

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Leffler 34-1CH**

Surface Location: Leffler 1I-HZ Pad Sec.1-T6N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

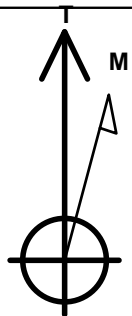
Ground Elevation: 4815.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1429853.34	3213118.22	40.510820	-104.733530	

Original Well Elev WELL @ 4830.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BHL 2148'FSL, 500'FEL	7230.0	1898.5	4415.3	Point



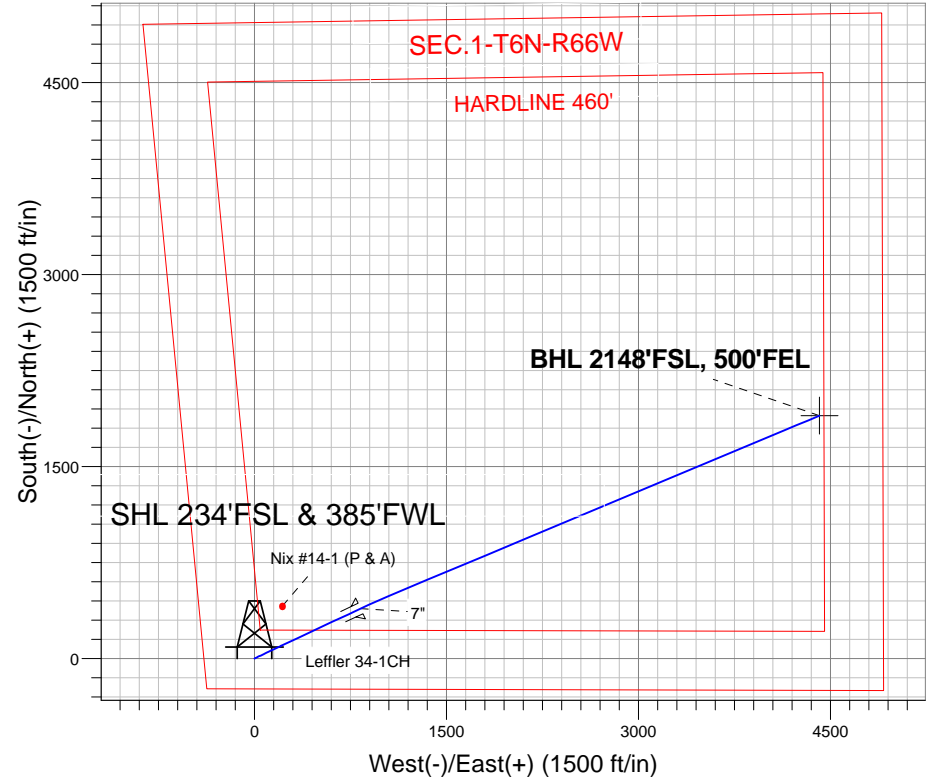
Azimuths to True North
Magnetic North: 8.70°

Magnetic Field
Strength: 53069.3nT
Dip Angle: 67.11°
Date: 8/16/2012
Model: IGRF2010

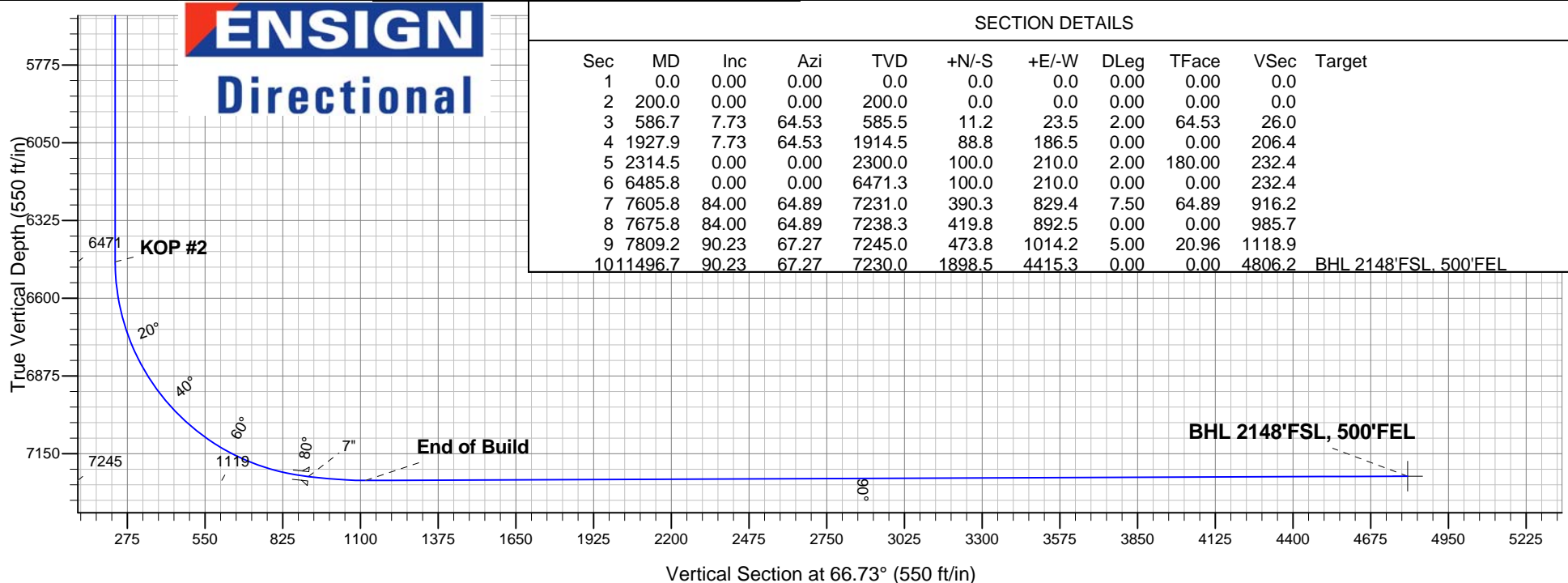
Leffler 1I-HZ Pad Sec.1-T6N-R66W
Leffler 34-1CH
Plan #1 (8-16-12)
10:26, August 21 2012

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6471.3	6485.8	KOP #2
7245.0	7809.2	End of Build



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	586.7	7.73	64.53	585.5	11.2	23.5	2.00	64.53	26.0	
4	1927.9	7.73	64.53	1914.5	88.8	186.5	0.00	0.00	206.4	
5	2314.5	0.00	0.00	2300.0	100.0	210.0	2.00	180.00	232.4	
6	6485.8	0.00	0.00	6471.3	100.0	210.0	0.00	0.00	232.4	
7	7605.8	84.00	64.89	7231.0	390.3	829.4	7.50	64.89	916.2	
8	7675.8	84.00	64.89	7238.3	419.8	892.5	0.00	0.00	985.7	
9	7809.2	90.23	67.27	7245.0	473.8	1014.2	5.00	20.96	1118.9	
10	11496.7	90.23	67.27	7230.0	1898.5	4415.3	0.00	0.00	4806.2	BHL 2148'FSL, 500'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T6N-R66W

Leffler 1I-HZ Pad Sec.1-T6N-R66W

Leffler 34-1CH

Wellbore #1

Plan: Plan #1 (8-16-12)

Standard Planning Report

21 August, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

Project	SEC.1-T6N-R66W, 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	Leffler 1I-HZ Pad Sec.1-T6N-R66W		
Site Position:		Northing:	1,429,853.35 ft
From:	Lat/Long	Easting:	3,213,118.22 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.510820
		Longitude:	-104.733530
		Grid Convergence:	0.50 °

Well	Leffler 34-1CH		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/16/2012	8.70	67.11	53,069

Design	Plan #1 (8-16-12)			
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	66.73

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
586.7	7.73	64.53	585.5	11.2	23.5	2.00	2.00	0.00	64.53	
1,927.9	7.73	64.53	1,914.5	88.8	186.5	0.00	0.00	0.00	0.00	
2,314.5	0.00	0.00	2,300.0	100.0	210.0	2.00	-2.00	0.00	180.00	
6,485.8	0.00	0.00	6,471.3	100.0	210.0	0.00	0.00	0.00	0.00	
7,605.8	84.00	64.89	7,231.0	390.3	829.4	7.50	7.50	0.00	64.89	
7,675.8	84.00	64.89	7,238.3	419.8	892.5	0.00	0.00	0.00	0.00	
7,809.2	90.23	67.27	7,245.0	473.8	1,014.2	5.00	4.67	1.79	20.96	
11,496.7	90.23	67.27	7,230.0	1,898.5	4,415.3	0.00	0.00	0.00	0.00	BHL 2148'FSL, 500

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	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
KOP #1									
240.0	0.80	64.53	240.0	0.1	0.3	0.3	2.00	2.00	0.00
280.0	1.60	64.53	280.0	0.5	1.0	1.1	2.00	2.00	0.00
320.0	2.40	64.53	320.0	1.1	2.3	2.5	2.00	2.00	0.00
360.0	3.20	64.53	359.9	1.9	4.0	4.5	2.00	2.00	0.00
400.0	4.00	64.53	399.8	3.0	6.3	7.0	2.00	2.00	0.00
440.0	4.80	64.53	439.7	4.3	9.1	10.0	2.00	2.00	0.00
480.0	5.60	64.53	479.6	5.9	12.3	13.7	2.00	2.00	0.00
520.0	6.40	64.53	519.3	7.7	16.1	17.8	2.00	2.00	0.00
560.0	7.20	64.53	559.1	9.7	20.4	22.6	2.00	2.00	0.00
586.7	7.73	64.53	585.5	11.2	23.5	26.0	2.00	2.00	0.00
600.0	7.73	64.53	598.7	12.0	25.1	27.8	0.00	0.00	0.00
640.0	7.73	64.53	638.3	14.3	30.0	33.2	0.00	0.00	0.00
680.0	7.73	64.53	678.0	16.6	34.9	38.6	0.00	0.00	0.00
720.0	7.73	64.53	717.6	18.9	39.7	44.0	0.00	0.00	0.00
760.0	7.73	64.53	757.3	21.2	44.6	49.3	0.00	0.00	0.00
800.0	7.73	64.53	796.9	23.5	49.4	54.7	0.00	0.00	0.00
840.0	7.73	64.53	836.5	25.9	54.3	60.1	0.00	0.00	0.00
880.0	7.73	64.53	876.2	28.2	59.2	65.5	0.00	0.00	0.00
920.0	7.73	64.53	915.8	30.5	64.0	70.9	0.00	0.00	0.00
960.0	7.73	64.53	955.4	32.8	68.9	76.2	0.00	0.00	0.00
1,000.0	7.73	64.53	995.1	35.1	73.7	81.6	0.00	0.00	0.00
1,040.0	7.73	64.53	1,034.7	37.4	78.6	87.0	0.00	0.00	0.00
1,080.0	7.73	64.53	1,074.3	39.7	83.5	92.4	0.00	0.00	0.00
1,120.0	7.73	64.53	1,114.0	42.1	88.3	97.8	0.00	0.00	0.00
1,160.0	7.73	64.53	1,153.6	44.4	93.2	103.1	0.00	0.00	0.00
1,200.0	7.73	64.53	1,193.2	46.7	98.0	108.5	0.00	0.00	0.00
1,240.0	7.73	64.53	1,232.9	49.0	102.9	113.9	0.00	0.00	0.00
1,280.0	7.73	64.53	1,272.5	51.3	107.8	119.3	0.00	0.00	0.00
1,320.0	7.73	64.53	1,312.2	53.6	112.6	124.6	0.00	0.00	0.00
1,360.0	7.73	64.53	1,351.8	55.9	117.5	130.0	0.00	0.00	0.00
1,400.0	7.73	64.53	1,391.4	58.3	122.3	135.4	0.00	0.00	0.00
1,440.0	7.73	64.53	1,431.1	60.6	127.2	140.8	0.00	0.00	0.00
1,480.0	7.73	64.53	1,470.7	62.9	132.1	146.2	0.00	0.00	0.00
1,520.0	7.73	64.53	1,510.3	65.2	136.9	151.5	0.00	0.00	0.00
1,560.0	7.73	64.53	1,550.0	67.5	141.8	156.9	0.00	0.00	0.00
1,600.0	7.73	64.53	1,589.6	69.8	146.6	162.3	0.00	0.00	0.00
1,640.0	7.73	64.53	1,629.2	72.1	151.5	167.7	0.00	0.00	0.00
1,680.0	7.73	64.53	1,668.9	74.5	156.4	173.1	0.00	0.00	0.00
1,720.0	7.73	64.53	1,708.5	76.8	161.2	178.4	0.00	0.00	0.00
1,760.0	7.73	64.53	1,748.2	79.1	166.1	183.8	0.00	0.00	0.00
1,800.0	7.73	64.53	1,787.8	81.4	170.9	189.2	0.00	0.00	0.00
1,840.0	7.73	64.53	1,827.4	83.7	175.8	194.6	0.00	0.00	0.00
1,880.0	7.73	64.53	1,867.1	86.0	180.7	200.0	0.00	0.00	0.00
1,920.0	7.73	64.53	1,906.7	88.3	185.5	205.3	0.00	0.00	0.00
1,927.9	7.73	64.53	1,914.5	88.8	186.5	206.4	0.00	0.00	0.00
1,960.0	7.09	64.53	1,946.4	90.6	190.2	210.5	2.00	-2.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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)
2,000.0	6.29	64.53	1,986.1	92.6	194.4	215.2	2.00	-2.00	0.00
2,040.0	5.49	64.53	2,025.9	94.4	198.1	219.3	2.00	-2.00	0.00
2,080.0	4.69	64.53	2,065.7	95.9	201.3	222.8	2.00	-2.00	0.00
2,120.0	3.89	64.53	2,105.6	97.2	204.0	225.8	2.00	-2.00	0.00
2,160.0	3.09	64.53	2,145.5	98.2	206.2	228.3	2.00	-2.00	0.00
2,200.0	2.29	64.53	2,185.5	99.0	207.9	230.1	2.00	-2.00	0.00
2,240.0	1.49	64.53	2,225.5	99.6	209.1	231.5	2.00	-2.00	0.00
2,280.0	0.69	64.53	2,265.5	99.9	209.8	232.2	2.00	-2.00	0.00
2,314.5	0.00	0.00	2,300.0	100.0	210.0	232.4	2.00	-2.00	0.00
2,320.0	0.00	0.00	2,305.5	100.0	210.0	232.4	0.00	0.00	0.00
2,360.0	0.00	0.00	2,345.5	100.0	210.0	232.4	0.00	0.00	0.00
2,400.0	0.00	0.00	2,385.5	100.0	210.0	232.4	0.00	0.00	0.00
2,440.0	0.00	0.00	2,425.5	100.0	210.0	232.4	0.00	0.00	0.00
2,480.0	0.00	0.00	2,465.5	100.0	210.0	232.4	0.00	0.00	0.00
2,520.0	0.00	0.00	2,505.5	100.0	210.0	232.4	0.00	0.00	0.00
2,560.0	0.00	0.00	2,545.5	100.0	210.0	232.4	0.00	0.00	0.00
2,600.0	0.00	0.00	2,585.5	100.0	210.0	232.4	0.00	0.00	0.00
2,640.0	0.00	0.00	2,625.5	100.0	210.0	232.4	0.00	0.00	0.00
2,680.0	0.00	0.00	2,665.5	100.0	210.0	232.4	0.00	0.00	0.00
2,720.0	0.00	0.00	2,705.5	100.0	210.0	232.4	0.00	0.00	0.00
2,760.0	0.00	0.00	2,745.5	100.0	210.0	232.4	0.00	0.00	0.00
2,800.0	0.00	0.00	2,785.5	100.0	210.0	232.4	0.00	0.00	0.00
2,840.0	0.00	0.00	2,825.5	100.0	210.0	232.4	0.00	0.00	0.00
2,880.0	0.00	0.00	2,865.5	100.0	210.0	232.4	0.00	0.00	0.00
2,920.0	0.00	0.00	2,905.5	100.0	210.0	232.4	0.00	0.00	0.00
2,960.0	0.00	0.00	2,945.5	100.0	210.0	232.4	0.00	0.00	0.00
3,000.0	0.00	0.00	2,985.5	100.0	210.0	232.4	0.00	0.00	0.00
3,040.0	0.00	0.00	3,025.5	100.0	210.0	232.4	0.00	0.00	0.00
3,080.0	0.00	0.00	3,065.5	100.0	210.0	232.4	0.00	0.00	0.00
3,120.0	0.00	0.00	3,105.5	100.0	210.0	232.4	0.00	0.00	0.00
3,160.0	0.00	0.00	3,145.5	100.0	210.0	232.4	0.00	0.00	0.00
3,200.0	0.00	0.00	3,185.5	100.0	210.0	232.4	0.00	0.00	0.00
3,240.0	0.00	0.00	3,225.5	100.0	210.0	232.4	0.00	0.00	0.00
3,280.0	0.00	0.00	3,265.5	100.0	210.0	232.4	0.00	0.00	0.00
3,320.0	0.00	0.00	3,305.5	100.0	210.0	232.4	0.00	0.00	0.00
3,360.0	0.00	0.00	3,345.5	100.0	210.0	232.4	0.00	0.00	0.00
3,400.0	0.00	0.00	3,385.5	100.0	210.0	232.4	0.00	0.00	0.00
3,440.0	0.00	0.00	3,425.5	100.0	210.0	232.4	0.00	0.00	0.00
3,480.0	0.00	0.00	3,465.5	100.0	210.0	232.4	0.00	0.00	0.00
3,520.0	0.00	0.00	3,505.5	100.0	210.0	232.4	0.00	0.00	0.00
3,560.0	0.00	0.00	3,545.5	100.0	210.0	232.4	0.00	0.00	0.00
3,600.0	0.00	0.00	3,585.5	100.0	210.0	232.4	0.00	0.00	0.00
3,640.0	0.00	0.00	3,625.5	100.0	210.0	232.4	0.00	0.00	0.00
3,680.0	0.00	0.00	3,665.5	100.0	210.0	232.4	0.00	0.00	0.00
3,720.0	0.00	0.00	3,705.5	100.0	210.0	232.4	0.00	0.00	0.00
3,760.0	0.00	0.00	3,745.5	100.0	210.0	232.4	0.00	0.00	0.00
3,800.0	0.00	0.00	3,785.5	100.0	210.0	232.4	0.00	0.00	0.00
3,840.0	0.00	0.00	3,825.5	100.0	210.0	232.4	0.00	0.00	0.00
3,880.0	0.00	0.00	3,865.5	100.0	210.0	232.4	0.00	0.00	0.00
3,920.0	0.00	0.00	3,905.5	100.0	210.0	232.4	0.00	0.00	0.00
3,960.0	0.00	0.00	3,945.5	100.0	210.0	232.4	0.00	0.00	0.00
4,000.0	0.00	0.00	3,985.5	100.0	210.0	232.4	0.00	0.00	0.00
4,040.0	0.00	0.00	4,025.5	100.0	210.0	232.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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)
4,080.0	0.00	0.00	4,065.5	100.0	210.0	232.4	0.00	0.00	0.00
4,120.0	0.00	0.00	4,105.5	100.0	210.0	232.4	0.00	0.00	0.00
4,160.0	0.00	0.00	4,145.5	100.0	210.0	232.4	0.00	0.00	0.00
4,200.0	0.00	0.00	4,185.5	100.0	210.0	232.4	0.00	0.00	0.00
4,240.0	0.00	0.00	4,225.5	100.0	210.0	232.4	0.00	0.00	0.00
4,280.0	0.00	0.00	4,265.5	100.0	210.0	232.4	0.00	0.00	0.00
4,320.0	0.00	0.00	4,305.5	100.0	210.0	232.4	0.00	0.00	0.00
4,360.0	0.00	0.00	4,345.5	100.0	210.0	232.4	0.00	0.00	0.00
4,400.0	0.00	0.00	4,385.5	100.0	210.0	232.4	0.00	0.00	0.00
4,440.0	0.00	0.00	4,425.5	100.0	210.0	232.4	0.00	0.00	0.00
4,480.0	0.00	0.00	4,465.5	100.0	210.0	232.4	0.00	0.00	0.00
4,520.0	0.00	0.00	4,505.5	100.0	210.0	232.4	0.00	0.00	0.00
4,560.0	0.00	0.00	4,545.5	100.0	210.0	232.4	0.00	0.00	0.00
4,600.0	0.00	0.00	4,585.5	100.0	210.0	232.4	0.00	0.00	0.00
4,640.0	0.00	0.00	4,625.5	100.0	210.0	232.4	0.00	0.00	0.00
4,680.0	0.00	0.00	4,665.5	100.0	210.0	232.4	0.00	0.00	0.00
4,720.0	0.00	0.00	4,705.5	100.0	210.0	232.4	0.00	0.00	0.00
4,760.0	0.00	0.00	4,745.5	100.0	210.0	232.4	0.00	0.00	0.00
4,800.0	0.00	0.00	4,785.5	100.0	210.0	232.4	0.00	0.00	0.00
4,840.0	0.00	0.00	4,825.5	100.0	210.0	232.4	0.00	0.00	0.00
4,880.0	0.00	0.00	4,865.5	100.0	210.0	232.4	0.00	0.00	0.00
4,920.0	0.00	0.00	4,905.5	100.0	210.0	232.4	0.00	0.00	0.00
4,960.0	0.00	0.00	4,945.5	100.0	210.0	232.4	0.00	0.00	0.00
5,000.0	0.00	0.00	4,985.5	100.0	210.0	232.4	0.00	0.00	0.00
5,040.0	0.00	0.00	5,025.5	100.0	210.0	232.4	0.00	0.00	0.00
5,080.0	0.00	0.00	5,065.5	100.0	210.0	232.4	0.00	0.00	0.00
5,120.0	0.00	0.00	5,105.5	100.0	210.0	232.4	0.00	0.00	0.00
5,160.0	0.00	0.00	5,145.5	100.0	210.0	232.4	0.00	0.00	0.00
5,200.0	0.00	0.00	5,185.5	100.0	210.0	232.4	0.00	0.00	0.00
5,240.0	0.00	0.00	5,225.5	100.0	210.0	232.4	0.00	0.00	0.00
5,280.0	0.00	0.00	5,265.5	100.0	210.0	232.4	0.00	0.00	0.00
5,320.0	0.00	0.00	5,305.5	100.0	210.0	232.4	0.00	0.00	0.00
5,360.0	0.00	0.00	5,345.5	100.0	210.0	232.4	0.00	0.00	0.00
5,400.0	0.00	0.00	5,385.5	100.0	210.0	232.4	0.00	0.00	0.00
5,440.0	0.00	0.00	5,425.5	100.0	210.0	232.4	0.00	0.00	0.00
5,480.0	0.00	0.00	5,465.5	100.0	210.0	232.4	0.00	0.00	0.00
5,520.0	0.00	0.00	5,505.5	100.0	210.0	232.4	0.00	0.00	0.00
5,560.0	0.00	0.00	5,545.5	100.0	210.0	232.4	0.00	0.00	0.00
5,600.0	0.00	0.00	5,585.5	100.0	210.0	232.4	0.00	0.00	0.00
5,640.0	0.00	0.00	5,625.5	100.0	210.0	232.4	0.00	0.00	0.00
5,680.0	0.00	0.00	5,665.5	100.0	210.0	232.4	0.00	0.00	0.00
5,720.0	0.00	0.00	5,705.5	100.0	210.0	232.4	0.00	0.00	0.00
5,760.0	0.00	0.00	5,745.5	100.0	210.0	232.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,785.5	100.0	210.0	232.4	0.00	0.00	0.00
5,840.0	0.00	0.00	5,825.5	100.0	210.0	232.4	0.00	0.00	0.00
5,880.0	0.00	0.00	5,865.5	100.0	210.0	232.4	0.00	0.00	0.00
5,920.0	0.00	0.00	5,905.5	100.0	210.0	232.4	0.00	0.00	0.00
5,960.0	0.00	0.00	5,945.5	100.0	210.0	232.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,985.5	100.0	210.0	232.4	0.00	0.00	0.00
6,040.0	0.00	0.00	6,025.5	100.0	210.0	232.4	0.00	0.00	0.00
6,080.0	0.00	0.00	6,065.5	100.0	210.0	232.4	0.00	0.00	0.00
6,120.0	0.00	0.00	6,105.5	100.0	210.0	232.4	0.00	0.00	0.00
6,160.0	0.00	0.00	6,145.5	100.0	210.0	232.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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)
6,200.0	0.00	0.00	6,185.5	100.0	210.0	232.4	0.00	0.00	0.00
6,240.0	0.00	0.00	6,225.5	100.0	210.0	232.4	0.00	0.00	0.00
6,280.0	0.00	0.00	6,265.5	100.0	210.0	232.4	0.00	0.00	0.00
6,320.0	0.00	0.00	6,305.5	100.0	210.0	232.4	0.00	0.00	0.00
6,360.0	0.00	0.00	6,345.5	100.0	210.0	232.4	0.00	0.00	0.00
6,400.0	0.00	0.00	6,385.5	100.0	210.0	232.4	0.00	0.00	0.00
6,440.0	0.00	0.00	6,425.5	100.0	210.0	232.4	0.00	0.00	0.00
6,480.0	0.00	0.00	6,465.5	100.0	210.0	232.4	0.00	0.00	0.00
6,485.8	0.00	0.00	6,471.3	100.0	210.0	232.4	0.00	0.00	0.00
KOP #2									
6,520.0	2.56	64.89	6,505.4	100.3	210.7	233.2	7.50	7.50	0.00
6,560.0	5.56	64.89	6,545.3	101.5	213.3	236.0	7.50	7.50	0.00
6,600.0	8.56	64.89	6,585.0	103.6	217.7	240.9	7.50	7.50	0.00
6,640.0	11.56	64.89	6,624.4	106.6	224.0	247.9	7.50	7.50	0.00
6,680.0	14.56	64.89	6,663.4	110.4	232.2	257.0	7.50	7.50	0.00
6,720.0	17.56	64.89	6,701.8	115.1	242.3	268.0	7.50	7.50	0.00
6,760.0	20.56	64.89	6,739.6	120.7	254.1	281.1	7.50	7.50	0.00
6,800.0	23.56	64.89	6,776.7	127.0	267.7	296.1	7.50	7.50	0.00
6,840.0	26.56	64.89	6,812.9	134.2	283.0	313.0	7.50	7.50	0.00
6,880.0	29.56	64.89	6,848.2	142.2	300.1	331.8	7.50	7.50	0.00
6,920.0	32.56	64.89	6,882.5	151.0	318.8	352.5	7.50	7.50	0.00
6,960.0	35.56	64.89	6,915.6	160.5	339.0	374.9	7.50	7.50	0.00
7,000.0	38.56	64.89	6,947.5	170.7	360.9	399.0	7.50	7.50	0.00
7,040.0	41.56	64.89	6,978.1	181.6	384.2	424.7	7.50	7.50	0.00
7,080.0	44.56	64.89	7,007.3	193.2	408.9	452.0	7.50	7.50	0.00
7,120.0	47.56	64.89	7,035.1	205.4	435.0	480.8	7.50	7.50	0.00
7,160.0	50.56	64.89	7,061.3	218.3	462.3	511.0	7.50	7.50	0.00
7,200.0	53.56	64.89	7,085.9	231.7	490.9	542.5	7.50	7.50	0.00
7,240.0	56.56	64.89	7,108.8	245.6	520.6	575.3	7.50	7.50	0.00
7,280.0	59.56	64.89	7,129.9	260.0	551.3	609.2	7.50	7.50	0.00
7,320.0	62.56	64.89	7,149.3	274.8	583.0	644.2	7.50	7.50	0.00
7,360.0	65.56	64.89	7,166.8	290.1	615.6	680.1	7.50	7.50	0.00
7,400.0	68.56	64.89	7,182.4	305.7	649.0	716.9	7.50	7.50	0.00
7,440.0	71.56	64.89	7,196.0	321.7	683.0	754.5	7.50	7.50	0.00
7,480.0	74.56	64.89	7,207.6	337.9	717.6	792.8	7.50	7.50	0.00
7,520.0	77.56	64.89	7,217.3	354.4	752.8	831.6	7.50	7.50	0.00
7,560.0	80.56	64.89	7,224.9	371.0	788.3	870.8	7.50	7.50	0.00
7,600.0	83.56	64.89	7,230.4	387.9	824.2	910.4	7.50	7.50	0.00
7,605.8	84.00	64.89	7,231.0	390.3	829.4	916.2	7.50	7.50	0.00
7"									
7,640.0	84.00	64.89	7,234.6	404.7	860.2	950.2	0.00	0.00	0.00
7,675.8	84.00	64.89	7,238.3	419.8	892.5	985.7	0.00	0.00	0.00
7,680.0	84.20	64.97	7,238.8	421.6	896.3	989.9	5.00	4.67	1.80
7,720.0	86.06	65.68	7,242.2	438.3	932.5	1,029.8	5.00	4.67	1.79
7,760.0	87.93	66.40	7,244.3	454.5	969.0	1,069.7	5.00	4.67	1.78
7,800.0	89.80	67.11	7,245.0	470.3	1,005.7	1,109.7	5.00	4.67	1.78
7,809.2	90.23	67.27	7,245.0	473.8	1,014.2	1,118.9	5.00	4.67	1.78
End of Build									
7,840.0	90.23	67.27	7,244.9	485.7	1,042.6	1,149.7	0.01	0.01	0.00
7,880.0	90.23	67.27	7,244.8	501.2	1,079.5	1,189.7	0.00	0.00	0.00
7,920.0	90.23	67.27	7,244.6	516.6	1,116.4	1,229.7	0.00	0.00	0.00
7,960.0	90.23	67.27	7,244.4	532.1	1,153.3	1,269.7	0.00	0.00	0.00
8,000.0	90.23	67.27	7,244.3	547.5	1,190.2	1,309.7	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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)
8,040.0	90.23	67.27	7,244.1	563.0	1,227.1	1,349.7	0.00	0.00	0.00
8,080.0	90.23	67.27	7,243.9	578.5	1,264.0	1,389.7	0.00	0.00	0.00
8,120.0	90.23	67.27	7,243.8	593.9	1,300.9	1,429.7	0.00	0.00	0.00
8,160.0	90.23	67.27	7,243.6	609.4	1,337.8	1,469.7	0.00	0.00	0.00
8,200.0	90.23	67.27	7,243.4	624.8	1,374.7	1,509.7	0.00	0.00	0.00
8,240.0	90.23	67.27	7,243.3	640.3	1,411.5	1,549.7	0.00	0.00	0.00
8,280.0	90.23	67.27	7,243.1	655.7	1,448.4	1,589.7	0.00	0.00	0.00
8,320.0	90.23	67.27	7,243.0	671.2	1,485.3	1,629.7	0.00	0.00	0.00
8,360.0	90.23	67.27	7,242.8	686.6	1,522.2	1,669.7	0.00	0.00	0.00
8,400.0	90.23	67.27	7,242.6	702.1	1,559.1	1,709.7	0.00	0.00	0.00
8,440.0	90.23	67.27	7,242.5	717.5	1,596.0	1,749.7	0.00	0.00	0.00
8,480.0	90.23	67.27	7,242.3	733.0	1,632.9	1,789.7	0.00	0.00	0.00
8,520.0	90.23	67.27	7,242.1	748.5	1,669.8	1,829.7	0.00	0.00	0.00
8,560.0	90.23	67.27	7,242.0	763.9	1,706.7	1,869.6	0.00	0.00	0.00
8,600.0	90.23	67.27	7,241.8	779.4	1,743.6	1,909.6	0.00	0.00	0.00
8,640.0	90.23	67.27	7,241.7	794.8	1,780.5	1,949.6	0.00	0.00	0.00
8,680.0	90.23	67.27	7,241.5	810.3	1,817.4	1,989.6	0.00	0.00	0.00
8,720.0	90.23	67.27	7,241.3	825.7	1,854.3	2,029.6	0.00	0.00	0.00
8,760.0	90.23	67.27	7,241.2	841.2	1,891.2	2,069.6	0.00	0.00	0.00
8,800.0	90.23	67.27	7,241.0	856.6	1,928.1	2,109.6	0.00	0.00	0.00
8,840.0	90.23	67.27	7,240.8	872.1	1,964.9	2,149.6	0.00	0.00	0.00
8,880.0	90.23	67.27	7,240.7	887.5	2,001.8	2,189.6	0.00	0.00	0.00
8,920.0	90.23	67.27	7,240.5	903.0	2,038.7	2,229.6	0.00	0.00	0.00
8,960.0	90.23	67.27	7,240.3	918.4	2,075.6	2,269.6	0.00	0.00	0.00
9,000.0	90.23	67.27	7,240.2	933.9	2,112.5	2,309.6	0.00	0.00	0.00
9,040.0	90.23	67.27	7,240.0	949.4	2,149.4	2,349.6	0.00	0.00	0.00
9,080.0	90.23	67.27	7,239.9	964.8	2,186.3	2,389.6	0.00	0.00	0.00
9,120.0	90.23	67.27	7,239.7	980.3	2,223.2	2,429.6	0.00	0.00	0.00
9,160.0	90.23	67.27	7,239.5	995.7	2,260.1	2,469.6	0.00	0.00	0.00
9,200.0	90.23	67.27	7,239.4	1,011.2	2,297.0	2,509.6	0.00	0.00	0.00
9,240.0	90.23	67.27	7,239.2	1,026.6	2,333.9	2,549.6	0.00	0.00	0.00
9,280.0	90.23	67.27	7,239.0	1,042.1	2,370.8	2,589.6	0.00	0.00	0.00
9,320.0	90.23	67.27	7,238.9	1,057.5	2,407.7	2,629.6	0.00	0.00	0.00
9,360.0	90.23	67.27	7,238.7	1,073.0	2,444.6	2,669.6	0.00	0.00	0.00
9,400.0	90.23	67.27	7,238.6	1,088.4	2,481.5	2,709.6	0.00	0.00	0.00
9,440.0	90.23	67.27	7,238.4	1,103.9	2,518.4	2,749.6	0.00	0.00	0.00
9,480.0	90.23	67.27	7,238.2	1,119.3	2,555.2	2,789.6	0.00	0.00	0.00
9,520.0	90.23	67.27	7,238.1	1,134.8	2,592.1	2,829.6	0.00	0.00	0.00
9,560.0	90.23	67.27	7,237.9	1,150.3	2,629.0	2,869.6	0.00	0.00	0.00
9,600.0	90.23	67.27	7,237.7	1,165.7	2,665.9	2,909.6	0.00	0.00	0.00
9,640.0	90.23	67.27	7,237.6	1,181.2	2,702.8	2,949.6	0.00	0.00	0.00
9,680.0	90.23	67.27	7,237.4	1,196.6	2,739.7	2,989.6	0.00	0.00	0.00
9,720.0	90.23	67.27	7,237.2	1,212.1	2,776.6	3,029.6	0.00	0.00	0.00
9,760.0	90.23	67.27	7,237.1	1,227.5	2,813.5	3,069.6	0.00	0.00	0.00
9,800.0	90.23	67.27	7,236.9	1,243.0	2,850.4	3,109.6	0.00	0.00	0.00
9,840.0	90.23	67.27	7,236.8	1,258.4	2,887.3	3,149.6	0.00	0.00	0.00
9,880.0	90.23	67.27	7,236.6	1,273.9	2,924.2	3,189.6	0.00	0.00	0.00
9,920.0	90.23	67.27	7,236.4	1,289.3	2,961.1	3,229.6	0.00	0.00	0.00
9,960.0	90.23	67.27	7,236.3	1,304.8	2,998.0	3,269.6	0.00	0.00	0.00
10,000.0	90.23	67.27	7,236.1	1,320.3	3,034.9	3,309.6	0.00	0.00	0.00
10,040.0	90.23	67.27	7,235.9	1,335.7	3,071.8	3,349.6	0.00	0.00	0.00
10,080.0	90.23	67.27	7,235.8	1,351.2	3,108.7	3,389.6	0.00	0.00	0.00
10,120.0	90.23	67.27	7,235.6	1,366.6	3,145.5	3,429.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

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)
10,160.0	90.23	67.27	7,235.5	1,382.1	3,182.4	3,469.6	0.00	0.00	0.00
10,200.0	90.23	67.27	7,235.3	1,397.5	3,219.3	3,509.6	0.00	0.00	0.00
10,240.0	90.23	67.27	7,235.1	1,413.0	3,256.2	3,549.6	0.00	0.00	0.00
10,280.0	90.23	67.27	7,235.0	1,428.4	3,293.1	3,589.6	0.00	0.00	0.00
10,320.0	90.23	67.27	7,234.8	1,443.9	3,330.0	3,629.6	0.00	0.00	0.00
10,360.0	90.23	67.27	7,234.6	1,459.3	3,366.9	3,669.6	0.00	0.00	0.00
10,400.0	90.23	67.27	7,234.5	1,474.8	3,403.8	3,709.6	0.00	0.00	0.00
10,440.0	90.23	67.27	7,234.3	1,490.2	3,440.7	3,749.6	0.00	0.00	0.00
10,480.0	90.23	67.27	7,234.1	1,505.7	3,477.6	3,789.5	0.00	0.00	0.00
10,520.0	90.23	67.27	7,234.0	1,521.2	3,514.5	3,829.5	0.00	0.00	0.00
10,560.0	90.23	67.27	7,233.8	1,536.6	3,551.4	3,869.5	0.00	0.00	0.00
10,600.0	90.23	67.27	7,233.7	1,552.1	3,588.3	3,909.5	0.00	0.00	0.00
10,640.0	90.23	67.27	7,233.5	1,567.5	3,625.2	3,949.5	0.00	0.00	0.00
10,680.0	90.23	67.27	7,233.3	1,583.0	3,662.1	3,989.5	0.00	0.00	0.00
10,720.0	90.23	67.27	7,233.2	1,598.4	3,699.0	4,029.5	0.00	0.00	0.00
10,760.0	90.23	67.27	7,233.0	1,613.9	3,735.8	4,069.5	0.00	0.00	0.00
10,800.0	90.23	67.27	7,232.8	1,629.3	3,772.7	4,109.5	0.00	0.00	0.00
10,840.0	90.23	67.27	7,232.7	1,644.8	3,809.6	4,149.5	0.00	0.00	0.00
10,880.0	90.23	67.27	7,232.5	1,660.2	3,846.5	4,189.5	0.00	0.00	0.00
10,920.0	90.23	67.27	7,232.4	1,675.7	3,883.4	4,229.5	0.00	0.00	0.00
10,960.0	90.23	67.27	7,232.2	1,691.2	3,920.3	4,269.5	0.00	0.00	0.00
11,000.0	90.23	67.27	7,232.0	1,706.6	3,957.2	4,309.5	0.00	0.00	0.00
11,040.0	90.23	67.27	7,231.9	1,722.1	3,994.1	4,349.5	0.00	0.00	0.00
11,080.0	90.23	67.27	7,231.7	1,737.5	4,031.0	4,389.5	0.00	0.00	0.00
11,120.0	90.23	67.27	7,231.5	1,753.0	4,067.9	4,429.5	0.00	0.00	0.00
11,160.0	90.23	67.27	7,231.4	1,768.4	4,104.8	4,469.5	0.00	0.00	0.00
11,200.0	90.23	67.27	7,231.2	1,783.9	4,141.7	4,509.5	0.00	0.00	0.00
11,240.0	90.23	67.27	7,231.0	1,799.3	4,178.6	4,549.5	0.00	0.00	0.00
11,280.0	90.23	67.27	7,230.9	1,814.8	4,215.5	4,589.5	0.00	0.00	0.00
11,320.0	90.23	67.27	7,230.7	1,830.2	4,252.4	4,629.5	0.00	0.00	0.00
11,360.0	90.23	67.27	7,230.6	1,845.7	4,289.3	4,669.5	0.00	0.00	0.00
11,400.0	90.23	67.27	7,230.4	1,861.1	4,326.1	4,709.5	0.00	0.00	0.00
11,440.0	90.23	67.27	7,230.2	1,876.6	4,363.0	4,749.5	0.00	0.00	0.00
11,480.0	90.23	67.27	7,230.1	1,892.1	4,399.9	4,789.5	0.00	0.00	0.00
11,496.7	90.23	67.27	7,230.0	1,898.5	4,415.3	4,806.2	0.00	0.00	0.00
BHL 2148'FSL, 500'FEL									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL 2148'FSL, 500'FI	0.00	0.00	7,230.0	1,898.5	4,415.3	1,431,789.87	3,217,516.82	40.516030	-104.717650
- plan hits target center									
- Point									

Database:	Landmark	Local Co-ordinate Reference:	Well Leffler 34-1CH
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Project:	SEC.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site:	Leffler 1I-HZ Pad Sec.1-T6N-R66W	North Reference:	True
Well:	Leffler 34-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-16-12)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,605.8	7,231.0	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1
6,485.8	6,471.3	100.0	210.0	KOP #2
7,809.2	7,245.0	473.8	1,014.2	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T6N-R66W

Leffler 1I-HZ Pad Sec.1-T6N-R66W

Leffler 34-1CH

Wellbore #1

Plan #1 (8-16-12)

Anticollision Report

21 August, 2012



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (8-16-12)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 8/21/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,496.7	Plan #1 (8-16-12) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Leffler 14-1H Pad Sec.1-T6N-R66W						
Leffler 14-1H (Exist.) - Wellbore #1 - Wellbore #1	0.0	2.0	116.9	116.9	10,000.000	CC
Leffler 14-1H (Exist.) - Wellbore #1 - Wellbore #1	200.0	201.6	117.2	116.7	207.589	ES
Leffler 14-1H (Exist.) - Wellbore #1 - Wellbore #1	6,600.0	6,644.0	369.5	342.3	13.577	SF
Leffler 11-HZ Pad Sec.1-T6N-R66W						
Leffler 11-204 - Wellbore #1 - Plan #1 (8-16-12)	200.0	200.0	27.8	27.1	41.238	CC, ES
Leffler 11-204 - Wellbore #1 - Plan #1 (8-16-12)	7,150.0	7,571.5	226.4	186.7	5.702	SF
Nix #14-1 (P&A) - Wellbore #1 - Wellbore #1	6,957.4	6,913.5	278.1	123.2	1.795	CC, ES
Nix #14-1 (P&A) - Wellbore #1 - Wellbore #1	7,000.0	6,947.5	279.3	123.5	1.793	SF
Leffler 24-1H Pad Sec.1-T6N-R66W						
Leffler 24-1H (Exist.) - Wellbore #1 - Wellbore #1	207.5	208.7	72.7	72.1	123.524	CC, ES
Leffler 24-1H (Exist.) - Wellbore #1 - Wellbore #1	6,800.0	6,896.4	179.3	150.9	6.315	SF

Offset Design		Leffler 14-1H Pad Sec.1-T6N-R66W - Leffler 14-1H (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft		
Survey Program: 943-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
0.0	0.0	2.0	2.0	0.0	0.0	-111.96	-43.7	-108.4	116.9	116.9	0.00	N/A	CC			
100.0	100.0	101.8	101.8	0.1	0.1	-112.00	-43.8	-108.5	117.0	116.8	0.23	514.515				
200.0	200.0	201.6	201.6	0.3	0.2	-112.14	-44.2	-108.6	117.2	116.7	0.56	207.589	ES			
300.0	300.0	301.4	301.4	0.6	0.3	-176.95	-44.8	-108.8	119.4	118.5	0.90	132.155				
400.0	399.8	401.1	401.1	0.8	0.5	-177.37	-45.6	-109.0	125.1	123.9	1.24	100.815				
500.0	499.5	500.4	500.4	1.0	0.6	-177.88	-46.6	-109.3	134.5	133.0	1.59	84.771				
586.7	585.5	586.2	586.2	1.3	0.7	-178.36	-47.7	-109.7	145.6	143.7	1.89	76.871				
600.0	598.7	599.3	599.3	1.3	0.7	-178.44	-47.8	-109.7	147.6	145.6	1.94	76.018				
700.0	697.8	698.0	698.0	1.6	0.8	-178.98	-49.3	-110.2	162.0	159.7	2.29	70.688				
800.0	796.9	796.7	796.6	2.0	0.9	-179.49	-51.0	-110.7	176.7	174.0	2.65	66.769				
900.0	896.0	895.2	895.2	2.3	1.0	-179.98	-52.9	-111.3	191.5	188.5	3.00	63.794				
1,000.0	995.1	995.2	995.1	2.6	1.2	179.52	-55.1	-111.8	206.3	202.9	3.41	60.584				
1,100.0	1,094.2	1,097.4	1,097.3	2.9	1.4	178.89	-57.5	-110.9	220.1	216.2	3.84	57.267				
1,200.0	1,193.2	1,198.8	1,198.7	3.3	1.6	178.47	-58.8	-109.1	232.4	228.2	4.27	54.490				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 943-MWD													Offset Well Error:	0.0 ft
Reference														
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
1,300.0	1,292.3	1,294.1	1,294.0	3.6	1.8	178.44		-58.8	-108.1	245.0	240.3	4.69	52.226	
1,400.0	1,391.4	1,392.2	1,392.1	3.9	2.0	178.57		-58.8	-108.6	259.0	253.8	5.13	50.483	
1,500.0	1,490.5	1,490.5	1,490.3	4.3	2.2	178.76		-58.6	-109.4	273.0	267.5	5.57	49.035	
1,600.0	1,589.6	1,589.0	1,588.8	4.6	2.4	178.91		-58.6	-110.5	287.4	281.4	6.02	47.763	
1,700.0	1,688.7	1,687.4	1,687.2	4.9	2.6	179.07		-58.5	-111.7	301.9	295.5	6.46	46.713	
1,800.0	1,787.8	1,787.3	1,787.2	5.3	2.8	179.24		-58.3	-112.8	316.3	309.4	6.90	45.812	
1,900.0	1,886.9	1,885.8	1,885.6	5.6	3.0	179.39		-58.1	-114.0	330.7	323.4	7.35	44.997	
1,927.9	1,914.5	1,913.5	1,913.3	5.7	3.1	179.42		-58.1	-114.3	334.7	327.3	7.48	44.777	
2,000.0	1,986.1	1,985.4	1,985.2	5.9	3.2	179.47		-58.2	-114.9	344.2	336.4	7.78	44.215	
2,100.0	2,085.7	2,084.8	2,084.6	6.1	3.4	179.54		-58.3	-115.8	354.2	346.0	8.17	43.336	
2,200.0	2,185.5	2,184.2	2,184.0	6.3	3.6	179.64		-58.2	-116.9	360.9	352.3	8.55	42.195	
2,300.0	2,285.5	2,285.2	2,285.0	6.5	3.8	179.74		-58.0	-117.9	364.0	355.1	8.92	40.789	
2,314.5	2,300.0	2,300.0	2,299.8	6.5	3.9	-115.71		-58.0	-118.1	364.1	354.0	10.15	35.878	
2,400.0	2,385.5	2,386.6	2,386.4	6.6	4.0	-115.64		-57.7	-118.6	364.5	354.0	10.46	34.848	
2,500.0	2,485.5	2,488.2	2,488.0	6.8	4.2	-115.56		-57.3	-118.9	364.6	353.8	10.84	33.635	
2,600.0	2,585.5	2,588.7	2,588.5	7.0	4.4	-115.46		-56.6	-118.9	364.3	353.1	11.22	32.466	
2,697.7	2,683.1	2,685.3	2,685.1	7.1	4.7	-115.37		-56.0	-119.0	364.2	352.6	11.60	31.399	
2,700.0	2,685.5	2,687.6	2,687.4	7.1	4.7	-115.36		-56.0	-119.0	364.2	352.5	11.61	31.374	
2,800.0	2,785.5	2,787.4	2,787.2	7.3	4.9	-115.25		-55.4	-119.4	364.2	352.2	12.00	30.364	
2,900.0	2,885.5	2,886.6	2,886.4	7.5	5.1	-115.11		-54.6	-120.0	364.4	352.0	12.39	29.422	
3,000.0	2,985.5	2,986.5	2,986.3	7.7	5.3	-114.97		-53.9	-120.6	364.7	351.9	12.78	28.540	
3,100.0	3,085.5	3,087.8	3,087.5	7.9	5.5	-114.83		-53.2	-121.1	364.8	351.6	13.18	27.688	
3,102.3	3,087.8	3,090.0	3,089.8	7.9	5.5	-114.83		-53.2	-121.1	364.8	351.6	13.18	27.669	
3,200.0	3,185.5	3,184.4	3,184.1	8.0	5.7	-114.74		-52.9	-121.7	365.3	351.7	13.57	26.924	
3,300.0	3,285.5	3,285.1	3,284.8	8.2	5.9	-114.69		-53.0	-122.8	366.2	352.3	13.97	26.213	
3,400.0	3,385.5	3,388.9	3,388.7	8.4	6.1	-114.72		-53.1	-122.7	366.2	351.8	14.38	25.463	
3,489.6	3,475.1	3,477.3	3,477.1	8.6	6.3	-114.82		-53.7	-122.2	366.0	351.3	14.74	24.826	
3,500.0	3,485.5	3,487.4	3,487.2	8.6	6.3	-114.84		-53.7	-122.2	366.0	351.3	14.79	24.756	
3,600.0	3,585.5	3,586.3	3,586.1	8.8	6.5	-114.99		-54.8	-122.1	366.4	351.2	15.19	24.114	
3,700.0	3,685.5	3,684.9	3,684.6	9.0	6.8	-115.07		-55.4	-122.2	366.8	351.2	15.60	23.515	
3,800.0	3,785.5	3,781.6	3,781.3	9.2	7.0	-115.24		-56.9	-122.9	368.1	352.1	16.00	22.999	
3,900.0	3,885.5	3,882.7	3,882.4	9.4	7.2	-115.38		-58.5	-124.1	369.8	353.4	16.42	22.525	
4,000.0	3,985.5	3,985.2	3,984.9	9.6	7.4	-115.64		-60.4	-124.2	370.8	353.9	16.84	22.022	
4,100.0	4,085.5	4,080.9	4,080.5	9.8	7.6	-115.96		-62.7	-124.2	371.8	354.6	17.24	21.564	
4,200.0	4,185.5	4,180.4	4,180.0	10.0	7.8	-116.10		-64.5	-125.7	373.9	356.3	17.65	21.181	
4,300.0	4,285.5	4,284.6	4,284.2	10.2	8.0	-116.18		-65.6	-126.9	375.4	357.4	18.08	20.770	
4,400.0	4,385.5	4,386.4	4,386.0	10.4	8.2	-116.28		-66.5	-127.2	376.0	357.5	18.49	20.335	
4,500.0	4,485.5	4,487.8	4,487.4	10.6	8.4	-116.36		-67.0	-127.0	376.1	357.2	18.91	19.891	
4,600.0	4,585.5	4,582.6	4,582.2	10.8	8.6	-116.45		-67.8	-127.3	376.8	357.5	19.31	19.511	
4,700.0	4,685.5	4,679.8	4,679.4	11.0	8.8	-116.42		-68.4	-129.1	378.7	358.9	19.73	19.196	
4,800.0	4,785.5	4,779.8	4,779.4	11.2	9.0	-116.24		-68.3	-131.4	380.7	360.6	20.14	18.901	
4,900.0	4,885.5	4,877.9	4,877.4	11.4	9.3	-116.05		-68.2	-134.1	383.1	362.6	20.56	18.636	
5,000.0	4,985.5	4,977.9	4,977.4	11.6	9.5	-115.82		-68.0	-137.2	385.9	364.9	20.98	18.394	
5,100.0	5,085.5	5,080.8	5,080.2	11.8	9.7	-115.65		-67.9	-139.8	388.1	366.7	21.40	18.133	
5,200.0	5,185.5	5,181.2	5,180.6	12.0	9.9	-115.59		-68.3	-141.5	389.7	367.9	21.82	17.860	
5,300.0	5,285.5	5,281.9	5,281.3	12.2	10.1	-115.56		-68.9	-143.1	391.5	369.3	22.25	17.599	
5,400.0	5,385.5	5,383.1	5,382.5	12.4	10.3	-115.58		-69.6	-144.4	392.9	370.2	22.67	17.331	
5,500.0	5,485.5	5,489.1	5,488.5	12.7	10.5	-115.54		-69.7	-145.1	393.5	370.4	23.10	17.036	
5,600.0	5,585.5	5,589.1	5,588.5	12.9	10.7	-115.55		-69.5	-144.7	393.2	369.6	23.52	16.716	
5,646.9	5,632.4	5,635.0	5,634.4	13.0	10.8	-115.64		-70.1	-144.4	393.1	369.4	23.72	16.575	
5,700.0	5,685.5	5,686.9	5,686.2	13.1	11.0	-115.80		-71.1	-144.0	393.2	369.2	23.94	16.424	

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 Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 943-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
5,800.0	5,785.5	5,790.5	5,789.9	13.3	11.2	-116.14	-73.1	-142.8	393.0	368.6	24.37	16.124	
5,900.0	5,885.5	5,889.6	5,888.9	13.5	11.4	-116.42	-74.6	-141.5	392.5	367.7	24.79	15.830	
6,000.0	5,985.5	5,988.6	5,987.9	13.7	11.6	-116.68	-76.1	-140.5	392.2	367.0	25.22	15.556	
6,100.0	6,085.5	6,088.2	6,087.5	13.9	11.8	-116.91	-77.5	-139.7	392.2	366.5	25.64	15.296	
6,116.9	6,102.4	6,105.0	6,104.3	14.0	11.8	-116.95	-77.8	-139.6	392.2	366.5	25.71	15.254	
6,200.0	6,185.5	6,187.0	6,186.3	14.1	12.0	-117.18	-79.2	-139.0	392.3	366.2	26.06	15.051	
6,300.0	6,285.5	6,297.1	6,296.3	14.4	12.2	-117.25	-79.6	-138.8	392.4	365.9	26.51	14.803	
6,400.0	6,385.5	6,433.5	6,430.8	14.6	12.5	-114.34	-57.6	-138.3	384.7	357.7	26.99	14.254	
6,485.8	6,471.3	6,528.3	6,520.7	14.7	12.7	-110.18	-27.9	-137.9	373.7	346.4	27.34	13.672	
6,500.0	6,485.5	6,541.3	6,532.7	14.8	12.7	-174.35	-22.9	-138.1	372.1	345.2	26.88	13.840	
6,550.0	6,535.4	6,590.4	6,577.2	14.9	12.8	-171.29	-2.1	-139.5	369.0	341.9	27.07	13.630	
6,568.0	6,553.3	6,609.8	6,594.3	14.9	12.9	-169.96	6.9	-140.2	368.7	341.6	27.13	13.592	
6,600.0	6,585.0	6,644.0	6,623.9	15.0	13.0	-167.43	24.1	-141.2	369.5	342.3	27.21	13.577 SF	
6,650.0	6,634.2	6,689.6	6,662.1	15.2	13.1	-163.80	48.9	-142.5	374.0	346.7	27.29	13.705	
6,700.0	6,682.7	6,729.7	6,694.6	15.4	13.3	-160.34	72.5	-143.9	383.2	355.9	27.31	14.033	
6,750.0	6,730.2	6,768.3	6,724.8	15.6	13.4	-156.81	96.3	-145.9	397.6	370.3	27.30	14.561	
6,800.0	6,776.7	6,805.7	6,753.5	15.8	13.6	-153.25	120.2	-147.8	416.3	389.1	27.30	15.253	
6,850.0	6,821.8	6,846.7	6,784.2	16.0	13.8	-149.29	147.3	-150.0	439.1	411.7	27.35	16.056	
6,900.0	6,865.5	6,880.3	6,808.7	16.3	13.9	-145.74	170.2	-151.8	465.3	437.9	27.40	16.983	
6,950.0	6,907.4	6,911.5	6,830.8	16.6	14.1	-142.12	192.2	-153.6	494.9	467.4	27.52	17.981	
7,000.0	6,947.5	6,940.0	6,850.3	17.0	14.3	-138.39	212.9	-155.5	527.5	499.8	27.75	19.012	
7,050.0	6,985.5	6,975.6	6,873.8	17.4	14.5	-134.03	239.5	-157.8	562.4	534.2	28.19	19.947	
7,100.0	7,021.4	7,004.3	6,892.0	17.8	14.7	-129.75	261.6	-159.4	599.1	570.3	28.76	20.831	
7,150.0	7,054.9	7,028.0	6,906.7	18.3	14.9	-125.35	280.3	-160.9	637.6	608.2	29.48	21.627	
7,200.0	7,085.9	7,057.0	6,924.4	18.9	15.1	-120.56	303.1	-162.6	677.5	647.0	30.43	22.265	
7,250.0	7,114.2	7,080.3	6,938.6	19.5	15.3	-115.64	321.5	-164.2	718.4	686.9	31.50	22.804	
7,300.0	7,139.8	7,098.2	6,949.3	20.1	15.4	-110.37	335.7	-165.5	760.6	727.8	32.71	23.252	
7,350.0	7,162.6	7,119.0	6,961.4	20.9	15.6	-104.78	352.6	-167.3	803.6	769.6	33.99	23.640	
7,400.0	7,182.4	7,130.3	6,967.7	21.6	15.7	-98.59	361.9	-168.3	847.3	812.1	35.26	24.033	
7,450.0	7,199.1	7,144.5	6,975.5	22.5	15.8	-92.20	373.7	-169.6	891.5	855.2	36.38	24.507	
7,500.0	7,212.7	7,158.2	6,982.8	23.3	16.0	-85.71	385.2	-170.9	936.1	898.9	37.25	25.131	
7,550.0	7,223.2	7,171.1	6,989.6	24.2	16.1	-79.26	396.2	-172.2	980.8	943.0	37.79	25.951	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-27.8	27.8					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-27.8	27.8	27.6	0.22	123.713		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-27.8	27.8	27.1	0.67	41.238 CC, ES		
300.0	300.0	300.0	300.0	0.6	0.6	-155.98	0.0	-27.8	29.4	28.3	1.12	26.159		
400.0	399.8	399.8	399.8	0.8	0.8	-159.52	0.0	-27.8	34.2	32.7	1.58	21.716		
500.0	499.5	499.5	499.5	1.0	1.0	-163.58	0.0	-27.8	42.5	40.5	2.03	20.895		
586.7	585.5	584.0	584.0	1.3	1.2	-166.40	0.0	-29.0	53.8	51.3	2.43	22.155		
600.0	598.7	596.9	596.9	1.3	1.2	-166.73	0.0	-29.4	55.9	53.4	2.49	22.490		
700.0	697.8	693.1	693.0	1.6	1.4	-168.26	0.0	-34.3	73.9	71.0	2.93	25.226		
800.0	796.9	788.1	787.6	2.0	1.6	-168.68	0.0	-42.3	95.2	91.8	3.38	28.146		
900.0	896.0	882.8	881.6	2.3	1.9	-168.58	0.0	-53.2	119.4	115.5	3.84	31.089		
1,000.0	995.1	979.6	977.7	2.6	2.2	-168.43	0.0	-65.2	144.4	140.1	4.29	33.677		
1,100.0	1,094.2	1,076.4	1,073.8	2.9	2.4	-168.32	0.0	-77.2	169.4	164.6	4.74	35.749		
1,200.0	1,193.2	1,173.2	1,169.9	3.3	2.7	-168.24	0.0	-89.2	194.4	189.2	5.19	37.427		
1,300.0	1,292.3	1,270.1	1,266.0	3.6	3.0	-168.18	0.0	-101.2	219.4	213.7	5.65	38.809		
1,400.0	1,391.4	1,366.9	1,362.0	3.9	3.3	-168.13	0.0	-113.2	244.4	238.3	6.11	39.967		
1,500.0	1,490.5	1,463.7	1,458.1	4.3	3.6	-168.09	0.0	-125.2	269.4	262.8	6.58	40.940		
1,600.0	1,589.6	1,560.5	1,554.2	4.6	3.9	-168.06	0.0	-137.1	294.4	287.3	7.05	41.782		
1,700.0	1,688.7	1,657.4	1,650.3	4.9	4.2	-168.03	0.0	-149.1	319.4	311.9	7.51	42.510		
1,800.0	1,787.8	1,754.2	1,746.3	5.3	4.5	-168.01	0.0	-161.1	344.4	336.4	7.98	43.146		
1,900.0	1,886.9	1,851.0	1,842.4	5.6	4.8	-167.99	0.0	-173.1	369.4	361.0	8.45	43.706		
1,927.9	1,914.5	1,878.0	1,869.2	5.7	4.9	-167.98	0.0	-176.5	376.4	367.8	8.58	43.850		
2,000.0	1,986.1	1,948.0	1,938.7	5.9	5.2	-168.02	0.0	-185.1	393.6	384.6	8.92	44.131		
2,100.0	2,085.7	2,045.8	2,035.7	6.1	5.5	-167.96	0.0	-197.2	414.5	405.2	9.35	44.327		
2,200.0	2,185.5	2,144.2	2,133.4	6.3	5.8	-167.81	0.0	-209.4	432.1	422.3	9.77	44.206		
2,300.0	2,285.5	2,243.2	2,231.6	6.5	6.1	-167.57	0.0	-221.7	446.3	436.2	10.19	43.815		
2,314.5	2,300.0	2,257.6	2,245.9	6.5	6.2	-102.99	0.0	-223.5	448.1	436.0	12.15	36.899		
2,400.0	2,385.5	2,342.4	2,330.0	6.6	6.4	-102.69	0.0	-234.0	458.5	445.9	12.55	36.545		
2,500.0	2,485.5	2,441.6	2,428.5	6.8	6.7	-102.36	0.0	-246.3	470.6	457.5	13.03	36.116		
2,600.0	2,585.5	2,540.9	2,527.0	7.0	7.1	-102.05	0.0	-258.6	482.7	469.1	13.52	35.710		
2,700.0	2,685.5	2,640.1	2,625.4	7.1	7.4	-101.75	0.0	-270.8	494.8	480.8	14.01	35.325		
2,800.0	2,785.5	2,739.3	2,723.9	7.3	7.7	-101.46	0.0	-283.1	506.9	492.4	14.50	34.960		
2,900.0	2,885.5	2,838.6	2,822.4	7.5	8.0	-101.19	0.0	-295.4	519.1	504.1	15.00	34.614		
3,000.0	2,985.5	2,937.8	2,920.8	7.7	8.4	-100.93	0.0	-307.7	531.2	515.7	15.49	34.285		
3,100.0	3,085.5	3,054.1	3,036.4	7.9	8.7	-100.67	0.0	-320.7	542.2	526.2	15.98	33.935		
3,200.0	3,185.5	3,176.8	3,158.8	8.0	8.9	-100.51	0.0	-329.3	549.2	532.8	16.41	33.460		
3,300.0	3,285.5	3,300.1	3,282.1	8.2	9.1	-100.44	0.0	-332.8	551.9	535.1	16.81	32.825		
3,400.0	3,385.5	3,403.5	3,385.5	8.4	9.3	-100.44	0.0	-332.8	551.9	534.8	17.17	32.137		
3,500.0	3,485.5	3,503.5	3,485.5	8.6	9.4	-100.44	0.0	-332.8	551.9	534.4	17.54	31.461		
3,600.0	3,585.5	3,603.5	3,585.5	8.8	9.6	-100.44	0.0	-332.8	551.9	534.0	17.92	30.807		
3,700.0	3,685.5	3,703.5	3,685.5	9.0	9.8	-100.44	0.0	-332.8	551.9	533.7	18.29	30.174		
3,800.0	3,785.5	3,803.5	3,785.5	9.2	9.9	-100.44	0.0	-332.8	551.9	533.3	18.67	29.562		
3,900.0	3,885.5	3,903.5	3,885.5	9.4	10.1	-100.44	0.0	-332.8	551.9	532.9	19.05	28.969		
4,000.0	3,985.5	4,003.5	3,985.5	9.6	10.3	-100.44	0.0	-332.8	551.9	532.5	19.44	28.395		
4,100.0	4,085.5	4,103.5	4,085.5	9.8	10.5	-100.44	0.0	-332.8	551.9	532.1	19.83	27.840		
4,200.0	4,185.5	4,203.5	4,185.5	10.0	10.7	-100.44	0.0	-332.8	551.9	531.7	20.22	27.303		
4,300.0	4,285.5	4,303.5	4,285.5	10.2	10.8	-100.44	0.0	-332.8	551.9	531.3	20.61	26.784		
4,400.0	4,385.5	4,403.5	4,385.5	10.4	11.0	-100.44	0.0	-332.8	551.9	530.9	21.00	26.280		
4,500.0	4,485.5	4,503.5	4,485.5	10.6	11.2	-100.44	0.0	-332.8	551.9	530.5	21.40	25.793		
4,600.0	4,585.5	4,603.5	4,585.5	10.8	11.4	-100.44	0.0	-332.8	551.9	530.1	21.80	25.321		
4,700.0	4,685.5	4,703.5	4,685.5	11.0	11.6	-100.44	0.0	-332.8	551.9	529.7	22.20	24.865		

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 Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,800.0	4,785.5	4,803.5	4,785.5	11.2	11.8	-100.44	0.0	-332.8	551.9	529.3	22.60	24.422		
4,900.0	4,885.5	4,903.5	4,885.5	11.4	12.0	-100.44	0.0	-332.8	551.9	528.9	23.00	23.993		
5,000.0	4,985.5	5,003.5	4,985.5	11.6	12.2	-100.44	0.0	-332.8	551.9	528.5	23.41	23.577		
5,100.0	5,085.5	5,103.5	5,085.5	11.8	12.4	-100.44	0.0	-332.8	551.9	528.1	23.82	23.174		
5,200.0	5,185.5	5,203.5	5,185.5	12.0	12.5	-100.44	0.0	-332.8	551.9	527.7	24.23	22.783		
5,300.0	5,285.5	5,303.5	5,285.5	12.2	12.7	-100.44	0.0	-332.8	551.9	527.3	24.64	22.404		
5,400.0	5,385.5	5,403.5	5,385.5	12.4	12.9	-100.44	0.0	-332.8	551.9	526.9	25.05	22.036		
5,500.0	5,485.5	5,503.5	5,485.5	12.7	13.1	-100.44	0.0	-332.8	551.9	526.5	25.46	21.678		
5,600.0	5,585.5	5,603.5	5,585.5	12.9	13.3	-100.44	0.0	-332.8	551.9	526.1	25.87	21.332		
5,700.0	5,685.5	5,703.5	5,685.5	13.1	13.5	-100.44	0.0	-332.8	551.9	525.7	26.29	20.995		
5,800.0	5,785.5	5,803.5	5,785.5	13.3	13.7	-100.44	0.0	-332.8	551.9	525.2	26.71	20.668		
5,900.0	5,885.5	5,903.5	5,885.5	13.5	13.9	-100.44	0.0	-332.8	551.9	524.8	27.12	20.350		
6,000.0	5,985.5	6,003.5	5,985.5	13.7	14.1	-100.44	0.0	-332.8	551.9	524.4	27.54	20.041		
6,100.0	6,085.5	6,103.5	6,085.5	13.9	14.3	-100.44	0.0	-332.8	551.9	524.0	27.96	19.740		
6,200.0	6,185.5	6,203.5	6,185.5	14.1	14.5	-100.44	0.0	-332.8	551.9	523.6	28.38	19.448		
6,300.0	6,285.5	6,303.5	6,285.5	14.4	14.7	-100.44	0.0	-332.8	551.9	523.1	28.80	19.164		
6,400.0	6,385.5	6,532.4	6,512.6	14.6	15.1	-100.89	-0.2	-310.9	545.5	516.2	29.35	18.583		
6,485.8	6,471.3	6,779.1	6,738.7	14.7	15.2	-103.39	-1.2	-215.0	512.2	482.5	29.76	17.210		
6,500.0	6,485.5	6,813.2	6,767.2	14.8	15.3	-169.04	-1.3	-196.1	504.7	476.0	28.65	17.615		
6,550.0	6,535.4	6,921.3	6,851.3	14.9	15.5	-172.28	-2.0	-128.4	476.0	447.2	28.83	16.510		
6,600.0	6,585.0	7,013.3	6,914.7	15.0	15.9	-176.28	-2.7	-61.8	445.1	416.2	28.95	15.376		
6,650.0	6,634.2	7,092.6	6,962.6	15.2	16.4	179.10	-3.3	1.2	413.1	384.0	29.05	14.217		
6,700.0	6,682.7	7,161.8	6,999.0	15.4	17.0	173.98	-3.9	60.2	380.7	351.4	29.21	13.033		
6,750.0	6,730.2	7,223.3	7,026.6	15.6	17.7	168.45	-4.4	115.0	348.7	319.2	29.48	11.829		
6,800.0	6,776.7	7,278.6	7,047.7	15.8	18.4	162.60	-4.9	166.2	318.0	288.1	29.93	10.627		
6,850.0	6,821.8	7,329.1	7,063.6	16.0	19.1	156.46	-5.4	214.1	289.5	258.9	30.61	9.457		
6,900.0	6,865.5	7,375.8	7,075.5	16.3	19.8	150.04	-5.8	259.2	264.2	232.7	31.57	8.369		
6,950.0	6,907.4	7,419.3	7,084.0	16.6	20.5	143.36	-6.3	301.9	243.3	210.5	32.81	7.416		
7,000.0	6,947.5	7,460.3	7,089.9	17.0	21.3	136.43	-6.7	342.5	228.2	193.9	34.32	6.649		
7,050.0	6,985.5	7,499.3	7,093.4	17.4	22.0	129.27	-7.1	381.3	220.0	184.0	36.04	6.104		
7,078.8	7,006.5	7,521.0	7,094.5	17.6	22.4	125.07	-7.3	402.9	218.7	181.6	37.11	5.894		
7,100.0	7,021.4	7,536.6	7,095.0	17.8	22.7	121.95	-7.4	418.5	219.4	181.5	37.89	5.790		
7,150.0	7,054.9	7,571.5	7,094.9	18.3	23.4	114.78	-7.8	453.4	226.4	186.7	39.69	5.702 SF		
7,200.0	7,085.9	7,606.7	7,094.7	18.9	24.1	107.65	-8.1	488.6	239.9	198.5	41.42	5.793		
7,250.0	7,114.2	7,643.6	7,094.5	19.5	24.9	100.67	-8.5	525.5	258.4	215.4	43.01	6.007		
7,300.0	7,139.8	7,682.1	7,094.2	20.1	25.7	94.17	-8.9	564.1	280.0	235.6	44.37	6.309		
7,350.0	7,162.6	7,722.1	7,094.0	20.9	26.6	88.40	-9.3	604.0	303.4	257.8	45.55	6.660		
7,400.0	7,182.4	7,763.3	7,093.7	21.6	27.5	83.50	-9.7	645.3	327.6	281.0	46.63	7.027		
7,450.0	7,199.1	7,805.7	7,093.5	22.5	28.4	79.46	-10.1	687.6	352.0	304.4	47.68	7.383		
7,500.0	7,212.7	7,849.0	7,093.2	23.3	29.4	76.24	-10.5	730.9	376.1	327.3	48.83	7.703		
7,550.0	7,223.2	7,893.0	7,092.9	24.2	30.5	73.76	-10.9	774.9	399.7	349.5	50.11	7.975		
7,600.0	7,230.4	7,937.5	7,092.6	25.2	31.5	71.91	-11.4	819.4	422.4	370.8	51.58	8.189		
7,605.8	7,231.0	7,942.7	7,092.6	25.3	31.7	71.74	-11.4	824.6	424.9	373.2	51.76	8.210		
7,675.8	7,238.3	8,005.4	7,092.2	26.7	33.2	72.09	-12.0	887.3	456.0	401.6	54.41	8.380		
7,700.0	7,240.6	8,027.1	7,092.1	27.2	33.7	71.73	-12.3	909.0	466.6	411.2	55.37	8.426		
7,809.2	7,245.0	8,126.6	7,091.4	29.5	36.2	70.95	-13.2	1,008.5	510.8	450.7	60.04	8.506		
7,900.0	7,244.7	8,209.9	7,090.9	31.4	38.3	72.15	-14.1	1,091.8	545.1	481.0	64.10	8.504		
8,000.0	7,244.3	8,301.8	7,090.3	33.6	40.6	73.31	-15.0	1,183.7	583.2	514.6	68.63	8.498		
8,100.0	7,243.9	8,393.6	7,089.8	35.9	43.0	74.33	-15.9	1,275.5	621.5	548.3	73.22	8.488		
8,200.0	7,243.4	8,485.5	7,089.2	38.2	45.4	75.23	-16.8	1,367.3	659.9	582.1	77.86	8.476		
8,300.0	7,243.0	8,577.3	7,088.6	40.6	47.8	76.03	-17.7	1,459.2	698.5	615.9	82.53	8.463		

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 Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design Leffler 11-HZ Pad Sec.1-T6N-R66W - Leffler 11-204 - Wellbore #1 - Plan #1 (8-16-12)												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
8,400.0	7,242.6	8,669.2	7,088.0	43.0	50.2	76.75	-18.6	1,551.0	737.1	649.9	87.24	8.449	
8,500.0	7,242.2	8,761.0	7,087.5	45.4	52.7	77.40	-19.5	1,642.9	775.9	683.9	91.98	8.435	
8,600.0	7,241.8	8,852.9	7,086.9	47.8	55.1	77.99	-20.4	1,734.7	814.7	718.0	96.74	8.421	
8,700.0	7,241.4	8,944.7	7,086.3	50.2	57.6	78.52	-21.3	1,826.6	853.6	752.1	101.52	8.408	
8,800.0	7,241.0	9,036.6	7,085.7	52.7	60.1	79.01	-22.2	1,918.4	892.5	786.2	106.33	8.394	
8,900.0	7,240.6	9,128.4	7,085.1	55.2	62.6	79.46	-23.1	2,010.2	931.5	820.4	111.14	8.381	
9,000.0	7,240.2	9,220.3	7,084.6	57.7	65.1	79.87	-24.0	2,102.1	970.6	854.6	115.98	8.369	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	28.08	411.7	219.7	466.6					
100.0	100.0	100.0	100.0	0.1	2.0	28.08	411.7	219.7	466.6	464.5	2.11	220.877		
200.0	200.0	200.0	200.0	0.3	4.0	28.08	411.7	219.7	466.6	462.3	4.34	107.582		
300.0	300.0	300.0	300.0	0.6	6.0	-36.60	411.7	219.7	465.2	458.7	6.56	70.969		
400.0	399.8	399.8	399.8	0.8	8.0	-37.03	411.7	219.7	461.0	452.3	8.77	52.588		
500.0	499.5	499.5	499.5	1.0	10.0	-37.78	411.7	219.7	454.1	443.1	10.97	41.376		
586.7	585.5	585.5	585.5	1.3	11.7	-38.70	411.7	219.7	445.9	433.0	12.89	34.605		
600.0	598.7	598.7	598.7	1.3	12.0	-38.84	411.7	219.7	444.5	431.3	13.18	33.717		
700.0	697.8	697.8	697.8	1.6	14.0	-39.95	411.7	219.7	434.1	418.7	15.43	28.133		
800.0	796.9	796.9	796.9	2.0	15.9	-41.11	411.7	219.7	423.8	406.1	17.69	23.965		
900.0	896.0	896.0	896.0	2.3	17.9	-42.33	411.7	219.7	413.7	393.8	19.95	20.740		
1,000.0	995.1	995.1	995.1	2.6	19.9	-43.61	411.7	219.7	403.8	381.6	22.22	18.175		
1,100.0	1,094.2	1,094.2	1,094.2	2.9	21.9	-44.96	411.7	219.7	394.2	369.7	24.50	16.089		
1,200.0	1,193.2	1,193.2	1,193.2	3.3	23.9	-46.37	411.7	219.7	384.7	357.9	26.78	14.364		
1,300.0	1,292.3	1,292.3	1,292.3	3.6	25.8	-47.85	411.7	219.7	375.5	346.4	29.08	12.915		
1,400.0	1,391.4	1,391.4	1,391.4	3.9	27.8	-49.40	411.7	219.7	366.6	335.2	31.38	11.683		
1,500.0	1,490.5	1,490.5	1,490.5	4.3	29.8	-51.02	411.7	219.7	357.9	324.2	33.68	10.626		
1,600.0	1,589.6	1,589.6	1,589.6	4.6	31.8	-52.73	411.7	219.7	349.6	313.6	36.00	9.711		
1,700.0	1,688.7	1,688.7	1,688.7	4.9	33.8	-54.51	411.7	219.7	341.5	303.2	38.32	8.913		
1,800.0	1,787.8	1,787.8	1,787.8	5.3	35.8	-56.38	411.7	219.7	333.9	293.2	40.64	8.214		
1,900.0	1,886.9	1,886.9	1,886.9	5.6	37.7	-58.34	411.7	219.7	326.5	283.6	42.98	7.598		
1,927.9	1,914.5	1,914.5	1,914.5	5.7	38.3	-58.90	411.7	219.7	324.6	280.9	43.63	7.439		
2,000.0	1,986.1	1,986.1	1,986.1	5.9	39.7	-60.16	411.7	219.7	320.1	274.8	45.31	7.064		
2,100.0	2,085.7	2,085.7	2,085.7	6.1	41.7	-61.53	411.7	219.7	315.6	268.0	47.57	6.634		
2,200.0	2,185.5	2,185.5	2,185.5	6.3	43.7	-62.40	411.7	219.7	312.9	263.1	49.78	6.285		
2,300.0	2,285.5	2,285.5	2,285.5	6.5	45.7	-62.75	411.7	219.7	311.8	259.9	51.95	6.003		
2,314.5	2,300.0	2,300.0	2,300.0	6.5	46.0	1.78	411.7	219.7	311.8	259.8	51.99	5.998		
2,400.0	2,385.5	2,385.5	2,385.5	6.6	47.7	1.78	411.7	219.7	311.8	258.0	53.84	5.792		
2,500.0	2,485.5	2,485.5	2,485.5	6.8	49.7	1.78	411.7	219.7	311.8	255.8	56.02	5.567		
2,600.0	2,585.5	2,585.5	2,585.5	7.0	51.7	1.78	411.7	219.7	311.8	253.6	58.20	5.358		
2,700.0	2,685.5	2,685.5	2,685.5	7.1	53.7	1.78	411.7	219.7	311.8	251.4	60.38	5.164		
2,800.0	2,785.5	2,785.5	2,785.5	7.3	55.7	1.78	411.7	219.7	311.8	249.3	62.56	4.984		
2,900.0	2,885.5	2,885.5	2,885.5	7.5	57.7	1.78	411.7	219.7	311.8	247.1	64.75	4.816		
3,000.0	2,985.5	2,985.5	2,985.5	7.7	59.7	1.78	411.7	219.7	311.8	244.9	66.94	4.658		
3,100.0	3,085.5	3,085.5	3,085.5	7.9	61.7	1.78	411.7	219.7	311.8	242.7	69.13	4.511		
3,200.0	3,185.5	3,185.5	3,185.5	8.0	63.7	1.78	411.7	219.7	311.8	240.5	71.32	4.372		
3,300.0	3,285.5	3,285.5	3,285.5	8.2	65.7	1.78	411.7	219.7	311.8	238.3	73.52	4.241		
3,400.0	3,385.5	3,385.5	3,385.5	8.4	67.7	1.78	411.7	219.7	311.8	236.1	75.71	4.118		
3,500.0	3,485.5	3,485.5	3,485.5	8.6	69.7	1.78	411.7	219.7	311.8	233.9	77.91	4.002		
3,600.0	3,585.5	3,585.5	3,585.5	8.8	71.7	1.78	411.7	219.7	311.8	231.7	80.11	3.892		
3,700.0	3,685.5	3,685.5	3,685.5	9.0	73.7	1.78	411.7	219.7	311.8	229.5	82.31	3.788		
3,800.0	3,785.5	3,785.5	3,785.5	9.2	75.7	1.78	411.7	219.7	311.8	227.3	84.51	3.690		
3,900.0	3,885.5	3,885.5	3,885.5	9.4	77.7	1.78	411.7	219.7	311.8	225.1	86.71	3.596		
4,000.0	3,985.5	3,985.5	3,985.5	9.6	79.7	1.78	411.7	219.7	311.8	222.9	88.92	3.507		
4,100.0	4,085.5	4,085.5	4,085.5	9.8	81.7	1.78	411.7	219.7	311.8	220.7	91.12	3.422		
4,200.0	4,185.5	4,185.5	4,185.5	10.0	83.7	1.78	411.7	219.7	311.8	218.5	93.33	3.341		
4,300.0	4,285.5	4,285.5	4,285.5	10.2	85.7	1.78	411.7	219.7	311.8	216.3	95.53	3.264		
4,400.0	4,385.5	4,385.5	4,385.5	10.4	87.7	1.78	411.7	219.7	311.8	214.1	97.74	3.190		
4,500.0	4,485.5	4,485.5	4,485.5	10.6	89.7	1.78	411.7	219.7	311.8	211.9	99.95	3.120		
4,600.0	4,585.5	4,585.5	4,585.5	10.8	91.7	1.78	411.7	219.7	311.8	209.7	102.16	3.052		
4,700.0	4,685.5	4,685.5	4,685.5	11.0	93.7	1.78	411.7	219.7	311.8	207.5	104.37	2.988		

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 Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7500-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
4,800.0	4,785.5	4,785.5	4,785.5	11.2	95.7	1.78	411.7	219.7	311.8	205.2	106.58	2.926		
4,900.0	4,885.5	4,885.5	4,885.5	11.4	97.7	1.78	411.7	219.7	311.8	203.0	108.79	2.866		
5,000.0	4,985.5	4,985.5	4,985.5	11.6	99.7	1.78	411.7	219.7	311.8	200.8	111.00	2.809		
5,100.0	5,085.5	5,085.5	5,085.5	11.8	101.7	1.78	411.7	219.7	311.8	198.6	113.21	2.754		
5,200.0	5,185.5	5,185.5	5,185.5	12.0	103.7	1.78	411.7	219.7	311.8	196.4	115.42	2.702		
5,300.0	5,285.5	5,285.5	5,285.5	12.2	105.7	1.78	411.7	219.7	311.8	194.2	117.63	2.651		
5,400.0	5,385.5	5,385.5	5,385.5	12.4	107.7	1.78	411.7	219.7	311.8	192.0	119.85	2.602		
5,500.0	5,485.5	5,485.5	5,485.5	12.7	109.7	1.78	411.7	219.7	311.8	189.8	122.06	2.555		
5,600.0	5,585.5	5,585.5	5,585.5	12.9	111.7	1.78	411.7	219.7	311.8	187.5	124.27	2.509		
5,700.0	5,685.5	5,685.5	5,685.5	13.1	113.7	1.78	411.7	219.7	311.8	185.3	126.49	2.465		
5,800.0	5,785.5	5,785.5	5,785.5	13.3	115.7	1.78	411.7	219.7	311.8	183.1	128.70	2.423		
5,900.0	5,885.5	5,885.5	5,885.5	13.5	117.7	1.78	411.7	219.7	311.8	180.9	130.92	2.382		
6,000.0	5,985.5	5,985.5	5,985.5	13.7	119.7	1.78	411.7	219.7	311.8	178.7	133.13	2.342		
6,100.0	6,085.5	6,085.5	6,085.5	13.9	121.7	1.78	411.7	219.7	311.8	176.5	135.35	2.304		
6,200.0	6,185.5	6,185.5	6,185.5	14.1	123.7	1.78	411.7	219.7	311.8	174.3	137.56	2.267		
6,300.0	6,285.5	6,285.5	6,285.5	14.4	125.7	1.78	411.7	219.7	311.8	172.0	139.78	2.231		
6,400.0	6,385.5	6,385.5	6,385.5	14.6	127.7	1.78	411.7	219.7	311.8	169.8	142.00	2.196		
6,485.8	6,471.3	6,471.3	6,471.3	14.7	129.4	1.78	411.7	219.7	311.8	167.9	143.90	2.167		
6,500.0	6,485.5	6,485.5	6,485.5	14.8	129.7	-63.14	411.7	219.7	311.8	167.4	144.40	2.159		
6,550.0	6,535.4	6,535.4	6,535.4	14.9	130.7	-63.64	411.7	219.7	310.6	165.2	145.43	2.136		
6,600.0	6,585.0	6,585.0	6,585.0	15.0	131.7	-64.78	411.7	219.7	308.1	161.7	146.38	2.105		
6,650.0	6,634.2	6,634.2	6,634.2	15.2	132.7	-66.56	411.7	219.7	304.3	157.0	147.30	2.066		
6,700.0	6,682.7	6,682.7	6,682.7	15.4	133.7	-68.99	411.7	219.7	299.5	151.3	148.26	2.020		
6,750.0	6,730.2	6,730.2	6,730.2	15.6	134.6	-72.05	411.7	219.7	294.1	144.8	149.34	1.970		
6,800.0	6,776.7	6,776.7	6,776.7	15.8	135.5	-75.71	411.7	219.7	288.7	138.1	150.58	1.917		
6,850.0	6,821.8	6,821.8	6,821.8	16.0	136.4	-79.89	411.7	219.7	283.7	131.7	151.98	1.866		
6,900.0	6,865.5	6,865.5	6,865.5	16.3	137.3	-84.47	411.7	219.7	279.9	126.5	153.44	1.824		
6,950.0	6,907.4	6,907.4	6,907.4	16.6	138.1	-89.28	411.7	219.7	278.1	123.4	154.77	1.797		
6,957.4	6,913.5	6,913.5	6,913.5	16.7	138.3	-90.00	411.7	219.7	278.1	123.2	154.94	1.795 CC, ES		
7,000.0	6,947.5	6,947.5	6,947.5	17.0	138.9	-94.12	411.7	219.7	279.3	123.5	155.76	1.793 SF		
7,050.0	6,985.5	6,985.5	6,985.5	17.4	139.7	-98.77	411.7	219.7	284.1	127.9	156.23	1.819		
7,100.0	7,021.4	7,021.4	7,021.4	17.8	140.4	-103.05	411.7	219.7	293.2	137.1	156.11	1.878		
7,150.0	7,054.9	7,054.9	7,054.9	18.3	141.1	-106.78	411.7	219.7	307.0	151.5	155.45	1.975		
7,200.0	7,085.9	7,085.9	7,085.9	18.9	141.7	-109.87	411.7	219.7	325.5	171.1	154.45	2.108		
7,250.0	7,114.2	7,114.2	7,114.2	19.5	142.3	-112.22	411.7	219.7	348.7	195.4	153.36	2.274		
7,300.0	7,139.8	7,139.8	7,139.8	20.1	142.8	-113.78	411.7	219.7	376.2	223.7	152.50	2.467		
7,350.0	7,162.6	7,162.6	7,162.6	20.9	143.3	-114.50	411.7	219.7	407.5	255.3	152.20	2.677		
7,400.0	7,182.4	7,182.4	7,182.4	21.6	143.6	-114.31	411.7	219.7	442.2	289.4	152.78	2.894		
7,450.0	7,199.1	7,199.1	7,199.1	22.5	144.0	-113.12	411.7	219.7	479.7	325.2	154.49	3.105		
7,500.0	7,212.7	7,212.7	7,212.7	23.3	144.3	-110.81	411.7	219.7	519.6	362.2	157.43	3.301		
7,550.0	7,223.2	7,223.2	7,223.2	24.2	144.5	-107.23	411.7	219.7	561.6	400.1	161.47	3.478		
7,600.0	7,230.4	7,230.4	7,230.4	25.2	144.6	-102.22	411.7	219.7	605.0	439.0	166.05	3.644		
7,605.8	7,231.0	7,231.0	7,231.0	25.3	144.6	-101.54	411.7	219.7	610.1	443.6	166.57	3.663		
7,675.8	7,238.3	7,238.3	7,238.3	26.7	144.8	-102.97	411.7	219.7	672.9	505.7	167.18	4.025		
7,700.0	7,240.6	7,240.6	7,240.6	27.2	144.8	-101.22	411.7	219.7	694.9	526.1	168.76	4.118		
7,809.2	7,245.0	7,245.0	7,245.0	29.5	144.9	-89.29	411.7	219.7	797.0	622.6	174.35	4.571		
7,900.0	7,244.7	7,244.7	7,244.7	31.4	144.9	-89.21	411.7	219.7	883.6	707.3	176.30	5.012		
8,000.0	7,244.3	7,244.3	7,244.3	33.6	144.9	-89.11	411.7	219.7	980.0	801.5	178.51	5.490		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 941-MWD													Offset Well Error:	0.0 ft
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-126.82	-43.7	-58.4	72.9	72.9	0.00	N/A		
100.0	100.0	101.1	101.1	0.1	0.1	-126.81	-43.7	-58.4	72.9	72.7	0.23	321.912		
200.0	200.0	201.2	201.2	0.3	0.2	-126.76	-43.5	-58.2	72.7	72.1	0.56	128.927		
207.5	207.5	208.7	208.7	0.4	0.2	168.71	-43.5	-58.2	72.7	72.1	0.59	123.524 CC, ES		
300.0	300.0	301.3	301.3	0.6	0.3	169.05	-43.2	-58.1	74.1	73.2	0.90	82.577		
400.0	399.8	401.2	401.2	0.8	0.5	169.86	-42.9	-57.8	78.8	77.6	1.23	63.863		
500.0	499.5	501.0	501.0	1.0	0.6	170.98	-42.4	-57.5	86.9	85.3	1.58	54.998		
586.7	585.5	587.2	587.2	1.3	0.7	172.05	-41.9	-57.1	96.6	94.7	1.89	51.177		
600.0	598.7	600.4	600.4	1.3	0.7	172.22	-41.8	-57.1	98.2	96.3	1.93	50.816		
700.0	697.8	699.7	699.7	1.6	0.8	173.33	-41.1	-56.6	110.8	108.5	2.28	48.511		
800.0	796.9	799.1	799.1	2.0	0.9	174.23	-40.3	-56.0	123.3	120.7	2.64	46.749		
900.0	896.0	898.4	898.4	2.3	1.0	175.00	-39.4	-55.4	135.7	132.7	2.99	45.353		
1,000.0	995.1	997.8	997.8	2.6	1.2	175.66	-38.4	-54.7	148.0	144.6	3.40	43.520		
1,100.0	1,094.2	1,097.2	1,097.1	2.9	1.4	176.27	-37.2	-54.0	160.3	156.4	3.85	41.668		
1,200.0	1,193.2	1,195.8	1,195.8	3.3	1.6	176.74	-36.2	-53.3	172.6	168.3	4.28	40.370		
1,300.0	1,292.3	1,294.1	1,294.1	3.6	1.8	177.10	-35.5	-53.0	185.4	180.7	4.70	39.468		
1,400.0	1,391.4	1,394.3	1,394.3	3.9	2.0	177.45	-34.8	-52.7	198.3	193.1	5.15	38.481		
1,500.0	1,490.5	1,492.3	1,492.3	4.3	2.2	177.81	-33.8	-52.4	211.0	205.4	5.59	37.717		
1,600.0	1,589.6	1,592.0	1,591.9	4.6	2.4	178.13	-33.0	-52.4	224.0	217.9	6.04	37.104		
1,700.0	1,688.7	1,689.8	1,689.7	4.9	2.6	178.39	-32.3	-52.5	237.2	230.7	6.48	36.627		
1,800.0	1,787.8	1,791.5	1,791.5	5.3	2.8	178.62	-31.5	-52.2	250.0	243.1	6.93	36.100		
1,900.0	1,886.9	1,890.1	1,890.0	5.6	3.0	178.81	-30.6	-51.6	262.5	255.2	7.37	35.630		
1,927.9	1,914.5	1,917.5	1,917.5	5.7	3.1	178.85	-30.3	-51.4	266.1	258.6	7.49	35.522		
2,000.0	1,986.1	1,988.4	1,988.3	5.9	3.2	178.95	-29.9	-51.2	274.4	266.6	7.79	35.226		
2,100.0	2,085.7	2,088.7	2,088.6	6.1	3.4	179.17	-29.0	-51.3	283.4	275.2	8.18	34.629		
2,200.0	2,185.5	2,192.4	2,192.3	6.3	3.6	179.33	-27.6	-50.2	287.6	279.0	8.58	33.533		
2,300.0	2,285.5	2,292.8	2,292.7	6.5	3.8	179.35	-26.6	-48.3	287.6	278.7	8.95	32.140		
2,314.5	2,300.0	2,307.3	2,307.2	6.5	3.9	-116.11	-26.4	-48.0	287.4	277.2	10.18	28.227		
2,400.0	2,385.5	2,393.1	2,393.0	6.6	4.1	-116.07	-25.5	-46.4	285.5	275.0	10.50	27.201		
2,500.0	2,485.5	2,493.5	2,493.3	6.8	4.3	-116.01	-24.1	-44.4	283.1	272.2	10.88	26.020		
2,600.0	2,585.5	2,593.1	2,592.9	7.0	4.5	-115.99	-23.0	-42.3	280.7	269.5	11.26	24.926		
2,700.0	2,685.5	2,692.2	2,692.0	7.1	4.7	-115.97	-22.0	-40.4	278.6	266.9	11.64	23.925		
2,800.0	2,785.5	2,791.3	2,791.0	7.3	4.9	-115.92	-20.9	-38.9	276.8	264.7	12.03	23.007		
2,900.0	2,885.5	2,890.9	2,890.6	7.5	5.1	-115.80	-19.8	-37.7	275.2	262.8	12.42	22.159		
3,000.0	2,985.5	2,990.5	2,990.2	7.7	5.3	-115.78	-19.0	-36.5	273.7	260.9	12.81	21.369		
3,100.0	3,085.5	3,089.8	3,089.5	7.9	5.5	-115.75	-18.4	-35.4	272.5	259.3	13.21	20.635		
3,200.0	3,185.5	3,189.0	3,188.8	8.0	5.7	-115.75	-17.9	-34.6	271.5	257.9	13.60	19.962		
3,300.0	3,285.5	3,289.2	3,289.0	8.2	5.9	-115.77	-17.7	-33.7	270.7	256.7	14.00	19.327		
3,400.0	3,385.5	3,389.4	3,389.1	8.4	6.2	-115.50	-16.1	-33.3	269.6	255.2	14.41	18.717		
3,500.0	3,485.5	3,487.5	3,487.2	8.6	6.4	-115.21	-14.5	-33.3	268.9	254.1	14.80	18.170		
3,525.1	3,510.5	3,511.9	3,511.5	8.7	6.4	-115.15	-14.3	-33.4	268.9	254.0	14.90	18.047		
3,600.0	3,585.5	3,584.8	3,584.5	8.8	6.6	-115.07	-14.0	-33.8	269.2	254.0	15.20	17.714		
3,700.0	3,685.5	3,683.5	3,683.2	9.0	6.8	-115.12	-14.7	-34.7	270.3	254.7	15.60	17.325		
3,800.0	3,785.5	3,783.1	3,782.8	9.2	7.0	-115.36	-16.3	-35.3	271.5	255.5	16.01	16.961		
3,900.0	3,885.5	3,885.3	3,884.9	9.4	7.2	-115.64	-18.0	-35.8	272.7	256.3	16.42	16.603		
4,000.0	3,985.5	3,987.9	3,987.6	9.6	7.4	-115.92	-19.2	-35.2	272.7	255.8	16.84	16.190		
4,100.0	4,085.5	4,087.0	4,086.7	9.8	7.6	-116.07	-19.7	-34.6	272.3	255.1	17.25	15.784		
4,200.0	4,185.5	4,187.8	4,187.4	10.0	7.8	-116.24	-20.3	-34.1	272.2	254.5	17.67	15.405		
4,300.0	4,285.5	4,291.5	4,291.1	10.2	8.0	-116.57	-21.3	-32.5	271.2	253.1	18.09	14.988		
4,400.0	4,385.5	4,392.5	4,392.1	10.4	8.2	-117.06	-22.4	-29.7	269.2	250.7	18.52	14.541		
4,500.0	4,485.5	4,491.0	4,490.5	10.6	8.4	-117.49	-23.4	-27.1	267.3	248.4	18.93	14.119		

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 Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 941-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4,579.7	4,565.1	4,566.6	4,566.2	10.7	8.6	-117.83	-24.5	-25.9	266.7	247.5	19.26	13.848		
4,600.0	4,585.5	4,586.1	4,585.6	10.8	8.6	-117.92	-24.9	-25.7	266.7	247.4	19.34	13.790		
4,700.0	4,685.5	4,682.2	4,681.7	11.0	8.8	-118.22	-26.6	-26.0	267.9	248.1	19.75	13.559		
4,800.0	4,785.5	4,779.5	4,779.0	11.2	9.0	-118.32	-28.0	-27.7	270.1	249.9	20.16	13.394		
4,900.0	4,885.5	4,877.8	4,877.2	11.4	9.2	-118.26	-29.4	-30.7	273.5	252.9	20.58	13.290		
5,000.0	4,985.5	4,981.1	4,980.4	11.6	9.5	-118.19	-30.4	-33.3	276.1	255.1	21.00	13.152		
5,100.0	5,085.5	5,081.4	5,080.7	11.8	9.7	-118.27	-31.7	-34.9	278.1	256.7	21.41	12.988		
5,200.0	5,185.5	5,181.9	5,181.2	12.0	9.9	-118.42	-33.3	-36.4	280.3	258.4	21.83	12.836		
5,300.0	5,285.5	5,283.4	5,282.7	12.2	10.1	-118.47	-34.3	-37.7	281.8	259.6	22.25	12.663		
5,400.0	5,385.5	5,384.4	5,383.7	12.4	10.3	-118.46	-34.8	-38.7	283.0	260.3	22.68	12.478		
5,500.0	5,485.5	5,483.5	5,482.8	12.7	10.5	-118.35	-34.8	-39.9	284.0	260.9	23.09	12.298		
5,600.0	5,585.5	5,584.1	5,583.4	12.9	10.7	-118.27	-35.1	-41.2	285.3	261.7	23.52	12.131		
5,700.0	5,685.5	5,684.2	5,683.5	13.1	10.9	-118.35	-35.9	-41.9	286.3	262.3	23.94	11.960		
5,800.0	5,785.5	5,785.3	5,784.6	13.3	11.1	-118.44	-36.7	-42.5	287.1	262.8	24.36	11.786		
5,900.0	5,885.5	5,883.8	5,883.0	13.5	11.3	-118.50	-37.4	-43.1	288.1	263.3	24.78	11.625		
6,000.0	5,985.5	5,983.9	5,983.1	13.7	11.5	-118.58	-38.3	-43.9	289.2	264.0	25.20	11.475		
6,100.0	6,085.5	6,083.2	6,082.5	13.9	11.8	-118.71	-39.5	-44.8	290.5	264.9	25.62	11.337		
6,200.0	6,185.5	6,183.9	6,183.2	14.1	12.0	-118.84	-40.7	-45.6	291.8	265.7	26.05	11.200		
6,300.0	6,285.5	6,307.5	6,306.7	14.4	12.2	-118.84	-40.2	-44.6	291.3	264.8	26.52	10.983		
6,400.0	6,385.5	6,460.2	6,456.3	14.6	12.6	-115.54	-14.9	-30.6	275.6	248.6	27.05	10.190		
6,485.8	6,471.3	6,579.8	6,567.7	14.7	12.9	-110.90	18.6	-3.2	247.4	219.9	27.47	9.006		
6,500.0	6,485.5	6,595.8	6,582.1	14.8	12.9	-174.94	24.0	1.3	241.9	214.9	27.02	8.954		
6,550.0	6,535.4	6,652.4	6,631.7	14.9	13.1	-171.16	45.6	18.0	223.6	196.4	27.23	8.210		
6,600.0	6,585.0	6,704.3	6,675.3	15.0	13.3	-166.35	69.0	33.6	207.5	180.1	27.40	7.574		
6,650.0	6,634.2	6,756.9	6,717.4	15.2	13.5	-160.27	95.6	50.4	194.2	166.7	27.56	7.046		
6,700.0	6,682.7	6,807.3	6,756.5	15.4	13.8	-153.83	122.1	68.0	184.3	156.6	27.77	6.638		
6,750.0	6,730.2	6,853.1	6,791.3	15.6	14.0	-147.64	146.9	84.5	179.1	151.1	28.03	6.390		
6,774.3	6,752.9	6,875.1	6,807.5	15.7	14.1	-144.49	159.4	92.5	178.4	150.2	28.20	6.329		
6,800.0	6,776.7	6,896.4	6,822.9	15.8	14.3	-141.32	172.0	100.1	179.3	150.9	28.39	6.315 SF		
6,850.0	6,821.8	6,942.0	6,854.7	16.0	14.6	-134.39	200.3	116.4	185.1	156.2	28.95	6.393		
6,900.0	6,865.5	6,992.8	6,888.4	16.3	15.0	-126.98	233.0	135.8	195.0	165.3	29.76	6.554		
6,950.0	6,907.4	7,047.3	6,922.7	16.6	15.4	-119.79	268.2	159.4	206.8	176.1	30.74	6.727		
7,000.0	6,947.5	7,096.3	6,951.1	17.0	15.9	-113.65	300.5	182.9	220.3	188.6	31.75	6.939		
7,050.0	6,985.5	7,139.4	6,974.8	17.4	16.3	-108.70	329.4	204.3	236.0	203.3	32.72	7.214		
7,100.0	7,021.4	7,179.7	6,996.0	17.8	16.7	-104.47	357.3	224.2	254.4	220.7	33.68	7.554		
7,150.0	7,054.9	7,218.9	7,014.8	18.3	17.2	-100.55	385.5	243.9	274.8	240.1	34.67	7.926		
7,200.0	7,085.9	7,255.4	7,030.3	18.9	17.6	-96.92	413.0	262.3	297.2	261.6	35.65	8.337		
7,250.0	7,114.2	7,297.5	7,045.3	19.5	18.2	-93.14	445.5	284.3	320.8	284.1	36.73	8.736		
7,300.0	7,139.8	7,334.8	7,056.4	20.1	18.7	-89.72	474.9	304.4	345.2	307.5	37.75	9.144		
7,350.0	7,162.6	7,375.6	7,066.7	20.9	19.2	-86.51	507.4	326.7	370.2	331.4	38.82	9.538		
7,400.0	7,182.4	7,408.9	7,073.9	21.6	19.7	-83.76	534.3	345.0	395.7	355.9	39.81	9.939		
7,450.0	7,199.1	7,431.0	7,078.0	22.5	20.0	-81.26	552.6	356.8	422.5	381.8	40.69	10.381		
7,500.0	7,212.7	7,463.7	7,082.8	23.3	20.5	-78.84	580.2	373.6	450.2	408.5	41.69	10.799		
7,550.0	7,223.2	7,502.8	7,087.2	24.2	21.1	-76.70	613.6	393.5	478.1	435.3	42.78	11.176		
7,600.0	7,230.4	7,535.0	7,090.3	25.2	21.6	-74.80	641.3	409.6	506.1	462.2	43.82	11.550		
7,605.8	7,231.0	7,535.0	7,090.3	25.3	21.6	-74.51	641.3	409.6	509.3	465.4	43.88	11.606		
7,675.8	7,238.3	7,609.3	7,095.0	26.7	22.7	-75.69	705.2	447.2	548.2	502.0	46.27	11.849		
7,700.0	7,240.6	7,628.0	7,095.6	27.2	23.1	-75.17	721.0	457.1	561.3	514.5	46.86	11.980		
7,809.2	7,245.0	7,733.1	7,094.7	29.5	24.8	-73.06	808.5	515.4	619.5	569.6	49.89	12.416		
7,900.0	7,244.7	7,832.8	7,094.1	31.4	26.5	-74.55	889.3	573.8	665.2	611.8	53.38	12.462		
8,000.0	7,244.3	7,912.7	7,092.7	33.6	27.9	-75.49	954.4	620.1	716.8	660.0	56.82	12.616		

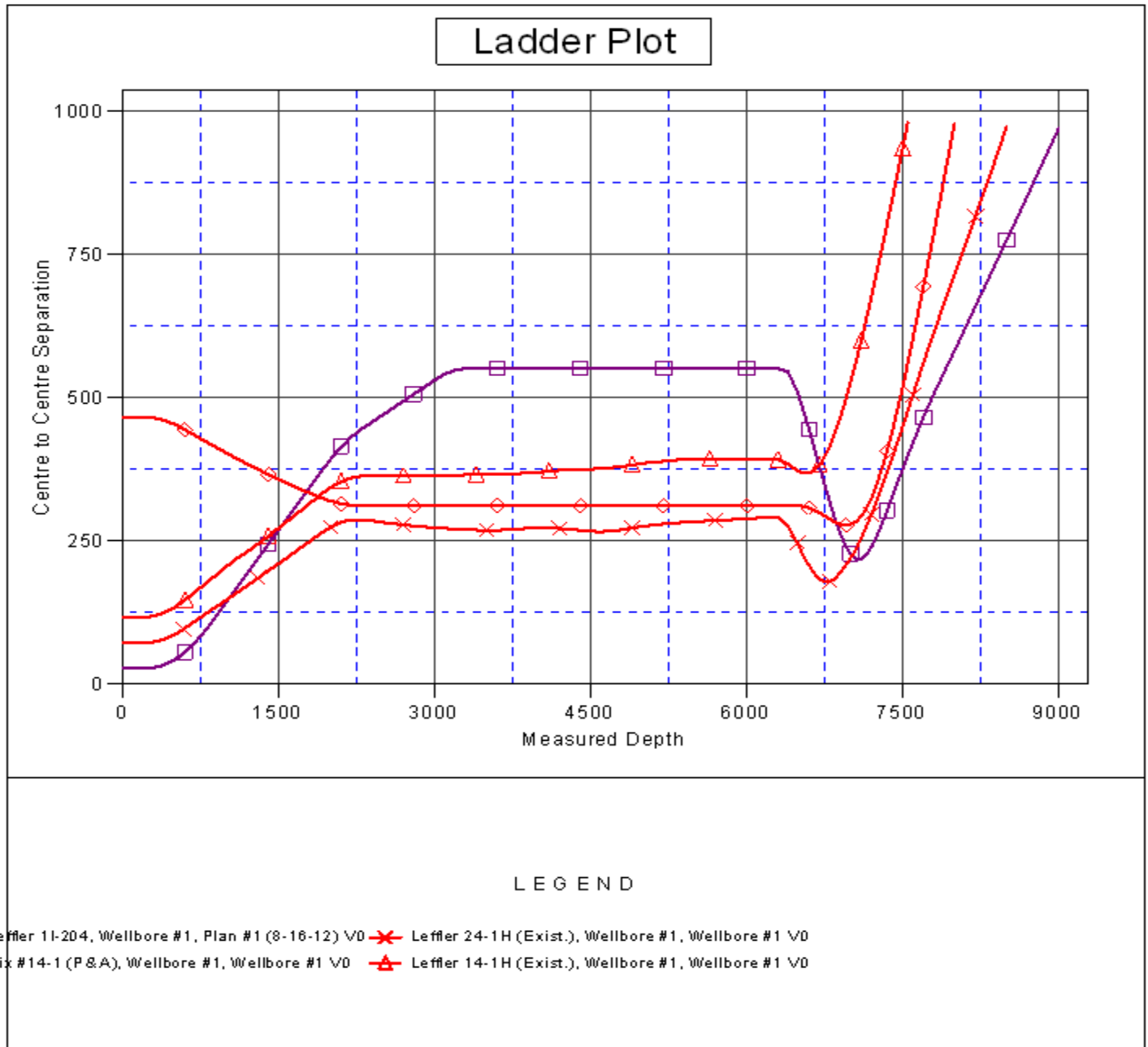
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Offset Design Leffler 24-1H Pad Sec.1-T6N-R66W - Leffler 24-1H (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 941-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,100.0	7,243.9	8,013.0	7,092.8	35.9	29.5	-76.64	1,035.2	679.4	767.0	706.4	60.61	12.655	
8,200.0	7,243.4	8,086.9	7,094.1	38.2	30.9	-77.49	1,094.7	723.2	817.2	753.1	64.09	12.751	
8,300.0	7,243.0	8,172.0	7,095.0	40.6	32.4	-78.32	1,163.9	772.7	868.6	800.8	67.80	12.812	
8,400.0	7,242.6	8,241.6	7,095.5	43.0	33.7	-78.93	1,220.8	812.8	920.8	849.6	71.27	12.920	
8,500.0	7,242.2	8,324.3	7,095.2	45.4	35.2	-79.51	1,288.5	860.3	973.6	898.6	75.00	12.981	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4830.0ft (Original Well Elev) Coordinates are relative to: Leffler 34-1CH
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: 0.50°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Leffler 34-1CH
Project:	SEC.1-T6N-R66W	TVD Reference:	WELL @ 4830.0ft (Original Well Elev)
Reference Site:	Leffler 11-HZ Pad Sec.1-T6N-R66W	MD Reference:	WELL @ 4830.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Leffler 34-1CH	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 #1 (8-16-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4830.0ft (Original Well Elev) Coordinates are relative to: Leffler 34-1CH
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: 0.50°

