

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **LDS 1W-414**

Surface Location: LDS 5N65W1W Pad Sec.1-T5N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

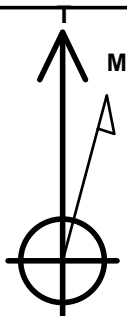
Ground Elevation: 4613.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1400431.92	3249728.92	40.429120	-104.602940	

Original Well Elev WELL @ 4628.0ft (Original Well Elev)

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2184'FNL & 334'FEL, Sec.1	1.0	0.0	0.0	Point
BHL 2367'FNL & 2144'FEL, Sec.2	6859.0	-173.8	-7138.3	Point



Azimuths to True North  
Magnetic North: 8.34°

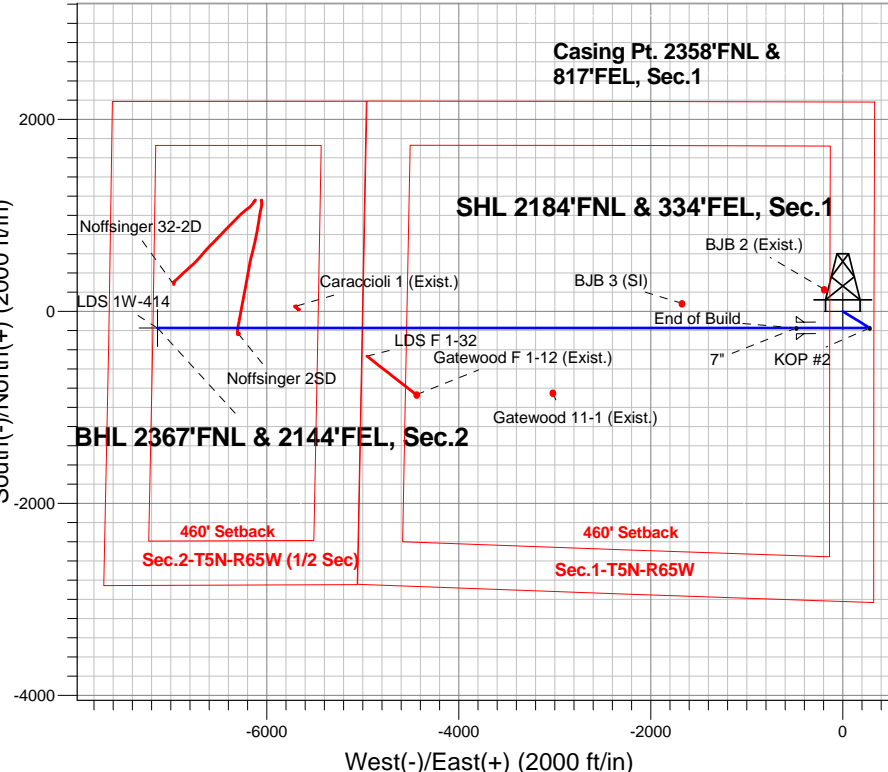
Magnetic Field  
Strength: 52825.6srT  
Dip Angle: 66.99°  
Date: 9/4/2014  
Model: IGRF2010

LDS 5N65W1W Pad Sec.1-T5N-R65W  
LDS 1W-414  
Plan #1 (9-4-14)

## ANNOTATIONS

TVD	MD	Annotation
1600.0	1600.0	KOP #1
6109.0	6128.9	KOP #2
6872.9	7330.5	End of Build

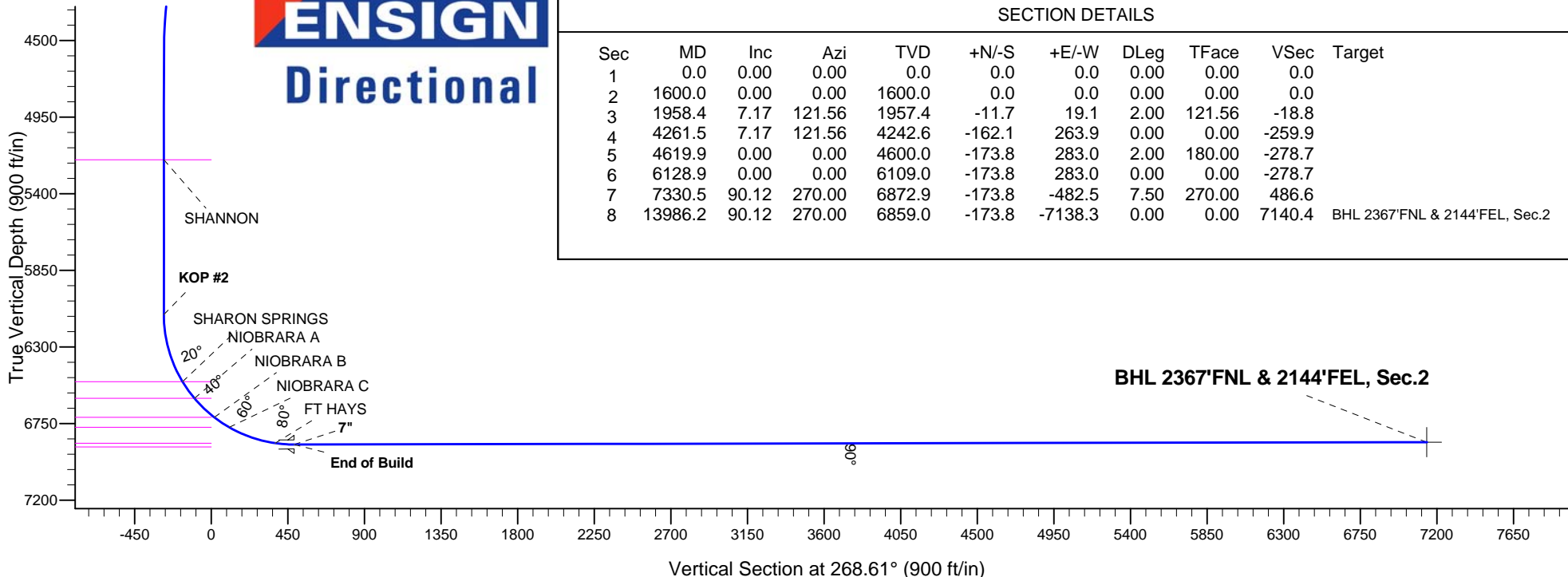
South(-)/North(+) (2000 ft/in)



**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	1958.4	7.17	121.56	1957.4	-11.7	19.1	2.00	121.56	-18.8	
4	4261.5	7.17	121.56	4242.6	-162.1	263.9	0.00	0.00	-259.9	
5	4619.9	0.00	0.00	4600.0	-173.8	283.0	2.00	180.00	-278.7	
6	6128.9	0.00	0.00	6109.0	-173.8	283.0	0.00	0.00	-278.7	
7	7330.5	90.12	270.00	6872.9	-173.8	-482.5	7.50	270.00	486.6	
8	13986.2	90.12	270.00	6859.0	-173.8	-7138.3	0.00	0.00	7140.4	BHL 2367'FNL & 2144'FEL, Sec.2





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.1-T5N-R65W**

**LDS 5N65W1W Pad Sec.1-T5N-R65W**

**LDS 1W-414**

**Wellbore #1**

**Plan: Plan #1 (9-4-14)**

## **Standard Planning Report**

**17 September, 2014**

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

<b>Project</b>	SEC.1-T5N-R65W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						LDS 5N65W1W Pad Sec.1-T5N-R65W											
Site Position:						Northing:			1,400,464.71 ft			Latitude:			40.429210		
From:			Lat/Long			Easting:			3,249,728.59ft			Longitude:			-104.602940		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.58 °		

Well	LDS 1W-414					
Well Position	+N/-S	-32.8 ft	Northing:	1,400,431.92 ft	Latitude:	40.429120
	+E/-W	0.0 ft	Easting:	3,249,728.92 ft	Longitude:	-104.602940
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,613.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/4/2014	8.35	66.99	52,826

<b>Design</b>	Plan #1 (9-4-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	268.61

<b>Plan Sections</b>										
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	
1,958.4	7.17	121.56	1,957.4	-11.7	19.1	2.00	2.00	0.00	121.56	
4,261.5	7.17	121.56	4,242.6	-162.1	263.9	0.00	0.00	0.00	0.00	
4,619.9	0.00	0.00	4,600.0	-173.8	283.0	2.00	-2.00	0.00	180.00	
6,128.9	0.00	0.00	6,109.0	-173.8	283.0	0.00	0.00	0.00	0.00	
7,330.5	90.12	270.00	6,872.9	-173.8	-482.5	7.50	7.50	0.00	270.00	
13,986.2	90.12	270.00	6,859.0	-173.8	-7,138.3	0.00	0.00	0.00	0.00	BHL 2367'FNL & 21

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

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
<b>KOP #1</b>									
1,700.0	2.00	121.56	1,700.0	-0.9	1.5	-1.5	2.00	2.00	0.00
1,800.0	4.00	121.56	1,799.8	-3.7	5.9	-5.9	2.00	2.00	0.00
1,900.0	6.00	121.56	1,899.5	-8.2	13.4	-13.2	2.00	2.00	0.00
1,958.4	7.17	121.56	1,957.4	-11.7	19.1	-18.8	2.00	2.00	0.00
2,000.0	7.17	121.56	1,998.7	-14.4	23.5	-23.1	0.00	0.00	0.00
2,100.0	7.17	121.56	2,098.0	-21.0	34.1	-33.6	0.00	0.00	0.00
2,200.0	7.17	121.56	2,197.2	-27.5	44.8	-44.1	0.00	0.00	0.00
2,300.0	7.17	121.56	2,296.4	-34.0	55.4	-54.5	0.00	0.00	0.00
2,400.0	7.17	121.56	2,395.6	-40.6	66.0	-65.0	0.00	0.00	0.00
2,500.0	7.17	121.56	2,494.8	-47.1	76.7	-75.5	0.00	0.00	0.00
2,600.0	7.17	121.56	2,594.1	-53.6	87.3	-86.0	0.00	0.00	0.00
2,700.0	7.17	121.56	2,693.3	-60.1	97.9	-96.4	0.00	0.00	0.00
2,800.0	7.17	121.56	2,792.5	-66.7	108.6	-106.9	0.00	0.00	0.00
2,900.0	7.17	121.56	2,891.7	-73.2	119.2	-117.4	0.00	0.00	0.00
3,000.0	7.17	121.56	2,990.9	-79.7	129.8	-127.8	0.00	0.00	0.00
3,100.0	7.17	121.56	3,090.1	-86.3	140.4	-138.3	0.00	0.00	0.00
3,200.0	7.17	121.56	3,189.4	-92.8	151.1	-148.8	0.00	0.00	0.00
3,300.0	7.17	121.56	3,288.6	-99.3	161.7	-159.2	0.00	0.00	0.00
3,400.0	7.17	121.56	3,387.8	-105.9	172.3	-169.7	0.00	0.00	0.00
3,499.0	7.17	121.56	3,486.0	-112.3	182.9	-180.1	0.00	0.00	0.00
<b>PARKMAN</b>									
3,500.0	7.17	121.56	3,487.0	-112.4	183.0	-180.2	0.00	0.00	0.00
3,600.0	7.17	121.56	3,586.2	-118.9	193.6	-190.6	0.00	0.00	0.00
3,700.0	7.17	121.56	3,685.5	-125.4	204.2	-201.1	0.00	0.00	0.00
3,800.0	7.17	121.56	3,784.7	-132.0	214.9	-211.6	0.00	0.00	0.00
3,900.0	7.17	121.56	3,883.9	-138.5	225.5	-222.1	0.00	0.00	0.00
4,000.0	7.17	121.56	3,983.1	-145.0	236.1	-232.5	0.00	0.00	0.00
4,100.0	7.17	121.56	4,082.3	-151.6	246.8	-243.0	0.00	0.00	0.00
4,200.0	7.17	121.56	4,181.6	-158.1	257.4	-253.5	0.00	0.00	0.00
4,261.5	7.17	121.56	4,242.6	-162.1	263.9	-259.9	0.00	0.00	0.00
4,262.9	7.14	121.56	4,244.0	-162.2	264.1	-260.1	2.00	-2.00	0.00
<b>SUSSEX</b>									
4,300.0	6.40	121.56	4,280.8	-164.5	267.8	-263.7	2.00	-2.00	0.00
4,400.0	4.40	121.56	4,380.4	-169.4	275.8	-271.6	2.00	-2.00	0.00
4,500.0	2.40	121.56	4,480.2	-172.5	280.9	-276.6	2.00	-2.00	0.00

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<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,600.0	0.40	121.56	4,580.1	-173.8	282.9	-278.6	2.00	-2.00	0.00
4,619.9	0.00	0.00	4,600.0	-173.8	283.0	-278.7	2.00	-2.00	0.00
4,700.0	0.00	0.00	4,680.1	-173.8	283.0	-278.7	0.00	0.00	0.00
4,800.0	0.00	0.00	4,780.1	-173.8	283.0	-278.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,880.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,980.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,100.0	0.00	0.00	5,080.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,200.0	0.00	0.00	5,180.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,219.9	0.00	0.00	5,200.0	-173.8	283.0	-278.7	0.00	0.00	0.00
<b>SHANNON</b>									
5,300.0	0.00	0.00	5,280.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,400.0	0.00	0.00	5,380.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,500.0	0.00	0.00	5,480.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,600.0	0.00	0.00	5,580.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,700.0	0.00	0.00	5,680.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,780.1	-173.8	283.0	-278.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,880.1	-173.8	283.0	-278.7	0.00	0.00	0.00
6,000.0	0.00	0.00	5,980.1	-173.8	283.0	-278.7	0.00	0.00	0.00
6,100.0	0.00	0.00	6,080.1	-173.8	283.0	-278.7	0.00	0.00	0.00
6,128.9	0.00	0.00	6,109.0	-173.8	283.0	-278.7	0.00	0.00	0.00
<b>KOP #2</b>									
6,200.0	5.34	270.00	6,180.0	-173.8	279.7	-275.4	7.50	7.50	0.00
6,300.0	12.84	270.00	6,278.7	-173.8	263.9	-259.6	7.50	7.50	0.00
6,400.0	20.34	270.00	6,374.5	-173.8	235.4	-231.1	7.50	7.50	0.00
6,500.0	27.84	270.00	6,465.7	-173.8	194.6	-190.3	7.50	7.50	0.00
6,544.0	31.14	270.00	6,504.0	-173.8	173.0	-168.7	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,600.0	35.34	270.00	6,550.8	-173.8	142.3	-138.0	7.50	7.50	0.00
6,664.7	40.19	270.00	6,602.0	-173.8	102.6	-98.4	7.50	7.50	0.00
<b>NIOBRARA A</b>									
6,700.0	42.84	270.00	6,628.4	-173.8	79.3	-75.0	7.50	7.50	0.00
6,800.0	50.34	270.00	6,697.1	-173.8	6.7	-2.4	7.50	7.50	0.00
6,825.5	52.25	270.00	6,713.0	-173.8	-13.2	17.4	7.50	7.50	0.00
<b>NIOBRARA B</b>									
6,900.0	57.84	270.00	6,755.7	-173.8	-74.3	78.5	7.50	7.50	0.00
6,931.7	60.21	270.00	6,772.0	-173.8	-101.4	105.6	7.50	7.50	0.00
<b>NIOBRARA C</b>									
7,000.0	65.34	270.00	6,803.2	-173.8	-162.1	166.3	7.50	7.50	0.00
7,100.0	72.84	270.00	6,838.9	-173.8	-255.5	259.6	7.50	7.50	0.00
7,200.0	80.34	270.00	6,862.1	-173.8	-352.7	356.8	7.50	7.50	0.00
7,218.6	81.73	270.00	6,865.0	-173.8	-371.1	375.2	7.50	7.50	0.00
<b>FT HAYS</b>									
7,300.0	87.84	270.00	6,872.4	-173.8	-452.1	456.2	7.50	7.50	0.00
7,330.5	90.12	270.00	6,872.9	-173.8	-482.6	486.7	7.49	7.49	0.00
<b>End of Build - 7"</b>									
7,400.0	90.12	270.00	6,872.8	-173.8	-552.1	556.2	0.00	0.00	0.00
7,500.0	90.12	270.00	6,872.6	-173.8	-652.1	656.1	0.00	0.00	0.00
7,600.0	90.12	270.00	6,872.4	-173.8	-752.1	756.1	0.00	0.00	0.00
7,700.0	90.12	270.00	6,872.2	-173.8	-852.1	856.1	0.00	0.00	0.00
7,800.0	90.12	270.00	6,872.0	-173.8	-952.1	956.0	0.00	0.00	0.00
7,900.0	90.12	270.00	6,871.7	-173.8	-1,052.1	1,056.0	0.00	0.00	0.00
8,000.0	90.12	270.00	6,871.5	-173.8	-1,152.1	1,156.0	0.00	0.00	0.00

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

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)
8,100.0	90.12	270.00	6,871.3	-173.8	-1,252.1	1,255.9	0.00	0.00	0.00
8,200.0	90.12	270.00	6,871.1	-173.8	-1,352.1	1,355.9	0.00	0.00	0.00
8,300.0	90.12	270.00	6,870.9	-173.8	-1,452.1	1,455.9	0.00	0.00	0.00
8,400.0	90.12	270.00	6,870.7	-173.8	-1,552.1	1,555.9	0.00	0.00	0.00
8,500.0	90.12	270.00	6,870.5	-173.8	-1,652.1	1,655.8	0.00	0.00	0.00
8,600.0	90.12	270.00	6,870.3	-173.8	-1,752.1	1,755.8	0.00	0.00	0.00
8,700.0	90.12	270.00	6,870.1	-173.8	-1,852.1	1,855.8	0.00	0.00	0.00
8,800.0	90.12	270.00	6,869.9	-173.8	-1,952.1	1,955.7	0.00	0.00	0.00
8,900.0	90.12	270.00	6,869.7	-173.8	-2,052.1	2,055.7	0.00	0.00	0.00
9,000.0	90.12	270.00	6,869.4	-173.8	-2,152.1	2,155.7	0.00	0.00	0.00
9,100.0	90.12	270.00	6,869.2	-173.8	-2,252.1	2,255.6	0.00	0.00	0.00
9,200.0	90.12	270.00	6,869.0	-173.8	-2,352.1	2,355.6	0.00	0.00	0.00
9,300.0	90.12	270.00	6,868.8	-173.8	-2,452.1	2,455.6	0.00	0.00	0.00
9,400.0	90.12	270.00	6,868.6	-173.8	-2,552.1	2,555.6	0.00	0.00	0.00
9,500.0	90.12	270.00	6,868.4	-173.8	-2,652.1	2,655.5	0.00	0.00	0.00
9,600.0	90.12	270.00	6,868.2	-173.8	-2,752.1	2,755.5	0.00	0.00	0.00
9,700.0	90.12	270.00	6,868.0	-173.8	-2,852.1	2,855.5	0.00	0.00	0.00
9,800.0	90.12	270.00	6,867.8	-173.8	-2,952.1	2,955.4	0.00	0.00	0.00
9,900.0	90.12	270.00	6,867.6	-173.8	-3,052.1	3,055.4	0.00	0.00	0.00
10,000.0	90.12	270.00	6,867.3	-173.8	-3,152.1	3,155.4	0.00	0.00	0.00
10,100.0	90.12	270.00	6,867.1	-173.8	-3,252.1	3,255.3	0.00	0.00	0.00
10,200.0	90.12	270.00	6,866.9	-173.8	-3,352.1	3,355.3	0.00	0.00	0.00
10,300.0	90.12	270.00	6,866.7	-173.8	-3,452.1	3,455.3	0.00	0.00	0.00
10,400.0	90.12	270.00	6,866.5	-173.8	-3,552.1	3,555.3	0.00	0.00	0.00
10,500.0	90.12	270.00	6,866.3	-173.8	-3,652.1	3,655.2	0.00	0.00	0.00
10,600.0	90.12	270.00	6,866.1	-173.8	-3,752.1	3,755.2	0.00	0.00	0.00
10,700.0	90.12	270.00	6,865.9	-173.8	-3,852.1	3,855.2	0.00	0.00	0.00
10,800.0	90.12	270.00	6,865.7	-173.8	-3,952.1	3,955.1	0.00	0.00	0.00
10,900.0	90.12	270.00	6,865.5	-173.8	-4,052.1	4,055.1	0.00	0.00	0.00
11,000.0	90.12	270.00	6,865.3	-173.8	-4,152.1	4,155.1	0.00	0.00	0.00
11,100.0	90.12	270.00	6,865.0	-173.8	-4,252.1	4,255.0	0.00	0.00	0.00
11,200.0	90.12	270.00	6,864.8	-173.8	-4,352.1	4,355.0	0.00	0.00	0.00
11,300.0	90.12	270.00	6,864.6	-173.8	-4,452.1	4,455.0	0.00	0.00	0.00
11,400.0	90.12	270.00	6,864.4	-173.8	-4,552.1	4,555.0	0.00	0.00	0.00
11,500.0	90.12	270.00	6,864.2	-173.8	-4,652.1	4,654.9	0.00	0.00	0.00
11,600.0	90.12	270.00	6,864.0	-173.8	-4,752.1	4,754.9	0.00	0.00	0.00
11,700.0	90.12	270.00	6,863.8	-173.8	-4,852.1	4,854.9	0.00	0.00	0.00
11,800.0	90.12	270.00	6,863.6	-173.8	-4,952.1	4,954.8	0.00	0.00	0.00
11,900.0	90.12	270.00	6,863.4	-173.8	-5,052.1	5,054.8	0.00	0.00	0.00
12,000.0	90.12	270.00	6,863.2	-173.8	-5,152.1	5,154.8	0.00	0.00	0.00
12,100.0	90.12	270.00	6,863.0	-173.8	-5,252.1	5,254.7	0.00	0.00	0.00
12,200.0	90.12	270.00	6,862.7	-173.8	-5,352.1	5,354.7	0.00	0.00	0.00
12,300.0	90.12	270.00	6,862.5	-173.8	-5,452.1	5,454.7	0.00	0.00	0.00
12,400.0	90.12	270.00	6,862.3	-173.8	-5,552.1	5,554.7	0.00	0.00	0.00
12,500.0	90.12	270.00	6,862.1	-173.8	-5,652.1	5,654.6	0.00	0.00	0.00
12,600.0	90.12	270.00	6,861.9	-173.8	-5,752.1	5,754.6	0.00	0.00	0.00
12,700.0	90.12	270.00	6,861.7	-173.8	-5,852.1	5,854.6	0.00	0.00	0.00
12,800.0	90.12	270.00	6,861.5	-173.8	-5,952.1	5,954.5	0.00	0.00	0.00
12,900.0	90.12	270.00	6,861.3	-173.8	-6,052.1	6,054.5	0.00	0.00	0.00
13,000.0	90.12	270.00	6,861.1	-173.8	-6,152.1	6,154.5	0.00	0.00	0.00
13,100.0	90.12	270.00	6,860.9	-173.8	-6,252.1	6,254.4	0.00	0.00	0.00
13,200.0	90.12	270.00	6,860.6	-173.8	-6,352.1	6,354.4	0.00	0.00	0.00
13,300.0	90.12	270.00	6,860.4	-173.8	-6,452.1	6,454.4	0.00	0.00	0.00

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

#### 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)
13,400.0	90.12	270.00	6,860.2	-173.8	-6,552.1	6,554.4	0.00	0.00	0.00
13,500.0	90.12	270.00	6,860.0	-173.8	-6,652.1	6,654.3	0.00	0.00	0.00
13,600.0	90.12	270.00	6,859.8	-173.8	-6,752.1	6,754.3	0.00	0.00	0.00
13,700.0	90.12	270.00	6,859.6	-173.8	-6,852.1	6,854.3	0.00	0.00	0.00
13,800.0	90.12	270.00	6,859.4	-173.8	-6,952.1	6,954.2	0.00	0.00	0.00
13,900.0	90.12	270.00	6,859.2	-173.8	-7,052.1	7,054.2	0.00	0.00	0.00
13,986.2	90.12	270.00	6,859.0	-173.8	-7,138.3	7,140.4	0.00	0.00	0.00

#### Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL 2367'FNL & 214' - plan hits target - Point	0.00	0.00	6,859.0	-173.8	-7,138.3	1,400,185.89	3,242,593.06	40.428640	-104.628580
SHL 2184'FNL & 334' - plan hits target - Point	0.00	0.00	1.0	0.0	0.0	1,400,431.93	3,249,728.92	40.429120	-104.602940

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,330.5	6,872.9	7"	7	7-1/2

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,499.0	3,486.0	PARKMAN		0.00	
4,262.9	4,244.0	SUSSEX		0.00	
5,219.9	5,200.0	SHANNON		0.00	
6,544.0	6,504.0	SHARON SPRINGS		0.00	
6,664.7	6,602.0	NIOBRARA A		0.00	
6,825.5	6,713.0	NIOBRARA B		0.00	
6,931.7	6,772.0	NIOBRARA C		0.00	
7,218.6	6,865.0	FT HAYS		0.00	
	6,887.0	CODELL		0.00	

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (9-4-14)		

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
6,128.9	6,109.0	-173.8	283.0	KOP #2
7,330.5	6,872.9	-173.8	-482.6	End of Build





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.1-T5N-R65W**

**LDS 5N65W1W Pad Sec.1-T5N-R65W**

**LDS 1W-414**

**Wellbore #1**

**Plan #1 (9-4-14)**

## **Anticollision Report**

**18 September, 2014**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (9-4-14)
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	MD Interval 100.0ft
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Elliptical Conic

Survey Tool Program		Date	9/17/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,986.2	Plan #1 (9-4-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Existing Wells Sec.1-T5N-R65W						
BJB 2 (Exist.) - Wellbore #1 - Wellbore #1	1,600.0	1,586.0	299.3	264.1	8.502	CC
BJB 2 (Exist.) - Wellbore #1 - Wellbore #1	7,032.6	6,802.2	403.3	249.9	2.629	ES, SF
BJB 3 (SI) - Wellbore #1 - Wellbore #1	8,521.1	6,874.4	257.7	68.3	1.360	Level 3, CC, ES, SF
Gatewood 11-1 (Exist.) - Wellbore #1 - Wellbore #1	9,868.7	6,874.6	674.8	448.6	2.983	CC
Gatewood 11-1 (Exist.) - Wellbore #1 - Wellbore #1	9,900.0	6,874.6	675.6	448.4	2.974	ES, SF
Gatewood F 1-12 (Exist.) - Wellbore #1 - Wellbore #1	11,285.8	6,873.7	692.8	427.2	2.608	CC
Gatewood F 1-12 (Exist.) - Wellbore #1 - Wellbore #1	11,300.0	6,873.6	693.0	427.0	2.605	ES, SF
Existing Wells Sec.2-T5N-R65W						
Caraccioli 1 (Exist.) - Wellbore #1 - Wellbore #1	12,536.9	6,878.2	230.1	53.2	1.300	Level 3, CC, ES, SF
LDS 5N65W1W Pad Sec.1-T5N-R65W						
LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)	1,400.0	1,400.0	61.9	55.9	10.205	CC, ES
LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)	13,987.0	13,851.3	623.5	229.7	1.584	SF
LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)	1,000.0	1,000.0	91.1	86.9	21.337	CC, ES
LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)	13,987.0	13,995.6	739.9	333.1	1.819	SF
LDS 1W-314 - Wellbore #1 - Plan #1 (9-4-14)	1,600.0	1,600.0	32.8	25.8	4.706	CC
LDS 1W-314 - Wellbore #1 - Plan #1 (9-4-14)	12,300.0	12,213.9	212.5	-78.4	0.730	Level 1, ES, SF
LDS F 1-32 pad Sec1-T5N-R65W						
LDS F 1-32 - Wellbore #1 - Design #1	11,804.5	6,929.6	292.8	132.2	1.823	CC, ES, SF
Noffsinger Pad Sec.2-T5N-R65W						
Noffsinger 2SD - Wellbore #1 - Wellbore #1	13,137.5	7,131.5	55.8	-141.1	0.284	Level 1, CC, ES, SF
Noffsinger 32-2D - Wellbore #1 - Wellbore #1	13,814.5	7,073.1	458.9	238.7	2.084	CC, ES, SF

<b>Offset Design</b>	Existing Wells Sec.1-T5N-R65W - BJB 2 (Exist.) - Wellbore #1 - Wellbore #1											<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b>	7050-UNKNOWN											<b>Offset Well Error:</b>	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)	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	-39.93	229.5	-192.1	299.6				
100.0	100.0	86.0	86.0	0.1	1.7	-39.93	229.5	-192.1	299.3	297.5	1.83	163.321	
200.0	200.0	186.0	186.0	0.3	3.7	-39.93	229.5	-192.1	299.3	295.2	4.06	73.767	
300.0	300.0	286.0	286.0	0.6	5.7	-39.93	229.5	-192.1	299.3	293.0	6.28	47.643	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 2 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7050-UNKNOWN													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
400.0	400.0	386.0	386.0	0.8	7.7	-39.93	229.5	-192.1	299.3	290.8	8.51	35.183		
500.0	500.0	486.0	486.0	1.0	9.7	-39.93	229.5	-192.1	299.3	288.6	10.73	27.889		
600.0	600.0	586.0	586.0	1.2	11.7	-39.93	229.5	-192.1	299.3	286.3	12.96	23.100		
700.0	700.0	686.0	686.0	1.5	13.7	-39.93	229.5	-192.1	299.3	284.1	15.18	19.715		
800.0	800.0	786.0	786.0	1.7	15.7	-39.93	229.5	-192.1	299.3	281.9	17.41	17.195		
900.0	900.0	886.0	886.0	1.9	17.7	-39.93	229.5	-192.1	299.3	279.7	19.63	15.246		
1,000.0	1,000.0	986.0	986.0	2.1	19.7	-39.93	229.5	-192.1	299.3	277.4	21.86	13.694		
1,100.0	1,100.0	1,086.0	1,086.0	2.4	21.7	-39.93	229.5	-192.1	299.3	275.2	24.08	12.429		
1,200.0	1,200.0	1,186.0	1,186.0	2.6	23.7	-39.93	229.5	-192.1	299.3	273.0	26.30	11.378		
1,300.0	1,300.0	1,286.0	1,286.0	2.8	25.7	-39.93	229.5	-192.1	299.3	270.8	28.53	10.491		
1,400.0	1,400.0	1,386.0	1,386.0	3.0	27.7	-39.93	229.5	-192.1	299.3	268.5	30.75	9.732		
1,500.0	1,500.0	1,486.0	1,486.0	3.3	29.7	-39.93	229.5	-192.1	299.3	266.3	32.98	9.075		
1,600.0	1,600.0	1,586.0	1,586.0	3.5	31.7	-39.93	229.5	-192.1	299.3	264.1	35.20	8.502 CC		
1,700.0	1,700.0	1,686.0	1,686.0	3.7	33.7	-161.58	229.5	-192.1	301.0	263.6	37.39	8.050		
1,800.0	1,799.8	1,785.8	1,785.8	3.9	35.7	-161.86	229.5	-192.1	305.9	266.4	39.50	7.744		
1,900.0	1,899.5	1,885.5	1,885.5	4.1	37.7	-162.31	229.5	-192.1	314.2	272.6	41.57	7.559		
2,000.0	1,998.7	1,984.7	1,984.7	4.3	39.7	-162.90	229.5	-192.1	325.6	281.9	43.65	7.459		
2,100.0	2,098.0	2,084.0	2,084.0	4.5	41.7	-163.53	229.5	-192.1	337.5	291.7	45.82	7.367		
2,200.0	2,197.2	2,183.2	2,183.2	4.8	43.7	-164.11	229.5	-192.1	349.5	301.5	47.99	7.283		
2,300.0	2,296.4	2,282.4	2,282.4	5.0	45.6	-164.65	229.5	-192.1	361.5	311.4	50.17	7.206		
2,400.0	2,395.6	2,381.6	2,381.6	5.3	47.6	-165.15	229.5	-192.1	373.6	321.2	52.35	7.136		
2,500.0	2,494.8	2,480.8	2,480.8	5.6	49.6	-165.63	229.5	-192.1	385.7	331.1	54.53	7.072		
2,600.0	2,594.1	2,580.1	2,580.1	5.8	51.6	-166.07	229.5	-192.1	397.8	341.1	56.72	7.013		
2,700.0	2,693.3	2,679.3	2,679.3	6.1	53.6	-166.49	229.5	-192.1	409.9	351.0	58.90	6.959		
2,800.0	2,792.5	2,778.5	2,778.5	6.4	55.6	-166.89	229.5	-192.1	422.0	360.9	61.09	6.908		
2,900.0	2,891.7	2,877.7	2,877.7	6.7	57.6	-167.26	229.5	-192.1	434.2	370.9	63.28	6.861		
3,000.0	2,990.9	2,976.9	2,976.9	7.0	59.5	-167.61	229.5	-192.1	446.4	380.9	65.47	6.818		
3,100.0	3,090.1	3,076.1	3,076.1	7.3	61.5	-167.95	229.5	-192.1	458.6	390.9	67.67	6.777		
3,200.0	3,189.4	3,175.4	3,175.4	7.6	63.5	-168.27	229.5	-192.1	470.8	400.9	69.86	6.739		
3,300.0	3,288.6	3,274.6	3,274.6	7.9	65.5	-168.57	229.5	-192.1	483.0	411.0	72.06	6.703		
3,400.0	3,387.8	3,373.8	3,373.8	8.2	67.5	-168.85	229.5	-192.1	495.3	421.0	74.25	6.670		
3,500.0	3,487.0	3,473.0	3,473.0	8.5	69.5	-169.12	229.5	-192.1	507.5	431.1	76.45	6.639		
3,600.0	3,586.2	3,572.2	3,572.2	8.8	71.4	-169.38	229.5	-192.1	519.8	441.1	78.65	6.609		
3,700.0	3,685.5	3,671.5	3,671.5	9.1	73.4	-169.63	229.5	-192.1	532.0	451.2	80.84	6.581		
3,800.0	3,784.7	3,770.7	3,770.7	9.4	75.4	-169.87	229.5	-192.1	544.3	461.3	83.04	6.555		
3,900.0	3,883.9	3,869.9	3,869.9	9.7	77.4	-170.09	229.5	-192.1	556.6	471.4	85.24	6.530		
4,000.0	3,983.1	3,969.1	3,969.1	10.0	79.4	-170.31	229.5	-192.1	568.9	481.5	87.44	6.506		
4,100.0	4,082.3	4,068.3	4,068.3	10.3	81.4	-170.52	229.5	-192.1	581.2	491.6	89.64	6.484		
4,200.0	4,181.6	4,167.6	4,167.6	10.7	83.4	-170.72	229.5	-192.1	593.5	501.7	91.84	6.462		
4,300.0	4,280.8	4,266.8	4,266.8	11.0	85.3	-170.92	229.5	-192.1	605.6	511.4	94.18	6.430		
4,400.0	4,380.4	4,366.4	4,366.4	11.2	87.3	-171.08	229.5	-192.1	614.9	518.2	96.64	6.362		
4,500.0	4,480.2	4,466.2	4,466.2	11.4	89.3	-171.19	229.5	-192.1	620.7	521.7	99.01	6.270		
4,600.0	4,580.1	4,566.1	4,566.1	11.6	91.3	-171.23	229.5	-192.1	623.2	521.9	101.26	6.154		
4,700.0	4,680.1	4,666.1	4,666.1	11.7	93.3	-49.67	229.5	-192.1	623.2	518.2	105.04	5.933		
4,800.0	4,780.1	4,766.1	4,766.1	11.9	95.3	-49.67	229.5	-192.1	623.2	516.0	107.22	5.813		
4,900.0	4,880.1	4,866.1	4,866.1	12.1	97.3	-49.67	229.5	-192.1	623.2	513.8	109.40	5.697		
5,000.0	4,980.1	4,966.1	4,966.1	12.3	99.3	-49.67	229.5	-192.1	623.2	511.6	111.58	5.586		
5,100.0	5,080.1	5,066.1	5,066.1	12.5	101.3	-49.67	229.5	-192.1	623.2	509.5	113.76	5.478		
5,200.0	5,180.1	5,166.1	5,166.1	12.7	103.3	-49.67	229.5	-192.1	623.2	507.3	115.94	5.375		
5,300.0	5,280.1	5,266.1	5,266.1	12.8	105.3	-49.67	229.5	-192.1	623.2	505.1	118.13	5.276		
5,400.0	5,380.1	5,366.1	5,366.1	13.0	107.3	-49.67	229.5	-192.1	623.2	502.9	120.32	5.180		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 2 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7050-UNKNOWN													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
5,500.0	5,480.1	5,466.1	5,466.1	13.2	109.3	-49.67	-49.67	229.5	-192.1	623.2	500.7	122.50	5.087	
5,600.0	5,580.1	5,566.1	5,566.1	13.4	111.3	-49.67	-49.67	229.5	-192.1	623.2	498.5	124.69	4.998	
5,700.0	5,680.1	5,666.1	5,666.1	13.6	113.3	-49.67	-49.67	229.5	-192.1	623.2	496.3	126.88	4.912	
5,800.0	5,780.1	5,766.1	5,766.1	13.8	115.3	-49.67	-49.67	229.5	-192.1	623.2	494.1	129.07	4.828	
5,900.0	5,880.1	5,866.1	5,866.1	14.0	117.3	-49.67	-49.67	229.5	-192.1	623.2	492.0	131.27	4.748	
6,000.0	5,980.1	5,966.1	5,966.1	14.2	119.3	-49.67	-49.67	229.5	-192.1	623.2	489.8	133.46	4.670	
6,100.0	6,080.1	6,066.1	6,066.1	14.4	121.3	-49.67	-49.67	229.5	-192.1	623.2	487.6	135.65	4.594	
6,200.0	6,180.0	6,166.0	6,166.0	14.5	123.3	40.65	40.65	229.5	-192.1	620.7	484.5	136.19	4.558	
6,300.0	6,278.7	6,264.7	6,264.7	14.6	125.3	42.21	42.21	229.5	-192.1	608.8	472.0	136.78	4.451	
6,400.0	6,374.5	6,360.5	6,360.5	14.7	127.2	45.18	45.18	229.5	-192.1	587.7	451.2	136.49	4.306	
6,500.0	6,465.7	6,451.7	6,451.7	14.7	129.0	49.71	49.71	229.5	-192.1	558.8	422.6	136.17	4.103	
6,600.0	6,550.8	6,536.8	6,536.8	14.8	130.7	55.93	55.93	229.5	-192.1	523.9	386.9	137.03	3.823	
6,700.0	6,628.4	6,614.4	6,614.4	14.9	132.3	63.74	63.74	229.5	-192.1	486.1	346.1	140.00	3.472	
6,800.0	6,697.1	6,683.1	6,683.1	15.3	133.7	72.54	72.54	229.5	-192.1	449.7	305.0	144.71	3.107	
6,900.0	6,755.7	6,741.7	6,741.7	15.9	134.8	81.16	81.16	229.5	-192.1	420.2	270.8	149.41	2.812	
7,000.0	6,803.2	6,789.2	6,789.2	17.0	135.8	88.23	88.23	229.5	-192.1	404.5	251.8	152.67	2.649	
7,032.6	6,816.2	6,802.2	6,802.2	17.4	136.0	90.00	90.00	229.5	-192.1	403.3	249.9	153.44	2.629 ES, SF	
7,100.0	6,838.9	6,824.9	6,824.9	18.3	136.5	92.66	92.66	229.5	-192.1	408.3	253.6	154.68	2.640	
7,200.0	6,862.1	6,848.1	6,848.1	20.0	137.0	93.82	93.82	229.5	-192.1	434.1	277.5	156.63	2.772	
7,300.0	6,872.4	6,858.4	6,858.4	21.9	137.2	91.39	91.39	229.5	-192.1	479.9	320.9	158.99	3.018	
7,400.0	6,872.8	6,858.8	6,858.8	23.9	137.2	89.89	89.89	229.5	-192.1	540.6	379.6	161.08	3.356	
7,500.0	6,872.6	6,858.6	6,858.6	26.1	137.2	89.86	89.86	229.5	-192.1	611.8	448.5	163.25	3.747	
7,600.0	6,872.4	6,858.4	6,858.4	28.4	137.2	89.83	89.83	229.5	-192.1	690.1	524.6	165.54	4.169	
7,700.0	6,872.2	6,858.2	6,858.2	30.8	137.2	89.80	89.80	229.5	-192.1	773.5	605.6	167.92	4.606	
7,800.0	6,872.0	6,858.0	6,858.0	33.2	137.2	89.77	89.77	229.5	-192.1	860.4	690.0	170.36	5.051	
7,900.0	6,871.7	6,857.7	6,857.7	35.7	137.2	89.74	89.74	229.5	-192.1	949.9	777.0	172.85	5.495	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.1-T5N-R65W - BJB 3 (SI) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7027-UNKNOWN												<b>Offset Well Error:</b>	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
7,600.0	6,872.4	6,876.4	6,876.4	28.4	137.5	90.43	83.8	-1,673.2	956.5	790.6	165.90	5.765	
7,700.0	6,872.2	6,876.2	6,876.2	30.8	137.5	90.38	83.8	-1,673.2	860.6	692.3	168.28	5.114	
7,800.0	6,872.0	6,876.0	6,876.0	33.2	137.5	90.34	83.8	-1,673.2	765.8	595.0	170.72	4.486	
7,900.0	6,871.7	6,875.7	6,875.7	35.7	137.5	90.29	83.8	-1,673.2	672.4	499.2	173.21	3.882	
8,000.0	6,871.5	6,875.5	6,875.5	38.3	137.5	90.24	83.8	-1,673.2	581.3	405.6	175.75	3.308	
8,100.0	6,871.3	6,875.3	6,875.3	40.8	137.5	90.20	83.8	-1,673.2	493.7	315.4	178.33	2.768	
8,200.0	6,871.1	6,875.1	6,875.1	43.4	137.5	90.15	83.8	-1,673.2	411.7	230.8	180.93	2.276	
8,300.0	6,870.9	6,874.9	6,874.9	46.1	137.5	90.10	83.8	-1,673.2	339.5	156.0	183.55	1.850	
8,400.0	6,870.7	6,874.7	6,874.7	48.7	137.5	90.06	83.8	-1,673.2	284.7	98.5	186.20	1.529	
8,500.0	6,870.5	6,874.5	6,874.5	51.4	137.5	90.01	83.8	-1,673.2	258.5	69.7	188.86	1.369 Level 3	
8,521.1	6,870.4	6,874.4	6,874.4	52.0	137.5	90.00	83.8	-1,673.2	257.7	68.3	189.43	1.360 Level 3, CC, ES, SF	
8,600.0	6,870.3	6,874.3	6,874.3	54.1	137.5	89.96	83.8	-1,673.2	269.5	77.9	191.54	1.407 Level 3	
8,700.0	6,870.1	6,874.1	6,874.1	56.8	137.5	89.92	83.8	-1,673.2	313.7	119.5	194.23	1.615	
8,800.0	6,869.9	6,873.9	6,873.9	59.5	137.5	89.87	83.8	-1,673.2	379.7	182.8	196.93	1.928	
8,900.0	6,869.7	6,873.7	6,873.7	62.2	137.5	89.82	83.8	-1,673.2	458.2	258.6	199.64	2.295	
9,000.0	6,869.4	6,873.4	6,873.4	64.9	137.5	89.78	83.8	-1,673.2	543.8	341.5	202.36	2.687	
9,100.0	6,869.2	6,873.2	6,873.2	67.6	137.5	89.73	83.8	-1,673.2	633.6	428.6	205.08	3.090	
9,200.0	6,869.0	6,873.0	6,873.0	70.4	137.5	89.68	83.8	-1,673.2	726.1	518.3	207.81	3.494	
9,300.0	6,868.8	6,872.8	6,872.8	73.1	137.5	89.64	83.8	-1,673.2	820.4	609.9	210.55	3.897	
9,400.0	6,868.6	6,872.6	6,872.6	75.9	137.5	89.59	83.8	-1,673.2	915.9	702.6	213.29	4.294	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.1-T5N-R65W - Gatewood 11-1 (Exist.) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7105-UNKNOWN													<b>Offset Well Error:</b>	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,200.0	6,869.0	6,876.0	6,876.0	70.4	137.5	-90.12	-848.7	-3,020.8	950.0	742.1	207.88	4.570		
9,300.0	6,868.8	6,875.8	6,875.8	73.1	137.5	-90.10	-848.7	-3,020.8	882.5	671.9	210.61	4.190		
9,400.0	6,868.6	6,875.6	6,875.6	75.9	137.5	-90.08	-848.7	-3,020.8	821.6	608.3	213.35	3.851		
9,500.0	6,868.4	6,875.4	6,875.4	78.6	137.5	-90.07	-848.7	-3,020.8	769.0	552.9	216.10	3.558		
9,600.0	6,868.2	6,875.2	6,875.2	81.4	137.5	-90.05	-848.7	-3,020.8	726.4	507.5	218.85	3.319		
9,700.0	6,868.0	6,875.0	6,875.0	84.1	137.5	-90.03	-848.7	-3,020.8	695.6	474.0	221.61	3.139		
9,800.0	6,867.8	6,874.8	6,874.8	86.9	137.5	-90.01	-848.7	-3,020.8	678.3	454.0	224.36	3.023		
9,868.7	6,867.6	6,874.6	6,874.6	88.8	137.5	-90.00	-848.7	-3,020.8	674.8	448.6	226.26	2.983 CC		
9,900.0	6,867.6	6,874.6	6,874.6	89.6	137.5	-89.99	-848.7	-3,020.8	675.6	448.4	227.12	2.974 ES, SF		
10,000.0	6,867.3	6,874.3	6,874.3	92.4	137.5	-89.98	-848.7	-3,020.8	687.5	457.6	229.89	2.991		
10,100.0	6,867.1	6,874.1	6,874.1	95.2	137.5	-89.96	-848.7	-3,020.8	713.4	480.7	232.65	3.066		
10,200.0	6,866.9	6,873.9	6,873.9	98.0	137.5	-89.94	-848.7	-3,020.8	751.8	516.4	235.42	3.193		
10,300.0	6,866.7	6,873.7	6,873.7	100.7	137.5	-89.92	-848.7	-3,020.8	800.9	562.7	238.19	3.362		
10,400.0	6,866.5	6,873.5	6,873.5	103.5	137.5	-89.91	-848.7	-3,020.8	858.9	617.9	240.96	3.564		
10,500.0	6,866.3	6,873.3	6,873.3	106.3	137.5	-89.89	-848.7	-3,020.8	924.1	680.4	243.74	3.791		
10,600.0	6,866.1	6,873.1	6,873.1	109.1	137.5	-89.87	-848.7	-3,020.8	995.1	748.6	246.51	4.037		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Gatewood F 1-12 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7049-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,600.0	6,866.1	6,875.1	6,875.1	109.1	137.5	-90.12	-866.7	-4,437.9	974.9	728.3	246.55	3.954		
10,700.0	6,865.9	6,874.9	6,874.9	111.8	137.5	-90.10	-866.7	-4,437.9	907.3	658.0	249.33	3.639		
10,800.0	6,865.7	6,874.7	6,874.7	114.6	137.5	-90.08	-866.7	-4,437.9	846.2	594.1	252.11	3.356		
10,900.0	6,865.5	6,874.5	6,874.5	117.4	137.5	-90.07	-866.7	-4,437.9	793.0	538.1	254.89	3.111		
11,000.0	6,865.3	6,874.3	6,874.3	120.2	137.5	-90.05	-866.7	-4,437.9	749.5	491.8	257.67	2.909		
11,100.0	6,865.0	6,874.0	6,874.0	123.0	137.5	-90.03	-866.7	-4,437.9	717.3	456.9	260.45	2.754		
11,200.0	6,864.8	6,873.8	6,873.8	125.8	137.5	-90.01	-866.7	-4,437.9	698.1	434.9	263.23	2.652		
11,285.8	6,864.7	6,873.7	6,873.7	128.2	137.5	-90.00	-866.7	-4,437.9	692.8	427.2	265.62	2.608 CC		
11,300.0	6,864.6	6,873.6	6,873.6	128.6	137.5	-90.00	-866.7	-4,437.9	693.0	427.0	266.02	2.605 ES, SF		
11,400.0	6,864.4	6,873.4	6,873.4	131.3	137.5	-89.98	-866.7	-4,437.9	702.2	433.4	268.80	2.612		
11,500.0	6,864.2	6,873.2	6,873.2	134.1	137.5	-89.96	-866.7	-4,437.9	725.2	453.6	271.59	2.670		
11,600.0	6,864.0	6,873.0	6,873.0	136.9	137.5	-89.95	-866.7	-4,437.9	760.8	486.4	274.37	2.773		
11,700.0	6,863.8	6,872.8	6,872.8	139.7	137.5	-89.93	-866.7	-4,437.9	807.2	530.0	277.16	2.912		
11,800.0	6,863.6	6,872.6	6,872.6	142.5	137.5	-89.91	-866.7	-4,437.9	862.8	582.9	279.95	3.082		
11,900.0	6,863.4	6,872.4	6,872.4	145.3	137.4	-89.89	-866.7	-4,437.9	925.9	643.1	282.74	3.275		
12,000.0	6,863.2	6,872.2	6,872.2	148.1	137.4	-89.88	-866.7	-4,437.9	995.0	709.5	285.52	3.485		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.2-T5N-R65W - Caraccioli 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
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)			
11,600.0	6,864.0	6,897.6	6,896.9	136.9	13.9	94.67	56.4	-5,688.6	964.5	814.2	150.36	6.415		
11,700.0	6,863.8	6,895.6	6,894.8	139.7	13.9	94.16	56.4	-5,688.6	867.8	714.5	153.24	5.663		
11,800.0	6,863.6	6,893.5	6,892.7	142.5	13.9	93.65	56.4	-5,688.7	771.8	615.7	156.11	4.944		
11,900.0	6,863.4	6,891.4	6,890.6	145.3	13.9	93.13	56.3	-5,688.7	677.1	518.1	158.98	4.259		
12,000.0	6,863.2	6,889.3	6,888.6	148.1	13.9	92.62	56.3	-5,688.7	584.0	422.2	161.83	3.609		
12,100.0	6,863.0	6,887.3	6,886.5	150.9	13.9	92.10	56.3	-5,688.8	493.7	329.0	164.68	2.998		
12,200.0	6,862.7	6,885.2	6,884.4	153.7	13.9	91.59	56.3	-5,688.8	407.9	240.4	167.51	2.435		
12,300.0	6,862.5	6,883.1	6,882.3	156.5	13.9	91.07	56.3	-5,688.9	330.2	159.9	170.34	1.939		
12,400.0	6,862.3	6,881.0	6,880.3	159.3	13.9	90.55	56.3	-5,688.9	267.8	94.6	173.15	1.546		
12,500.0	6,862.1	6,879.0	6,878.2	162.1	13.9	90.04	56.3	-5,688.9	233.1	57.1	175.96	1.325 Level 3		
12,536.9	6,862.0	6,878.2	6,877.4	163.1	13.9	89.85	56.3	-5,689.0	230.1	53.2	176.99	1.300 Level 3, CC, ES, SF		
12,600.0	6,861.9	6,876.9	6,876.1	164.9	13.9	89.52	56.3	-5,689.0	238.6	59.9	178.75	1.335 Level 3		
12,700.0	6,861.7	6,874.8	6,874.0	167.7	13.9	89.01	56.3	-5,689.0	282.1	100.5	181.52	1.554		
12,800.0	6,861.5	6,872.7	6,872.0	170.5	13.9	88.49	56.3	-5,689.1	349.5	165.2	184.29	1.897		
12,900.0	6,861.3	6,870.7	6,869.9	173.3	13.9	87.97	56.3	-5,689.1	429.8	242.8	187.03	2.298		
13,000.0	6,861.1	6,868.6	6,867.8	176.1	13.9	87.46	56.3	-5,689.1	517.1	327.3	189.77	2.725		
13,100.0	6,860.9	6,866.5	6,865.7	178.8	13.9	86.94	56.3	-5,689.2	608.2	415.7	192.48	3.160		
13,200.0	6,860.6	6,864.4	6,863.7	181.6	13.9	86.43	56.3	-5,689.2	701.8	506.6	195.18	3.596		
13,300.0	6,860.4	6,862.4	6,861.6	184.4	13.9	85.92	56.3	-5,689.2	796.9	599.0	197.87	4.028		
13,400.0	6,860.2	6,860.3	6,859.5	187.2	13.9	85.40	56.3	-5,689.3	893.1	692.6	200.53	4.454		
13,500.0	6,860.0	6,858.2	6,857.5	190.0	13.9	84.89	56.3	-5,689.3	990.0	786.9	203.18	4.873		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)													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)	+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	0.00	0.00	61.9	0.0	61.9				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.00	61.9	0.0	61.9	61.7	0.22	275.528	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.00	61.9	0.0	61.9	61.3	0.67	91.843	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	0.00	61.9	0.0	61.9	60.8	1.12	55.106	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	0.00	61.9	0.0	61.9	60.4	1.57	39.361	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	0.00	61.9	0.0	61.9	59.9	2.02	30.614	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	0.00	61.9	0.0	61.9	59.5	2.47	25.048	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	0.00	61.9	0.0	61.9	59.0	2.92	21.194	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	0.00	61.9	0.0	61.9	58.6	3.37	18.369	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	0.00	61.9	0.0	61.9	58.1	3.82	16.208	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	0.00	61.9	0.0	61.9	57.7	4.27	14.501	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	0.00	0.00	61.9	0.0	61.9	57.2	4.72	13.120	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	0.00	61.9	0.0	61.9	56.8	5.17	11.979	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	0.00	61.9	0.0	61.9	56.3	5.62	11.021	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	0.00	61.9	0.0	61.9	55.9	6.07	10.205 CC, ES	
1,500.0	1,500.0	1,498.3	1,498.3	3.3	3.3	0.93	0.93	63.3	1.0	63.3	56.8	6.51	9.721	
1,600.0	1,600.0	1,596.3	1,596.2	3.5	3.5	3.50	3.50	67.2	4.1	67.5	60.5	6.95	9.707	
1,700.0	1,700.0	1,693.9	1,693.4	3.7	3.7	-115.48	-115.48	73.8	9.2	75.4	68.1	7.38	10.221	
1,800.0	1,799.8	1,791.8	1,790.6	3.9	3.9	-114.36	-114.36	82.9	16.2	87.6	79.8	7.80	11.237	
1,900.0	1,899.5	1,890.8	1,888.9	4.1	4.2	-115.05	-115.05	92.4	23.6	101.7	93.5	8.22	12.373	
2,000.0	1,998.7	1,989.5	1,986.8	4.3	4.4	-117.03	-117.03	102.0	31.0	117.3	108.6	8.66	13.535	
2,100.0	2,098.0	2,088.1	2,084.7	4.5	4.7	-118.89	-118.89	111.5	38.4	133.2	124.1	9.12	14.600	
2,200.0	2,197.2	2,186.8	2,182.6	4.8	4.9	-120.35	-120.35	121.1	45.8	149.3	139.7	9.60	15.554	
2,300.0	2,296.4	2,285.4	2,280.5	5.0	5.2	-121.53	-121.53	130.6	53.2	165.4	155.3	10.08	16.408	
2,400.0	2,395.6	2,384.0	2,378.4	5.3	5.5	-122.50	-122.50	140.2	60.6	181.6	171.0	10.57	17.174	
2,500.0	2,494.8	2,482.7	2,476.3	5.6	5.8	-123.31	-123.31	149.7	68.0	197.8	186.8	11.08	17.863	
2,600.0	2,594.1	2,581.3	2,574.2	5.8	6.1	-124.00	-124.00	159.2	75.4	214.1	202.5	11.58	18.485	
2,700.0	2,693.3	2,680.0	2,672.1	6.1	6.3	-124.59	-124.59	168.8	82.8	230.4	218.3	12.10	19.047	
2,800.0	2,792.5	2,778.6	2,770.0	6.4	6.6	-125.10	-125.10	178.3	90.2	246.7	234.1	12.61	19.558	
2,900.0	2,891.7	2,877.2	2,867.9	6.7	6.9	-125.55	-125.55	187.9	97.5	263.0	249.9	13.14	20.022	
3,000.0	2,990.9	2,975.9	2,965.8	7.0	7.2	-125.95	-125.95	197.4	104.9	279.4	265.7	13.66	20.446	
3,100.0	3,090.1	3,074.5	3,063.7	7.3	7.5	-126.30	-126.30	206.9	112.3	295.7	281.6	14.20	20.834	
3,200.0	3,189.4	3,173.1	3,161.6	7.6	7.8	-126.62	-126.62	216.5	119.7	312.1	297.4	14.73	21.190	
3,300.0	3,288.6	3,271.8	3,259.5	7.9	8.1	-126.90	-126.90	226.0	127.1	328.5	313.2	15.27	21.518	
3,400.0	3,387.8	3,370.4	3,357.4	8.2	8.4	-127.16	-127.16	235.6	134.5	344.9	329.1	15.80	21.821	
3,500.0	3,487.0	3,469.1	3,455.3	8.5	8.7	-127.39	-127.39	245.1	141.9	361.3	344.9	16.35	22.101	
3,600.0	3,586.2	3,567.7	3,553.2	8.8	9.0	-127.61	-127.61	254.7	149.3	377.6	360.8	16.89	22.360	
3,700.0	3,685.5	3,666.3	3,651.1	9.1	9.3	-127.80	-127.80	264.2	156.7	394.0	376.6	17.43	22.601	
3,800.0	3,784.7	3,765.0	3,749.0	9.4	9.6	-127.98	-127.98	273.7	164.1	410.4	392.5	17.98	22.826	
3,900.0	3,883.9	3,863.6	3,846.9	9.7	9.9	-128.15	-128.15	283.3	171.5	426.9	408.3	18.53	23.036	
4,000.0	3,983.1	3,962.3	3,944.8	10.0	10.2	-128.30	-128.30	292.8	178.9	443.3	424.2	19.08	23.232	
4,100.0	4,082.3	4,060.9	4,042.7	10.3	10.5	-128.45	-128.45	302.4	186.2	459.7	440.0	19.63	23.416	
4,200.0	4,181.6	4,159.5	4,140.5	10.7	10.8	-128.58	-128.58	311.9	193.6	476.1	455.9	20.18	23.588	
4,300.0	4,280.8	4,258.2	4,238.5	11.0	11.1	-128.78	-128.78	321.5	201.0	492.3	471.6	20.74	23.741	
4,400.0	4,380.4	4,357.1	4,336.7	11.2	11.4	-128.85	-128.85	331.0	208.4	506.9	485.6	21.26	23.842	
4,500.0	4,480.2	4,456.3	4,435.1	11.4	11.7	-128.59	-128.59	340.6	215.9	519.2	497.4	21.76	23.866	
4,600.0	4,580.1	4,555.5	4,533.6	11.6	12.0	-128.02	-128.02	350.2	223.3	529.5	507.2	22.22	23.823	
4,700.0	4,680.1	4,654.8	4,632.1	11.7	12.4	-5.59	-5.59	359.8	230.8	538.4	516.1	22.22	24.225	
4,800.0	4,780.1	4,754.0	4,730.6	11.9	12.7	-4.72	-4.72	369.4	238.2	547.4	524.7	22.69	24.120	
4,900.0	4,880.1	4,853.3	4,829.1	12.1	13.0	-3.87	-3.87	379.0	245.6	556.5	533.3	23.17	24.021	
5,000.0	4,980.1	4,952.5	4,927.6	12.3	13.3	-3.05	-3.05	388.6	253.1	565.7	542.1	23.64	23.926	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWDD													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)				
5,100.0	5,080.1	5,051.8	5,026.1	12.5	13.6	-2.25	398.2	260.5	575.1	550.9	24.13	23.835			
5,200.0	5,180.1	5,151.0	5,124.6	12.7	13.9	-1.48	407.8	267.9	584.5	559.9	24.61	23.749			
5,300.0	5,280.1	5,264.7	5,237.5	12.8	14.2	-0.71	417.8	275.6	593.2	568.1	25.09	23.642			
5,400.0	5,380.1	5,383.9	5,356.5	13.0	14.4	-0.21	424.4	280.8	598.7	573.2	25.53	23.449			
5,500.0	5,480.1	5,503.7	5,476.2	13.2	14.6	-0.01	427.2	282.9	601.0	575.1	25.95	23.166			
5,600.0	5,580.1	5,607.6	5,580.1	13.4	14.8	0.00	427.3	283.0	601.1	574.8	26.32	22.835			
5,700.0	5,680.1	5,707.6	5,680.1	13.6	15.0	0.00	427.3	283.0	601.1	574.4	26.72	22.499			
5,800.0	5,780.1	5,807.6	5,780.1	13.8	15.2	0.00	427.3	283.0	601.1	574.0	27.11	22.172			
5,900.0	5,880.1	5,907.6	5,880.1	14.0	15.4	0.00	427.3	283.0	601.1	573.6	27.51	21.853			
5,966.2	5,946.3	5,973.8	5,946.3	14.1	15.5	0.00	427.3	283.0	601.1	573.3	27.77	21.646			
6,000.0	5,980.1	6,007.6	5,980.1	14.2	15.5	0.00	427.3	283.0	601.1	573.2	27.90	21.542			
6,025.7	6,005.9	6,033.3	6,005.8	14.2	15.6	-0.05	427.3	282.5	601.1	573.1	28.00	21.467			
6,100.0	6,080.1	6,107.0	6,079.2	14.4	15.7	-0.65	427.3	276.2	601.1	572.9	28.27	21.266			
6,200.0	6,180.0	6,203.8	6,174.1	14.5	15.7	87.82	427.3	257.3	601.6	572.8	28.78	20.903			
6,300.0	6,278.7	6,298.6	6,263.9	14.6	15.8	86.29	427.3	227.3	602.4	573.5	28.94	20.813			
6,400.0	6,374.5	6,391.6	6,347.8	14.7	15.8	84.83	427.3	187.3	603.6	574.6	29.05	20.776			
6,500.0	6,465.7	6,483.1	6,425.0	14.7	15.7	83.47	427.3	138.3	605.1	575.9	29.19	20.733			
6,600.0	6,550.8	6,573.2	6,494.8	14.8	15.7	82.22	427.3	81.3	606.8	577.3	29.44	20.610			
6,700.0	6,628.4	6,662.1	6,556.6	14.9	15.7	81.10	427.3	17.4	608.5	578.6	29.95	20.321			
6,800.0	6,697.1	6,750.0	6,609.9	15.3	15.8	80.12	427.3	-52.3	610.2	579.4	30.83	19.794			
6,900.0	6,755.7	6,837.2	6,654.6	15.9	16.7	79.29	427.3	-127.1	611.8	579.6	32.23	18.985			
7,000.0	6,803.2	6,923.6	6,690.3	17.0	17.7	78.63	427.3	-205.8	613.2	579.0	34.18	17.942			
7,100.0	6,838.9	7,009.5	6,716.6	18.3	19.0	78.14	427.3	-287.5	614.3	577.6	36.68	16.746			
7,200.0	6,862.1	7,095.1	6,733.6	20.0	20.5	77.82	427.3	-371.3	615.0	575.3	39.69	15.494			
7,300.0	6,872.4	7,180.5	6,741.1	21.9	22.1	77.68	427.3	-456.3	615.3	572.2	43.11	14.273			
7,400.0	6,872.8	7,275.3	6,741.1	23.9	24.0	77.64	427.3	-551.1	615.4	568.4	46.99	13.096			
7,500.0	6,872.6	7,375.3	6,740.3	26.1	26.2	77.59	427.3	-651.1	615.5	564.3	51.23	12.015			
7,600.0	6,872.4	7,475.3	6,739.6	28.4	28.5	77.55	427.3	-751.1	615.6	559.9	55.68	11.055			
7,700.0	6,872.2	7,575.3	6,738.9	30.8	30.8	77.50	427.3	-851.1	615.7	555.4	60.31	10.209			
7,800.0	6,872.0	7,675.3	6,738.2	33.2	33.3	77.45	427.3	-951.1	615.8	550.7	65.07	9.464			
7,900.0	6,871.7	7,775.3	6,737.5	35.7	35.7	77.41	427.3	-1,051.1	615.9	546.0	69.93	8.807			
8,000.0	6,871.5	7,875.3	6,736.8	38.3	38.3	77.36	427.3	-1,151.1	616.0	541.2	74.88	8.227			
8,100.0	6,871.3	7,975.3	6,736.0	40.8	40.8	77.32	427.3	-1,251.1	616.1	536.2	79.90	7.712			
8,200.0	6,871.1	8,075.3	6,735.3	43.4	43.4	77.27	427.3	-1,351.1	616.3	531.3	84.97	7.253			
8,300.0	6,870.9	8,175.3	6,734.6	46.1	46.1	77.22	427.3	-1,451.1	616.4	526.3	90.09	6.842			
8,400.0	6,870.7	8,275.3	6,733.9	48.7	48.7	77.18	427.3	-1,551.1	616.5	521.2	95.25	6.472			
8,500.0	6,870.5	8,375.3	6,733.2	51.4	51.4	77.13	427.3	-1,651.1	616.6	516.2	100.44	6.139			
8,600.0	6,870.3	8,475.3	6,732.5	54.1	54.0	77.09	427.3	-1,751.1	616.7	511.1	105.65	5.837			
8,700.0	6,870.1	8,575.3	6,731.8	56.8	56.7	77.04	427.3	-1,851.1	616.8	505.9	110.89	5.562			
8,800.0	6,869.9	8,675.3	6,731.0	59.5	59.4	77.00	427.3	-1,951.1	616.9	500.8	116.15	5.311			
8,900.0	6,869.7	8,775.3	6,730.3	62.2	62.1	76.95	427.3	-2,051.1	617.0	495.6	121.43	5.082			
9,000.0	6,869.4	8,875.3	6,729.6	64.9	64.8	76.90	427.3	-2,151.1	617.2	490.4	126.72	4.870			
9,100.0	6,869.2	8,975.3	6,728.9	67.6	67.6	76.86	427.3	-2,251.1	617.3	485.3	132.02	4.676			
9,200.0	6,869.0	9,075.3	6,728.2	70.4	70.3	76.81	427.3	-2,351.1	617.4	480.1	137.34	4.495			
9,300.0	6,868.8	9,175.3	6,727.5	73.1	73.0	76.77	427.3	-2,451.1	617.5	474.9	142.66	4.329			
9,400.0	6,868.6	9,275.3	6,726.7	75.9	75.8	76.72	427.3	-2,551.1	617.6	469.6	147.99	4.173			
9,500.0	6,868.4	9,375.3	6,726.0	78.6	78.5	76.68	427.3	-2,651.1	617.7	464.4	153.33	4.029			
9,600.0	6,868.2	9,475.3	6,725.3	81.4	81.3	76.63	427.3	-2,751.1	617.9	459.2	158.67	3.894			
9,700.0	6,868.0	9,575.3	6,724.6	84.1	84.0	76.58	427.3	-2,851.1	618.0	454.0	164.02	3.768			
9,800.0	6,867.8	9,675.3	6,723.9	86.9	86.8	76.54	427.3	-2,951.0	618.1	448.7	169.38	3.649			
9,900.0	6,867.6	9,775.3	6,723.2	89.6	89.5	76.49	427.3	-3,051.0	618.2	443.5	174.73	3.538			

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-234 - Wellbore #1 - Plan #1 (9-4-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,000.0	6,867.3	9,875.3	6,722.5	92.4	92.3	76.45	427.3	-3,151.0	618.3	438.2	180.09	3.433		
10,100.0	6,867.1	9,975.3	6,721.7	95.2	95.1	76.40	427.3	-3,251.0	618.4	433.0	185.46	3.335		
10,200.0	6,866.9	10,075.3	6,721.0	98.0	97.8	76.36	427.3	-3,351.0	618.6	427.7	190.83	3.242		
10,300.0	6,866.7	10,175.3	6,720.3	100.7	100.6	76.31	427.3	-3,451.0	618.7	422.5	196.19	3.153		
10,400.0	6,866.5	10,275.3	6,719.6	103.5	103.4	76.27	427.3	-3,551.0	618.8	417.2	201.57	3.070		
10,500.0	6,866.3	10,375.3	6,718.9	106.3	106.2	76.22	427.3	-3,651.0	618.9	412.0	206.94	2.991		
10,600.0	6,866.1	10,475.3	6,718.2	109.1	108.9	76.17	427.3	-3,751.0	619.0	406.7	212.31	2.916		
10,700.0	6,865.9	10,575.2	6,717.4	111.8	111.7	76.13	427.3	-3,851.0	619.2	401.5	217.69	2.844		
10,800.0	6,865.7	10,675.2	6,716.7	114.6	114.5	76.08	427.3	-3,951.0	619.3	396.2	223.06	2.776		
10,900.0	6,865.5	10,775.2	6,716.0	117.4	117.3	76.04	427.3	-4,051.0	619.4	391.0	228.44	2.712		
11,000.0	6,865.3	10,875.2	6,715.3	120.2	120.1	75.99	427.3	-4,151.0	619.5	385.7	233.81	2.650		
11,100.0	6,865.0	10,975.2	6,714.6	123.0	122.9	75.95	427.3	-4,251.0	619.7	380.5	239.19	2.591		
11,200.0	6,864.8	11,075.2	6,713.9	125.8	125.6	75.90	427.3	-4,351.0	619.8	375.2	244.56	2.534		
11,300.0	6,864.6	11,175.2	6,713.1	128.6	128.4	75.86	427.3	-4,451.0	619.9	370.0	249.94	2.480		
11,400.0	6,864.4	11,275.2	6,712.4	131.3	131.2	75.81	427.3	-4,551.0	620.0	364.7	255.32	2.428		
11,500.0	6,864.2	11,375.2	6,711.7	134.1	134.0	75.77	427.3	-4,651.0	620.2	359.5	260.69	2.379		
11,600.0	6,864.0	11,475.2	6,711.0	136.9	136.8	75.72	427.3	-4,751.0	620.3	354.2	266.07	2.331		
11,700.0	6,863.8	11,575.2	6,710.3	139.7	139.6	75.67	427.3	-4,851.0	620.4	349.0	271.44	2.286		
11,800.0	6,863.6	11,675.2	6,709.6	142.5	142.4	75.63	427.3	-4,951.0	620.5	343.7	276.81	2.242		
11,900.0	6,863.4	11,775.2	6,708.9	145.3	145.2	75.58	427.3	-5,051.0	620.7	338.5	282.19	2.199		
12,000.0	6,863.2	11,875.2	6,708.1	148.1	148.0	75.54	427.3	-5,151.0	620.8	333.2	287.56	2.159		
12,100.0	6,863.0	11,975.2	6,707.4	150.9	150.7	75.49	427.3	-5,251.0	620.9	328.0	292.93	2.120		
12,200.0	6,862.7	12,075.2	6,706.7	153.7	153.5	75.45	427.3	-5,351.0	621.0	322.7	298.30	2.082		
12,300.0	6,862.5	12,175.2	6,706.0	156.5	156.3	75.40	427.3	-5,451.0	621.2	317.5	303.67	2.046		
12,400.0	6,862.3	12,275.2	6,705.3	159.3	159.1	75.36	427.3	-5,550.9	621.3	312.3	309.03	2.010		
12,500.0	6,862.1	12,375.2	6,704.6	162.1	161.9	75.31	427.3	-5,650.9	621.4	307.0	314.40	1.977		
12,600.0	6,861.9	12,475.2	6,703.8	164.9	164.7	75.27	427.3	-5,750.9	621.5	301.8	319.76	1.944		
12,700.0	6,861.7	12,575.2	6,703.1	167.7	167.5	75.22	427.3	-5,850.9	621.7	296.5	325.13	1.912		
12,800.0	6,861.5	12,675.2	6,702.4	170.5	170.3	75.18	427.3	-5,950.9	621.8	291.3	330.49	1.881		
12,900.0	6,861.3	12,775.2	6,701.7	173.3	173.1	75.13	427.3	-6,050.9	621.9	286.1	335.85	1.852		
13,000.0	6,861.1	12,875.2	6,701.0	176.1	175.9	75.09	427.3	-6,150.9	622.1	280.9	341.21	1.823		
13,100.0	6,860.9	12,975.2	6,700.3	178.8	178.7	75.04	427.3	-6,250.9	622.2	275.6	346.57	1.795		
13,200.0	6,860.6	13,075.2	6,699.6	181.6	181.5	75.00	427.3	-6,350.9	622.3	270.4	351.92	1.768		
13,300.0	6,860.4	13,175.2	6,698.8	184.4	184.3	74.95	427.3	-6,450.9	622.5	265.2	357.28	1.742		
13,400.0	6,860.2	13,275.2	6,698.1	187.2	187.1	74.91	427.3	-6,550.9	622.6	260.0	362.63	1.717		
13,500.0	6,860.0	13,375.2	6,697.4	190.0	189.9	74.86	427.3	-6,650.9	622.7	254.7	367.98	1.692		
13,600.0	6,859.8	13,475.2	6,696.7	192.8	192.7	74.82	427.3	-6,750.9	622.9	249.5	373.33	1.668		
13,700.0	6,859.6	13,575.2	6,696.0	195.6	195.5	74.77	427.3	-6,850.9	623.0	244.3	378.68	1.645		
13,800.0	6,859.4	13,675.2	6,695.3	198.4	198.3	74.73	427.3	-6,950.9	623.1	239.1	384.02	1.623		
13,900.0	6,859.2	13,775.2	6,694.5	201.2	201.1	74.68	427.3	-7,050.9	623.3	233.9	389.37	1.601		
13,943.8	6,859.1	13,819.0	6,694.2	202.5	202.3	74.66	427.3	-7,094.7	623.3	231.6	391.70	1.591		
13,987.0	6,859.0	13,851.3	6,694.0	203.7	203.2	74.65	427.3	-7,127.0	623.5	229.7	393.72	1.584 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)													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	0.0	0.0	0.0	0.0	1.75	1.75	91.1	2.8	91.1				
100.0	100.0	100.0	100.0	0.1	0.1	1.75	1.75	91.1	2.8	91.1	90.9	0.22	405.404	
200.0	200.0	200.0	200.0	0.3	0.3	1.75	1.75	91.1	2.8	91.1	90.4	0.67	135.135	
300.0	300.0	300.0	300.0	0.6	0.6	1.75	1.75	91.1	2.8	91.1	90.0	1.12	81.081	
400.0	400.0	400.0	400.0	0.8	0.8	1.75	1.75	91.1	2.8	91.1	89.5	1.57	57.915	
500.0	500.0	500.0	500.0	1.0	1.0	1.75	1.75	91.1	2.8	91.1	89.1	2.02	45.045	
600.0	600.0	600.0	600.0	1.2	1.2	1.75	1.75	91.1	2.8	91.1	88.6	2.47	36.855	
700.0	700.0	700.0	700.0	1.5	1.5	1.75	1.75	91.1	2.8	91.1	88.2	2.92	31.185	
800.0	800.0	800.0	800.0	1.7	1.7	1.75	1.75	91.1	2.8	91.1	87.7	3.37	27.027	
900.0	900.0	900.0	900.0	1.9	1.9	1.75	1.75	91.1	2.8	91.1	87.3	3.82	23.847	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	1.75	1.75	91.1	2.8	91.1	86.9	4.27	21.337 CC, ES	
1,100.0	1,100.0	1,097.3	1,097.2	2.4	2.4	2.25	2.25	92.5	3.6	92.6	87.9	4.71	19.654	
1,200.0	1,200.0	1,194.3	1,194.1	2.6	2.6	3.64	3.64	96.7	6.2	97.1	92.0	5.15	18.846	
1,300.0	1,300.0	1,290.9	1,290.4	2.8	2.8	5.69	5.69	103.8	10.3	104.7	99.1	5.60	18.713	
1,400.0	1,400.0	1,386.8	1,385.6	3.0	3.0	8.09	8.09	113.5	16.1	115.5	109.5	6.04	19.115	
1,500.0	1,500.0	1,483.6	1,481.3	3.3	3.3	10.57	10.57	125.8	23.5	129.3	122.8	6.50	19.888	
1,600.0	1,600.0	1,582.4	1,579.0	3.5	3.6	12.69	12.69	138.8	31.2	143.8	136.9	6.97	20.626	
1,700.0	1,700.0	1,681.2	1,676.6	3.7	3.8	-107.46	-107.46	151.8	39.0	159.0	151.6	7.40	21.495	
1,800.0	1,799.8	1,779.9	1,774.1	3.9	4.2	-107.33	-107.33	164.8	46.8	175.3	167.5	7.82	22.410	
1,900.0	1,899.5	1,878.3	1,871.4	4.1	4.5	-108.16	-108.16	177.8	54.5	192.6	184.3	8.26	23.319	
2,000.0	1,998.7	1,976.4	1,968.3	4.3	4.8	-109.74	-109.74	190.8	62.2	211.0	202.3	8.72	24.209	
2,100.0	2,098.0	2,074.4	2,065.1	4.5	5.1	-111.39	-111.39	203.7	69.9	229.8	220.6	9.19	24.999	
2,200.0	2,197.2	2,172.4	2,162.0	4.8	5.4	-112.78	-112.78	216.6	77.6	248.8	239.1	9.68	25.692	
2,300.0	2,296.4	2,270.4	2,258.9	5.0	5.7	-113.98	-113.98	229.5	85.3	267.9	257.7	10.18	26.302	
2,400.0	2,395.6	2,368.4	2,355.7	5.3	6.1	-115.02	-115.02	242.4	93.0	287.1	276.4	10.70	26.841	
2,500.0	2,494.8	2,466.5	2,452.6	5.6	6.4	-115.93	-115.93	255.4	100.7	306.3	295.1	11.21	27.319	
2,600.0	2,594.1	2,564.5	2,549.4	5.8	6.7	-116.73	-116.73	268.3	108.4	325.7	313.9	11.74	27.744	
2,700.0	2,693.3	2,662.5	2,646.3	6.1	7.1	-117.44	-117.44	281.2	116.1	345.1	332.8	12.27	28.124	
2,800.0	2,792.5	2,760.5	2,743.1	6.4	7.4	-118.08	-118.08	294.1	123.9	364.5	351.7	12.80	28.465	
2,900.0	2,891.7	2,858.5	2,840.0	6.7	7.8	-118.65	-118.65	307.1	131.6	384.0	370.6	13.34	28.772	
3,000.0	2,990.9	2,956.5	2,936.8	7.0	8.1	-119.16	-119.16	320.0	139.3	403.5	389.6	13.89	29.050	
3,100.0	3,090.1	3,054.6	3,033.7	7.3	8.4	-119.63	-119.63	332.9	147.0	423.0	408.6	14.44	29.302	
3,200.0	3,189.4	3,152.6	3,130.6	7.6	8.8	-120.06	-120.06	345.8	154.7	442.6	427.6	14.99	29.531	
3,300.0	3,288.6	3,250.6	3,227.4	7.9	9.1	-120.45	-120.45	358.7	162.4	462.1	446.6	15.54	29.740	
3,400.0	3,387.8	3,348.6	3,324.3	8.2	9.5	-120.81	-120.81	371.7	170.1	481.7	465.6	16.09	29.932	
3,500.0	3,487.0	3,446.6	3,421.1	8.5	9.8	-121.14	-121.14	384.6	177.8	501.3	484.7	16.65	30.108	
3,600.0	3,586.2	3,544.7	3,518.0	8.8	10.2	-121.45	-121.45	397.5	185.5	521.0	503.8	17.21	30.270	
3,700.0	3,685.5	3,642.7	3,614.8	9.1	10.5	-121.73	-121.73	410.4	193.2	540.6	522.9	17.77	30.420	
3,800.0	3,784.7	3,740.7	3,711.7	9.4	10.9	-122.00	-122.00	423.4	200.9	560.3	541.9	18.33	30.559	
3,900.0	3,883.9	3,838.7	3,808.6	9.7	11.2	-122.24	-122.24	436.3	208.6	579.9	561.0	18.90	30.688	
4,000.0	3,983.1	3,936.7	3,905.4	10.0	11.6	-122.47	-122.47	449.2	216.3	599.6	580.2	19.46	30.808	
4,100.0	4,082.3	4,034.7	4,002.3	10.3	11.9	-122.69	-122.69	462.1	224.0	619.3	599.3	20.03	30.919	
4,200.0	4,181.6	4,132.8	4,099.1	10.7	12.2	-122.89	-122.89	475.0	231.7	639.0	618.4	20.60	31.024	
4,300.0	4,280.8	4,230.8	4,196.0	11.0	12.6	-123.19	-123.19	488.0	239.4	658.6	637.4	21.17	31.108	
4,400.0	4,380.4	4,329.2	4,293.2	11.2	12.9	-123.45	-123.45	500.9	247.2	676.6	654.9	21.71	31.172	
4,500.0	4,480.2	4,427.8	4,390.7	11.4	13.3	-123.44	-123.44	513.9	254.9	692.8	670.5	22.21	31.189	
4,600.0	4,580.1	4,526.6	4,488.3	11.6	13.7	-123.17	-123.17	527.0	262.7	707.0	684.4	22.68	31.169	
4,700.0	4,680.1	4,632.4	4,592.9	11.7	14.0	-0.97	-0.97	540.8	270.9	720.0	696.2	23.76	30.302	
4,800.0	4,780.1	4,759.1	4,718.7	11.9	14.4	-0.34	-0.34	553.8	278.7	730.3	706.0	24.29	30.064	
4,900.0	4,880.1	4,886.9	4,846.1	12.1	14.6	0.05	0.05	562.2	283.7	736.8	712.0	24.75	29.765	
5,000.0	4,980.1	5,015.4	4,974.5	12.3	14.8	0.21	0.21	565.6	285.7	739.5	714.3	25.17	29.383	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)													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	5,080.1	5,121.0	5,080.1	12.5	15.0	0.22		565.7	285.8	739.6	714.0	25.53	28.970	
5,200.0	5,180.1	5,221.0	5,180.1	12.7	15.1	0.22		565.7	285.8	739.6	713.7	25.90	28.559	
5,300.0	5,280.1	5,321.0	5,280.1	12.8	15.3	0.22		565.7	285.8	739.6	713.3	26.27	28.157	
5,400.0	5,380.1	5,421.0	5,380.1	13.0	15.5	0.22		565.7	285.8	739.6	712.9	26.64	27.764	
5,500.0	5,480.1	5,521.0	5,480.1	13.2	15.6	0.22		565.7	285.8	739.6	712.5	27.01	27.379	
5,600.0	5,580.1	5,621.0	5,580.1	13.4	15.8	0.22		565.7	285.8	739.6	712.2	27.39	27.002	
5,700.0	5,680.1	5,721.0	5,680.1	13.6	16.0	0.22		565.7	285.8	739.6	711.8	27.77	26.634	
5,800.0	5,780.1	5,821.0	5,780.1	13.8	16.2	0.22		565.7	285.8	739.6	711.4	28.15	26.274	
5,900.0	5,880.1	5,921.0	5,880.1	14.0	16.3	0.22		565.7	285.8	739.6	711.0	28.53	25.922	
6,000.0	5,980.1	6,021.0	5,980.1	14.2	16.5	0.22		565.7	285.8	739.6	710.6	28.92	25.577	
6,100.0	6,080.1	6,121.0	6,080.1	14.4	16.7	0.22		565.7	285.8	739.6	710.3	29.30	25.240	
6,200.0	6,180.0	6,221.3	6,180.3	14.5	16.8	90.21		565.7	282.4	739.6	710.5	29.03	25.478	
6,300.0	6,278.7	6,321.7	6,279.3	14.6	16.9	90.21		565.7	266.5	739.6	710.3	29.23	25.298	
6,400.0	6,374.5	6,422.0	6,375.4	14.7	16.9	90.20		565.7	237.7	739.6	710.2	29.36	25.191	
6,500.0	6,465.7	6,522.3	6,466.8	14.7	16.9	90.18		565.7	196.7	739.6	710.1	29.47	25.095	
6,600.0	6,550.8	6,622.6	6,552.1	14.8	16.9	90.16		565.7	144.0	739.6	709.9	29.68	24.918	
6,700.0	6,628.4	6,722.9	6,629.7	14.9	16.9	90.14		565.7	80.6	739.6	709.4	30.13	24.548	
6,800.0	6,697.1	6,823.1	6,698.3	15.3	16.9	90.12		565.7	7.7	739.6	708.6	30.98	23.876	
6,900.0	6,755.7	6,923.3	6,756.8	15.9	16.9	90.10		565.7	-73.6	739.6	707.2	32.37	22.846	
7,000.0	6,803.2	7,023.4	6,804.1	17.0	17.6	90.07		565.7	-161.8	739.6	705.1	34.41	21.494	
7,100.0	6,838.9	7,123.5	6,839.5	18.3	19.0	90.04		565.7	-255.3	739.6	702.5	37.09	19.937	
7,200.0	6,862.1	7,223.6	6,862.3	20.0	20.6	90.02		565.7	-352.7	739.6	699.2	40.36	18.323	
7,255.9	6,869.5	7,279.5	6,869.5	21.0	21.6	90.00		565.7	-408.1	739.6	697.1	42.42	17.435	
7,300.0	6,872.4	7,323.6	6,872.2	21.9	22.5	89.99		565.7	-452.1	739.6	695.5	44.08	16.778	
7,400.0	6,872.8	7,423.6	6,872.7	23.9	24.5	89.99		565.7	-552.1	739.6	691.4	48.13	15.366	
7,436.1	6,872.7	7,459.7	6,872.7	24.7	25.2	90.00		565.7	-588.2	739.6	689.9	49.68	14.886	
7,500.0	6,872.6	7,523.6	6,872.7	26.1	26.6	90.01		565.7	-652.1	739.6	687.1	52.46	14.098	
7,600.0	6,872.4	7,623.6	6,872.8	28.4	28.9	90.03		565.7	-752.1	739.6	682.5	57.01	12.972	
7,700.0	6,872.2	7,723.6	6,872.8	30.8	31.2	90.05		565.7	-852.1	739.6	677.8	61.74	11.978	
7,800.0	6,872.0	7,823.6	6,872.8	33.2	33.6	90.07		565.7	-952.1	739.6	672.9	66.61	11.103	
7,900.0	6,871.7	7,923.6	6,872.9	35.7	36.1	90.09		565.7	-1,052.1	739.6	668.0	71.59	10.331	
8,000.0	6,871.5	8,023.6	6,872.9	38.3	38.6	90.11		565.7	-1,152.1	739.6	662.9	76.65	9.648	
8,100.0	6,871.3	8,123.6	6,873.0	40.8	41.2	90.13		565.7	-1,252.1	739.6	657.8	81.79	9.042	
8,200.0	6,871.1	8,223.6	6,873.0	43.4	43.8	90.14		565.7	-1,352.1	739.6	652.6	86.99	8.501	
8,300.0	6,870.9	8,323.6	6,873.0	46.1	46.4	90.16		565.7	-1,452.1	739.6	647.3	92.24	8.018	
8,400.0	6,870.7	8,423.6	6,873.1	48.7	49.0	90.18		565.7	-1,552.1	739.6	642.0	97.53	7.583	
8,500.0	6,870.5	8,523.6	6,873.1	51.4	51.7	90.20		565.7	-1,652.1	739.6	636.7	102.85	7.190	
8,600.0	6,870.3	8,623.6	6,873.1	54.1	54.3	90.22		565.7	-1,752.1	739.6	631.4	108.21	6.835	
8,700.0	6,870.1	8,723.6	6,873.2	56.8	57.0	90.24		565.7	-1,852.1	739.6	626.0	113.59	6.511	
8,800.0	6,869.9	8,823.6	6,873.2	59.5	59.7	90.26		565.7	-1,952.1	739.6	620.6	118.99	6.215	
8,900.0	6,869.7	8,923.6	6,873.2	62.2	62.4	90.28		565.7	-2,052.1	739.6	615.2	124.41	5.945	
9,000.0	6,869.4	9,023.6	6,873.3	64.9	65.1	90.30		565.7	-2,152.1	739.6	609.7	129.85	5.696	
9,100.0	6,869.2	9,123.6	6,873.3	67.6	67.8	90.31		565.7	-2,252.1	739.6	604.3	135.30	5.466	
9,200.0	6,869.0	9,223.6	6,873.3	70.4	70.6	90.33		565.7	-2,352.1	739.6	598.8	140.77	5.254	
9,300.0	6,868.8	9,323.6	6,873.4	73.1	73.3	90.35		565.7	-2,452.1	739.6	593.3	146.24	5.057	
9,400.0	6,868.6	9,423.6	6,873.4	75.9	76.0	90.37		565.7	-2,552.1	739.6	587.8	151.73	4.874	
9,500.0	6,868.4	9,523.6	6,873.4	78.6	78.8	90.39		565.7	-2,652.1	739.6	582.3	157.23	4.704	
9,600.0	6,868.2	9,623.6	6,873.5	81.4	81.5	90.41		565.7	-2,752.1	739.6	576.8	162.73	4.545	
9,700.0	6,868.0	9,723.6	6,873.5	84.1	84.3	90.43		565.7	-2,852.1	739.6	571.3	168.24	4.396	
9,800.0	6,867.8	9,823.6	6,873.5	86.9	87.0	90.45		565.7	-2,952.1	739.6	565.8	173.76	4.256	
9,900.0	6,867.6	9,923.6	6,873.6	89.6	89.8	90.47		565.7	-3,052.1	739.6	560.3	179.29	4.125	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1V-434 - Wellbore #1 - Plan #1 (9-4-14)													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
10,000.0	6,867.3	10,023.6	6,873.6	92.4	92.5	90.49	565.7	-3,152.1	739.6	554.8	184.82	4.002		
10,100.0	6,867.1	10,123.6	6,873.6	95.2	95.3	90.50	565.7	-3,252.1	739.6	549.2	190.35	3.885		
10,200.0	6,866.9	10,223.6	6,873.7	98.0	98.1	90.52	565.7	-3,352.1	739.6	543.7	195.89	3.775		
10,300.0	6,866.7	10,323.6	6,873.7	100.7	100.8	90.54	565.7	-3,452.1	739.6	538.1	201.44	3.672		
10,400.0	6,866.5	10,423.6	6,873.8	103.5	103.6	90.56	565.7	-3,552.1	739.6	532.6	206.99	3.573		
10,500.0	6,866.3	10,523.6	6,873.8	106.3	106.4	90.58	565.7	-3,652.1	739.6	527.1	212.54	3.480		
10,600.0	6,866.1	10,623.6	6,873.8	109.1	109.2	90.60	565.7	-3,752.1	739.6	521.5	218.09	3.391		
10,700.0	6,865.9	10,723.6	6,873.9	111.8	111.9	90.62	565.7	-3,852.1	739.6	515.9	223.65	3.307		
10,800.0	6,865.7	10,823.6	6,873.9	114.6	114.7	90.64	565.7	-3,952.1	739.6	510.4	229.21	3.227		
10,900.0	6,865.5	10,923.6	6,873.9	117.4	117.5	90.66	565.7	-4,052.1	739.6	504.8	234.78	3.150		
11,000.0	6,865.3	11,023.6	6,874.0	120.2	120.3	90.67	565.7	-4,152.1	739.6	499.3	240.34	3.077		
11,100.0	6,865.0	11,123.6	6,874.0	123.0	123.1	90.69	565.7	-4,252.1	739.6	493.7	245.91	3.008		
11,200.0	6,864.8	11,223.6	6,874.0	125.8	125.8	90.71	565.7	-4,352.1	739.6	488.1	251.48	2.941		
11,300.0	6,864.6	11,323.6	6,874.1	128.6	128.6	90.73	565.7	-4,452.1	739.6	482.6	257.06	2.877		
11,400.0	6,864.4	11,423.6	6,874.1	131.3	131.4	90.75	565.7	-4,552.1	739.6	477.0	262.63	2.816		
11,500.0	6,864.2	11,523.6	6,874.1	134.1	134.2	90.77	565.7	-4,652.1	739.6	471.4	268.21	2.758		
11,600.0	6,864.0	11,623.6	6,874.2	136.9	137.0	90.79	565.7	-4,752.1	739.6	465.8	273.78	2.701		
11,700.0	6,863.8	11,723.6	6,874.2	139.7	139.8	90.81	565.7	-4,852.1	739.6	460.3	279.36	2.648		
11,800.0	6,863.6	11,823.6	6,874.2	142.5	142.6	90.83	565.7	-4,952.1	739.6	454.7	284.94	2.596		
11,900.0	6,863.4	11,923.6	6,874.3	145.3	145.4	90.84	565.7	-5,052.1	739.6	449.1	290.53	2.546		
12,000.0	6,863.2	12,023.6	6,874.3	148.1	148.1	90.86	565.7	-5,152.1	739.6	443.5	296.11	2.498		
12,100.0	6,863.0	12,123.6	6,874.3	150.9	150.9	90.88	565.7	-5,252.1	739.6	437.9	301.69	2.452		
12,200.0	6,862.7	12,223.6	6,874.4	153.7	153.7	90.90	565.7	-5,352.1	739.6	432.4	307.28	2.407		
12,300.0	6,862.5	12,323.6	6,874.4	156.5	156.5	90.92	565.7	-5,452.1	739.6	426.8	312.87	2.364		
12,400.0	6,862.3	12,423.6	6,874.5	159.3	159.3	90.94	565.7	-5,552.1	739.7	421.2	318.45	2.323		
12,500.0	6,862.1	12,523.6	6,874.5	162.1	162.1	90.96	565.7	-5,652.1	739.7	415.6	324.04	2.283		
12,600.0	6,861.9	12,623.6	6,874.5	164.9	164.9	90.98	565.7	-5,752.1	739.7	410.0	329.63	2.244		
12,700.0	6,861.7	12,723.6	6,874.6	167.7	167.7	91.00	565.7	-5,852.1	739.7	404.4	335.22	2.207		
12,800.0	6,861.5	12,823.6	6,874.6	170.5	170.5	91.02	565.7	-5,952.1	739.7	398.9	340.81	2.170		
12,900.0	6,861.3	12,923.6	6,874.6	173.3	173.3	91.03	565.7	-6,052.1	739.7	393.3	346.40	2.135		
13,000.0	6,861.1	13,023.6	6,874.7	176.1	176.1	91.05	565.7	-6,152.1	739.7	387.7	351.99	2.101		
13,100.0	6,860.9	13,123.6	6,874.7	178.8	178.9	91.07	565.7	-6,252.1	739.7	382.1	357.59	2.069		
13,200.0	6,860.6	13,223.6	6,874.7	181.6	181.7	91.09	565.7	-6,352.1	739.7	376.5	363.18	2.037		
13,300.0	6,860.4	13,323.6	6,874.8	184.4	184.5	91.11	565.7	-6,452.1	739.7	370.9	368.77	2.006		
13,400.0	6,860.2	13,423.6	6,874.8	187.2	187.3	91.13	565.7	-6,552.1	739.7	365.3	374.37	1.976		
13,500.0	6,860.0	13,523.6	6,874.8	190.0	190.1	91.15	565.7	-6,652.1	739.7	359.7	379.96	1.947		
13,600.0	6,859.8	13,623.6	6,874.9	192.8	192.9	91.17	565.7	-6,752.1	739.7	354.1	385.56	1.919		
13,700.0	6,859.6	13,723.6	6,874.9	195.6	195.7	91.19	565.7	-6,852.1	739.7	348.6	391.15	1.891		
13,800.0	6,859.4	13,823.6	6,874.9	198.4	198.5	91.20	565.7	-6,952.1	739.7	343.0	396.75	1.864		
13,900.0	6,859.2	13,923.6	6,875.0	201.2	201.3	91.22	565.7	-7,052.1	739.7	337.4	402.35	1.839		
13,946.3	6,859.1	13,969.8	6,875.0	202.5	202.6	91.23	565.7	-7,098.4	739.7	334.8	404.93	1.827		
13,987.0	6,859.0	13,995.6	6,875.0	203.7	203.3	91.24	565.7	-7,124.1	739.9	333.1	406.79	1.819 SF		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-314 - Wellbore #1 - Plan #1 (9-4-14)													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)	+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	0.00	0.00	32.8	0.0	32.8				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.00	32.8	0.0	32.8	32.6	0.22	145.877	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.00	32.8	0.0	32.8	32.1	0.67	48.626	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	0.00	32.8	0.0	32.8	31.7	1.12	29.175	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	0.00	32.8	0.0	32.8	31.2	1.57	20.840	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	0.00	32.8	0.0	32.8	30.8	2.02	16.209	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	0.00	32.8	0.0	32.8	30.3	2.47	13.262	
700.0	700.0	700.0	700.0	1.5	1.5	0.00	0.00	32.8	0.0	32.8	29.9	2.92	11.221	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	0.00	32.8	0.0	32.8	29.4	3.37	9.725	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	0.00	32.8	0.0	32.8	29.0	3.82	8.581	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	0.00	32.8	0.0	32.8	28.5	4.27	7.678	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	0.00	0.00	32.8	0.0	32.8	28.1	4.72	6.947	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	0.00	32.8	0.0	32.8	27.6	5.17	6.342	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	0.00	32.8	0.0	32.8	27.2	5.62	5.835	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	0.00	32.8	0.0	32.8	26.7	6.07	5.403	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	0.00	0.00	32.8	0.0	32.8	26.3	6.52	5.030	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	0.00	0.00	32.8	0.0	32.8	25.8	6.97	4.706 CC	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-124.07	32.8	32.8	0.0	33.7	26.3	7.40	4.562	
1,800.0	1,799.8	1,799.8	1,799.8	3.9	3.9	-130.76	32.8	32.8	0.0	36.9	29.1	7.80	4.732	
1,900.0	1,899.5	1,899.5	1,899.5	4.1	4.2	-139.47	32.8	32.8	0.0	43.1	34.9	8.21	5.254	
2,000.0	1,998.7	1,998.7	1,998.7	4.3	4.4	-147.81	32.8	32.8	0.0	52.7	44.1	8.62	6.123	
2,100.0	2,098.0	2,099.2	2,099.1	4.5	4.6	-152.56	32.7	32.7	1.7	62.7	53.7	9.02	6.951	
2,200.0	2,197.2	2,200.1	2,200.0	4.8	4.8	-153.69	32.5	32.5	7.0	71.0	61.6	9.43	7.526	
2,300.0	2,296.4	2,301.4	2,300.8	5.0	5.0	-152.42	32.2	32.2	15.8	77.3	67.4	9.86	7.838	
2,400.0	2,395.6	2,402.1	2,400.8	5.3	5.2	-149.42	31.8	31.8	27.8	81.9	71.6	10.31	7.947	
2,500.0	2,494.8	2,501.9	2,499.8	5.6	5.5	-146.42	31.3	31.3	40.4	86.5	75.8	10.78	8.025	
2,600.0	2,594.1	2,601.6	2,598.8	5.8	5.7	-143.73	30.9	30.9	52.9	91.3	80.1	11.27	8.103	
2,700.0	2,693.3	2,701.4	2,697.8	6.1	6.0	-141.31	30.4	30.4	65.4	96.3	84.5	11.78	8.178	
2,800.0	2,792.5	2,801.2	2,796.8	6.4	6.2	-139.14	29.9	29.9	77.9	101.5	89.2	12.30	8.250	
2,900.0	2,891.7	2,901.0	2,895.8	6.7	6.5	-137.17	29.5	29.5	90.4	106.7	93.9	12.83	8.318	
3,000.0	2,990.9	3,000.8	2,994.8	7.0	6.8	-135.39	29.0	29.0	102.9	112.1	98.7	13.38	8.382	
3,100.0	3,090.1	3,100.6	3,093.8	7.3	7.0	-133.78	28.6	28.6	115.4	117.6	103.7	13.93	8.442	
3,200.0	3,189.4	3,200.4	3,192.8	7.6	7.3	-132.31	28.1	28.1	128.0	123.2	108.7	14.49	8.498	
3,300.0	3,288.6	3,300.2	3,291.9	7.9	7.6	-130.97	27.7	27.7	140.5	128.8	113.7	15.06	8.550	
3,400.0	3,387.8	3,400.0	3,390.9	8.2	7.9	-129.74	27.2	27.2	153.0	134.5	118.9	15.64	8.599	
3,500.0	3,487.0	3,499.8	3,489.9	8.5	8.2	-128.61	26.8	26.8	165.5	140.3	124.0	16.23	8.644	
3,600.0	3,586.2	3,599.6	3,588.9	8.8	8.5	-127.57	26.3	26.3	178.0	146.1	129.3	16.82	8.686	
3,700.0	3,685.5	3,699.4	3,687.9	9.1	8.8	-126.61	25.8	25.8	190.5	151.9	134.5	17.41	8.726	
3,800.0	3,784.7	3,799.2	3,786.9	9.4	9.1	-125.73	25.4	25.4	203.0	157.8	139.8	18.01	8.763	
3,900.0	3,883.9	3,899.0	3,885.9	9.7	9.4	-124.90	24.9	24.9	215.6	163.7	145.1	18.61	8.798	
4,000.0	3,983.1	3,998.8	3,984.9	10.0	9.7	-124.14	24.5	24.5	228.1	169.7	150.5	19.22	8.831	
4,100.0	4,082.3	4,098.6	4,083.9	10.3	10.0	-123.42	24.0	24.0	240.6	175.7	155.9	19.83	8.862	
4,200.0	4,181.6	4,198.4	4,182.9	10.7	10.3	-122.76	23.6	23.6	253.1	181.7	161.3	20.44	8.891	
4,300.0	4,280.8	4,298.1	4,281.8	11.0	10.6	-122.20	23.1	23.1	265.3	187.6	166.6	21.03	8.922	
4,400.0	4,380.4	4,397.7	4,381.0	11.2	10.8	-121.85	22.8	22.8	274.6	192.2	170.7	21.50	8.940	
4,500.0	4,480.2	4,497.3	4,480.5	11.4	11.0	-121.65	22.6	22.6	280.5	195.1	173.2	21.92	8.901	
4,600.0	4,580.1	4,597.1	4,580.2	11.6	11.2	-121.56	22.5	22.5	282.9	196.3	174.0	22.29	8.807	
4,700.0	4,680.1	4,697.0	4,680.1	11.7	11.3	0.00	22.5	22.5	283.0	196.3	175.6	20.73	9.469	
4,800.0	4,780.1	4,797.0	4,780.1	11.9	11.5	0.00	22.5	22.5	283.0	196.3	175.2	21.14	9.287	
4,900.0	4,880.1	4,897.0	4,880.1	12.1	11.7	0.00	22.5	22.5	283.0	196.3	174.8	21.54	9.111	
5,000.0	4,980.1	4,997.0	4,980.1	12.3	11.9	0.00	22.5	22.5	283.0	196.3	174.3	21.95	8.942	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-314 - Wellbore #1 - Plan #1 (9-4-14)											Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	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)				
5,100.0	5,080.1	5,097.0	5,080.1	12.5	12.1	0.00	22.5	283.0	196.3	173.9	22.36	8.777			
5,200.0	5,180.1	5,197.0	5,180.1	12.7	12.3	0.00	22.5	283.0	196.3	173.5	22.78	8.619			
5,300.0	5,280.1	5,297.0	5,280.1	12.8	12.5	0.00	22.5	283.0	196.3	173.1	23.19	8.465			
5,400.0	5,380.1	5,397.0	5,380.1	13.0	12.7	0.00	22.5	283.0	196.3	172.7	23.60	8.316			
5,500.0	5,480.1	5,497.0	5,480.1	13.2	12.9	0.00	22.5	283.0	196.3	172.3	24.02	8.172			
5,600.0	5,580.1	5,597.0	5,580.1	13.4	13.1	0.00	22.5	283.0	196.3	171.9	24.44	8.033			
5,700.0	5,680.1	5,697.0	5,680.1	13.6	13.3	0.00	22.5	283.0	196.3	171.4	24.86	7.897			
5,800.0	5,780.1	5,797.0	5,780.1	13.8	13.5	0.00	22.5	283.0	196.3	171.0	25.28	7.766			
5,900.0	5,880.1	5,897.0	5,880.1	14.0	13.7	0.00	22.5	283.0	196.3	170.6	25.70	7.639			
6,000.0	5,980.1	5,997.0	5,980.1	14.2	13.9	0.00	22.5	283.0	196.3	170.2	26.12	7.516			
6,052.7	6,032.9	6,049.8	6,032.9	14.3	14.0	0.00	22.5	283.0	196.3	170.0	26.34	7.453			
6,100.0	6,080.1	6,097.0	6,080.1	14.4	14.1	-0.34	22.5	281.8	196.3	169.8	26.54	7.396			
6,200.0	6,180.0	6,195.9	6,178.2	14.5	14.3	87.14	22.5	270.0	196.5	168.2	28.36	6.931			
6,300.0	6,278.7	6,293.7	6,272.9	14.6	14.3	84.54	22.5	246.0	197.2	168.7	28.47	6.927			
6,400.0	6,374.5	6,390.4	6,362.8	14.7	14.4	82.05	22.5	210.5	198.2	169.7	28.52	6.950			
6,500.0	6,465.7	6,486.1	6,446.6	14.7	14.5	79.74	22.5	164.5	199.5	170.9	28.58	6.981			
6,600.0	6,550.8	6,580.9	6,523.4	14.8	14.7	77.63	22.5	108.9	201.0	172.2	28.75	6.992			
6,700.0	6,628.4	6,674.9	6,592.1	14.9	15.0	75.75	22.5	44.9	202.6	173.4	29.15	6.950			
6,800.0	6,697.1	6,768.3	6,652.1	15.3	15.5	74.12	22.5	-26.6	204.1	174.2	29.91	6.824			
6,900.0	6,755.7	6,861.0	6,702.6	15.9	16.3	72.75	22.5	-104.3	205.6	174.4	31.15	6.598			
7,000.0	6,803.2	6,953.3	6,743.2	17.0	17.4	71.67	22.5	-187.2	206.8	173.9	32.95	6.276			
7,100.0	6,838.9	7,045.2	6,773.3	18.3	18.7	70.86	22.5	-274.0	207.8	172.5	35.33	5.882			
7,200.0	6,862.1	7,136.9	6,792.8	20.0	20.3	70.35	22.5	-363.5	208.4	170.2	38.22	5.453			
7,300.0	6,872.4	7,228.4	6,801.4	21.9	22.0	70.12	22.5	-454.5	208.7	167.2	41.55	5.024			
7,400.0	6,872.8	7,325.7	6,801.6	23.9	24.0	70.07	22.5	-551.8	208.8	163.5	45.33	4.606			
7,500.0	6,872.6	7,425.7	6,801.2	26.1	26.2	70.02	22.5	-651.8	208.9	159.4	49.42	4.226			
7,600.0	6,872.4	7,525.7	6,800.8	28.4	28.5	69.97	22.5	-751.8	208.9	155.2	53.73	3.889			
7,700.0	6,872.2	7,625.7	6,800.4	30.8	30.8	69.92	22.5	-851.8	209.0	150.8	58.19	3.592			
7,800.0	6,872.0	7,725.7	6,800.0	33.2	33.3	69.87	22.5	-951.8	209.1	146.3	62.78	3.330			
7,900.0	6,871.7	7,825.7	6,799.6	35.7	35.8	69.82	22.5	-1,051.8	209.1	141.7	67.47	3.100			
8,000.0	6,871.5	7,925.7	6,799.2	38.3	38.3	69.77	22.5	-1,151.8	209.2	137.0	72.24	2.896			
8,100.0	6,871.3	8,025.7	6,798.8	40.8	40.9	69.72	22.5	-1,251.8	209.3	132.2	77.07	2.715			
8,200.0	6,871.1	8,125.7	6,798.4	43.4	43.5	69.68	22.5	-1,351.8	209.3	127.4	81.96	2.554			
8,300.0	6,870.9	8,225.7	6,798.0	46.1	46.1	69.63	22.5	-1,451.8	209.4	122.5	86.89	2.410			
8,400.0	6,870.7	8,325.7	6,797.6	48.7	48.8	69.58	22.5	-1,551.8	209.5	117.6	91.85	2.280			
8,500.0	6,870.5	8,425.7	6,797.2	51.4	51.4	69.53	22.5	-1,651.8	209.5	112.7	96.84	2.164			
8,600.0	6,870.3	8,525.7	6,796.8	54.1	54.1	69.48	22.5	-1,751.8	209.6	107.7	101.86	2.058			
8,700.0	6,870.1	8,625.7	6,796.4	56.8	56.8	69.43	22.5	-1,851.8	209.7	102.8	106.90	1.961			
8,800.0	6,869.9	8,725.7	6,796.0	59.5	59.5	69.38	22.5	-1,951.8	209.7	97.8	111.96	1.873			
8,900.0	6,869.7	8,825.7	6,795.6	62.2	62.2	69.33	22.5	-2,051.8	209.8	92.8	117.03	1.793			
9,000.0	6,869.4	8,925.7	6,795.2	64.9	65.0	69.28	22.5	-2,151.8	209.9	87.8	122.11	1.719			
9,100.0	6,869.2	9,025.7	6,794.8	67.6	67.7	69.23	22.5	-2,251.8	209.9	82.7	127.20	1.650			
9,200.0	6,869.0	9,125.7	6,794.4	70.4	70.4	69.18	22.5	-2,351.8	210.0	77.7	132.31	1.587			
9,300.0	6,868.8	9,225.7	6,794.0	73.1	73.2	69.14	22.5	-2,451.8	210.1	72.7	137.42	1.529			
9,400.0	6,868.6	9,325.7	6,793.6	75.9	75.9	69.09	22.5	-2,551.8	210.1	67.6	142.53	1.474	Level 3		
9,500.0	6,868.4	9,425.7	6,793.2	78.6	78.7	69.04	22.5	-2,651.8	210.2	62.6	147.66	1.424	Level 3		
9,600.0	6,868.2	9,525.7	6,792.8	81.4	81.4	68.99	22.5	-2,751.8	210.3	57.5	152.78	1.376	Level 3		
9,700.0	6,868.0	9,625.7	6,792.4	84.1	84.2	68.94	22.5	-2,851.8	210.3	52.4	157.91	1.332	Level 3		
9,800.0	6,867.8	9,725.7	6,792.0	86.9	86.9	68.89	22.5	-2,951.8	210.4	47.4	163.05	1.291	Level 3		
9,900.0	6,867.6	9,825.7	6,791.6	89.6	89.7	68.84	22.5	-3,051.8	210.5	42.3	168.18	1.252	Level 3		
10,000.0	6,867.3	9,925.7	6,791.2	92.4	92.5	68.79	22.5	-3,151.8	210.6	37.2	173.32	1.215	Level 2		

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design LDS 5N65W1W Pad Sec.1-T5N-R65W - LDS 1W-314 - Wellbore #1 - Plan #1 (9-4-14)													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 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	6,867.1	10,025.7	6,790.8	95.2	95.2	68.74	22.5	-3,251.8	210.6	32.2	178.46	1.180	Level 2	
10,200.0	6,866.9	10,125.7	6,790.4	98.0	98.0	68.70	22.5	-3,351.8	210.7	27.1	183.60	1.148	Level 2	
10,300.0	6,866.7	10,225.7	6,790.0	100.7	100.8	68.65	22.5	-3,451.8	210.8	22.0	188.74	1.117	Level 2	
10,400.0	6,866.5	10,325.7	6,789.6	103.5	103.6	68.60	22.5	-3,551.8	210.8	16.9	193.88	1.087	Level 2	
10,500.0	6,866.3	10,425.7	6,789.2	106.3	106.3	68.55	22.5	-3,651.8	210.9	11.9	199.03	1.060	Level 2	
10,600.0	6,866.1	10,525.7	6,788.8	109.1	109.1	68.50	22.5	-3,751.8	211.0	6.8	204.17	1.033	Level 2	
10,700.0	6,865.9	10,625.7	6,788.4	111.8	111.9	68.45	22.5	-3,851.8	211.0	1.7	209.31	1.008	Level 2	
10,800.0	6,865.7	10,725.7	6,788.0	114.6	114.7	68.41	22.5	-3,951.8	211.1	-3.3	214.45	0.984	Level 1	
10,900.0	6,865.5	10,825.7	6,787.6	117.4	117.5	68.36	22.5	-4,051.8	211.2	-8.4	219.59	0.962	Level 1	
11,000.0	6,865.3	10,925.7	6,787.2	120.2	120.3	68.31	22.5	-4,151.8	211.3	-13.5	224.73	0.940	Level 1	
11,100.0	6,865.0	11,025.7	6,786.8	123.0	123.0	68.26	22.5	-4,251.8	211.3	-18.5	229.87	0.919	Level 1	
11,200.0	6,864.8	11,125.7	6,786.4	125.8	125.8	68.21	22.5	-4,351.8	211.4	-23.6	235.00	0.900	Level 1	
11,300.0	6,864.6	11,225.7	6,786.0	128.6	128.6	68.16	22.5	-4,451.8	211.5	-28.7	240.14	0.881	Level 1	
11,400.0	6,864.4	11,325.7	6,785.6	131.3	131.4	68.11	22.5	-4,551.8	211.5	-33.7	245.27	0.862	Level 1	
11,500.0	6,864.2	11,425.7	6,785.2	134.1	134.2	68.07	22.5	-4,651.8	211.6	-38.8	250.40	0.845	Level 1	
11,600.0	6,864.0	11,525.7	6,784.8	136.9	137.0	68.02	22.5	-4,751.8	211.7	-43.8	255.53	0.828	Level 1	
11,700.0	6,863.8	11,625.7	6,784.4	139.7	139.8	67.97	22.5	-4,851.8	211.8	-48.9	260.66	0.812	Level 1	
11,800.0	6,863.6	11,725.7	6,784.0	142.5	142.6	67.92	22.5	-4,951.8	211.8	-54.0	265.79	0.797	Level 1	
11,900.0	6,863.4	11,825.7	6,783.6	145.3	145.4	67.87	22.5	-5,051.8	211.9	-59.0	270.91	0.782	Level 1	
12,000.0	6,863.2	11,925.7	6,783.2	148.1	148.2	67.83	22.5	-5,151.8	212.0	-64.1	276.03	0.768	Level 1	
12,100.0	6,863.0	12,025.7	6,782.8	150.9	150.9	67.78	22.5	-5,251.8	212.0	-69.1	281.15	0.754	Level 1	
12,200.0	6,862.7	12,125.7	6,782.4	153.7	153.7	67.73	22.5	-5,351.7	212.1	-74.1	286.27	0.741	Level 1	
12,255.9	6,862.6	12,181.5	6,782.1	155.2	155.3	67.70	22.5	-5,407.6	212.2	-77.0	289.12	0.734	Level 1	
12,300.0	6,862.5	12,213.9	6,782.0	156.5	156.1	67.69	22.5	-5,440.0	212.5	-78.4	290.96	0.730	Level 1, ES, SF	
12,400.0	6,862.3	12,213.9	6,782.0	159.3	156.1	67.69	22.5	-5,440.0	239.9	-53.7	293.56	0.817	Level 1	
12,500.0	6,862.1	12,213.9	6,782.0	162.1	156.1	67.69	22.5	-5,440.0	299.9	3.7	296.16	1.013	Level 2	
12,600.0	6,861.9	12,213.9	6,782.0	164.9	156.1	67.69	22.5	-5,440.0	377.3	78.5	298.77	1.263	Level 3	
12,700.0	6,861.7	12,213.9	6,782.0	167.7	156.1	67.69	22.5	-5,440.0	463.4	162.0	301.37	1.538		
12,800.0	6,861.5	12,213.9	6,782.0	170.5	156.1	67.69	22.5	-5,440.0	554.2	250.2	303.98	1.823		
12,900.0	6,861.3	12,213.9	6,782.0	173.3	156.1	67.69	22.5	-5,440.0	647.7	341.1	306.58	2.113		
13,000.0	6,861.1	12,213.9	6,782.0	176.1	156.1	67.69	22.5	-5,440.0	742.9	433.7	309.19	2.403		
13,100.0	6,860.9	12,213.9	6,782.0	178.8	156.1	67.69	22.5	-5,440.0	839.2	527.4	311.79	2.692		
13,200.0	6,860.6	12,213.9	6,782.0	181.6	156.1	67.69	22.5	-5,440.0	936.3	621.9	314.40	2.978		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-													Offset Well Error:	0.0 ft
LDS F 1-32 pad Sec1-T5N-R65W - LDS F 1-32 - Wellbore #1 - Design #1														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,900.0	6,865.5	6,931.5	6,888.5	117.4	19.1	-90.37	-466.7	-4,956.6	950.8	815.4	135.40	7.022		
11,000.0	6,865.3	6,931.3	6,888.3	120.2	19.1	-90.33	-466.7	-4,956.6	856.2	718.0	138.18	6.196		
11,100.0	6,865.0	6,931.1	6,888.0	123.0	19.1	-90.29	-466.7	-4,956.6	763.0	622.0	140.97	5.412		
11,200.0	6,864.8	6,930.9	6,887.8	125.8	19.1	-90.25	-466.7	-4,956.6	671.7	528.0	143.76	4.673		
11,300.0	6,864.6	6,930.7	6,887.6	128.6	19.1	-90.21	-466.7	-4,956.6	583.4	436.8	146.54	3.981		
11,400.0	6,864.4	6,930.5	6,887.4	131.3	19.1	-90.17	-466.7	-4,956.6	499.4	350.1	149.33	3.344		
11,500.0	6,864.2	6,930.3	6,887.2	134.1	19.1	-90.12	-466.7	-4,956.6	422.5	270.4	152.12	2.777		
11,600.0	6,864.0	6,930.1	6,887.0	136.9	19.1	-90.08	-466.7	-4,956.6	357.2	202.3	154.91	2.306		
11,700.0	6,863.8	6,929.8	6,886.8	139.7	19.1	-90.04	-466.7	-4,956.6	310.9	153.2	157.70	1.972		
11,800.0	6,863.6	6,929.6	6,886.6	142.5	19.1	-90.00	-466.7	-4,956.6	292.9	132.4	160.49	1.825		
11,804.5	6,863.6	6,929.6	6,886.6	142.6	19.1	-90.00	-466.7	-4,956.6	292.8	132.2	160.62	1.823 CC, ES, SF		
11,900.0	6,863.4	6,929.4	6,886.4	145.3	19.1	-89.96	-466.7	-4,956.6	308.0	144.7	163.28	1.886		
12,000.0	6,863.2	6,929.2	6,886.2	148.1	19.1	-89.92	-466.7	-4,956.6	352.1	186.0	166.08	2.120		
12,100.0	6,863.0	6,929.0	6,886.0	150.9	19.1	-89.88	-466.7	-4,956.6	416.0	247.1	168.87	2.463		
12,200.0	6,862.7	6,928.8	6,885.7	153.7	19.1	-89.84	-466.7	-4,956.6	492.1	320.4	171.66	2.867		
12,300.0	6,862.5	6,928.6	6,885.5	156.5	19.1	-89.80	-466.7	-4,956.6	575.5	401.1	174.46	3.299		
12,400.0	6,862.3	6,928.4	6,885.3	159.3	19.1	-89.76	-466.7	-4,956.6	663.6	486.3	177.25	3.744		
12,500.0	6,862.1	6,928.2	6,885.1	162.1	19.1	-89.72	-466.7	-4,956.6	754.6	574.6	180.05	4.191		
12,600.0	6,861.9	6,928.0	6,884.9	164.9	19.1	-89.67	-466.7	-4,956.6	847.7	664.8	182.84	4.636		
12,700.0	6,861.7	6,927.8	6,884.7	167.7	19.1	-89.63	-466.7	-4,956.6	942.1	756.5	185.64	5.075		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

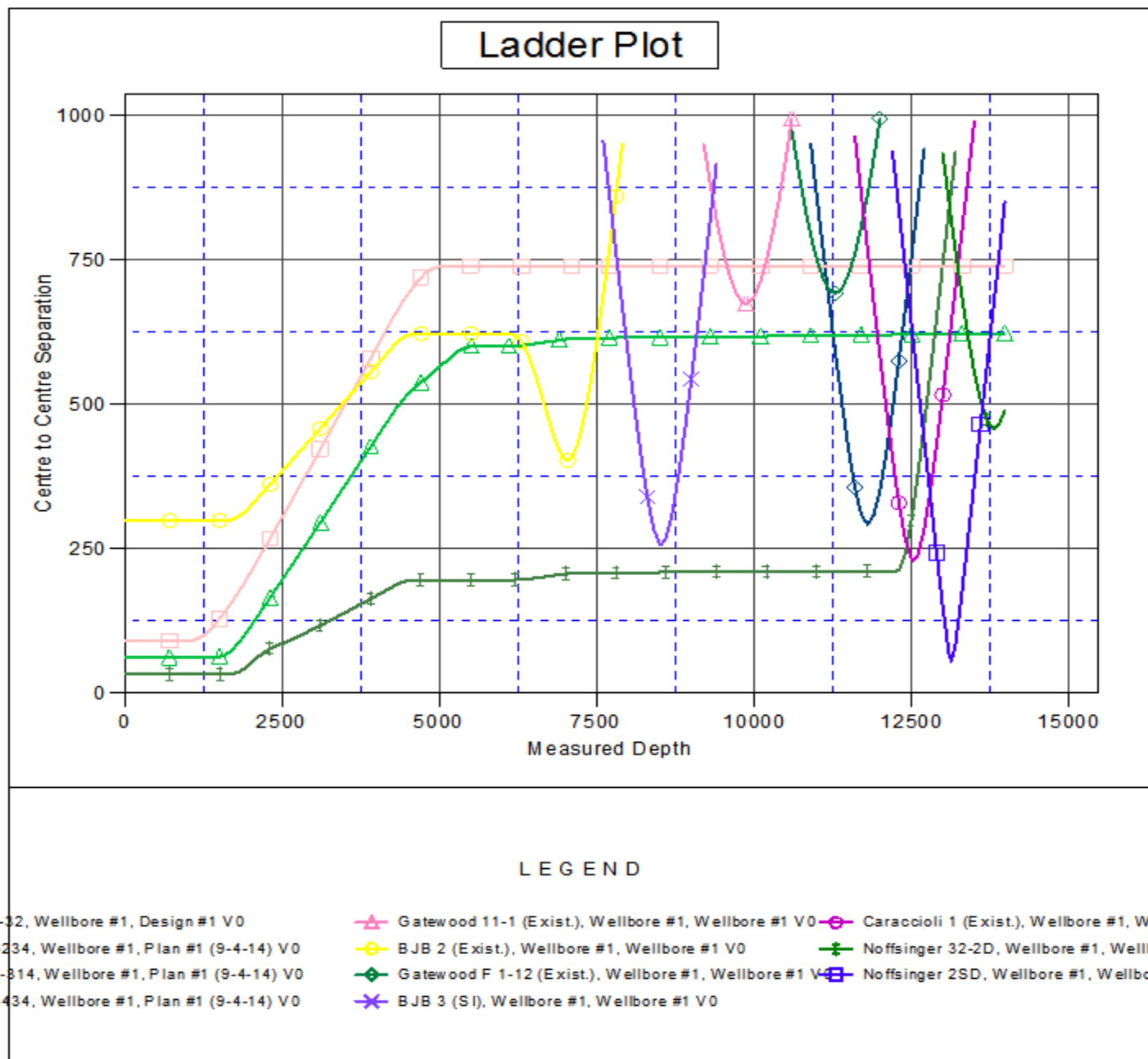
Offset Design													Offset Site Error:	0.0 ft
Survey Program: 761-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,200.0	6,862.7	7,097.3	6,858.0	153.7	28.3	-57.93	-229.3	-6,288.2	938.5	789.7	148.81	6.307		
12,300.0	6,862.5	7,100.9	6,861.6	156.5	28.3	-60.68	-229.4	-6,288.3	838.8	683.9	154.90	5.415		
12,400.0	6,862.3	7,104.5	6,865.2	159.3	28.3	-63.59	-229.4	-6,288.5	739.1	578.1	161.01	4.590		
12,500.0	6,862.1	7,108.1	6,868.8	162.1	28.3	-66.66	-229.4	-6,288.6	639.5	472.4	167.04	3.828		
12,600.0	6,861.9	7,111.7	6,872.4	164.9	28.3	-69.90	-229.5	-6,288.8	540.0	367.1	172.90	3.123		
12,700.0	6,861.7	7,115.4	6,876.1	167.7	28.3	-73.29	-229.5	-6,288.9	440.7	262.2	178.49	2.469		
12,800.0	6,861.5	7,119.0	6,879.7	170.5	28.3	-76.80	-229.5	-6,289.1	341.8	158.1	183.68	1.861		
12,900.0	6,861.3	7,122.7	6,883.4	173.3	28.3	-80.44	-229.6	-6,289.2	243.8	55.4	188.38	1.294 Level 3		
13,000.0	6,861.1	7,126.4	6,887.1	176.1	28.3	-84.16	-229.6	-6,289.3	148.3	-44.2	192.46	0.770 Level 1		
13,100.0	6,860.9	7,130.1	6,890.8	178.8	28.3	-87.94	-229.6	-6,289.5	67.2	-128.6	195.83	0.343 Level 1		
13,137.5	6,860.8	7,131.5	6,892.2	179.9	28.3	-89.37	-229.6	-6,289.5	55.8	-141.1	196.90	0.284 Level 1, CC, ES, SF		
13,200.0	6,860.6	7,133.8	6,894.5	181.6	28.3	-91.75	-229.7	-6,289.6	83.8	-114.6	198.43	0.422 Level 1		
13,300.0	6,860.4	7,137.5	6,898.2	184.4	28.3	-95.55	-229.7	-6,289.8	171.7	-28.5	200.23	0.858 Level 1		
13,400.0	6,860.2	7,141.3	6,901.9	187.2	28.3	-99.31	-229.8	-6,289.9	268.2	67.0	201.20	1.333 Level 3		
13,500.0	6,860.0	7,145.0	6,905.7	190.0	28.3	-103.00	-229.8	-6,290.1	366.5	165.2	201.40	1.820		
13,600.0	6,859.8	7,148.8	6,909.5	192.8	28.3	-106.60	-229.9	-6,290.2	465.6	264.7	200.86	2.318		
13,700.0	6,859.6	7,152.6	6,913.3	195.6	28.4	-110.06	-229.9	-6,290.4	564.9	365.2	199.67	2.829		
13,800.0	6,859.4	7,156.4	6,917.1	198.4	28.4	-113.39	-230.0	-6,290.5	664.4	466.5	197.92	3.357		
13,900.0	6,859.2	7,160.2	6,920.9	201.2	28.4	-116.57	-230.0	-6,290.7	764.0	568.3	195.71	3.904		
13,987.0	6,859.0	7,163.5	6,924.2	203.7	28.4	-119.20	-230.1	-6,290.8	850.8	657.3	193.48	4.397		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore:</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Noffsinger Pad Sec.2-T5N-R65W - Noffsinger 32-2D - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 668-MWD												<b>Offset Well Error:</b>	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
13,000.0	6,861.1	7,059.2	6,894.0	176.1	25.9	90.32	285.3	-6,966.4	934.8	737.4	197.46	4.734	
13,100.0	6,860.9	7,060.9	6,895.7	178.8	25.9	90.54	285.3	-6,966.4	849.1	648.9	200.26	4.240	
13,200.0	6,860.6	7,062.7	6,897.4	181.6	25.9	90.76	285.2	-6,966.4	766.9	563.9	203.06	3.777	
13,300.0	6,860.4	7,064.4	6,899.1	184.4	26.0	90.97	285.1	-6,966.5	689.4	483.6	205.86	3.349	
13,400.0	6,860.2	7,066.1	6,900.9	187.2	26.0	91.19	285.1	-6,966.5	618.4	409.7	208.65	2.964	
13,500.0	6,860.0	7,067.8	6,902.6	190.0	26.0	91.40	285.0	-6,966.5	556.4	344.9	211.44	2.631	
13,600.0	6,859.8	7,069.5	6,904.3	192.8	26.0	91.61	284.9	-6,966.6	506.6	292.4	214.23	2.365	
13,700.0	6,859.6	7,071.2	6,905.9	195.6	26.0	91.82	284.9	-6,966.6	473.0	256.0	217.02	2.180	
13,800.0	6,859.4	7,072.9	6,907.6	198.4	26.0	92.03	284.8	-6,966.6	459.2	239.4	219.80	2.089	
13,814.5	6,859.4	7,073.1	6,907.9	198.9	26.0	92.06	284.8	-6,966.6	458.9	238.7	220.20	2.084 CC, ES, SF	
13,900.0	6,859.2	7,074.5	6,909.3	201.2	26.0	92.24	284.8	-6,966.7	466.8	244.2	222.58	2.097	
13,987.0	6,859.0	7,076.0	6,910.7	203.7	26.0	92.42	284.7	-6,966.7	490.3	265.3	224.99	2.179	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4628.0ft (Original Well Elev) Coordinates are relative to: LDS 1W-414  
 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: 0.58°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well LDS 1W-414
<b>Project:</b>	SEC.1-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Reference Site:</b>	LDS 5N65W1W Pad Sec.1-T5N-R65W	<b>MD Reference:</b>	WELL @ 4628.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LDS 1W-414	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	landmark
<b>Reference Design:</b>	Plan #1 (9-4-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4628.0ft (Original Well Elev) Coordinates are relative to: LDS 1W-414

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Central Meridian is -105.500000 °

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