2	1.2	1.3	-64.36	-64.36	132.6	-276.3	306.5	303.9	2.56	119.521	
700.0	700.0	686.6	686.6	1.5	1.4	-64.26	-64.26	133.4	-276.7	307.2	304.3	2.90	106.019	
800.0	800.0	787.5	787.4	1.7	1.6	-64.15	-64.15	134.2	-277.0	307.9	304.6	3.25	94.588	
900.0	900.0	887.1	887.1	1.9	1.7	-64.10	-64.10	134.7	-277.4	308.4	304.7	3.66	84.308	
1,000.0	1,000.0	986.5	986.5	2.1	2.0	-64.04	-64.04	135.3	-277.9	309.1	305.0	4.09	75.646	
1,100.0	1,100.0	1,086.0	1,086.0	2.4	2.2	-63.96	-63.96	136.1	-278.5	310.0	305.5	4.53	68.423	
1,200.0	1,200.0	1,184.7	1,184.6	2.6	2.4	-63.92	-63.92	136.8	-279.4	311.2	306.2	4.99	62.336	
1,300.0	1,300.0	1,285.0	1,285.0	2.8	2.7	-63.88	-63.88	137.6	-280.6	312.5	307.1	5.47	57.189	
1,400.0	1,400.0	1,386.2	1,386.2	3.0	2.9	-63.84	-63.84	138.3	-281.5	313.6	307.7	5.94	52.760	
1,500.0	1,500.0	1,487.0	1,487.0	3.3	3.2	-63.84	-63.84	138.6	-282.2	314.4	308.0	6.43	48.907	
1,600.0	1,600.0	1,587.3	1,587.2	3.5	3.4	-63.83	-63.83	138.9	-282.7	315.0	308.1	6.91	45.574	
1,700.0	1,700.0	1,687.2	1,687.2	3.7	3.7	-30.82	-30.82	139.2	-283.2	314.8	307.4	7.39	42.599	
1,800.0	1,800.0	1,786.2	1,786.1	3.9	3.9	-31.11	-31.11	139.4	-283.9	313.3	305.4	7.86	39.873	
1,900.0	1,899.9	1,885.7	1,885.7	4.2	4.2	-31.66	-31.66	139.2	-285.1	310.6	302.2	8.32	37.326	
2,000.0	1,999.7	1,986.3	1,986.3	4.4	4.4	-32.44	-32.44	138.9	-286.3	306.3	297.5	8.78	34.895	
2,100.0	2,099.4	2,086.4	2,086.3	4.6	4.6	-33.51	-33.51	138.1	-287.4	300.5	291.2	9.21	32.609	
2,200.0	2,198.9	2,186.1	2,186.0	4.8	4.8	-34.94	-34.94	136.6	-288.8	293.2	283.6	9.63	30.434	
2,300.0	2,298.3	2,284.1	2,284.0	5.1	5.1	-36.65	-36.65	135.2	-290.2	284.8	274.8	10.06	28.304	
2,400.0	2,397.4	2,382.6	2,382.4	5.3	5.3	-38.76	-38.76	133.6	-292.2	275.8	265.3	10.51	26.243	
2,500.0	2,496.3	2,481.9	2,481.7	5.6	5.5	-41.49	-41.49	131.1	-294.4	265.9	254.9	10.96	24.257	
2,600.0	2,594.9	2,580.2	2,579.9	5.9	5.7	-44.70	-44.70	128.4	-296.6	255.2	243.8	11.43	22.333	
2,700.0	2,693.3	2,677.4	2,677.0	6.2	5.9	-48.43	-48.43	125.8	-298.9	244.4	232.4	11.92	20.499	
2,800.0	2,791.4	2,776.4	2,776.0	6.5	6.1	-52.62	-52.62	123.3	-301.3	234.1	221.7	12.46	18.786	
2,900.0	2,889.5	2,874.1	2,873.7	6.9	6.4	-57.03	-57.03	121.1	-303.2	224.9	211.8	13.03	17.253	
3,000.0	2,987.7	2,972.2	2,971.7	7.2	6.6	-61.62	-61.62	119.6	-305.4	217.2	203.6	13.64	15.927	
3,100.0	3,085.8	3,071.4	3,070.9	7.6	6.9	-66.47	-66.47	118.4	-307.4	210.8	196.6	14.27	14.772	
3,200.0	3,183.9	3,170.1	3,169.5	7.9	7.1	-71.53	-71.53	117.4	-308.9	205.5	190.6	14.92	13.774	
3,300.0	3,282.1	3,269.0	3,268.4	8.3	7.4	-76.79	-76.79	116.6	-310.2	201.7	186.2	15.57	12.953	
3,400.0	3,380.2	3,368.6	3,368.1	8.7	7.6	-82.31	-82.31	115.7	-310.9	199.2	183.0	16.23	12.277	
3,500.0	3,478.4	3,468.2	3,467.6	9.0	7.8	-87.66	-87.66	116.0	-311.3	197.7	180.9	16.83	11.750	
3,559.9	3,537.4	3,527.2	3,526.7	9.2	7.9	-90.41	-90.41	116.6	-311.5	197.4	180.3	17.12	11.533 CC	
3,600.0	3,577.0	3,566.2	3,565.6	9.3	8.0	-92.02	-92.02	117.0	-311.8	197.6	180.2	17.30	11.418 ES	
3,700.0	3,676.1	3,664.3	3,663.7	9.6	8.2	-95.29	-95.29	117.9	-313.1	198.9	181.1	17.77	11.195	
3,800.0	3,775.7	3,763.4	3,762.8	9.8	8.4	-97.41	-97.41	119.0	-315.2	200.9	182.6	18.23	11.020	
3,900.0	3,875.5	3,862.8	3,862.2	10.0	8.7	-98.41	-98.41	120.3	-317.7	202.7	184.1	18.67	10.861	
4,000.0	3,975.5	3,962.1	3,961.4	10.2	8.9	-98.30	-98.30	121.8	-320.7	204.4	185.3	19.09	10.710	
4,100.0	4,075.5	4,060.7	4,059.9	10.4	9.2	-130.44	-130.44	123.3	-324.3	206.2	186.7	19.50	10.573	
4,200.0	4,175.5	4,159.0	4,158.1	10.5	9.4	-129.34	-129.34	124.7	-328.8	208.9	188.9	19.95	10.471	
4,300.0	4,275.5	4,257.7	4,256.7	10.7	9.7	-128.13	-128.13	126.0	-334.2	212.3	191.9	20.39	10.408	
4,400.0	4,375.5	4,357.2	4,356.0	10.9	9.9	-126.92	-126.92	127.3	-340.0	216.1	195.2	20.84	10.367	
4,500.0	4,475.5	4,456.7	4,455.3	11.1	10.2	-125.82	-125.82	128.3	-345.7	220.1	198.8	21.30	10.334	
4,600.0	4,575.5	4,556.6	4,555.1	11.3	10.5	-124.81	-124.81	129.1	-351.4	224.3	202.6	21.75	10.312	
4,700.0	4,675.5	4,657.8	4,656.1	11.5	10.7	-123.87	-123.87	129.9	-356.8	228.3	206.1	22.21	10.279	
4,800.0	4,775.5	4,759.3	4,757.5	11.7	11.0	-123.00	-123.00	130.9	-361.5	231.6	208.9	22.67	10.217	
4,900.0	4,875.5	4,859.9	4,858.0	11.9	11.2	-122.22	-122.22	132.1	-365.6	234.4	211.3	23.12	10.137	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
5,000.0	4,975.5	4,960.3	4,958.3	12.1	11.5	-121.55	133.0	-369.4	237.1	213.5	23.58	10.055		
5,100.0	5,075.5	5,061.2	5,059.1	12.3	11.8	-121.04	133.5	-372.5	239.5	215.5	24.04	9.963		
5,200.0	5,175.5	5,161.3	5,159.2	12.5	12.0	-120.48	134.5	-375.6	241.6	217.1	24.50	9.864		
5,300.0	5,275.5	5,260.9	5,258.8	12.7	12.3	-120.03	135.0	-378.5	243.9	218.9	24.95	9.773		
5,400.0	5,375.5	5,360.9	5,358.7	12.9	12.6	-119.72	135.0	-381.2	246.2	220.8	25.42	9.688		
5,500.0	5,475.5	5,461.5	5,459.3	13.1	12.8	-119.43	134.9	-383.8	248.5	222.6	25.88	9.601		
5,600.0	5,575.5	5,561.0	5,558.7	13.3	13.1	-119.31	134.4	-385.8	250.6	224.2	26.33	9.514		
5,700.0	5,675.5	5,658.7	5,656.5	13.5	13.3	-119.42	132.7	-387.8	253.2	226.4	26.77	9.460		
5,800.0	5,775.5	5,757.0	5,754.7	13.7	13.5	-119.59	130.3	-390.5	256.8	229.6	27.20	9.441		
5,900.0	5,875.5	5,856.9	5,854.5	13.9	13.8	-119.55	128.5	-394.0	260.7	233.0	27.65	9.427		
6,000.0	5,975.5	5,957.6	5,955.1	14.1	14.0	-119.32	127.6	-397.7	264.3	236.2	28.12	9.402		
6,100.0	6,075.5	6,058.5	6,056.0	14.3	14.3	-119.05	127.1	-401.3	267.7	239.1	28.59	9.366		
6,200.0	6,175.5	6,159.2	6,156.7	14.5	14.6	-118.74	126.9	-404.6	270.7	241.7	29.06	9.317		
6,300.0	6,275.5	6,260.0	6,257.3	14.7	14.8	-118.41	126.9	-407.8	273.5	244.0	29.53	9.262		
6,400.0	6,375.5	6,361.0	6,358.3	14.9	15.1	61.85	126.9	-410.6	275.9	245.9	30.00	9.197		
6,500.0	6,475.1	6,460.3	6,457.5	15.1	15.4	63.52	127.1	-413.2	274.8	244.5	30.35	9.054		
6,600.0	6,573.0	6,557.7	6,555.0	15.1	15.6	67.99	127.4	-416.1	269.0	238.4	30.57	8.800		
6,700.0	6,667.4	6,652.8	6,650.0	15.2	15.9	75.18	127.5	-418.7	260.8	230.1	30.76	8.478		
6,800.0	6,756.8	6,742.4	6,739.6	15.2	16.1	84.59	128.0	-421.0	254.8	223.9	30.97	8.228		
6,827.5	6,780.3	6,765.9	6,763.1	15.2	16.2	87.39	128.1	-421.6	254.5	223.4	31.02	8.202 SF		
6,900.0	6,839.5	6,824.7	6,821.9	15.2	16.3	94.79	128.5	-423.0	257.8	226.7	31.07	8.297		
7,000.0	6,914.2	6,898.4	6,895.5	15.2	16.5	103.99	128.9	-425.0	276.1	245.2	30.88	8.941		
7,100.0	6,979.6	6,963.7	6,960.8	15.3	16.7	110.97	129.3	-426.7	313.0	282.5	30.46	10.275		
7,200.0	7,034.6	7,018.6	7,015.7	15.6	16.8	114.92	129.8	-428.1	367.5	337.4	30.14	12.193		
7,300.0	7,078.3	7,063.2	7,060.2	16.1	17.0	115.54	130.0	-429.1	436.3	406.0	30.35	14.374		
7,400.0	7,109.8	7,095.8	7,092.9	16.9	17.0	112.09	130.1	-429.8	515.7	484.2	31.53	16.354		
7,500.0	7,128.7	7,115.1	7,112.1	17.7	17.1	103.25	130.1	-430.2	602.4	568.7	33.74	17.853		
7,600.0	7,134.6	7,121.0	7,118.0	18.8	17.1	88.37	130.1	-430.3	693.6	657.9	35.76	19.397		
7,700.0	7,134.3	7,120.6	7,117.6	19.9	17.1	88.28	130.1	-430.3	787.1	750.2	36.91	21.324		
7,800.0	7,134.0	7,120.1	7,117.2	21.2	17.1	88.19	130.1	-430.3	881.9	843.8	38.17	23.105		
7,900.0	7,133.7	7,119.7	7,116.8	22.6	17.1	88.10	130.1	-430.3	977.8	938.3	39.53	24.739		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	134.41		-360.7	368.1	515.5				
100.0	100.0	88.2	88.2	0.1	0.1	134.42		-360.7	368.1	515.3	515.1	0.23	2,245.381	
200.0	200.0	189.3	189.3	0.3	0.4	134.45		-360.8	367.8	515.2	514.5	0.71	728.998	
275.5	275.5	263.5	263.5	0.5	0.6	134.50		-361.0	367.4	515.1	514.0	1.06	483.749	
300.0	300.0	287.5	287.5	0.6	0.6	134.52		-361.1	367.3	515.1	513.9	1.18	436.367	
400.0	400.0	390.1	390.1	0.8	0.9	134.57		-361.4	366.9	515.0	513.4	1.65	312.153	
470.1	470.1	458.1	458.1	0.9	1.0	134.59		-361.4	366.7	514.8	512.9	1.92	267.837	
500.0	500.0	486.8	486.8	1.0	1.0	134.59		-361.4	366.7	514.9	512.8	2.03	253.046	
600.0	600.0	586.7	586.7	1.2	1.2	134.61		-361.7	366.8	515.1	512.7	2.43	211.762	
700.0	700.0	689.5	689.5	1.5	1.4	134.64		-362.0	366.6	515.2	512.3	2.86	179.841	
800.0	800.0	789.8	789.8	1.7	1.6	134.67		-361.9	366.1	514.8	511.5	3.30	155.799	
860.1	860.1	848.1	848.1	1.8	1.7	134.70		-362.1	365.8	514.7	511.1	3.57	144.180	
900.0	900.0	886.6	886.6	1.9	1.8	134.72		-362.2	365.7	514.7	511.0	3.75	137.417	
1,000.0	1,000.0	987.5	987.5	2.1	2.1	134.78		-362.7	365.6	515.0	510.8	4.20	122.533	
1,100.0	1,100.0	1,087.7	1,087.7	2.4	2.3	134.85		-363.2	365.1	515.0	510.4	4.68	109.965	
1,200.0	1,200.0	1,189.6	1,189.6	2.6	2.6	134.92		-363.6	364.7	514.9	509.8	5.17	99.606	
1,300.0	1,300.0	1,291.5	1,291.5	2.8	2.8	135.00		-363.8	363.7	514.5	508.8	5.65	91.097	
1,400.0	1,400.0	1,390.9	1,390.9	3.0	3.1	135.09		-363.9	362.7	513.8	507.7	6.12	84.017	
1,500.0	1,500.0	1,491.8	1,491.7	3.3	3.3	135.18		-364.0	361.7	513.2	506.6	6.59	77.875	
1,600.0	1,600.0	1,593.0	1,593.0	3.5	3.6	135.28		-364.0	360.5	512.3	505.3	7.06	72.543	
1,653.9	1,653.9	1,646.7	1,646.7	3.6	3.7	168.42		-364.0	359.8	512.1	504.7	7.31	70.004	
1,700.0	1,700.0	1,692.4	1,692.4	3.7	3.8	168.48		-364.0	359.2	512.3	504.7	7.53	68.032	
1,800.0	1,800.0	1,793.7	1,793.7	3.9	4.1	168.66		-364.1	357.7	513.9	505.9	8.00	64.223	
1,900.0	1,899.9	1,893.1	1,893.0	4.2	4.3	168.87		-364.1	356.2	517.1	508.6	8.47	61.073	
2,000.0	1,999.7	1,992.0	1,991.9	4.4	4.6	169.11		-364.3	354.7	522.2	513.2	8.93	58.445	
2,100.0	2,099.4	2,093.0	2,092.9	4.6	4.8	169.41		-364.5	353.1	529.0	519.5	9.41	56.226	
2,200.0	2,198.9	2,191.6	2,191.5	4.8	5.1	169.72		-364.7	351.5	537.4	527.5	9.87	54.435	
2,300.0	2,298.3	2,290.0	2,289.9	5.1	5.4	170.05		-365.1	350.0	547.8	537.5	10.34	52.992	
2,400.0	2,397.4	2,391.4	2,391.2	5.3	5.6	170.45		-365.7	348.1	559.9	549.0	10.81	51.792	
2,500.0	2,496.3	2,488.0	2,487.9	5.6	5.9	170.90		-366.7	345.8	573.6	562.3	11.27	50.908	
2,600.0	2,594.9	2,585.6	2,585.4	5.9	6.1	171.40		-368.1	343.5	589.4	577.7	11.72	50.273	
2,700.0	2,693.3	2,683.4	2,683.2	6.2	6.4	171.90		-369.7	341.1	607.1	594.9	12.18	49.846	
2,800.0	2,791.4	2,780.8	2,780.5	6.5	6.6	172.41		-371.4	338.7	625.9	613.2	12.66	49.427	
2,900.0	2,889.5	2,876.7	2,876.4	6.9	6.9	172.88		-373.2	336.7	644.9	631.8	13.14	49.062	
3,000.0	2,987.7	2,977.9	2,977.6	7.2	7.2	173.35		-375.1	334.4	664.0	650.4	13.64	48.672	
3,100.0	3,085.8	3,079.5	3,079.1	7.6	7.4	173.78		-376.5	331.9	682.6	668.4	14.15	48.245	
3,200.0	3,183.9	3,181.2	3,180.8	7.9	7.7	174.20		-377.5	329.0	700.7	686.0	14.66	47.809	
3,300.0	3,282.1	3,283.9	3,283.4	8.3	8.0	174.61		-378.2	325.6	718.3	703.1	15.17	47.366	
3,400.0	3,380.2	3,389.7	3,389.1	8.7	8.2	175.01		-378.2	321.6	735.2	719.5	15.68	46.899	
3,500.0	3,478.4	3,489.6	3,489.0	9.0	8.5	175.36		-377.6	317.5	751.2	735.1	16.18	46.428	
3,600.0	3,577.0	3,593.5	3,592.7	9.3	8.7	175.71		-376.7	313.1	764.4	747.7	16.69	45.793	
3,700.0	3,676.1	3,690.4	3,689.5	9.6	9.0	176.02		-375.8	308.6	774.0	756.8	17.17	45.071	
3,800.0	3,775.7	3,791.7	3,790.7	9.8	9.2	176.33		-375.2	303.9	780.2	762.5	17.64	44.222	
3,900.0	3,875.5	3,889.7	3,888.6	10.0	9.5	176.57		-374.2	299.6	782.9	764.8	18.08	43.306	
4,000.0	3,975.5	3,988.4	3,987.2	10.2	9.7	176.79		-373.5	295.5	782.4	763.9	18.49	42.303	
4,100.0	4,075.5	4,087.5	4,086.2	10.4	10.0	143.91		-372.6	291.6	779.5	760.6	18.92	41.190	
4,200.0	4,175.5	4,185.6	4,184.2	10.5	10.2	144.07		-371.7	288.2	776.7	757.3	19.38	40.077	
4,300.0	4,275.5	4,284.7	4,283.3	10.7	10.4	144.22		-370.8	285.0	774.1	754.3	19.84	39.018	
4,400.0	4,375.5	4,383.6	4,382.1	10.9	10.7	144.36		-369.9	282.1	771.6	751.3	20.30	38.016	
4,500.0	4,475.5	4,481.6	4,480.2	11.1	10.9	144.48		-369.0	279.5	769.3	748.6	20.75	37.070	
4,600.0	4,575.5	4,578.4	4,576.9	11.3	11.2	144.60		-368.4	277.1	767.3	746.1	21.21	36.178	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,700.0	4,675.5	4,676.4	4,674.9	11.5	11.4	144.70		-367.9	275.1	765.7	744.1	21.67	35.333	
4,800.0	4,775.5	4,775.8	4,774.3	11.7	11.7	144.78		-367.3	273.4	764.3	742.2	22.13	34.531	
4,900.0	4,875.5	4,875.6	4,874.0	11.9	11.9	144.86		-366.8	271.7	762.9	740.3	22.60	33.756	
5,000.0	4,975.5	4,974.3	4,972.7	12.1	12.2	144.97		-366.6	269.7	761.6	738.5	23.07	33.007	
5,100.0	5,075.5	5,076.3	5,074.7	12.3	12.4	145.09		-366.4	267.7	760.3	736.7	23.56	32.275	
5,200.0	5,175.5	5,175.9	5,174.2	12.5	12.7	145.21		-366.1	265.6	758.8	734.8	24.03	31.573	
5,300.0	5,275.5	5,278.8	5,277.1	12.7	12.9	145.33		-365.7	263.4	757.2	732.7	24.52	30.888	
5,400.0	5,375.5	5,375.3	5,373.6	12.9	13.2	145.44		-365.2	261.2	755.6	730.6	24.98	30.243	
5,500.0	5,475.5	5,475.6	5,474.0	13.1	13.5	145.55		-364.9	259.3	754.3	728.8	25.46	29.623	
5,600.0	5,575.5	5,576.4	5,574.7	13.3	13.7	145.68		-364.7	257.0	752.8	726.9	25.95	29.016	
5,700.0	5,675.5	5,673.1	5,671.4	13.5	14.0	145.81		-364.6	254.9	751.5	725.1	26.42	28.445	
5,800.0	5,775.5	5,774.2	5,772.5	13.7	14.2	145.90		-364.4	253.4	750.5	723.6	26.90	27.898	
5,900.0	5,875.5	5,873.3	5,871.6	13.9	14.5	145.98		-364.0	251.8	749.3	721.9	27.37	27.371	
6,000.0	5,975.5	5,975.9	5,974.1	14.1	14.8	146.09		-363.8	249.9	748.1	720.2	27.86	26.850	
6,100.0	6,075.5	6,077.5	6,075.7	14.3	15.0	146.21		-363.3	247.8	746.5	718.2	28.34	26.339	
6,200.0	6,175.5	6,178.2	6,176.3	14.5	15.3	146.30		-362.6	245.8	744.8	716.0	28.81	25.850	
6,300.0	6,275.5	6,277.8	6,275.9	14.7	15.5	146.38		-361.7	244.0	743.1	713.8	29.28	25.379	
6,400.0	6,375.5	6,379.0	6,377.2	14.9	15.8	-33.54		-360.9	242.1	741.4	711.6	29.74	24.925	
6,500.0	6,475.1	6,476.4	6,474.5	15.1	16.0	-34.08		-360.0	240.3	733.7	703.8	29.90	24.537	
6,600.0	6,573.0	6,573.9	6,572.0	15.1	16.3	-35.68		-359.5	238.5	715.6	685.8	29.77	24.040	
6,700.0	6,667.4	6,669.8	6,667.9	15.2	16.5	-38.51		-359.0	236.5	687.3	657.9	29.42	23.358	
6,800.0	6,756.8	6,758.7	6,756.8	15.2	16.7	-42.79		-358.2	234.7	649.9	620.9	29.06	22.365	
6,900.0	6,839.5	6,840.0	6,838.0	15.2	16.9	-48.70		-357.6	233.1	605.4	576.4	28.97	20.899	
7,000.0	6,914.2	6,913.4	6,911.4	15.2	17.1	-56.38		-357.2	231.8	556.1	526.6	29.46	18.879	
7,100.0	6,979.6	6,979.1	6,977.1	15.3	17.3	-65.62		-356.9	230.6	505.3	474.6	30.62	16.503	
7,200.0	7,034.6	7,033.4	7,031.4	15.6	17.4	-75.19		-356.6	229.5	457.5	425.5	32.07	14.268	
7,300.0	7,078.3	7,075.9	7,073.9	16.1	17.5	-83.56		-356.4	228.7	419.3	386.0	33.35	12.574	
7,400.0	7,109.8	7,106.3	7,104.3	16.9	17.6	-89.36		-356.3	228.2	397.9	363.5	34.35	11.584	
7,444.7	7,119.8	7,115.7	7,113.7	17.3	17.6	-90.86		-356.2	228.0	395.5	360.7	34.78	11.370 CC, ES	
7,500.0	7,128.7	7,124.0	7,121.9	17.7	17.7	-91.76		-356.2	227.9	399.3	364.0	35.29	11.313 SF	
7,600.0	7,134.6	7,129.3	7,127.3	18.8	17.7	-90.61		-356.2	227.9	424.8	388.5	36.33	11.693	
7,700.0	7,134.3	7,128.7	7,126.7	19.9	17.7	-90.53		-356.2	227.9	470.7	433.2	37.48	12.559	
7,800.0	7,134.0	7,128.1	7,126.1	21.2	17.7	-90.44		-356.2	227.9	531.7	492.9	38.74	13.725	
7,900.0	7,133.7	7,127.5	7,125.5	22.6	17.7	-90.35		-356.2	227.9	603.1	563.1	40.09	15.044	
8,000.0	7,133.4	7,126.9	7,124.9	24.0	17.7	-90.26		-356.2	227.9	681.8	640.3	41.52	16.421	
8,100.0	7,133.1	7,126.3	7,124.3	25.5	17.7	-90.17		-356.2	227.9	765.5	722.5	43.02	17.795	
8,200.0	7,132.8	7,125.7	7,123.6	27.0	17.7	-90.08		-356.2	227.9	852.7	808.1	44.57	19.133	
8,300.0	7,132.5	7,125.0	7,123.0	28.6	17.7	-89.99		-356.2	227.9	942.5	896.3	46.16	20.417	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	-90.00	0.0	-89.2	89.2	89.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	-90.00	0.0	-89.2	89.2	89.0	0.23	393.123	
166.3	166.3	167.3	167.3	0.3	0.3	-90.00	-90.00	0.0	-89.2	89.2	88.7	0.53	169.928 CC	
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	-90.00	0.0	-89.2	89.2	88.6	0.68	131.936 ES	
300.0	300.0	300.0	300.0	0.6	0.6	-89.90	-89.90	0.2	-90.1	90.1	89.0	1.11	80.816	
400.0	400.0	397.9	397.9	0.8	0.8	-89.60	-89.60	0.6	-92.6	92.7	91.1	1.55	59.686	
500.0	500.0	496.2	496.1	1.0	1.0	-89.14	-89.14	1.4	-96.8	96.9	94.9	2.00	48.510	
600.0	600.0	594.3	594.0	1.2	1.2	-88.56	-88.56	2.6	-102.6	102.8	100.4	2.45	42.019	
700.0	700.0	692.2	691.6	1.5	1.5	-87.91	-87.91	4.0	-110.0	110.5	107.6	2.90	38.069	
800.0	800.0	789.9	788.8	1.7	1.7	-87.23	-87.23	5.8	-119.0	119.8	116.4	3.36	35.641	
900.0	900.0	887.1	885.5	1.9	2.0	-86.55	-86.55	7.8	-129.6	130.8	127.0	3.83	34.187	
1,000.0	1,000.0	984.0	981.6	2.1	2.3	-85.90	-85.90	10.2	-141.8	143.5	139.2	4.30	33.390	
1,100.0	1,100.0	1,080.4	1,077.0	2.4	2.6	-85.29	-85.29	12.8	-155.5	157.9	153.1	4.78	33.049	
1,200.0	1,200.0	1,176.4	1,171.6	2.6	3.0	-84.73	-84.73	15.8	-170.7	173.9	168.7	5.27	33.035	
1,300.0	1,300.0	1,271.7	1,265.5	2.8	3.3	-84.22	-84.22	19.0	-187.4	191.6	185.9	5.76	33.259	
1,400.0	1,400.0	1,366.5	1,358.5	3.0	3.7	-83.76	-83.76	22.5	-205.4	211.0	204.7	6.27	33.657	
1,500.0	1,500.0	1,460.7	1,450.5	3.3	4.1	-83.35	-83.35	26.2	-224.9	231.9	225.2	6.79	34.184	
1,600.0	1,600.0	1,555.2	1,542.7	3.5	4.5	-82.98	-82.98	30.3	-245.8	254.5	247.1	7.31	34.786	
1,700.0	1,700.0	1,652.7	1,637.5	3.7	5.0	-49.55	-49.55	34.5	-267.8	276.8	269.3	7.49	36.979	
1,800.0	1,800.0	1,750.4	1,732.6	3.9	5.5	-49.48	-49.48	38.8	-289.8	298.1	290.2	7.96	37.458	
1,900.0	1,899.9	1,848.3	1,827.9	4.2	5.9	-49.66	-49.66	43.1	-311.9	318.3	309.9	8.43	37.734	
2,000.0	1,999.7	1,946.5	1,923.4	4.4	6.4	-50.04	-50.04	47.3	-334.1	337.4	328.5	8.92	37.839	
2,100.0	2,099.4	2,044.7	2,019.0	4.6	6.9	-50.59	-50.59	51.6	-356.2	355.4	346.0	9.40	37.795	
2,200.0	2,198.9	2,143.1	2,114.8	4.8	7.4	-51.29	-51.29	55.9	-378.4	372.4	362.5	9.90	37.621	
2,300.0	2,298.3	2,241.6	2,210.7	5.1	7.8	-52.13	-52.13	60.2	-400.7	388.4	378.0	10.40	37.329	
2,400.0	2,397.4	2,340.2	2,306.6	5.3	8.3	-53.10	-53.10	64.5	-422.9	403.5	392.5	10.92	36.931	
2,500.0	2,496.3	2,438.8	2,402.6	5.6	8.8	-54.19	-54.19	68.8	-445.2	417.7	406.2	11.46	36.435	
2,600.0	2,594.9	2,537.5	2,498.6	5.9	9.3	-55.39	-55.39	73.1	-467.4	431.0	419.0	12.02	35.848	
2,700.0	2,693.3	2,636.1	2,594.6	6.2	9.8	-56.71	-56.71	77.4	-489.7	443.7	431.1	12.61	35.175	
2,800.0	2,791.4	2,734.6	2,690.5	6.5	10.3	-58.15	-58.15	81.7	-511.9	456.1	442.8	13.23	34.466	
2,900.0	2,889.5	2,833.2	2,786.4	6.9	10.8	-59.52	-59.52	86.0	-534.1	468.7	454.8	13.87	33.789	
3,000.0	2,987.7	2,931.8	2,882.4	7.2	11.2	-60.82	-60.82	90.3	-556.4	481.6	467.1	14.53	33.145	
3,100.0	3,085.8	3,030.4	2,978.3	7.6	11.7	-62.05	-62.05	94.6	-578.6	494.8	479.6	15.21	32.536	
3,200.0	3,183.9	3,129.0	3,074.3	7.9	12.2	-63.22	-63.22	98.9	-600.9	508.1	492.2	15.90	31.959	
3,300.0	3,282.1	3,227.5	3,170.2	8.3	12.7	-64.33	-64.33	103.2	-623.1	521.7	505.1	16.61	31.416	
3,400.0	3,380.2	3,326.1	3,266.1	8.7	13.2	-65.38	-65.38	107.5	-645.3	535.4	518.1	17.33	30.904	
3,500.0	3,478.4	3,424.7	3,362.1	9.0	13.7	-66.45	-66.45	111.8	-667.6	549.4	531.3	18.05	30.441	
3,600.0	3,577.0	3,523.3	3,458.1	9.3	14.2	-67.42	-67.42	116.1	-689.8	564.5	545.8	18.69	30.200	
3,700.0	3,676.1	3,621.9	3,554.0	9.6	14.7	-68.07	-68.07	120.4	-712.1	581.0	561.7	19.29	30.116 SF	
3,800.0	3,775.7	3,720.3	3,649.8	9.8	15.2	-68.40	-68.40	124.7	-734.3	598.8	578.9	19.84	30.179	
3,900.0	3,875.5	3,818.4	3,745.2	10.0	15.7	-68.46	-68.46	129.0	-756.4	617.8	597.5	20.34	30.382	
4,000.0	3,975.5	3,916.1	3,840.3	10.2	16.2	-68.26	-68.26	133.3	-778.4	638.2	617.4	20.78	30.718	
4,100.0	4,075.5	4,013.4	3,935.1	10.4	16.6	-100.69	-100.69	137.5	-800.4	659.5	638.4	21.17	31.153	
4,200.0	4,175.5	4,110.8	4,029.8	10.5	17.1	-99.98	-99.98	141.7	-822.4	681.0	659.4	21.58	31.556	
4,300.0	4,275.5	4,208.1	4,124.5	10.7	17.6	-99.31	-99.31	146.0	-844.3	702.6	680.6	22.00	31.942	
4,400.0	4,375.5	4,305.4	4,219.2	10.9	18.1	-98.69	-98.69	150.2	-866.3	724.3	701.9	22.41	32.314	
4,500.0	4,475.5	4,402.7	4,314.0	11.1	18.6	-98.09	-98.09	154.5	-888.2	746.0	723.2	22.83	32.670	
4,600.0	4,575.5	4,500.1	4,408.7	11.3	19.1	-97.54	-97.54	158.7	-910.2	767.8	744.6	23.26	33.013	
4,700.0	4,675.5	4,597.4	4,503.4	11.5	19.6	-97.01	-97.01	163.0	-932.1	789.7	766.0	23.69	33.342	
4,800.0	4,775.5	4,694.7	4,598.1	11.7	20.0	-96.51	-96.51	167.2	-954.1	811.7	787.5	24.12	33.658	
4,900.0	4,875.5	4,792.0	4,692.8	11.9	20.5	-96.04	-96.04	171.5	-976.1	833.7	809.1	24.55	33.961	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,975.5	4,889.4	4,787.6	12.1	21.0	-95.59	175.7	-998.0	855.7	830.7	24.98	34.253	
5,100.0	5,075.5	4,986.7	4,882.3	12.3	21.5	-95.16	180.0	-1,020.0	877.8	852.4	25.42	34.533	
5,200.0	5,175.5	5,084.0	4,977.0	12.5	22.0	-94.76	184.2	-1,041.9	899.9	874.1	25.86	34.802	
5,300.0	5,275.5	5,181.3	5,071.7	12.7	22.5	-94.37	188.4	-1,063.9	922.1	895.8	26.30	35.062	
5,400.0	5,375.5	5,278.7	5,166.4	12.9	23.0	-94.01	192.7	-1,085.8	944.4	917.6	26.74	35.311	
5,500.0	5,475.5	5,376.0	5,261.2	13.1	23.5	-93.65	196.9	-1,107.8	966.6	939.4	27.19	35.551	
5,600.0	5,575.5	5,473.3	5,355.9	13.3	23.9	-93.32	201.2	-1,129.8	988.9	961.3	27.64	35.783	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00		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 CC, ES	
500.0	500.0	499.0	499.0	1.0	1.0	-89.85		0.2	-59.4	59.4	57.4	2.01	29.556	
600.0	600.0	597.9	597.9	1.2	1.2	-89.44		0.6	-61.9	62.0	59.5	2.44	25.355	
700.0	700.0	696.7	696.6	1.5	1.4	-88.83		1.4	-66.1	66.2	63.3	2.88	22.964	
800.0	800.0	795.4	795.1	1.7	1.7	-88.09		2.4	-72.0	72.2	68.9	3.33	21.686	
900.0	900.0	893.8	893.2	1.9	1.9	-87.31		3.7	-79.5	79.9	76.1	3.78	21.134	
1,000.0	1,000.0	991.9	990.9	2.1	2.1	-86.53		5.4	-88.6	89.3	85.0	4.24	21.076	
1,100.0	1,100.0	1,089.7	1,088.0	2.4	2.4	-85.81		7.3	-99.4	100.4	95.7	4.70	21.365	
1,200.0	1,200.0	1,187.0	1,184.6	2.6	2.7	-85.15		9.5	-111.7	113.2	108.0	5.17	21.902	
1,300.0	1,300.0	1,284.0	1,280.5	2.8	3.0	-84.56		12.0	-125.6	127.6	122.0	5.64	22.617	
1,400.0	1,400.0	1,380.7	1,375.9	3.0	3.3	-84.05		14.7	-141.0	143.8	137.6	6.13	23.456	
1,500.0	1,500.0	1,479.3	1,473.1	3.3	3.7	-83.61		17.6	-157.3	160.5	153.9	6.62	24.233	
1,600.0	1,600.0	1,577.8	1,570.3	3.5	4.0	-83.26		20.5	-173.6	177.3	170.2	7.12	24.890	
1,700.0	1,700.0	1,676.5	1,667.5	3.7	4.4	-49.97		23.4	-189.9	193.5	186.1	7.40	26.140	
1,800.0	1,800.0	1,775.4	1,765.0	3.9	4.8	-50.14		26.3	-206.3	208.7	200.8	7.86	26.537	
1,900.0	1,899.9	1,874.3	1,862.5	4.2	5.1	-50.64		29.3	-222.6	222.7	214.4	8.32	26.750	
2,000.0	1,999.7	1,973.4	1,960.2	4.4	5.5	-51.40		32.2	-239.0	235.7	226.9	8.79	26.809	
2,100.0	2,099.4	2,072.6	2,058.0	4.6	5.9	-52.40		35.1	-255.4	247.6	238.4	9.26	26.737	
2,200.0	2,198.9	2,171.8	2,155.8	4.8	6.3	-53.62		38.0	-271.9	258.6	248.9	9.74	26.552	
2,300.0	2,298.3	2,271.1	2,253.6	5.1	6.6	-55.04		41.0	-288.3	268.8	258.5	10.23	26.270	
2,400.0	2,397.4	2,370.3	2,351.5	5.3	7.0	-56.65		43.9	-304.7	278.1	267.4	10.74	25.900	
2,500.0	2,496.3	2,469.5	2,449.2	5.6	7.4	-58.45		46.8	-321.1	286.8	275.5	11.27	25.456	
2,600.0	2,594.9	2,568.6	2,547.0	5.9	7.8	-60.43		49.7	-337.5	294.9	283.0	11.82	24.945	
2,700.0	2,693.3	2,667.6	2,644.6	6.2	8.2	-62.59		52.7	-353.9	302.5	290.1	12.41	24.377	
2,800.0	2,791.4	2,766.6	2,742.1	6.5	8.6	-64.87		55.6	-370.3	310.2	297.1	13.03	23.799	
2,900.0	2,889.5	2,865.6	2,839.7	6.9	8.9	-67.03		58.5	-386.6	318.3	304.6	13.68	23.266	
3,000.0	2,987.7	2,964.5	2,937.2	7.2	9.3	-69.09		61.4	-403.0	326.9	312.5	14.35	22.778	
3,100.0	3,085.8	3,063.5	3,034.7	7.6	9.7	-71.05		64.3	-419.4	335.8	320.8	15.04	22.331	
3,200.0	3,183.9	3,162.4	3,132.3	7.9	10.1	-72.90		67.3	-435.8	345.2	329.4	15.75	21.923	
3,300.0	3,282.1	3,261.4	3,229.8	8.3	10.5	-74.65		70.2	-452.1	354.9	338.4	16.47	21.552	
3,400.0	3,380.2	3,360.3	3,327.4	8.7	10.9	-76.31		73.1	-468.5	364.9	347.7	17.20	21.214	
3,500.0	3,478.4	3,459.3	3,424.9	9.0	11.2	-77.92		76.0	-484.9	375.2	357.3	17.93	20.923	
3,600.0	3,577.0	3,558.4	3,522.6	9.3	11.6	-79.22		79.0	-501.3	386.3	367.7	18.57	20.795	
3,700.0	3,676.1	3,657.6	3,620.5	9.6	12.0	-79.99		81.9	-517.7	398.1	378.9	19.17	20.768	
3,800.0	3,775.7	3,756.8	3,718.3	9.8	12.4	-80.25		84.8	-534.1	410.5	390.8	19.70	20.832	
3,900.0	3,875.5	3,855.9	3,815.9	10.0	12.8	-80.06		87.7	-550.5	423.5	403.3	20.18	20.984	
4,000.0	3,975.5	3,954.8	3,913.4	10.2	13.2	-79.45		90.6	-566.8	437.2	416.6	20.60	21.222	
4,100.0	4,075.5	4,053.4	4,010.6	10.4	13.6	-111.46		93.6	-583.2	451.4	430.5	20.98	21.522	
4,200.0	4,175.5	4,151.9	4,107.7	10.5	14.0	-110.38		96.5	-599.5	465.9	444.5	21.37	21.804	
4,300.0	4,275.5	4,250.5	4,204.9	10.7	14.3	-109.37		99.4	-615.8	480.5	458.7	21.76	22.080	
4,400.0	4,375.5	4,349.1	4,302.1	10.9	14.7	-108.41		102.3	-632.1	495.2	473.1	22.16	22.350	
4,500.0	4,475.5	4,447.7	4,399.3	11.1	15.1	-107.52		105.2	-648.4	510.1	487.6	22.56	22.613	
4,600.0	4,575.5	4,546.2	4,496.4	11.3	15.5	-106.67		108.1	-664.7	525.1	502.1	22.96	22.870	
4,700.0	4,675.5	4,644.8	4,593.6	11.5	15.9	-105.87		111.0	-681.0	540.2	516.8	23.37	23.120	
4,800.0	4,775.5	4,743.4	4,690.8	11.7	16.3	-105.11		113.9	-697.3	555.4	531.6	23.77	23.363	
4,900.0	4,875.5	4,842.0	4,788.0	11.9	16.7	-104.39		116.8	-713.6	570.7	546.5	24.18	23.599	
5,000.0	4,975.5	4,940.6	4,885.1	12.1	17.0	-103.71		119.7	-729.9	586.1	561.5	24.60	23.828	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,075.5	5,039.1	4,982.3	12.3	17.4	-103.07		122.6	-746.2	601.5	576.5	25.01	24.051	
5,200.0	5,175.5	5,137.7	5,079.5	12.5	17.8	-102.45		125.5	-762.6	617.0	591.6	25.43	24.267	
5,300.0	5,275.5	5,236.3	5,176.7	12.7	18.2	-101.87		128.5	-778.9	632.6	606.8	25.85	24.476	
5,400.0	5,375.5	5,334.9	5,273.9	12.9	18.6	-101.32		131.4	-795.2	648.3	622.0	26.27	24.679	
5,500.0	5,475.5	5,433.4	5,371.0	13.1	19.0	-100.79		134.3	-811.5	664.0	637.3	26.69	24.876	
5,600.0	5,575.5	5,532.0	5,468.2	13.3	19.4	-100.28		137.2	-827.8	679.7	652.6	27.12	25.067	
5,700.0	5,675.5	5,630.6	5,565.4	13.5	19.7	-99.80		140.1	-844.1	695.5	668.0	27.54	25.252	
5,800.0	5,775.5	5,729.2	5,662.6	13.7	20.1	-99.34		143.0	-860.4	711.4	683.4	27.97	25.432	
5,900.0	5,875.5	5,827.8	5,759.7	13.9	20.5	-98.90		145.9	-876.7	727.2	698.8	28.40	25.606	
6,000.0	5,975.5	5,926.3	5,856.9	14.1	20.9	-98.48		148.8	-893.0	743.2	714.3	28.83	25.775	
6,100.0	6,075.5	6,024.9	5,954.1	14.3	21.3	-98.08		151.7	-909.3	759.2	729.9	29.27	25.939	
6,200.0	6,175.5	6,123.5	6,051.3	14.5	21.7	-97.69		154.6	-925.6	775.2	745.5	29.70	26.098	
6,300.0	6,275.5	6,222.1	6,148.4	14.7	22.1	-97.32		157.5	-942.0	791.2	761.1	30.14	26.252	
6,400.0	6,375.5	6,320.6	6,245.6	14.9	22.5	-96.98		160.5	-958.3	807.3	776.7	30.58	26.397	
6,500.0	6,475.1	6,418.7	6,342.3	15.1	22.8	-96.67		163.3	-974.5	822.5	791.5	31.02	26.517	
6,600.0	6,573.0	6,510.6	6,432.9	15.1	23.2	-96.37		166.6	-989.7	836.7	805.4	31.27	26.754	
6,700.0	6,667.4	6,600.0	6,520.6	15.2	23.5	-96.07		169.4	-1,004.4	850.8	819.4	31.40	27.098	
6,800.0	6,756.8	6,692.3	6,609.6	15.2	23.7	-95.77		172.2	-1,019.3	864.7	833.3	31.45	27.493	
6,900.0	6,839.5	6,787.5	6,698.3	15.2	24.0	-95.47		175.0	-1,034.2	878.3	846.8	31.51	27.878	
7,000.0	6,914.2	6,862.2	6,785.4	15.2	24.2	-95.17		177.8	-1,048.9	891.4	859.8	31.64	28.174	
7,100.0	6,979.6	6,928.8	6,869.3	15.3	24.5	-94.87		180.6	-1,062.9	903.8	871.8	31.94	28.297	
7,200.0	7,034.6	7,095.7	6,948.0	15.6	24.7	-94.57		183.4	-1,076.1	915.1	882.6	32.49	28.160	
7,300.0	7,078.3	7,207.4	7,018.8	16.1	25.1	-94.27		186.2	-1,088.0	925.0	891.6	33.38	27.712	
7,400.0	7,109.8	7,324.0	7,078.8	16.9	25.5	-93.97		189.0	-1,098.1	933.4	898.7	34.65	26.936	
7,500.0	7,128.7	7,445.6	7,124.8	17.7	26.0	-93.67		191.8	-1,105.8	939.7	903.4	36.31	25.877	
7,600.0	7,134.6	7,571.9	7,153.4	18.8	26.7	-93.37		194.6	-1,110.6	943.7	905.4	38.36	24.601	
7,700.0	7,134.3	7,698.4	7,161.7	19.9	27.5	-93.07		197.4	-1,112.0	945.0	904.2	40.77	23.179	
7,800.0	7,134.0	7,798.4	7,161.7	21.2	28.3	-92.77		199.8	-1,112.0	945.0	901.8	43.17	21.888	
7,900.0	7,133.7	7,898.4	7,161.8	22.6	29.2	-92.47		202.2	-1,112.0	945.0	899.2	45.77	20.645	
8,000.0	7,133.4	7,998.4	7,161.8	24.0	30.3	-92.17		204.6	-1,112.0	945.0	896.5	48.54	19.470	
8,100.0	7,133.1	8,098.4	7,161.8	25.5	31.4	-91.87		207.0	-1,112.0	945.0	893.6	51.44	18.372	
8,200.0	7,132.8	8,198.4	7,161.9	27.0	32.6	-91.57		209.4	-1,112.0	945.0	890.6	54.45	17.354	
8,300.0	7,132.5	8,298.4	7,161.9	28.6	33.9	-91.27		211.8	-1,112.0	945.0	887.5	57.57	16.416	
8,400.0	7,132.2	8,398.4	7,161.9	30.3	35.2	-90.97		214.2	-1,112.0	945.1	884.3	60.76	15.553	
8,500.0	7,131.9	8,498.4	7,162.0	31.9	36.6	-90.67		216.6	-1,112.0	945.1	881.0	64.03	14.759	
8,600.0	7,131.6	8,598.4	7,162.0	33.6	38.0	-90.37		219.0	-1,112.0	945.1	877.7	67.36	14.031	
8,700.0	7,131.3	8,698.4	7,162.1	35.3	39.5	-90.07		221.4	-1,112.0	945.1	874.3	70.74	13.361	
8,800.0	7,131.0	8,798.4	7,162.1	37.1	41.0	-89.77		223.8	-1,112.0	945.1	870.9	74.16	12.744	
8,900.0	7,130.7	8,898.4	7,162.1	38.8	42.6	-89.47		226.2	-1,112.0	945.1	867.5	77.62	12.176	
9,000.0	7,130.4	8,998.4	7,162.2	40.6	44.2	-89.17		228.6	-1,112.0	945.1	864.0	81.11	11.652	
9,100.0	7,130.1	9,098.4	7,162.2	42.3	45.8	-88.87		231.0	-1,112.0	945.1	860.5	84.64	11.167	
9,200.0	7,129.8	9,198.4	7,162.2	44.1	47.4	-88.57		233.4	-1,112.0	945.1	857.0	88.19	10.717	
9,300.0	7,129.5	9,298.4	7,162.3	45.9	49.1	-88.27		235.8	-1,112.0	945.2	853.4	91.76	10.300	
9,400.0	7,129.3	9,398.4	7,162.3	47.8	50.8	-87.97		238.2	-1,112.0	945.2	849.8	95.35	9.912	
9,500.0	7,129.0	9,498.4	7,162.3	49.6	52.5	-87.67		240.6	-1,112.0	945.2	846.2	98.97	9.551	
9,600.0	7,128.7	9,598.4	7,162.4	51.4	54.2	-87.37		243.0	-1,112.0	945.2	842.6	102.59	9.213	
9,700.0	7,128.4	9,698.4	7,162.4	53.2	55.9	-87.07		245.4	-1,112.0	945.2	839.0	106.24	8.897	
9,800.0	7,128.1	9,798.4	7,162.4	55.1	57.6	-86.77		247.8	-1,112.0	945.2	835.3	109.89	8.601	
9,900.0	7,127.8	9,898.4	7,162.5	56.9	59.4	-86.47		250.2	-1,112.0	945.2	831.7	113.56	8.324	
10,000.0	7,127.5	9,998.4	7,162.5	58.8	61.1	-86.17		252.6	-1,112.0	945.2	828.0	117.23	8.063	
10,100.0	7,127.2	10,098.4	7,162.5	60.6	62.9	-85.87		255.0	-1,112.0	945.2	824.3	120.92	7.817	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	7,126.9	10,198.4	7,162.6	62.5	64.7	92.16	92.16	-3,111.7	-1,112.0	945.3	820.6	124.62	7.585	
10,300.0	7,126.6	10,298.4	7,162.6	64.3	66.5	92.18	92.18	-3,211.7	-1,112.0	945.3	816.9	128.32	7.366	
10,400.0	7,126.3	10,398.4	7,162.6	66.2	68.2	92.20	92.20	-3,311.7	-1,112.0	945.3	813.3	132.03	7.159	
10,500.0	7,126.0	10,498.4	7,162.7	68.1	70.0	92.22	92.22	-3,411.7	-1,112.0	945.3	809.5	135.75	6.963	
10,600.0	7,125.7	10,598.4	7,162.7	69.9	71.8	92.24	92.24	-3,511.7	-1,112.0	945.3	805.8	139.48	6.778	
10,700.0	7,125.4	10,698.4	7,162.8	71.8	73.7	92.26	92.26	-3,611.7	-1,112.0	945.3	802.1	143.21	6.601	
10,800.0	7,125.1	10,798.4	7,162.8	73.7	75.5	92.28	92.28	-3,711.7	-1,112.0	945.3	798.4	146.94	6.433	
10,900.0	7,124.8	10,898.4	7,162.8	75.6	77.3	92.30	92.30	-3,811.7	-1,112.0	945.4	794.7	150.68	6.274	
11,000.0	7,124.5	10,998.4	7,162.9	77.4	79.1	92.33	92.33	-3,911.7	-1,112.0	945.4	790.9	154.43	6.122	
11,100.0	7,124.2	11,098.4	7,162.9	79.3	81.0	92.35	92.35	-4,011.7	-1,112.0	945.4	787.2	158.18	5.977	
11,200.0	7,123.9	11,198.4	7,162.9	81.2	82.8	92.37	92.37	-4,111.7	-1,112.0	945.4	783.5	161.93	5.838	
11,300.0	7,123.6	11,298.4	7,163.0	83.1	84.6	92.39	92.39	-4,211.7	-1,112.0	945.4	779.7	165.69	5.706	
11,400.0	7,123.3	11,398.4	7,163.0	85.0	86.5	92.41	92.41	-4,311.7	-1,112.0	945.4	776.0	169.45	5.579	
11,500.0	7,123.0	11,498.4	7,163.0	86.9	88.3	92.43	92.43	-4,411.7	-1,112.0	945.4	772.2	173.21	5.458	
11,600.0	7,122.7	11,598.4	7,163.1	88.8	90.2	92.45	92.45	-4,511.7	-1,112.0	945.4	768.5	176.97	5.342	
11,700.0	7,122.4	11,698.4	7,163.1	90.6	92.0	92.47	92.47	-4,611.7	-1,112.0	945.5	764.7	180.74	5.231	
11,800.0	7,122.1	11,798.4	7,163.1	92.5	93.9	92.49	92.49	-4,711.7	-1,112.0	945.5	761.0	184.51	5.124	
11,900.0	7,121.8	11,898.4	7,163.2	94.4	95.7	92.51	92.51	-4,811.7	-1,112.0	945.5	757.2	188.29	5.022	
12,000.0	7,121.5	11,998.4	7,163.2	96.3	97.6	92.53	92.53	-4,911.7	-1,112.0	945.5	753.4	192.06	4.923	
12,100.0	7,121.2	12,098.4	7,163.2	98.2	99.4	92.55	92.55	-5,011.7	-1,112.0	945.5	749.7	195.84	4.828	
12,200.0	7,120.9	12,198.4	7,163.3	100.1	101.3	92.57	92.57	-5,111.7	-1,112.0	945.5	745.9	199.62	4.737	
12,300.0	7,120.6	12,298.4	7,163.3	102.0	103.2	92.59	92.59	-5,211.7	-1,112.0	945.5	742.1	203.40	4.649	
12,400.0	7,120.4	12,398.4	7,163.3	103.9	105.0	92.61	92.61	-5,311.7	-1,112.0	945.6	738.4	207.19	4.564	
12,500.0	7,120.1	12,498.4	7,163.4	105.8	106.9	92.63	92.63	-5,411.7	-1,112.0	945.6	734.6	210.97	4.482	
12,600.0	7,119.8	12,598.4	7,163.4	107.7	108.8	92.65	92.65	-5,511.7	-1,112.0	945.6	730.8	214.76	4.403	
12,700.0	7,119.5	12,698.4	7,163.4	109.6	110.6	92.67	92.67	-5,611.7	-1,112.0	945.6	727.1	218.55	4.327	
12,800.0	7,119.2	12,798.4	7,163.5	111.5	112.5	92.69	92.69	-5,711.7	-1,112.0	945.6	723.3	222.33	4.253	
12,900.0	7,118.9	12,898.4	7,163.5	113.4	114.4	92.71	92.71	-5,811.7	-1,112.0	945.6	719.5	226.13	4.182	
13,000.0	7,118.6	12,998.4	7,163.6	115.3	116.3	92.73	92.73	-5,911.7	-1,112.0	945.7	715.7	229.92	4.113	
13,100.0	7,118.3	13,098.4	7,163.6	117.2	118.2	92.75	92.75	-6,011.7	-1,112.0	945.7	712.0	233.71	4.046	
13,200.0	7,118.0	13,198.4	7,163.6	119.1	120.0	92.77	92.77	-6,111.7	-1,112.0	945.7	708.2	237.50	3.982	
13,300.0	7,117.7	13,298.4	7,163.7	121.0	121.9	92.79	92.79	-6,211.7	-1,112.0	945.7	704.4	241.30	3.919	
13,400.0	7,117.4	13,398.4	7,163.7	122.9	123.8	92.81	92.81	-6,311.7	-1,112.0	945.7	700.6	245.10	3.859	
13,500.0	7,117.1	13,498.4	7,163.7	124.8	125.7	92.83	92.83	-6,411.7	-1,112.0	945.7	696.8	248.89	3.800	
13,600.0	7,116.8	13,598.4	7,163.8	126.7	127.6	92.85	92.85	-6,511.7	-1,112.0	945.8	693.1	252.69	3.743	
13,700.0	7,116.5	13,698.4	7,163.8	128.6	129.4	92.87	92.87	-6,611.7	-1,112.0	945.8	689.3	256.49	3.687	
13,800.0	7,116.2	13,798.4	7,163.8	130.5	131.3	92.89	92.89	-6,711.7	-1,112.0	945.8	685.5	260.29	3.634	
13,900.0	7,115.9	13,898.4	7,163.9	132.4	133.2	92.91	92.91	-6,811.7	-1,112.0	945.8	681.7	264.09	3.581	
14,000.0	7,115.6	13,998.4	7,163.9	134.3	135.1	92.93	92.93	-6,911.7	-1,112.0	945.8	677.9	267.89	3.531	
14,100.0	7,115.3	14,098.4	7,163.9	136.3	137.0	92.95	92.95	-7,011.7	-1,112.0	945.8	674.1	271.69	3.481	
14,200.0	7,115.0	14,198.4	7,164.0	138.2	138.9	92.97	92.97	-7,111.7	-1,112.0	945.9	670.4	275.50	3.433	
14,203.2	7,115.0	14,201.6	7,164.0	138.2	139.0	92.97	92.97	-7,114.9	-1,112.0	945.9	670.2	275.62	3.432 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-223 - Wellbore #1 - Plan #3 (1-28-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	90.00	0.0	30.7	30.7	23.7	6.97	4.403 CC, ES	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	124.42	124.42	0.0	30.7	31.2	23.7	7.41	4.203	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	128.19	128.19	0.0	30.7	32.7	24.9	7.86	4.163	
1,900.0	1,899.9	1,899.9	1,899.9	4.2	4.2	133.69	133.69	0.0	30.7	35.6	27.3	8.30	4.287	
2,000.0	1,999.7	1,999.7	1,999.7	4.4	4.4	139.99	139.99	0.0	30.7	40.0	31.3	8.74	4.581	
2,100.0	2,099.4	2,099.4	2,099.4	4.6	4.6	145.13	145.13	0.8	31.0	46.3	37.2	9.18	5.049	
2,200.0	2,198.9	2,199.0	2,199.0	4.8	4.8	148.13	148.13	3.2	32.0	54.3	44.7	9.61	5.653	
2,300.0	2,298.3	2,298.6	2,298.5	5.1	5.1	149.55	149.55	7.1	33.7	63.8	53.8	10.05	6.354	
2,400.0	2,397.4	2,398.1	2,397.8	5.3	5.3	149.93	149.93	12.7	36.1	74.8	64.3	10.49	7.129	
2,500.0	2,496.3	2,497.4	2,496.8	5.6	5.5	149.62	149.62	19.8	39.2	87.1	76.1	10.93	7.965	
2,600.0	2,594.9	2,596.5	2,595.5	5.9	5.7	148.88	148.88	28.5	42.9	100.8	89.4	11.39	8.849	
2,700.0	2,693.3	2,695.5	2,693.8	6.2	6.0	147.90	147.90	38.7	47.3	115.9	104.0	11.86	9.773	
2,800.0	2,791.4	2,794.2	2,791.7	6.5	6.2	146.69	146.69	50.5	52.4	131.8	119.4	12.36	10.660	
2,900.0	2,889.5	2,892.8	2,889.2	6.9	6.5	145.09	145.09	63.8	58.1	147.8	134.9	12.90	11.458	
3,000.0	2,987.7	2,991.4	2,986.4	7.2	6.7	143.22	143.22	78.5	64.4	163.9	150.5	13.45	12.182	
3,100.0	3,085.8	3,089.9	3,083.6	7.6	7.0	141.56	141.56	93.7	70.9	180.2	166.2	14.03	12.842	
3,200.0	3,183.9	3,188.4	3,180.8	7.9	7.3	140.18	140.18	108.8	77.4	196.6	182.0	14.62	13.446	
3,300.0	3,282.1	3,287.0	3,277.9	8.3	7.6	139.01	139.01	123.9	83.9	213.2	197.9	15.23	13.997	
3,400.0	3,380.2	3,385.5	3,375.1	8.7	7.9	138.00	138.00	139.0	90.4	229.8	213.9	15.85	14.501	
3,500.0	3,478.4	3,484.1	3,472.2	9.0	8.2	137.18	137.18	154.1	96.9	246.3	229.9	16.47	14.954	
3,600.0	3,577.0	3,582.8	3,569.6	9.3	8.5	136.21	136.21	169.3	103.4	261.1	244.0	17.08	15.286	
3,700.0	3,676.1	3,681.8	3,667.2	9.6	8.9	134.81	134.81	184.5	109.9	273.5	255.8	17.68	15.470	
3,800.0	3,775.7	3,780.8	3,764.8	9.8	9.2	133.02	133.02	199.6	116.4	283.7	265.4	18.26	15.534	
3,900.0	3,875.5	3,879.8	3,862.4	10.0	9.5	130.83	130.83	214.8	122.9	291.9	273.1	18.83	15.505	
4,000.0	3,975.5	3,979.9	3,961.1	10.2	9.8	128.25	128.25	229.9	129.4	298.3	279.0	19.35	15.414	
4,100.0	4,075.5	4,082.6	4,062.9	10.4	10.1	92.71	92.71	242.7	134.9	302.9	283.1	19.82	15.283	
4,200.0	4,175.5	4,186.1	4,165.9	10.5	10.3	90.90	90.90	252.2	139.0	306.6	286.3	20.27	15.127	
4,300.0	4,275.5	4,290.3	4,269.9	10.7	10.5	89.76	89.76	258.3	141.6	309.0	288.4	20.68	14.943	
4,400.0	4,375.5	4,394.8	4,374.3	10.9	10.7	89.28	89.28	260.9	142.7	310.1	289.1	21.07	14.720	
4,500.0	4,475.5	4,495.9	4,475.5	11.1	10.9	89.26	89.26	261.0	142.8	310.2	288.7	21.45	14.464	
4,600.0	4,575.5	4,595.9	4,575.5	11.3	11.1	89.26	89.26	261.0	142.8	310.2	288.3	21.84	14.201	
4,700.0	4,675.5	4,695.9	4,675.5	11.5	11.3	89.26	89.26	261.0	142.8	310.2	287.9	22.24	13.946	
4,800.0	4,775.5	4,795.9	4,775.5	11.7	11.5	89.26	89.26	261.0	142.8	310.2	287.5	22.64	13.698	
4,900.0	4,875.5	4,895.9	4,875.5	11.9	11.7	89.26	89.26	261.0	142.8	310.2	287.1	23.05	13.459	
5,000.0	4,975.5	4,995.9	4,975.5	12.1	11.9	89.26	89.26	261.0	142.8	310.2	286.7	23.45	13.226	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-223 - Wellbore #1 - Plan #3 (1-28-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,075.5	5,095.9	5,075.5	12.3	12.1	89.26		261.0	142.8	310.2	286.3	23.86	13.001	
5,200.0	5,175.5	5,195.9	5,175.5	12.5	12.3	89.26		261.0	142.8	310.2	285.9	24.27	12.782	
5,300.0	5,275.5	5,295.9	5,275.5	12.7	12.5	89.26		261.0	142.8	310.2	285.5	24.68	12.570	
5,400.0	5,375.5	5,395.9	5,375.5	12.9	12.7	89.26		261.0	142.8	310.2	285.1	25.09	12.364	
5,500.0	5,475.5	5,495.9	5,475.5	13.1	12.9	89.26		261.0	142.8	310.2	284.7	25.50	12.164	
5,600.0	5,575.5	5,595.9	5,575.5	13.3	13.1	89.26		261.0	142.8	310.2	284.3	25.91	11.970	
5,700.0	5,675.5	5,695.9	5,675.5	13.5	13.3	89.26		261.0	142.8	310.2	283.9	26.33	11.781	
5,800.0	5,775.5	5,795.9	5,775.5	13.7	13.5	89.26		261.0	142.8	310.2	283.4	26.74	11.598	
5,900.0	5,875.5	5,895.9	5,875.5	13.9	13.7	89.26		261.0	142.8	310.2	283.0	27.16	11.420	
6,000.0	5,975.5	5,995.9	5,975.5	14.1	13.9	89.26		261.0	142.8	310.2	282.6	27.58	11.247	
6,100.0	6,075.5	6,095.9	6,075.5	14.3	14.1	89.26		261.0	142.8	310.2	282.2	28.00	11.079	
6,200.0	6,175.5	6,195.9	6,175.5	14.5	14.4	89.26		261.0	142.8	310.2	281.8	28.42	10.915	
6,300.0	6,275.5	6,295.9	6,275.5	14.7	14.6	89.26		261.0	142.8	310.2	281.3	28.84	10.756	
6,400.0	6,375.5	6,396.1	6,375.5	14.9	14.7	-90.12		257.6	142.8	310.2	280.9	29.21	10.618	
6,407.3	6,382.7	6,403.4	6,382.7	14.9	14.7	-90.00		256.9	142.8	310.2	280.9	29.23	10.611	
6,500.0	6,475.1	6,495.2	6,473.3	15.1	14.8	-88.51		241.9	142.8	310.3	280.8	29.42	10.547	
6,600.0	6,573.0	6,593.3	6,567.3	15.1	14.9	-86.94		214.1	142.8	310.6	281.1	29.51	10.527	
6,700.0	6,667.4	6,690.3	6,656.0	15.2	14.9	-85.43		174.9	142.8	311.2	281.6	29.52	10.539	
6,800.0	6,756.8	6,786.4	6,738.2	15.2	14.9	-84.01		125.4	142.8	311.9	282.3	29.52	10.564	
6,900.0	6,839.5	6,881.6	6,813.0	15.2	14.9	-82.70		66.5	142.8	312.7	283.1	29.58	10.573	
7,000.0	6,914.2	6,976.1	6,879.3	15.2	15.0	-81.52		-0.6	142.8	313.6	283.8	29.76	10.538	
7,100.0	6,979.6	7,069.9	6,936.5	15.3	15.2	-80.48		-74.9	142.8	314.5	284.4	30.15	10.432	
7,200.0	7,034.6	7,163.1	6,983.9	15.6	15.6	-79.60		-155.1	142.8	315.4	284.6	30.80	10.238	
7,300.0	7,078.3	7,255.8	7,021.0	16.1	16.2	-78.88		-240.0	142.8	316.1	284.3	31.77	9.949	
7,400.0	7,109.8	7,350.0	7,047.9	16.9	16.9	-78.34		-330.2	142.8	316.7	283.6	33.08	9.572	
7,400.4	7,109.9	7,350.0	7,047.9	16.9	16.9	-78.34		-330.2	142.8	316.7	283.6	33.09	9.571	
7,500.0	7,128.7	7,440.3	7,063.1	17.7	17.7	-77.99		-419.2	142.8	317.1	282.4	34.70	9.139	
7,600.0	7,134.6	7,532.6	7,067.6	18.8	18.6	-77.82		-511.3	142.8	317.3	280.7	36.61	8.668	
7,700.0	7,134.3	7,632.6	7,067.0	19.9	19.8	-77.76		-611.3	142.8	317.4	278.5	38.87	8.164	
7,800.0	7,134.0	7,732.6	7,066.4	21.2	21.1	-77.70		-711.3	142.8	317.5	276.1	41.35	7.678	
7,900.0	7,133.7	7,832.6	7,065.7	22.6	22.4	-77.63		-811.3	142.8	317.5	273.5	44.00	7.216	
8,000.0	7,133.4	7,932.6	7,065.1	24.0	23.9	-77.57		-911.3	142.8	317.6	270.8	46.81	6.785	
8,100.0	7,133.1	8,032.6	7,064.4	25.5	25.4	-77.51		-1,011.3	142.8	317.7	267.9	49.74	6.387	
8,200.0	7,132.8	8,132.6	7,063.8	27.0	26.9	-77.45		-1,111.3	142.8	317.8	265.0	52.77	6.021	
8,300.0	7,132.5	8,232.6	7,063.1	28.6	28.5	-77.39		-1,211.3	142.8	317.8	261.9	55.89	5.687	
8,400.0	7,132.2	8,332.6	7,062.5	30.3	30.2	-77.33		-1,311.3	142.8	317.9	258.8	59.08	5.381	
8,500.0	7,131.9	8,432.6	7,061.8	31.9	31.8	-77.27		-1,411.3	142.8	318.0	255.6	62.34	5.101	
8,600.0	7,131.6	8,532.6	7,061.2	33.6	33.5	-77.20		-1,511.3	142.8	318.1	252.4	65.64	4.845	
8,700.0	7,131.3	8,632.6	7,060.5	35.3	35.3	-77.14		-1,611.3	142.8	318.1	249.1	68.99	4.611	
8,800.0	7,131.0	8,732.6	7,059.9	37.1	37.0	-77.08		-1,711.3	142.8	318.2	245.8	72.37	4.397	
8,900.0	7,130.7	8,832.6	7,059.2	38.8	38.7	-77.02		-1,811.3	142.8	318.3	242.5	75.79	4.200	
9,000.0	7,130.4	8,932.6	7,058.6	40.6	40.5	-76.96		-1,911.3	142.8	318.4	239.1	79.24	4.018	
9,100.0	7,130.1	9,032.6	7,058.0	42.3	42.3	-76.90		-2,011.3	142.8	318.4	235.7	82.71	3.850	
9,200.0	7,129.8	9,132.6	7,057.3	44.1	44.1	-76.84		-2,111.3	142.8	318.5	232.3	86.20	3.695	
9,300.0	7,129.5	9,232.6	7,056.7	45.9	45.9	-76.78		-2,211.3	142.8	318.6	228.9	89.71	3.552	
9,400.0	7,129.3	9,332.6	7,056.0	47.8	47.7	-76.72		-2,311.3	142.8	318.7	225.5	93.23	3.418	
9,500.0	7,129.0	9,432.6	7,055.4	49.6	49.5	-76.65		-2,411.3	142.8	318.8	222.0	96.77	3.294	
9,600.0	7,128.7	9,532.6	7,054.7	51.4	51.4	-76.59		-2,511.3	142.8	318.8	218.5	100.32	3.178	
9,700.0	7,128.4	9,632.6	7,054.1	53.2	53.2	-76.53		-2,611.3	142.8	318.9	215.0	103.89	3.070	
9,800.0	7,128.1	9,732.6	7,053.4	55.1	55.0	-76.47		-2,711.2	142.8	319.0	211.6	107.46	2.969	
9,900.0	7,127.8	9,832.6	7,052.8	56.9	56.9	-76.41		-2,811.2	142.8	319.1	208.1	111.04	2.874	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13K-223 - Wellbore #1 - Plan #3 (1-28-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,127.5	9,932.6	7,052.1	58.8	58.7	-76.35	-2,911.2	142.8	319.2	204.5	114.63	2.784		
10,100.0	7,127.2	10,032.6	7,051.5	60.6	60.6	-76.29	-3,011.2	142.8	319.3	201.0	118.22	2.700		
10,200.0	7,126.9	10,132.6	7,050.9	62.5	62.4	-76.23	-3,111.2	142.8	319.3	197.5	121.82	2.621		
10,300.0	7,126.6	10,232.6	7,050.2	64.3	64.3	-76.17	-3,211.2	142.8	319.4	194.0	125.43	2.547		
10,400.0	7,126.3	10,332.6	7,049.6	66.2	66.2	-76.11	-3,311.2	142.8	319.5	190.5	129.04	2.476		
10,500.0	7,126.0	10,432.6	7,048.9	68.1	68.0	-76.05	-3,411.2	142.8	319.6	186.9	132.66	2.409		
10,600.0	7,125.7	10,532.6	7,048.3	69.9	69.9	-75.98	-3,511.2	142.8	319.7	183.4	136.28	2.346		
10,700.0	7,125.4	10,632.6	7,047.6	71.8	71.8	-75.92	-3,611.2	142.8	319.8	179.9	139.90	2.286		
10,800.0	7,125.1	10,732.6	7,047.0	73.7	73.7	-75.86	-3,711.2	142.8	319.8	176.3	143.52	2.229		
10,900.0	7,124.8	10,832.6	7,046.3	75.6	75.5	-75.80	-3,811.2	142.8	319.9	172.8	147.15	2.174		
11,000.0	7,124.5	10,932.6	7,045.7	77.4	77.4	-75.74	-3,911.2	142.8	320.0	169.2	150.78	2.122		
11,100.0	7,124.2	11,032.6	7,045.0	79.3	79.3	-75.68	-4,011.2	142.8	320.1	165.7	154.41	2.073		
11,200.0	7,123.9	11,132.6	7,044.4	81.2	81.2	-75.62	-4,111.2	142.8	320.2	162.1	158.05	2.026		
11,300.0	7,123.6	11,232.6	7,043.8	83.1	83.1	-75.56	-4,211.2	142.8	320.3	158.6	161.68	1.981		
11,400.0	7,123.3	11,332.6	7,043.1	85.0	85.0	-75.50	-4,311.2	142.8	320.4	155.0	165.32	1.938		
11,500.0	7,123.0	11,432.6	7,042.5	86.9	86.9	-75.44	-4,411.2	142.8	320.5	151.5	168.95	1.897		
11,600.0	7,122.7	11,532.6	7,041.8	88.8	88.7	-75.38	-4,511.2	142.8	320.5	147.9	172.59	1.857		
11,700.0	7,122.4	11,632.6	7,041.2	90.6	90.6	-75.32	-4,611.2	142.8	320.6	144.4	176.23	1.819		
11,800.0	7,122.1	11,732.6	7,040.5	92.5	92.5	-75.26	-4,711.2	142.8	320.7	140.9	179.87	1.783		
11,900.0	7,121.8	11,832.6	7,039.9	94.4	94.4	-75.20	-4,811.2	142.8	320.8	137.3	183.50	1.748		
12,000.0	7,121.5	11,932.6	7,039.2	96.3	96.3	-75.14	-4,911.2	142.8	320.9	133.8	187.14	1.715		
12,100.0	7,121.2	12,032.6	7,038.6	98.2	98.2	-75.08	-5,011.2	142.8	321.0	130.2	190.78	1.682		
12,200.0	7,120.9	12,132.6	7,037.9	100.1	100.1	-75.02	-5,111.2	142.8	321.1	126.7	194.42	1.651		
12,300.0	7,120.6	12,232.6	7,037.3	102.0	102.0	-74.96	-5,211.2	142.8	321.2	123.1	198.06	1.622		
12,400.0	7,120.4	12,332.6	7,036.6	103.9	103.9	-74.90	-5,311.2	142.8	321.3	119.6	201.70	1.593		
12,500.0	7,120.1	12,432.6	7,036.0	105.8	105.8	-74.84	-5,411.2	142.8	321.3	116.0	205.33	1.565		
12,600.0	7,119.8	12,532.6	7,035.4	107.7	107.7	-74.78	-5,511.2	142.8	321.4	112.5	208.97	1.538		
12,700.0	7,119.5	12,632.6	7,034.7	109.6	109.6	-74.72	-5,611.2	142.8	321.5	108.9	212.61	1.512		
12,800.0	7,119.2	12,732.6	7,034.1	111.5	111.5	-74.66	-5,711.2	142.8	321.6	105.4	216.24	1.487 Level 3		
12,900.0	7,118.9	12,832.6	7,033.4	113.4	113.4	-74.60	-5,811.2	142.8	321.7	101.8	219.88	1.463 Level 3		
13,000.0	7,118.6	12,932.6	7,032.8	115.3	115.3	-74.54	-5,911.2	142.8	321.8	98.3	223.51	1.440 Level 3		
13,100.0	7,118.3	13,032.6	7,032.1	117.2	117.2	-74.48	-6,011.2	142.8	321.9	94.8	227.15	1.417 Level 3		
13,200.0	7,118.0	13,132.6	7,031.5	119.1	119.1	-74.42	-6,111.2	142.8	322.0	91.2	230.78	1.395 Level 3		
13,300.0	7,117.7	13,232.6	7,030.8	121.0	121.0	-74.36	-6,211.2	142.8	322.1	87.7	234.41	1.374 Level 3		
13,400.0	7,117.4	13,332.6	7,030.2	122.9	122.9	-74.30	-6,311.2	142.8	322.2	84.1	238.04	1.353 Level 3		
13,500.0	7,117.1	13,432.6	7,029.5	124.8	124.8	-74.24	-6,411.1	142.8	322.3	80.6	241.67	1.334 Level 3		
13,600.0	7,116.8	13,532.6	7,028.9	126.7	126.7	-74.18	-6,511.1	142.8	322.4	77.1	245.30	1.314 Level 3		
13,700.0	7,116.5	13,632.6	7,028.3	128.6	128.6	-74.12	-6,611.1	142.8	322.5	73.5	248.93	1.295 Level 3		
13,800.0	7,116.2	13,732.6	7,027.6	130.5	130.5	-74.06	-6,711.1	142.8	322.6	70.0	252.55	1.277 Level 3		
13,900.0	7,115.9	13,832.6	7,027.0	132.4	132.4	-74.00	-6,811.1	142.8	322.7	66.5	256.18	1.260 Level 3		
14,000.0	7,115.6	13,932.6	7,026.3	134.3	134.4	-73.94	-6,911.1	142.8	322.8	63.0	259.80	1.242 Level 2		
14,100.0	7,115.3	14,032.6	7,025.7	136.3	136.3	-73.88	-7,011.1	142.8	322.9	59.4	263.42	1.226 Level 2		
14,200.0	7,115.0	14,132.6	7,025.0	138.2	138.2	-73.82	-7,111.1	142.8	322.9	55.9	267.04	1.209 Level 2		
14,203.2	7,115.0	14,135.7	7,025.0	138.2	138.2	-73.82	-7,114.3	142.8	323.0	55.8	267.16	1.209 Level 2, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	-90.01	0.0	-27.9	27.9				
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	-90.01	0.0	-27.9	27.9	27.7	0.22	124.079	
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	-90.01	0.0	-27.9	27.9	27.2	0.67	41.360	
300.0	300.0	300.0	300.0	0.6	0.6	-90.01	-90.01	0.0	-27.9	27.9	26.8	1.12	24.816	
400.0	400.0	400.0	400.0	0.8	0.8	-90.01	-90.01	0.0	-27.9	27.9	26.3	1.57	17.726	
500.0	500.0	500.0	500.0	1.0	1.0	-90.01	-90.01	0.0	-27.9	27.9	25.9	2.02	13.787	
600.0	600.0	600.0	600.0	1.2	1.2	-90.01	-90.01	0.0	-27.9	27.9	25.4	2.47	11.280	
700.0	700.0	700.0	700.0	1.5	1.5	-90.01	-90.01	0.0	-27.9	27.9	25.0	2.92	9.545	
800.0	800.0	800.0	800.0	1.7	1.7	-90.01	-90.01	0.0	-27.9	27.9	24.5	3.37	8.272	
900.0	900.0	900.0	900.0	1.9	1.9	-90.01	-90.01	0.0	-27.9	27.9	24.1	3.82	7.299	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.01	-90.01	0.0	-27.9	27.9	23.6	4.27	6.530	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.01	-90.01	0.0	-27.9	27.9	23.2	4.72	5.909	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.01	-90.01	0.0	-27.9	27.9	22.7	5.17	5.395	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.01	-90.01	0.0	-27.9	27.9	22.3	5.62	4.963	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.01	-90.01	0.0	-27.9	27.9	21.8	6.07	4.596 CC, ES	
1,500.0	1,500.0	1,499.5	1,499.5	3.3	3.2	-89.81	-89.81	0.1	-28.7	28.8	22.2	6.50	4.420	
1,600.0	1,600.0	1,599.0	1,598.9	3.5	3.4	-89.26	-89.26	0.4	-31.3	31.3	24.4	6.93	4.521	
1,700.0	1,700.0	1,698.3	1,698.2	3.7	3.7	-56.59	-56.59	0.9	-35.6	35.2	27.8	7.36	4.781	
1,800.0	1,800.0	1,797.6	1,797.2	3.9	3.9	-58.71	-58.71	1.6	-41.6	39.8	32.0	7.78	5.113	
1,900.0	1,899.9	1,896.6	1,896.0	4.2	4.1	-61.88	-61.88	2.5	-49.3	45.3	37.1	8.21	5.519	
2,000.0	1,999.7	1,995.6	1,994.5	4.4	4.3	-65.59	-65.59	3.6	-58.6	51.9	43.2	8.64	6.001	
2,100.0	2,099.4	2,094.3	2,092.6	4.6	4.6	-69.46	-69.46	4.9	-69.6	59.6	50.5	9.09	6.560	
2,200.0	2,198.9	2,192.7	2,190.2	4.8	4.8	-73.23	-73.23	6.4	-82.3	68.6	59.1	9.55	7.191	
2,300.0	2,298.3	2,291.0	2,287.4	5.1	5.1	-76.75	-76.75	8.1	-96.5	79.0	69.0	10.02	7.885	
2,400.0	2,397.4	2,389.5	2,384.6	5.3	5.4	-80.03	-80.03	10.0	-112.3	90.7	80.1	10.53	8.614	
2,500.0	2,496.3	2,488.6	2,482.4	5.6	5.7	-83.45	-83.45	11.9	-128.5	102.5	91.5	11.06	9.272	
2,600.0	2,594.9	2,587.6	2,580.1	5.9	6.0	-86.99	-86.99	13.8	-144.6	114.6	103.0	11.62	9.859	
2,700.0	2,693.3	2,686.6	2,677.7	6.2	6.3	-90.61	-90.61	15.7	-160.6	127.1	114.8	12.23	10.393	
2,800.0	2,791.4	2,785.4	2,775.2	6.5	6.7	-94.08	-94.08	17.6	-176.7	140.0	127.2	12.85	10.892	
2,900.0	2,889.5	2,884.2	2,872.7	6.9	7.0	-96.97	-96.97	19.6	-192.8	153.4	139.9	13.50	11.362	
3,000.0	2,987.7	2,983.0	2,970.1	7.2	7.3	-99.39	-99.39	21.5	-208.8	167.1	153.0	14.16	11.801	
3,100.0	3,085.8	3,081.9	3,067.6	7.6	7.7	-101.44	-101.44	23.4	-224.9	181.1	166.2	14.83	12.209	
3,200.0	3,183.9	3,180.7	3,165.1	7.9	8.0	-103.19	-103.19	25.3	-241.0	195.2	179.7	15.51	12.587	
3,300.0	3,282.1	3,279.5	3,262.6	8.3	8.4	-104.71	-104.71	27.2	-257.1	209.5	193.3	16.20	12.937	
3,400.0	3,380.2	3,378.3	3,360.1	8.7	8.7	-106.04	-106.04	29.1	-273.1	224.0	207.1	16.89	13.261	
3,500.0	3,478.4	3,477.2	3,457.6	9.0	9.1	-107.25	-107.25	31.0	-289.2	238.5	220.9	17.58	13.566	
3,600.0	3,577.0	3,576.2	3,555.3	9.3	9.4	-107.94	-107.94	32.9	-305.3	252.3	234.1	18.19	13.870	
3,700.0	3,676.1	3,675.4	3,653.2	9.6	9.8	-107.85	-107.85	34.8	-321.4	265.0	246.2	18.77	14.119	
3,800.0	3,775.7	3,774.6	3,751.0	9.8	10.1	-107.07	-107.07	36.7	-337.6	276.7	257.4	19.31	14.327	
3,900.0	3,875.5	3,873.7	3,848.8	10.0	10.5	-105.70	-105.70	38.6	-353.7	287.5	267.7	19.82	14.509	
4,000.0	3,975.5	3,972.6	3,946.3	10.2	10.9	-103.78	-103.78	40.5	-369.7	297.7	277.4	20.27	14.686	
4,100.0	4,075.5	4,071.2	4,043.7	10.4	11.2	-134.49	-134.49	42.5	-385.8	307.8	287.1	20.69	14.874	
4,200.0	4,175.5	4,169.9	4,141.0	10.5	11.6	-132.21	-132.21	44.4	-401.8	318.4	297.3	21.13	15.071	
4,300.0	4,275.5	4,268.5	4,238.3	10.7	12.0	-130.07	-130.07	46.3	-417.9	329.5	307.9	21.55	15.288	
4,400.0	4,375.5	4,367.2	4,335.6	10.9	12.3	-128.08	-128.08	48.2	-433.9	340.9	319.0	21.97	15.521	
4,500.0	4,475.5	4,465.8	4,432.9	11.1	12.7	-126.22	-126.22	50.1	-450.0	352.8	330.4	22.38	15.765	
4,600.0	4,575.5	4,564.5	4,530.2	11.3	13.1	-124.47	-124.47	52.0	-466.0	365.0	342.2	22.79	16.018	
4,700.0	4,675.5	4,663.1	4,627.6	11.5	13.4	-122.85	-122.85	53.9	-482.0	377.6	354.4	23.20	16.277	
4,800.0	4,775.5	4,761.8	4,724.9	11.7	13.8	-121.32	-121.32	55.8	-498.1	390.4	366.8	23.60	16.540	
4,900.0	4,875.5	4,860.4	4,822.2	11.9	14.2	-119.89	-119.89	57.7	-514.1	403.5	379.5	24.01	16.805	
5,000.0	4,975.5	4,959.1	4,919.5	12.1	14.6	-118.56	-118.56	59.6	-530.2	416.8	392.4	24.41	17.071	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,075.5	5,057.7	5,016.8	12.3	14.9	-117.30		61.5	-546.2	430.3	405.5	24.82	17.336	
5,200.0	5,175.5	5,156.4	5,114.2	12.5	15.3	-116.12		63.4	-562.2	444.0	418.8	25.23	17.600	
5,300.0	5,275.5	5,255.0	5,211.5	12.7	15.7	-115.01		65.3	-578.3	457.9	432.3	25.64	17.861	
5,400.0	5,375.5	5,353.7	5,308.8	12.9	16.0	-113.97		67.2	-594.3	472.0	445.9	26.05	18.119	
5,500.0	5,475.5	5,452.3	5,406.1	13.1	16.4	-112.99		69.1	-610.4	486.2	459.7	26.46	18.374	
5,600.0	5,575.5	5,551.0	5,503.4	13.3	16.8	-112.06		71.0	-626.4	500.5	473.6	26.87	18.625	
5,700.0	5,675.5	5,649.6	5,600.8	13.5	17.2	-111.18		72.9	-642.4	514.9	487.6	27.29	18.871	
5,800.0	5,775.5	5,748.3	5,698.1	13.7	17.5	-110.36		74.8	-658.5	529.5	501.8	27.70	19.113	
5,900.0	5,875.5	5,860.4	5,808.8	13.9	17.9	-109.52		76.8	-675.6	543.4	515.2	28.12	19.325	
6,000.0	5,975.5	5,980.4	5,928.0	14.1	18.2	-108.88		78.5	-689.4	553.8	525.2	28.53	19.412	
6,100.0	6,075.5	6,101.4	6,048.7	14.3	18.4	-108.48		79.5	-698.3	560.5	531.5	28.94	19.367	
6,200.0	6,175.5	6,222.9	6,170.1	14.5	18.6	-108.32		80.0	-702.1	563.3	534.0	29.35	19.195	
6,300.0	6,275.5	6,328.2	6,275.5	14.7	18.8	-108.31		80.0	-702.3	563.4	533.7	29.74	18.944	
6,400.0	6,375.5	6,414.7	6,361.9	14.9	18.9	71.47		77.8	-702.3	564.3	534.2	30.11	18.740	
6,500.0	6,475.1	6,500.0	6,446.4	15.1	19.0	70.89		66.7	-702.3	566.1	535.7	30.39	18.631	
6,600.0	6,573.0	6,575.6	6,519.8	15.1	19.1	70.60		48.9	-702.3	567.1	536.7	30.46	18.618	
6,700.0	6,667.4	6,655.8	6,595.4	15.2	19.2	70.55		22.3	-702.3	567.3	536.9	30.40	18.661	
6,800.0	6,756.8	6,736.0	6,667.9	15.2	19.3	70.76		-12.1	-702.3	566.6	536.3	30.29	18.705	
6,900.0	6,839.5	6,816.4	6,736.5	15.2	19.4	71.22		-54.0	-702.3	565.1	534.9	30.17	18.731	
7,000.0	6,914.2	6,900.0	6,802.6	15.2	19.5	71.97		-105.0	-702.3	562.8	532.6	30.20	18.635	
7,100.0	6,979.6	6,978.6	6,859.5	15.3	19.7	72.92		-159.2	-702.3	559.9	529.4	30.48	18.367	
7,200.0	7,034.6	7,060.8	6,912.6	15.6	19.9	74.14		-221.8	-702.3	556.4	525.3	31.11	17.886	
7,300.0	7,078.3	7,143.8	6,959.1	16.1	20.2	75.60		-290.6	-702.3	552.7	520.5	32.14	17.195	
7,400.0	7,109.8	7,228.0	6,998.4	16.9	20.6	77.29		-365.0	-702.3	548.8	515.2	33.59	16.340	
7,500.0	7,128.7	7,313.6	7,029.7	17.7	21.1	79.18		-444.6	-702.3	545.0	509.6	35.39	15.397	
7,600.0	7,134.6	7,400.0	7,052.1	18.8	21.8	81.24		-528.0	-702.3	541.5	504.0	37.47	14.449	
7,700.0	7,134.3	7,490.7	7,065.3	19.9	22.6	82.65		-617.7	-702.3	539.4	499.7	39.67	13.595	
7,793.5	7,134.0	7,578.2	7,068.1	21.1	23.5	82.98		-705.1	-702.3	538.9	497.0	41.91	12.859	
7,800.0	7,134.0	7,584.6	7,068.1	21.2	23.5	82.98		-711.5	-702.3	538.9	496.9	42.08	12.809	
7,900.0	7,133.7	7,684.6	7,067.8	22.6	24.7	82.98		-811.5	-702.3	539.0	494.2	44.73	12.048	
8,000.0	7,133.4	7,784.6	7,067.5	24.0	25.9	82.97		-911.5	-702.3	539.0	491.4	47.54	11.336	
8,100.0	7,133.1	7,884.6	7,067.2	25.5	27.2	82.97		-1,011.5	-702.3	539.0	488.5	50.49	10.675	
8,200.0	7,132.8	7,984.6	7,066.9	27.0	28.6	82.97		-1,111.5	-702.3	539.0	485.4	53.54	10.067	
8,300.0	7,132.5	8,084.6	7,066.5	28.6	30.1	82.97		-1,211.5	-702.3	539.0	482.3	56.68	9.508	
8,400.0	7,132.2	8,184.6	7,066.2	30.3	31.6	82.97		-1,311.5	-702.3	539.0	479.1	59.91	8.997	
8,500.0	7,131.9	8,284.6	7,065.9	31.9	33.2	82.97		-1,411.5	-702.3	539.0	475.8	63.19	8.529	
8,600.0	7,131.6	8,384.6	7,065.6	33.6	34.8	82.96		-1,511.5	-702.3	539.0	472.4	66.54	8.100	
8,700.0	7,131.3	8,484.6	7,065.3	35.3	36.4	82.96		-1,611.5	-702.3	539.0	469.0	69.93	7.707	
8,800.0	7,131.0	8,584.6	7,065.0	37.1	38.0	82.96		-1,711.5	-702.3	539.0	465.6	73.37	7.346	
8,900.0	7,130.7	8,684.6	7,064.7	38.8	39.7	82.96		-1,811.5	-702.3	539.0	462.1	76.84	7.015	
9,000.0	7,130.4	8,784.6	7,064.3	40.6	41.4	82.96		-1,911.5	-702.3	539.0	458.6	80.34	6.709	
9,100.0	7,130.1	8,884.6	7,064.0	42.3	43.1	82.95		-2,011.5	-702.3	539.0	455.1	83.87	6.427	
9,200.0	7,129.8	8,984.6	7,063.7	44.1	44.8	82.95		-2,111.5	-702.3	539.0	451.6	87.42	6.166	
9,300.0	7,129.5	9,084.6	7,063.4	45.9	46.6	82.95		-2,211.5	-702.3	539.0	448.0	90.99	5.923	
9,400.0	7,129.3	9,184.6	7,063.1	47.8	48.3	82.95		-2,311.5	-702.3	539.0	444.4	94.58	5.698	
9,500.0	7,129.0	9,284.6	7,062.8	49.6	50.1	82.95		-2,411.5	-702.3	539.0	440.8	98.19	5.489	
9,600.0	7,128.7	9,384.6	7,062.5	51.4	51.9	82.95		-2,511.5	-702.3	539.0	437.2	101.82	5.294	
9,700.0	7,128.4	9,484.6	7,062.1	53.2	53.7	82.94		-2,611.5	-702.3	539.0	433.5	105.45	5.111	
9,800.0	7,128.1	9,584.6	7,061.8	55.1	55.5	82.94		-2,711.5	-702.3	539.0	429.9	109.10	4.940	
9,900.0	7,127.8	9,684.6	7,061.5	56.9	57.3	82.94		-2,811.5	-702.3	539.0	426.2	112.76	4.780	
10,000.0	7,127.5	9,784.6	7,061.2	58.8	59.1	82.94		-2,911.5	-702.3	539.0	422.6	116.43	4.629	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,127.2	9,884.6	7,060.9	60.6	60.9	82.94	82.94	-3,011.5	-702.3	539.0	418.9	120.11	4.487	
10,200.0	7,126.9	9,984.6	7,060.6	62.5	62.8	82.93	82.93	-3,111.5	-702.3	539.0	415.2	123.80	4.354	
10,300.0	7,126.6	10,084.6	7,060.3	64.3	64.6	82.93	82.93	-3,211.5	-702.3	539.0	411.5	127.49	4.228	
10,400.0	7,126.3	10,184.6	7,059.9	66.2	66.4	82.93	82.93	-3,311.5	-702.3	539.0	407.8	131.20	4.108	
10,500.0	7,126.0	10,284.6	7,059.6	68.1	68.3	82.93	82.93	-3,411.5	-702.3	539.0	404.1	134.90	3.996	
10,600.0	7,125.7	10,384.6	7,059.3	69.9	70.1	82.93	82.93	-3,511.5	-702.3	539.0	400.4	138.62	3.888	
10,700.0	7,125.4	10,484.6	7,059.0	71.8	72.0	82.93	82.93	-3,611.5	-702.3	539.0	396.7	142.33	3.787	
10,800.0	7,125.1	10,584.6	7,058.7	73.7	73.8	82.92	82.92	-3,711.5	-702.3	539.0	393.0	146.06	3.690	
10,900.0	7,124.8	10,684.6	7,058.4	75.6	75.7	82.92	82.92	-3,811.5	-702.3	539.0	389.2	149.79	3.599	
11,000.0	7,124.5	10,784.6	7,058.1	77.4	77.5	82.92	82.92	-3,911.5	-702.3	539.0	385.5	153.52	3.511	
11,100.0	7,124.2	10,884.6	7,057.7	79.3	79.4	82.92	82.92	-4,011.5	-702.3	539.0	381.8	157.25	3.428	
11,200.0	7,123.9	10,984.6	7,057.4	81.2	81.3	82.92	82.92	-4,111.5	-702.3	539.0	378.0	160.99	3.348	
11,300.0	7,123.6	11,084.6	7,057.1	83.1	83.1	82.91	82.91	-4,211.5	-702.3	539.0	374.3	164.74	3.272	
11,400.0	7,123.3	11,184.6	7,056.8	85.0	85.0	82.91	82.91	-4,311.5	-702.3	539.0	370.5	168.48	3.199	
11,500.0	7,123.0	11,284.6	7,056.5	86.9	86.9	82.91	82.91	-4,411.5	-702.3	539.0	366.8	172.23	3.130	
11,600.0	7,122.7	11,384.6	7,056.2	88.8	88.8	82.91	82.91	-4,511.5	-702.3	539.0	363.0	175.98	3.063	
11,700.0	7,122.4	11,484.6	7,055.9	90.6	90.6	82.91	82.91	-4,611.5	-702.3	539.0	359.3	179.74	2.999	
11,800.0	7,122.1	11,584.6	7,055.6	92.5	92.5	82.90	82.90	-4,711.5	-702.3	539.0	355.5	183.49	2.938	
11,900.0	7,121.8	11,684.6	7,055.2	94.4	94.4	82.90	82.90	-4,811.5	-702.3	539.0	351.8	187.25	2.879	
12,000.0	7,121.5	11,784.6	7,054.9	96.3	96.3	82.90	82.90	-4,911.5	-702.3	539.0	348.0	191.01	2.822	
12,100.0	7,121.2	11,884.6	7,054.6	98.2	98.2	82.90	82.90	-5,011.5	-702.3	539.0	344.3	194.78	2.767	
12,200.0	7,120.9	11,984.6	7,054.3	100.1	100.0	82.90	82.90	-5,111.5	-702.3	539.0	340.5	198.54	2.715	
12,300.0	7,120.6	12,084.6	7,054.0	102.0	101.9	82.90	82.90	-5,211.5	-702.3	539.0	336.7	202.31	2.664	
12,400.0	7,120.4	12,184.6	7,053.7	103.9	103.8	82.89	82.89	-5,311.5	-702.3	539.0	333.0	206.08	2.616	
12,500.0	7,120.1	12,284.6	7,053.4	105.8	105.7	82.89	82.89	-5,411.5	-702.3	539.1	329.2	209.85	2.569	
12,600.0	7,119.8	12,384.6	7,053.0	107.7	107.6	82.89	82.89	-5,511.5	-702.3	539.1	325.4	213.62	2.523	
12,700.0	7,119.5	12,484.6	7,052.7	109.6	109.5	82.89	82.89	-5,611.5	-702.3	539.1	321.7	217.39	2.480	
12,800.0	7,119.2	12,584.6	7,052.4	111.5	111.4	82.89	82.89	-5,711.5	-702.3	539.1	317.9	221.17	2.437	
12,900.0	7,118.9	12,684.6	7,052.1	113.4	113.3	82.88	82.88	-5,811.5	-702.3	539.1	314.1	224.94	2.396	
13,000.0	7,118.6	12,784.6	7,051.8	115.3	115.1	82.88	82.88	-5,911.5	-702.3	539.1	310.3	228.72	2.357	
13,100.0	7,118.3	12,884.6	7,051.5	117.2	117.0	82.88	82.88	-6,011.5	-702.3	539.1	306.6	232.50	2.319	
13,200.0	7,118.0	12,984.6	7,051.2	119.1	118.9	82.88	82.88	-6,111.5	-702.3	539.1	302.8	236.28	2.282	
13,300.0	7,117.7	13,084.6	7,050.8	121.0	120.8	82.88	82.88	-6,211.5	-702.3	539.1	299.0	240.06	2.246	
13,400.0	7,117.4	13,184.6	7,050.5	122.9	122.7	82.88	82.88	-6,311.5	-702.3	539.1	295.2	243.84	2.211	
13,500.0	7,117.1	13,284.6	7,050.2	124.8	124.6	82.87	82.87	-6,411.5	-702.3	539.1	291.5	247.62	2.177	
13,600.0	7,116.8	13,384.6	7,049.9	126.7	126.5	82.87	82.87	-6,511.5	-702.3	539.1	287.7	251.40	2.144	
13,700.0	7,116.5	13,484.6	7,049.6	128.6	128.4	82.87	82.87	-6,611.5	-702.3	539.1	283.9	255.19	2.112	
13,800.0	7,116.2	13,584.6	7,049.3	130.5	130.3	82.87	82.87	-6,711.5	-702.3	539.1	280.1	258.97	2.082	
13,900.0	7,115.9	13,684.6	7,049.0	132.4	132.2	82.87	82.87	-6,811.5	-702.3	539.1	276.3	262.76	2.052	
14,000.0	7,115.6	13,784.6	7,048.6	134.3	134.1	82.86	82.86	-6,911.5	-702.3	539.1	272.5	266.54	2.023	
14,100.0	7,115.3	13,884.6	7,048.3	136.3	136.0	82.86	82.86	-7,011.5	-702.3	539.1	268.8	270.33	1.994	
14,200.0	7,115.0	13,984.6	7,048.0	138.2	137.9	82.86	82.86	-7,111.5	-702.3	539.1	265.0	274.12	1.967	
14,203.2	7,115.0	13,987.8	7,048.0	138.2	138.0	82.86	82.86	-7,114.7	-702.3	539.1	264.9	274.24	1.966 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	61.4	61.4				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	61.4	61.4	61.1	0.22	274.344	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	61.4	61.4	60.7	0.67	91.296	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	61.4	61.4	60.2	1.12	54.704	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	61.4	61.4	59.8	1.57	39.052	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	61.4	61.4	59.3	2.02	30.364	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	61.4	61.4	58.9	2.47	24.838	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	61.4	61.4	58.4	2.92	21.014	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	61.4	61.4	58.0	3.37	18.210	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	90.00	0.0	61.4	61.4	57.5	3.82	16.067	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	90.00	0.0	61.4	61.4	57.1	4.27	14.375	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.00	90.00	0.0	61.4	61.4	56.6	4.72	13.005	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.00	90.00	0.0	61.4	61.4	56.2	5.17	11.874 CC, ES	
1,300.0	1,300.0	1,298.0	1,298.0	2.8	2.8	89.70	89.70	0.3	62.1	62.1	56.5	5.61	11.084	
1,400.0	1,400.0	1,397.0	1,396.9	3.0	3.0	88.84	88.84	1.3	64.5	64.5	58.5	6.04	10.686	
1,500.0	1,500.0	1,495.8	1,495.7	3.3	3.2	87.54	87.54	2.9	68.4	68.5	62.1	6.47	10.589	
1,600.0	1,600.0	1,594.5	1,594.2	3.5	3.4	85.96	85.96	5.2	73.9	74.2	67.3	6.91	10.740	
1,700.0	1,700.0	1,692.9	1,692.3	3.7	3.7	117.80	117.80	8.1	80.9	82.0	74.7	7.34	11.166	
1,800.0	1,800.0	1,790.9	1,789.9	3.9	3.9	117.40	117.40	11.7	89.5	92.2	84.5	7.78	11.858	
1,900.0	1,899.9	1,888.5	1,886.9	4.2	4.1	117.62	117.62	15.9	99.5	104.9	96.7	8.21	12.769	
2,000.0	1,999.7	1,985.5	1,983.1	4.4	4.4	118.23	118.23	20.7	111.0	120.0	111.3	8.65	13.863	
2,100.0	2,099.4	2,081.9	2,078.5	4.6	4.7	119.07	119.07	26.0	123.9	137.5	128.4	9.10	15.110	
2,200.0	2,198.9	2,177.6	2,172.8	4.8	4.9	120.01	120.01	32.0	138.2	157.4	147.9	9.55	16.485	
2,300.0	2,298.3	2,272.4	2,266.1	5.1	5.3	120.97	120.97	38.4	153.7	179.8	169.8	10.01	17.964	
2,400.0	2,397.4	2,366.2	2,358.2	5.3	5.6	121.89	121.89	45.4	170.6	204.6	194.1	10.48	19.528	
2,500.0	2,496.3	2,459.1	2,449.0	5.6	5.9	122.76	122.76	52.9	188.6	231.8	220.9	10.96	21.156	
2,600.0	2,594.9	2,553.3	2,540.8	5.9	6.3	123.61	123.61	61.0	207.9	261.2	249.7	11.46	22.794	
2,700.0	2,693.3	2,648.4	2,633.5	6.2	6.7	124.52	124.52	69.2	227.6	291.7	279.7	11.97	24.356	
2,800.0	2,791.4	2,743.2	2,725.9	6.5	7.1	125.61	125.61	77.3	247.2	322.8	310.3	12.52	25.787	
2,900.0	2,889.5	2,838.1	2,818.4	6.9	7.5	126.52	126.52	85.5	266.8	354.0	340.9	13.07	27.077	
3,000.0	2,987.7	2,933.0	2,910.9	7.2	7.9	127.29	127.29	93.7	286.4	385.3	371.6	13.64	28.244	
3,100.0	3,085.8	3,027.8	3,003.3	7.6	8.3	127.94	127.94	101.8	306.0	416.6	402.4	14.22	29.302	
3,200.0	3,183.9	3,122.7	3,095.8	7.9	8.7	128.50	128.50	110.0	325.6	448.0	433.2	14.80	30.263	
3,300.0	3,282.1	3,217.6	3,188.2	8.3	9.1	128.99	128.99	118.1	345.2	479.4	464.0	15.40	31.138	
3,400.0	3,380.2	3,312.4	3,280.7	8.7	9.5	129.41	129.41	126.3	364.8	510.9	494.9	16.00	31.936	
3,500.0	3,478.4	3,407.3	3,373.2	9.0	10.0	129.93	129.93	134.5	384.5	542.2	525.6	16.61	32.651	
3,600.0	3,577.0	3,502.8	3,466.2	9.3	10.4	130.52	130.52	142.7	404.2	572.0	554.8	17.20	33.264	
3,700.0	3,676.1	3,598.9	3,559.9	9.6	10.8	130.79	130.79	150.9	424.0	599.6	581.9	17.77	33.751	
3,800.0	3,775.7	3,695.5	3,654.0	9.8	11.3	130.79	130.79	159.2	444.0	625.0	606.7	18.31	34.133	
3,900.0	3,875.5	3,792.5	3,748.6	10.0	11.7	130.55	130.55	167.6	464.1	648.3	629.5	18.83	34.431	
4,000.0	3,975.5	3,889.8	3,843.4	10.2	12.2	130.08	130.08	176.0	484.2	669.5	650.1	19.31	34.661	
4,100.0	4,075.5	3,987.3	3,938.4	10.4	12.6	96.17	96.17	184.3	504.3	689.2	669.4	19.77	34.853	
4,200.0	4,175.5	4,084.8	4,033.4	10.5	13.1	95.31	95.31	192.7	524.5	709.0	688.8	20.25	35.019	
4,300.0	4,275.5	4,182.2	4,128.4	10.7	13.5	94.49	94.49	201.1	544.6	729.0	708.2	20.72	35.187	
4,400.0	4,375.5	4,279.7	4,223.4	10.9	14.0	93.71	93.71	209.5	564.8	749.1	727.9	21.19	35.357	
4,500.0	4,475.5	4,377.1	4,318.4	11.1	14.4	92.98	92.98	217.9	584.9	769.3	747.6	21.65	35.528	
4,600.0	4,575.5	4,474.6	4,413.4	11.3	14.9	92.28	92.28	226.2	605.0	789.6	767.5	22.12	35.698	
4,700.0	4,675.5	4,572.1	4,508.4	11.5	15.4	91.62	91.62	234.6	625.2	810.1	787.5	22.59	35.868	
4,800.0	4,775.5	4,666.2	4,619.7	11.7	15.9	90.90	90.90	244.2	648.2	830.2	807.1	23.08	35.972	
4,900.0	4,875.5	4,820.9	4,752.3	11.9	16.3	90.24	90.24	253.5	670.5	846.7	823.2	23.57	35.928	
5,000.0	4,975.5	4,957.7	4,887.8	12.1	16.6	89.77	89.77	260.4	687.2	859.0	835.0	24.04	35.731	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,075.5	5,095.9	5,025.5	12.3	16.9	89.47	89.47	265.0	698.1	866.9	842.4	24.50	35.382	
5,200.0	5,175.5	5,234.9	5,164.4	12.5	17.2	89.35	89.35	266.9	702.8	870.3	845.3	24.94	34.893	
5,300.0	5,275.5	5,345.0	5,274.5	12.7	17.3	89.34	89.34	267.0	703.0	870.4	845.1	25.34	34.351	
5,400.0	5,375.5	5,445.0	5,374.5	12.9	17.5	89.34	89.34	267.0	703.0	870.4	844.7	25.73	33.830	
5,500.0	5,475.5	5,545.0	5,474.5	13.1	17.6	89.34	89.34	267.0	703.0	870.4	844.3	26.12	33.322	
5,600.0	5,575.5	5,645.0	5,574.5	13.3	17.8	89.34	89.34	267.0	703.0	870.4	843.9	26.52	32.827	
5,700.0	5,675.5	5,745.0	5,674.5	13.5	17.9	89.34	89.34	267.0	703.0	870.4	843.5	26.91	32.345	
5,800.0	5,775.5	5,845.0	5,774.5	13.7	18.1	89.34	89.34	267.0	703.0	870.4	843.1	27.31	31.874	
5,900.0	5,875.5	5,945.0	5,874.5	13.9	18.2	89.34	89.34	267.0	703.0	870.4	842.7	27.71	31.415	
6,000.0	5,975.5	6,045.0	5,974.5	14.1	18.4	89.34	89.34	267.0	703.0	870.4	842.3	28.11	30.967	
6,100.0	6,075.5	6,145.0	6,074.5	14.3	18.5	89.34	89.34	267.0	703.0	870.4	841.9	28.51	30.531	
6,200.0	6,175.5	6,245.0	6,174.5	14.5	18.7	89.34	89.34	267.0	703.0	870.4	841.5	28.91	30.105	
6,300.0	6,275.5	6,345.0	6,274.5	14.7	18.8	89.34	89.34	267.0	703.0	870.4	841.1	29.32	29.690	
6,365.0	6,340.4	6,409.9	6,339.4	14.9	18.9	-90.67	-90.67	267.0	703.0	870.4	840.8	29.58	29.426	
6,400.0	6,375.5	6,445.0	6,374.5	14.9	19.0	-90.66	-90.66	267.0	703.0	870.4	840.7	29.72	29.285	
6,500.0	6,475.1	6,544.9	6,474.4	15.1	19.2	-91.12	-91.12	266.9	703.0	870.5	840.5	30.02	28.994	
6,600.0	6,573.0	6,647.5	6,576.5	15.1	19.3	-91.88	-91.88	258.1	703.0	870.8	840.7	30.19	28.849	
6,700.0	6,667.4	6,751.9	6,678.1	15.2	19.3	-92.55	-92.55	234.2	703.0	871.2	841.0	30.24	28.808	
6,800.0	6,756.8	6,858.0	6,776.6	15.2	19.3	-93.12	-93.12	195.0	703.0	871.7	841.4	30.25	28.817	
6,900.0	6,839.5	6,965.4	6,869.3	15.2	19.3	-93.57	-93.57	141.0	703.0	872.1	841.8	30.28	28.802	
7,000.0	6,914.2	7,073.9	6,953.8	15.2	19.3	-93.89	-93.89	73.0	703.0	872.4	842.0	30.42	28.675	
7,100.0	6,979.6	7,183.2	7,027.4	15.3	19.3	-94.07	-94.07	-7.5	703.0	872.6	841.8	30.78	28.348	
7,200.0	7,034.6	7,292.7	7,088.1	15.6	19.4	-94.11	-94.11	-98.5	703.0	872.6	841.2	31.44	27.758	
7,300.0	7,078.3	7,402.2	7,134.2	16.1	19.6	-94.00	-94.00	-197.7	703.0	872.5	840.0	32.46	26.882	
7,400.0	7,109.8	7,511.1	7,164.6	16.9	20.0	-93.74	-93.74	-302.1	703.0	872.2	838.4	33.86	25.758	
7,500.0	7,128.7	7,619.1	7,178.7	17.7	20.7	-93.36	-93.36	-409.1	703.0	871.9	836.2	35.63	24.471	
7,600.0	7,134.6	7,722.1	7,179.4	18.8	21.5	-93.01	-93.01	-512.1	703.0	871.6	833.9	37.66	23.143	
7,700.0	7,134.3	7,822.1	7,178.7	19.9	22.5	-92.99	-92.99	-612.1	703.0	871.5	831.6	39.92	21.830	
7,800.0	7,134.0	7,922.1	7,178.0	21.2	23.6	-92.96	-92.96	-712.1	703.0	871.5	829.1	42.42	20.547	
7,900.0	7,133.7	8,022.1	7,177.2	22.6	24.8	-92.93	-92.93	-812.1	703.0	871.5	826.4	45.10	19.326	
8,000.0	7,133.4	8,122.1	7,176.5	24.0	26.1	-92.90	-92.90	-912.1	703.0	871.5	823.5	47.93	18.181	
8,100.0	7,133.1	8,222.1	7,175.8	25.5	27.4	-92.87	-92.87	-1,012.1	703.0	871.5	820.6	50.90	17.120	
8,200.0	7,132.8	8,322.1	7,175.0	27.0	28.9	-92.84	-92.84	-1,112.1	703.0	871.4	817.5	53.98	16.143	
8,300.0	7,132.5	8,422.1	7,174.3	28.6	30.4	-92.81	-92.81	-1,212.1	703.0	871.4	814.3	57.15	15.248	
8,400.0	7,132.2	8,522.1	7,173.6	30.3	31.9	-92.79	-92.79	-1,312.0	703.0	871.4	811.0	60.40	14.427	
8,500.0	7,131.9	8,622.1	7,172.8	31.9	33.5	-92.76	-92.76	-1,412.0	703.0	871.4	807.7	63.71	13.677	
8,600.0	7,131.6	8,722.1	7,172.1	33.6	35.1	-92.73	-92.73	-1,512.0	703.0	871.4	804.3	67.08	12.989	
8,700.0	7,131.3	8,822.0	7,171.4	35.3	36.7	-92.70	-92.70	-1,612.0	703.0	871.3	800.8	70.50	12.359	
8,800.0	7,131.0	8,922.0	7,170.6	37.1	38.4	-92.67	-92.67	-1,712.0	703.0	871.3	797.4	73.96	11.781	
8,900.0	7,130.7	9,022.0	7,169.9	38.8	40.1	-92.64	-92.64	-1,812.0	703.0	871.3	793.8	77.45	11.249	
9,000.0	7,130.4	9,122.0	7,169.2	40.6	41.8	-92.61	-92.61	-1,912.0	703.0	871.3	790.3	80.98	10.759	
9,100.0	7,130.1	9,222.0	7,168.4	42.3	43.5	-92.58	-92.58	-2,012.0	703.0	871.3	786.7	84.53	10.307	
9,200.0	7,129.8	9,322.0	7,167.7	44.1	45.3	-92.56	-92.56	-2,112.0	703.0	871.2	783.1	88.11	9.888	
9,300.0	7,129.5	9,422.0	7,167.0	45.9	47.0	-92.53	-92.53	-2,212.0	703.0	871.2	779.5	91.71	9.500	
9,400.0	7,129.3	9,522.0	7,166.2	47.8	48.8	-92.50	-92.50	-2,312.0	703.0	871.2	775.9	95.32	9.139	
9,500.0	7,129.0	9,622.0	7,165.5	49.6	50.6	-92.47	-92.47	-2,412.0	703.0	871.2	772.2	98.96	8.803	
9,600.0	7,128.7	9,722.0	7,164.8	51.4	52.4	-92.44	-92.44	-2,512.0	703.0	871.2	768.5	102.61	8.490	
9,700.0	7,128.4	9,822.0	7,164.0	53.2	54.2	-92.41	-92.41	-2,612.0	703.0	871.1	764.9	106.27	8.197	
9,800.0	7,128.1	9,922.0	7,163.3	55.1	56.0	-92.38	-92.38	-2,712.0	703.0	871.1	761.2	109.94	7.923	
9,900.0	7,127.8	10,022.0	7,162.6	56.9	57.8	-92.36	-92.36	-2,812.0	703.0	871.1	757.5	113.63	7.666	
10,000.0	7,127.5	10,122.0	7,161.8	58.8	59.6	-92.33	-92.33	-2,912.0	703.0	871.1	753.8	117.33	7.425	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (1-28-15)	Offset TVD Reference:	Offset Datum

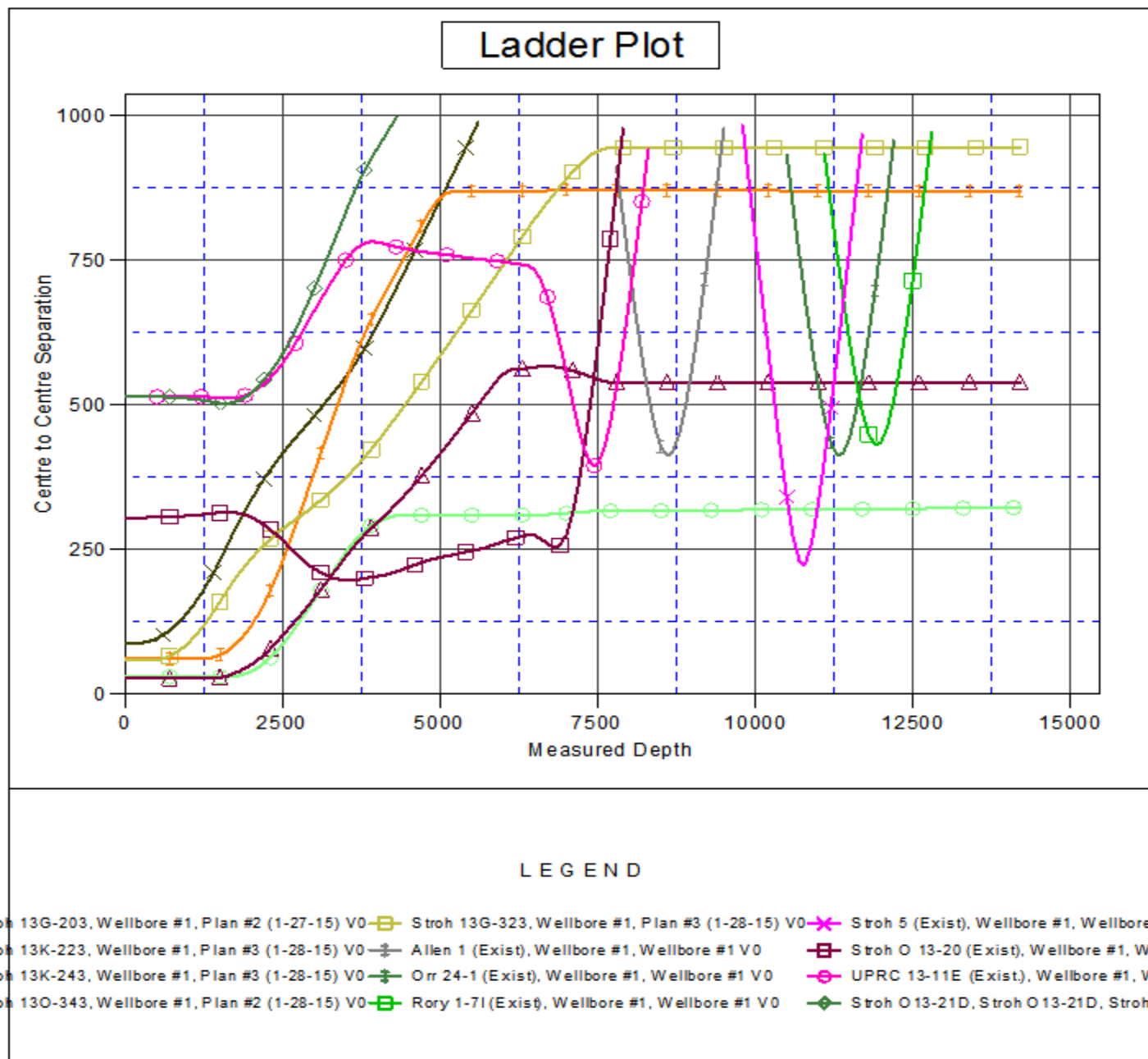
Offset Design Stroh 13GK-HZ Pad Sec. 13-T4N-R67W - Stroh 13O-343 - Wellbore #1 - Plan #2 (1-28-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,127.2	10,222.0	7,161.1	60.6	61.4	-92.30	-3,012.0	703.0	871.1	750.0	121.03	7.197		
10,200.0	7,126.9	10,322.0	7,160.4	62.5	63.3	-92.27	-3,112.0	703.0	871.0	746.3	124.74	6.983		
10,300.0	7,126.6	10,422.0	7,159.6	64.3	65.1	-92.24	-3,212.0	703.0	871.0	742.6	128.46	6.780		
10,400.0	7,126.3	10,522.0	7,158.9	66.2	66.9	-92.21	-3,312.0	703.0	871.0	738.8	132.19	6.589		
10,500.0	7,126.0	10,622.0	7,158.2	68.1	68.8	-92.18	-3,412.0	703.0	871.0	735.1	135.92	6.408		
10,600.0	7,125.7	10,722.0	7,157.4	69.9	70.6	-92.15	-3,512.0	703.0	871.0	731.3	139.66	6.236		
10,700.0	7,125.4	10,822.0	7,156.7	71.8	72.5	-92.13	-3,612.0	703.0	871.0	727.6	143.41	6.073		
10,800.0	7,125.1	10,922.0	7,156.0	73.7	74.3	-92.10	-3,712.0	703.0	870.9	723.8	147.16	5.919		
10,900.0	7,124.8	11,022.0	7,155.2	75.6	76.2	-92.07	-3,812.0	703.0	870.9	720.0	150.91	5.771		
11,000.0	7,124.5	11,122.0	7,154.5	77.4	78.1	-92.04	-3,912.0	703.0	870.9	716.2	154.67	5.631		
11,100.0	7,124.2	11,222.0	7,153.8	79.3	79.9	-92.01	-4,011.9	703.0	870.9	712.5	158.43	5.497		
11,200.0	7,123.9	11,322.0	7,153.0	81.2	81.8	-91.98	-4,111.9	703.0	870.9	708.7	162.20	5.369		
11,300.0	7,123.6	11,422.0	7,152.3	83.1	83.7	-91.95	-4,211.9	703.0	870.9	704.9	165.97	5.247		
11,400.0	7,123.3	11,522.0	7,151.6	85.0	85.5	-91.93	-4,311.9	703.0	870.9	701.1	169.74	5.131		
11,500.0	7,123.0	11,622.0	7,150.8	86.9	87.4	-91.90	-4,411.9	703.0	870.8	697.3	173.52	5.019		
11,600.0	7,122.7	11,722.0	7,150.1	88.8	89.3	-91.87	-4,511.9	703.0	870.8	693.5	177.30	4.912		
11,700.0	7,122.4	11,822.0	7,149.4	90.6	91.2	-91.84	-4,611.9	703.0	870.8	689.7	181.08	4.809		
11,800.0	7,122.1	11,922.0	7,148.6	92.5	93.0	-91.81	-4,711.9	703.0	870.8	685.9	184.86	4.711		
11,900.0	7,121.8	12,022.0	7,147.9	94.4	94.9	-91.78	-4,811.9	703.0	870.8	682.1	188.65	4.616		
12,000.0	7,121.5	12,122.0	7,147.2	96.3	96.8	-91.75	-4,911.9	703.0	870.8	678.3	192.44	4.525		
12,100.0	7,121.2	12,222.0	7,146.4	98.2	98.7	-91.72	-5,011.9	703.0	870.8	674.5	196.23	4.438		
12,200.0	7,120.9	12,322.0	7,145.7	100.1	100.6	-91.70	-5,111.9	703.0	870.7	670.7	200.02	4.353		
12,300.0	7,120.6	12,422.0	7,145.0	102.0	102.5	-91.67	-5,211.9	703.0	870.7	666.9	203.81	4.272		
12,400.0	7,120.4	12,522.0	7,144.2	103.9	104.3	-91.64	-5,311.9	703.0	870.7	663.1	207.61	4.194		
12,500.0	7,120.1	12,622.0	7,143.5	105.8	106.2	-91.61	-5,411.9	703.0	870.7	659.3	211.41	4.119		
12,600.0	7,119.8	12,722.0	7,142.8	107.7	108.1	-91.58	-5,511.9	703.0	870.7	655.5	215.21	4.046		
12,700.0	7,119.5	12,822.0	7,142.0	109.6	110.0	-91.55	-5,611.9	703.0	870.7	651.7	219.01	3.976		
12,800.0	7,119.2	12,922.0	7,141.3	111.5	111.9	-91.52	-5,711.9	703.0	870.7	647.9	222.81	3.908		
12,900.0	7,118.9	13,022.0	7,140.6	113.4	113.8	-91.49	-5,811.9	703.0	870.7	644.0	226.61	3.842		
13,000.0	7,118.6	13,122.0	7,139.8	115.3	115.7	-91.47	-5,911.9	703.0	870.6	640.2	230.42	3.779		
13,100.0	7,118.3	13,222.0	7,139.1	117.2	117.6	-91.44	-6,011.9	703.0	870.6	636.4	234.22	3.717		
13,200.0	7,118.0	13,322.0	7,138.4	119.1	119.5	-91.41	-6,111.9	703.0	870.6	632.6	238.03	3.658		
13,300.0	7,117.7	13,422.0	7,137.6	121.0	121.4	-91.38	-6,211.9	703.0	870.6	628.8	241.84	3.600		
13,400.0	7,117.4	13,522.0	7,136.9	122.9	123.3	-91.35	-6,311.9	703.0	870.6	625.0	245.65	3.544		
13,500.0	7,117.1	13,622.0	7,136.2	124.8	125.2	-91.32	-6,411.9	703.0	870.6	621.1	249.46	3.490		
13,600.0	7,116.8	13,722.0	7,135.4	126.7	127.1	-91.29	-6,511.9	703.0	870.6	617.3	253.27	3.437		
13,700.0	7,116.5	13,822.0	7,134.7	128.6	129.0	-91.27	-6,611.9	703.0	870.6	613.5	257.08	3.386		
13,800.0	7,116.2	13,922.0	7,134.0	130.5	130.9	-91.24	-6,711.9	703.0	870.6	609.7	260.90	3.337		
13,900.0	7,115.9	14,022.0	7,133.2	132.4	132.8	-91.21	-6,811.8	703.0	870.6	605.8	264.71	3.289		
14,000.0	7,115.6	14,122.0	7,132.5	134.3	134.7	-91.18	-6,911.8	703.0	870.5	602.0	268.53	3.242		
14,100.0	7,115.3	14,222.0	7,131.8	136.3	136.6	-91.15	-7,011.8	703.0	870.5	598.2	272.34	3.196		
14,200.0	7,115.0	14,322.0	7,131.0	138.2	138.5	-91.12	-7,111.8	703.0	870.5	594.4	276.16	3.152		
14,203.2	7,115.0	14,325.2	7,131.0	138.2	138.5	-91.12	-7,115.0	703.0	870.5	594.3	276.28	3.151 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stroh 13K-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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-Reference													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance		Between		Minimum		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	129.42	-327.9	398.8	516.3					
100.0	100.0	101.4	101.4	0.1	0.1	129.42	-327.8	398.8	516.3	516.0	0.23	2,279.645		
200.0	200.0	201.7	201.7	0.3	0.2	129.42	-327.7	398.7	516.2	515.6	0.56	915.196		
300.0	300.0	302.1	302.1	0.6	0.3	129.41	-327.6	398.7	516.0	515.1	0.90	572.361		
400.0	400.0	402.4	402.4	0.8	0.5	129.40	-327.3	398.5	515.7	514.5	1.24	416.254		
500.0	500.0	503.0	503.0	1.0	0.6	129.38	-327.1	398.4	515.4	513.8	1.61	320.892		
600.0	600.0	604.4	604.4	1.2	0.8	129.39	-326.8	397.9	514.9	512.9	2.05	251.038		
700.0	700.0	704.5	704.5	1.5	1.0	129.40	-326.4	397.3	514.2	511.7	2.49	206.847		
800.0	800.0	805.1	805.1	1.7	1.2	129.40	-325.9	396.8	513.5	510.6	2.92	175.599		
900.0	900.0	905.8	905.8	1.9	1.5	129.40	-325.4	396.1	512.6	509.3	3.37	152.293		
1,000.0	1,000.0	1,006.4	1,006.4	2.1	1.7	129.41	-324.8	395.3	511.6	507.8	3.81	134.268		
1,100.0	1,100.0	1,107.0	1,107.0	2.4	1.9	129.44	-324.3	394.3	510.5	506.3	4.25	120.006		
1,200.0	1,200.0	1,208.2	1,208.2	2.6	2.1	129.50	-323.9	392.9	509.2	504.5	4.70	108.379		
1,300.0	1,300.0	1,310.5	1,310.5	2.8	2.3	129.57	-323.3	391.3	507.6	502.5	5.14	98.703		
1,400.0	1,400.0	1,412.7	1,412.6	3.0	2.6	129.53	-321.7	389.8	505.5	499.9	5.59	90.474		
1,500.0	1,500.0	1,509.4	1,509.3	3.3	2.8	129.47	-319.9	388.5	503.3	497.3	6.02	83.677		
1,585.1	1,585.1	1,586.2	1,586.1	3.5	2.9	129.34	-318.6	388.7	502.6	496.2	6.36	79.069 CC		
1,600.0	1,600.0	1,599.3	1,599.2	3.5	2.9	129.31	-318.4	388.9	502.6	496.2	6.41	78.356 ES		
1,700.0	1,700.0	1,693.2	1,693.1	3.7	3.1	162.07	-316.8	391.6	504.6	497.7	6.82	74.017		
1,800.0	1,800.0	1,797.5	1,797.2	3.9	3.3	161.53	-313.3	396.1	508.4	501.1	7.25	70.076		
1,900.0	1,899.9	1,892.2	1,891.7	4.2	3.5	160.95	-309.1	400.9	513.7	506.0	7.67	66.936		
2,000.0	1,999.7	1,986.5	1,985.6	4.4	3.7	160.34	-304.7	407.1	521.8	513.8	8.09	64.473		
2,100.0	2,099.4	2,083.9	2,082.5	4.6	4.0	159.52	-298.8	415.4	532.4	523.9	8.53	62.389		
2,200.0	2,198.9	2,186.9	2,184.8	4.8	4.2	158.60	-291.3	425.0	544.6	535.6	9.00	60.519		
2,300.0	2,298.3	2,286.6	2,283.8	5.1	4.5	157.77	-283.3	433.7	557.6	548.1	9.46	58.946		
2,400.0	2,397.4	2,381.7	2,378.1	5.3	4.7	156.96	-275.0	443.0	572.8	562.9	9.92	57.742		
2,500.0	2,496.3	2,483.7	2,479.0	5.6	5.0	156.05	-264.9	453.9	589.8	579.4	10.41	56.640		
2,600.0	2,594.9	2,576.6	2,570.6	5.9	5.3	155.11	-254.0	464.9	608.4	597.5	10.90	55.798		
2,700.0	2,693.3	2,663.4	2,655.5	6.2	5.6	154.02	-241.8	477.8	630.0	618.6	11.41	55.220		
2,800.0	2,791.4	2,756.6	2,745.9	6.5	5.9	152.71	-225.9	494.3	653.7	641.7	12.00	54.497		
2,900.0	2,889.5	2,851.2	2,837.3	6.9	6.3	151.37	-209.1	512.1	678.4	665.8	12.60	53.851		
3,000.0	2,987.7	2,952.6	2,935.7	7.2	6.7	150.22	-192.6	529.4	702.4	689.2	13.22	53.139		
3,100.0	3,085.8	3,037.6	3,018.2	7.6	7.0	149.28	-178.5	544.5	727.3	713.5	13.81	52.653		
3,200.0	3,183.9	3,130.5	3,107.8	7.9	7.4	148.17	-162.2	563.2	753.9	739.4	14.47	52.117		
3,300.0	3,282.1	3,229.1	3,202.6	8.3	7.9	147.00	-143.6	582.6	780.1	764.9	15.16	51.456		
3,400.0	3,380.2	3,317.2	3,287.0	8.7	8.3	145.92	-126.0	600.9	806.9	791.1	15.84	50.950		
3,500.0	3,478.4	3,411.3	3,377.0	9.0	8.8	144.90	-107.1	621.1	834.6	818.0	16.56	50.384		
3,600.0	3,577.0	3,502.2	3,463.8	9.3	9.2	144.11	-88.9	640.7	860.7	843.4	17.25	49.880		
3,700.0	3,676.1	3,590.7	3,548.5	9.6	9.7	143.31	-71.9	660.1	885.0	867.1	17.90	49.429		
3,800.0	3,775.7	3,695.2	3,648.3	9.8	10.2	142.20	-51.6	683.0	906.8	888.2	18.61	48.716		
3,900.0	3,875.5	3,785.8	3,734.6	10.0	10.7	141.08	-32.3	703.2	926.2	906.9	19.26	48.081		
4,000.0	3,975.5	3,873.4	3,817.3	10.2	11.2	139.82	-12.2	723.8	944.4	924.5	19.89	47.479		
4,100.0	4,075.5	3,967.7	3,906.0	10.4	11.8	105.10	10.4	746.3	961.6	941.1	20.54	46.814		
4,200.0	4,175.5	4,063.8	3,996.4	10.5	12.3	103.44	33.2	769.5	979.9	958.7	21.19	46.239		
4,300.0	4,275.5	4,170.3	4,097.7	10.7	12.9	101.82	55.8	793.6	998.0	976.1	21.84	45.705 SF		

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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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #2 (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-303
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 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-303
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-303	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
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