

PETROLEUM DEVELOPMENT CORP Weld County CO

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

Surface Location: LDS 5N65W1U Pad Sec.1-T5N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

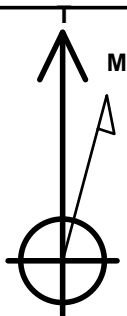
Ground Elevation: 4638.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1402107.30	3249681.35	40.433720	-104.603050	

Original Well Elev WELL @ 4653.0ft (Original Well Elev)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 510'FNL & 368'FEL, Sec.1	1.0	0.0	0.0	Point
BHL 989'FNL & 1005'FEL, Sec.2	6892.0	-472.9	-5943.6	Point



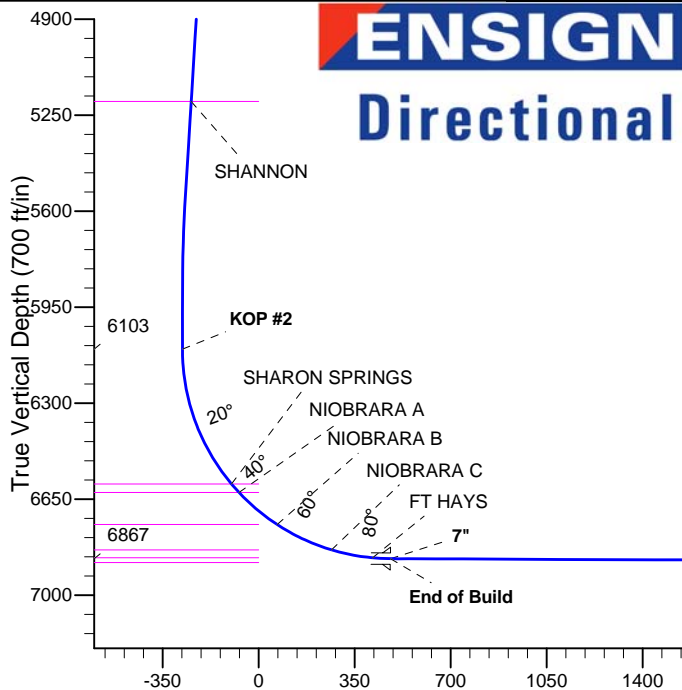
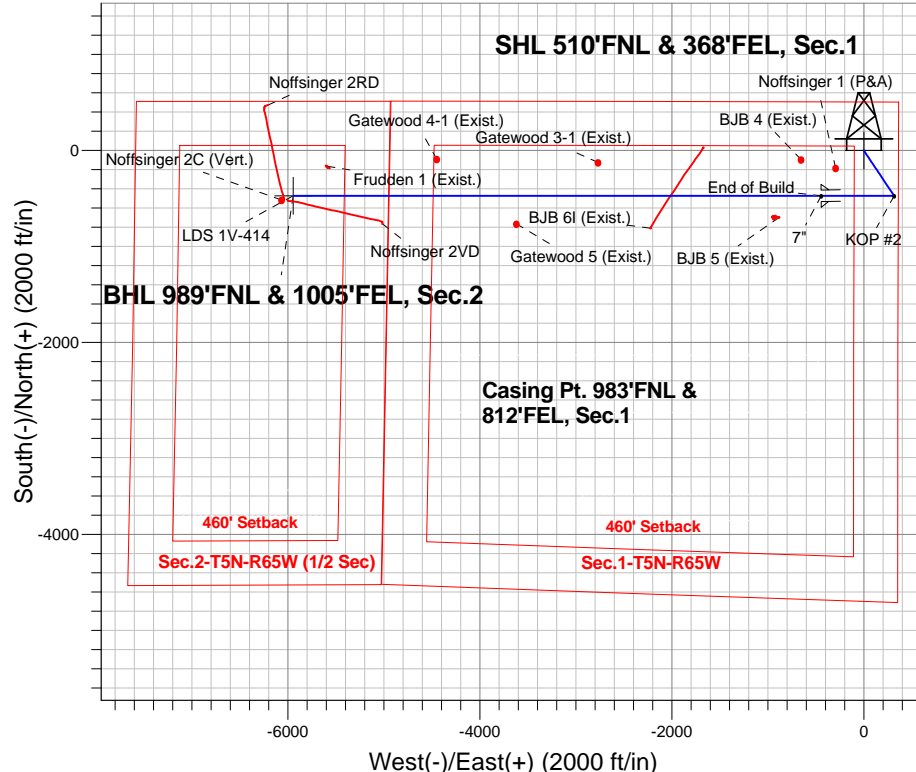
Azimuths to True North
Magnetic North: 8.35°

Magnetic Field
Strength: 52827.8srT
Dip Angle: 66.99°
Date: 9/4/2014
Model: IGRF2010

LDS 5N65W1U Pad Sec.1-T5N-R65W
LDS 1V-414
Plan #1 (9-4-14)

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6103.1	6137.7	KOP #2
6867.0	7334.2	End of Build



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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1357.0	7.14	146.21	1356.0	-18.5	12.4	2.00	146.21	-10.8	
4	5577.6	7.14	146.21	5544.0	-454.4	304.0	0.00	0.00	-267.1	
5	5934.6	0.00	0.00	5900.0	-472.9	316.4	2.00	180.00	-277.9	
6	6137.7	0.00	0.00	6103.1	-472.9	316.4	0.00	0.00	-277.9	
7	7334.2	89.74	270.00	6867.0	-472.9	-444.1	7.50	270.00	480.2	
8	12833.8	89.74	270.00	6892.0	-472.9	-5943.6	0.00	0.00	5962.4	BHL 989'FNL & 1005'FEL, Sec.2

BHL 989'FNL & 1005'FEL, Sec.2

Vertical Section at 265.45° (700 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T5N-R65W

LDS 5N65W1U Pad Sec.1-T5N-R65W

LDS 1V-414

Wellbore #1

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

Standard Planning Report

18 September, 2014

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1V-414
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-4-14)		

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

Site	LDS 5N65W1U Pad Sec.1-T5N-R65W		
Site Position:		Northing:	1,402,064.02 ft
From:	Lat/Long	Easting:	3,249,723.55 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.433600
		Longitude:	-104.602900
		Grid Convergence:	0.58 °

Well	LDS 1V-414		
Well Position	+N/-S	43.7 ft	Northing:
	+E/-W	-41.8 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			ft
			Latitude:
			40.433720
			Longitude:
			-104.603050
			Ground Level:
			4,638.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/4/2014	8.35	66.99	52,828

Design	Plan #1 (9-4-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	265.45

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,357.0	7.14	146.21	1,356.0	-18.5	12.4	2.00	2.00	0.00	146.21	
5,577.6	7.14	146.21	5,544.0	-454.4	304.0	0.00	0.00	0.00	0.00	
5,934.6	0.00	0.00	5,900.0	-472.9	316.4	2.00	-2.00	0.00	180.00	
6,137.7	0.00	0.00	6,103.1	-472.9	316.4	0.00	0.00	0.00	0.00	
7,334.2	89.74	270.00	6,867.0	-472.9	-444.1	7.50	7.50	0.00	270.00	
12,833.8	89.74	270.00	6,892.0	-472.9	-5,943.6	0.00	0.00	0.00	0.00	BHL 989'FNL & 10C

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1V-414
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
KOP #1									
1,100.0	2.00	146.21	1,100.0	-1.5	1.0	-0.9	2.00	2.00	0.00
1,200.0	4.00	146.21	1,199.8	-5.8	3.9	-3.4	2.00	2.00	0.00
1,300.0	6.00	146.21	1,299.5	-13.0	8.7	-7.7	2.00	2.00	0.00
1,357.0	7.14	146.21	1,356.0	-18.5	12.4	-10.8	2.00	2.00	0.00
1,400.0	7.14	146.21	1,398.7	-22.9	15.3	-13.5	0.00	0.00	0.00
1,500.0	7.14	146.21	1,498.0	-33.2	22.2	-19.5	0.00	0.00	0.00
1,600.0	7.14	146.21	1,597.2	-43.6	29.1	-25.6	0.00	0.00	0.00
1,700.0	7.14	146.21	1,696.4	-53.9	36.1	-31.7	0.00	0.00	0.00
1,800.0	7.14	146.21	1,795.6	-64.2	43.0	-37.7	0.00	0.00	0.00
1,900.0	7.14	146.21	1,894.9	-74.6	49.9	-43.8	0.00	0.00	0.00
2,000.0	7.14	146.21	1,994.1	-84.9	56.8	-49.9	0.00	0.00	0.00
2,100.0	7.14	146.21	2,093.3	-95.2	63.7	-56.0	0.00	0.00	0.00
2,200.0	7.14	146.21	2,192.5	-105.5	70.6	-62.0	0.00	0.00	0.00
2,300.0	7.14	146.21	2,291.8	-115.9	77.5	-68.1	0.00	0.00	0.00
2,400.0	7.14	146.21	2,391.0	-126.2	84.4	-74.2	0.00	0.00	0.00
2,500.0	7.14	146.21	2,490.2	-136.5	91.3	-80.2	0.00	0.00	0.00
2,600.0	7.14	146.21	2,589.4	-146.9	98.3	-86.3	0.00	0.00	0.00
2,700.0	7.14	146.21	2,688.7	-157.2	105.2	-92.4	0.00	0.00	0.00
2,800.0	7.14	146.21	2,787.9	-167.5	112.1	-98.4	0.00	0.00	0.00
2,900.0	7.14	146.21	2,887.1	-177.8	119.0	-104.5	0.00	0.00	0.00
3,000.0	7.14	146.21	2,986.3	-188.2	125.9	-110.6	0.00	0.00	0.00
3,100.0	7.14	146.21	3,085.6	-198.5	132.8	-116.7	0.00	0.00	0.00
3,200.0	7.14	146.21	3,184.8	-208.8	139.7	-122.7	0.00	0.00	0.00
3,300.0	7.14	146.21	3,284.0	-219.2	146.6	-128.8	0.00	0.00	0.00
3,400.0	7.14	146.21	3,383.2	-229.5	153.5	-134.9	0.00	0.00	0.00
3,500.0	7.14	146.21	3,482.5	-239.8	160.5	-140.9	0.00	0.00	0.00
3,503.6	7.14	146.21	3,486.0	-240.2	160.7	-141.2	0.00	0.00	0.00
PARKMAN									
3,600.0	7.14	146.21	3,581.7	-250.2	167.4	-147.0	0.00	0.00	0.00
3,700.0	7.14	146.21	3,680.9	-260.5	174.3	-153.1	0.00	0.00	0.00
3,800.0	7.14	146.21	3,780.1	-270.8	181.2	-159.1	0.00	0.00	0.00
3,900.0	7.14	146.21	3,879.4	-281.1	188.1	-165.2	0.00	0.00	0.00
4,000.0	7.14	146.21	3,978.6	-291.5	195.0	-171.3	0.00	0.00	0.00
4,100.0	7.14	146.21	4,077.8	-301.8	201.9	-177.4	0.00	0.00	0.00
4,200.0	7.14	146.21	4,177.0	-312.1	208.8	-183.4	0.00	0.00	0.00
4,267.5	7.14	146.21	4,244.0	-319.1	213.5	-187.5	0.00	0.00	0.00
SUSSEX									
4,300.0	7.14	146.21	4,276.3	-322.5	215.8	-189.5	0.00	0.00	0.00
4,400.0	7.14	146.21	4,375.5	-332.8	222.7	-195.6	0.00	0.00	0.00
4,500.0	7.14	146.21	4,474.7	-343.1	229.6	-201.6	0.00	0.00	0.00
4,600.0	7.14	146.21	4,573.9	-353.4	236.5	-207.7	0.00	0.00	0.00

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Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
4,700.0	7.14	146.21	4,673.2	-363.8	243.4	-213.8	0.00	0.00	0.00
4,800.0	7.14	146.21	4,772.4	-374.1	250.3	-219.9	0.00	0.00	0.00
4,900.0	7.14	146.21	4,871.6	-384.4	257.2	-225.9	0.00	0.00	0.00
5,000.0	7.14	146.21	4,970.8	-394.8	264.1	-232.0	0.00	0.00	0.00
5,100.0	7.14	146.21	5,070.1	-405.1	271.0	-238.1	0.00	0.00	0.00
5,200.0	7.14	146.21	5,169.3	-415.4	278.0	-244.1	0.00	0.00	0.00
5,231.0	7.14	146.21	5,200.0	-418.6	280.1	-246.0	0.00	0.00	0.00
SHANNON									
5,300.0	7.14	146.21	5,268.5	-425.8	284.9	-250.2	0.00	0.00	0.00
5,400.0	7.14	146.21	5,367.7	-436.1	291.8	-256.3	0.00	0.00	0.00
5,500.0	7.14	146.21	5,467.0	-446.4	298.7	-262.3	0.00	0.00	0.00
5,577.6	7.14	146.21	5,544.0	-454.4	304.0	-267.1	0.00	0.00	0.00
5,600.0	6.69	146.21	5,566.2	-456.7	305.5	-268.4	2.00	-2.00	0.00
5,700.0	4.69	146.21	5,665.7	-464.9	311.1	-273.2	2.00	-2.00	0.00
5,800.0	2.69	146.21	5,765.5	-470.3	314.6	-276.4	2.00	-2.00	0.00
5,900.0	0.69	146.21	5,865.4	-472.7	316.3	-277.8	2.00	-2.00	0.00
5,934.6	0.00	0.00	5,900.0	-472.9	316.4	-277.9	2.00	-2.00	0.00
6,000.0	0.00	0.00	5,965.4	-472.9	316.4	-277.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,065.4	-472.9	316.4	-277.9	0.00	0.00	0.00
6,137.7	0.00	0.00	6,103.1	-472.9	316.4	-277.9	0.00	0.00	0.00
KOP #2									
6,200.0	4.67	270.00	6,165.4	-472.9	313.9	-275.4	7.50	7.50	0.00
6,300.0	12.17	270.00	6,264.2	-472.9	299.2	-260.8	7.50	7.50	0.00
6,400.0	19.67	270.00	6,360.3	-472.9	271.8	-233.4	7.50	7.50	0.00
6,500.0	27.17	270.00	6,452.0	-472.9	232.1	-193.8	7.50	7.50	0.00
6,600.0	34.67	270.00	6,537.7	-472.9	180.7	-142.7	7.50	7.50	0.00
6,672.1	40.08	270.00	6,595.0	-472.9	137.0	-99.0	7.50	7.50	0.00
SHARON SPRINGS									
6,700.0	42.17	270.00	6,616.0	-472.9	118.6	-80.7	7.50	7.50	0.00
6,713.6	43.19	270.00	6,626.0	-472.9	109.4	-71.6	7.50	7.50	0.00
NIOBRARA A									
6,800.0	49.67	270.00	6,685.5	-472.9	46.8	-9.2	7.50	7.50	0.00
6,896.2	56.89	270.00	6,743.0	-472.9	-30.2	67.6	7.50	7.50	0.00
NIOBRARA B									
6,900.0	57.17	270.00	6,745.1	-472.9	-33.4	70.8	7.50	7.50	0.00
7,000.0	64.67	270.00	6,793.6	-472.9	-120.8	157.9	7.50	7.50	0.00
7,100.0	72.17	270.00	6,830.4	-472.9	-213.7	250.5	7.50	7.50	0.00
7,115.6	73.34	270.00	6,835.0	-472.9	-228.6	265.4	7.50	7.50	0.00
NIOBRARA C									
7,200.0	79.67	270.00	6,854.7	-472.9	-310.6	347.1	7.50	7.50	0.00
7,269.4	84.88	270.00	6,864.0	-472.9	-379.3	415.6	7.50	7.50	0.00
FT HAYS									
7,300.0	87.17	270.00	6,866.1	-472.9	-409.9	446.1	7.50	7.50	0.00
7,334.2	89.74	270.00	6,867.0	-472.9	-444.1	480.2	7.50	7.50	0.00
End of Build - 7"									
7,400.0	89.74	270.00	6,867.3	-472.9	-509.9	545.8	0.00	0.00	0.00
7,500.0	89.74	270.00	6,867.8	-472.9	-609.9	645.4	0.00	0.00	0.00
7,600.0	89.74	270.00	6,868.2	-472.9	-709.9	745.1	0.00	0.00	0.00
7,700.0	89.74	270.00	6,868.7	-472.9	-809.9	844.8	0.00	0.00	0.00
7,800.0	89.74	270.00	6,869.2	-472.9	-909.9	944.5	0.00	0.00	0.00
7,900.0	89.74	270.00	6,869.6	-472.9	-1,009.9	1,044.2	0.00	0.00	0.00
8,000.0	89.74	270.00	6,870.1	-472.9	-1,109.9	1,143.9	0.00	0.00	0.00

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Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	89.74	270.00	6,870.5	-472.9	-1,209.9	1,243.5	0.00	0.00	0.00
8,200.0	89.74	270.00	6,871.0	-472.9	-1,309.9	1,343.2	0.00	0.00	0.00
8,300.0	89.74	270.00	6,871.4	-472.9	-1,409.9	1,442.9	0.00	0.00	0.00
8,400.0	89.74	270.00	6,871.9	-472.9	-1,509.9	1,542.6	0.00	0.00	0.00
8,500.0	89.74	270.00	6,872.3	-472.9	-1,609.9	1,642.3	0.00	0.00	0.00
8,600.0	89.74	270.00	6,872.8	-472.9	-1,709.9	1,742.0	0.00	0.00	0.00
8,700.0	89.74	270.00	6,873.2	-472.9	-1,809.9	1,841.7	0.00	0.00	0.00
8,800.0	89.74	270.00	6,873.7	-472.9	-1,909.9	1,941.3	0.00	0.00	0.00
8,900.0	89.74	270.00	6,874.1	-472.9	-2,009.9	2,041.0	0.00	0.00	0.00
9,000.0	89.74	270.00	6,874.6	-472.9	-2,109.9	2,140.7	0.00	0.00	0.00
9,100.0	89.74	270.00	6,875.1	-472.9	-2,209.8	2,240.4	0.00	0.00	0.00
9,200.0	89.74	270.00	6,875.5	-472.9	-2,309.8	2,340.1	0.00	0.00	0.00
9,300.0	89.74	270.00	6,876.0	-472.9	-2,409.8	2,439.8	0.00	0.00	0.00
9,400.0	89.74	270.00	6,876.4	-472.9	-2,509.8	2,539.4	0.00	0.00	0.00
9,500.0	89.74	270.00	6,876.9	-472.9	-2,609.8	2,639.1	0.00	0.00	0.00
9,600.0	89.74	270.00	6,877.3	-472.9	-2,709.8	2,738.8	0.00	0.00	0.00
9,700.0	89.74	270.00	6,877.8	-472.9	-2,809.8	2,838.5	0.00	0.00	0.00
9,800.0	89.74	270.00	6,878.2	-472.9	-2,909.8	2,938.2	0.00	0.00	0.00
9,900.0	89.74	270.00	6,878.7	-472.9	-3,009.8	3,037.9	0.00	0.00	0.00
10,000.0	89.74	270.00	6,879.1	-472.9	-3,109.8	3,137.5	0.00	0.00	0.00
10,100.0	89.74	270.00	6,879.6	-472.9	-3,209.8	3,237.2	0.00	0.00	0.00
10,200.0	89.74	270.00	6,880.0	-472.9	-3,309.8	3,336.9	0.00	0.00	0.00
10,300.0	89.74	270.00	6,880.5	-472.9	-3,409.8	3,436.6	0.00	0.00	0.00
10,400.0	89.74	270.00	6,881.0	-472.9	-3,509.8	3,536.3	0.00	0.00	0.00
10,409.7	89.74	270.00	6,881.0	-472.9	-3,519.6	3,546.0	0.00	0.00	0.00
CODELL									
10,500.0	89.74	270.00	6,881.4	-472.9	-3,609.8	3,636.0	0.00	0.00	0.00
10,600.0	89.74	270.00	6,881.9	-472.9	-3,709.8	3,735.7	0.00	0.00	0.00
10,700.0	89.74	270.00	6,882.3	-472.9	-3,809.8	3,835.3	0.00	0.00	0.00
10,800.0	89.74	270.00	6,882.8	-472.9	-3,909.8	3,935.0	0.00	0.00	0.00
10,900.0	89.74	270.00	6,883.2	-472.9	-4,009.8	4,034.7	0.00	0.00	0.00
11,000.0	89.74	270.00	6,883.7	-472.9	-4,109.8	4,134.4	0.00	0.00	0.00
11,100.0	89.74	270.00	6,884.1	-472.9	-4,209.8	4,234.1	0.00	0.00	0.00
11,200.0	89.74	270.00	6,884.6	-472.9	-4,309.8	4,333.8	0.00	0.00	0.00
11,300.0	89.74	270.00	6,885.0	-472.9	-4,409.8	4,433.4	0.00	0.00	0.00
11,400.0	89.74	270.00	6,885.5	-472.9	-4,509.8	4,533.1	0.00	0.00	0.00
11,500.0	89.74	270.00	6,885.9	-472.9	-4,609.8	4,632.8	0.00	0.00	0.00
11,600.0	89.74	270.00	6,886.4	-472.9	-4,709.8	4,732.5	0.00	0.00	0.00
11,700.0	89.74	270.00	6,886.9	-472.9	-4,809.8	4,832.2	0.00	0.00	0.00
11,800.0	89.74	270.00	6,887.3	-472.9	-4,909.8	4,931.9	0.00	0.00	0.00
11,900.0	89.74	270.00	6,887.8	-472.9	-5,009.8	5,031.5	0.00	0.00	0.00
12,000.0	89.74	270.00	6,888.2	-472.9	-5,109.8	5,131.2	0.00	0.00	0.00
12,100.0	89.74	270.00	6,888.7	-472.9	-5,209.8	5,230.9	0.00	0.00	0.00
12,200.0	89.74	270.00	6,889.1	-472.9	-5,309.8	5,330.6	0.00	0.00	0.00
12,300.0	89.74	270.00	6,889.6	-472.9	-5,409.8	5,430.3	0.00	0.00	0.00
12,400.0	89.74	270.00	6,890.0	-472.9	-5,509.8	5,530.0	0.00	0.00	0.00
12,500.0	89.74	270.00	6,890.5	-472.9	-5,609.8	5,629.6	0.00	0.00	0.00
12,600.0	89.74	270.00	6,890.9	-472.9	-5,709.8	5,729.3	0.00	0.00	0.00
12,700.0	89.74	270.00	6,891.4	-472.9	-5,809.8	5,829.0	0.00	0.00	0.00
12,800.0	89.74	270.00	6,891.8	-472.9	-5,909.8	5,928.7	0.00	0.00	0.00
12,833.8	89.74	270.00	6,892.0	-472.9	-5,943.6	5,962.4	0.00	0.00	0.00

Database:	landmark	Local Co-ordinate Reference:	Well LDS 1V-414
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Project:	SEC.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	North Reference:	True
Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (9-4-14)		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
BHL 989'FNL & 1005'	0.00	0.00	6,892.0	-472.9	-5,943.6	1,401,574.34	3,243,743.09	40.432420	-104.624400
- plan hits target									
- Point									
SHL 510'FNL & 368'F	0.00	0.00	1.0	0.0	0.0	1,402,107.31	3,249,681.35	40.433720	-104.603050
- plan hits target									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
7,334.2	6,867.0	7"		7	7-1/2

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
3,503.6	3,486.0	PARKMAN		0.00		
4,267.5	4,244.0	SUSSEX		0.00		
5,231.0	5,200.0	SHANNON		0.00		
6,672.1	6,595.0	SHARON SPRINGS		0.00		
6,713.6	6,626.0	NIOBRARA A		0.00		
6,896.2	6,743.0	NIOBRARA B		0.00		
7,115.6	6,835.0	NIOBRARA C		0.00		
7,269.4	6,864.0	FT HAYS		0.00		
10,409.7	6,881.0	CODELL		0.00		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
1,000.0	1,000.0	0.0	0.0	KOP #1	
6,137.7	6,103.1	-18.5	12.4	KOP #2	
7,334.2	6,867.0	-454.4	304.0	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.1-T5N-R65W

LDS 5N65W1U Pad Sec.1-T5N-R65W

LDS 1V-414

Wellbore #1

Plan #1 (9-4-14)

Anticollision Report

18 September, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	9/18/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,833.8	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 4 (Exist.) - Wellbore #1 - Wellbore #1	7,544.3	6,852.0	378.2	214.5	2.311	CC, ES, SF
BJB 5 (Exist.) - Wellbore #1 - Wellbore #1	7,774.9	6,857.8	225.6	180.9	5.043	CC, ES
BJB 5 (Exist.) - Wellbore #1 - Wellbore #1	7,800.0	6,857.5	227.0	181.7	5.006	SF
BJB 6I (Exist.) - Wellbore #1 - Wellbore #1	9,109.9	7,017.5	337.7	252.7	3.973	CC, ES, SF
Gatewood 3-1 (Exist.) - Wellbore #1 - Wellbore #1	9,660.1	6,859.6	349.2	129.7	1.591	CC, ES, SF
Gatewood 4-1 (Exist.) - Wellbore #1 - Wellbore #1	11,338.7	6,873.2	382.2	115.8	1.435	Level 3, CC, ES, SF
Gatewood 5 (Exist.) - Wellbore #1 - Wellbore #1	10,509.3	6,867.5	291.9	48.7	1.200	Level 2, CC, ES, SF
Noffsinger 1 (P&A) - Wellbore #1 - Wellbore #1	7,181.3	6,882.1	290.7	133.7	1.852	CC, ES
Noffsinger 1 (P&A) - Wellbore #1 - Wellbore #1	7,200.0	6,885.7	291.3	133.9	1.851	SF
Existing Wells Sec.2-T5N-R65W						
Frudden 1 (Exist.) - Wellbore #1 - Wellbore #1	12,481.8	6,888.7	310.9	12.9	1.043	Level 2, CC, ES
Frudden 1 (Exist.) - Wellbore #1 - Wellbore #1	12,500.0	6,888.4	311.5	12.9	1.043	Level 2, SF
LDS 5N65W1U Pad Sec.1-T5N-R65W						
LDS 1U-234 - Wellbore #1 - Plan #1 (9-4-14)	1,000.0	1,001.0	57.9	53.6	13.545	CC, ES
LDS 1U-234 - Wellbore #1 - Plan #1 (9-4-14)	12,834.6	12,740.1	703.2	370.0	2.111	SF
LDS 1U-304 - Wellbore #1 - Plan #1 (9-4-14)	1,000.0	1,002.0	89.1	84.8	20.837	CC, ES
LDS 1U-304 - Wellbore #1 - Plan #1 (9-4-14)	12,834.6	12,832.5	894.6	556.9	2.649	SF
LDS 1V-204 - Wellbore #1 - Plan #1 (9-4-14)	400.0	400.0	31.2	29.6	19.834	CC
LDS 1V-204 - Wellbore #1 - Plan #1 (9-4-14)	12,834.6	12,757.7	195.2	-22.1	0.898	Level 1, ES, SF
LDS 1V-304 - Wellbore #1 - Plan #1 (9-4-14)	200.0	199.0	60.5	59.8	89.953	CC, ES
LDS 1V-304 - Wellbore #1 - Plan #1 (9-4-14)	12,834.6	12,844.3	494.7	159.2	1.475	Level 3, SF
LDS 1V-314 - Wellbore #1 - Plan #1 (9-4-14)	1,000.0	1,000.0	29.3	25.0	6.857	CC
LDS 1V-314 - Wellbore #1 - Plan #1 (9-4-14)	12,834.6	12,829.7	154.2	-132.6	0.538	Level 1, ES, SF
Noffsinger Pad Sec.2-T5N-R65W						
Noffsinger 2C (Vert.) - Wellbore #1 - Design #1	12,834.6	6,899.0	128.3	-57.8	0.689	Level 1, CC, ES, SF
Noffsinger 2RD - Wellbore #1 - Wellbore #1	12,834.6	7,026.0	982.0	795.8	5.273	CC, ES, SF
Noffsinger 2VD - Wellbore #1 - Wellbore #1	11,903.4	7,028.1	293.5	125.8	1.750	CC, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 4 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0ft
Survey Program: 7064-UNKNOWN													Offset Well Error:	0.0ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-98.24	-94.7	-654.2	661.2					
100.0	100.0	84.0	84.0	0.1	1.7	-98.24	-94.7	-654.2	661.0	659.2	1.79	368.755		
200.0	200.0	184.0	184.0	0.3	3.7	-98.24	-94.7	-654.2	661.0	657.0	4.02	164.542		
300.0	300.0	284.0	284.0	0.6	5.7	-98.24	-94.7	-654.2	661.0	654.8	6.24	105.897		
400.0	400.0	384.0	384.0	0.8	7.7	-98.24	-94.7	-654.2	661.0	652.6	8.47	78.072		
500.0	500.0	484.0	484.0	1.0	9.7	-98.24	-94.7	-654.2	661.0	650.3	10.69	61.826		
600.0	600.0	584.0	584.0	1.2	11.7	-98.24	-94.7	-654.2	661.0	648.1	12.92	51.177		
700.0	700.0	684.0	684.0	1.5	13.7	-98.24	-94.7	-654.2	661.0	645.9	15.14	43.657		
800.0	800.0	784.0	784.0	1.7	15.7	-98.24	-94.7	-654.2	661.0	643.7	17.37	38.064		
900.0	900.0	884.0	884.0	1.9	17.7	-98.24	-94.7	-654.2	661.0	641.4	19.59	33.742		
1,000.0	1,000.0	984.0	984.0	2.1	19.7	-98.24	-94.7	-654.2	661.0	639.2	21.82	30.301		
1,100.0	1,100.0	1,084.0	1,084.0	2.3	21.7	115.67	-94.7	-654.2	661.8	637.8	24.01	27.562		
1,200.0	1,199.8	1,183.8	1,183.8	2.5	23.7	116.04	-94.7	-654.2	664.1	637.9	26.18	25.366		
1,300.0	1,299.5	1,283.5	1,283.5	2.7	25.7	116.64	-94.7	-654.2	667.9	639.6	28.35	23.562		
1,400.0	1,398.7	1,382.7	1,382.7	2.9	27.7	117.48	-94.7	-654.2	673.4	642.8	30.53	22.056		
1,500.0	1,498.0	1,482.0	1,482.0	3.2	29.6	118.41	-94.7	-654.2	679.2	646.5	32.74	20.747		
1,600.0	1,597.2	1,581.2	1,581.2	3.4	31.6	119.31	-94.7	-654.2	685.3	650.3	34.96	19.601		
1,700.0	1,696.4	1,680.4	1,680.4	3.7	33.6	120.21	-94.7	-654.2	691.5	654.3	37.19	18.593		
1,800.0	1,795.6	1,779.6	1,779.6	4.0	35.6	121.08	-94.7	-654.2	697.8	658.4	39.43	17.700		
1,900.0	1,894.9	1,878.9	1,878.9	4.3	37.6	121.95	-94.7	-654.2	704.4	662.7	41.67	16.904		
2,000.0	1,994.1	1,978.1	1,978.1	4.6	39.6	122.79	-94.7	-654.2	711.1	667.2	43.91	16.193		
2,100.0	2,093.3	2,077.3	2,077.3	4.9	41.5	123.62	-94.7	-654.2	717.9	671.7	46.16	15.553		
2,200.0	2,192.5	2,176.5	2,176.5	5.2	43.5	124.43	-94.7	-654.2	724.9	676.5	48.41	14.975		
2,300.0	2,291.8	2,275.8	2,275.8	5.5	45.5	125.23	-94.7	-654.2	732.0	681.4	50.66	14.451		
2,400.0	2,391.0	2,375.0	2,375.0	5.8	47.5	126.01	-94.7	-654.2	739.3	686.4	52.91	13.974		
2,500.0	2,490.2	2,474.2	2,474.2	6.1	49.5	126.78	-94.7	-654.2	746.7	691.6	55.16	13.538		
2,600.0	2,589.4	2,573.4	2,573.4	6.4	51.5	127.53	-94.7	-654.2	754.3	696.9	57.41	13.139		
2,700.0	2,688.7	2,672.7	2,672.7	6.7	53.5	128.27	-94.7	-654.2	761.9	702.3	59.66	12.772		
2,800.0	2,787.9	2,771.9	2,771.9	7.0	55.4	128.99	-94.7	-654.2	769.7	707.8	61.90	12.434		
2,900.0	2,887.1	2,871.1	2,871.1	7.3	57.4	129.70	-94.7	-654.2	777.7	713.5	64.15	12.122		
3,000.0	2,986.3	2,970.3	2,970.3	7.7	59.4	130.40	-94.7	-654.2	785.7	719.3	66.40	11.833		
3,100.0	3,085.6	3,069.6	3,069.6	8.0	61.4	131.08	-94.7	-654.2	793.8	725.2	68.64	11.565		
3,200.0	3,184.8	3,168.8	3,168.8	8.3	63.4	131.74	-94.7	-654.2	802.1	731.2	70.89	11.315		
3,300.0	3,284.0	3,268.0	3,268.0	8.6	65.4	132.40	-94.7	-654.2	810.5	737.3	73.13	11.082		
3,400.0	3,383.2	3,367.2	3,367.2	8.9	67.3	133.04	-94.7	-654.2	818.9	743.5	75.37	10.865		
3,500.0	3,482.5	3,466.5	3,466.5	9.3	69.3	133.66	-94.7	-654.2	827.5	749.9	77.61	10.662		
3,600.0	3,581.7	3,565.7	3,565.7	9.6	71.3	134.28	-94.7	-654.2	836.1	756.3	79.85	10.471		
3,700.0	3,680.9	3,664.9	3,664.9	9.9	73.3	134.88	-94.7	-654.2	844.9	762.8	82.09	10.292		
3,800.0	3,780.1	3,764.1	3,764.1	10.2	75.3	135.47	-94.7	-654.2	853.8	769.4	84.33	10.124		
3,900.0	3,879.4	3,863.4	3,863.4	10.6	77.3	136.04	-94.7	-654.2	862.7	776.1	86.56	9.966		
4,000.0	3,978.6	3,962.6	3,962.6	10.9	79.3	136.61	-94.7	-654.2	871.7	782.9	88.80	9.817		
4,100.0	4,077.8	4,061.8	4,061.8	11.2	81.2	137.16	-94.7	-654.2	880.8	789.8	91.03	9.676		
4,200.0	4,177.0	4,161.0	4,161.0	11.5	83.2	137.70	-94.7	-654.2	890.0	796.7	93.26	9.543		
4,300.0	4,276.3	4,260.3	4,260.3	11.9	85.2	138.23	-94.7	-654.2	899.3	803.8	95.50	9.417		
4,400.0	4,375.5	4,359.5	4,359.5	12.2	87.2	138.75	-94.7	-654.2	908.6	810.9	97.73	9.298		
4,500.0	4,474.7	4,458.7	4,458.7	12.5	89.2	139.26	-94.7	-654.2	918.0	818.1	99.96	9.184		
4,600.0	4,573.9	4,557.9	4,557.9	12.8	91.2	139.76	-94.7	-654.2	927.5	825.3	102.18	9.077		
4,700.0	4,673.2	4,657.2	4,657.2	13.2	93.1	140.25	-94.7	-654.2	937.1	832.6	104.41	8.975		
4,800.0	4,772.4	4,756.4	4,756.4	13.5	95.1	140.73	-94.7	-654.2	946.7	840.0	106.64	8.878		
4,900.0	4,871.6	4,855.6	4,855.6	13.8	97.1	141.20	-94.7	-654.2	956.4	847.5	108.86	8.785		
5,000.0	4,970.8	4,954.8	4,954.8	14.2	99.1	141.66	-94.7	-654.2	966.1	855.0	111.09	8.697		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 4 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7064-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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.0	5,070.1	5,054.1	5,054.1	14.5	101.1	142.11	-94.7	-654.2	975.9	862.6	113.31	8.613		
5,200.0	5,169.3	5,153.3	5,153.3	14.8	103.1	142.56	-94.7	-654.2	985.8	870.2	115.53	8.532		
5,300.0	5,268.5	5,252.5	5,252.5	15.1	105.1	142.99	-94.7	-654.2	995.7	878.0	117.76	8.456		
6,500.0	6,452.0	6,436.0	6,436.0	17.2	128.7	25.62	-94.7	-654.2	963.6	832.6	130.98	7.357		
6,600.0	6,537.7	6,521.7	6,521.7	17.2	130.4	28.84	-94.7	-654.2	916.6	790.4	126.13	7.267		
6,700.0	6,616.0	6,600.0	6,600.0	17.1	132.0	33.44	-94.7	-654.2	860.4	738.5	121.85	7.061		
6,800.0	6,685.5	6,669.5	6,669.5	17.1	133.4	39.81	-94.7	-654.2	796.5	676.0	120.53	6.609		
6,900.0	6,745.1	6,729.1	6,729.1	17.0	134.6	48.34	-94.7	-654.2	726.9	602.2	124.70	5.829		
7,000.0	6,793.6	6,777.6	6,777.6	17.0	135.6	58.89	-94.7	-654.2	653.9	519.3	134.57	4.859		
7,100.0	6,830.4	6,814.4	6,814.4	18.1	136.3	70.37	-94.7	-654.2	580.6	434.5	146.10	3.974		
7,200.0	6,854.7	6,838.7	6,838.7	19.7	136.8	80.75	-94.7	-654.2	510.9	356.6	154.34	3.311		
7,300.0	6,866.1	6,850.1	6,850.1	21.6	137.0	88.18	-94.7	-654.2	450.2	291.9	158.36	2.843		
7,400.0	6,867.3	6,851.3	6,851.3	23.6	137.0	89.90	-94.7	-654.2	404.8	244.3	160.48	2.522		
7,500.0	6,867.8	6,851.8	6,851.8	25.8	137.0	89.97	-94.7	-654.2	380.8	218.1	162.63	2.341		
7,544.3	6,868.0	6,852.0	6,852.0	26.8	137.0	90.00	-94.7	-654.2	378.2	214.5	163.64	2.311 CC, ES, SF		
7,600.0	6,868.2	6,852.2	6,852.2	28.0	137.0	90.04	-94.7	-654.2	382.2	217.3	164.90	2.318		
7,700.0	6,868.7	6,852.7	6,852.7	30.4	137.1	90.11	-94.7	-654.2	409.0	241.7	167.26	2.445		
7,800.0	6,869.2	6,853.2	6,853.2	32.8	137.1	90.18	-94.7	-654.2	456.5	286.8	169.70	2.690		
7,900.0	6,869.6	6,853.6	6,853.6	35.3	137.1	90.24	-94.7	-654.2	519.1	347.0	172.19	3.015		
8,000.0	6,870.1	6,854.1	6,854.1	37.8	137.1	90.31	-94.7	-654.2	592.1	417.4	174.72	3.389		
8,100.0	6,870.5	6,854.5	6,854.5	40.4	137.1	90.38	-94.7	-654.2	672.1	494.8	177.30	3.791		
8,200.0	6,871.0	6,855.0	6,855.0	43.0	137.1	90.45	-94.7	-654.2	756.9	577.0	179.90	4.207		
8,300.0	6,871.4	6,855.4	6,855.4	45.6	137.1	90.52	-94.7	-654.2	845.0	662.5	182.53	4.629		
8,400.0	6,871.9	6,855.9	6,855.9	48.2	137.1	90.59	-94.7	-654.2	935.5	750.3	185.18	5.052		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 5 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,800.0	6,685.5	6,688.2	6,686.6	17.1	12.3	-20.81	-698.6	-887.3	961.1	939.2	21.96	43.766		
6,900.0	6,745.1	6,746.6	6,745.0	17.0	12.5	-26.56	-698.6	-886.4	882.5	861.2	21.26	41.509		
7,000.0	6,793.6	6,793.8	6,792.2	17.0	12.6	-35.47	-698.6	-885.7	797.7	775.5	22.16	35.992		
7,100.0	6,830.4	6,829.2	6,827.5	18.1	12.7	-49.04	-698.5	-885.2	708.5	682.9	25.61	27.666		
7,200.0	6,854.7	6,852.0	6,850.4	19.7	12.7	-67.31	-698.5	-884.9	617.1	586.4	30.66	20.124		
7,300.0	6,866.1	6,862.0	6,860.3	21.6	12.7	-85.90	-698.5	-884.7	525.8	491.6	34.21	15.367		
7,400.0	6,867.3	6,861.7	6,860.1	23.6	12.7	-91.02	-698.5	-884.7	437.6	401.4	36.17	12.098		
7,500.0	6,867.8	6,860.6	6,859.0	25.8	12.7	-90.76	-698.5	-884.7	355.6	317.3	38.31	9.283		
7,600.0	6,868.2	6,859.6	6,858.0	28.0	12.7	-90.49	-698.5	-884.8	285.5	244.9	40.57	7.036		
7,700.0	6,868.7	6,858.5	6,856.9	30.4	12.7	-90.23	-698.5	-884.8	237.8	194.8	42.93	5.538		
7,774.9	6,869.0	6,857.8	6,856.2	32.2	12.7	-90.03	-698.5	-884.8	225.6	180.9	44.75	5.043 CC, ES		
7,800.0	6,869.2	6,857.5	6,855.9	32.8	12.7	-89.96	-698.5	-884.8	227.0	181.7	45.36	5.006 SF		
7,900.0	6,869.6	6,856.5	6,854.8	35.3	12.7	-89.70	-698.5	-884.8	258.0	210.1	47.84	5.393		
8,000.0	6,870.1	6,855.4	6,853.8	37.8	12.7	-89.43	-698.5	-884.8	318.7	268.3	50.37	6.328		
8,100.0	6,870.5	6,854.4	6,852.8	40.4	12.7	-89.17	-698.5	-884.8	395.7	342.8	52.93	7.476		
8,200.0	6,871.0	6,853.3	6,851.7	43.0	12.7	-88.90	-698.5	-884.8	481.2	425.7	55.53	8.667		
8,300.0	6,871.4	6,852.3	6,850.7	45.6	12.7	-88.64	-698.5	-884.9	571.5	513.3	58.14	9.829		
8,400.0	6,871.9	6,851.2	6,849.6	48.2	12.7	-88.37	-698.5	-884.9	664.5	603.7	60.78	10.933		
8,500.0	6,872.3	6,850.2	6,848.6	50.9	12.7	-88.11	-698.5	-884.9	759.3	695.9	63.43	11.971		
8,600.0	6,872.8	6,849.1	6,847.5	53.5	12.7	-87.84	-698.5	-884.9	855.3	789.2	66.10	12.940		
8,700.0	6,873.2	6,848.1	6,846.5	56.2	12.7	-87.58	-698.5	-884.9	952.2	883.4	68.77	13.845		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - BJB 6I (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 552-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,200.0	6,871.0	7,000.4	6,846.1	43.0	22.6	-87.12	-810.6	-2,219.5	970.4	909.8	60.63	16.006		
8,300.0	6,871.4	7,002.3	6,848.0	45.6	22.6	-87.44	-810.6	-2,219.6	877.4	814.1	63.25	13.872		
8,400.0	6,871.9	7,004.2	6,849.9	48.2	22.6	-87.77	-810.6	-2,219.6	786.0	720.1	65.89	11.930		
8,500.0	6,872.3	7,006.1	6,851.8	50.9	22.6	-88.09	-810.6	-2,219.6	697.1	628.5	68.55	10.169		
8,600.0	6,872.8	7,008.0	6,853.7	53.5	22.6	-88.41	-810.6	-2,219.6	611.5	540.3	71.22	8.586		
8,700.0	6,873.2	7,009.9	6,855.6	56.2	22.6	-88.73	-810.6	-2,219.7	531.0	457.1	73.91	7.185		
8,800.0	6,873.7	7,011.8	6,857.5	58.9	22.6	-89.04	-810.6	-2,219.7	458.3	381.7	76.60	5.983		
8,900.0	6,874.1	7,013.6	6,859.3	61.6	22.6	-89.36	-810.6	-2,219.7	397.6	318.3	79.31	5.013		
9,000.0	6,874.6	7,015.5	6,861.2	64.3	22.6	-89.67	-810.6	-2,219.7	355.1	273.1	82.02	4.330		
9,100.0	6,875.1	7,017.3	6,863.0	67.1	22.6	-89.98	-810.6	-2,219.8	337.8	253.1	84.73	3.987		
9,109.9	6,875.1	7,017.5	6,863.2	67.3	22.6	-90.01	-810.6	-2,219.8	337.7	252.7	85.00	3.973	CC, ES, SF	
9,200.0	6,875.5	7,019.1	6,864.8	69.8	22.6	-90.29	-810.6	-2,219.8	349.5	262.0	87.46	3.996		
9,300.0	6,876.0	7,020.9	6,866.6	72.5	22.6	-90.59	-810.6	-2,219.8	387.5	297.3	90.18	4.297		
9,400.0	6,876.4	7,022.7	6,868.4	75.3	22.6	-90.89	-810.6	-2,219.8	445.1	352.2	92.91	4.791		
9,500.0	6,876.9	7,024.4	6,870.1	78.0	22.6	-91.19	-810.6	-2,219.9	515.9	420.2	95.64	5.394		
9,600.0	6,877.3	7,026.2	6,871.9	80.8	22.6	-91.49	-810.6	-2,219.9	595.1	496.7	98.37	6.049		
9,700.0	6,877.8	7,027.9	6,873.6	83.5	22.6	-91.79	-810.6	-2,219.9	679.8	578.7	101.10	6.724		
9,800.0	6,878.2	7,029.7	6,875.4	86.3	22.6	-92.08	-810.6	-2,219.9	768.2	664.3	103.84	7.398		
9,900.0	6,878.7	7,031.4	6,877.1	89.0	22.6	-92.37	-810.6	-2,220.0	859.1	752.5	106.57	8.061		
10,000.0	6,879.1	7,033.1	6,878.8	91.8	22.6	-92.66	-810.6	-2,220.0	951.8	842.5	109.30	8.708		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Gatewood 3-1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7060-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		
8,800.0	6,873.7	6,855.7	6,855.7	58.9	137.1	89.36	-123.7	-2,769.9	928.2	732.4	195.88	4.739		
8,900.0	6,874.1	6,856.1	6,856.1	61.6	137.1	89.43	-123.7	-2,769.9	836.4	637.8	198.60	4.212		
9,000.0	6,874.6	6,856.6	6,856.6	64.3	137.1	89.51	-123.7	-2,769.9	746.7	545.4	201.33	3.709		
9,100.0	6,875.1	6,857.1	6,857.1	67.1	137.1	89.58	-123.7	-2,769.9	660.0	455.9	204.07	3.234		
9,200.0	6,875.5	6,857.5	6,857.5	69.8	137.2	89.66	-123.7	-2,769.9	577.6	370.8	206.81	2.793		
9,300.0	6,876.0	6,858.0	6,858.0	72.5	137.2	89.73	-123.7	-2,769.9	501.6	292.0	209.56	2.393		
9,400.0	6,876.4	6,858.4	6,858.4	75.3	137.2	89.81	-123.7	-2,769.9	435.4	223.1	212.32	2.051		
9,500.0	6,876.9	6,858.9	6,858.9	78.0	137.2	89.88	-123.7	-2,769.9	384.1	169.0	215.08	1.786		
9,600.0	6,877.3	6,859.3	6,859.3	80.8	137.2	89.96	-123.7	-2,769.9	354.3	136.5	217.84	1.626		
9,660.1	6,877.6	6,859.6	6,859.6	82.4	137.2	90.00	-123.7	-2,769.9	349.2	129.7	219.50	1.591 CC, ES, SF		
9,700.0	6,877.8	6,859.8	6,859.8	83.5	137.2	90.03	-123.7	-2,769.9	351.4	130.8	220.61	1.593		
9,800.0	6,878.2	6,860.2	6,860.2	86.3	137.2	90.10	-123.7	-2,769.9	376.2	152.8	223.38	1.684		
9,900.0	6,878.7	6,860.7	6,860.7	89.0	137.2	90.18	-123.7	-2,769.9	423.7	197.5	226.15	1.873		
10,000.0	6,879.1	6,861.1	6,861.1	91.8	137.2	90.25	-123.7	-2,769.9	487.3	258.4	228.92	2.129		
10,100.0	6,879.6	6,861.6	6,861.6	94.6	137.2	90.33	-123.7	-2,769.9	561.6	329.9	231.70	2.424		
10,200.0	6,880.0	6,862.0	6,862.0	97.3	137.2	90.40	-123.7	-2,769.9	643.0	408.5	234.48	2.742		
10,300.0	6,880.5	6,862.5	6,862.5	100.1	137.3	90.48	-123.7	-2,769.9	729.0	491.7	237.26	3.072		
10,400.0	6,881.0	6,863.0	6,863.0	102.9	137.3	90.55	-123.7	-2,769.9	818.2	578.1	240.04	3.408		
10,500.0	6,881.4	6,863.4	6,863.4	105.7	137.3	90.63	-123.7	-2,769.9	909.6	666.8	242.83	3.746		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Gatewood 4-1 (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 7045-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
10,500.0	6,881.4	6,869.4	6,869.4	105.7	137.4	89.43	-90.7	-4,448.6	921.7	678.8	242.93	3.794	
10,600.0	6,881.9	6,869.9	6,869.9	108.4	137.4	89.50	-90.7	-4,448.6	831.8	586.0	245.72	3.385	
10,700.0	6,882.3	6,870.3	6,870.3	111.2	137.4	89.57	-90.7	-4,448.6	744.4	495.8	248.52	2.995	
10,800.0	6,882.8	6,870.8	6,870.8	114.0	137.4	89.63	-90.7	-4,448.6	660.6	409.2	251.31	2.628	
10,900.0	6,883.2	6,871.2	6,871.2	116.8	137.4	89.70	-90.7	-4,448.6	581.9	327.8	254.10	2.290	
11,000.0	6,883.7	6,871.7	6,871.7	119.5	137.4	89.77	-90.7	-4,448.6	510.7	253.8	256.90	1.988	
11,100.0	6,884.1	6,872.1	6,872.1	122.3	137.4	89.84	-90.7	-4,448.6	450.6	191.0	259.70	1.735	
11,200.0	6,884.6	6,872.6	6,872.6	125.1	137.5	89.91	-90.7	-4,448.6	406.6	144.1	262.49	1.549	
11,300.0	6,885.0	6,873.0	6,873.0	127.9	137.5	89.97	-90.7	-4,448.6	384.2	118.9	265.29	1.448	Level 3
11,338.7	6,885.2	6,873.2	6,873.2	129.0	137.5	90.00	-90.7	-4,448.6	382.2	115.8	266.37	1.435	Level 3, CC, ES, SF
11,400.0	6,885.5	6,873.5	6,873.5	130.7	137.5	90.04	-90.7	-4,448.6	387.1	119.0	268.09	1.444	Level 3
11,500.0	6,885.9	6,873.9	6,873.9	133.5	137.5	90.11	-90.7	-4,448.6	414.8	143.9	270.89	1.531	
11,600.0	6,886.4	6,874.4	6,874.4	136.3	137.5	90.18	-90.7	-4,448.6	463.0	189.3	273.69	1.692	
11,700.0	6,886.9	6,874.9	6,874.9	139.1	137.5	90.25	-90.7	-4,448.6	525.9	249.4	276.49	1.902	
11,800.0	6,887.3	6,875.3	6,875.3	141.8	137.5	90.31	-90.7	-4,448.6	599.0	319.7	279.28	2.145	
11,900.0	6,887.8	6,875.8	6,875.8	144.6	137.5	90.38	-90.7	-4,448.6	679.0	396.9	282.08	2.407	
12,000.0	6,888.2	6,876.2	6,876.2	147.4	137.5	90.45	-90.7	-4,448.6	763.8	478.9	284.89	2.681	
12,100.0	6,888.7	6,876.7	6,876.7	150.2	137.5	90.52	-90.7	-4,448.6	851.8	564.1	287.69	2.961	
12,200.0	6,889.1	6,877.1	6,877.1	153.0	137.5	90.59	-90.7	-4,448.6	942.2	651.8	290.49	3.244	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Gatewood 5 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7123-UNKNOWN													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)			
9,600.0	6,877.3	6,863.3	6,863.3	80.8	137.3	-89.19	-764.8	-3,619.1	955.0	737.0	217.91	4.382		
9,700.0	6,877.8	6,863.8	6,863.8	83.5	137.3	-89.28	-764.8	-3,619.1	860.3	639.6	220.68	3.898		
9,800.0	6,878.2	6,864.2	6,864.2	86.3	137.3	-89.37	-764.8	-3,619.1	767.0	543.5	223.45	3.432		
9,900.0	6,878.7	6,864.7	6,864.7	89.0	137.3	-89.46	-764.8	-3,619.1	675.6	449.3	226.23	2.986		
10,000.0	6,879.1	6,865.1	6,865.1	91.8	137.3	-89.55	-764.8	-3,619.1	587.0	358.0	229.00	2.563		
10,100.0	6,879.6	6,865.6	6,865.6	94.6	137.3	-89.64	-764.8	-3,619.1	502.7	270.9	231.78	2.169		
10,200.0	6,880.0	6,866.0	6,866.0	97.3	137.3	-89.72	-764.8	-3,619.1	425.3	190.7	234.56	1.813		
10,300.0	6,880.5	6,866.5	6,866.5	100.1	137.3	-89.81	-764.8	-3,619.1	359.2	121.8	237.34	1.513		
10,400.0	6,881.0	6,867.0	6,867.0	102.9	137.3	-89.90	-764.8	-3,619.1	311.7	71.6	240.13	1.298	Level 3	
10,500.0	6,881.4	6,867.4	6,867.4	105.7	137.3	-89.99	-764.8	-3,619.1	292.1	49.1	242.91	1.202	Level 2	
10,509.3	6,881.5	6,867.5	6,867.5	105.9	137.3	-90.00	-764.8	-3,619.1	291.9	48.7	243.17	1.200	Level 2, CC, ES, SF	
10,600.0	6,881.9	6,867.9	6,867.9	108.4	137.4	-90.08	-764.8	-3,619.1	305.7	60.0	245.70	1.244	Level 2	
10,700.0	6,882.3	6,868.3	6,868.3	111.2	137.4	-90.17	-764.8	-3,619.1	348.7	100.2	248.49	1.403	Level 3	
10,800.0	6,882.8	6,868.8	6,868.8	114.0	137.4	-90.26	-764.8	-3,619.1	412.0	160.7	251.27	1.640		
10,900.0	6,883.2	6,869.2	6,869.2	116.8	137.4	-90.35	-764.8	-3,619.1	487.7	233.7	254.06	1.920		
11,000.0	6,883.7	6,869.7	6,869.7	119.5	137.4	-90.44	-764.8	-3,619.1	571.0	314.1	256.85	2.223		
11,100.0	6,884.1	6,870.1	6,870.1	122.3	137.4	-90.53	-764.8	-3,619.1	658.9	399.3	259.64	2.538		
11,200.0	6,884.6	6,870.6	6,870.6	125.1	137.4	-90.62	-764.8	-3,619.1	749.9	487.5	262.43	2.857		
11,300.0	6,885.0	6,871.0	6,871.0	127.9	137.4	-90.70	-764.8	-3,619.1	842.9	577.7	265.22	3.178		
11,400.0	6,885.5	6,871.5	6,871.5	130.7	137.4	-90.79	-764.8	-3,619.1	937.3	669.3	268.01	3.497		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Noffsinger 1 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7140-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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	31.0	31.0	0.0	0.6	-121.93		-182.2	-292.3	344.4	343.8	0.62	555.335	
100.0	100.0	131.0	131.0	0.1	2.6	-121.93		-182.2	-292.3	344.4	341.7	2.73	126.041	
200.0	200.0	231.0	231.0	0.3	4.6	-121.93		-182.2	-292.3	344.4	339.5	4.96	69.476	
300.0	300.0	331.0	331.0	0.6	6.6	-121.93		-182.2	-292.3	344.4	337.2	7.18	47.955	
400.0	400.0	431.0	431.0	0.8	8.6	-121.93		-182.2	-292.3	344.4	335.0	9.41	36.613	
500.0	500.0	531.0	531.0	1.0	10.6	-121.93		-182.2	-292.3	344.4	332.8	11.63	29.610	
600.0	600.0	631.0	631.0	1.2	12.6	-121.93		-182.2	-292.3	344.4	330.6	13.86	24.856	
700.0	700.0	731.0	731.0	1.5	14.6	-121.93		-182.2	-292.3	344.4	328.3	16.08	21.417	
800.0	800.0	831.0	831.0	1.7	16.6	-121.93		-182.2	-292.3	344.4	326.1	18.31	18.815	
900.0	900.0	931.0	931.0	1.9	18.6	-121.93		-182.2	-292.3	344.4	323.9	20.53	16.776	
1,000.0	1,000.0	1,031.0	1,031.0	2.1	20.6	-121.93		-182.2	-292.3	344.4	321.7	22.76	15.136	
1,100.0	1,100.0	1,131.0	1,131.0	2.3	22.6	92.14		-182.2	-292.3	344.5	319.5	24.95	13.805	
1,200.0	1,199.8	1,230.8	1,230.8	2.5	24.6	93.01		-182.2	-292.3	344.7	317.6	27.13	12.705	
1,300.0	1,299.5	1,330.5	1,330.5	2.7	26.6	94.43		-182.2	-292.3	345.3	316.0	29.32	11.776	
1,400.0	1,398.7	1,429.7	1,429.7	2.9	28.6	96.37		-182.2	-292.3	346.4	314.9	31.53	10.988	
1,500.0	1,498.0	1,529.0	1,529.0	3.2	30.6	98.39		-182.2	-292.3	348.0	314.3	33.75	10.312	
1,600.0	1,597.2	1,628.2	1,628.2	3.4	32.6	100.38		-182.2	-292.3	350.1	314.1	35.98	9.728	
1,700.0	1,696.4	1,727.4	1,727.4	3.7	34.5	102.36		-182.2	-292.3	352.5	314.3	38.23	9.222	
1,800.0	1,795.6	1,826.6	1,826.6	4.0	36.5	104.30		-182.2	-292.3	355.4	314.9	40.48	8.780	
1,900.0	1,894.9	1,925.9	1,925.9	4.3	38.5	106.21		-182.2	-292.3	358.7	316.0	42.73	8.394	
2,000.0	1,994.1	2,025.1	2,025.1	4.6	40.5	108.08		-182.2	-292.3	362.4	317.4	44.99	8.055	
2,100.0	2,093.3	2,124.3	2,124.3	4.9	42.5	109.92		-182.2	-292.3	366.5	319.2	47.25	7.756	
2,200.0	2,192.5	2,223.5	2,223.5	5.2	44.5	111.71		-182.2	-292.3	370.9	321.4	49.51	7.492	
2,300.0	2,291.8	2,322.8	2,322.8	5.5	46.5	113.46		-182.2	-292.3	375.7	324.0	51.76	7.258	
2,400.0	2,391.0	2,422.0	2,422.0	5.8	48.4	115.16		-182.2	-292.3	380.9	326.9	54.02	7.051	
2,500.0	2,490.2	2,521.2	2,521.2	6.1	50.4	116.82		-182.2	-292.3	386.4	330.1	56.27	6.866	
2,600.0	2,589.4	2,620.4	2,620.4	6.4	52.4	118.43		-182.2	-292.3	392.2	333.6	58.52	6.701	
2,700.0	2,688.7	2,719.7	2,719.7	6.7	54.4	120.00		-182.2	-292.3	398.3	337.5	60.77	6.553	
2,800.0	2,787.9	2,818.9	2,818.9	7.0	56.4	121.51		-182.2	-292.3	404.7	341.6	63.02	6.421	
2,900.0	2,887.1	2,918.1	2,918.1	7.3	58.4	122.98		-182.2	-292.3	411.3	346.1	65.26	6.303	
3,000.0	2,986.3	3,017.3	3,017.3	7.7	60.3	124.40		-182.2	-292.3	418.3	350.8	67.50	6.196	
3,100.0	3,085.6	3,116.6	3,116.6	8.0	62.3	125.78		-182.2	-292.3	425.4	355.7	69.74	6.101	
3,200.0	3,184.8	3,215.8	3,215.8	8.3	64.3	127.10		-182.2	-292.3	432.9	360.9	71.97	6.014	
3,300.0	3,284.0	3,315.0	3,315.0	8.6	66.3	128.39		-182.2	-292.3	440.5	366.3	74.20	5.937	
3,400.0	3,383.2	3,414.2	3,414.2	8.9	68.3	129.63		-182.2	-292.3	448.4	371.9	76.43	5.866	
3,500.0	3,482.5	3,513.5	3,513.5	9.3	70.3	130.82		-182.2	-292.3	456.4	377.8	78.66	5.803	
3,600.0	3,581.7	3,612.7	3,612.7	9.6	72.3	131.98		-182.2	-292.3	464.7	383.8	80.88	5.745	
3,700.0	3,680.9	3,711.9	3,711.9	9.9	74.2	133.09		-182.2	-292.3	473.1	390.0	83.10	5.693	
3,800.0	3,780.1	3,811.1	3,811.1	10.2	76.2	134.17		-182.2	-292.3	481.7	396.4	85.32	5.646	
3,900.0	3,879.4	3,910.4	3,910.4	10.6	78.2	135.20		-182.2	-292.3	490.5	403.0	87.54	5.603	
4,000.0	3,978.6	4,009.6	4,009.6	10.9	80.2	136.21		-182.2	-292.3	499.4	409.7	89.75	5.564	
4,100.0	4,077.8	4,108.8	4,108.8	11.2	82.2	137.17		-182.2	-292.3	508.5	416.5	91.97	5.529	
4,200.0	4,177.0	4,208.0	4,208.0	11.5	84.2	138.10		-182.2	-292.3	517.7	423.5	94.18	5.497	
4,300.0	4,276.3	4,307.3	4,307.3	11.9	86.1	139.00		-182.2	-292.3	527.1	430.7	96.39	5.468	
4,400.0	4,375.5	4,406.5	4,406.5	12.2	88.1	139.87		-182.2	-292.3	536.5	437.9	98.60	5.442	
4,500.0	4,474.7	4,505.7	4,505.7	12.5	90.1	140.71		-182.2	-292.3	546.1	445.3	100.81	5.417	
4,600.0	4,573.9	4,604.9	4,604.9	12.8	92.1	141.52		-182.2	-292.3	555.8	452.8	103.02	5.396	
4,700.0	4,673.2	4,704.2	4,704.2	13.2	94.1	142.30		-182.2	-292.3	565.6	460.4	105.22	5.376	
4,800.0	4,772.4	4,803.4	4,803.4	13.5	96.1	143.05		-182.2	-292.3	575.6	468.1	107.43	5.358	
4,900.0	4,871.6	4,902.6	4,902.6	13.8	98.1	143.78		-182.2	-292.3	585.6	475.9	109.64	5.341	
5,000.0	4,970.8	5,001.8	5,001.8	14.2	100.0	144.49		-182.2	-292.3	595.7	483.8	111.84	5.326	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.1-T5N-R65W - Noffsinger 1 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7140-UNKNOWN													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	5,070.1	5,101.1	5,101.1	14.5	102.0	145.17	-182.2	-292.3	605.9	491.8	114.04	5.312		
5,200.0	5,169.3	5,200.3	5,200.3	14.8	104.0	145.83	-182.2	-292.3	616.1	499.9	116.25	5.300		
5,300.0	5,268.5	5,299.5	5,299.5	15.1	106.0	146.46	-182.2	-292.3	626.5	508.0	118.45	5.289		
5,400.0	5,367.7	5,398.7	5,398.7	15.5	108.0	147.08	-182.2	-292.3	636.9	516.2	120.65	5.279		
5,500.0	5,467.0	5,498.0	5,498.0	15.8	110.0	147.68	-182.2	-292.3	647.4	524.5	122.86	5.269		
5,600.0	5,566.2	5,597.2	5,597.2	16.1	111.9	148.27	-182.2	-292.3	657.9	532.7	125.13	5.258		
5,700.0	5,665.7	5,696.7	5,696.7	16.3	113.9	148.81	-182.2	-292.3	666.3	538.8	127.55	5.224		
5,800.0	5,765.5	5,796.5	5,796.5	16.5	115.9	149.15	-182.2	-292.3	671.9	542.0	129.89	5.172		
5,900.0	5,865.4	5,896.4	5,896.4	16.7	117.9	149.30	-182.2	-292.3	674.4	542.3	132.12	5.104		
6,000.0	5,965.4	5,996.4	5,996.4	16.8	119.9	-64.47	-182.2	-292.3	674.6	538.7	135.88	4.964		
6,100.0	6,065.4	6,096.4	6,096.4	17.0	121.9	-64.47	-182.2	-292.3	674.6	536.5	138.03	4.887		
6,200.0	6,165.4	6,196.4	6,196.4	17.1	123.9	25.70	-182.2	-292.3	672.3	534.1	138.19	4.865		
6,300.0	6,264.2	6,295.2	6,295.2	17.2	125.9	26.69	-182.2	-292.3	659.1	521.1	138.06	4.774		
6,400.0	6,360.3	6,391.3	6,391.3	17.2	127.8	28.69	-182.2	-292.3	634.6	498.5	136.15	4.661		
6,500.0	6,452.0	6,483.0	6,483.0	17.2	129.7	31.93	-182.2	-292.3	599.6	466.5	133.03	4.507		
6,600.0	6,537.7	6,568.7	6,568.7	17.2	131.4	36.77	-182.2	-292.3	555.2	425.3	129.96	4.272		
6,700.0	6,616.0	6,647.0	6,647.0	17.1	132.9	43.67	-182.2	-292.3	503.4	374.3	129.03	3.901		
6,800.0	6,685.5	6,716.5	6,716.5	17.1	134.3	52.95	-182.2	-292.3	446.7	314.1	132.58	3.369		
6,900.0	6,745.1	6,776.1	6,776.1	17.0	135.5	64.23	-182.2	-292.3	389.3	248.6	140.66	2.767		
7,000.0	6,793.6	6,824.6	6,824.6	17.0	136.5	75.83	-182.2	-292.3	337.6	188.2	149.34	2.260		
7,100.0	6,830.4	6,861.4	6,861.4	18.1	137.2	85.27	-182.2	-292.3	301.2	146.4	154.77	1.946		
7,181.3	6,851.1	6,882.1	6,882.1	19.4	137.6	90.00	-182.2	-292.3	290.7	133.7	157.01	1.852 CC, ES		
7,200.0	6,854.7	6,885.7	6,885.7	19.7	137.7	90.65	-182.2	-292.3	291.3	133.9	157.38	1.851 SF		
7,300.0	6,866.1	6,897.1	6,897.1	21.6	137.9	91.14	-182.2	-292.3	313.6	154.2	159.41	1.967		
7,400.0	6,867.3	6,898.3	6,898.3	23.6	138.0	90.19	-182.2	-292.3	363.1	201.7	161.43	2.249		
7,500.0	6,867.8	6,898.8	6,898.8	25.8	138.0	90.28	-182.2	-292.3	430.5	267.0	163.58	2.632		
7,600.0	6,868.2	6,899.2	6,899.2	28.0	138.0	90.37	-182.2	-292.3	508.8	343.0	165.84	3.068		
7,700.0	6,868.7	6,899.7	6,899.7	30.4	138.0	90.46	-182.2	-292.3	593.6	425.4	168.20	3.529		
7,800.0	6,869.2	6,900.2	6,900.2	32.8	138.0	90.55	-182.2	-292.3	682.6	511.9	170.64	4.000		
7,900.0	6,869.6	6,900.6	6,900.6	35.3	138.0	90.64	-182.2	-292.3	774.2	601.1	173.13	4.472		
8,000.0	6,870.1	6,901.1	6,901.1	37.8	138.0	90.73	-182.2	-292.3	867.7	692.0	175.66	4.940		
8,100.0	6,870.5	6,901.5	6,901.5	40.4	138.0	90.82	-182.2	-292.3	962.5	784.3	178.23	5.400		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.2-T5N-R65W - Frudden 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
11,600.0	6,886.4	6,904.2	6,903.6	136.3	136.7	93.53	-162.2	-5,591.2	934.9	662.6	272.29	3.433		
11,700.0	6,886.9	6,902.4	6,901.8	139.1	136.7	93.21	-162.1	-5,591.3	841.2	566.0	275.24	3.056		
11,800.0	6,887.3	6,900.7	6,900.1	141.8	136.8	92.88	-162.1	-5,591.3	749.2	471.1	278.18	2.693		
11,900.0	6,887.8	6,898.9	6,898.3	144.6	136.9	92.56	-162.1	-5,591.3	659.6	378.5	281.12	2.346		
12,000.0	6,888.2	6,897.2	6,896.6	147.4	137.0	92.24	-162.1	-5,591.4	573.3	289.3	284.05	2.018		
12,100.0	6,888.7	6,895.4	6,894.8	150.2	137.0	91.92	-162.0	-5,591.4	492.3	205.4	286.97	1.716		
12,200.0	6,889.1	6,893.7	6,893.1	153.0	137.1	91.59	-162.0	-5,591.5	419.6	129.7	289.89	1.447 Level 3		
12,300.0	6,889.6	6,891.9	6,891.3	155.8	137.2	91.27	-162.0	-5,591.5	360.2	67.4	292.80	1.230 Level 2		
12,400.0	6,890.0	6,890.2	6,889.6	158.6	137.2	90.95	-162.0	-5,591.5	321.5	25.8	295.70	1.087 Level 2		
12,481.8	6,890.4	6,888.7	6,888.1	160.9	137.3	90.69	-162.0	-5,591.6	310.9	12.9	298.06	1.043 Level 2, CC, ES		
12,500.0	6,890.5	6,888.4	6,887.8	161.4	137.3	90.63	-162.0	-5,591.6	311.5	12.9	298.59	1.043 Level 2, SF		
12,600.0	6,890.9	6,886.7	6,886.1	164.2	137.4	90.30	-161.9	-5,591.6	332.7	31.2	301.47	1.103 Level 2		
12,700.0	6,891.4	6,884.9	6,884.3	167.0	137.4	89.98	-161.9	-5,591.7	379.9	75.5	304.35	1.248 Level 2		
12,800.0	6,891.8	6,883.2	6,882.6	169.8	137.5	89.66	-161.9	-5,591.7	444.9	137.7	307.22	1.448 Level 3		
12,834.6	6,892.0	6,882.6	6,881.9	170.7	137.5	89.55	-161.9	-5,591.7	470.2	162.0	308.20	1.526		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-234 - 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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-46.18	40.1	-41.8	57.9	57.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-46.18	40.1	-41.8	57.9	57.6	0.23	254.946		
200.0	200.0	201.0	201.0	0.3	0.3	-46.18	40.1	-41.8	57.9	57.2	0.68	85.547		
300.0	300.0	301.0	301.0	0.6	0.6	-46.18	40.1	-41.8	57.9	56.8	1.13	51.396		
400.0	400.0	401.0	401.0	0.8	0.8	-46.18	40.1	-41.8	57.9	56.3	1.58	36.733		
500.0	500.0	501.0	501.0	1.0	1.0	-46.18	40.1	-41.8	57.9	55.9	2.03	28.579		
600.0	600.0	601.0	601.0	1.2	1.2	-46.18	40.1	-41.8	57.9	55.4	2.47	23.387		
700.0	700.0	701.0	701.0	1.5	1.5	-46.18	40.1	-41.8	57.9	55.0	2.92	19.792		
800.0	800.0	801.0	801.0	1.7	1.7	-46.18	40.1	-41.8	57.9	54.5	3.37	17.155		
900.0	900.0	901.0	901.0	1.9	1.9	-46.18	40.1	-41.8	57.9	54.1	3.82	15.138		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-46.18	40.1	-41.8	57.9	53.6	4.27	13.545 CC, ES		
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.4	167.96	40.1	-41.8	59.6	54.9	4.70	12.689		
1,200.0	1,199.8	1,200.8	1,200.8	2.5	2.6	168.91	40.1	-41.8	64.7	59.6	5.10	12.700		
1,300.0	1,299.5	1,300.5	1,300.5	2.7	2.8	170.19	40.1	-41.8	73.3	67.8	5.50	13.331		
1,400.0	1,398.7	1,399.7	1,399.7	2.9	3.0	171.53	40.1	-41.8	85.0	79.1	5.91	14.392		
1,500.0	1,498.0	1,499.0	1,499.0	3.2	3.3	172.61	40.1	-41.8	97.3	91.0	6.33	15.377		
1,600.0	1,597.2	1,598.2	1,598.2	3.4	3.5	173.45	40.1	-41.8	109.6	102.9	6.76	16.230		
1,700.0	1,696.4	1,697.4	1,697.4	3.7	3.7	174.11	40.1	-41.8	122.0	114.8	7.19	16.973		
1,800.0	1,795.6	1,796.6	1,796.6	4.0	3.9	174.66	40.1	-41.8	134.4	126.8	7.62	17.625		
1,900.0	1,894.9	1,895.9	1,895.9	4.3	4.1	175.11	40.1	-41.8	146.8	138.7	8.06	18.200		
2,000.0	1,994.1	1,995.1	1,995.1	4.6	4.4	175.49	40.1	-41.8	159.1	150.6	8.51	18.711		
2,100.0	2,093.3	2,094.3	2,094.3	4.9	4.6	175.82	40.1	-41.8	171.5	162.6	8.95	19.167		
2,200.0	2,192.5	2,193.5	2,193.5	5.2	4.8	176.10	40.1	-41.8	183.9	174.5	9.40	19.577		
2,300.0	2,291.8	2,292.8	2,292.8	5.5	5.0	176.34	40.1	-41.8	196.3	186.5	9.84	19.947		
2,400.0	2,391.0	2,392.0	2,392.0	5.8	5.3	176.56	40.1	-41.8	208.7	198.4	10.29	20.282		
2,500.0	2,490.2	2,491.2	2,491.2	6.1	5.5	176.76	40.1	-41.8	221.1	210.4	10.74	20.586		
2,600.0	2,589.4	2,591.9	2,591.9	6.4	5.7	177.29	40.7	-40.4	233.3	222.1	11.19	20.849		
2,700.0	2,688.7	2,692.6	2,692.5	6.7	5.9	178.58	42.8	-35.9	244.8	233.2	11.63	21.050		
2,800.0	2,787.9	2,793.0	2,792.5	7.0	6.1	-179.46	46.5	-28.2	255.9	243.9	12.08	21.195		
2,900.0	2,887.1	2,892.6	2,891.4	7.3	6.4	-176.95	51.6	-17.5	267.0	254.5	12.53	21.302		
3,000.0	2,986.3	2,991.2	2,989.2	7.7	6.6	-174.42	57.1	-5.9	278.4	265.4	13.01	21.407		
3,100.0	3,085.6	3,089.9	3,086.9	8.0	6.8	-172.09	62.6	5.8	290.4	276.9	13.49	21.520		
3,200.0	3,184.8	3,188.5	3,184.7	8.3	7.1	-169.94	68.2	17.5	302.8	288.8	13.99	21.638		
3,300.0	3,284.0	3,287.1	3,282.4	8.6	7.3	-167.97	73.7	29.2	315.6	301.1	14.50	21.758		
3,400.0	3,383.2	3,385.7	3,380.2	8.9	7.6	-166.15	79.3	40.8	328.7	313.7	15.02	21.879		
3,500.0	3,482.5	3,484.3	3,478.0	9.3	7.9	-164.47	84.8	52.5	342.1	326.6	15.55	22.000		
3,600.0	3,581.7	3,582.9	3,575.7	9.6	8.1	-162.91	90.3	64.2	355.8	339.8	16.09	22.119		
3,700.0	3,680.9	3,681.5	3,673.5	9.9	8.4	-161.47	95.9	75.8	369.8	353.2	16.63	22.237		
3,800.0	3,780.1	3,780.1	3,771.2	10.2	8.7	-160.14	101.4	87.5	384.0	366.8	17.18	22.353		
3,900.0	3,879.4	3,878.7	3,869.0	10.6	9.0	-158.90	106.9	99.2	398.3	380.6	17.73	22.466		
4,000.0	3,978.6	3,977.3	3,966.8	10.9	9.3	-157.74	112.5	110.8	412.8	394.5	18.28	22.577		
4,100.0	4,077.8	4,075.9	4,064.5	11.2	9.5	-156.67	118.0	122.5	427.5	408.7	18.84	22.686		
4,200.0	4,177.0	4,174.5	4,162.3	11.5	9.8	-155.67	123.6	134.2	442.3	422.9	19.41	22.791		
4,300.0	4,276.3	4,273.1	4,260.0	11.9	10.1	-154.73	129.1	145.9	457.3	437.3	19.97	22.894		
4,400.0	4,375.5	4,371.8	4,357.8	12.2	10.4	-153.85	134.6	157.5	472.3	451.8	20.54	22.994		
4,500.0	4,474.7	4,470.4	4,455.5	12.5	10.7	-153.02	140.2	169.2	487.5	466.3	21.11	23.091		
4,600.0	4,573.9	4,569.0	4,553.3	12.8	11.0	-152.25	145.7	180.9	502.7	481.0	21.68	23.186		
4,700.0	4,673.2	4,667.6	4,651.1	13.2	11.3	-151.52	151.2	192.5	518.0	495.8	22.25	23.278		
4,800.0	4,772.4	4,766.2	4,748.8	13.5	11.6	-150.83	156.8	204.2	533.4	510.6	22.83	23.367		
4,900.0	4,871.6	4,864.8	4,846.6	13.8	11.9	-150.18	162.3	215.9	548.9	525.5	23.40	23.454		
5,000.0	4,970.8	4,963.4	4,944.3	14.2	12.2	-149.56	167.9	227.6	564.5	540.5	23.98	23.538		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-234 - 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,070.1	5,062.0	5,042.1	14.5	12.5	-148.98		173.4	239.2	580.1	555.5	24.56	23.619	
5,200.0	5,169.3	5,160.6	5,139.8	14.8	12.8	-148.43		178.9	250.9	595.7	570.6	25.14	23.699	
5,300.0	5,268.5	5,259.2	5,237.6	15.1	13.1	-147.91		184.5	262.6	611.5	585.7	25.72	23.776	
5,400.0	5,367.7	5,357.8	5,335.4	15.5	13.4	-147.41		190.0	274.2	627.2	600.9	26.30	23.851	
5,500.0	5,467.0	5,456.4	5,433.1	15.8	13.8	-146.94		195.5	285.9	643.0	616.1	26.88	23.923	
5,600.0	5,566.2	5,555.7	5,531.5	16.1	14.1	-146.52		201.1	297.6	658.8	631.3	27.46	23.988	
5,700.0	5,665.7	5,665.6	5,640.8	16.3	14.3	-146.24		206.3	308.5	671.7	643.7	27.98	24.010	
5,800.0	5,765.5	5,776.4	5,751.3	16.5	14.6	-146.07		209.7	315.7	680.1	651.7	28.42	23.934	
5,900.0	5,865.4	5,887.8	5,862.6	16.7	14.8	-145.99		211.2	318.9	683.9	655.1	28.80	23.752	
6,000.0	5,965.4	5,991.6	5,966.4	16.8	14.9	0.23		211.3	319.1	684.2	654.9	29.32	23.332	
6,100.0	6,065.4	6,091.7	6,066.5	17.0	15.1	0.09		211.3	317.5	684.2	654.5	29.67	23.058	
6,113.2	6,078.7	6,104.9	6,079.7	17.0	15.1	90.02		211.3	316.5	684.2	654.7	29.52	23.178	
6,200.0	6,165.4	6,190.7	6,164.5	17.1	15.2	89.22		211.3	304.7	684.3	654.6	29.70	23.042	
6,300.0	6,264.2	6,288.1	6,258.7	17.2	15.2	88.29		211.3	279.8	684.5	654.7	29.78	22.988	
6,400.0	6,360.3	6,384.3	6,347.7	17.2	15.2	87.40		211.3	243.6	684.9	655.1	29.78	23.002	
6,500.0	6,452.0	6,479.2	6,430.5	17.2	15.2	86.55		211.3	197.3	685.5	655.7	29.77	23.023	
6,600.0	6,537.7	6,573.1	6,506.1	17.2	15.3	85.76		211.3	141.7	686.1	656.2	29.87	22.967	
6,700.0	6,616.0	6,666.0	6,573.6	17.1	15.4	85.05		211.3	78.0	686.8	656.6	30.22	22.731	
6,800.0	6,685.5	6,758.1	6,632.4	17.1	15.8	84.42		211.4	7.2	687.5	656.6	30.94	22.222	
6,900.0	6,745.1	6,850.0	6,682.2	17.0	16.4	83.87		211.4	-70.0	688.2	656.0	32.17	21.390	
7,000.0	6,793.6	6,940.2	6,721.7	17.0	17.4	83.43		211.4	-151.0	688.8	654.8	34.00	20.259	
7,100.0	6,830.4	7,030.5	6,751.5	18.1	18.6	83.09		211.4	-236.3	689.3	652.9	36.42	18.925	
7,200.0	6,854.7	7,120.5	6,770.9	19.7	20.0	82.85		211.4	-324.1	689.6	650.3	39.38	17.514	
7,300.0	6,866.1	7,210.3	6,779.8	21.6	21.7	82.73		211.4	-413.4	689.8	647.1	42.76	16.135	
7,400.0	6,867.3	7,306.0	6,780.0	23.6	23.6	82.64		211.4	-509.0	690.0	643.4	46.58	14.813	
7,500.0	6,867.8	7,406.0	6,779.1	25.8	25.7	82.54		211.4	-609.0	690.2	639.4	50.79	13.588	
7,600.0	6,868.2	7,506.0	6,778.3	28.0	27.9	82.43		211.4	-709.0	690.4	635.1	55.24	12.497	
7,700.0	6,868.7	7,605.9	6,777.5	30.4	30.2	82.32		211.5	-809.0	690.5	630.7	59.87	11.533	
7,800.0	6,869.2	7,705.9	6,776.6	32.8	32.7	82.22		211.5	-909.0	690.7	626.1	64.65	10.684	
7,900.0	6,869.6	7,805.9	6,775.8	35.3	35.1	82.11		211.5	-1,009.0	690.9	621.4	69.54	9.935	
8,000.0	6,870.1	7,905.9	6,774.9	37.8	37.6	82.01		211.5	-1,109.0	691.1	616.6	74.53	9.273	
8,100.0	6,870.5	8,005.9	6,774.1	40.4	40.2	81.90		211.5	-1,209.0	691.3	611.7	79.58	8.686	
8,200.0	6,871.0	8,105.9	6,773.3	43.0	42.8	81.79		211.5	-1,308.9	691.5	606.8	84.70	8.164	
8,300.0	6,871.4	8,205.9	6,772.4	45.6	45.4	81.69		211.5	-1,408.9	691.7	601.8	89.86	7.697	
8,400.0	6,871.9	8,305.9	6,771.6	48.2	48.0	81.58		211.6	-1,508.9	691.9	596.8	95.07	7.278	
8,500.0	6,872.3	8,405.9	6,770.8	50.9	50.7	81.48		211.6	-1,608.9	692.1	591.8	100.30	6.900	
8,600.0	6,872.8	8,505.9	6,769.9	53.5	53.4	81.37		211.6	-1,708.9	692.3	586.7	105.57	6.558	
8,700.0	6,873.2	8,605.9	6,769.1	56.2	56.0	81.27		211.6	-1,808.9	692.5	581.7	110.86	6.247	
8,800.0	6,873.7	8,705.9	6,768.2	58.9	58.7	81.16		211.6	-1,908.9	692.7	576.6	116.17	5.963	
8,900.0	6,874.1	8,805.8	6,767.4	61.6	61.4	81.06		211.6	-2,008.9	692.9	571.4	121.49	5.704	
9,000.0	6,874.6	8,905.8	6,766.6	64.3	64.2	80.95		211.6	-2,108.8	693.2	566.3	126.83	5.465	
9,100.0	6,875.1	9,005.8	6,765.7	67.1	66.9	80.85		211.7	-2,208.8	693.4	561.2	132.18	5.246	
9,200.0	6,875.5	9,105.8	6,764.9	69.8	69.6	80.74		211.7	-2,308.8	693.6	556.0	137.54	5.043	
9,300.0	6,876.0	9,205.8	6,764.1	72.5	72.3	80.63		211.7	-2,408.8	693.8	550.9	142.91	4.855	
9,400.0	6,876.4	9,305.8	6,763.2	75.3	75.1	80.53		211.7	-2,508.8	694.0	545.7	148.29	4.680	
9,500.0	6,876.9	9,405.8	6,762.4	78.0	77.8	80.42		211.7	-2,608.8	694.3	540.6	153.67	4.518	
9,600.0	6,877.3	9,505.8	6,761.5	80.8	80.6	80.32		211.7	-2,708.8	694.5	535.4	159.06	4.366	
9,700.0	6,877.8	9,605.8	6,760.7	83.5	83.3	80.22		211.7	-2,808.8	694.7	530.3	164.45	4.225	
9,800.0	6,878.2	9,705.8	6,759.9	86.3	86.1	80.11		211.7	-2,908.7	695.0	525.1	169.84	4.092	
9,900.0	6,878.7	9,805.8	6,759.0	89.0	88.9	80.01		211.8	-3,008.7	695.2	520.0	175.24	3.967	
10,000.0	6,879.1	9,905.8	6,758.2	91.8	91.6	79.90		211.8	-3,108.7	695.4	514.8	180.64	3.850	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-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							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)			
10,100.0	6,879.6	10,005.7	6,757.4	94.6	94.4	79.80	211.8	-3,208.7	695.7	509.6	186.04	3.739		
10,200.0	6,880.0	10,105.7	6,756.5	97.3	97.2	79.69	211.8	-3,308.7	695.9	504.5	191.44	3.635		
10,300.0	6,880.5	10,205.7	6,755.7	100.1	99.9	79.59	211.8	-3,408.7	696.2	499.3	196.84	3.537		
10,400.0	6,881.0	10,305.7	6,754.8	102.9	102.7	79.48	211.8	-3,508.7	696.4	494.2	202.25	3.443		
10,500.0	6,881.4	10,405.7	6,754.0	105.7	105.5	79.38	211.8	-3,608.7	696.7	489.0	207.65	3.355		
10,600.0	6,881.9	10,505.7	6,753.2	108.4	108.2	79.28	211.9	-3,708.7	696.9	483.9	213.05	3.271		
10,700.0	6,882.3	10,605.7	6,752.3	111.2	111.0	79.17	211.9	-3,808.6	697.2	478.7	218.45	3.191		
10,800.0	6,882.8	10,705.7	6,751.5	114.0	113.8	79.07	211.9	-3,908.6	697.4	473.6	223.85	3.116		
10,900.0	6,883.2	10,805.7	6,750.7	116.8	116.6	78.96	211.9	-4,008.6	697.7	468.4	229.25	3.043		
11,000.0	6,883.7	10,905.7	6,749.8	119.5	119.4	78.86	211.9	-4,108.6	697.9	463.3	234.64	2.975		
11,100.0	6,884.1	11,005.7	6,749.0	122.3	122.2	78.76	211.9	-4,208.6	698.2	458.2	240.04	2.909		
11,200.0	6,884.6	11,105.7	6,748.1	125.1	124.9	78.65	211.9	-4,308.6	698.5	453.0	245.43	2.846		
11,300.0	6,885.0	11,205.6	6,747.3	127.9	127.7	78.55	211.9	-4,408.6	698.7	447.9	250.82	2.786		
11,400.0	6,885.5	11,305.6	6,746.5	130.7	130.5	78.44	212.0	-4,508.6	699.0	442.8	256.21	2.728		
11,500.0	6,885.9	11,405.6	6,745.6	133.5	133.3	78.34	212.0	-4,608.5	699.3	437.7	261.59	2.673		
11,600.0	6,886.4	11,505.6	6,744.8	136.3	136.1	78.24	212.0	-4,708.5	699.6	432.6	266.97	2.620		
11,700.0	6,886.9	11,605.6	6,744.0	139.1	138.9	78.13	212.0	-4,808.5	699.8	427.5	272.35	2.570		
11,800.0	6,887.3	11,705.6	6,743.1	141.8	141.7	78.03	212.0	-4,908.5	700.1	422.4	277.73	2.521		
11,900.0	6,887.8	11,805.6	6,742.3	144.6	144.5	77.93	212.0	-5,008.5	700.4	417.3	283.10	2.474		
12,000.0	6,888.2	11,905.6	6,741.4	147.4	147.3	77.83	212.0	-5,108.5	700.7	412.2	288.47	2.429		
12,100.0	6,888.7	12,005.6	6,740.6	150.2	150.0	77.72	212.1	-5,208.5	701.0	407.1	293.83	2.386		
12,200.0	6,889.1	12,105.6	6,739.8	153.0	152.8	77.62	212.1	-5,308.5	701.3	402.1	299.20	2.344		
12,300.0	6,889.6	12,205.6	6,738.9	155.8	155.6	77.52	212.1	-5,408.5	701.6	397.0	304.55	2.304		
12,400.0	6,890.0	12,305.6	6,738.1	158.6	158.4	77.41	212.1	-5,508.4	701.8	391.9	309.91	2.265		
12,500.0	6,890.5	12,405.5	6,737.3	161.4	161.2	77.31	212.1	-5,608.4	702.1	386.9	315.26	2.227		
12,600.0	6,890.9	12,505.5	6,736.4	164.2	164.0	77.21	212.1	-5,708.4	702.4	381.8	320.61	2.191		
12,700.0	6,891.4	12,605.5	6,735.6	167.0	166.8	77.11	212.1	-5,808.4	702.7	376.8	325.95	2.156		
12,800.0	6,891.8	12,705.5	6,734.7	169.8	169.6	77.00	212.2	-5,908.4	703.0	371.8	331.29	2.122		
12,834.6	6,892.0	12,740.1	6,734.4	170.7	170.6	76.97	212.2	-5,943.0	703.2	370.0	333.13	2.111 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-304 - 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 (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	2.0	2.0	0.0	0.0	-45.95		61.9	-64.0	89.1	89.1	0.00	N/A	
100.0	100.0	102.0	102.0	0.1	0.1	-45.95		61.9	-64.0	89.1	88.9	0.23	388.554	
200.0	200.0	202.0	202.0	0.3	0.3	-45.95		61.9	-64.0	89.1	88.4	0.68	131.234	
300.0	300.0	302.0	302.0	0.6	0.6	-45.95		61.9	-64.0	89.1	88.0	1.13	78.949	
400.0	400.0	402.0	402.0	0.8	0.8	-45.95		61.9	-64.0	89.1	87.5	1.58	56.457	
500.0	500.0	502.0	502.0	1.0	1.0	-45.95		61.9	-64.0	89.1	87.1	2.03	43.939	
600.0	600.0	602.0	602.0	1.2	1.2	-45.95		61.9	-64.0	89.1	86.6	2.48	35.964	
700.0	700.0	702.0	702.0	1.5	1.5	-45.95		61.9	-64.0	89.1	86.2	2.93	30.440	
800.0	800.0	802.0	802.0	1.7	1.7	-45.95		61.9	-64.0	89.1	85.7	3.38	26.387	
900.0	900.0	902.0	902.0	1.9	1.9	-45.95		61.9	-64.0	89.1	85.3	3.83	23.286	
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	-45.95		61.9	-64.0	89.1	84.8	4.28	20.837 CC, ES	
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.4	168.06		61.9	-64.0	90.8	86.1	4.70	19.326	
1,200.0	1,199.8	1,201.8	1,201.8	2.5	2.6	168.69		61.9	-64.0	95.9	90.8	5.10	18.816	
1,300.0	1,299.5	1,301.5	1,301.5	2.7	2.8	169.59		61.9	-64.0	104.5	99.0	5.50	18.997	
1,400.0	1,398.7	1,400.7	1,400.7	2.9	3.0	170.63		61.9	-64.0	116.2	110.3	5.91	19.661	
1,500.0	1,498.0	1,499.9	1,499.9	3.2	3.3	172.31		63.1	-62.7	128.5	122.1	6.33	20.308	
1,600.0	1,597.2	1,598.7	1,598.5	3.4	3.5	175.09		66.6	-58.9	141.0	134.3	6.75	20.908	
1,700.0	1,696.4	1,696.9	1,696.4	3.7	3.7	178.66		72.3	-52.7	154.3	147.1	7.18	21.499	
1,800.0	1,795.6	1,794.7	1,793.5	4.0	3.9	-177.31		80.1	-44.2	168.6	161.0	7.63	22.116	
1,900.0	1,894.9	1,892.9	1,891.0	4.3	4.2	-173.71		88.3	-35.2	183.8	175.8	8.09	22.725	
2,000.0	1,994.1	1,991.2	1,988.4	4.6	4.4	-170.66		96.6	-26.1	199.7	191.1	8.57	23.306	
2,100.0	2,093.3	2,089.4	2,085.9	4.9	4.7	-168.06		104.8	-17.1	216.0	206.9	9.05	23.852	
2,200.0	2,192.5	2,187.6	2,183.3	5.2	5.0	-165.83		113.1	-8.1	232.6	223.1	9.55	24.359	
2,300.0	2,291.8	2,285.8	2,280.8	5.5	5.2	-163.89		121.3	0.9	249.6	239.5	10.05	24.830	
2,400.0	2,391.0	2,384.0	2,378.2	5.8	5.5	-162.21		129.6	9.9	266.8	256.2	10.56	25.265	
2,500.0	2,490.2	2,482.3	2,475.7	6.1	5.8	-160.72		137.8	18.9	284.2	273.1	11.07	25.666	
2,600.0	2,589.4	2,580.5	2,573.2	6.4	6.1	-159.41		146.1	28.0	301.8	290.2	11.59	26.037	
2,700.0	2,688.7	2,678.7	2,670.6	6.7	6.4	-158.25		154.3	37.0	319.5	307.4	12.11	26.380	
2,800.0	2,787.9	2,776.9	2,768.1	7.0	6.6	-157.20		162.6	46.0	337.3	324.7	12.64	26.697	
2,900.0	2,887.1	2,875.1	2,865.5	7.3	6.9	-156.26		170.8	55.0	355.3	342.1	13.16	26.991	
3,000.0	2,986.3	2,973.4	2,963.0	7.7	7.2	-155.41		179.0	64.0	373.3	359.6	13.69	27.264	
3,100.0	3,085.6	3,071.6	3,060.5	8.0	7.5	-154.64		187.3	73.0	391.3	377.1	14.22	27.518	
3,200.0	3,184.8	3,169.8	3,157.9	8.3	7.8	-153.93		195.5	82.0	409.5	394.7	14.75	27.755	
3,300.0	3,284.0	3,268.0	3,255.4	8.6	8.1	-153.29		203.8	91.1	427.7	412.4	15.29	27.976	
3,400.0	3,383.2	3,366.2	3,352.8	8.9	8.4	-152.70		212.0	100.1	445.9	430.1	15.82	28.182	
3,500.0	3,482.5	3,464.5	3,450.3	9.3	8.7	-152.15		220.3	109.1	464.2	447.9	16.36	28.376	
3,600.0	3,581.7	3,562.7	3,547.7	9.6	9.0	-151.65		228.5	118.1	482.5	465.6	16.90	28.557	
3,700.0	3,680.9	3,660.9	3,645.2	9.9	9.3	-151.18		236.8	127.1	500.9	483.5	17.44	28.727	
3,800.0	3,780.1	3,759.1	3,742.7	10.2	9.6	-150.75		245.0	136.1	519.3	501.3	17.98	28.888	
3,900.0	3,879.4	3,857.4	3,840.1	10.6	9.9	-150.35		253.3	145.2	537.7	519.2	18.52	29.039	
4,000.0	3,978.6	3,955.6	3,937.6	10.9	10.2	-149.97		261.5	154.2	556.1	537.1	19.06	29.181	
4,100.0	4,077.8	4,053.8	4,035.0	11.2	10.6	-149.62		269.8	163.2	574.6	555.0	19.60	29.316	
4,200.0	4,177.0	4,152.0	4,132.5	11.5	10.9	-149.28		278.0	172.2	593.1	572.9	20.14	29.444	
4,300.0	4,276.3	4,250.2	4,230.0	11.9	11.2	-148.97		286.2	181.2	611.6	590.9	20.69	29.565	
4,400.0	4,375.5	4,348.5	4,327.4	12.2	11.5	-148.68		294.5	190.2	630.1	608.9	21.23	29.680	
4,500.0	4,474.7	4,446.7	4,424.9	12.5	11.8	-148.40		302.7	199.3	648.6	626.9	21.77	29.789	
4,600.0	4,573.9	4,544.9	4,522.3	12.8	12.1	-148.14		311.0	208.3	667.2	644.9	22.32	29.892	
4,700.0	4,673.2	4,643.1	4,619.8	13.2	12.4	-147.90		319.2	217.3	685.7	662.9	22.86	29.991	
4,800.0	4,772.4	4,741.3	4,717.2	13.5	12.7	-147.66		327.5	226.3	704.3	680.9	23.41	30.085	
4,900.0	4,871.6	4,839.6	4,814.7	13.8	13.0	-147.44		335.7	235.3	722.9	698.9	23.96	30.175	
5,000.0	4,970.8	4,937.8	4,912.2	14.2	13.3	-147.23		344.0	244.3	741.5	717.0	24.50	30.260	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-304 - 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	5,070.1	5,036.0	5,009.6	14.5	13.6	-147.03		352.2	253.4	760.1	735.0	25.05	30.342	
5,200.0	5,169.3	5,134.2	5,107.1	14.8	14.0	-146.84		360.5	262.4	778.7	753.1	25.60	30.421	
5,300.0	5,268.5	5,232.5	5,204.5	15.1	14.3	-146.66		368.7	271.4	797.3	771.2	26.14	30.496	
5,400.0	5,367.7	5,330.7	5,302.0	15.5	14.6	-146.48		376.9	280.4	815.9	789.2	26.69	30.568	
5,500.0	5,467.0	5,428.9	5,399.5	15.8	14.9	-146.32		385.2	289.4	834.6	807.3	27.24	30.637	
5,600.0	5,566.2	5,527.1	5,496.9	16.1	15.2	-146.20		393.4	298.4	853.1	825.3	27.80	30.693	
5,700.0	5,665.7	5,638.9	5,607.9	16.3	15.5	-146.14		402.3	308.2	869.3	841.0	28.33	30.685	
5,800.0	5,765.5	5,764.1	5,732.7	16.5	15.8	-146.07		409.1	315.6	880.1	851.3	28.80	30.563	
5,900.0	5,865.4	5,890.3	5,858.8	16.7	16.0	-146.04		412.2	319.0	885.0	855.8	29.20	30.308	
6,000.0	5,965.4	5,998.9	5,967.4	16.8	16.2	0.18		412.4	319.2	885.3	854.7	30.56	28.971	
6,100.0	6,065.4	6,098.9	6,067.4	17.0	16.3	0.18		412.4	319.2	885.3	854.4	30.90	28.651	
6,200.0	6,165.4	6,199.2	6,167.6	17.1	16.5	90.17		412.4	316.4	885.3	855.1	30.23	29.286	
6,300.0	6,264.2	6,299.5	6,266.7	17.2	16.6	90.14		412.4	301.4	885.3	854.9	30.38	29.138	
6,400.0	6,360.3	6,399.7	6,362.9	17.2	16.6	90.12		412.4	273.5	885.3	854.9	30.42	29.106	
6,500.0	6,452.0	6,500.0	6,454.7	17.2	16.5	90.09		412.4	233.4	885.3	854.9	30.40	29.125	
6,600.0	6,537.7	6,600.1	6,540.3	17.2	16.4	90.06		412.4	181.5	885.3	854.9	30.43	29.096	
6,700.0	6,616.0	6,700.2	6,618.4	17.1	16.4	90.04		412.4	119.0	885.3	854.6	30.65	28.882	
6,800.0	6,685.5	6,800.3	6,687.6	17.1	16.4	90.01		412.4	46.9	885.3	854.1	31.24	28.338	
6,818.5	6,697.3	6,818.8	6,699.3	17.1	16.4	90.00		412.4	32.6	885.3	853.9	31.43	28.164	
6,900.0	6,745.1	6,900.2	6,746.7	17.0	16.6	89.98		412.4	-33.6	885.3	852.9	32.35	27.362	
7,000.0	6,793.6	7,000.2	6,794.9	17.0	17.3	89.95		412.4	-121.1	885.3	851.2	34.11	25.955	
7,100.0	6,830.4	7,100.0	6,831.2	18.1	18.4	89.92		412.4	-214.1	885.3	848.8	36.54	24.231	
7,200.0	6,854.7	7,199.8	6,855.0	19.7	19.9	89.89		412.4	-310.9	885.3	845.7	39.58	22.367	
7,300.0	6,866.1	7,299.6	6,866.0	21.6	21.7	89.86		412.4	-410.0	885.3	842.2	43.12	20.532	
7,400.0	6,867.3	7,399.4	6,865.8	23.6	23.6	89.77		412.4	-509.8	885.3	838.3	47.02	18.829	
7,500.0	6,867.8	7,499.4	6,863.9	25.8	25.7	89.62		412.4	-609.8	885.3	834.1	51.23	17.281	
7,600.0	6,868.2	7,599.4	6,862.1	28.0	27.9	89.47		412.4	-709.7	885.3	829.6	55.69	15.897	
7,700.0	6,868.7	7,699.3	6,860.2	30.4	30.2	89.32		412.4	-809.7	885.4	825.0	60.35	14.671	
7,800.0	6,869.2	7,799.3	6,858.4	32.8	32.6	89.17		412.4	-909.6	885.4	820.2	65.15	13.590	
7,900.0	6,869.6	7,899.3	6,856.5	35.3	35.1	89.02		412.4	-1,009.6	885.4	815.3	70.08	12.635	
8,000.0	6,870.1	7,999.3	6,854.7	37.8	37.6	88.87		412.4	-1,109.5	885.5	810.4	75.10	11.791	
8,100.0	6,870.5	8,099.2	6,852.8	40.4	40.1	88.72		412.4	-1,209.5	885.5	805.3	80.20	11.042	
8,200.0	6,871.0	8,199.2	6,851.0	43.0	42.7	88.58		412.4	-1,309.5	885.6	800.2	85.36	10.374	
8,300.0	6,871.4	8,299.2	6,849.1	45.6	45.3	88.43		412.4	-1,409.4	885.6	795.1	90.58	9.778	
8,400.0	6,871.9	8,399.1	6,847.3	48.2	47.9	88.28		412.4	-1,509.4	885.7	789.9	95.83	9.242	
8,500.0	6,872.3	8,499.1	6,845.4	50.9	50.5	88.13		412.4	-1,609.3	885.8	784.6	101.13	8.759	
8,600.0	6,872.8	8,599.1	6,843.6	53.5	53.2	87.98		412.4	-1,709.3	885.8	779.4	106.46	8.321	
8,700.0	6,873.2	8,699.1	6,841.7	56.2	55.9	87.83		412.4	-1,809.2	885.9	774.1	111.81	7.924	
8,800.0	6,873.7	8,799.0	6,839.9	58.9	58.6	87.68		412.4	-1,909.2	886.0	768.8	117.18	7.561	
8,900.0	6,874.1	8,899.0	6,838.0	61.6	61.3	87.53		412.4	-2,009.1	886.1	763.5	122.57	7.229	
9,000.0	6,874.6	8,999.0	6,836.2	64.3	64.0	87.38		412.4	-2,109.1	886.2	758.2	127.98	6.925	
9,100.0	6,875.1	9,099.0	6,834.3	67.1	66.7	87.24		412.4	-2,209.1	886.3	752.9	133.41	6.644	
9,200.0	6,875.5	9,198.9	6,832.5	69.8	69.4	87.09		412.4	-2,309.0	886.4	747.6	138.84	6.385	
9,300.0	6,876.0	9,298.9	6,830.6	72.5	72.1	86.94		412.4	-2,409.0	886.6	742.3	144.29	6.144	
9,400.0	6,876.4	9,398.9	6,828.8	75.3	74.9	86.79		412.4	-2,508.9	886.7	736.9	149.74	5.922	
9,500.0	6,876.9	9,498.9	6,826.9	78.0	77.6	86.64		412.4	-2,608.9	886.8	731.6	155.20	5.714	
9,600.0	6,877.3	9,598.8	6,825.1	80.8	80.3	86.49		412.4	-2,708.8	887.0	726.3	160.67	5.520	
9,700.0	6,877.8	9,698.8	6,823.2	83.5	83.1	86.34		412.4	-2,808.8	887.1	721.0	166.14	5.339	
9,800.0	6,878.2	9,798.8	6,821.4	86.3	85.8	86.20		412.4	-2,908.8	887.3	715.6	171.62	5.170	
9,900.0	6,878.7	9,898.8	6,819.5	89.0	88.6	86.05		412.4	-3,008.7	887.4	710.3	177.10	5.011	
10,000.0	6,879.1	9,998.7	6,817.7	91.8	91.4	85.90		412.4	-3,108.7	887.6	705.0	182.58	4.861	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1U-304 - 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							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)			
10,100.0	6,879.6	10,098.7	6,815.8	94.6	94.1	85.75	412.4	-3,208.6	887.7	699.7	188.07	4.720		
10,200.0	6,880.0	10,198.7	6,814.0	97.3	96.9	85.60	412.4	-3,308.6	887.9	694.4	193.56	4.587		
10,300.0	6,880.5	10,298.6	6,812.1	100.1	99.7	85.45	412.4	-3,408.5	888.1	689.0	199.05	4.462		
10,400.0	6,881.0	10,398.6	6,810.3	102.9	102.4	85.31	412.4	-3,508.5	888.3	683.7	204.54	4.343		
10,500.0	6,881.4	10,498.6	6,808.4	105.7	105.2	85.16	412.4	-3,608.4	888.5	678.4	210.03	4.230		
10,600.0	6,881.9	10,598.6	6,806.6	108.4	108.0	85.01	412.4	-3,708.4	888.7	673.1	215.52	4.123		
10,700.0	6,882.3	10,698.5	6,804.7	111.2	110.7	84.86	412.4	-3,808.4	888.9	667.9	221.02	4.022		
10,800.0	6,882.8	10,798.5	6,802.9	114.0	113.5	84.71	412.4	-3,908.3	889.1	662.6	226.51	3.925		
10,900.0	6,883.2	10,898.5	6,801.0	116.8	116.3	84.57	412.4	-4,008.3	889.3	657.3	232.00	3.833		
11,000.0	6,883.7	10,998.5	6,799.2	119.5	119.1	84.42	412.4	-4,108.2	889.5	652.0	237.48	3.746		
11,100.0	6,884.1	11,098.4	6,797.3	122.3	121.9	84.27	412.4	-4,208.2	889.7	646.8	242.97	3.662		
11,200.0	6,884.6	11,198.4	6,795.5	125.1	124.6	84.12	412.4	-4,308.1	890.0	641.5	248.46	3.582		
11,300.0	6,885.0	11,298.4	6,793.6	127.9	127.4	83.98	412.4	-4,408.1	890.2	636.3	253.94	3.506		
11,400.0	6,885.5	11,398.4	6,791.8	130.7	130.2	83.83	412.4	-4,508.1	890.5	631.0	259.42	3.433		
11,500.0	6,885.9	11,498.3	6,789.9	133.5	133.0	83.68	412.4	-4,608.0	890.7	625.8	264.90	3.362		
11,600.0	6,886.4	11,598.3	6,788.1	136.3	135.8	83.54	412.4	-4,708.0	891.0	620.6	270.37	3.295		
11,700.0	6,886.9	11,698.3	6,786.2	139.1	138.6	83.39	412.4	-4,807.9	891.2	615.4	275.84	3.231		
11,800.0	6,887.3	11,798.2	6,784.4	141.8	141.4	83.24	412.4	-4,907.9	891.5	610.2	281.31	3.169		
11,900.0	6,887.8	11,898.2	6,782.5	144.6	144.1	83.09	412.4	-5,007.8	891.8	605.0	286.78	3.110		
12,000.0	6,888.2	11,998.2	6,780.7	147.4	146.9	82.95	412.4	-5,107.8	892.1	599.8	292.24	3.052		
12,100.0	6,888.7	12,098.2	6,778.8	150.2	149.7	82.80	412.4	-5,207.7	892.3	594.6	297.70	2.997		
12,200.0	6,889.1	12,198.1	6,777.0	153.0	152.5	82.65	412.4	-5,307.7	892.6	589.5	303.16	2.944		
12,300.0	6,889.6	12,298.1	6,775.1	155.8	155.3	82.51	412.4	-5,407.7	892.9	584.3	308.61	2.893		
12,400.0	6,890.0	12,398.1	6,773.3	158.6	158.1	82.36	412.4	-5,507.6	893.2	579.2	314.06	2.844		
12,500.0	6,890.5	12,498.1	6,771.4	161.4	160.9	82.21	412.4	-5,607.6	893.5	574.0	319.50	2.797		
12,600.0	6,890.9	12,598.0	6,769.6	164.2	163.7	82.07	412.4	-5,707.5	893.9	568.9	324.94	2.751		
12,700.0	6,891.4	12,698.0	6,767.7	167.0	166.5	81.92	412.4	-5,807.5	894.2	563.8	330.37	2.707		
12,800.0	6,891.8	12,798.0	6,765.9	169.8	169.3	81.78	412.4	-5,907.4	894.5	558.7	335.80	2.664		
12,834.6	6,892.0	12,832.5	6,765.2	170.7	170.2	81.73	412.4	-5,942.0	894.6	556.9	337.67	2.649 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-204 - 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	134.47		-21.9	22.3	31.2				
100.0	100.0	100.0	100.0	0.1	0.1	134.47		-21.9	22.3	31.2	31.0	0.22	138.836	
200.0	200.0	200.0	200.0	0.3	0.3	134.47		-21.9	22.3	31.2	30.5	0.67	46.279	
300.0	300.0	300.0	300.0	0.6	0.6	134.47		-21.9	22.3	31.2	30.1	1.12	27.767	
400.0	400.0	400.0	400.0	0.8	0.8	134.47		-21.9	22.3	31.2	29.6	1.57	19.834 CC	
500.0	500.0	498.9	498.9	1.0	1.0	135.39		-23.4	23.1	32.9	30.9	2.00	16.448	
600.0	600.0	597.6	597.5	1.2	1.2	137.69		-27.9	25.4	37.8	35.4	2.42	15.659	
700.0	700.0	695.9	695.3	1.5	1.4	140.40		-35.4	29.3	46.2	43.3	2.85	16.212	
800.0	800.0	793.6	792.3	1.7	1.6	142.87		-45.8	34.7	58.0	54.7	3.30	17.568	
900.0	900.0	892.7	890.5	1.9	1.9	144.69		-57.6	40.8	71.3	67.5	3.76	18.974	
1,000.0	1,000.0	991.7	988.7	2.1	2.2	145.94		-69.4	46.9	84.6	80.4	4.22	20.051	
1,100.0	1,100.0	1,091.1	1,087.1	2.3	2.6	0.65		-81.3	53.1	96.2	91.6	4.59	20.942	
1,200.0	1,199.8	1,190.7	1,185.9	2.5	2.9	1.42		-93.2	59.2	104.4	99.4	5.00	20.894	
1,300.0	1,299.5	1,290.6	1,284.8	2.7	3.2	2.14		-105.1	65.4	109.1	103.7	5.41	20.177	
1,400.0	1,398.7	1,390.6	1,383.9	2.9	3.5	2.88		-117.0	71.6	110.7	104.8	5.83	18.980	
1,500.0	1,498.0	1,490.5	1,483.0	3.2	3.9	3.62		-128.9	77.8	111.7	105.4	6.27	17.817	
1,600.0	1,597.2	1,590.5	1,582.1	3.4	4.2	4.35		-140.9	84.0	112.7	106.0	6.71	16.789	
1,700.0	1,696.4	1,690.5	1,681.1	3.7	4.5	5.06		-152.8	90.1	113.8	106.6	7.16	15.880	
1,800.0	1,795.6	1,790.5	1,780.2	4.0	4.9	5.77		-164.7	96.3	114.8	107.2	7.62	15.072	
1,900.0	1,894.9	1,890.5	1,879.3	4.3	5.2	6.45		-176.6	102.5	115.9	107.8	8.08	14.349	
2,000.0	1,994.1	1,990.5	1,978.4	4.6	5.6	7.13		-188.6	108.7	117.0	108.5	8.54	13.700	
2,100.0	2,093.3	2,090.4	2,077.5	4.9	5.9	7.79		-200.5	114.9	118.1	109.1	9.01	13.115	
2,200.0	2,192.5	2,190.4	2,176.5	5.2	6.2	8.44		-212.4	121.1	119.3	109.8	9.48	12.584	
2,300.0	2,291.8	2,290.4	2,275.6	5.5	6.6	9.08		-224.3	127.2	120.4	110.5	9.95	12.102	
2,400.0	2,391.0	2,390.4	2,374.7	5.8	6.9	9.71		-236.3	133.4	121.6	111.1	10.42	11.662	
2,500.0	2,490.2	2,490.4	2,473.8	6.1	7.3	10.32		-248.2	139.6	122.7	111.8	10.90	11.258	
2,600.0	2,589.4	2,590.4	2,572.8	6.4	7.6	10.92		-260.1	145.8	123.9	112.6	11.38	10.887	
2,700.0	2,688.7	2,690.4	2,671.9	6.7	8.0	11.51		-272.0	152.0	125.1	113.3	11.87	10.545	
2,800.0	2,787.9	2,790.3	2,771.0	7.0	8.3	12.09		-284.0	158.2	126.4	114.0	12.35	10.229	
2,900.0	2,887.1	2,890.3	2,870.1	7.3	8.6	12.66		-295.9	164.3	127.6	114.8	12.84	9.936	
3,000.0	2,986.3	2,990.3	2,969.2	7.7	9.0	13.22		-307.8	170.5	128.8	115.5	13.33	9.664	
3,100.0	3,085.6	3,090.3	3,068.2	8.0	9.3	13.76		-319.7	176.7	130.1	116.3	13.83	9.410	
3,200.0	3,184.8	3,190.3	3,167.3	8.3	9.7	14.30		-331.7	182.9	131.4	117.0	14.32	9.172	
3,300.0	3,284.0	3,290.3	3,266.4	8.6	10.0	14.82		-343.6	189.1	132.6	117.8	14.82	8.951	
3,400.0	3,383.2	3,390.2	3,365.5	8.9	10.4	15.34		-355.5	195.2	133.9	118.6	15.32	8.742	
3,500.0	3,482.5	3,490.2	3,464.5	9.3	10.7	15.85		-367.4	201.4	135.2	119.4	15.82	8.547	
3,600.0	3,581.7	3,590.2	3,563.6	9.6	11.0	16.34		-379.4	207.6	136.5	120.2	16.33	8.363	
3,700.0	3,680.9	3,690.2	3,662.7	9.9	11.4	16.83		-391.3	213.8	137.9	121.0	16.83	8.190	
3,800.0	3,780.1	3,790.2	3,761.8	10.2	11.7	17.31		-403.2	220.0	139.2	121.8	17.34	8.026	
3,900.0	3,879.4	3,890.2	3,860.9	10.6	12.1	17.77		-415.1	226.2	140.5	122.7	17.85	7.871	
4,000.0	3,978.6	3,990.1	3,959.9	10.9	12.4	18.23		-427.1	232.3	141.9	123.5	18.37	7.724	
4,100.0	4,077.8	4,090.1	4,059.0	11.2	12.8	18.68		-439.0	238.5	143.2	124.3	18.88	7.585	
4,200.0	4,177.0	4,190.1	4,158.1	11.5	13.1	19.13		-450.9	244.7	144.6	125.2	19.40	7.453	
4,300.0	4,276.3	4,290.1	4,257.2	11.9	13.5	19.56		-462.8	250.9	146.0	126.0	19.92	7.328	
4,400.0	4,375.5	4,390.1	4,356.2	12.2	13.8	19.99		-474.8	257.1	147.3	126.9	20.44	7.209	
4,500.0	4,474.7	4,490.1	4,455.3	12.5	14.2	20.40		-486.7	263.2	148.7	127.8	20.96	7.095	
4,600.0	4,573.9	4,590.1	4,554.4	12.8	14.5	20.81		-498.6	269.4	150.1	128.6	21.49	6.987	
4,700.0	4,673.2	4,690.0	4,653.5	13.2	14.8	21.22		-510.5	275.6	151.5	129.5	22.02	6.883	
4,800.0	4,772.4	4,790.0	4,752.6	13.5	15.2	21.61		-522.5	281.8	153.0	130.4	22.55	6.784	
4,900.0	4,871.6	4,890.0	4,851.6	13.8	15.5	22.00		-534.4	288.0	154.4	131.3	23.08	6.690	
5,000.0	4,970.8	4,990.0	4,950.7	14.2	15.9	22.38		-546.3	294.2	155.8	132.2	23.61	6.599	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-204 - 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	5,070.1	5,090.0	5,049.8	14.5	16.2	22.75		-558.2	300.3	157.2	133.1	24.14	6.512	
5,200.0	5,169.3	5,191.9	5,150.8	14.8	16.6	23.15		-570.2	306.5	158.5	133.8	24.68	6.421	
5,300.0	5,268.5	5,297.4	5,255.7	15.1	16.8	23.89		-579.9	311.6	157.0	131.8	25.20	6.227	
5,400.0	5,367.7	5,402.6	5,360.7	15.5	17.0	25.09		-586.2	314.8	152.0	126.2	25.77	5.899	
5,500.0	5,467.0	5,507.3	5,465.3	15.8	17.1	26.90		-589.0	316.3	143.7	117.3	26.39	5.444	
5,600.0	5,566.2	5,608.1	5,566.2	16.1	17.3	29.28		-589.2	316.4	132.9	105.9	27.08	4.909	
5,700.0	5,665.7	5,707.6	5,665.7	16.3	17.4	31.43		-589.2	316.4	124.4	96.7	27.68	4.492	
5,800.0	5,765.5	5,807.4	5,765.5	16.5	17.5	32.98		-589.2	316.4	118.9	90.7	28.20	4.217	
5,900.0	5,865.4	5,907.4	5,865.4	16.7	17.7	33.75		-589.2	316.4	116.4	87.9	28.59	4.072	
5,955.9	5,921.4	5,963.3	5,921.4	16.8	17.7	33.88		-589.2	316.4	116.0	87.3	28.79	4.030	
6,000.0	5,965.4	6,007.4	5,965.4	16.8	17.8	-179.99		-589.2	316.4	116.3	83.4	32.89	3.535	
6,051.6	6,017.0	6,059.0	6,017.0	16.9	17.9	-179.99		-589.2	316.4	116.3	83.2	33.04	3.519	
6,100.0	6,065.4	6,107.3	6,065.3	17.0	17.9	-179.32		-589.2	315.0	116.3	83.2	33.11	3.512	
6,200.0	6,165.4	6,206.1	6,163.3	17.1	18.0	-84.52		-589.2	302.8	116.8	86.6	30.19	3.870	
6,300.0	6,264.2	6,303.4	6,257.5	17.2	18.0	-79.47		-589.2	278.6	118.3	87.4	30.91	3.827	
6,400.0	6,360.3	6,400.0	6,347.1	17.2	18.0	-74.74		-589.2	242.8	120.5	89.2	31.35	3.845	
6,500.0	6,452.0	6,494.5	6,429.8	17.2	18.0	-70.51		-589.2	197.2	123.4	91.9	31.49	3.918	
6,600.0	6,537.7	6,588.5	6,505.9	17.2	18.0	-66.76		-589.2	142.0	126.6	95.2	31.38	4.035	
6,700.0	6,616.0	6,681.6	6,573.9	17.1	17.9	-63.53		-589.2	78.6	130.0	98.8	31.14	4.173	
6,800.0	6,685.5	6,773.9	6,633.3	17.1	17.9	-60.83		-589.2	8.0	133.2	102.3	30.97	4.302	
6,900.0	6,745.1	6,865.5	6,683.4	17.0	17.9	-58.64		-589.2	-68.6	136.2	105.2	31.07	4.384	
7,000.0	6,793.6	6,956.7	6,723.8	17.0	18.0	-56.93		-589.2	-150.3	138.8	107.1	31.70	4.378	
7,100.0	6,830.4	7,047.4	6,754.1	18.1	18.7	-55.68		-589.2	-235.7	140.8	107.8	33.00	4.266	
7,200.0	6,854.7	7,137.8	6,774.0	19.7	20.2	-54.88		-589.2	-323.9	142.2	107.1	35.06	4.054	
7,300.0	6,866.1	7,228.0	6,783.3	21.6	21.9	-54.51		-589.2	-413.6	142.8	105.0	37.85	3.773	
7,400.0	6,867.3	7,323.6	6,783.5	23.6	23.8	-54.22		-589.2	-509.1	143.3	102.3	41.01	3.495	
7,500.0	6,867.8	7,423.6	6,782.6	25.8	26.0	-53.78		-589.2	-609.1	144.1	99.8	44.32	3.252	
7,600.0	6,868.2	7,523.6	6,781.8	28.0	28.2	-53.36		-589.2	-709.1	144.9	97.1	47.79	3.033	
7,700.0	6,868.7	7,623.6	6,780.9	30.4	30.6	-52.93		-589.2	-809.1	145.7	94.4	51.36	2.837	
7,800.0	6,869.2	7,723.6	6,780.0	32.8	33.0	-52.51		-589.2	-909.1	146.5	91.5	55.02	2.664	
7,900.0	6,869.6	7,823.6	6,779.1	35.3	35.5	-52.10		-589.2	-1,009.1	147.4	88.6	58.73	2.509	
8,000.0	6,870.1	7,923.6	6,778.2	37.8	38.0	-51.69		-589.2	-1,109.0	148.2	85.7	62.47	2.372	
8,100.0	6,870.5	8,023.5	6,777.3	40.4	40.6	-51.28		-589.2	-1,209.0	149.0	82.8	66.24	2.250	
8,200.0	6,871.0	8,123.5	6,776.4	43.0	43.2	-50.88		-589.2	-1,309.0	149.9	79.9	70.02	2.141	
8,300.0	6,871.4	8,223.5	6,775.5	45.6	45.8	-50.49		-589.2	-1,409.0	150.7	76.9	73.79	2.042	
8,400.0	6,871.9	8,323.5	6,774.6	48.2	48.4	-50.09		-589.2	-1,509.0	151.6	74.0	77.57	1.954	
8,500.0	6,872.3	8,423.5	6,773.7	50.9	51.1	-49.71		-589.2	-1,609.0	152.4	71.1	81.33	1.874	
8,600.0	6,872.8	8,523.5	6,772.9	53.5	53.7	-49.32		-589.2	-1,709.0	153.3	68.2	85.07	1.802	
8,700.0	6,873.2	8,623.5	6,772.0	56.2	56.4	-48.94		-589.2	-1,809.0	154.2	65.4	88.80	1.736	
8,800.0	6,873.7	8,723.5	6,771.1	58.9	59.1	-48.57		-589.2	-1,908.9	155.1	62.6	92.50	1.677	
8,900.0	6,874.1	8,823.5	6,770.2	61.6	61.8	-48.20		-589.2	-2,008.9	156.0	59.8	96.18	1.622	
9,000.0	6,874.6	8,923.5	6,769.3	64.3	64.5	-47.83		-589.2	-2,108.9	156.9	57.0	99.84	1.571	
9,100.0	6,875.1	9,023.5	6,768.4	67.1	67.2	-47.47		-589.2	-2,208.9	157.8	54.3	103.47	1.525	
9,200.0	6,875.5	9,123.4	6,767.5	69.8	70.0	-47.12		-589.2	-2,308.9	158.7	51.6	107.06	1.482 Level 3	
9,300.0	6,876.0	9,223.4	6,766.6	72.5	72.7	-46.76		-589.2	-2,408.9	159.6	49.0	110.63	1.443 Level 3	
9,400.0	6,876.4	9,323.4	6,765.7	75.3	75.4	-46.41		-589.2	-2,508.9	160.5	46.4	114.17	1.406 Level 3	
9,500.0	6,876.9	9,423.4	6,764.8	78.0	78.2	-46.07		-589.2	-2,608.8	161.5	43.8	117.68	1.372 Level 3	
9,600.0	6,877.3	9,523.4	6,764.0	80.8	80.9	-45.73		-589.2	-2,708.8	162.4	41.2	121.16	1.340 Level 3	
9,700.0	6,877.8	9,623.4	6,763.1	83.5	83.7	-45.39		-589.2	-2,808.8	163.3	38.7	124.60	1.311 Level 3	
9,800.0	6,878.2	9,723.4	6,762.2	86.3	86.4	-45.05		-589.2	-2,908.8	164.3	36.3	128.02	1.283 Level 3	
9,900.0	6,878.7	9,823.4	6,761.3	89.0	89.2	-44.72		-589.2	-3,008.8	165.2	33.8	131.40	1.258 Level 3	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-204 - 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	6,879.1	9,923.4	6,760.4	91.8	92.0	-44.40	-589.2	-3,108.8	166.2	31.4	134.75	1.233	Level 2	
10,100.0	6,879.6	10,023.4	6,759.5	94.6	94.7	-44.08	-589.2	-3,208.8	167.2	29.1	138.07	1.211	Level 2	
10,200.0	6,880.0	10,123.4	6,758.6	97.3	97.5	-43.76	-589.2	-3,308.8	168.1	26.8	141.35	1.189	Level 2	
10,300.0	6,880.5	10,223.3	6,757.7	100.1	100.3	-43.44	-589.2	-3,408.7	169.1	24.5	144.61	1.169	Level 2	
10,400.0	6,881.0	10,323.3	6,756.8	102.9	103.0	-43.13	-589.2	-3,508.7	170.1	22.2	147.83	1.150	Level 2	
10,500.0	6,881.4	10,423.3	6,755.9	105.7	105.8	-42.82	-589.2	-3,608.7	171.1	20.0	151.02	1.133	Level 2	
10,600.0	6,881.9	10,523.3	6,755.1	108.4	108.6	-42.52	-589.2	-3,708.7	172.1	17.9	154.18	1.116	Level 2	
10,700.0	6,882.3	10,623.3	6,754.2	111.2	111.4	-42.22	-589.2	-3,808.7	173.0	15.7	157.31	1.100	Level 2	
10,800.0	6,882.8	10,723.3	6,753.3	114.0	114.1	-41.92	-589.2	-3,908.7	174.0	13.6	160.41	1.085	Level 2	
10,900.0	6,883.2	10,823.3	6,752.4	116.8	116.9	-41.63	-589.2	-4,008.7	175.0	11.6	163.48	1.071	Level 2	
11,000.0	6,883.7	10,923.3	6,751.5	119.5	119.7	-41.34	-589.2	-4,108.7	176.0	9.5	166.52	1.057	Level 2	
11,100.0	6,884.1	11,023.3	6,750.6	122.3	122.5	-41.05	-589.2	-4,208.6	177.1	7.5	169.53	1.044	Level 2	
11,200.0	6,884.6	11,123.3	6,749.7	125.1	125.3	-40.77	-589.2	-4,308.6	178.1	5.6	172.51	1.032	Level 2	
11,300.0	6,885.0	11,223.3	6,748.8	127.9	128.1	-40.49	-589.2	-4,408.6	179.1	3.6	175.46	1.021	Level 2	
11,400.0	6,885.5	11,323.2	6,747.9	130.7	130.8	-40.21	-589.2	-4,508.6	180.1	1.7	178.39	1.010	Level 2	
11,500.0	6,885.9	11,423.2	6,747.0	133.5	133.6	-39.93	-589.2	-4,608.6	181.1	-0.1	181.28	0.999	Level 1	
11,600.0	6,886.4	11,523.2	6,746.2	136.3	136.4	-39.66	-589.2	-4,708.6	182.2	-2.0	184.15	0.989	Level 1	
11,700.0	6,886.9	11,623.2	6,745.3	139.1	139.2	-39.39	-589.2	-4,808.6	183.2	-3.8	186.98	0.980	Level 1	
11,800.0	6,887.3	11,723.2	6,744.4	141.8	142.0	-39.13	-589.2	-4,908.5	184.3	-5.5	189.80	0.971	Level 1	
11,900.0	6,887.8	11,823.2	6,743.5	144.6	144.8	-38.87	-589.2	-5,008.5	185.3	-7.3	192.58	0.962	Level 1	
12,000.0	6,888.2	11,923.2	6,742.6	147.4	147.6	-38.61	-589.2	-5,108.5	186.4	-9.0	195.34	0.954	Level 1	
12,100.0	6,888.7	12,023.2	6,741.7	150.2	150.4	-38.35	-589.2	-5,208.5	187.4	-10.7	198.07	0.946	Level 1	
12,200.0	6,889.1	12,123.2	6,740.8	153.0	153.2	-38.10	-589.2	-5,308.5	188.5	-12.3	200.78	0.939	Level 1	
12,300.0	6,889.6	12,223.2	6,739.9	155.8	156.0	-37.85	-589.2	-5,408.5	189.5	-13.9	203.46	0.931	Level 1	
12,400.0	6,890.0	12,323.2	6,739.0	158.6	158.8	-37.60	-589.2	-5,508.5	190.6	-15.5	206.11	0.925	Level 1	
12,500.0	6,890.5	12,423.1	6,738.1	161.4	161.5	-37.35	-589.2	-5,608.5	191.6	-17.1	208.74	0.918	Level 1	
12,600.0	6,890.9	12,523.1	6,737.3	164.2	164.3	-37.11	-589.2	-5,708.4	192.7	-18.6	211.35	0.912	Level 1	
12,700.0	6,891.4	12,623.1	6,736.4	167.0	167.1	-36.87	-589.2	-5,808.4	193.8	-20.1	213.93	0.906	Level 1	
12,800.0	6,891.8	12,723.1	6,735.5	169.8	169.9	-36.63	-589.2	-5,908.4	194.9	-21.6	216.49	0.900	Level 1	
12,834.6	6,892.0	12,757.7	6,735.2	170.7	170.9	-36.55	-589.2	-5,943.0	195.2	-22.1	217.37	0.898 Level 1, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-304 - 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	136.31	136.31	-43.7	41.8	60.5				
100.0	100.0	99.0	99.0	0.1	0.1	136.31	136.31	-43.7	41.8	60.5	60.2	0.22	270.309	
200.0	200.0	199.0	199.0	0.3	0.3	136.31	136.31	-43.7	41.8	60.5	59.8	0.67	89.953 CC, ES	
300.0	300.0	297.1	297.1	0.6	0.5	137.00	137.00	-45.3	42.2	62.0	60.9	1.10	56.458	
400.0	400.0	395.0	394.9	0.8	0.7	138.91	138.91	-50.1	43.7	66.6	65.0	1.53	43.569	
500.0	500.0	492.5	492.0	1.0	1.0	141.55	141.55	-58.0	46.1	74.4	72.4	1.97	37.704	
600.0	600.0	589.2	588.0	1.2	1.2	144.42	144.42	-69.0	49.4	85.5	83.1	2.43	35.216	
700.0	700.0	685.1	682.8	1.5	1.6	147.15	147.15	-83.0	53.6	100.1	97.2	2.90	34.542	
800.0	800.0	781.8	777.8	1.7	1.9	149.56	149.56	-99.7	58.6	117.6	114.2	3.38	34.766	
900.0	900.0	880.0	874.4	1.9	2.3	151.41	151.41	-117.1	63.8	135.6	131.8	3.87	35.063	
1,000.0	1,000.0	978.3	971.0	2.1	2.7	152.83	152.83	-134.5	69.1	153.8	149.4	4.36	35.239	
1,100.0	1,100.0	1,076.9	1,067.9	2.3	3.1	7.77	7.77	-152.0	74.3	170.3	165.6	4.73	36.037	
1,200.0	1,199.8	1,175.9	1,165.2	2.5	3.5	8.88	8.88	-169.6	79.6	183.5	178.4	5.15	35.659	
1,300.0	1,299.5	1,275.4	1,262.9	2.7	3.9	10.02	10.02	-187.2	84.9	193.3	187.8	5.57	34.689	
1,400.0	1,398.7	1,375.0	1,360.9	2.9	4.4	11.24	11.24	-204.8	90.2	200.2	194.1	6.01	33.278	
1,500.0	1,498.0	1,474.7	1,458.9	3.2	4.8	12.43	12.43	-222.5	95.5	206.5	200.0	6.47	31.916	
1,600.0	1,597.2	1,574.5	1,556.9	3.4	5.2	13.54	13.54	-240.2	100.8	212.9	206.0	6.93	30.715	
1,700.0	1,696.4	1,674.2	1,654.8	3.7	5.6	14.59	14.59	-257.8	106.1	219.4	212.0	7.40	29.647	
1,800.0	1,795.6	1,773.9	1,752.8	4.0	6.0	15.58	15.58	-275.5	111.4	226.0	218.1	7.88	28.693	
1,900.0	1,894.9	1,873.6	1,850.8	4.3	6.4	16.52	16.52	-293.2	116.8	232.6	224.3	8.36	27.836	
2,000.0	1,994.1	1,973.3	1,948.8	4.6	6.9	17.40	17.40	-310.9	122.1	239.3	230.5	8.84	27.063	
2,100.0	2,093.3	2,073.0	2,046.8	4.9	7.3	18.23	18.23	-328.5	127.4	246.1	236.8	9.34	26.361	
2,200.0	2,192.5	2,172.7	2,144.8	5.2	7.7	19.02	19.02	-346.2	132.7	252.9	243.1	9.83	25.723	
2,300.0	2,291.8	2,272.4	2,242.8	5.5	8.1	19.77	19.77	-363.9	138.0	259.7	249.4	10.33	25.139	
2,400.0	2,391.0	2,372.1	2,340.8	5.8	8.5	20.48	20.48	-381.5	143.3	266.6	255.8	10.84	24.604	
2,500.0	2,490.2	2,471.8	2,438.7	6.1	9.0	21.15	21.15	-399.2	148.6	273.5	262.2	11.35	24.111	
2,600.0	2,589.4	2,571.6	2,536.7	6.4	9.4	21.79	21.79	-416.9	153.9	280.5	268.6	11.86	23.656	
2,700.0	2,688.7	2,671.3	2,634.7	6.7	9.8	22.40	22.40	-434.5	159.3	287.5	275.1	12.37	23.235	
2,800.0	2,787.9	2,771.0	2,732.7	7.0	10.2	22.98	22.98	-452.2	164.6	294.5	281.6	12.89	22.844	
2,900.0	2,887.1	2,870.7	2,830.7	7.3	10.7	23.53	23.53	-469.9	169.9	301.6	288.2	13.42	22.480	
3,000.0	2,986.3	2,970.4	2,928.7	7.7	11.1	24.06	24.06	-487.6	175.2	308.6	294.7	13.94	22.140	
3,100.0	3,085.6	3,070.1	3,026.7	8.0	11.5	24.56	24.56	-505.2	180.5	315.8	301.3	14.47	21.823	
3,200.0	3,184.8	3,169.8	3,124.7	8.3	11.9	25.05	25.05	-522.9	185.8	322.9	307.9	15.00	21.526	
3,300.0	3,284.0	3,269.5	3,222.6	8.6	12.3	25.51	25.51	-540.6	191.1	330.0	314.5	15.53	21.247	
3,400.0	3,383.2	3,369.2	3,320.6	8.9	12.8	25.95	25.95	-558.2	196.4	337.2	321.1	16.07	20.984	
3,500.0	3,482.5	3,468.9	3,418.6	9.3	13.2	26.37	26.37	-575.9	201.8	344.4	327.8	16.61	20.737	
3,600.0	3,581.7	3,568.6	3,516.6	9.6	13.6	26.78	26.78	-593.6	207.1	351.6	334.4	17.15	20.504	
3,700.0	3,680.9	3,668.4	3,614.6	9.9	14.0	27.17	27.17	-611.2	212.4	358.8	341.1	17.69	20.284	
3,800.0	3,780.1	3,768.1	3,712.6	10.2	14.4	27.54	27.54	-628.9	217.7	366.1	347.8	18.23	20.076	
3,900.0	3,879.4	3,867.8	3,810.6	10.6	14.9	27.90	27.90	-646.6	223.0	373.3	354.5	18.78	19.878	
4,000.0	3,978.6	3,967.5	3,908.6	10.9	15.3	28.24	28.24	-664.2	228.3	380.6	361.2	19.33	19.691	
4,100.0	4,077.8	4,067.2	4,006.5	11.2	15.7	28.58	28.58	-681.9	233.6	387.9	368.0	19.88	19.513	
4,200.0	4,177.0	4,166.9	4,104.5	11.5	16.1	28.90	28.90	-699.6	238.9	395.1	374.7	20.43	19.344	
4,300.0	4,276.3	4,266.6	4,202.5	11.9	16.6	29.21	29.21	-717.3	244.2	402.5	381.5	20.98	19.183	
4,400.0	4,375.5	4,366.3	4,300.5	12.2	17.0	29.50	29.50	-734.9	249.6	409.8	388.2	21.53	19.029	
4,500.0	4,474.7	4,466.0	4,398.5	12.5	17.4	29.79	29.79	-752.6	254.9	417.1	395.0	22.09	18.883	
4,600.0	4,573.9	4,565.7	4,496.5	12.8	17.8	30.07	30.07	-770.3	260.2	424.4	401.8	22.64	18.743	
4,700.0	4,673.2	4,665.5	4,594.5	13.2	18.2	30.34	30.34	-787.9	265.5	431.8	408.6	23.20	18.609	
4,800.0	4,772.4	4,765.2	4,692.5	13.5	18.7	30.60	30.60	-805.6	270.8	439.1	415.4	23.76	18.481	
4,900.0	4,871.6	4,864.9	4,790.4	13.8	19.1	30.85	30.85	-823.3	276.1	446.5	422.2	24.32	18.359	
5,000.0	4,970.8	4,964.6	4,888.4	14.2	19.5	31.09	31.09	-840.9	281.4	453.9	429.0	24.88	18.241	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-304 - 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	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
5,100.0	5,070.1	5,064.3	4,986.4	14.5	19.9	31.32	-858.6	286.7	461.3	435.8	25.44	18.129		
5,200.0	5,169.3	5,164.0	5,084.4	14.8	20.4	31.55	-876.3	292.1	468.6	442.6	26.01	18.020		
5,300.0	5,268.5	5,263.7	5,182.4	15.1	20.8	31.77	-894.0	297.4	476.0	449.5	26.57	17.917		
5,400.0	5,367.7	5,365.5	5,282.4	15.5	21.2	31.99	-912.0	302.8	483.4	456.3	27.14	17.814		
5,500.0	5,467.0	5,484.9	5,400.3	15.8	21.5	32.33	-930.3	308.3	488.4	460.7	27.71	17.626		
5,600.0	5,566.2	5,604.5	5,519.0	16.1	21.8	32.82	-943.9	312.4	489.4	461.2	28.27	17.315		
5,700.0	5,665.7	5,724.0	5,638.2	16.3	22.0	33.27	-952.7	315.0	488.6	459.8	28.72	17.011		
5,800.0	5,765.5	5,843.5	5,757.6	16.5	22.2	33.60	-956.8	316.3	486.6	457.5	29.11	16.714		
5,900.0	5,865.4	5,950.4	5,864.4	16.7	22.3	33.78	-957.1	316.4	484.4	455.0	29.42	16.464		
5,955.9	5,921.4	6,006.3	5,920.4	16.8	22.4	33.81	-957.1	316.4	484.0	454.4	29.60	16.353		
6,000.0	5,965.4	6,050.4	5,964.4	16.8	22.4	-179.99	-957.1	316.4	484.2	446.4	37.77	12.819		
6,065.9	6,031.3	6,116.3	6,030.3	16.9	22.5	-179.99	-957.1	316.4	484.2	446.3	37.94	12.763		
6,100.0	6,065.4	6,150.4	6,064.4	17.0	22.5	-179.99	-957.1	316.4	484.2	446.2	38.03	12.734		
6,200.0	6,165.4	6,250.0	6,163.8	17.1	22.6	-89.49	-957.1	309.6	484.2	453.8	30.40	15.929		
6,300.0	6,264.2	6,349.0	6,260.8	17.2	22.6	-88.88	-957.1	290.1	484.3	453.7	30.63	15.813		
6,400.0	6,360.3	6,447.3	6,353.8	17.2	22.7	-88.30	-957.1	258.5	484.4	453.7	30.74	15.759		
6,500.0	6,452.0	6,545.1	6,441.5	17.2	22.7	-87.74	-957.1	215.5	484.6	453.8	30.80	15.733		
6,600.0	6,537.7	6,642.3	6,522.6	17.2	22.6	-87.23	-957.1	162.0	484.8	453.9	30.91	15.683		
6,700.0	6,616.0	6,738.9	6,595.8	17.1	22.6	-86.76	-957.1	99.0	485.0	453.8	31.21	15.539		
6,800.0	6,685.5	6,835.2	6,660.3	17.1	22.6	-86.34	-957.1	27.6	485.2	453.3	31.87	15.226		
6,900.0	6,745.1	6,931.1	6,715.1	17.0	22.6	-85.99	-957.1	-51.0	485.4	452.4	33.03	14.694		
7,000.0	6,793.6	7,026.6	6,759.4	17.0	22.7	-85.71	-957.1	-135.6	485.6	450.8	34.83	13.943		
7,100.0	6,830.4	7,122.0	6,792.8	18.1	22.9	-85.49	-957.1	-224.8	485.7	448.5	37.27	13.033		
7,200.0	6,854.7	7,217.1	6,814.9	19.7	23.4	-85.35	-957.1	-317.3	485.8	445.5	40.32	12.049		
7,300.0	6,866.1	7,312.2	6,825.2	21.6	24.3	-85.28	-957.1	-411.8	485.9	442.0	43.86	11.077		
7,400.0	6,867.3	7,410.0	6,825.6	23.6	25.8	-85.20	-957.1	-509.6	485.9	438.1	47.78	10.170		
7,500.0	6,867.8	7,510.0	6,825.0	25.8	27.6	-85.07	-957.1	-609.6	486.0	434.0	52.02	9.343		
7,600.0	6,868.2	7,610.0	6,824.3	28.0	29.7	-84.93	-957.1	-709.6	486.1	429.6	56.49	8.605		
7,700.0	6,868.7	7,710.0	6,823.7	30.4	31.9	-84.80	-957.1	-809.6	486.2	425.1	61.15	7.952		
7,800.0	6,869.2	7,810.0	6,823.0	32.8	34.2	-84.67	-957.1	-909.6	486.3	420.4	65.95	7.375		
7,900.0	6,869.6	7,910.0	6,822.3	35.3	36.6	-84.54	-957.1	-1,009.6	486.4	415.6	70.86	6.865		
8,000.0	6,870.1	8,010.0	6,821.7	37.8	39.1	-84.41	-957.1	-1,109.5	486.5	410.7	75.86	6.413		
8,100.0	6,870.5	8,110.0	6,821.0	40.4	41.6	-84.28	-957.1	-1,209.5	486.6	405.7	80.94	6.012		
8,200.0	6,871.0	8,210.0	6,820.3	43.0	44.1	-84.15	-957.1	-1,309.5	486.8	400.7	86.08	5.655		
8,300.0	6,871.4	8,310.0	6,819.7	45.6	46.7	-84.02	-957.1	-1,409.5	486.9	395.6	91.27	5.335		
8,400.0	6,871.9	8,410.0	6,819.0	48.2	49.3	-83.89	-957.1	-1,509.5	487.0	390.5	96.49	5.047		
8,500.0	6,872.3	8,510.0	6,818.4	50.9	51.9	-83.76	-957.1	-1,609.5	487.1	385.4	101.76	4.787		
8,600.0	6,872.8	8,610.0	6,817.7	53.5	54.6	-83.63	-957.1	-1,709.5	487.2	380.2	107.05	4.552		
8,700.0	6,873.2	8,710.0	6,817.0	56.2	57.2	-83.50	-957.1	-1,809.5	487.4	375.0	112.36	4.337		
8,800.0	6,873.7	8,809.9	6,816.4	58.9	59.9	-83.36	-957.1	-1,909.5	487.5	369.8	117.69	4.142		
8,900.0	6,874.1	8,909.9	6,815.7	61.6	62.6	-83.23	-957.1	-2,009.5	487.6	364.6	123.05	3.963		
9,000.0	6,874.6	9,009.9	6,815.0	64.3	65.2	-83.10	-957.1	-2,109.5	487.8	359.3	128.41	3.798		
9,100.0	6,875.1	9,109.9	6,814.4	67.1	67.9	-82.97	-957.1	-2,209.5	487.9	354.1	133.79	3.647		
9,200.0	6,875.5	9,209.9	6,813.7	69.8	70.7	-82.84	-957.1	-2,309.4	488.0	348.8	139.18	3.507		
9,300.0	6,876.0	9,309.9	6,813.0	72.5	73.4	-82.71	-957.1	-2,409.4	488.2	343.6	144.57	3.377		
9,400.0	6,876.4	9,409.9	6,812.4	75.3	76.1	-82.58	-957.1	-2,509.4	488.3	338.3	149.98	3.256		
9,500.0	6,876.9	9,509.9	6,811.7	78.0	78.8	-82.45	-957.1	-2,609.4	488.5	333.1	155.38	3.144		
9,600.0	6,877.3	9,609.9	6,811.1	80.8	81.6	-82.32	-957.1	-2,709.4	488.6	327.8	160.80	3.039		
9,700.0	6,877.8	9,709.9	6,810.4	83.5	84.3	-82.19	-957.1	-2,809.4	488.8	322.5	166.22	2.940		
9,800.0	6,878.2	9,809.9	6,809.7	86.3	87.0	-82.06	-957.1	-2,909.4	488.9	317.3	171.64	2.848		
9,900.0	6,878.7	9,909.9	6,809.1	89.0	89.8	-81.93	-957.1	-3,009.4	489.1	312.0	177.06	2.762		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-304 - 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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	6,879.1	10,009.9	6,808.4	91.8	92.5	-81.81	-957.1	-3,109.4	489.2	306.7	182.49	2.681		
10,100.0	6,879.6	10,109.9	6,807.7	94.6	95.3	-81.68	-957.1	-3,209.4	489.4	301.5	187.91	2.604		
10,200.0	6,880.0	10,209.9	6,807.1	97.3	98.1	-81.55	-957.1	-3,309.4	489.5	296.2	193.34	2.532		
10,300.0	6,880.5	10,309.9	6,806.4	100.1	100.8	-81.42	-957.1	-3,409.4	489.7	290.9	198.77	2.464		
10,400.0	6,881.0	10,409.8	6,805.8	102.9	103.6	-81.29	-957.1	-3,509.3	489.9	285.7	204.20	2.399		
10,500.0	6,881.4	10,509.8	6,805.1	105.7	106.3	-81.16	-957.1	-3,609.3	490.0	280.4	209.62	2.338		
10,600.0	6,881.9	10,609.8	6,804.4	108.4	109.1	-81.03	-957.1	-3,709.3	490.2	275.2	215.05	2.280		
10,700.0	6,882.3	10,709.8	6,803.8	111.2	111.9	-80.90	-957.1	-3,809.3	490.4	269.9	220.47	2.224		
10,800.0	6,882.8	10,809.8	6,803.1	114.0	114.6	-80.77	-957.1	-3,909.3	490.6	264.7	225.89	2.172		
10,900.0	6,883.2	10,909.8	6,802.4	116.8	117.4	-80.64	-957.1	-4,009.3	490.8	259.4	231.31	2.122		
11,000.0	6,883.7	11,009.8	6,801.8	119.5	120.2	-80.51	-957.1	-4,109.3	490.9	254.2	236.73	2.074		
11,100.0	6,884.1	11,109.8	6,801.1	122.3	123.0	-80.39	-957.1	-4,209.3	491.1	249.0	242.15	2.028		
11,200.0	6,884.6	11,209.8	6,800.4	125.1	125.8	-80.26	-957.1	-4,309.3	491.3	243.8	247.56	1.985		
11,300.0	6,885.0	11,309.8	6,799.8	127.9	128.5	-80.13	-957.1	-4,409.3	491.5	238.5	252.97	1.943		
11,400.0	6,885.5	11,409.8	6,799.1	130.7	131.3	-80.00	-957.1	-4,509.3	491.7	233.3	258.37	1.903		
11,500.0	6,885.9	11,509.8	6,798.5	133.5	134.1	-79.87	-957.1	-4,609.3	491.9	228.1	263.78	1.865		
11,600.0	6,886.4	11,609.8	6,797.8	136.3	136.9	-79.75	-957.1	-4,709.2	492.1	222.9	269.18	1.828		
11,700.0	6,886.9	11,709.8	6,797.1	139.1	139.7	-79.62	-957.1	-4,809.2	492.3	217.7	274.57	1.793		
11,800.0	6,887.3	11,809.8	6,796.5	141.8	142.4	-79.49	-957.1	-4,909.2	492.5	212.5	279.96	1.759		
11,900.0	6,887.8	11,909.8	6,795.8	144.6	145.2	-79.36	-957.1	-5,009.2	492.7	207.3	285.35	1.727		
12,000.0	6,888.2	12,009.7	6,795.1	147.4	148.0	-79.23	-957.1	-5,109.2	492.9	202.2	290.74	1.695		
12,100.0	6,888.7	12,109.7	6,794.5	150.2	150.8	-79.11	-957.1	-5,209.2	493.1	197.0	296.12	1.665		
12,200.0	6,889.1	12,209.7	6,793.8	153.0	153.6	-78.98	-957.1	-5,309.2	493.3	191.8	301.49	1.636		
12,300.0	6,889.6	12,309.7	6,793.2	155.8	156.4	-78.85	-957.1	-5,409.2	493.5	186.7	306.86	1.608		
12,400.0	6,890.0	12,409.7	6,792.5	158.6	159.2	-78.72	-957.1	-5,509.2	493.8	181.5	312.23	1.581		
12,500.0	6,890.5	12,509.7	6,791.8	161.4	162.0	-78.60	-957.1	-5,609.2	494.0	176.4	317.59	1.555		
12,600.0	6,890.9	12,609.7	6,791.2	164.2	164.8	-78.47	-957.1	-5,709.2	494.2	171.3	322.94	1.530		
12,700.0	6,891.4	12,709.7	6,790.5	167.0	167.5	-78.34	-957.1	-5,809.1	494.4	166.1	328.29	1.506		
12,800.0	6,891.8	12,809.7	6,789.8	169.8	170.3	-78.22	-957.1	-5,909.1	494.6	161.0	333.64	1.483 Level 3		
12,834.6	6,892.0	12,844.3	6,789.6	170.7	171.3	-78.17	-957.1	-5,943.7	494.7	159.2	335.48	1.475 Level 3, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-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	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-41.72	-41.72	21.9	-19.5	29.3				
100.0	100.0	100.0	100.0	0.1	0.1	-41.72	-41.72	21.9	-19.5	29.3	29.1	0.22	130.286	
200.0	200.0	200.0	200.0	0.3	0.3	-41.72	-41.72	21.9	-19.5	29.3	28.6	0.67	43.429	
300.0	300.0	300.0	300.0	0.6	0.6	-41.72	-41.72	21.9	-19.5	29.3	28.2	1.12	26.057	
400.0	400.0	400.0	400.0	0.8	0.8	-41.72	-41.72	21.9	-19.5	29.3	27.7	1.57	18.612	
500.0	500.0	500.0	500.0	1.0	1.0	-41.72	-41.72	21.9	-19.5	29.3	27.3	2.02	14.476	
600.0	600.0	600.0	600.0	1.2	1.2	-41.72	-41.72	21.9	-19.5	29.3	26.8	2.47	11.844	
700.0	700.0	700.0	700.0	1.5	1.5	-41.72	-41.72	21.9	-19.5	29.3	26.4	2.92	10.022	
800.0	800.0	800.0	800.0	1.7	1.7	-41.72	-41.72	21.9	-19.5	29.3	25.9	3.37	8.686	
900.0	900.0	900.0	900.0	1.9	1.9	-41.72	-41.72	21.9	-19.5	29.3	25.5	3.82	7.664	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-41.72	-41.72	21.9	-19.5	29.3	25.0	4.27	6.857 CC	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	172.51	172.51	21.9	-19.5	31.0	26.3	4.69	6.608	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	173.58	173.58	21.9	-19.5	36.2	31.1	5.09	7.109	
1,300.0	1,299.5	1,299.5	1,299.5	2.7	2.8	174.81	174.81	21.9	-19.5	44.9	39.4	5.50	8.167	
1,400.0	1,398.7	1,398.7	1,398.7	2.9	3.0	175.88	175.88	21.9	-19.5	56.7	50.8	5.90	9.605	
1,500.0	1,498.0	1,498.0	1,498.0	3.2	3.3	176.62	176.62	21.9	-19.5	69.1	62.8	6.33	10.926	
1,600.0	1,597.2	1,597.2	1,597.2	3.4	3.5	177.14	177.14	21.9	-19.5	81.5	74.8	6.75	12.072	
1,700.0	1,696.4	1,696.4	1,696.4	3.7	3.7	177.64	177.64	20.6	-18.3	92.3	85.1	7.17	12.877	
1,800.0	1,795.6	1,802.8	1,802.6	4.0	3.9	178.29	178.29	16.6	-14.6	99.5	91.9	7.56	13.157	
1,900.0	1,894.9	1,906.4	1,905.8	4.3	4.1	179.13	179.13	9.8	-8.4	103.1	95.1	7.97	12.941	
2,000.0	1,994.1	2,008.2	2,006.9	4.6	4.3	-179.84	-179.84	0.7	-0.2	103.6	95.2	8.38	12.361	
2,100.0	2,093.3	2,108.2	2,106.1	4.9	4.5	-178.80	-178.80	-8.5	8.3	103.7	94.9	8.80	11.779	
2,200.0	2,192.5	2,208.2	2,205.3	5.2	4.8	-177.75	-177.75	-17.7	16.8	103.8	94.6	9.23	11.245	
2,300.0	2,291.8	2,308.2	2,304.5	5.5	5.0	-176.71	-176.71	-27.0	25.2	103.9	94.3	9.66	10.753	
2,400.0	2,391.0	2,408.2	2,403.7	5.8	5.3	-175.68	-175.68	-36.2	33.7	104.1	94.0	10.10	10.301	
2,500.0	2,490.2	2,508.2	2,502.9	6.1	5.5	-174.64	-174.64	-45.5	42.1	104.3	93.7	10.55	9.884	
2,600.0	2,589.4	2,608.1	2,602.1	6.4	5.8	-173.61	-173.61	-54.7	50.6	104.5	93.5	11.00	9.499	
2,700.0	2,688.7	2,708.1	2,701.3	6.7	6.1	-172.59	-172.59	-63.9	59.0	104.8	93.3	11.46	9.142	
2,800.0	2,787.9	2,808.1	2,800.5	7.0	6.4	-171.57	-171.57	-73.2	67.5	105.1	93.2	11.93	8.811	
2,900.0	2,887.1	2,908.1	2,899.7	7.3	6.6	-170.55	-170.55	-82.4	76.0	105.4	93.0	12.40	8.504	
3,000.0	2,986.3	3,008.1	2,998.9	7.7	6.9	-169.55	-169.55	-91.7	84.4	105.8	92.9	12.88	8.218	
3,100.0	3,085.6	3,108.1	3,098.1	8.0	7.2	-168.55	-168.55	-100.9	92.9	106.2	92.8	13.36	7.951	
3,200.0	3,184.8	3,208.0	3,197.3	8.3	7.5	-167.55	-167.55	-110.1	101.3	106.6	92.8	13.85	7.701	
3,300.0	3,284.0	3,308.0	3,296.4	8.6	7.8	-166.57	-166.57	-119.4	109.8	107.1	92.8	14.34	7.468	
3,400.0	3,383.2	3,408.0	3,395.6	8.9	8.1	-165.60	-165.60	-128.6	118.3	107.6	92.8	14.84	7.250	
3,500.0	3,482.5	3,508.0	3,494.8	9.3	8.4	-164.63	-164.63	-137.8	126.7	108.1	92.8	15.35	7.045	
3,600.0	3,581.7	3,608.0	3,594.0	9.6	8.8	-163.68	-163.68	-147.1	135.2	108.7	92.8	15.86	6.853	
3,700.0	3,680.9	3,707.9	3,693.2	9.9	9.1	-162.73	-162.73	-156.3	143.6	109.3	92.9	16.38	6.671	
3,800.0	3,780.1	3,807.9	3,792.4	10.2	9.4	-161.80	-161.80	-165.6	152.1	109.9	93.0	16.90	6.501	
3,900.0	3,879.4	3,907.9	3,891.6	10.6	9.7	-160.87	-160.87	-174.8	160.5	110.5	93.1	17.43	6.340	
4,000.0	3,978.6	4,007.9	3,990.8	10.9	10.0	-159.96	-159.96	-184.0	169.0	111.2	93.2	17.97	6.188	
4,100.0	4,077.8	4,107.9	4,090.0	11.2	10.3	-159.06	-159.06	-193.3	177.5	111.9	93.4	18.51	6.045	
4,200.0	4,177.0	4,207.9	4,189.2	11.5	10.6	-158.16	-158.16	-202.5	185.9	112.6	93.6	19.06	5.910	
4,300.0	4,276.3	4,307.8	4,288.4	11.9	11.0	-157.29	-157.29	-211.8	194.4	113.4	93.8	19.61	5.781	
4,400.0	4,375.5	4,407.8	4,387.6	12.2	11.3	-156.42	-156.42	-221.0	202.8	114.2	94.0	20.17	5.660	
4,500.0	4,474.7	4,507.8	4,486.8	12.5	11.6	-155.56	-155.56	-230.2	211.3	115.0	94.2	20.74	5.545	
4,600.0	4,573.9	4,607.8	4,586.0	12.8	11.9	-154.72	-154.72	-239.5	219.7	115.8	94.5	21.31	5.435	
4,700.0	4,673.2	4,707.8	4,685.2	13.2	12.2	-153.89	-153.89	-248.7	228.2	116.7	94.8	21.89	5.332	
4,800.0	4,772.4	4,807.7	4,784.4	13.5	12.6	-153.07	-153.07	-258.0	236.7	117.6	95.1	22.47	5.233	
4,900.0	4,871.6	4,907.7	4,883.6	13.8	12.9	-152.26	-152.26	-267.2	245.1	118.5	95.4	23.05	5.139	
5,000.0	4,970.8	5,007.7	4,982.8	14.2	13.2	-151.47	-151.47	-276.4	253.6	119.4	95.8	23.64	5.050	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-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	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	5,070.1	5,107.7	5,081.9	14.5	13.5	-150.69	-285.7	262.0	120.4	96.1	24.24	4.965		
5,200.0	5,169.3	5,207.7	5,181.1	14.8	13.8	-149.92	-294.9	270.5	121.3	96.5	24.84	4.885		
5,300.0	5,268.5	5,307.7	5,280.3	15.1	14.2	-149.16	-304.1	278.9	122.3	96.9	25.44	4.808		
5,400.0	5,367.7	5,407.6	5,379.5	15.5	14.5	-148.42	-313.4	287.4	123.3	97.3	26.05	4.734		
5,500.0	5,467.0	5,507.6	5,478.7	15.8	14.8	-147.69	-322.6	295.9	124.4	97.7	26.66	4.664		
5,600.0	5,566.2	5,606.4	5,576.8	16.1	15.1	-147.02	-331.6	304.1	125.5	98.3	27.26	4.605		
5,700.0	5,665.7	5,703.2	5,673.1	16.3	15.3	-146.61	-338.4	310.3	126.7	99.0	27.73	4.569		
5,800.0	5,765.5	5,800.0	5,769.7	16.5	15.5	-146.34	-342.9	314.4	127.4	99.3	28.13	4.530		
5,900.0	5,865.4	5,896.9	5,866.5	16.7	15.7	-146.22	-344.9	316.3	127.8	99.3	28.47	4.488		
6,000.0	5,965.4	5,995.8	5,965.4	16.8	15.9	0.01	-345.1	316.4	127.8	97.2	30.56	4.182		
6,100.0	6,065.4	6,095.8	6,065.4	17.0	16.0	0.01	-345.1	316.4	127.8	96.9	30.88	4.139		
6,200.0	6,165.4	6,195.8	6,165.4	17.1	16.2	90.01	-345.1	313.9	127.8	98.3	29.47	4.336		
6,300.0	6,264.2	6,295.8	6,264.2	17.2	16.2	90.00	-345.1	299.2	127.8	98.2	29.64	4.312		
6,400.0	6,360.3	6,395.8	6,360.3	17.2	16.3	90.00	-345.1	271.8	127.8	98.1	29.68	4.306		
6,500.0	6,452.0	6,495.8	6,452.0	17.2	16.2	90.00	-345.1	232.1	127.8	98.1	29.68	4.306		
6,600.0	6,537.7	6,595.8	6,537.7	17.2	16.2	90.00	-345.1	180.7	127.8	98.1	29.74	4.298		
6,629.0	6,561.3	6,624.8	6,561.3	17.2	16.2	90.00	-345.1	163.8	127.8	98.0	29.80	4.289		
6,700.0	6,616.0	6,695.8	6,616.0	17.1	16.2	90.00	-345.1	118.6	127.8	97.8	30.00	4.260		
6,800.0	6,685.5	6,795.8	6,685.5	17.1	16.2	90.00	-345.1	46.8	127.8	97.2	30.64	4.172		
6,900.0	6,745.1	6,895.8	6,745.1	17.0	16.3	90.00	-345.1	-33.4	127.8	96.0	31.81	4.018		
7,000.0	6,793.6	6,995.8	6,793.6	17.0	16.8	90.00	-345.1	-120.8	127.8	94.2	33.64	3.800		
7,100.0	6,830.4	7,095.8	6,830.4	18.1	18.0	89.99	-345.1	-213.7	127.8	91.7	36.14	3.537		
7,200.0	6,854.7	7,195.8	6,854.7	19.7	19.6	89.99	-345.1	-310.6	127.8	88.5	39.26	3.255		
7,300.0	6,866.1	7,295.8	6,866.1	21.6	21.4	89.99	-345.1	-409.9	127.8	84.9	42.87	2.981		
7,309.2	6,866.6	7,304.9	6,866.5	21.8	21.6	89.98	-345.1	-419.0	127.8	84.6	43.23	2.957		
7,400.0	6,867.3	7,395.8	6,866.4	23.6	23.4	89.57	-345.1	-509.9	127.8	81.0	46.82	2.730		
7,500.0	6,867.8	7,495.7	6,865.3	25.8	25.6	88.87	-345.1	-609.8	127.8	76.8	51.06	2.504		
7,600.0	6,868.2	7,595.7	6,864.2	28.0	27.8	88.16	-345.1	-709.8	127.9	72.3	55.53	2.303		
7,700.0	6,868.7	7,695.7	6,863.0	30.4	30.2	87.46	-345.1	-809.8	127.9	67.8	60.17	2.126		
7,800.0	6,869.2	7,795.7	6,861.9	32.8	32.6	86.76	-345.1	-909.8	128.0	63.1	64.95	1.971		
7,900.0	6,869.6	7,895.7	6,860.8	35.3	35.1	86.06	-345.1	-1,009.8	128.1	58.3	69.83	1.835		
8,000.0	6,870.1	7,995.7	6,859.7	37.8	37.6	85.36	-345.1	-1,109.7	128.2	53.4	74.79	1.714		
8,100.0	6,870.5	8,095.7	6,858.6	40.4	40.2	84.66	-345.1	-1,209.7	128.4	48.6	79.80	1.608		
8,200.0	6,871.0	8,195.7	6,857.5	43.0	42.8	83.96	-345.1	-1,309.7	128.5	43.7	84.86	1.514		
8,300.0	6,871.4	8,295.6	6,856.3	45.6	45.4	83.27	-345.1	-1,409.7	128.7	38.8	89.94	1.431 Level 3		
8,400.0	6,871.9	8,395.6	6,855.2	48.2	48.0	82.57	-345.1	-1,509.7	128.9	33.8	95.04	1.356 Level 3		
8,500.0	6,872.3	8,495.6	6,854.1	50.9	50.7	81.88	-345.1	-1,609.7	129.1	28.9	100.15	1.289 Level 3		
8,600.0	6,872.8	8,595.6	6,853.0	53.5	53.4	81.19	-345.1	-1,709.6	129.3	24.1	105.26	1.229 Level 2		
8,700.0	6,873.2	8,695.6	6,851.9	56.2	56.0	80.51	-345.1	-1,809.6	129.6	19.2	110.37	1.174 Level 2		
8,800.0	6,873.7	8,795.6	6,850.7	58.9	58.7	79.82	-345.1	-1,909.6	129.8	14.4	115.46	1.125 Level 2		
8,900.0	6,874.1	8,895.6	6,849.6	61.6	61.4	79.14	-345.1	-2,009.6	130.1	9.6	120.54	1.080 Level 2		
9,000.0	6,874.6	8,995.6	6,848.5	64.3	64.2	78.46	-345.1	-2,109.6	130.4	4.8	125.60	1.039 Level 2		
9,100.0	6,875.1	9,095.5	6,847.4	67.1	66.9	77.79	-345.1	-2,209.5	130.8	0.1	130.64	1.001 Level 2		
9,200.0	6,875.5	9,195.5	6,846.3	69.8	69.6	77.12	-345.1	-2,309.5	131.1	-4.5	135.65	0.966 Level 1		
9,300.0	6,876.0	9,295.5	6,845.2	72.5	72.3	76.45	-345.1	-2,409.5	131.5	-9.2	140.63	0.935 Level 1		
9,400.0	6,876.4	9,395.5	6,844.0	75.3	75.1	75.79	-345.1	-2,509.5	131.8	-13.7	145.58	0.906 Level 1		
9,500.0	6,876.9	9,495.5	6,842.9	78.0	77.8	75.13	-345.1	-2,609.5	132.2	-18.3	150.49	0.879 Level 1		
9,600.0	6,877.3	9,595.5	6,841.8	80.8	80.6	74.47	-345.1	-2,709.4	132.6	-22.7	155.37	0.854 Level 1		
9,700.0	6,877.8	9,695.5	6,840.7	83.5	83.3	73.82	-345.1	-2,809.4	133.1	-27.1	160.20	0.831 Level 1		
9,800.0	6,878.2	9,795.5	6,839.6	86.3	86.1	73.17	-345.1	-2,909.4	133.5	-31.5	165.00	0.809 Level 1		
9,900.0	6,878.7	9,895.4	6,838.5	89.0	88.9	72.53	-345.1	-3,009.4	134.0	-35.8	169.75	0.789 Level 1		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design LDS 5N65W1U Pad Sec.1-T5N-R65W - LDS 1V-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	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,879.1	9,995.4	6,837.3	91.8	91.6	71.89		-345.1	-3,109.4	134.5	-40.0	174.46	0.771	Level 1
10,100.0	6,879.6	10,095.4	6,836.2	94.6	94.4	71.26		-345.1	-3,209.4	135.0	-44.2	179.13	0.753	Level 1
10,200.0	6,880.0	10,195.4	6,835.1	97.3	97.2	70.63		-345.1	-3,309.3	135.5	-48.3	183.74	0.737	Level 1
10,300.0	6,880.5	10,295.4	6,834.0	100.1	99.9	70.01		-345.1	-3,409.3	136.0	-52.3	188.31	0.722	Level 1
10,400.0	6,881.0	10,395.4	6,832.9	102.9	102.7	69.39		-345.1	-3,509.3	136.5	-56.3	192.83	0.708	Level 1
10,500.0	6,881.4	10,495.4	6,831.8	105.7	105.5	68.77		-345.1	-3,609.3	137.1	-60.2	197.30	0.695	Level 1
10,600.0	6,881.9	10,595.4	6,830.6	108.4	108.3	68.16		-345.1	-3,709.3	137.7	-64.0	201.72	0.683	Level 1
10,700.0	6,882.3	10,695.3	6,829.5	111.2	111.0	67.56		-345.1	-3,809.2	138.3	-67.8	206.09	0.671	Level 1
10,800.0	6,882.8	10,795.3	6,828.4	114.0	113.8	66.96		-345.1	-3,909.2	138.9	-71.5	210.41	0.660	Level 1
10,900.0	6,883.2	10,895.3	6,827.3	116.8	116.6	66.37		-345.1	-4,009.2	139.5	-75.2	214.68	0.650	Level 1
11,000.0	6,883.7	10,995.3	6,826.2	119.5	119.4	65.78		-345.1	-4,109.2	140.1	-78.7	218.89	0.640	Level 1
11,100.0	6,884.1	11,095.3	6,825.1	122.3	122.2	65.20		-345.1	-4,209.2	140.8	-82.3	223.05	0.631	Level 1
11,200.0	6,884.6	11,195.3	6,823.9	125.1	124.9	64.62		-345.1	-4,309.2	141.5	-85.7	227.16	0.623	Level 1
11,300.0	6,885.0	11,295.3	6,822.8	127.9	127.7	64.05		-345.1	-4,409.1	142.1	-89.1	231.21	0.615	Level 1
11,400.0	6,885.5	11,395.3	6,821.7	130.7	130.5	63.48		-345.1	-4,509.1	142.8	-92.4	235.21	0.607	Level 1
11,500.0	6,885.9	11,495.2	6,820.6	133.5	133.3	62.92		-345.1	-4,609.1	143.5	-95.6	239.16	0.600	Level 1
11,600.0	6,886.4	11,595.2	6,819.5	136.3	136.1	62.36		-345.1	-4,709.1	144.3	-98.8	243.05	0.594	Level 1
11,700.0	6,886.9	11,695.2	6,818.4	139.1	138.9	61.81		-345.1	-4,809.1	145.0	-101.9	246.89	0.587	Level 1
11,800.0	6,887.3	11,795.2	6,817.2	141.8	141.7	61.27		-345.1	-4,909.0	145.8	-104.9	250.68	0.581	Level 1
11,900.0	6,887.8	11,895.2	6,816.1	144.6	144.5	60.73		-345.1	-5,009.0	146.5	-107.9	254.42	0.576	Level 1
12,000.0	6,888.2	11,995.2	6,815.0	147.4	147.3	60.20		-345.1	-5,109.0	147.3	-110.8	258.10	0.571	Level 1
12,100.0	6,888.7	12,095.2	6,813.9	150.2	150.0	59.67		-345.1	-5,209.0	148.1	-113.7	261.73	0.566	Level 1
12,200.0	6,889.1	12,195.2	6,812.8	153.0	152.8	59.15		-345.1	-5,309.0	148.9	-116.4	265.31	0.561	Level 1
12,300.0	6,889.6	12,295.1	6,811.7	155.8	155.6	58.63		-345.1	-5,408.9	149.7	-119.1	268.84	0.557	Level 1
12,400.0	6,890.0	12,395.1	6,810.5	158.6	158.4	58.12		-345.1	-5,508.9	150.5	-121.8	272.31	0.553	Level 1
12,500.0	6,890.5	12,495.1	6,809.4	161.4	161.2	57.62		-345.1	-5,608.9	151.3	-124.4	275.74	0.549	Level 1
12,600.0	6,890.9	12,595.1	6,808.3	164.2	164.0	57.12		-345.1	-5,708.9	152.2	-126.9	279.11	0.545	Level 1
12,700.0	6,891.4	12,695.1	6,807.2	167.0	166.8	56.62		-345.1	-5,808.9	153.1	-129.4	282.44	0.542	Level 1
12,800.0	6,891.8	12,795.1	6,806.1	169.8	169.6	56.14		-345.1	-5,908.9	153.9	-131.8	285.71	0.539	Level 1
12,834.6	6,892.0	12,829.7	6,805.7	170.7	170.6	55.97		-345.1	-5,943.4	154.2	-132.6	286.83	0.538	Level 1, ES, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design Noffsinger Pad Sec.2-T5N-R65W - Noffsinger 2C (Vert.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
12,000.0	6,888.2	6,895.2	6,895.2	147.4	15.4	-84.34	-516.6	-6,065.0	956.2	794.1	162.09	5.899		
12,100.0	6,888.7	6,895.7	6,895.7	150.2	15.4	-84.92	-516.6	-6,065.0	856.3	691.3	165.01	5.189		
12,200.0	6,889.1	6,896.1	6,896.1	153.0	15.4	-85.52	-516.6	-6,065.0	756.4	588.5	167.92	4.505		
12,300.0	6,889.6	6,896.6	6,896.6	155.8	15.4	-86.11	-516.6	-6,065.0	656.6	485.8	170.82	3.844		
12,400.0	6,890.0	6,897.0	6,897.0	158.6	15.4	-86.70	-516.6	-6,065.0	556.9	383.2	173.70	3.206		
12,500.0	6,890.5	6,897.5	6,897.5	161.4	15.4	-87.29	-516.6	-6,065.0	457.3	280.7	176.58	2.590		
12,600.0	6,890.9	6,897.9	6,897.9	164.2	15.4	-87.89	-516.6	-6,065.0	357.8	178.4	179.44	1.994		
12,700.0	6,891.4	6,898.4	6,898.4	167.0	15.4	-88.48	-516.6	-6,065.0	258.9	76.6	182.28	1.420	Level 3	
12,800.0	6,891.8	6,898.8	6,898.8	169.8	15.4	-89.08	-516.6	-6,065.0	161.2	-23.9	185.11	0.871	Level 1	
12,834.6	6,892.0	6,899.0	6,899.0	170.7	15.4	-89.28	-516.6	-6,065.0	128.3	-57.8	186.07	0.689	Level 1, CC, ES, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

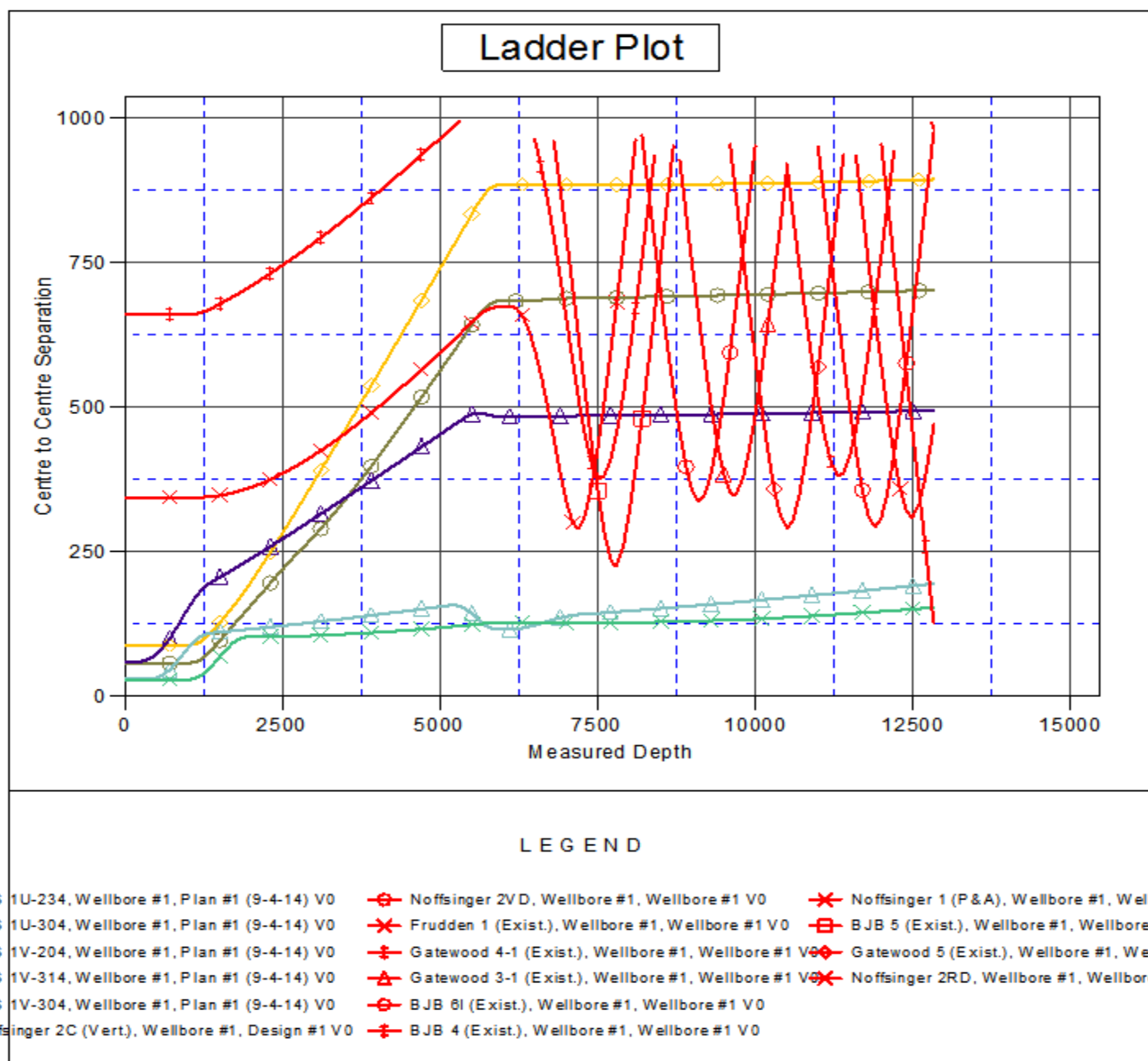
Offset Design Noffsinger Pad Sec.2-T5N-R65W - Noffsinger 2RD - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 699-MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance										
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
12,800.0	6,891.8	7,028.1	6,892.0	169.8	22.5	89.50	471.9	-6,212.1	992.0	806.7	185.28	5.354		
12,834.6	6,892.0	7,026.0	6,890.0	170.7	22.5	89.38	471.9	-6,212.2	982.0	795.8	186.24	5.273 CC, ES, SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Offset Design													Noffsinger Pad Sec.2-T5N-R65W - Noffsinger 2VD - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft
Survey Program: 700-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)						
11,000.0	6,883.7	7,040.6	6,906.8	119.5	23.4	-92.34	-766.4	-5,013.0	949.8	807.5	142.34	6.673					
11,100.0	6,884.1	7,039.3	6,905.4	122.3	23.4	-92.08	-766.4	-5,013.1	855.3	710.1	145.15	5.892					
11,200.0	6,884.6	7,037.9	6,904.1	125.1	23.4	-91.81	-766.4	-5,013.1	762.2	614.2	147.96	5.151					
11,300.0	6,885.0	7,036.5	6,902.7	127.9	23.4	-91.54	-766.4	-5,013.1	671.0	520.2	150.77	4.450					
11,400.0	6,885.5	7,035.2	6,901.3	130.7	23.4	-91.28	-766.4	-5,013.1	582.7	429.1	153.58	3.794					
11,500.0	6,885.9	7,033.8	6,899.9	133.5	23.4	-91.01	-766.4	-5,013.2	498.9	342.5	156.38	3.190					
11,600.0	6,886.4	7,032.4	6,898.6	136.3	23.4	-90.74	-766.4	-5,013.2	422.1	263.0	159.19	2.652					
11,700.0	6,886.9	7,031.0	6,897.2	139.1	23.4	-90.46	-766.4	-5,013.2	357.1	195.1	161.99	2.204					
11,800.0	6,887.3	7,029.6	6,895.8	141.8	23.4	-90.19	-766.4	-5,013.2	311.2	146.4	164.79	1.888					
11,900.0	6,887.8	7,028.2	6,894.3	144.6	23.4	-89.92	-766.4	-5,013.3	293.5	125.9	167.58	1.751					
11,903.4	6,887.8	7,028.1	6,894.3	144.7	23.4	-89.91	-766.4	-5,013.3	293.5	125.8	167.68	1.750 CC, ES, SF					
12,000.0	6,888.2	7,026.8	6,892.9	147.4	23.4	-89.64	-766.4	-5,013.3	309.0	138.6	170.38	1.813					
12,100.0	6,888.7	7,025.4	6,891.5	150.2	23.4	-89.36	-766.4	-5,013.3	353.2	180.1	173.17	2.040					
12,200.0	6,889.1	7,023.9	6,890.1	153.0	23.4	-89.08	-766.4	-5,013.4	417.2	241.3	175.95	2.371					
12,300.0	6,889.6	7,022.5	6,888.6	155.8	23.4	-88.80	-766.4	-5,013.4	493.3	314.6	178.73	2.760					
12,400.0	6,890.0	7,021.0	6,887.2	158.6	23.4	-88.52	-766.4	-5,013.4	576.8	395.2	181.51	3.178					
12,500.0	6,890.5	7,019.6	6,885.7	161.4	23.4	-88.24	-766.4	-5,013.4	664.8	480.5	184.28	3.607					
12,600.0	6,890.9	7,018.1	6,884.3	164.2	23.4	-87.95	-766.4	-5,013.5	755.8	568.7	187.05	4.041					
12,700.0	6,891.4	7,016.7	6,882.8	167.0	23.4	-87.67	-766.4	-5,013.5	848.8	659.0	189.82	4.472					
12,800.0	6,891.8	7,015.2	6,881.3	169.8	23.4	-87.38	-766.4	-5,013.5	943.3	750.7	192.58	4.898					
12,834.6	6,892.0	7,014.7	6,880.8	170.7	23.4	-87.28	-766.4	-5,013.5	976.2	782.7	193.52	5.044					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4653.0ft (Original Well Elev) Coordinates are relative to: LDS 1V-414
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.58°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well LDS 1V-414
Project:	SEC.1-T5N-R65W	TVD Reference:	WELL @ 4653.0ft (Original Well Elev)
Reference Site:	LDS 5N65W1U Pad Sec.1-T5N-R65W	MD Reference:	WELL @ 4653.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LDS 1V-414	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #1 (9-4-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4653.0ft (Original Well Elev) Coordinates are relative to: LDS 1V-414

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Central Meridian is -105.500000 °

Grid Convergence at Surface is: 0.58°

